WG20

Gear Units and Geared Motors up to 18000 Nm

TECHNICAL CATALOGUE



Motors | Automation | Energy | Transmission & Distribution | Coatings



WEG Group - Transforming energy into solutions.

WEG is a leading global manufacturer and solutions provider of drive technology, energy production and distribution, and automation systems and switchgear construction.
Founded in Brazil in 1961 by three entrepreneurs, WEG has grown to become one of the most important global manufacturers of electric motors. WEG has more than 31,000 employees around the world. The annual turnover of around 3 billion euro reflects its increasing success. The company's global presence is supported by branches in 34 countries, production facilities, and a network of authorised dealers on all five continents.

Your **requirements** - our **expertise**

As one of the leading global manufacturers and solutions providers of drive technology, WEG's aim was to expand its extensive range of products by gear units produced in its own facilities. Perfect coordination of products throughout the drive train has put WEG in a position to offer customers even more superior and efficient solutions.

Under the leadership of Watt Drive, the challenge was to develop a program which not only meets the current demands of the market, but also satisfied WEG's high quality requirements. The Group's own centre of excellence for geared motors in Austria, part of the WEG Group since 2011, can draw on more than 40 years of experience in development, production and sales of gear units and geared motors.

In order to satisfy the requirements of state-of-the-art geared motors the following market requirements were taken into account during the development phase:

Standard mounting dimensions

For users, the aim was to make the new range of geared motors as easy and effortless to use as possible. To ensure installation in an existing system or production line worked effortlessly without incurring unnecessary costs for conversions, the developers decided to adapt the mounting dimensions of the new gear units to products already established on the market. The objective: worldwide, easy and cost-effective interchangeability.

Torque transmission

The gear units needed to be compact, efficient, robust and reliable. In order to achieve this goal a transmission had to be designed which allows large ratio ranges in a two-stage model while being able to integrate easily into the new design gear housing.

Efficiency

Energy efficiency has always been of paramount importance to WEG. The aim here was to live up to this demand when designing the new WG20 geared motors. This requires the perfect interaction of sophisticated technology and exclusive use of high quality components.

Worldwide use

To meet the requirements of global mechanical and plant engineering, it was vital that the new geared motors can be used worldwide, whilst maintaining a high level of flexibility for applications.

The solution is **WG20**.









www.cat4cad.com

Easy **product selection**

The “cat4CAD®” product configuration tool makes it easy to interactively select products. Comprehensive wizards, user-friendly navigation and many other extra features allow quick configuration of the required drive.

Advantages

- Extensive product library
- Fast configuration of motors and geared motors
- Creation of project files with comprehensive technical documentation
- Easy modification of generated product data by means of the project file
- Quick request times

Features

- The entire menu is available in many languages.
- To-scale 2D/3D drawings and PDF and DXF dimension sheet drawings of the previously selected drive.
- The 2D/3D data can be exported for use in standard CAD programs.
- Comprehensive technical data sheets of the configured gear unit and motor at the click of a button.
- The project file allows complete management of previously selected drives on one screen.
  At the click of a button one can save or print this project file, create PDF and DXF dimension drawings, and send enquiries directly to our sales team.

Online version available at www.cat4cad.com

Offline version for download at www.wattdrive.com

WG20 - Gear units and Geared motors up to 18000 Nm

WG20 is the first geared motor range to be completely developed in-house at WEG. It comprises helical, parallel shaft and helical bevel gear units with torques between 50 and 18000 Nm. Already the two-stage units excel with their large ratio range, as well as being exceptionally efficient thanks to the sophisticated design. The light aluminium housings of the gear units up to 600 Nm and the robust cast iron housings from 800 Nm provide a highly versatile and reliable product, with a wide range of possible applications.

C

Helical gear units

Nominal torque: 50 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 2.44 - 375.71



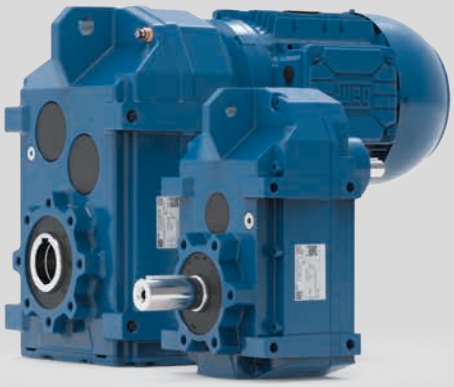
F

Parallel shaft gear units

Nominal torque: 130 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 3.85 - 487.67



K

Helical bevel gear units

Nominal torque: 110 - 18000 Nm

Power range: 0.12 - 75 kW

Ratio range: 3.82 - 277.79





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Disclaimer

This catalogue contains information (descriptions and characteristics), which do not always apply as described in case of actual use. Data can also change due to product development. Characteristics are only binding if explicitly agreed to in the contract. Delivery opportunities and technical modifications subject to change without notice.

Drive calculation

1. Drive power

The required total power is divided into static and dynamic components. The static power is the component at constant speed (friction and lifting force). The dynamic component is the power for accelerating and decelerating of masses.
The selected rated motor power (P_N) must be bigger than the required static drive power. The required total power can be bigger than the rated motor power but it must be smaller than the maximum motor power.

	Formula	Unit
Output speed of the gear unit	$n_2 = \frac{v \cdot 30}{\pi \cdot r}$	[min^{-1}]

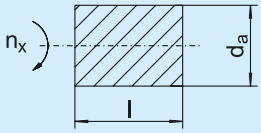
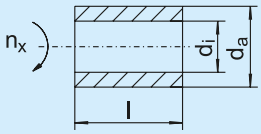
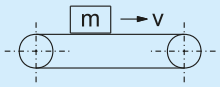
Static drive power		
Linear movement Horizontal movement (conveyor, travel drive)	$P_{stat} = \frac{m \cdot g \cdot \mu \cdot v}{1000 \cdot \eta}$	[kW]
Inclined movement (inclined conveyor, travel drive with inclination)	$P_{stat} = \frac{m \cdot g \cdot v \cdot (\sin\alpha + \mu \cdot \cos\alpha)}{1000 \cdot \eta}$	[kW]
Vertical movement (lifting drive, hoist, bucket elevator)	$P_{stat} = \frac{m \cdot g \cdot v}{1000 \cdot \eta}$	[kW]
Static output torque	$M_{2stat} = \frac{P_{stat} \cdot 9550}{n_2}$	[Nm]

Dynamic drive power (acceleration/deceleration power)		
Horizontal movement	$P_{dyn,A,(B)} = \frac{m \cdot v^2}{1000 \cdot t_{A,(B)} \cdot \eta)}$	[kW]
Rotary motion	$P_{dyn,A,(B)} = \frac{\Sigma J_{red.} \cdot n_1^2}{9{,}12 \cdot 10^4 \cdot t_{A,(B)} \cdot \eta}$	[kW]
Starting resp. braking time	$t_{A,(B)} = \frac{\Sigma J_{red.} \cdot n_1}{9{,}55 \cdot (M_{A,(B)} \pm M_L)}$	[s]
Minimum starting time against slipping	$t_{Amin} = \frac{v}{\mu_0 \cdot g}$	[s]
Load torque of motor	$M_L = \frac{M_{2stat}}{i}$	[Nm]
Starting power	$P_A = P_{dyn,A} + P_{stat}$	[kW]
Braking power	$P_B = P_{dyn,B} \pm P_{stat}$	[kW]
Starting / braking torque	$M_{2,A,(B)} = \frac{P_{A,(B)} \cdot 9550}{n_2}$	[Nm]

+M_L for braking when the load acts braking (e.g. lifts when going up)
-M_L for starting or for braking when the load acts accelerative (e.g. lifts when going down)

Mass moments of inertia

External load moments of inertia have to be reduced onto the motor shaft by squared ratios.

Reduced mass moment of inertia	$J_{ex.red.} = \frac{J_{ex}}{i^2}$	[kgm²]
Solid cylinder 	$J_{ex.red.} = 98{,}2 \cdot \rho \cdot l \cdot d_a^4 \cdot (\frac{n_x}{n_1})^2$	[kgm²]
Hollow cylinder 	$J_{ex.red.} = 98{,}2 \cdot \rho \cdot l \cdot (d_a^4 - d_i^4) \cdot (\frac{n_x}{n_1})^2$	[kgm²]
Linear movement 	$J_{ex.red.} = 91{,}2 \cdot m \cdot (\frac{v}{n_1})^2$	[kgm²]

Approximate values for friction coefficients:

Rolling friction:
- $\mu_r = 0.005 - 0.02$ steel/steel
- $\mu_r = 0.02 - 0.06$ plastic/steel
- $\mu_r = 0.06 - 0.2$ rubber/steel

Static friction:
- $\mu_0 = 0.15$ steel/steel

Friction coefficient for conveyors:
- $\mu_r = 0.13$ 10 m conveyor length
- $\mu_r = 0.08$ 25 m conveyor length
- $\mu_r = 0.06$ 50 m conveyor length
- $\mu_r = 0.05$ 100 m conveyor length

Designation	Unit	Description
d_a	[m]	Outside diameter
d_i	[m]	Inside diameter
f_B		Service factor
F_I		Inertial factor
g	[m/s²]	Acceleration due to gravity
i		Gear ratio
$J_{ex.red.}$	[kgm²]	All external mass moments of inertia corrected to motor input
J_{ex}	[kgm²]	All extern mass moments of inertia
J_{mot}	[kgm²]	Mass moment of inertia of the motor
$\Sigma J_{red.}$	[kgm²]	Sum of all J_{red} values
l	[m]	Length
m	[kg]	Mass
$M_{2,A}$	[Nm]	Output torque of gear unit for starting
$M_{2,B}$	[Nm]	Output torque of gear unit for braking
M_{2Nenn}	[Nm]	Permissible output torque
M_{2stat}	[Nm]	Static output torque
M_A	[Nm]	Starting torque of the motor (see motor electric data sheets from page 371)
M_B	[Nm]	Brake torque

Designation	Unit	Description
M_L	[Nm]	Load torque of motor
n_1	[min^{-1}]	Input speed (motor speed)
n_2	[min^{-1}]	Output speed (gear unit)
n_x	[min^{-1}]	Speed of calculated components
P_A	[kW]	Power of gear unit at start
P_B	[kW]	Power of gear unit at stop
P_{stat}	[kW]	Static power
$P_{dyn,A}$	[kW]	Dynamic acceleration power
$P_{dyn,B}$	[kW]	Dynamic deceleration power
r	[m]	Sprocket / roller radius
t_{Amin}	[s]	Minimum starting time with risk of slip
t_A	[s]	Starting time
t_B	[s]	Braking time
v	[m/s]	Linear velocity
α	[°]	Angle of inclination
η		Efficiency of the gear unit, system
μ		Coefficient of friction
μ_0		Coefficient of static friction
μ_r		Coefficient of rolling friction
ρ	[kg/dm³]	Density (steel=7.85 kg/dm³)

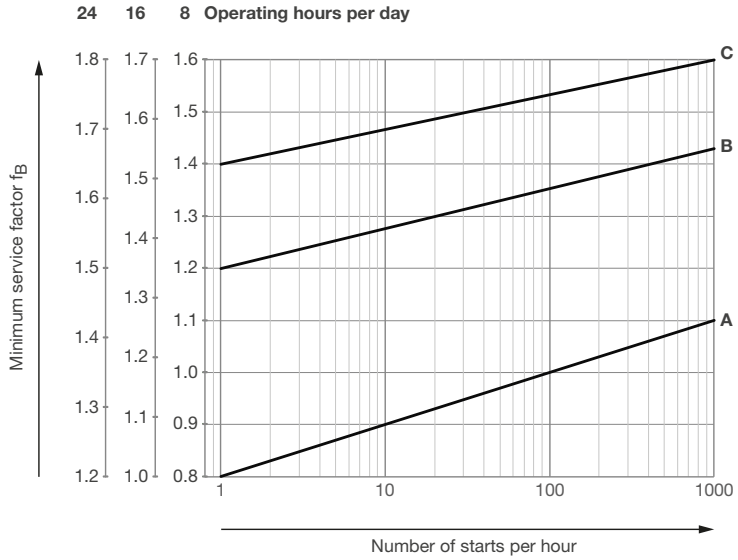
2. Load types

Load type A	Load type B	Load type C
Uniform load, small masses to be accelerated, no shocks	Non-uniform load, medium masses to be accelerated, medium shocks	Extremely rough conditions, high masses to be accelerated, heavy shocks and alternating load
Examples: Continuous conveyor for bulk goods, light conveyors, blowers, centrifugal pumps, light elevators, screw conveyors, fluid agitators	Examples: Bucket conveyors, rotary furnaces, printing and dyeing machines, conveyor drums, centrifugal pumps and semi-fluid good agitators, wood working machines, elevators, screw conveyors, concrete mixers	Examples: Ramming machines, calenders, duty rolling mills, presses, heavy mixer, stone crushers, shredders, heavy winches and lifts

3. Service factor

The gear unit required can be selected from the following tables showing the power, torque and output speed options. All our gear units are adequately dimensioned for long-life industrial applications and are designed for continuous loading under uniform operating conditions with small masses to be accelerated. Operating times of 8-10 hours a day are considered standard. No drive can be built to withstand all possible conditions, therefore the load conditions at the site have to be determined accurately and the proper load type identified. After determining the daily operating hours, selecting the type and establishing the number of starts (c/h), see the following diagram to find out the necessary service factor f_B. The inertial factor F_I assists in evaluating and attributing the masses to be accelerated. The service factor given in the tables indicates the reserve load in the rated torque for the specific gear unit.

In the tables you can usually choose between two types of gear units with the same or similar speeds, but different service factors. When you select the correct gear unit, the f_B from the diagram below should always be less than or equal to the available f_B (from the selection tables) for the chosen type. For short time operation, you can sometimes select a maller gear unit, while for peak operation, a large number of starts or 24-hour continuous operation, a larger type is necessary. The output speed figures shown in the selection tables have been rounded up or rounded off. They may however vary due to the motor size and are valid for nominal load. Deviations of +/- 3 % are permissible.



	Formula	Unit
Service factor	$f_B = \frac{M_{2Nenn}}{M_{2stat}}$	
Inertial factor	$F_I = \frac{\Sigma J_{ex.red} + J_{mot}}{J_{mot}}$	[min^{-1}]

Modes of operation DIN EN 60034-1 see page 366.

Legend see page 9.

Thermal power limit

The thermal power limit P_t must always be taken into account when designing a drive. It represents the maximum input power which can be transmitted by the gear unit at the given ambient temperature in a continuous operation mode (S1).

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20 °C. Thermal power limits for other temperatures can be seen in the table below.

Parameters to be considered:

- Higher / lower temperatures
- Vertical mounting positions (M2 or M4)
- Higher speed (> 1800 min^{-1}) due to e.g. use of frequency inverter
- Small ratios
- Little mounting space

For such conditions we recommend consulting WEG. The geared motors can be adapted according to customer requirements by using e.g. lubricant expansion, optimised oil quantities, synthetic oils or Viton seal rings.

Gear unit size	Ambient temperature								
	-20 °C	-10 °C	0 °C	+10 °C	+20 °C	+30 °C	+40 °C	+50 °C	+60 °C
C002	2.5	2.1	1.8	1.5	1.2	1.0	0.7	0.5	0.3
C012	5.0	4.3	3.6	3.0	2.5	2.0	1.5	1.1	0.7
C032	10	8.7	7.4	6.2	5.0	4.0	3.0	2.1	1.3
C033	6.1	5.2	4.5	3.7	3.0	2.4	1.8	1.3	0.8
C052	19	16	14	12	9.5	7.5	5.7	4.0	2.5
C053	11	9.8	8.4	7.0	5.7	4.5	3.4	2.4	1.5
C062	26	22	19	16	13	10	7.8	5.5	3.5
C063	16	14	11	9.6	7.8	6.2	4.7	3.3	2.1
C072	34	29	25	21	17	13	10	7.2	4.5
C073	20	17	15	12	10	8.1	6.1	4.3	2.7
C082	58	50	42	35	29	23	17	12	7.7
C083	35	30	26	21	17	14	11	7.4	4.7
C092	82	71	60	50	41	32	25	17	11
C093	49	43	36	30	25	20	15	11	6.6
C102	103	89	75	63	51	41	31	22	14
C103	62	54	46	38	31	25	19	13	8.3
C132	142	123	105	87	71	57	43	30	19
C133	86	74	63	53	43	34	26	18	12
C142	191	165	140	117	96	76	57	41	26
C143	115	99	85	71	58	46	35	25	15
C162	271	234	199	167	136	108	82	58	36
C163	164	141	120	101	82	65	49	35	22
F022	8.4	7.2	6.1	5.1	4.2	3.3	2.5	1.8	1.1
F032	11	9.7	8.3	6.9	5.7	4.5	3.4	2.4	1.5
F042	18	15	13	11	8.9	7.1	5.4	3.8	2.4
F043	11	9.3	7.9	6.6	5.4	4.3	3.2	2.3	1.4
F052	24	21	18	15	12	9.7	7.3	5.2	3.3
F053	15	13	11	9.0	7.4	5.8	4.4	3.1	2.0
F062	31	27	23	19	15	12	9.3	6.6	4.1
F063	19	16	14	11	9.3	7.4	5.6	4.0	2.5
F072	51	44	37	31	25	20	15	11	6.8
F073	31	26	23	19	15	12	9.2	6.6	4.1
F082	73	63	54	45	37	29	22	16	9.8
F083	44	38	32	27	22	18	13	9	5.9
F092	107	92	78	65	53	42	32	23	14
F093	64	56	47	40	32	26	19	14	8.6
F102	157	136	115	96	79	62	47	34	21
F103	95	82	70	58	48	38	29	20	13
F122	220	190	162	135	110	87	66	47	30
F123	133	115	98	82	67	53	40	28	18
F152	337	291	247	207	169	134	101	72	45
F153	203	176	149	125	102	81	61	43	27

Gear unit size	Ambient temperature								
	-20 °C	-10 °C	0 °C	+10 °C	+20 °C	+30 °C	+40 °C	+50 °C	+60 °C
K022	10	8.8	7.4	6.2	5.1	4.0	3.1	2.2	1.4
K033	10	8.6	7.3	6.1	5.0	4.0	3.0	2.1	1.3
K043	16	14	12	9.8	8.0	6.3	4.8	3.4	2.1
K053	21	18	15	13	10	8.3	6.3	4.5	2.8
K063	23	20	17	14	12	9.3	7.0	5.0	3.1
K073	37	32	27	23	19	15	11	8.0	5.0
K083	44	38	32	27	22	17	13	9.4	5.9
K093	62	54	46	38	31	25	19	13	8.3
K103	95	82	69	58	47	38	29	20	13
K123	131	113	96	80	66	52	39	28	18
K153	185	160	136	114	93	74	56	40	25

Thermal power limit P_t [kW]

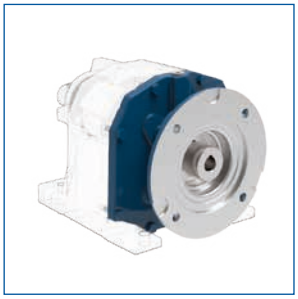
Input types

1. IEC Adapter I

Standard motors complying with DIN EN 50347 IM B5 can be mounted on WG20 gear units with IEC adapters. The adapters are oil-tight. The motors are attached using different couplings, depending on the adapter size:

- **I63 to I100: Plug-in adapter**

The connecting coupling is one part; the motor shaft is inserted directly into the coupling shaft. Before mounting, the motor shaft is to be cleaned and coated with lubricating paste (e.g. Klüberpaste 46 MR 401). This makes it easier to disassemble the shaft when servicing is required and protects the connection against frictional corrosion.



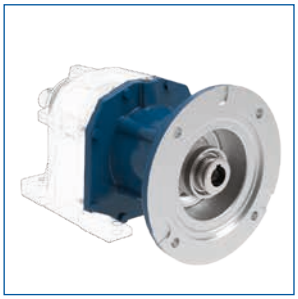
Plug-in adapter

- **I112 to I132: Curved teeth coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of the internally toothed coupling sleeve.

- **I160 to I280: Claw coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of a flexible coupling star.



Adapter with coupling

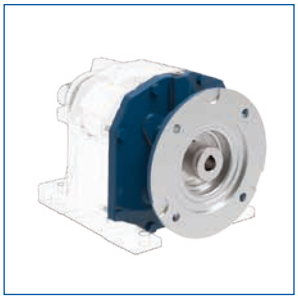
Complete drive systems with WEG IEC motors:
By mounting, for example, WEG W22 IEC motors or WEG roller table motors, complete packages can be supplied for a wide range of applications.

2. NEMA Adapter N

Standard motors complying with NEMA C-face standard can be mounted on WG20 gear units with NEMA adapters. The adapters are oil-tight. The motors are attached using different couplings, depending on the adapter size:

- **N56 to N182: Plug-in adapter**

The connecting coupling is one part; the motor shaft is inserted directly into the coupling shaft. Before mounting, the motor shaft is to be cleaned and coated with lubricating paste (e.g. Klüberpaste 46 MR 401). This makes it easier to disassemble the shaft when servicing is required and protects the connection against frictional corrosion.



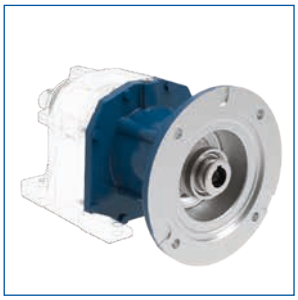
Plug-in adapter

- **N184 to N215: Curved teeth coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of the internally toothed coupling sleeve.

- **N254 to N364: Claw coupling**

The connecting coupling comprises two parts; a coupling hub is mounted on the motor shaft and fixed using a threaded pin. Power is transmitted by means of a flexible coupling star.



Adapter with coupling

Complete drive systems with WEG NEMA motors:
By mounting, for example, WEG W22 NEMA motors, complete packages can be supplied for a wide range of applications.

It is recommended that the motors are sealed with a sealant (e.g. Loctite 510) when IEC and NEMA adapters are mounted to the flange to prevent water or dust ingress. Use screws of strength class 8.8 (or higher) to fasten the motors to the flanges. Observe the corresponding tightening torques according to the mounting Instruction.

3. SERVO Adapter S

WG20 gear units with SERVO adapters can be fitted with servomotors from different manufacturers. The adapters are oil-tight, and the motors are mounted using flexible servo couplings. The backlash-free connection between the motor shaft and the adapter shaft is made by means of a clamp connection.
Both servo motors with smooth shaft and servo motors with feather key can be mounted. The mounting clearance between the motor shaft and coupling is reduced to 0 by means of a clamp ring.

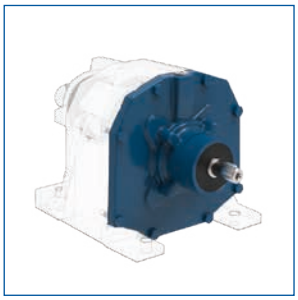


Servo coupling

- **S92 to S190: Servo coupling**

4. Input Unit U

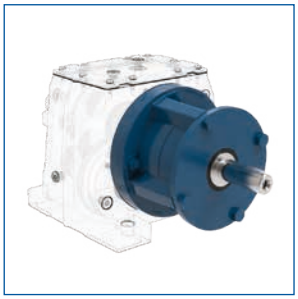
Gear unit versions with input unit enable the WG20 gear units to be operated by attaching drive elements such as couplings or belt drives. Permissible shear forces or thermal power limits must be checked accordingly.



Input unit U2 and U3

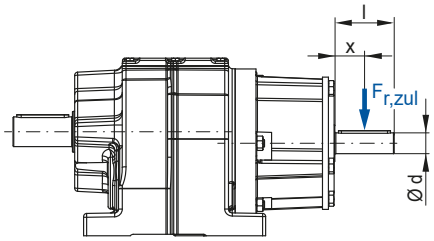
- **Input unit sizes: U2, U3, U5, U6, U7**

Size	U2	U3	U5			U6	U7
Input shaft [mm]	19x40	24x50	28x60	38x80	42x110	48x110	55x110



Input unit U5 to U7

The shear forces given in the following table (Permissible shear forces - Input unit on page 14) apply to input units with force applied to the shaft centre x = l/2. When determining the permissible shear forces, the unfavourable rotating direction and the most unfavourable force direction is assumed, as well as an input speed n1 = 1400 min^{-1} at a given rated power P_N. The calculation was made with a standard shaft and standard bearing. For exact determination of the permissible shear force $F_{r,zul}$, the direction of force and the rotating direction must be specified.



Input shaft unit [mm]			M_{max} [Nm]	Nominal power P_N [kW]											
	Ø d	l	at $F_r = 0$	0.12	0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2	3	4	5.5
				Permissible shear force $F_{r,zul}$ [N]											
U2	19	40	18	2600	2500	2400	2300	2000	1800	1600	1300	700	-	-	-
U3	24	50	100	5000	5000	5000	5000	5000	5000	4600	4200	3400	2500	2200	1700
U5	28	60	100	6500	6500	6500	6500	6500	6500	6500	6400	6400	6400	6300	6300
	38	80	170	11000	11000	11000	11000	11000	11000	11000	11000	10500	10500	10000	9500
	42	110	240	11000	11000	11000	11000	11000	11000	11000	11000	10500	10500	10000	9500
U6	48	110	490	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	14500	14500
U7	55	110	970	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000

Input shaft unit [mm]			M_{max} [Nm]	Nominal power P_N [kW]										
	Ø d	l	at $F_r = 0$	7.5	9.2	11	15	22	30	37	45	55	75	90
				Permissible shear force $F_{r,zul}$ [N]										
U2	19	40	18	-	-	-	-	-	-	-	-	-	-	-
U3	24	50	100	1000	500	-	-	-	-	-	-	-	-	-
U5	28	60	100	6200	6100	6000	-	-	-	-	-	-	-	-
	38	80	170	9000	8000	7500	6000	-	-	-	-	-	-	-
	42	110	240	9000	8000	7500	6000	3000	-	-	-	-	-	-
U6	48	110	490	14000	13500	13000	11500	9500	7500	5500	3000	-	-	-
U7	55	110	970	25000	25000	25000	25000	25000	25000	25000	24000	23000	21000	20000

Permissible shear force - Input unit $F_{r,zul}$ at x = l/2

Explosion-proof gear units and geared motors

WG20 type series gear units meet the requirements of Directive 2014/34/EU on equipment for use in potentially hazardous areas. Both gear units and geared motors can be used.



WG20 geared motor for application in zones 2 + 22



WG20 geared motor for application in zones 1 + 21

General information

The operation of systems requires special measures in areas with explosive air/gas mixtures or air/dust mixtures. The Directive governs the possible uses of equipment within the existing danger zones, whereby both electrical and mechanical equipment, such as gear units, must meet the minimum requirements specified in the standard.

Zoning

Zoning takes into account whether the Ex atmosphere is a mixture of air with gas or with dust.

Relevant areas

- **Category 2G/2D and EPL Gb/Db units**

are intended for use in areas in which there is *occasionally* an explosive atmosphere. They are permitted for use in zone 1 (category 2G) and zone 21 (category 2D), and zone 2 (3G) and 22 (3D).

- **Category 3G/3D and EPL Gc/Dc units**

are intended for use in areas in which an explosive atmosphere caused by gases, vapours, mists or suspended dust is unlikely to occur. However, if this does occur, it will occur only *rarely or for a short period of time*. These units are permitted for use in zone 2 (category 3G) or zone 22 (category 3D).

Marking according to standards

	Equipment group I		Equipment group II					
	Mines		Other areas with dust or gas explosive atmosphere					
Category	M1	M2	1		2		3	
Presence of explosive atmospheres			continuous, frequent or for long periods		likely in normal operation		not likely in normal operation, only for short period of time	
Surrounding atmosphere			G	D	G	D	G	D
Zone			0	20	1	21	2	22
Equipment Protection Level	Ma	Mb	Ga	Da	Gb	Db	Gc	Dc
Type of protection (not electric)					h (c, k)	h (c, k)	h (c, k)	h (c, k)
Type of protection (electric)					d, eb	tb	ec	tc
Ex-marking gear unit					II 2G Ex h IIC T4 Gb	II 2D Ex h IIIC T125°C Db	II 3G Ex h IIC T4 Gc	II 3D Ex h IIIC T125°C Dc
Ex-marking motor					II 2G Ex d IIC T4 Gb	II 2D Ex tb IIIC T125 °C Db	II 3G Ex ec IIC T3 Gc	II 3D Ex tc IIIC T125°C Dc

Possible range of application for WG20 products

Types of ingnition protection used

The ignition of an explosive mixture in the classified zones is to be prevented by the various types of ignition protection used for the equipment.

- **Types of ignition protection for non-electrical equipment: according to EN ISO 80079-36 and -37**

„c“: Protection by means of structural safety
„k“: Protection by means of fluid coupling

- **Types of ignition protection for electrical equipment: according to EN ISO 60079-07 and -31**

„ec“ and „eb“: Protection by means of increased safety
„tc“ and „tb“: Protection by means of housing
„d“: flameproof enclosure

Applicable explosive atmospheres

For the types of ignition protection used, parts which can be exposed to an explosive atmosphere without restriction must not reach excessively high temperatures.

- **Temperature classes for gas explosion protection (G)**

Flammable gases and vapours are divided into temperature classes according to their flammability. The influence of ambient temperature and self-heating of the equipment must also be taken into account.

The maximum surface temperature of the equipment may only assume values that correspond to the temperature class for gases. In fact, the ignition temperature represents the lowest temperature value at which a hot surface can ignite the corresponding explosive atmosphere.
In addition, gases and vapours are classified in explosion groups IIA, IIB and IIC. The hazardousness of gases increases from explosion group IIA to IIC.

WG20 geared motors can be used in temperature class T3 (max. surface temperature 200 °C).
WG20 gear units with input types can be used in temperature class T4 (max. surface temperature 135 °C).

Temperature class	T1	T2	T3	T4	T5	T6
Max. permissible surface temperature	450 °C	300 °C	200 °C	135 °C	100 °C	85 °C

Possible range of application for WG20 products

- **Surface temperature for dust explosion protection (D)**

Dusts are not divided into temperature classes, but the value of the minimum ignition temperature is specified.

WG20 gear units and geared motors are classified with a max. surface temperature of 125 °C.

Dust group	Description	Degree of protection	
		tb	tc
IIIA	Combustible flyings	IP5X	IP5X
IIIB	Non-conductive dust	IP6X	IP5X
IIIC	Conductive dust	IP6X	IP6X

Necessary degree of protection for dust explosive atmospheres

Table of lubricants

Recommended ambient temperatures	-10 °C ... +60 °C	-20 °C ... +80 °C	-25 °C ... +60 °C	-40 °C ... +80 °C	-20 °C ... +40 °C
DIN (ISO)	CLP (mineral oil) [1]	CLP PG (polyglycol oil)	CLP PG (polyglycol oil)	CLP-HC (polyalphaolefin oil) [2]	food grade
ISO VG	220	460	220	220	220
ARAL	Degol BG 220	Degol GS 460	Degol GS 220	Degol PAS 220	-
BP	Energol GR-XP 220	Enersyn SG-XP 460	Enersyn SG-XP 220	Enersyn HTX 220	-
Castrol	Alpha SP 220	Alphasyn PG 460	Alphasyn PG 220	Alphasyn HTX 220	Optileb GT 220
Klüber	Klüberoil GEM 1-220 N	Klübersynth GH 6-460	Klübersynth GH 6-220	Klübersynth GEM 4-220 N	Klüberoil 4UH1 220 N
Mobil	Mobilgear 600 XP 220	Glygoyle 460	Glygoyle 220	SHC 630	SHC Cibus 220
Shell	Omala S2 G 220	Omala S4 WE 460	Omala S4 WE 220	Omala S4 GX 220	-
Addinol	Gear Oil 220 F	Poly Gear PG 460	Poly Gear PG 220	Eco Gear 220 S	Ecoleb 220 FG

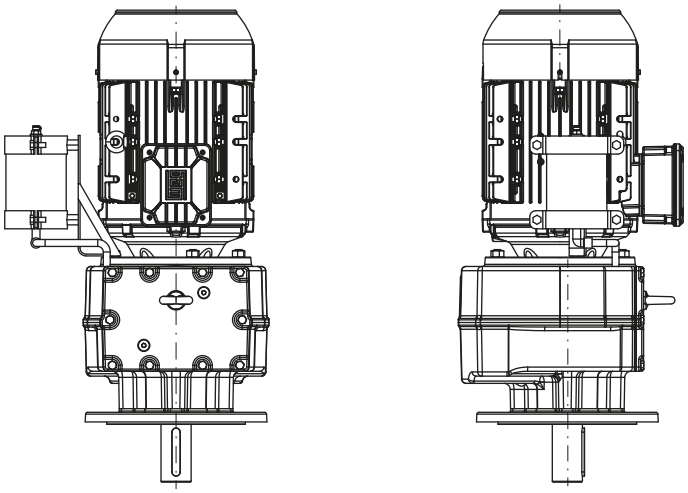
1) standard lubricant acc. to DIN 51517 part 3 - CLP ISO VG 220
2) note critical starting behaviour at low temperatures

Lubricant expansion unit

For gear units and geared motors in M4 design, high oil levels are required for lubrication of the first gear stage.
To prevent oil leaking from the gear unit during operation, expansion units are to be used at reductions i < 20 or at higher motor speeds (e.g. frequency drives operation > 2000 min^{-1}).

The use of lubricant expansion units is recommended for gear unit sizes from C07 (helical gear unit), F06 (parallel shaft gear unit) and K06 (helical bevel gear unit) and for the conditions described above.

Example: CF082-11P-132S-04E-TH-TF



Painting

Standard colour geared motors: RAL 7011 (RAL 5009, RAL 9005 without additional costs)
In addition to the standard high-grade polyurethane-based surface finish other special finishes for applications that are subject to specific environmental conditions are offered. Paintwork is basically categorised according to the composition of the applied surface finish. The standard program contains 6 painting systems categorised from LA0 to LC5. Special colours are possible.

Painting system	Application	Layering	NDFT Nominal dry film thickness	Temperature range	Corrosion category DIN EN ISO 12944-5
not painted					
LA0	Primer	Dip primer Base coat (2 pack PUR)		-40 °C - +120 °C	
LC1 (Standard)	**Indoor installation, neutral atmosphere**	**Dip primer Varnish (1K-AY-PUR*) or (2 pack PUR**)**	**40 µm**	**-40 °C - +120 °C**	**C1**
LC2	Protected outdoor installation, neutral atmosphere	Dip primer 2x Varnish (2 pack PUR)	140 µm	-40 °C - +120 °C	C2
LC3	Outdoor installation, industrial atmosphere	Dip primer Base coat (2 pack PUR) Varnish (2 pack PUR)	160 µm	-40 °C - +120 °C	C3
LC4	Outdoor installation, aggressive atmosphere	Dip primer Base coat (2 pack PUR) Intermediate base coat (2 pack PUR) Varnish (2 pack PUR)	240 µm	-40 °C - +120 °C	C4
LC5	Coast or offshore, very aggressive atmosphere, under water	Dip primer Base coat (2 pack PUR) Intermediate base coat (2 pack PUR) 2x Varnish (2 pack PUR)	320 µm	-40 °C - +120 °C	C5

**) Colours RAL 7011, RAL 5009, RAL 9005, RAL 9007*
***) All other colours*

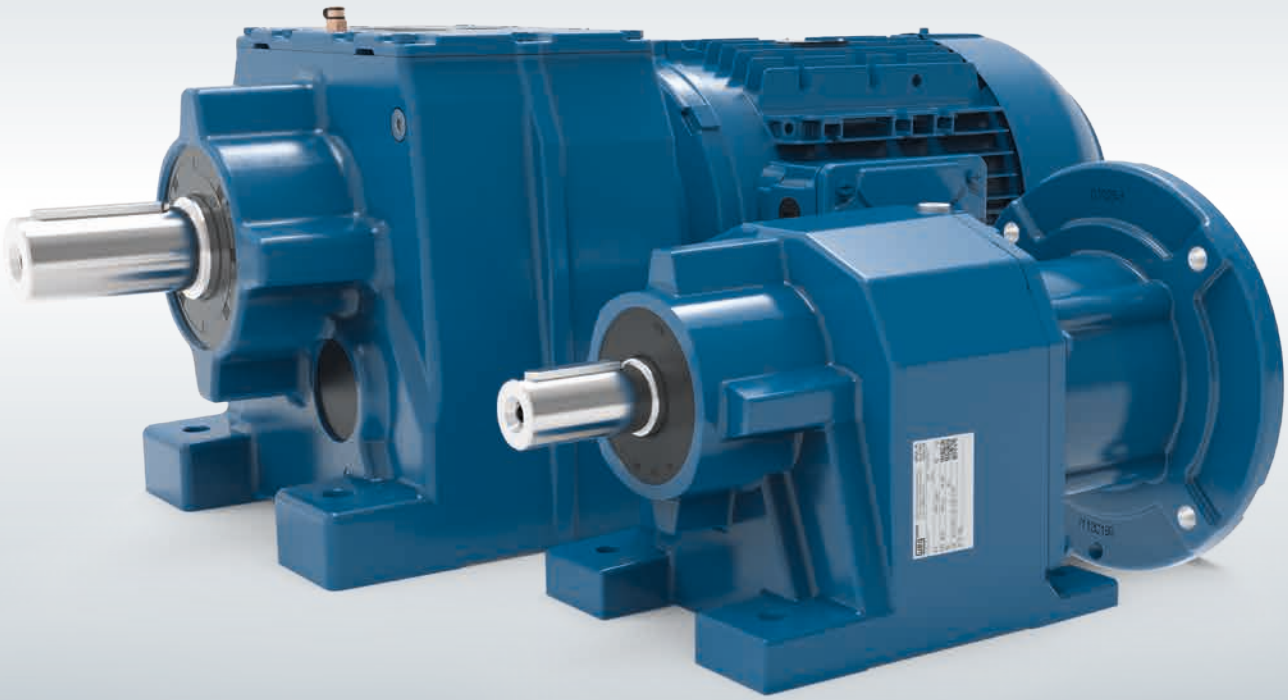
Degrees of protection

Degree of protection according to DIN EN 60034-5.
The designation to indicate the degrees of protection consists of the characteristic letters IP followed by two numerals.
Code figure 1: degree of protection against contact with live or moving parts and against ingress of solid foreign objects
Code figure 2: degree of protection against harm for ingress of water

Code figure 1	
	Description
0	No protection
1	Protected against solid foreign objects of 50 mm diameter and larger: the probe (50 mm ball) may not fully penetrate.
2	Protected against solid foreign objects of 12.5 mm diameter and larger: the probe (ball 12.5 mm) shall not fully penetrate.
3	Protected against solid foreign objects of 2.5 mm diameter: the probe (ball 2.5 mm) must not penetrate at all.
4	Protected against solid foreign objects of 1 mm and larger: the probe (1 mm ball) must not penetrate at all.
5	Dust protected: ingress of dust is not totally prevented, but dust shall not penetrate in a quantity that the operation of the device is affected or to impair safety.
6	Dustproof: no ingress of dust at underpressure of 20 mbar in the housing

Code figure 2	
	Description
0	No protection
1	Protected against dripping water: vertically falling drops may not have any harmful effects.
2	Protected against dripping water when the housing is inclined up to 15 °: vertically falling drops may not have any harmful effects when the housing is inclined up to 15 ° from the vertical.
3	Protected against water spray: water sprayed at an angle up to 60 ° on both sides of the vertical may not have any harmful effects.
4	Protected against splash water: water splashed against the housing from any direction may not have any harmful effects.
5	Protected against water jets: water that is from any direction in jets against the housing may not have any harmful effects.
6	Protected against strong water jets: water that is from any direction in powerful jets against the housing may not have any harmful effects.
7	Protected against the effects of temporary (1m for 30 min) immersion in water: water must not enter in quantities causing harmful effects, if the housing is under standardised conditions of pressure and time temporarily submerged in water.
8	Protected against the effects of continuous immersion in water: water must not enter in quantities causing harmful effects when the enclosure is permanently submerged in water under conditions to be agreed between manufacturer and user. The conditions must be more stringent than for index 7.

Degree of protection:
Modular system motor: IP55 (standard) to IP67
Brake: IP55 (standard) to IP66
Gear unit: IP65 (standard) to IP68



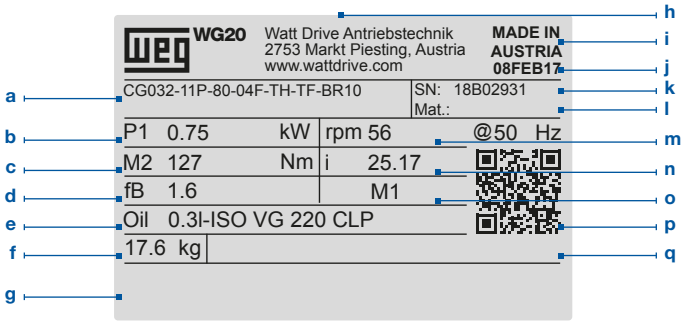
Helical gear units and Helical geared motors C

Technical Data

Size		C00	C01	C03	C05	C06	C07	C08	C09	C10	C13	C14	C16
Power [kW]		0.12 - 0.75	0.12 - 1.5	0.12 - 3	0.12 - 7.5	0.12 - 9.2	0.12 - 15	0.18 - 22	0.55 - 30	1.1 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]		50	85	200	400	600	820	1550	3000	4500	8000	13000	18000
Ratio		2.44-47.44	3.09-66.5	3.34-286.32	3.83-328.43	3.73-375.71	5.30-351.33	5.12-368.94	4.22-306.73	4.19-246.43	4.00-204.88	5.17-206.88	5.96-234.67
Number of stages		2	2	2 / 3	2 / 3	2 / 3	2 / 3	2 /3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3
Housing material		aluminium					cast iron						
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2											
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6											
	Material	standard: C45E (1.1191) / stainless steel on request											
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347											
	Material	cast iron											
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7											
	Material	16MnCr5 (1.7131) case hardened - minimum 58HRC											
Shaft seals	Type	type AS acc. to DIN 3760											
	Material	standard NBR / special FKM											
Bearing		standard / reinforced											
Lubricants	Type	standard CLP 220 / special CLP HC 220											
	Quantity	depending on mounting position											
Axle height		acc. to DIN 747: ≤ 50: -0.4; > 50 to ≤ 250: -0.5; > 250: -1 for foot-mounted geard motors, the motor may extend below the mounting surface											

General information

1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		

2. Type code

CG083-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

CG083-EX-I112

1 2 3 4 5 11

1 Type: C = Helical gear unit

2 Design:
A = Foot mounted and B5 flange execution with output shaft
C = B14 flange execution with output shaft
F = Flange execution with output shaft
G = Foot mounted with output shaft
W = Foot mounted and B14 flange execution with output shaft

3 Size:

00	05	08	13
01	06	09	14
03	07	10	16

4 Number of stages:
2 = 2 gear stages
3 = 3 gear stages

5 ATEX execution: when operated in explosive atmospheres, see page 14

6 Motor type:
11N = Integral motor aluminium IE1
11P = Integral motor aluminium IE3
22P = Integral motor cast iron IE3

7 Motor frame size:

63	90S/L	112M	L132M	180M	225S/M
71	100L	132S	160M	180L	250S/M
80	L100L	132M	160L	200L	

8 Number of poles:
04 = 4 poles
06 = 6 poles

9 Power indicator:
D
E
F
G

10 Motor modules: see from page 385

11 Adapters, Input unit:

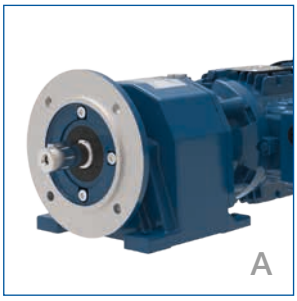
IEC Adapter		NEMA Adapter		SERVO Adapter		Input unit
I63	I160	N56	N254	S92	S141	U2
I71	I180	N143	N284	S105	S142	U3
I80	I200	N182	N324	S114	S180	U5
I90	I225	N184	N364	S115	S189	U6
I100	I250	N213		S130	S190	U7
I112	I280					
I132						

Type code Motor see page 361

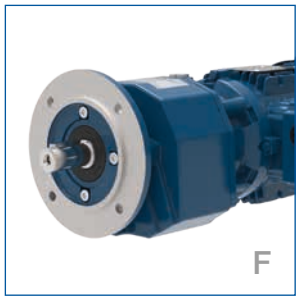
3. Range

Size	C00	C01	C03	C05	C06	C07	C08	C09	C10	C13	C14	C16
Housing material	Aluminium					Cast iron						

4. Design











A	Foot mounted and B5 flange execution with output shaft
C	B14 flange execution with output shaft
F	Flange execution with output shaft
G	Foot mounted with output shaft
W	Foot mounted and B14 flange execution with output shaft

5. Venting the gear unit

The helical gear unit sizes C00 to C06 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.
By default, the helical gear units from C07 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 26).



6. Overhung and axial loads

The overhung loads (F_{rN}) indicated in the respective selection tables apply to gear units with the force acting on the shaft center (x=l/2). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor (f_Z) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
				
f_Z=1.1 (z≤17)	f_Z=1.2 (z≤13)	f_Z=1.1 (z>13)	f_Z=1.8	f_Z=2.5

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

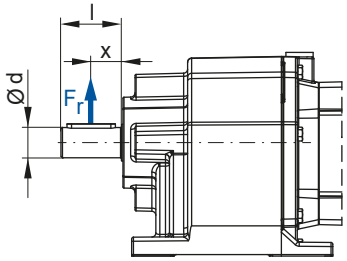
Q1	$F_{zL} = F_{rN} \cdot a_1$
Q2	$F_{zW} = F_W \cdot a_2$
Q3	$F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$
Q4	$F_{Qvorh} \leq F_{zL}$
	$F_{Qvorh} \leq F_{zW}$

Variable	Unit	Description
a_1		Load action factor - output shaft bearing from Table 1
a_2		Load action factor - output shaft from Table 1
d_0	[m]	Effective diameter of the transmission element
M_2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
F_{zL}	[N]	Permissible overhung load for output shaft bearings
F_{zW}	[N]	Permissible overhung load for output shaft
F_{rN}	[N]	Permissible overhung load from selection tables
F_W	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
F_{Qvorh}	[N]	Existing overhung load at gear shaft
f_z		Factor for transmission element
M_{max}	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

x / l						
0	0.25	0.5	0.75	1	1.5	2
$a_1 \rightarrow$ Equation Q1						
1.39	1.18	1.00	0.85	0.73	0.52	0.38
$a_2 \rightarrow$ Equation Q2						
2.00	2.00	1.00	0.55	0.38	0.23	0.17

Table 1: Load action factors a_1, a_2



Intermediate values can be interpolated linearly. Combined load ($F_r \neq 0$; $F_a = 0$) on request.

Output shaft [mm]		M_{max} at $F_r = 0$	Output torque M_2 [Nm]											
			50	85	200	400	600	820	1550	3000	4500	8000	13000	18000
Ø d	l		F_W [kN] at x/l = 0.5 → Equation Q2											
20	40	160	3.4	3.1										
25	50	300	5.9	5.7	4.8									
30	60	500		7.6	7.1	5.0								
35	70	800			11.0	10.0	8.3							
40	80	1170				13.0	12.0	10.7						
50	100	2250				24.0	24.0	23.0	20.0					
60	120	3740						31.0	30.0	23.0				
70	140	5850							44.0	41.0	36.0			
90	170	11700								72.0	70.0	61.0		
110	210	20800									106.0	103.0	93.0	
120	210	26700										129.0	121.0	109.0

Table 2: Permissible overhung load - output shaft x = l/2

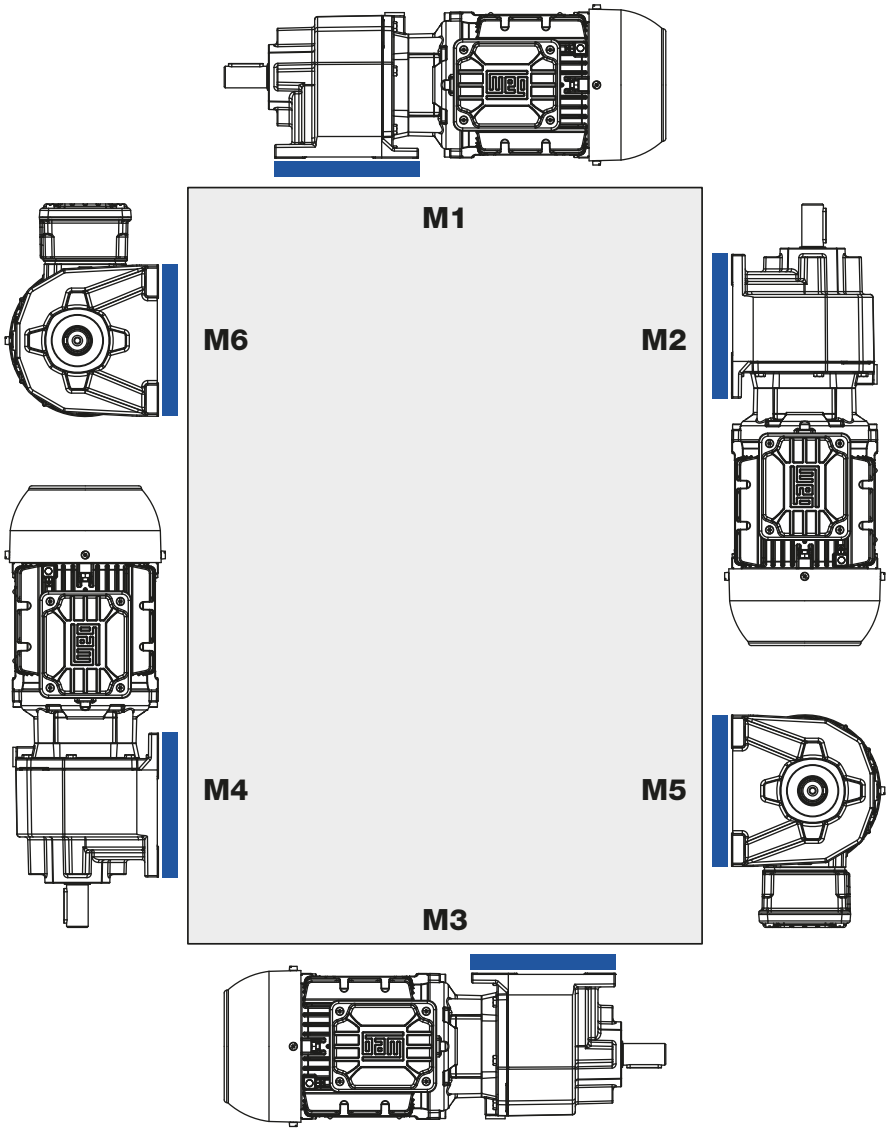
The axial loads (F_{aN}) for execution with output shaft, given in the following selection tables, are valid at radial force F_{rN} = 0. If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.

7. Mounting positions, Position of the terminal box and Cable entry

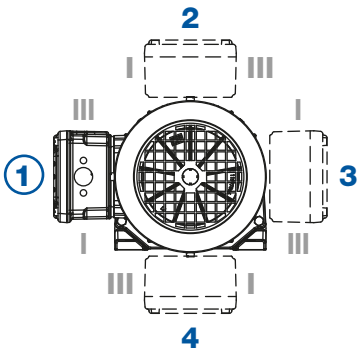
Mounting positions foot type - Sizes C00 to C06

Gear units C00 to C06 are not ventilated and supplied with lifetime lubrication.

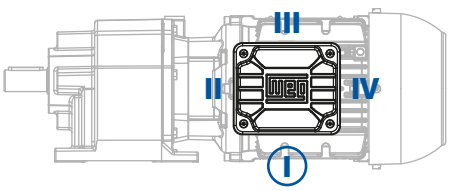
Reference area



Position of the terminal box
Standard: Position 1



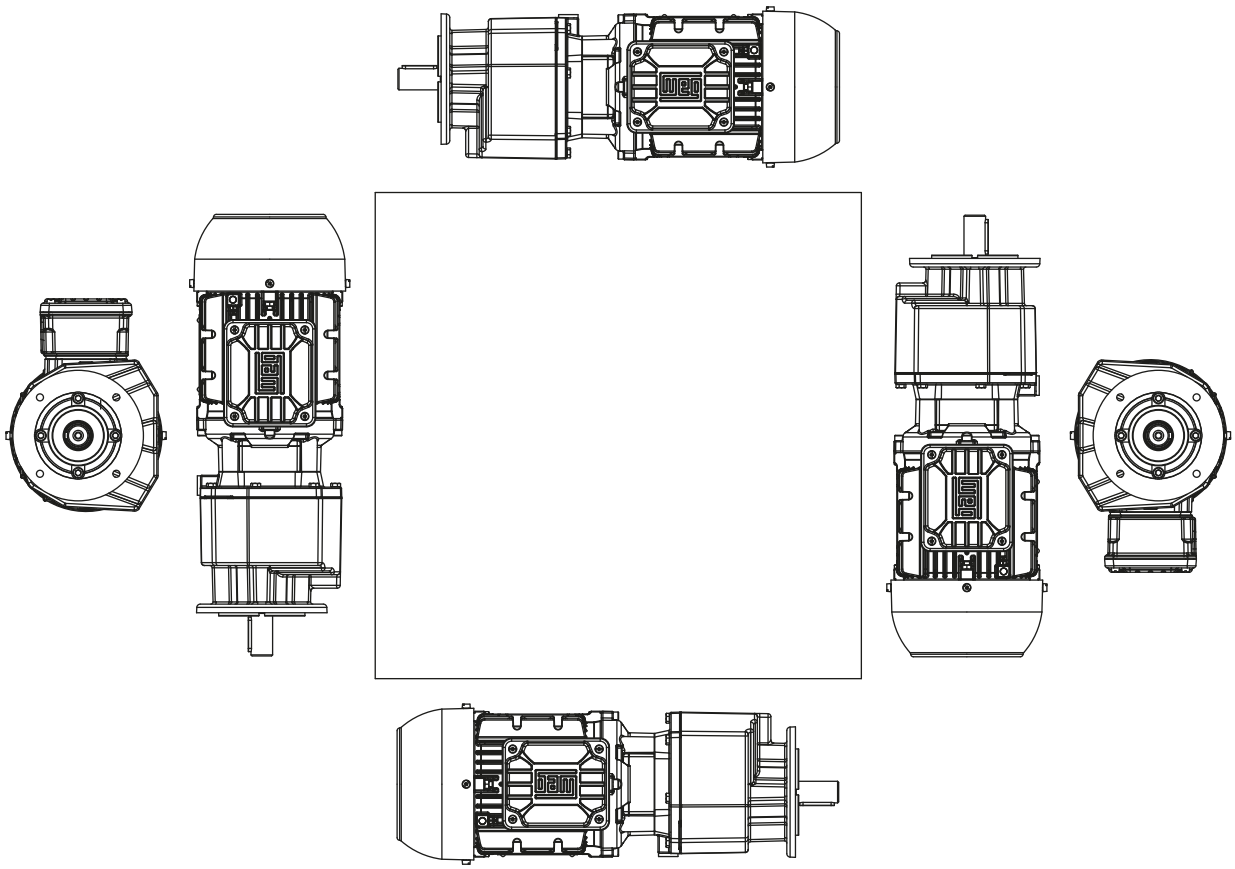
Cable entry
Standard: Position I



Mounting positions flange type - Sizes C00 to C06

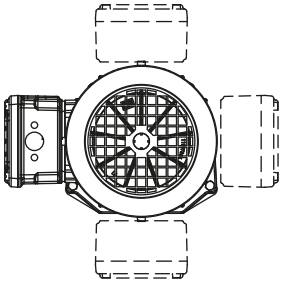
Gear units C00 to C06 are not ventilated and supplied with lifetime lubrication.

Reference area



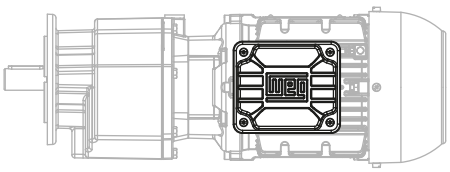
Position of the terminal box

Standard: Position 1



Cable entry

Standard: Position I

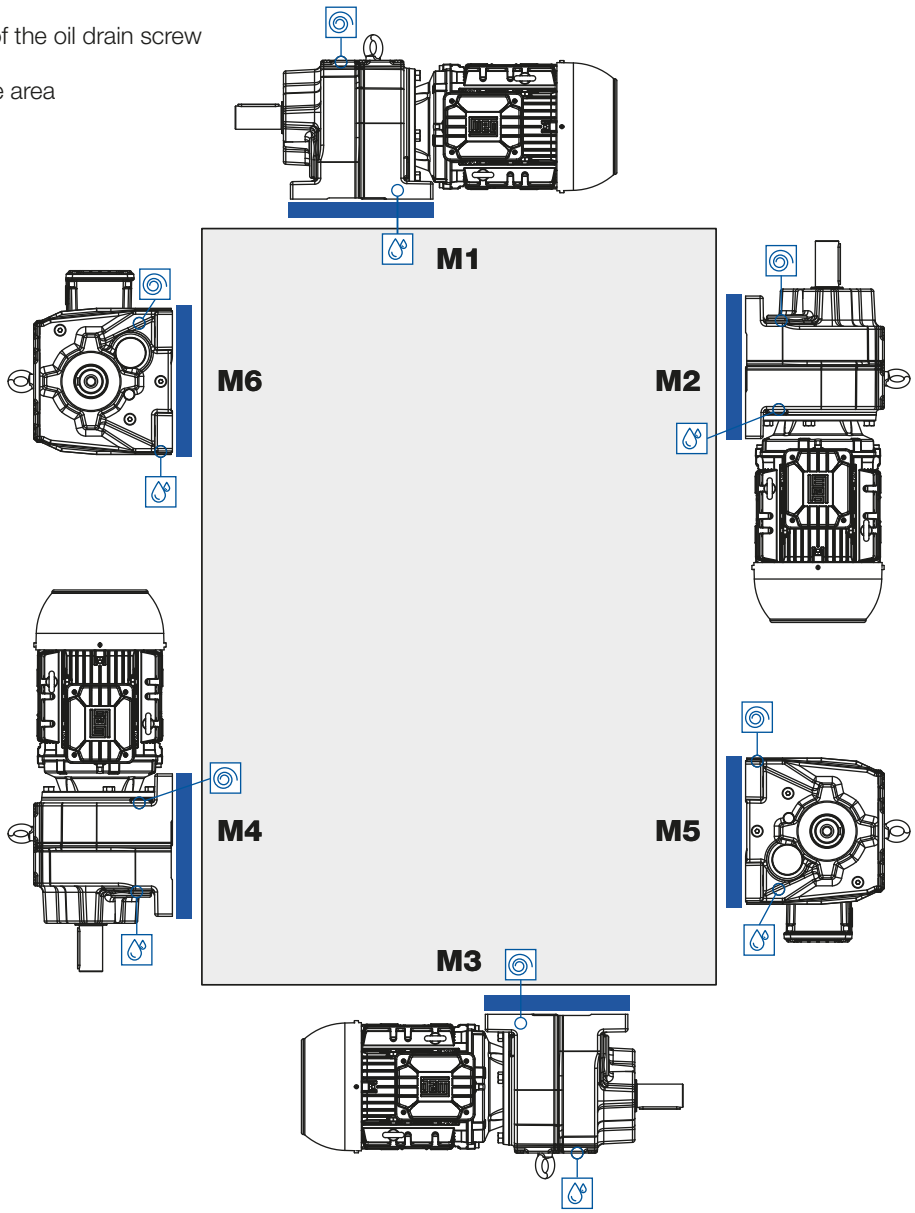


Mounting positions foot type - Sizes C07 to C16

Position of the venting screw

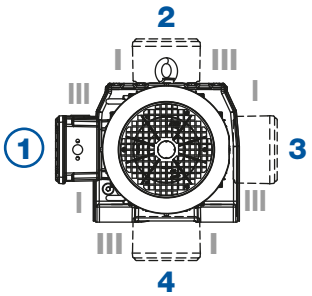
Position of the oil drain screw

Reference area



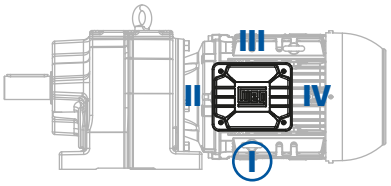
Position of the terminal box

Standard: Position 1



Cable entry

Standard: Position I

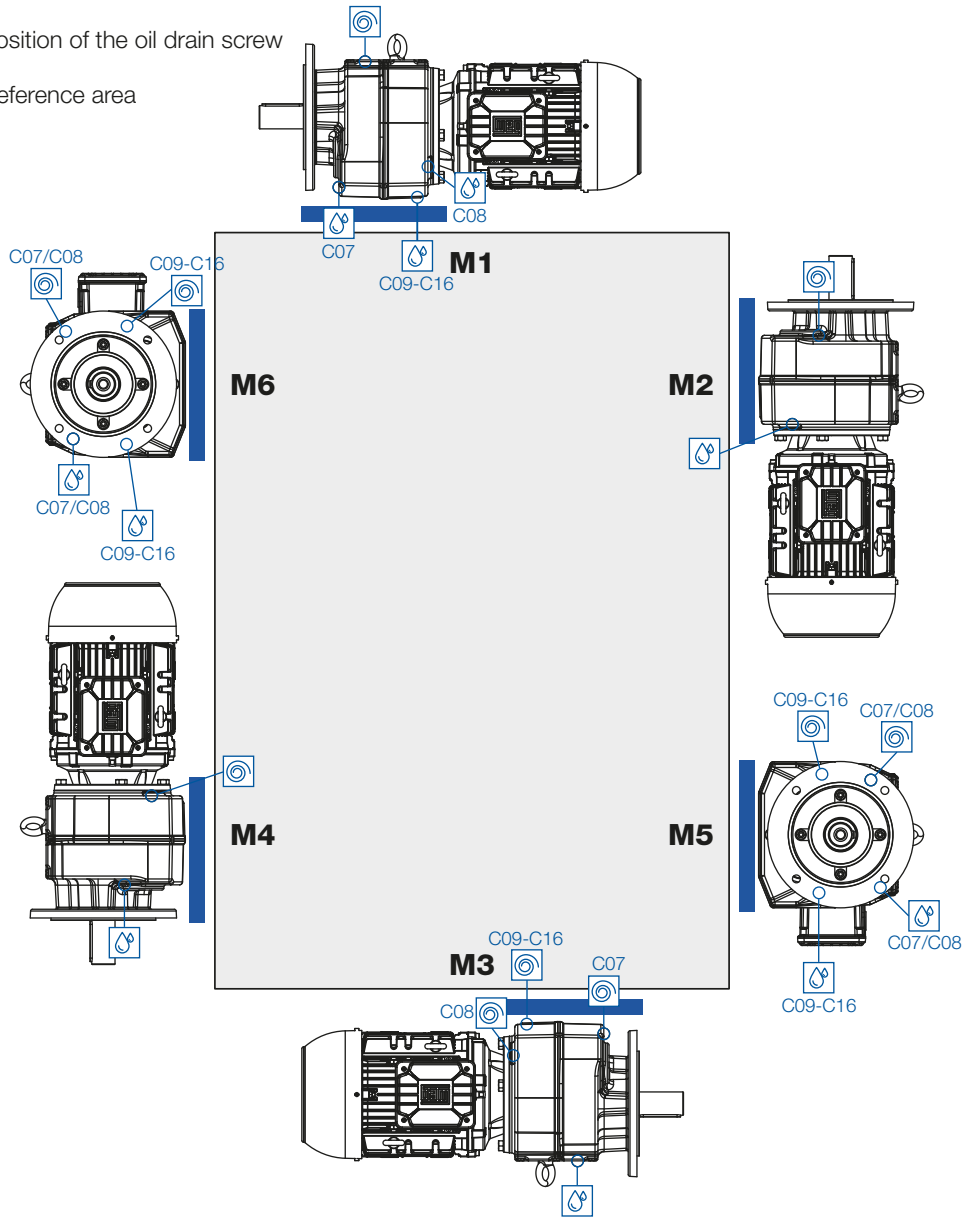


Mounting positions flange type - Sizes C07 to C16

Position of the venting screw

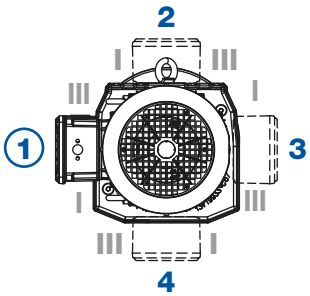
Position of the oil drain screw

Reference area



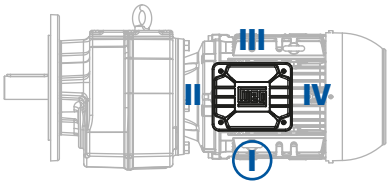
Position of the terminal box

Standard: Position 1



Cable entry

Standard: Position I



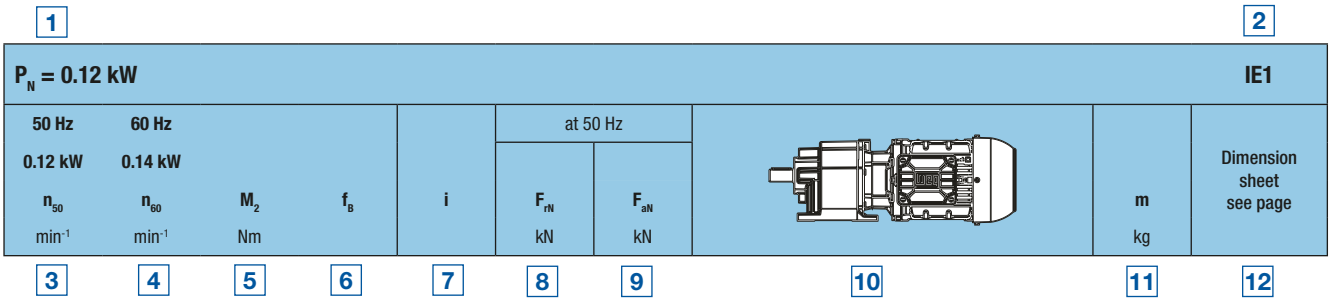
Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20 °C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up to 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

Structure of the selection tables



1 Rated power of the motor

2 Given values are based on the respective efficiency class

3 Output speed at 50 Hz

4 Output speed at 60 Hz

5 Output torque

6 Service factor

7 Total ratio

8 Permissible radial load at midpoint of the output shaft extension (standard bearing) at axial load=0

9 Permissible axial load (standard bearing) at radial load=0

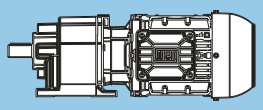
10 Geared motor type

11 Weight

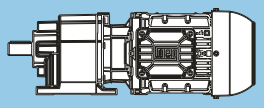
12 Page refererence for dimension sheet

*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

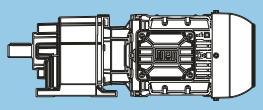
Increased rated power
1.2 x P_N

P_N = 0.12 kW									IE1
50 Hz 0.12 kW n_{50} min^{-1}	60 Hz 0.14 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
2.5	3.1	452	1.85	351.33	13.1	14.1	**CG073-11N-63-06F** **CF073-11N-63-06F**	37 41	120
2.8	3.5	412	2.00	319.60	13.3	14.1			
3.2	4.0	359	2.30	278.44	13.5	14.4			
3.5	4.4	326	2.55	253.30	13.6	14.4			
4.1	5.1	278	2.95	216.20	13.7	14.6			
3.9	4.8	293	2.85	351.33	13.7	14.6	**CG073-11N-63-04E** **CF073-11N-63-04E**	37 41	120
2.4	2.9	484	1.25	375.71	9.4	6.7	**CG063-11N-63-06F** **CF063-11N-63-06F**	21 26	118
2.6	3.2	444	1.40	344.51	9.7	6.8			
2.9	3.6	396	1.55	307.24	10.1	7.0			
3.2	3.9	363	1.70	281.73	10.3	7.0			
3.7	4.6	312	1.95	242.60	10.5	7.2			
4.0	5.0	286	2.10	222.46	10.6	7.3			
4.7	5.9	242	2.50	188.11	10.8	7.4			
5.2	6.4	222	2.75	172.49	10.9	7.4			
3.7	4.5	313	1.95	375.71	10.5	7.2	**CG063-11N-63-04E** **CF063-11N-63-04E**	21 26	118
4.0	4.9	287	2.10	344.51	10.6	7.3			
4.5	5.5	256	2.35	307.24	10.8	7.4			
4.9	6.0	235	2.60	281.73	10.8	7.4			
5.7	7.0	202	3.00	242.60	10.9	7.5			
2.7	3.4	423	0.95	328.43	4.5	6.2	**CG053-11N-63-06F** **CF053-11N-63-06F**	16 21	116
3.0	3.7	384	1.05	298.57	5.2	6.3			
3.3	4.1	345	1.20	267.93	5.8	6.5			
3.7	4.5	314	1.30	243.57	6.2	6.7			
4.2	5.2	275	1.50	213.71	6.6	6.9			
4.6	5.7	250	1.60	194.29	6.8	6.9			
5.4	6.7	213	1.90	165.45	7.0	7.1			
5.9	7.3	194	2.10	150.41	7.2	7.2			
6.7	8.3	171	2.35	132.97	7.3	7.3			
7.4	9.1	156	2.60	120.88	7.4	7.4			
4.2	5.2	274	1.50	328.43	6.6	6.9	**CG053-11N-63-04E** **CF053-11N-63-04E**	16 21	116
4.6	5.7	249	1.65	298.57	6.8	7.0			
5.1	6.3	223	1.80	267.93	7.0	7.1			
5.6	7.0	203	2.00	243.57	7.1	7.2			
6.4	7.9	178	2.25	213.71	7.3	7.3			
7.1	8.7	162	2.50	194.29	7.3	7.4			
8.3	10	138	2.95	165.45	7.4	7.5			
4.4	5.5	261	0.80	202.55	3.7	2.9	**CG033-11N-63-06F** **CF033-11N-63-06F**	12 14	114
4.9	6.1	233	0.90	180.83	4.3	3.1			
5.4	6.7	211	0.95	164.23	4.6	3.3			
6.2	7.8	183	1.10	142.47	5.0	3.5			
6.9	8.5	167	1.25	129.39	5.1	3.5			
8.1	10	141	1.45	109.79	5.4	3.7			
8.9	11	128	1.60	99.71	5.5	3.8			
10	13	110	1.85	85.78	5.6	3.9			
11	14	100	2.00	77.90	5.7	4.0			
14	17	82	2.45	64.05	5.7	4.1			
15	19	75	2.70	58.17	5.8	4.1			
4.8	5.9	239	0.85	286.32	4.1	3.1	**CG033-11N-63-04E** **CF033-11N-63-04E**	11 13	114
5.3	6.5	217	0.95	260.03	4.5	3.2			
6.2	7.6	186	1.10	223.03	4.9	3.4			
6.8	8.4	169	1.20	202.55	5.1	3.5			
7.6	9.4	151	1.35	180.83	5.3	3.7			
8.4	10	137	1.50	164.23	5.4	3.7			
9.7	12	119	1.70	142.47	5.5	3.9			
11	13	108	1.90	129.39	5.6	3.9			
13	15	92	2.20	109.79	5.7	4.0			
14	17	83	2.45	99.71	5.7	4.1			
16	20	71	2.80	85.78	5.8	4.2			

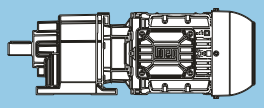
Legend see page 29

P_N = 0.12 kW									IE1
50 Hz 0.12 kW	60 Hz 0.14 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
13	17	86	1.00	66.50	3.1	1.1	**CG012-11N-63-06F** **CF012-11N-63-06F**	9.1 10	112
15	19	77	1.15	59.59	3.2	1.1			
17	21	67	1.30	51.80	3.3	1.2			
19	24	60	1.45	46.42	3.3	1.2			
21	26	54	1.60	42.00	3.4	1.3			
24	29	48	1.80	37.64	3.4	1.3			
27	33	43	2.00	33.09	3.5	1.4			
30	37	38	2.25	29.65	3.5	1.4			
35	43	33	2.60	25.50	3.5	1.4			
36	44	32	1.30	25.05	3.5	1.3			
39	48	29	2.90	22.85	3.5	1.4			
46	57	25	2.65	19.51	3.6	1.4			
21	25	55	1.55	66.50	3.4	1.3	**CG012-11N-63-04E** **CF012-11N-63-04E**	8.7 10	112
23	28	50	1.75	59.59	3.4	1.3			
27	33	43	2.00	51.80	3.5	1.3			
30	37	39	2.20	46.42	3.5	1.4			
33	40	35	2.45	42.00	3.5	1.4			
37	45	31	2.75	37.64	3.5	1.4			
55	68	21	2.00	25.05	3.6	1.4			
19	23	61	0.85	47.44	3.6	1.1	**CG002-11N-63-06F** **CF002-11N-63-06F**	8.0 9.3	110
21	26	55	0.95	42.34	3.6	1.2			
24	30	47	1.10	36.85	3.7	1.2			
27	34	42	1.20	32.89	3.7	1.3			
30	38	38	1.35	29.33	3.7	1.3			
34	42	34	1.50	26.18	3.7	1.3			
39	48	30	1.70	23.00	3.8	1.4			
43	54	26	1.90	20.53	3.8	1.4			
51	64	22	2.25	17.29	3.8	1.4			
53	66	22	1.45	16.86	3.7	1.4			
58	72	20	2.55	15.43	3.6	1.5			
66	82	17	2.90	13.54	3.5	1.5			
68	84	17	2.60	13.10	3.4	1.4			
29	36	40	1.30	47.44	3.7	1.3	**CG002-11N-63-04E** **CF002-11N-63-04E**	7.6 8.9	110
32	40	35	1.45	42.34	3.7	1.3			
37	46	31	1.65	36.85	3.8	1.4			
42	52	27	1.85	32.89	3.8	1.4			
47	58	24	2.05	29.33	3.8	1.4			
53	65	22	2.30	26.18	3.7	1.4			
60	74	19	2.65	23.00	3.6	1.5			
67	83	17	2.95	20.53	3.5	1.5			
80	98	14	3.50	17.29	3.3	1.5			
82	101	14	2.25	16.86	3.3	1.5			
89	110	13	3.90	15.43	3.2	1.5			
102	125	11	4.45	13.54	3.1	1.5			
105	129	11	3.95	13.10	3.0	1.5			
114	140	10	5.00	12.08	3.0	1.5			
132	163	9	5.20	10.42	2.8	1.5			
138	170	8	6.05	9.97	2.8	1.6			
155	190	7	6.75	8.90	2.7	1.6			
168	207	7	6.65	8.17	2.6	1.5			
200	247	6	8.60	6.88	2.5	1.6			
224	276	5	9.80	6.14	2.4	1.6			
286	352	4	9.75	4.81	2.2	1.6			
388	478	3	11.90	3.54	2.0	1.6			

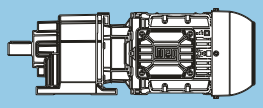
Legend see page 29

P_N = 0.18 kW									IE1
50 Hz	60 Hz				at 50 Hz				
0.18 kW	0.22 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
2.4	3.0	709	2.20	368.94	23.7	21.1	**CG083-11N-71-06E**	63	122
3.1	3.9	547	2.85	284.84	24.0	21.4	**CF083-11N-71-06E**	67	
2.5	3.1	675	1.25	351.33	11.9	13.5			
2.8	3.5	614	1.35	319.60	12.3	13.5			
3.2	4.0	535	1.55	278.44	12.7	13.9			
3.5	4.4	486	1.70	253.30	13.0	13.9	**CG073-11N-71-06E**	39	120
4.1	5.1	415	2.00	216.20	13.3	14.3	**CF073-11N-71-06E**	43	
4.6	5.6	378	2.20	196.68	13.4	14.2			
5.0	6.2	341	2.45	177.39	13.5	14.5			
5.5	6.8	310	2.65	161.38	13.6	14.5			
3.9	4.8	441	1.90	351.33	13.2	14.2			
4.3	5.3	401	2.05	319.60	13.3	14.2	**CG073-11N-63-04F**	37	120
4.9	6.1	349	2.35	278.44	13.5	14.4	**CF073-11N-63-04F**	41	
5.4	6.7	318	2.60	253.30	13.6	14.4			
2.4	2.9	722	0.85	375.71	6.5	6.0			
2.6	3.2	662	0.95	344.51	7.5	6.2			
2.9	3.6	590	1.05	307.24	8.4	6.4			
3.2	3.9	541	1.15	281.73	8.9	6.5			
3.7	4.6	466	1.30	242.60	9.6	6.8			
4.0	5.0	427	1.45	222.46	9.9	6.8	**CG063-11N-71-06E**	23	118
4.8	5.9	361	1.70	188.11	10.3	7.1	**CF063-11N-71-06E**	28	
5.2	6.4	331	1.85	172.49	10.4	7.1			
5.8	7.2	296	2.05	153.96	10.6	7.2			
6.3	7.8	271	2.25	141.17	10.7	7.3			
7.6	9.3	228	2.65	118.51	10.9	7.4			
8.2	10	209	2.90	108.67	10.9	7.5			
3.6	4.5	471	1.30	375.71	9.5	6.7			
4.0	4.9	432	1.40	344.51	9.8	6.8			
4.5	5.5	386	1.60	307.24	10.1	7.0			
4.9	6.0	353	1.70	281.73	10.3	7.1	**CG063-11N-63-04F**	21	118
5.6	7.0	304	2.00	242.60	10.6	7.2	**CF063-11N-63-04F**	26	
6.2	7.6	279	2.15	222.46	10.7	7.3			
7.3	9.0	236	2.55	188.11	10.8	7.4			
7.9	9.9	216	2.80	172.49	10.9	7.5			
3.3	4.1	515	0.80	267.93	1.3	5.8			
3.7	4.5	468	0.90	243.57	3.4	5.9			
4.2	5.2	410	1.00	213.71	4.8	6.2			
4.6	5.7	373	1.10	194.29	5.4	6.4			
5.4	6.7	318	1.30	165.45	6.1	6.7			
6.0	7.3	289	1.40	150.41	6.4	6.8	**CG053-11N-71-06E**	18	116
6.7	8.3	255	1.60	132.97	6.7	6.9	**CF053-11N-71-06E**	23	
7.4	9.1	232	1.75	120.88	6.9	7.0			
8.8	11	195	2.10	101.55	7.2	7.2			
9.7	12	177	2.30	92.32	7.3	7.3			
12	14	149	2.70	77.79	7.4	7.4			
13	16	136	2.95	70.71	7.5	7.5			
4.2	5.2	412	1.00	328.43	4.7	6.2			
4.6	5.7	375	1.10	298.57	5.4	6.4			
5.1	6.3	336	1.20	267.93	5.9	6.6			
5.6	7.0	306	1.35	243.57	6.3	6.7			
6.4	8.0	268	1.50	213.71	6.6	6.9	**CG053-11N-63-04F**	16	116
7.1	8.8	244	1.65	194.29	6.8	7.0	**CF053-11N-63-04F**	21	
8.3	10	208	1.95	165.45	7.1	7.2			
9.1	11	189	2.15	150.41	7.2	7.2			
10	13	167	2.40	132.97	7.3	7.3			
11	14	152	2.65	120.88	7.4	7.4			
15	19	113	2.25	58.85	7.5	7.6			
17	21	103	2.25	53.50	7.6	7.6	**CG052-11N-71-06E**	17	116
25	31	69	2.25	35.67	7.7	7.7	**CF052-11N-71-06E**	22	

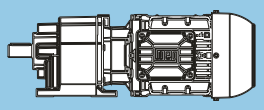
Legend see page 29

P_N = 0.18 kW									IE1
50 Hz 0.18 kW	60 Hz 0.22 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
6.9	8.5	249	0.85	129.39	4.0	3.0	**CG033-11N-71-06E** **CF033-11N-71-06E**	14 16	114
8.2	10	211	0.95	109.79	4.6	3.3			
9.0	11	192	1.05	99.71	4.9	3.4			
10	13	165	1.25	85.78	5.2	3.6			
11	14	150	1.35	77.90	5.3	3.7			
14	17	123	1.65	64.05	5.5	3.8			
15	19	112	1.80	58.17	5.6	3.9			
19	23	93	2.20	48.22	5.7	4.0			
20	25	84	2.40	43.79	5.7	4.1			
25	31	68	2.95	35.38	5.8	4.2			
6.8	8.4	254	0.80	202.55	3.8	3.0	**CG033-11N-63-04F** **CF033-11N-63-04F**	12 14	114
7.6	9.4	227	0.90	180.83	4.4	3.2			
8.3	10	206	1.00	164.23	4.7	3.3			
9.6	12	179	1.15	142.47	5.0	3.5			
11	13	162	1.25	129.39	5.2	3.6			
12	15	138	1.50	109.79	5.4	3.7			
14	17	125	1.60	99.71	5.5	3.8			
16	20	108	1.90	85.78	5.6	3.9			
18	22	98	2.05	77.90	5.7	4.0			
21	27	80	2.50	64.05	5.8	4.1			
24	29	73	2.75	58.17	5.8	4.1			
21	26	82	2.25	42.88	5.7	4.1	**CG032-11N-71-06E** **CF032-11N-71-06E**	13 15	114
23	28	75	2.25	38.95	5.8	4.1			
26	32	67	3.00	34.88	5.8	4.2			
37	46	46	2.25	24.03	5.9	4.3			
17	21	99	0.90	51.80	2.8	1.0	**CG012-11N-71-06E** **CF012-11N-71-06E**	11 12	112
19	24	89	1.00	46.42	3.0	1.0			
21	26	81	1.10	42.00	3.1	1.1			
24	29	72	1.20	37.64	3.2	1.2			
27	33	64	1.35	33.09	3.3	1.2			
30	37	57	1.50	29.65	3.4	1.3			
35	43	49	1.75	25.50	3.4	1.3			
36	44	48	0.90	25.05	3.4	1.2			
39	48	44	1.95	22.85	3.5	1.3			
45	55	38	2.25	19.92	3.5	1.4			
46	57	37	1.80	19.51	3.5	1.3			
50	62	34	2.50	17.85	3.5	1.4			
57	70	30	2.20	15.82	3.5	1.4			
60	74	29	3.00	14.88	3.5	1.4			
72	89	24	2.80	12.46	3.5	1.4			
21	26	83	1.05	66.50	3.1	1.1	**CG012-11N-63-04F** **CF012-11N-63-04F**	8.9 10	112
23	29	75	1.15	59.59	3.2	1.1			
26	33	65	1.35	51.80	3.3	1.2			
30	37	58	1.50	46.42	3.4	1.2			
33	40	53	1.65	42.00	3.4	1.3			
36	45	47	1.80	37.64	3.4	1.3			
41	51	42	2.05	33.09	3.5	1.4			
46	57	37	2.30	29.65	3.5	1.4			
54	67	32	2.70	25.50	3.5	1.4			
55	68	31	1.35	25.05	3.5	1.3			
60	74	29	3.00	22.85	3.5	1.4			
70	87	24	2.70	19.51	3.6	1.4			

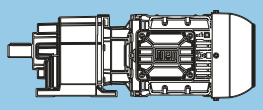
Legend see page 29

P_N = 0.18 kW									IE1
50 Hz 0.18 kW n_{50} min^{-1}	60 Hz 0.22 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
27	34	63	0.80	32.89	3.5	1.1	**CG002-11N-71-06E** **CF002-11N-71-06E**	10 11	110
31	38	56	0.90	29.33	3.6	1.2			
34	42	50	1.00	26.18	3.6	1.2			
39	48	44	1.15	23.00	3.7	1.3			
44	54	39	1.30	20.53	3.7	1.3			
52	64	33	1.55	17.29	3.7	1.4			
53	66	32	1.00	16.86	3.6	1.2			
58	72	30	1.70	15.43	3.6	1.4			
66	82	26	1.95	13.54	3.4	1.4			
68	84	25	1.75	13.10	3.4	1.3			
74	91	23	2.20	12.08	3.3	1.4			
86	106	20	2.25	10.42	3.1	1.4			
90	111	19	2.65	9.97	3.1	1.5			
101	124	17	2.95	8.90	3.0	1.5			
109	135	16	2.90	8.17	2.9	1.4			
29	36	60	0.85	47.44	3.6	1.1	**CG002-11N-63-04F** **CF002-11N-63-04F**	7.8 9.1	110
32	40	53	0.95	42.34	3.6	1.2			
37	46	46	1.10	36.85	3.7	1.2			
42	52	41	1.25	32.89	3.7	1.3			
47	58	37	1.40	29.33	3.7	1.3			
52	65	33	1.55	26.18	3.7	1.4			
60	74	29	1.75	23.00	3.5	1.4			
67	83	26	1.95	20.53	3.4	1.4			
79	98	22	2.35	17.29	3.3	1.4			
81	101	21	1.50	16.86	3.2	1.4			
89	110	19	2.60	15.43	3.1	1.5			
101	126	17	2.95	13.54	3.0	1.5			
105	130	16	2.65	13.10	3.0	1.4			
113	141	15	3.30	12.08	2.9	1.5			
131	163	13	3.45	10.42	2.8	1.5			
137	171	13	4.00	9.97	2.8	1.5			
154	191	11	4.50	8.90	2.7	1.5			
168	208	10	4.40	8.17	2.6	1.5			
199	247	9	5.70	6.88	2.5	1.6			
223	277	8	6.50	6.14	2.4	1.6			
285	353	6	6.50	4.81	2.2	1.6			
387	480	4	7.90	3.54	2.0	1.6			

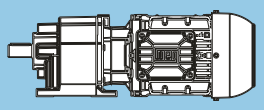
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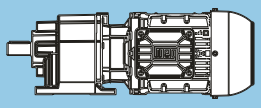
P_N = 0.25 kW									IE1
50 Hz 0.25 kW	60 Hz 0.30 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
2.4	3.0	979	1.60	368.94	22.9	20.5	**CG083-11N-71-06F** **CF083-11N-71-06F**	64 68	122
3.2	3.9	756	2.10	284.84	23.6	21.0			
3.8	4.6	634	2.45	238.89	23.9	21.2			
3.7	4.6	643	2.45	368.94	23.9	21.2	**CG083-11N-71-04E** **CF083-11N-71-04E**	62 66	122
2.6	3.2	932	0.90	351.33	9.5	12.8	**CG073-11N-71-06F** **CF073-11N-71-06F**	40 44	120
2.8	3.5	848	1.00	319.60	10.4	12.8			
3.2	4.0	739	1.15	278.44	11.4	13.4			
3.6	4.4	672	1.25	253.30	11.9	13.3			
4.2	5.1	574	1.45	216.20	12.5	13.8			
4.6	5.6	522	1.60	196.68	12.8	13.8			
5.1	6.3	471	1.75	177.39	13.0	14.1			
5.6	6.9	428	1.95	161.38	13.2	14.1			
6.6	8.1	364	2.30	137.38	13.4	14.4			
7.2	8.9	332	2.50	124.97	13.6	14.4			
8.6	11	277	3.00	104.50	13.7	14.6			
3.9	4.8	612	1.35	351.33	12.3	13.7	**CG073-11N-71-04E** **CF073-11N-71-04E**	38 42	120
4.3	5.3	557	1.50	319.60	12.6	13.7			
4.9	6.1	485	1.70	278.44	13.0	14.1			
5.4	6.7	441	1.90	253.30	13.2	14.1			
6.3	7.9	377	2.20	216.20	13.4	14.4			
7.0	8.6	343	2.40	196.68	13.5	14.4			
7.7	9.6	309	2.70	177.39	13.6	14.5			
8.5	11	281	2.95	161.38	13.7	14.5			
3.2	3.9	747	0.85	281.73	6.1	5.9	**CG063-11N-71-06F** **CF063-11N-71-06F**	24 29	118
3.7	4.6	644	0.95	242.60	7.7	6.2			
4.0	5.0	590	1.05	222.46	8.4	6.4			
4.8	5.9	499	1.25	188.11	9.3	6.7			
5.2	6.4	458	1.35	172.49	9.6	6.8			
5.8	7.2	408	1.50	153.96	10.0	6.9			
6.4	7.9	375	1.65	141.17	10.2	7.0			
7.6	9.4	314	1.95	118.51	10.5	7.2			
8.3	10	288	2.10	108.67	10.6	7.3			
10	12	238	2.55	89.54	10.8	7.4			
11	14	218	2.80	82.10	10.9	7.5			
3.6	4.5	655	0.95	375.71	7.6	6.2	**CG063-11N-71-04E** **CF063-11N-71-04E**	22 27	118
4.0	4.9	600	1.00	344.51	8.3	6.3			
4.5	5.5	535	1.15	307.24	9.0	6.6			
4.9	6.0	491	1.25	281.73	9.4	6.7			
5.6	7.0	423	1.45	242.60	9.9	6.9			
6.2	7.6	388	1.55	222.46	10.1	7.0			
7.3	9.0	328	1.85	188.11	10.5	7.2			
7.9	9.9	301	2.00	172.49	10.6	7.2			
8.9	11	268	2.25	153.96	10.7	7.3			
9.7	12	246	2.45	141.17	10.8	7.4			
12	14	207	2.95	118.51	10.9	7.5			
15	19	159	2.65	60.00	11.1	7.6	**CG062-11N-71-06F** **CF062-11N-71-06F**	23 28	118
16	20	146	2.65	55.02	11.1	7.7			
27	33	89	2.65	33.43	11.2	7.7			
4.6	5.7	515	0.80	194.29	1.2	5.7	**CG053 -11N-71-06F** **CF053-11N-71-06F**	19 24	116
5.4	6.7	439	0.95	165.45	4.2	6.1			
6.0	7.4	399	1.05	150.41	5.0	6.3			
6.8	8.3	353	1.15	132.97	5.7	6.5			
7.4	9.2	321	1.25	120.88	6.1	6.6			
8.9	11	269	1.50	101.55	6.6	6.9			
9.7	12	245	1.65	92.32	6.8	7.0			
12	14	206	1.95	77.79	7.1	7.2			
13	16	188	2.15	70.71	7.2	7.2			
15	18	163	2.45	61.63	7.3	7.4			
16	20	149	2.70	56.02	7.4	7.4			

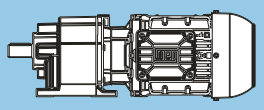
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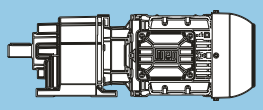
P_N = 0.25 kW									IE1
50 Hz 0.25 kW n_{50} min^{-1}	60 Hz 0.30 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
4.6	5.7	520	0.80	298.57	0.7	5.7	**CG053-11N-71-04E** **CF053-11N-71-04E**	17 22	116
5.1	6.3	467	0.90	267.93	3.5	6.0			
5.6	7.0	424	0.95	243.57	4.5	6.1			
6.4	8.0	372	1.10	213.71	5.4	6.4			
7.1	8.8	339	1.20	194.29	5.9	6.5			
8.3	10	288	1.40	165.45	6.4	6.8			
9.1	11	262	1.55	150.41	6.7	6.9			
10	13	232	1.75	132.97	6.9	7.0			
11	14	211	1.90	120.88	7.1	7.1			
13	17	177	2.30	101.55	7.3	7.3			
15	18	161	2.50	92.32	7.3	7.4			
18	22	136	3.00	77.79	7.5	7.5			
15	19	156	1.65	58.85	7.4	7.4	**CG052-11N-71-06F** **CF052-11N-71-06F**	18 23	116
17	21	142	1.60	53.50	7.4	7.4			
19	23	128	2.65	48.13	7.5	7.5			
21	25	116	2.65	43.75	7.5	7.6			
25	31	95	1.60	35.67	7.6	7.6			
31	38	77	2.65	29.17	7.6	7.7			
23	29	103	2.45	58.85	7.6	7.6	**CG052-11N-71-04E** **CF052-11N-71-04E**	16 21	116
26	32	93	2.45	53.50	7.6	7.7			
38	48	62	2.45	35.67	7.7	7.7			
9.0	11	265	0.80	99.71	3.6	2.9	**CG033-11N-71-06F** **CF033-11N-71-06F**	14 16	114
10	13	228	0.90	85.78	4.3	3.2			
12	14	207	1.00	77.90	4.7	3.3			
14	17	170	1.20	64.05	5.1	3.5			
15	19	154	1.30	58.17	5.3	3.6			
19	23	128	1.60	48.22	5.5	3.8			
21	25	116	1.75	43.79	5.6	3.9			
25	31	94	2.15	35.38	5.7	4.0			
28	35	85	2.35	32.13	5.7	4.1			
9.6	12	248	0.85	142.47	4.0	3.1	**CG033-11N-71-04E** **CF033-11N-71-04E**	12 14	114
11	13	225	0.90	129.39	4.4	3.2			
12	15	191	1.05	109.79	4.9	3.4			
14	17	174	1.20	99.71	5.1	3.5			
16	20	149	1.35	85.78	5.3	3.7			
18	22	136	1.50	77.90	5.4	3.7			
21	27	112	1.80	64.05	5.6	3.9			
24	29	101	2.00	58.17	5.6	4.0			
28	35	84	2.40	48.22	5.7	4.1			
31	39	76	2.65	43.79	5.8	4.1			
21	26	114	1.65	42.88	5.6	3.9	**CG032-11N-71-06F** **CF032-11N-71-06F**	14 16	114
23	29	103	1.65	38.95	5.6	3.9			
26	32	93	2.20	34.88	5.7	4.0			
28	35	84	2.40	31.67	5.7	4.1			
32	40	74	2.75	27.71	5.8	4.1			
36	44	67	3.00	25.17	5.8	4.2			
37	46	64	1.65	24.03	5.8	4.1			
46	57	52	2.50	19.54	5.7	4.2			
32	40	75	2.50	42.88	5.8	4.1	**CG032-11N-71-04E** **CF032-11N-71-04E**	12 14	114
35	44	68	2.50	38.95	5.8	4.2			
57	71	42	2.50	24.03	5.3	4.3			

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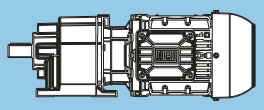
P_N = 0.25 kW									IE1
50 Hz 0.25 kW n_{50} min^{-1}	60 Hz 0.30 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
21	26	111	0.80	42.00	2.6	0.9	**CG012-11N-71-06F** **CF012-11N-71-06F**	12 13	112
24	29	100	0.90	37.64	2.8	1.0			
27	34	88	1.00	33.09	3.0	1.1			
30	37	79	1.10	29.65	3.1	1.1			
35	44	68	1.30	25.50	3.3	1.2			
39	49	61	1.45	22.85	3.3	1.2			
45	56	53	1.65	19.92	3.4	1.3			
46	57	52	1.30	19.51	3.4	1.2			
50	62	47	1.80	17.85	3.4	1.3			
57	70	42	1.60	15.82	3.5	1.3			
61	75	39	2.20	14.88	3.5	1.4			
68	83	35	2.45	13.33	3.5	1.4			
72	89	33	2.00	12.46	3.5	1.3			
80	99	30	2.85	11.20	3.4	1.4			
94	116	25	2.60	9.60	3.2	1.4			
23	29	104	0.85	59.59	2.8	0.9	**CG012-11N-71-04E** **CF012-11N-71-04E**	9.7 11	112
26	33	90	0.95	51.80	3.0	1.0			
30	37	81	1.10	46.42	3.1	1.1			
33	40	73	1.20	42.00	3.2	1.2			
36	45	66	1.30	37.64	3.3	1.2			
41	51	58	1.50	33.09	3.4	1.3			
46	57	52	1.65	29.65	3.4	1.3			
54	67	44	1.95	25.50	3.5	1.3			
55	68	44	0.95	25.05	3.5	1.2			
60	74	40	2.15	22.85	3.5	1.4			
69	85	35	2.45	19.92	3.5	1.4			
70	87	34	1.95	19.51	3.5	1.3			
77	95	31	2.75	17.85	3.4	1.4			
87	107	28	2.40	15.82	3.3	1.4			
39	48	61	0.85	23.00	3.6	1.1	**CG002-11N-71-06F** **CF002-11N-71-06F**	11 12	110
44	54	54	0.95	20.53	3.6	1.2			
52	64	46	1.10	17.29	3.6	1.3			
58	72	41	1.25	15.43	3.5	1.3			
66	82	36	1.40	13.54	3.4	1.3			
69	85	35	1.25	13.10	3.3	1.2			
74	92	32	1.60	12.08	3.3	1.4			
86	106	28	1.65	10.42	3.1	1.3			
90	111	26	1.90	9.97	3.1	1.4			
101	125	24	2.15	8.90	3.0	1.4			
110	136	22	2.10	8.17	2.9	1.4			
131	161	18	2.70	6.88	2.8	1.5			
147	181	16	2.60	6.14	2.6	1.4			
37	46	64	0.80	36.85	3.5	1.1	**CG002-11N-71-04E** **CF002-11N-71-04E**	8.6 9.9	110
42	52	57	0.90	32.89	3.6	1.1			
47	58	51	1.00	29.33	3.6	1.2			
52	65	46	1.10	26.18	3.6	1.2			
60	74	40	1.25	23.00	3.5	1.3			
67	83	36	1.40	20.53	3.4	1.3			
79	98	30	1.70	17.29	3.2	1.4			
81	101	29	1.10	16.86	3.1	1.3			
89	110	27	1.90	15.43	3.1	1.4			
101	126	24	2.15	13.54	3.0	1.4			
105	130	23	1.90	13.10	2.9	1.4			
113	141	21	2.40	12.08	2.9	1.5			
131	163	18	2.50	10.42	2.7	1.4			
137	171	17	2.90	9.97	2.7	1.5			
154	191	16	3.25	8.90	2.6	1.5			
168	208	14	3.20	8.17	2.5	1.5			
199	247	12	4.10	6.88	2.4	1.5			
223	277	11	4.70	6.14	2.3	1.5			
285	353	8	4.70	4.81	2.2	1.5			
387	480	6	5.55	3.54	2.0	1.6			

P_N = 0.37 kW									IE1
50 Hz	60 Hz				at 50 Hz				
0.37 kW	0.44 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
3.0	3.7	1178	2.55	306.73	30.7	28.3	**CG093-11N-80-06E** **CF093-11N-80-06E**	118 116	124
2.5	3.1	1417	1.10	368.94	21.1	19.6			
3.2	4.0	1094	1.45	284.84	22.5	20.3			
3.9	4.7	918	1.70	238.89	23.1	20.6	**CG083-11N-80-06E** **CF083-11N-80-06E**	66 70	122
4.9	6.0	720	2.20	187.48	23.7	21.0			
6.4	7.8	556	2.80	144.69	24.0	21.4			
3.7	4.6	955	1.65	368.94	23.0	20.5			
4.8	5.9	737	2.15	284.84	23.6	21.0	**CG083-11N-71-04F** **CF083-11N-71-04F**	63 67	122
5.7	7.1	618	2.55	238.89	23.9	21.2			
3.3	4.1	1069	0.80	278.44	7.5	12.4			
3.6	4.5	973	0.85	253.30	9.0	12.4			
4.3	5.2	830	1.00	216.20	10.6	13.1			
4.7	5.7	755	1.10	196.68	11.3	13.1			
5.2	6.4	681	1.25	177.39	11.8	13.5			
5.7	7.0	620	1.35	161.38	12.2	13.5	**CG073-11N-80-06E**	42	120
6.7	8.2	528	1.60	137.38	12.8	13.9	**CF073-11N-80-06E**	46	
7.4	9.0	480	1.75	124.97	13.0	13.9			
8.8	11	401	2.05	104.50	13.3	14.3			
9.7	12	365	2.25	95.06	13.4	14.3			
11	13	331	2.50	86.17	13.6	14.5			
12	14	301	2.75	78.39	13.6	14.5			
3.9	4.8	909	0.95	351.33	9.8	12.9			
4.3	5.3	827	1.00	319.60	10.6	12.9			
4.9	6.1	721	1.15	278.44	11.5	13.4			
5.4	6.7	656	1.30	253.30	12.0	13.4			
6.3	7.8	560	1.50	216.20	12.6	13.9	**CG073-11N-71-04F**	39	120
6.9	8.6	509	1.65	196.68	12.9	13.8	**CF073-11N-71-04F**	43	
7.7	9.5	459	1.80	177.39	13.1	14.1			
8.5	10	418	2.00	161.38	13.3	14.1			
9.9	12	356	2.35	137.38	13.5	14.4			
11	13	324	2.55	124.97	13.6	14.4			
4.9	6.0	722	0.85	188.11	6.5	6.0			
5.3	6.6	662	0.95	172.49	7.5	6.2			
6.0	7.3	591	1.05	153.96	8.4	6.4			
6.5	8.0	542	1.15	141.17	8.9	6.5			
7.8	9.5	455	1.35	118.51	9.7	6.8			
8.5	10	417	1.45	108.67	9.9	6.9	**CG063-11N-80-06E**	25	118
10	13	344	1.75	89.54	10.4	7.1	**CF063-11N-80-06E**	30	
11	14	315	1.95	82.10	10.5	7.2			
13	15	281	2.15	73.28	10.7	7.3			
14	17	258	2.35	67.19	10.8	7.3			
15	19	228	2.65	59.42	10.9	7.4			
17	21	209	2.90	54.49	10.9	7.5			
4.4	5.5	795	0.80	307.24	5.0	5.8			
4.8	6.0	729	0.85	281.73	6.4	6.0			
5.6	6.9	628	1.00	242.60	7.9	6.3			
6.1	7.6	576	1.05	222.46	8.6	6.4			
7.3	9.0	487	1.25	188.11	9.4	6.7			
7.9	9.8	447	1.35	172.49	9.7	6.8	**CG063-11N-71-04F**	22	118
8.9	11	399	1.55	153.96	10.0	6.9	**CF063-11N-71-04F**	27	
9.7	12	365	1.65	141.17	10.2	7.0			
12	14	307	2.00	118.51	10.6	7.2			
13	16	281	2.15	108.67	10.7	7.3			
15	19	232	2.60	89.54	10.9	7.4			
17	21	213	2.85	82.10	10.9	7.5			
15	19	230	1.85	60.00	10.9	7.4			
17	21	211	1.85	55.02	10.9	7.5	**CG062-11N-80-06E**	25	118
28	34	128	1.85	33.43	11.1	7.6	**CF062-11N-80-06E**	30	
23	28	155	2.75	60.00	11.1	7.7			
25	31	142	2.75	55.02	11.1	7.7	**CG062-11N-71-04F**	22	118
41	50	87	2.75	33.43	11.2	7.7	**CF062-11N-71-04F**	27	

P_N = 0.37 kW									IE1
50 Hz 0.37 kW n_{50} min^{-1}	60 Hz 0.44 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
6.9	8.5	511	0.80	132.97	1.6	5.8	**CG053-11N-80-06E** **CF053-11N-80-06E**	21 26	116
7.6	9.3	464	0.90	120.88	3.5	6.0			
9.1	11	390	1.05	101.55	5.1	6.3			
10	12	355	1.15	92.32	5.7	6.5			
12	15	299	1.35	77.79	6.3	6.7			
13	16	272	1.50	70.71	6.6	6.8			
15	18	237	1.70	61.63	6.9	7.0			
16	20	215	1.90	56.02	7.0	7.1			
19	23	189	2.15	49.20	7.2	7.2			
21	25	172	2.35	44.73	7.3	7.3			
7.0	8.7	503	0.80	194.29	2.1	5.8	**CG053-11N-71-04F** **CF053-11N-71-04F**	18 23	116
8.3	10	428	0.95	165.45	4.4	6.2			
9.1	11	389	1.05	150.41	5.1	6.3			
10	13	344	1.20	132.97	5.8	6.5			
11	14	313	1.30	120.88	6.2	6.7			
13	17	263	1.55	101.55	6.7	6.9			
15	18	239	1.70	92.32	6.9	7.0			
18	22	201	2.00	77.79	7.1	7.2			
19	24	183	2.20	70.71	7.2	7.3			
22	27	160	2.55	61.63	7.3	7.4			
24	30	145	2.80	56.02	7.4	7.4			
16	19	226	1.15	58.85	7.0	7.1	**CG052-11N-80-06E** **CF052-11N-80-06E**	20 25	116
17	21	205	1.15	53.50	7.1	7.2			
19	23	185	1.85	48.13	7.2	7.3			
21	26	168	1.85	43.75	7.3	7.3			
24	30	146	2.75	38.00	7.4	7.4			
26	32	137	1.15	35.67	7.4	7.3			
32	39	112	1.85	29.17	7.5	7.5			
23	29	152	1.65	58.85	7.4	7.4	**CG052-11N-71-04F** **CF052-11N-71-04F**	17 22	116
26	31	138	1.65	53.50	7.4	7.5			
28	35	125	2.75	48.13	7.5	7.5			
31	39	113	2.75	43.75	7.5	7.6			
38	47	92	1.65	35.67	7.6	7.6			
47	58	76	2.75	29.17	7.6	7.7			
14	18	246	0.85	64.05	4.0	3.1	**CG033-11N-80-06E** **CF033-11N-80-06E**	16 18	114
16	19	223	0.90	58.17	4.4	3.2			
17	20	212	0.95	55.25	4.6	3.3			
18	23	193	1.05	50.18	4.8	3.4			
19	23	185	1.10	48.22	4.9	3.4			
21	26	168	1.20	43.79	5.1	3.5			
26	32	136	1.50	35.38	5.4	3.8			
29	35	123	1.65	32.13	5.5	3.8			
14	17	258	0.80	99.71	3.8	3.0	**CG033-11N-71-04F** **CF033-11N-71-04F**	13 15	114
16	20	222	0.95	85.78	4.4	3.2			
18	22	202	1.00	77.90	4.7	3.3			
21	26	166	1.25	64.05	5.1	3.6			
23	29	151	1.35	58.17	5.3	3.6			
28	35	125	1.65	48.22	5.5	3.8			
31	38	113	1.80	43.79	5.6	3.9			
39	48	92	2.20	35.38	5.7	4.0			
42	52	83	2.45	32.13	5.7	4.1			
21	26	165	1.15	42.88	5.2	3.6	**CG032-11N-80-06E** **CF032-11N-80-06E**	16 18	114
24	29	150	1.15	38.95	5.3	3.7			
26	32	134	1.50	34.88	5.4	3.8			
29	36	122	1.65	31.67	5.5	3.8			
33	41	106	1.90	27.71	5.6	3.9			
37	45	97	2.10	25.17	5.7	4.0			
38	47	92	1.15	24.03	5.7	3.9			
43	53	82	2.45	21.40	5.7	4.1			
47	58	75	2.70	19.44	5.5	4.1			
59	73	60	2.20	15.53	5.2	4.2			
77	94	46	2.85	11.99	4.8	4.3			

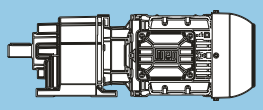
P_N = 0.37 kW									IE1
50 Hz 0.37 kW n_{50} min^{-1}	60 Hz 0.44 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
32	39	111	1.70	42.88	5.6	3.9			
35	43	101	1.70	38.95	5.6	4.0			
39	48	90	2.25	34.88	5.7	4.0			
43	53	82	2.45	31.67	5.7	4.1	**CG032-11N-71-04F**	13	114
49	61	72	2.80	27.71	5.5	4.2	**CF032-11N-71-04F**	15	
57	70	62	1.70	24.03	5.2	4.1			
70	86	51	2.55	19.54	4.9	4.2			
36	44	98	0.90	25.50	2.9	1.0			
40	49	88	1.00	22.85	3.0	1.1			
46	57	77	1.15	19.92	3.2	1.1			
47	58	75	0.90	19.51	3.2	1.0			
52	63	69	1.25	17.85	3.3	1.2			
58	71	61	1.10	15.82	3.3	1.1			
62	76	57	1.50	14.88	3.4	1.3			
69	85	51	1.70	13.33	3.4	1.3			
72	88	49	1.75	12.83	3.4	1.3	**CG012-11N-80-06E**	13	112
74	91	48	1.40	12.46	3.3	1.2	**CF012-11N-80-06E**	14	
80	98	44	1.95	11.50	3.3	1.3			
82	101	43	2.00	11.20	3.3	1.3			
92	113	39	2.15	10.04	3.2	1.4			
96	118	37	1.80	9.60	3.1	1.3			
112	138	32	2.45	8.22	3.0	1.4			
123	151	29	2.30	7.50	2.9	1.4			
125	153	28	2.65	7.36	2.9	1.4			
33	40	109	0.80	42.00	2.7	0.9			
36	45	97	0.90	37.64	2.9	1.0			
41	51	86	1.00	33.09	3.1	1.1			
46	57	77	1.15	29.65	3.2	1.1			
54	66	66	1.30	25.50	3.3	1.2			
60	74	59	1.45	22.85	3.3	1.2			
69	85	52	1.65	19.92	3.4	1.3			
70	86	51	1.35	19.51	3.4	1.2	**CG012-11N-71-04F**	11	112
76	94	46	1.85	17.85	3.4	1.3	**CF012-11N-71-04F**	12	
86	107	41	1.65	15.82	3.2	1.3			
92	113	39	2.25	14.88	3.2	1.4			
102	126	35	2.50	13.33	3.1	1.4			
110	135	32	2.05	12.46	3.0	1.3			
122	150	29	2.90	11.20	2.9	1.4			
142	175	25	2.70	9.60	2.8	1.4			
53	65	66	0.80	17.29	3.4	1.1			
60	73	59	0.85	15.43	3.3	1.1			
68	83	52	1.00	13.54	3.2	1.2			
70	86	50	0.90	13.10	3.1	1.0			
76	94	46	1.10	12.08	3.1	1.2			
88	108	40	1.15	10.42	2.9	1.1			
92	113	38	1.35	9.97	3.0	1.3	**CG002-11N-80-06E**	12	110
103	127	34	1.50	8.90	2.9	1.3	**CF002-11N-80-06E**	13	
113	138	31	1.45	8.17	2.8	1.2			
134	164	26	1.90	6.88	2.7	1.4			
150	184	24	2.15	6.14	2.6	1.4			
191	235	18	2.15	4.81	2.4	1.4			
260	319	14	2.60	3.54	2.2	1.5			

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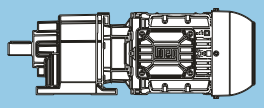
P_N = 0.37 kW									IE1
50 Hz 0.37 kW n_{50} min^{-1}	60 Hz 0.44 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
59	73	60	0.85	23.00	3.3	1.1	**CG002-11N-71-04F** **CF002-11N-71-04F**	9.4 11	110
66	82	53	0.95	20.53	3.2	1.2			
79	97	45	1.15	17.29	3.1	1.3			
88	109	40	1.30	15.43	3.0	1.3			
101	124	35	1.45	13.54	2.9	1.3			
104	129	34	1.30	13.10	2.8	1.2			
113	139	31	1.60	12.08	2.8	1.4			
131	162	27	1.70	10.42	2.6	1.3			
137	169	26	1.95	9.97	2.7	1.4			
153	189	23	2.20	8.90	2.6	1.4			
167	206	21	2.15	8.17	2.5	1.4			
199	245	18	2.80	6.88	2.4	1.5			
222	275	16	3.15	6.14	2.3	1.5			
284	350	12	3.15	4.81	2.1	1.5			
385	476	9	3.85	3.54	1.9	1.5			

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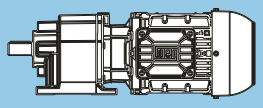
C

P_N = 0.55 kW									IE1
50 Hz 0.55 kW	60 Hz 0.66 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
3.0	3.7	1732	1.75	306.73	29.2	27.4			
3.8	4.7	1371	2.20	242.77	30.2	28.0	**CG093-11N-80-06F**	119	124
4.4	5.4	1197	2.55	211.98	30.6	28.2	**CF093-11N-80-06F**	117	
5.0	6.1	1058	2.85	187.34	30.9	28.4			
4.6	5.6	1139	2.65	306.73	30.7	28.3	**CG093-11N-80-04E**	117	124
							CF093-11N-80-04E	115	
3.3	4.0	1609	1.00	284.84	19.9	19.2			
3.9	4.8	1349	1.15	238.89	21.4	19.7			
5.0	6.1	1059	1.50	187.48	22.7	20.3	**CG083-11N-80-06F**	67	122
6.4	7.9	817	1.90	144.69	23.4	20.8	**CF083-11N-80-06F**	71	
7.8	9.5	676	2.30	119.68	23.8	21.1			
9.1	11	575	2.70	101.80	24.0	21.3			
3.8	4.7	1370	1.15	368.94	21.3	19.7			
5.0	6.1	1057	1.50	284.84	22.7	20.3			
5.9	7.2	887	1.75	238.89	23.2	20.7	**CG083-11N-80-04E**	66	122
7.5	9.2	696	2.25	187.48	23.7	21.1	**CF083-11N-80-04E**	69	
9.8	12	537	2.90	144.69	24.1	21.4			
5.2	6.4	1002	0.85	177.39	8.6	12.6			
5.8	7.1	911	0.90	161.38	9.8	12.6			
6.8	8.3	776	1.10	137.38	11.1	13.3			
7.4	9.1	706	1.20	124.97	11.7	13.2			
8.9	11	590	1.40	104.50	12.4	13.8			
9.8	12	537	1.55	95.06	12.7	13.8			
11	13	487	1.70	86.17	13.0	14.1	**CG073-11N-80-06F**	43	120
12	15	443	1.90	78.39	13.2	14.0	**CF073-11N-80-06F**	47	
13	16	399	2.10	70.68	13.3	14.3			
14	18	363	2.30	64.30	13.5	14.3			
15	19	339	2.45	60.06	13.5	14.5			
17	21	309	2.70	54.63	13.6	14.5			
19	23	279	2.95	49.38	13.7	14.6			
5.1	6.2	1034	0.80	278.44	8.1	12.5			
5.6	6.8	940	0.90	253.30	9.4	12.5			
6.5	8.0	803	1.05	216.20	10.9	13.2			
7.2	8.8	730	1.15	196.68	11.5	13.2			
8.0	9.7	658	1.25	177.39	12.0	13.6			
8.8	11	599	1.40	161.38	12.4	13.6	**CG073-11N-80-04E**	41	120
10	13	510	1.65	137.38	12.9	14.0	**CF073-11N-80-04E**	45	
11	14	464	1.80	124.97	13.1	14.0			
14	17	388	2.15	104.50	13.4	14.3			
15	18	353	2.35	95.06	13.5	14.3			
16	20	320	2.60	86.17	13.6	14.5			
18	22	291	2.85	78.39	13.7	14.5			
6.6	8.1	797	0.80	141.17	4.9	5.8			
7.8	9.6	669	0.90	118.51	7.4	6.2			
8.6	10	614	1.00	108.67	8.1	6.3			
10	13	506	1.20	89.54	9.2	6.6			
11	14	464	1.30	82.10	9.6	6.7			
13	16	414	1.45	73.28	9.9	6.9	**CG063-11N-80-06F**	26	118
14	17	380	1.60	67.19	10.2	7.0	**CF063-11N-80-06F**	31	
16	19	336	1.80	59.42	10.4	7.1			
17	21	308	1.95	54.49	10.5	7.2			
19	23	281	2.15	49.74	10.7	7.3			
20	25	258	2.35	45.61	10.8	7.3			

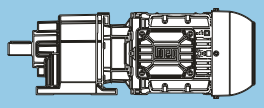
Legend see page 29

P_N = 0.55 kW									IE1
50 Hz 0.55 kW	60 Hz 0.66 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
7.5	9.2	698	0.90	188.11	6.9	6.1	**CG063-11N-80-04E** **CF063-11N-80-04E**	24 29	118
8.2	10	640	0.95	172.49	7.8	6.2			
9.2	11	571	1.05	153.96	8.6	6.4			
10	12	524	1.15	141.17	9.1	6.6			
12	15	440	1.40	118.51	9.8	6.8			
13	16	403	1.50	108.67	10.0	6.9			
16	19	332	1.85	89.54	10.4	7.1			
17	21	305	2.00	82.10	10.6	7.2			
19	24	272	2.25	73.28	10.7	7.3			
21	26	249	2.45	67.19	10.8	7.4			
24	29	221	2.75	59.42	10.9	7.5			
26	32	202	3.00	54.49	10.9	7.5			
16	19	339	1.25	60.00	10.4	7.1	**CG062-11N-80-06F** **CF062-11N-80-06F**	26 31	118
17	21	311	1.25	55.02	10.5	7.2			
20	24	269	2.25	47.55	10.7	7.3			
21	26	246	2.30	43.60	10.8	7.4			
25	31	209	2.90	36.92	10.9	7.5			
28	34	189	1.25	33.43	11.0	7.3			
35	43	150	2.30	26.49	11.1	7.5			
24	29	223	1.90	60.00	10.9	7.5	**CG062-11N-80-04E** **CF062-11N-80-04E**	24 29	118
26	31	204	1.90	55.02	10.9	7.5			
42	52	124	1.90	33.43	11.1	7.6			
10	12	521	0.80	92.32	0.4	5.7	**CG053-11N-80-06F** **CF053-11N-80-06F**	22 27	116
12	15	439	0.95	77.79	4.2	6.1			
13	16	399	1.05	70.71	5.0	6.3			
15	18	348	1.15	61.63	5.8	6.5			
17	20	316	1.30	56.02	6.1	6.6			
19	23	278	1.45	49.20	6.5	6.8			
21	25	253	1.60	44.73	6.8	6.9			
11	13	494	0.85	132.97	2.5	5.9	**CG053-11N-80-04E** **CF053-11N-80-04E**	20 25	116
12	14	449	0.90	120.88	3.9	6.0			
14	17	377	1.10	101.55	5.3	6.4			
15	19	343	1.20	92.32	5.8	6.5			
18	22	289	1.40	77.79	6.4	6.8			
20	24	262	1.55	70.71	6.7	6.9			
23	28	229	1.75	61.63	6.9	7.1			
25	31	208	1.95	56.02	7.1	7.1			
29	35	183	2.20	49.20	7.2	7.3			
32	39	166	2.45	44.73	7.3	7.3			
16	19	332	0.80	58.85	6.0	6.6	**CG052-11N-80-06F** **CF052-11N-80-06F**	21 26	116
17	21	302	0.80	53.50	6.3	6.7			
19	24	272	1.25	48.13	6.6	6.9			
21	26	247	1.25	43.75	6.8	7.0			
24	30	215	1.90	38.00	7.0	7.1			
27	33	195	2.10	34.55	7.2	7.2			
32	39	166	2.45	29.46	7.3	7.3			
35	43	151	2.65	26.79	7.4	7.4			
39	47	136	2.95	24.12	7.5	7.5			
40	50	130	2.10	23.03	7.5	7.4			
52	64	101	2.65	17.86	7.6	7.5			
24	29	218	1.15	58.85	7.0	7.1	**CG052-11N-80-04E** **CF052-11N-80-04E**	19 24	116
26	32	199	1.15	53.50	7.1	7.2			
29	36	179	1.90	48.13	7.3	7.3			
32	39	162	1.90	43.75	7.3	7.4			
37	45	141	2.85	38.00	7.4	7.5			
40	48	132	1.15	35.67	7.5	7.3			
49	59	108	1.90	29.17	7.6	7.5			
21	26	247	0.85	43.79	4.0	3.0	**CG033-11N-80-06F** **CF033-11N-80-06F**	17 19	114
26	32	200	1.05	35.38	4.7	3.4			
29	35	181	1.15	32.13	5.0	3.4			

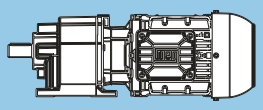
Legend see page 29

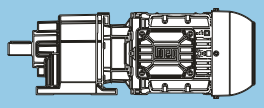
P_N = 0.55 kW									IE1
50 Hz 0.55 kW n_{50} min^{-1}	60 Hz 0.66 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
22	27	238	0.85	64.05	4.2	3.1	**CG033-11N-80-04E** **CF033-11N-80-04E**	15 17	114
24	30	216	0.95	58.17	4.5	3.2			
26	31	205	1.00	55.25	4.7	3.3			
28	34	186	1.10	50.18	4.9	3.4			
29	36	179	1.15	48.22	5.0	3.5			
32	39	163	1.25	43.79	5.2	3.6			
40	49	131	1.55	35.38	5.4	3.8			
44	54	119	1.70	32.13	5.4	3.8			
22	27	242	0.80	42.88	4.1	3.1	**CG032-11N-80-06F** **CF032-11N-80-06F**	17 19	114
24	29	220	0.80	38.95	4.5	3.2			
27	33	197	1.05	34.88	4.8	3.4			
29	36	179	1.15	31.67	5.0	3.5			
34	41	157	1.30	27.71	5.2	3.6			
37	45	142	1.45	25.17	5.4	3.7			
39	47	136	0.80	24.03	5.4	3.6			
43	53	121	1.70	21.40	5.5	3.8			
48	59	110	1.85	19.44	5.3	3.9			
54	67	97	2.10	17.09	5.2	4.0			
60	73	88	2.30	15.52	5.0	4.0			
72	88	73	2.70	12.92	4.8	4.1			
78	95	68	1.95	11.99	4.6	4.1			
79	97	66	3.00	11.73	4.6	4.2			
97	119	54	2.45	9.57	4.3	4.2			
33	40	159	1.20	42.88	5.2	3.6	**CG032-11N-80-04E** **CF032-11N-80-04E**	15 17	114
36	44	145	1.20	38.95	5.3	3.7			
41	49	129	1.55	34.88	5.5	3.8			
45	54	118	1.75	31.67	5.4	3.9			
51	62	103	1.95	27.71	5.2	4.0			
56	69	93	2.15	25.17	5.1	4.0			
59	72	89	1.20	24.03	5.0	3.9			
66	81	79	2.55	21.40	4.9	4.1			
72	88	73	1.80	19.54	4.7	4.1			
73	89	72	2.80	19.44	4.7	4.1			
91	111	58	2.30	15.53	4.4	4.2			
118	144	45	2.95	11.99	4.1	4.3			
47	57	113	0.80	19.92	2.6	0.9	**CG012-11N-80-06F** **CF012-11N-80-06F**	15 16	112
52	64	101	0.85	17.85	2.8	1.0			
63	77	84	1.05	14.88	3.1	1.1			
70	86	75	1.15	13.33	3.2	1.1			
72	89	72	1.20	12.83	3.2	1.2			
75	91	70	0.95	12.46	3.2	1.0			
81	99	65	1.35	11.50	3.2	1.2			
83	102	63	1.35	11.20	3.2	1.2			
93	114	57	1.45	10.04	3.1	1.3			
97	119	54	1.25	9.60	3.0	1.1			
113	139	46	1.65	8.22	2.9	1.3			
124	152	42	1.60	7.50	2.8	1.2			
126	155	42	1.80	7.36	2.8	1.4			
166	203	32	2.10	5.60	2.6	1.3			
192	236	27	2.45	4.83	2.5	1.4			
220	270	24	2.80	4.22	2.4	1.4			

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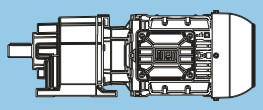
P_N = 0.55 kW									IE1
50 Hz 0.55 kW	60 Hz 0.66 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
48	58	110	0.80	29.65	2.6	0.9			
55	68	95	0.90	25.50	2.9	1.0			
62	75	85	1.05	22.85	3.1	1.1			
71	87	74	1.15	19.92	3.2	1.2			
73	88	72	0.95	19.51	3.2	1.0			
79	97	66	1.30	17.85	3.2	1.2			
89	109	59	1.15	15.82	3.0	1.1			
95	116	55	1.55	14.88	3.1	1.3			
106	129	49	1.75	13.33	3.0	1.3	**CG012-11N-80-04E**	13	112
110	134	48	1.80	12.83	2.9	1.3	**CF012-11N-80-04E**	14	
114	138	46	1.45	12.46	2.9	1.2			
123	150	43	2.00	11.50	2.8	1.3			
126	154	42	2.05	11.20	2.8	1.4			
141	172	37	2.20	10.04	2.7	1.4			
147	180	36	1.90	9.60	2.7	1.3			
172	210	31	2.50	8.22	2.6	1.4			
189	230	28	2.40	7.50	2.5	1.4			
192	234	27	2.75	7.36	2.5	1.4			
89	109	59	0.80	10.42	2.8	0.9			
93	114	56	0.90	9.97	2.8	1.2			
105	128	50	1.00	8.90	2.7	1.2			
114	139	46	1.00	8.17	2.6	1.1			
135	166	39	1.30	6.88	2.6	1.3	**CG002-11N-80-06F**	13	110
151	186	35	1.25	6.14	2.4	1.2	**CF002-11N-80-06F**	14	
152	186	35	1.45	6.14	2.5	1.3			
193	237	27	1.45	4.81	2.3	1.3			
263	322	20	1.75	3.54	2.1	1.4			
381	467	14	2.25	2.44	1.9	1.5			
82	100	64	0.80	17.29	2.9	1.1			
92	112	57	0.90	15.43	2.8	1.1			
105	127	50	1.00	13.54	2.8	1.2			
108	132	49	0.90	13.10	2.6	1.0			
117	143	45	1.15	12.08	2.7	1.3			
136	165	39	1.20	10.42	2.5	1.2			
142	173	37	1.40	9.97	2.5	1.3	**CG002-11N-80-04E**	11	110
159	194	33	1.55	8.90	2.5	1.4	**CF002-11N-80-04E**	12	
173	211	30	1.50	8.17	2.4	1.3			
206	251	26	1.95	6.88	2.3	1.4			
230	281	23	1.85	6.14	2.2	1.4			
231	281	23	2.20	6.14	2.2	1.4			
294	359	18	2.20	4.81	2.0	1.4			
399	487	13	2.70	3.54	1.9	1.5			

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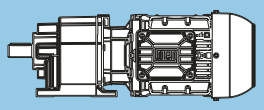
P_N = 0.75 kW									IE3
50 Hz 0.75 kW n_{50} min^{-1}	60 Hz 0.90 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
3.8	4.6	1878	2.40	246.43	44.0	24.8	**CG103-11P-90S/L-06E** **CF103-11P-90S/L-06E**	169 173	126
4.5	5.5	1587	2.85	208.33	44.4	25.2			
3.1	3.7	2337	1.30	306.73	26.8	26.5	**CG093-11P-90S/L-06E** **CF093-11P-90S/L-06E**	126 124	124
3.9	4.7	1850	1.65	242.77	28.8	27.3			
4.4	5.4	1615	1.90	211.98	29.5	27.6			
5.0	6.1	1427	2.15	187.34	30.1	27.9			
5.9	7.2	1207	2.50	158.42	30.6	28.2			
6.1	7.4	1175	2.60	154.24	30.7	28.3			
6.9	8.4	1038	2.90	136.18	30.9	28.5			
4.7	5.7	1536	2.00	306.73	29.8	27.7	**CG093-11P-80-04F** **CF093-11P-80-04F**	120 118	124
5.9	7.2	1216	2.50	242.77	30.6	28.2			
6.7	8.2	1062	2.85	211.98	30.9	28.4			
3.9	4.8	1820	0.90	238.89	18.5	18.8	**CG083-11P-90S/L-06E** **CF083-11P-90S/L-06E**	74 78	122
5.0	6.1	1429	1.10	187.48	21.0	19.6			
6.5	7.9	1102	1.45	144.69	22.5	20.2			
7.9	9.6	912	1.70	119.68	23.2	20.6			
9.2	11	776	2.00	101.80	23.5	20.9			
11	13	672	2.35	88.23	23.8	21.1			
13	15	568	2.75	74.50	24.0	21.3			
3.9	4.7	1848	0.85	368.94	18.2	18.7	**CG083-11P-80-04F** **CF083-11P-80-04F**	68 72	122
5.0	6.1	1427	1.10	284.84	21.0	19.6			
6.0	7.3	1197	1.30	238.89	22.1	20.1			
7.6	9.3	939	1.70	187.48	23.1	20.6			
9.9	12	725	2.15	144.69	23.7	21.0			
12	15	599	2.60	119.68	23.9	21.3			
6.8	8.3	1047	0.80	137.38	7.9	12.5	**CG073-11P-90S/L-06E** **CF073-11P-90S/L-06E**	50 54	120
7.5	9.2	952	0.90	124.97	9.3	12.5			
9.0	11	796	1.05	104.50	10.9	13.2			
9.9	12	724	1.15	95.06	11.5	13.2			
11	13	657	1.25	86.17	12.0	13.6			
12	15	597	1.40	78.39	12.4	13.6			
13	16	539	1.55	70.68	12.7	13.9			
15	18	490	1.70	64.30	12.9	13.9			
16	19	458	1.80	60.06	13.1	14.1			
17	21	416	2.00	54.63	13.3	14.1			
19	23	376	2.20	49.38	13.4	14.4			
21	25	342	2.35	44.92	13.5	14.4			
24	29	298	2.60	39.17	13.6	14.6			
26	32	271	2.70	35.63	13.7	14.6			
6.6	8.0	1083	0.80	216.20	7.3	12.4	**CG073-11P-80-04F** **CF073-11P-80-04F**	44 48	120
7.3	8.8	985	0.85	196.68	8.8	12.4			
8.1	9.8	889	0.95	177.39	10.0	12.9			
8.9	11	808	1.05	161.38	10.8	12.9			
10	13	688	1.20	137.38	11.8	13.5			
11	14	626	1.35	124.97	12.2	13.5			
14	17	523	1.60	104.50	12.8	14.0			
15	18	476	1.75	95.06	13.0	13.9			
17	20	432	1.90	86.17	13.2	14.2			
18	22	393	2.10	78.39	13.4	14.2			
20	25	354	2.35	70.68	13.5	14.4			
22	27	322	2.55	64.30	13.6	14.4			
24	29	301	2.75	60.06	13.6	14.6			
26	32	274	3.00	54.63	13.7	14.6			
24	29	297	2.80	38.92	13.7	14.6	**CG072-11P-90S/L-06E** **CF072-11P-90S/L-06E**	49 53	120
10	13	682	0.90	89.54	7.2	6.1	**CG063-11P-90S/L-06E** **CF063-11P-90S/L-06E**	33 38	118
11	14	626	1.00	82.10	8.0	6.3			
13	16	558	1.10	73.28	8.7	6.5			
14	17	512	1.20	67.19	9.2	6.6			
16	19	453	1.35	59.42	9.7	6.8			
17	21	415	1.45	54.49	9.9	6.9			
19	23	379	1.60	49.74	10.2	7.0			
21	25	348	1.75	45.61	10.3	7.1			

P_N = 0.75 kW									IE3
50 Hz 0.75 kW	60 Hz 0.90 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
9.3	11	771	0.80	153.96	5.6	5.9	**CG063-11P-80-04F** **CF063-11P-80-04F**	27 32	118
10	12	707	0.85	141.17	6.8	6.0			
12	15	594	1.05	118.51	8.4	6.4			
13	16	544	1.15	108.67	8.9	6.5			
16	19	448	1.35	89.54	9.7	6.8			
17	21	411	1.50	82.10	10.0	6.9			
20	24	367	1.65	73.28	10.2	7.0			
21	26	337	1.80	67.19	10.4	7.1			
24	29	298	2.05	59.42	10.6	7.2			
26	32	273	2.20	54.49	10.7	7.3			
29	35	249	2.45	49.74	10.8	7.4			
31	38	228	2.65	45.61	10.9	7.4			
16	19	457	0.95	60.00	9.6	6.8	**CG062-11P-90S/L-06E** **CF062-11P-90S/L-06E**	33 38	118
17	21	419	0.95	55.02	9.9	6.9			
20	24	362	1.70	47.55	10.3	7.1			
22	26	332	1.70	43.60	10.4	7.1			
25	31	281	2.15	36.92	10.7	7.3			
28	34	258	2.35	33.86	10.8	7.3			
31	38	231	2.60	30.30	10.9	7.4			
34	41	212	2.85	27.78	10.9	7.5			
35	43	202	1.70	26.49	11.0	7.3			
46	56	157	2.45	20.57	11.1	7.4			
56	68	129	2.95	16.88	10.7	7.6			
24	29	301	1.40	60.00	10.6	7.2	**CG062-11P-80-04F** **CF062-11P-80-04F**	27 32	118
26	32	276	1.40	55.02	10.7	7.3			
30	37	238	2.55	47.55	10.8	7.4			
33	40	218	2.60	43.60	10.9	7.5			
43	52	167	1.40	33.43	11.0	7.4			
54	66	133	2.60	26.49	10.8	7.5			
15	19	470	0.90	61.63	3.4	6.0	**CG053-11P-90S/L-06E** **CF053-11P-90S/L-06E**	29 34	116
17	20	427	0.95	56.02	4.4	6.1			
19	23	375	1.10	49.20	5.4	6.4			
21	26	341	1.20	44.73	5.8	6.5			
14	17	509	0.80	101.55	1.7	5.8	**CG053-11P-80-04F** **CF053-11P-80-04F**	23 28	116
15	19	462	0.90	92.32	3.6	6.0			
18	22	390	1.05	77.79	5.1	6.3			
20	25	354	1.15	70.71	5.7	6.5			
23	28	309	1.30	61.63	6.2	6.7			
26	31	281	1.45	56.02	6.5	6.8			
29	35	246	1.65	49.20	6.8	7.0			
32	39	224	1.80	44.73	7.0	7.1			
20	24	367	0.95	48.13	5.5	6.4	**CG052-11P-90S/L-06E** **CF052-11P-90S/L-06E**	28 33	116
21	26	333	0.95	43.75	5.9	6.6			
25	30	290	1.40	38.00	6.4	6.8			
27	33	263	1.55	34.55	6.7	6.9			
32	39	225	1.80	29.46	7.0	7.1			
35	43	204	2.00	26.79	7.1	7.2			
39	47	184	2.20	24.12	7.2	7.3			
41	50	175	1.55	23.03	7.3	7.1			
43	52	167	2.40	21.92	7.3	7.3			
51	62	141	2.85	18.56	7.4	7.5			
53	64	136	2.00	17.86	7.5	7.3			
64	78	111	2.40	14.62	7.5	7.5			

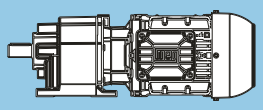
Legend see page 29

P_N = 0.75 kW									IE3
50 Hz 0.75 kW n_{50} min^{-1}	60 Hz 0.90 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
24	30	295	0.85	58.85	6.4	6.8	**CG052-11P-80-04F** **CF052-11P-80-04F**	22 27	116
27	33	268	0.85	53.50	6.6	6.9			
30	36	241	1.40	48.13	6.8	7.0			
33	40	219	1.45	43.75	7.0	7.1			
38	46	190	2.15	38.00	7.2	7.2			
40	49	179	0.85	35.67	7.3	7.1			
41	50	173	2.35	34.55	7.3	7.3			
49	59	148	2.75	29.46	7.4	7.4			
53	65	134	3.00	26.79	7.5	7.5			
62	76	115	2.35	23.03	7.5	7.4			
80	97	89	3.00	17.86	7.5	7.6			
28	35	251	0.80	50.18	3.9	3.0	**CG033-11P-80-04F** **CF033-11P-80-04F**	18 20	114
30	36	242	0.85	48.22	4.1	3.1			
33	40	219	0.95	43.79	4.5	3.2			
40	49	177	1.15	35.38	5.0	3.5			
45	54	161	1.25	32.13	5.1	3.6			
27	33	266	0.80	34.88	3.6	2.9	**CG032-11P-90S/L-06E** **CF032-11P-90S/L-06E**	24 26	114
30	36	241	0.85	31.67	4.1	3.1			
34	41	211	0.95	27.71	4.6	3.3			
37	45	192	1.05	25.17	4.9	3.4			
44	53	163	1.25	21.40	5.2	3.6			
48	59	148	1.40	19.44	5.1	3.7			
55	67	130	1.55	17.09	4.9	3.8			
61	74	118	1.70	15.52	4.8	3.8			
73	89	98	2.00	12.92	4.6	4.0			
78	95	91	1.45	11.99	4.5	3.9			
80	98	89	2.25	11.73	4.5	4.0			
96	117	75	2.45	9.82	4.3	4.1			
98	120	73	1.80	9.57	4.2	4.1			
105	128	68	2.70	8.92	4.2	4.2			
123	150	58	2.95	7.64	4.0	4.2			
130	158	55	2.40	7.24	3.9	4.2			
33	41	215	0.90	42.88	4.5	3.3	**CG032-11P-80-04F** **CF032-11P-80-04F**	18 20	114
37	45	195	0.90	38.95	4.8	3.4			
41	50	175	1.15	34.88	5.1	3.5			
45	55	159	1.30	31.67	5.1	3.6			
52	63	139	1.45	27.71	5.0	3.7			
57	69	126	1.60	25.17	4.9	3.8			
60	72	120	0.90	24.03	4.7	3.7			
67	81	107	1.90	21.40	4.7	3.9			
73	89	98	1.35	19.54	4.5	3.9			
74	90	97	2.10	19.44	4.6	4.0			
84	102	86	2.35	17.09	4.4	4.1			
92	112	78	2.60	15.52	4.3	4.1			
111	135	65	3.00	12.92	4.1	4.2			
119	145	60	2.20	11.99	4.0	4.1			
149	182	48	2.75	9.57	3.8	4.2			
71	86	102	0.85	13.33	2.8	1.0	**CG012-11P-90S/L-06E** **CF012-11P-90S/L-06E**	22 23	112
73	89	98	0.90	12.83	2.9	1.0			
82	100	88	1.00	11.50	3.0	1.1			
84	102	85	1.00	11.20	3.0	1.1			
94	114	76	1.10	10.04	2.9	1.1			
98	119	73	0.95	9.60	2.8	1.0			
114	139	63	1.25	8.22	2.8	1.2			
125	153	57	1.20	7.50	2.7	1.1			
128	155	56	1.35	7.36	2.7	1.3			
168	204	43	1.55	5.60	2.5	1.2			
194	237	37	1.80	4.83	2.4	1.3			
223	271	32	2.10	4.22	2.3	1.3			
304	370	24	2.70	3.09	2.1	1.4			

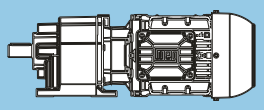
Legend see page 29

P_N = 0.75 kW									IE3
50 Hz 0.75 kW	60 Hz 0.90 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
72	87	100	0.90	19.92	2.8	1.0	**CG012-11P-80-04F** **CF012-11P-80-04F**	15 16	112
80	97	89	1.00	17.85	3.0	1.0			
90	110	79	0.85	15.82	2.9	0.9			
96	117	75	1.15	14.88	2.9	1.1			
107	131	67	1.30	13.33	2.9	1.2			
111	136	64	1.35	12.83	2.8	1.2			
115	140	62	1.10	12.46	2.7	1.1			
124	151	58	1.50	11.50	2.8	1.2			
128	155	56	1.50	11.20	2.7	1.3			
142	173	50	1.65	10.04	2.7	1.3			
149	181	48	1.40	9.60	2.6	1.2			
174	212	41	1.85	8.22	2.5	1.4			
191	232	38	1.80	7.50	2.4	1.3			
194	236	37	2.05	7.36	2.4	1.4			
255	311	28	2.40	5.60	2.2	1.4			
296	360	24	2.75	4.83	2.1	1.4			
118	144	61	0.85	12.08	2.6	1.1	**CG002-11P-80-04F** **CF002-11P-80-04F**	14 15	110
137	167	52	0.90	10.42	2.4	1.0			
143	175	50	1.05	9.97	2.5	1.2			
161	196	45	1.15	8.90	2.4	1.3			
175	213	41	1.10	8.17	2.3	1.1			
208	253	34	1.45	6.88	2.2	1.3			
233	284	31	1.65	6.14	2.2	1.4			
297	362	24	1.65	4.81	2.0	1.3			
404	491	18	2.00	3.54	1.8	1.4			

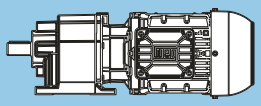
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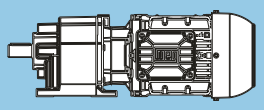
P_N = 1.1 kW									IE3
50 Hz 1.1 kW n_{50} min^{-1}	60 Hz 1.3 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
5.9	7.1	1779	2.55	246.43	44.1	24.9	**CG103-11P-90S/L-04E** **CF103-11P-90S/L-04E**	167 171	126
7.0	8.4	1504	3.00	208.33	44.5	25.3			
3.9	4.7	2697	1.70	246.43	42.2	23.8	**CG103-11P-100L-06D** **CF103-11P-100L-06D**	173 177	126
4.6	5.6	2280	2.00	208.33	43.2	24.3			
5.3	6.5	1973	2.30	180.35	43.8	24.7			
6.0	7.3	1748	2.60	159.72	44.2	25.0			
6.9	8.4	1512	3.00	138.17	44.5	25.3			
4.7	5.7	2215	1.40	306.73	27.3	26.7	**CG093-11P-90S/L-04E** **CF093-11P-90S/L-04E**	124 122	124
6.0	7.2	1753	1.75	242.77	29.1	27.4			
6.9	8.3	1530	2.00	211.98	29.8	27.7			
7.8	9.4	1353	2.25	187.34	30.3	28.0			
9.2	11	1144	2.65	158.42	30.7	28.3			
9.4	11	1114	2.70	154.24	30.8	28.4			
3.1	3.8	3356	0.90	306.73	20.0	25.0	**CG093-11P-100L-06D** **CF093-11P-100L-06D**	130 128	124
4.0	4.8	2657	1.15	242.77	25.1	26.1			
4.5	5.5	2320	1.30	211.98	26.9	26.6			
5.1	6.2	2050	1.50	187.34	28.0	27.0			
6.1	7.4	1734	1.75	158.42	29.2	27.4			
6.2	7.6	1688	1.80	154.24	29.3	27.5			
7.0	8.6	1490	2.05	136.18	29.9	27.8			
7.9	9.5	1336	2.25	122.08	30.3	28.0			
8.1	9.8	1301	2.35	118.88	30.4	28.1			
9.0	11	1166	2.60	106.60	30.7	28.3			
9.4	11	1115	2.70	101.85	30.8	28.4			
10	12	1031	2.95	94.21	30.9	28.5			
5.1	6.2	2057	0.80	284.84	16.4	18.3	**CG083-11P-90S/L-04E** **CF083-11P-90S/L-04E**	72 76	122
6.1	7.4	1725	0.90	238.89	19.2	19.0			
7.8	9.4	1354	1.15	187.48	21.4	19.7			
10	12	1045	1.50	144.69	22.7	20.4			
12	15	864	1.80	119.68	23.3	20.7			
14	17	735	2.15	101.80	23.6	21.0			
16	20	637	2.45	88.23	23.9	21.2			
20	24	538	2.90	74.50	24.1	21.4			
5.1	6.2	2052	0.80	187.48	16.4	18.3	**CG083-11P-100L-06D** **CF083-11P-100L-06D**	78 82	122
6.6	8.1	1583	1.00	144.69	20.1	19.3			
8.0	9.7	1310	1.20	119.68	21.6	19.8			
9.4	11	1114	1.40	101.80	22.4	20.2			
11	13	965	1.65	88.23	23.0	20.5			
13	16	815	1.95	74.50	23.4	20.8			
16	19	672	2.35	61.37	23.8	21.1			
18	22	593	2.65	54.18	24.0	21.3	**CG082-11P-100L-06D** **CF082-11P-100L-06D**	77 81	122
11	13	992	0.85	137.38	8.7	12.7	**CG073-11P-90S/L-04E** **CF073-11P-90S/L-04E**	48 52	120
12	14	902	0.95	124.97	9.9	12.6			
14	17	754	1.10	104.50	11.3	13.3			
15	19	686	1.20	95.06	11.8	13.3			
17	20	622	1.35	86.17	12.2	13.7			
19	22	566	1.45	78.39	12.6	13.7			
21	25	510	1.65	70.68	12.9	14.0			
23	27	464	1.80	64.30	13.1	14.0			
24	29	434	1.90	60.06	13.2	14.2			
27	32	394	2.10	54.63	13.3	14.2			
29	36	357	2.35	49.38	13.5	14.4			
32	39	324	2.45	44.92	13.6	14.4			
37	45	283	2.75	39.17	13.7	14.6			
41	49	257	2.85	35.63	13.7	14.6			

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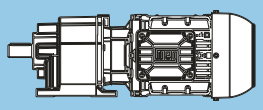
P_N = 1.1 kW									IE3
50 Hz 1.1 kW	60 Hz 1.3 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
10	12	1040	0.80	95.06	8.0	12.2	**CG073-11P-100L-06D** **CF073-11P-100L-06D**	54 58	120
11	14	943	0.90	86.17	9.4	12.8			
12	15	858	1.00	78.39	10.3	12.8			
14	16	773	1.10	70.68	11.1	13.3			
15	18	704	1.20	64.30	11.7	13.2			
16	19	657	1.25	60.06	12.0	13.6			
18	21	598	1.40	54.63	12.4	13.6			
19	24	540	1.55	49.38	12.7	13.9			
21	26	492	1.65	44.92	12.9	13.9			
25	30	429	1.80	39.17	13.2	14.2			
27	33	390	1.90	35.63	13.4	14.2			
37	45	281	2.95	38.92	13.7	14.6	**CG072-11P-90S/L-04E** **CF072-11P-90S/L-04E**	47 51	120
25	30	426	1.95	38.92	13.2	14.2	**CG072-11P-100L-06D** **CF072-11P-100L-06D**	53 57	120
27	33	387	2.15	35.41	13.4	14.2			
31	38	334	2.50	30.55	13.5	14.5			
35	42	304	2.70	27.79	13.6	14.5			
13	16	785	0.80	108.67	5.3	5.8	**CG063-11P-90S/L-04E** **CF063-11P-90S/L-04E**	31 36	118
16	20	646	0.95	89.54	7.7	6.2			
18	21	593	1.05	82.10	8.4	6.4			
20	24	529	1.15	73.28	9.0	6.6			
22	26	485	1.25	67.19	9.4	6.7			
24	30	429	1.40	59.42	9.8	6.9			
27	32	393	1.55	54.49	10.1	6.9			
29	35	359	1.70	49.74	10.3	7.1			
32	39	329	1.85	45.61	10.4	7.1			
14	17	735	0.85	67.19	6.3	5.9	**CG063-11P-100L-06D** **CF063-11P-100L-06D**	37 42	118
16	20	650	0.95	59.42	7.7	6.2			
18	21	596	1.05	54.49	8.3	6.4			
19	23	544	1.15	49.74	8.9	6.5			
21	26	499	1.25	45.61	9.3	6.6			
24	29	433	1.00	60.00	9.8	6.8	**CG062-11P-90S/L-04E** **CF062-11P-90S/L-04E**	31 36	118
26	32	397	1.00	55.02	10.1	6.9			
31	37	343	1.75	47.55	10.4	7.1			
33	40	315	1.80	43.60	10.5	7.2			
39	48	267	2.30	36.92	10.7	7.3			
43	52	244	2.50	33.86	10.8	7.4			
44	53	241	1.00	33.43	10.8	7.1			
48	58	219	2.75	30.30	10.9	7.5			
52	63	201	3.00	27.78	10.8	7.5			
55	66	191	1.80	26.49	10.6	7.3			
71	86	149	2.55	20.57	9.8	7.5			
20	24	520	1.20	47.55	9.1	6.6	**CG062-11P-100L-06D** **CF062-11P-100L-06D**	37 42	118
22	27	477	1.20	43.60	9.5	6.7			
26	32	404	1.50	36.92	10.0	6.9			
28	34	370	1.65	33.86	10.2	7.0			
32	38	332	1.85	30.30	10.4	7.1			
35	42	304	2.00	27.78	10.6	7.2			
36	44	290	1.20	26.49	10.6	6.9			
41	50	257	2.35	23.46	10.8	7.4			
45	54	235	2.55	21.51	10.8	7.4			
47	57	225	1.70	20.57	10.9	7.2			
57	69	185	2.05	16.88	10.4	7.3			
73	89	143	2.65	13.07	9.7	7.5			
21	25	511	0.80	70.71	1.6	5.7	**CG053-11P-90S/L-04E** **CF053-11P-90S/L-04E**	27 32	116
24	29	445	0.90	61.63	4.0	6.1			
26	31	404	1.00	56.02	4.9	6.2			
30	36	355	1.15	49.20	5.7	6.5			
33	39	323	1.25	44.73	6.1	6.6			

Legend see page 29

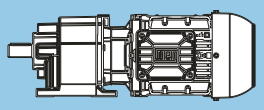
P_N = 1.1 kW									IE3
50 Hz	60 Hz				at 50 Hz				
1.1 kW	1.3 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
30	37	347	1.00	48.13	5.8	6.5	**CG052-11P-90S/L-04E** **CF052-11P-90S/L-04E**	26 31	116
33	40	316	1.00	43.75	6.1	6.6			
38	46	274	1.50	38.00	6.6	6.9			
42	51	249	1.65	34.55	6.8	6.9			
49	60	213	1.90	29.46	7.0	7.1			
50	60	211	1.00	29.17	7.1	6.9			
54	66	193	2.10	26.79	7.2	7.2			
60	73	174	2.30	24.12	7.3	7.3			
63	76	166	1.65	23.03	7.3	7.1			
66	80	158	2.55	21.92	7.4	7.4			
78	95	134	3.00	18.56	7.5	7.5			
81	99	129	2.10	17.86	7.3	7.4			
100	120	106	2.55	14.62	6.9	7.5			
25	31	416	1.00	38.00	4.7	6.2	**CG052-11P-100L-06D** **CF052-11P-100L-06D**	32 37	116
28	34	378	1.10	34.55	5.3	6.4			
33	40	322	1.25	29.46	6.1	6.6			
36	43	293	1.40	26.79	6.4	6.7			
40	48	264	1.55	24.12	6.7	6.9			
42	51	252	1.10	23.03	6.8	6.7			
44	53	240	1.70	21.92	6.9	7.0			
52	63	203	2.00	18.56	7.1	7.2			
54	65	195	1.40	17.86	7.2	7.0			
57	69	185	2.20	16.88	7.2	7.2			
66	80	160	1.70	14.62	7.3	7.2			
68	83	153	2.65	14.03	7.4	7.4			
75	91	140	2.90	12.75	7.4	7.5			
85	104	123	2.20	11.25	7.2	7.4			
113	137	93	2.90	8.50	6.7	7.6			
42	50	252	0.80	34.88	3.9	3.0	**CG032-11P-90S/L-04E** **CF032-11P-90S/L-04E**	22 24	114
46	56	229	0.90	31.67	4.3	3.1			
53	64	200	1.00	27.71	4.6	3.4			
58	70	182	1.15	25.17	4.5	3.4			
68	82	155	1.30	21.40	4.4	3.6			
74	90	141	0.95	19.54	4.2	3.5			
75	91	140	1.45	19.44	4.3	3.7			
85	103	123	1.65	17.09	4.2	3.8			
94	113	112	1.80	15.52	4.1	3.9			
113	136	93	2.10	12.92	3.9	4.0			
121	147	87	1.55	11.99	3.8	3.9			
124	150	85	2.35	11.73	3.8	4.1			
148	179	71	2.55	9.82	3.7	4.2			
152	184	69	1.90	9.57	3.6	4.1			
163	197	64	2.85	8.92	3.6	4.2			
201	243	52	2.50	7.24	3.3	4.2			
45	54	234	0.90	21.40	4.2	3.1	**CG032-11P-100L-06D** **CF032-11P-100L-06D**	28 30	114
49	60	213	0.95	19.44	4.6	3.3			
56	68	187	1.10	17.09	4.6	3.4			
62	75	170	1.20	15.52	4.4	3.5			
74	90	141	1.40	12.92	4.3	3.7			
80	97	131	1.00	11.99	4.2	3.6			
82	99	128	1.55	11.73	4.2	3.8			
98	119	107	1.70	9.82	4.1	3.9			
100	122	105	1.25	9.57	4.0	3.8			
108	131	98	1.90	8.92	4.0	4.0			
126	153	84	2.05	7.64	3.8	4.1			
133	161	79	1.65	7.24	3.7	4.0			
138	168	76	2.30	6.94	3.7	4.1			
161	195	65	2.45	5.96	3.6	4.2			
175	212	60	2.20	5.50	3.5	4.1			
177	215	59	2.70	5.41	3.5	4.2			
224	272	47	2.80	4.28	3.3	4.2			

P_N = 1.1 kW									IE3
50 Hz 1.1 kW n_{50} min^{-1}	60 Hz 1.3 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
98	118	107	0.80	14.88	2.7	0.9	**CG012-11P-90S/L-04E** **CF012-11P-90S/L-04E**	20 21	112
109	132	96	0.90	13.33	2.7	1.0			
113	137	93	0.95	12.83	2.6	1.0			
127	153	83	1.05	11.50	2.6	1.1			
130	157	81	1.05	11.20	2.6	1.1			
145	175	72	1.15	10.04	2.5	1.2			
152	183	69	1.00	9.60	2.4	1.0			
177	214	59	1.30	8.22	2.4	1.2			
194	235	54	1.25	7.50	2.3	1.1			
198	239	53	1.40	7.36	2.3	1.3			
260	314	40	1.65	5.60	2.1	1.3			
301	364	35	1.90	4.83	2.1	1.3			
345	417	30	2.20	4.22	2.0	1.4			
470	569	22	2.85	3.09	1.8	1.4			

Legend see page 29

P_N = 1.5 kW									IE3
50 Hz 1.5 kW	60 Hz 1.8 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
5.9	7.1	2435	1.85	246.43	42.9	24.1			
7.0	8.4	2058	2.20	208.33	43.6	24.6	**CG103-11P-90S/L-04F**	168	126
8.0	9.7	1782	2.55	180.35	44.1	24.9	**CF103-11P-90S/L-04F**	172	
9.1	11	1578	2.90	159.72	44.4	25.2			
4.7	5.7	3030	1.00	306.73	22.7	25.5			
6.0	7.2	2398	1.30	242.77	26.5	26.5			
6.8	8.3	2094	1.45	211.98	27.9	26.9			
7.7	9.4	1851	1.65	187.34	28.8	27.3			
9.2	11	1565	1.95	158.42	29.7	27.7	**CG093-11P-90S/L-04F**	126	124
9.4	11	1524	2.00	154.24	29.8	27.7	**CF093-11P-90S/L-04F**	124	
11	13	1345	2.25	136.18	30.3	28.0			
12	15	1174	2.60	118.88	30.7	28.3			
14	17	1006	3.00	101.85	31.0	28.5			
7.7	9.4	1852	0.85	187.48	18.2	18.7			
10	12	1429	1.10	144.69	21.0	19.6			
12	15	1182	1.35	119.68	22.2	20.1			
14	17	1006	1.55	101.80	22.8	20.4	**CG083-11P-90S/L-04F**	73	122
16	20	872	1.80	88.23	23.3	20.7	**CF083-11P-90S/L-04F**	77	
19	24	736	2.15	74.50	23.6	21.0			
24	29	606	2.60	61.37	23.9	21.3			
27	32	535	2.90	54.18	24.1	21.4	**CG082-11P-90S/L-04F**	72	122
							CF082-11P-90S/L-04F	76	
14	17	1032	0.80	104.50	8.1	12.5			
15	18	939	0.90	95.06	9.4	12.5			
17	20	851	1.00	86.17	10.4	13.0			
18	22	774	1.10	78.39	11.1	13.0			
21	25	698	1.20	70.68	11.7	13.5			
23	27	635	1.30	64.30	12.1	13.5	**CG073-11P-90S/L-04F**	49	120
24	29	593	1.40	60.06	12.4	13.8	**CF073-11P-90S/L-04F**	53	
27	32	540	1.55	54.63	12.7	13.8			
29	36	488	1.70	49.38	13.0	14.1			
32	39	444	1.80	44.92	13.2	14.0			
37	45	387	2.00	39.17	13.4	14.3			
41	49	352	2.10	35.63	13.5	14.3			
37	45	385	2.15	38.92	13.4	14.3			
41	50	350	2.35	35.41	13.5	14.3	**CG072-11P-90S/L-04F**	48	120
47	57	302	2.75	30.55	13.6	14.6	**CF072-11P-90S/L-04F**	52	
52	63	275	3.00	27.79	13.7	14.6			
20	24	724	0.85	73.28	6.5	6.0			
22	26	664	0.95	67.19	7.5	6.2			
24	30	587	1.05	59.42	8.4	6.4	**CG063-11P-90S/L-04F**	33	118
27	32	538	1.15	54.49	8.9	6.5	**CF063-11P-90S/L-04F**	38	
29	35	491	1.25	49.74	9.4	6.7			
32	38	451	1.35	45.61	9.7	6.8			
30	37	470	1.30	47.55	9.5	6.7			
33	40	431	1.35	43.60	9.8	6.8			
39	48	365	1.65	36.92	10.3	7.0			
43	52	334	1.80	33.86	10.4	7.1			
48	58	299	2.05	30.30	10.6	7.2			
52	63	274	2.20	27.78	10.5	7.3	**CG062-11P-90S/L-04F**	33	118
55	66	262	1.35	26.49	10.3	7.0	**CF062-11P-90S/L-04F**	38	
62	75	232	2.60	23.46	10.0	7.4			
67	82	213	2.85	21.51	9.8	7.5			
70	85	203	1.90	20.57	9.6	7.3			
86	104	167	2.30	16.88	9.1	7.4			
111	134	129	2.95	13.07	8.4	7.6			
29	36	486	0.85	49.20	2.8	5.9	**CG053-11P-90S/L-04F**	28	116
32	39	442	0.95	44.73	4.1	6.1	**CF053-11P-90S/L-04F**	33	

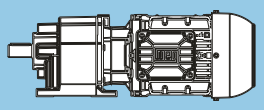
Legend see page 29

P_N = 1.5 kW									IE3
50 Hz 1.5 kW	60 Hz 1.8 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
38	46	375	1.10	38.00	5.4	6.4	**CG052-11P-90S/L-04F** **CF052-11P-90S/L-04F**	27 32	116
42	51	341	1.20	34.55	5.8	6.5			
49	60	291	1.40	29.46	6.4	6.8			
54	66	265	1.55	26.79	6.7	6.9			
60	73	238	1.70	24.12	6.9	7.0			
63	76	228	1.20	23.03	6.9	6.8			
66	80	217	1.85	21.92	7.0	7.1			
78	95	183	2.20	18.56	7.2	7.3			
81	98	176	1.55	17.86	7.1	7.1			
86	104	167	2.40	16.88	7.0	7.3			
99	120	144	1.85	14.62	6.7	7.3			
103	125	139	2.90	14.03	6.7	7.5			
129	156	111	2.45	11.25	6.3	7.5			
58	70	249	0.85	25.17	4.0	3.0	**CG032-11P-90S/L-04F** **CF032-11P-90S/L-04F**	23 25	114
68	82	211	0.95	21.40	4.1	3.3			
75	90	192	1.05	19.44	4.0	3.4			
85	103	169	1.20	17.09	3.9	3.5			
93	113	153	1.35	15.52	3.9	3.6			
112	136	128	1.55	12.92	3.7	3.8			
121	146	118	1.10	11.99	3.6	3.7			
124	150	116	1.75	11.73	3.6	3.9			
148	179	97	1.90	9.82	3.5	4.0			
151	183	95	1.40	9.57	3.4	3.9			
163	197	88	2.10	8.92	3.4	4.0			
190	230	75	2.25	7.64	3.3	4.1			
200	243	71	1.85	7.24	3.2	4.1			
209	253	69	2.50	6.94	3.2	4.2			
243	294	59	2.70	5.96	3.1	4.2			
264	319	54	2.40	5.50	3.0	4.2			
268	324	53	3.00	5.41	3.0	4.3			
129	157	111	0.80	11.20	2.4	0.9	**CG012-11P-90S/L-04F** **CF012-11P-90S/L-04F**	21 22	112
144	175	99	0.85	10.04	2.3	1.0			
176	214	81	0.95	8.22	2.3	1.1			
193	234	74	0.90	7.50	2.1	1.0			
197	238	73	1.05	7.36	2.2	1.2			
259	313	55	1.20	5.60	2.0	1.1			
300	363	48	1.40	4.83	2.0	1.2			
344	416	42	1.60	4.22	1.9	1.3			
469	567	31	2.10	3.09	1.8	1.4			

Legend see page 29

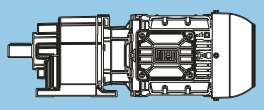
P_N = 2.2 kW									IE3
50 Hz	60 Hz				at 50 Hz				
2.2 kW	2.6 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
5.8	7.1	3608	1.25	246.43	39.4	22.6			
6.9	8.4	3050	1.50	208.33	41.2	23.3			
8.0	9.7	2640	1.75	180.35	42.4	23.8			
9.0	11	2339	1.95	159.72	43.1	24.2	**CG103-11P-100L-04E**	178	126
10	13	2023	2.25	138.17	43.7	24.6	**CF103-11P-100L-04E**	182	
11	13	1951	2.35	133.24	43.8	24.7			
12	15	1721	2.65	117.56	44.2	25.0			
14	17	1510	3.00	103.15	44.5	25.3			
5.9	7.2	3554	0.85	242.77	18.0	24.7			
6.8	8.2	3104	1.00	211.98	22.1	25.4			
7.7	9.3	2743	1.10	187.34	24.6	25.9			
9.1	11	2320	1.30	158.42	26.9	26.6			
9.3	11	2258	1.35	154.24	27.1	26.7			
11	13	1994	1.55	136.18	28.3	27.1			
12	15	1741	1.75	118.88	29.2	27.4	**CG093-11P-100L-04E**	136	124
13	16	1561	1.95	106.60	29.7	27.7	**CF093-11P-100L-04E**	134	
14	17	1491	2.05	101.85	29.9	27.8			
15	19	1379	2.20	94.21	30.2	28.0			
17	20	1269	2.40	86.68	30.5	28.1			
18	22	1166	2.60	79.66	30.7	28.3			
20	24	1065	2.85	72.72	30.9	28.4			
21	25	1003	3.00	68.48	31.0	28.5			
12	15	1752	0.90	119.68	19.0	18.9			
14	17	1490	1.05	101.80	20.7	19.5			
16	20	1292	1.20	88.23	21.7	19.9	**CG083-11P-100L-04E**	83	122
19	23	1091	1.45	74.50	22.5	20.3	**CF083-11P-100L-04E**	87	
20	24	1052	1.50	71.84	22.7	20.4			
23	28	899	1.75	61.37	23.2	20.7			
26	32	793	2.00	54.18	23.5	20.9			
33	41	628	2.50	42.88	23.9	21.2	**CG082-11P-100L-04E**	82	122
38	47	548	2.85	37.44	23.4	21.4	**CF082-11P-100L-04E**	86	
46	56	457	2.45	31.23	22.0	21.4			
20	25	1035	0.80	70.68	8.1	12.5			
22	27	941	0.90	64.30	9.4	12.5			
24	29	879	0.95	60.06	10.1	13.0			
26	32	800	1.05	54.63	10.9	13.0			
29	35	723	1.15	49.38	11.5	13.4	**CG073-11P-100L-04E**	59	120
30	37	697	1.20	47.62	11.7	13.5	**CF073-11P-100L-04E**	63	
32	39	658	1.25	44.92	12.0	13.4			
33	40	634	1.25	43.32	12.2	13.5			
37	45	573	1.35	39.17	12.5	13.8			
40	49	522	1.40	35.63	12.8	13.8			
37	45	570	1.45	38.92	12.5	13.8			
41	49	518	1.60	35.41	12.8	13.8			
47	57	447	1.85	30.55	13.1	14.2			
52	63	407	2.05	27.79	13.3	14.2			
61	74	345	2.35	23.58	13.5	14.4			
67	81	314	2.50	21.45	13.6	14.4	**CG072-11P-100L-04E**	58	120
70	85	302	2.30	20.65	13.6	14.1	**CF072-11P-100L-04E**	62	
74	89	286	2.70	19.50	13.7	14.6			
81	98	260	2.85	17.74	13.7	14.6			
87	105	243	3.00	16.59	13.8	14.7			
89	108	237	2.85	16.20	13.8	14.4			
26	32	798	0.80	54.49	4.9	5.8			
29	35	728	0.85	49.74	6.4	6.0	**CG063-11P-100L-04E**	43	118
31	38	668	0.90	45.61	7.4	6.1	**CF063-11P-100L-04E**	48	

Legend see page 29

P_N = 2.2 kW									IE3
50 Hz 2.2 kW n_{50} min^{-1}	60 Hz 2.6 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
39	47	541	1.15	36.92	8.9	6.5	**CG062-11P-100L-04E** **CF062-11P-100L-04E**	42 47	118
42	52	496	1.25	33.86	9.3	6.6			
47	58	444	1.40	30.30	9.7	6.8			
52	63	407	1.50	27.78	10.0	6.9			
61	74	344	1.75	23.46	9.7	7.1			
67	81	315	1.95	21.51	9.5	7.2			
70	85	301	1.30	20.57	9.3	6.8			
80	98	261	2.30	17.85	9.1	7.3			
85	103	247	1.55	16.88	8.8	7.1			
88	107	240	2.55	16.36	8.8	7.4			
98	119	215	2.80	14.72	8.6	7.5			
110	133	191	2.00	13.07	8.2	7.3			
144	176	146	2.60	9.94	7.6	7.5			
49	59	431	0.95	29.46	4.3	6.1	**CG052-11P-100L-04E** **CF052-11P-100L-04E**	37 42	116
54	65	392	1.05	26.79	5.1	6.3			
60	72	353	1.15	24.12	5.7	6.5			
65	80	321	1.25	21.92	6.1	6.6			
77	94	272	1.50	18.56	6.6	6.9			
80	98	261	1.05	17.86	6.7	6.6			
85	103	247	1.65	16.88	6.7	7.0			
98	119	214	1.25	14.62	6.4	6.9			
102	124	205	1.95	14.03	6.5	7.2			
113	137	187	2.15	12.75	6.3	7.2			
125	152	168	2.40	11.48	6.1	7.3			
128	155	165	1.65	11.25	6.0	7.2			
138	167	153	2.65	10.43	6.0	7.4			
154	187	136	2.85	9.31	5.8	7.5			
169	205	124	2.15	8.50	5.6	7.4			
170	206	124	2.95	8.46	5.6	7.5			
206	251	102	2.65	6.96	5.3	7.5			
84	102	250	0.80	17.09	3.5	3.0	**CG032-11P-100L-04E** **CF032-11P-100L-04E**	33 35	114
92	112	227	0.90	15.52	3.4	3.2			
111	135	189	1.05	12.92	3.4	3.4			
122	149	172	1.20	11.73	3.3	3.5			
146	178	144	1.30	9.82	3.3	3.7			
150	182	140	0.95	9.57	3.1	3.5			
161	196	131	1.45	8.92	3.2	3.8			
188	228	112	1.55	7.64	3.1	3.9			
198	241	106	1.25	7.24	3.0	3.8			
207	252	102	1.70	6.94	3.0	4.0			
241	293	87	1.85	5.96	3.0	4.1			
261	317	81	1.65	5.50	2.9	4.0			
265	322	79	2.05	5.41	2.9	4.1			
335	408	63	2.10	4.28	2.7	4.1			
430	522	49	2.70	3.34	2.5	4.2			

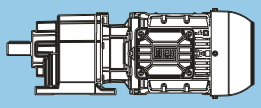
Legend see page 29

P_N = 3.0 kW									IE3
50 Hz	60 Hz				at 50 Hz				
3.0 kW	3.6 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
5.8	7.1	4903	0.95	246.43	33.3	21.0	**CG103-11P-L100L-04F** **CF103-11P-L100L-04F**	185 189	126
6.9	8.4	4145	1.10	208.33	37.2	21.9			
8.0	9.6	3588	1.30	180.35	39.5	22.6			
9.0	11	3178	1.45	159.72	40.9	23.2			
10	13	2749	1.65	138.17	42.1	23.7			
11	13	2651	1.70	133.24	42.3	23.8			
12	15	2339	1.95	117.56	43.1	24.2			
14	17	1990	2.30	100.05	43.8	24.7			
16	19	1777	2.55	89.30	44.1	24.9			
17	20	1717	2.65	86.31	43.6	25.0			
18	22	1573	2.90	79.08	42.6	25.2			
7.7	9.3	3727	0.85	187.34	16.0	24.5	**CG093-11P-L100L-04F** **CF093-11P-L100L-04F**	142 140	124
9.1	11	3152	1.00	158.42	21.7	25.3			
9.3	11	3069	1.00	154.24	22.4	25.5			
11	13	2709	1.15	136.18	24.8	26.0			
12	15	2365	1.30	118.88	26.6	26.5			
14	17	2026	1.50	101.85	28.1	27.0			
15	18	1874	1.65	94.21	28.7	27.2			
17	20	1725	1.75	86.68	29.2	27.5			
18	22	1585	1.90	79.66	29.6	27.7			
20	24	1447	2.10	72.72	30.0	27.9			
21	25	1362	2.25	68.48	30.2	28.0			
23	28	1219	2.50	61.28	30.6	28.2			
24	29	1189	2.55	59.78	30.6	28.2			
28	34	1019	2.95	51.22	31.0	28.5			
14	17	2025	0.80	101.80	16.7	18.4	**CG083-11P-L100L-04F** **CF083-11P-L100L-04F**	90 94	122
16	20	1755	0.90	88.23	19.0	18.9			
19	23	1482	1.05	74.50	20.7	19.5			
20	24	1429	1.10	71.84	21.0	19.6			
23	28	1221	1.30	61.37	22.0	20.0			
27	32	1078	1.45	54.18	22.6	20.3	**CG082-11P-L100L-04F** **CF082-11P-L100L-04F**	89 93	122
34	41	853	1.85	42.88	23.3	20.8			
38	46	745	2.10	37.44	23.6	21.0			
44	53	658	2.40	33.09	22.6	21.2			
46	56	621	1.80	31.23	22.3	21.0			
51	62	557	2.80	27.98	21.4	21.4			
58	70	492	2.30	24.72	20.5	21.3			
26	32	1087	0.80	54.63	7.2	12.1	**CG073-11P-L100L-04F** **CF073-11P-L100L-04F**	66 70	120
29	35	982	0.85	49.38	8.9	12.7			
30	37	947	0.90	47.62	9.3	12.8			
32	39	894	0.90	44.92	10.0	12.7			
33	40	862	0.95	43.32	10.3	12.8			
37	44	779	1.00	39.17	11.1	13.2			
40	49	709	1.05	35.63	11.6	13.2			
37	45	774	1.10	38.92	11.1	13.3	**CG072-11P-L100L-04F** **CF072-11P-L100L-04F**	65 69	120
41	49	704	1.20	35.41	11.7	13.2			
47	57	608	1.35	30.55	12.3	13.7			
52	63	553	1.50	27.79	12.6	13.7			
61	74	469	1.75	23.58	13.0	14.1			
67	81	427	1.85	21.45	13.2	14.1			
70	84	411	1.70	20.65	13.3	13.7			
74	89	388	2.00	19.50	13.4	14.3			
81	98	353	2.10	17.74	13.5	14.3			
87	105	330	2.20	16.59	13.6	14.5			
89	107	322	2.10	16.20	13.4	14.0			
95	115	300	2.35	15.09	13.6	14.5			
100	121	286	2.45	14.38	13.7	14.6			
110	133	260	2.60	13.08	13.3	14.6			
115	139	249	2.50	12.51	13.1	14.3			
119	143	242	2.75	12.14	12.9	14.7			
123	149	233	2.80	11.71	12.8	14.8			
130	158	220	2.90	11.04	12.5	14.7			
135	163	212	3.00	10.65	12.3	14.8			
139	168	206	2.85	10.34	12.3	14.5			

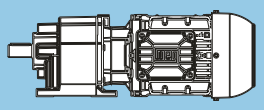
P_N = 3.0 kW									IE3
50 Hz	60 Hz				at 50 Hz				
3.0 kW	3.6 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
39	47	735	0.85	36.92	6.3	6.0	**CG062-11P-L100L-04F** **CF062-11P-L100L-04F**	49 54	118
43	51	674	0.90	33.86	7.3	6.1			
48	57	603	1.00	30.30	8.3	6.4			
52	63	553	1.10	27.78	8.8	6.5			
61	74	467	1.30	23.46	9.3	6.7			
67	81	428	1.45	21.51	9.1	6.8			
70	85	409	0.95	20.57	8.9	6.4			
81	98	355	1.70	17.85	8.7	7.1			
85	103	336	1.15	16.88	8.5	6.7			
88	106	326	1.85	16.36	8.5	7.1			
98	118	293	2.05	14.72	8.3	7.3			
107	129	268	2.25	13.49	8.1	7.3			
110	133	260	1.45	13.07	8.0	7.0			
119	144	240	2.50	12.07	7.9	7.4			
130	157	220	2.75	11.07	7.7	7.5			
140	170	204	2.95	10.26	7.6	7.5			
145	175	198	1.95	9.94	7.4	7.3			
176	212	163	2.35	8.20	7.0	7.4			
214	259	134	2.85	6.73	6.7	7.5			
54	65	533	0.80	26.79	**	5.6	**CG052-11P-L100L-04F** **CF052-11P-L100L-04F**	44 49	116
60	72	480	0.85	24.12	3.0	5.9			
66	79	436	0.95	21.92	4.2	6.1			
78	94	369	1.10	18.56	5.5	6.4			
81	97	355	0.80	17.86	5.7	6.1			
85	103	336	1.20	16.88	5.9	6.6			
99	119	291	0.95	14.62	6.0	6.4			
103	124	279	1.45	14.03	6.1	6.8			
113	136	254	1.60	12.75	6.0	6.9			
125	152	228	1.80	11.48	5.9	7.1			
128	155	224	1.20	11.25	5.8	6.8			
138	167	208	1.95	10.43	5.7	7.1			
155	187	185	2.10	9.31	5.6	7.3			
169	205	169	1.60	8.50	5.4	7.1			
170	206	168	2.20	8.46	5.5	7.3			
185	223	155	2.25	7.79	5.4	7.4			
203	246	141	2.35	7.08	5.2	7.5			
207	250	138	1.95	6.96	5.1	7.3			
228	276	126	2.45	6.31	5.1	7.5			
236	286	121	2.50	6.09	5.0	7.5			
251	303	114	2.55	5.74	4.9	7.6			
255	308	112	2.35	5.64	4.9	7.5			
260	314	110	2.60	5.54	4.9	7.6			
305	368	94	2.45	4.72	4.7	7.6			
376	455	76	2.65	3.83	4.4	7.7			
390	471	73	2.70	3.69	4.3	7.7			
111	135	257	0.80	12.92	3.0	3.0	**CG032-11P-L100L-04F** **CF032-11P-L100L-04F**	40 42	114
123	148	233	0.85	11.73	3.0	3.1			
147	177	195	0.95	9.82	2.9	3.4			
162	195	177	1.05	8.92	2.9	3.5			
189	228	152	1.15	7.64	2.9	3.7			
199	240	144	0.95	7.24	2.8	3.5			
208	251	138	1.25	6.94	2.8	3.7			
242	292	119	1.35	5.96	2.8	3.9			
262	316	109	1.20	5.50	2.7	3.8			
266	321	108	1.50	5.41	2.7	3.9			
337	407	85	1.55	4.28	2.5	4.0			
431	521	66	2.00	3.34	2.4	4.1			

Legend see page 29

*** ... on request*

P_N = 4.0 kW									IE3
50 Hz 4.0 kW n_{50} min^{-1}	60 Hz 4.8 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
7.0	8.5	5450	2.40	206.88	109.0	22.0	**CG143-11P-112M-04E** **CF143-11P-112M-04E**	436 454	130
8.0	9.7	4752	2.75	180.38	109.6	22.7			
8.3	10	4582	2.85	173.94	109.7	22.9			
7.1	8.6	5397	1.50	204.88	69.9	23.3	**CG133-11P-112M-04E** **CF133-11P-112M-04E**	289 291	128
8.0	9.7	4767	1.70	180.95	71.1	24.1			
9.2	11	4138	1.95	157.08	72.2	24.8			
9.6	12	3990	2.05	151.47	72.4	24.9			
11	13	3575	2.25	135.71	73.0	25.4			
12	15	3060	2.65	116.14	73.7	26.0			
14	17	2683	3.00	101.85	74.1	26.4			
7.0	8.4	5488	0.85	208.33	29.4	20.2	**CG103-11P-112M-04E** **CF103-11P-112M-04E**	186 190	126
8.0	9.7	4751	0.95	180.35	34.2	21.2			
9.1	11	4208	1.10	159.72	36.9	21.8			
10	13	3640	1.25	138.17	39.3	22.6			
11	13	3510	1.30	133.24	39.7	22.7			
12	15	3097	1.50	117.56	41.1	23.3			
14	18	2636	1.75	100.05	42.4	23.8			
16	20	2352	1.95	89.30	43.0	24.2			
17	20	2274	2.00	86.31	43.2	24.3			
18	22	2083	2.20	79.08	43.4	24.6			
21	26	1802	2.50	68.41	40.9	24.9			
22	27	1738	2.60	65.97	40.3	25.0			
25	30	1533	2.95	58.21	38.4	25.3			
11	13	3588	0.85	136.18	17.7	24.7	**CG093-11P-112M-04E** **CF093-11P-112M-04E**	143 141	124
12	15	3132	1.00	118.88	21.9	25.4			
14	17	2683	1.15	101.85	24.9	26.0			
15	19	2482	1.25	94.21	26.1	26.3			
17	20	2284	1.35	86.68	27.0	26.6			
18	22	2099	1.45	79.66	27.8	26.9			
20	24	1916	1.60	72.72	28.5	27.2			
21	26	1804	1.70	68.48	28.9	27.3			
24	29	1575	1.95	59.78	29.7	27.7			
28	34	1349	2.25	51.22	30.3	28.0			
29	36	1301	2.35	49.39	30.4	28.1			
33	40	1148	2.50	43.59	30.7	28.3			
40	48	963	2.80	36.57	28.9	28.6			
37	44	1043	2.85	39.60	29.7	28.5	**CG092-11P-112M-04E** **CF092-11P-112M-04E**	141 139	124
64	78	595	2.85	22.58	24.4	28.8			
19	24	1963	0.80	74.50	17.3	18.5	**CG083-11P-112M-04E** **CF083-11P-112M-04E**	91 95	122
20	24	1893	0.85	71.84	17.9	18.6			
24	29	1617	1.00	61.37	19.9	19.2			
27	32	1427	1.10	54.18	21.0	19.6	**CG082-11P-112M-04E** **CF082-11P-112M-04E**	90 94	122
34	41	1130	1.40	42.88	22.4	20.2			
39	47	986	1.60	37.44	22.9	20.5			
44	53	872	1.80	33.09	23.0	20.7			
46	56	823	1.40	31.23	22.7	20.5			
52	63	737	2.15	27.98	21.6	21.0			
59	71	651	1.75	24.72	20.7	20.9			
60	73	634	2.35	24.05	20.4	21.2			
67	81	569	2.35	21.58	19.7	21.1			
69	84	553	2.60	21.00	19.4	21.4			
76	92	503	2.60	19.08	18.8	21.3			
81	98	474	2.90	17.99	18.3	21.5			
84	101	457	2.95	17.35	18.1	21.6			
41	49	939	0.80	35.63	9.4	12.5	**CG073-11P-112M-04E** **CF073-11P-112M-04E**	67 71	120

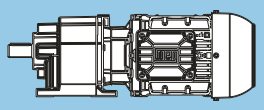
Legend see page 29

P_N = 4.0 kW									IE3
50 Hz 4.0 kW	60 Hz 4.8 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
37	45	1025	0.80	38.92	8.2	12.6	**CG072-11P-112M-04E** **CF072-11P-112M-04E**	66 70	120
41	50	933	0.90	35.41	9.5	12.5			
47	57	805	1.05	30.55	10.8	13.2			
52	63	732	1.15	27.79	11.3	13.2			
62	74	621	1.30	23.58	11.9	13.7			
68	82	565	1.40	21.45	12.0	13.7			
70	85	544	1.30	20.65	11.2	13.1			
74	90	514	1.50	19.50	12.3	14.0			
82	99	467	1.60	17.74	12.2	14.0			
87	106	437	1.65	16.59	12.4	14.2			
89	108	427	1.60	16.20	11.6	13.6			
96	116	398	1.80	15.09	12.3	14.2			
101	122	379	1.85	14.38	12.3	14.4			
111	134	345	1.95	13.08	12.2	14.3			
116	140	329	1.90	12.51	11.7	14.0			
119	145	320	2.05	12.14	12.3	14.5			
124	150	308	2.10	11.71	12.2	14.5			
131	159	291	2.20	11.04	12.1	14.5			
136	165	281	2.25	10.65	12.1	14.5			
140	170	272	2.15	10.34	11.6	14.2			
145	176	263	2.35	10.00	12.0	14.7			
159	193	240	2.55	9.10	11.8	14.7			
165	199	232	2.40	8.80	11.4	14.4			
190	230	201	2.65	7.63	11.1	14.5			
225	273	170	2.95	6.44	10.4	14.7			
48	58	798	0.80	30.30	4.9	5.8	**CG062-11P-112M-04E** **CF062-11P-112M-04E**	50 55	118
52	63	732	0.85	27.78	6.4	6.0			
62	75	618	1.00	23.46	8.1	6.3			
67	82	567	1.10	21.51	8.6	6.4			
81	98	470	1.30	17.85	8.3	6.7			
86	104	445	0.85	16.88	8.0	6.2			
89	107	431	1.40	16.36	8.1	6.8			
99	119	388	1.55	14.72	7.9	7.0			
107	130	355	1.70	13.49	7.8	7.1			
111	134	344	1.10	13.07	7.6	6.7			
120	145	318	1.90	12.07	7.6	7.2			
131	159	292	2.10	11.07	7.4	7.2			
141	171	270	2.25	10.26	7.3	7.3			
146	177	262	1.45	9.94	7.2	7.0			
154	187	248	2.40	9.40	7.1	7.4			
172	208	222	2.50	8.43	7.0	7.5			
177	214	216	1.75	8.20	6.8	7.2			
178	216	214	2.50	8.13	6.9	7.5			
188	227	204	2.55	7.73	6.8	7.5			
194	235	196	2.60	7.46	6.7	7.5			
216	261	177	2.15	6.73	6.5	7.4			
217	262	176	2.70	6.69	6.5	7.6			
236	286	162	2.75	6.13	6.4	7.6			
254	307	151	2.50	5.71	6.2	7.5			
309	374	124	2.65	4.70	5.9	7.6			
320	387	119	2.70	4.53	5.8	7.6			
389	471	98	2.85	3.73	5.5	7.7			

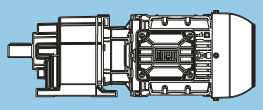
Legend see page 29

P_N = 4.0 kW									IE3
50 Hz 4.0 kW	60 Hz 4.8 kW				at 50 Hz			m	Dimension sheet see page
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		kg	
78	95	489	0.85	18.56	2.7	5.9			
86	104	445	0.90	16.88	4.0	6.0			
103	125	369	1.10	14.03	5.5	6.4			
114	138	336	1.20	12.75	5.6	6.6			
126	153	302	1.35	11.48	5.5	6.7			
129	156	296	0.95	11.25	5.4	6.4			
139	168	275	1.50	10.43	5.4	6.8			
156	189	245	1.60	9.31	5.3	7.0			
171	207	223	1.65	8.46	5.2	7.1			
186	225	205	1.70	7.79	5.1	7.2	**CG052-11P-112M-04E**	45	116
205	248	187	1.80	7.08	5.0	7.2	**CF052-11P-112M-04E**	50	
208	252	183	1.50	6.96	4.9	7.0			
230	278	166	1.85	6.31	4.9	7.3			
238	288	160	1.90	6.09	4.8	7.4			
253	306	151	1.95	5.74	4.8	7.4			
257	311	149	1.75	5.64	4.7	7.2			
262	317	146	1.95	5.54	4.7	7.4			
307	372	124	1.85	4.72	4.5	7.4			
379	459	101	2.00	3.83	4.3	7.5			
393	476	97	2.05	3.69	4.2	7.5			

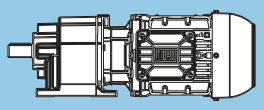
Legend see page 29

P_N = 5.5 kW									IE3
50 Hz 5.5 kW n_{50} min^{-1}	60 Hz 6.6 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
7.1	8.5	7417	1.80	206.88	106.9	20.1	**CG143-11P-132S-04E** **CF143-11P-132S-04E**	454 472	130
8.1	9.8	6467	2.05	180.38	108.0	21.0			
8.4	10	6236	2.10	173.94	108.2	21.2			
9.4	11	5571	2.35	155.38	108.9	21.9			
11	13	4797	2.75	133.80	109.5	22.7			
7.2	8.6	7345	1.10	204.88	64.9	21.1	**CG133-11P-132S-04E** **CF133-11P-132S-04E**	307 309	128
8.1	9.8	6488	1.25	180.95	67.3	22.1			
9.3	11	5632	1.45	157.08	69.4	23.1			
9.7	12	5431	1.50	151.47	69.8	23.3			
11	13	4866	1.65	135.71	71.0	23.9			
13	15	4164	1.95	116.14	72.2	24.7			
14	17	3652	2.20	101.85	72.9	25.3			
15	18	3596	2.25	100.31	73.0	25.4			
16	20	3225	2.50	89.96	73.5	25.8			
19	23	2700	3.00	75.30	74.0	26.4			
9.2	11	5727	0.80	159.72	27.5	19.9	**CG103-11P-132S-04E** **CF103-11P-132S-04E**	204 208	126
11	13	4954	0.95	138.17	33.0	20.9			
12	15	4215	1.10	117.56	36.9	21.8			
14	17	3698	1.25	103.15	39.1	22.5			
15	18	3587	1.30	100.05	39.5	22.6			
16	20	3202	1.45	89.30	40.8	23.1			
17	20	3094	1.50	86.31	41.1	23.3			
19	22	2835	1.60	79.08	41.9	23.6			
21	26	2453	1.85	68.41	41.9	24.1			
22	27	2365	1.95	65.97	41.2	24.2			
25	30	2087	2.20	58.21	39.2	24.5			
30	36	1776	2.55	49.54	36.6	24.9			
34	41	1532	2.95	42.74	34.9	25.3			
14	17	3652	0.85	101.85	16.9	24.6	**CG093-11P-132S-04E** **CF093-11P-132S-04E**	162 160	124
15	18	3521	0.90	98.21	18.4	24.8			
16	19	3378	0.90	94.21	19.8	25.0			
17	20	3108	1.00	86.68	22.1	25.4			
18	22	2856	1.10	79.66	23.9	25.8			
20	24	2607	1.20	72.72	25.4	26.1			
21	26	2455	1.25	68.48	26.2	26.4			
24	29	2197	1.40	61.28	27.4	26.8			
25	30	2143	1.40	59.78	27.7	26.8			
29	34	1836	1.65	51.22	28.8	27.3			
30	36	1771	1.70	49.39	29.1	27.4			
34	40	1563	1.85	43.59	29.7	27.7			
40	48	1311	2.05	36.57	29.5	28.1			
48	57	1105	2.30	30.81	27.5	28.4			
37	45	1420	2.10	39.60	30.1	27.9	**CG092-11P-132S-04E** **CF092-11P-132S-04E**	160 158	124
44	53	1200	2.50	33.48	28.4	28.2			
51	61	1039	2.90	28.98	26.9	28.5			
65	78	810	2.10	22.58	24.7	28.4			
77	92	684	2.50	19.09	23.2	28.6			
89	107	593	2.90	16.53	22.0	28.8			

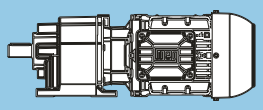
Legend see page 29

P_N = 5.5 kW									IE3
50 Hz 5.5 kW n_{50} min^{-1}	60 Hz 6.6 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
27	33	1942	0.80	54.18	17.5	18.5	**CG082-11P-132S-04E** **CF082-11P-132S-04E**	108 112	122
34	41	1537	1.05	42.88	20.4	19.4			
39	47	1342	1.20	37.44	21.4	19.8			
44	53	1186	1.35	33.09	22.2	20.1			
47	57	1120	1.00	31.23	22.4	19.7			
52	63	1003	1.55	27.98	22.1	20.5			
59	71	886	1.30	24.72	21.2	20.3			
61	73	862	1.75	24.05	20.8	20.7			
68	82	774	1.75	21.58	20.1	20.6			
70	84	753	1.90	21.00	19.7	21.0			
77	93	684	1.95	19.08	19.1	20.8			
81	98	645	2.10	17.99	18.6	21.2			
84	102	622	2.20	17.35	18.4	21.2			
91	109	578	2.25	16.13	18.0	21.1			
96	115	549	2.35	15.31	17.5	21.4			
106	127	497	2.50	13.87	17.0	21.3			
114	137	460	2.65	12.84	16.4	21.6			
121	146	434	2.75	12.10	16.1	21.4			
135	163	388	3.00	10.82	15.4	21.7			
53	64	996	0.85	27.79	7.1	12.4	**CG072-11P-132S-04E** **CF072-11P-132S-04E**	84 88	120
62	75	845	0.95	23.58	8.5	13.1			
68	82	769	1.05	21.45	8.8	13.0			
71	85	740	0.95	20.65	7.8	12.3			
75	91	699	1.10	19.50	9.4	13.5			
83	99	636	1.20	17.74	9.5	13.5			
88	106	595	1.25	16.59	9.9	13.8			
90	109	581	1.20	16.20	9.0	12.9			
97	117	541	1.30	15.09	10.0	13.7			
102	123	515	1.35	14.38	10.2	14.0			
112	135	469	1.45	13.08	10.3	14.0			
117	141	448	1.40	12.51	9.6	13.5			
121	145	435	1.55	12.14	10.4	14.2			
125	151	420	1.55	11.71	10.5	14.2			
133	160	396	1.65	11.04	10.4	14.2			
138	166	382	1.70	10.65	10.4	14.2			
142	171	371	1.60	10.34	9.9	13.8			
147	177	359	1.75	10.00	10.5	14.4			
161	194	326	1.85	9.10	10.5	14.4			
167	201	315	1.75	8.80	10.0	14.1			
192	231	273	1.95	7.63	10.0	14.2			
228	274	231	2.20	6.44	9.9	14.4			
236	284	223	2.25	6.21	9.9	14.5			
276	333	190	2.50	5.30	9.7	14.6			

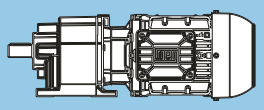
Legend see page 29

P_N = 5.5 kW									IE3
50 Hz 5.5 kW	60 Hz 6.6 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
68	82	771	0.80	21.51	5.6	5.8	**CG062-11P-132S-04E** **CF062-11P-132S-04E**	69 74	118
82	99	640	0.95	17.85	7.7	6.2			
90	108	587	1.05	16.36	7.5	6.4			
100	120	528	1.15	14.72	7.4	6.6			
109	131	484	1.25	13.49	7.3	6.7			
112	135	469	0.85	13.07	7.1	6.1			
121	146	433	1.40	12.07	7.2	6.8			
132	159	397	1.55	11.07	7.1	6.9			
143	172	368	1.65	10.26	6.9	7.0			
147	178	356	1.10	9.94	6.8	6.6			
156	188	337	1.75	9.40	6.8	7.1			
174	209	302	1.85	8.43	6.7	7.2			
179	215	294	1.30	8.20	6.5	6.9			
180	217	292	1.85	8.13	6.6	7.3			
189	228	277	1.90	7.73	6.5	7.3			
196	237	267	1.90	7.46	6.5	7.3			
218	262	241	1.60	6.73	6.2	7.1			
219	264	240	2.00	6.69	6.3	7.4			
239	288	220	2.05	6.13	6.2	7.5			
256	309	205	1.85	5.71	6.0	7.2			
312	376	168	1.95	4.70	5.7	7.4			
323	390	162	2.00	4.53	5.6	7.4			
393	474	134	2.10	3.73	5.4	7.5			
104	126	503	0.80	14.03	2.1	5.8	**CG052-11P-132S-04E** **CF052-11P-132S-04E**	63 68	116
115	138	457	0.90	12.75	3.7	6.0			
128	154	412	1.00	11.48	4.8	6.2			
140	169	374	1.10	10.43	5.0	6.4			
157	190	334	1.20	9.31	4.9	6.6			
172	208	305	0.90	8.50	4.7	6.3			
173	209	303	1.25	8.46	4.8	6.7			
188	227	279	1.25	7.79	4.8	6.8			
207	249	254	1.30	7.08	4.7	6.9			
211	254	249	1.10	6.96	4.6	6.7			
232	280	226	1.40	6.31	4.6	7.1			
241	290	218	1.40	6.09	4.6	7.1			
255	307	206	1.45	5.74	4.5	7.2			
260	313	202	1.30	5.64	4.4	6.9			
265	319	198	1.45	5.54	4.5	7.2			
310	374	169	1.40	4.72	4.3	7.1			
383	461	137	1.50	3.83	4.1	7.3			
397	478	132	1.50	3.69	4.0	7.3			

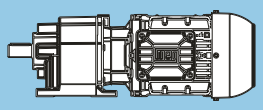
Legend see page 29

P_N = 7.5 kW									IE3
50 Hz 7.5 kW n_{50} min^{-1}	60 Hz 9.0 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
7.1	8.6	10115	1.30	206.88	102.9	17.4	**CG143-11P-L132M-04F** **CF143-11P-L132M-04F**	468 486	130
8.1	9.8	8819	1.50	180.38	105.0	18.7			
8.4	10	8504	1.55	173.94	105.4	19.0			
9.4	11	7596	1.75	155.38	106.7	19.9			
11	13	6541	2.00	133.80	107.9	20.9			
13	16	5538	2.35	113.27	108.9	22.0			
15	18	4828	2.70	98.76	109.5	22.7			
7.2	8.6	10017	0.80	204.88	54.3	18.1	**CG133-11P-L132M-04F** **CF133-11P-L132M-04F**	321 323	128
8.1	9.8	8847	0.95	180.95	59.6	19.4			
9.3	11	7680	1.05	157.08	63.8	20.7			
9.7	12	7405	1.10	151.47	64.7	21.0			
11	13	6635	1.25	135.71	66.9	21.9			
13	15	5678	1.45	116.14	69.3	23.0			
14	17	4980	1.65	101.85	70.7	23.8			
15	18	4904	1.65	100.31	70.9	23.9			
16	20	4398	1.85	89.96	71.8	24.5			
19	24	3682	2.20	75.30	72.9	25.3			
22	26	3299	2.45	67.47	73.4	25.7			
25	31	2823	2.85	57.74	73.9	26.3			
49	59	1460	2.50	29.86	75.0	27.8	**CG132-11P-L132M-04F** **CF132-11P-L132M-04F**	312 314	128
86	104	831	2.50	17.00	75.2	28.3			
12	15	5965	0.80	122.02	25.4	19.6	**CG103-11P-L132M-04F** **CF103-11P-L132M-04F**	218 222	126
14	17	5043	0.90	103.15	32.5	20.8			
15	18	4891	0.95	100.05	33.4	21.0			
16	20	4366	1.05	89.30	36.2	21.6			
17	21	4220	1.10	86.31	36.9	21.8			
19	22	3867	1.20	79.08	38.4	22.3			
21	26	3345	1.35	68.41	40.3	22.9			
22	27	3225	1.40	65.97	40.7	23.1			
25	30	2846	1.60	58.21	40.3	23.6			
30	36	2422	1.90	49.54	37.6	24.1			
34	41	2089	2.20	42.74	35.7	24.5			
44	54	1614	2.30	33.01	32.3	25.1	**CG102-11P-L132M-04F** **CF102-11P-L132M-04F**	213 217	126
60	73	1193	2.50	24.40	28.7	25.7			
76	92	937	2.30	19.17	26.5	25.6			
103	125	693	2.50	14.17	23.7	26.0			
18	22	3895	0.80	79.66	13.7	24.2	**CG093-11P-L132M-04F** **CF093-11P-L132M-04F**	176 174	124
20	24	3555	0.85	72.72	18.0	24.7			
21	26	3348	0.90	68.48	20.1	25.1			
24	29	2996	1.05	61.28	22.9	25.6			
25	30	2923	1.05	59.78	23.4	25.7			
29	35	2504	1.20	51.22	25.9	26.3			
30	36	2415	1.25	49.39	26.4	26.4			
34	41	2131	1.35	43.59	27.7	26.9			
40	48	1788	1.50	36.57	29.0	27.4			
48	57	1507	1.70	30.81	28.2	27.8			
37	45	1936	1.55	39.60	28.5	27.1	**CG092-11P-L132M-04F** **CF092-11P-L132M-04F**	174 172	124
44	53	1637	1.85	33.48	29.2	27.6			
51	61	1417	2.15	28.98	27.6	27.9			
57	69	1255	2.40	25.67	26.4	28.1			
65	78	1104	1.55	22.58	25.3	27.8			
66	80	1086	2.80	22.20	24.9	28.4			
68	83	1047	2.50	21.41	24.6	28.5			
77	93	933	1.85	19.09	23.7	28.1			
89	107	808	2.15	16.53	22.4	28.4			
100	121	716	2.55	14.64	21.4	28.6			
116	140	619	2.95	12.66	20.3	28.8			
120	145	597	2.50	12.21	20.0	28.8			

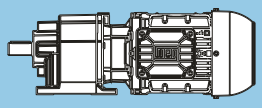
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P_N = 7.5 kW									IE3
50 Hz 7.5 kW	60 Hz 9.0 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
39	47	1830	0.85	37.44	18.4	18.8	**CG082-11P-L132M-04F** **CF082-11P-L132M-04F**	122 126	122
44	53	1618	1.00	33.09	19.9	19.2			
52	63	1368	1.15	27.98	21.3	19.7			
59	72	1209	0.95	24.72	21.9	19.5			
61	74	1176	1.30	24.05	21.4	20.1			
68	82	1055	1.25	21.58	20.7	19.9			
70	84	1027	1.40	21.00	20.2	20.4			
77	93	933	1.45	19.08	19.7	20.2			
81	98	880	1.55	17.99	19.1	20.7			
84	102	848	1.60	17.35	18.8	20.8			
91	110	789	1.65	16.13	18.4	20.5			
96	116	749	1.75	15.31	17.9	21.0			
106	128	678	1.85	13.87	17.3	20.8			
114	138	628	1.95	12.84	16.7	21.2			
121	146	592	2.00	12.10	16.5	21.0			
135	164	529	2.20	10.82	15.7	21.4			
141	171	507	2.25	10.37	15.5	21.2			
147	177	489	2.30	10.00	15.3	21.3			
166	201	432	2.45	8.83	14.6	21.4			
198	239	362	2.80	7.40	13.7	21.6			
75	91	953	0.80	19.50	5.5	12.8	**CG072-11P-L132M-04F** **CF072-11P-L132M-04F**	98 102	120
83	100	867	0.85	17.74	6.0	12.7			
88	107	811	0.90	16.59	6.6	13.2			
90	109	792	0.85	16.20	5.4	12.0			
97	117	738	0.95	15.09	7.0	13.1			
102	123	703	1.00	14.38	7.4	13.5			
112	135	639	1.05	13.08	7.7	13.4			
117	142	611	1.05	12.51	6.9	12.8			
121	146	593	1.15	12.14	8.0	13.8			
125	151	572	1.15	11.71	8.2	13.8			
133	160	540	1.20	11.04	8.2	13.7			
138	166	521	1.25	10.65	8.3	13.8			
142	171	506	1.20	10.34	7.6	13.3			
147	177	489	1.30	10.00	8.5	14.0			
161	195	445	1.35	9.10	8.7	14.0			
167	201	430	1.30	8.80	8.0	13.6			
192	232	373	1.45	7.63	8.3	13.8			
228	275	315	1.60	6.44	8.5	14.1			
236	285	304	1.65	6.21	8.5	14.1			
276	334	259	1.85	5.30	8.5	14.3			
100	120	719	0.85	14.72	6.6	6.0	**CG062-11P-L132M-04F** **CF062-11P-L132M-04F**	82 87	118
109	131	660	0.95	13.49	6.7	6.2			
121	147	590	1.05	12.07	6.7	6.4			
132	160	541	1.15	11.07	6.6	6.5			
143	173	501	1.20	10.26	6.5	6.6			
147	178	486	0.80	9.94	6.3	6.1			
156	188	460	1.30	9.40	6.4	6.8			
174	210	412	1.35	8.43	6.3	6.9			
179	216	401	0.95	8.20	6.1	6.4			
180	218	398	1.35	8.13	6.2	6.9			
189	229	378	1.40	7.73	6.2	7.0			
196	237	365	1.40	7.46	6.1	7.0			
218	263	329	1.15	6.73	5.9	6.7			
219	265	327	1.45	6.69	6.0	7.2			
239	289	300	1.50	6.13	5.9	7.2			
256	310	279	1.35	5.71	5.7	6.9			
312	377	230	1.45	4.70	5.5	7.1			
323	391	222	1.45	4.53	5.4	7.2			
393	475	182	1.55	3.73	5.2	7.3			

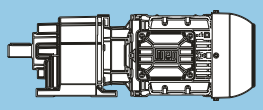
Legend see page 29

P_N = 7.5 kW									IE3
50 Hz 7.5 kW n_{50} min^{-1}	60 Hz 9.0 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
140	170	510	0.80	10.43	1.6	5.7			
157	190	455	0.85	9.31	3.8	6.0			
173	209	414	0.90	8.46	4.3	6.2			
188	227	381	0.95	7.79	4.3	6.4			
207	250	346	0.95	7.08	4.3	6.5			
211	254	340	0.80	6.96	4.2	6.1			
232	280	309	1.00	6.31	4.3	6.7	**CG052-11P-L132M-04F**	77	116
241	291	298	1.05	6.09	4.2	6.7	**CF052-11P-L132M-04F**	82	
255	308	281	1.05	5.74	4.2	6.8			
260	314	276	0.95	5.64	4.1	6.5			
265	320	271	1.05	5.54	4.2	6.9			
310	375	231	1.00	4.72	4.0	6.8			
383	462	187	1.10	3.83	3.8	7.0			
397	480	180	1.10	3.69	3.8	7.1			

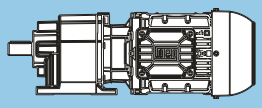
Legend see page 29

P_N = 9.2 kW									IE3
50 Hz 9.2 kW n_{50} min^{-1}	60 Hz 11 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
7.1	8.5	12450	1.05	206.88	98.2	15.0	**CG143-11P-L132M-04G** **CF143-11P-L132M-04G**	473 491	130
8.1	9.8	10855	1.20	180.38	101.5	16.6			
8.4	10	10467	1.25	173.94	102.2	17.0			
9.4	11	9350	1.40	155.38	104.2	18.1			
11	13	8052	1.65	133.80	106.1	19.4			
12	15	7033	1.85	116.88	107.4	20.5			
13	16	6816	1.95	113.27	107.6	20.7			
15	18	5943	2.20	98.76	108.5	21.5			
17	21	5119	2.55	85.07	109.3	22.4			
20	24	4408	2.95	73.25	109.8	23.1			
9.3	11	9453	0.85	157.08	57.0	18.7	**CG133-11P-L132M-04G** **CF133-11P-L132M-04G**	326 328	128
9.6	12	9115	0.90	151.47	58.5	19.1			
11	13	8167	1.00	135.71	62.2	20.2			
13	15	6989	1.15	116.14	66.0	21.5			
14	17	6129	1.35	101.85	68.2	22.5			
15	18	6036	1.35	100.31	68.5	22.6			
16	20	5414	1.50	89.96	69.9	23.3			
19	23	4531	1.80	75.30	71.6	24.3			
22	26	4060	2.00	67.47	72.3	24.9			
25	31	3475	2.35	57.74	73.2	25.5			
29	35	3001	2.70	49.87	73.7	26.1			
41	50	2137	2.50	35.51	74.5	27.1	**CG132-11P-L132M-04G** **CF132-11P-L132M-04G**	317 319	128
49	59	1797	2.00	29.86	74.8	27.4			
72	87	1217	2.50	20.22	75.1	27.8			
86	104	1023	2.00	17.00	75.2	28.1			
16	20	5374	0.85	89.30	30.3	20.4	**CG103-11P-L132M-04G** **CF103-11P-L132M-04G**	223 227	126
17	20	5194	0.90	86.31	31.5	20.6			
18	22	4759	0.95	79.08	34.1	21.1			
21	26	4117	1.10	68.41	37.3	22.0			
22	27	3970	1.15	65.97	38.0	22.2			
25	30	3503	1.30	58.21	39.8	22.7			
29	36	2981	1.55	49.54	38.8	23.4			
34	41	2572	1.75	42.74	36.4	23.9			
44	53	1986	1.90	33.01	32.8	24.7	**CG102-11P-L132M-04G** **CF102-11P-L132M-04G**	218 222	126
50	61	1755	2.60	29.16	31.3	25.0			
58	70	1523	3.00	25.31	29.5	25.3			
60	72	1469	2.00	24.40	29.1	25.3			
76	92	1153	1.90	19.17	26.8	25.2			
86	104	1019	2.65	16.93	25.6	25.4			
103	125	853	2.00	14.17	23.9	25.7			
24	29	3688	0.85	61.28	16.5	24.6	**CG093-11P-L132M-04G** **CF093-11P-L132M-04G**	181 179	124
29	34	3082	1.00	51.22	22.3	25.4			
30	36	2972	1.05	49.39	23.1	25.6			
33	40	2623	1.10	43.59	25.3	26.1			
40	48	2200	1.25	36.57	27.4	26.7			
47	57	1854	1.40	30.81	28.8	27.3			
37	45	2383	1.25	39.60	26.6	26.5	**CG092-11P-L132M-04G** **CF092-11P-L132M-04G**	179 177	124
44	53	2015	1.50	33.48	28.2	27.0			
50	61	1744	1.75	28.98	28.3	27.4			
57	69	1545	1.95	25.67	26.9	27.7			
65	78	1359	1.25	22.58	25.8	27.3			
66	79	1336	2.25	22.20	25.3	28.0			
68	82	1288	2.00	21.41	25.0	28.1			
76	92	1149	1.50	19.09	24.2	27.7			
77	93	1137	2.65	18.89	23.8	28.3			
88	107	995	1.75	16.53	22.8	28.0			
100	121	881	2.10	14.64	21.7	28.2			
115	139	762	2.40	12.66	20.6	28.5			
120	145	735	2.00	12.21	20.3	28.5			
136	164	648	2.85	10.77	19.3	28.7			

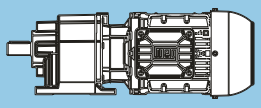
Legend see page 29

P_N = 9.2 kW									IE3
50 Hz	60 Hz				at 50 Hz				
9.2 kW	11 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
44	53	1991	0.80	33.09	17.0	18.4	**CG082-11P-L132M-04G** **CF082-11P-L132M-04G**	127 137	122
52	63	1684	0.95	27.98	19.5	19.1			
59	71	1488	0.80	24.72	20.7	18.8			
61	73	1447	1.05	24.05	20.9	19.5			
68	82	1299	1.05	21.58	21.2	19.3			
70	84	1264	1.15	21.00	20.7	19.9			
77	93	1148	1.15	19.08	20.1	19.7			
81	98	1083	1.25	17.99	19.5	20.3			
84	102	1044	1.30	17.35	19.2	20.4			
91	109	971	1.35	16.13	18.8	20.1			
95	115	921	1.40	15.31	18.3	20.6			
105	127	834	1.50	13.87	17.7	20.4			
114	137	773	1.60	12.84	17.0	20.9			
121	146	728	1.65	12.10	16.8	20.7			
135	163	651	1.80	10.82	15.9	21.2			
141	170	624	1.80	10.37	15.8	21.0			
146	177	602	1.85	10.00	15.6	21.0			
165	200	531	2.00	8.83	14.8	21.2			
197	238	446	2.25	7.40	13.9	21.4			
234	283	375	2.55	6.24	13.0	21.6			
97	117	908	0.80	15.09	4.4	12.6	**CG072-11P-L132M-04G** **CF072-11P-L132M-04G**	103 107	120
102	123	865	0.80	14.38	4.9	13.0			
112	135	787	0.90	13.08	5.4	13.0			
117	141	753	0.85	12.51	4.5	12.2			
120	145	730	0.90	12.14	6.0	13.4			
125	151	704	0.95	11.71	6.2	13.5			
132	160	665	1.00	11.04	6.3	13.4			
137	166	641	1.00	10.65	6.5	13.4			
141	171	622	0.95	10.34	5.7	12.8			
146	177	602	1.05	10.00	6.9	13.7			
160	194	547	1.10	9.10	7.1	13.7			
166	201	529	1.05	8.80	6.4	13.2			
191	231	459	1.20	7.63	6.9	13.5			
227	274	387	1.30	6.44	7.2	13.8			
235	284	374	1.35	6.21	7.3	13.8			
275	333	319	1.50	5.30	7.5	14.0			
121	146	726	0.85	12.07	6.2	6.0	**CG062-11P-L132M-04G** **CF062-11P-L132M-04G**	87 92	118
132	159	666	0.95	11.07	6.1	6.1			
142	172	617	1.00	10.26	6.1	6.3			
155	188	566	1.05	9.40	6.0	6.4			
173	209	507	1.10	8.43	6.0	6.6			
178	215	493	0.80	8.20	5.8	6.0			
180	217	489	1.10	8.13	5.9	6.7			
189	228	465	1.15	7.73	5.9	6.7			
196	237	449	1.15	7.46	5.8	6.8			
217	262	405	0.95	6.73	5.6	6.4			
218	264	403	1.20	6.69	5.8	6.9			
238	288	369	1.25	6.13	5.6	7.0			
255	309	344	1.10	5.71	5.5	6.7			
311	376	283	1.15	4.70	5.3	6.9			
322	390	273	1.20	4.53	5.2	7.0			
392	474	224	1.25	3.73	5.0	7.2			

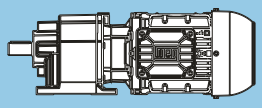
Legend see page 29

P_N = 11 kW									IE3
50 Hz 11 kW n_{50} min^{-1}	60 Hz 13 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
6.3	7.6	16770	1.10	234.67	116.6	25.3	**CG163-22P-160M-04E** **CF163-22P-160M-04E**	764 787	132
7.3	8.8	14444	1.25	202.12	122.0	27.4			
8.4	10	12493	1.45	174.82	125.8	29.1			
9.5	12	11020	1.65	154.21	128.2	30.5			
11	13	9465	1.95	132.44	130.4	31.9			
13	16	7875	2.30	110.19	132.3	33.3			
15	18	6949	2.60	97.24	133.2	33.3			
16	19	6534	2.80	91.43	133.6	34.6			
17	21	6130	2.95	85.78	134.0	34.2			
7.1	8.6	14784	0.90	206.88	92.2	12.7	**CG143-22P-160M-04E** **CF143-22P-160M-04E**	535 553	130
8.1	9.8	12890	1.05	180.38	97.2	14.6			
9.5	11	11103	1.20	155.38	101.0	16.4			
11	13	9562	1.40	133.80	103.8	17.9			
13	16	8094	1.65	113.27	106.0	19.4			
15	18	7215	1.85	100.96	107.1	20.3			
17	21	6079	2.15	85.07	108.4	21.4			
18	21	5966	2.20	83.49	108.5	21.5			
20	24	5235	2.50	73.25	109.2	22.3			
21	26	4910	2.65	68.70	109.4	22.6			
23	28	4573	2.85	63.99	109.7	22.9			
39	47	2679	2.70	37.48	110.8	24.8	**CG142-22P-160M-04E** **CF142-22P-160M-04E**	521 539	130
69	83	1527	2.70	21.37	111.2	25.6			
11	13	9698	0.85	135.71	55.9	18.4	**CG133-22P-160M-04E** **CF133-22P-160M-04E**	388 390	128
13	15	8300	1.00	116.14	61.7	20.0			
15	18	7168	1.15	100.31	65.4	21.3			
16	20	6429	1.25	89.96	67.5	22.2			
17	21	6062	1.35	84.82	68.4	22.6			
19	23	5580	1.45	78.09	69.5	23.1			
21	26	4946	1.65	69.21	70.8	23.8			
22	26	4822	1.70	67.47	71.0	24.0			
25	31	4126	1.95	57.74	72.2	24.8			
26	32	4013	2.00	56.16	72.4	24.9			
29	36	3564	2.25	49.87	73.0	25.4			
35	42	3013	2.70	42.17	73.7	26.1			
41	50	2538	2.10	35.51	74.2	26.6	**CG132-22P-160M-04E** **CF132-22P-160M-04E**	379 381	128
47	57	2213	2.70	30.96	74.5	27.0			
73	88	1445	2.10	20.22	75.0	27.5			
83	101	1260	2.70	17.63	75.1	27.7			
19	22	5652	0.80	79.08	28.2	20.0	**CG103-22P-160M-04E** **CF103-22P-160M-04E**	285 289	126
20	25	5174	0.90	72.40	31.6	20.6			
21	26	4889	0.95	68.41	33.4	21.0			
25	30	4207	1.10	58.87	36.9	21.9			
30	36	3540	1.30	49.54	39.2	22.7			
32	39	3289	1.40	46.03	38.1	23.0			
34	42	3054	1.50	42.74	37.1	23.3			
41	50	2562	1.80	35.85	34.4	23.9			
50	61	2083	2.20	29.15	31.7	24.6			
65	78	1629	2.80	22.79	28.7	25.1			
50	61	2084	2.20	29.16	31.7	24.6	**CG102-22P-160M-04E** **CF102-22P-160M-04E**	280 284	126
58	70	1809	2.50	25.31	29.9	24.9			
67	81	1563	2.90	21.87	28.3	25.2			
87	105	1210	2.25	16.93	25.8	25.1			
100	121	1050	2.60	14.69	24.5	25.4			
116	140	907	3.00	12.70	23.2	25.6			
29	35	3660	0.85	51.22	16.8	24.6	**CG093-22P-160M-04E** **CF093-22P-160M-04E**	243 241	124
34	41	3115	0.95	43.59	22.0	25.4			
40	49	2613	1.05	36.57	25.3	26.1			
48	58	2202	1.15	30.81	27.4	26.7			
58	70	1805	1.30	25.26	27.2	27.3			

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P_N = 11 kW									IE3
50 Hz 11 kW n_{50} min^{-1}	60 Hz 13 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
57	69	1834	1.65	25.67	27.4	27.3			
66	80	1587	1.90	22.20	25.8	27.7			
78	94	1350	2.25	18.89	24.1	28.0			
91	110	1149	2.65	16.08	22.7	28.3	**CG092-22P-160M-04E** **CF092-22P-160M-04E**	241 239	124
100	121	1046	1.75	14.64	22.1	27.9			
116	140	905	2.05	12.66	20.8	28.2			
136	165	770	2.40	10.77	19.6	28.5			
160	194	655	2.80	9.17	18.4	28.7			
70	85	1501	0.95	21.00	20.6	19.4			
82	99	1286	1.10	17.99	19.8	19.9			
96	116	1094	1.20	15.31	18.5	20.3			
114	138	918	1.35	12.84	17.3	20.6			
121	147	865	1.40	12.10	17.0	20.4			
136	164	773	1.50	10.82	16.1	20.9	**CG082-22P-160M-04E** **CF082-22P-160M-04E**	189 193	122
142	171	741	1.55	10.37	16.0	20.7			
166	200	634	1.75	8.87	14.9	21.2			
167	201	631	1.70	8.83	15.0	20.9			
199	240	529	1.90	7.40	14.0	21.2			
236	284	446	2.15	6.24	13.1	21.4			
287	347	366	2.45	5.12	12.2	21.6			
121	146	867	0.80	12.14	3.9	13.0			
133	161	789	0.85	11.04	4.4	13.0			
147	178	715	0.90	10.00	5.1	13.4			
162	195	650	0.95	9.10	5.5	13.4	**CG072-22P-160M-04E** **CF072-22P-160M-04E**	165 169	120
193	233	545	1.00	7.63	5.4	13.1			
228	276	460	1.10	6.44	6.0	13.4			
277	335	379	1.25	5.30	6.5	13.8			

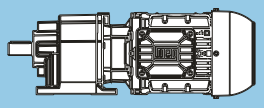
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P_N = 15 kW									IE3
50 Hz 15 kW n_{50} min^{-1}	60 Hz 18 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
6.2	7.6	22946	0.80	234.67	96.0	19.7	**CG163-22P-160L-04F** **CF163-22P-160L-04F**	787 810	132
7.2	8.8	19763	0.95	202.12	107.9	22.5			
8.4	10	17094	1.10	174.82	115.8	25.0			
9.5	12	15079	1.20	154.21	120.7	26.8			
11	14	12763	1.45	130.53	125.3	27.3			
13	16	10775	1.70	110.19	128.6	30.7			
15	18	9509	1.90	97.24	130.4	30.7			
16	19	8940	2.05	91.43	131.1	32.4			
17	21	8387	2.15	85.78	131.8	31.8			
20	24	7203	2.50	73.67	133.0	33.1			
9.4	11	15193	0.90	155.38	91.0	12.3	**CG143-22P-160L-04F** **CF143-22P-160L-04F**	558 576	130
11	13	13083	1.00	133.80	96.7	14.4			
13	16	11075	1.20	113.27	101.1	16.4			
15	18	9872	1.35	100.96	103.3	17.6			
17	21	8318	1.60	85.07	105.7	19.2			
18	21	8164	1.60	83.49	105.9	19.3			
20	24	7163	1.85	73.25	107.2	20.3			
21	26	6718	1.95	68.70	107.7	20.8			
23	28	6257	2.10	63.99	108.2	21.2			
27	32	5405	2.45	55.27	109.0	22.1			
32	39	4470	2.95	45.71	109.8	23.0			
39	47	3665	1.95	37.48	110.3	23.8	**CG142-22P-160L-04F** **CF142-22P-160L-04F**	544 562	130
45	55	3157	3.00	32.28	110.6	24.3			
69	83	2090	1.95	21.37	111.0	24.9			
80	96	1800	3.00	18.41	111.1	25.3			
15	18	9809	0.85	100.31	55.3	18.3	**CG133-22P-160L-04F** **CF133-22P-160L-04F**	411 413	128
16	20	8796	0.95	89.96	59.8	19.5			
17	21	8294	1.00	84.82	61.7	20.0			
19	23	7636	1.05	78.09	64.0	20.8			
21	26	6768	1.20	69.21	66.6	21.8			
22	26	6597	1.25	67.47	67.0	22.0			
25	31	5646	1.45	57.74	69.4	23.1			
26	32	5491	1.50	56.16	69.7	23.2			
29	36	4876	1.65	49.87	70.9	23.9			
35	42	4123	1.95	42.17	72.2	24.8			
43	52	3365	2.40	34.41	73.3	25.7			
52	64	2730	2.95	27.92	74.0	26.4			
41	50	3472	1.55	35.51	73.2	25.5	**CG132-22P-160L-04F** **CF132-22P-160L-04F**	402 404	128
47	57	3028	1.95	30.96	73.7	26.0			
55	67	2608	3.00	26.67	74.1	26.5			
72	88	1977	1.55	20.22	74.7	26.7			
83	101	1724	1.95	17.63	74.8	27.1			
96	117	1485	3.00	15.19	75.0	27.4			
25	30	5756	0.80	58.87	27.3	19.9	**CG103-22P-160L-04F** **CF103-22P-160L-04F**	308 312	126
30	36	4844	0.95	49.54	33.7	21.0			
32	39	4501	1.00	46.03	35.5	21.5			
34	42	4179	1.10	42.74	37.1	21.9			
41	50	3505	1.30	35.85	35.8	22.7			
50	61	2850	1.60	29.15	32.9	23.6			
64	78	2228	2.05	22.79	29.7	24.4			
50	61	2851	1.60	29.16	32.9	23.6	**CG102-22P-160L-04F** **CF102-22P-160L-04F**	303 307	126
58	70	2475	1.85	25.31	30.9	24.1			
67	81	2138	2.15	21.87	29.1	24.5			
78	95	1830	2.50	18.71	27.4	24.9			
87	105	1655	1.65	16.93	26.6	24.3			
91	110	1580	2.85	16.16	25.8	25.2			
100	121	1437	1.90	14.69	25.1	24.7			
115	140	1241	2.20	12.70	23.8	25.0			
135	163	1062	2.55	10.86	22.3	25.3			
156	189	918	2.95	9.38	21.1	25.6			

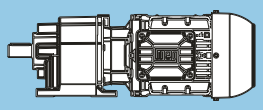
Legend see page 29

P_N = 15 kW									IE3
50 Hz 15 kW n_{50} min^{-1}	60 Hz 18 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	at 50 Hz F_{aN} kN		m kg	Dimension sheet see page
48	58	3013	0.85	30.81	22.8	25.5	**CG093-22P-160L-04F** **CF093-22P-160L-04F**	266 264	124
58	70	2470	0.95	25.26	26.1	26.4			
57	69	2510	1.20	25.67	25.9	26.3	**CG092-22P-160L-04F** **CF092-22P-160L-04F**	264 262	124
66	80	2171	1.40	22.20	26.8	26.8			
78	94	1847	1.65	18.89	25.0	27.3			
91	110	1572	1.95	16.08	23.4	27.7			
100	121	1431	1.30	14.64	22.8	27.1			
106	128	1356	2.25	13.87	22.0	28.0			
116	140	1238	1.50	12.66	21.5	27.5			
126	153	1138	2.65	11.63	20.5	28.3			
136	165	1053	1.75	10.77	20.1	27.9			
160	194	896	2.05	9.17	18.9	28.2			
185	224	773	2.40	7.91	17.8	28.4			
221	268	649	2.85	6.63	16.6	28.7			
81	99	1759	0.80	17.99	18.9	18.9	**CG082-22P-160L-04F** **CF082-22P-160L-04F**	212 216	122
96	116	1497	0.90	15.31	19.3	19.4			
114	138	1256	1.00	12.84	17.9	19.9			
121	147	1184	1.00	12.10	17.7	19.6			
135	164	1058	1.10	10.82	16.7	20.3			
141	171	1014	1.15	10.37	16.6	20.0			
165	200	868	1.30	8.87	15.4	20.7			
166	201	863	1.25	8.83	15.5	20.4			
198	240	724	1.40	7.40	14.4	20.7			
235	284	610	1.55	6.24	13.5	21.0			
286	347	500	1.80	5.12	12.5	21.3			
228	276	630	0.80	6.44	3.1	12.7	**CG072-22P-160L-04F** **CF072-22P-160L-04F**	188 192	120
276	335	519	0.95	5.30	4.2	13.2			

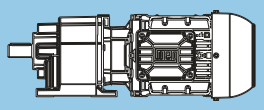
Legend see page 29

P_N = 18.5 kW									IE3
50 Hz 18.5 kW	60 Hz 22 kW				at 50 Hz				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
8.4	10	21011	0.90	174.82	103.6	21.4	**CG163-22P-180M-04E** **CF163-22P-180M-04E**	801 824	132
9.5	12	18534	1.00	154.21	111.7	23.7			
11	13	15918	1.15	132.44	118.7	26.0			
13	16	13244	1.40	110.19	124.4	28.5			
15	18	11687	1.55	97.24	127.2	28.4			
16	19	10989	1.65	91.43	128.3	30.5			
17	21	10309	1.75	85.78	129.3	29.9			
19	23	9164	2.00	76.25	130.8	32.2			
20	24	8854	2.05	73.67	131.2	31.4			
22	27	7877	2.30	65.54	132.3	33.3			
24	29	7367	2.45	61.29	132.8	32.9			
29	35	6112	2.95	50.86	134.0	34.2			
11	13	16081	0.85	133.80	88.3	11.4	**CG143-22P-180M-04E** **CF143-22P-180M-04E**	572 590	130
13	15	14047	0.95	116.88	94.3	13.4			
15	18	12134	1.10	100.96	98.9	15.3			
17	21	10224	1.30	85.07	102.7	17.3			
18	21	10034	1.30	83.49	103.0	17.4			
20	24	8804	1.50	73.25	105.0	18.7			
21	26	8257	1.60	68.70	105.8	19.2			
23	28	7691	1.70	63.99	106.5	19.8			
26	31	6787	1.95	56.47	107.6	20.7			
27	32	6643	2.00	55.27	107.8	20.8			
31	37	5763	2.30	47.95	108.7	21.7			
32	39	5494	2.40	45.71	108.9	22.0			
39	47	4521	2.90	37.61	109.7	23.0			
39	47	4505	1.60	37.48	109.7	23.0	**CG142-22P-180M-04E** **CF142-22P-180M-04E**	558 576	130
46	55	3880	2.45	32.28	110.2	23.6			
69	83	2569	1.60	21.37	110.9	24.3			
80	96	2213	2.45	18.41	111.0	24.8			
17	21	10194	0.80	84.82	53.4	17.9	**CG133-22P-180M-04E** **CF133-22P-180M-04E**	425 427	128
19	23	9385	0.90	78.09	57.3	18.8			
21	26	8319	1.00	69.21	61.6	20.0			
22	26	8109	1.00	67.47	62.4	20.2			
25	31	6939	1.20	57.74	66.1	21.6			
26	32	6749	1.20	56.16	66.6	21.8			
29	36	5994	1.35	49.87	68.6	22.7			
33	40	5388	1.50	44.83	69.9	23.3			
35	42	5068	1.60	42.17	70.6	23.7			
43	52	4136	1.95	34.41	72.2	24.8			
53	64	3355	2.40	27.92	73.3	25.7			
66	80	2679	3.00	22.29	74.1	26.4			
47	57	3721	1.60	30.96	72.8	25.2	**CG132-22P-180M-04E** **CF132-22P-180M-04E**	416 418	128
55	67	3205	2.45	26.67	73.5	25.8			
64	77	2760	2.90	22.97	74.0	26.3			
83	101	2119	1.60	17.63	74.5	26.5			
97	117	1825	2.45	15.19	74.8	26.9			
58	70	3042	1.50	25.31	31.8	23.3	**CG102-22P-180M-04E** **CF102-22P-180M-04E**	317 321	126
67	81	2628	1.75	21.87	29.9	23.9			
79	95	2249	2.05	18.71	27.9	24.3			
91	110	1943	2.35	16.16	26.3	24.7			
100	121	1766	1.55	14.69	25.7	24.1			
108	130	1643	2.75	13.67	24.6	25.1			
116	140	1526	1.80	12.70	24.2	24.5			
135	163	1306	2.10	10.86	22.7	24.9			
157	189	1128	2.40	9.38	21.4	25.2			
185	224	954	2.85	7.93	20.1	25.5			

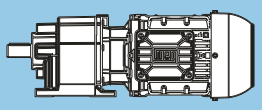
Legend see page 29

P_N = 18.5 kW									IE3
50 Hz 18.5 kW n_{50} min^{-1}	60 Hz 22 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
66	80	2669	1.15	22.20	25.0	26.1	**CG092-22P-180M-04E** **CF092-22P-180M-04E**	278 276	124
78	94	2270	1.35	18.89	25.7	26.6			
91	110	1932	1.60	16.08	24.0	27.1			
106	128	1667	1.80	13.87	22.6	27.5			
116	140	1522	1.20	12.66	22.0	26.9			
126	153	1398	2.15	11.63	21.0	27.9			
136	165	1295	1.45	10.77	20.6	27.4			
155	188	1137	2.50	9.46	19.3	28.3			
160	194	1102	1.70	9.17	19.3	27.8			
186	224	951	1.95	7.91	18.1	28.1			
199	240	889	2.95	7.40	17.5	28.7			
222	268	797	2.30	6.63	16.9	28.4			
272	329	648	2.85	5.39	15.6	28.7			
114	138	1544	0.80	12.84	18.5	19.3	**CG082-22P-180M-04E** **CF082-22P-180M-04E**	226 230	122
136	164	1301	0.90	10.82	17.1	19.8			
142	171	1246	0.90	10.37	17.1	19.4			
166	200	1066	1.05	8.87	15.7	20.3			
167	201	1061	1.00	8.83	15.9	19.9			
199	240	890	1.15	7.40	14.8	20.3			
236	284	750	1.30	6.24	13.8	20.6			
287	347	615	1.45	5.12	12.7	21.0			

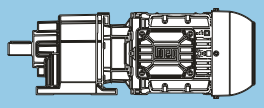
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P_N = 22 kW									IE3
50 Hz 22 kW n_{50} min^{-1}	60 Hz 26 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
9.5	12	22040	0.85	154.21	99.8	20.5	**CG163-22P-180L-04F** **CF163-22P-180L-04F**	822 845	132
11	13	18929	1.00	132.44	110.6	23.3			
13	16	16068	1.15	112.42	118.4	23.9			
15	18	13898	1.30	97.24	123.2	26.2			
16	19	13068	1.40	91.43	124.8	28.6			
17	21	12260	1.50	85.78	126.2	27.9			
19	23	10898	1.70	76.25	128.4	30.6			
20	24	10529	1.75	73.67	129.0	29.6			
22	27	9367	1.95	65.54	130.6	32.0			
24	29	8760	2.10	61.29	131.3	31.5			
29	35	7269	2.50	50.86	132.9	33.0			
35	42	6062	3.00	42.41	134.0	34.2			
45	54	4717	3.00	33.00	135.0	36.2	**CG162-22P-180L-04F** **CF162-22P-180L-04F**	797 820	132
83	100	2529	3.00	17.70	136.0	37.9			
13	15	16704	0.80	116.88	86.2	10.8	**CG143-22P-180L-04F** **CF143-22P-180L-04F**	593 611	130
15	18	14429	0.95	100.96	93.2	13.0			
17	21	12158	1.10	85.07	98.8	15.3			
18	21	11933	1.10	83.49	99.3	15.5			
20	24	10470	1.25	73.25	102.2	17.0			
21	26	9819	1.35	68.70	103.4	17.7			
23	28	9146	1.45	63.99	104.5	18.3			
26	31	8071	1.65	56.47	106.0	19.4			
27	32	7900	1.65	55.27	106.3	19.6			
31	37	6853	1.90	47.95	107.6	20.6			
32	39	6533	2.00	45.71	107.9	21.0			
39	47	5376	2.45	37.61	109.0	22.1			
48	57	4419	2.90	30.92	109.8	23.1			
39	47	5357	1.35	37.48	109.1	22.1	**CG142-22P-180L-04F** **CF142-22P-180L-04F**	579 597	130
46	55	4614	2.05	32.28	109.7	22.9			
53	64	3991	2.95	27.92	110.1	23.5			
69	83	3055	1.35	21.37	110.6	23.7			
80	96	2631	2.05	18.41	110.8	24.3			
92	111	2276	2.95	15.92	111.0	24.7			
21	26	9892	0.85	69.21	54.9	18.2	**CG133-22P-180L-04F** **CF133-22P-180L-04F**	446 448	128
22	26	9643	0.85	67.47	56.1	18.5			
25	31	8252	1.00	57.74	61.9	20.1			
26	32	8026	1.00	56.16	62.7	20.3			
29	36	7127	1.15	49.87	65.6	21.4			
33	40	6408	1.25	44.83	67.5	22.2			
35	42	6027	1.35	42.17	68.5	22.6			
43	52	4918	1.65	34.41	70.9	23.9			
53	64	3990	2.05	27.92	72.4	24.9			
66	80	3186	2.55	22.29	73.5	25.9			
47	57	4425	1.35	30.96	71.7	24.4	**CG132-22P-180L-04F** **CF132-22P-180L-04F**	437 439	128
55	67	3812	2.05	26.67	72.7	25.1			
64	77	3283	2.45	22.97	73.4	25.8			
73	88	2867	2.80	20.06	73.9	26.2			
83	101	2520	1.35	17.63	74.2	26.0			
97	117	2170	2.05	15.19	74.5	26.5			
112	136	1869	2.65	13.08	74.5	26.9			

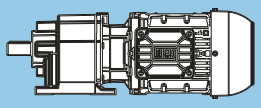
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P_N = 22 kW									IE3
50 Hz 22 kW	60 Hz 26 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
58	70	3617	1.25	25.31	32.6	22.6	**CG102-22P-180L-04F** **CF102-22P-180L-04F**	338 342	126
67	81	3125	1.45	21.87	30.6	23.2			
79	95	2675	1.70	18.71	28.5	23.8			
91	110	2310	1.95	16.16	26.9	24.3			
100	121	2100	1.30	14.69	26.2	23.5			
108	130	1953	2.35	13.67	25.1	24.7			
116	140	1815	1.50	12.70	24.6	24.0			
132	159	1594	2.85	11.15	23.1	25.2			
135	163	1553	1.75	10.86	23.1	24.5			
157	189	1341	2.05	9.38	21.8	24.9			
185	224	1134	2.40	7.93	20.4	25.2			
227	274	925	2.95	6.47	18.8	25.6			
66	80	3173	0.95	22.20	21.6	25.3	**CG092-22P-180L-04F** **CF092-22P-180L-04F**	299 297	124
78	94	2700	1.15	18.89	24.8	26.0			
91	110	2298	1.35	16.08	24.7	26.6			
106	128	1982	1.55	13.87	23.1	27.1			
116	140	1810	1.05	12.66	22.6	26.4			
126	153	1663	1.80	11.63	21.5	27.5			
136	165	1540	1.20	10.77	21.1	26.9			
155	188	1352	2.10	9.46	19.7	28.0			
160	194	1310	1.40	9.17	19.7	27.4			
186	224	1130	1.65	7.91	18.5	27.7			
199	240	1057	2.50	7.40	17.8	28.4			
222	268	948	1.95	6.63	17.2	28.1			
272	329	771	2.40	5.39	15.8	28.4			
142	171	1482	0.80	10.37	17.5	18.8	**CG082-22P-180L-04F** **CF082-22P-180L-04F**	247 251	122
166	200	1268	0.90	8.87	16.1	19.9			
167	201	1261	0.85	8.83	16.3	19.4			
199	240	1058	0.95	7.40	15.1	19.9			
236	284	892	1.10	6.24	14.1	20.3			
287	347	731	1.25	5.12	13.0	20.7			

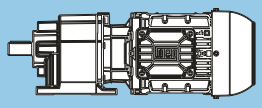
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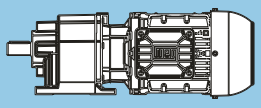
P_N = 30 kW									IE3
50 Hz	60 Hz				at 50 Hz				
30 kW	36 kW								
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN		kg	
13	16	21763	0.85	112.42	100.8	18.1	**CG163-22P-200L-04E** **CF163-22P-200L-04E**	880 903	132
15	18	18824	1.00	97.24	110.9	21.1			
16	19	17699	1.05	91.43	114.1	24.4			
17	21	16605	1.10	85.78	117.0	23.4			
19	23	14760	1.25	76.25	121.4	27.1			
20	24	14261	1.30	73.67	122.4	25.8			
23	27	12687	1.45	65.54	125.5	29.0			
24	29	11865	1.55	61.29	126.9	28.3			
26	31	10979	1.65	56.72	128.3	30.5			
29	35	9845	1.85	50.86	129.9	30.3			
35	42	8210	2.20	42.41	132.0	32.0			
41	49	7057	2.60	36.45	133.1	33.2			
47	56	6107	2.90	31.55	134.0	34.2			
45	54	6388	2.20	33.00	133.7	34.7	**CG162-22P-200L-04E** **CF162-22P-200L-04E**	855 878	132
84	101	3426	2.20	17.70	135.7	37.0			
17	21	16468	0.80	85.07	87.0	11.0	**CG143-22P-200L-04E** **CF143-22P-200L-04E**	651 669	130
18	21	16162	0.85	83.49	88.0	11.3			
20	24	14181	0.95	73.25	93.9	13.3			
22	26	13300	1.00	68.70	96.2	14.2			
23	28	12387	1.05	63.99	98.3	15.1			
26	32	10932	1.20	56.47	101.4	16.5			
27	32	10700	1.25	55.27	101.8	16.8			
31	37	9282	1.45	47.95	104.3	18.2			
32	39	8849	1.50	45.71	104.9	18.6			
36	43	7923	1.65	40.93	106.2	19.6			
39	47	7282	1.80	37.61	107.1	20.2			
48	58	5985	2.15	30.92	108.5	21.5			
56	68	5082	2.40	26.25	109.3	22.4			
66	79	4338	2.70	22.41	109.9	23.2			
46	55	6249	1.50	32.28	108.2	21.2	**CG142-22P-200L-04E** **CF142-22P-200L-04E**	637 655	130
53	64	5405	2.20	27.92	109.0	22.1			
60	72	4768	2.75	24.63	109.5	22.7			
80	97	3564	1.50	18.41	110.4	23.1			
93	112	3082	2.20	15.92	110.6	23.7			
105	127	2719	3.00	14.05	110.8	24.2			
30	36	9654	0.85	49.87	56.1	18.5	**CG133-22P-200L-04E** **CF133-22P-200L-04E**	504 506	128
33	40	8679	0.95	44.83	60.2	19.6			
35	42	8163	1.00	42.17	62.2	20.2			
43	52	6661	1.25	34.41	66.9	21.9			
53	64	5404	1.50	27.92	69.9	23.3			
66	80	4315	1.90	22.29	71.9	24.6			
55	67	5163	1.50	26.67	70.4	23.6	**CG132-22P-200L-04E** **CF132-22P-200L-04E**	495 497	128
64	78	4446	1.80	22.97	71.7	24.4			
74	89	3884	2.10	20.06	72.6	25.1			
85	103	3355	2.40	17.33	73.3	25.7			
97	117	2940	1.50	15.19	70.4	25.4			
103	124	2774	2.90	14.33	72.1	26.3			
113	136	2531	1.95	13.08	69.3	25.9			
130	156	2211	2.25	11.42	68.1	26.4			
150	180	1910	2.60	9.87	66.8	26.8			

Legend see page 29

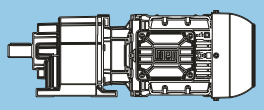
P_N = 30 kW									IE3
50 Hz 30 kW n_{50} min^{-1}	60 Hz 36 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
68	81	4233	1.10	21.87	32.1	21.8			
79	95	3622	1.25	18.71	29.9	22.6			
92	110	3129	1.45	16.16	28.0	23.2			
108	130	2646	1.75	13.67	26.1	23.8			
117	140	2458	1.10	12.70	25.6	22.9			
133	160	2159	2.10	11.15	23.9	24.5	**CG102-22P-200L-04E**	396	126
136	164	2103	1.30	10.86	24.0	23.5	**CF102-22P-200L-04E**	400	
158	190	1817	1.50	9.38	22.5	24.0			
164	197	1752	2.60	9.05	21.9	25.0			
187	224	1536	1.80	7.93	21.0	24.5			
229	275	1253	2.20	6.47	19.3	25.0			
282	339	1017	2.70	5.25	17.8	25.4			
78	94	3657	0.85	18.89	16.9	24.6			
92	111	3112	1.00	16.08	22.1	25.4			
107	128	2685	1.15	13.87	24.3	26.0			
127	153	2252	1.35	11.63	22.4	26.7			
137	165	2085	0.90	10.77	22.1	25.8			
156	188	1831	1.55	9.46	20.5	27.3	**CG092-22P-200L-04E**	357	124
161	194	1775	1.05	9.17	20.5	26.4	**CF092-22P-200L-04E**	355	
187	225	1531	1.20	7.91	19.2	26.9			
200	241	1432	1.85	7.40	18.4	27.9			
223	268	1284	1.45	6.63	17.8	27.4			
274	330	1044	1.75	5.39	16.3	27.9			
351	422	816	2.25	4.22	14.8	28.4			

Legend see page 29

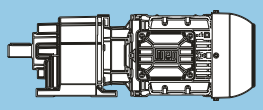
P_N = 37 kW									IE3
50 Hz 37 kW n_{50} min^{-1}	60 Hz 44 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
15	18	23217	0.80	97.24	94.9	16.6	**CG163-22P-200L-04F** **CF163-22P-200L-04F**	907 930	132
16	19	21829	0.85	91.43	100.6	20.7			
17	21	20479	0.90	85.78	105.5	19.4			
19	23	18204	1.00	76.25	112.7	24.0			
20	24	17588	1.05	73.67	114.4	22.4			
23	27	15647	1.20	65.54	119.4	26.3			
24	29	14634	1.25	61.29	121.6	25.4			
26	31	13541	1.35	56.72	123.9	28.2			
29	35	12142	1.50	50.86	126.4	28.0			
35	42	10126	1.80	42.41	129.6	30.1			
41	49	8703	2.10	36.45	131.4	31.5			
47	56	7532	2.35	31.55	132.7	32.7			
45	54	7879	1.80	33.00	132.3	33.3	**CG162-22P-200L-04F** **CF162-22P-200L-04F**	882 905	132
59	71	6005	3.00	25.15	134.1	35.0			
84	101	4225	1.80	17.70	135.3	36.1			
22	26	16403	0.80	68.70	87.2	11.1	**CG143-22P-200L-04F** **CF143-22P-200L-04F**	678 696	130
23	28	15278	0.90	63.99	90.8	12.2			
26	32	13483	1.00	56.47	95.7	14.0			
27	32	13197	1.00	55.27	96.4	14.3			
31	37	11447	1.15	47.95	100.3	16.0			
32	39	10914	1.20	45.71	101.4	16.6			
36	44	9771	1.35	40.93	103.5	17.7			
39	47	8981	1.45	37.61	104.7	18.5			
48	58	7382	1.75	30.92	106.9	20.1			
56	68	6268	1.95	26.25	108.2	21.2			
66	80	5350	2.20	22.41	109.1	22.1			
46	55	7707	1.25	32.28	106.5	19.8	**CG142-22P-200L-04F** **CF142-22P-200L-04F**	664 682	130
53	64	6667	1.80	27.92	107.8	20.8			
60	72	5881	2.25	24.63	108.6	21.6			
70	84	5050	2.60	21.15	109.3	22.4			
80	97	4395	1.25	18.41	109.8	22.1			
93	112	3802	1.80	15.92	110.2	22.8			
105	127	3353	2.45	14.05	108.7	23.4			
123	148	2880	2.80	12.06	105.7	24.0			
35	42	10068	0.80	42.17	54.1	18.0	**CG133-22P-200L-04F** **CF133-22P-200L-04F**	531 533	128
43	52	8215	1.00	34.41	62.0	20.1			
53	64	6666	1.25	27.92	66.2	21.9			
66	80	5321	1.55	22.29	68.1	23.4			
55	67	6368	1.25	26.67	67.0	22.2	**CG132-22P-200L-04F** **CF132-22P-200L-04F**	522 524	128
64	78	5483	1.50	22.97	68.0	23.2			
74	89	4790	1.70	20.06	68.2	24.0			
85	103	4137	1.95	17.33	68.4	24.8			
97	117	3626	1.25	15.19	65.4	24.4			
103	124	3422	2.35	14.33	67.8	25.6			
113	136	3122	1.60	13.08	65.0	25.1			
125	151	2816	2.85	11.79	66.8	26.3			
130	156	2727	1.85	11.42	64.3	25.7			
150	181	2356	2.10	9.87	63.5	26.2			
181	218	1948	2.55	8.16	62.1	26.8			
68	81	5221	0.90	21.87	31.3	20.6	**CG102-22P-200L-04F** **CF102-22P-200L-04F**	423 427	126
79	95	4468	1.05	18.71	31.2	21.5			
92	110	3859	1.20	16.16	29.1	22.3			
108	130	3263	1.40	13.67	27.0	23.1			
117	140	3031	0.90	12.70	26.6	21.9			
133	160	2663	1.70	11.15	24.6	23.8			
136	164	2594	1.05	10.86	24.8	22.7			
158	190	2240	1.25	9.38	23.2	23.3			
164	197	2160	2.10	9.05	22.5	24.5			
187	225	1894	1.45	7.93	21.6	23.9			
205	247	1725	2.65	7.22	20.4	25.0			
229	275	1546	1.75	6.47	19.8	24.5			
282	339	1254	2.20	5.25	18.2	25.0			
353	425	1001	2.70	4.19	16.6	25.5			

P_N = 45 kW									IE3
50 Hz 45 kW n_{50} min^{-1}	60 Hz 55 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
19	23	22140	0.85	76.25	99.4	20.4	**CG163-22P-225S/M-04F** **CF163-22P-225S/M-04F**	1044 1067	132
20	24	21391	0.85	73.67	102.2	18.4			
23	27	19030	0.95	65.54	110.3	23.2			
24	29	17798	1.05	61.29	113.9	22.1			
26	31	16469	1.10	56.72	117.4	25.5			
29	35	14767	1.25	50.86	121.3	25.3			
35	42	12315	1.50	42.41	126.1	27.8			
41	49	10585	1.75	36.45	128.9	29.6			
47	56	9161	1.95	31.55	130.8	31.1			
45	54	9582	1.50	33.00	130.3	31.8	**CG162-22P-225S/M-04F** **CF162-22P-225S/M-04F**	1019 1042	132
59	71	7304	2.50	25.15	132.9	33.9			
70	84	6133	2.95	21.12	134.0	34.9			
84	101	5138	1.50	17.70	134.7	35.2			
110	132	3917	2.60	13.49	135.4	36.5			
26	32	16398	0.80	56.47	87.2	11.1	**CG143-22P-225S/M-04F** **CF143-22P-225S/M-04F**	815 833	130
27	32	16050	0.85	55.27	88.4	11.4			
31	37	13923	0.95	47.95	94.6	13.5			
32	39	13273	1.00	45.71	96.3	14.2			
36	44	11884	1.10	40.93	99.4	15.6			
39	47	10922	1.20	37.61	101.4	16.6			
48	58	8978	1.45	30.92	104.7	18.5			
56	68	7623	1.60	26.25	106.6	19.9			
66	80	6506	1.80	22.41	107.9	21.0			
53	64	8108	1.50	27.92	106.0	19.4	**CG142-22P-225S/M-04F** **CF142-22P-225S/M-04F**	801 819	130
60	72	7152	1.85	24.63	107.2	20.3			
70	84	6142	2.15	21.15	108.3	21.3			
84	101	5111	2.55	17.60	109.3	22.4			
93	112	4624	1.50	15.92	105.4	21.8			
105	127	4078	2.00	14.05	104.1	22.5			
123	148	3503	2.30	12.06	101.7	23.2			
43	52	9992	0.85	34.41	51.2	18.1	**CG133-22P-225S/M-04F** **CF133-22P-225S/M-04F**	668 670	128
53	64	8107	1.00	27.92	56.6	20.2			
66	80	6472	1.25	22.29	60.5	22.1			
55	67	7744	1.00	26.67	57.8	20.7	**CG132-22P-225S/M-04F** **CF132-22P-225S/M-04F**	659 661	128
64	78	6669	1.20	22.97	60.1	21.9			
74	89	5825	1.40	20.06	61.3	22.8			
85	103	5032	1.60	17.33	62.5	23.8			
97	117	4410	1.00	15.19	59.5	23.3			
103	124	4161	1.95	14.33	62.9	24.7			
113	136	3797	1.30	13.08	59.9	24.2			
125	151	3424	2.35	11.79	62.7	25.6			
130	156	3317	1.50	11.42	59.9	24.8			
150	181	2865	1.75	9.87	59.7	25.5			
153	184	2815	2.85	9.69	61.7	26.3			
180	217	2390	3.35	8.23	60.7	26.8			
181	218	2369	2.10	8.16	58.9	26.2			
211	254	2040	3.95	7.03	59.5	27.2			
220	265	1950	2.55	6.71	57.7	26.8			
268	323	1603	3.10	5.52	56.1	27.3			
316	380	1361	3.65	4.69	54.6	27.6			
370	446	1161	4.30	4.00	53.1	27.9			

Legend see page 29

P_N = 55 kW									IE3
50 Hz 55 kW n_{50} min^{-1}	60 Hz 66 kW n_{60} min^{-1}	M_2 Nm	f_B	i	at 50 Hz F_{rN} kN	 F_{aN} kN		m kg	Dimension sheet see page
23	27	23259	0.80	65.54	94.7	19.4	**CG163-22P-225S/M-04G** **CF163-22P-225S/M-04G**	1092 1115	132
24	29	21753	0.85	61.29	100.9	18.1			
26	31	20128	0.90	56.72	106.7	22.2			
29	35	18049	1.00	50.86	113.2	21.9			
35	42	15052	1.20	42.41	120.7	25.0			
41	49	12938	1.40	36.45	125.0	27.2			
47	57	11196	1.60	31.55	128.0	29.0			
59	71	8927	2.05	25.15	131.1	32.4	**CG162-22P-225S/M-04G** **CF162-22P-225S/M-04G**	1067 1090	132
70	85	7495	2.45	21.12	132.7	33.7			
85	103	6168	2.95	17.38	133.9	34.9			
110	132	4787	2.10	13.49	134.9	35.6			
131	158	4019	2.85	11.33	135.4	36.4			
31	37	17017	0.80	47.95	85.1	10.4	**CG143-22P-225S/M-04G** **CF143-22P-225S/M-04G**	863 881	130
32	39	16223	0.85	45.71	87.8	11.2			
36	44	14525	0.90	40.93	93.0	12.9			
39	47	13349	1.00	37.61	96.1	14.1			
48	58	10973	1.20	30.92	101.3	16.5			
56	68	9317	1.30	26.25	103.5	18.2			
66	80	7952	1.50	22.41	103.8	19.5			
60	72	8741	1.50	24.63	103.6	18.7	**CG142-22P-225S/M-04G** **CF142-22P-225S/M-04G**	849 867	130
70	84	7507	1.75	21.15	103.7	20.0			
84	101	6246	2.10	17.60	103.2	21.2			
101	122	5183	2.55	14.60	101.9	22.3			
105	127	4985	1.65	14.05	98.2	21.4			
123	148	4281	1.90	12.06	96.7	22.2			
147	178	3562	2.60	10.04	94.9	23.1			
53	64	9908	0.85	27.92	44.6	18.2	**CG133-22P-225S/M-04G** **CF133-22P-225S/M-04G**	716 718	128
66	80	7910	1.05	22.29	50.9	20.5			
74	89	7120	1.15	20.06	52.6	21.4	**CG132-22P-225S/M-04G** **CF132-22P-225S/M-04G**	707 709	128
85	103	6150	1.35	17.33	55.0	22.5			
103	125	5086	1.60	14.33	56.7	23.7			
125	151	4185	1.95	11.79	57.6	24.7			
130	156	4054	1.25	11.42	54.4	23.8			
150	181	3502	1.45	9.87	55.0	24.6			
153	184	3440	2.35	9.69	57.6	25.6			
180	217	2921	2.75	8.23	57.2	26.2			
181	219	2896	1.75	8.16	55.0	25.4			
211	254	2493	3.25	7.03	56.5	26.7			
220	266	2383	2.10	6.71	54.5	26.2			
268	323	1959	2.55	5.52	53.5	26.8			
316	381	1663	3.00	4.69	52.4	27.2			
370	446	1420	3.50	4.00	51.2	27.5			

Legend see page 29

P_N = 75 kW									IE3
50 Hz 75 kW	60 Hz 90 kW				at 50 Hz				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
35	42	20525	0.90	42.41	105.4	19.3	**CG163-22P-250S/M-04F** **CF163-22P-250S/M-04F**	1196 1219	132
41	49	17642	1.05	36.45	114.3	22.3			
47	56	15268	1.15	31.55	120.2	24.8			
59	71	12173	1.50	25.15	126.4	29.4	**CG162-22P-250S/M-04F** **CF162-22P-250S/M-04F**	1196 1194	132
70	84	10221	1.80	21.12	129.4	31.2			
85	102	8411	2.15	17.38	131.7	32.9			
100	120	7156	2.55	14.79	133.0	34.0			
110	132	6528	1.55	13.49	130.7	33.8			
116	139	6182	2.95	12.77	133.9	34.9			
131	157	5481	2.10	11.33	128.9	34.8			
159	191	4510	2.50	9.32	126.1	35.8			
187	225	3837	2.95	7.93	123.2	36.5			

Legend see page 29

Selection tables - Gear units

Structure of the selection tables

1 Type	2 $i_{ges.}$	3 M_{2nenn}	4 n_2	5 i_{exakt}	IEC motor frame size 6												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter 7												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter 8												
		[Nm]	[min^{-1}]		N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
C002																	
2 stages	9																
n_1=1400 min^{-1}	10																
Maximum torque 50 Nm	11																

1 Type	2 $i_{ges.}$	SERVO adapter 12										Input unit 14							
		n_{1max}	Adapter size 13										n_{1max}	Input shaft [mm] 15						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110

1 Type of gear unit

2 Total ratio

3 Permissible output torque at S1 operation (f_B = 1.0)

4 Output speed (gear unit) at n_1 = 1400 min^{-1}

5 Exact mathematical ratio

6 Possible motor frame sizes (Direct mounting)

7 Possible IEC adapter sizes

8 Possible NEMA adapter sizes

9 Number of gear stages

10 Motor speed

11 Maximum torque

12 Maximum input speed - SERVO adapter

13 Possible SERVO adapter sizes

14 Maximum input speed - direct mounting, IEC / NEMA adapter and input unit
Higher input speeds on request

15 Possible input shafts of the input unit

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C002	47.44	50	30	759/16	■	■											
	42.34	50	33	1863/44	■	■											
	36.85	50	38	737/20	■	■	■										
	32.89	50	43	1809/55	■	■	■										
	29.33	50	48	88/3	■	■	■										
	26.18	50	53	288/11	■	■	■										
	23.00	50	61	23/1	■	■	■										
	20.53	50	68	2484/121	■	■	■										
	17.29	50	81	121/7	■	■	■										
	16.86	31	83	2967/176	■	■											
	15.43	50	91	108/7	■	■	■										
	13.54	50	103	176/13	■	■	■										
	13.10	43	107	2881/220	■	■	■										
	12.08	50	116	1728/143	■	■	■										
	10.42	45	134	344/33	■	■	■										
	9.97	50	140	319/32	■	■	■										
	8.90	50	157	783/88	■	■	■										
	8.17	45	171	989/121	■	■	■										
	6.88	49	204	55/8	■	■	■										
	6.14	50	228	135/22	■	■	■										
	4.81	39	291	688/143	■	■	■										
	3.54	35	395	1247/352	■	■	■										
	2.44	31	573	215/88	■	■	■										
C012	66.50	85	21	133/2	■	■											
	59.59	85	23	1311/22	■	■											
	51.80	85	27	259/5	■	■	■	■									
	46.42	85	30	2553/55	■	■	■	■									
	42.00	85	33	42/1	■	■	■	■									
	37.64	85	37	414/11	■	■	■	■									
	33.09	85	42	364/11	■	■	■	■									
	29.65	85	47	3588/121	■	■	■	■									
	25.50	85	55	51/2	■	■	■	■									
	25.05	41	56	551/22	■	■											
	22.85	85	61	3519/154	■	■	■	■									
	19.92	85	70	259/13	■	■	■	■									
	19.51	66	72	1073/55	■	■	■	■									
	17.85	85	78	2553/143	■	■	■	■									
	15.82	66	89	174/11	■	■	■	■									
	14.88	85	94	119/8	■	■	■	■									
	13.33	85	105	1173/88	■	■	■	■									
	12.83	85	109	77/6			■	■									
	12.46	66	112	1508/121	■	■	■	■									
	11.50	85	122	23/2			■	■									
	11.20	84	125	56/5	■	■	■	■									
	10.04	81	139	552/55	■	■	■	■									
	9.60	66	146	1479/154	■	■	■	■									
	8.22	76	170	189/23	■	■	■	■									
	7.50	66	187	1073/143	■	■	■	■									
	7.36	74	190	81/11	■	■	■	■									
	5.60	66	250	493/88	■	■	■	■									
	4.83	66	290	29/6			■	■									
	4.22	66	332	232/55	■	■	■	■									
	3.09	63	452	783/253	■	■	■	■									

2 stages

n_1=1400 min^{-1}

Maximum torque 50 Nm

2 stages

n_1=1400 min^{-1}

Maximum torque 85 Nm

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C002	47.44	5000	■										-							
	42.34	5000	■										-							
	36.85	5000	■	■	■	■	■	■					3000	■						
	32.89	5000	■	■	■	■	■	■					3000	■						
	29.33	5000	■	■	■	■	■	■					3000	■						
	26.18	5000	■	■	■	■	■	■					3000	■						
	23.00	5000	■	■	■	■	■	■					3000	■						
	20.53	5000	■	■	■	■	■	■					3000	■						
	17.29	5000	■	■	■	■	■	■	■				3000	■						
	16.86	5000	■										-							
	15.43	5000	■	■	■	■	■	■	■				3000	■						
	13.54	5000	■	■	■	■	■	■	■				3000	■						
	13.10	5000	■	■	■	■	■	■					3000	■						
	12.08	5000	■	■	■	■	■	■	■				3000	■						
	10.42	5000	■	■	■	■	■	■					3000	■						
	9.97	4200	■	■	■	■	■	■	■				3000	■						
	8.90	4200	■	■	■	■	■	■	■				3000	■						
	8.17	5000	■	■	■	■	■	■					3000	■						
	6.88	3400	■	■	■	■	■	■	■				3000	■						
	6.14	5000	■	■	■	■	■	■	■				3000	■						
	6.14	3400	■	■	■	■	■	■	■				3000	■						
	4.81	5000	■	■	■	■	■	■	■				3000	■						
	3.54	4200	■	■	■	■	■	■	■				3000	■						
	2.44	3400	■	■	■	■	■	■	■				3000	■						
C012	66.50	5000	■										-							
	59.59	5000	■										-							
	51.80	5000	■	■	■	■	■	■					3000	■						
	46.42	5000	■	■	■	■	■	■					3000	■						
	42.00	5000	■	■	■	■	■	■					3000	■						
	37.64	5000	■	■	■	■	■	■					3000	■						
	33.09	5000	■	■	■	■	■	■					3000	■						
	29.65	5000	■	■	■	■	■	■					3000	■						
	25.50	5000	■	■	■	■	■	■	■				3000	■						
	25.05	5000	■										-							
	22.85	5000	■	■	■	■	■	■	■				3000	■						
	19.92	5000	■	■	■	■	■	■	■				3000	■						
	19.51	5000	■	■	■	■	■	■					3000	■						
	17.85	5000	■	■	■	■	■	■	■				3000	■						
	15.82	5000	■	■	■	■	■	■					3000	■						
	14.88	4700	■	■	■	■	■	■	■				3000	■						
	13.33	4700	■	■	■	■	■	■	■				3000	■						
	12.83	4200		■	■	■	■	■	■				3000	■						
	12.46	5000	■	■	■	■	■	■					3000	■						
	11.50	4200		■	■	■	■	■	■				3000	■						
	11.20	3800	■	■	■	■	■	■	■				3000	■						
	10.04	3800	■	■	■	■	■	■	■				3000	■						
	9.60	5000	■	■	■	■	■	■	■				3000	■						
	8.22	3300	■	■	■	■	■	■	■				3000	■						
	7.50	5000	■	■	■	■	■	■	■				3000	■						
	7.36	3300	■	■	■	■	■	■	■				3000	■						
	5.60	4700	■	■	■	■	■	■	■				3000	■						
	4.83	4200		■	■	■	■	■	■				3000	■						
	4.22	3800	■	■	■	■	■	■	■				3000	■						
	3.09	3300	■	■	■	■	■	■	■				3000	■						

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C032	42.88	184	33	2573/60	■	■	■	■									
	38.95	168	36	5063/130	■	■	■	■									
	34.88	200	40	279/8	■	■	■	■									
	31.67	200	44	1647/52	■	■	■	■									
	27.71	200	51	1829/66	■	■	■	■									
	25.17	200	56	3599/143	■	■	■	■									
	24.03	103	58	913/38	■	■	■	■									
	21.40	200	65	899/42	■	■	■	■	■								
	19.54	128	72	1485/76	■	■	■	■									
	19.44	200	72	1769/91	■	■	■	■	■								
	17.09	200	82	1333/78	■	■	■	■	■								
2 stages	15.53	130	90	295/19	■	■	■	■									
	15.52	200	90	2623/169	■	■	■	■	■								
n_1=1400 min^{-1}	12.92	194	108	155/12	■	■	■	■	■								
	11.99	130	117	1595/133	■	■	■	■	■								
	11.73	198	119	305/26	■	■	■	■	■								
Maximum torque 200 Nm	9.82	180	143	589/60	■	■	■	■	■								
	9.57	130	146	2365/247	■	■	■	■	■								
	8.92	183	157	1159/130	■	■	■	■	■								
	7.64	169	183	527/69	■	■	■	■	■								
	7.24	130	193	275/38	■	■	■	■	■								
	6.94	171	202	2074/299	■	■	■	■	■								
	5.96	158	235	155/26			■	■	■								
	5.50	130	255	11/2	■	■	■	■	■								
	5.41	159	259	915/169			■	■	■								
	4.28	130	327	1870/437	■	■	■	■	■								
	3.34	130	419	825/247			■	■	■								
C033	286.32	200	4.9	20615/72	■	■											
	260.03	200	5.4	40565/156	■	■											
	223.03	200	6.3	8029/36	■	■	■										
	202.55	200	6.9	15799/78	■	■	■										
	180.83	200	7.7	1085/6	■	■	■										
	164.23	200	8.5	2135/13	■	■	■										
	142.47	200	9.8	14105/99	■	■	■										
3 stages	129.39	200	11	4270/33	■	■	■										
	109.79	200	13	2635/24	■	■	■										
	99.71	200	14	5185/52	■	■	■										
n_1=1400 min^{-1}	85.78	200	16	40145/468	■	■	■										
	77.90	200	18	78995/1014	■	■	■										
	64.05	200	22	18445/288	■	■	■										
Maximum torque 200 Nm	58.17	200	24	36295/624	■	■	■										
	55.25	200	25	11935/216			■										
	50.18	200	28	23485/468			■										
	48.22	200	29	434/9	■	■	■										
	43.79	200	32	1708/39	■	■	■										
	35.38	200	40	3255/92	■	■	■										
	32.13	200	44	19215/598	■	■	■										

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C032	42.88	5000	■	■	■	■	■	■					3000	■						
	38.95	5000	■	■	■	■	■	■					3000	■						
	34.88	5000	■	■	■	■	■	■					3000	■						
	31.67	5000	■	■	■	■	■	■					3000	■						
	27.71	5000	■	■	■	■	■	■					3000	■						
	25.17	5000	■	■	■	■	■	■					3000	■						
	24.03	5000	■	■	■	■	■	■					3000	■						
	21.40	5000	■	■	■	■	■	■	■				3000	■						
	19.54	5000	■	■	■	■	■	■					3000	■						
	19.44	5000	■	■	■	■	■	■	■				3000	■						
	17.09	5000	■	■	■	■	■	■	■				3000	■						
	15.53	5000	■	■	■	■	■	■					3000	■						
	15.52	5000	■	■	■	■	■	■	■				3000	■						
	12.92	5000	■	■	■	■	■	■	■				3000	■						
	11.99	5000	■	■	■	■	■	■	■				3000	■						
	11.73	5000	■	■	■	■	■	■	■				3000	■						
	9.82	4200	■	■	■	■	■	■	■				3000	■						
	9.57	5000	■	■	■	■	■	■	■				3000	■						
	8.92	4200	■	■	■	■	■	■	■				3000	■						
	7.64	3600	■	■	■	■	■	■	■				3000	■						
	7.24	5000	■	■	■	■	■	■	■				3000	■						
	6.94	3600	■	■	■	■	■	■	■				3000	■						
	5.96	3200		■	■	■	■	■	■				3000	■						
	5.50	4200	■	■	■	■	■	■	■				3000	■						
	5.41	3200		■	■	■	■	■	■				3000	■						
	4.28	3600	■	■	■	■	■	■	■				3000	■						
	3.34	3200		■	■	■	■	■	■				3000	■						
C033	286.32	5000	■										-							
	260.03	5000	■										-							
	223.03	5000	■	■	■	■	■	■					3000	■						
	202.55	5000	■	■	■	■	■	■					3000	■						
	180.83	5000	■	■	■	■	■	■					3000	■						
	164.23	5000	■	■	■	■	■	■					3000	■						
	142.47	5000	■	■	■	■	■	■					3000	■						
	129.39	5000	■	■	■	■	■	■					3000	■						
	109.79	5000	■	■	■	■	■	■	■				3000	■						
	99.71	5000	■	■	■	■	■	■	■				3000	■						
	85.78	5000	■	■	■	■	■	■	■				3000	■						
	77.90	5000	■	■	■	■	■	■	■				3000	■						
	64.05	5000	■	■	■	■	■	■	■				3000	■						
	58.17	5000	■	■	■	■	■	■	■				3000	■						
	55.25	4600		■	■	■	■	■	■				3000	■						
	50.18	4600		■	■	■	■	■	■				3000	■						
	48.22	4200	■	■	■	■	■	■	■				3000	■						
	43.79	4200	■	■	■	■	■	■	■				3000	■						
	35.38	3600	■	■	■	■	■	■	■				3000	■						
	32.13	3600	■	■	■	■	■	■	■				3000	■						

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C052	58.85	250	24	1177/20	■	■	■	■									
	53.50	227	26	107/2	■	■	■	■									
	48.13	337	29	385/8	■	■	■	■									
	43.75	307	32	175/4	■	■	■	■									
	38.00	400	37	38/1	■	■	■	■									
	35.67	151	39	107/3	■	■	■	■									
	34.55	400	41	380/11	■	■	■	■									
	29.46	400	48	825/28	■	■	■	■	■	■	■						
	29.17	204	48	175/6	■	■	■	■									
	26.79	400	52	375/14	■	■	■	■	■	■	■						
	24.12	400	58	627/26	■	■	■	■	■	■	■						
	23.03	267	61	760/33	■	■	■	■									
	21.92	400	64	285/13	■	■	■	■	■	■	■						
	18.56	400	75	297/16	■	■	■	■	■	■	■						
	17.86	267	78	125/7	■	■	■	■	■	■	■						
2 stages	16.88	400	83	135/8	■	■	■	■	■	■	■						
	14.62	267	96	190/13	■	■	■	■	■	■	■						
	14.03	400	100	561/40	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	12.75	400	110	51/4	■	■	■	■	■	■	■						
	11.48	400	122	264/23	■	■	■	■	■	■	■						
Maximum torque	11.25	267	124	45/4	■	■	■	■	■	■	■						
400 Nm	10.43	400	134	240/23	■	■	■	■	■	■	■						
	9.31	386	150	121/13			■	■	■	■	■						
	8.50	267	165	17/2	■	■	■	■	■	■	■						
	8.46	365	165	110/13			■	■	■	■	■						
	7.79	347	180	187/24			■	■	■	■	■						
	7.08	328	198	85/12			■	■	■	■	■						
	6.96	267	201	160/23	■	■	■	■	■	■	■						
	6.31	306	222	341/54			■	■	■	■	■						
	6.09	299	230	341/56					■	■	■						
	5.74	289	244	155/27			■	■	■	■	■						
	5.64	259	248	220/39			■	■	■	■	■						
	5.54	283	253	155/28					■	■	■						
	4.72	230	296	85/18			■	■	■	■	■						
	3.83	200	366	310/81			■	■	■	■	■						
	3.69	195	379	155/42					■	■	■						
C053	328.43	400	4.3	2299/7	■	■	■	■									
	298.57	400	4.7	2090/7	■	■	■	■									
	267.93	400	5.2	3751/14	■	■	■	■									
	243.57	400	5.7	1705/7	■	■	■	■									
	213.71	400	6.6	1496/7	■	■	■	■									
	194.29	400	7.2	1360/7	■	■	■	■									
3 stages	165.45	400	8.5	8107/49	■	■	■	■									
	150.41	400	9.3	7370/49	■	■	■	■									
	132.97	400	11	12100/91	■	■	■	■									
n_1=1400 min^{-1}	120.88	400	12	11000/91	■	■	■	■									
	101.55	400	14	5687/56	■	■	■	■									
Maximum torque	92.32	400	15	2585/28	■	■	■	■									
400 Nm	77.79	400	18	1089/14	■	■	■	■									
	70.71	400	20	495/7	■	■	■	■									
	61.63	400	23	9922/161	■	■	■	■									
	56.02	400	25	9020/161	■	■	■	■									
	49.20	400	28	4477/91			■	■									
	44.73	400	31	4070/91			■	■									

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C052	58.85	5000	■	■	■	■	■	■					3000	■						
	53.50	5000	■	■	■	■	■	■					3000	■						
	48.13	5000	■	■	■	■	■	■					3000	■						
	43.75	5000	■	■	■	■	■	■					3000	■						
	38.00	5000	■	■	■	■	■	■					3000	■						
	35.67	5000	■	■	■	■	■	■					3000	■						
	34.55	5000	■	■	■	■	■	■					3000	■						
	29.46	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	29.17	5000	■	■	■	■	■	■					3000	■						
	26.79	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	24.12	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	23.03	5000	■	■	■	■	■	■					3000	■						
	21.92	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	18.56	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	17.86	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	16.88	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	14.62	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	14.03	4800	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	12.75	4800	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	11.48	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	11.25	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	10.43	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	9.31	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	8.50	4800	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	8.46	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	7.79	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	7.08	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.96	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	6.31	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.09	2900							■	■	■	■	2900		■					
	5.74	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.64	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.54	2900							■	■	■	■	2900		■					
	4.72	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	3.83	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	3.69	2900							■	■	■	■	2900		■					
C053	328.43	5000	■	■	■	■	■	■					3000	■						
	298.57	5000	■	■	■	■	■	■					3000	■						
	267.93	5000	■	■	■	■	■	■					3000	■						
	243.57	5000	■	■	■	■	■	■					3000	■						
	213.71	5000	■	■	■	■	■	■					3000	■						
	194.29	5000	■	■	■	■	■	■					3000	■						
	165.45	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	150.41	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	132.97	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	120.88	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	101.55	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	92.32	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	77.79	4800	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	70.71	4800	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	61.63	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	56.02	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	49.20	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	44.73	3700		■	■	■	■	■	■	■	■	■	3000	■	■					

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C062	60.00	420	23	60/1	■	■	■	■									
	55.02	385	25	3081/56	■	■	■	■									
	47.55	600	29	6800/143	■	■	■	■									
	43.60	563	32	6715/154	■	■	■	■									
	36.92	600	38	480/13	■	■	■	■	■	■	■						
	33.86	600	41	237/7	■	■	■	■		■	■						
	33.43	234	42	234/7	■	■	■	■									
	30.30	600	46	5120/169	■	■	■	■	■	■	■						
	27.78	600	50	2528/91	■	■	■	■	■	■	■						
	26.49	342	53	2040/77	■	■	■	■									
	23.46	600	60	305/13	■	■	■	■	■	■	■						
	21.51	600	65	4819/224	■	■	■	■	■	■	■						
	20.57	377	68	144/7	■	■	■	■	■	■	■						
	17.85	600	78	232/13	■	■	■	■	■	■	■						
	16.88	377	83	1536/91	■	■	■	■	■	■	■						
2 stages	16.36	600	86	2291/140	■	■	■	■	■	■	■						
	14.72	600	95	4400/299	■	■	■	■	■	■	■						
	13.49	600	104	4345/322	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	13.07	377	107	183/14	■	■	■	■	■	■	■						
	12.07	600	116	2040/169			■	■	■	■	■						
Maximum torque	11.07	600	126	4029/364			■	■	■	■	■						
600 Nm	10.26	600	137	400/39			■	■	■	■	■						
	9.94	377	141	348/35	■	■	■	■	■	■	■						
	9.40	589	149	395/42			■	■	■	■	■						
	8.43	547	166	2960/351			■	■	■	■	■						
	8.20	377	171	1320/161	■	■	■	■	■	■	■						
	8.13	534	172	740/91					■	■	■						
	7.73	517	181	2923/378			■	■	■	■	■						
	7.46	504	188	2923/392					■	■	■						
	6.73	377	208	612/91			■	■	■	■	■						
	6.69	469	209	2000/299			■	■	■	■	■						
	6.13	443	228	1975/322			■	■	■	■	■						
	5.71	371	245	40/7			■	■	■	■	■						
	4.70	325	298	296/63			■	■	■	■	■						
	4.53	318	309	222/49					■	■	■						
	3.73	279	376	600/161			■	■	■	■	■						
C063	375.71	600	3.7	83032/221	■	■	■	■									
	344.51	600	4.1	819941/2380	■	■	■	■									
	307.24	600	4.6	67900/221	■	■	■	■									
	281.73	600	5	38315/136	■	■	■	■									
	242.60	600	5.8	589760/2431	■	■	■	■									
	222.46	600	6.3	291194/1309	■	■	■	■									
	188.11	600	7.4	291000/1547	■	■	■	■									
3 stages	172.49	600	8.1	574725/3332	■	■	■	■									
	153.96	600	9.1	442320/2873	■	■	■	■									
	141.17	600	9.9	436791/3094	■	■	■	■									
n_1=1400 min^{-1}	118.51	600	12	26190/221	■	■	■	■									
	108.67	600	13	206901/1904	■	■	■	■									
Maximum torque	89.54	600	16	1164/13	■	■	■	■									
600 Nm	82.10	600	17	22989/280	■	■	■	■									
	73.28	600	19	372480/5083	■	■	■	■									
	67.19	600	21	183912/2737	■	■	■	■									
	59.42	600	24	170720/2873			■	■	■	■							
	54.49	600	26	84293/1547			■	■	■	■							
	49.74	600	28	1940/39			■	■	■	■							
	45.61	600	31	7663/168			■	■	■	■							

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C062	60.00	5000	■	■	■	■	■	■					3000	■						
	55.02	5000	■	■	■	■	■	■					3000	■						
	47.55	5000	■	■	■	■	■	■					3000	■						
	43.60	5000	■	■	■	■	■	■					3000	■						
	36.92	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	33.86	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	33.43	5000	■	■	■	■	■	■					3000	■						
	30.30	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	27.78	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	26.49	5000	■	■	■	■	■	■					3000	■						
	23.46	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	21.51	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	20.57	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	17.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	16.88	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	16.36	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	14.72	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	13.49	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	13.07	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	12.07	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.07	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	10.26	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	9.94	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	9.40	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	8.43	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	8.20	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	8.13	3100							■	■	■	■	3000		■					
	7.73	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	7.46	3100							■	■	■	■	3000		■					
	6.73	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.69	2800		■	■	■	■	■	■	■	■	■	2800	■	■					
	6.13	2800		■	■	■	■	■	■	■	■	■	2800	■	■					
	5.71	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	4.70	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	4.53	3100							■	■	■	■	3000		■					
	3.73	2800		■	■	■	■	■	■	■	■	■	2800	■	■					
C063	375.71	5000	■	■	■	■	■	■					3000	■						
	344.51	5000	■	■	■	■	■	■					3000	■						
	307.24	5000	■	■	■	■	■	■					3000	■						
	281.73	5000	■	■	■	■	■	■					3000	■						
	242.60	5000	■	■	■	■	■	■					3000	■						
	222.46	5000	■	■	■	■	■	■					3000	■						
	188.11	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	172.49	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	153.96	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	141.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	118.51	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	108.67	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	89.54	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	82.10	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	73.28	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	67.19	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	59.42	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	54.49	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	49.74	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	45.61	3600		■	■	■	■	■	■	■	■	■	3000	■	■					

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C072	38.92	820	36	506/13	■	■	■	■	■	■	■						
	35.41	820	40	5984/169	■	■	■	■	■	■	■						
	30.55	820	46	1955/64	■	■	■	■	■	■	■						
	27.79	820	50	1445/52	■	■	■	■	■	■	■						
	23.58	802	59	943/40	■	■	■	■	■	■	■						
	21.45	780	65	1394/65	■	■	■	■	■	■	■						
	20.65	686	68	1342/65	■	■	■	■	■	■	■						
	19.50	757	72	39/2	■	■	■	■	■	■	■						
	17.74	736	79	408/23	■	■	■	■	■	■	■						
	16.59	720	84	1725/104			■	■	■	■	■						
	16.20	671	86	1037/64	■	■	■	■	■	■	■						
2 stages	15.09	700	93	2550/169			■	■	■	■	■						
	14.38	689	97	115/8			■	■	■	■	■	■					
n_1=1400 min^{-1}	13.08	670	107	170/13			■	■	■	■	■	■					
	12.51	618	112	2501/200	■	■	■	■	■	■	■						
	12.14	654	115	437/36			■	■	■	■	■	■					
Maximum torque 820 Nm	11.71	647	120	1311/112					■	■	■						
	11.04	637	127	1292/117			■	■	■	■	■	■					
	10.65	630	131	969/91					■	■	■						
	10.34	582	135	2379/230	■	■	■	■	■	■	■						
	10.00	617	140	10/1			■	■	■	■	■	■					
	9.10	600	154	2720/299			■	■	■	■	■	■					
	8.80	552	159	915/104			■	■	■	■	■						
	7.63	528	184	61/8			■	■	■	■	■	■					
	6.44	500	217	1159/180			■	■	■	■	■	■					
	6.21	494	225	3477/560					■	■	■						
	5.30	470	264	122/23			■	■	■	■	■	■					
C073	351.33	820	4	14053/40	■	■	■	■									
	319.60	820	4.4	1598/5	■	■	■	■									
	278.44	820	5	18377/66	■	■	■	■									
	253.30	820	5.5	108664/429	■	■	■	■									
	216.20	820	6.5	1081/5	■	■	■	■	■	■	■						
	196.68	820	7.1	12784/65	■	■	■	■	■	■	■						
	177.39	820	7.9	34592/195	■	■	■	■	■	■	■						
	161.38	820	8.7	409088/2535	■	■	■	■	■	■	■						
	137.38	820	10	65941/480	■	■	■	■	■	■	■						
3 stages	124.97	820	11	48739/390	■	■	■	■	■	■	■						
	104.50	820	13	31349/300	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	95.06	820	15	92684/975	■	■	■	■	■	■	■						
	86.17	820	16	517/6	■	■	■	■	■	■	■						
	78.39	820	18	70312/897	■	■	■	■	■	■	■						
Maximum torque 820 Nm	70.68	820	20	18377/260			■	■	■	■	■						
	64.30	820	22	54332/845			■	■	■	■	■						
	60.06	820	23	1081/18			■	■	■	■	■						
	54.63	820	26	6392/117			■	■	■	■	■						
	49.38	820	28	39997/810			■	■	■	■	■						
	47.62	819	29	39997/840					■	■	■						
	44.92	794	31	236504/5265			■	■	■	■	■						
	43.32	782	32	59126/1365					■	■	■						
	39.17	765	36	235/6			■	■	■	■	■						
	35.63	726	39	31960/897			■	■	■	■	■						

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C072	38.92	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	35.41	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	30.55	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	27.79	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	23.58	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	21.45	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	20.65	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	19.50	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	17.74	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.59	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.20	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	15.09	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	14.38	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	13.08	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	12.51	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	12.14	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	11.71	3200							■	■	■	■	3000		■	■				
	11.04	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	10.65	3200							■	■	■	■	3000		■	■				
	10.34	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	10.00	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
	9.10	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
	8.80	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	7.63	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	6.44	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	6.21	3200							■	■	■	■	3000		■	■				
	5.30	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
C073	351.33	5000	■	■	■	■	■	■					3000	■						
	319.60	5000	■	■	■	■	■	■					3000	■						
	278.44	5000	■	■	■	■	■	■					3000	■						
	253.30	5000	■	■	■	■	■	■					3000	■						
	216.20	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	196.68	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	177.39	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	161.38	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	137.38	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	124.97	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	104.50	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	95.06	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	86.17	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	78.39	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	70.68	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	64.30	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	60.06	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	54.63	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	49.38	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	47.62	3200							■	■	■	■	3000		■	■				
	44.92	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	43.32	3200							■	■	■	■	3000		■	■				
	39.17	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
	35.63	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C082	54.18	1550	26	4930/91	■	■	■	■	■	■	■						
	42.88	1550	33	9605/224	■	■	■	■	■	■	■						
	37.44	1550	37	3145/84			■	■	■	■	■						
	33.09	1550	42	1853/56	■	■	■	■	■	■	■						
	31.23	1117	45	406/13	■	■	■	■	■	■	■						
	27.98	1549	50	4505/161	■	■	■	■	■	■	■						
	24.72	1120	57	791/32	■	■	■	■	■	■	■						
	24.05	1479	58	8755/364			■	■	■	■	■						
	21.58	1316	65	259/12			■	■	■	■	■						
	21.00	1418	67	7055/336			■	■	■	■	■	■					
2 stages	19.08	1306	73	763/40	■	■	■	■	■	■	■						
	17.99	1353	78	3400/189			■	■	■	■	■	■	■				
n_1=1400 min^{-1}	17.35	1338	81	850/49					■	■	■						
	16.13	1298	87	371/23	■	■	■	■	■	■	■						
	15.31	1288	91	2465/161			■	■	■	■	■	■	■				
Maximum torque 1550 Nm	13.87	1233	101	721/52			■	■	■	■	■						
	12.84	1220	109	4675/364					■	■	■	■	■				
	12.10	1177	116	581/48			■	■	■	■	■	■					
	10.82	1158	129	3485/322					■	■	■	■	■				
	10.37	1117	135	280/27			■	■	■	■	■	■	■				
	10.00	1103	140	10/1					■	■	■						
	8.87	1090	158	1615/182								■	■				
	8.83	1057	159	203/23			■	■	■	■	■	■	■				
	7.40	996	189	385/52					■	■	■	■	■				
	6.24	939	224	287/46					■	■	■	■	■				
	5.12	878	274	133/26								■	■				
C083	368.94	1550	3.8	909075/2464	■	■	■	■									
	284.84	1550	4.9	893265/3136	■	■	■	■	■	■	■						
3 stages	238.89	1550	5.9	86955/364	■	■	■	■	■	■	■						
	187.48	1550	7.5	671925/3584	■	■	■	■	■	■	■						
	144.69	1550	9.7	64821/448	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	119.68	1550	12	308295/2576	■	■	■	■	■	■	■						
	101.80	1550	14	592875/5824			■	■	■	■	■						
	88.23	1550	16	39525/448			■	■	■	■	■						
Maximum torque 1550 Nm	74.50	1550	19	50065/672			■	■	■	■	■						
	71.84	1550	19	450585/6272					■	■	■						
	61.37	1550	23	39525/644			■	■	■	■	■						

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C082	54.18	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	42.88	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	37.44	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	33.09	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	31.23	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	27.98	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	24.72	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	24.05	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	21.58	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	21.00	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	19.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	17.99	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	17.35	3600							■	■	■	■	3000		■	■				
	16.13	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	15.31	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	13.87	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	12.84	2900							■	■	■	■	2900		■	■	■	■		
	12.10	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	10.82	2600							■	■	■	■	2600		■	■	■	■		
	10.37	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	10.00	3600							■	■	■	■	3000		■	■				
	8.87	-											2300				■	■		
	8.83	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	7.40	2900							■	■	■	■	2900		■	■	■	■		
	6.24	2600							■	■	■	■	2600		■	■	■	■		
	5.12	-											2300				■	■		
C083	368.94	5000	■	■	■	■	■	■					3000	■						
	284.84	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	238.89	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	187.48	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	144.69	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	119.68	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	101.80	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	88.23	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	74.50	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	71.84	3600							■	■	■	■	3000		■	■				
	61.37	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C092	39.60	2970	35	198/5	■	■	■	■	■	■	■						
	33.48	2992	42	770/23	■	■	■	■	■	■	■						
	28.98	2981	48	1507/52			■	■	■	■	■						
	25.67	3000	55	77/3			■	■	■	■	■	■					
	22.58	1694	62	1242/55	■	■	■	■	■	■	■						
	22.20	3000	63	1199/54			■	■	■	■	■	■	■				
	21.41	2569	65	1199/56					■	■	■						
	19.09	1706	73	210/11	■	■	■	■	■	■	■						
	18.89	3000	74	869/46			■	■	■	■	■	■	■				
2 stages	16.53	1700	85	9453/572			■	■	■	■	■						
	16.08	3000	87	209/13					■	■	■	■	■	■			
	14.64	1819	96	161/11			■	■	■	■	■	■					
n_1=1400 min^{-1}	13.87	3000	101	319/23					■	■	■	■	■	■			
	12.66	1819	111	2507/198			■	■	■	■	■	■	■				
Maximum torque	12.21	1465	115	7521/616					■	■	■						
3000 Nm	11.63	2990	120	605/52								■	■	■			
	10.77	1819	130	237/22			■	■	■	■	■	■	■				
	9.46	2805	148	473/50								■	■	■			
	9.17	1819	153	1311/143					■	■	■	■	■	■			
	7.91	1819	177	87/11					■	■	■	■	■	■			
	7.40	2600	189	429/58								■	■	■			
	6.63	1819	211	345/52								■	■	■			
	5.39	1819	260	2967/550								■	■	■			
	4.22	1819	332	2691/638								■	■	■			
C093	306.73	3000	4.6	7975/26	■	■	■	■	■	■	■						
	242.77	3000	5.8	31075/128	■	■	■	■	■	■	■						
	211.98	3000	6.6	10175/48			■	■	■	■	■						
	187.34	3000	7.5	5995/32	■	■	■	■	■	■	■						
	158.42	3000	8.8	14575/92	■	■	■	■	■	■	■						
	154.24	3000	9.1	14036/91	■	■	■	■	■	■	■						
	136.18	3000	10	28325/208			■	■	■	■	■						
	122.08	3000	11	13673/112	■	■	■	■	■	■	■						
	118.88	3000	12	22825/192			■	■	■	■	■	■					
	106.60	3000	13	4477/42			■	■	■	■	■						
3 stages	101.85	3000	14	2750/27			■	■	■	■	■	■					
	98.21	3000	14	1375/14					■	■	■						
	94.21	3000	15	13189/140	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	86.68	3000	16	7975/92			■	■	■	■	■	■					
	79.66	3000	18	12826/161	■	■	■	■	■	■	■						
Maximum torque	72.72	3000	19	15125/208					■	■	■	■					
3000 Nm	68.48	3000	20	12463/182			■	■	■	■	■						
	61.28	3000	23	11275/184					■	■	■	■					
	59.78	3000	23	10043/168			■	■	■	■	■	■					
	51.22	3000	27	9680/189			■	■	■	■	■	■					
	50.24	2923	28	5225/104								■					
	49.39	2995	28	2420/49					■	■	■						
	43.59	2859	32	7018/161			■	■	■	■	■	■					
	36.57	2677	38	6655/182					■	■	■	■					
	30.81	2510	45	4961/161					■	■	■	■					
	25,26	2331	55	2299/91								■					

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C092	39.60	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	33.48	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	28.98	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	25.67	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	22.58	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	22.20	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	21.41	3900							■	■	■	■	3000		■	■				
	19.09	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	18.89	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	16.53	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.08	3100							■	■	■	■	3000		■	■	■	■	■	
	14.64	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	13.87	2800							■	■	■	■	2800		■	■	■	■	■	
	12.66	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	12.21	3900							■	■	■	■	3000		■	■				
	11.63	-											2500				■	■	■	
	10.77	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	9.46	-											2200				■	■	■	
	9.17	3100							■	■	■	■	3000		■	■	■	■	■	
	7.91	2800							■	■	■	■	2800		■	■	■	■	■	
	7.40	-											1900				■	■	■	
	6.63	-											2500				■	■	■	
	5.39	-											2200				■	■	■	
	4.22	-											1900				■	■	■	
C093	306.73	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	242.77	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	211.98	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	187.34	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	158.42	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	154.24	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	136.18	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	122.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	118.88	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	106.60	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	101.85	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	98.21	3900							■	■	■	■	3000		■	■				
	94.21	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	86.68	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	79.66	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	72.72	3100							■	■	■	■	3000		■	■	■	■	■	
	68.48	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	61.28	2800							■	■	■	■	2800		■	■	■	■	■	
	59.78	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	51.22	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	50.24	-											2500				■	■	■	
	49.39	3900							■	■	■	■	3000	■	■	■				
	43.59	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	36.57	3100							■	■	■	■	3000		■	■	■	■	■	
	30.81	2800							■	■	■	■	2800		■	■	■	■	■	
	25.26	-											2500				■	■	■	

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C102	33.01	3695	42	6437/195			■	■	■	■	■						
	29.16	4500	48	1312/45			■	■	■	■	■	■					
	25.31	4500	55	2050/81			■	■	■	■	■	■	■				
	24.40	2930	57	1025/42					■	■	■						
	21.87	4500	64	328/15			■	■	■	■	■	■	■				
	19.17	2146	73	11461/598			■	■	■	■	■						
	18.71	4500	75	3649/195					■	■	■	■	■	■			
	16.93	2698	83	1168/69			■	■	■	■	■	■					
2 stages	16.16	4500	87	5576/345					■	■	■	■	■	■			
	14.69	2698	95	9125/621			■	■	■	■	■	■	■				
n_1=1400 min^{-1}	14.17	1701	99	9125/644					■	■	■						
	13.67	4500	102	41/3								■	■	■			
	12.70	2698	110	292/23			■	■	■	■	■	■	■				
Maximum torque 4500 Nm	11.15	4500	126	1394/125								■	■	■			
	10.86	2698	129	6497/598					■	■	■	■	■	■			
	9.38	2698	149	4964/529					■	■	■	■	■	■			
	9.05	4500	155	1312/145								■	■	■			
	7.93	2698	176	365/46								■	■	■			
	7.22	4500	194	1517/210									■	■			
	6.47	2698	216	3723/575								■	■	■			
	5.25	2698	266	3504/667								■	■	■			
	4.19	2698	334	2701/644									■	■			
C103	246.43	4500	5.7	141696/575	■	■	■	■	■	■	■						
	208.33	4500	6.7	110208/529	■	■	■	■	■	■	■						
	180.35	4500	7.8	269616/1495			■	■	■	■	■						
	159.72	4500	8.8	18368/115			■	■	■	■	■	■					
	138.17	4500	10	143008/1035			■	■	■	■	■	■					
	133.24	4500	11	107256/805					■	■	■						
	122.02	4500	11	15252/125	■	■	■	■	■	■	■						
	117.56	4500	12	310944/2645			■	■	■	■	■	■					
	103.15	4500	14	35588/345	■	■	■	■	■	■	■						
3 stages	100.05	4500	14	149568/1495					■	■	■	■					
	89.30	4500	16	174127/1950			■	■	■	■	■						
	86.31	4500	16	228288/2645					■	■	■	■					
n_1=1400 min^{-1}	79.08	4500	18	17794/225			■	■	■	■	■	■					
	72.40	4500	19	21648/299								■					
Maximum torque 4500 Nm	68.41	4500	20	138539/2025			■	■	■	■	■	■					
	65.97	4500	21	138539/2100					■	■	■						
	58.87	4500	24	169248/2875								■					
	58.21	4500	24	100409/1725			■	■	■	■	■	■					
	49.54	4500	28	48298/975					■	■	■	■					
	46.03	4500	30	153504/3335								■					
	42.74	4500	33	73718/1725					■	■	■	■					
	35.85	4500	39	13981/390								■					
	29.15	4500	48	54653/1875								■					
	22.79	4500	61	16523/725								■					

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C102	33.01	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	29.16	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	25.31	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	24.40	4100							■	■	■	■	3000		■	■				
	21.87	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	19.17	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	18.71	3300							■	■	■	■	3000		■	■	■	■	■	
	16.93	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	16.16	3000							■	■	■	■	3000		■	■	■	■	■	
	14.69	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	14.17	4100							■	■	■	■	3000		■	■				
	13.67	-											2600				■	■	■	
	12.70	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	11.15	-											2300				■	■	■	
	10.86	3300							■	■	■	■	3000		■	■	■	■	■	
	9.38	3000							■	■	■	■	3000		■	■	■	■	■	
	9.05	-											2000				■	■	■	
	7.93	-											2600				■	■	■	
	7.22	-											1800					■	■	
	6.47	-											2300				■	■	■	
	5.25	-											2000				■	■	■	
	4.19	-											1800					■	■	
C103	246.43	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	208.33	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	180.35	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	159.72	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	138.17	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	133.24	4100							■	■	■	■	3000		■	■				
	122.02	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	117.56	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	103.15	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	100.05	3300							■	■	■	■	3000		■	■	■	■	■	
	89.30	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	86.31	3000							■	■	■	■	3000		■	■	■	■	■	
	79.08	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	72.40	-											2600				■	■	■	
	68.41	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	65.97	4100							■	■	■	■	3000		■	■				
	58.87	-											2300				■	■	■	
	58.21	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	49.54	3300							■	■	■	■	3000		■	■	■	■	■	
	46.03	-											2000				■	■	■	
	42.74	3000							■	■	■	■	3000		■	■	■	■	■	
	35.85	-											2600				■	■	■	
	29.15	-											2300				■	■	■	
	22.79	-											2000				■	■	■	

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C132	35.51	5325	39	2983/84						■	■	■					
	30.96	5885	45	836/27						■	■	■	■				
	29.86	3583	47	209/7						■	■						
	26.67	7730	52	4294/161						■	■	■	■				
	22.97	8000	61	2090/91						■	■	■	■	■	■		
	20.22	3032	69	2669/132						■	■	■					
	20.06	8000	70	3230/161						■	■	■	■	■	■		
	17.63	3351	79	476/27						■	■	■	■				
	17.33	8000	81	1577/91								■	■	■	■		
2 stages	17.00	2040	82	17/1						■	■						
	15.19	4401	92	3842/253						■	■	■	■				
	14.33	8000	98	2508/175								■	■	■	■		
n_1=1400 min^{-1}	13.08	4884	107	170/13						■	■	■	■	■	■		
	11.79	8000	119	342/29								■	■	■	■		
Maximum torque	11.42	4945	123	2890/253							■	■	■	■	■		
8000 Nm	9.87	4945	142	1411/143								■	■	■	■		
	9.69	8000	144	475/49									■	■	■		
	8.23	8000	170	1786/217									■	■	■		
	8.16	4945	172	204/25								■	■	■	■		
	7.03	8000	199	836/119									■	■	■		
	6.71	4945	208	2142/319								■	■	■	■		
	5.52	4945	254	425/77									■	■	■		
	4.69	4945	299	1598/341									■	■	■		
	4.00	4945	350	4/1									■	■	■		
C133	204.88	8000	6.8	74575/364						■	■						
	180.95	8000	7.7	3800/21						■	■	■					
	157.08	8000	8.9	59375/378						■	■	■	■				
	151.47	8000	9.2	59375/392						■	■						
	135.71	8000	10	950/7						■	■	■	■				
	116.14	8000	12	42275/364						■	■	■	■	■	■		
	101.85	8000	14	259521/2548						■	■						
	100.31	8000	14	16150/161						■	■	■	■	■	■		
3 stages	89.96	8000	16	4408/49						■	■	■					
	84.82	8000	17	2375/28								■	■	■	■		
	78.09	8000	18	68875/882						■	■	■	■				
n_1=1400 min^{-1}	75.30	8000	19	206625/2744						■	■						
	69.21	8000	20	969/14								■	■	■	■		
Maximum torque	67.47	8000	21	3306/49						■	■	■	■				
8000 Nm	57.74	8000	24	147117/2548						■	■	■	■	■	■		
	56.16	8000	25	11400/203								■	■	■	■		
	49.87	8000	28	56202/1127						■	■	■	■	■	■		
	44.83	8000	31	17575/392									■	■	■		
	42.17	8000	33	8265/196								■	■	■	■		
	34.41	8000	41	84303/2450								■	■	■	■		
	27.92	8000	50	1368/49								■	■	■	■		
	22.29	8000	63	61161/2744										■	■		

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C132	35.51	5000								■	■	■	3000		■	■	■			
	30.96	4500								■	■	■	3000		■	■	■	■		
	29.86	4400								■	■	■	3000		■	■				
	26.67	4000								■	■	■	3000		■	■	■	■		
	22.97	3500								■	■	■	3000		■	■	■	■	■	
	20.22	5000								■	■	■	3000		■	■	■			
	20.06	3200								■	■	■	3000		■	■	■	■	■	■
	17.63	4500								■	■	■	3000		■	■	■	■		
	17.33	-											2800				■	■	■	■
	17.00	4400								■	■	■	3000		■	■				
	15.19	4000								■	■	■	3000		■	■	■	■		
	14.33	-											2400				■	■	■	■
	13.08	3500								■	■	■	3000		■	■	■	■	■	
	11.79	-											2100				■	■	■	■
	11.42	3200								■	■	■	3000		■	■	■	■	■	■
	9.87	-											2800				■	■	■	■
	9.69	-											1900					■	■	■
	8.23	-											1700					■	■	■
	8.16	-											2400				■	■	■	■
	7.03	-											1500						■	■
	6.71	-											2100				■	■	■	■
	5.52	-											1900					■	■	■
	4.69	-											1700					■	■	■
	4.00	-											1500						■	■
C133	204.88	5000								■	■	■	3000		■	■				
	180.95	5000								■	■	■	3000		■	■	■			
	157.08	4500								■	■	■	3000		■	■	■	■		
	151.47	4400								■	■	■	3000		■	■				
	135.71	4000								■	■	■	3000		■	■	■	■		
	116.14	3500								■	■	■	3000		■	■	■	■	■	
	101.85	5000								■	■	■	3000		■	■				
	100.31	3200								■	■	■	3000		■	■	■	■	■	■
	89.96	5000								■	■	■	3000		■	■	■			
	84.82	-											2800				■	■	■	■
	78.09	4500								■	■	■	3000		■	■	■	■		
	75.30	4400								■	■	■	3000		■	■				
	69.21	-											2400				■	■	■	■
	67.47	4000								■	■	■	3000		■	■	■	■		
	57.74	3500								■	■	■	3000		■	■	■	■	■	
	56.16	-											2100				■	■	■	■
	49.87	3200								■	■	■	3000		■	■	■	■	■	■
	44.83	-											1900					■	■	■
	42.17	-											2800				■	■	■	■
	34.41	-											2400				■	■	■	■
	27.92	-											2100				■	■	■	■
	22.29	-											1900					■	■	■

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C142	37.48	7123	37	1012/27						■	■	■	■				
	32.28	9361	43	1485/46						■	■	■	■				
	27.92	11759	50	363/13						■	■	■	■	■	■		
	24.63	13000	57	1133/46						■	■	■	■	■	■	■	
	21.37	4062	66	2116/99						■	■	■	■				
	21.15	13000	66	275/13								■	■	■	■	■	
	18.41	5338	76	405/22						■	■	■	■				
2 stages	17.60	13000	80	88/5								■	■	■	■		
	15.92	6706	88	207/13						■	■	■	■	■	■		
	14.60	13000	96	847/58								■	■	■	■	■	
n_1=1400 min^{-1}	14.05	8155	100	309/22						■	■	■	■	■	■	■	
	12.18	13000	115	341/28									■	■	■	■	
Maximum torque	12.06	8032	116	1725/143								■	■	■	■	■	
13000 Nm	10.47	13000	134	649/62									■	■	■	■	
	10.04	9095	139	552/55								■	■	■	■	■	
	9.06	13000	155	154/17									■	■	■	■	
	8.33	9017	168	483/58								■	■	■	■	■	
	6.94	9095	202	2139/308									■	■	■	■	
	5.97	9095	235	4071/682									■	■	■	■	
	5.17	8816	271	966/187									■	■	■	■	
C143	206.88	13000	6.8	39721/192						■	■	■					
	180.38	13000	7.8	19481/108						■	■	■	■				
	173.94	13000	8	2783/16						■	■						
	155.38	13000	9	1243/8						■	■	■	■				
	133.80	13000	10	13915/104						■	■	■	■	■	■		
	116.88	13000	12	935/8						■	■	■	■	■	■	■	
	113.27	13000	12	146795/1296						■	■	■					
	100.96	13000	14	20999/208								■	■	■	■	■	
	98.76	13000	14	71995/729						■	■	■	■				
3 stages	95.23	11428	15	10285/108						■	■						
	85.07	13000	16	105655/1242						■	■	■	■				
	83.49	13000	17	8349/100								■	■	■	■	■	
n_1=1400 min^{-1}	73.25	13000	19	51425/702						■	■	■	■	■	■		
	68.70	13000	20	15939/232								■	■	■	■	■	
Maximum torque	63.99	13000	22	79475/1242						■	■	■	■	■	■	■	
13000 Nm	56.47	13000	25	6325/112									■	■	■	■	
	55.27	13000	25	77605/1404								■	■	■	■	■	
	47.95	13000	29	11891/248									■	■	■	■	
	45.71	13000	31	2057/45								■	■	■	■	■	
	40.93	13000	34	2783/68									■	■	■	■	
	37.61	13000	37	6545/174								■	■	■	■	■	
	30.92	12705	45	23375/756									■	■	■	■	
	26.25	12096	53	43945/1674									■	■	■	■	
	22.41	11535	62	605/27									■	■	■	■	

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C142	37.48	4800								■	■	■	3000		■	■	■	■		
	32.28	4200								■	■	■	3000		■	■	■	■		
	27.92	3700								■	■	■	3000		■	■	■	■	■	
	24.63	3400								■	■	■	3000		■	■	■	■	■	■
	21.37	4800								■	■	■	3000		■	■	■	■		
	21.15	-											3000				■	■	■	■
	18.41	4200								■	■	■	3000		■	■	■	■		
	17.60	-											2600				■	■	■	■
	15.92	3700								■	■	■	3000		■	■	■	■	■	
	14.60	-											2200				■	■	■	■
	14.05	3400								■	■	■	3000		■	■	■	■	■	■
	12.18	-											2000					■	■	■
	12.06	-											3000				■	■	■	■
	10.47	-											1800					■	■	■
	10.04	-											2600				■	■	■	■
	9.06	-											1600						■	■
	8.33	-											2200				■	■	■	■
	6.94	-											2000					■	■	■
	5.97	-											1800					■	■	■
	5.17	-											1600						■	■
C143	206.88	5000								■	■	■	3000		■	■	■			
	180.38	4800								■	■	■	3000		■	■	■	■		
	173.94	4600								■	■	■	3000		■	■				
	155.38	4200								■	■	■	3000		■	■	■	■		
	133.80	3700								■	■	■	3000		■	■	■	■	■	
	116.88	3400								■	■	■	3000		■	■	■	■	■	■
	113.27	5000								■	■	■	3000		■	■	■			
	100.96	-											3000				■	■	■	■
	98.76	4800								■	■	■	3000		■	■	■	■		
	95.23	4600								■	■	■	3000		■	■				
	85.07	4200								■	■	■	3000		■	■	■	■		
	83.49	-											2600				■	■	■	■
	73.25	3700								■	■	■	3000		■	■	■	■	■	
	68.70	-											2200				■	■	■	■
	63.99	3400								■	■	■	3000		■	■	■	■	■	■
	56.47	-											2000					■	■	■
	55.27	-											3000				■	■	■	■
	47.95	-											1800					■	■	■
	45.71	-											2600				■	■	■	■
	40.93	-											1600						■	■
	37.61	-											2200				■	■	■	■
	30.92	-											2000					■	■	■
	26.25	-											1800					■	■	■
	22.41	-											1600						■	■

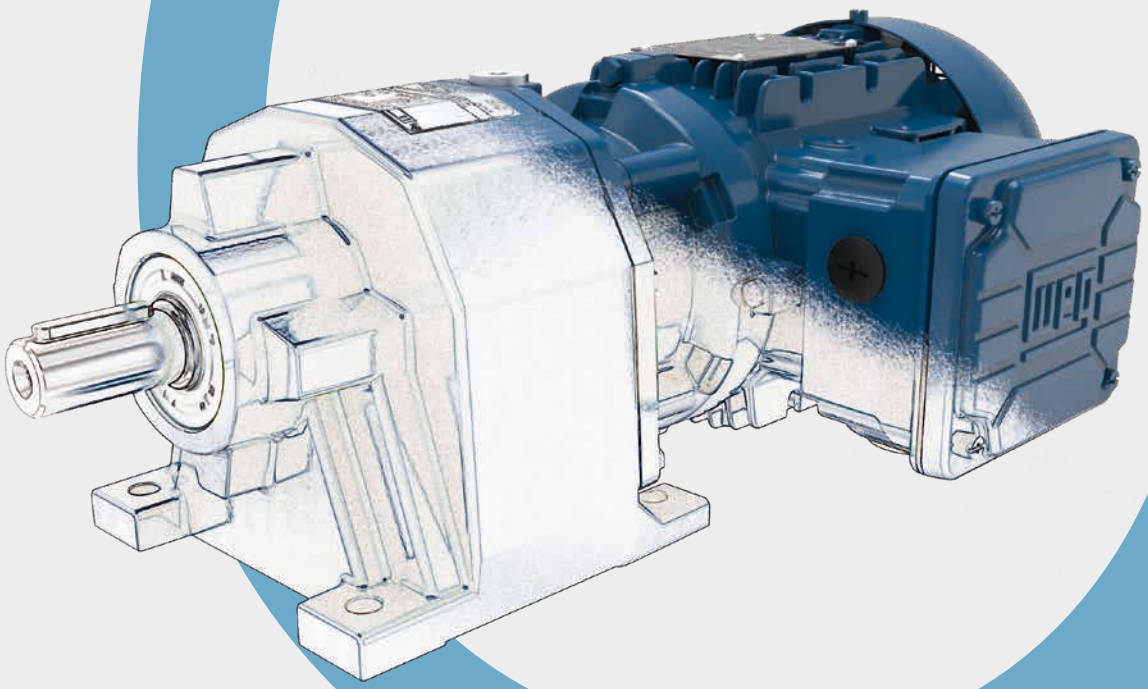
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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
C162	33.00	13926	42	33/1								■	■	■	■		
	25.15	18000	56	327/13								■	■	■	■	■	■
	21.12	18000	66	528/25								■	■	■	■	■	■
	17.70	7468	79	407/23								■	■	■	■		
2 stages	17.38	18000	81	504/29								■	■	■	■	■	■
	14.79	18000	95	207/14									■	■	■	■	■
n_1=1400 min^{-1}	13.49	10003	104	4033/299								■	■	■	■	■	■
	12.77	18000	110	396/31									■	■	■	■	■
	11.33	11261	124	6512/575								■	■	■	■	■	■
Maximum torque 18000 Nm	11.12	18000	126	189/17									■	■	■	■	■
	9.32	11197	150	6216/667								■	■	■	■	■	■
	7.93	11261	177	111/14									■	■	■	■	■
	6.85	11261	204	4884/713									■	■	■	■	■
	5.96	11261	235	2331/391									■	■	■	■	■
C163	234.67	18000	6	704/3								■	■				
	202.12	18000	6.9	106920/529								■	■				
	174.82	18000	8	52272/299								■	■	■	■		
	154.21	18000	9.1	81576/529								■	■	■	■	■	■
	132.44	18000	11	39600/299								■	■	■	■	■	■
	130.53	18000	11	15272/117								■	■				
	112.42	18000	12	33615/299								■	■				
3 stages	110.19	18000	13	12672/115								■	■	■	■	■	■
	97.24	18000	14	16434/169								■	■	■	■		
	91.43	18000	15	60984/667								■	■	■	■	■	■
n_1=1400 min^{-1}	85.78	18000	16	25647/299								■	■	■	■	■	■
	76.25	18000	18	12276/161									■	■	■	■	■
	73.67	18000	19	12450/169								■	■	■	■	■	■
Maximum torque 18000 Nm	65.54	18000	21	46728/713									■	■	■	■	■
	61.29	18000	23	3984/65								■	■	■	■	■	■
	56.72	18000	25	22176/391									■	■	■	■	■
	50.86	18000	28	19173/377								■	■	■	■	■	■
	42.41	18000	33	7719/182									■	■	■	■	■
	36.45	18000	38	14691/403									■	■	■	■	■
	31.55	17437	44	6972/221									■	■	■	■	■

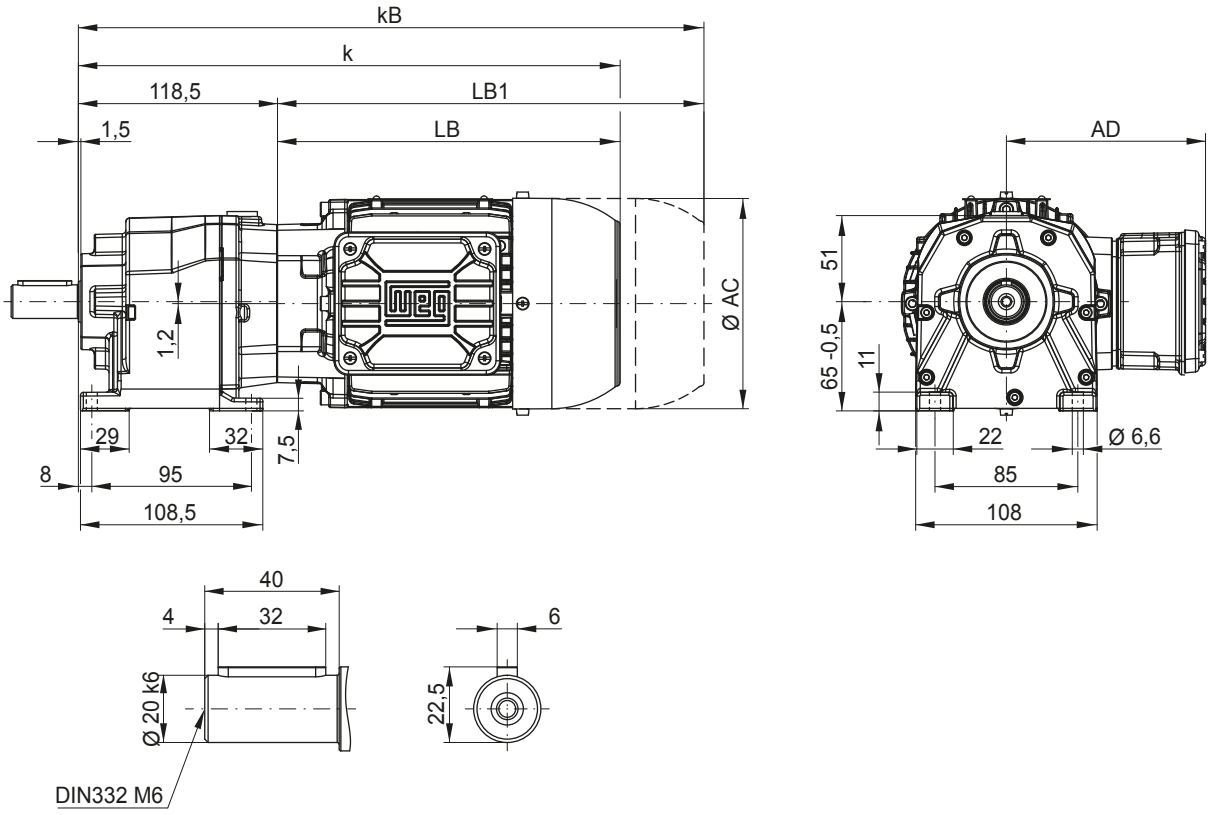
Legend see page 85

Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
C162	33.00	-											3000				■	■	■	
	25.15	-											3000				■	■	■	■
	21.12	-											2700				■	■	■	■
	17.70	-											3000				■	■	■	
	17.38	-											2300				■	■	■	■
	14.79	-											2000					■	■	■
	13.49	-											3000				■	■	■	■
	12.77	-											1800					■	■	■
	11.33	-											2700				■	■	■	■
	11.12	-											1700						■	■
	9.32	-											2300				■	■	■	■
	7.93	-											2000					■	■	■
	6.85	-											1800					■	■	■
	5.96	-											1700						■	■
C163	234.67	-											3000				■	■		
	202.12	-											3000				■	■	■	
	174.82	-											3000				■	■	■	
	154.21	-											3000				■	■	■	■
	132.44	-											3000				■	■	■	■
	130.53	-											3000				■	■		
	112.42	-											3000				■	■	■	
	110.19	-											2700				■	■	■	■
	97.24	-											3000				■	■	■	
	91.43	-											2300				■	■	■	■
	85.78	-											3000				■	■	■	■
	76.25	-											2000					■	■	■
	73.67	-											3000				■	■	■	■
	65.54	-											1800					■	■	■
	61.29	-											2700				■	■	■	■
	56.72	-											1700						■	■
	50.86	-											2300				■	■	■	■
	42.41	-											2000					■	■	■
	36.45	-											1800					■	■	■
	31.55	-											1700						■	■

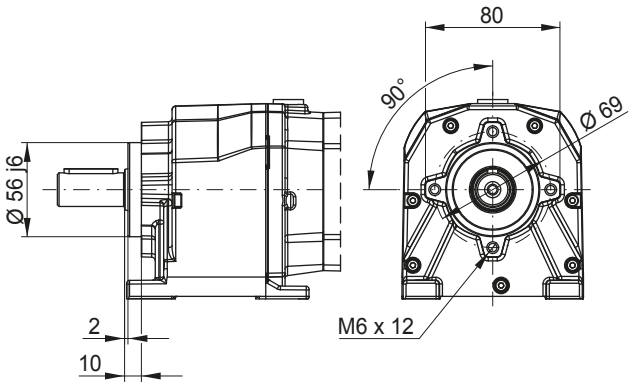
Legend see page 85



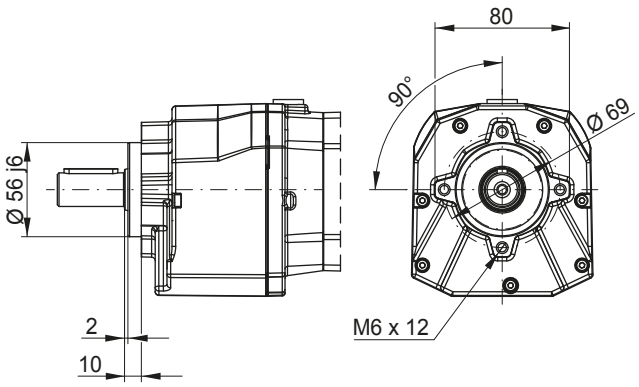
CG00 - Foot mounted



CW00 - Foot mounted with B14 flange execution + centring and threaded hole



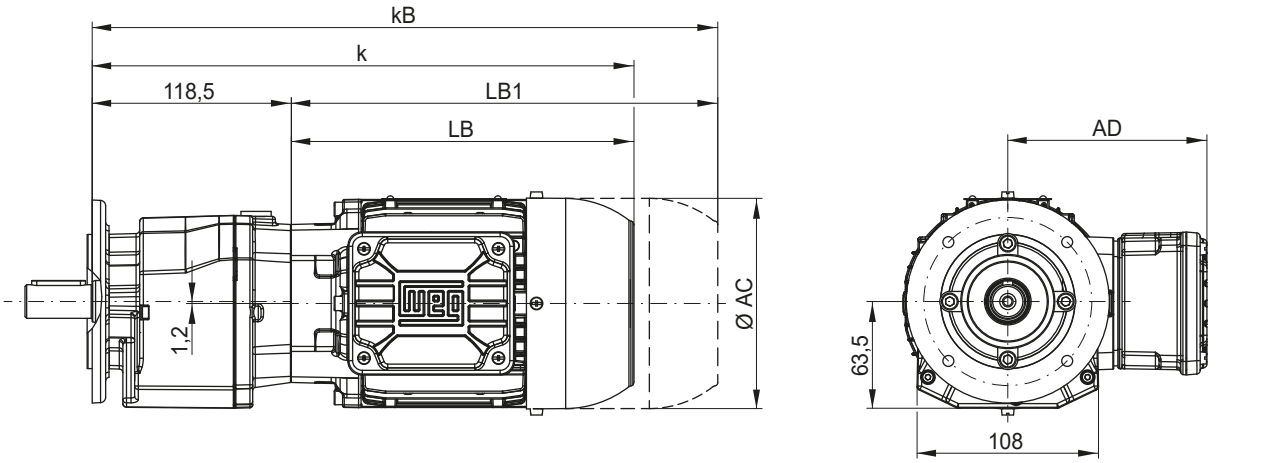
CC00 - B14 flange execution + centring and threaded hole



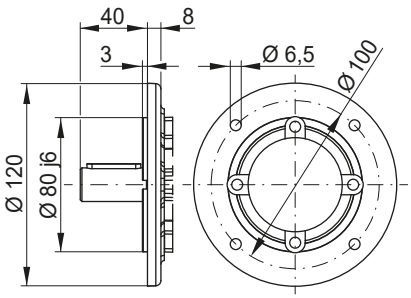
Dimension \ Motor fr.	63	71	80
AC	126	141	159
AD	125	133	142
k	323	357	365
kB	367	406	423
LB	204	238	246
LB1	248	287	304

Motor dimension sheets see page 380
Description of motor lengths LB and LB1 see page 384

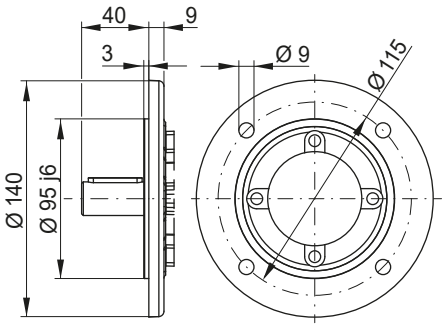
CF00 - Flange execution



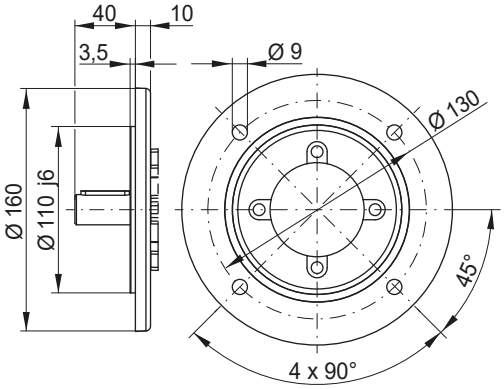
Flange Ø 120



Flange Ø 140

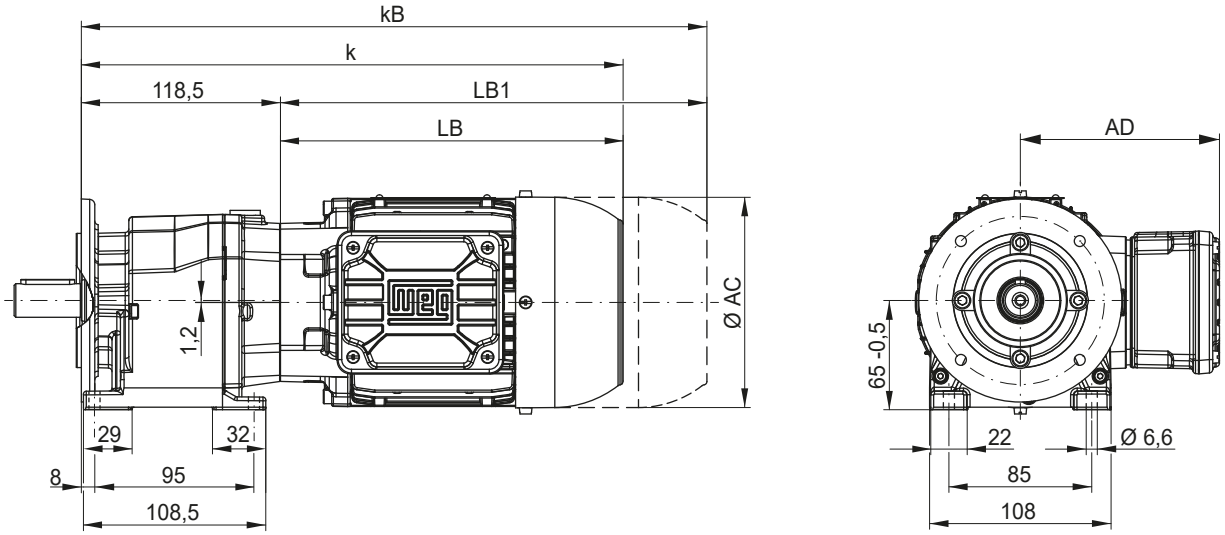


Flange Ø 160



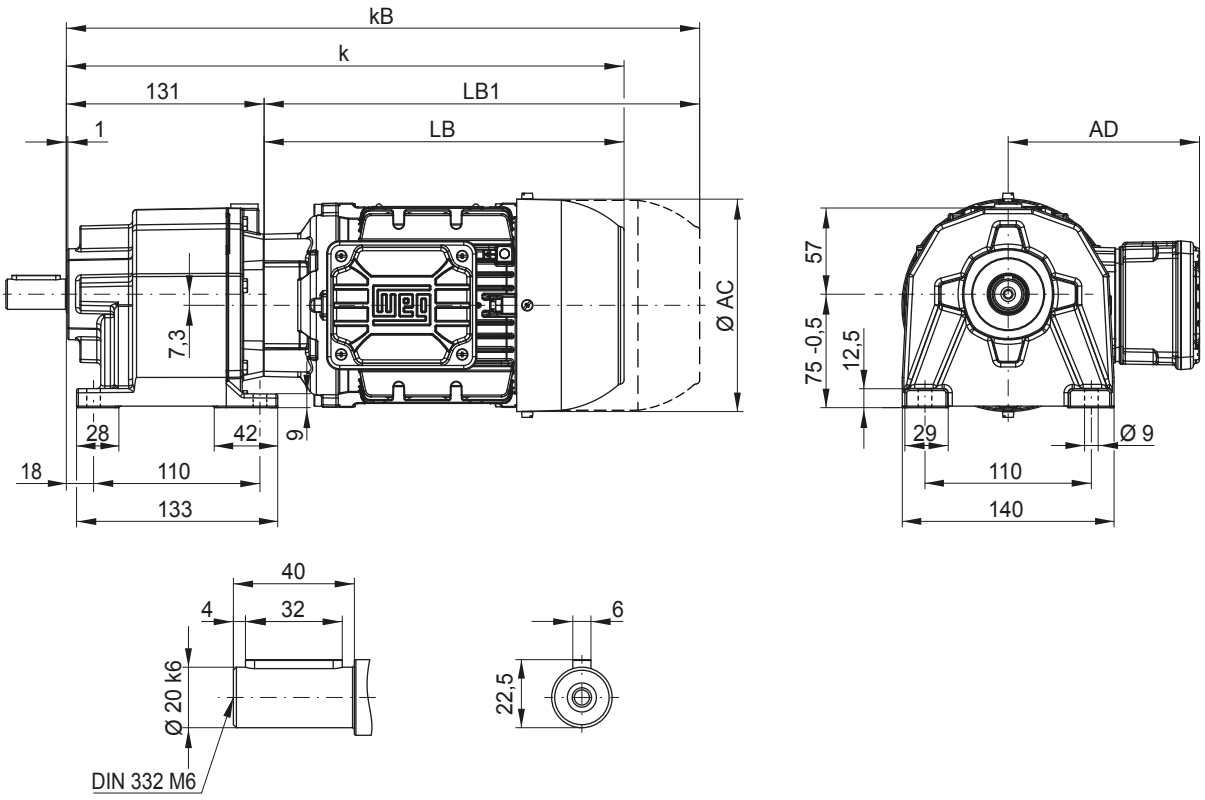
CA00 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 120

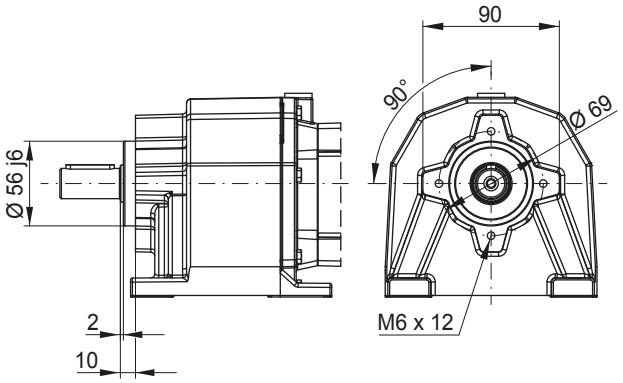


Dimensions in mm.

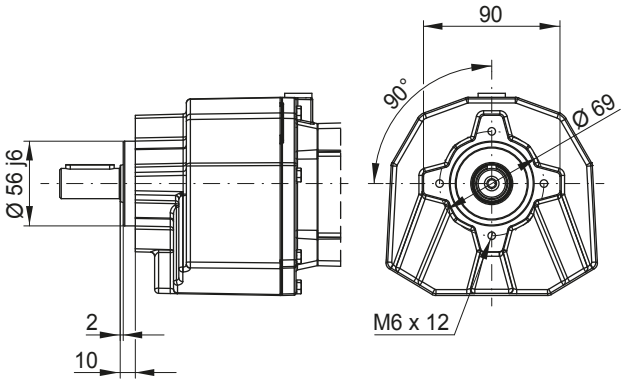
CG01 - Foot mounted



CW01 - Foot mounted with B14 flange execution + centring and threaded hole



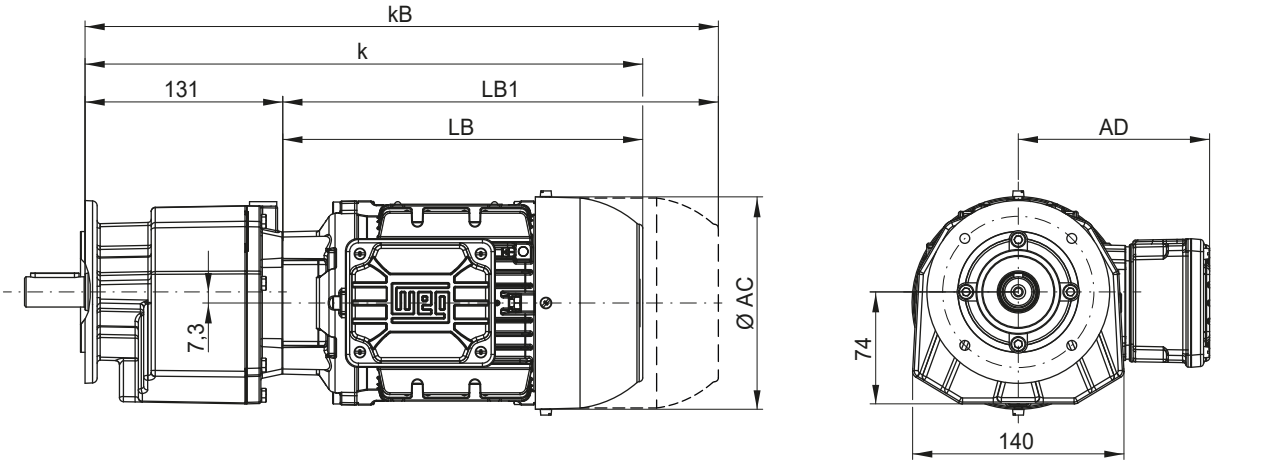
CC01 - B14 flange execution + centring and threaded hole



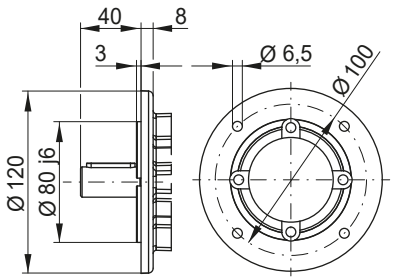
Dimension \ Motor fr.	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	335	369	377	419
kB	379	418	435	492
LB	204	238	246	288
LB1	248	287	304	361

Motor dimension sheets see page 380
Description of motor lengths LB and LB1 see page 384

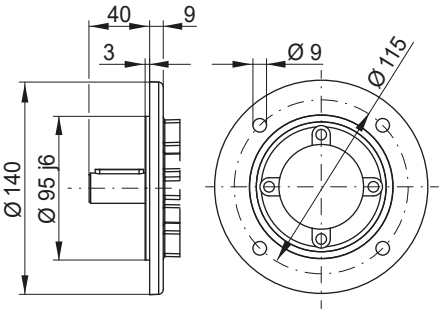
CF01 - Flange execution



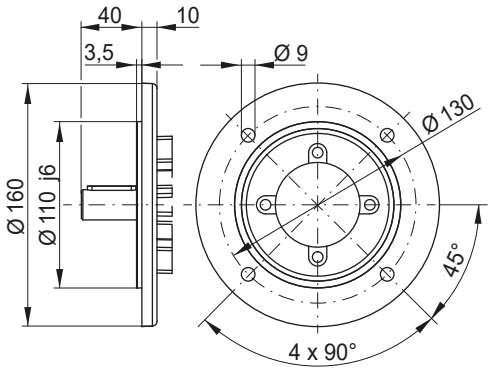
Flange Ø 120



Flange Ø 140

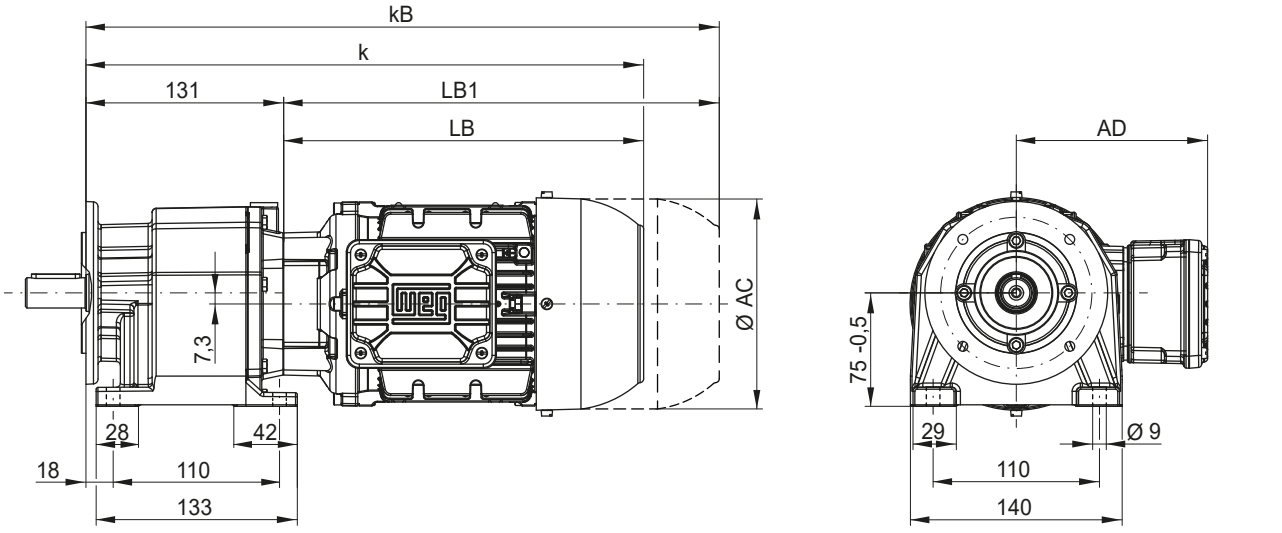


Flange Ø 160



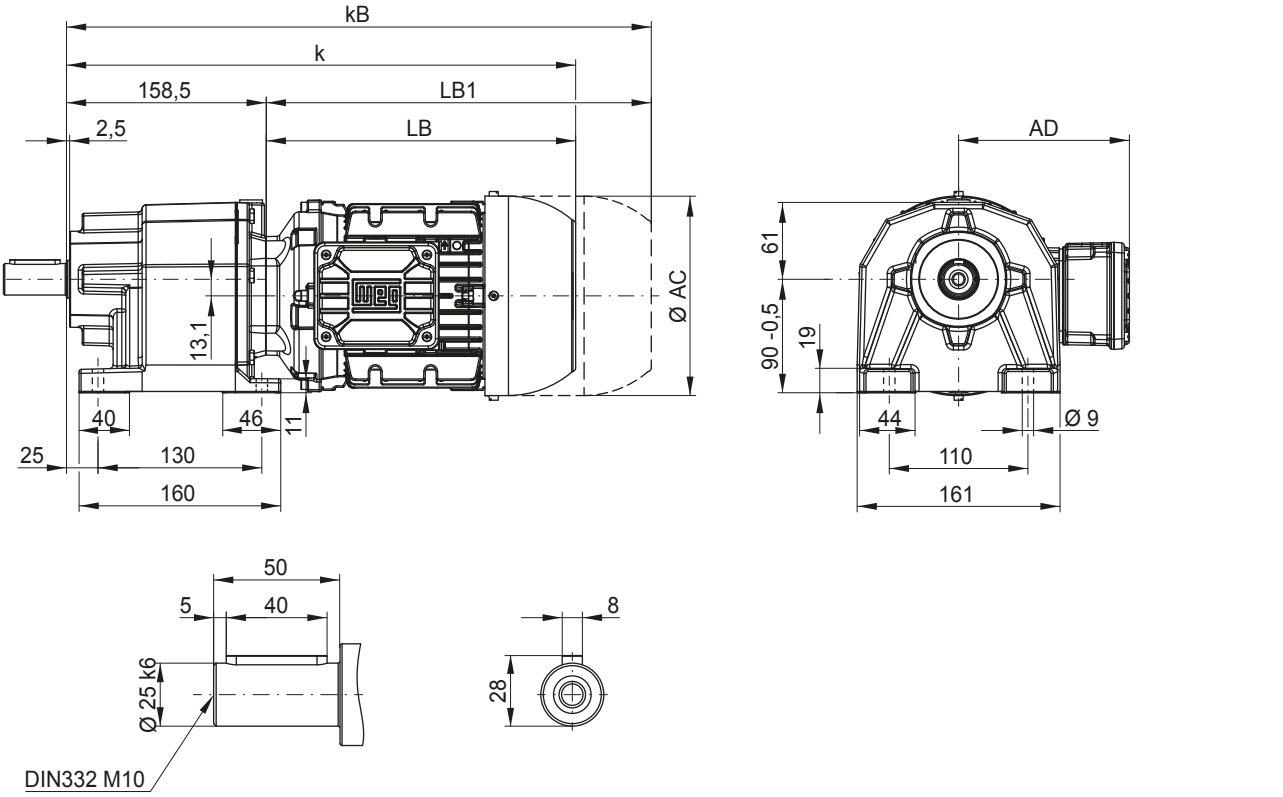
CA01 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 120 and Ø 140

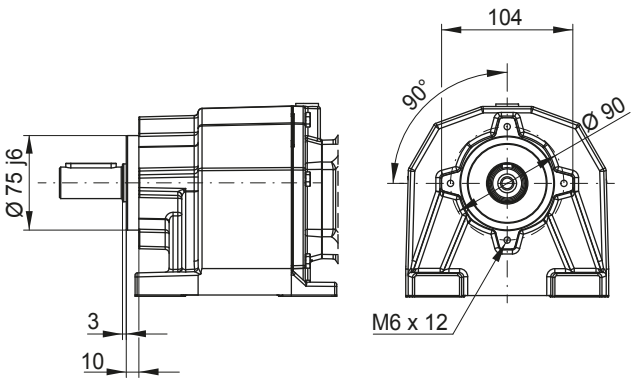


Dimensions in mm.

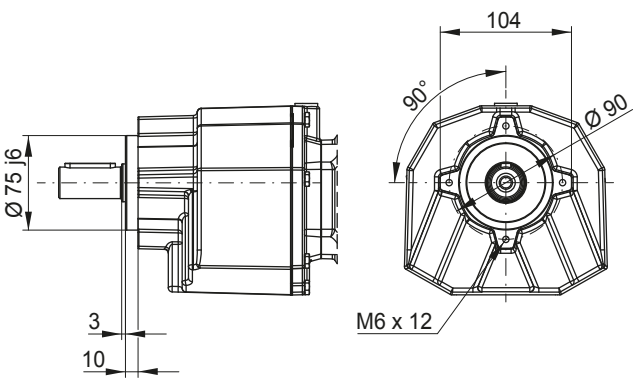
CG03 - Foot mounted



CW03 - Foot mounted with B14 flange execution + centring and threaded hole



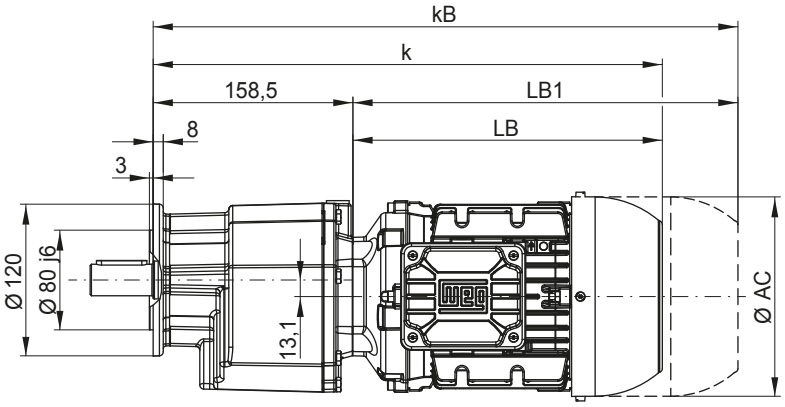
CC03 - B14 flange execution + centring and threaded hole



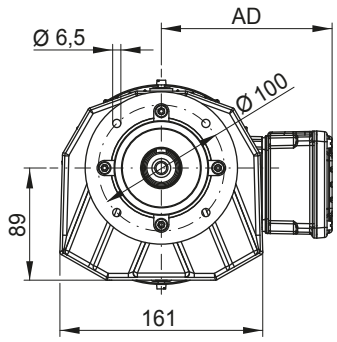
Dimension \ Motor fr.	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	363	397	405	447	497	535
kB	407	446	463	520	581	619
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

Motor dimension sheets see page 380
Description of motor lengths LB and LB1 see page 384

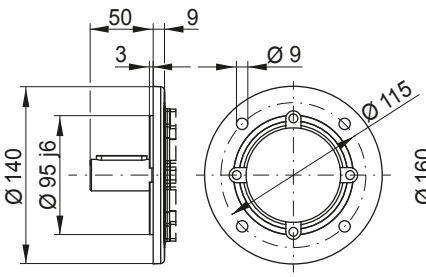
CF03 - Flange execution



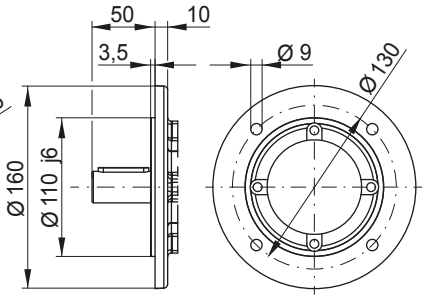
Flange Ø 120



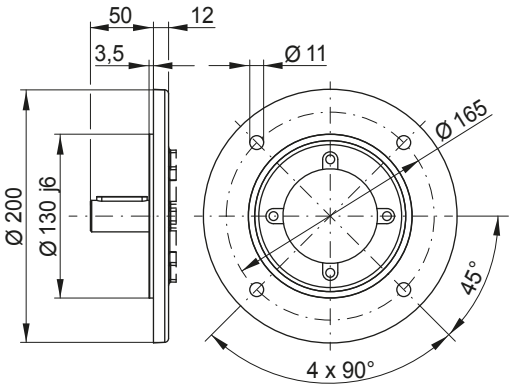
Flange Ø 140



Flange Ø 160

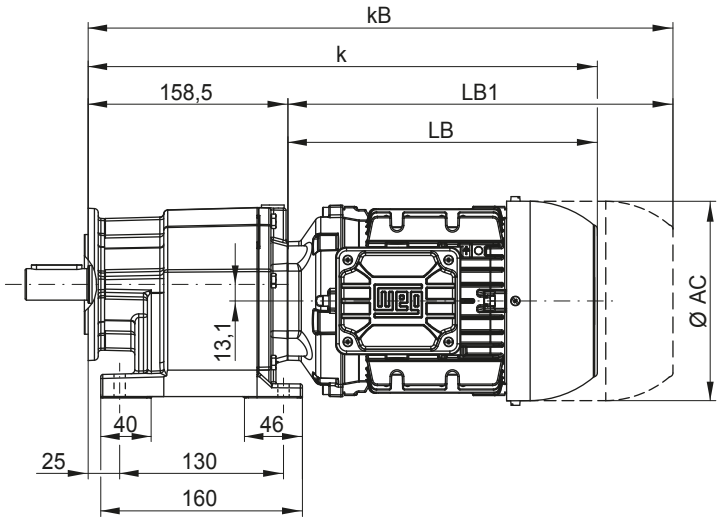


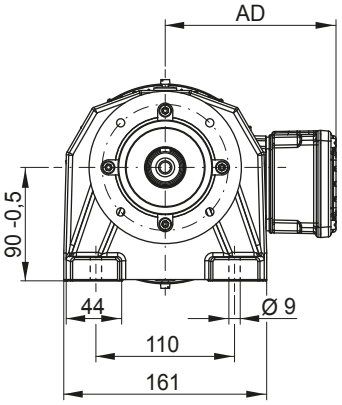
Flange Ø 200



CA03 - Foot mounted and B5 flange execution

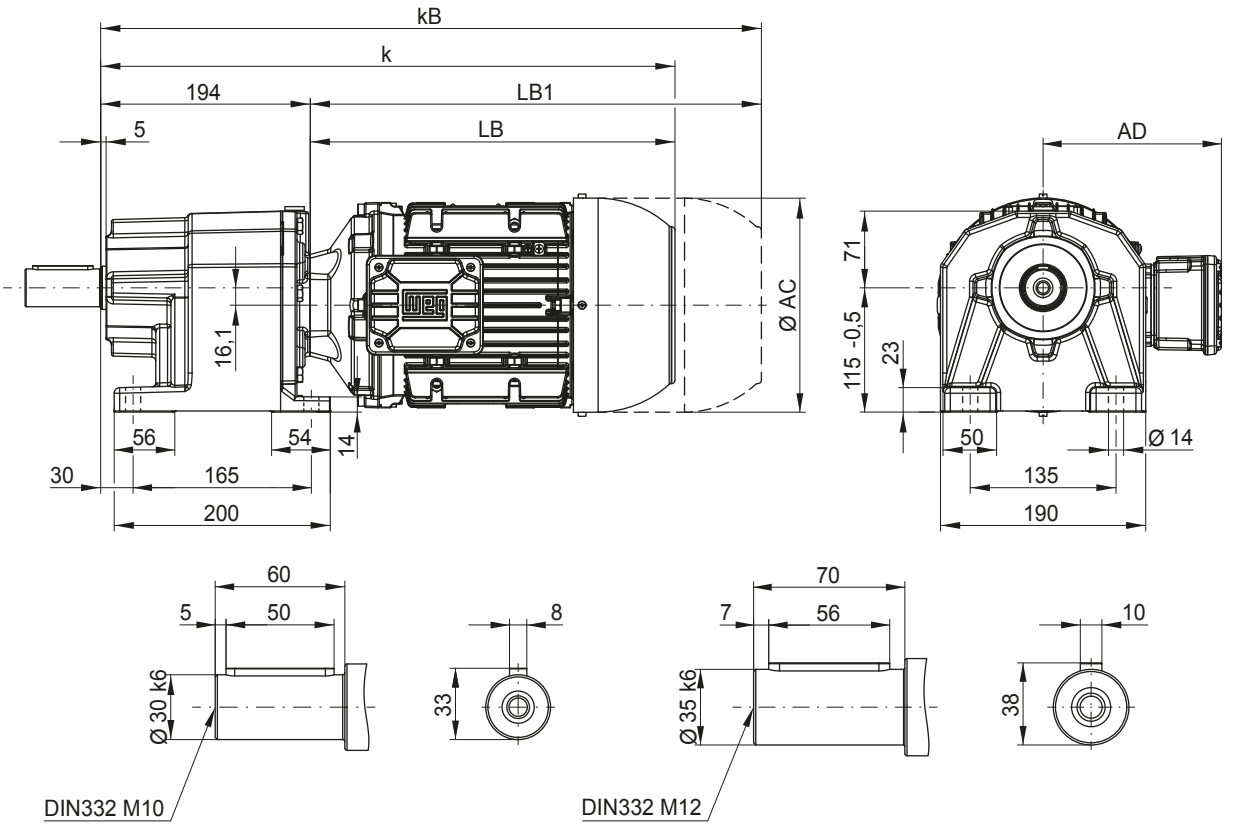
mountable flange sizes on the housing: Ø 120, Ø 140 and Ø 160



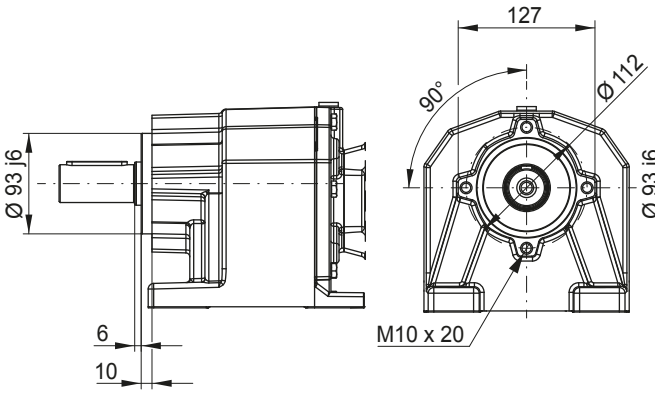


Dimensions in mm.

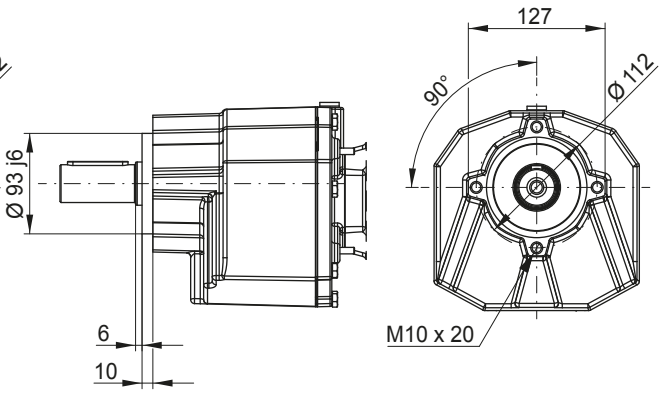
CG05 - Foot mounted



CW05 - Foot mounted with B14 flange execution + centring and threaded hole



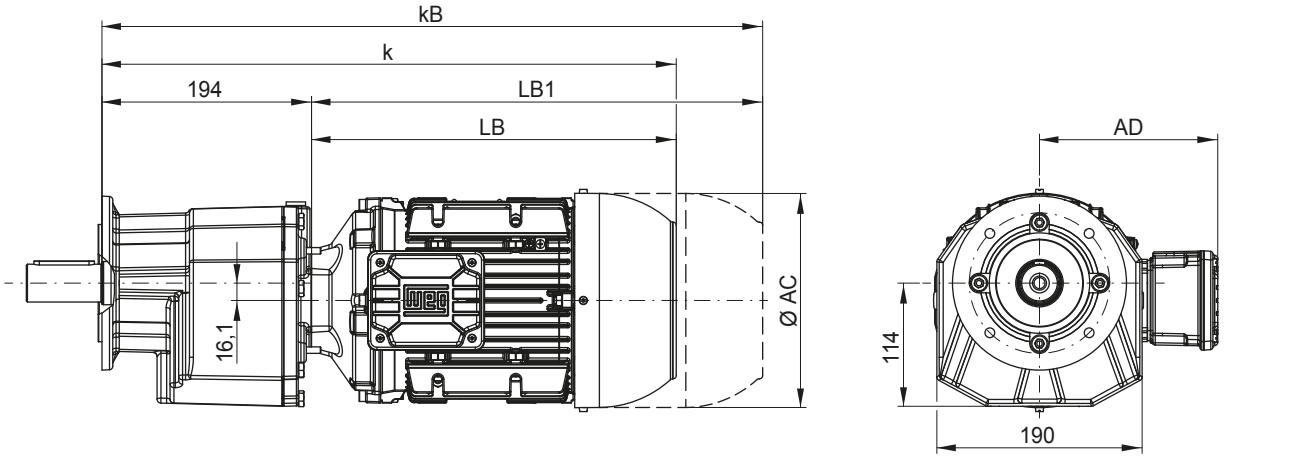
CC05 - B14 flange execution + centring and threaded hole



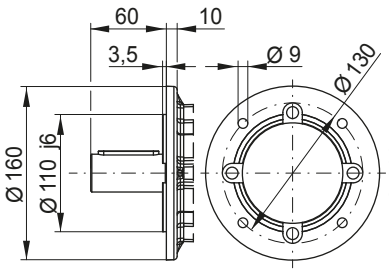
Dimension \ Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	398	432	440	482	532	570	542	607	645
kB	442	481	498	555	616	654	629	725	763
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380
Description of motor lengths LB and LB1 see page 384

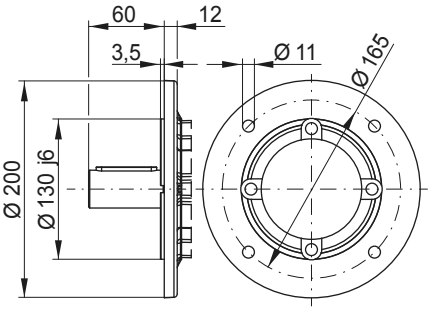
CF05 - Flange execution



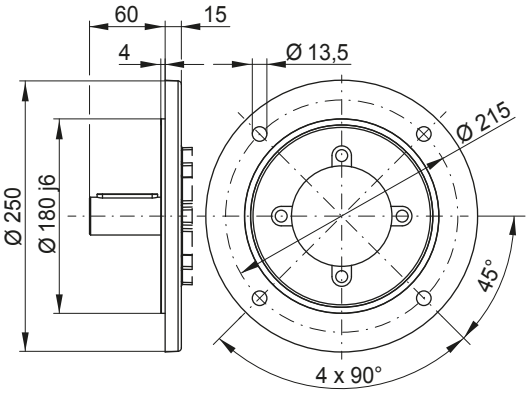
Flange Ø 160



Flange Ø 200

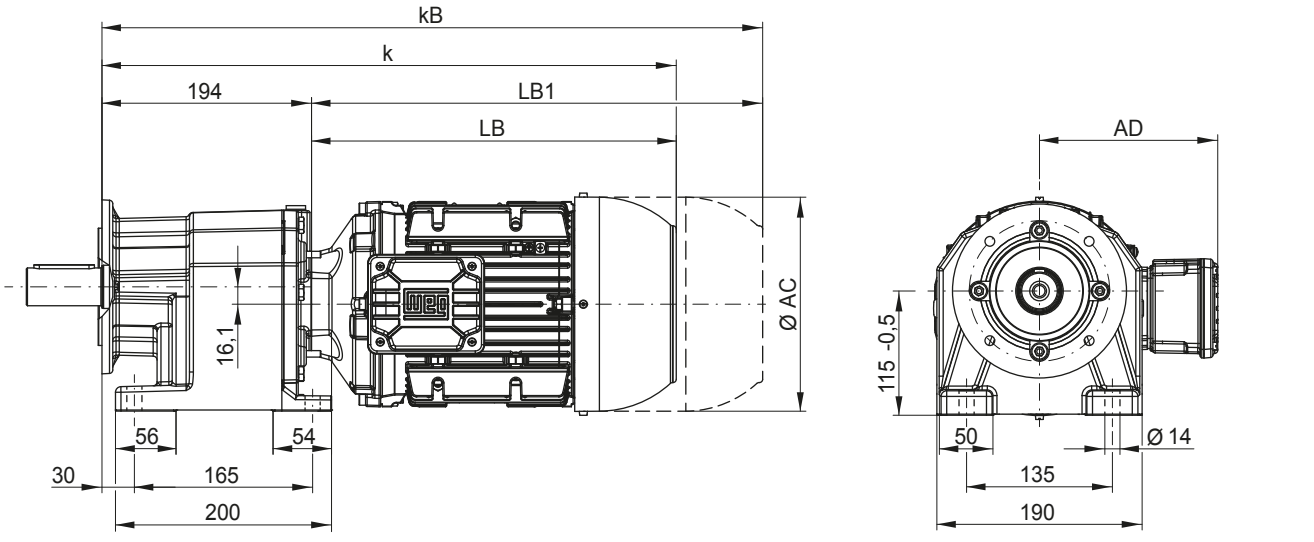


Flange Ø 250



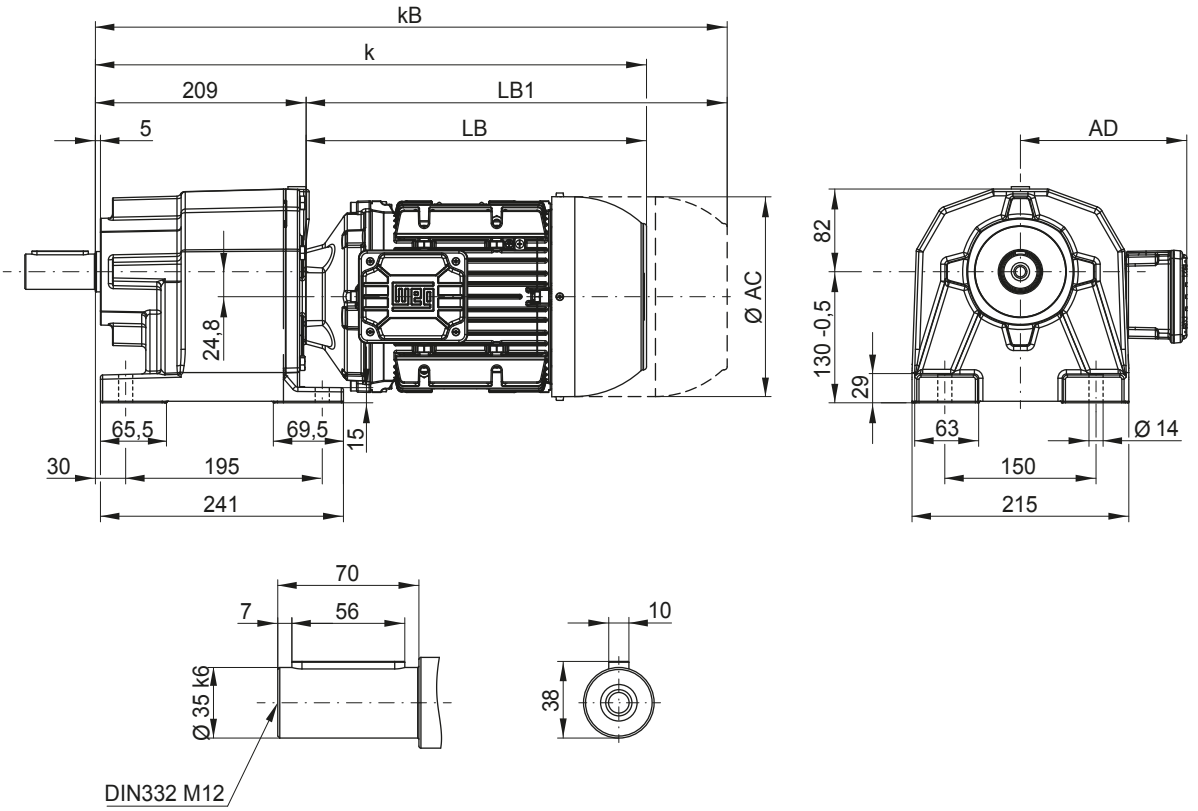
CA05 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 160 and Ø 200

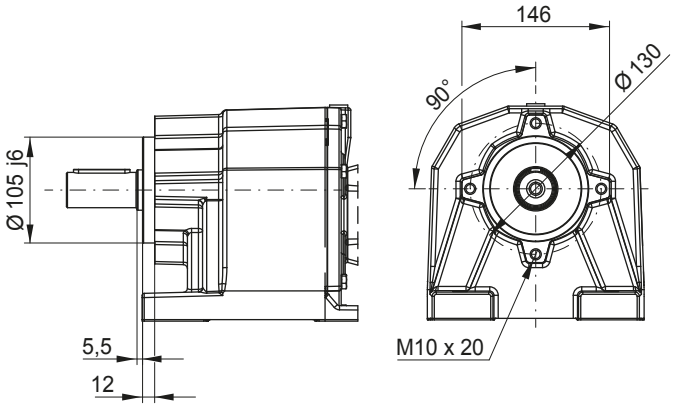


Dimensions in mm.

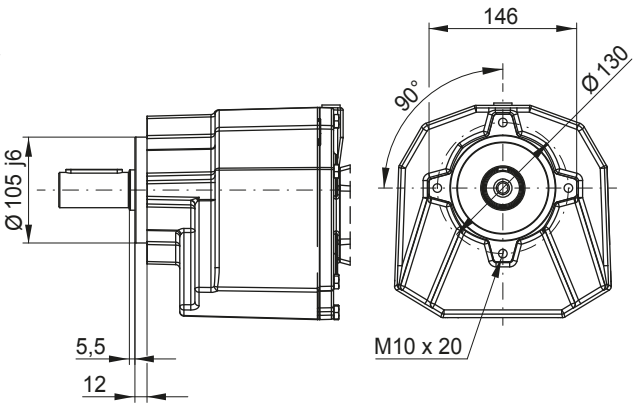
CG06 - Foot mounted



CW06 - Foot mounted with B14 flange execution + centring and threaded hole



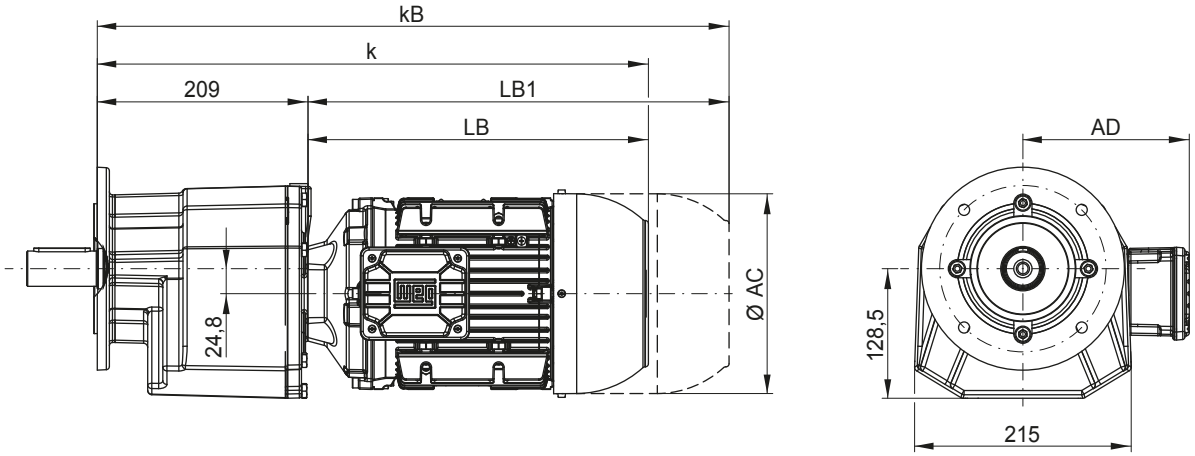
CC06 - B14 flange execution + centring and threaded hole



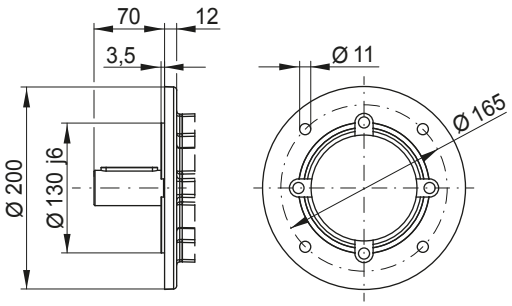
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	413	447	455	497	547	585	557	622	660
kB	457	496	513	570	631	669	644	740	778
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380
Description of motor lengths LB and LB1 see page 384

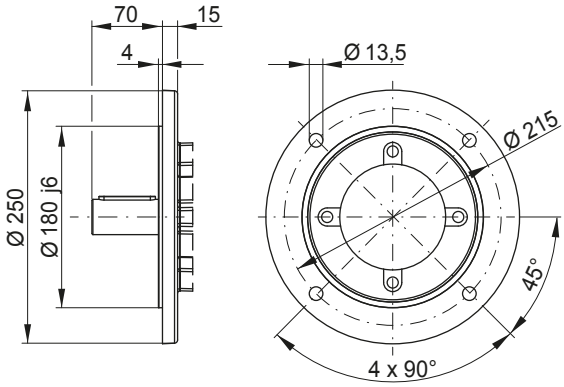
CF06 - Flange execution



Flange Ø 200

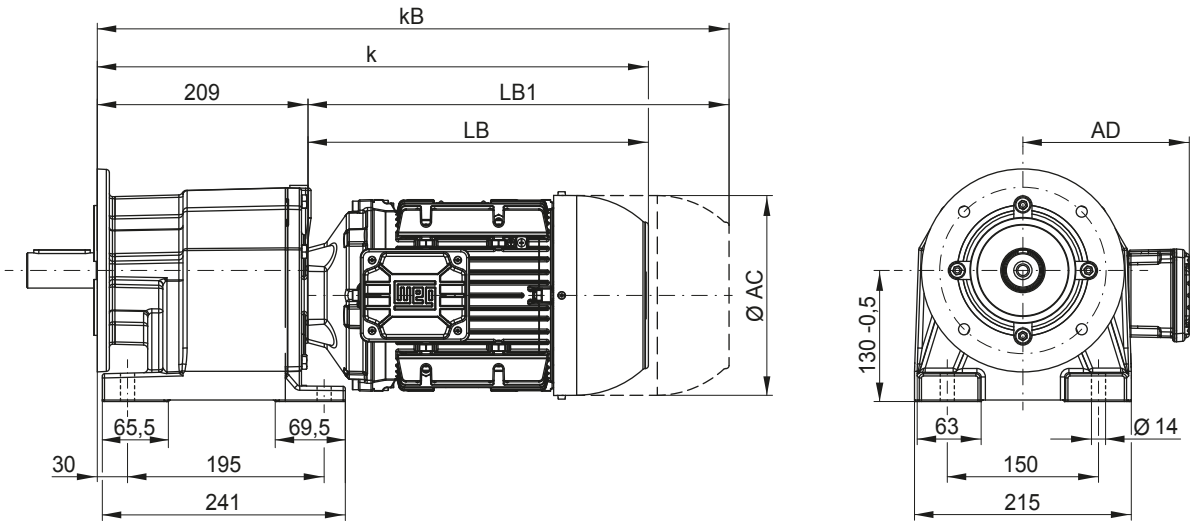


Flange Ø 250



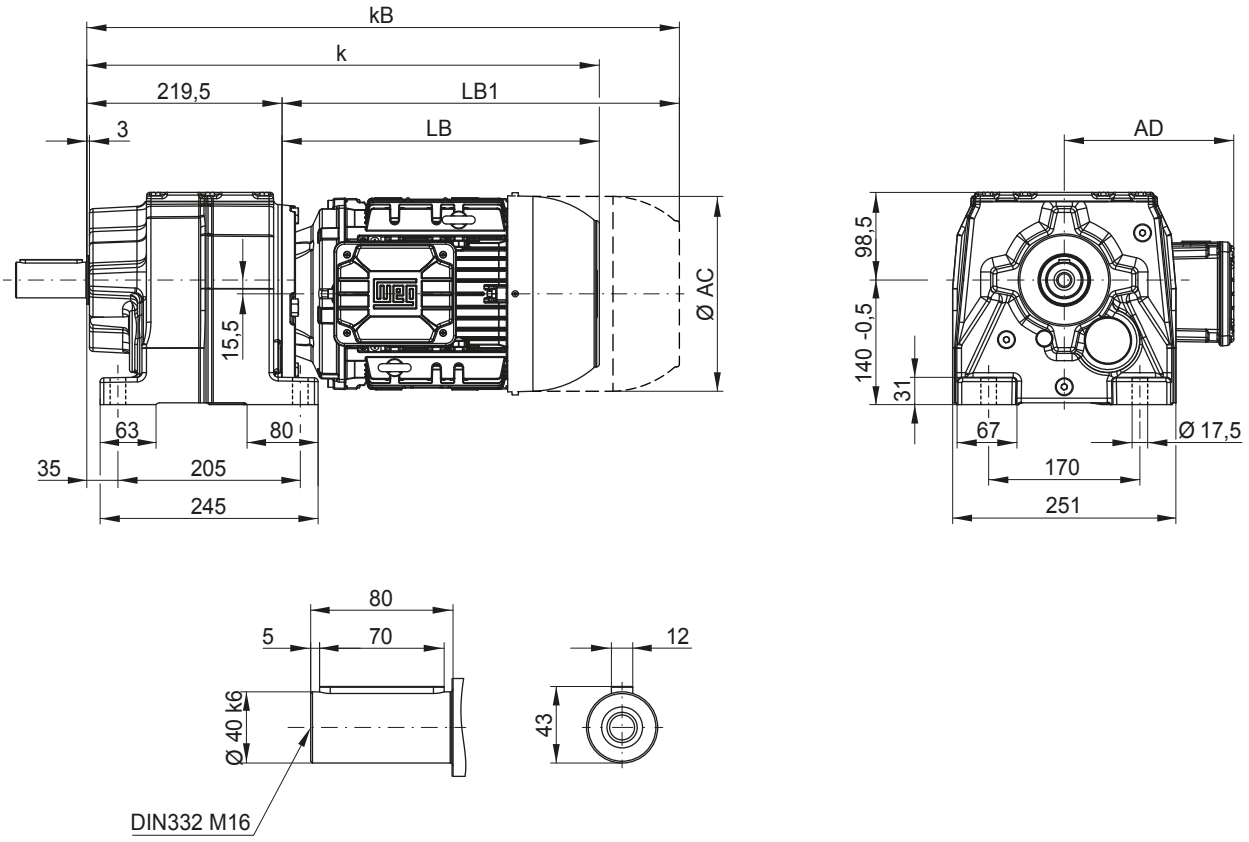
CA06 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 200

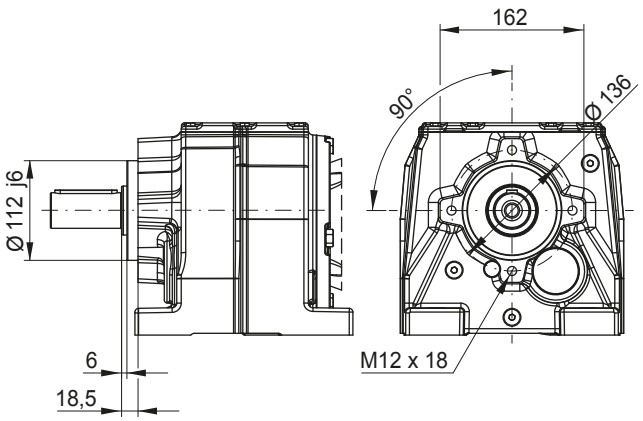


Dimensions in mm.

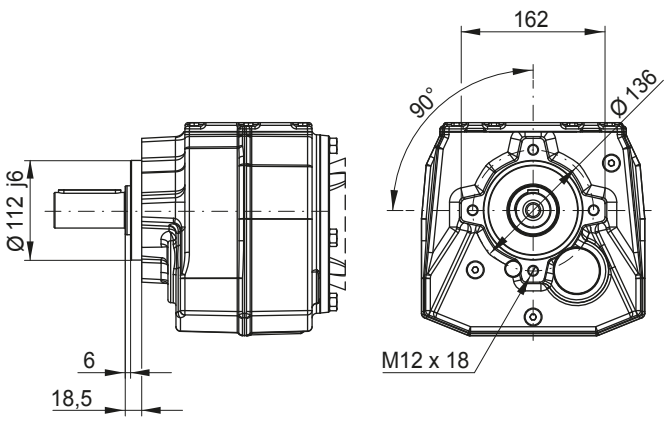
CG07 - Foot mounted



CW07 - Foot mounted with B14 flange execution + centring and threaded hole



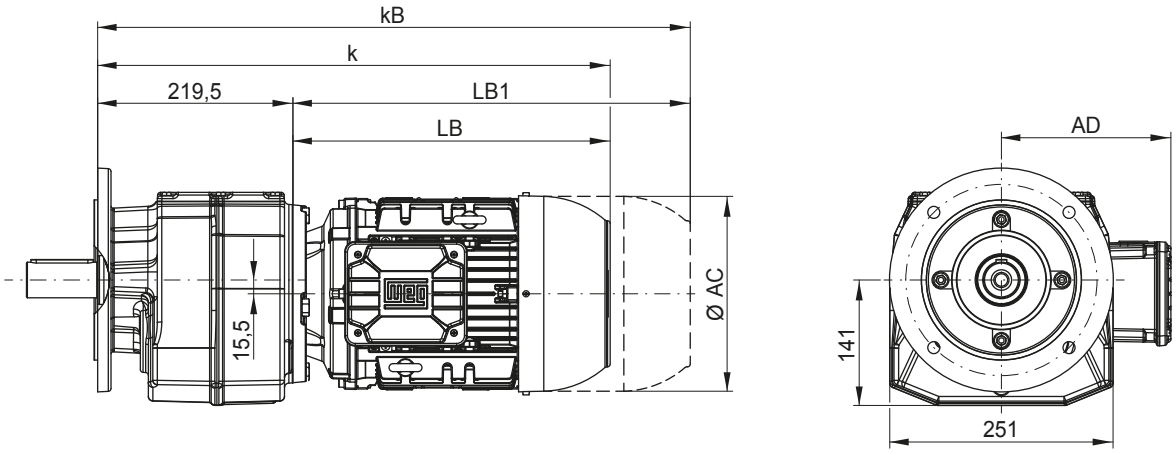
CC07 - B14 flange execution + centring and threaded hole



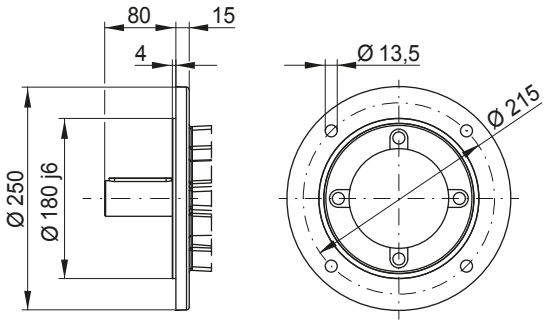
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	424	458	466	508	558	596	568	633	671	765	809
kB	468	507	524	581	642	680	655	751	789	889	933
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

Motor dimension sheets see page 380; Gear unit size C07 corresponds to motor flange FR-200.
Description of motor lengths LB and LB1 see page 384

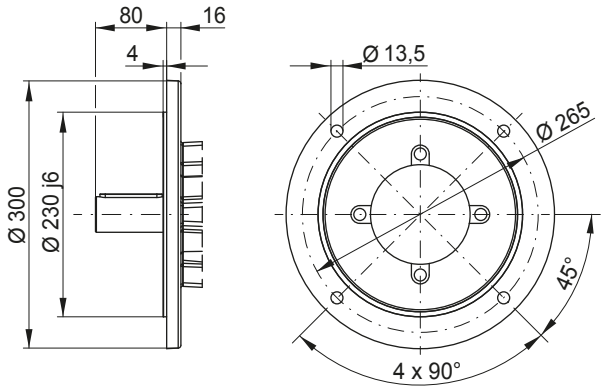
CF07 - Flange execution



Flange Ø 250

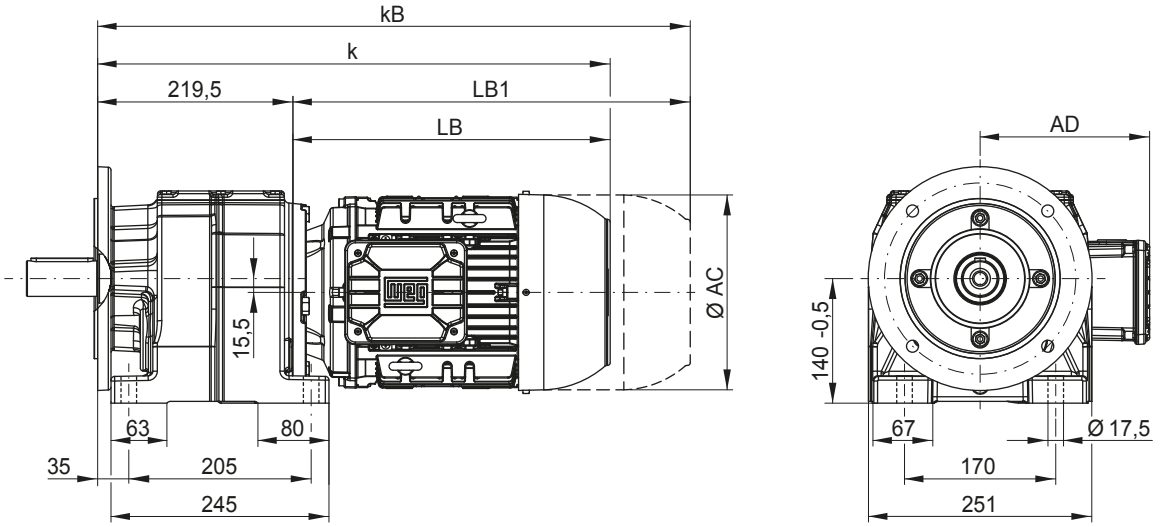


Flange Ø 300



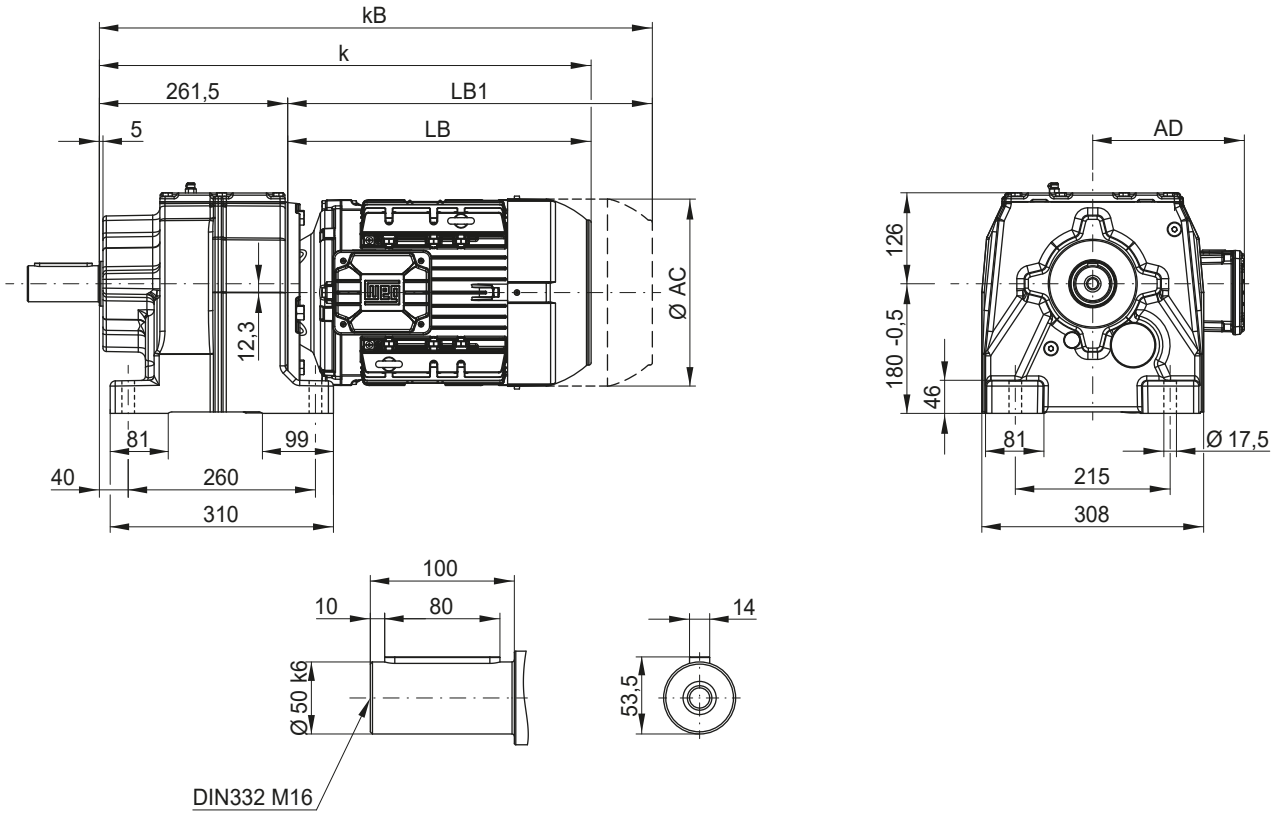
CA07 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 250

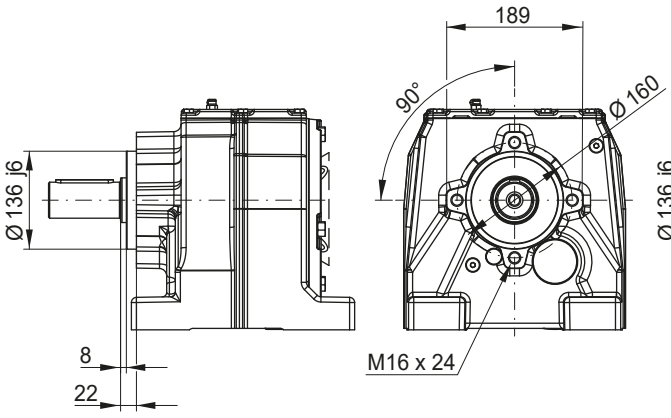


Dimensions in mm.

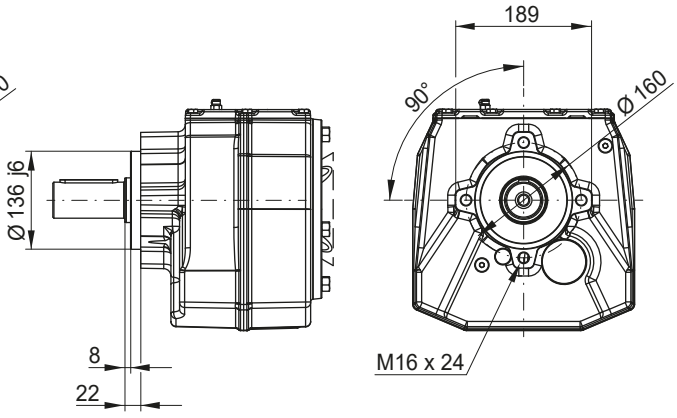
CG08 - Foot mounted



CW08 - Foot mounted with B14 flange execution + centring and threaded hole



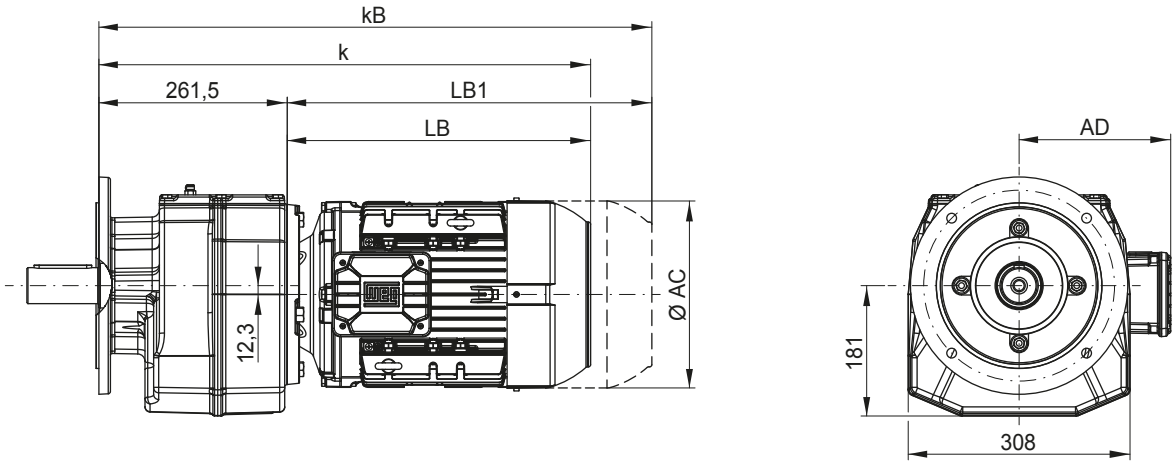
CC08 - B14 flange execution + centring and threaded hole



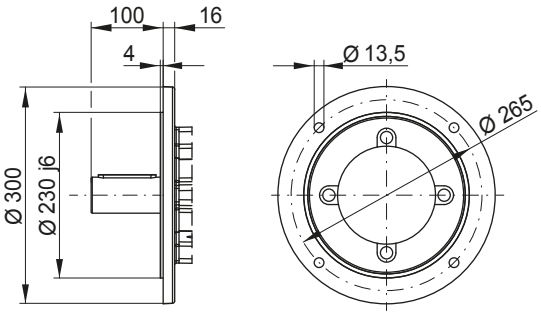
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	466	500	508	550	600	638	610	675	713	802	846	870	908
kB	510	549	566	623	684	722	697	793	831	926	970	988	1026
LB	204	238	246	288	338	376	348	413	451	540	584	608	646
LB1	248	287	304	361	422	460	435	531	569	664	708	726	764

Motor dimension sheets see page 380; Gear unit size C08 corresponds to motor flange FR-250.
Description of motor lengths LB and LB1 see page 384

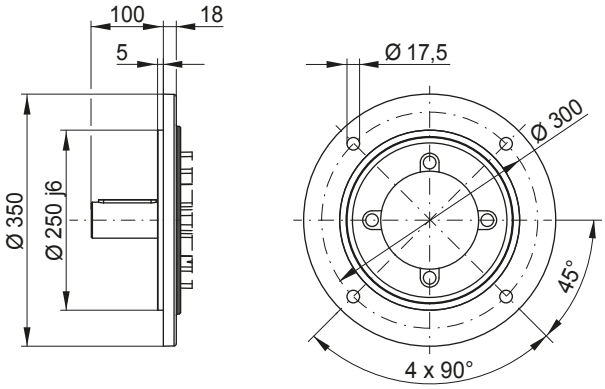
CF08 - Flange execution



Flange Ø 300

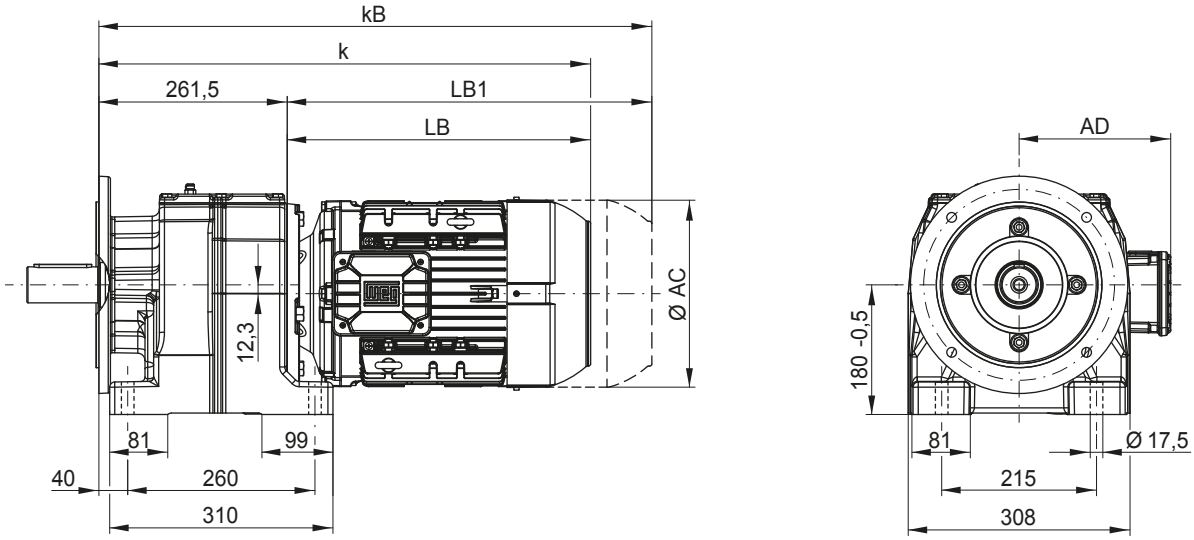


Flange Ø 350



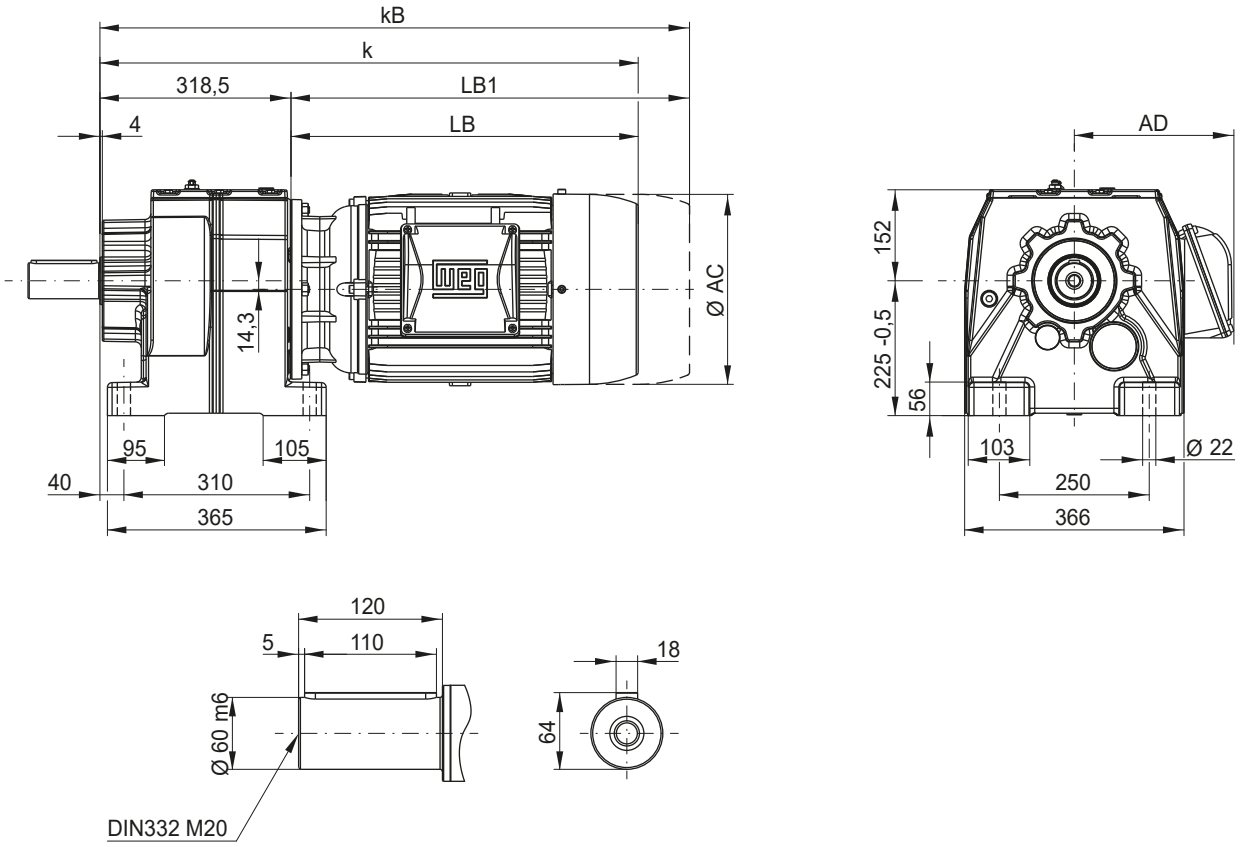
CA08 - Foot mounted and B5 flange execution

mountable flange sizes on the housing: Ø 300



Dimensions in mm.

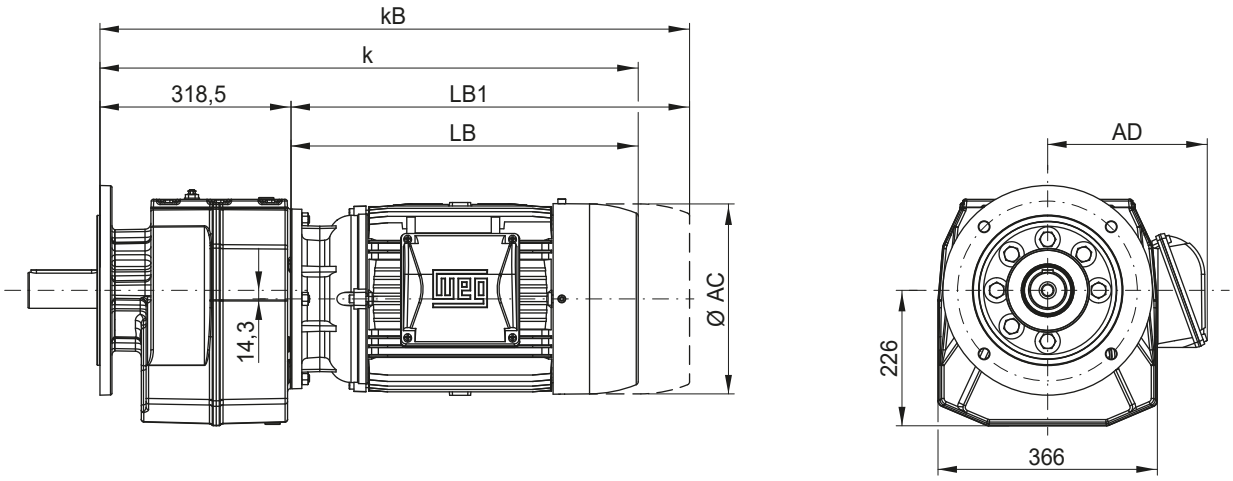
CG09 - Foot mounted



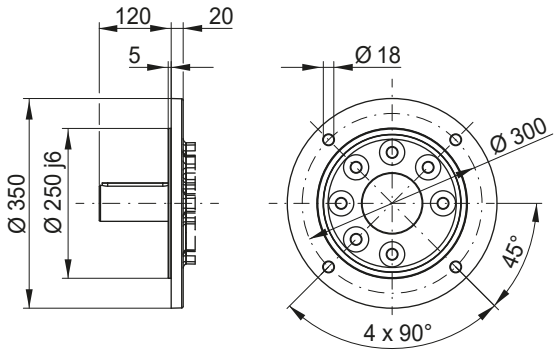
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	523	557	565	607	657	695	667	732	770	854	898	922	960	1052
kB	567	606	623	680	741	779	754	850	888	978	1022	1040	1078	1178
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

Motor dimension sheets see page 380; Gear unit size C09 corresponds to motor flange FR-300.
Description of motor lengths LB and LB1 see page 384

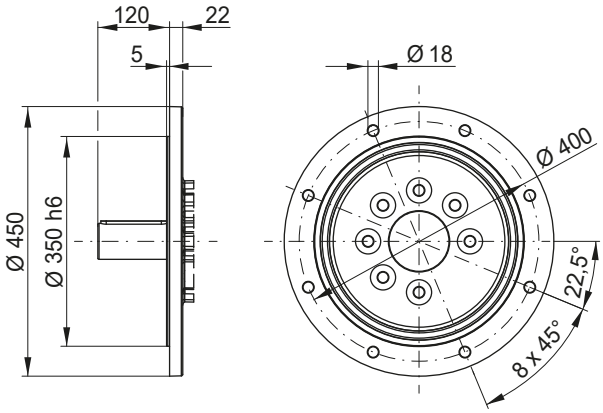
CF09 - Flange execution



Flange Ø 350

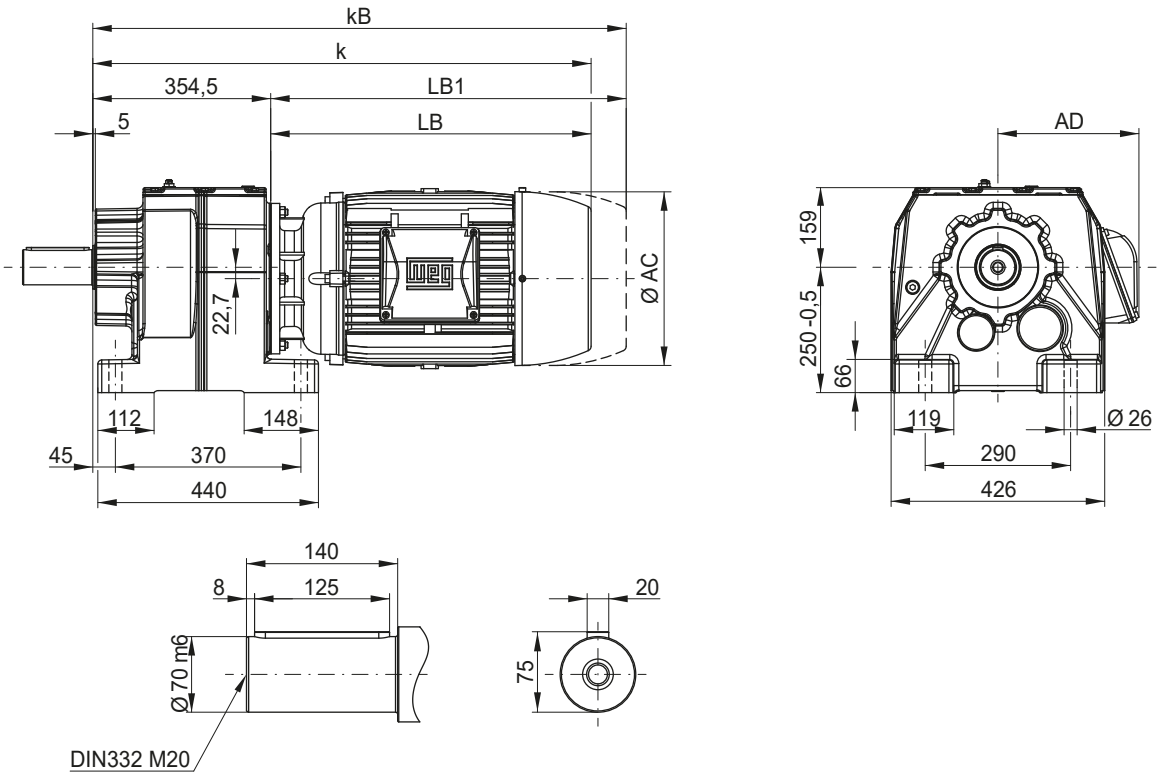


Flange Ø 450



Dimensions in mm.

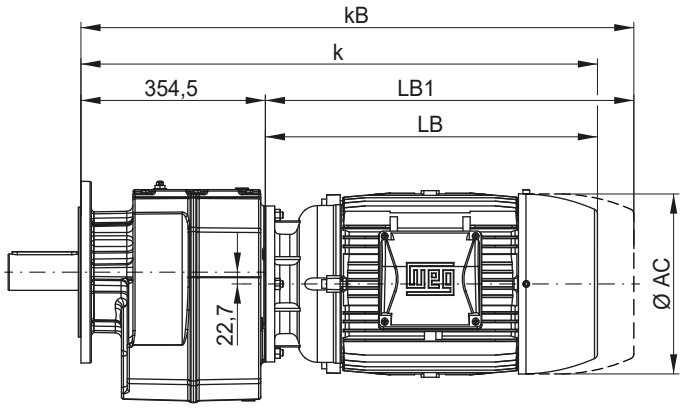
CG10 - Foot mounted

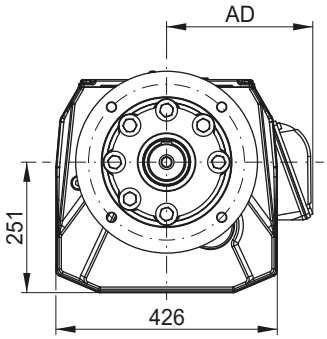


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	559	593	601	643	693	731	703	768	806	890	934	958	996	1088
kB	603	642	659	716	777	815	790	886	924	1014	1058	1076	1114	1214
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

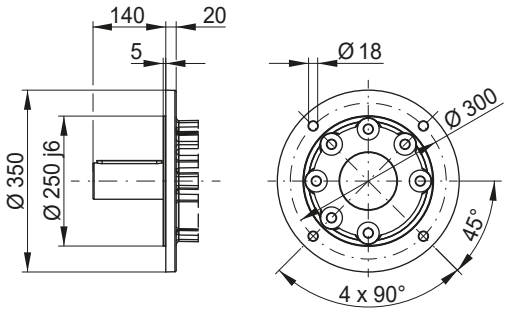
Motor dimension sheets see page 380; Gear unit size C10 corresponds to motor flange FR-300.
Description of motor lengths LB and LB1 see page 384

CF10 - Flange execution

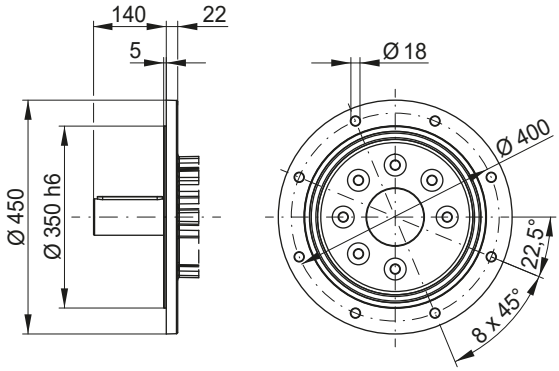




Flange Ø 350

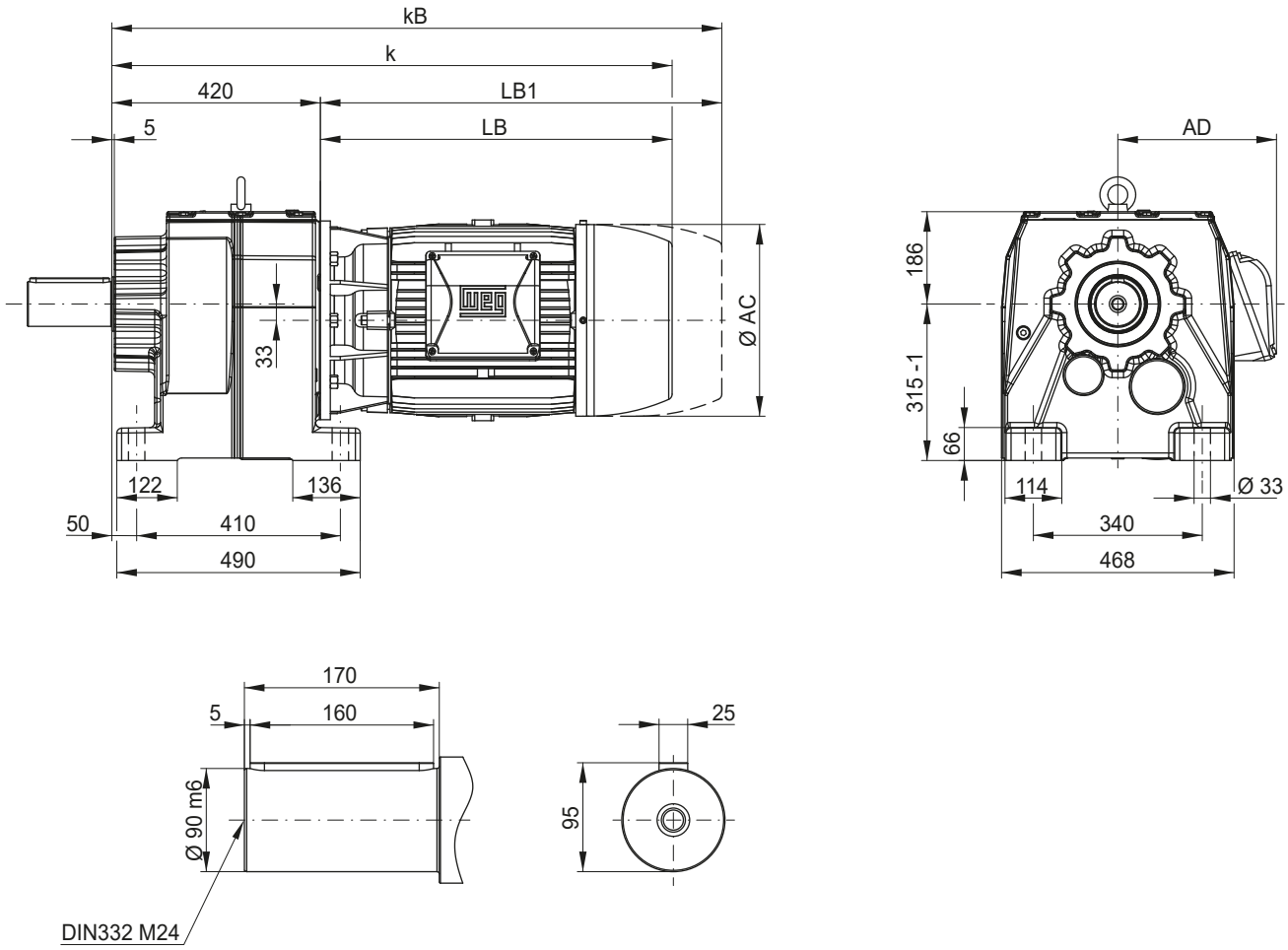


Flange Ø 450



Dimensions in mm.

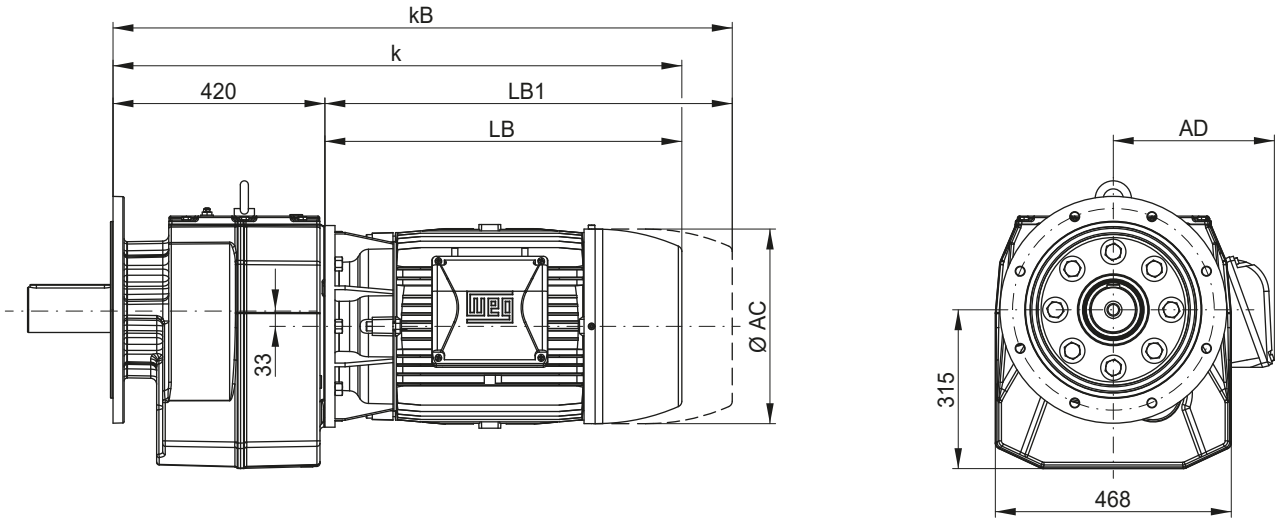
CG13 - Foot mounted



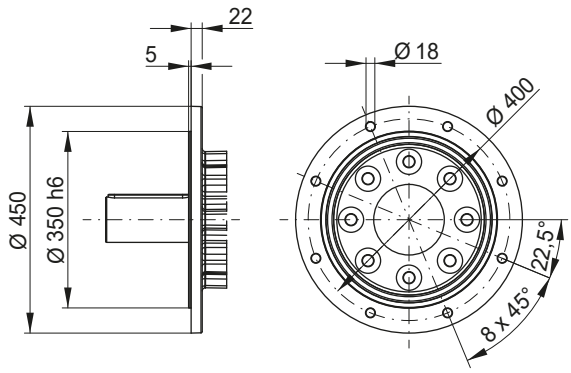
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	768	833	871	942	986	1010	1048	1140	1248
kB	-	-	-	-	-	-	855	951	989	1066	1110	1128	1166	1266	1366
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size C13 corresponds to motor flange FR-400.
Description of motor lengths LB and LB1 see page 384

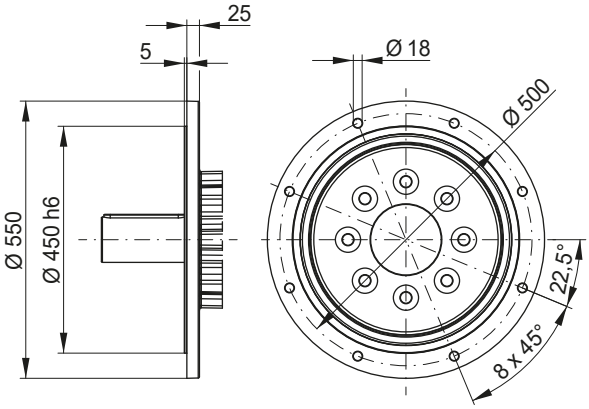
CF13 - Flange execution



Flange Ø 450

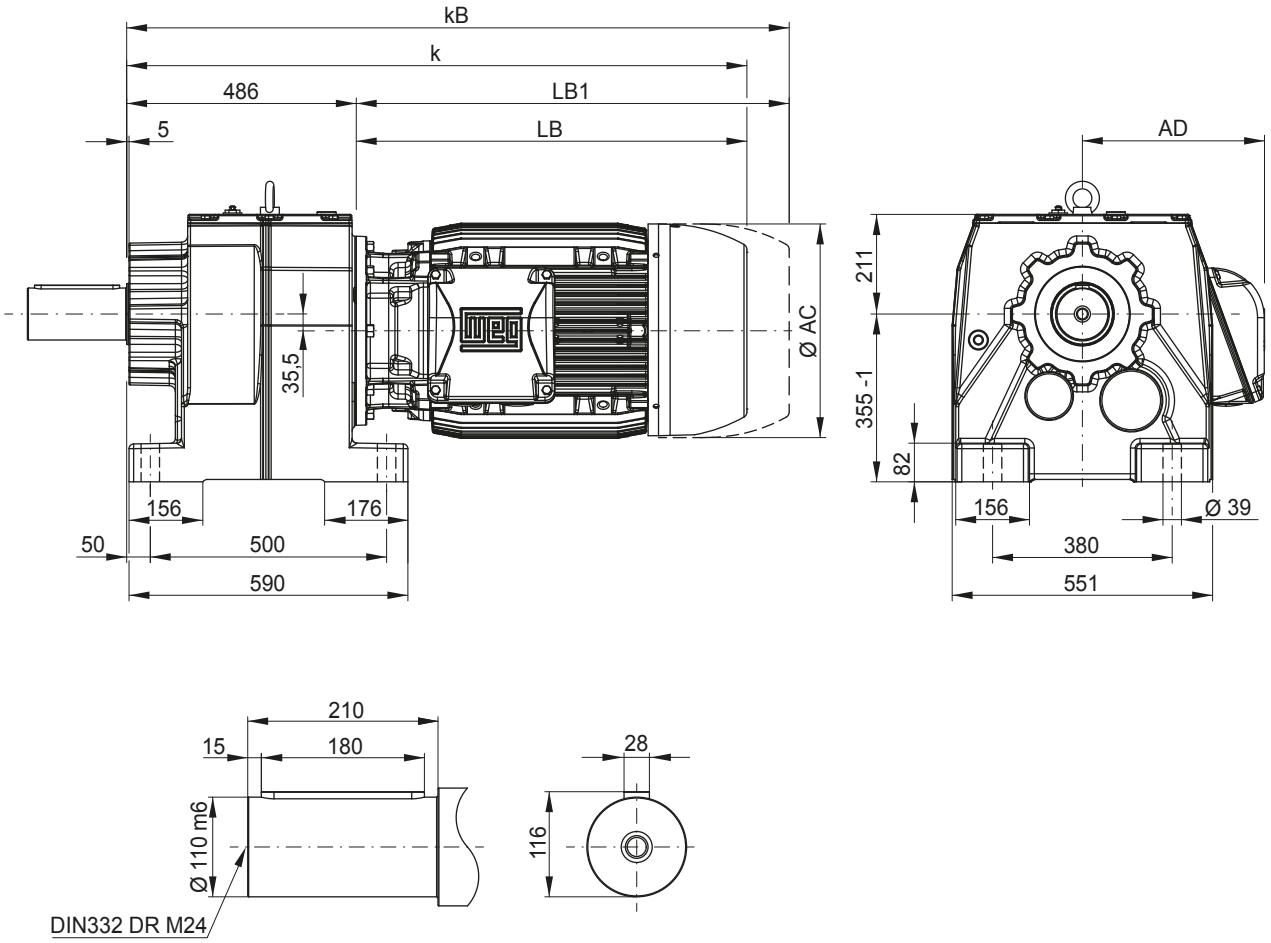


Flange Ø 550



Dimensions in mm.

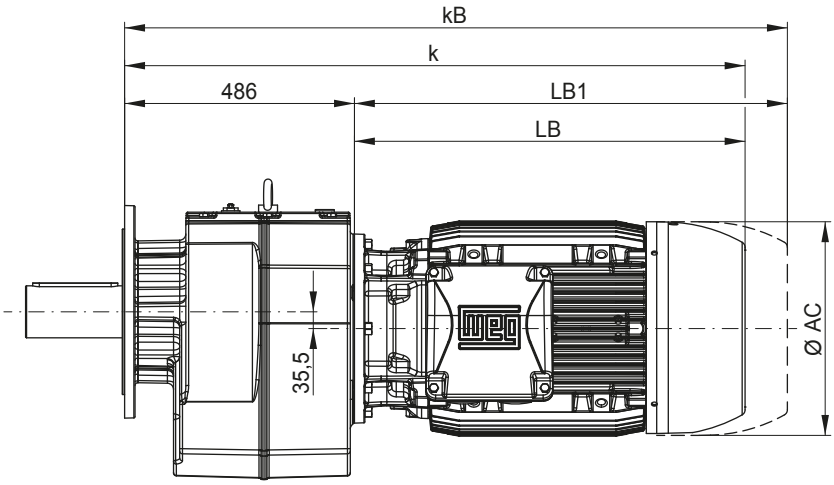
CG14 - Foot mounted

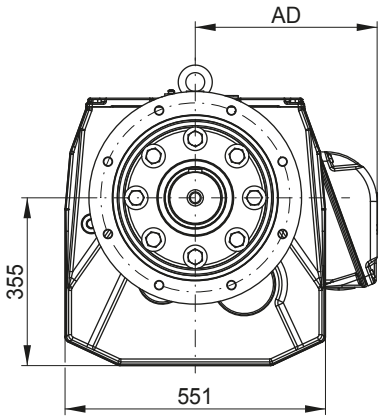


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	834	899	937	1008	1052	1076	1114	1206	1314
kB	-	-	-	-	-	-	921	1017	1055	1132	1176	1194	1232	1332	1432
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

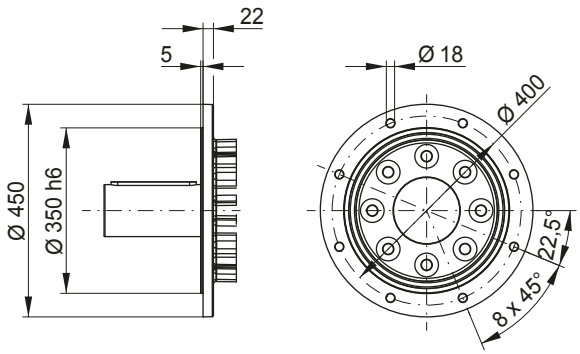
Motor dimension sheets see page 380; Gear unit size C14 corresponds to motor flange FR-400.
Description of motor lengths LB and LB1 see page 384

CF14 - Flange execution

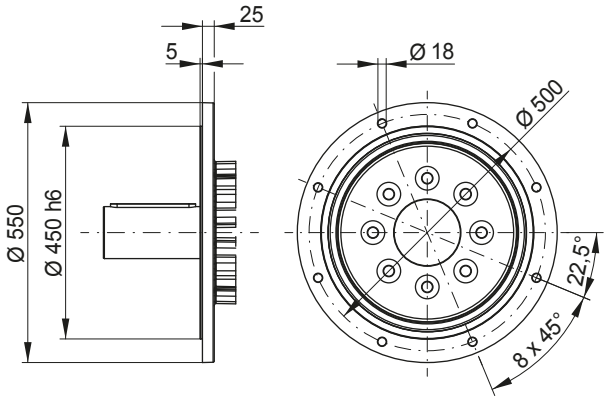




Flange Ø 450

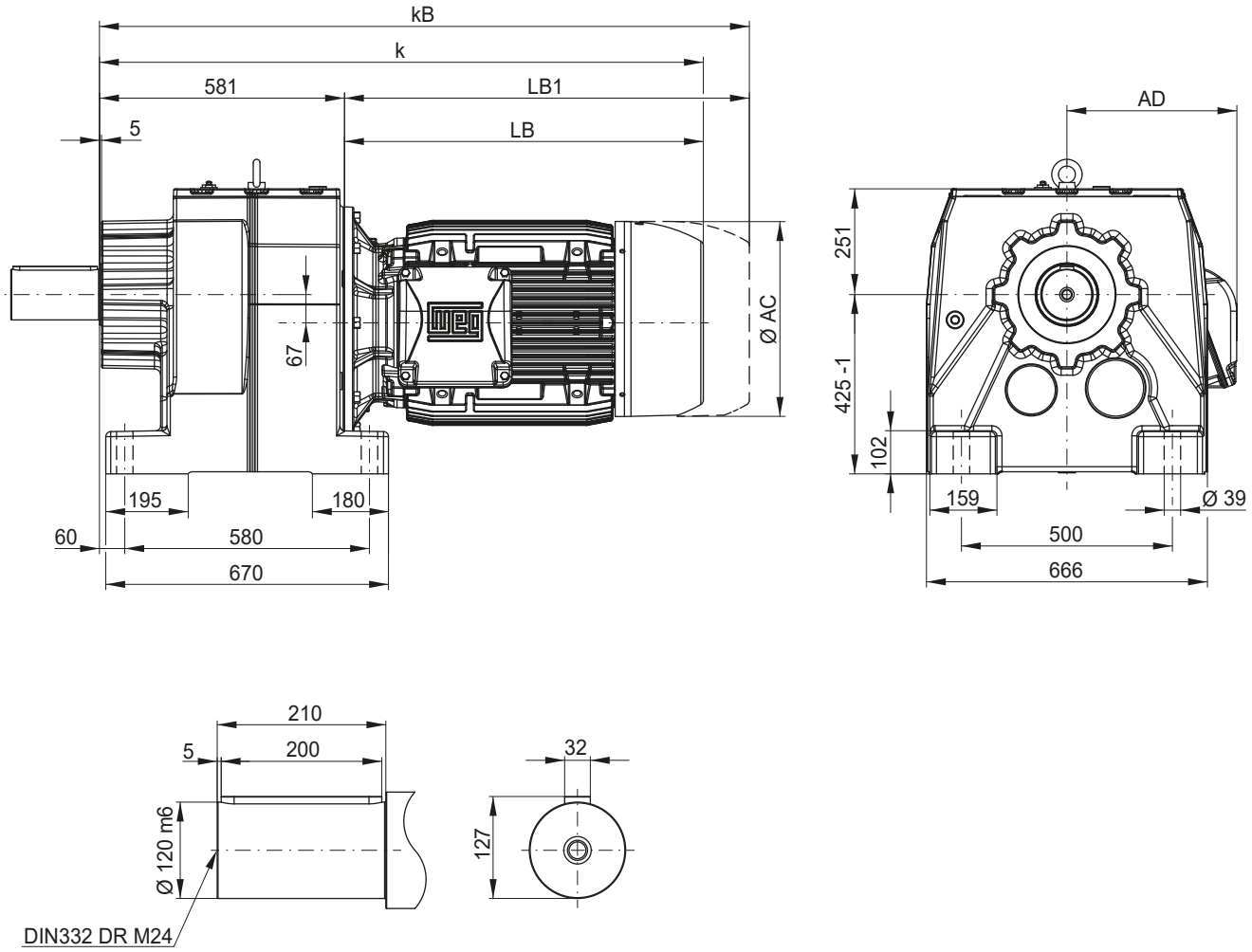


Flange Ø 550



Dimensions in mm.

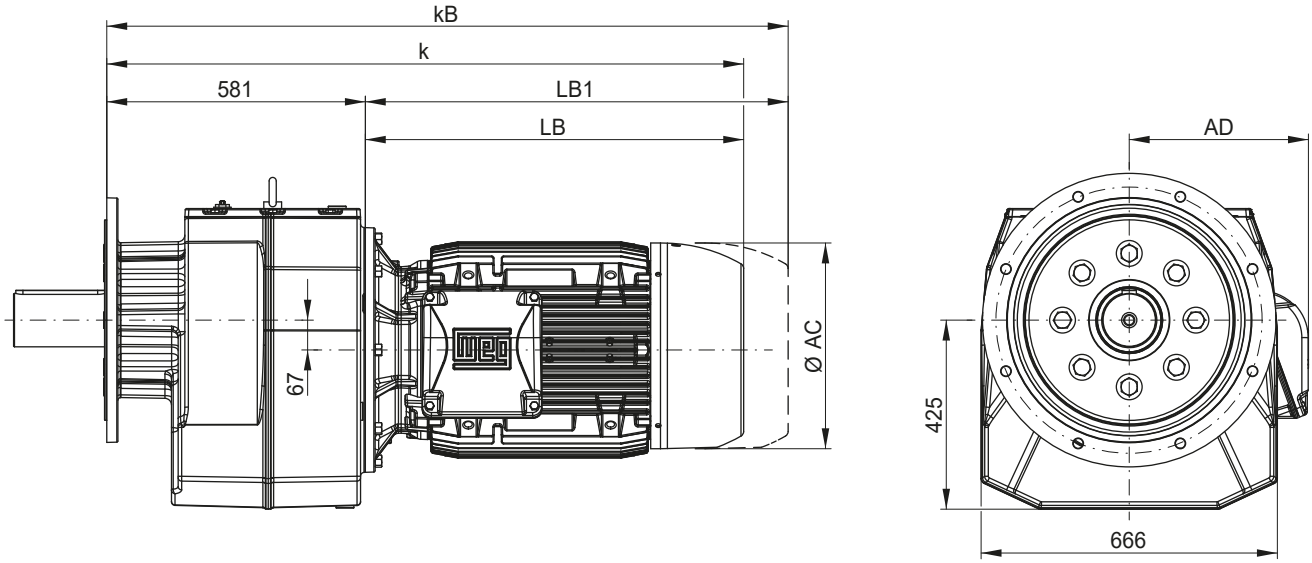
CG16 - Foot mounted



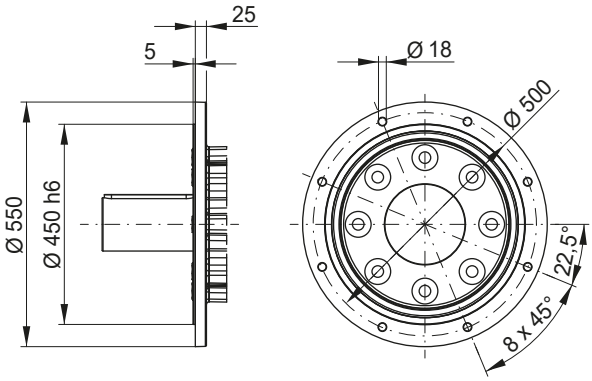
Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	1087	1131	1155	1193	1285	1393	1432
kB	-	-	-	-	-	-	-	-	-	1211	1255	1273	1311	1411	1511	1550
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

Motor dimension sheets see page 380; Gear unit size C16 corresponds to motor flange FR-550.
Description of motor lengths LB and LB1 see page 384

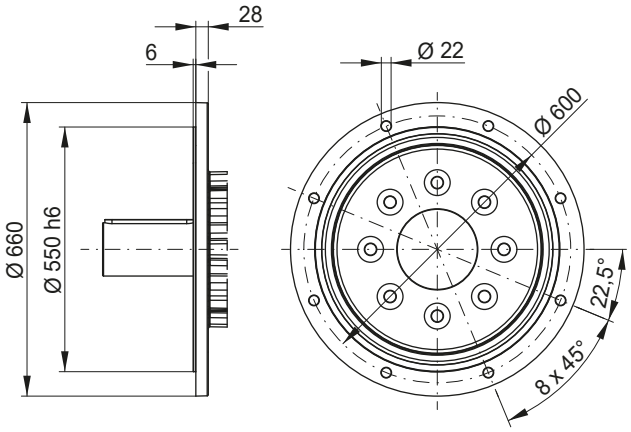
CF16 - Flange execution



Flange Ø 550

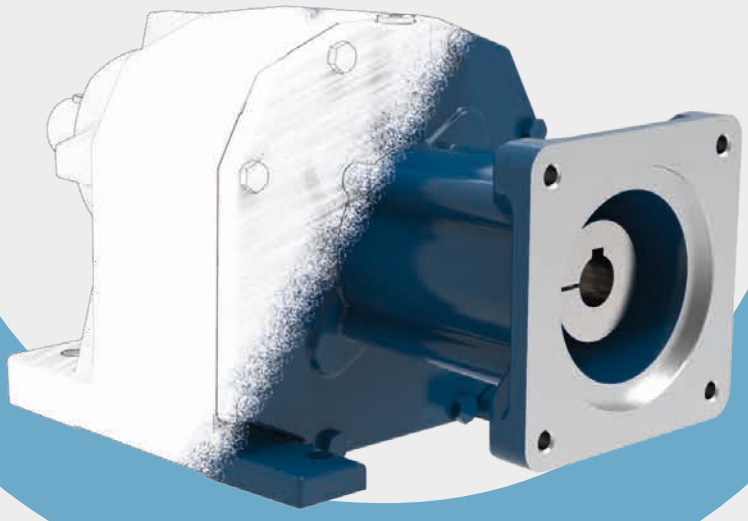


Flange Ø 660

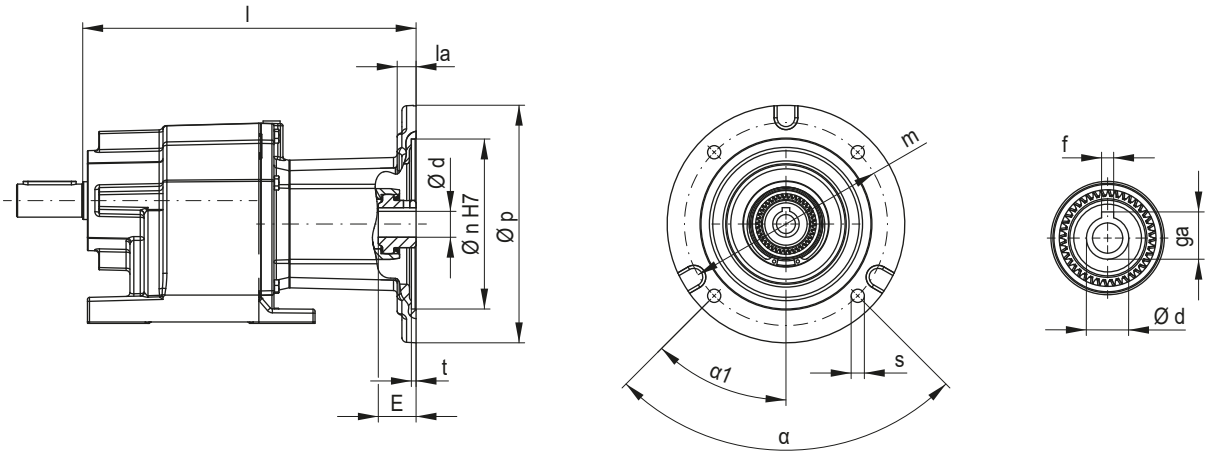


Dimensions in mm.

C



IEC Adapter I63 to I280



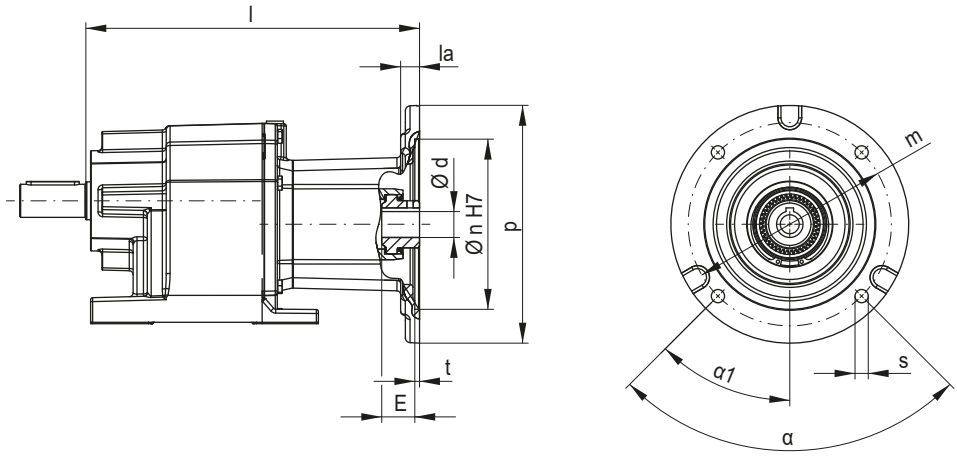
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225		I250	I280	
p	160	160	200	200	250	250	300	350	350	400	400		550	550	
n	95	110	130	130	180	180	230	250	250	300	350		450	450	
la	22.5	10	13	13	15	20	15	35	35	20	20		20	20	
m	115	130	165	165	215	215	265	300	300	350	400		500	500	
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5		5	5	
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19		19	19	
α	90	90	90	90	90	90	90	90	90	90	45		45	45	
α_1	35	45	45	45	45	45	45	45	45	45	45		45	45	
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E [1]	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	

[1] *Maximum motor shaft length for motors with key*

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
	l												
C00	150.5	150.5	178.5	-	-	-	-	-	-	-	-	-	-
C01	163	163	191	191	-	-	-	-	-	-	-	-	-
C03	190.5	190.5	218.5	218.5	249.5	-	-	-	-	-	-	-	-
C05	226	226	254	254	285	338	349	-	-	-	-	-	-
C06	241	241	269	269	300	353	364	-	-	-	-	-	-
C07	252.5	252.5	280.5	280.5	311.5	364.5	375.5	461.5	-	-	-	-	-
C08	293.5	293.5	321.5	321.5	352.5	405.5	416.5	498.5	498.5	-	-	-	-
C09	343	343	371	371	402	455	466	550.5	550.5	579	-	-	-
C10	379	379	407	407	438	491	502	586.5	586.5	615	-	-	-
C13	-	-	-	-	-	545.5	556.5	638.5	638.5	667	697	-	-
C14	-	-	-	-	-	611.5	622.5	704.5	704.5	733	763	852	-
C16	-	-	-	-	-	-	-	783.5	783.5	812	842	931	931

Dimensions in mm.

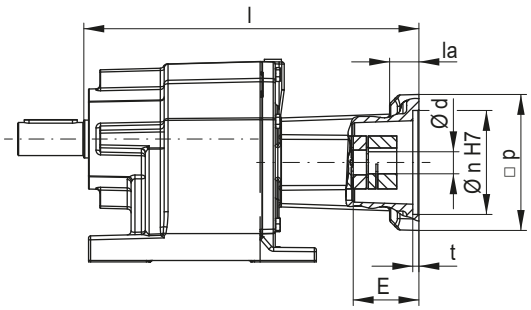
NEMA Adapter N56 to N364

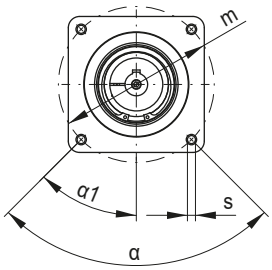


Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	19	19
α	90	90	90	90	90	90	90	90	90
α_1	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5

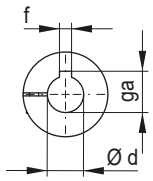
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
C00	178.5	178.5	-	-	-	-	-	-	-
C01	191	191	-	-	-	-	-	-	-
C03	218.5	218.5	249.5	-	-	-	-	-	-
C05	254	254	285	338	349	-	-	-	-
C06	269	269	300	353	364	-	-	-	-
C07	280.5	280.5	311.5	364.5	375.5	461.5	-	-	-
C08	321.5	321.5	352.5	405.5	416.5	498.5	501.5	-	-
C09	371	371	402	455	466	550.5	553.5	601	-
C10	407	407	438	491	502	586.5	589.5	637	-
C13	-	-	-	545.5	556.5	638.5	641.5	689	704.5
C14	-	-	-	611.5	622.5	704.5	707.5	755	770.5
C16	-	-	-	-	-	783.5	786.5	849.5	849.5

SERVO Adapter S92 to S190

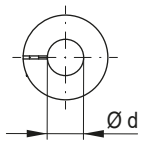




Shaft with key



Smooth shaft



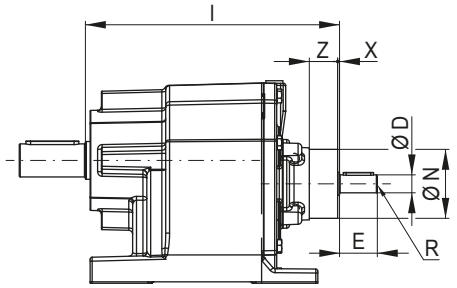
Type	S92			S105	S114		S115	S130				S141	S142		S180	S189		S190
p	101			144	144		144	144				144	144		197	197		197
n	80			95	95		110	110				110	130		114.3	130		180
la	17.5			31	31		31	31				31	31		35	32		38
m	100			115	130		130	145				165	165		200	215		215
t	6.5			6.5	6.5		6.5	6.5				6.5	6.5		6.5	6.5		6.5
s	M6x12			M8x16	M8x16		M8x16	M8x16				M8x16	M8x16		13.5	15		15
α	90°			90°	90°		90°	90°				90°	90°		90°	90°		90°
α_1	45°			45°	45°		45°	45°				45°	45°		45°	45°		45°
d [1]	14	16	19	19	19	24	24	19	22	24	28	24	24	32	35	32	38	38
f	5	5	6	6	6	8	8	6	6	8	8	8	8	10	10	10	10	10
ga	16.3	18.3	21.8	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	35.3	41.3
E [2]	47.5			69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5
E [3]	47.5			69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5

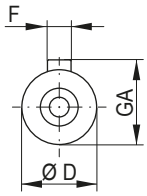
[1] Other shaft diameters on request
[2] Maximum motor shaft length for motors with key
[3] Maximum motor shaft length for motors with smooth shaft

Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	l									
C00	216	264	264	264	264	264	264	-	-	-
C01	228.5	276.5	276.5	276.5	276.5	276.5	276.5	-	-	-
C03	256	304	304	304	304	304	304	-	-	-
C05	291.5	339.5	339.5	339.5	339.5	339.5	339.5	410	404	431
C06	306.5	354.5	354.5	354.5	354.5	354.5	354.5	425	419	446
C07	318	366	366	366	366	366	366	436.5	430.5	457.5
C08	359	407	407	407	407	407	407	477.5	471.5	498.5
C09	408.5	456.5	456.5	456.5	456.5	456.5	456.5	527	521	548
C10	444.5	492.5	492.5	492.5	492.5	492.5	492.5	563	557	584
C13	-	-	-	-	-	-	-	617.5	611.5	638.5
C14	-	-	-	-	-	-	-	683.5	677.5	704.5
C16	-	-	-	-	-	-	-	-	-	-

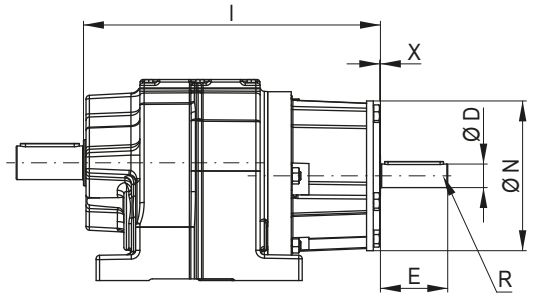
Dimensions in mm.

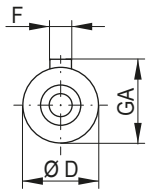
Input Unit U2, U3





Input Unit U5, U6, U7

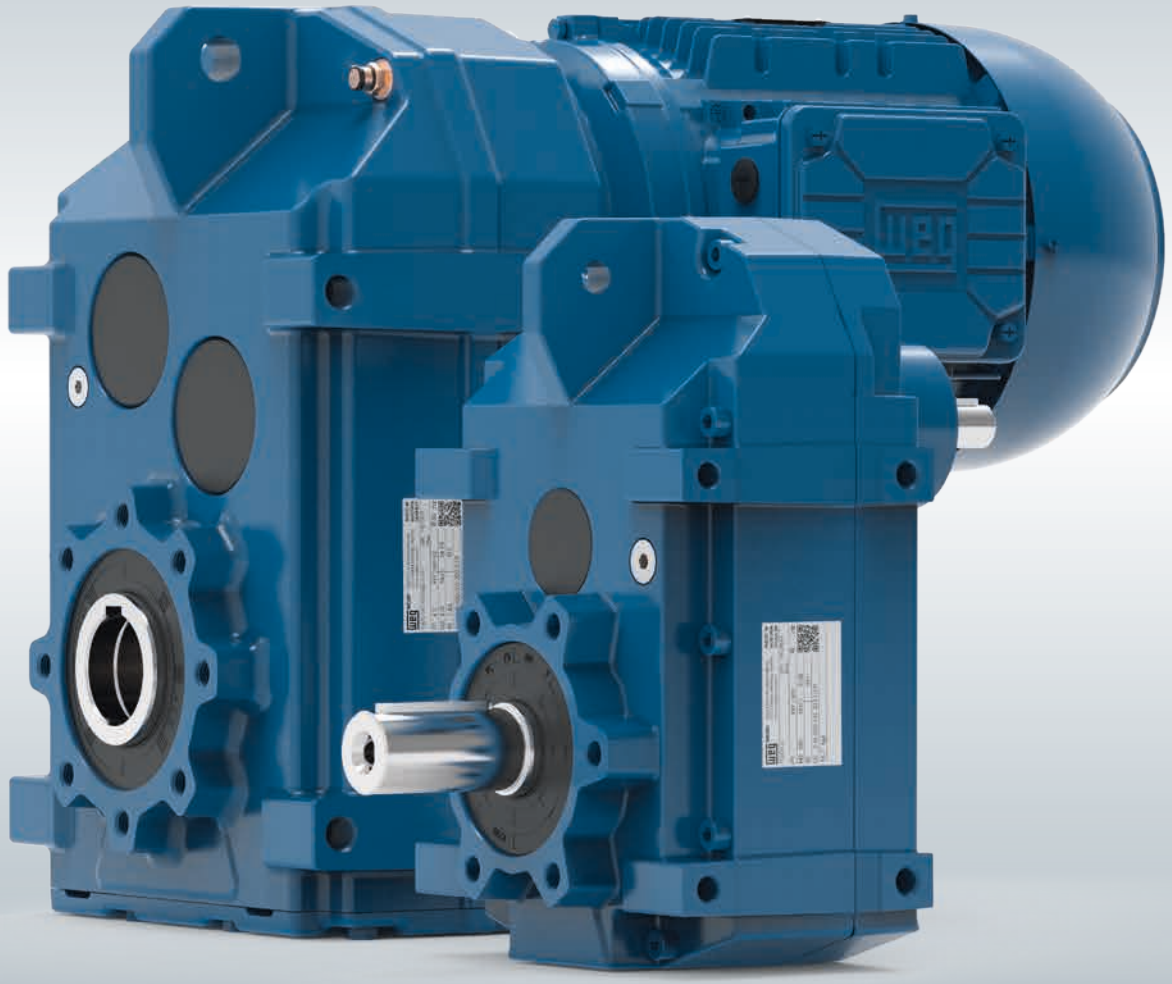




Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	I				
C00	178.5	-	-	-	-
C01	191	-	-	-	-
C03	218.5	-	-	-	-
C05	254	286	-	-	-
C06	269	301	-	-	-
C07	280.5	312.5	355	-	-
C08	321.5	353.5	392	-	-
C09	371	403	444	466	-
C10	407	439	480	502	-
C13	-	493.5	532	554	623
C14	-	559.5	598	620	689
C16	-	-	677	699	768



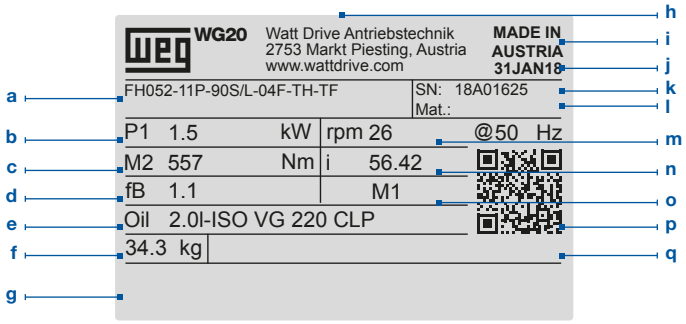
Parallel shaft gear units and Parallel shaft geared motors F

Technical Data

Size		F02	F03	F04	F05	F06	F07	F08	F09	F10	F12	F15
Power [kW]		0.12 - 1.5	0.12 - 3	0.12 - 3	0.12 - 9.2	0.12 - 15	0.12 - 15	0.55 - 22	0.55 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]		130	220	400	600	820	1500	3000	4500	8000	13000	18000
Ratio		3.93-97.85	3.85-70.17	4.42-422.98	5.17-487.67	4.41-412.64	4.29-305.42	4.09-358.52	4.16-288.50	4.38-246.57	4.64-220.67	5.84-259.81
Number of stages		2	2	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3	2 / 3
Housing material		aluminium				cast iron						
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2										
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6										
	Material	standard: C45E (1.1191) / stainless steel on request										
Hollow shaft	Type	with key acc. to DIN 6885.1										
	Tolerance	H7										
	Material	standard: C45E (1.1191) / stainless steel on request										
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347										
	Material	cast iron										
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7										
	Material	16MnCr5 (1.7131) case hardened – minimum 58HRC										
Shaft seals	Type	type AS acc. to DIN 3760										
	Material	standard NBR / special FKM										
Bearing		standard / reinforced										
Lubricants	Type	standard CLP 220 / special CLP HC 220										
	Quantity	depending on mounting position										
Axle height		acc. to DIN 747: ≤ 50: -0.4; > 50 to ≤ 250: -0.5; > 250: -1										

General information

1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		

2. Type code

FH073-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

FH073-EX-I112

1 2 3 4 5 11

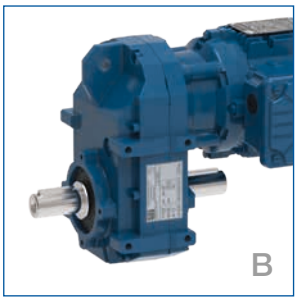
1	Type:	F = Parallel shaft gear unit
2	Design:	B = Output shaft on both sides D = Hollow shaft with shrink disc F = B5 flange execution with output shaft H = Hollow shaft O = B5 flange execution with hollow shaft P = B5 flange execution with hollow shaft and shrink disc S = Output shaft T = Hollow shaft with rubber buffer U = Hollow shaft with shrink disc and rubber buffer
3	Size:	02 05 08 12 03 06 09 15 04 07 10
4	Number of stages:	2 = 2 gear stages 3 = 3 gear stages
5	ATEX execution:	when operated in explosive atmospheres, see page 14
6	Motor type:	11N = Integral motor aluminium IE1 11P = Integral motor aluminium IE3 22P = Integral motor cast iron IE3
7	Motor frame size:	63 90S/L 112M L132M 180M 225S/M 71 100L 132S 160M 180L 250S/M 80 L100L 132M 160L 200L
8	Number of poles:	04 = 4 poles 06 = 6 poles
9	Power indicator:	D E F G
10	Motor modules:	see from page 385
11	Adapters, Input unit:	IEC Adapter: I63 I71 I80 I90 I100 I112 I132 I160 I180 I200 I225 I250 I280 NEMA Adapter: N56 N143 N182 N184 N213 N254 N284 N324 N364 SERVO Adapter: S92 S105 S114 S115 S130 S141 S142 S180 S189 S190 Input unit: U2 U3 U5 U6 U7

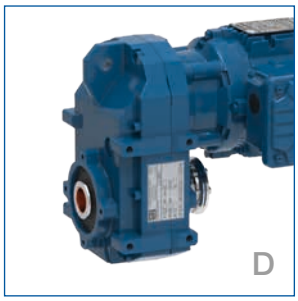
Type code Motor see page 361

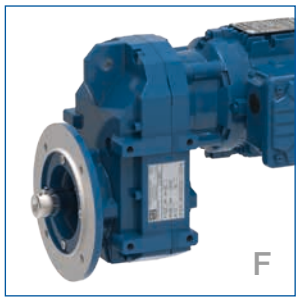
3. Range

Size	F02	F03	F04	F05	F06	F07	F08	F09	F10	F12	F15
Housing material	Aluminium				Cast iron						

4. Design



















B	Output shaft on both sides
D	Hollow shaft with shrink disc
F	B5 flange execution with output shaft
H	Hollow shaft
O	B5 flange execution with hollow shaft

P	B5 flange execution with hollow shaft and shrink disc
S	Output shaft
T	Hollow shaft with rubber buffer
U	Hollow shaft with shrink disc and rubber buffer

5. Venting the gear unit

The parallel shaft gear unit sizes F02 to F05 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.
By default, the parallel shaft gear units from F06 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 147)



6. Overhung and axial loads

The overhung loads (F_{rN}) indicated in the respective selection tables apply to gear units with the force acting on the shaft center (x=l/2). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor (f_z) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
				
f_z=1.1 (z≤17)	f_z=1.2 (z≤13)	f_z=1.1 (z>13)	f_z=1.8	f_z=2.5

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

Q1	$F_{zL} = F_{rN} \cdot a_1$
Q2	$F_{zW} = F_W \cdot a_2$
Q3	$F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$
Q4	$F_{Qvorh} \leq F_{zL}$
	$F_{Qvorh} \leq F_{zW}$

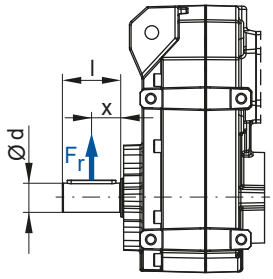
Variable	Unit	Description
a_1		Load action factor - output shaft bearing from Table 1
a_2		Load action factor - output shaft from Table 1
d_0	[m]	Effective diameter of the transmission element
M_2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
F_{zL}	[N]	Permissible overhung load for output shaft bearings
F_{zW}	[N]	Permissible overhung load for output shaft
F_{rN}	[N]	Permissible overhung load from selection tables
F_W	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
F_{Qvorh}	[N]	Existing overhung load at gear shaft
f_z		Factor for transmission element
M_{max}	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

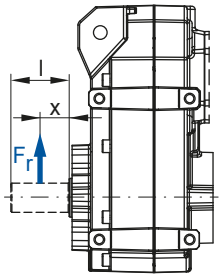
x / l						
0	0.25	0.5	0.75	1	1.5	2
$a_1 \rightarrow$ Equation Q1						
1.39	1.18	1.00	0.85	0.73	0.52	0.38
$a_2 \rightarrow$ Equation Q2						
2.00	2.00	1.00	0.55	0.38	0.23	0.17

Table 1: Load action factors a_1, a_2

Output shaft



Hollow shaft



Intermediate values can be interpolated linearly. Combined load ($F_r \neq 0$; $F_a = 0$) on request.

Output shaft [mm]		M_{max} at $F_r = 0$	Output torque M_2 [Nm]										
			130	220	400	600	820	1500	3000	4500	8000	13000	18000
Ø d	l		F_W [kN] at x/l = 0.5 → Equation Q2										
20	40	160	2.2										
25	50	300	5.5	4.5									
30	60	500	7.5	7.0	5.0								
35	70	800		11.0	10.0	8.3							
40	80	1170			13.0	12.0	10.7						
50	100	2250			24.0	24.0	23.0	21.0					
60	120	3740					31.0	30.0	23.0				
70	140	5850						45.0	41.0	36.0			
90	170	11700							72.0	70.0	61.0		
110	210	20800								106.0	103.0	93.0	
120	210	26700									129.0	121.0	109.0

Table 2: Permissible overhung load - output shaft x = l/2

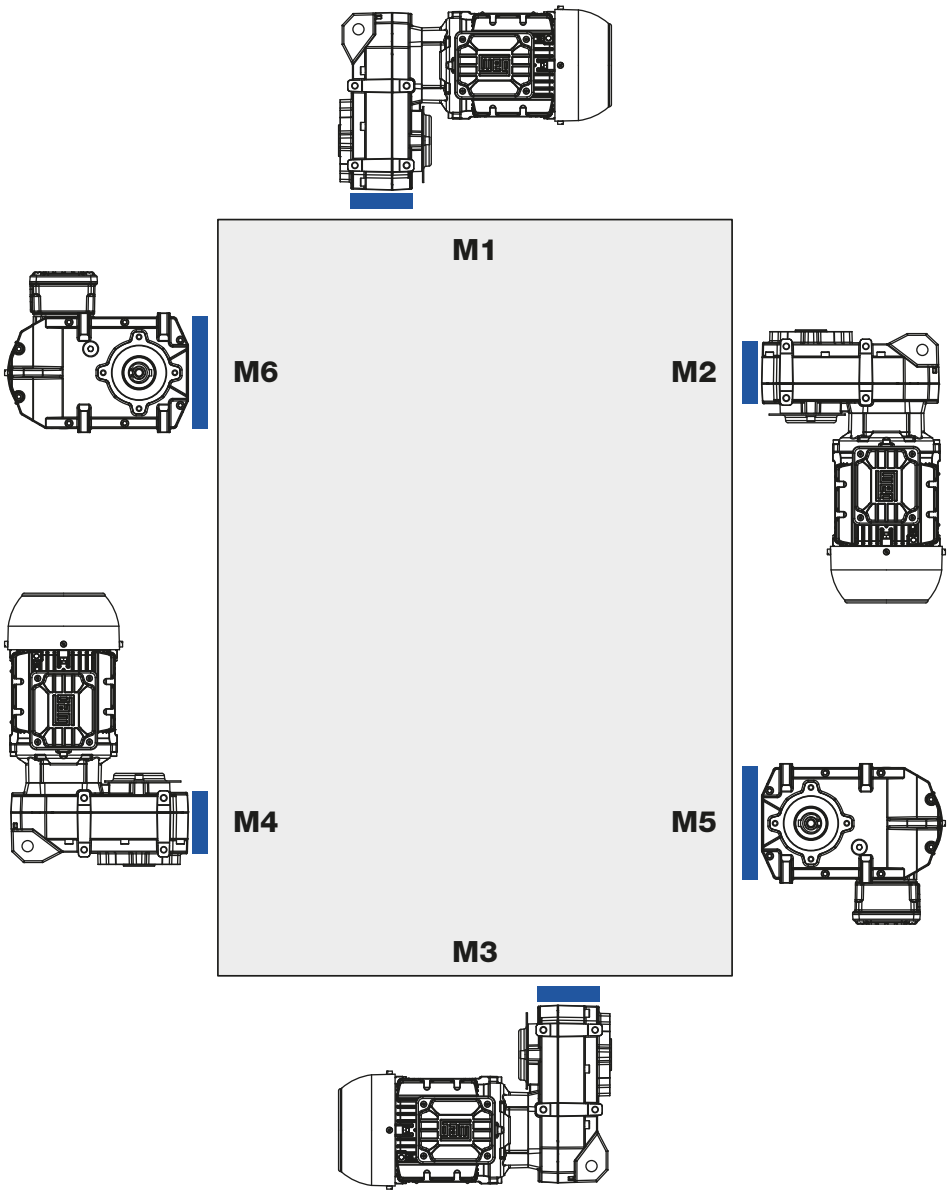
The axial loads (F_{aN}) for the respective execution (output shaft or hollow shaft), given in the following selection tables, are valid at radial force $F_{rN} = 0$. If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.

7. Mounting positions, Position of the terminal box and Cable entry

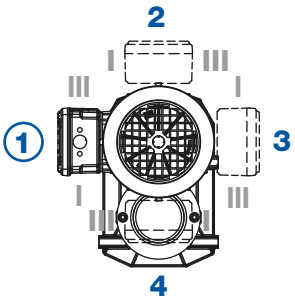
Mounting positions - Sizes F02 to F05

Gear units F02 to F05 are not ventilated and supplied with lifetime lubrication.

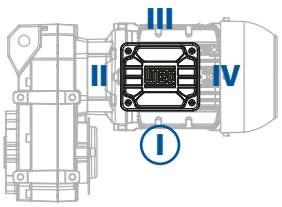
Reference area



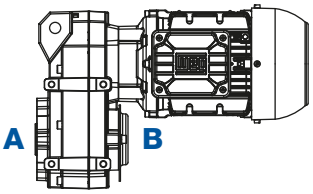
Position of the terminal box
Standard: Position 1



Cable entry
Standard: Position I



Side indication

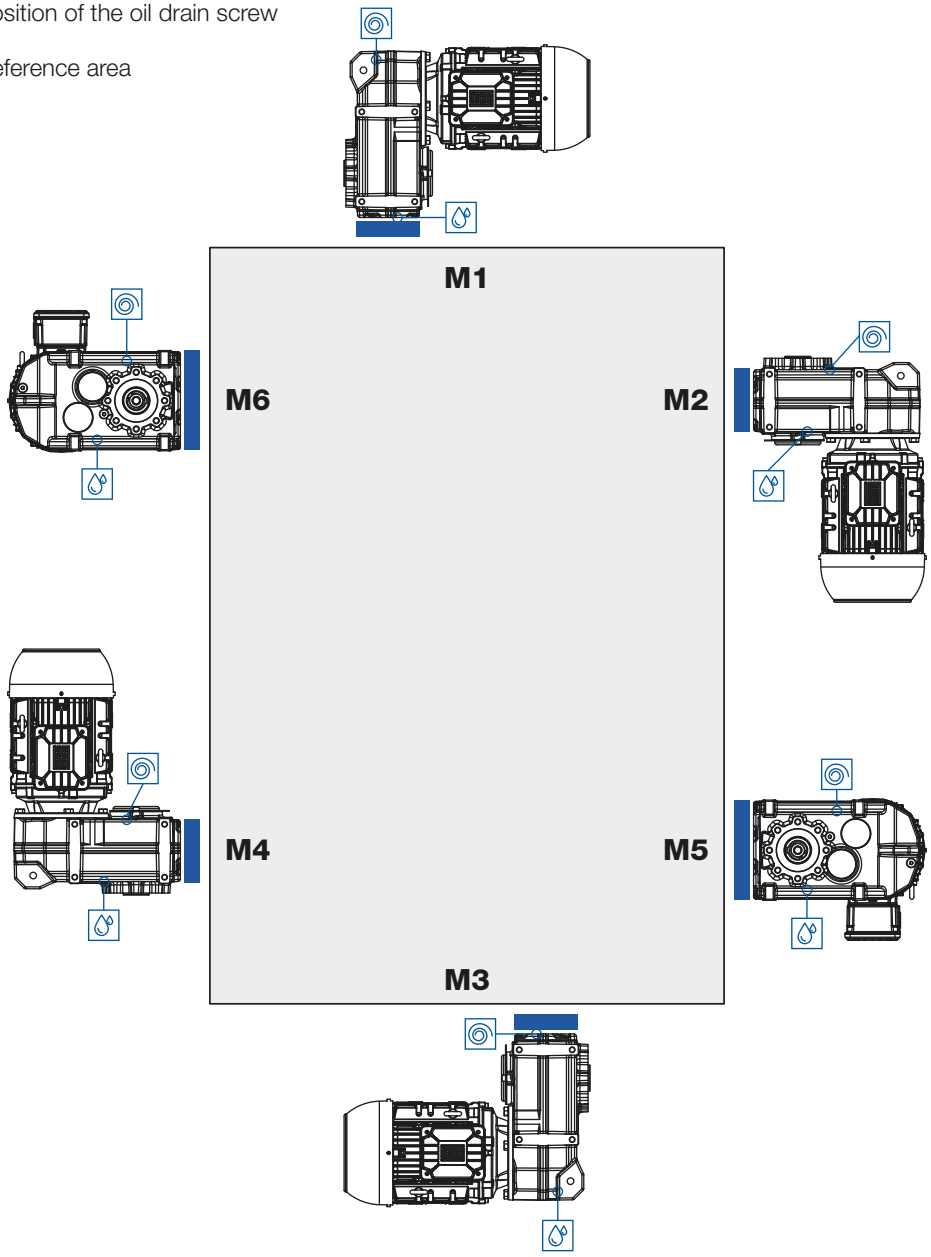


Mounting positions - Sizes F06 to F15

Position of the venting screw

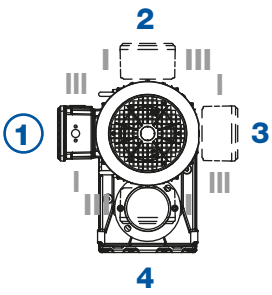
Position of the oil drain screw

Reference area



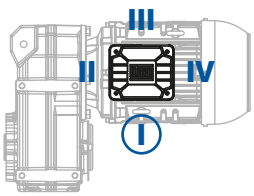
Position of the terminal box

Standard: Position 1

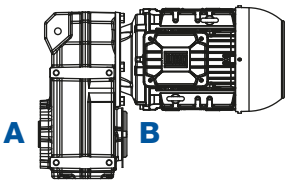


Cable entry

Standard: Position I



Side indication



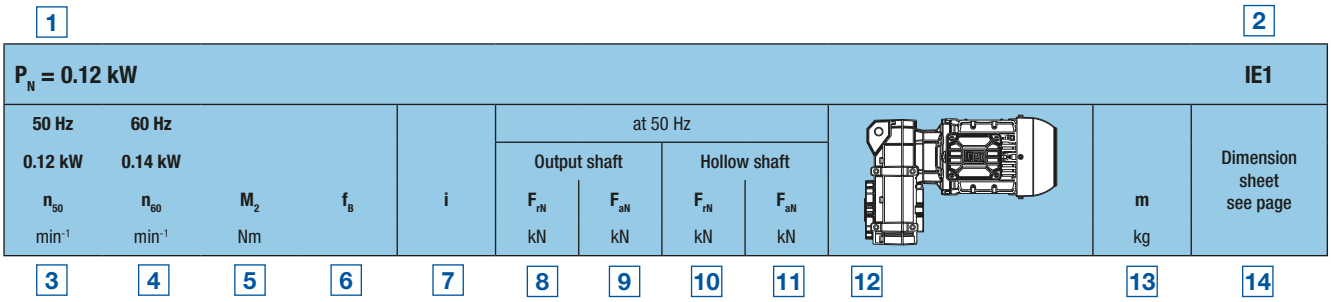
Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20 °C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up tp 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

Structure of the selection tables



1 Rated power of the motor

2 Given values are based on the respective efficiency class

3 Output speed at 50 Hz

4 Output speed at 60 Hz

5 Output torque

6 Service factor

7 Total ratio

8 Permissible radial load - Execution with output shaft at midpoint of the shaft (standard bearing) at axial load=0

9 Permissible axial load - Execution with output shaft (standard bearing) at radial load=0

10 Permissible radial load - Execution with hollow shaft at x=l/2 (standard bearing) and axial load=0

11 Permissible axial load - Execution with hollow shaft (standard bearing) at radial load=0

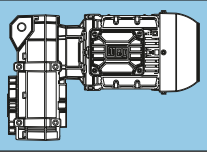
12 Geared motor type

13 Weight

14 Page refererence for dimension sheet

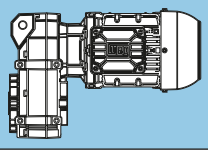
*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

Increased rated power
1.2 x P_N

P_N = 0.12 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.12 kW	0.14 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
2.2	2.7	531	1.55	412.64	11.0	13.5	11.0	3.6	**FH063-11N-63-06F**	36	232
2.4	2.9	487	1.70	378.37	11.2	13.7	11.2	3.7			
2.6	3.3	435	1.90	337.44	11.5	13.8	11.5	3.9			
2.9	3.6	398	2.10	309.42	11.7	13.9	11.7	4.0			
3.3	4.1	343	2.40	266.44	11.9	14.1	11.9	4.2			
3.6	4.5	315	2.65	244.32	12.0	14.2	12.0	4.3			
3.3	4.1	344	2.40	412.64	11.9	14.1	11.9	4.2	**FH063-11N-63-04E**	36	232
3.6	4.5	315	2.65	378.37	12.0	14.2	12.0	4.3			
4.1	5.0	281	2.95	337.44	12.1	14.3	12.1	4.4			
1.8	2.3	628	1.00	487.67	5.6	9.3	5.6	3.4	**FH053-11N-63-06F**	20	230
2.0	2.5	574	1.05	445.56	6.5	10.2	6.5	3.5			
2.3	2.9	489	1.25	379.87	7.5	10.5	7.5	3.8			
2.6	3.2	447	1.35	347.07	7.9	10.6	7.9	3.9			
2.9	3.6	397	1.55	308.00	8.3	10.8	8.3	4.1			
3.2	3.9	362	1.65	281.41	8.6	10.9	8.6	4.2			
3.7	4.6	312	1.95	242.67	8.9	11.0	8.9	4.3			
4.0	5.0	285	2.10	221.71	9.0	11.1	9.0	4.4			
4.8	5.9	241	2.50	187.00	9.3	11.3	9.3	4.6			
5.2	6.5	220	2.75	170.85	9.3	11.3	9.3	4.6			
2.8	3.5	406	1.50	487.67	8.3	10.8	8.3	4.1	**FH053-11N-63-04E**	20	230
3.1	3.8	371	1.65	445.56	8.5	10.9	8.5	4.2			
3.6	4.5	317	1.90	379.87	8.9	11.0	8.9	4.3			
4.0	4.9	289	2.10	347.07	9.0	11.1	9.0	4.4			
4.5	5.5	257	2.35	308.00	9.2	11.2	9.2	4.5			
4.9	6.0	235	2.55	281.41	9.3	11.3	9.3	4.6			
5.7	7.0	202	3.00	242.67	9.4	11.4	9.4	4.7			
2.3	2.9	497	0.85	385.85	**	**	**	**	**FH043-11N-63-06F**	14	228
2.7	3.4	424	0.95	329.48	3.2	4.9	3.2	2.4			
3.0	3.7	387	1.05	300.55	4.1	6.8	4.1	2.5			
3.3	4.1	344	1.20	267.14	4.9	8.3	4.9	2.7			
3.7	4.5	314	1.30	243.69	5.3	8.4	5.3	2.8			
4.2	5.2	271	1.50	210.48	5.8	8.5	5.8	2.9			
4.6	5.8	247	1.65	192.00	6.0	8.6	6.0	3.0			
5.5	6.8	209	1.95	162.19	6.3	8.8	6.3	3.2			
6.0	7.5	191	2.10	147.96	6.4	8.8	6.4	3.2			
7.0	8.7	163	2.50	126.72	6.6	8.9	6.6	3.3			
7.7	9.6	149	2.70	115.60	6.7	9.0	6.7	3.4			
3.3	4.0	353	1.15	422.98	4.7	8.1	4.7	2.6	**FH043-11N-63-04E**	14	228
3.6	4.4	322	1.25	385.85	5.2	8.4	5.2	2.8			
4.2	5.1	275	1.50	329.48	5.7	8.5	5.7	2.9			
4.6	5.6	250	1.60	300.55	6.0	8.6	6.0	3.0			
5.1	6.3	223	1.80	267.14	6.2	8.7	6.2	3.1			
5.6	7.0	203	2.00	243.69	6.4	8.8	6.4	3.2			
6.5	8.1	175	2.30	210.48	6.5	8.9	6.5	3.3			
7.2	8.8	160	2.50	192.00	6.6	8.9	6.6	3.3			
8.5	10	135	3.00	162.19	6.7	9.0	6.7	3.4			
13	16	90	2.45	70.17	4.9	3.1	4.9	3.1	**FH032-11N-63-06F**	13	226
14	17	82	2.70	63.63	4.9	3.3	4.9	3.3			
16	19	73	3.00	57.07	5.0	3.2	5.0	3.2			
9.1	11	126	1.05	97.85	4.8	2.0	4.8	2.0	**FH022-11N-63-06F**	10	224
10	13	113	1.15	88.09	4.9	2.3	4.9	2.3			
12	14	98	1.35	76.22	5.0	2.2	5.0	2.2			
13	16	88	1.50	68.62	5.0	2.4	5.0	2.4			
14	18	80	1.65	61.80	5.1	2.3	5.1	2.3			
16	20	72	1.85	55.64	5.1	2.4	5.1	2.4			
18	23	63	2.10	48.69	5.1	2.4	5.1	2.4			
20	25	56	2.35	43.83	5.2	2.5	5.2	2.5			
24	29	48	2.70	37.52	5.2	2.5	5.2	2.5			
26	33	43	3.00	33.78	5.2	2.6	5.2	2.6			
28	35	41	1.30	31.79	5.2	2.6	5.2	2.6			
36	45	32	2.65	24.76	5.2	2.6	5.2	2.6			

Legend see page 149

*** ... on request*

P_N = 0.12 kW											IE1
50 Hz 0.12 kW	60 Hz 0.14 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
14	17	82	1.60	97.85	5.1	2.3	5.1	2.3			
16	19	73	1.80	88.09	5.1	2.4	5.1	2.4			
18	22	64	2.05	76.22	5.1	2.4	5.1	2.4			
20	25	57	2.30	68.62	5.2	2.5	5.2	2.5			
22	27	52	2.55	61.80	5.2	2.4	5.2	2.4			
25	30	46	2.85	55.64	5.2	2.5	5.2	2.5			
28	35	41	3.25	48.69	5.2	2.5	5.2	2.5			
31	39	37	3.60	43.83	5.2	2.6	5.2	2.6			
37	45	31	4.20	37.52	5.2	2.6	5.2	2.6			
41	50	28	4.65	33.78	5.2	2.6	5.2	2.6			
43	53	26	2.05	31.79	5.2	2.6	5.2	2.6			
47	58	24	5.35	29.32	5.2	2.6	5.2	2.6			
52	64	22	5.95	26.39	5.2	2.7	5.2	2.7			
56	68	21	4.10	24.76	5.2	2.7	5.2	2.7	**FH022-11N-63-04E**	10	224
63	77	18	7.15	21.89	5.2	2.6	5.2	2.6			
68	84	17	5.05	20.08	5.2	2.7	5.2	2.7			
70	86	16	7.95	19.70	5.3	2.7	5.3	2.7			
83	103	14	9.50	16.48	5.2	2.7	5.2	2.7			
87	107	13	6.40	15.82	5.1	2.7	5.1	2.7			
93	114	12	10.55	14.84	5.0	2.7	5.0	2.7			
113	139	10	8.30	12.19	4.7	2.7	4.7	2.7			
114	140	10	12.95	12.09	4.7	2.7	4.7	2.7			
126	156	9	14.35	10.89	4.5	2.7	4.5	2.7			
144	178	8	10.60	9.52	4.3	2.7	4.3	2.7			
193	238	6	14.20	7.11	3.9	2.7	3.9	2.7			
257	317	4	18.85	5.35	3.6	2.7	3.6	2.7			
350	431	3	22.00	3.93	3.2	2.7	3.2	2.7			

Legend see page 149

P_N = 0.18 kW										IE1
50 Hz	60 Hz				at 50 Hz					
0.18 kW	0.22 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
2.3	2.9	740	2.05	385.37	19.4	17.5	19.4	6.2	**FH073-11N-71-06E**	61	234
2.9	3.6	587	2.60	305.42	19.8	17.8	19.8	6.6			
2.2	2.7	793	1.05	412.64	8.9	12.7	8.9	2.7	**FH063-11N-71-06E**	38	232
2.4	2.9	727	1.15	378.37	9.5	12.9	9.5	2.9			
2.7	3.3	648	1.30	337.44	10.2	13.2	10.2	3.2			
2.9	3.6	594	1.40	309.42	10.6	13.3	10.6	3.4			
3.4	4.1	512	1.65	266.44	11.1	13.6	11.1	3.6			
3.7	4.5	469	1.75	244.32	11.3	13.7	11.3	3.8			
4.3	5.3	397	2.10	206.59	11.7	14.0	11.7	4.0			
4.7	5.8	364	2.30	189.44	11.8	14.1	11.8	4.1			
5.3	6.5	325	2.55	169.09	11.9	14.2	11.9	4.2			
5.8	7.1	298	2.80	155.05	12.0	14.3	12.0	4.3			
3.3	4.1	518	1.60	412.64	11.1	13.6	11.1	3.6	**FH063-11N-63-04F**	36	232
3.6	4.5	475	1.75	378.37	11.3	13.7	11.3	3.7			
4.1	5.0	423	1.95	337.44	11.6	13.9	11.6	3.9			
4.4	5.5	388	2.15	309.42	11.7	14.0	11.7	4.0			
5.1	6.4	334	2.50	266.44	11.9	14.2	11.9	4.2			
5.6	7.0	307	2.70	244.32	12.0	14.2	12.0	4.3			
2.4	2.9	730	0.85	379.87	3.1	4.0	3.1	3.1	**FH053-11N-71-06E**	22	230
2.6	3.2	667	0.90	347.07	4.9	7.7	4.9	3.2			
2.9	3.6	592	1.05	308.00	6.2	10.2	6.2	3.5			
3.2	3.9	540	1.15	281.41	6.9	10.3	6.9	3.6			
3.7	4.6	466	1.30	242.67	7.8	10.6	7.8	3.9			
4.0	5.0	426	1.45	221.71	8.1	10.7	8.1	4.0			
4.8	5.9	359	1.70	187.00	8.6	10.9	8.6	4.2			
5.2	6.5	328	1.85	170.85	8.8	11.0	8.8	4.3			
6.1	7.6	281	2.15	146.10	9.1	11.1	9.1	4.4			
6.7	8.3	256	2.35	133.49	9.2	11.2	9.2	4.5			
8.2	10	210	2.90	109.08	9.4	11.4	9.4	4.7			
2.8	3.5	612	1.00	487.67	5.9	9.9	5.9	3.4	**FH053-11N-63-04F**	20	230
3.1	3.8	559	1.10	445.56	6.7	10.3	6.7	3.6			
3.6	4.5	477	1.30	379.87	7.6	10.5	7.6	3.8			
3.9	4.9	435	1.40	347.07	8.0	10.7	8.0	4.0			
4.4	5.5	386	1.60	308.00	8.4	10.8	8.4	4.1			
4.9	6.0	353	1.70	281.41	8.7	10.9	8.7	4.2			
5.6	7.0	304	2.00	242.67	8.9	11.1	8.9	4.4			
6.2	7.7	278	2.15	221.71	9.1	11.1	9.1	4.4			
7.3	9.1	235	2.60	187.00	9.3	11.3	9.3	4.6			
8.0	10	214	2.80	170.85	9.4	11.3	9.4	4.6			
10	13	168	2.25	87.38	9.5	11.5	9.5	4.8	**FH052-11N-71-06E**	22	230
11	14	153	2.25	79.84	9.5	11.5	9.5	4.8			
19	23	92	2.25	48.15	9.7	11.6	9.7	4.9			
3.4	4.1	513	0.80	267.14	**	**	**	**	**FH043-11N-71-06E**	16	228
3.7	4.5	468	0.90	243.69	1.3	0.9	1.3	0.9			
4.3	5.2	404	1.00	210.48	3.7	6.0	3.7	2.5			
4.7	5.8	369	1.10	192.00	4.4	7.5	4.4	2.6			
5.5	6.8	312	1.30	162.19	5.3	8.4	5.3	2.8			
6.0	7.5	284	1.45	147.96	5.6	8.5	5.6	2.9			
7.1	8.7	243	1.65	126.72	6.0	8.6	6.0	3.0			
7.7	9.6	222	1.85	115.60	6.2	8.7	6.2	3.1			
9.5	12	182	2.25	94.61	6.5	8.9	6.5	3.3			
10	13	166	2.45	86.31	6.6	8.9	6.6	3.3			
13	16	137	2.95	71.24	6.7	9.0	6.7	3.4			

Legend see page 149

** ... *on request*

P_N = 0.18 kW										IE1
50 Hz 0.18 kW	60 Hz 0.22 kW				at 50 Hz					
					Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
3.2	4.0	531	0.80	422.98	**	**	**	**		
3.6	4.4	484	0.85	385.85	**	**	**	**		
4.2	5.2	413	1.00	329.48	3.5	5.5	3.5	2.4		
4.6	5.7	377	1.10	300.55	4.3	7.3	4.3	2.6		
5.1	6.4	335	1.20	267.14	5.0	8.3	5.0	2.7		
5.6	7.0	306	1.35	243.69	5.4	8.4	5.4	2.8		
6.5	8.1	264	1.55	210.48	5.9	8.6	5.9	3.0	**FH043-11N-63-04F**	14	228
7.1	8.9	241	1.70	192.00	6.1	8.7	6.1	3.1			
8.4	10	204	2.00	162.19	6.4	8.8	6.4	3.2			
9.3	11	186	2.20	147.96	6.5	8.8	6.5	3.2			
11	13	159	2.55	126.72	6.6	8.9	6.6	3.3			
12	15	145	2.80	115.60	6.7	9.0	6.7	3.4			
12	15	146	2.25	75.79	6.7	9.0	6.7	3.4			
13	16	133	2.25	69.14	6.8	9.0	6.8	3.4	**FH042-11N-71-06E**	16	228
22	27	79	2.25	41.20	6.9	9.1	6.9	3.5			
13	16	135	1.65	70.17	4.6	2.8	4.6	2.8			
14	17	122	1.85	63.63	4.7	3.1	4.7	3.1			
16	19	110	2.05	57.07	4.8	3.0	4.8	3.0			
17	21	99	2.25	51.75	4.8	3.2	4.8	3.2	**FH032-11N-71-06E**	15	226
20	24	87	2.55	45.35	4.9	3.1	4.9	3.1			
22	27	79	2.80	41.12	5.0	3.3	5.0	3.3			
32	40	53	2.25	27.67	5.1	3.4	5.1	3.4			
20	24	88	2.50	70.17	4.9	3.1	4.9	3.1	**FH032-11N-63-04F**	13	226
22	27	80	2.80	63.63	4.9	3.3	4.9	3.3			
10	13	169	0.80	88.09	**	**	**	**		
12	14	146	0.90	76.22	4.6	1.9	4.6	1.9		
13	16	132	1.00	68.62	4.7	2.2	4.7	2.2		
14	18	119	1.10	61.80	4.8	2.0	4.8	2.0		
16	20	107	1.25	55.64	4.9	2.3	4.9	2.3		
18	23	94	1.40	48.69	5.0	2.2	5.0	2.2		
20	25	84	1.55	43.83	5.0	2.4	5.0	2.4		
24	29	72	1.85	37.52	5.1	2.3	5.1	2.3	**FH022-11N-71-06E**	12	224
26	33	65	2.05	33.78	5.1	2.5	5.1	2.5			
28	35	61	0.90	31.79	5.1	2.5	5.1	2.5			
31	38	56	2.35	29.32	5.2	2.4	5.2	2.4			
34	42	51	2.60	26.39	5.2	2.5	5.2	2.5			
36	45	48	1.80	24.76	5.2	2.5	5.2	2.5			
45	55	39	2.20	20.08	5.2	2.6	5.2	2.6			
57	70	30	2.80	15.82	5.2	2.6	5.2	2.6			

Legend see page 149

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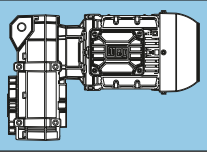
P_N = 0.18 kW										IE1
50 Hz	60 Hz				at 50 Hz					
0.18 kW	0.22 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
14	17	123	1.10	97.85	4.8	2.0	4.8	2.0		
16	19	111	1.20	88.09	4.9	2.3	4.9	2.3		
18	22	96	1.40	76.22	5.0	2.2	5.0	2.2		
20	25	86	1.55	68.62	5.0	2.4	5.0	2.4		
22	28	78	1.70	61.80	5.1	2.3	5.1	2.3		
25	31	70	1.90	55.64	5.1	2.4	5.1	2.4		
28	35	61	2.15	48.69	5.1	2.4	5.1	2.4		
31	39	55	2.40	43.83	5.2	2.5	5.2	2.5		
37	45	47	2.80	37.52	5.2	2.5	5.2	2.5		
41	50	42	3.10	33.78	5.2	2.6	5.2	2.6		
43	53	40	1.35	31.79	5.2	2.6	5.2	2.6		
47	58	37	3.55	29.32	5.2	2.5	5.2	2.5		
52	64	33	3.95	26.39	5.2	2.6	5.2	2.6		
55	69	31	2.75	24.76	5.2	2.6	5.2	2.6	**FH022-11N-63-04F**	10	224
63	78	27	4.75	21.89	5.2	2.6	5.2	2.6		
68	85	25	3.35	20.08	5.2	2.6	5.2	2.6		
70	86	25	5.30	19.70	5.2	2.6	5.2	2.6		
83	103	21	6.30	16.48	5.2	2.6	5.2	2.6		
87	107	20	4.25	15.82	5.2	2.7	5.2	2.7		
92	115	19	7.00	14.84	5.1	2.7	5.1	2.7		
112	139	15	5.50	12.19	4.8	2.7	4.8	2.7		
113	141	15	8.60	12.09	4.8	2.7	4.8	2.7		
126	156	14	9.55	10.89	4.6	2.7	4.6	2.7		
144	179	12	7.05	9.52	4.4	2.7	4.4	2.7		
193	239	9	9.45	7.11	3.9	2.7	3.9	2.7		
256	318	7	12.55	5.35	3.6	2.7	3.6	2.7		
349	433	5	14.65	3.93	3.2	2.7	3.2	2.7		

Legend see page 149

P_N = 0.25 kW											IE1
50 Hz 0.25 kW	60 Hz 0.30 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
2.3	2.9	1022	1.50	385.37	18.4	16.9	18.4	5.7			
2.9	3.6	810	1.90	305.42	19.2	17.3	19.2	6.1	**FH073-11N-71-06F**	62	234
3.8	4.7	629	2.40	237.15	19.7	17.7	19.7	6.5			
4.6	5.7	516	2.95	194.58	20.0	17.9	20.0	6.7			
3.6	4.4	672	2.25	385.37	19.6	17.6	19.6	6.4	**FH073-11N-71-04E**	60	234
4.5	5.6	532	2.85	305.42	19.9	17.9	19.9	6.7			
2.4	2.9	1004	0.85	378.37	5.6	7.9	5.6	2.0			
2.7	3.3	895	0.95	337.44	7.6	12.3	7.6	2.4			
2.9	3.6	821	1.00	309.42	8.5	12.6	8.5	2.6			
3.4	4.2	707	1.20	266.44	9.7	13.0	9.7	3.0			
3.7	4.5	648	1.30	244.32	10.2	13.1	10.2	3.2			
4.4	5.4	548	1.50	206.59	10.9	13.5	10.9	3.5	**FH063-11N-71-06F**	39	232
4.8	5.9	503	1.65	189.44	11.2	13.6	11.2	3.7			
5.3	6.6	449	1.85	169.09	11.4	13.8	11.4	3.8			
5.8	7.2	411	2.00	155.05	11.6	13.9	11.6	4.0			
6.9	8.5	345	2.40	130.15	11.9	14.1	11.9	4.2			
7.5	9.3	317	2.60	119.35	12.0	14.2	12.0	4.3			
3.3	4.1	719	1.15	412.64	9.6	12.9	9.6	3.0			
3.6	4.5	659	1.25	378.37	10.1	13.1	10.1	3.1			
4.1	5.0	588	1.40	337.44	10.6	13.3	10.6	3.4			
4.4	5.5	539	1.55	309.42	10.9	13.5	10.9	3.5			
5.1	6.4	464	1.80	266.44	11.4	13.7	11.4	3.8	**FH063-11N-71-04E**	37	232
5.6	7.0	426	1.95	244.32	11.5	13.9	11.5	3.9			
6.6	8.2	360	2.30	206.59	11.8	14.1	11.8	4.1			
7.2	9.0	330	2.50	189.44	11.9	14.2	11.9	4.2			
8.1	10	295	2.80	169.09	12.0	14.3	12.0	4.3			
3.2	3.9	747	0.80	281.41	**	**	**	**			
3.7	4.6	644	0.95	242.67	5.3	8.6	5.3	3.3			
4.1	5.0	588	1.05	221.71	6.3	10.2	6.3	3.5			
4.8	5.9	496	1.25	187.00	7.4	10.5	7.4	3.8			
5.3	6.5	453	1.35	170.85	7.9	10.6	7.9	3.9			
6.2	7.6	388	1.55	146.10	8.4	10.8	8.4	4.1	**FH053-11N-71-06F**	23	230
6.7	8.3	354	1.70	133.49	8.7	10.9	8.7	4.2			
8.3	10	289	2.10	109.08	9.0	11.1	9.0	4.4			
9.0	11	264	2.30	99.66	9.2	11.2	9.2	4.5			
11	14	218	2.80	82.13	9.3	11.3	9.3	4.6			
12	15	199	3.00	75.04	9.4	11.4	9.4	4.7			
3.1	3.8	776	0.80	445.56	**	**	**	**			
3.6	4.5	662	0.95	379.87	5.0	8.0	5.0	3.3			
3.9	4.9	605	1.00	347.07	6.0	10.1	6.0	3.4			
4.4	5.5	537	1.15	308.00	7.0	10.4	7.0	3.7			
4.9	6.0	490	1.25	281.41	7.5	10.5	7.5	3.8			
5.6	7.0	423	1.45	242.67	8.1	10.7	8.1	4.0	**FH053-11N-71-04E**	21	230
6.2	7.7	386	1.55	221.71	8.4	10.8	8.4	4.1			
7.3	9.1	326	1.85	187.00	8.8	11.0	8.8	4.3			
8.0	10	298	2.05	170.85	9.0	11.1	9.0	4.4			
9.4	12	255	2.40	146.10	9.2	11.2	9.2	4.5			
10	13	233	2.60	133.49	9.3	11.3	9.3	4.6			
10	13	232	1.65	87.38	9.3	11.3	9.3	4.6			
11	14	212	1.65	79.84	9.4	11.3	9.4	4.6			
13	16	190	2.65	71.46	9.4	11.4	9.4	4.7	**FH052-11N-71-06F**	23	230
14	17	173	2.65	65.29	9.5	11.5	9.5	4.8			
19	23	128	1.60	48.15	9.6	11.4	9.6	4.7			
23	28	104	2.65	39.38	9.7	11.5	9.7	4.8			
16	19	152	2.45	87.38	9.6	11.5	9.6	4.8			
17	21	139	2.45	79.84	9.6	11.6	9.6	4.9	**FH052-11N-71-04E**	21	230
28	35	84	2.45	48.15	9.7	11.6	9.7	4.9			

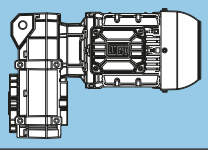
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P_N = 0.25 kW											IE1
50 Hz 0.25 kW	60 Hz 0.30 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
4.7	5.8	509	0.80	192.00	**	**	**	**	**FH043-11N-71-06F**	17	228
5.5	6.8	430	0.95	162.19	3.0	4.5	3.0	2.4			
6.1	7.5	393	1.05	147.96	4.0	6.6	4.0	2.5			
7.1	8.8	336	1.20	126.72	5.0	8.3	5.0	2.7			
7.8	9.6	307	1.35	115.60	5.4	8.4	5.4	2.8			
9.5	12	251	1.60	94.61	6.0	8.6	6.0	3.0			
10	13	229	1.75	86.31	6.2	8.7	6.2	3.1			
13	16	189	2.15	71.24	6.5	8.8	6.5	3.2			
14	17	172	2.35	64.98	6.6	8.9	6.6	3.3			
17	21	139	2.90	52.27	6.7	9.0	6.7	3.4			
4.6	5.7	524	0.80	300.55	**	**	**	**	**FH043-11N-71-04E**	15	228
5.1	6.4	466	0.90	267.14	1.5	1.3	1.5	1.3			
5.6	7.0	425	0.95	243.69	3.2	4.9	3.2	2.4			
6.5	8.1	367	1.10	210.48	4.5	7.7	4.5	2.6			
7.1	8.9	335	1.20	192.00	5.0	8.3	5.0	2.7			
8.4	10	283	1.45	162.19	5.7	8.5	5.7	2.9			
9.3	11	258	1.60	147.96	5.9	8.6	5.9	3.0			
11	13	221	1.85	126.72	6.2	8.7	6.2	3.1			
12	15	201	2.00	115.60	6.4	8.8	6.4	3.2			
14	18	165	2.45	94.61	6.6	8.9	6.6	3.3			
16	20	150	2.70	86.31	6.7	9.0	6.7	3.4			
12	15	201	1.65	75.79	6.4	8.8	6.4	3.2	**FH042-11N-71-06F**	17	228
13	16	183	1.60	69.14	6.5	8.9	6.5	3.3			
15	18	164	2.45	61.98	6.6	8.9	6.6	3.3			
16	20	150	2.65	56.54	6.7	9.0	6.7	3.4			
22	27	109	1.65	41.20	6.8	8.9	6.8	3.3			
27	33	89	2.65	33.69	6.9	9.0	6.9	3.4			
18	22	132	2.45	75.79	6.8	9.0	6.8	3.4	**FH042-11N-71-04E**	15	228
20	25	120	2.45	69.14	6.8	9.1	6.8	3.5			
33	41	72	2.45	41.20	7.0	9.1	7.0	3.5			
13	16	186	1.20	70.17	3.9	2.5	3.9	2.5	**FH032-11N-71-06F**	16	226
14	17	169	1.35	63.63	4.2	2.9	4.2	2.9			
16	19	151	1.50	57.07	4.4	2.7	4.4	2.7			
17	21	137	1.65	51.75	4.5	3.0	4.5	3.0			
20	24	120	1.85	45.35	4.7	2.9	4.7	2.9			
22	27	109	2.05	41.12	4.8	3.2	4.8	3.2			
26	32	93	2.40	35.03	4.9	3.1	4.9	3.1			
28	35	84	2.65	31.76	4.9	3.3	4.9	3.3			
32	40	74	3.00	27.97	5.0	3.2	5.0	3.2			
33	40	73	1.65	27.67	5.0	3.3	5.0	3.3			
40	49	60	2.50	22.50	5.0	3.3	5.0	3.3			
20	24	122	1.80	70.17	4.7	2.9	4.7	2.9	**FH032-11N-71-04E**	14	226
22	27	111	2.00	63.63	4.8	3.2	4.8	3.2			
24	30	99	2.25	57.07	4.8	3.0	4.8	3.0			
26	33	90	2.45	51.75	4.9	3.2	4.9	3.2			
30	37	79	2.80	45.35	5.0	3.2	5.0	3.2			
50	61	48	2.50	27.67	5.1	3.4	5.1	3.4			
15	18	164	0.80	61.80	**	**	**	**	**FH022-11N-71-06F**	13	224
16	20	148	0.90	55.64	4.6	2.1	4.6	2.1			
18	23	129	1.05	48.69	4.7	2.0	4.7	2.0			
21	25	116	1.15	43.83	4.8	2.2	4.8	2.2			
24	30	100	1.35	37.52	5.0	2.2	5.0	2.2			
27	33	90	1.50	33.78	5.0	2.4	5.0	2.4			
31	38	78	1.70	29.32	5.1	2.3	5.1	2.3			
34	42	70	1.90	26.39	5.1	2.4	5.1	2.4			
36	45	66	1.30	24.76	5.1	2.5	5.1	2.5			
41	51	58	2.25	21.89	5.2	2.4	5.2	2.4			
45	55	53	1.60	20.08	5.2	2.5	5.2	2.5			
46	56	52	2.50	19.70	5.2	2.5	5.2	2.5			
55	67	44	3.00	16.48	5.2	2.5	5.2	2.5			
57	70	42	2.05	15.82	5.2	2.6	5.2	2.6			
74	91	32	2.60	12.19	5.2	2.6	5.2	2.6			

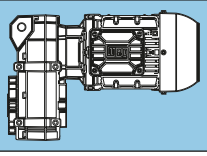
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P_N = 0.25 kW											IE1
50 Hz 0.25 kW	60 Hz 0.30 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
14	17	171	0.80	97.85	**	**	**	**			
16	19	154	0.85	88.09	4.5	2.1	4.5	2.1			
18	22	133	1.00	76.22	4.7	2.0	4.7	2.0			
20	25	120	1.10	68.62	4.8	2.2	4.8	2.2			
22	28	108	1.25	61.80	4.9	2.1	4.9	2.1			
25	31	97	1.35	55.64	5.0	2.3	5.0	2.3			
28	35	85	1.55	48.69	5.0	2.2	5.0	2.2			
31	39	76	1.75	43.83	5.1	2.4	5.1	2.4			
37	45	65	2.00	37.52	5.1	2.4	5.1	2.4			
41	50	59	2.25	33.78	5.2	2.5	5.2	2.5			
43	53	55	1.00	31.79	5.2	2.5	5.2	2.5			
47	58	51	2.55	29.32	5.2	2.4	5.2	2.4			
52	64	46	2.85	26.39	5.2	2.5	5.2	2.5			
55	69	43	1.95	24.76	5.2	2.6	5.2	2.6	**FH022-11N-71-04E**	11	224
63	78	38	3.45	21.89	5.2	2.5	5.2	2.5			
68	85	35	2.45	20.08	5.2	2.6	5.2	2.6			
70	86	34	3.80	19.70	5.2	2.6	5.2	2.6			
83	103	29	4.55	16.48	5.2	2.6	5.2	2.6			
87	107	28	3.05	15.82	5.2	2.6	5.2	2.6			
92	115	26	5.05	14.84	5.1	2.6	5.1	2.6			
112	139	21	4.00	12.19	4.8	2.7	4.8	2.7			
113	141	21	6.20	12.09	4.8	2.6	4.8	2.6			
126	156	19	6.90	10.89	4.6	2.7	4.6	2.7			
144	179	17	5.10	9.52	4.4	2.7	4.4	2.7			
193	239	12	6.80	7.11	4.0	2.7	4.0	2.7			
256	318	9	9.05	5.35	3.6	2.7	3.6	2.7			
349	433	7	10.55	3.93	3.2	2.7	3.2	2.7			

Legend see page 149

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P_N = 0.37 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.37 kW	0.44 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
2.6	3.2	1377	2.20	358.52	27.6	42.9	27.6	10.4	**FH083-11N-80-06E**	111	236
3.2	4.0	1090	2.80	283.76	28.3	43.3	28.3	10.8			
2.4	2.9	1480	1.05	385.37	15.7	16.0	15.7	4.7			
3.0	3.7	1173	1.30	305.42	17.6	16.6	17.6	5.4			
3.9	4.8	911	1.65	237.15	18.8	17.1	18.8	5.9	**FH073-11N-80-06E**	64	234
4.7	5.8	747	2.05	194.58	19.4	17.5	19.4	6.2			
6.1	7.5	579	2.60	150.69	19.8	17.8	19.8	6.6			
3.5	4.4	998	1.55	385.37	18.5	17.0	18.5	5.7			
4.5	5.5	791	1.90	305.42	19.2	17.4	19.2	6.1	**FH073-11N-71-04F**	61	234
5.8	7.1	614	2.45	237.15	19.7	17.7	19.7	6.5			
7.0	8.7	504	3.00	194.58	20.0	18.0	20.0	6.7			
3.5	4.2	1023	0.85	266.44	5.2	7.1	5.2	2.0			
3.8	4.6	938	0.90	244.32	6.9	10.7	6.9	2.2			
4.5	5.5	793	1.05	206.59	8.8	12.7	8.8	2.7			
4.9	6.0	728	1.15	189.44	9.5	12.9	9.5	2.9			
5.4	6.7	649	1.30	169.09	10.2	13.1	10.2	3.2			
5.9	7.3	596	1.40	155.05	10.6	13.3	10.6	3.3			
7.1	8.7	500	1.65	130.15	11.2	13.6	11.2	3.7	**FH063-11N-80-06E**	41	232
7.7	9.5	458	1.80	119.35	11.4	13.7	11.4	3.8			
9.4	11	378	2.20	98.34	11.8	14.0	11.8	4.1			
10	13	346	2.40	90.17	11.9	14.1	11.9	4.2			
11	14	309	2.70	80.48	12.0	14.3	12.0	4.3			
12	15	283	2.90	73.80	12.1	14.3	12.1	4.4			
3.3	4.1	1068	0.80	412.64	**	**	**	**			
3.6	4.5	979	0.85	378.37	6.1	9.0	6.1	2.1			
4.0	5.0	874	0.95	337.44	7.9	12.4	7.9	2.5			
4.4	5.4	801	1.05	309.42	8.8	12.6	8.8	2.7			
5.1	6.3	690	1.20	266.44	9.9	13.0	9.9	3.1			
5.6	6.9	632	1.30	244.32	10.3	13.2	10.3	3.2	**FH063-11N-71-04F**	38	232
6.6	8.2	535	1.55	206.59	11.0	13.5	11.0	3.6			
7.2	8.9	490	1.70	189.44	11.2	13.6	11.2	3.7			
8.1	10	438	1.90	169.09	11.5	13.8	11.5	3.9			
8.8	11	401	2.05	155.05	11.7	13.9	11.7	4.0			
10	13	337	2.45	130.15	11.9	14.2	11.9	4.2			
11	14	309	2.70	119.35	12.0	14.2	12.0	4.3			
4.9	6	718	0.85	187.00	3.5	4.8	3.5	3.1			
5.4	6.6	656	0.95	170.85	5.1	8.2	5.1	3.3			
6.3	7.7	561	1.10	146.10	6.7	10.3	6.7	3.6			
6.9	8.5	513	1.20	133.49	7.3	10.4	7.3	3.7			
8.4	10	419	1.45	109.08	8.2	10.7	8.2	4.0			
9.2	11	383	1.60	99.66	8.5	10.8	8.5	4.1	**FH053-11N-80-06E**	24	230
9.8	12	361	1.70	94.11	8.6	10.9	8.6	4.2			
11	14	315	1.95	82.13	8.9	11.0	8.9	4.3			
12	15	288	2.10	75.04	9.0	11.1	9.0	4.4			
15	19	231	2.60	60.26	9.3	11.3	9.3	4.6			
17	21	211	2.85	55.06	9.4	11.3	9.4	4.6			
4.4	5.5	797	0.80	308.00	**	**	**	**			
4.9	6.0	728	0.85	281.41	3.1	3.9	3.1	3.0			
5.6	6.9	628	1.00	242.67	5.6	9.3	5.6	3.4			
6.2	7.6	574	1.05	221.71	6.5	10.2	6.5	3.5			
7.3	9.0	484	1.25	187.00	7.6	10.5	7.6	3.8			
8.0	9.9	442	1.35	170.85	8.0	10.6	8.0	3.9	**FH053-11N-71-04F**	22	230
9.3	12	378	1.60	146.10	8.5	10.8	8.5	4.1			
10	13	346	1.75	133.49	8.7	10.9	8.7	4.2			
13	15	282	2.15	109.08	9.1	11.1	9.1	4.4			
14	17	258	2.35	99.66	9.2	11.2	9.2	4.5			
17	21	213	2.85	82.13	9.4	11.3	9.4	4.6			

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*** ... on request*

P_N = 0.37 kW											IE1
50 Hz 0.37 kW	60 Hz 0.44 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
11	13	336	1.15	87.38	8.8	11.0	8.8	4.3			
12	14	307	1.15	79.84	8.9	11.1	8.9	4.4			
13	16	274	1.85	71.46	9.1	11.2	9.1	4.5			
14	17	251	1.85	65.29	9.2	11.2	9.2	4.5	**FH052-11N-80-06E**	24	230
16	20	217	2.80	56.42	9.3	11.3	9.3	4.6			
19	23	185	1.15	48.15	9.5	11.2	9.5	4.5			
23	29	151	1.85	39.38	9.6	11.3	9.6	4.6			
16	19	226	1.65	87.38	9.3	11.3	9.3	4.6			
17	21	207	1.65	79.84	9.4	11.4	9.4	4.7			
19	24	185	2.75	71.46	9.5	11.4	9.5	4.7	**FH052-11N-71-04F**	21	230
21	26	169	2.75	65.29	9.5	11.5	9.5	4.8			
28	35	125	1.65	48.15	9.6	11.5	9.6	4.8			
35	43	102	2.75	39.38	9.7	11.6	9.7	4.9			
7.3	8.9	487	0.85	126.72	**	**	**	**			
8.0	9.8	444	0.95	115.60	2.5	3.4	2.5	2.3			
9.7	12	363	1.15	94.61	4.5	7.7	4.5	2.6			
11	14	314	1.30	81.63	5.3	8.4	5.3	2.8			
12	15	286	1.40	74.46	5.6	8.5	5.6	2.9	**FH043-11N-80-06E**	19	228
13	16	274	1.50	71.24	5.8	8.5	5.8	2.9			
14	17	250	1.65	64.98	6.0	8.6	6.0	3.0			
18	22	201	2.00	52.27	6.4	8.8	6.4	3.2			
19	24	183	2.20	47.68	6.5	8.9	6.5	3.3			
7.1	8.8	497	0.85	192.00	**	**	**	**			
8.4	10	420	1.00	162.19	3.3	5.1	3.3	2.4			
9.2	11	383	1.05	147.96	4.2	7.0	4.2	2.5			
11	13	328	1.25	126.72	5.1	8.3	5.1	2.7			
12	15	299	1.35	115.60	5.5	8.4	5.5	2.8	**FH043-11N-71-04F**	16	228
14	18	245	1.65	94.61	6.0	8.6	6.0	3.0			
16	20	223	1.80	86.31	6.2	8.7	6.2	3.1			
19	24	184	2.20	71.24	6.5	8.8	6.5	3.2			
21	26	168	2.40	64.98	6.6	8.9	6.6	3.3			
26	32	135	3.00	52.27	6.7	9.0	6.7	3.4			
12	15	291	1.15	75.79	5.6	8.5	5.6	2.9			
13	16	266	1.15	69.14	5.8	8.6	5.8	3.0			
15	18	238	1.70	61.98	6.1	8.7	6.1	3.1			
16	20	217	1.85	56.54	6.3	8.7	6.3	3.1			
19	23	188	2.15	48.94	6.5	8.8	6.5	3.2	**FH042-11N-80-06E**	18	228
21	25	171	2.35	44.64	6.6	8.9	6.6	3.3			
22	27	158	1.15	41.20	6.6	8.7	6.6	3.1			
24	30	146	2.75	37.95	6.7	9.0	6.7	3.4			
27	34	129	1.85	33.69	6.8	8.8	6.8	3.2			
18	22	196	1.65	75.79	6.4	8.8	6.4	3.2			
20	24	179	1.65	69.14	6.5	8.9	6.5	3.3			
22	27	160	2.50	61.98	6.6	8.9	6.6	3.3	**FH042-11N-71-04F**	16	228
24	30	146	2.75	56.54	6.7	9.0	6.7	3.4			
33	41	107	1.65	41.20	6.9	9.0	6.9	3.4			
41	50	87	2.75	33.69	6.9	9.1	6.9	3.5			
13	16	270	0.85	70.17	1.9	2.0	1.9	2.0			
14	18	244	0.95	63.63	2.8	2.6	2.8	2.6			
16	20	219	1.05	57.07	3.4	2.3	3.4	2.3			
18	22	199	1.15	51.75	3.8	2.8	3.8	2.8			
20	25	174	1.30	45.35	4.1	2.6	4.1	2.6			
22	27	158	1.40	41.12	4.3	2.9	4.3	2.9			
26	32	135	1.65	35.03	4.6	2.8	4.6	2.8			
29	36	122	1.85	31.76	4.7	3.1	4.7	3.1	**FH032-11N-80-06E**	17	226
33	40	107	2.05	27.97	4.8	3.0	4.8	3.0			
36	45	97	2.30	25.36	4.8	3.2	4.8	3.2			
41	50	86	1.75	22.50	4.9	3.2	4.9	3.2			
44	53	81	2.75	21.14	4.9	3.1	4.9	3.1			
48	59	74	3.00	19.17	5.0	3.3	5.0	3.3			
51	63	69	2.20	17.88	5.0	3.3	5.0	3.3			
67	82	53	2.85	13.81	5.1	3.4	5.1	3.4			

P_N = 0.37 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.37 kW	0.44 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
19	24	182	1.25	70.17	4.0	2.5	4.0	2.5			
21	26	165	1.35	63.63	4.2	2.9	4.2	2.9			
24	30	148	1.50	57.07	4.4	2.7	4.4	2.7			
26	33	134	1.65	51.75	4.6	3.1	4.6	3.1			
30	37	117	1.90	45.35	4.7	2.9	4.7	2.9			
33	41	106	2.10	41.12	4.8	3.2	4.8	3.2	**FH032-11N-71-04F**	14	226
39	48	91	2.45	35.03	4.9	3.1	4.9	3.1			
43	53	82	2.70	31.76	4.9	3.3	4.9	3.3			
49	61	72	1.70	27.67	5.0	3.3	5.0	3.3			
61	75	58	2.55	22.50	5.0	3.4	5.0	3.4			
21	26	168	0.80	43.83	**	**	**	**			
25	30	144	0.95	37.52	4.6	1.9	4.6	1.9			
27	33	130	1.05	33.78	4.7	2.2	4.7	2.2			
31	39	113	1.20	29.32	4.9	2.1	4.9	2.1			
35	43	101	1.30	26.39	4.9	2.3	4.9	2.3			
37	46	95	0.90	24.76	5.0	2.3	5.0	2.3			
42	52	84	1.55	21.89	5.0	2.3	5.0	2.3			
46	56	77	1.10	20.08	5.1	2.4	5.1	2.4			
47	57	76	1.75	19.70	5.1	2.4	5.1	2.4	**FH022-11N-80-06E**	15	224
49	60	73	1.80	18.88	5.1	2.3	5.1	2.3			
54	66	65	2.00	17.00	5.1	2.5	5.1	2.5			
56	69	63	2.10	16.48	5.1	2.4	5.1	2.4			
58	71	61	1.40	15.82	5.1	2.5	5.1	2.5			
62	76	57	2.30	14.84	5.2	2.5	5.2	2.5			
75	93	47	1.80	12.19	5.2	2.5	5.2	2.5			
76	93	46	2.80	12.09	5.2	2.5	5.2	2.5			
97	119	37	2.30	9.52	5.1	2.6	5.1	2.6			
22	27	160	0.85	61.80	4.4	1.8	4.4	1.8			
25	30	144	0.95	55.64	4.6	2.1	4.6	2.1			
28	35	126	1.05	48.69	4.8	2.0	4.8	2.0			
31	38	113	1.15	43.83	4.9	2.3	4.9	2.3			
36	45	97	1.35	37.52	5.0	2.2	5.0	2.2			
40	50	87	1.50	33.78	5.0	2.4	5.0	2.4			
47	57	76	1.75	29.32	5.1	2.3	5.1	2.3			
52	64	68	1.95	26.39	5.1	2.4	5.1	2.4			
55	68	64	1.35	24.76	5.1	2.5	5.1	2.5			
62	77	57	2.30	21.89	5.2	2.4	5.2	2.4			
68	84	52	1.65	20.08	5.2	2.5	5.2	2.5			
69	86	51	2.55	19.70	5.2	2.5	5.2	2.5	**FH022-11N-71-04F**	12	224
83	102	43	3.05	16.48	5.2	2.5	5.2	2.5			
86	107	41	2.10	15.82	5.2	2.6	5.2	2.6			
92	114	38	3.40	14.84	5.2	2.6	5.2	2.6			
112	138	32	2.70	12.19	4.9	2.6	4.9	2.6			
113	139	31	4.20	12.09	4.9	2.6	4.9	2.6			
125	155	28	4.65	10.89	4.7	2.6	4.7	2.6			
143	177	25	3.45	9.52	4.4	2.6	4.4	2.6			
192	237	18	4.60	7.11	4.0	2.7	4.0	2.7			
255	315	14	6.10	5.35	3.6	2.7	3.6	2.7			
347	429	10	7.10	3.93	3.3	2.7	3.3	2.7			

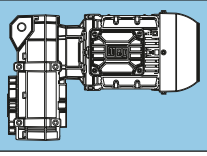
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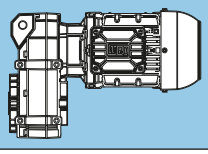
*** ... on request*

P_N = 0.55 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.55 kW	0.66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
3.2	4.0	1629	2.80	288.50	38.6	42.8	38.6	42.8	**FH093-11N-80-06F**	167	238
2.6	3.2	2025	1.50	358.52	25.4	41.9	25.4	9.4			
3.3	4.0	1603	1.90	283.76	27.0	42.5	27.0	10.0			
3.8	4.6	1399	2.15	247.77	27.6	42.8	27.6	10.3	**FH083-11N-80-06F**	112	236
4.2	5.2	1237	2.45	218.97	28.0	43.1	28.0	10.6			
5.0	6.2	1046	2.90	185.17	28.4	43.4	28.4	10.9			
5.2	6.3	1018	2.95	180.28	28.5	43.4	28.5	10.9			
3.9	4.8	1331	2.30	358.52	27.7	42.9	27.7	10.4	**FH083-11N-80-04E**	110	236
5.0	6.1	1053	2.85	283.76	28.4	43.4	28.4	10.9			
3.0	3.7	1725	0.90	305.42	13.6	15.5	13.6	4.2			
3.9	4.8	1339	1.15	237.15	16.7	16.3	16.7	5.0			
4.8	5.9	1099	1.40	194.58	18.0	16.8	18.0	5.5	**FH073-11N-80-06F**	65	234
6.2	7.6	851	1.80	150.69	19.0	17.3	19.0	6.0			
8.1	9.9	647	2.35	114.62	19.6	17.7	19.6	6.4			
9.8	12	534	2.85	94.52	19.9	17.9	18.7	6.7			
3.7	4.5	1430	1.05	385.37	16.1	16.1	16.1	4.8			
4.6	5.6	1134	1.35	305.42	17.8	16.7	17.8	5.4			
6.0	7.3	880	1.75	237.15	18.9	17.2	18.9	6.0	**FH073-11N-80-04E**	63	234
7.3	8.9	722	2.10	194.58	19.4	17.5	19.4	6.3			
9.4	11	559	2.70	150.69	19.9	17.9	19.0	6.6			
4.9	6.0	1070	0.80	189.44	**	**	**	**			
5.5	6.7	955	0.90	169.09	6.6	10.1	6.6	2.2			
6.0	7.4	876	0.95	155.05	7.8	12.4	7.8	2.4			
7.1	8.8	735	1.15	130.15	9.4	12.9	9.4	2.9			
7.8	9.6	674	1.25	119.35	10.0	13.0	10.0	3.1			
9.5	12	555	1.50	98.34	10.8	13.5	10.8	3.5			
10	13	509	1.65	90.17	11.1	13.6	11.1	3.6	**FH063-11N-80-06F**	42	232
12	14	455	1.85	80.48	11.4	13.8	11.4	3.8			
13	15	417	2.00	73.80	11.6	13.9	11.6	3.9			
14	17	369	2.25	65.26	11.8	14.1	11.8	4.1			
16	19	338	2.45	59.84	11.9	14.1	11.9	4.2			
17	21	309	2.70	54.63	12.0	14.3	12.0	4.3			
19	23	283	2.90	50.10	12.1	14.3	12.1	4.4			
5.3	6.5	989	0.85	266.44	5.9	8.6	5.9	2.1			
5.8	7.1	907	0.95	244.32	7.4	11.8	7.4	2.3			
6.8	8.3	767	1.10	206.59	9.1	12.8	9.1	2.8			
7.5	9.1	703	1.20	189.44	9.7	12.9	9.7	3.0			
8.4	10	628	1.35	169.09	10.4	13.2	10.4	3.3			
9.1	11	576	1.45	155.05	10.7	13.4	10.7	3.4	**FH063-11N-80-04E**	40	232
11	13	483	1.70	130.15	11.3	13.7	11.3	3.7			
12	14	443	1.90	119.35	11.5	13.8	11.5	3.8			
14	18	365	2.25	98.34	11.8	14.1	11.8	4.1			
16	19	335	2.45	90.17	11.9	14.2	11.9	4.2			
18	21	299	2.75	80.48	12.0	14.3	12.0	4.3			
19	23	274	3.00	73.80	12.1	14.4	12.1	4.4			
19	23	281	2.95	49.67	12.1	14.3	12.1	4.4	**FH062-11N-80-06F**	41	232
7.0	8.5	754	0.80	133.49	**	**	**	**			
8.5	10	616	1.00	109.08	5.8	9.7	5.8	3.4			
9.3	11	563	1.10	99.66	6.6	10.3	6.6	3.6			
9.9	12	532	1.15	94.11	7.0	10.4	7.0	3.7	**FH053-11N-80-06F**	26	230
11	14	464	1.30	82.13	7.8	10.6	7.8	3.9			
12	15	424	1.45	75.04	8.1	10.7	8.1	4.0			
15	19	340	1.80	60.26	8.7	11.0	8.7	4.3			
17	21	311	1.95	55.06	8.9	11.0	8.9	4.3			

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P_N = 0.55 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.55 kW	0.66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
7.6	9.2	694	0.90	187.00	4.2	6.3	4.2	3.2			
8.3	10	634	0.95	170.85	5.5	9.0	5.5	3.3			
9.7	12	542	1.15	146.10	6.9	10.3	6.9	3.6			
11	13	496	1.25	133.49	7.5	10.5	7.5	3.8			
13	16	405	1.50	109.08	8.3	10.8	8.3	4.1			
14	17	370	1.65	99.66	8.5	10.9	8.5	4.2			
15	18	349	1.75	94.11	8.7	10.9	8.7	4.2	**FH053-11N-80-04E**	24	230
16	20	319	1.90	85.99	8.9	11.0	8.9	4.3			
17	21	305	2.00	82.13	8.9	11.1	8.9	4.4			
19	23	279	2.15	75.04	9.1	11.1	9.1	4.4			
23	29	224	2.70	60.26	9.3	11.3	9.3	4.6			
26	31	204	2.95	55.06	9.4	11.4	9.4	4.7			
11	13	494	0.80	87.38	**	**	**	**			
12	14	451	0.80	79.84	**	**	**	**			
13	16	404	1.25	71.46	8.3	10.8	8.3	4.1			
14	17	369	1.25	65.29	8.6	10.9	8.6	4.2			
16	20	319	1.90	56.42	8.9	11.0	8.9	4.3			
18	22	291	2.10	51.55	9.0	11.1	9.0	4.4			
19	24	272	0.80	48.15	**	**	**	**	**FH052-11N-80-06F**	25	230
21	26	247	2.45	43.75	9.2	11.2	9.2	4.5			
23	29	226	2.65	39.97	9.3	11.3	9.3	4.6			
24	29	222	1.25	39.38	9.3	11.0	9.3	4.3			
26	32	202	3.00	35.81	9.4	11.4	9.4	4.7			
30	37	176	2.10	31.09	9.5	11.2	9.5	4.5			
39	47	136	2.65	24.11	9.6	11.4	9.6	4.7			
16	20	324	1.15	87.38	8.8	11.0	8.8	4.3			
18	22	296	1.15	79.84	9.0	11.1	9.0	4.4			
20	24	265	1.90	71.46	9.1	11.2	9.1	4.5			
22	26	242	1.90	65.29	9.2	11.3	9.2	4.6	**FH052-11N-80-04E**	23	230
25	31	209	2.90	56.42	9.4	11.4	9.4	4.7			
29	36	179	1.15	48.15	9.5	11.2	9.5	4.5			
36	44	146	1.90	39.38	9.6	11.4	9.6	4.7			
11	14	461	0.90	81.63	1.7	1.8	1.7	1.8			
12	15	421	1.00	74.46	3.3	5.1	3.3	2.4			
13	16	402	1.00	71.24	3.8	6.2	3.8	2.5			
14	18	367	1.10	64.98	4.5	7.7	4.5	2.6	**FH043-11N-80-06F**	20	228
18	22	295	1.40	52.27	5.5	8.4	5.5	2.8			
20	24	269	1.50	47.68	5.8	8.6	5.8	3.0			
11	14	470	0.90	126.72	1.1	0.5	1.1	0.5			
12	15	429	0.95	115.60	3.0	4.5	3.0	2.4			
15	18	351	1.15	94.61	4.7	8.1	4.7	2.6			
16	20	320	1.25	86.31	5.2	8.4	5.2	2.8			
17	21	303	1.35	81.63	5.4	8.4	5.4	2.8			
19	23	276	1.45	74.46	5.7	8.5	5.7	2.9	**FH043-11N-80-04E**	18	228
20	24	264	1.55	71.24	5.8	8.6	5.8	3.0			
22	27	241	1.70	64.98	6.1	8.6	6.1	3.0			
27	33	194	2.10	52.27	6.4	8.8	6.4	3.2			
30	36	177	2.30	47.68	6.5	8.9	6.5	3.3			
12	15	428	0.80	75.79	**	**	**	**			
13	16	390	0.80	69.14	**	**	**	**			
15	18	350	1.15	61.98	4.8	8.3	4.8	2.7			
16	20	319	1.25	56.54	5.2	8.4	5.2	2.8			
19	23	276	1.45	48.94	5.7	8.5	5.7	2.9			
21	26	252	1.60	44.64	6.0	8.6	6.0	3.0			
23	28	233	0.80	41.20	**	**	**	**			
25	30	214	1.90	37.95	6.3	8.7	6.3	3.1	**FH042-11N-80-06F**	20	228
27	33	196	2.05	34.62	6.4	8.8	6.4	3.2			
28	34	190	1.25	33.69	6.4	8.5	6.4	2.9			
30	37	175	2.30	31.06	6.5	8.9	6.5	3.3			
33	40	160	2.50	28.33	6.6	8.9	6.6	3.3			
35	43	150	2.10	26.60	6.7	8.7	6.7	3.1			
39	48	135	3.00	23.91	6.7	9.0	6.7	3.4			
45	55	117	2.65	20.63	6.8	8.9	6.8	3.3			

P_N = 0.55 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.55 kW	0.66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
19	23	281	1.15	75.79	5.7	8.5	5.7	2.9			
20	25	257	1.15	69.14	5.9	8.6	5.9	3.0			
23	28	230	1.75	61.98	6.2	8.7	6.2	3.1			
25	31	210	1.90	56.54	6.3	8.8	6.3	3.2			
29	35	182	2.25	48.94	6.5	8.9	6.5	3.3	**FH042-11N-80-04E**	18	228
32	39	166	2.45	44.64	6.6	8.9	6.6	3.3			
34	42	153	1.15	41.20	6.7	8.7	6.7	3.1			
37	45	141	2.85	37.95	6.7	9.0	6.7	3.4			
42	51	125	1.90	33.69	6.8	8.9	6.8	3.3			
18	22	292	0.80	51.75	**	**	**	**			
21	25	256	0.90	45.35	2.4	2.1	2.4	2.1			
23	28	232	0.95	41.12	3.1	2.6	3.1	2.6			
27	33	198	1.15	35.03	3.8	2.4	3.8	2.4			
29	36	179	1.25	31.76	4.0	2.9	4.0	2.9			
33	41	158	1.40	27.97	4.3	2.7	4.3	2.7			
34	41	156	0.80	27.67	**	**	**	**			
37	45	143	1.55	25.36	4.5	3.0	4.5	3.0			
41	51	127	1.20	22.50	4.6	3.0	4.6	3.0	**FH032-11N-80-06F**	18	226
44	54	119	1.85	21.14	4.7	2.9	4.7	2.9			
49	59	108	2.05	19.17	4.8	3.2	4.8	3.2			
52	64	101	1.50	17.88	4.8	3.1	4.8	3.1			
58	71	91	2.45	16.06	4.9	3.1	4.9	3.1			
64	78	82	2.70	14.57	4.9	3.3	4.9	3.3			
67	83	78	1.95	13.81	5.0	3.3	5.0	3.3			
84	103	62	2.45	11.03	5.0	3.3	5.0	3.3			
20	25	260	0.85	70.17	2.3	2.0	2.3	2.0			
22	27	236	0.95	63.63	3.0	2.6	3.0	2.6			
25	30	212	1.05	57.07	3.5	2.3	3.5	2.3			
27	33	192	1.15	51.75	3.9	2.8	3.9	2.8			
31	38	168	1.35	45.35	4.2	2.6	4.2	2.6			
34	42	153	1.45	41.12	4.4	3.0	4.4	3.0			
40	49	130	1.70	35.03	4.6	2.8	4.6	2.8			
45	54	118	1.90	31.76	4.7	3.1	4.7	3.1	**FH032-11N-80-04E**	16	226
51	62	104	2.15	27.97	4.8	3.0	4.8	3.0			
56	68	94	2.35	25.36	4.9	3.2	4.9	3.2			
63	77	84	1.80	22.50	4.9	3.2	4.9	3.2			
67	82	78	2.85	21.14	5.0	3.2	5.0	3.2			
79	96	66	2.30	17.88	5.0	3.3	5.0	3.3			
102	125	51	2.95	13.81	5.1	3.4	5.1	3.4			
32	39	166	0.80	29.32	**	**	**	**			
35	43	149	0.90	26.39	4.5	2.1	4.5	2.1			
42	52	124	1.10	21.89	4.8	2.0	4.8	2.0			
47	58	111	1.20	19.70	4.9	2.3	4.9	2.3			
49	60	107	1.25	18.88	4.9	2.1	4.9	2.1			
55	67	96	1.40	17.00	5.0	2.3	5.0	2.3			
56	69	93	1.40	16.48	5.0	2.2	5.0	2.2			
59	72	89	0.95	15.82	5.0	2.4	5.0	2.4			
63	77	84	1.60	14.84	5.0	2.4	5.0	2.4	**FH022-11N-80-06F**	16	224
76	94	69	1.25	12.19	5.1	2.4	5.1	2.4			
77	94	68	1.95	12.09	5.1	2.3	5.1	2.3			
85	105	62	2.15	10.89	5.1	2.5	5.1	2.5			
98	120	54	1.60	9.52	5.2	2.5	5.2	2.5			
131	160	40	2.10	7.11	4.7	2.6	4.7	2.6			
152	186	35	2.45	6.13	4.4	2.6	4.4	2.6			
174	213	30	2.80	5.35	4.2	2.6	4.2	2.6			

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P_N = 0.55 kW										IE1
50 Hz	60 Hz				at 50 Hz					
0.55 kW	0.66 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
32	39	163	0.80	43.83	**	**	**	**		
38	46	139	0.95	37.52	4.6	1.9	4.6	1.9		
42	51	125	1.05	33.78	4.8	2.2	4.8	2.2		
48	59	109	1.20	29.32	4.9	2.1	4.9	2.1		
54	65	98	1.35	26.39	5.0	2.3	5.0	2.3		
57	70	92	0.95	24.76	5.0	2.3	5.0	2.3		
65	79	81	1.60	21.89	5.1	2.3	5.1	2.3		
70	86	75	1.15	20.08	5.1	2.4	5.1	2.4		
72	88	73	1.80	19.70	5.1	2.4	5.1	2.4		
75	91	70	1.90	18.88	5.1	2.3	5.1	2.3		
83	101	63	2.10	17.00	5.1	2.5	5.1	2.5		
86	105	61	2.15	16.48	5.1	2.4	5.1	2.4	**FH022-11N-80-04E**	14	224
89	109	59	1.45	15.82	5.2	2.5	5.2	2.5		
95	116	55	2.40	14.84	5.2	2.5	5.2	2.5		
116	142	45	1.90	12.19	4.9	2.6	4.9	2.6		
117	143	45	2.90	12.09	4.9	2.5	4.9	2.5		
130	158	40	3.25	10.89	4.7	2.6	4.7	2.6		
149	181	35	2.40	9.52	4.5	2.6	4.5	2.6		
199	243	26	3.20	7.11	4.0	2.6	4.0	2.6		
231	281	23	3.70	6.13	3.8	2.7	3.8	2.7		
264	322	20	4.25	5.35	3.6	2.7	3.6	2.7		
360	439	15	4.95	3.93	3.2	2.7	3.2	2.7		

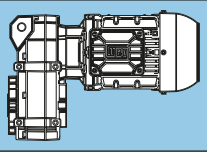
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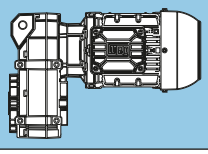
P_N = 0.75 kW											IE3
50 Hz 0.75 kW	60 Hz 0.90 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
3.3	4.0	2198	2.05	288.50	37.4	42.1	37.4	42.1			
3.9	4.7	1858	2.45	243.90	38.1	42.5	38.1	42.5	**FH093-11P-90S/L-06E**	174	238
4.5	5.4	1609	2.80	211.14	38.6	42.9	38.6	42.9			
2.6	3.2	2732	1.10	358.52	21.4	38.6	21.4	8.3			
3.3	4.0	2162	1.40	283.76	24.7	41.7	24.7	9.2			
3.8	4.6	1888	1.60	247.77	25.9	42.1	25.9	9.6			
4.3	5.2	1668	1.80	218.97	26.7	42.4	26.7	9.9			
5.1	6.2	1411	2.15	185.17	27.5	42.8	27.5	10.3	**FH083-11P-90S/L-06E**	119	236
5.2	6.4	1374	2.20	180.28	27.6	42.9	27.6	10.4			
5.9	7.2	1213	2.50	159.17	28.0	43.1	28.0	10.6			
6.6	8.0	1087	2.80	142.69	28.3	43.3	28.3	10.8			
6.8	8.2	1059	2.85	138.95	28.4	43.4	28.4	10.9			
4.0	4.9	1796	1.70	358.52	26.3	42.2	26.3	9.7			
5.0	6.1	1421	2.15	283.76	27.5	42.8	27.5	10.3	**FH083-11P-80-04F**	113	236
5.8	7.0	1241	2.45	247.77	28.0	43.1	28.0	10.6			
6.5	7.9	1097	2.75	218.97	28.3	43.3	28.3	10.8			
4.0	4.8	1807	0.85	237.15	12.7	15.3	12.7	4.1			
4.8	5.9	1483	1.05	194.58	15.7	16.0	15.7	4.7			
6.2	7.6	1148	1.35	150.69	17.8	16.7	17.8	5.4			
8.2	10	873	1.75	114.62	18.9	17.2	18.9	6.0	**FH073-11P-90S/L-06E**	72	234
9.9	12	720	2.10	94.52	19.4	17.5	19.3	6.3			
12	15	591	2.55	77.53	19.8	17.8	17.8	6.5			
14	17	502	3.00	65.88	20.0	18.0	16.7	6.7			
3.7	4.5	1930	0.80	385.37	**	**	**	**			
4.7	5.7	1530	1.00	305.42	15.3	15.9	15.3	4.6			
6.0	7.3	1188	1.30	237.15	17.6	16.6	17.6	5.3	**FH073-11P-80-04F**	66	234
7.3	8.9	975	1.55	194.58	18.6	17.0	18.6	5.8			
9.5	12	755	2.00	150.69	19.3	17.5	19.3	6.2			
12	15	574	2.65	114.62	19.8	17.8	17.7	6.6			
7.2	8.8	992	0.85	130.15	5.9	8.6	5.9	2.1			
7.9	9.6	909	0.95	119.35	7.3	11.6	7.3	2.3			
9.6	12	749	1.10	98.34	9.3	12.8	9.3	2.9			
10	13	687	1.20	90.17	9.9	13.0	9.9	3.0			
12	14	613	1.35	80.48	10.5	13.3	10.5	3.3	**FH063-11P-90S/L-06E**	49	232
13	16	562	1.50	73.80	10.8	13.4	10.8	3.5			
14	18	497	1.65	65.26	11.2	13.6	11.2	3.7			
16	19	456	1.80	59.84	11.4	13.8	11.4	3.8			
17	21	416	2.00	54.63	11.6	13.9	11.6	4.0			
19	23	382	2.15	50.10	11.7	14.0	11.7	4.0			
6.9	8.4	1035	0.80	206.59	**	**	**	**			
7.5	9.2	949	0.90	189.44	6.7	10.3	6.7	2.2			
8.5	10	847	1.00	169.09	8.2	12.5	8.2	2.6			
9.2	11	777	1.10	155.05	9.0	12.7	9.0	2.8			
11	13	652	1.30	130.15	10.2	13.1	10.2	3.2			
12	15	598	1.40	119.35	10.6	13.3	10.6	3.3			
15	18	493	1.70	98.34	11.2	13.7	11.2	3.7	**FH063-11P-80-04F**	43	232
16	19	452	1.85	90.17	11.4	13.8	11.4	3.8			
18	22	403	2.05	80.48	11.6	13.9	11.6	4.0			
19	24	370	2.25	73.80	11.8	14.0	11.8	4.1			
22	27	327	2.55	65.26	11.9	14.2	11.9	4.2			
24	29	300	2.75	59.84	12.0	14.3	11.7	4.3			
26	32	274	3.00	54.63	12.1	14.4	11.3	4.4			
19	23	378	2.20	49.67	11.7	14.0	11.7	4.1			
21	25	347	2.40	45.55	11.9	14.1	11.9	4.2			
23	27	317	2.60	41.66	12.0	14.2	11.9	4.3	**FH062-11P-90S/L-06E**	48	232
25	30	291	2.85	38.20	12.0	14.3	11.5	4.3			
46	56	156	2.75	20.49	12.4	14.6	9.2	4.6			
9.4	11	759	0.80	99.66	**	**	**	**			
10	12	717	0.85	94.11	3.5	4.8	3.5	3.1			
11	14	626	1.00	82.13	5.7	9.5	5.7	3.4	**FH053-11P-90S/L-06E**	33	230
13	15	572	1.05	75.04	6.5	10.2	6.5	3.5			
16	19	459	1.35	60.26	7.8	10.6	7.8	3.9			
17	21	420	1.45	55.06	8.2	10.7	8.2	4.0			

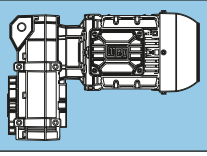
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P_N = 0.75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
0.75 kW	0.90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
9.8	12	732	0.85	146.10	3.0	3.8	3.0	3.1			
11	13	669	0.90	133.49	4.8	7.5	4.8	3.2			
13	16	546	1.10	109.08	6.9	10.3	6.9	3.6			
14	17	499	1.20	99.66	7.4	10.5	7.4	3.8			
15	18	471	1.30	94.11	7.7	10.6	7.7	3.9	**FH053-11P-80-04F**	26	230
17	21	411	1.50	82.13	8.2	10.7	8.2	4.0			
19	23	376	1.60	75.04	8.5	10.8	8.5	4.1			
24	29	302	2.00	60.26	9.0	11.1	9.0	4.4			
26	32	276	2.20	55.06	9.1	11.1	9.1	4.4			
13	16	545	0.95	71.46	6.9	10.3	6.9	3.6			
14	18	497	0.95	65.29	7.4	10.5	7.4	3.8			
17	20	430	1.40	56.42	8.1	10.7	8.1	4.0			
18	22	393	1.55	51.55	8.4	10.8	8.4	4.1			
21	26	333	1.80	43.75	8.8	11.0	8.8	4.3			
24	29	305	2.00	39.97	8.9	11.1	8.9	4.4			
26	32	273	2.20	35.81	9.1	11.2	9.1	4.5	**FH052-11P-90S/L-06E**	32	230
29	35	249	2.40	32.72	9.2	11.2	9.2	4.5			
30	37	237	1.55	31.09	9.3	11.0	9.3	4.3			
34	42	210	2.90	27.56	9.4	11.4	9.4	4.7			
39	47	184	2.00	24.11	9.5	11.2	9.5	4.5			
48	58	150	2.40	19.73	9.6	11.3	9.6	4.6			
16	20	438	0.85	87.38	8.0	10.7	8.0	4.0			
18	22	400	0.85	79.84	8.3	10.8	8.3	4.1			
20	24	358	1.40	71.46	8.6	10.9	8.6	4.2			
22	27	327	1.40	65.29	8.8	11.0	8.8	4.3			
25	31	283	2.15	56.42	9.1	11.1	9.1	4.4			
28	34	258	2.35	51.55	9.2	11.2	9.2	4.5	**FH052-11P-80-04F**	26	230
30	36	241	0.85	48.15	9.3	11.0	9.3	4.3			
33	40	219	2.75	43.75	9.3	11.3	9.3	4.6			
36	44	200	3.00	39.97	9.4	11.4	9.4	4.7			
46	56	156	2.35	31.09	9.5	11.3	9.5	4.6			
59	72	121	3.00	24.11	9.6	11.5	9.6	4.8			
14	18	495	0.85	64.98	**	**	**	**			
18	22	398	1.05	52.27	3.8	6.2	3.8	2.5	**FH043-11P-90S/L-06E**	27	228
20	24	363	1.15	47.68	4.5	7.7	4.5	2.6			
15	18	474	0.85	94.61	0.6	-0.5	0.6	-0.5			
17	20	432	0.95	86.31	2.9	4.3	2.9	2.4			
18	21	409	1.00	81.63	3.6	5.7	3.6	2.4			
19	23	373	1.10	74.46	4.4	7.5	4.4	2.6	**FH043-11P-80-04F**	21	228
20	24	357	1.15	71.24	4.7	8.1	4.7	2.6			
22	27	325	1.25	64.98	5.1	8.4	5.1	2.8			
27	33	262	1.55	52.27	5.9	8.6	5.9	3.0			
30	36	239	1.70	47.68	6.1	8.7	6.1	3.1			
15	18	472	0.85	61.98	0.9	0.1	0.9	0.1			
17	20	431	0.95	56.54	3.0	4.5	3.0	2.4			
19	23	373	1.10	48.94	4.4	7.5	4.4	2.6			
21	26	340	1.20	44.64	4.9	8.3	4.9	2.7			
25	30	289	1.40	37.95	5.6	8.5	5.6	2.9			
27	33	264	1.55	34.62	5.9	8.6	5.9	3.0			
28	34	257	0.95	33.69	5.9	8.2	5.9	2.6			
30	37	237	1.70	31.06	6.1	8.7	6.1	3.1	**FH042-11P-90S/L-06E**	27	228
33	40	216	1.90	28.33	6.3	8.7	6.3	3.1			
35	43	203	1.55	26.60	6.4	8.5	6.4	2.9			
39	48	182	2.20	23.91	6.5	8.8	6.5	3.2			
43	52	166	2.45	21.81	6.6	8.9	6.6	3.3			
46	56	157	2.00	20.63	6.6	8.7	6.6	3.1			
52	63	138	2.95	18.06	6.7	9.0	6.7	3.4			
56	68	129	2.40	16.88	6.8	8.8	6.8	3.2			

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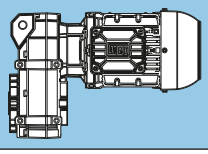
P_N = 0.75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
0.75 kW	0.90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
19	23	380	0.85	75.79	4.2	7.0	4.2	2.5			
21	25	346	0.85	69.14	4.8	8.3	4.8	2.7			
23	28	310	1.30	61.98	5.3	8.4	5.3	2.8			
25	31	283	1.40	56.54	5.7	8.5	5.7	2.9			
29	36	245	1.65	48.94	6.0	8.6	6.0	3.0			
32	39	224	1.80	44.64	6.2	8.7	6.2	3.1			
35	42	206	0.85	41.20	6.3	8.5	6.3	2.9			
38	46	190	2.15	37.95	6.4	8.8	6.4	3.2	**FH042-11P-80-04F**	20	228
41	50	173	2.35	34.62	6.5	8.9	6.5	3.3			
42	52	169	1.40	33.69	6.6	8.6	6.6	3.0			
46	56	156	2.60	31.06	6.6	8.9	6.6	3.3			
50	61	142	2.85	28.33	6.7	9.0	6.7	3.4			
54	65	133	2.35	26.60	6.8	8.8	6.8	3.2			
69	84	103	3.00	20.63	6.9	9.0	6.9	3.4			
27	33	267	0.85	35.03	2.0	2.0	2.0	2.0			
30	36	242	0.95	31.76	2.8	2.6	2.8	2.6			
34	41	213	1.05	27.97	3.5	2.3	3.5	2.3			
37	45	193	1.15	25.36	3.8	2.8	3.8	2.8			
42	51	171	0.90	22.50	4.2	2.8	4.2	2.8			
44	54	161	1.40	21.14	4.3	2.7	4.3	2.7			
49	60	146	1.55	19.17	4.4	3.0	4.4	3.0			
53	64	136	1.15	17.88	4.5	3.0	4.5	3.0			
59	71	122	1.80	16.06	4.7	2.9	4.7	2.9	**FH032-11P-90S/L-06E**	25	226
65	79	111	2.00	14.57	4.8	3.2	4.8	3.2			
68	83	105	1.45	13.81	4.8	3.1	4.8	3.1			
75	92	95	2.35	12.50	4.9	3.1	4.9	3.1			
83	101	86	2.55	11.33	4.9	3.3	4.9	3.3			
85	104	84	1.80	11.03	4.9	3.2	4.9	3.2			
96	117	74	2.90	9.76	5.0	3.2	5.0	3.2			
106	129	67	3.00	8.85	5.0	3.4	5.0	3.4			
113	137	63	2.40	8.33	5.0	3.3	5.0	3.3			
25	30	286	0.80	57.07	**	**	**	**			
28	34	259	0.85	51.75	2.3	2.5	2.3	2.5			
32	38	227	1.00	45.35	3.2	2.2	3.2	2.2			
35	42	206	1.10	41.12	3.6	2.7	3.6	2.7			
41	50	175	1.30	35.03	4.1	2.6	4.1	2.6			
45	55	159	1.40	31.76	4.3	2.9	4.3	2.9			
51	62	140	1.60	27.97	4.5	2.8	4.5	2.8			
52	63	139	0.90	27.67	4.5	2.9	4.5	2.9			
56	69	127	1.75	25.36	4.6	3.1	4.6	3.1	**FH032-11P-80-04F**	19	226
64	77	113	1.35	22.50	4.7	3.1	4.7	3.1			
68	82	106	2.10	21.14	4.8	3.0	4.8	3.0			
75	91	96	2.30	19.17	4.9	3.2	4.9	3.2			
80	97	90	1.70	17.88	4.9	3.2	4.9	3.2			
89	108	80	2.75	16.06	4.9	3.2	4.9	3.2			
104	126	69	2.20	13.81	5.0	3.3	5.0	3.3			
130	158	55	2.75	11.03	5.1	3.4	5.1	3.4			
43	52	167	0.80	21.89	**	**	**	**			
48	58	150	0.90	19.70	4.5	2.1	4.5	2.1			
50	61	144	0.95	18.88	4.6	1.9	4.6	1.9			
55	67	130	1.05	17.00	4.7	2.2	4.7	2.2			
57	69	126	1.05	16.48	4.8	2.0	4.8	2.0			
63	77	113	1.15	14.84	4.9	2.3	4.9	2.3			
77	94	93	0.95	12.19	5.0	2.3	5.0	2.3			
78	95	92	1.45	12.09	5.0	2.2	5.0	2.2	**FH022-11P-90S/L-06E**	23	224
86	105	83	1.60	10.89	5.0	2.4	5.0	2.4			
99	120	73	1.20	9.52	5.1	2.4	5.1	2.4			
132	161	54	1.60	7.11	4.8	2.5	4.8	2.5			
153	187	47	1.80	6.13	4.5	2.5	4.5	2.5			
176	214	41	2.10	5.35	4.3	2.6	4.3	2.6			
239	291	30	2.45	3.93	3.8	2.6	3.8	2.6			

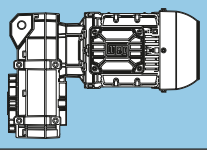
P_N = 0.75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
0.75 kW	0.90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
42	52	169	0.80	33.78	**	**	**	**			
49	59	147	0.90	29.32	4.6	1.9	4.6	1.9			
54	66	132	1.00	26.39	4.7	2.2	4.7	2.2			
65	79	110	1.20	21.89	4.9	2.1	4.9	2.1			
71	87	101	0.85	20.08	4.9	2.3	4.9	2.3			
73	88	99	1.35	19.70	5.0	2.3	5.0	2.3			
76	92	95	1.40	18.88	5.0	2.2	5.0	2.2			
84	102	85	1.55	17.00	5.0	2.4	5.0	2.4			
87	106	83	1.60	16.48	5.1	2.3	5.1	2.3			
90	110	79	1.10	15.82	5.1	2.4	5.1	2.4	**FH022-11P-80-04F**	17	224
96	117	74	1.75	14.84	5.1	2.4	5.1	2.4			
117	143	61	1.40	12.19	5.0	2.5	5.0	2.5			
118	144	61	2.15	12.09	5.0	2.4	5.0	2.4			
131	160	55	2.40	10.89	4.8	2.5	4.8	2.5			
150	183	48	1.80	9.52	4.5	2.5	4.5	2.5			
201	245	36	2.40	7.11	4.1	2.6	4.1	2.6			
233	284	31	2.75	6.13	3.8	2.6	3.8	2.6			
267	325	27	3.15	5.35	3.7	2.6	3.7	2.6			
364	443	20	3.70	3.93	3.3	2.7	3.3	2.7			

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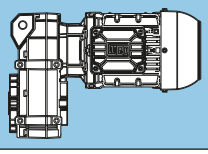
*** ... on request*

P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.0	6.1	2083	2.20	288.50	37.7	42.2	37.7	42.2	**FH093-11P-90S/L-04E**	172	238
6.0	7.2	1761	2.60	243.90	38.3	42.7	38.3	42.7			
6.9	8.3	1524	3.00	211.14	38.7	43.0	38.7	43.0			
3.3	4.0	3157	1.45	288.50	34.6	40.8	34.6	40.8	**FH093-11P-100L-06D**	178	238
3.9	4.8	2669	1.70	243.90	36.2	41.5	36.2	41.5			
4.5	5.5	2310	1.95	211.14	37.1	41.9	37.1	41.9			
5.1	6.2	2046	2.20	186.99	37.8	42.3	37.8	42.3			
5.9	7.2	1770	2.55	161.76	38.3	42.7	38.3	42.7			
6.7	8.2	1563	2.90	142.85	38.7	42.9	38.7	42.9			
7.0	8.5	1506	3.00	137.63	38.8	43.0	38.8	43.0			
4.1	4.9	2588	1.20	358.52	22.4	40.8	22.4	8.5	**FH083-11P-90S/L-04E**	117	236
5.1	6.2	2049	1.50	283.76	25.2	41.8	25.2	9.3			
5.9	7.1	1789	1.70	247.77	26.3	42.2	26.3	9.7			
6.6	8.0	1581	1.90	218.97	27.0	42.6	27.0	10.1			
7.9	9.5	1337	2.25	185.17	27.7	42.9	27.7	10.4			
8.1	9.8	1302	2.35	180.28	27.8	43.0	27.8	10.5			
9.1	11	1149	2.65	159.17	28.2	43.2	28.2	10.7			
10	13	1003	3.00	138.95	28.5	43.5	27.4	11.0			
2.7	3.2	3923	0.80	358.52	**	**	**	**	**FH083-11P-100L-06D**	123	236
3.4	4.1	3105	1.00	283.76	18.4	32.0	18.4	7.7			
3.9	4.7	2711	1.15	247.77	21.6	39.0	21.6	8.3			
4.4	5.3	2396	1.30	218.97	23.5	41.3	23.5	8.8			
5.2	6.3	2026	1.50	185.17	25.3	41.9	25.3	9.4			
5.3	6.5	1973	1.55	180.28	25.6	42.0	25.6	9.5			
6.0	7.3	1742	1.75	159.17	26.5	42.3	26.5	9.8			
6.7	8.2	1561	1.95	142.69	27.1	42.6	27.1	10.1			
6.9	8.4	1520	2.00	138.95	27.2	42.7	27.2	10.2			
7.7	9.4	1363	2.25	124.59	27.7	42.9	27.7	10.4			
8.1	9.8	1303	2.35	119.05	27.8	43.0	27.8	10.5			
8.7	11	1205	2.50	110.11	28.1	43.1	28.1	10.6			
9.5	11	1109	2.75	101.32	28.3	43.3	28.1	10.8			
10	13	1019	2.95	93.11	28.5	43.4	27.4	10.9			
6.1	7.4	1712	0.90	237.15	13.7	15.5	13.7	4.3	**FH073-11P-90S/L-04E**	70	234
7.5	9.0	1405	1.10	194.58	16.2	16.1	16.2	4.9			
9.7	12	1088	1.40	150.69	18.1	16.8	18.1	5.5			
13	15	828	1.85	114.62	19.1	17.3	18.2	6.1			
15	19	682	2.20	94.52	19.6	17.6	17.0	6.4			
19	23	560	2.70	77.53	19.9	17.9	15.4	6.6			
6.4	7.7	1649	0.95	150.69	14.3	15.6	14.3	4.4	**FH073-11P-100L-06D**	76	234
8.4	10	1254	1.20	114.62	17.2	16.4	17.2	5.2			
10	12	1034	1.50	94.52	18.3	16.9	18.3	5.6			
12	15	848	1.80	77.53	19.0	17.3	18.7	6.0			
15	18	721	2.10	65.88	19.4	17.5	17.1	6.3			
18	22	593	2.55	54.16	19.8	17.8	15.8	6.5			
11	14	940	0.90	130.15	6.9	10.8	6.9	2.3	**FH063-11P-90S/L-04E**	47	232
12	15	862	1.00	119.35	8.0	12.4	8.0	2.5			
15	18	710	1.20	98.34	9.7	13.0	9.7	3.0			
16	20	651	1.30	90.17	10.2	13.1	10.2	3.2			
18	22	581	1.45	80.48	10.7	13.4	10.7	3.4			
20	24	533	1.55	73.80	11.0	13.5	11.0	3.6			
22	27	471	1.75	65.26	11.3	13.7	11.3	3.8			
24	29	432	1.90	59.84	11.5	13.8	11.5	3.9			
27	32	394	2.10	54.63	11.7	14.0	11.7	4.0			
29	35	362	2.30	50.10	11.8	14.1	11.4	4.1			
9.8	12	1076	0.80	98.34	**	**	**	**	**FH063-11P-100L-06D**	53	232
11	13	987	0.85	90.17	6.0	8.8	6.0	2.1			
12	14	881	0.95	80.48	7.8	12.4	7.8	2.5			
13	16	808	1.05	73.80	8.7	12.6	8.7	2.7			
15	18	714	1.15	65.26	9.6	12.9	9.6	3.0			
16	19	655	1.30	59.84	10.1	13.1	10.1	3.2			
18	21	598	1.40	54.63	10.6	13.3	10.6	3.4			
19	23	548	1.50	50.10	10.9	13.5	10.9	3.5			

P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
29	35	359	2.30	49.67	11.8	14.1	11.3	4.1			
32	39	329	2.50	45.55	11.9	14.2	10.9	4.2			
35	42	301	2.75	41.66	12.0	14.3	10.5	4.3	**FH062-11P-90S/L-04E**	46	232
38	46	276	3.00	38.20	12.1	14.3	10.1	4.4			
71	86	148	2.90	20.49	12.4	14.6	8.0	4.6			
19	23	544	1.55	49.67	10.9	13.5	10.9	3.5			
21	26	498	1.65	45.55	11.2	13.6	11.2	3.7			
23	28	456	1.80	41.66	11.4	13.8	11.4	3.8			
25	30	418	2.00	38.20	11.6	13.9	11.6	3.9			
29	36	358	2.30	32.69	11.8	14.1	11.3	4.1	**FH062-11P-100L-06D**	52	232
32	39	328	2.50	29.98	11.9	14.2	10.9	4.2			
38	46	276	3.00	25.23	12.1	14.4	10.1	4.4			
47	57	224	1.90	20.49	12.2	14.3	9.5	4.3			
13	16	788	0.80	109.08	**	**	**	**			
15	19	679	0.90	94.11	4.6	7.1	4.6	3.2			
17	20	621	1.00	85.99	5.8	9.7	5.8	3.4			
18	21	593	1.05	82.13	6.2	10.2	6.2	3.5	**FH053-11P-90S/L-04E**	31	230
19	23	542	1.15	75.04	6.9	10.3	6.9	3.6			
24	29	435	1.40	60.26	8.0	10.7	8.0	4.0			
26	32	398	1.55	55.06	8.3	10.8	8.3	4.1			
20	25	516	1.00	71.46	7.2	10.4	7.2	3.7			
22	27	471	1.00	65.29	7.7	10.5	7.7	3.8			
26	31	407	1.50	56.42	8.3	10.8	8.3	4.1			
28	34	372	1.65	51.55	8.5	10.8	8.5	4.1			
33	40	316	1.90	43.75	8.9	11.0	8.9	4.3			
36	44	289	2.10	39.97	9.0	11.1	9.0	4.4	**FH052-11P-90S/L-04E**	30	230
37	45	284	1.00	39.38	9.1	10.8	9.1	4.1			
41	49	259	2.35	35.81	9.2	11.2	9.2	4.5			
44	54	236	2.55	32.72	9.3	11.3	9.3	4.6			
47	57	224	1.65	31.09	9.3	11.0	9.3	4.3			
60	73	174	2.10	24.11	9.5	11.2	9.5	4.5			
74	89	142	2.55	19.73	9.6	11.4	9.6	4.7			
17	21	617	1.00	56.42	5.8	9.7	5.8	3.4			
19	23	564	1.10	51.55	6.6	10.3	6.6	3.6			
22	27	479	1.30	43.75	7.6	10.5	7.6	3.8			
24	29	437	1.40	39.97	8.0	10.6	8.0	3.9			
27	33	392	1.55	35.81	8.4	10.8	8.4	4.1			
29	36	358	1.70	32.72	8.6	10.9	8.6	4.2			
31	37	340	1.10	31.09	8.7	10.5	8.7	3.8			
35	42	302	2.00	27.56	9.0	11.1	9.0	4.4	**FH052-11P-100L-06D**	36	230
38	46	276	2.20	25.18	9.1	11.1	9.1	4.4			
40	48	264	1.40	24.11	9.2	10.9	9.2	4.2			
46	56	228	2.65	20.83	9.3	11.3	9.3	4.6			
49	59	216	1.70	19.73	9.4	11.1	9.4	4.4			
50	61	208	2.90	19.03	9.4	11.4	9.4	4.7			
63	77	166	2.20	15.19	9.5	11.3	9.5	4.6			
84	101	126	2.90	11.48	9.6	11.5	9.1	4.8			
20	25	514	0.80	71.24	**	**	**	**			
22	27	469	0.90	64.98	1.2	0.7	1.2	0.7	**FH043-11P-90S/L-04E**	25	228
28	34	377	1.10	52.27	4.3	7.3	4.3	2.6			
31	37	344	1.20	47.68	4.9	8.3	4.9	2.7			
20	24	522	0.80	47.68	**	**	**	**	**FH043-11P-100L-06D**	31	228

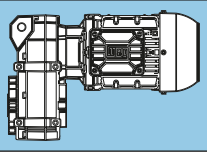
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P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
23	28	447	0.90	61.98	2.4	3.2	2.4	2.3			
26	31	408	1.00	56.54	3.6	5.8	3.6	2.5			
30	36	353	1.15	48.94	4.7	8.1	4.7	2.6			
33	39	322	1.25	44.64	5.2	8.4	5.2	2.8			
38	46	274	1.50	37.95	5.8	8.5	5.8	2.9			
42	51	250	1.65	34.62	6.0	8.6	6.0	3.0			
43	52	243	1.00	33.69	6.0	8.3	6.0	2.7			
47	57	224	1.80	31.06	6.2	8.7	6.2	3.1	**FH042-11P-90S/L-04E**	25	228
51	62	205	2.00	28.33	6.4	8.8	6.4	3.2			
55	66	192	1.65	26.60	6.4	8.5	6.4	2.9			
61	74	173	2.35	23.91	6.6	8.9	6.6	3.3			
67	81	157	2.55	21.81	6.6	8.9	6.6	3.3			
71	85	149	2.10	20.63	6.7	8.7	6.7	3.1			
86	104	122	2.55	16.88	6.8	8.9	6.8	3.3			
22	26	488	0.85	44.64	**	**	**	**			
25	31	415	1.00	37.95	3.4	5.3	3.4	2.4			
28	34	379	1.10	34.62	4.3	7.3	4.3	2.6			
31	38	340	1.20	31.06	4.9	8.3	4.9	2.7			
34	41	310	1.30	28.33	5.3	8.4	5.3	2.8			
36	44	291	1.10	26.60	5.6	8.0	5.6	2.4			
40	49	262	1.55	23.91	5.9	8.6	5.9	3.0			
44	53	239	1.70	21.81	6.1	8.7	6.1	3.1			
47	56	226	1.40	20.63	6.2	8.4	6.2	2.8	**FH042-11P-100L-06D**	30	228
53	65	198	2.05	18.06	6.4	8.8	6.4	3.2			
57	69	185	1.70	16.88	6.5	8.6	6.5	3.0			
58	71	180	2.25	16.48	6.5	8.9	6.5	3.3			
65	79	162	2.50	14.78	6.6	8.9	6.6	3.3			
71	86	148	2.75	13.48	6.7	9.0	6.7	3.4			
74	90	142	2.20	12.99	6.7	8.8	6.7	3.2			
80	97	131	2.95	11.99	6.8	9.0	6.8	3.4			
98	119	107	2.90	9.82	6.9	9.0	6.9	3.4			
42	50	253	0.90	35.03	2.5	2.1	2.5	2.1			
46	55	229	1.00	31.76	3.2	2.6	3.2	2.6			
52	63	202	1.10	27.97	3.7	2.4	3.7	2.4			
57	69	183	1.25	25.36	4.0	2.8	4.0	2.8			
65	78	162	0.95	22.50	4.3	2.8	4.3	2.8			
69	83	153	1.45	21.14	4.4	2.7	4.4	2.7			
76	92	138	1.60	19.17	4.5	3.0	4.5	3.0			
81	98	129	1.20	17.88	4.6	3.0	4.6	3.0	**FH032-11P-90S/L-04E**	23	226
91	110	116	1.90	16.06	4.7	2.9	4.7	2.9			
100	121	105	2.10	14.57	4.8	3.2	4.8	3.2			
105	127	100	1.55	13.81	4.8	3.1	4.8	3.1			
116	141	90	2.45	12.50	4.9	3.1	4.9	3.1			
128	155	82	2.70	11.33	4.9	3.3	4.9	3.3			
132	160	80	1.90	11.03	5.0	3.2	5.0	3.2			
175	211	60	2.50	8.33	5.0	3.3	5.0	3.3			
38	46	278	0.80	25.36	**	**	**	**			
45	55	231	1.00	21.14	3.1	2.2	3.1	2.2			
50	61	210	1.05	19.17	3.6	2.7	3.6	2.7			
54	65	196	0.80	17.88	**	**	**	**			
60	73	176	1.30	16.06	4.1	2.6	4.1	2.6			
66	80	159	1.40	14.57	4.3	2.9	4.3	2.9			
70	84	151	1.00	13.81	4.4	2.9	4.4	2.9			
77	93	137	1.65	12.50	4.5	2.8	4.5	2.8			
85	103	124	1.80	11.33	4.7	3.1	4.7	3.1	**FH032-11P-100L-06D**	29	226
87	106	121	1.25	11.03	4.7	3.0	4.7	3.0			
98	119	107	2.00	9.76	4.8	3.0	4.8	3.0			
108	132	97	2.10	8.85	4.9	3.2	4.9	3.2			
115	140	91	1.65	8.33	4.9	3.2	4.9	3.2			
152	184	69	2.10	6.33	5.0	3.3	5.0	3.3			
195	236	54	2.40	4.93	5.1	3.4	5.1	3.4			
249	303	42	2.65	3.85	4.9	3.4	4.9	3.4			

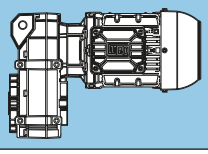
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P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
66	80	158	0.85	21.89	4.4	1.8	4.4	1.8			
74	89	142	0.95	19.70	4.6	2.1	4.6	2.1			
77	93	136	1.00	18.88	4.7	1.9	4.7	1.9			
86	104	123	1.10	17.00	4.8	2.2	4.8	2.2			
88	107	119	1.10	16.48	4.8	2.0	4.8	2.0			
98	119	107	1.25	14.84	4.9	2.3	4.9	2.3			
119	144	88	1.00	12.19	5.0	2.4	5.0	2.4			
120	146	87	1.50	12.09	5.0	2.2	5.0	2.2	**FH022-11P-90S/L-04E**	21	224
134	162	79	1.70	10.89	4.9	2.4	4.9	2.4			
153	185	69	1.25	9.52	4.6	2.5	4.6	2.5			
205	248	51	1.65	7.11	4.1	2.5	4.1	2.5			
237	287	44	1.90	6.13	3.9	2.6	3.9	2.6			
272	329	39	2.20	5.35	3.7	2.6	3.7	2.6			
370	448	28	2.55	3.93	3.3	2.6	3.3	2.6			

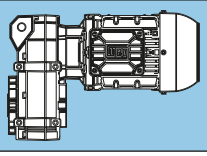
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P_N = 1.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.5 kW	1.8 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.0	6.1	2850	1.60	288.50	35.6	41.2	35.6	41.2			
5.9	7.2	2410	1.90	243.90	36.9	41.8	36.9	41.8			
6.9	8.3	2086	2.20	211.14	37.7	42.2	37.7	42.2	**FH093-11P-90S/L-04F**	173	238
7.8	9.4	1847	2.45	186.99	38.2	42.6	38.2	42.6			
9.0	11	1598	2.85	161.76	38.6	42.9	38.6	42.9			
4.0	4.9	3542	0.85	358.52	13.5	21.5	13.5	7.0			
5.1	6.2	2803	1.10	283.76	20.9	37.5	20.9	8.2			
5.9	7.1	2448	1.25	247.77	23.2	41.2	23.2	8.7			
6.6	8.0	2163	1.40	218.97	24.7	41.7	24.7	9.2			
7.8	9.5	1829	1.65	185.17	26.2	42.2	26.2	9.7			
8.0	9.7	1781	1.70	180.28	26.3	42.3	26.3	9.8	**FH083-11P-90S/L-04F**	119	236
9.1	11	1572	1.95	159.17	27.0	42.6	27.0	10.1			
10	13	1373	2.20	138.95	27.6	42.9	27.6	10.4			
12	15	1176	2.60	119.05	28.1	43.2	26.5	10.7			
13	16	1088	2.80	110.11	28.3	43.3	25.6	10.8			
14	17	1001	3.00	101.32	28.5	43.5	24.8	11.0			
7.5	9.0	1922	0.80	194.58	**	**	**	**			
9.6	12	1489	1.05	150.69	15.6	16.0	15.6	4.7			
13	15	1132	1.35	114.62	17.8	16.7	17.8	5.4			
15	19	934	1.65	94.52	18.7	17.1	17.8	5.8	**FH073-11P-90S/L-04F**	71	234
19	23	766	2.00	77.53	19.3	17.4	16.1	6.2			
22	27	651	2.35	65.88	19.6	17.7	15.1	6.4			
27	32	535	2.85	54.16	19.9	17.9	13.9	6.7			
15	18	972	0.85	98.34	6.3	9.5	6.3	2.2			
16	19	891	0.95	90.17	7.6	12.3	7.6	2.4			
18	22	795	1.05	80.48	8.8	12.7	8.8	2.7			
20	24	729	1.15	73.80	9.5	12.9	9.5	2.9	**FH063-11P-90S/L-04F**	48	232
22	27	645	1.30	65.26	10.2	13.2	10.2	3.2			
24	29	591	1.40	59.84	10.6	13.3	10.6	3.4			
27	32	540	1.55	54.63	10.9	13.5	10.9	3.6			
29	35	495	1.70	50.10	11.2	13.6	11.2	3.7			
29	35	491	1.70	49.67	11.2	13.7	11.2	3.7			
32	39	450	1.85	45.55	11.4	13.8	11.4	3.8			
35	42	412	2.00	41.66	11.6	13.9	11.0	4.0			
38	46	377	2.20	38.20	11.8	14.0	10.6	4.1	**FH062-11P-90S/L-04F**	47	232
44	54	323	2.55	32.69	11.9	14.2	9.9	4.3			
48	59	296	2.80	29.98	12.0	14.3	9.6	4.3			
71	86	202	2.10	20.49	12.3	14.4	8.3	4.4			
19	23	741	0.85	75.04	2.6	2.9	2.6	2.9			
24	29	595	1.05	60.26	6.2	10.2	6.2	3.5	**FH053-11P-90S/L-04F**	32	230
26	32	544	1.10	55.06	6.9	10.3	6.9	3.6			
26	31	557	1.10	56.42	6.7	10.3	6.7	3.6			
28	34	509	1.20	51.55	7.3	10.4	7.3	3.7			
33	40	432	1.40	43.75	8.1	10.7	8.1	4.0			
36	44	395	1.55	39.97	8.4	10.8	8.4	4.1			
40	49	354	1.70	35.81	8.7	10.9	8.7	4.2			
44	54	323	1.85	32.72	8.8	11.0	8.8	4.3			
47	56	307	1.20	31.09	8.9	10.7	8.9	4.0	**FH052-11P-90S/L-04F**	32	230
53	64	272	2.25	27.56	9.1	11.2	9.1	4.5			
58	70	249	2.40	25.18	9.2	11.2	9.2	4.5			
60	73	238	1.55	24.11	9.3	11.0	9.3	4.3			
70	84	206	2.95	20.83	9.4	11.4	9.4	4.7			
73	89	195	1.85	19.73	9.4	11.2	9.4	4.5			
95	116	150	2.40	15.19	9.6	11.4	8.9	4.7			
28	34	516	0.80	52.27	**	**	**	**	**FH043-11P-90S/L-04F**	26	228
30	37	471	0.85	47.68	1.0	0.3	1.0	0.3			

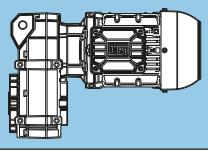
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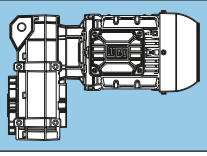
P_N = 1.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.5 kW	1.8 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
30	36	483	0.85	48.94	**	**	**	**			
32	39	441	0.95	44.64	2.6	3.6	2.6	2.3			
38	46	375	1.10	37.95	4.3	7.3	4.3	2.6			
42	51	342	1.20	34.62	4.9	8.3	4.9	2.7			
47	57	307	1.35	31.06	5.4	8.4	5.4	2.8			
51	62	280	1.45	28.33	5.7	8.5	5.7	2.9			
55	66	263	1.20	26.60	5.9	8.2	5.9	2.6			
61	73	236	1.70	23.91	6.1	8.7	6.1	3.1	**FH042-11P-90S/L-04F**	26	228
66	80	215	1.90	21.81	6.3	8.7	6.3	3.1			
70	85	204	1.55	20.63	6.4	8.5	6.4	2.9			
80	97	178	2.25	18.06	6.5	8.9	6.5	3.3			
86	104	167	1.85	16.88	6.6	8.7	6.6	3.1			
88	106	163	2.50	16.48	6.6	8.9	6.6	3.3			
98	119	146	2.75	14.78	6.7	9.0	6.7	3.4			
112	135	128	2.45	12.99	6.8	8.9	6.8	3.3			
52	63	276	0.80	27.97	**	**	**	**			
57	69	251	0.90	25.36	2.6	2.5	2.6	2.5			
69	83	209	1.10	21.14	3.6	2.4	3.6	2.4			
76	92	189	1.20	19.17	3.9	2.8	3.9	2.8			
81	98	177	0.85	17.88	4.1	2.8	4.1	2.8			
90	109	159	1.40	16.06	4.3	2.7	4.3	2.7			
100	120	144	1.55	14.57	4.5	3.0	4.5	3.0			
105	127	136	1.10	13.81	4.5	3.0	4.5	3.0			
116	140	123	1.80	12.50	4.7	2.9	4.7	2.9	**FH032-11P-90S/L-04F**	25	226
128	155	112	2.00	11.33	4.7	3.2	4.7	3.2			
131	159	109	1.40	11.03	4.8	3.1	4.8	3.1			
149	180	96	2.20	9.76	4.9	3.1	4.9	3.1			
164	198	87	2.35	8.85	4.9	3.3	4.9	3.3			
174	211	82	1.85	8.33	4.9	3.2	4.9	3.2			
229	277	63	2.35	6.33	5.0	3.3	5.0	3.3			
294	356	49	2.65	4.93	4.7	3.4	4.7	3.4			
377	456	38	2.95	3.85	4.3	3.5	4.3	3.5			
85	103	168	0.80	17.00	**	**	**	**			
88	106	163	0.80	16.48	**	**	**	**			
98	118	147	0.90	14.84	4.6	2.1	4.6	2.1			
120	145	119	1.10	12.09	4.8	2.0	4.8	2.0			
133	161	108	1.25	10.89	4.9	2.3	4.9	2.3			
152	184	94	0.90	9.52	4.8	2.3	4.8	2.3	**FH022-11P-90S/L-04F**	22	224
204	247	70	1.20	7.11	4.3	2.4	4.3	2.4			
237	286	61	1.40	6.13	4.0	2.5	4.0	2.5			
271	328	53	1.60	5.35	3.8	2.5	3.8	2.5			
369	447	39	1.90	3.93	3.4	2.6	3.4	2.6			

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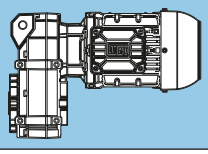
P_N = 2.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
2.2 kW	2.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.0	6.0	4224	1.10	288.50	29.6	39.4	29.6	39.4			
5.9	7.2	3571	1.30	243.90	32.9	40.3	32.9	40.3			
6.8	8.3	3091	1.50	211.14	34.8	40.9	34.8	40.9			
7.7	9.3	2738	1.65	186.99	36.0	41.4	36.0	41.4			
8.9	11	2368	1.95	161.76	37.0	41.9	37.0	41.9	**FH093-11P-100L-04E**	183	238
9.2	11	2284	2.00	155.99	37.2	42.0	37.2	42.0			
10	13	2015	2.25	137.63	37.8	42.3	37.8	42.3			
12	15	1715	2.65	117.13	38.4	42.7	38.4	42.7			
14	17	1531	2.95	104.54	38.7	43.0	38.7	43.0			
5.8	7.0	3628	0.85	247.77	12.2	18.8	12.2	6.9			
6.6	8.0	3206	0.95	218.97	17.5	30.1	17.5	7.6			
7.7	9.4	2711	1.15	185.17	21.6	39.0	21.6	8.3			
8.0	9.7	2640	1.15	180.28	22.1	40.1	22.1	8.4			
9.0	11	2330	1.30	159.17	23.9	41.4	23.9	8.9			
10	13	2034	1.50	138.95	25.3	41.9	25.3	9.4			
12	15	1743	1.75	119.05	26.5	42.3	26.5	9.8	**FH083-11P-100L-04E**	129	236
13	16	1612	1.90	110.11	26.9	42.5	26.9	10.0			
14	17	1483	2.05	101.32	27.3	42.7	26.3	10.2			
15	19	1363	2.25	93.11	27.7	42.9	25.4	10.4			
17	21	1244	2.45	84.99	28.0	43.1	24.2	10.6			
18	22	1172	2.60	80.04	28.1	43.2	23.6	10.7			
20	24	1049	2.85	71.62	28.4	43.4	22.5	10.9			
21	25	1023	2.85	69.87	28.5	43.4	22.1	10.9			
13	15	1678	0.90	114.62	14.1	15.6	14.1	4.3			
15	18	1384	1.10	94.52	16.4	16.2	16.4	4.9			
19	23	1135	1.35	77.53	17.8	16.7	17.4	5.4	**FH073-11P-100L-04E**	81	234
22	26	965	1.60	65.88	18.6	17.0	16.2	5.8			
26	32	793	1.90	54.16	19.2	17.4	14.9	6.1			
27	33	765	2.00	52.23	19.3	17.4	14.6	6.2			
32	39	659	2.30	45.02	19.6	17.7	13.6	6.4			
37	44	576	2.65	39.31	19.8	17.8	12.8	6.6	**FH072-11P-100L-04E**	80	234
41	50	509	2.95	34.74	20.0	18.0	12.2	6.7			
22	27	955	0.90	65.26	6.6	10.1	6.6	2.2			
24	29	876	0.95	59.84	7.8	12.4	7.8	2.4	**FH063-11P-100L-04E**	58	232
26	32	800	1.05	54.63	8.8	12.7	8.8	2.7			
29	35	734	1.15	50.10	9.5	12.8	9.5	2.9			
29	35	727	1.15	49.67	9.5	12.9	9.5	2.9			
32	38	667	1.25	45.55	10.0	13.1	10.0	3.1			
34	42	610	1.35	41.66	10.5	13.3	10.5	3.3			
38	46	559	1.50	38.20	10.8	13.4	10.8	3.5			
44	53	479	1.75	32.69	11.3	13.7	10.6	3.8			
48	58	439	1.90	29.98	11.5	13.8	10.2	3.9			
57	69	369	2.25	25.23	11.8	14.1	9.4	4.1	**FH062-11P-100L-04E**	57	232
62	75	339	2.45	23.14	11.9	14.1	9.1	4.2			
69	84	306	2.70	20.87	12.0	14.3	8.6	4.3			
70	85	300	1.45	20.49	12.0	13.9	8.9	4.0			
75	91	280	2.95	19.14	12.1	14.3	8.3	4.4			
84	102	252	2.30	17.18	12.2	14.1	8.2	4.2			
106	129	198	2.90	13.49	12.3	14.4	7.4	4.4			

Legend see page 149

P_N = 2.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
2.2 kW	2.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
33	40	641	0.95	43.75	5.4	8.8	5.4	3.3			
36	44	585	1.05	39.97	6.3	10.2	6.3	3.5			
40	49	524	1.15	35.81	7.1	10.4	7.1	3.7			
44	53	479	1.25	32.72	7.6	10.5	7.6	3.8			
52	63	404	1.50	27.56	8.3	10.8	8.3	4.1			
57	69	369	1.65	25.18	8.6	10.9	8.6	4.2			
60	72	353	1.05	24.11	8.7	10.5	8.7	3.8			
69	84	305	2.00	20.83	8.9	11.1	8.9	4.4			
73	88	289	1.25	19.73	9.0	10.7	9.0	4.0	**FH052-11P-100L-04E**	42	230
75	92	279	2.15	19.03	9.1	11.1	9.1	4.4			
84	102	249	2.45	17.04	9.2	11.2	9.2	4.5			
92	112	228	2.65	15.57	9.3	11.3	9.3	4.6			
94	115	222	1.65	15.19	9.3	11.0	9.3	4.3			
104	126	202	3.00	13.82	9.4	11.4	8.9	4.7			
125	152	168	2.15	11.48	9.5	11.3	8.3	4.6			
153	186	137	2.65	9.39	9.6	11.4	7.7	4.7			
41	50	507	0.80	34.62	**	**	**	**			
46	56	455	0.90	31.06	2.1	2.6	2.1	2.3			
51	62	415	1.00	28.33	3.4	5.3	3.4	2.4			
60	73	350	1.15	23.91	4.8	8.3	4.8	2.7			
66	80	319	1.30	21.81	5.2	8.4	5.2	2.8			
70	85	302	1.05	20.63	5.4	8.0	5.4	2.4			
79	97	264	1.55	18.06	5.8	8.6	5.8	3.0			
85	103	247	1.25	16.88	6.0	8.2	6.0	2.6			
87	106	241	1.70	16.48	6.1	8.6	6.1	3.0			
97	118	216	1.85	14.78	6.3	8.7	6.3	3.1			
106	129	197	2.05	13.48	6.4	8.8	6.4	3.2			
110	134	190	1.65	12.99	6.4	8.5	6.4	2.9			
120	146	176	2.20	11.99	6.5	8.9	6.5	3.3	**FH042-11P-100L-04E**	36	228
131	160	160	2.30	10.93	6.6	8.9	6.6	3.3			
143	174	147	2.40	10.03	6.7	9.0	6.5	3.4			
146	178	144	2.15	9.82	6.7	8.8	6.5	3.2			
157	191	134	2.45	9.15	6.7	9.0	6.3	3.4			
177	215	119	2.65	8.13	6.8	9.1	6.0	3.5			
179	217	118	2.40	8.03	6.8	8.9	6.0	3.3			
183	223	115	2.65	7.84	6.8	9.1	5.9	3.5			
193	235	109	2.70	7.42	6.8	9.1	5.7	3.5			
201	244	105	2.75	7.15	6.9	9.1	5.7	3.5			
220	268	95	2.60	6.52	6.9	9.0	5.5	3.4			
263	320	80	2.80	5.45	6.9	9.1	5.1	3.5			
75	91	281	0.80	19.17	**	**	**	**			
89	109	235	0.95	16.06	3.0	2.2	3.0	2.2			
98	120	213	1.05	14.57	3.5	2.7	3.5	2.7			
115	140	183	1.25	12.50	4.0	2.5	4.0	2.5			
127	154	166	1.35	11.33	4.2	2.9	4.2	2.9			
130	158	161	0.95	11.03	4.3	2.8	4.3	2.8			
147	179	143	1.50	9.76	4.5	2.8	4.5	2.8	**FH032-11P-100L-04E**	35	226
162	197	130	1.60	8.85	4.6	3.1	4.6	3.1			
172	209	122	1.25	8.33	4.7	3.0	4.7	3.0			
227	276	93	1.60	6.33	4.9	3.2	4.9	3.2			
291	354	72	1.80	4.93	4.8	3.3	4.8	3.3			
373	453	56	2.00	3.85	4.4	3.4	4.4	3.4			

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P_N = 3.0 kW											IE3
50 Hz	60 Hz				at 50 Hz						
3.0 kW	3.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.0	6.0	5740	0.80	288.50	**	**	**	**	**FH093-11P-L100L-04F**	190	238
5.9	7.1	4853	0.95	243.90	25.5	38.6	25.5	38.6			
6.8	8.2	4201	1.10	211.14	29.8	39.4	29.8	39.4			
7.7	9.3	3720	1.25	186.99	32.2	40.1	32.2	40.1			
8.9	11	3218	1.40	161.76	34.3	40.7	34.3	40.7			
9.2	11	3104	1.45	155.99	34.7	40.9	34.7	40.9			
10	13	2738	1.65	137.63	36.0	41.4	36.0	41.4			
12	15	2330	1.95	117.13	37.1	41.9	37.1	41.9			
14	17	2010	2.25	101.04	37.8	42.3	37.8	42.3			
16	19	1842	2.45	92.59	38.2	42.6	38.2	42.6			
18	22	1593	2.85	80.09	38.6	42.9	38.6	42.9			
19	23	1537	2.95	77.23	38.7	43.0	38.7	43.0			
7.8	9.4	3684	0.85	185.17	11.2	16.7	11.2	6.8	**FH083-11P-L100L-04F**	135	236
8.0	9.7	3587	0.85	180.28	12.8	20.1	12.8	7.0			
9.0	11	3167	0.95	159.17	17.9	30.9	17.9	7.6			
10	12	2839	1.10	142.69	20.7	37.0	20.7	8.1			
12	15	2369	1.30	119.05	23.7	41.3	23.7	8.8			
13	16	2191	1.40	110.11	24.6	41.6	24.6	9.1			
14	17	2016	1.50	101.32	25.4	41.9	25.4	9.4			
15	19	1853	1.65	93.11	26.1	42.1	26.1	9.6			
17	20	1691	1.80	84.99	26.7	42.4	25.5	9.9			
18	22	1592	1.90	80.04	27.0	42.5	24.8	10.0			
20	24	1425	2.10	71.62	27.5	42.8	23.6	10.3			
21	25	1390	2.10	69.87	27.6	42.9	23.2	10.4			
24	29	1191	2.35	59.86	28.1	43.2	21.8	10.7			
25	30	1149	2.40	57.73	28.2	43.2	21.4	10.7			
28	34	1014	2.65	50.95	28.5	43.4	20.3	10.9			
34	41	850	2.95	42.74	28.8	43.7	18.8	11.2			
15	18	1881	0.80	94.52	**	**	**	**	**FH073-11P-L100L-04F**	88	234
19	22	1543	1.00	77.53	15.2	15.9	15.2	4.6			
22	26	1311	1.15	65.88	16.8	16.3	16.8	5.1			
27	32	1078	1.40	54.16	18.1	16.8	15.7	5.6			
28	33	1039	1.45	52.23	18.3	16.9	15.4	5.6			
32	39	896	1.70	45.02	18.9	17.2	14.4	5.9	**FH072-11P-L100L-04F**	87	234
37	44	782	1.95	39.31	19.3	17.4	13.5	6.2			
41	50	691	2.20	34.74	19.5	17.6	12.8	6.3			
49	59	585	2.60	29.38	19.8	17.8	11.9	6.6			
57	69	502	3.00	25.25	20.0	18.0	11.1	6.7			
69	84	412	2.30	20.72	20.1	17.8	10.4	6.5			
26	32	1087	0.80	54.63	**	**	**	**	**FH063-11P-L100L-04F**	65	232
29	35	997	0.85	50.10	5.8	8.3	5.8	2.0			
29	35	988	0.85	49.67	6.0	8.8	6.0	2.1	**FH062-11P-L100L-04F**	64	232
32	38	906	0.95	45.55	7.4	11.8	7.4	2.3			
35	42	829	1.00	41.66	8.4	12.6	8.4	2.6			
38	46	760	1.10	38.20	9.2	12.8	9.2	2.8			
44	53	650	1.30	32.69	10.2	13.1	10.2	3.2			
48	58	596	1.40	29.98	10.6	13.3	10.6	3.3			
57	69	502	1.65	25.23	11.2	13.6	10.0	3.7			
62	75	460	1.80	23.14	11.4	13.7	9.6	3.8			
69	83	415	2.00	20.87	11.6	13.9	9.1	4.0			
70	85	408	1.05	20.49	11.6	13.4	9.4	3.5			
75	91	381	2.20	19.14	11.7	14.0	8.8	4.1			
81	98	353	2.35	17.75	11.8	14.1	8.5	4.2			
84	101	342	1.70	17.18	11.9	13.7	8.6	3.8			
88	107	324	2.55	16.28	11.9	14.2	8.2	4.2			
94	113	306	2.70	15.38	12.0	14.3	7.9	4.3			
102	123	281	2.95	14.11	12.1	14.3	7.7	4.4			
107	129	268	2.15	13.49	12.1	14.1	7.7	4.1			
138	167	207	2.80	10.41	12.3	14.3	6.9	4.4			

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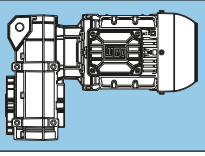
P_N = 3.0 kW										IE3
50 Hz	60 Hz				at 50 Hz					
3.0 kW	3.6 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
36	44	795	0.80	39.97	**	**	**	**		
40	49	712	0.85	35.81	3.7	5.2	3.7	3.1		
44	53	651	0.95	32.72	5.2	8.4	5.2	3.3		
52	63	548	1.10	27.56	6.8	10.3	6.8	3.6		
57	69	501	1.20	25.18	7.4	10.5	7.4	3.8		
60	72	480	0.80	24.11	**	**	**	**		
69	84	414	1.45	20.83	8.2	10.7	8.2	4.0		
73	88	393	0.95	19.73	8.4	10.3	8.4	3.6		
76	91	379	1.60	19.03	8.5	10.8	8.5	4.1		
85	102	339	1.80	17.04	8.7	11.0	8.7	4.3		
92	112	310	1.95	15.57	8.9	11.0	8.9	4.3	**FH052-11P-L100L-04F**	48	230
95	115	302	1.20	15.19	9.0	10.7	9.0	4.0		
104	126	275	2.20	13.82	9.1	11.2	9.1	4.5		
114	138	251	2.40	12.63	9.2	11.2	8.9	4.5		
124	150	230	2.65	11.57	9.3	11.3	8.6	4.6		
125	152	228	1.60	11.48	9.3	11.0	8.7	4.3		
136	165	210	2.80	10.57	9.4	11.4	8.3	4.7		
153	185	187	1.95	9.39	9.5	11.2	7.9	4.5		
189	228	152	2.40	7.62	9.6	11.3	7.3	4.6		
226	273	127	2.85	6.38	9.4	11.5	6.8	4.8		
60	73	476	0.85	23.91	0.2	-1.3	0.2	-1.3		
66	80	434	0.95	21.81	2.9	4.3	2.9	2.4		
70	84	410	0.80	20.63	**	**	**	**		
80	96	359	1.15	18.06	4.6	7.9	4.6	2.6		
85	103	336	0.95	16.88	5.0	7.8	5.0	2.2		
87	106	328	1.25	16.48	5.1	8.3	5.1	2.7		
97	118	294	1.40	14.78	5.5	8.5	5.5	2.9		
107	129	268	1.50	13.48	5.8	8.6	5.8	3.0		
111	134	258	1.20	12.99	5.9	8.2	5.9	2.6		
120	145	239	1.65	11.99	6.1	8.6	6.1	3.0		
132	159	217	1.70	10.93	6.3	8.7	6.3	3.1		
144	173	200	1.75	10.03	6.4	8.8	6.4	3.2	**FH042-11P-L100L-04F**	42	228
147	177	195	1.60	9.82	6.4	8.5	6.4	2.9		
157	190	182	1.80	9.15	6.5	8.9	6.5	3.3		
177	214	162	1.95	8.13	6.6	8.9	6.2	3.3		
179	217	160	1.80	8.03	6.6	8.7	6.3	3.1		
184	222	156	1.95	7.84	6.6	8.9	6.1	3.3		
194	235	148	2.00	7.42	6.7	9.0	6.0	3.4		
201	243	142	2.05	7.15	6.7	9.0	5.9	3.4		
221	267	130	1.95	6.52	6.8	8.8	5.7	3.2		
264	319	108	2.05	5.45	6.8	9.0	5.3	3.4		
326	394	88	2.25	4.42	6.6	9.1	4.9	3.5		
338	408	85	2.30	4.26	6.6	9.1	4.8	3.5		
99	119	290	0.80	14.57	**	**	**	**		
115	139	249	0.90	12.50	2.7	2.1	2.7	2.1		
127	154	225	1.00	11.33	3.2	2.6	3.2	2.6		
148	178	194	1.10	9.76	3.8	2.5	3.8	2.5		
163	197	176	1.15	8.85	4.1	2.9	4.1	2.9	**FH032-11P-L100L-04F**	41	226
173	209	166	0.95	8.33	4.2	2.8	4.2	2.8		
227	275	126	1.20	6.33	4.6	3.0	4.6	3.0		
292	353	98	1.30	4.93	4.8	3.2	4.8	3.2		
374	452	77	1.45	3.85	4.5	3.3	4.5	3.3		

Legend see page 149

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P_N = 4.0 kW											IE3
50 Hz	60 Hz				at 50 Hz						
4.0 kW	4.8 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
6.6	8.0	5814	2.25	220.67	85.9	91.9	85.9	91.9			
7.5	9.1	5069	2.60	192.40	86.7	92.6	86.7	92.6	**FH123-11P-112M-04E**	425	242
7.8	9.5	4888	2.70	185.53	86.9	92.8	86.9	92.8			
8.7	11	4366	3.00	165.73	87.4	93.3	87.4	93.3			
5.9	7.1	6496	1.25	246.57	51.8	61.9	51.8	61.9			
6.7	8.1	5737	1.40	217.78	54.2	62.8	54.2	62.8			
7.7	9.3	4980	1.65	189.04	56.2	63.6	56.2	63.6			
8.0	9.6	4802	1.70	182.29	56.6	63.8	56.6	63.8	**FH103-11P-112M-04E**	285	240
8.9	11	4303	1.90	163.33	57.7	64.4	57.7	64.4			
10	13	3682	2.20	139.78	58.9	65.1	58.9	65.1			
12	15	3180	2.55	120.72	59.7	65.6	59.7	65.6			
13	16	2852	2.85	108.27	60.1	66.0	60.1	66.0			
6.9	8.3	5562	0.85	211.14	18.8	30.2	18.8	30.2			
7.8	9.4	4926	0.95	186.99	24.9	38.5	24.9	38.5			
9.0	11	4262	1.10	161.76	29.4	39.4	29.4	39.4			
9.3	11	4110	1.10	155.99	30.3	39.6	30.3	39.6			
10	12	3763	1.20	142.85	32.0	40.0	32.0	40.0			
11	13	3626	1.25	137.63	32.7	40.2	32.7	40.2			
12	15	3086	1.50	117.13	34.8	40.9	34.8	40.9	**FH093-11P-112M-04E**	191	238
14	17	2662	1.70	101.04	36.2	41.5	36.2	41.5			
16	19	2439	1.85	92.59	36.8	41.8	36.8	41.8			
18	22	2110	2.15	80.09	37.6	42.2	37.6	42.2			
19	23	2035	2.25	77.23	37.8	42.3	37.8	42.3			
21	26	1795	2.55	68.15	38.3	42.6	38.3	42.6			
25	30	1528	2.95	57.99	38.7	43.0	38.7	43.0			
10	13	3661	0.85	138.95	11.6	17.6	11.6	6.9			
12	15	3136	1.00	119.05	18.2	31.6	18.2	7.7			
13	16	2901	1.05	110.11	20.2	35.9	20.2	8.0			
14	17	2669	1.15	101.32	21.9	39.7	21.9	8.4			
16	19	2453	1.25	93.11	23.2	41.2	23.2	8.7			
17	21	2239	1.35	84.99	24.4	41.5	24.4	9.0			
18	22	2109	1.45	80.04	25.0	41.7	25.0	9.2	**FH083-11P-112M-04E**	136	236
20	25	1887	1.60	71.62	25.9	42.1	25.0	9.6			
21	25	1841	1.60	69.87	26.1	42.2	24.6	9.7			
24	29	1577	1.80	59.86	27.0	42.6	23.0	10.1			
25	30	1521	1.85	57.73	27.2	42.7	22.6	10.2			
28	34	1342	2.00	50.95	27.7	42.9	21.3	10.4			
34	41	1126	2.25	42.74	28.2	43.3	19.6	10.8			
40	49	949	2.55	36.02	28.6	43.5	18.2	11.0			
22	27	1736	0.90	65.88	13.5	15.5	13.5	4.2			
27	32	1427	1.10	54.16	16.1	16.1	16.1	4.8	**FH073-11P-112M-04E**	89	234
28	34	1376	1.10	52.23	16.4	16.2	16.4	4.9			
32	39	1186	1.30	45.02	17.6	16.6	15.4	5.3			
37	45	1036	1.45	39.31	18.3	16.9	14.3	5.6			
42	51	915	1.65	34.74	18.8	17.1	13.5	5.9			
49	60	774	1.95	29.38	19.3	17.4	12.5	6.2			
57	70	665	2.30	25.25	19.6	17.6	11.6	6.4	**FH072-11P-112M-04E**	88	234
66	80	581	2.60	22.05	19.8	17.8	10.9	6.6			
70	85	546	1.75	20.72	19.9	17.4	10.9	6.1			
80	97	477	2.35	18.09	20.0	17.6	10.2	6.3			
91	110	421	2.60	15.99	20.1	17.8	9.7	6.5			

Legend see page 149

P_N = 4.0 kW											IE3
50 Hz	60 Hz				at 50 Hz						
4.0 kW	4.8 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
38	46	1006	0.85	38.20	5.6	7.9	5.6	2.0			
44	54	861	1.00	32.69	8.0	12.5	8.0	2.5			
48	59	790	1.05	29.98	8.9	12.7	8.9	2.7			
57	70	665	1.25	25.23	10.1	13.1	10.1	3.2			
63	76	610	1.35	23.14	10.5	13.3	10.2	3.3			
69	84	550	1.50	20.87	10.9	13.5	9.7	3.5			
71	86	540	0.80	20.49	**	**	**	**			
76	92	504	1.65	19.14	11.2	13.6	9.3	3.6			
82	99	468	1.80	17.75	11.3	13.7	8.9	3.8			
84	102	453	1.30	17.18	11.4	13.2	9.2	3.3			
89	108	429	1.95	16.28	11.5	13.8	8.6	3.9			
94	114	405	2.05	15.38	11.6	13.9	8.4	4.0	**FH062-11P-112M-04E**	65	232
103	124	372	2.25	14.11	11.8	14.0	8.0	4.1			
107	130	355	1.65	13.49	11.8	13.7	8.2	3.7			
112	135	342	2.40	12.99	11.9	14.1	7.7	4.2			
116	140	330	2.50	12.53	11.9	14.2	7.6	4.2			
122	147	314	2.65	11.91	12.0	14.2	7.4	4.3			
126	153	303	2.75	11.49	12.0	14.3	7.3	4.3			
136	164	282	2.95	10.70	12.1	14.3	7.1	4.4			
139	169	274	2.10	10.41	12.1	14.0	7.2	4.1			
168	204	227	2.55	8.61	12.2	14.2	6.6	4.3			
198	240	193	3.00	7.32	12.3	14.4	6.2	4.4			
53	64	726	0.85	27.56	3.2	4.2	3.2	3.1			
58	70	663	0.90	25.18	4.9	7.7	4.9	3.2			
70	84	549	1.10	20.83	6.8	10.3	6.8	3.6			
76	92	501	1.20	19.03	7.4	10.5	7.4	3.8			
85	103	449	1.35	17.04	7.9	10.6	7.9	3.9			
93	113	410	1.50	15.57	8.2	10.7	8.2	4.0			
95	116	400	0.90	15.19	8.3	10.3	8.3	3.6			
105	127	364	1.65	13.82	8.6	10.9	8.6	4.2			
115	139	333	1.80	12.63	8.8	11.0	8.8	4.3			
125	152	305	2.00	11.57	8.9	11.1	8.9	4.4			
126	153	302	1.20	11.48	9.0	10.7	9.0	4.0	**FH052-11P-112M-04E**	49	230
137	166	278	2.10	10.57	9.1	11.1	8.6	4.4			
154	187	247	1.50	9.39	9.2	10.9	8.3	4.2			
155	187	247	2.30	9.38	9.2	11.2	8.2	4.5			
160	194	238	2.35	9.04	9.3	11.3	8.0	4.6			
169	205	226	2.45	8.57	9.3	11.3	7.9	4.6			
176	212	218	2.50	8.26	9.3	11.3	7.7	4.6			
190	230	201	1.80	7.62	9.4	11.1	7.5	4.4			
227	275	168	2.15	6.38	9.5	11.3	7.0	4.6			
280	339	136	2.65	5.17	8.8	11.4	6.4	4.7			
291	352	131	2.75	4.98	8.7	11.4	6.3	4.7			

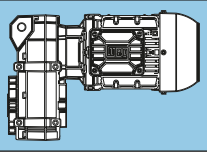
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P_N = 5.5 kW										IE3
50 Hz	60 Hz				at 50 Hz					
5.5 kW	6.6 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
6.6	8.0	7912	1.65	220.67	82.8	89.9	82.8	89.9			
7.6	9.2	6898	1.90	192.40	84.4	90.9	84.4	90.9			
7.9	9.5	6652	2.00	185.53	84.8	91.1	84.8	91.1	**FH123-11P-132S-04E**	443	242
8.8	11	5942	2.20	165.73	85.7	91.8	85.7	91.8			
10	12	5117	2.55	142.72	86.7	92.6	86.7	92.6			
12	14	4470	2.95	124.67	87.3	93.2	87.3	93.2			
5.9	7.2	8840	0.95	246.57	41.3	59.3	41.3	59.3			
6.7	8.1	7808	1.05	217.78	46.7	60.5	46.7	60.5			
7.7	9.3	6778	1.20	189.04	50.9	61.6	50.9	61.6			
8.0	9.7	6536	1.25	182.29	51.7	61.9	51.7	61.9			
9.0	11	5856	1.40	163.33	53.9	62.7	53.9	62.7	**FH103-11P-132S-04E**	303	240
10	13	5012	1.60	139.78	56.1	63.6	56.1	63.6			
12	14	4395	1.85	122.58	57.5	64.3	57.5	64.3			
14	16	3882	2.10	108.27	58.5	64.8	58.5	64.8			
16	19	3249	2.50	90.63	59.6	65.6	59.6	65.6			
18	22	2911	2.75	81.20	60.0	65.9	60.0	65.9			
9.1	11	5800	0.80	161.76	**	**	**	**			
9.4	11	5593	0.85	155.99	18.4	29.4	18.4	29.4			
10	12	5122	0.90	142.85	23.3	38.2	23.3	38.2			
11	13	4934	0.95	137.63	24.8	38.5	24.8	38.5			
12	15	4330	1.05	120.77	29.0	39.3	29.0	39.3			
13	15	4199	1.10	117.13	29.8	39.4	29.8	39.4			
14	17	3748	1.25	104.54	32.1	40.0	32.1	40.0	**FH093-11P-132S-04E**	209	238
16	19	3320	1.40	92.59	33.9	40.6	33.9	40.6			
18	22	2871	1.60	80.09	35.5	41.2	35.5	41.2			
19	23	2769	1.65	77.23	35.9	41.3	35.9	41.3			
21	26	2443	1.85	68.15	36.8	41.8	36.8	41.8			
25	30	2079	2.20	57.99	37.7	42.2	37.7	42.2			
29	35	1794	2.55	50.03	38.3	42.6	38.3	42.6			
13	16	3948	0.80	110.11	**	**	**	**			
14	17	3633	0.85	101.32	12.1	18.6	12.1	6.9			
16	19	3338	0.90	93.11	16.1	27.1	16.1	7.4			
17	21	3047	1.00	84.99	19.0	33.3	19.0	7.8			
18	22	2870	1.05	80.04	20.4	36.4	20.4	8.1			
20	25	2568	1.15	71.62	22.5	41.0	22.5	8.5	**FH083-11P-132S-04E**	155	236
21	25	2505	1.20	69.87	22.9	41.1	22.9	8.6			
24	29	2146	1.30	59.86	24.8	41.7	24.7	9.2			
25	31	2070	1.35	57.73	25.2	41.8	24.2	9.3			
29	35	1827	1.45	50.95	26.2	42.2	22.6	9.7			
34	41	1532	1.65	42.74	27.2	42.6	20.8	10.1			
41	49	1291	1.85	36.02	27.9	43.0	19.1	10.5			
43	52	1214	2.30	33.87	28.0	43.1	18.7	10.6	**FH082-11P-132S-04E**	146	236
49	59	1076	2.80	30.00	28.3	43.3	17.6	10.8			
27	33	1942	0.80	54.16	**	**	**	**	**FH073-11P-132S-04E**	107	234
28	34	1873	0.85	52.23	12.0	15.2	12.0	3.9			
33	39	1614	0.95	45.02	14.6	15.7	14.6	4.5			
37	45	1409	1.10	39.31	16.2	16.1	15.6	4.9			
42	51	1246	1.25	34.74	17.2	16.5	14.6	5.2			
50	60	1053	1.45	29.38	18.2	16.9	13.4	5.6			
58	70	905	1.70	25.25	18.8	17.2	12.4	5.9			
66	80	791	1.90	22.05	19.2	17.4	11.6	6.1			
71	85	743	1.30	20.72	19.4	16.8	11.6	5.6	**FH072-11P-132S-04E**	106	234
78	93	677	2.25	18.89	19.6	17.6	10.7	6.4			
80	97	653	2.30	18.21	19.6	17.7	10.6	6.4			
81	98	649	1.75	18.09	19.6	17.1	10.9	5.8			
91	110	577	2.65	16.08	19.8	17.8	10.0	6.6			
92	110	573	1.95	15.99	19.8	17.3	10.2	6.1			
108	131	485	2.30	13.52	20.0	17.6	9.5	6.3			
126	152	417	2.65	11.62	20.1	17.8	8.8	6.5			

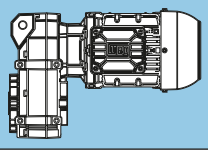
Legend see page 149

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P_N = 5.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
5.5 kW	6.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
49	59	1075	0.80	29.98	**	**	**	**			
58	70	905	0.95	25.23	7.4	11.9	7.4	2.4			
63	76	830	1.00	23.14	8.4	12.5	8.4	2.6			
70	85	748	1.10	20.87	9.3	12.8	9.3	2.9			
77	92	686	1.20	19.14	9.9	13.0	9.9	3.1			
83	99	636	1.30	17.75	10.3	13.2	9.7	3.2			
85	103	616	0.95	17.18	10.4	12.5	10.1	2.6			
90	108	584	1.45	16.28	10.7	13.3	9.3	3.4			
95	115	551	1.50	15.38	10.9	13.5	9.0	3.5			
104	125	506	1.65	14.11	11.1	13.6	8.6	3.6			
109	131	484	1.20	13.49	11.3	13.1	8.8	3.2			
113	136	466	1.80	12.99	11.4	13.7	8.2	3.8	**FH062-11P-132S-04E**	83	232
117	141	449	1.85	12.53	11.4	13.8	8.1	3.8			
123	148	427	1.95	11.91	11.5	13.9	7.9	3.9			
128	154	412	2.00	11.49	11.6	13.9	7.8	4.0			
137	165	384	2.15	10.70	11.7	14.0	7.5	4.1			
141	170	373	1.55	10.41	11.8	13.6	7.7	3.6			
149	180	352	2.35	9.81	11.8	14.1	7.2	4.1			
170	205	309	1.85	8.61	12.0	13.9	7.0	3.9			
200	241	262	2.20	7.32	12.1	14.1	6.5	4.1			
231	278	228	2.55	6.35	12.2	14.2	6.1	4.3			
273	329	192	3.00	5.36	12.3	14.4	5.6	4.4			
70	85	747	0.85	20.83	2.3	2.3	2.3	2.3			
77	93	682	0.90	19.03	4.5	6.9	4.5	3.2			
86	104	611	1.00	17.04	5.9	9.9	5.9	3.4			
94	113	558	1.10	15.57	6.7	10.3	6.7	3.6			
106	128	495	1.25	13.82	7.5	10.5	7.5	3.8			
116	140	453	1.35	12.63	7.9	10.6	7.9	3.9			
127	153	415	1.45	11.57	8.2	10.7	8.2	4.0			
128	154	412	0.90	11.48	8.2	10.2	8.2	3.5			
139	167	379	1.55	10.57	8.5	10.8	8.5	4.1	**FH052-11P-132S-04E**	68	230
156	188	336	1.70	9.38	8.8	11.0	8.6	4.3			
162	195	324	1.75	9.04	8.8	11.0	8.5	4.3			
171	206	307	1.80	8.57	8.9	11.1	8.3	4.4			
177	214	296	1.85	8.26	9.0	11.1	8.1	4.4			
192	232	273	1.35	7.62	9.1	10.8	7.9	4.1			
230	277	229	1.60	6.38	9.3	11.0	7.3	4.3			
283	341	185	1.95	5.17	9.1	11.2	6.7	4.5			
294	354	179	2.05	4.98	8.9	11.2	6.5	4.5			

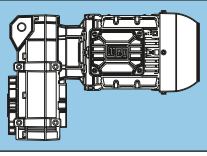
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P_N = 7.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
7.5 kW	9.0 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
6.6	8.0	10789	1.25	220.67	76.8	87.1	76.8	87.1	**FH123-11P-L132M-04F**	457	242
7.6	9.2	9407	1.40	192.40	80.0	88.4	80.0	88.4			
7.9	9.5	9071	1.45	185.53	80.7	88.8	80.7	88.8			
8.8	11	8103	1.65	165.73	82.5	89.7	82.5	89.7			
10	12	6978	1.90	142.72	84.3	90.8	84.3	90.8			
12	15	5907	2.25	120.82	85.8	91.8	85.8	91.8			
14	17	5150	2.55	105.34	86.6	92.5	86.6	92.5			
16	20	4436	2.95	90.74	87.3	93.2	87.3	93.2			
6.7	8.1	10647	0.80	217.78	**	**	**	**	**FH103-11P-L132M-04F**	317	240
7.7	9.4	9242	0.90	189.04	38.9	58.9	38.9	58.9			
8.0	9.7	8912	0.90	182.29	40.9	59.3	40.9	59.3			
9.0	11	7985	1.05	163.33	45.8	60.3	45.8	60.3			
10	13	6834	1.20	139.78	50.6	61.6	50.6	61.6			
12	15	5902	1.40	120.72	53.7	62.6	53.7	62.6			
14	16	5293	1.55	108.27	55.4	63.3	55.4	63.3			
16	20	4431	1.85	90.63	57.5	64.2	57.5	64.2			
18	22	3970	2.05	81.20	58.4	64.7	58.4	64.7			
21	25	3397	2.40	69.49	59.3	65.4	59.3	65.4			
24	29	2934	2.75	60.02	60.0	65.9	60.0	65.9			
41	49	1757	2.50	35.93	61.3	67.2	61.3	67.2	**FH102-11P-L132M-04F**	291	240
79	95	910	2.50	18.62	51.4	68.0	51.4	68.0			
12	15	5905	0.80	120.77	**	**	**	**	**FH093-11P-L132M-04F**	223	238
13	15	5727	0.80	117.13	**	**	**	**			
14	18	4940	0.95	101.04	24.8	38.5	24.8	38.5			
16	19	4527	1.00	92.59	27.8	39.0	27.8	39.0			
18	22	3916	1.15	80.09	31.3	39.8	31.3	39.8			
19	23	3776	1.20	77.23	32.0	40.0	32.0	40.0			
21	26	3332	1.40	68.15	33.9	40.6	33.9	40.6			
25	31	2835	1.60	57.99	35.7	41.2	35.7	41.2			
29	35	2446	1.85	50.03	36.8	41.8	36.8	41.8			
38	46	1890	2.30	38.65	38.1	42.5	38.1	42.5	**FH092-11P-L132M-04F**	209	238
43	52	1669	2.70	34.13	38.5	42.8	38.5	42.8			
51	62	1397	2.50	28.57	38.9	43.1	38.9	43.1			
77	93	929	2.30	19.01	39.5	43.6	39.5	43.6			
104	126	687	2.50	14.05	37.6	44.0	37.6	44.0			
18	22	3913	0.80	80.04	**	**	**	**	**FH083-11P-L132M-04F**	169	236
20	25	3502	0.85	71.62	14.0	22.6	14.0	7.1			
21	25	3416	0.85	69.87	15.1	24.9	15.1	7.2			
24	30	2927	0.95	59.86	20.0	35.5	20.0	8.0			
25	31	2822	1.00	57.73	20.8	37.2	20.8	8.1			
29	35	2491	1.10	50.95	23.0	41.2	23.0	8.7			
34	41	2090	1.20	42.74	25.1	41.8	22.5	9.3			
41	49	1761	1.40	36.02	26.4	42.3	20.6	9.8			
43	52	1656	1.70	33.87	26.8	42.4	20.0	9.9	**FH082-11P-L132M-04F**	160	236
49	59	1467	2.05	30.00	27.4	42.7	18.8	10.2			
56	68	1269	2.40	25.95	27.9	43.0	17.6	10.5			
66	80	1080	2.80	22.08	28.3	43.3	16.3	10.8			
103	125	693	2.55	14.18	29.0	43.8	13.6	11.3			
119	144	600	2.95	12.27	29.1	43.9	12.7	11.4			

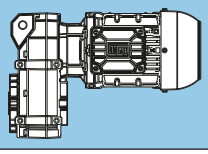
Legend see page 149

*** ... on request*

P_N = 7.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
7.5 kW	9.0 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
37	45	1922	0.80	39.31	**	**	**	**	**FH072-11P-L132M-04F**	120	234
42	51	1698	0.90	34.74	13.9	15.5	13.9	4.3			
50	60	1436	1.05	29.38	16.0	16.1	14.6	4.8			
58	70	1234	1.25	25.25	17.3	16.5	13.5	5.2			
66	80	1078	1.40	22.05	18.1	16.8	12.6	5.6			
71	85	1013	0.95	20.72	18.4	16.0	12.7	4.8			
78	94	924	1.65	18.89	18.8	17.1	11.6	5.9			
80	97	890	1.70	18.21	18.9	17.2	11.4	5.9			
81	98	884	1.25	18.09	18.9	16.4	11.8	5.1			
91	110	786	1.95	16.08	19.2	17.4	10.7	6.1			
92	111	782	1.40	15.99	19.3	16.7	11.0	5.5			
108	131	661	1.70	13.52	19.6	17.1	10.2	5.8			
109	131	660	2.30	13.49	19.6	17.7	9.8	6.4			
126	152	568	1.95	11.62	19.8	17.3	9.4	6.1			
129	156	555	2.75	11.36	19.9	17.9	9.0	6.6			
144	175	496	2.25	10.14	20.0	17.5	8.8	6.3			
169	204	425	2.65	8.69	20.1	17.8	8.2	6.5			
175	211	410	2.50	8.38	20.1	17.8	8.1	6.5			
70	85	1020	0.85	20.87	5.3	7.3	5.3	2.0	**FH062-11P-L132M-04F**	97	232
77	92	936	0.90	19.14	6.9	10.7	6.9	2.2			
83	100	868	0.95	17.75	7.9	12.4	7.9	2.5			
90	109	796	1.05	16.28	8.8	12.6	8.8	2.7			
95	115	752	1.10	15.38	9.3	12.8	9.3	2.9			
104	125	690	1.20	14.11	9.9	13.0	9.4	3.0			
109	131	660	0.90	13.49	10.1	12.3	9.2	2.4			
113	136	635	1.30	12.99	10.3	13.2	9.0	3.2			
117	141	613	1.35	12.53	10.5	13.3	8.8	3.3			
123	149	582	1.45	11.91	10.7	13.3	8.6	3.4			
128	154	562	1.50	11.49	10.8	13.4	8.4	3.5			
137	165	523	1.60	10.70	11.0	13.6	8.1	3.6			
141	170	509	1.15	10.41	11.1	13.0	8.4	3.0			
149	180	480	1.75	9.81	11.3	13.7	7.8	3.7			
170	206	421	1.40	8.61	11.6	13.4	7.6	3.4			
200	242	358	1.60	7.32	11.8	13.7	7.0	3.7			
231	279	310	1.85	6.35	12.0	13.9	6.5	3.9			
273	330	262	2.20	5.36	12.1	14.1	6.0	4.1			
283	342	253	2.30	5.17	12.2	14.1	5.9	4.2			
332	401	216	2.65	4.41	12.2	14.3	5.5	4.3			
94	114	761	0.80	15.57	**	**	**	**	**FH052-11P-L132M-04F**	82	230
106	128	676	0.90	13.82	4.7	7.3	4.7	3.2			
116	140	617	1.00	12.63	5.8	9.7	5.8	3.4			
127	153	566	1.10	11.57	6.6	10.3	6.6	3.6			
139	167	517	1.15	10.57	7.2	10.4	7.2	3.7			
156	189	459	1.25	9.38	7.8	10.6	7.8	3.9			
162	196	442	1.30	9.04	8.0	10.6	8.0	3.9			
171	207	419	1.35	8.57	8.2	10.7	8.2	4.0			
177	214	404	1.35	8.26	8.3	10.8	8.3	4.1			
192	232	373	1.00	7.62	8.5	10.4	8.5	3.7			
230	277	312	1.20	6.38	8.9	10.6	7.8	3.9			
283	342	253	1.45	5.17	9.2	10.9	7.0	4.2			
294	355	243	1.50	4.98	9.2	10.9	6.9	4.2			

Legend see page 149

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P_N = 9.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
9.2 kW	11 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
6.6	8.0	13279	1.00	220.67	69.5	84.7	69.5	84.7	**FH123-11P-L132M-04G**	462	242
7.6	9.2	11578	1.15	192.40	74.7	86.3	74.7	86.3			
7.9	9.5	11165	1.20	185.53	75.9	86.7	75.9	86.7			
8.8	11	9973	1.35	165.73	78.8	87.9	78.8	87.9			
10	12	8589	1.55	142.72	81.6	89.2	81.6	89.2			
12	15	7271	1.80	120.82	83.9	90.5	83.9	90.5			
14	17	6339	2.10	105.34	85.2	91.4	85.2	91.4			
16	19	5461	2.40	90.74	86.3	92.2	86.3	92.2			
19	23	4702	2.80	78.14	87.1	93.0	87.1	93.0			
8.9	11	9829	0.85	163.33	34.7	58.2	34.7	58.2	**FH103-11P-L132M-04G**	322	240
10	13	8412	1.00	139.78	43.7	59.8	43.7	59.8			
12	15	7265	1.15	120.72	49.0	61.1	49.0	61.1			
13	16	6515	1.25	108.27	51.8	61.9	51.8	61.9			
16	19	5454	1.50	90.63	55.0	63.1	55.0	63.1			
18	22	4886	1.65	81.20	56.4	63.7	56.4	63.7			
21	25	4182	1.95	69.49	58.0	64.5	58.0	64.5			
24	29	3612	2.25	60.02	59.0	65.1	59.0	65.1			
34	41	2572	2.50	42.74	60.5	66.3	60.5	66.3	**FH102-11P-L132M-04G**	296	240
41	49	2162	2.00	35.93	60.9	66.8	60.9	66.8			
66	80	1332	2.50	22.14	55.1	67.5	55.1	67.5			
78	95	1121	2.00	18.62	52.1	67.8	52.1	67.8			
16	19	5572	0.85	92.59	18.7	30.0	18.7	30.0	**FH093-11P-L132M-04G**	228	238
18	22	4820	0.95	80.09	25.7	38.6	25.7	38.6			
19	23	4648	1.00	77.23	27.0	38.8	27.0	38.8			
21	26	4101	1.10	68.15	30.3	39.6	30.3	39.6			
25	30	3490	1.30	57.99	33.2	40.4	33.2	40.4			
29	35	3011	1.50	50.03	35.1	41.0	35.1	41.0			
38	46	2326	1.90	38.65	37.1	41.9	37.1	41.9	**FH092-11P-L132M-04G**	214	238
43	52	2054	2.20	34.13	37.7	42.3	37.7	42.3			
49	60	1783	2.55	29.63	38.3	42.6	38.3	42.6			
51	62	1719	2.00	28.57	38.4	42.7	38.4	42.7			
57	69	1541	2.95	25.60	38.7	43.0	38.7	43.0			
77	93	1144	1.90	19.01	39.3	43.3	39.3	43.3			
87	105	1010	2.65	16.79	39.4	43.5	39.4	43.5			
104	126	846	2.00	14.05	38.2	43.7	38.2	43.7			
24	29	3602	0.80	59.86	**	**	**	**	**FH083-11P-L132M-04G**	174	236
25	31	3474	0.80	57.73	**	**	**	**			
29	35	3066	0.90	50.95	18.8	32.9	18.8	7.8			
34	41	2572	1.00	42.74	22.5	41.0	22.5	8.5			
41	49	2168	1.10	36.02	24.7	41.7	21.8	9.2			
43	52	2038	1.40	33.87	25.3	41.9	21.2	9.4	**FH082-11P-L132M-04G**	165	236
49	59	1805	1.70	30.00	26.2	42.2	19.8	9.7			
56	68	1562	1.95	25.95	27.1	42.6	18.5	10.1			
66	80	1329	2.30	22.08	27.8	43.0	17.0	10.5			
78	94	1131	2.70	18.79	28.2	43.3	15.7	10.8			
103	124	853	2.10	14.18	28.8	43.5	14.1	11.0			
119	144	738	2.40	12.27	28.9	43.7	13.2	11.2			
140	169	628	2.85	10.44	29.1	43.9	12.3	11.4			

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P_N = 9.2 kW										IE3
50 Hz	60 Hz				at 50 Hz					
9.2 kW	11 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
50	60	1768	0.85	29.38	13.2	15.4	13.2	4.1		
58	70	1519	1.00	25.25	15.4	15.9	13.3	4.7		
66	80	1327	1.15	22.05	16.8	16.3	13.3	5.0		
70	85	1247	0.80	20.72	**	**	**	**		
77	93	1137	1.35	18.89	17.8	16.7	12.3	5.4		
80	97	1096	1.40	18.21	18.0	16.8	12.1	5.5		
81	98	1089	1.05	18.09	18.1	15.8	12.4	4.5		
91	110	968	1.60	16.08	18.6	17.0	11.3	5.8		
108	131	812	1.85	13.49	19.2	17.3	10.3	6.1	**FH072-11P-L132M-04G**	125	234
126	152	699	1.60	11.62	19.5	16.9	9.9	5.7		
129	155	684	2.20	11.36	19.6	17.6	9.5	6.4		
144	174	610	1.85	10.14	19.7	17.2	9.3	6.0		
168	203	523	2.15	8.69	19.9	17.5	8.6	6.2		
174	211	504	2.00	8.38	20.0	17.5	8.4	6.3		
197	239	445	2.55	7.40	20.1	17.7	7.9	6.4		
235	284	374	3.00	6.21	20.2	17.9	7.3	6.7		
82	99	1068	0.80	17.75	**	**	**	**		
90	108	980	0.85	16.28	6.1	9.0	6.1	2.1		
95	115	926	0.90	15.38	7.1	11.2	7.1	2.3		
103	125	849	1.00	14.11	8.2	12.5	8.2	2.5		
112	136	782	1.05	12.99	9.0	12.7	9.0	2.8		
117	141	754	1.10	12.53	9.3	12.8	9.1	2.9		
123	148	717	1.15	11.91	9.6	12.9	9.0	3.0		
127	154	691	1.20	11.49	9.8	13.0	9.0	3.0		
136	165	644	1.30	10.70	10.2	13.2	8.7	3.2	**FH062-11P-L132M-04G**	102	232
140	170	626	0.95	10.41	10.4	12.5	8.4	2.5		
149	180	590	1.40	9.81	10.6	13.3	8.3	3.4		
170	205	518	1.15	8.61	11.1	13.0	8.1	3.0		
199	241	441	1.30	7.32	11.5	13.3	7.5	3.3		
230	278	382	1.50	6.35	11.7	13.6	6.9	3.6		
272	329	323	1.80	5.36	12.0	13.8	6.3	3.9		
282	341	311	1.85	5.17	12.0	13.9	6.2	3.9		
331	400	265	2.20	4.41	12.1	14.1	5.7	4.1		
116	140	760	0.80	12.63	**	**	**	**		
126	153	696	0.90	11.57	4.1	6.1	4.1	3.2		
138	167	636	0.95	10.57	5.5	9.0	5.5	3.3		
156	188	564	1.00	9.38	6.6	10.3	6.6	3.6		
162	195	544	1.05	9.04	6.9	10.3	6.9	3.6		
170	206	516	1.10	8.57	7.2	10.4	7.2	3.7	**FH052-11P-L132M-04G**	87	230
177	214	497	1.10	8.26	7.4	10.5	7.4	3.8		
192	232	459	0.80	7.62	**	**	**	**		
229	277	384	0.95	6.38	8.4	10.3	8.2	3.6		
282	341	311	1.20	5.17	8.9	10.7	7.4	4.0		
293	354	300	1.25	4.98	9.0	10.7	7.2	4.0		

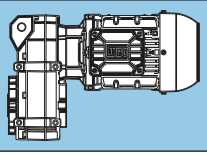
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P_N = 11 kW											IE3
50 Hz	60 Hz				at 50 Hz						
11 kW	13 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.7	6.8	18567	1.00	259.81	75.8	114.8	75.8	114.8			
6.6	7.9	15991	1.15	223.77	85.6	116.9	85.6	116.9			
7.6	9.2	13832	1.35	193.55	92.1	118.6	92.1	118.6			
8.6	10	12201	1.50	170.73	96.1	120.0	96.1	120.0			
10	12	10479	1.75	146.63	99.6	121.4	99.6	121.4	**FH153-22P-160M-04E**	754	244
12	15	8718	2.10	122.00	102.6	122.8	102.6	122.8			
14	16	7694	2.35	107.66	104.1	122.8	104.1	122.8			
15	19	6787	2.70	94.97	105.2	123.7	105.2	123.7			
6.7	8.0	15770	0.85	220.67	59.5	82.3	59.5	82.3			
7.6	9.2	13749	0.95	192.40	67.9	84.3	67.9	84.3			
8.9	11	11843	1.10	165.73	74.0	86.1	74.0	86.1			
10	12	10199	1.30	142.72	78.2	87.7	78.2	87.7			
12	15	8634	1.55	120.82	81.5	89.2	81.5	89.2			
14	17	7528	1.75	105.34	83.5	90.2	83.5	90.2	**FH123-22P-160M-04E**	524	242
16	20	6485	2.05	90.74	85.0	91.3	85.0	91.3			
17	20	6364	2.05	89.06	85.2	91.4	85.2	91.4			
19	23	5584	2.35	78.14	86.2	92.1	86.2	92.1			
20	24	5237	2.50	73.28	86.5	92.5	86.5	92.5			
22	26	4878	2.70	68.26	86.9	92.8	86.9	92.8			
37	44	2857	2.70	39.98	88.5	94.7	88.5	94.7	**FH122-22P-160M-04E**	483	242
77	93	1371	2.70	19.18	77.8	96.0	77.8	96.0			
11	13	9989	0.85	139.78	33.5	55.9	33.5	55.9			
12	15	8627	0.95	120.72	42.6	59.6	42.6	59.6			
14	17	7295	1.10	102.08	48.9	61.1	48.9	61.1			
16	19	6716	1.20	93.98	51.1	61.7	51.1	61.7			
18	22	5803	1.40	81.20	54.0	62.7	54.0	62.7	**FH103-22P-160M-04E**	384	240
21	26	4966	1.65	69.49	56.3	63.6	56.3	63.6			
22	26	4830	1.70	67.59	56.6	63.8	56.6	63.8			
24	30	4289	1.90	60.02	57.8	64.4	57.8	64.4			
29	35	3627	2.25	50.75	59.0	65.1	59.0	65.1			
35	43	2959	2.75	41.41	60.0	65.9	60.0	65.9			
34	42	3054	2.10	42.74	59.9	65.8	59.9	65.8			
39	48	2663	2.70	37.26	60.4	66.2	60.4	66.2	**FH102-22P-160M-04E**	358	240
66	80	1582	2.10	22.14	55.8	67.2	55.8	67.2			
76	92	1379	2.70	19.30	53.1	67.5	53.1	67.5			
18	22	5723	0.80	80.09	**	**	**	**			
21	26	4925	0.95	68.92	24.9	38.5	24.9	38.5			
22	26	4870	0.95	68.15	25.3	38.5	25.3	38.5			
25	31	4144	1.10	57.99	30.1	39.5	30.1	39.5			
27	33	3851	1.20	53.89	31.6	39.9	31.6	39.9	**FH093-22P-160M-04E**	290	238
29	35	3575	1.30	50.03	32.9	40.3	32.9	40.3			
35	42	2999	1.50	41.97	35.1	41.0	35.1	41.0			
43	52	2438	1.75	34.12	36.8	41.8	36.8	41.8			
55	67	1907	2.05	26.68	38.1	42.5	38.1	42.5			
43	52	2439	1.85	34.13	36.8	41.8	36.8	41.8			
50	60	2117	2.15	29.63	37.6	42.2	37.6	42.2			
57	69	1829	2.50	25.60	38.2	42.6	38.2	42.6			
67	81	1566	2.90	21.91	38.7	42.9	38.7	42.9	**FH092-22P-160M-04E**	276	238
88	106	1200	2.25	16.79	39.2	43.2	39.2	43.2			
101	122	1041	2.60	14.57	39.1	43.4	39.1	43.4			
117	141	900	3.00	12.59	37.1	43.7	37.1	43.7			
34	42	3054	0.85	42.74	18.9	33.1	18.9	7.8			
41	49	2574	0.95	36.02	22.5	41.0	22.5	8.5	**FH083-22P-160M-04E**	236	236
50	60	2110	1.10	29.53	25.0	41.7	20.7	9.2			

Legend see page 149

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P_N = 11 kW											IE3
50 Hz 11 kW	60 Hz 13 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
49	59	2144	1.40	30.00	24.8	41.7	20.8	9.2			
57	68	1854	1.65	25.95	26.1	42.1	19.3	9.6			
67	80	1578	1.95	22.08	27.0	42.6	17.7	10.1			
78	94	1343	2.25	18.79	27.7	42.9	16.4	10.4			
91	110	1158	2.60	16.21	28.2	43.2	15.2	10.7	**FH082-22P-160M-04E**	227	236
104	125	1013	1.75	14.18	28.5	43.2	14.7	10.7			
120	145	877	2.05	12.27	28.7	43.5	13.7	11.0			
141	170	746	2.40	10.44	28.9	43.7	12.7	11.2			
166	200	635	2.80	8.88	29.1	43.9	11.7	11.4			
67	80	1576	1.00	22.05	15.0	15.8	12.1	4.5			
78	94	1350	1.15	18.89	16.6	16.2	12.2	5.0			
91	110	1149	1.35	16.08	17.8	16.7	11.9	5.4			
109	132	964	1.60	13.49	18.6	17.0	10.8	5.8			
129	156	812	1.85	11.36	19.2	17.3	9.9	6.1			
145	175	725	1.55	10.14	19.4	16.9	9.7	5.6	**FH072-22P-160M-04E**	187	234
158	190	666	2.30	9.32	19.6	17.6	8.9	6.4			
169	204	621	1.80	8.69	19.7	17.2	8.9	5.9			
199	240	529	2.15	7.40	19.9	17.4	8.2	6.2			
237	286	444	2.55	6.21	20.1	17.7	7.6	6.4			
281	339	374	3.00	5.23	19.2	17.9	7.0	6.7			
104	126	1008	0.85	14.11	5.5	7.7	5.5	2.0			
113	137	928	0.90	12.99	7.1	11.2	7.1	2.3			
123	149	851	1.00	11.91	8.2	12.5	8.2	2.5			
137	166	765	1.10	10.70	9.2	12.8	8.4	2.8			
150	181	701	1.20	9.81	9.8	13.0	8.3	3.0	**FH062-22P-160M-04E**	164	232
231	280	454	1.30	6.35	11.4	13.2	7.3	3.3			
274	331	383	1.50	5.36	11.7	13.6	6.6	3.6			
333	402	315	1.85	4.41	12.0	13.9	6.0	3.9			

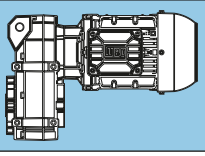
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P_N = 15 kW										IE3
50 Hz	60 Hz				at 50 Hz					
15 kW	18 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
6.5	7.9	21881	0.85	223.77	57.9	97.8	57.9	97.8		
7.6	9.2	18926	1.00	193.55	74.2	114.5	74.2	114.5		
8.6	10	16694	1.10	170.73	83.2	116.3	83.2	116.3		
10	12	14338	1.30	146.63	90.7	118.2	90.7	118.2		
12	15	11929	1.55	122.00	96.7	120.2	96.7	120.2	**FH153-22P-160L-04F**	777	244
14	18	9898	1.85	101.23	100.7	121.9	100.7	121.9		
15	19	9286	1.95	94.97	101.7	121.4	101.7	121.4		
18	22	7975	2.30	81.56	103.7	122.6	103.7	122.6		
22	26	6635	2.75	67.86	105.4	123.8	105.4	123.8		
8.8	11	16205	0.85	165.73	57.4	81.9	57.4	81.9		
10	12	13955	0.95	142.72	67.1	84.1	67.1	84.1		
12	15	11814	1.15	120.82	74.1	86.1	74.1	86.1		
14	17	10300	1.30	105.34	78.0	87.6	78.0	87.6		
16	20	8873	1.50	90.74	81.1	88.9	81.1	88.9		
19	23	7641	1.75	78.14	83.3	90.1	83.3	90.1	**FH123-22P-160L-04F**	547	242
20	24	7165	1.85	73.28	84.0	90.6	84.0	90.6		
21	26	6675	1.95	68.26	84.8	91.1	84.8	91.1		
25	30	5765	2.25	58.96	85.9	91.9	85.9	91.9		
30	36	4768	2.60	48.76	87.0	92.9	87.0	92.9		
37	44	3923	2.95	40.12	87.8	93.7	87.8	93.7		
37	44	3909	1.95	39.98	87.8	93.7	87.8	93.7		
43	52	3367	3.00	34.43	88.2	94.3	88.2	94.3	**FH122-22P-160L-04F**	506	242
76	93	1875	1.95	19.18	79.2	95.4	79.2	95.4		
89	107	1615	3.00	16.52	75.2	95.7	75.2	95.7		
14	17	9982	0.85	102.08	33.5	55.9	33.5	55.9		
16	19	9190	0.90	93.98	39.2	58.9	39.2	58.9		
18	22	7940	1.05	81.20	46.1	60.3	46.1	60.3		
21	26	6795	1.20	69.49	50.8	61.6	50.8	61.6		
22	26	6609	1.25	67.59	51.5	61.8	51.5	61.8	**FH103-22P-160L-04F**	407	240
24	30	5869	1.40	60.02	53.8	62.6	53.8	62.6		
29	35	4962	1.65	50.75	56.3	63.6	56.3	63.6		
35	43	4049	2.00	41.41	58.2	64.7	58.2	64.7		
44	53	3285	2.40	33.60	59.5	65.5	59.5	65.5		
34	42	4179	1.55	42.74	58.0	64.5	58.0	64.5		
39	48	3643	1.95	37.26	58.9	65.1	58.9	65.1		
46	55	3139	2.55	32.10	59.7	65.7	59.7	65.7		
53	64	2703	3.00	27.64	60.3	66.2	60.3	66.2	**FH102-22P-160L-04F**	381	240
66	80	2165	1.55	22.14	57.2	66.5	57.2	66.5		
76	92	1887	1.95	19.30	54.4	66.8	54.4	66.8		
88	107	1626	3.00	16.63	51.6	67.2	51.6	67.2		
25	31	5670	0.80	57.99	**	**	**	**		
27	33	5269	0.90	53.89	21.9	36.8	21.9	36.8		
29	35	4892	0.95	50.03	25.2	38.5	25.2	38.5	**FH093-22P-160L-04F**	313	238
35	42	4104	1.10	41.97	30.3	39.6	30.3	39.6		
43	52	3336	1.30	34.12	33.9	40.6	33.9	40.6		
55	67	2609	1.50	26.68	36.3	41.5	36.3	41.5		
43	52	3337	1.35	34.13	33.9	40.6	33.9	40.6		
49	60	2897	1.60	29.63	35.5	41.2	35.5	41.2		
57	69	2503	1.80	25.60	36.6	41.7	36.6	41.7		
67	81	2142	2.15	21.91	37.5	42.2	37.5	42.2		
77	94	1850	2.45	18.92	38.2	42.5	38.2	42.5		
87	106	1642	1.65	16.79	38.5	42.5	38.5	42.5	**FH092-22P-160L-04F**	299	238
92	111	1565	2.90	16.00	38.7	42.9	38.7	42.9		
101	122	1425	1.90	14.57	38.9	42.9	38.9	42.9		
116	141	1231	2.20	12.59	38.3	43.2	38.3	43.2		
136	165	1054	2.55	10.78	36.1	43.4	36.1	43.4		
157	191	910	2.95	9.31	34.3	43.6	34.3	43.6		

Legend see page 149

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P_N = 15 kW											IE3
50 Hz	60 Hz				at 50 Hz						
15 kW	18 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
50	60	2887	0.80	29.53	**	**	**	**	**FH083-22P-160L-04F**	259	236
49	59	2933	1.05	30.00	19.9	35.3	19.9	8.0			
56	68	2537	1.20	25.95	22.7	41.1	21.4	8.6			
66	80	2159	1.40	22.08	24.7	41.7	19.5	9.2			
78	94	1837	1.65	18.79	26.1	42.2	17.9	9.7			
90	110	1585	1.90	16.21	27.0	42.6	16.5	10.1			
103	125	1387	1.30	14.18	27.6	42.6	16.0	10.1			
108	131	1330	2.30	13.60	27.8	43.0	15.1	10.5	**FH082-22P-160L-04F**	250	236
119	145	1200	1.50	12.27	28.1	42.9	14.8	10.4			
132	160	1081	2.80	11.06	28.3	43.3	13.6	10.8			
140	170	1021	1.75	10.44	28.5	43.2	13.6	10.7			
165	200	868	2.05	8.88	28.7	43.5	12.6	11.0			
191	232	749	2.40	7.66	28.9	43.7	11.7	11.2			
228	276	629	2.85	6.43	29.1	43.9	10.8	11.4			
78	94	1847	0.85	18.89	12.3	15.2	10.1	4.0			
91	110	1572	1.00	16.08	15.0	15.8	10.3	4.5			
109	132	1319	1.15	13.49	16.8	16.3	10.4	5.1			
129	156	1111	1.40	11.36	17.9	16.7	10.4	5.5			
144	175	992	1.15	10.14	18.5	16.1	9.8	4.8			
157	190	911	1.65	9.32	18.8	17.1	9.8	5.9	**FH072-22P-160L-04F**	210	234
169	204	850	1.35	8.69	19.0	16.5	9.7	5.3			
198	240	724	1.55	7.40	19.4	16.9	9.0	5.6			
236	286	607	1.85	6.21	19.7	17.2	8.2	6.0			
280	339	511	2.20	5.23	19.8	17.5	7.5	6.2			
341	414	419	2.60	4.29	18.4	17.8	6.8	6.5			
137	166	1046	0.80	10.70	**	**	**	**			
149	181	959	0.90	9.81	6.5	9.9	6.5	2.2			
231	280	621	0.95	6.35	10.4	12.5	6.5	2.6	**FH062-22P-160L-04F**	187	232
273	331	524	1.10	5.36	11.0	12.9	6.6	3.0			
332	402	431	1.35	4.41	11.5	13.3	6.5	3.4			

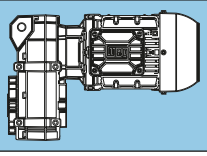
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P_N = 18.5 kW										IE3
50 Hz	60 Hz				at 50 Hz					
18.5 kW	22 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
7.6	9.2	23262	0.80	193.55	**	**	**	**		
8.6	10	20520	0.90	170.73	66.2	113.2	66.2	113.2		
10	12	17623	1.05	146.63	79.7	115.5	79.7	115.5		
12	14	14960	1.25	124.47	88.9	116.1	88.9	116.1		
14	16	12939	1.40	107.66	94.3	118.0	94.3	118.0		
15	18	12167	1.50	101.23	96.2	120.0	96.2	120.0	**FH153-22P-180M-04E**	791	244
17	21	10146	1.80	84.42	100.3	121.7	100.3	121.7		
18	22	9802	1.85	81.56	100.9	120.9	100.9	120.9		
20	24	8721	2.10	72.56	102.6	122.8	102.6	122.8		
22	26	8156	2.25	67.86	103.4	122.4	103.4	122.4		
26	32	6768	2.70	56.31	105.2	123.7	105.2	123.7		
10	12	17153	0.80	142.72	**	**	**	**		
12	14	14984	0.90	124.67	63.0	83.1	63.0	83.1		
14	16	12943	1.05	107.69	70.6	85.0	70.6	85.0		
16	20	10906	1.20	90.74	76.5	87.0	76.5	87.0		
17	20	10704	1.25	89.06	77.0	87.2	77.0	87.2		
19	23	9391	1.40	78.14	80.0	88.5	80.0	88.5		
20	24	8807	1.50	73.28	81.2	89.0	81.2	89.0		
22	26	8204	1.60	68.26	82.3	89.6	82.3	89.6	**FH123-22P-180M-04E**	561	242
24	29	7240	1.80	60.24	83.9	90.5	83.9	90.5		
25	30	7086	1.85	58.96	84.2	90.7	84.2	90.7		
29	35	6146	2.10	51.14	85.5	91.6	85.5	91.6		
30	36	5860	2.10	48.76	85.8	91.9	85.8	91.9		
37	44	4822	2.40	40.12	87.0	92.9	87.0	92.9		
45	54	3964	2.75	32.98	87.7	93.7	87.7	93.7		
37	44	4805	1.60	39.98	87.0	92.9	87.0	92.9		
43	52	4138	2.45	34.43	87.6	93.5	87.6	93.5	**FH122-22P-180M-04E**	520	242
77	93	2305	1.60	19.18	79.9	94.9	79.9	94.9		
89	107	1985	2.45	16.52	76.0	95.3	76.0	95.3		
18	22	9759	0.85	81.20	35.3	58.3	35.3	58.3		
21	26	8352	1.00	69.49	44.0	59.9	44.0	59.9		
22	26	8123	1.00	67.59	45.2	60.1	45.2	60.1		
24	30	7214	1.15	60.02	49.2	61.1	49.2	61.1		
27	33	6485	1.25	53.96	51.9	62.0	51.9	62.0	**FH103-22P-180M-04E**	421	240
29	35	6099	1.35	50.75	53.1	62.4	53.1	62.4		
35	43	4977	1.65	41.41	56.2	63.6	56.2	63.6		
44	53	4038	2.00	33.60	58.2	64.7	58.2	64.7		
55	66	3225	2.30	26.83	59.6	65.6	59.6	65.6		
39	48	4478	1.60	37.26	57.4	64.2	57.4	64.2		
46	55	3858	2.10	32.10	58.6	64.9	58.6	64.9		
53	64	3322	2.45	27.64	59.5	65.5	59.5	65.5	**FH102-22P-180M-04E**	395	240
61	74	2901	2.80	24.14	59.5	65.9	59.5	65.9		
76	92	2320	1.60	19.30	55.4	66.3	55.4	66.3		
88	107	1999	2.45	16.63	52.5	66.7	52.5	66.7		
50	60	3561	1.30	29.63	32.9	40.3	32.9	40.3		
57	69	3077	1.50	25.60	34.8	40.9	34.8	40.9		
67	81	2633	1.75	21.91	36.3	41.5	36.3	41.5		
78	94	2274	2.00	18.92	37.2	42.0	37.2	42.0		
92	111	1923	2.35	16.00	38.0	42.5	38.0	42.5		
101	122	1751	1.55	14.57	38.3	42.4	38.3	42.4	**FH092-22P-180M-04E**	313	238
113	136	1570	2.90	13.06	38.7	42.9	38.7	42.9		
117	141	1513	1.80	12.59	38.8	42.7	38.8	42.7		
136	165	1296	2.10	10.78	37.0	43.1	37.0	43.1		
158	191	1119	2.40	9.31	34.9	43.3	34.9	43.3		
187	226	946	2.85	7.87	32.8	43.6	32.8	43.6		

Legend see page 149

*** ... on request*

P_N = 18.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
18.5 kW	22 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
57	68	3119	1.00	25.95	18.3	31.8	18.3	7.7			
67	80	2654	1.15	22.08	22.0	39.9	19.3	8.4			
78	94	2258	1.35	18.79	24.3	41.5	19.1	9.0			
91	110	1948	1.55	16.21	25.7	42.0	17.6	9.5			
108	131	1635	1.85	13.60	26.8	42.5	16.0	10.0			
120	145	1475	1.20	12.27	27.3	42.4	15.7	9.9			
133	160	1329	2.30	11.06	27.8	43.0	14.3	10.5	**FH082-22P-180M-04E**	264	236
141	170	1255	1.45	10.44	27.9	42.8	14.4	10.3			
166	200	1067	1.70	8.88	28.4	43.1	13.2	10.6			
170	205	1040	2.90	8.65	28.4	43.4	12.6	10.9			
192	232	921	1.95	7.66	28.6	43.4	12.3	10.9			
229	276	773	2.30	6.43	28.9	43.6	11.2	11.1			
281	339	629	2.85	5.23	27.8	43.9	10.2	11.4			

F

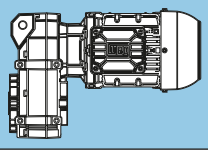
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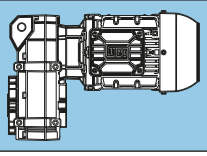
P_N = 22 kW											IE3
50 Hz	60 Hz				at 50 Hz						
22 kW	26 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	12	20957	0.90	146.63	63.7	110.2	63.7	110.2			
12	14	17790	1.05	124.47	79.0	113.4	79.0	113.4			
14	16	15387	1.20	107.66	87.5	115.7	87.5	115.7			
15	19	13574	1.35	94.97	92.7	117.4	92.7	117.4			
17	21	12066	1.50	84.42	96.4	120.1	96.4	120.1			
18	22	11657	1.55	81.56	97.3	119.2	97.3	119.2	**FH153-22P-180L-04F**	812	244
20	24	10371	1.75	72.56	99.8	121.5	99.8	121.5			
22	26	9699	1.90	67.86	101.0	121.0	101.0	121.0			
26	32	8048	2.25	56.31	103.6	122.5	103.6	122.5			
31	38	6712	2.70	46.96	105.3	123.8	105.3	123.8			
40	49	5222	3.00	36.54	106.8	125.7	106.8	125.7	**FH152-22P-180L-04F**	774	244
85	102	2480	3.00	17.35	108.5	127.7	108.5	127.7			
14	17	15056	0.90	105.34	62.7	83.0	62.7	83.0			
16	20	12969	1.05	90.74	70.6	85.0	70.6	85.0			
17	20	12729	1.05	89.06	71.3	85.2	71.3	85.2			
19	23	11168	1.20	78.14	75.9	86.7	75.9	86.7			
20	24	10474	1.25	73.28	77.6	87.4	77.6	87.4			
22	26	9756	1.35	68.26	79.3	88.1	79.3	88.1			
24	29	8610	1.55	60.24	81.6	89.2	81.6	89.2	**FH123-22P-180L-04F**	582	242
25	30	8427	1.55	58.96	81.9	89.4	81.9	89.4			
29	35	7309	1.75	51.14	83.8	90.5	83.8	90.5			
30	36	6969	1.80	48.76	84.3	90.8	84.3	90.8			
37	44	5734	2.05	40.12	86.0	92.0	86.0	92.0			
45	54	4714	2.35	32.98	87.1	93.0	87.1	93.0			
53	63	4002	2.60	28.00	87.7	93.6	87.7	93.6			
37	44	5714	1.35	39.98	86.0	92.0	86.0	92.0			
43	52	4921	2.05	34.43	86.9	92.8	86.9	92.8			
49	60	4256	2.95	29.78	87.5	93.4	87.5	93.4	**FH122-22P-180L-04F**	541	242
77	93	2741	1.35	19.18	80.9	94.4	80.9	94.4			
89	107	2361	2.05	16.52	76.9	94.9	76.9	94.9			
103	124	2042	2.95	14.29	73.1	95.2	73.1	95.2			
21	26	9932	0.85	69.49	33.9	56.8	33.9	56.8			
22	26	9660	0.85	67.59	36.0	58.4	36.0	58.4			
24	30	8578	0.95	60.02	42.8	59.6	42.8	59.6			
27	33	7712	1.05	53.96	47.1	60.6	47.1	60.6	**FH103-22P-180L-04F**	442	240
29	35	7253	1.15	50.75	49.0	61.1	49.0	61.1			
35	43	5919	1.40	41.41	53.7	62.6	53.7	62.6			
44	53	4802	1.65	33.60	56.6	63.8	56.6	63.8			
55	66	3835	1.95	26.83	58.6	64.9	58.6	64.9			
39	48	5325	1.35	37.26	55.4	63.2	55.4	63.2			
46	55	4588	1.75	32.10	57.1	64.1	57.1	64.1			
53	64	3950	2.05	27.64	58.4	64.8	58.4	64.8			
61	74	3450	2.35	24.14	59.3	65.3	59.3	65.3			
70	85	2981	2.70	20.86	57.5	65.8	57.5	65.8	**FH102-22P-180L-04F**	416	240
76	92	2758	1.35	19.30	56.5	65.7	56.5	65.7			
88	107	2377	2.05	16.63	53.4	66.2	53.4	66.2			
103	124	2047	2.65	14.32	50.4	66.6	50.4	66.6			

Legend see page 149

P_N = 22 kW											IE3
50 Hz	60 Hz				at 50 Hz						
22 kW	26 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
50	60	4235	1.10	29.63	29.6	39.4	29.6	39.4			
57	69	3659	1.25	25.60	32.5	40.2	32.5	40.2			
67	81	3131	1.45	21.91	34.6	40.9	34.6	40.9			
78	94	2704	1.70	18.92	36.1	41.4	36.1	41.4			
92	111	2287	2.00	16.00	37.2	42.0	37.2	42.0			
101	122	2082	1.30	14.57	37.7	41.9	37.7	41.9			
113	136	1867	2.45	13.06	38.1	42.5	38.1	42.5	**FH092-22P-180L-04F**	334	238
117	141	1799	1.50	12.59	38.3	42.3	38.3	42.3			
136	165	1541	1.75	10.78	37.8	42.7	37.8	42.7			
139	168	1514	3.00	10.59	36.9	43.0	36.9	43.0			
158	191	1331	2.05	9.31	35.6	43.0	35.6	43.0			
187	226	1125	2.40	7.87	33.4	43.3	33.4	43.3			
229	276	918	2.95	6.42	31.0	43.6	31.0	43.6			
57	68	3709	0.85	25.95	10.7	15.7	10.7	6.8			
67	80	3156	1.00	22.08	18.0	31.1	17.6	7.6			
78	94	2686	1.15	18.79	21.7	39.3	17.7	8.4			
91	110	2317	1.30	16.21	23.9	41.4	17.7	8.9			
108	131	1944	1.55	13.60	25.7	42.0	16.9	9.5			
120	145	1754	1.05	12.27	26.4	41.9	16.5	9.4			
133	160	1581	1.90	11.06	27.0	42.6	15.1	10.1			
141	170	1492	1.20	10.44	27.3	42.4	15.2	9.9	**FH082-22P-180L-04F**	285	236
166	200	1269	1.40	8.88	27.9	42.8	13.9	10.3			
170	205	1236	2.45	8.65	28.0	43.1	13.2	10.6			
192	232	1095	1.65	7.66	28.3	43.1	12.9	10.6			
229	276	919	1.95	6.43	28.6	43.4	11.8	10.9			
281	339	747	2.40	5.23	28.2	43.7	10.6	11.2			
359	434	585	2.70	4.09	25.8	44.0	9.4	11.5			

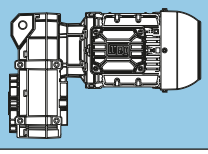
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P_N = 30 kW											IE3
50 Hz	60 Hz				at 50 Hz						
30 kW	36 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
12	15	23617	0.80	122.00	**	**	**	**	**FH153-22P-200L-04E**	870	244
14	17	20841	0.90	107.66	64.4	109.4	64.4	109.4			
15	18	19596	0.95	101.23	71.0	113.9	71.0	113.9			
16	19	18384	1.00	94.97	76.5	112.9	76.5	112.9			
18	21	16342	1.15	84.42	84.4	116.6	84.4	116.6			
20	25	14046	1.30	72.56	91.5	118.5	91.5	118.5			
22	26	13136	1.40	67.86	93.9	117.8	93.9	117.8			
24	28	12155	1.50	62.79	96.2	120.0	96.2	120.0			
26	32	10901	1.70	56.31	98.8	119.9	98.8	119.9			
32	38	9091	2.00	46.96	102.0	121.5	102.0	121.5			
37	44	7813	2.35	40.36	103.9	122.7	103.9	122.7			
42	51	6762	2.70	34.93	105.2	123.7	105.2	123.7			
41	49	7073	2.20	36.54	104.9	124.2	104.9	124.2	**FH152-22P-200L-04E**	832	244
85	103	3359	2.20	17.35	108.1	126.9	108.1	126.9			
17	20	17240	0.80	89.06	**	**	**	**	**FH123-22P-200L-04E**	640	242
19	23	15126	0.90	78.14	62.4	82.9	62.4	82.9			
20	24	14186	0.95	73.28	66.3	83.8	66.3	83.8			
22	26	13214	1.00	68.26	69.7	84.8	69.7	84.8			
25	30	11661	1.15	60.24	74.5	86.3	74.5	86.3			
29	35	9900	1.30	51.14	78.9	88.0	78.9	88.0			
30	37	9439	1.30	48.76	79.9	88.4	79.9	88.4			
34	41	8450	1.45	43.65	81.9	89.4	81.9	89.4			
37	44	7766	1.50	40.12	83.1	90.0	83.1	90.0			
45	54	6384	1.75	32.98	85.2	91.3	85.2	91.3			
53	64	5420	1.95	28.00	86.3	92.3	86.3	92.3			
62	74	4627	2.15	23.90	87.2	93.0	87.2	93.0			
43	52	6665	1.50	34.43	84.8	91.1	84.8	91.1	**FH122-22P-200L-04E**	599	242
50	60	5765	2.20	29.78	85.9	91.9	85.9	91.9			
56	68	5085	2.60	26.27	86.7	92.6	86.7	92.6			
66	79	4367	3.00	22.56	86.8	93.3	86.8	93.3			
90	108	3198	1.50	16.52	78.5	93.9	78.5	93.9			
104	125	2766	2.20	14.29	74.5	94.4	74.5	94.4			
117	141	2441	3.00	12.61	71.4	94.8	71.4	94.8			
27	33	10446	0.80	53.96	**	**	**	**	**FH103-22P-200L-04E**	500	240
29	35	9824	0.85	50.75	34.8	58.2	34.8	58.2			
36	43	8016	1.00	41.41	45.7	60.2	45.7	60.2			
44	53	6504	1.25	33.60	51.8	61.9	51.8	61.9			
55	66	5194	1.45	26.83	55.7	63.4	55.7	63.4			
46	55	6214	1.30	32.10	52.8	62.3	52.8	62.3	**FH102-22P-200L-04E**	474	240
54	64	5351	1.50	27.64	55.3	63.2	55.3	63.2			
61	74	4673	1.75	24.14	56.9	64.0	56.9	64.0			
71	85	4038	2.00	20.86	58.2	64.7	58.2	64.7			
86	103	3339	2.40	17.25	55.3	65.5	55.3	65.5			
89	107	3219	1.50	16.63	55.3	65.2	55.3	65.2			
103	124	2772	1.95	14.32	52.2	65.7	52.2	65.7			
104	125	2747	2.95	14.19	51.3	66.1	51.3	66.1			
118	142	2422	2.25	12.51	49.5	66.2	49.5	66.2			
137	165	2091	2.60	10.80	46.8	66.6	46.8	66.6			
58	70	4956	0.95	25.60	24.7	38.4	24.7	38.4	**FH092-22P-200L-04E**	392	238
68	81	4241	1.10	21.91	29.5	39.4	29.5	39.4			
78	94	3663	1.25	18.92	32.5	40.1	32.5	40.1			
93	111	3097	1.50	16.00	34.8	40.9	34.8	40.9			
113	136	2528	1.80	13.06	36.6	41.7	36.6	41.7			
118	141	2437	1.10	12.59	36.8	41.4	36.8	41.4			
137	165	2087	1.30	10.78	37.7	41.9	37.7	41.9			
140	168	2050	2.20	10.59	37.7	42.3	37.7	42.3			
159	191	1802	1.50	9.31	37.2	42.3	37.2	42.3			
175	210	1638	2.45	8.46	35.1	42.8	35.1	42.8			
188	226	1523	1.80	7.87	34.7	42.7	34.7	42.7			
231	277	1243	2.20	6.42	32.0	43.1	32.0	43.1			
284	342	1009	2.60	5.21	29.5	43.5	29.5	43.5			
356	428	805	2.85	4.16	27.1	43.8	27.1	43.8			

P_N = 37 kW											IE3
50 Hz 37 kW	60 Hz 44 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
16	19	22674	0.80	94.97	**	**	**	**			
18	22	19472	0.95	81.56	71.6	111.9	71.6	111.9			
20	25	17324	1.05	72.56	80.8	115.8	80.8	115.8			
22	26	16202	1.15	67.86	84.9	114.9	84.9	114.9			
24	28	14991	1.25	62.79	88.8	117.7	88.8	117.7	**FH153-22P-200L-04F**	897	244
26	32	13444	1.35	56.31	93.1	117.5	93.1	117.5			
32	38	11212	1.65	46.96	98.2	119.6	98.2	119.6			
37	44	9636	1.90	40.36	101.1	121.0	101.1	121.0			
42	51	8340	2.20	34.93	103.2	122.2	103.2	122.2			
41	49	8724	1.80	36.54	102.6	122.8	102.6	122.8			
53	64	6649	2.75	27.85	105.4	124.5	105.4	124.5	**FH152-22P-200L-04F**	859	244
85	103	4142	1.80	17.35	107.6	126.1	107.6	126.1			
22	26	16297	0.80	68.26	**	**	**	**			
25	30	14382	0.95	60.24	65.5	83.6	65.5	83.6			
29	35	12210	1.05	51.14	72.9	85.7	72.9	85.7			
30	37	11641	1.05	48.76	74.6	86.3	74.6	86.3			
34	41	10421	1.20	43.65	77.7	87.5	77.7	87.5	**FH123-22P-200L-04F**	667	242
37	44	9579	1.25	40.12	79.6	88.3	79.6	88.3			
45	54	7874	1.40	32.98	82.9	89.9	82.9	89.9			
53	64	6685	1.55	28.00	84.7	91.1	84.7	91.1			
62	75	5706	1.75	23.90	86.0	92.0	86.0	92.0			
43	52	8220	1.25	34.43	82.3	89.6	82.3	89.6			
50	60	7110	1.80	29.78	84.1	90.6	84.1	90.6			
56	68	6272	2.10	26.27	85.3	91.5	85.3	91.5			
66	79	5386	2.40	22.56	86.4	92.3	86.4	92.3			
79	95	4481	2.80	18.77	82.9	93.2	82.9	93.2	**FH122-22P-200L-04F**	626	242
90	108	3944	1.25	16.52	80.2	93.1	80.2	93.1			
104	125	3412	1.80	14.29	76.0	93.7	76.0	93.7			
117	141	3011	2.45	12.61	72.7	94.1	72.7	94.1			
137	165	2586	2.80	10.83	68.7	94.6	68.7	94.6			
46	56	7664	1.05	32.10	47.3	60.6	47.3	60.6			
54	64	6599	1.25	27.64	51.5	61.8	51.5	61.8			
61	74	5763	1.40	24.14	54.2	62.8	54.2	62.8			
71	85	4980	1.65	20.86	56.2	63.6	56.2	63.6			
86	103	4118	1.95	17.25	57.0	64.6	57.0	64.6			
89	107	3970	1.25	16.63	57.2	64.2	57.2	64.2			
103	124	3419	1.60	14.32	53.8	64.9	53.8	64.9			
104	126	3388	2.40	14.19	52.7	65.4	52.7	65.4			
118	142	2987	1.85	12.51	50.9	65.5	50.9	65.5	**FH102-22P-200L-04F**	501	240
127	153	2786	2.85	11.67	48.8	66.1	48.8	66.1			
137	165	2579	2.15	10.80	48.0	66.0	48.0	66.0			
149	180	2366	3.25	9.91	45.8	66.5	45.8	66.5			
166	199	2134	2.55	8.94	44.6	66.5	44.6	66.5			
175	211	2017	3.65	8.45	43.2	66.9	43.2	66.9			
201	242	1755	3.10	7.35	41.4	67.0	41.4	67.0			
245	295	1442	3.80	6.04	38.5	67.4	38.5	67.4			
288	347	1225	4.45	5.13	36.3	67.6	36.3	67.6			
338	407	1046	5.20	4.38	34.3	67.3	34.3	67.3			

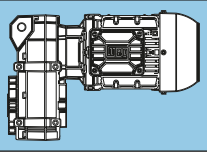
Legend see page 149

*** ... on request*

P_N = 45 kW											IE3
50 Hz	60 Hz				at 50 Hz						
45 kW	55 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
18	22	23683	0.80	81.56	**	**	**	**			
20	25	21069	0.90	72.56	63.0	108.7	63.0	108.7			
22	26	19705	0.95	67.86	70.4	111.7	70.4	111.7			
24	28	18232	1.00	62.79	77.2	115.0	77.2	115.0			
26	32	16351	1.15	56.31	84.4	114.8	84.4	114.8	**FH153-22P-225S/M-04F**	1034	244
32	38	13636	1.35	46.96	92.6	117.3	92.6	117.3			
37	44	11719	1.55	40.36	97.1	119.1	97.1	119.1			
42	51	10143	1.80	34.93	100.3	120.6	100.3	120.6			
41	49	10610	1.50	36.54	99.4	121.3	99.4	121.3			
53	64	8087	2.25	27.85	103.5	123.4	103.5	123.4			
63	76	6789	2.70	23.38	105.2	124.4	105.2	124.4	**FH152-22P-225S/M-04F**	996	244
85	103	5038	1.50	17.35	106.9	125.3	106.9	125.3			
112	135	3839	2.60	13.22	107.8	126.4	107.8	126.4			
25	30	17120	0.80	58.96	**	**	**	**			
29	35	14850	0.85	51.14	63.6	83.2	63.6	83.2			
30	37	14159	0.90	48.76	66.4	83.9	66.4	83.9			
34	41	12675	0.95	43.65	71.5	85.3	71.5	85.3			
37	44	11650	1.00	40.12	74.6	86.3	74.6	86.3	**FH123-22P-225S/M-04F**	804	242
45	54	9576	1.15	32.98	79.6	88.3	79.6	88.3			
53	64	8130	1.30	28.00	82.5	89.7	82.5	89.7			
62	75	6940	1.45	23.90	84.4	90.8	84.4	90.8			
43	52	9997	1.00	34.43	78.7	87.9	78.7	87.9			
50	60	8647	1.50	29.78	81.5	89.2	81.5	89.2			
56	68	7628	1.75	26.27	83.3	90.1	83.3	90.1			
66	79	6551	2.00	22.56	84.9	91.2	84.9	91.2			
79	95	5450	2.30	18.77	84.8	92.2	84.8	92.2			
90	108	4797	1.00	16.52	82.2	92.1	82.2	92.1	**FH122-22P-225S/M-04F**	763	242
95	114	4524	2.65	15.58	79.0	93.1	79.0	93.1			
104	125	4149	1.50	14.29	77.7	92.9	77.7	92.9			
117	141	3662	2.00	12.61	74.2	93.4	74.2	93.4			
137	165	3145	2.30	10.83	70.0	94.0	70.0	94.0			
46	56	9321	0.90	32.10	38.4	58.8	38.4	58.8			
54	64	8026	1.00	27.64	45.6	60.2	45.6	60.2			
61	74	7010	1.15	24.14	50.0	61.4	50.0	61.4			
71	85	6057	1.35	20.86	53.3	62.4	53.3	62.4			
86	103	5009	1.60	17.25	56.2	63.6	56.2	63.6			
89	107	4829	1.00	16.63	56.6	63.2	56.6	63.2			
103	124	4158	1.30	14.32	55.6	64.0	55.6	64.0			
104	126	4120	1.95	14.19	54.3	64.6	54.3	64.6			
118	142	3633	1.50	12.51	52.5	64.7	52.5	64.7			
127	153	3389	2.35	11.67	50.1	65.4	50.1	65.4	**FH102-22P-225S/M-04F**	638	240
137	165	3136	1.75	10.80	49.4	65.3	49.4	65.3			
149	180	2878	2.65	9.91	47.0	66.0	47.0	66.0			
166	199	2596	2.10	8.94	45.7	66.0	45.7	66.0			
175	211	2454	3.00	8.45	44.1	66.4	44.1	66.4			
201	242	2134	2.55	7.35	42.4	66.5	42.4	66.5			
245	295	1754	3.10	6.04	39.3	67.0	39.3	67.0			
288	347	1490	3.65	5.13	37.0	67.3	37.0	67.3			
338	407	1272	4.30	4.38	34.9	67.6	34.9	67.6			

Legend see page 149

*** ... on request*

P_N = 55 kW										IE3
50 Hz 55 kW	60 Hz 66 kW				at 50 Hz					
					Output shaft		Hollow shaft			
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
24	28	22284	0.85	62.79	55.1	91.9	55.1	91.9			
26	32	19984	0.95	56.31	69.0	111.4	69.0	111.4			
32	38	16666	1.10	46.96	83.3	114.5	83.3	114.5	**FH153-22P-225S/M-04G**	1082	244
37	44	14324	1.30	40.36	90.7	116.7	90.7	116.7			
42	51	12397	1.50	34.93	95.6	118.5	95.6	118.5			
53	64	9884	1.85	27.85	100.7	121.9	100.7	121.9			
63	76	8298	2.20	23.38	103.2	123.2	103.2	123.2			
77	93	6828	2.65	19.24	105.1	124.4	105.1	124.4	**FH152-22P-225S/M-04G**	1044	244
112	135	4692	2.10	13.22	107.2	125.6	107.2	125.6			
133	161	3939	2.85	11.10	106.4	126.3	106.4	126.3			
34	41	15491	0.80	43.65	**	**	**	**			
37	44	14239	0.85	40.12	66.1	83.8	66.1	83.8			
45	54	11705	0.95	32.98	74.4	86.2	74.4	86.2	**FH123-22P-225S/M-04G**	852	242
53	64	9937	1.05	28.00	78.8	87.9	78.8	87.9			
62	75	8482	1.20	23.90	81.8	89.3	81.8	89.3			
56	68	9323	1.40	26.27	80.2	88.5	80.2	88.5			
66	79	8007	1.65	22.56	82.7	89.8	82.7	89.8			
79	95	6661	1.90	18.77	84.8	91.1	84.8	91.1			
95	115	5529	2.15	15.58	81.0	92.2	81.0	92.2			
114	137	4610	2.50	12.99	75.4	93.1	75.4	93.1			
117	142	4475	1.65	12.61	76.1	92.5	76.1	92.5			
132	160	3964	2.80	11.17	71.3	93.7	71.3	93.7			
137	165	3844	1.90	10.83	71.6	93.2	71.6	93.2	**FH122-22P-225S/M-04G**	811	242
153	185	3428	3.10	9.66	67.5	94.2	67.5	94.2			
164	198	3198	2.60	9.01	66.8	93.9	66.8	93.9			
198	239	2651	3.10	7.47	62.3	94.5	62.3	94.5			
238	287	2211	3.70	6.23	58.2	95.0	58.2	95.0			
276	333	1902	4.30	5.36	55.2	95.4	55.2	95.4			
319	385	1647	4.65	4.64	52.5	95.7	52.5	95.7			

Legend see page 149

*** ... on request*

P_N = 75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
75 kW	90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
32	38	22726	0.80	46.96	**	**	**	**			
37	44	19532	0.95	40.36	71.3	111.8	71.3	111.8	**FH153-22P-250S/M-04F**	1186	244
42	51	16904	1.10	34.93	82.4	114.3	82.4	114.3			
53	64	13478	1.35	27.85	93.0	118.9	93.0	118.9			
63	76	11315	1.60	23.38	98.0	120.7	98.0	120.7			
77	93	9311	1.95	19.24	101.7	122.4	101.7	122.4			
90	109	7922	2.30	16.37	103.8	123.5	103.8	123.5			
105	126	6843	2.65	14.14	105.1	124.4	105.1	124.4	**FH152-22P-250S/M-04F**	1148	244
112	135	6398	1.55	13.22	105.6	124.0	105.6	124.0			
133	160	5372	2.10	11.10	106.6	125.0	106.6	125.0			
162	195	4423	2.50	9.14	101.7	125.9	101.7	125.9			
190	229	3760	2.95	7.77	96.0	126.5	96.0	126.5			

F

Legend see page 149

*** ... on request*

Selection tables - Gear units

Structure of the selection tables

1 Type	2 $i_{ges.}$	3 M_{2nenn}	4 n_2	5 i_{exakt}	6 IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					7 IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					8 NEMA adapter												
		[Nm]	[min^{-1}]		N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
F022																	
2 stages	9																
n_1=1400 min^{-1}	10																
Maximum torque 130 Nm	11																

1 Type	2 $i_{ges.}$	12 SERVO adapter										14 Input unit							
		n_{1max}	13 Adapter size									n_{1max}	15 Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110

1 Type of gear unit

2 Total ratio

3 Permissible output torque at S1 operation (f_B = 1.0)

4 Output speed (gear unit) at n_1 = 1400 min^{-1}

5 Exact mathematical ratio

6 Possible motor frame sizes (Direct mounting)

7 Possible IEC adapter sizes

8 Possible NEMA adapter sizes

9 Number of gear stages

10 Motor speed

11 Maximum torque

12 Maximum input speed - SERVO adapter

13 Possible SERVO adapter sizes

14 Maximum input speed - direct mounting, IEC / NEMA adapter and input unit
Higher input speeds on request

15 Possible input shafts of the input unit

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F022	97.85	130	14	1957/20	■	■											
	88.09	130	16	969/11	■	■											
	76.22	130	18	3811/50	■	■	■	■									
	68.62	130	20	3774/55	■	■	■	■									
	61.80	130	23	309/5	■	■	■	■									
	55.64	130	25	612/11	■	■	■	■									
	48.69	130	29	2678/55	■	■	■	■									
	43.83	130	32	5304/121	■	■	■	■									
	37.52	130	37	5253/140	■	■	■	■									
	33.78	130	41	2601/77	■	■	■	■									
	31.79	53	44	1653/52	■	■											
	29.32	130	48	3811/130	■	■	■	■									
2 stages	26.39	130	53	3774/143	■	■	■	■									
	24.76	84	57	3219/130	■	■	■	■									
	21.89	130	64	1751/80	■	■	■	■									
n_1=1400 min^{-1}	20.08	84	70	261/13	■	■	■	■									
	19.70	130	71	867/44	■	■	■	■									
Maximum torque	18.88	130	74	1133/60			■	■									
130 Nm	17.00	130	82	17/1			■	■									
	16.48	130	85	412/25	■	■	■	■									
	15.82	84	89	174/11	■	■	■	■									
	14.84	130	94	816/55	■	■	■	■									
	12.19	84	115	4437/364	■	■	■	■									
	12.09	130	116	2781/230	■	■	■	■									
	10.89	130	129	2754/253	■	■	■	■									
	9.52	84	147	3219/338	■	■	■	■									
	7.11	84	197	1479/208	■	■	■	■									
	6.13	84	228	319/52			■	■									
	5.35	84	261	348/65	■	■	■	■									
	3.93	72	356	2349/598	■	■	■	■									
F032	70.17	220	20	7719/110	■	■	■	■									
	63.63	220	22	1909/30	■	■	■	■									
	57.07	220	25	2511/44	■	■	■	■									
	51.75	220	27	207/4	■	■	■	■									
	45.35	220	31	5487/121	■	■	■	■									
	41.12	220	34	1357/33	■	■	■	■									
	35.03	220	40	2697/77	■	■	■	■	■								
	31.76	220	44	667/21	■	■	■	■	■								
	27.97	220	50	3999/143	■	■	■	■	■								
	27.67	119	51	83/3	■	■	■	■									
	25.36	220	55	989/39	■	■	■	■	■								
2 stages	22.50	147	62	45/2	■	■	■	■									
	21.14	220	66	465/22	■	■	■	■	■								
n_1=1400 min^{-1}	19.17	220	73	115/6	■	■	■	■	■								
	17.88	150	78	590/33	■	■	■	■									
	16.06	220	87	1767/110	■	■	■	■	■								
Maximum torque	14.57	220	96	437/30	■	■	■	■	■								
220 Nm	13.81	150	101	290/21	■	■	■	■	■								
	12.50	220	112	3162/253	■	■	■	■	■								
	11.33	220	124	34/3	■	■	■	■	■								
	11.03	150	127	430/39	■	■	■	■	■								
	9.76	212	144	1395/143			■	■	■								
	8.85	202	158	115/13			■	■	■								
	8.33	150	168	25/3	■	■	■	■	■								
	6.33	145	221	19/3	■	■	■	■	■								
	4.93	127	284	340/69	■	■	■	■	■								
	3.85	111	364	50/13			■	■	■								

Legend see page 201

Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F022	97.85	5000	■										-							
	88.09	5000	■										-							
	76.22	5000	■	■	■	■	■	■					3000	■						
	68.62	5000	■	■	■	■	■	■					3000	■						
	61.80	5000	■	■	■	■	■	■					3000	■						
	55.64	5000	■	■	■	■	■	■					3000	■						
	48.69	5000	■	■	■	■	■	■					3000	■						
	43.83	5000	■	■	■	■	■	■					3000	■						
	37.52	5000	■	■	■	■	■	■	■				3000	■						
	33.78	5000	■	■	■	■	■	■	■				3000	■						
	31.79	5000	■										-							
	29.32	5000	■	■	■	■	■	■	■				3000	■						
	26.39	5000	■	■	■	■	■	■	■				3000	■						
	24.76	5000	■	■	■	■	■	■					3000	■						
	21.89	5000	■	■	■	■	■	■	■				3000	■						
	20.08	5000	■	■	■	■	■	■					3000	■						
	19.70	5000	■	■	■	■	■	■	■				3000	■						
	18.88	4700		■	■	■	■	■	■				3000	■						
	17.00	4700		■	■	■	■	■	■				3000	■						
	16.48	4200	■	■	■	■	■	■	■				3000	■						
	15.82	5000	■	■	■	■	■	■					3000	■						
	14.84	4200	■	■	■	■	■	■	■				3000	■						
	12.19	5000	■	■	■	■	■	■	■				3000	■						
	12.09	3700	■	■	■	■	■	■	■				3000	■						
	10.89	3700	■	■	■	■	■	■	■				3000	■						
	9.52	5000	■	■	■	■	■	■	■				3000	■						
	7.11	5000	■	■	■	■	■	■	■				3000	■						
	6.13	4700		■	■	■	■	■	■				3000	■						
	5.35	4200	■	■	■	■	■	■	■				3000	■						
	3.93	3700	■	■	■	■	■	■	■				3000	■						
F032	70.17	5000	■	■	■	■	■	■					3000	■						
	63.63	5000	■	■	■	■	■	■					3000	■						
	57.07	5000	■	■	■	■	■	■					3000	■						
	51.75	5000	■	■	■	■	■	■					3000	■						
	45.35	5000	■	■	■	■	■	■					3000	■						
	41.12	5000	■	■	■	■	■	■					3000	■						
	35.03	5000	■	■	■	■	■	■	■				3000	■						
	31.76	5000	■	■	■	■	■	■	■				3000	■						
	27.97	5000	■	■	■	■	■	■	■				3000	■						
	27.67	5000	■	■	■	■	■	■					3000	■						
	25.36	5000	■	■	■	■	■	■	■				3000	■						
	22.50	5000	■	■	■	■	■	■					3000	■						
	21.14	5000	■	■	■	■	■	■	■				3000	■						
	19.17	5000	■	■	■	■	■	■	■				3000	■						
	17.88	5000	■	■	■	■	■	■					3000	■						
	16.06	4600	■	■	■	■	■	■	■				3000	■						
	14.57	4600	■	■	■	■	■	■	■				3000	■						
	13.81	5000	■	■	■	■	■	■	■				3000	■						
	12.50	4000	■	■	■	■	■	■	■				3000	■						
	11.33	4000	■	■	■	■	■	■	■				3000	■						
	11.03	5000	■	■	■	■	■	■	■				3000	■						
	9.76	3500		■	■	■	■	■	■				3000	■						
	8.85	3500		■	■	■	■	■	■				3000	■						
	8.33	5000	■	■	■	■	■	■	■				3000	■						
	6.33	4600	■	■	■	■	■	■	■				3000	■						
	4.93	4000	■	■	■	■	■	■	■				3000	■						
	3.85	3500		■	■	■	■	■	■				3000	■						

Legend see page 201

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F042	75.79	322	18	1819/24	■	■	■	■									
	69.14	293	20	4494/65	■	■	■	■									
	61.98	400	23	2975/48	■	■	■	■									
	56.54	396	25	735/13	■	■	■	■									
	48.94	400	29	1615/33	■	■	■	■									
	44.64	400	31	6384/143	■	■	■	■									
	41.20	175	34	8239/200	■	■	■	■									
	37.95	400	37	2125/56	■	■	■	■	■								
	34.62	400	40	450/13	■	■	■	■	■								
	33.69	236	42	539/16	■	■	■	■									
	31.06	400	45	1615/52	■	■	■	■	■								
	28.33	400	49	4788/169	■	■	■	■	■								
	26.60	308	53	133/5	■	■	■	■									
	23.91	400	59	765/32	■	■	■	■	■								
	21.81	400	64	567/26	■	■	■	■	■								
2 stages	20.63	308	68	165/8	■	■	■	■	■								
	18.06	400	78	289/16	■	■	■	■	■								
	16.88	308	83	4389/260	■	■	■	■	■								
n_1=1400 min^{-1}	16.48	400	85	1071/65	■	■	■	■	■								
	14.78	400	95	340/23	■	■	■	■	■								
Maximum torque	13.48	400	104	4032/299	■	■	■	■	■								
400 Nm	12.99	308	108	2079/160	■	■	■	■	■								
	11.99	384	117	935/78			■	■	■								
	10.93	361	128	1848/169			■	■	■								
	10.03	348	140	1445/144			■	■	■								
	9.82	308	143	3927/400	■	■	■	■	■								
	9.15	327	153	119/13			■	■	■								
	8.13	310	172	2635/324			■	■	■								
	8.03	280	174	924/115	■	■	■	■	■								
	7.84	304	179	2635/336					■								
	7.42	291	189	868/117			■	■	■								
	7.15	285	196	93/13					■								
	6.52	247	215	847/130			■	■	■								
	5.45	222	257	1309/240			■	■	■								
	4.42	196	317	2387/540			■	■	■								
	4.26	192	328	341/80					■								
F043	422.98	400	3.3	17765/42	■	■											
	385.85	400	3.6	5016/13	■	■											
	329.48	400	4.2	6919/21	■	■	■	■									
	300.55	400	4.7	19536/65	■	■	■	■									
	267.14	400	5.2	1870/7	■	■	■	■									
	243.69	400	5.7	3168/13	■	■	■	■									
	210.48	400	6.7	4420/21	■	■	■	■									
3 stages	192.00	400	7.3	192/1	■	■	■	■									
	162.19	400	8.6	15895/98	■	■	■	■									
	147.96	400	9.5	13464/91	■	■	■	■									
n_1=1400 min^{-1}	126.72	400	11	34595/273	■	■	■	■									
	115.60	400	12	19536/169	■	■	■	■									
Maximum torque	94.61	400	15	15895/168	■	■	■	■									
400 Nm	86.31	400	16	1122/13	■	■	■	■									
	81.63	400	17	10285/126			■	■									
	74.46	400	19	968/13			■	■									
	71.24	400	20	1496/21	■	■	■	■									
	64.98	400	22	4224/65	■	■	■	■									
	52.27	400	27	8415/161	■	■	■	■									
	47.68	400	29	14256/299	■	■	■	■									

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F042	75.79	5000	■	■	■	■	■	■					3000	■						
	69.14	5000	■	■	■	■	■	■					3000	■						
	61.98	5000	■	■	■	■	■	■					3000	■						
	56.54	5000	■	■	■	■	■	■					3000	■						
	48.94	5000	■	■	■	■	■	■					3000	■						
	44.64	5000	■	■	■	■	■	■					3000	■						
	41.20	5000	■	■	■	■	■	■					3000	■						
	37.95	5000	■	■	■	■	■	■	■				3000	■						
	34.62	5000	■	■	■	■	■	■	■				3000	■						
	33.69	5000	■	■	■	■	■	■					3000	■						
	31.06	5000	■	■	■	■	■	■	■				3000	■						
	28.33	5000	■	■	■	■	■	■	■				3000	■						
	26.60	5000	■	■	■	■	■	■					3000	■						
	23.91	5000	■	■	■	■	■	■	■				3000	■						
	21.81	5000	■	■	■	■	■	■	■				3000	■						
	20.63	5000	■	■	■	■	■	■	■				3000	■						
	18.06	4900	■	■	■	■	■	■	■				3000	■						
	16.88	5000	■	■	■	■	■	■	■				3000	■						
	16.48	4900	■	■	■	■	■	■	■				3000	■						
	14.78	4300	■	■	■	■	■	■	■				3000	■						
	13.48	4300	■	■	■	■	■	■	■				3000	■						
	12.99	5000	■	■	■	■	■	■	■				3000	■						
	11.99	3800		■	■	■	■	■	■				3000	■						
	10.93	3800		■	■	■	■	■	■				3000	■						
	10.03	3400		■	■	■	■	■	■				3000	■						
	9.82	4900	■	■	■	■	■	■	■				3000	■						
	9.15	3400		■	■	■	■	■	■				3000	■						
	8.13	3000		■	■	■	■	■	■				3000	■						
	8.03	4300	■	■	■	■	■	■	■				3000	■						
	7.84	2900							■				-							
	7.42	3000		■	■	■	■	■	■				3000	■						
	7.15	2900							■				-							
	6.52	3800		■	■	■	■	■	■				3000	■						
	5.45	3400		■	■	■	■	■	■				3000	■						
	4.42	3000		■	■	■	■	■	■				3000	■						
	4.26	2900							■				-							
F043	422.98	5000	■										-							
	385.85	5000	■										-							
	329.48	5000	■	■	■	■	■	■					3000	■						
	300.55	5000	■	■	■	■	■	■					3000	■						
	267.14	5000	■	■	■	■	■	■					3000	■						
	243.69	5000	■	■	■	■	■	■					3000	■						
	210.48	5000	■	■	■	■	■	■					3000	■						
	192.00	5000	■	■	■	■	■	■					3000	■						
	162.19	5000	■	■	■	■	■	■	■				3000	■						
	147.96	5000	■	■	■	■	■	■	■				3000	■						
	126.72	5000	■	■	■	■	■	■	■				3000	■						
	115.60	5000	■	■	■	■	■	■	■				3000	■						
	94.61	5000	■	■	■	■	■	■	■				3000	■						
	86.31	5000	■	■	■	■	■	■	■				3000	■						
	81.63	5000		■	■	■	■	■	■				3000	■						
	74.46	5000		■	■	■	■	■	■				3000	■						
	71.24	4900	■	■	■	■	■	■	■				3000	■						
	64.98	4900	■	■	■	■	■	■	■				3000	■						
	52.27	4300	■	■	■	■	■	■	■				3000	■						
	47.68	4300	■	■	■	■	■	■	■				3000	■						

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F052	87.38	371	16	5243/60	■	■	■	■									
	79.84	339	18	10379/130	■	■	■	■									
	71.46	501	20	1715/24	■	■	■	■									
	65.29	457	21	3395/52	■	■	■	■									
	56.42	600	25	1862/33	■	■	■	■									
	51.55	597	27	7372/143	■	■	■	■									
	48.15	204	29	963/20	■	■	■	■									
	43.75	600	32	175/4	■	■	■	■	■	■	■						
	39.97	597	35	7275/182	■	■	■	■	■	■	■						
	39.38	276	36	315/8	■	■	■	■									
	35.81	600	39	931/26	■	■	■	■	■	■	■						
	32.72	597	43	5529/169	■	■	■	■	■	■	■						
	31.09	360	45	342/11	■	■	■	■									
	27.56	600	51	441/16	■	■	■	■	■	■	■						
	25.18	597	56	2619/104	■	■	■	■	■	■	■						
2 stages	24.11	360	58	675/28	■	■	■	■	■	■	■						
	20.83	600	67	833/40	■	■	■	■	■	■	■						
	19.73	360	71	513/26	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	19.03	597	74	4947/260	■	■	■	■	■	■	■						
	17.04	600	82	392/23	■	■	■	■	■	■	■						
Maximum torque	15.57	597	90	4656/299	■	■	■	■	■	■	■						
600 Nm	15.19	360	92	243/16	■	■	■	■	■	■	■						
	13.82	600	101	539/39			■	■	■	■	■						
	12.63	597	111	2134/169			■	■	■	■	■						
	11.57	600	121	833/72			■	■	■	■	■						
	11.48	360	122	459/40	■	■	■	■	■	■	■						
	10.57	584	132	1649/156			■	■	■	■	■						
	9.39	360	149	216/23	■	■	■	■	■	■	■						
	9.38	564	149	1519/162			■	■	■	■	■						
	9.04	558	155	217/24					■	■	■						
	8.57	549	163	3007/351			■	■	■	■	■						
	8.26	543	169	3007/364					■	■	■						
	7.62	360	184	99/13			■	■	■	■	■						
	6.38	360	220	51/8			■	■	■	■	■						
	5.17	360	271	31/6			■	■	■	■	■						
	4.98	360	281	279/56					■	■	■						
F053	487.67	600	2.9	1463/3	■	■											
	445.56	597	3.1	40546/91	■	■											
	379.87	600	3.7	5698/15	■	■	■	■									
	347.07	597	4.0	157916/455	■	■	■	■									
	308.00	600	4.5	308/1	■	■	■	■									
	281.41	597	5.0	25608/91	■	■	■	■									
	242.67	600	5.8	728/3	■	■	■	■									
3 stages	221.71	597	6.3	1552/7	■	■	■	■									
	187.00	600	7.5	187/1	■	■	■	■									
	170.85	597	8.2	108834/637	■	■	■	■									
n_1=1400 min^{-1}	146.10	600	9.6	5698/39	■	■	■	■									
	133.49	597	10	157916/1183	■	■	■	■									
Maximum torque	109.08	600	13	1309/12	■	■	■	■									
600 Nm	99.66	597	14	18139/182	■	■	■	■									
	94.11	600	15	847/9			■	■									
	85.99	597	16	23474/273			■	■									
	82.13	600	17	1232/15	■	■	■	■									
	75.04	597	19	34144/455	■	■	■	■									
	60.26	600	23	1386/23	■	■	■	■									
	55.06	597	25	115236/2093	■	■	■	■									

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F052	87.38	5000	■	■	■	■	■	■					3000	■						
	79.84	5000	■	■	■	■	■	■					3000	■						
	71.46	5000	■	■	■	■	■	■					3000	■						
	65.29	5000	■	■	■	■	■	■					3000	■						
	56.42	5000	■	■	■	■	■	■					3000	■						
	51.55	5000	■	■	■	■	■	■					3000	■						
	48.15	5000	■	■	■	■	■	■					3000	■						
	43.75	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	39.97	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	39.38	5000	■	■	■	■	■	■					3000	■						
	35.81	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	32.72	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	31.09	5000	■	■	■	■	■	■					3000	■						
	27.56	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	25.18	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	24.11	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	20.83	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	19.73	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	19.03	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	17.04	4600	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	15.57	4600	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	15.19	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	13.82	4100		■	■	■	■	■	■	■	■	■	3000	■	■					
	12.63	4100		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.57	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.48	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	10.57	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	9.39	4600	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	9.38	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	9.04	3200							■	■	■	■	3000		■					
	8.57	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	8.26	3200							■	■	■	■	3000		■					
	7.62	4100		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.38	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.17	3300		■	■	■	■	■	■	■	■	■	3000	■	■					
	4.98	3200							■	■	■	■	3000		■					
F053	487.67	5000	■										-							
	445.56	5000	■										-							
	379.87	5000	■	■	■	■	■	■					3000	■						
	347.07	5000	■	■	■	■	■	■					3000	■						
	308.00	5000	■	■	■	■	■	■					3000	■						
	281.41	5000	■	■	■	■	■	■					3000	■						
	242.67	5000	■	■	■	■	■	■					3000	■						
	221.71	5000	■	■	■	■	■	■					3000	■						
	187.00	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	170.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	146.10	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	133.49	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	109.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	99.66	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	94.11	5000		■	■	■	■	■	■	■	■	■	3000	■	■					
	85.99	5000		■	■	■	■	■	■	■	■	■	3000	■	■					
	82.13	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	75.04	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	60.26	4600	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	55.06	4600	■	■	■	■	■	■	■	■	■	■	3000	■	■					

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F062	49.67	820	28	4520/91	■	■	■	■	■	■	■						
	45.55	820	31	8927/196	■	■	■	■	■	■	■						
	41.66	820	34	7040/169	■	■	■	■	■	■	■						
	38.20	820	37	3476/91	■	■	■	■	■	■	■						
	32.69	820	43	425/13	■	■	■	■	■	■	■						
	29.98	820	47	6715/224	■	■	■	■	■	■	■						
	25.23	820	55	328/13	■	■	■	■	■	■	■						
	23.14	820	61	3239/140	■	■	■	■	■	■	■						
	20.87	820	67	480/23	■	■	■	■	■	■	■						
	20.49	422	68	3729/182	■	■	■	■	■	■	■						
	19.14	820	73	3081/161	■	■	■	■	■	■	■						
	17.75	820	79	3000/169			■	■	■	■	■						
2 stages	17.18	571	81	2904/169	■	■	■	■	■	■	■						
	16.28	820	86	5925/364			■	■	■	■	■						
	15.38	820	91	200/13			■	■	■	■	■	■					
n_1=1400 min^{-1}	14.11	820	99	395/28			■	■	■	■	■	■					
	13.49	571	104	2805/208	■	■	■	■	■	■	■						
Maximum torque	12.99	820	108	1520/117			■	■	■	■	■	■					
820 Nm	12.53	820	112	1140/91					■	■	■						
	11.91	820	118	1501/126			■	■	■	■	■	■					
	11.49	820	122	4503/392					■	■	■						
	10.70	820	131	3200/299			■	■	■	■	■	■					
	10.41	571	135	1353/130	■	■	■	■	■	■	■						
	9.81	820	143	1580/161			■	■	■	■	■	■					
	8.61	571	163	198/23	■	■	■	■	■	■	■						
	7.32	571	191	2475/338			■	■	■	■	■						
	6.35	571	221	165/26			■	■	■	■	■	■					
	5.36	571	261	209/39			■	■	■	■	■	■					
	5.17	571	271	1881/364					■	■	■						
	4.41	571	317	1320/299			■	■	■	■	■	■					
F063	412.64	820	3.4	80464/195	■	■	■	■									
	378.37	820	3.7	397291/1050	■	■	■	■									
	337.44	820	4.1	13160/39	■	■	■	■									
	309.42	820	4.5	3713/12	■	■	■	■									
	266.44	820	5.3	114304/429	■	■	■	■									
	244.32	820	5.7	282188/1155	■	■	■	■									
	206.59	820	6.8	18800/91	■	■	■	■									
3 stages	189.44	820	7.4	18565/98	■	■	■	■									
	169.09	820	8.3	28576/169	■	■	■	■									
	155.05	820	9	70547/455	■	■	■	■									
n_1=1400 min^{-1}	130.15	820	11	1692/13	■	■	■	■									
	119.35	820	12	33417/280	■	■	■	■									
Maximum torque	98.34	820	14	6392/65	■	■	■	■									
820 Nm	90.17	820	16	63121/700	■	■	■	■									
	80.48	820	17	24064/299	■	■	■	■									
	73.80	820	19	59408/805	■	■	■	■									
	65.26	820	21	33088/507			■	■	■	■							
	59.84	820	23	81686/1365			■	■	■	■							
	54.63	820	26	6392/117			■	■	■	■							
	50.10	820	28	63121/1260			■	■	■	■							

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F062	49.67	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	45.55	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	41.66	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	38.20	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	32.69	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	29.98	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	25.23	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	23.14	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	20.87	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	20.49	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	19.14	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	17.75	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	17.18	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.28	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	15.38	3900		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	14.11	3900		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	13.49	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	12.99	3500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	12.53	3300							■	■	■	■	3000		■	■				
	11.91	3500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	11.49	3300							■	■	■	■	3000		■	■				
	10.70	3000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	10.41	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	9.81	3000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	8.61	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	7.32	4300		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.35	3900		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	5.36	3500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	5.17	3300							■	■	■	■	3000		■	■				
	4.41	3000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
F063	412.64	5000	■	■	■	■	■	■					3000	■						
	378.37	5000	■	■	■	■	■	■					3000	■						
	337.44	5000	■	■	■	■	■	■					3000	■						
	309.42	5000	■	■	■	■	■	■					3000	■						
	266.44	5000	■	■	■	■	■	■					3000	■						
	244.32	5000	■	■	■	■	■	■					3000	■						
	206.59	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	189.44	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	169.09	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	155.05	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	130.15	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	119.35	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	98.34	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	90.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	80.48	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	73.80	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	65.26	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	59.84	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	54.63	3900		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	50.10	3900		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F072	45.02	1500	31	5763/128	■	■	■	■	■	■	■						
	39.31	1500	36	629/16			■	■	■	■	■						
	34.74	1500	40	5559/160	■	■	■	■	■	■	■						
	29.38	1500	48	2703/92	■	■	■	■	■	■	■						
	25.25	1500	55	5253/208			■	■	■	■	■						
	22.05	1500	64	1411/64			■	■	■	■	■	■					
	20.72	939	68	1243/60	■	■	■	■	■	■	■						
	18.89	1500	74	170/9			■	■	■	■	■	■					
	18.21	1500	77	255/14					■	■	■						
2 stages	18.09	1103	77	814/45			■	■	■	■	■						
	16.08	1500	87	1479/92			■	■	■	■	■	■					
	15.99	1094	88	1199/75	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	13.52	1103	104	4664/345	■	■	■	■	■	■	■						
	13.49	1500	104	2805/208					■	■	■	■					
	11.62	1085	120	2266/195			■	■	■	■	■						
Maximum torque 1500 Nm	11.36	1500	123	2091/184					■	■	■	■					
	10.14	1115	138	913/90			■	■	■	■	■	■					
	9.32	1500	150	969/104								■					
	8.69	1115	161	704/81			■	■	■	■	■	■					
	8.38	1006	167	176/21					■	■	■						
	7.40	1115	189	2552/345			■	■	■	■	■	■					
	6.21	1115	226	242/39					■	■	■	■					
	5.23	1115	268	1804/345					■	■	■	■					
	4.29	1081	327	836/195								■					
F073	385.37	1500	3.6	61659/160	■	■	■	■									
	305.42	1500	4.6	26877/88	■	■	■	■									
	237.15	1500	5.9	4743/20	■	■	■	■	■	■	■						
3 stages	194.58	1500	7.2	12648/65	■	■	■	■	■	■	■						
	150.69	1500	9.3	96441/640	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	114.62	1500	12	45849/400	■	■	■	■	■	■	■						
	94.52	1500	15	17391/184	■	■	■	■	■	■	■						
	77.53	1500	18	80631/1040			■	■	■	■	■						
Maximum torque 1500 Nm	65.88	1500	21	527/8			■	■	■	■	■						
	54.16	1500	26	19499/360			■	■	■	■	■						
	52.23	1500	27	58497/1120					■	■	■						

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F072	45.02	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	39.31	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	34.74	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	29.38	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	25.25	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	22.05	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	20.72	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	18.89	3800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	18.21	3700							■	■	■	■	3000		■	■				
	18.09	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.08	3400		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	15.99	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	13.52	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	13.49	3000							■	■	■	■	3000		■	■	■			
	11.62	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	11.36	2700							■	■	■	■	2700		■	■	■			
	10.14	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	9.32	-											2400				■			
	8.69	3800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	8.38	3700							■	■	■	■	3000		■	■				
	7.40	3400		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	6.21	3000							■	■	■	■	3000		■	■	■			
	5.23	2700							■	■	■	■	2700		■	■	■			
	4.29	-											2400				■			
F073	385.37	5000	■	■	■	■	■	■					3000	■						
	305.42	5000	■	■	■	■	■	■					3000	■						
	237.15	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	194.58	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	150.69	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	114.62	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	94.52	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	77.53	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	65.88	4300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	54.16	3800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	52.23	3700							■	■	■	■	3000		■	■				

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F082	33.87	2785	41	6165/182			■	■	■	■	■						
	30.00	3000	47	30/1			■	■	■	■	■	■					
	25.95	3000	54	545/21			■	■	■	■	■	■	■				
	22.08	3000	63	3555/161			■	■	■	■	■	■	■				
	18.79	3000	75	1710/91					■	■	■	■	■				
	16.21	3000	86	2610/161					■	■	■	■	■				
2 stages	16.01	1647	87	10823/676			■	■	■	■	■						
	14.18	1762	99	553/39			■	■	■	■	■	■					
	13.60	3000	103	2475/182								■	■				
n_1=1400 min^{-1}	12.27	1762	114	8611/702			■	■	■	■	■	■	■				
	11.06	3000	127	387/35								■	■				
	10.44	1762	134	6241/598			■	■	■	■	■	■	■				
Maximum torque 3000 Nm	8.88	1762	158	1501/169					■	■	■	■	■				
	8.65	3000	162	1755/203								■	■				
	7.66	1762	183	2291/299					■	■	■	■	■				
	6.43	1762	218	4345/676								■	■				
	5.23	1762	268	3397/650								■	■				
	4.09	1564	343	237/58								■	■				
F083	358.52	3000	3.9	32625/91	■	■	■	■	■	■	■						
	283.76	3000	4.9	127125/448	■	■	■	■	■	■	■						
	247.77	3000	5.7	13875/56			■	■	■	■	■						
	218.97	3000	6.4	24525/112	■	■	■	■	■	■	■						
	185.17	3000	7.6	59625/322	■	■	■	■	■	■	■						
	180.28	3000	7.8	114840/637	■	■	■	■	■	■	■						
	159.17	3000	8.8	115875/728			■	■	■	■	■						
	142.69	3000	9.8	55935/392	■	■	■	■	■	■	■						
	138.95	3000	10	31125/224			■	■	■	■	■	■					
	124.59	3000	11	6105/49			■	■	■	■	■						
3 stages	119.05	3000	12	2500/21			■	■	■	■	■	■					
	114.80	3000	12	5625/49					■	■	■						
	110.11	3000	13	10791/98	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	101.32	3000	14	32625/322			■	■	■	■	■	■					
	93.11	3000	15	104940/1127	■	■	■	■	■	■	■						
Maximum torque 3000 Nm	84.99	3000	16	61875/728					■	■	■	■					
	80.04	3000	17	50985/637			■	■	■	■	■						
	71.62	2947	20	46125/644					■	■	■	■					
	69.87	2903	20	13695/196			■	■	■	■	■	■					
	59.86	2771	23	8800/147			■	■	■	■	■	■					
	58.72	2777	24	21375/364								■					
	57.73	2741	24	19800/343					■	■	■						
	50.95	2640	27	57420/1127			■	■	■	■	■	■					
	42.74	2505	33	27225/637					■	■	■	■					
	36.02	2379	39	40590/1127					■	■	■	■					
	29.53	2242	47	18810/637								■					

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F082	33.87	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	30.00	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	25.95	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	22.08	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	18.79	3100							■	■	■	■	3000		■	■	■	■	■	
	16.21	2800							■	■	■	■	2800		■	■	■	■	■	
	16.01	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	14.18	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	13.60	-											2500				■	■	■	
	12.27	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	11.06	-											2200				■	■	■	
	10.44	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	8.88	3100							■	■	■	■	3000		■	■	■	■	■	
	8.65	-											1900				■	■	■	
	7.66	2800							■	■	■	■	2800		■	■	■	■	■	
	6.43	-											2500				■	■	■	
	5.23	-											2200				■	■	■	
	4.09	-											1900				■	■	■	
F083	358.52	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	283.76	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	247.77	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	218.97	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	185.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	180.28	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	159.17	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	142.69	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	138.95	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	124.59	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	119.05	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	114.80	3900							■	■	■	■	3000		■	■				
	110.11	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	101.32	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	93.11	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	84.99	3100							■	■	■	■	3000		■	■	■	■	■	
	80.04	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	71.62	2800							■	■	■	■	2800		■	■	■	■	■	
	69.87	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	59.86	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	58.72	-											2500				■	■	■	
	57.73	3900							■	■	■	■	3000		■	■				
	50.95	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	42.74	3100							■	■	■	■	3000		■	■	■	■	■	
	36.02	2800							■	■	■	■	2800		■	■	■	■	■	
	29.53	-											2500				■	■	■	

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F092	38.65	4326	36	2512/65			■	■	■	■	■						
	34.13	4500	41	512/15			■	■	■	■	■	■					
	29.63	4500	47	800/27			■	■	■	■	■	■	■				
	28.57	3430	49	200/7					■	■	■						
	25.60	4500	55	128/5			■	■	■	■	■	■	■				
	21.91	4500	64	1424/65					■	■	■	■	■	■			
	19.01	2128	74	13345/702			■	■	■	■	■						
	18.92	4500	74	2176/115					■	■	■	■	■	■			
2 stages	16.79	2676	83	1360/81			■	■	■	■	■	■					
	16.00	4500	88	16/1								■	■	■			
	14.57	2676	96	10625/729			■	■	■	■	■	■	■				
n_1=1400 min^{-1}	14.05	1687	100	10625/756					■	■	■						
	13.06	4500	107	1632/125								■	■	■			
Maximum torque	12.59	2676	111	340/27			■	■	■	■	■	■	■				
4500 Nm	10.78	2676	130	7565/702					■	■	■	■	■	■			
	10.59	4500	132	1536/145								■	■	■			
	9.31	2676	150	5780/621					■	■	■	■	■	■			
	8.46	4006	166	296/35									■	■			
	7.87	2676	178	425/54								■	■	■			
	6.42	2676	218	289/45								■	■	■			
	5.21	2577	269	1360/261								■	■	■			
	4.16	2284	337	3145/756									■	■			
F093	288.50	4500	4.9	165888/575	■	■	■	■	■	■	■						
	243.90	4500	5.7	129024/529	■	■	■	■	■	■	■						
	211.14	4500	6.6	315648/1495			■	■	■	■	■						
	186.99	4500	7.5	21504/115			■	■	■	■	■	■					
	161.76	4500	8.7	55808/345			■	■	■	■	■	■					
	155.99	4500	9	125568/805					■	■	■						
	142.85	4500	9.8	17856/125	■	■	■	■	■	■	■						
	137.63	4500	10	364032/2645			■	■	■	■	■	■					
	120.77	4500	12	13888/115	■	■	■	■	■	■	■						
3 stages	117.13	4500	12	175104/1495					■	■	■	■					
	104.54	4500	13	33976/325			■	■	■	■	■						
	101.04	4500	14	267264/2645					■	■	■	■					
n_1=1400 min^{-1}	92.59	4500	15	6944/75			■	■	■	■	■	■					
	84.76	4500	17	25344/299								■					
Maximum torque	80.09	4500	17	54064/675			■	■	■	■	■	■					
4500 Nm	77.23	4500	18	13516/175					■	■	■						
	68.92	4500	20	198144/2875								■					
	68.15	4500	21	39184/575			■	■	■	■	■	■					
	57.99	4500	24	18848/325					■	■	■	■					
	53.89	4500	26	179712/3335								■					
	50.03	4500	28	28768/575					■	■	■	■					
	41.97	4458	33	2728/65								■					
	34.12	4189	41	21328/625								■					
	26.68	3891	52	19344/725								■					

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F092	38.65	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	34.13	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	29.63	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	28.57	4100							■	■	■	■	3000		■	■				
	25.60	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	21.91	3300							■	■	■	■	3000		■	■	■	■	■	
	19.01	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	18.92	3000							■	■	■	■	3000		■	■	■	■	■	
	16.79	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	16.00	-											2600				■	■	■	
	14.57	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	14.05	4100							■	■	■	■	3000		■	■				
	13.06	-											2300				■	■	■	
	12.59	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	10.78	3300							■	■	■	■	3000		■	■	■	■	■	
	10.59	-											2000				■	■	■	
	9.31	3000							■	■	■	■	3000		■	■	■	■	■	
	8.46	-											1800					■	■	
	7.87	-											2600				■	■	■	
	6.42	-											2300				■	■	■	
	5.21	-											2000				■	■	■	
	4.16	-											1800					■	■	
F093	288.50	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	243.90	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	211.14	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	186.99	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	161.76	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	155.99	4100							■	■	■	■	3000		■	■				
	142.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	137.63	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	120.77	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	117.13	3300							■	■	■	■	3000		■	■	■	■	■	
	104.54	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	101.04	3000							■	■	■	■	3000		■	■	■	■	■	
	92.59	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	84.76	-											2600				■	■	■	
	80.09	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	77.23	4100							■	■	■	■	3000		■	■				
	68.92	-											2300				■	■	■	
	68.15	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	57.99	3300							■	■	■	■	3000		■	■	■	■	■	
	53.89	-											2000				■	■	■	
	50.03	3000							■	■	■	■	3000		■	■	■	■	■	
	41.97	-											2600				■	■	■	
	34.12	-											2300				■	■	■	
	26.68	-											2000				■	■	■	

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F102	42.74	6409	33	7693/180						■	■	■					
	37.26	7082	38	15092/405						■	■	■	■				
	35.93	4312	39	539/15						■	■						
	32.10	8000	44	11074/345						■	■	■	■				
	27.64	8000	51	1078/39						■	■	■	■	■	■		
	24.14	8000	58	1666/69						■	■	■	■	■	■		
	22.14	3320	63	1727/78						■	■	■					
	20.86	8000	67	4067/195								■	■	■	■		
	19.30	3669	73	6776/351						■	■	■	■				
2 stages	18.62	2234	75	242/13						■	■						
	17.25	8000	81	2156/125								■	■	■	■		
n_1=1400 min^{-1}	16.63	4820	84	4972/299						■	■	■	■				
	14.32	5348	98	2420/169						■	■	■	■	■	■		
	14.19	8000	99	2058/145								■	■	■	■		
Maximum torque 8000 Nm	12.51	5415	112	3740/299						■	■	■	■	■	■		
	11.67	7875	120	35/3									■	■	■		
	10.80	5415	130	1826/169								■	■	■	■		
	9.91	7609	141	4606/465									■	■	■		
	8.94	5415	157	2904/325								■	■	■	■		
	8.45	7361	166	2156/255									■	■	■		
	7.35	5415	190	2772/377								■	■	■	■		
	6.04	5415	232	550/91									■	■	■		
	5.13	5415	273	2068/403									■	■	■		
	4.38	5415	320	968/221									■	■	■		
F103	246.57	8000	5.7	38465/156						■	■						
	217.78	8000	6.4	1960/9						■	■	■					
	189.04	8000	7.4	30625/162						■	■	■	■				
	182.29	8000	7.7	4375/24						■	■						
	163.33	8000	8.6	490/3						■	■	■	■				
	139.78	8000	10	21805/156						■	■	■	■	■	■		
	122.58	8000	11	31871/260						■	■						
	120.72	8000	12	8330/69						■	■	■	■	■	■		
3 stages	108.27	8000	13	1624/15						■	■	■					
	102.08	8000	14	1225/12								■	■	■	■		
	93.98	8000	15	5075/54						■	■	■	■				
n_1=1400 min^{-1}	90.63	8000	15	725/8						■	■						
	83.30	8000	17	833/10								■	■	■	■		
Maximum torque 8000 Nm	81.20	8000	17	406/5						■	■	■	■				
	69.49	8000	20	18067/260						■	■	■	■	■	■		
	67.59	8000	21	1960/29								■	■	■	■		
	60.02	8000	23	6902/115						■	■	■	■	■	■		
	53.96	8000	26	1295/24								■	■	■	■		
	50.75	8000	28	203/4								■	■	■	■		
	41.41	8000	34	10353/250								■	■	■	■		
	33.60	7876	42	168/5								■	■	■	■		
	26.83	7361	52	1073/40									■	■	■		

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F102	42.74	5000								■	■	■	3000		■	■	■			
	37.26	4500								■	■	■	3000		■	■	■	■		
	35.93	4400								■	■	■	3000		■	■				
	32.10	4000								■	■	■	3000		■	■	■	■		
	27.64	3500								■	■	■	3000		■	■	■	■	■	
	24.14	3200								■	■	■	3000		■	■	■	■	■	■
	22.14	5000								■	■	■	3000		■	■	■			
	20.86	-											2800				■	■	■	■
	19.30	4500								■	■	■	3000		■	■	■	■		
	18.62	4400								■	■	■	3000		■	■				
	17.25	-											2400				■	■	■	■
	16.63	4000								■	■	■	3000		■	■	■	■		
	14.32	3500								■	■	■	3000		■	■	■	■	■	
	14.19	-											2100				■	■	■	■
	12.51	3200								■	■	■	3000		■	■	■	■	■	■
	11.67	-											1900					■	■	■
	10.80	-											2800				■	■	■	■
	9.91	-											1700					■	■	■
	8.94	-											2400				■	■	■	■
	8.45	-											1500						■	■
	7.35	-											2100				■	■	■	■
	6.04	-											1900					■	■	■
	5.13	-											1700					■	■	■
	4.38	-											1500						■	■
F103	246.57	5000								■	■	■	3000		■	■				
	217.78	5000								■	■	■	3000		■	■	■			
	189.04	4500								■	■	■	3000		■	■	■	■		
	182.29	4400								■	■	■	3000		■	■				
	163.33	4000								■	■	■	3000		■	■	■	■		
	139.78	3500								■	■	■	3000		■	■	■	■	■	
	122.58	5000								■	■	■	3000		■	■				
	120.72	3200								■	■	■	3000		■	■	■	■	■	■
	108.27	5000								■	■	■	3000		■	■	■			
	102.08	-											2800				■	■	■	■
	93.98	4500								■	■	■	3000		■	■	■	■		
	90.63	4400								■	■	■	3000		■	■				
	83.30	-											2400				■	■	■	■
	81.20	4000								■	■	■	3000		■	■	■	■	■	
	69.49	3500								■	■	■	3000		■	■	■	■		
	67.59	-											2100				■	■	■	■
	60.02	3200								■	■	■	3000		■	■	■	■	■	■
	53.96	-											1900					■	■	■
	50.75	-											2800				■	■	■	■
	41.41	-											2400				■	■	■	■
	33.60	-											2100				■	■	■	■
	26.83	-											1900					■	■	■

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
F122	39.98	7597	35	16192/405						■	■	■	■				
	34.43	9985	41	792/23						■	■	■	■				
	29.78	12543	47	1936/65						■	■	■	■	■	■		
	26.27	13000	53	9064/345						■	■	■	■	■	■	■	
	22.56	12916	62	880/39								■	■	■	■	■	
	19.18	3645	73	13984/729						■	■	■	■				
	18.77	12365	75	1408/75								■	■	■	■	■	
2 stages	16.52	4791	85	380/23						■	■	■	■				
	15.58	11830	90	6776/435								■	■	■	■	■	
	14.29	6018	98	1672/117						■	■	■	■	■	■		
n_1=1400 min^{-1}	12.99	11332	108	1364/105									■	■	■	■	
	12.61	7319	111	7828/621						■	■	■	■	■	■	■	
Maximum torque	11.17	10933	125	5192/465									■	■	■	■	
13000 Nm	10.83	7209	129	3800/351								■	■	■	■	■	
	9.66	10565	145	2464/255									■	■	■	■	
	9.01	8163	155	1216/135								■	■	■	■	■	
	7.47	8093	187	5852/783								■	■	■	■	■	
	6.23	8163	225	1178/189									■	■	■	■	
	5.36	8163	261	4484/837									■	■	■	■	
	4.64	7647	302	2128/459									■	■	■	■	
F123	220.67	13000	6.3	39721/180						■	■	■					
	192.40	13000	7.3	77924/405						■	■	■	■				
	185.53	13000	7.5	2783/15						■	■						
	165.73	13000	8.4	2486/15						■	■	■	■				
	142.72	13000	9.8	5566/39						■	■	■	■	■	■		
	124.67	13000	11	374/3						■	■	■	■	■	■	■	
	120.82	13000	12	29359/243						■	■	■					
	107.69	13000	13	20999/195								■	■	■	■	■	
	105.34	13000	13	230384/2187						■	■	■	■				
3 stages	101.58	12190	14	8228/81						■	■						
	90.74	13000	15	169048/1863						■	■	■	■				
	89.06	13000	16	11132/125								■	■	■	■	■	
n_1=1400 min^{-1}	78.14	13000	18	82280/1053						■	■	■	■	■	■		
	73.28	13000	19	10626/145								■	■	■	■	■	
Maximum torque	68.26	13000	21	127160/1863						■	■	■	■	■	■	■	
13000 Nm	60.24	13000	23	1265/21									■	■	■	■	
	58.96	12929	24	62084/1053								■	■	■	■	■	
	51.14	12609	27	23782/465									■	■	■	■	
	48.76	12213	29	32912/675								■	■	■	■	■	
	43.65	12024	32	11132/255									■	■	■	■	
	40.12	11519	35	10472/261								■	■	■	■	■	
	32.98	10861	42	18700/567									■	■	■	■	
	28.00	10341	50	70312/2511									■	■	■	■	
	23.90	9861	59	1936/81									■	■	■	■	

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F122	39.98	4800								■	■	■	3000		■	■	■	■		
	34.43	4200								■	■	■	3000		■	■	■	■		
	29.78	3700								■	■	■	3000		■	■	■	■	■	
	26.27	3400								■	■	■	3000		■	■	■	■	■	■
	22.56	-											3000				■	■	■	■
	19.18	4800								■	■	■	3000		■	■	■	■		
	18.77	-											2600				■	■	■	■
	16.52	4200								■	■	■	3000		■	■	■	■		
	15.58	-											2200				■	■	■	■
	14.29	3700								■	■	■	3000		■	■	■	■	■	
	12.99	-											2000					■	■	■
	12.61	3400								■	■	■	3000		■	■	■	■	■	■
	11.17	-											1800					■	■	■
	10.83	-											3000				■	■	■	■
	9.66	-											1600						■	■
	9.01	-											2600				■	■	■	■
	7.47	-											2200				■	■	■	■
	6.23	-											2000					■	■	■
	5.36	-											1800					■	■	■
	4.64	-											1600						■	■
F123	220.67	5000								■	■	■	3000		■	■	■			
	192.40	4800								■	■	■	3000		■	■	■	■		
	185.53	4600								■	■	■	3000		■	■				
	165.73	4200								■	■	■	3000		■	■	■	■		
	142.72	3700								■	■	■	3000		■	■	■	■	■	
	124.67	3400								■	■	■	3000		■	■	■	■	■	■
	120.82	5000								■	■	■	3000		■	■	■			
	107.69	-											3000				■	■	■	■
	105.34	4800								■	■	■	3000		■	■	■	■		
	101.58	4600								■	■	■	3000		■	■				
	90.74	4200								■	■	■	3000		■	■	■	■		
	89.06	-											2600				■	■	■	■
	78.14	3700								■	■	■	3000		■	■	■	■	■	
	73.28	-											2200				■	■	■	■
	68.26	3400								■	■	■	3000		■	■	■	■	■	■
	60.24	-											2000					■	■	■
	58.96	-											3000				■	■	■	■
	51.14	-											1800					■	■	■
	48.76	-											2600				■	■	■	■
	43.65	-											1600						■	■
	40.12	-											2200				■	■	■	■
	32.98	-											2000					■	■	■
	28.00	-											1800					■	■	■
	23.90	-											1600						■	■

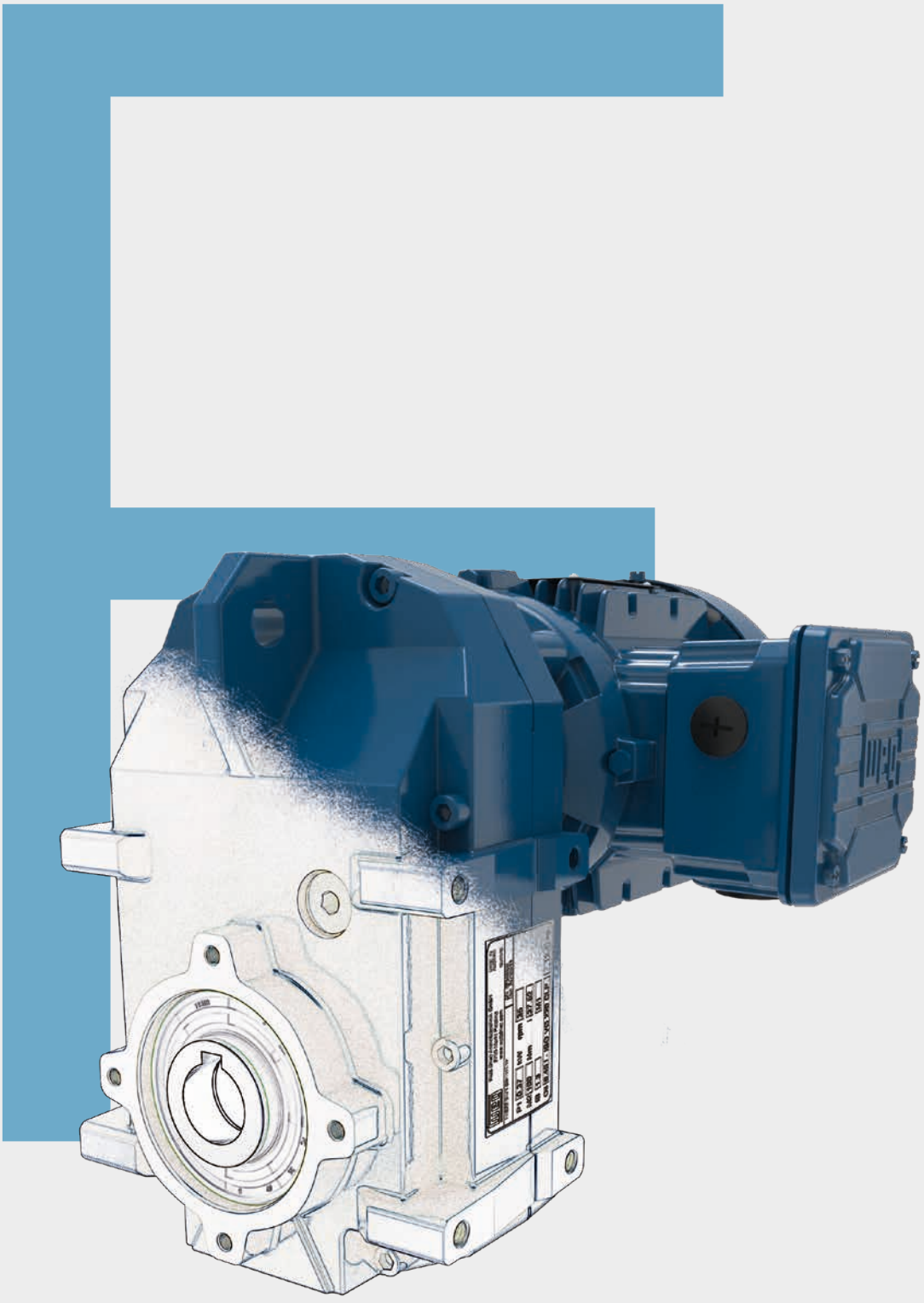
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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/215	N254/256	N284/286	N324/326	N364	-	-
		[Nm]	[min^{-1}]														
F152	36.54	15418	38	1023/28								■	■	■	■		
	27.85	18000	50	10137/364								■	■	■	■	■	■
	23.38	18000	60	4092/175								■	■	■	■	■	■
	19.24	18000	73	558/29								■	■	■	■	■	■
2 stages	17.35	7320	81	451/26								■	■	■	■		
	16.37	18000	86	6417/392									■	■	■	■	■
	14.14	18000	99	99/7									■	■	■	■	■
n_1=1400 min^{-1}	13.22	9805	106	4469/338								■	■	■	■	■	■
	12.31	18000	114	837/68									■	■	■	■	■
	11.10	11038	126	3608/325								■	■	■	■	■	■
Maximum torque 18000 Nm	9.14	10975	153	3444/377								■	■	■	■	■	■
	7.77	11038	180	2829/364									■	■	■	■	■
	6.71	11038	208	2706/403									■	■	■	■	■
	5.84	11038	240	2583/442									■	■	■	■	■
F153	259.81	18000	5.4	5456/21								■	■				
	223.77	18000	6.3	828630/3703								■	■				
	193.55	18000	7.2	405108/2093								■	■	■	■		
	170.73	18000	8.2	632214/3703								■	■	■	■	■	■
	146.63	18000	9.5	306900/2093								■	■	■	■	■	■
	144.52	18000	9.7	118358/819								■	■				
	124.47	18000	11	1042065/8372								■	■				
3 stages	122.00	18000	11	98208/805								■	■	■	■	■	■
	107.66	18000	13	254727/2366								■	■	■	■		
	101.23	18000	14	67518/667								■	■	■	■	■	■
n_1=1400 min^{-1}	94.97	18000	15	795057/8372								■	■	■	■	■	■
	84.42	18000	17	95139/1127									■	■	■	■	■
	81.56	18000	17	192975/2366								■	■	■	■	■	■
Maximum torque 18000 Nm	72.56	18000	19	11682/161									■	■	■	■	■
	67.86	18000	21	30876/455								■	■	■	■	■	■
	62.79	18000	22	24552/391									■	■	■	■	■
	56.31	18000	25	84909/1508								■	■	■	■	■	■
	46.96	18000	30	239289/5096									■	■	■	■	■
	40.36	18000	35	14691/364									■	■	■	■	■
	34.93	18000	40	7719/221									■	■	■	■	■

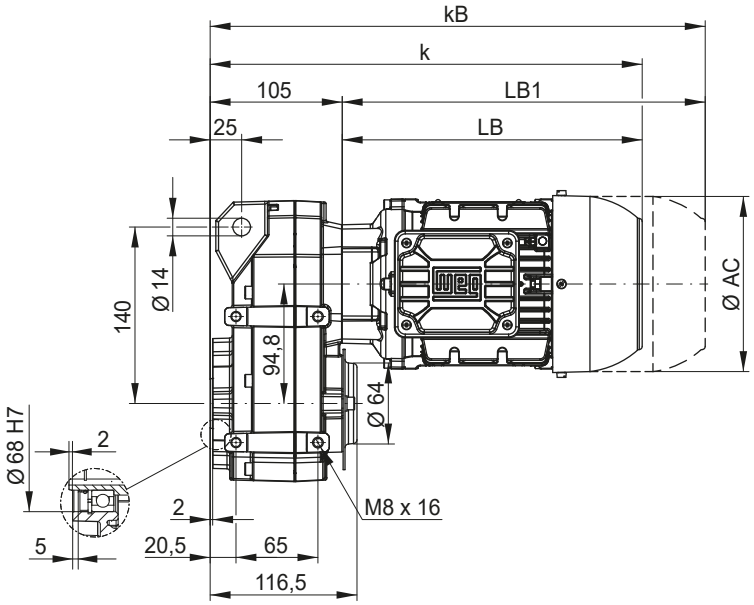
Legend see page 201

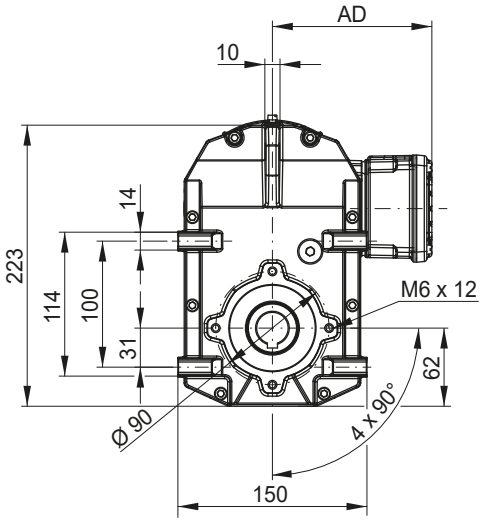
Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
F152	36.54	-											3000				■	■	■	
	27.85	-											3000				■	■	■	■
	23.38	-											2700				■	■	■	■
	19.24	-											2300				■	■	■	■
	17.35	-											3000				■	■	■	
	16.37	-											2000					■	■	■
	14.14	-											1800					■	■	■
	13.22	-											3000				■	■	■	■
	12.31	-											1700						■	■
	11.10	-											2700				■	■	■	■
	9.14	-											2300				■	■	■	■
	7.77	-											2000					■	■	■
	6.71	-											1800					■	■	■
	5.84	-											1700						■	■
F153	259.81	-											3000				■	■		
	223.77	-											3000				■	■		
	193.55	-											3000				■	■	■	
	170.73	-											3000				■	■	■	■
	146.63	-											3000				■	■	■	■
	144.52	-											3000				■	■		
	124.47	-											3000				■	■		
	122.00	-											2700				■	■	■	■
	107.66	-											3000				■	■	■	
	101.23	-											2300				■	■	■	■
	94.97	-											3000				■	■	■	■
	84.42	-											2000					■	■	■
	81.56	-											3000				■	■	■	■
	72.56	-											1800					■	■	■
	67.86	-											2700				■	■	■	■
	62.79	-											1700						■	■
	56.31	-											2300				■	■	■	■
	46.96	-											2000					■	■	■
	40.36	-											1800					■	■	■
	34.93	-											1700						■	■

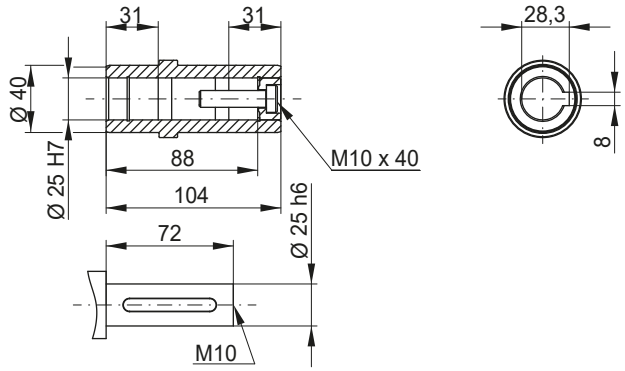
Legend see page 201



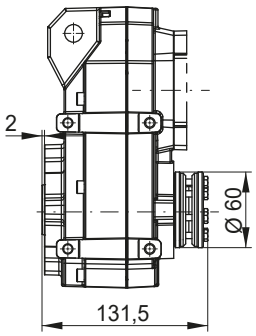
FH02 - Hollow shaft



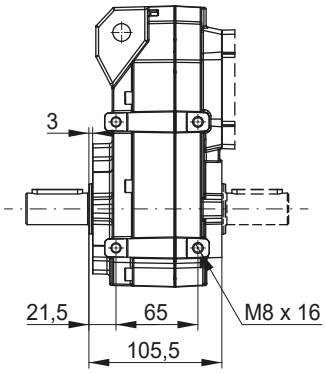


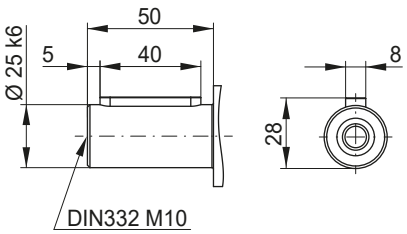


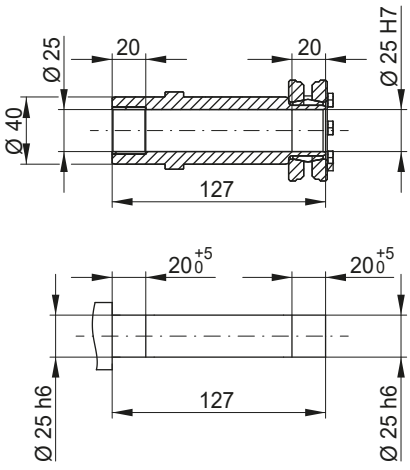
FD02 - Shrink disc *



FS02 - Output shaft
FB02 - Output shaft on both sides



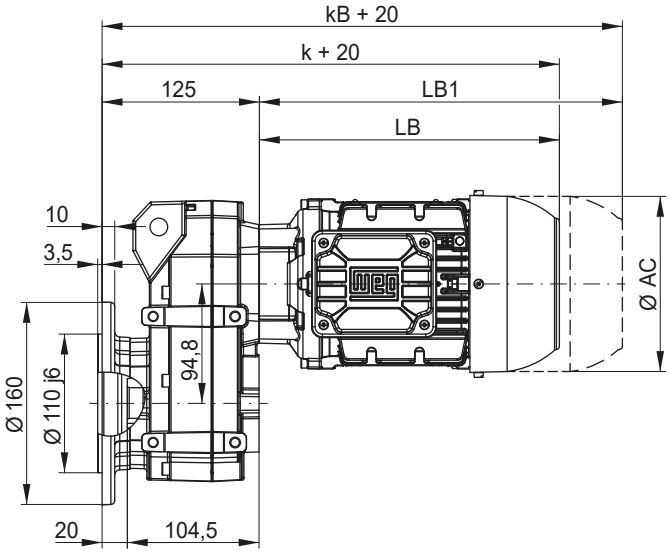


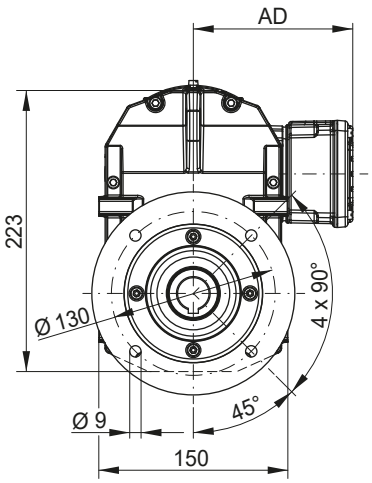


Dimension \ Motor fr.	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	309	343	351	393
kB	353	392	409	466
LB	204	238	246	288
LB1	248	287	304	361

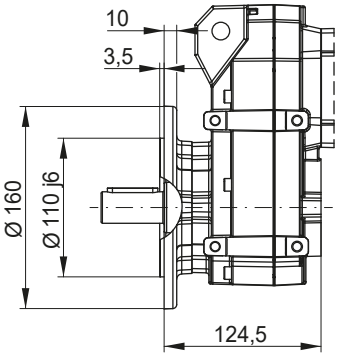
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

FO02 - B5 flange execution with hollow shaft

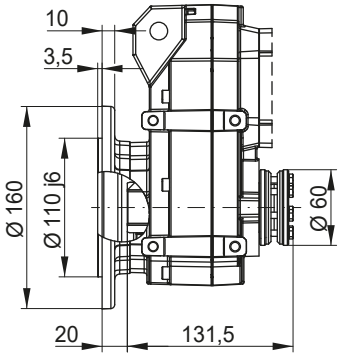




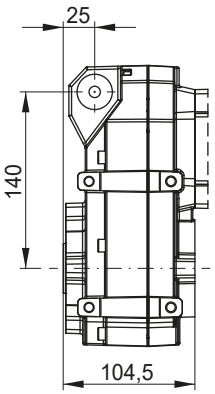
FF02 - B5 flange execution with output shaft



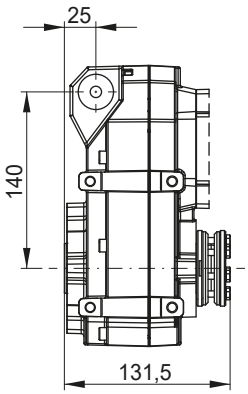
FP02 - B5 flange execution with hollow shaft and shrink disc *

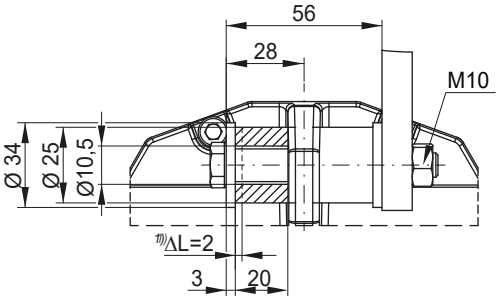


FT02 - Hollow shaft with rubber buffer



FU02 - Hollow shaft with shrink disc * and rubber buffer



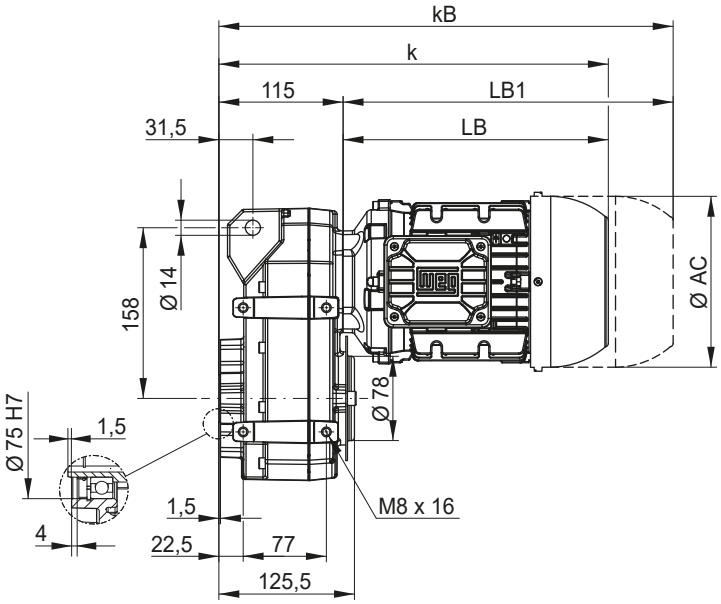


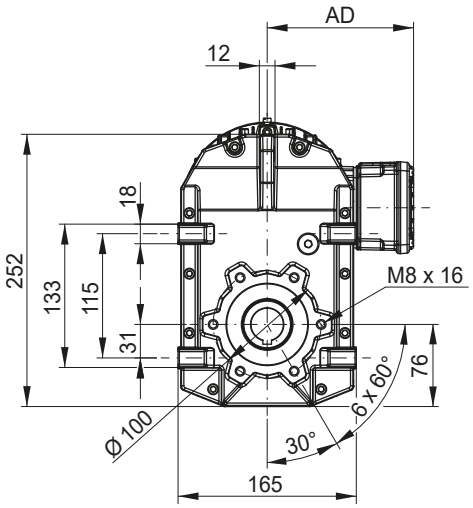
Dimensions in mm.

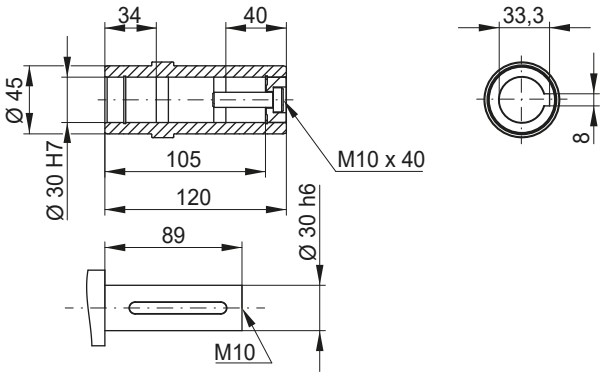
** Shrink disc only in combination with motor frame sizes 63 and 71*
Protection cap for shrink disc never possible

1) ΔL = recommended preload

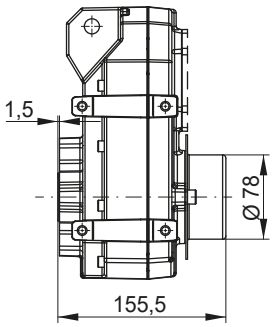
FH03 - Hollow shaft



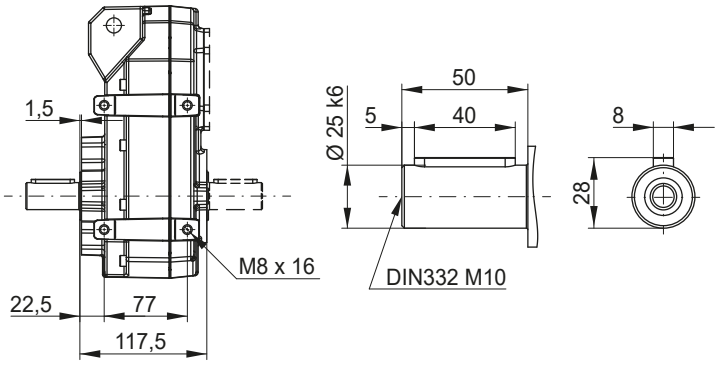


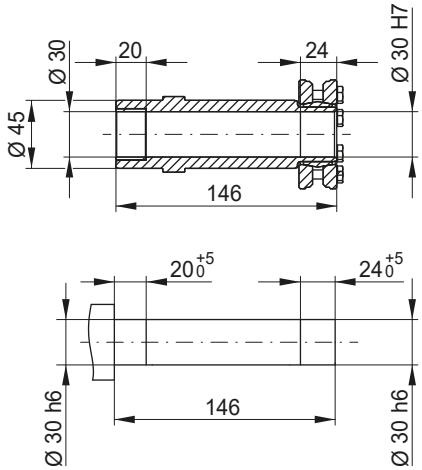


FD03 - Shrink disc *



FS03 - Output shaft
FB03 - Output shaft on both sides

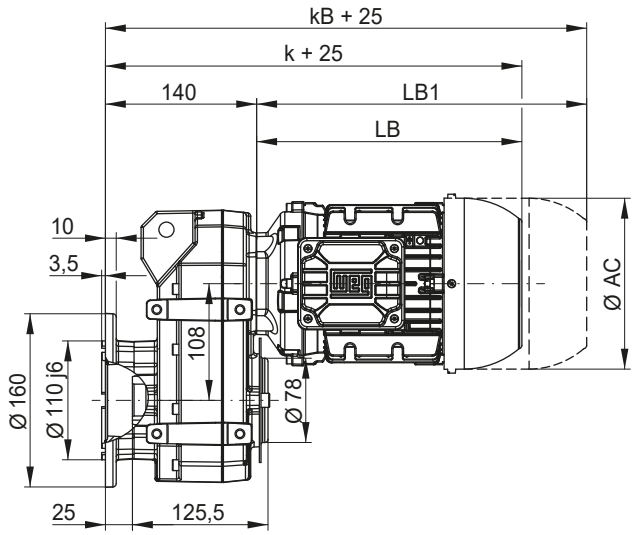


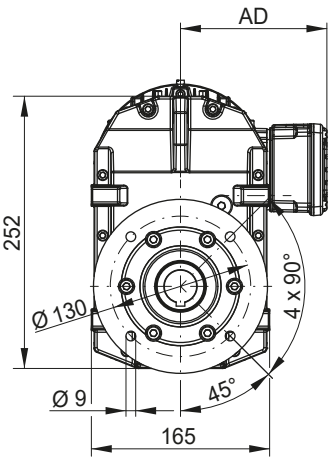


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	319	353	361	403	453	491
kB	363	402	419	476	537	575
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

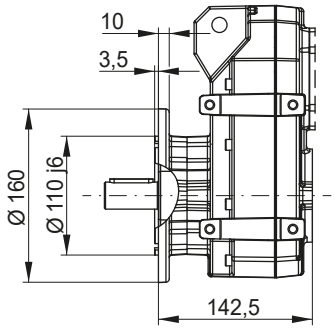
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

FO03 - B5 flange execution with hollow shaft

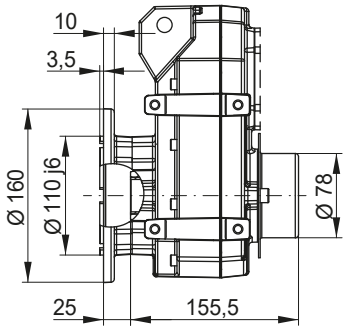




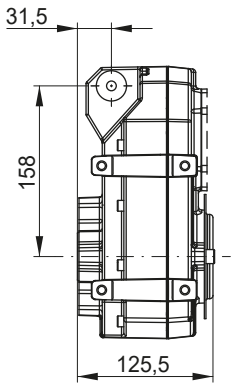
FF03 - B5 flange execution with output shaft



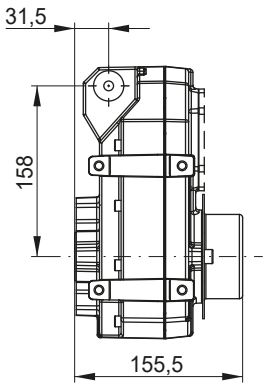
FP03 - B5 flange execution with hollow shaft and shrink disc *

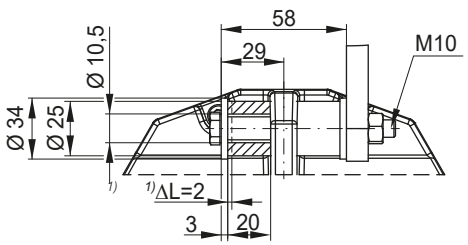


FT03 - Hollow shaft with rubber buffer



FU03 - Hollow shaft with shrink disc * and rubber buffer



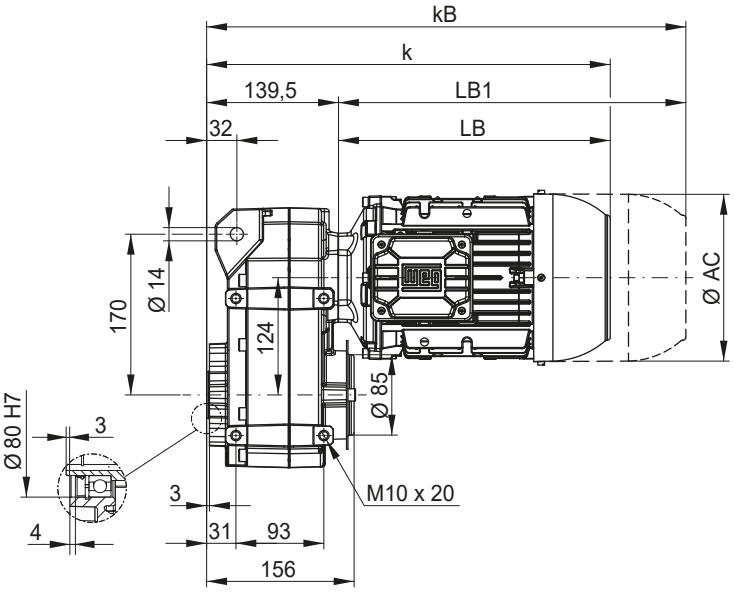


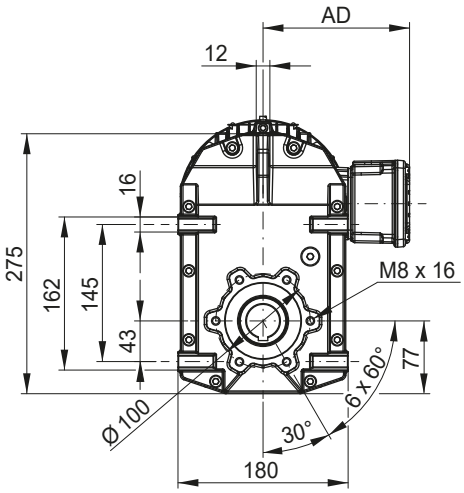
Dimensions in mm.

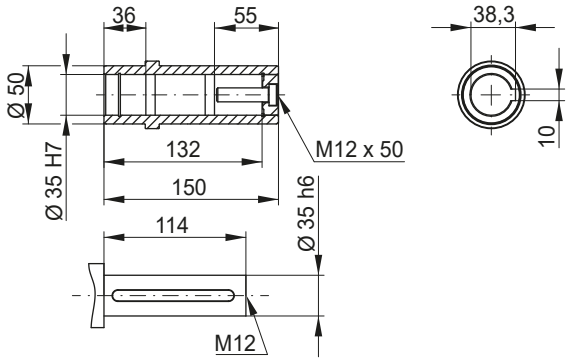
** Shrink disc only in combination with motor frame sizes 63 and 71*

1) ΔL = recommended preload

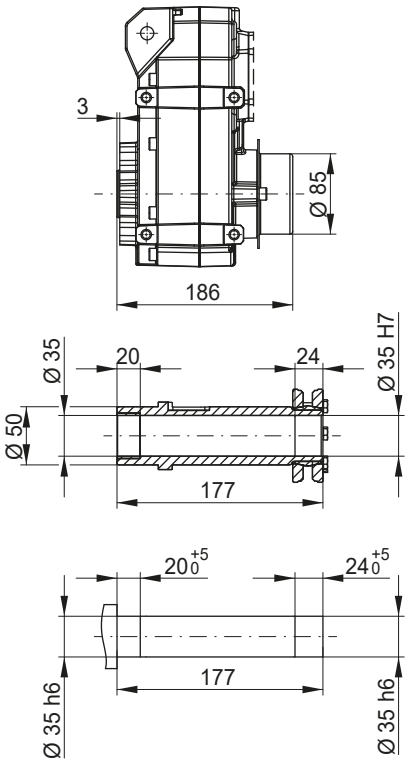
FH04 - Hollow shaft



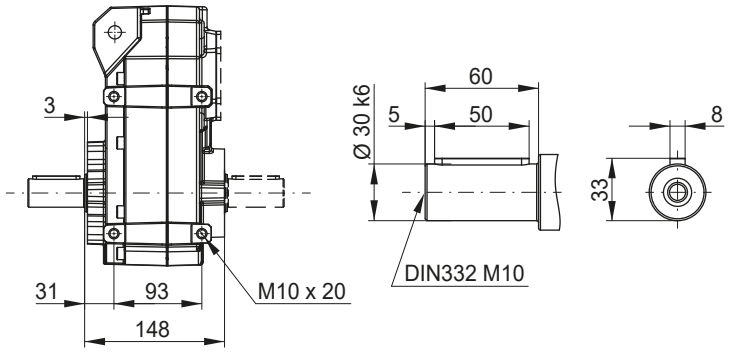




FD04 - Shrink disc *



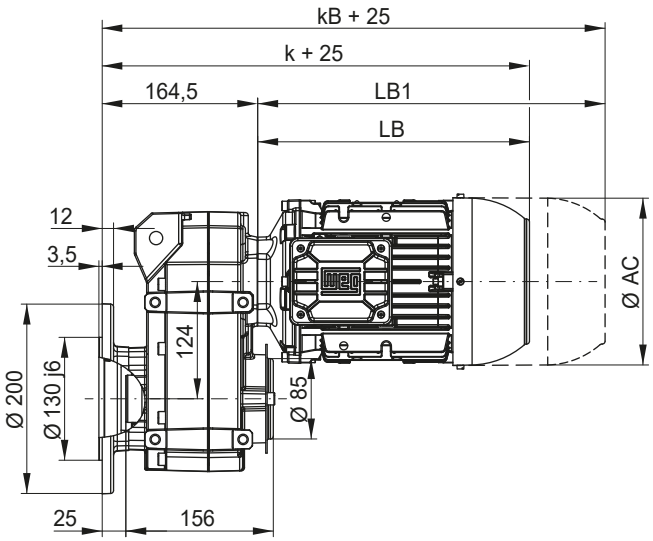
FS04 - Output shaft
FB04 - Output shaft on both sides

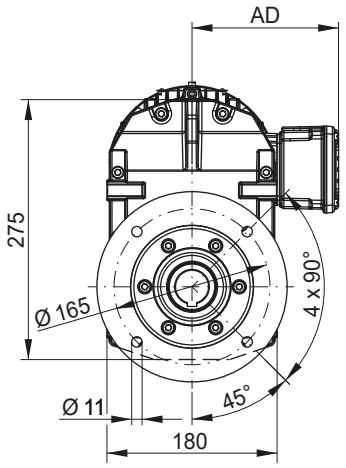


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	344	378	386	428	478	516
kB	388	427	444	501	562	600
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

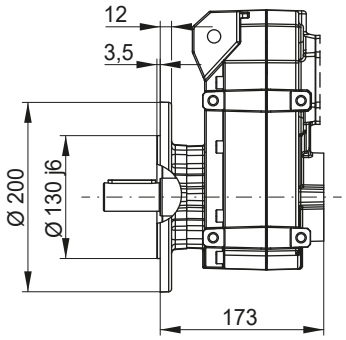
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

FO04 - B5 flange execution with hollow shaft

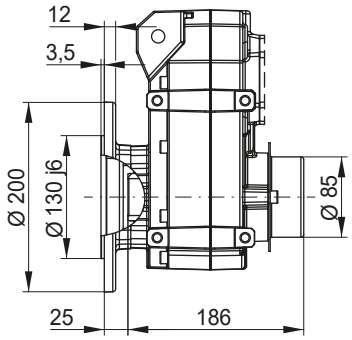




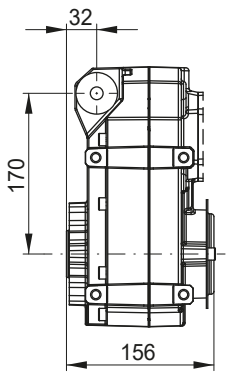
FF04 - B5 flange execution with output shaft



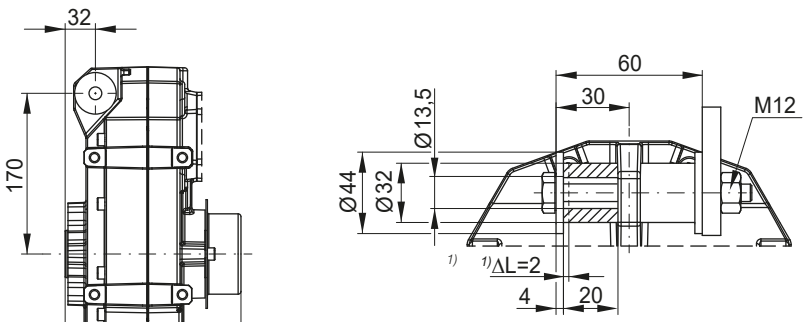
FP04 - B5 flange execution with hollow shaft and shrink disc *



FT04 - Hollow shaft with rubber buffer



FU04 - Hollow shaft with shrink disc * and rubber buffer

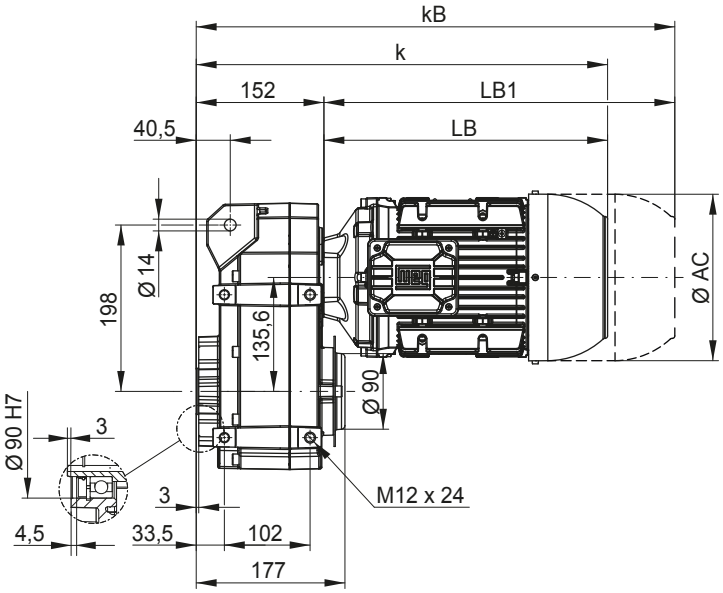


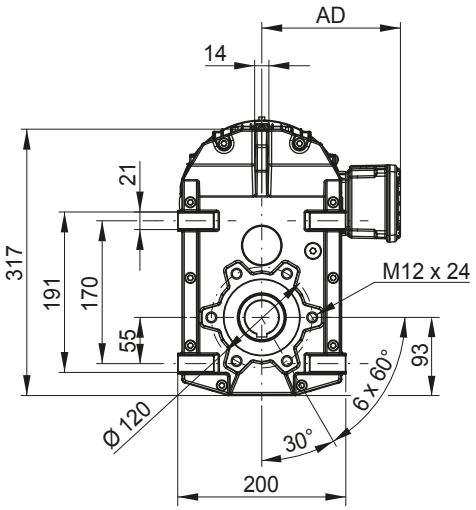
Dimensions in mm.

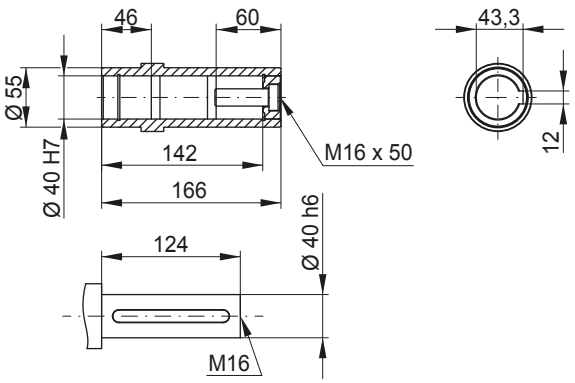
** Shrink disc only in combination with motor frame sizes 63, 71 and 80*

1) ΔL = recommended preload

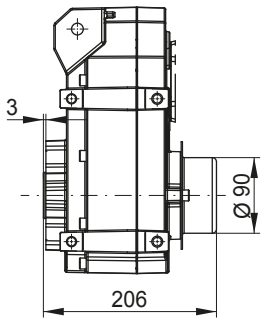
FH05 - Hollow shaft



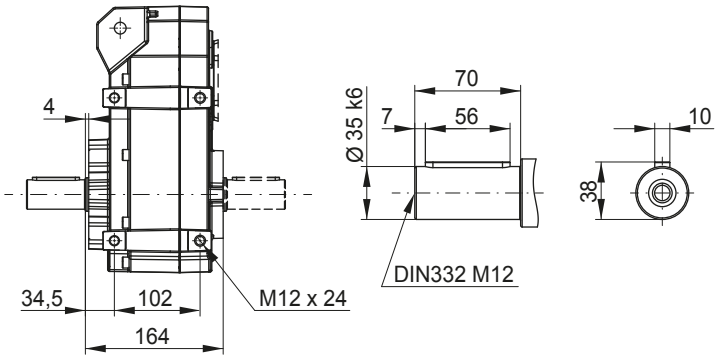


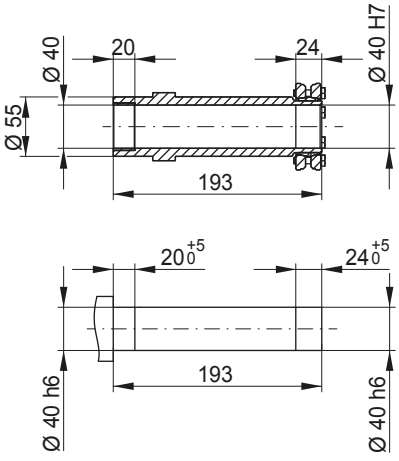


FD05 - Shrink disc *



FS05 - Output shaft
FB05 - Output shaft on both sides

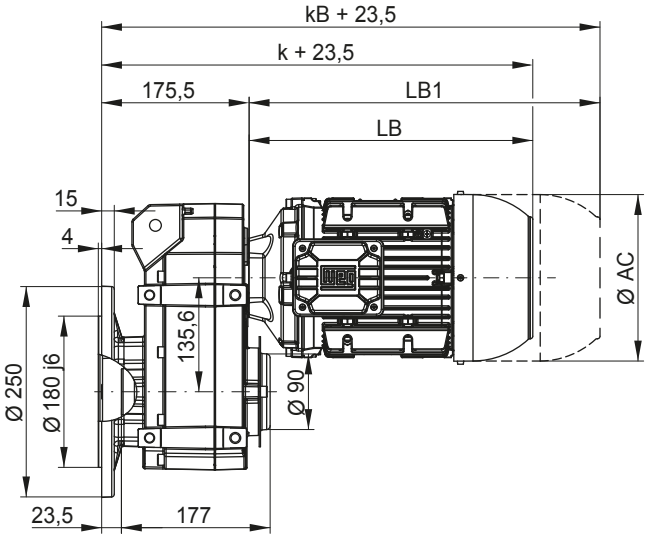


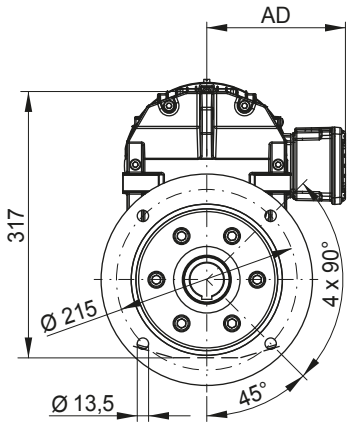


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	356	390	398	440	490	528	500	565	603
kB	400	439	456	513	574	612	587	683	721
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

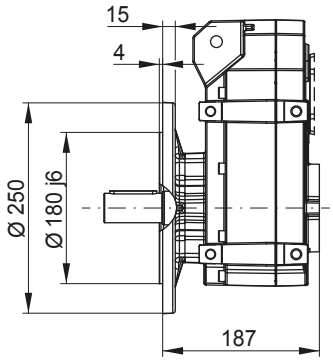
Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

FO05 - B5 flange execution with hollow shaft

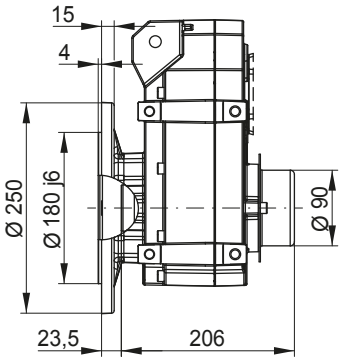




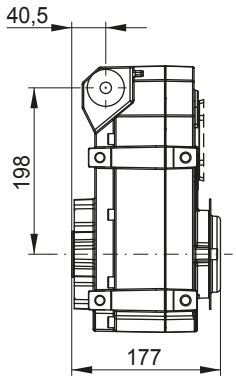
FF05 - B5 flange execution with output shaft



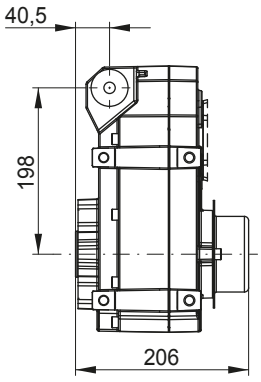
FP05 - B5 flange execution with hollow shaft and shrink disc *

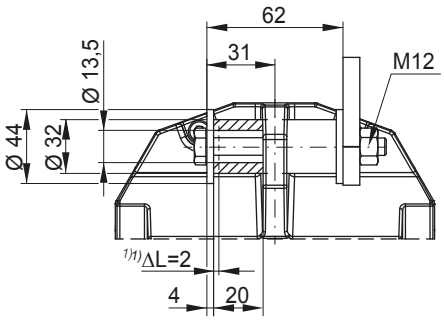


FT05 - Hollow shaft with rubber buffer



FU05 - Hollow shaft with shrink disc * and rubber buffer



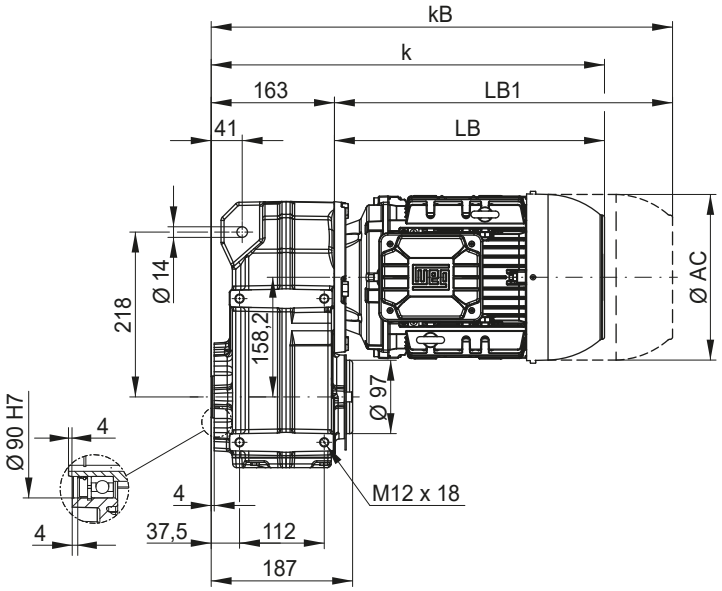


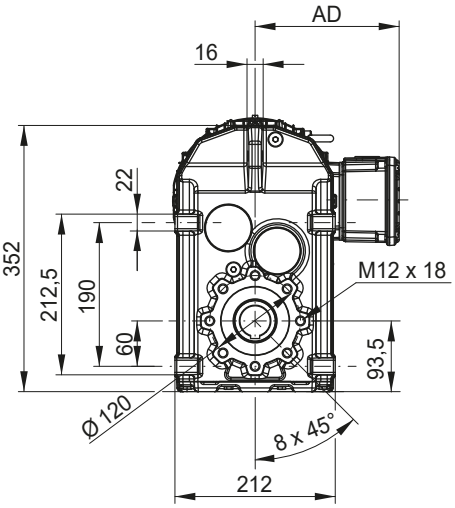
Dimensions in mm.

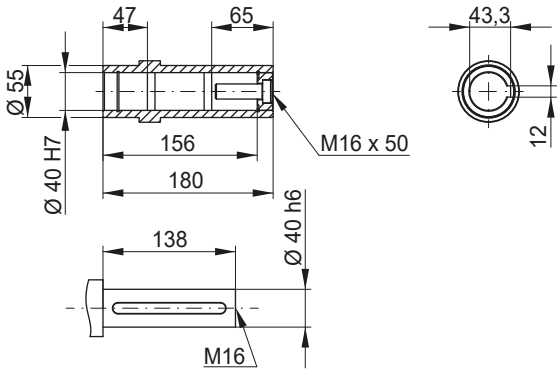
** Shrink disc only in combination with motor frame sizes 63, 71, 80 and 90*

1) ΔL = recommended preload

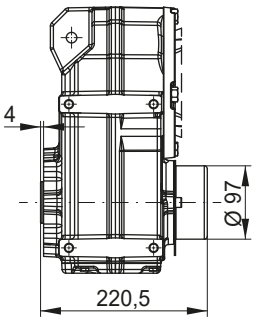
FH06 - Hollow shaft



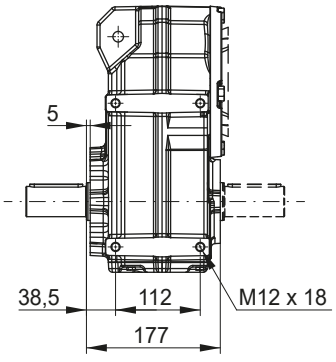


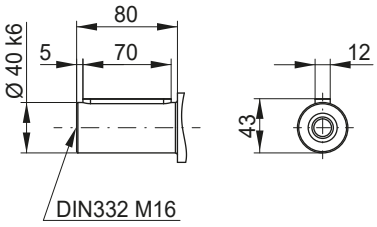


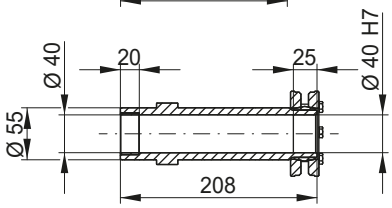
FD06 - Shrink disc *

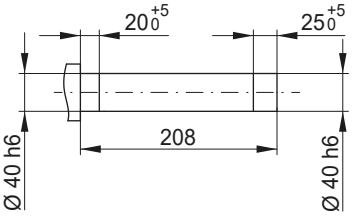


FS06 - Output shaft
FB06 - Output shaft on both sides





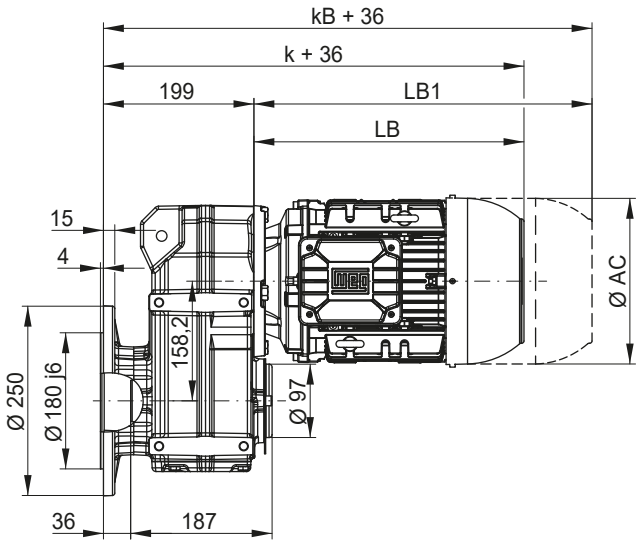


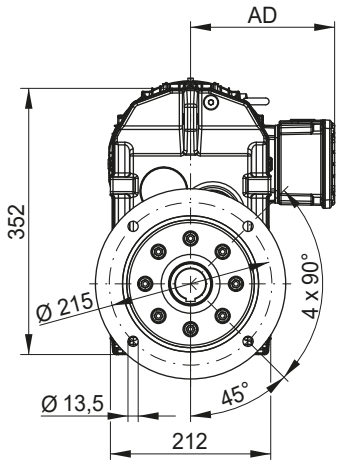


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	367	401	409	451	501	539	511	576	614	708	752
kB	411	450	467	524	585	623	598	694	732	832	876
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

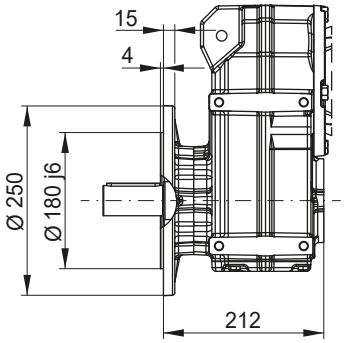
Motor dimension sheets see page 380; Gear unit size F06 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

FO06 - B5 flange execution with hollow shaft

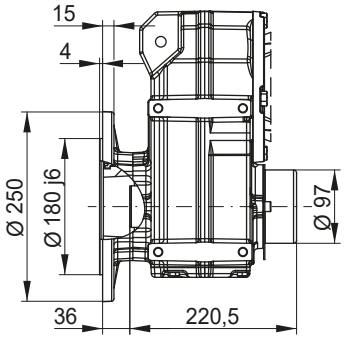




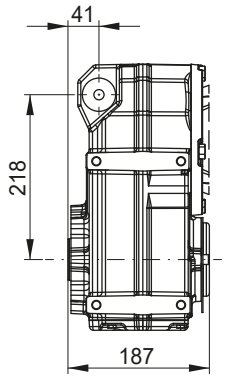
FF06 - B5 flange execution with output shaft



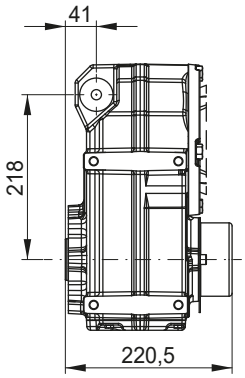
FP06 - B5 flange execution with hollow shaft and shrink disc *

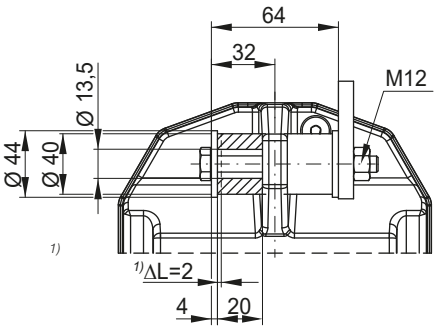


FT06 - Hollow shaft with rubber buffer



FU06 - Hollow shaft with shrink disc * and rubber buffer



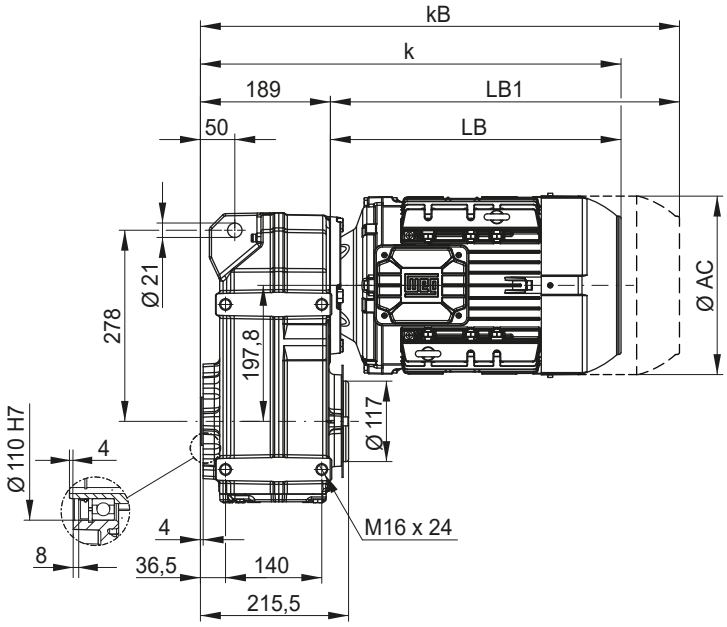


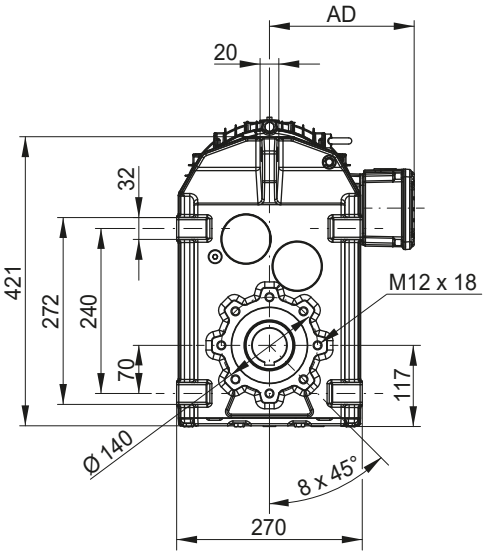
Dimensions in mm.

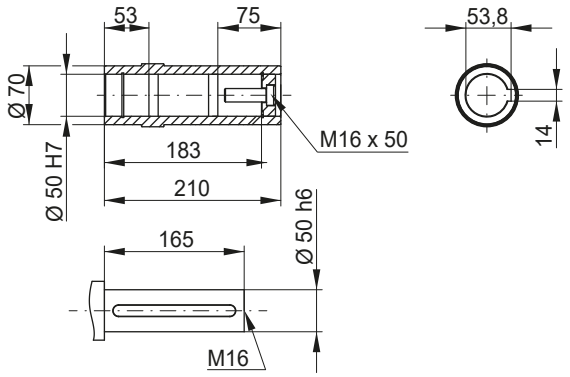
** Shrink disc only in combination with motor frame sizes 63, 71, 80, 90, 100 and 112*

1) ΔL = recommended preload

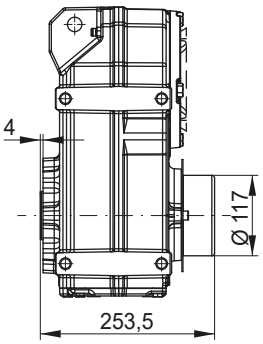
FH07 - Hollow shaft



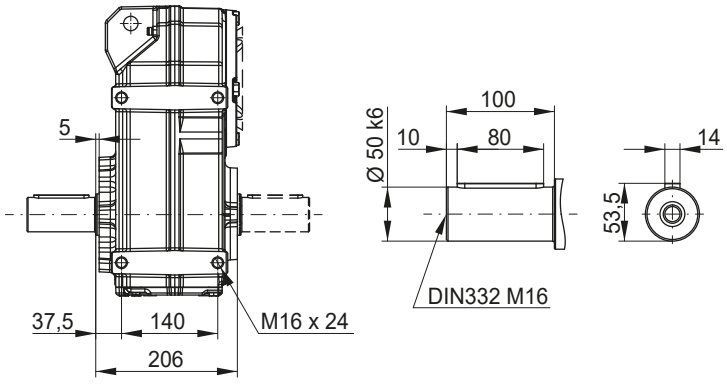


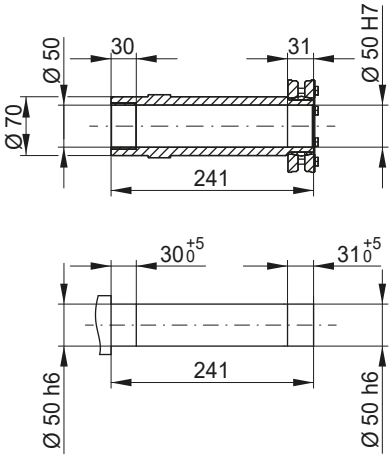


FD07 - Shrink disc *



FS07 - Output shaft
FB07 - Output shaft on both sides

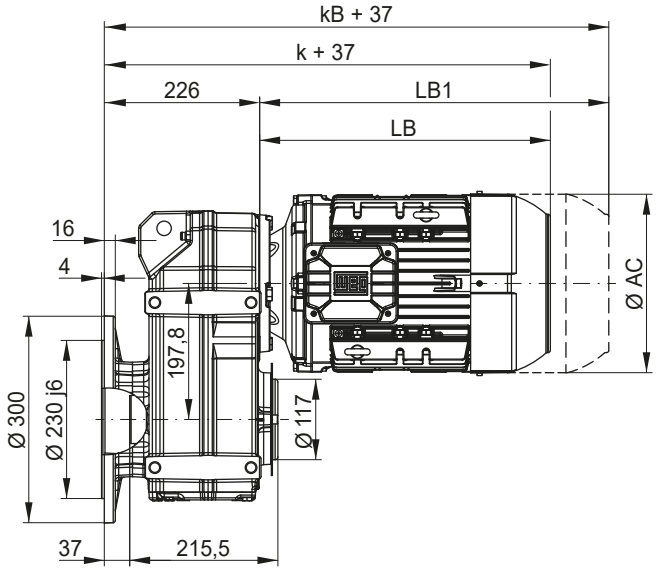


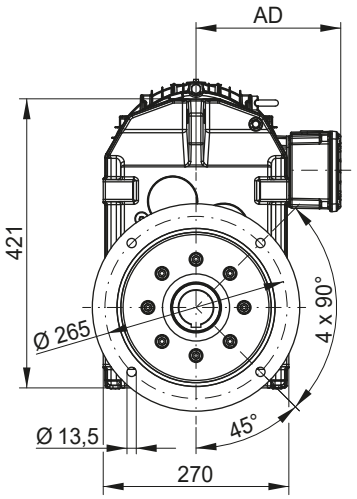


Dimensions \ Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	393	427	435	477	527	565	537	602	640	734	778
kB	437	476	493	550	611	649	624	720	758	858	902
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

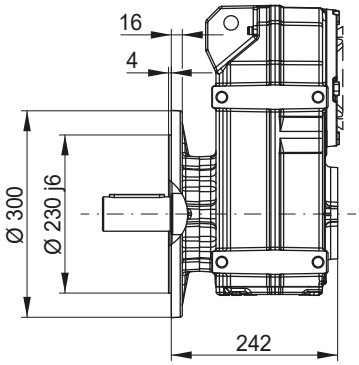
Motor dimension sheets see page 380; Gear unit size F07 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

FO07 - B5 flange execution with hollow shaft

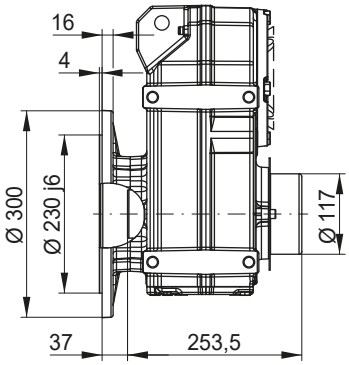




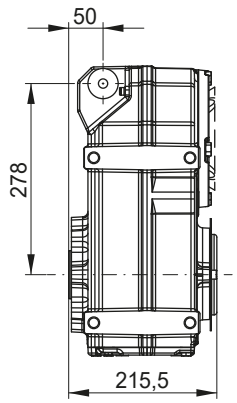
FF07 - B5 flange execution with output shaft



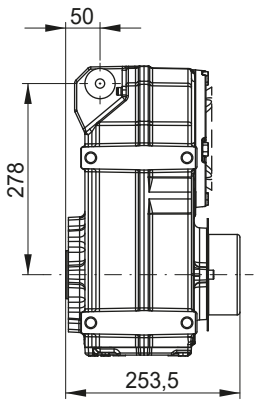
FP07 - B5 flange execution with hollow shaft and shrink disc *

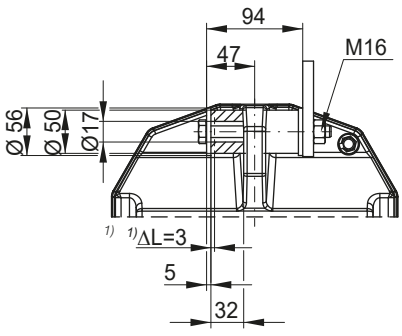


FT07 - Hollow shaft with rubber buffer



FU07 - Hollow shaft with shrink disc * and rubber buffer



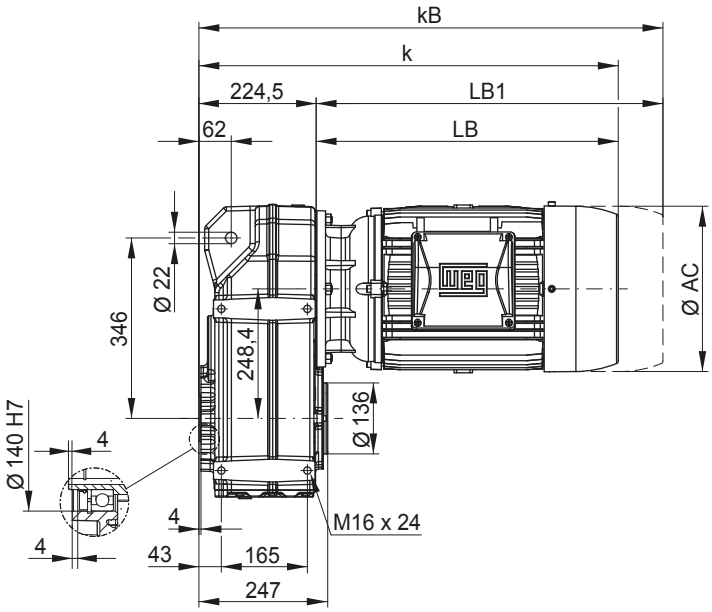


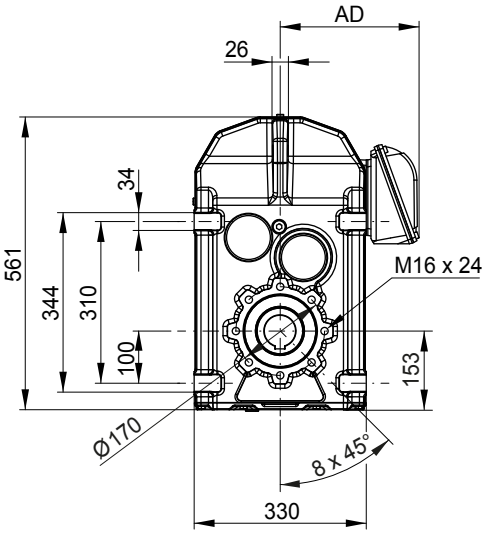
Dimensions in mm.

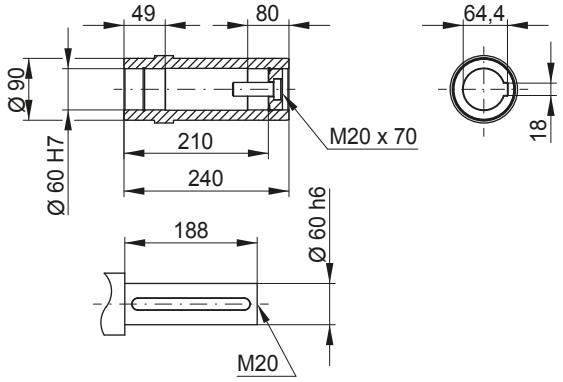
** Shrink disc and protection cap possible with all mountable motors.*

1) ΔL = recommended preload

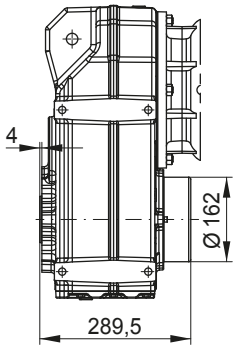
FH08 - Hollow shaft



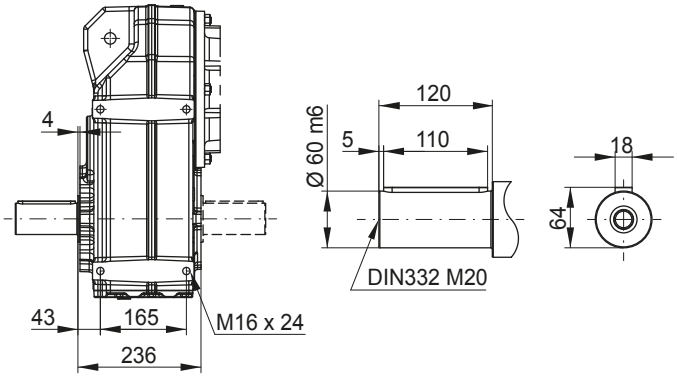


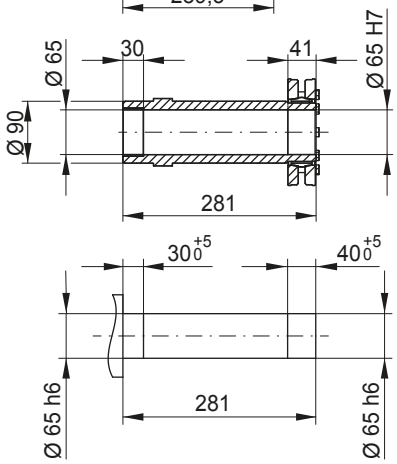


FD08 - Shrink disc *



FS08 - Output shaft
FB08 - Output shaft on both sides

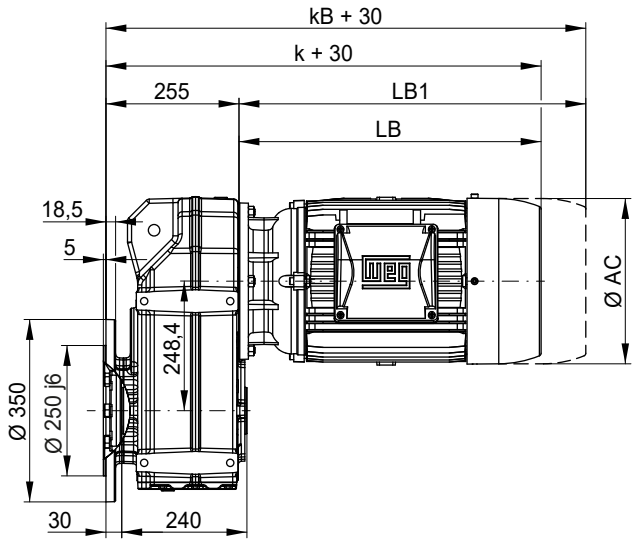


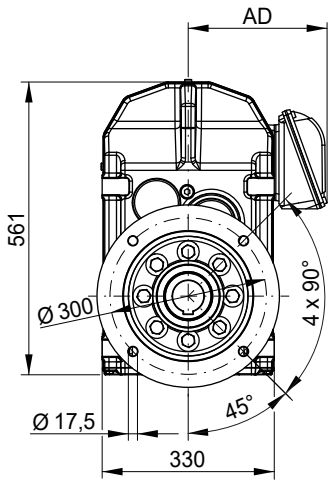


Motor fr. / Dimensions	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	429	463	471	513	563	601	573	638	676	760	804	828	866
kB	473	512	529	586	647	685	660	756	794	884	928	946	984
LB	204	238	246	288	338	376	348	413	451	535	579	603	641
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759

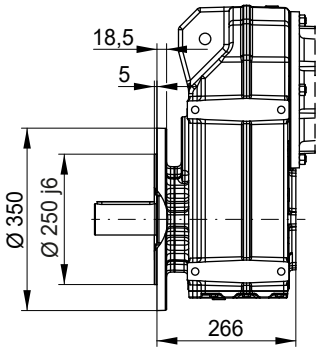
Motor dimension sheets see page 380; Gear unit size F08 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

FO08 - B5 flange execution with hollow shaft

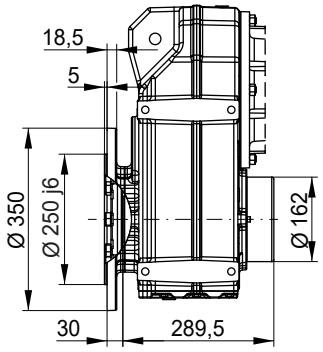




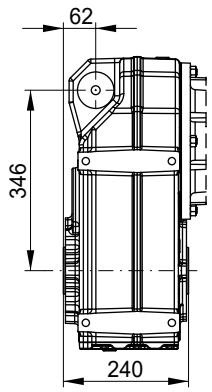
FF08 - B5 flange execution with output shaft



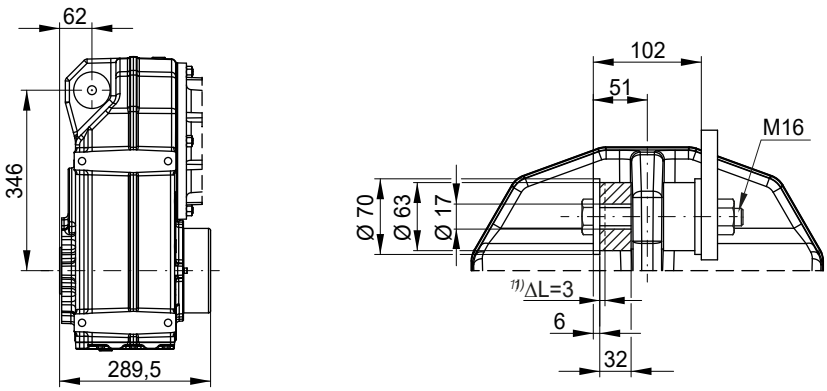
FP08 - B5 flange execution with hollow shaft and shrink disc *



FT08 - Hollow shaft with rubber buffer



FU08 - Hollow shaft with shrink disc * and rubber buffer

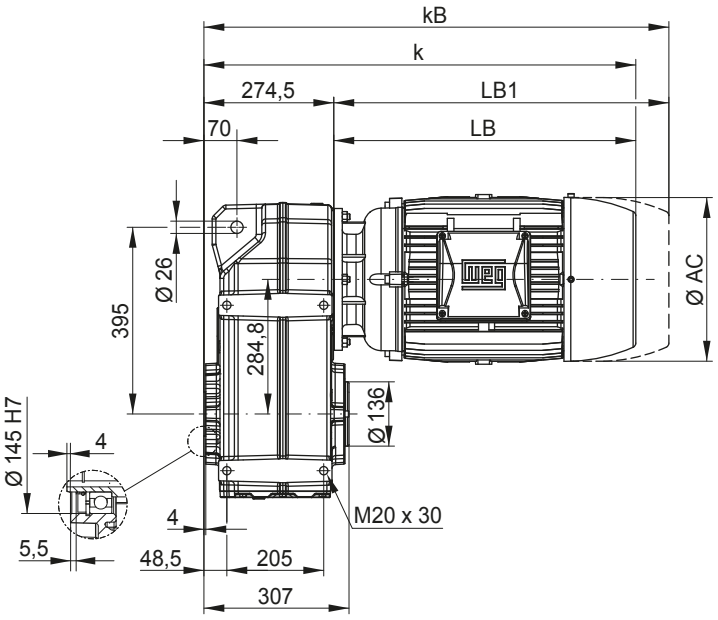


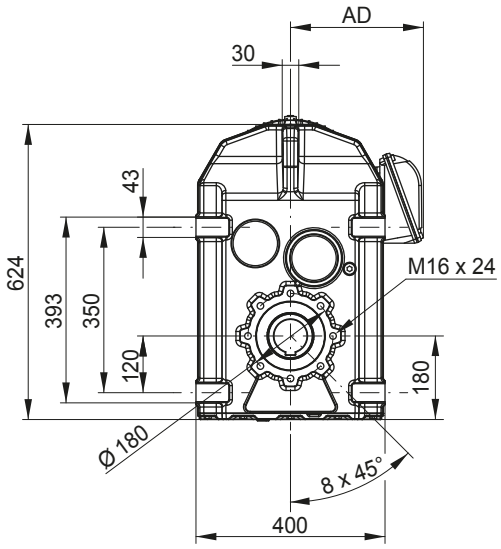
Dimensions in mm.

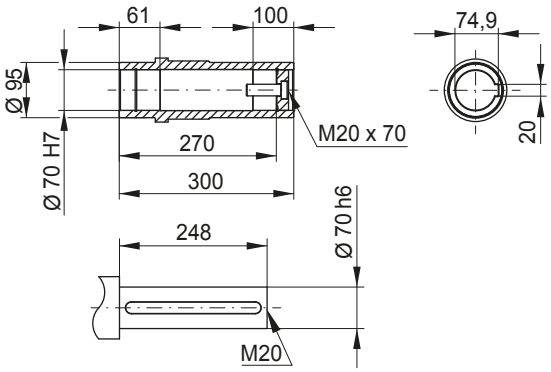
** Shrink disc and protection cap possible with all mountable motors.*

1) ΔL = recommended preload

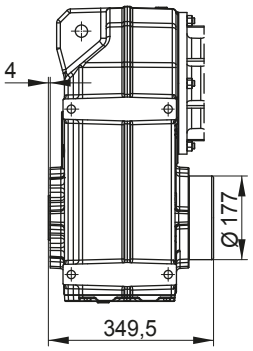
FH09 - Hollow shaft



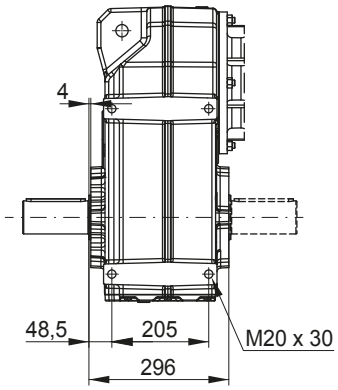


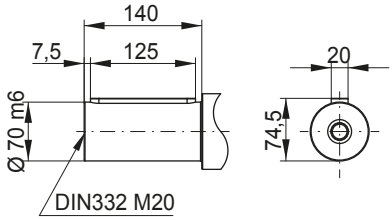


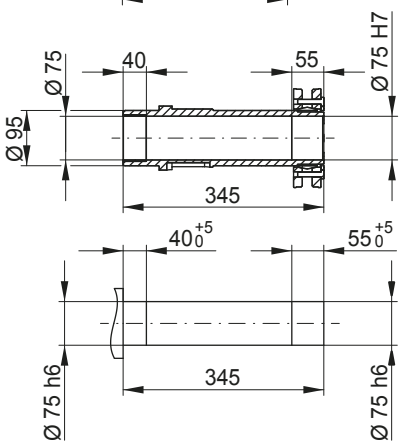
FD09 - Shrink disc *



FS09 - Output shaft
FB09 - Output shaft on both sides



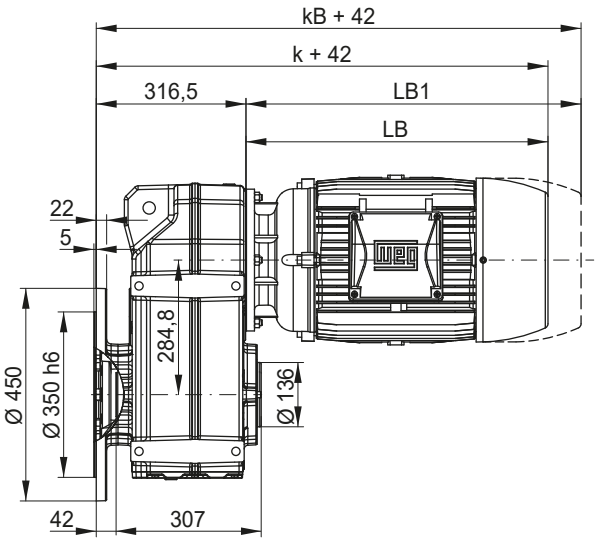


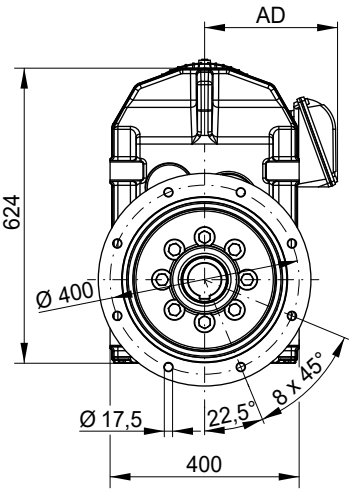


Motor fr. / Dimensions	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	125	133	142	152	162	162	180	200	200	266	266	281	281	317
k	479	513	521	563	613	651	623	688	726	810	854	878	916	1008
kB	523	562	579	636	697	735	710	806	844	934	978	996	1034	1134
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

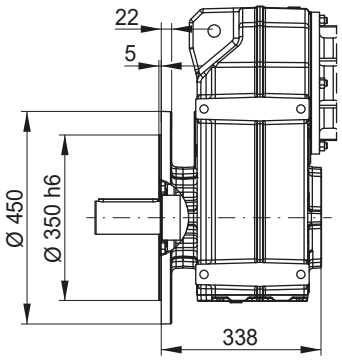
Motor dimension sheets see page 380; Gear unit size F09 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

FO09 - B5 flange execution with hollow shaft

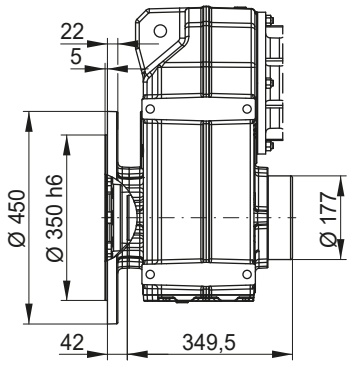




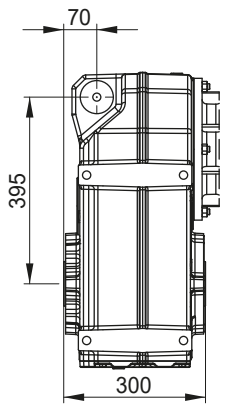
FF09 - B5 flange execution with output shaft



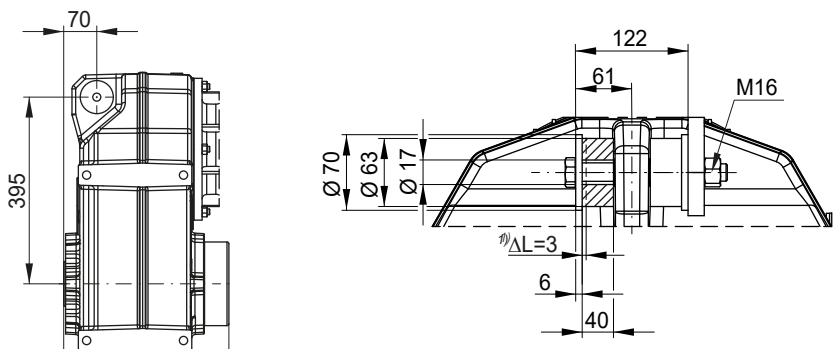
FP09 - B5 flange execution with hollow shaft and shrink disc *



FT09 - Hollow shaft with rubber buffer



FU09 - Hollow shaft with shrink disc * and rubber buffer

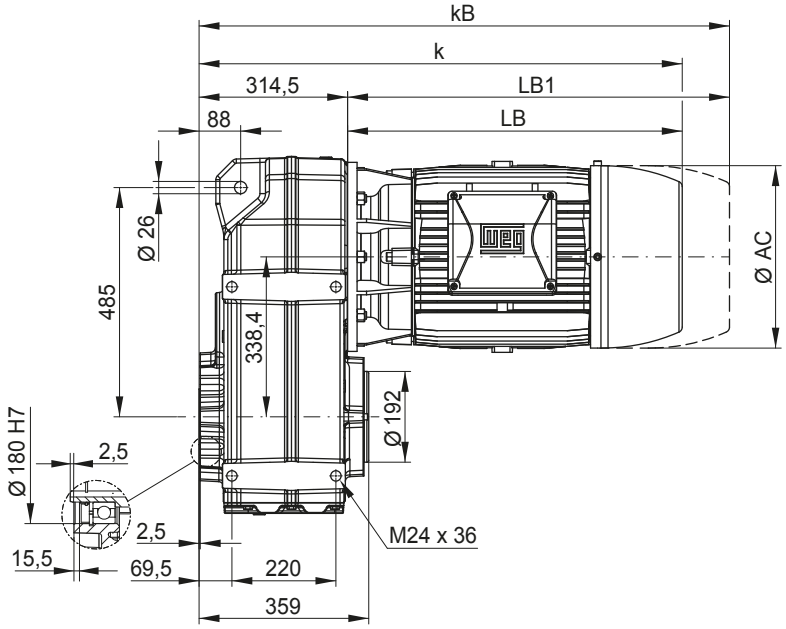


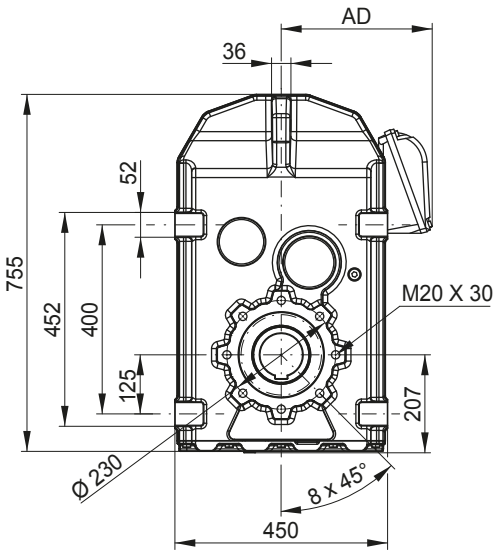
Dimensions in mm.

** Shrink disc and protection cap possible with all mountable motors.*

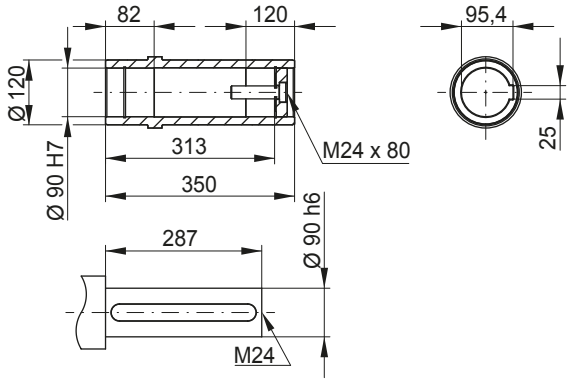
1) ΔL = recommended preload

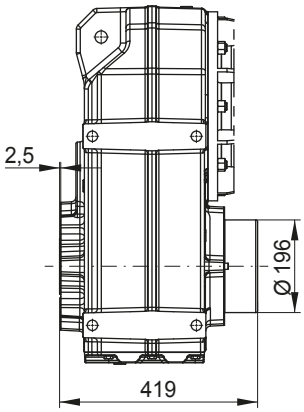
FH10 - Hollow shaft



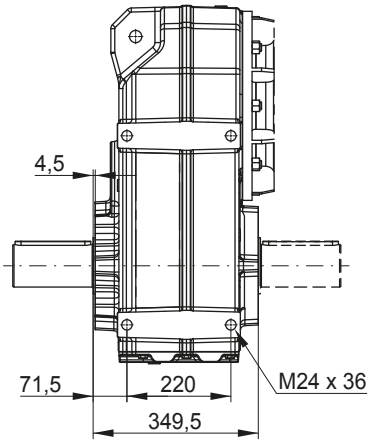


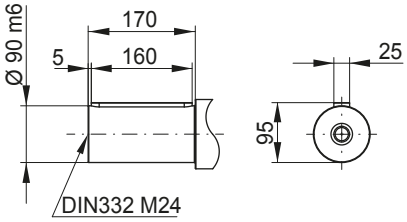
FD10 - Shrink disc *

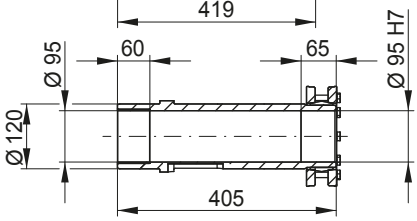


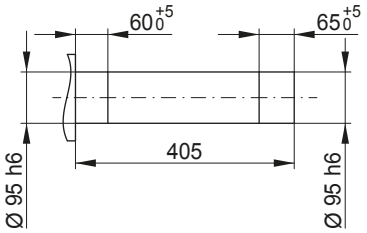


FS10 - Output shaft
FB10 - Output shaft on both sides





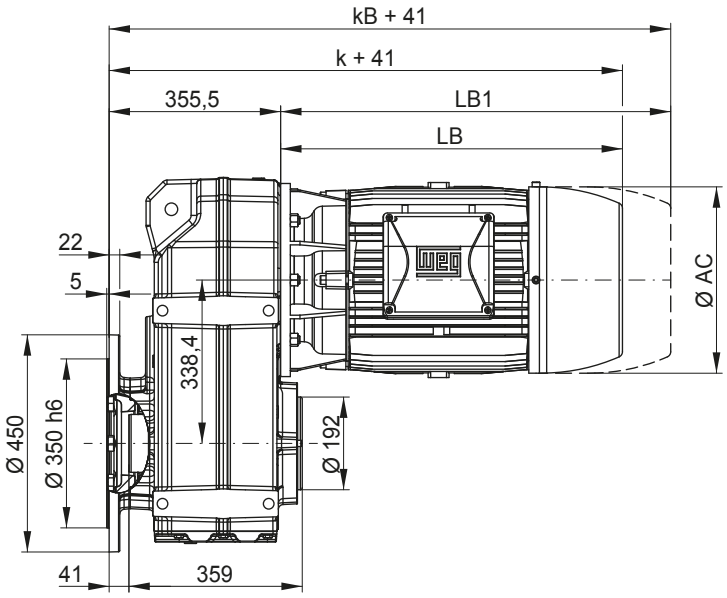


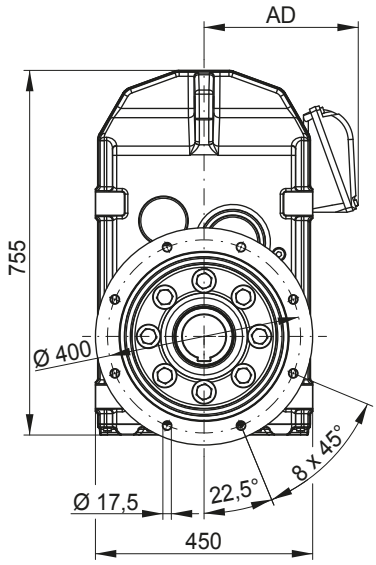


Motor fr. / Dimensions	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	663	728	766	837	881	905	943	1035	1143
kB	-	-	-	-	-	-	750	846	884	961	1005	1023	1061	1161	1261
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

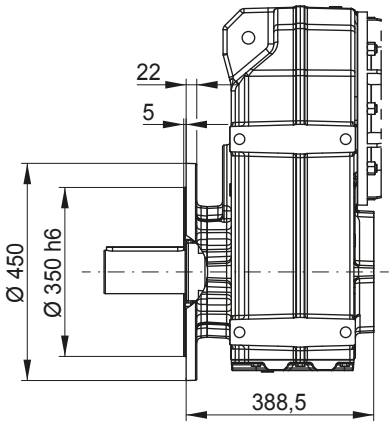
Motor dimension sheets see page 380; Gear unit size F10 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

FO10 - B5 flange execution with hollow shaft

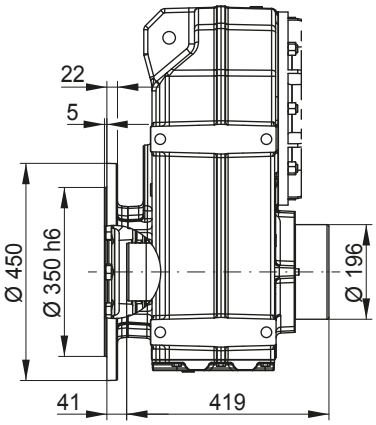




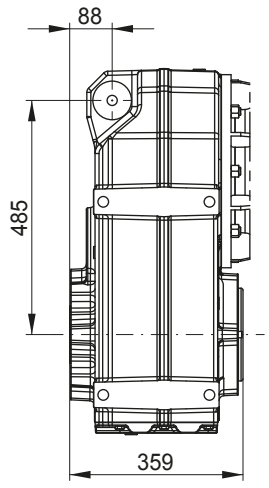
FF10 - B5 flange execution with output shaft



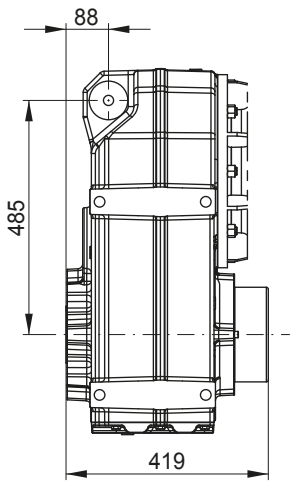
FP10 - B5 flange execution with hollow shaft and shrink disc *

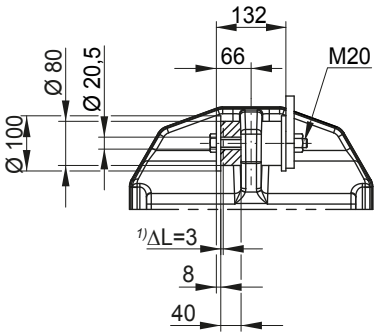


FT10 - Hollow shaft with rubber buffer



FU10 - Hollow shaft with shrink disc * and rubber buffer



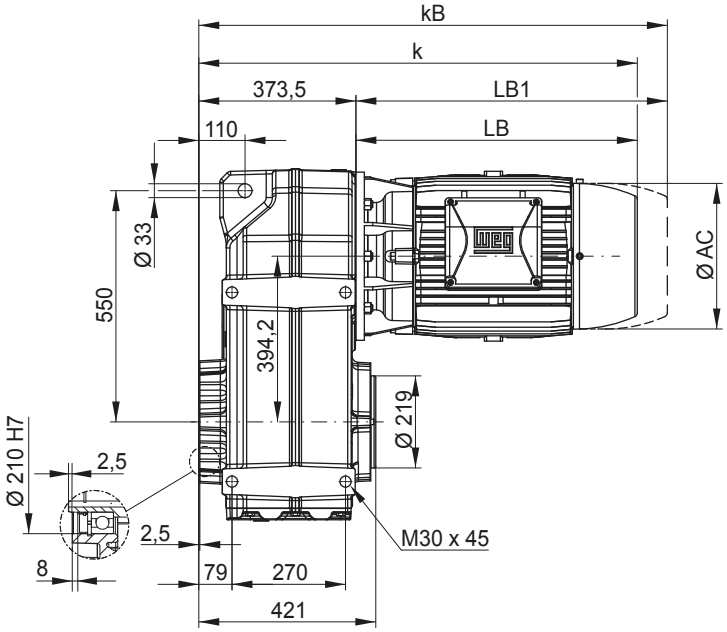


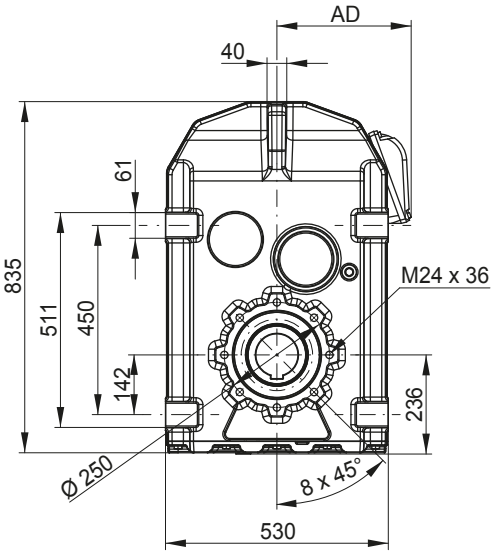
Dimensions in mm.

** Shrink disc and protection cap possible with all mountable motors.*

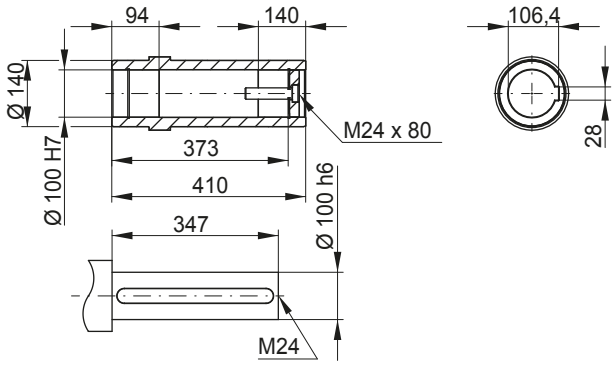
1) ΔL = recommended preload

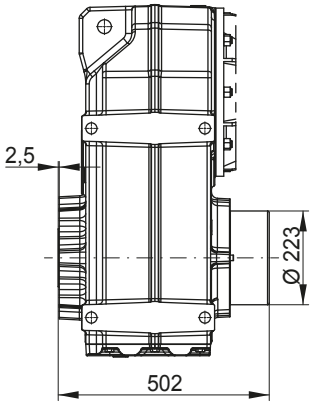
FH12 - Hollow shaft



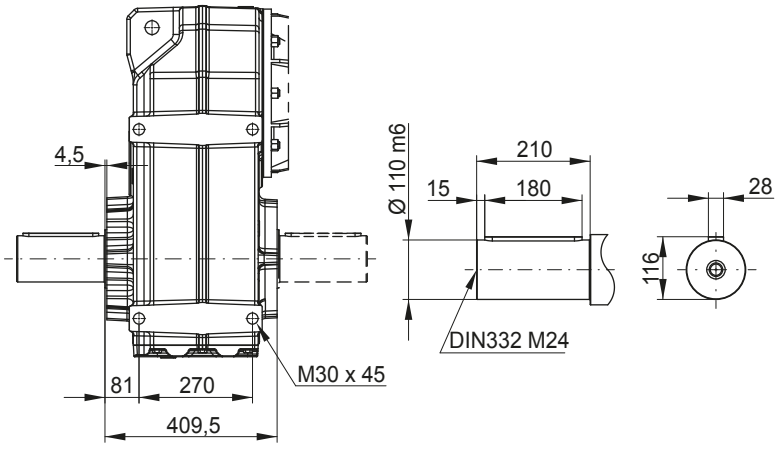


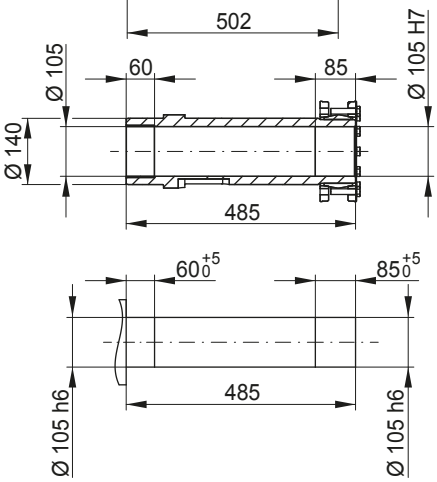
FD12 - Shrink disc *





FS12 - Output shaft
FB12 - Output shaft on both sides

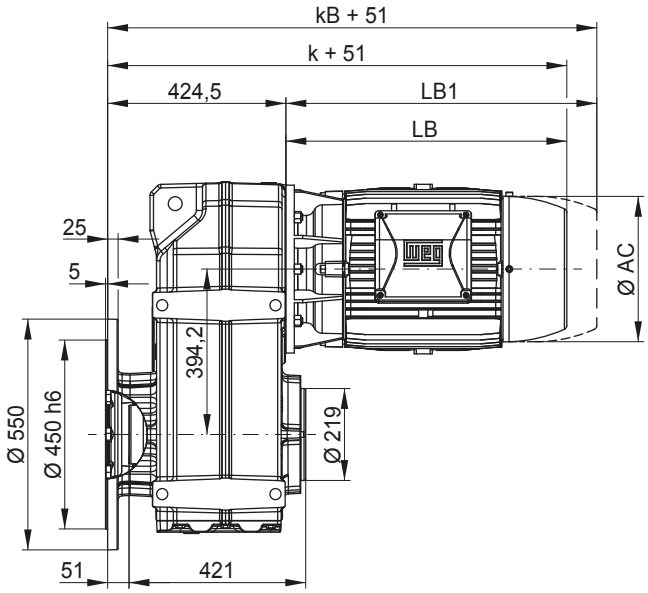


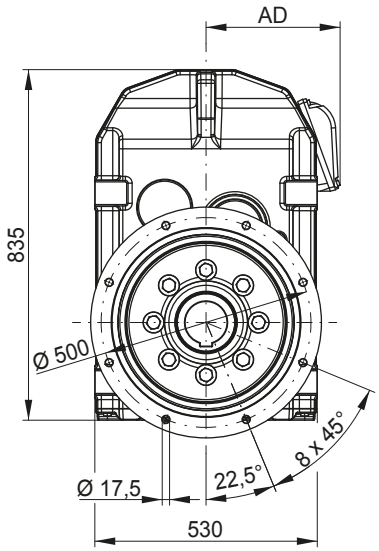


Motor fr. / Dimensions	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	722	787	825	896	940	964	1002	1094	1202
kB	-	-	-	-	-	-	809	905	943	1020	1064	1082	1120	1220	1320
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

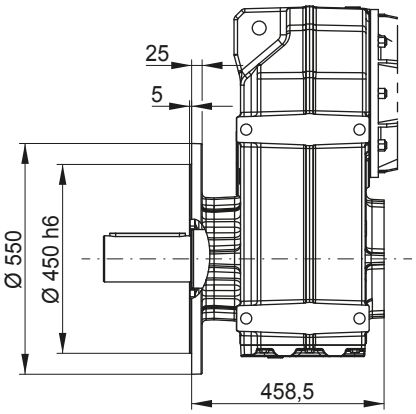
Motor dimension sheets see page 380; Gear unit size F12 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

FO12 - B5 flange execution with hollow shaft

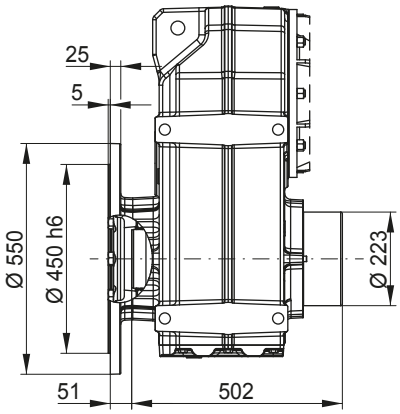




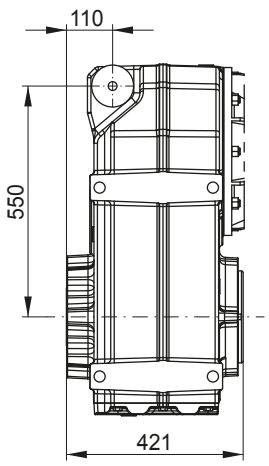
FF12 - B5 flange execution with output shaft



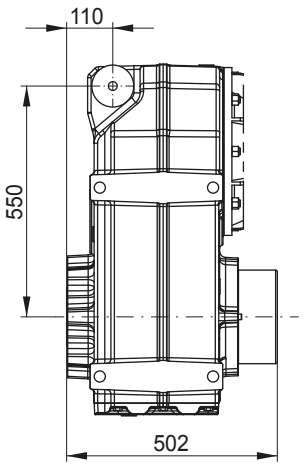
FP12 - B5 flange execution with hollow shaft and shrink disc *

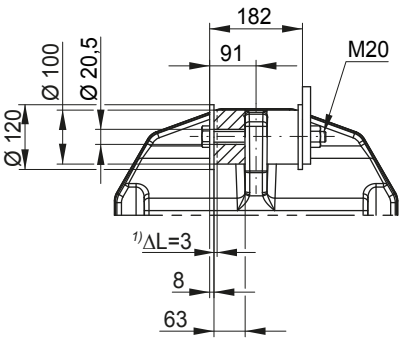


FT12 - Hollow shaft with rubber buffer



FU12 - Hollow shaft with shrink disc * and rubber buffer



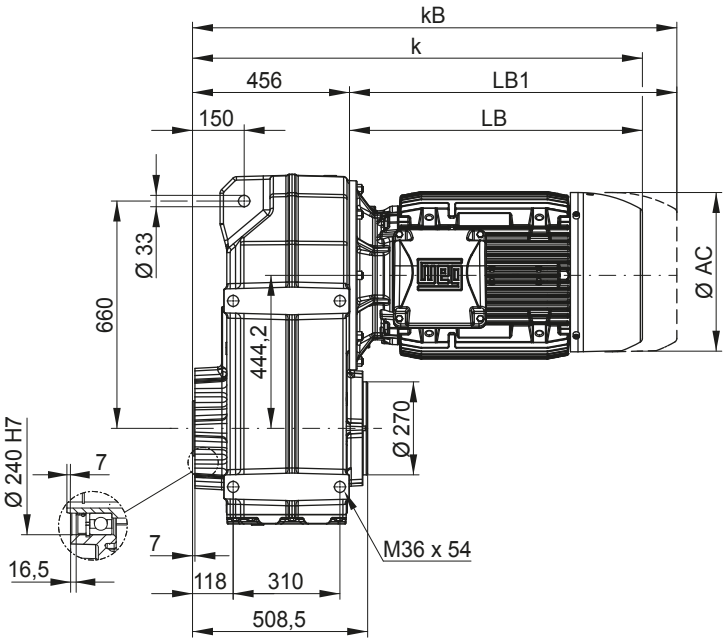


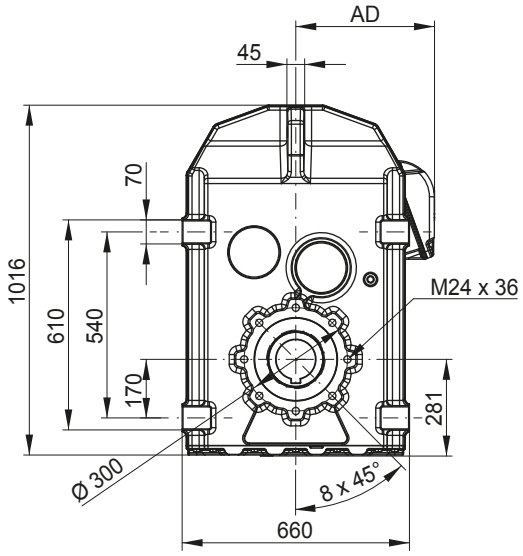
Dimensions in mm.

** Shrink disc and protection cap possible with all mountable motors.*

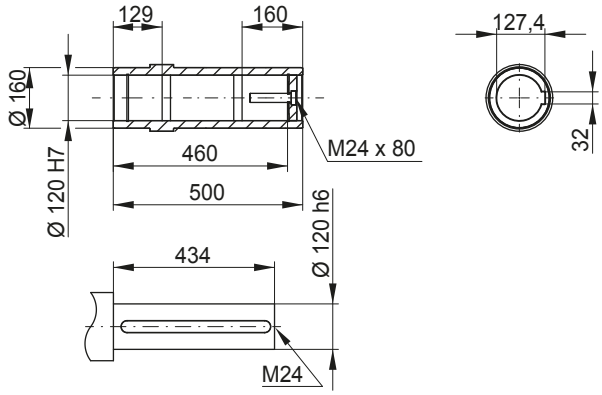
1) ΔL = recommended preload

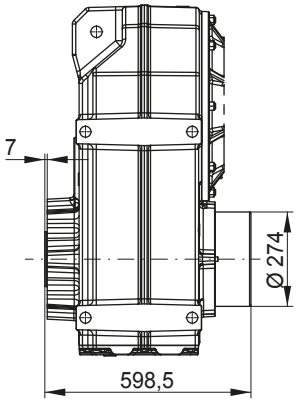
FH15 - Hollow shaft



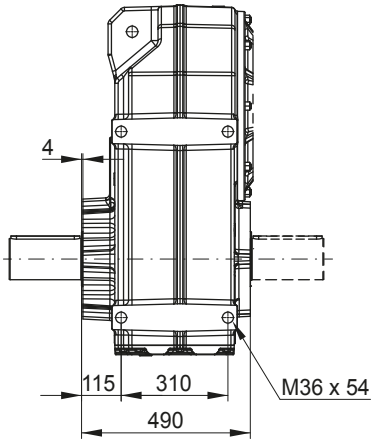


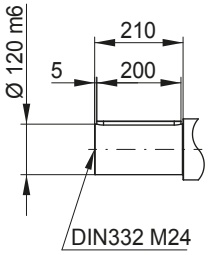
FD15 - Shrink disc *

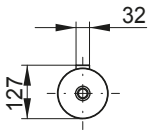


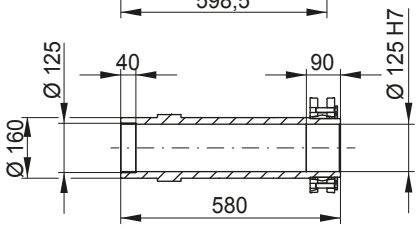


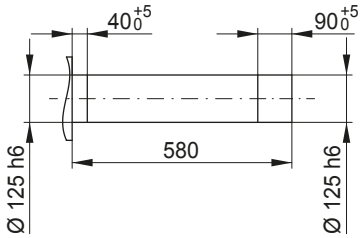
FS15 - Output shaft
FB15 - Output shaft on both sides







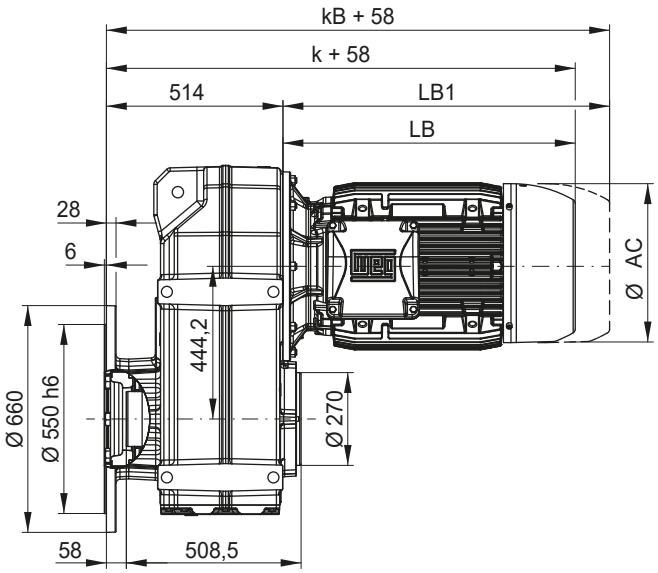


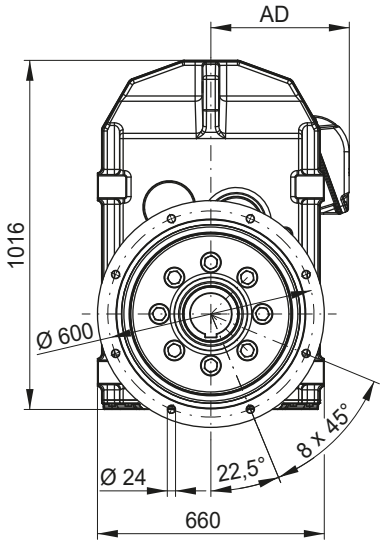


Motor fr. / Dimensions	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	962	1006	1030	1068	1160	1268	1307
kB	-	-	-	-	-	-	-	-	-	1086	1130	1148	1186	1286	1386	1425
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

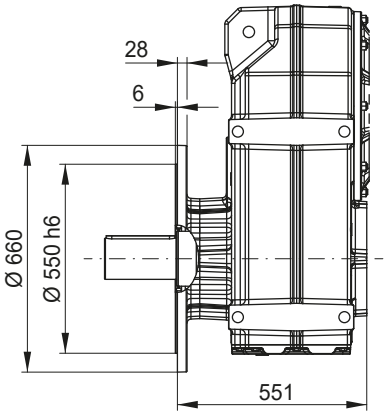
Motor dimension sheets see page 380; Gear unit size F15 corresponds to motor flange FR-550. Description of motor lengths LB and LB1 see page 384.

FO15 - B5 flange execution with hollow shaft

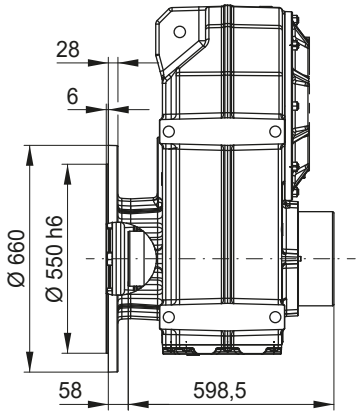




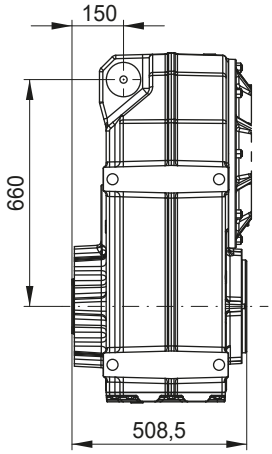
FF15 - B5 flange execution with output shaft



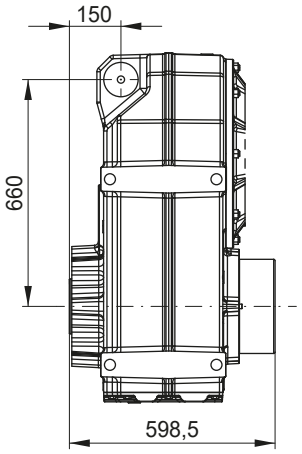
FP15 - B5 flange execution with hollow shaft and shrink disc *

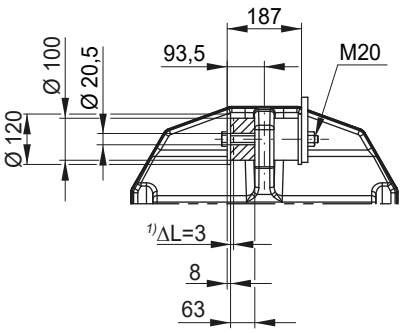


FT15 - Hollow shaft with rubber buffer



FU15 - Hollow shaft with shrink disc * and rubber buffer

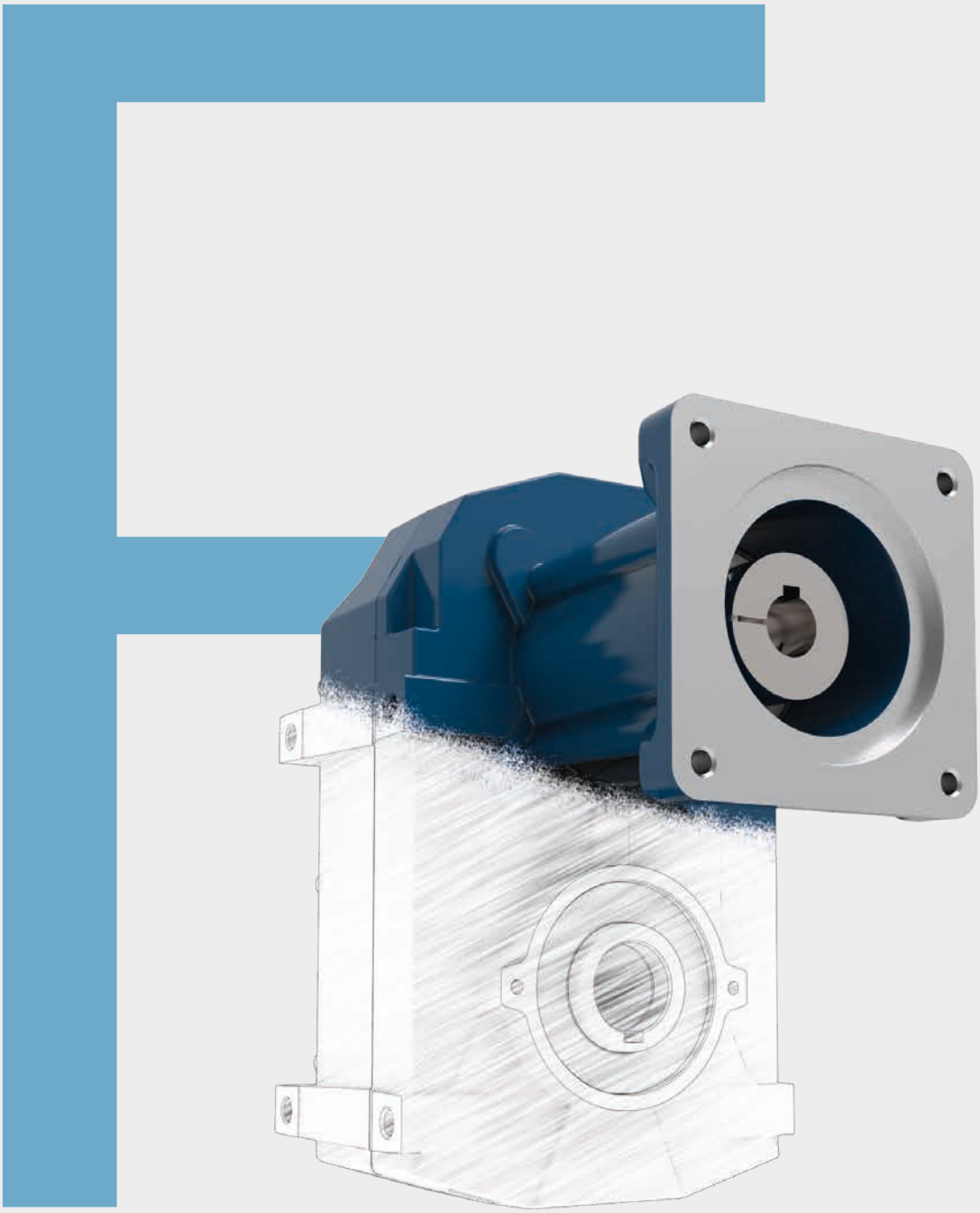




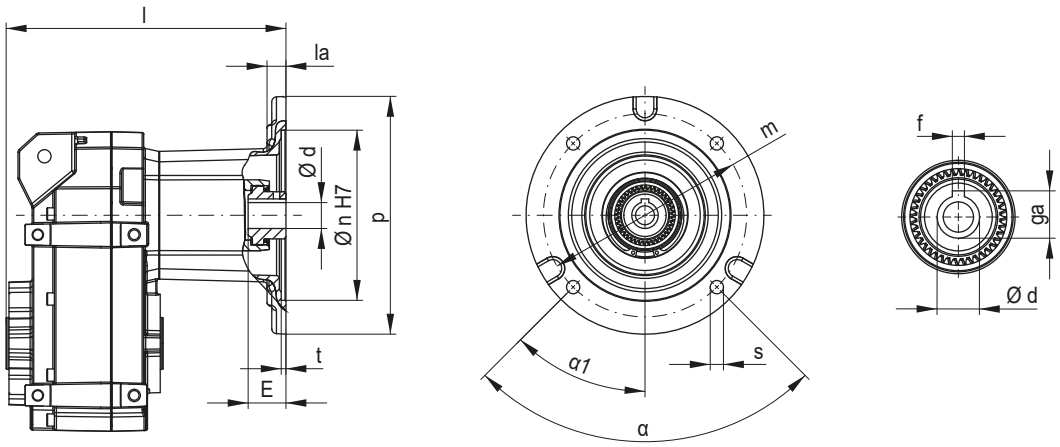
Dimensions in mm.

** Shrink disc and protection cap possible with all mountable motors.*

1) ΔL = recommended preload



IEC Adapter I63 to I280



F

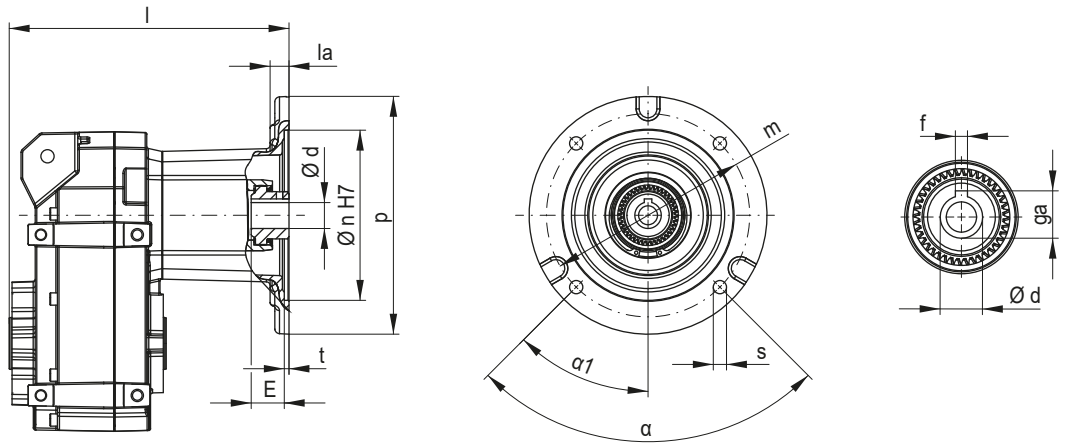
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225		I250	I280	
p	160	160	200	200	250	250	300	350	350	400	400		550	550	
n	95	110	130	130	180	180	230	250	250	300	350		450	450	
la	22.5	10	13	13	15	20	15	35	35	20	20		20	20	
m	115	130	165	165	215	215	265	300	300	350	400		500	500	
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5		5	5	
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19		19	19	
α	90	90	90	90	90	90	90	90	90	90	45		45	45	
α_1	35	45	45	45	45	45	45	45	45	45	45		45	45	
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E [1)]	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	

[1)] Maximum motor shaft length for motors with key

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
	l												
F02	137	137	165	165	-	-	-	-	-	-	-	-	-
F03	147	147	175	175	206	-	-	-	-	-	-	-	-
F04	171.5	171.5	199.5	199.5	230.5	-	-	-	-	-	-	-	-
F05	184	184	212	212	243	296	307	-	-	-	-	-	-
F06	195.5	195.5	223.5	223.5	254.5	307.5	318.5	404.5	-	-	-	-	-
F07	221.5	221.5	249.5	249.5	280.5	333.5	344.5	430.5	-	-	-	-	-
F08	248.5	248.5	276.5	276.5	307.5	360.5	371.5	456	456	-	-	-	-
F09	298.5	298.5	326.5	326.5	357.5	410.5	421.5	506	506	534.5	-	-	-
F10	-	-	-	-	-	440	451	533	533	561.5	591.5	-	-
F12	-	-	-	-	-	499.5	510.5	592.5	592.5	621	651	740	740
F15	-	-	-	-	-	-	-	659	659	687.5	717.5	806.5	806.5

Dimensions in mm.

NEMA Adapter N56 to N364

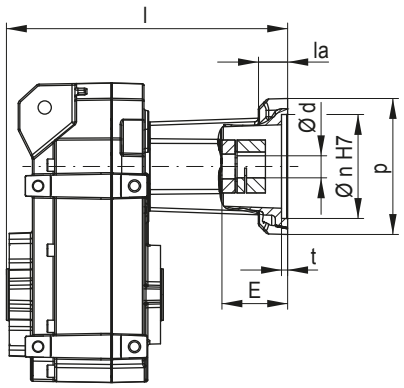


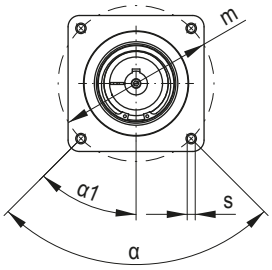
F

Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	16	16
α	90	90	90	90	90	90	90	90	90
α_1	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5

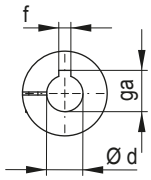
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
F02	165	165	-	-	-	-	-	-	-
F03	175	175	206	-	-	-	-	-	-
F04	199.5	199.5	230.5	-	-	-	-	-	-
F05	212	212	243	296	307	-	-	-	-
F06	223.5	223.5	254.5	307.5	318.5	404.5	-	-	-
F07	249.5	249.5	280.5	333.5	344.5	430.5	-	-	-
F08	276.5	276.5	307.5	360.5	371.5	456	459	-	-
F09	326.5	326.5	357.5	410.5	421.5	506	509	556.5	-
F10	-	-	-	440	451	533	536	583.5	599
F12	-	-	-	499.5	510.5	592.5	595.5	643	658.5
F15	-	-	-	-	-	659	662	725	725

SERVO Adapter S92 to S190

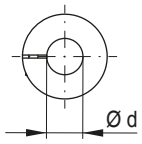




Shaft with key



Smooth shaft



F

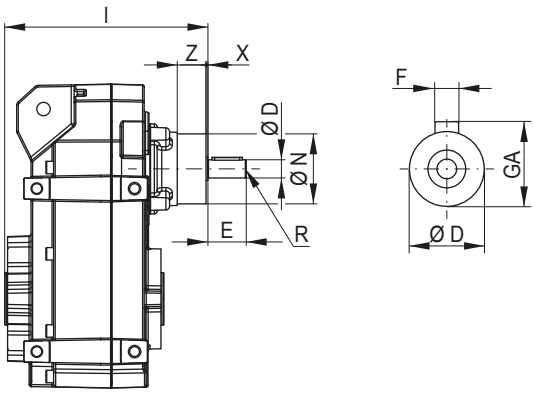
Type	S92			S105	S114		S115	S130				S141	S142		S180	S189		S190
p	101			144	144		144	144				144	144		197	197		197
n	80			95	95		110	110				110	130		114.3	130		180
la	17.5			31	31		31	31				31	31		35	32		38
m	100			115	130		130	145				165	165		200	215		215
t	6.5			6.5	6.5		6.5	6.5				6.5	6.5		6.5	6.5		6.5
s	M6x12			M8x16	M8x16		M8x16	M8x16				M8x16	M8x16		13.5	15		15
α	90°			90°	90°		90°	90°				90°	90°		90°	90°		90°
α_1	45°			45°	45°		45°	45°				45°	45°		45°	45°		45°
d [1]	14	16	19	19	19	24	24	19	22	24	28	24	24	32	35	32	38	38
f	5	5	6	6	6	8	8	6	6	8	8	8	8	10	10	10	10	10
ga	16.3	18.3	21.8	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	35.3	41.3
E [2]	47.5			69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5
E [3]	47.5			69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5

[1] Other shaft diameters on request
[2] Maximum motor shaft length for motors with key
[3] Maximum motor shaft length for motors with smooth shaft

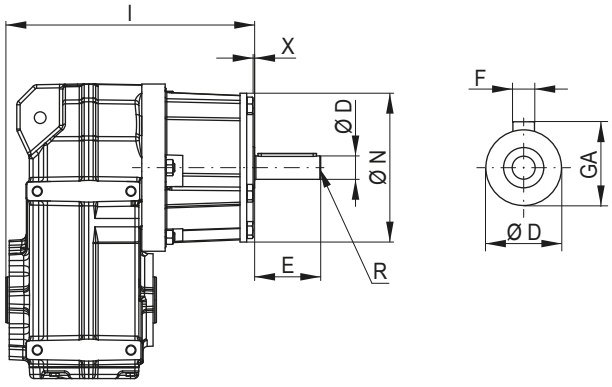
Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	l									
F02	202.5	250.5	250.5	250.5	250.5	250.5	250.5	-	-	-
F03	212.5	260.5	260.5	260.5	260.5	260.5	260.5	-	-	-
F04	237	285	285	285	285	285	285	-	-	-
F05	249.5	297.5	297.5	297.5	297.5	297.5	297.5	368	362	389
F06	261	309	309	309	309	309	309	379.5	373.5	400.5
F07	287	335	335	335	335	335	335	405.5	399.5	426.5
F08	314	362	362	362	362	362	362	432.5	426.5	453.5
F09	364	412	412	412	412	412	412	482.5	476.5	503.5
F10	-	-	-	-	-	-	-	512	506	533
F12	-	-	-	-	-	-	-	571.5	565.5	592.5
F15	-	-	-	-	-	-	-	-	-	-

Dimensions in mm.

Input Unit U2, U3



Input Unit U5, U6, U7

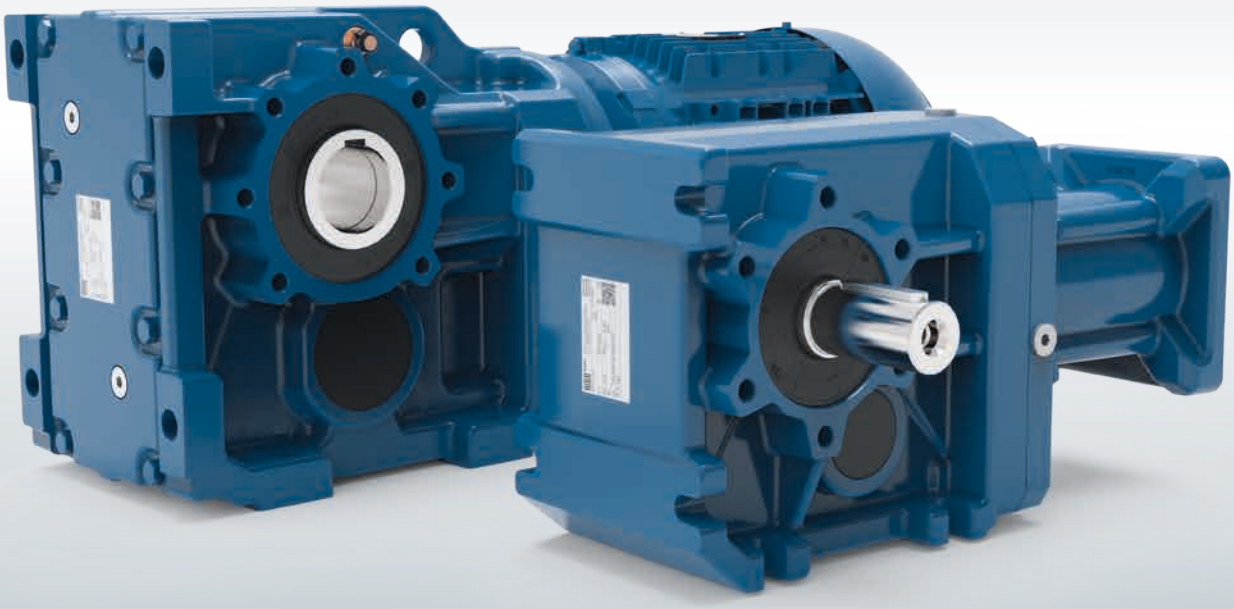


F

Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	I				
F02	165	-	-	-	-
F03	175	-	-	-	-
F04	199.5	-	-	-	-
F05	212	244	-	-	-
F06	223.5	255.5	298	-	-
F07	249.5	281.5	324	-	-
F08	276.5	308.5	349.5	371.5	-
F09	326.5	358.5	399.5	421.5	-
F10	-	388	426.5	448.5	517.5
F12	-	447.5	486	508	577
F15	-	-	552.5	574.5	643.5



Helical bevel gear units and Helical bevel geared motors K

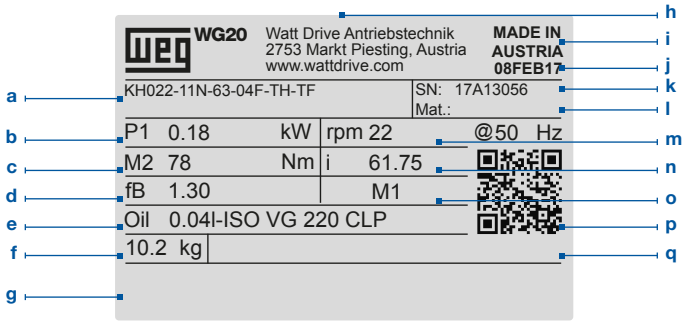
Technical data

Size		K02	K03	K04	K05	K06	K07	K08	K09	K10	K12	K15
Power [kW]		0.12 - 1.5	0.12 - 3	0.12 - 4	0.12 - 9.2	0.18 - 9.2	0.25 - 15	0.55 - 22	1.1 - 30	4 - 55	4 - 55	11 - 75
Torque [Nm]		110	200	400	600	820	1550	3000	4500	8000	13000	18000
Ratio		3.82-68.88	4.17-217.88	5.05-277.79	4.27-245.7	4.94-198	7.91-256.14	7.45-206.12	6.94-169.25	6.64-140.95	6.60-151.11	8.61-146.69
Number of stages		2	3	3	3	3	3	3	3	3	3	3
Housing material		aluminium				cast iron						
Solid shaft	Type	with key acc. to DIN 6885.1 and threaded bore acc. to DIN 332 sheet 2										
	Tolerance	< Ø 55: k6 / ≥ Ø 55: m6										
	Material	standard: C45E (1.1191) / stainless steel on request										
Hollow shaft	Type	with key acc. to DIN 6885.1										
	Tolerance	H7										
	Material	standard: C45E (1.1191) / stainless steel on request										
Flanges	Tolerance	centring ≤ 250: j6 / > 250: h6 acc. to DIN EN 50347										
	Material	cast iron										
Gear wheels	Type	honed - designed and produced according to DIN 3990/3991 - Q7										
	Material	16MnCr5 (1.7131) case hardened – minimum 58HRC										
Shaft seals	Type	type AS acc. to DIN 3760										
	Material	standard NBR / special FKM										
Bearing		standard / reinforced										
Lubricants	Type	standard CLP 220 / special CLP HC 220										
	Quantity	depending on mounting position										
Axle height		acc. to DIN 747: ≤ 50: -0.4; > 50 bis ≤ 250: -0.5; > 250: -1 for foot-mounted geard motors, the motor may extend below the mounting surface										

K

General information

1. Nameplate



a	Type code	j	Production date
b	Motor power	k	Serial number
c	Output torque	l	Material number
d	Service factor	m	Output speed and Frequency
e	Type and quantity of lubricant	n	Total gear ratio
f	Weight	o	Mounting position
g	Space for ATEX code (if applicable)	p	QR-Code linked online to additional information
h	Manufacturer address	q	Space for additional information
i	Country of origin		

2. Type code

KH073-EX-11P-90S/L-04F ...

1 2 3 4 5 6 7 8 9 10

KH073-EX-I112

1 2 3 4 5 11

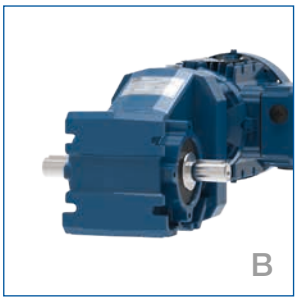
1	Type:	K = Helical bevel gear unit
2	Design:	B = Output shaft on both sides D = Hollow shaft with shrink disc F = B5 flange type with output shaft H = Hollow shaft O = B5 flange type with hollow shaft P = B5 flange type with hollow shaft and shrink disc S = Output shaft T = Hollow shaft with torque arm U = Hollow shaft with shrink disc and torque arm
3	Size:	02 05 08 12 03 06 09 15 04 07 10
4	Number of stages:	2 = 2 gear stages 3 = 3 gear stages
5	ATEX execution:	when operated in explosive atmospheres, see page 14
6	Motor type:	11N = Integral motor aluminium IE1 11P = Integral motor aluminium IE3 22P = Integral motor cast iron IE3
7	Motor frame size:	63 90S/L 112M L132M 180M 225S/M 71 100L 132S 160M 180L 250S/M 80 L100L 132M 160L 200L
8	Number of poles:	04 = 4 poles 06 = 6 poles
9	Power indicator:	D E F G
10	Motor modules:	see from page 385
11	Adapters, Input unit:	IEC Adapter: I63 I71 I80 I90 I100 I112 I132 I160 I180 I200 I225 I250 I280 NEMA Adapter: N56 N143 N182 N184 N213 N254 N284 N324 N364 SERVO Adapter: S92 S105 S114 S115 S130 S141 S142 S180 S189 S190 Input unit: U2 U3 U5 U6 U7

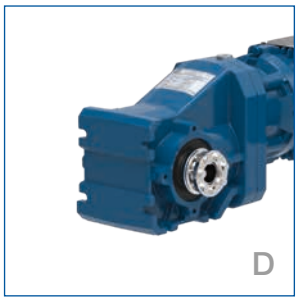
Type code Motor see page 361

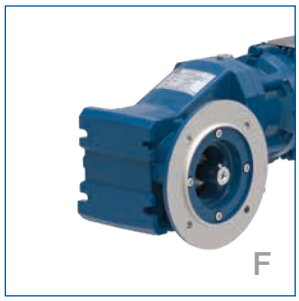
3. Range

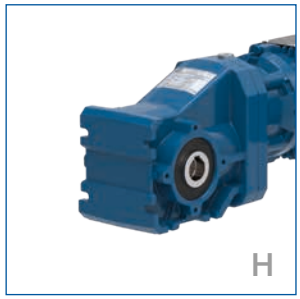
Size	K02	K03	K04	K05	K06	K07	K08	K09	K10	K12	K15
Housing material	Aluminium				Cast iron						

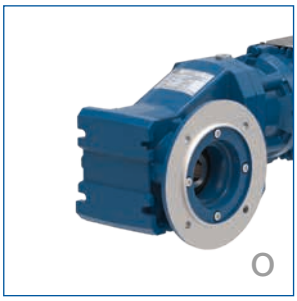
4. Design

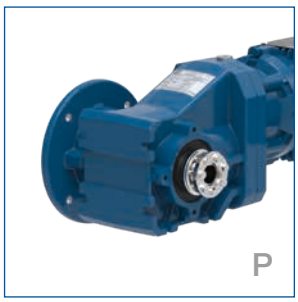


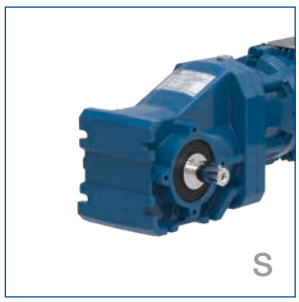
















B	Output shaft on both sides
D	Hollow shaft with shrink disc
F	B5 flange type with output shaft
H	Hollow shaft
O	B5 flange type with hollow shaft

P	B5 flange type with hollow shaft and shrink disc
S	Output shaft
T	Hollow shaft with torque arm
U	Hollow shaft with shrink disc and torque arm

5. Venting the gear unit

The helical bevel gear unit sizes K02 to K05 are neither equipped with a venting nor an oil drain screw. They are supplied with lifetime-lubrication.
By default, the helical bevel gear units from K06 are equipped with venting screws with a safety strap for transportation (see illustration). The rubber strap (a) of the venting screw must be removed entirely before the initial startup. The venting screw is placed accordingly to the mounting position (see chapter Mounting positions, page 259)



6. Overhung and axial loads

The overhung loads (F_{rN}) indicated in the respective selection tables apply to gear units with the force acting on the shaft center (x=l/2). The permissible overhung loads listed are based on the least favourable loading direction and calculated for standard shafts and standard bearings. Other load directions and action can be calculated with equations Q1 to Q3. If transmission elements are placed on the output shaft, an appropriate factor (f_z) has to be taken into consideration when determining the overhung load.

Gear wheels	Sprockets		V-belts	Flat belts
				
f_z=1.1 (z≤17)	f_z=1.2 (z≤13)	f_z=1.1 (z>13)	f_z=1.8	f_z=2.5

Use the following equations Q1 and Q2 to calculate the permissible radial loads on the output shaft. Q3 is to calculate the real existing shaft loads for your application. The results are to be compared by using the equation Q4.

Q1	$F_{zL} = F_{rN} \cdot a_1$
Q2	$F_{zW} = F_W \cdot a_2$
Q3	$F_{Qvorh} = \frac{2 \cdot M_2}{d_0} \cdot f_z$
Q4	$F_{Qvorh} \leq F_{zL}$
	$F_{Qvorh} \leq F_{zW}$

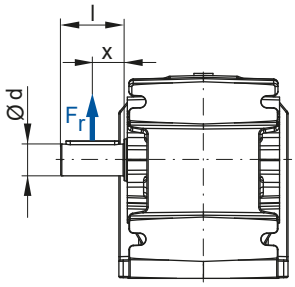
Variable	Unit	Description
a_1		Load action factor - output shaft bearing from Table 1
a_2		Load action factor - output shaft from Table 1
d_0	[m]	Effective diameter of the transmission element
M_2	[Nm]	Geared motor output torque (from selection tables) or required calculated output torque
F_{zL}	[N]	Permissible overhung load for output shaft bearings
F_{zW}	[N]	Permissible overhung load for output shaft
F_{rN}	[N]	Permissible overhung load from selection tables
F_W	[N]	Permissible overhung load - Output shaft x=l/2 from Table 2
F_{Qvorh}	[N]	Existing overhung load at gear shaft
f_z		Factor for transmission element
M_{max}	[Nm]	Highest possible output torque for coupling operation (Table 2)

Always use both equations Q1 and Q2 for your calculations.

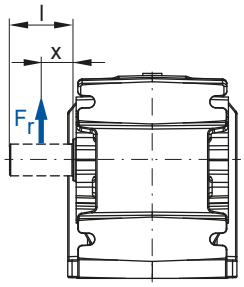
x / l						
0	0.25	0.5	0.75	1	1.5	2
$a_1 \rightarrow$ Equation Q1						
1.39	1.18	1.00	0.85	0.73	0.52	0.38
$a_2 \rightarrow$ Equation Q2						
2.00	2.00	1.00	0.55	0.38	0.23	0.17

Table 1: Load action factors a_1, a_2

Output shaft



Hollow shaft



Intermediate values can be interpolated linearly. Combined load ($F_r \neq 0$; $F_a = 0$) on request.

Output shaft [mm]		M_{max} at $F_r = 0$	Output torque M_2 [Nm]										
			110	200	400	600	820	1550	3000	4500	8000	13000	18000
Ø d	l		F_W [kN] at x/l = 0.5 → Equation Q2										
20	40	160	2.6										
25	50	300	5.6	4.8									
30	60	500	7.5	7.1	5.0								
35	70	800		11.0	10.0	8.3							
40	80	1170			13.0	12.0	10.7						
50	100	2250			24.0	24.0	23.0	20.0					
60	120	3740					31.0	30.0	23.0				
70	140	5850						44.0	41.0	36.0			
90	170	11700							72.0	70.0	61.0		
110	210	20800								106.0	103.0	93.0	
120	210	26700									129.0	121.0	109.0

Table 2: Permissible overhung load - output shaft x = l/2

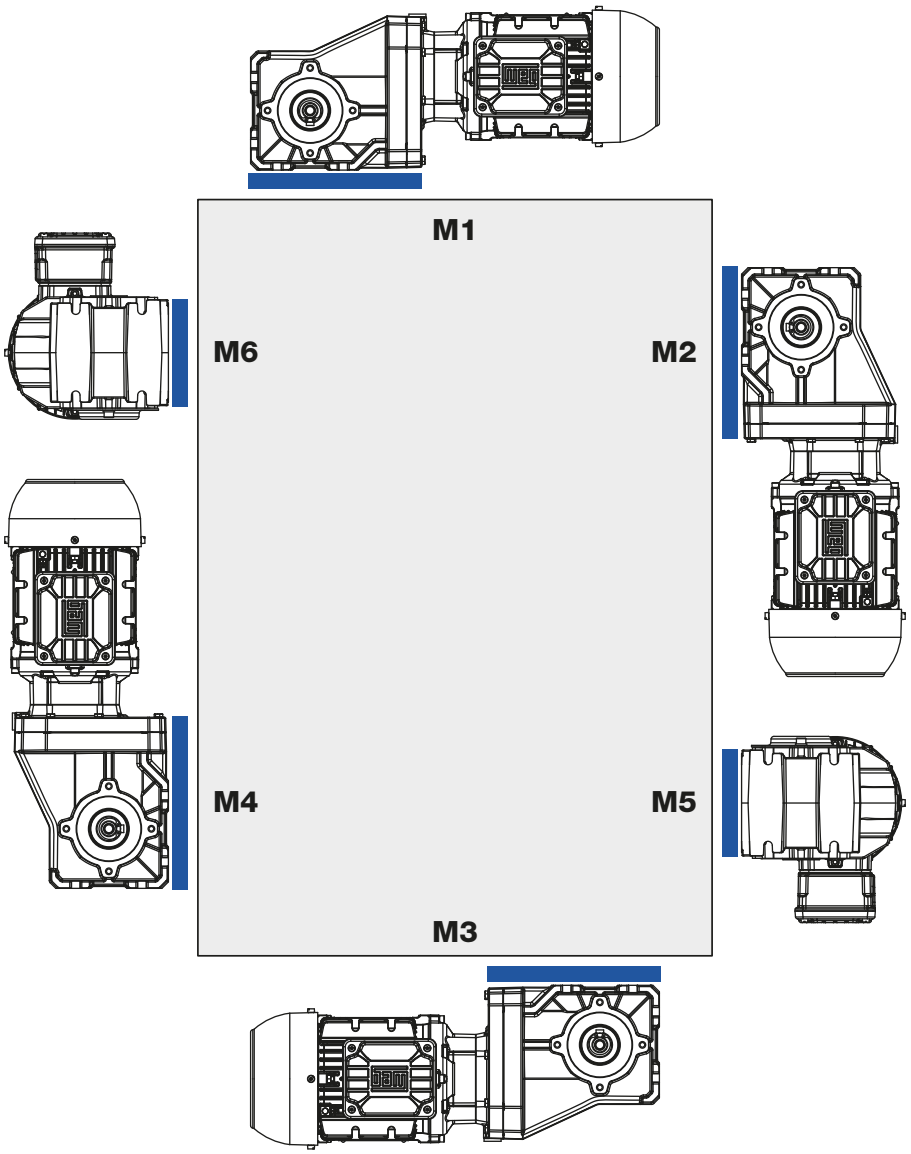
The axial loads (F_{aN}) for the respective execution (output shaft or hollow shaft), given in the following selection tables, are valid at radial force $F_{rN} = 0$. If there are axial loads or radial and axial components acting on the drive which are extraordinarily high, we recommend to contact the manufacturer.

7. Mounting positions, Position of the terminal box and Cable entry

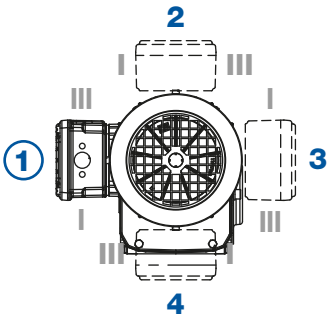
Mounting positions - Sizes K02 to K05

Gear units K02 to K05 are not ventilated and supplied with lifetime lubrication.

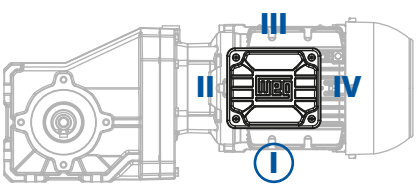
Reference area



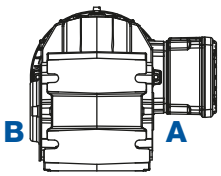
Position of the terminal box
Standard: Position 1



Cable entry
Standard: Position I



Side indication

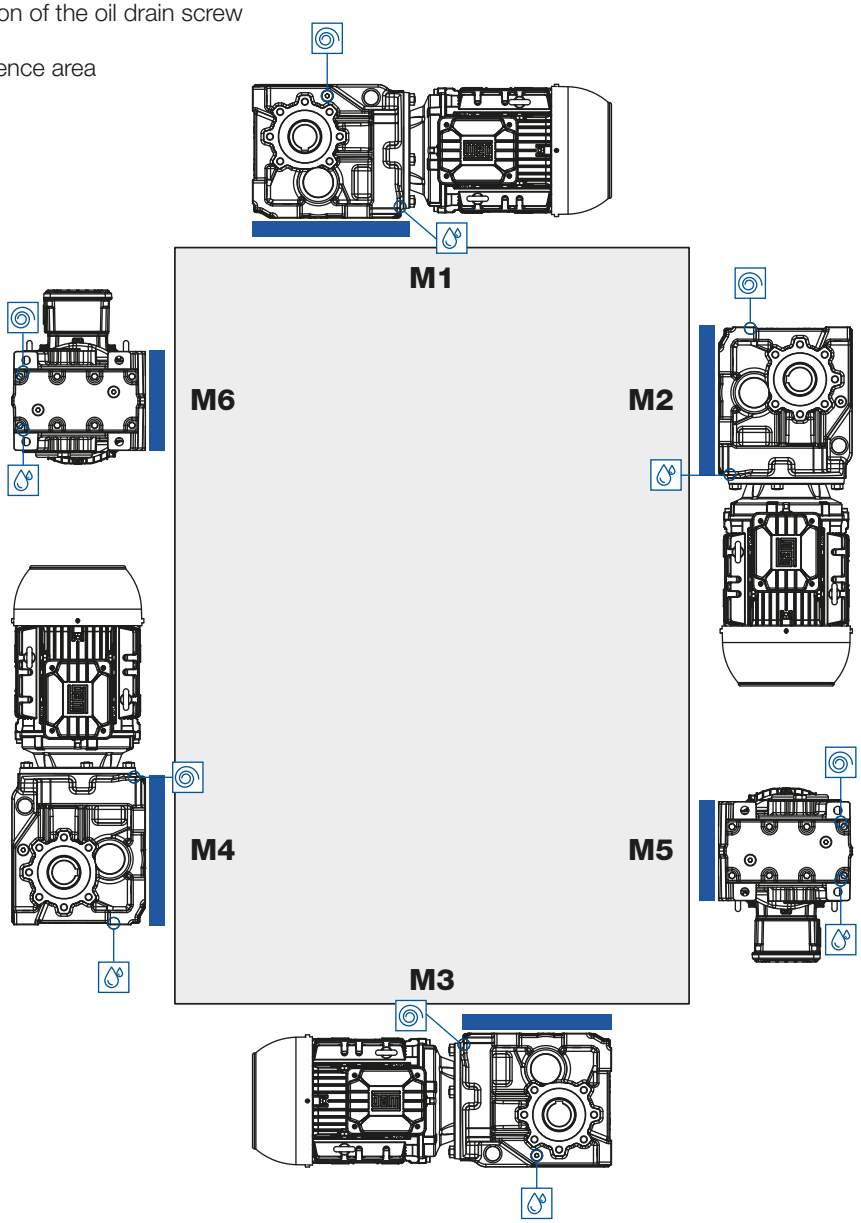


Mounting positions - Sizes K06 to K15

Position of the venting screw

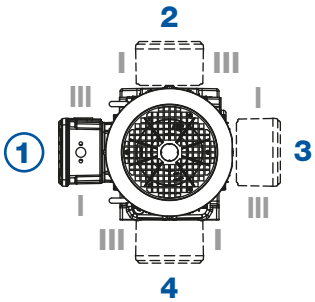
Position of the oil drain screw

Reference area



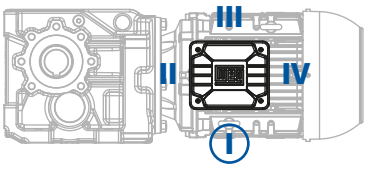
Position of the terminal box

Standard: Position 1

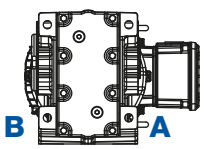


Cable entry

Standard: Position I



Side indication



Selection tables - Geared motors

The technical data of the geared motors shown in the selection tables apply to an ambient temperature of +20 °C.

The selection tables are calculated with following motor data:

Power (IEC frame size)	Motor series (IE class)
up tp 0.55 kW (63 - 80)	11N (IE1) - aluminium
0.75 - 9.2 kW (80 - 132)	11P (IE3) - aluminium
11 - 75 kW (160 - 250)	22P (IE3) - cast iron

Structure of the selection tables

1												2
P_N = 0.12 kW												IE1
50 Hz 0.12 kW	60 Hz 0.14 kW				at 50 Hz							
					Output shaft		Hollow shaft					
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
3	4	5	6	7	8	9	10	11	12	13	14

1 Rated power of the motor

2 Given values are based on the respective efficiency class

3 Output speed at 50 Hz

4 Output speed at 60 Hz

5 Output torque

6 Service factor

7 Total ratio

8 Permissible radial load - Execution with output shaft at midpoint of the shaft (standard bearing) at axial load=0

9 Permissible axial load - Execution with output shaft (standard bearing) at radial load=0

10 Permissible radial load - Execution with hollow shaft at x=l/2 (standard bearing) and axial load=0

11 Permissible axial load - Execution with hollow shaft (standard bearing) at radial load=0

12 Geared motor type

13 Weight

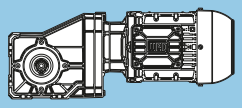
14 Page refererence for dimension sheet

*) Increased rated power at 60 Hz can only be reached together with increased voltage within the wide range (for details see page 369).

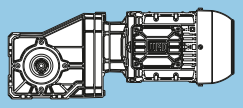
Increased rated power
1.2 x P_N

P_N = 0.12 kW										IE1
50 Hz	60 Hz				at 50 Hz					
0.12 kW	0.14 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
3.6	4.5	316	1.90	245.70	8.9	11.0	8.9	4.3	**KH053-11N-63-06F**	20	334
4.6	5.7	251	2.40	194.73	9.2	11.2	9.2	4.5			
5.6	6.9	205	2.95	245.70	9.4	11.4	9.4	4.7	**KH053-11N-63-04E**	20	334
3.2	4.0	358	1.15	277.79	4.6	7.8	4.6	2.5			
3.9	4.9	293	1.40	227.16	5.5	8.3	5.5	2.7			
5.0	6.2	231	1.75	179.37	6.1	8.6	6.1	3.0	**KH043-11N-63-06F**	17	332
6.4	7.9	179	2.25	139.08	6.5	8.8	6.5	3.2			
7.8	9.7	147	2.75	113.83	6.7	8.9	6.7	3.3			
4.9	6.1	232	1.75	277.79	6.1	8.6	6.1	3.0			
6.1	7.5	189	2.15	227.16	6.5	8.7	6.5	3.1	**KH043-11N-63-04E**	16	332
7.7	9.4	149	2.70	179.37	6.7	8.9	6.7	3.3			
5.0	6.2	228	0.90	177.19	3.2	2.4	3.2	2.4			
6.3	7.8	181	1.15	140.80	4.0	2.6	4.0	2.6			
8.2	10	140	1.45	108.75	4.5	2.9	4.5	2.9			
10	13	112	1.80	86.83	4.8	3.0	4.8	3.0	**KH033-11N-63-06F**	13	330
12	15	93	2.20	71.93	4.9	3.1	4.9	3.1			
14	17	85	2.40	65.63	4.9	3.2	4.9	3.2			
15	19	75	2.70	58.50	5.0	3.2	5.0	3.2			
6.3	7.8	182	1.15	217.88	4.0	2.6	4.0	2.6			
7.8	9.6	148	1.40	177.19	4.4	2.8	4.4	2.8			
9.8	12	117	1.75	140.80	4.7	3.0	4.7	3.0	**KH033-11N-63-04E**	13	330
13	16	91	2.25	108.75	4.9	3.1	4.9	3.1			
16	20	72	2.80	86.83	5.0	3.2	5.0	3.2			
13	16	89	1.25	68.88	5.1	2.8	5.1	2.8			
14	18	80	1.30	61.75	5.1	2.8	5.1	2.8			
17	21	69	1.60	53.65	5.2	2.8	5.2	2.8			
19	23	62	1.80	48.10	5.2	2.8	5.2	2.8			
20	25	56	2.00	43.50	5.2	2.8	5.2	2.8	**KH022-11N-63-06F**	11	328
23	28	50	2.20	39.00	5.2	2.8	5.2	2.8			
26	32	44	2.50	34.27	5.2	2.8	5.2	2.8			
29	36	40	2.80	30.73	5.3	2.8	5.3	2.8			
37	46	31	2.65	24.05	5.3	2.8	5.3	2.8			
20	25	57	1.95	68.88	5.2	2.8	5.2	2.8			
22	27	51	2.00	61.75	5.2	2.8	5.2	2.8			
26	32	45	2.50	53.65	5.2	2.8	5.2	2.8			
29	35	40	2.75	48.10	5.3	2.8	5.3	2.8			
32	39	36	3.05	43.50	5.3	2.8	5.3	2.8			
35	43	33	3.40	39.00	5.3	2.8	5.3	2.8			
40	49	29	3.90	34.27	5.3	2.8	5.3	2.8			
45	55	26	4.30	30.73	5.3	2.8	5.3	2.8			
52	64	22	5.00	26.41	5.3	2.8	5.3	2.8			
57	70	20	4.05	24.05	5.3	2.8	5.3	2.8			
58	72	20	5.60	23.68	5.3	2.8	5.3	2.8			
67	82	17	6.00	20.63	5.3	2.8	5.3	2.8			
71	87	16	5.00	19.50	5.3	2.8	5.3	2.8			
74	92	15	6.65	18.50	5.3	2.8	5.3	2.8	**KH022-11N-63-04E**	11	328
89	110	13	7.25	15.41	5.3	2.8	5.3	2.8			
90	110	13	6.35	15.36	5.3	2.8	5.3	2.8			
100	123	12	8.10	13.81	5.3	2.8	5.3	2.8			
116	143	10	8.25	11.84	5.1	2.8	5.1	2.8			
119	146	10	8.80	11.60	5.1	2.8	5.1	2.8			
132	163	9	9.85	10.40	4.9	2.8	4.9	2.8			
149	183	8	10.55	9.25	4.7	2.8	4.7	2.8			
162	199	7	10.90	8.51	4.6	2.8	4.6	2.8			
180	222	6	12.15	7.63	4.4	2.8	4.4	2.8			
199	245	6	12.85	6.91	4.2	2.8	4.2	2.8			
264	326	4	15.00	5.20	3.9	2.8	3.9	2.8			
360	444	3	17.95	3.82	3.5	2.8	3.5	2.8			

Legend see page 261

P_N = 0.18 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.18 kW	0.22 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
4.5	5.6	380	2.20	198.00	11.7	14.1	11.7	4.1	**KH063-11N-71-06E**	35	336
5.7	7.0	301	2.75	156.92	12.0	14.3	12.0	4.4			
3.6	4.5	472	1.30	245.70	7.7	10.6	7.7	3.9			
4.6	5.7	374	1.65	194.73	8.5	10.9	8.5	4.2	**KH053-11N-71-06E**	22	334
5.9	7.3	290	2.10	151.20	9.0	11.1	9.0	4.4			
7.2	8.9	238	2.55	124.06	9.3	11.3	9.3	4.6			
5.6	6.9	308	1.95	245.70	8.9	11.1	8.9	4.4	**KH053-11N-63-04F**	20	334
7.0	8.7	244	2.50	194.73	9.2	11.3	9.2	4.6			
3.9	4.9	436	0.95	227.16	2.8	3.9	2.8	2.2			
5.0	6.2	345	1.20	179.37	4.9	8.1	4.9	2.5			
6.4	7.9	267	1.50	139.08	5.8	8.4	5.8	2.8			
7.9	9.7	219	1.85	113.83	6.2	8.6	6.2	3.0	**KH043-11N-71-06E**	19	332
10	13	168	2.40	87.62	6.6	8.8	6.6	3.2			
12	15	140	2.90	72.92	6.7	8.9	6.7	3.3			
19	23	90	2.25	47.07	6.9	9.0	6.9	3.4			
4.9	6.1	349	1.15	277.79	4.8	8.1	4.8	2.5			
6.0	7.5	285	1.45	227.16	5.6	8.4	5.6	2.8			
7.6	9.5	225	1.80	179.37	6.2	8.6	6.2	3.0	**KH043-11N-63-04F**	17	332
9.9	12	175	2.30	139.08	6.5	8.8	6.5	3.2			
12	15	143	2.85	113.83	6.7	8.9	6.7	3.3			
8.2	10	209	1.00	108.75	3.6	2.5	3.6	2.5			
10	13	167	1.20	86.83	4.2	2.7	4.2	2.7			
12	15	138	1.45	71.93	4.5	2.9	4.5	2.9			
14	17	126	1.60	65.63	4.6	2.9	4.6	2.9			
15	19	112	1.80	58.50	4.7	3.0	4.7	3.0			
18	22	96	2.10	49.88	4.9	3.1	4.9	3.1	**KH033-11N-71-06E**	15	330
19	24	89	2.25	46.48	4.9	3.1	4.9	3.1			
23	28	75	2.70	38.80	5.0	3.2	5.0	3.2			
25	31	69	2.95	35.90	5.0	3.3	5.0	3.3			
30	37	58	2.25	29.97	5.0	3.2	5.0	3.2			
7.7	9.6	222	0.90	177.19	3.3	2.4	3.3	2.4			
9.7	12	177	1.15	140.80	4.1	2.7	4.1	2.7			
13	16	136	1.50	108.75	4.5	2.9	4.5	2.9			
16	20	109	1.85	86.83	4.8	3.0	4.8	3.0	**KH033-11N-63-04F**	13	330
19	24	90	2.25	71.93	4.9	3.1	4.9	3.1			
21	26	82	2.45	65.63	4.9	3.2	4.9	3.2			
23	29	73	2.75	58.50	5.0	3.2	5.0	3.2			
13	16	132	0.85	68.88	4.8	2.8	4.8	2.8			
14	18	119	0.90	61.75	4.9	2.8	4.9	2.8			
17	21	103	1.10	53.65	5.0	2.8	5.0	2.8			
19	23	92	1.20	48.10	5.0	2.8	5.0	2.8			
21	25	84	1.35	43.50	5.1	2.8	5.1	2.8			
23	28	75	1.50	39.00	5.1	2.8	5.1	2.8			
26	32	66	1.70	34.27	5.2	2.8	5.2	2.8			
29	36	59	1.90	30.73	5.2	2.8	5.2	2.8	**KH022-11N-71-06E**	13	328
34	42	51	2.20	26.41	5.2	2.8	5.2	2.8			
37	46	46	1.80	24.05	5.2	2.8	5.2	2.8			
38	47	45	2.45	23.68	5.2	2.8	5.2	2.8			
43	54	40	2.60	20.63	5.3	2.8	5.3	2.8			
46	57	37	2.20	19.50	5.3	2.8	5.3	2.8			
48	60	36	2.90	18.50	5.3	2.8	5.3	2.8			
58	72	30	2.75	15.36	5.3	2.8	5.3	2.8			

Legend see page 261

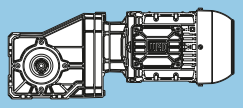
P_N = 0.18 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.18 kW	0.22 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
20	25	86	1.30	68.88	5.1	2.8	5.1	2.8			
22	28	77	1.35	61.75	5.1	2.8	5.1	2.8			
26	32	67	1.65	53.65	5.2	2.8	5.2	2.8			
28	35	60	1.85	48.10	5.2	2.8	5.2	2.8			
31	39	55	2.05	43.50	5.2	2.8	5.2	2.8			
35	44	49	2.25	39.00	5.2	2.8	5.2	2.8			
40	50	43	2.60	34.27	5.2	2.8	5.2	2.8			
44	55	39	1.35	30.88	5.3	2.8	5.3	2.8			
45	55	39	2.90	30.73	5.3	2.8	5.3	2.8			
52	64	33	3.35	26.41	5.3	2.8	5.3	2.8			
57	71	30	2.70	24.05	5.3	2.8	5.3	2.8			
58	72	30	3.75	23.68	5.3	2.8	5.3	2.8			
66	82	26	4.00	20.63	5.3	2.8	5.3	2.8	**KH022-11N-63-04F**	11	328
70	87	24	3.35	19.50	5.3	2.8	5.3	2.8			
74	92	23	4.40	18.50	5.3	2.8	5.3	2.8			
89	110	19	4.85	15.41	5.3	2.8	5.3	2.8			
99	123	17	5.40	13.81	5.3	2.8	5.3	2.8			
116	144	15	5.50	11.84	5.1	2.8	5.1	2.8			
118	147	15	5.85	11.60	5.1	2.8	5.1	2.8			
132	163	13	6.55	10.40	4.9	2.8	4.9	2.8			
148	184	12	7.00	9.25	4.7	2.8	4.7	2.8			
161	200	11	7.25	8.51	4.6	2.8	4.6	2.8			
180	223	10	8.05	7.63	4.4	2.8	4.4	2.8			
198	246	9	8.55	6.91	4.3	2.8	4.3	2.8			
263	327	7	10.00	5.20	3.9	2.8	3.9	2.8			
359	445	5	11.90	3.82	3.5	2.8	3.5	2.8			

Legend see page 261

P_N = 0.25 kW											IE1
50 Hz 0.25 kW	60 Hz 0.30 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
3.5	4.3	679	2.30	256.14	19.6	17.6	19.6	6.3	**KH073-11N-71-06F**	56	338
4.6	5.6	525	3.00	197.75	19.9	17.9	19.9	6.7			
4.5	5.6	525	1.60	198.00	11.0	13.6	11.0	3.6			
5.7	7.1	416	2.00	156.92	11.6	13.9	11.6	4.0			
7.4	9.1	323	2.55	121.85	11.9	14.2	11.9	4.3	**KH063-11N-71-06F**	36	336
11	14	216	2.65	81.53	12.2	14.6	12.2	4.6			
20	25	118	2.65	44.35	12.4	14.7	11.7	4.8			
6.9	8.6	345	2.40	198.00	11.9	14.2	11.9	4.2	**KH063-11N-71-04E**	34	336
8.7	11	273	3.00	156.92	12.1	14.4	12.1	4.4			
3.7	4.5	652	0.95	245.70	5.2	8.4	5.2	3.3			
4.6	5.7	517	1.20	194.73	7.2	10.4	7.2	3.7			
6.0	7.3	401	1.50	151.20	8.3	10.8	8.3	4.1			
7.3	8.9	329	1.85	124.06	8.8	11.0	8.8	4.3	**KH053-11N-71-06F**	23	334
9.4	12	255	2.40	96.08	9.2	11.2	9.2	4.5			
11	14	213	2.65	80.46	9.4	11.4	9.4	4.7			
23	29	102	2.65	38.32	9.7	11.5	9.7	4.8			
5.6	6.9	428	1.45	245.70	8.1	10.7	8.1	4.0			
7.0	8.7	339	1.80	194.73	8.7	11.0	8.7	4.3	**KH053-11N-71-04E**	21	334
9.1	11	263	2.30	151.20	9.2	11.2	9.2	4.5			
11	14	216	2.80	124.06	9.4	11.3	9.4	4.6			
5.0	6.2	476	0.85	179.37	**	**	**	**			
6.5	8.0	369	1.10	139.08	4.4	7.3	4.4	2.4			
7.9	9.8	302	1.35	113.83	5.4	8.3	5.4	2.7			
10	13	232	1.75	87.62	6.1	8.6	6.1	3.0			
12	15	193	2.10	72.92	6.4	8.7	6.4	3.1	**KH043-11N-71-06F**	19	332
14	17	176	2.30	66.20	6.5	8.8	6.5	3.2			
16	19	153	2.65	57.58	6.7	8.9	6.7	3.3			
17	20	144	2.80	54.18	6.7	8.9	6.7	3.3			
19	24	125	1.65	47.07	6.8	8.9	6.8	3.3			
23	29	102	2.65	38.49	6.9	9.0	6.9	3.4			
4.9	6.1	484	0.85	277.79	**	**	**	**			
6.0	7.5	396	1.05	227.16	3.9	6.2	3.9	2.3			
7.6	9.5	313	1.30	179.37	5.3	8.3	5.3	2.7			
9.9	12	242	1.70	139.08	6.1	8.5	6.1	2.9	**KH043-11N-71-04E**	17	332
12	15	198	2.05	113.83	6.4	8.7	6.4	3.1			
15	19	155	2.45	89.17	6.6	8.9	6.6	3.3			
16	19	153	2.65	87.62	6.7	8.9	6.7	3.3			
29	36	82	2.45	47.07	6.9	9.1	6.9	3.5			
10	13	230	0.90	86.83	3.1	2.3	3.1	2.3			
13	15	191	1.05	71.93	3.9	2.6	3.9	2.6			
14	17	174	1.15	65.63	4.1	2.7	4.1	2.7			
15	19	155	1.30	58.50	4.4	2.8	4.4	2.8			
18	22	132	1.55	49.88	4.6	2.9	4.6	2.9			
19	24	123	1.65	46.48	4.7	3.0	4.7	3.0	**KH033-11N-71-06F**	16	330
23	29	103	1.95	38.80	4.8	3.1	4.8	3.1			
25	31	95	2.15	35.90	4.9	3.1	4.9	3.1			
30	37	80	1.65	29.97	5.0	3.1	5.0	3.1			
31	39	76	2.65	28.67	5.0	3.2	5.0	3.2			
37	46	65	2.50	24.38	5.0	3.2	5.0	3.2			
9.7	12	245	0.85	140.80	2.7	2.3	2.7	2.3			
13	16	190	1.10	108.75	3.9	2.6	3.9	2.6			
16	20	151	1.35	86.83	4.4	2.8	4.4	2.8			
19	24	125	1.60	71.93	4.6	2.9	4.6	2.9			
21	26	114	1.75	65.63	4.7	3.0	4.7	3.0	**KH033-11N-71-04E**	14	330
23	29	102	2.00	58.50	4.8	3.1	4.8	3.1			
27	34	87	2.35	49.88	4.9	3.2	4.9	3.2			
29	37	81	2.50	46.48	4.9	3.2	4.9	3.2			
35	44	68	3.00	38.80	5.0	3.3	5.0	3.3			
46	57	52	2.50	29.97	5.1	3.3	5.1	3.3			

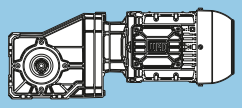
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*** ... on request*

P_N = 0.25 kW										IE1
50 Hz 0.25 kW	60 Hz 0.33 kW				at 50 Hz					
					Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
17	21	142	0.80	53.65	**	**	**	**			
19	23	128	0.90	48.10	4.8	2.8	4.8	2.8			
21	26	115	1.00	43.50	4.9	2.8	4.9	2.8			
23	28	103	1.10	39.00	5.0	2.8	5.0	2.8			
26	32	91	1.25	34.27	5.1	2.8	5.1	2.8			
29	36	82	1.35	30.73	5.1	2.8	5.1	2.8			
34	42	70	1.60	26.41	5.2	2.8	5.2	2.8			
37	46	64	1.30	24.05	5.2	2.8	5.2	2.8			
38	47	63	1.80	23.68	5.2	2.8	5.2	2.8	**KH022-11N-71-06F**	14	328
44	54	55	1.90	20.63	5.2	2.8	5.2	2.8			
46	57	52	1.60	19.50	5.2	2.8	5.2	2.8			
49	60	49	2.10	18.50	5.2	2.8	5.2	2.8			
58	72	41	2.30	15.41	5.3	2.8	5.3	2.8			
59	72	41	2.00	15.36	5.3	2.8	5.3	2.8			
65	80	37	2.55	13.81	5.3	2.8	5.3	2.8			
76	94	31	2.60	11.84	5.3	2.8	5.3	2.8			
78	96	31	2.80	11.60	5.3	2.8	5.3	2.8			
20	25	120	0.95	68.88	4.9	2.8	4.9	2.8			
22	28	108	0.95	61.75	4.9	2.8	4.9	2.8			
26	32	93	1.20	53.65	5.0	2.8	5.0	2.8			
28	35	84	1.35	48.10	5.1	2.8	5.1	2.8			
31	39	76	1.50	43.50	5.1	2.8	5.1	2.8			
35	44	68	1.65	39.00	5.2	2.8	5.2	2.8			
40	50	60	1.85	34.27	5.2	2.8	5.2	2.8			
44	55	54	0.95	30.88	5.2	2.8	5.2	2.8			
45	55	54	2.10	30.73	5.2	2.8	5.2	2.8			
52	64	46	2.40	26.41	5.2	2.8	5.2	2.8			
57	71	42	1.95	24.05	5.3	2.8	5.3	2.8			
58	72	41	2.70	23.68	5.3	2.8	5.3	2.8			
66	82	36	2.90	20.63	5.3	2.8	5.3	2.8			
70	87	34	2.40	19.50	5.3	2.8	5.3	2.8	**KH022-11N-71-04E**	12	328
74	92	32	3.20	18.50	5.3	2.8	5.3	2.8			
89	110	27	3.50	15.41	5.3	2.8	5.3	2.8			
99	123	24	3.90	13.81	5.3	2.8	5.3	2.8			
116	144	21	3.95	11.84	5.1	2.8	5.1	2.8			
118	147	20	4.25	11.60	5.1	2.8	5.1	2.8			
132	163	18	4.70	10.40	4.9	2.8	4.9	2.8			
148	184	16	5.05	9.25	4.7	2.8	4.7	2.8			
161	200	15	5.20	8.51	4.6	2.8	4.6	2.8			
180	223	13	5.80	7.63	4.4	2.8	4.4	2.8			
198	246	12	6.15	6.91	4.3	2.8	4.3	2.8			
263	327	9	7.20	5.20	3.9	2.8	3.9	2.8			
359	445	7	8.60	3.82	3.5	2.8	3.5	2.8			

Legend see page 261

*** ... on request*

P_N = 0.37 kW											IE1
50 Hz 0.37 kW	60 Hz 0.44 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
3.6	4.4	984	1.60	256.14	18.5	17.0	18.5	5.7			
4.7	5.7	760	2.05	197.75	19.3	17.4	19.3	6.2	**KH073-11N-80-06E**	58	338
5.5	6.8	637	2.45	165.85	19.7	17.7	19.7	6.4			
5.3	6.6	663	2.35	256.14	19.6	17.6	19.6	6.4	**KH073-11N-71-04F**	55	338
4.6	5.7	760	1.10	198.00	9.2	12.9	9.2	2.9			
5.9	7.2	603	1.40	156.92	10.5	13.4	10.5	3.4			
7.6	9.3	468	1.80	121.85	11.3	13.8	11.3	3.8			
9.2	11	384	2.15	99.98	11.7	14.0	11.7	4.1	**KH063-11N-80-06E**	38	336
11	14	313	1.85	81.53	12.0	14.3	12.0	4.3			
12	15	297	2.80	77.42	12.0	14.3	12.0	4.4			
21	25	170	1.85	44.35	12.3	14.5	11.9	4.5			
6.9	8.5	513	1.60	198.00	11.1	13.6	11.1	3.7			
8.7	11	406	2.05	156.92	11.6	14.0	11.6	4.0			
11	14	315	2.60	121.85	12.0	14.3	12.0	4.3	**KH063-11N-71-04F**	35	336
17	21	211	2.75	81.53	12.3	14.6	12.3	4.6			
31	38	115	2.75	44.35	12.4	14.7	10.2	4.8			
4.7	5.8	748	0.85	194.73	2.3	2.3	2.3	2.3			
6.1	7.5	581	1.05	151.20	6.4	10.2	6.4	3.5			
7.4	9.1	476	1.30	124.06	7.6	10.6	7.6	3.9			
9.6	12	369	1.65	96.08	8.5	10.9	8.5	4.2			
11	14	309	1.85	80.46	8.9	11.1	8.9	4.4	**KH053-11N-80-06E**	24	334
13	15	281	2.15	73.08	9.1	11.2	9.1	4.5			
14	18	245	2.45	63.77	9.2	11.3	9.2	4.6			
15	19	231	2.60	60.26	9.3	11.3	9.3	4.6			
24	29	147	1.85	38.32	9.6	11.3	9.6	4.6			
5.6	6.9	636	0.95	245.70	5.5	9.1	5.5	3.4			
7.0	8.7	504	1.20	194.73	7.4	10.5	7.4	3.8			
9.0	11	391	1.55	151.20	8.4	10.8	8.4	4.1			
11	14	321	1.90	124.06	8.9	11.0	8.9	4.3	**KH053-11N-71-04F**	22	334
14	18	249	2.45	96.08	9.2	11.2	9.2	4.5			
17	21	208	2.75	80.46	9.4	11.4	9.4	4.7			
36	44	99	2.75	38.32	9.7	11.6	9.7	4.9			
8.1	9.9	437	0.95	113.83	2.8	3.9	2.8	2.2			
10	13	337	1.20	87.62	5.0	8.2	5.0	2.6			
13	15	280	1.45	72.92	5.7	8.4	5.7	2.8			
14	17	254	1.60	66.20	5.9	8.5	5.9	2.9			
16	20	221	1.85	57.58	6.2	8.6	6.2	3.0			
17	21	208	1.95	54.18	6.3	8.7	6.3	3.1	**KH043-11N-80-06E**	21	332
20	24	181	1.15	47.07	6.5	8.6	6.5	3.0			
21	26	169	2.40	43.93	6.6	8.8	6.6	3.2			
24	29	148	1.85	38.49	6.7	8.7	6.7	3.1			
25	31	141	2.75	36.78	6.7	8.9	6.7	3.3			
30	37	117	2.80	30.39	6.8	8.9	6.8	3.3			
7.6	9.4	464	0.90	179.37	1.5	1.1	1.5	1.1			
9.8	12	360	1.15	139.08	4.6	7.8	4.6	2.5			
12	15	295	1.40	113.83	5.5	8.3	5.5	2.7			
15	19	231	1.65	89.17	6.2	8.6	6.2	3.0			
16	19	227	1.80	87.62	6.2	8.6	6.2	3.0			
19	23	189	2.15	72.92	6.5	8.7	6.5	3.1	**KH043-11N-71-04F**	18	332
21	25	171	2.35	66.20	6.6	8.8	6.6	3.2			
24	29	149	2.70	57.58	6.7	8.9	6.7	3.3			
25	31	140	2.90	54.18	6.7	8.9	6.7	3.3			
29	36	122	1.65	47.07	6.8	8.9	6.8	3.3			
35	44	100	2.75	38.49	6.9	9.0	6.9	3.4			

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P_N = 0.37 kW										IE1
50 Hz	60 Hz				at 50 Hz					
0.37 kW	0.44 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
14	17	252	0.80	65.63	**	**	**	**		
16	19	225	0.90	58.50	3.3	2.4	3.3	2.4		
18	23	192	1.05	49.88	3.9	2.6	3.9	2.6		
20	24	179	1.15	46.48	4.1	2.6	4.1	2.6		
24	29	149	1.35	38.80	4.4	2.8	4.4	2.8		
26	31	138	1.50	35.90	4.5	2.9	4.5	2.9		
30	37	116	1.75	30.29	4.7	3.0	4.7	3.0	**KH033-11N-80-06E**	17	330
31	38	115	1.15	29.97	4.7	2.8	4.7	2.8		
32	39	110	1.85	28.67	4.8	3.0	4.8	3.0		
38	46	94	1.75	24.38	4.9	3.0	4.9	3.0		
42	52	83	2.45	21.67	4.9	3.2	4.9	3.2		
47	58	74	2.20	19.37	5.0	3.1	5.0	3.1		
61	76	57	2.85	14.96	5.0	3.2	5.0	3.2		
16	19	225	0.90	86.83	3.3	2.4	3.3	2.4		
19	23	186	1.10	71.93	3.9	2.6	3.9	2.6		
21	26	170	1.20	65.63	4.2	2.7	4.2	2.7		
23	29	151	1.35	58.50	4.4	2.8	4.4	2.8		
27	34	129	1.55	49.88	4.6	2.9	4.6	2.9		
29	36	120	1.70	46.48	4.7	3.0	4.7	3.0	**KH033-11N-71-04F**	15	330
35	43	100	2.00	38.80	4.8	3.1	4.8	3.1		
38	47	93	2.20	35.90	4.9	3.1	4.9	3.1		
46	56	78	1.70	29.97	5.0	3.1	5.0	3.1		
48	59	74	2.70	28.67	5.0	3.2	5.0	3.2		
56	69	63	2.55	24.38	5.0	3.2	5.0	3.2		
27	33	132	0.85	34.27	4.8	2.8	4.8	2.8		
30	37	118	0.95	30.73	4.9	2.8	4.9	2.8		
35	43	101	1.10	26.41	5.0	2.8	5.0	2.8		
38	47	92	0.90	24.05	5.0	2.8	5.0	2.8		
39	48	91	1.25	23.68	5.1	2.8	5.1	2.8		
45	55	79	1.30	20.63	5.1	2.8	5.1	2.8		
47	58	75	1.10	19.50	5.1	2.8	5.1	2.8		
50	61	71	1.45	18.50	5.2	2.8	5.2	2.8		
60	73	59	1.60	15.41	5.2	2.8	5.2	2.8		
67	82	53	1.80	13.81	5.2	2.8	5.2	2.8	**KH022-11N-80-06E**	15	328
69	85	51	1.75	13.29	5.2	2.8	5.2	2.8		
77	95	46	1.95	11.92	5.2	2.8	5.2	2.8		
78	95	45	1.80	11.84	5.2	2.8	5.2	2.8		
79	97	45	1.95	11.60	5.2	2.8	5.2	2.8		
88	109	40	2.15	10.40	5.3	2.8	5.3	2.8		
99	122	36	2.30	9.25	5.3	2.8	5.3	2.8		
108	133	33	2.40	8.51	5.3	2.8	5.3	2.8		
121	148	29	2.65	7.63	5.1	2.8	5.1	2.8		
133	164	27	2.80	6.91	4.9	2.8	4.9	2.8		

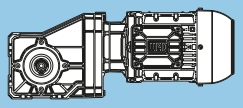
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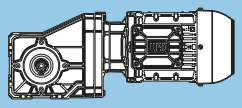
P_N = 0.37 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.37 kW	0.44 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
25	31	139	0.80	53.65	**	**	**	**			
28	35	125	0.90	48.10	4.8	2.8	4.8	2.8			
31	39	113	1.00	43.50	4.9	2.8	4.9	2.8			
35	43	101	1.10	39.00	5.0	2.8	5.0	2.8			
40	49	89	1.25	34.27	5.1	2.8	5.1	2.8			
44	55	80	1.40	30.73	5.1	2.8	5.1	2.8			
52	64	68	1.65	26.41	5.2	2.8	5.2	2.8			
57	70	62	1.35	24.05	5.2	2.8	5.2	2.8			
58	71	61	1.80	23.68	5.2	2.8	5.2	2.8			
66	82	53	1.95	20.63	5.2	2.8	5.2	2.8			
70	86	50	1.65	19.50	5.2	2.8	5.2	2.8			
74	91	48	2.15	18.50	5.2	2.8	5.2	2.8	**KH022-11N-71-04F**	13	328
89	109	40	2.35	15.41	5.3	2.8	5.3	2.8			
99	122	36	2.65	13.81	5.3	2.8	5.3	2.8			
115	142	31	2.65	11.84	5.2	2.8	5.2	2.8			
118	145	30	2.85	11.60	5.2	2.8	5.2	2.8			
131	162	27	3.20	10.40	5.0	2.8	5.0	2.8			
148	182	24	3.40	9.25	4.8	2.8	4.8	2.8			
160	198	22	3.50	8.51	4.6	2.8	4.6	2.8			
179	221	20	3.90	7.63	4.5	2.8	4.5	2.8			
198	244	18	4.15	6.91	4.3	2.8	4.3	2.8			
263	324	13	4.85	5.20	3.9	2.8	3.9	2.8			
357	441	10	5.80	3.82	3.5	2.8	3.5	2.8			

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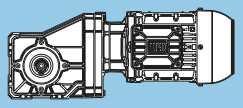
P_N = 0.55 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.55 kW	0.66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
4.5	5.5	1164	2.60	206.12	28.2	43.3	28.2	10.8	**KH083-11N-80-06F**	100	340
3.6	4.5	1447	1.10	256.14	16.0	16.0	16.0	4.8			
4.7	5.8	1117	1.40	197.75	17.9	16.7	17.9	5.4			
5.6	6.9	937	1.70	165.85	18.7	17.1	18.7	5.8	**KH073-11N-80-06F**	59	338
7.1	8.8	735	2.15	130.16	19.4	17.5	19.4	6.2			
9.3	11	567	2.75	100.45	19.8	17.8	19.5	6.6			
20	24	269	2.30	47.56	20.3	18.2	14.6	6.9			
5.5	6.7	951	1.65	256.14	18.7	17.0	18.7	5.8			
7.2	8.7	734	2.15	197.75	19.4	17.5	19.4	6.2	**KH073-11N-80-04E**	57	338
8.5	10	616	2.55	165.85	19.7	17.7	19.7	6.5			
5.9	7.3	886	0.95	156.92	7.7	12.5	7.7	2.5			
7.6	9.4	688	1.20	121.85	9.9	13.1	9.9	3.1			
9.3	11	565	1.50	99.98	10.8	13.5	10.8	3.5			
11	14	460	1.25	81.53	11.4	13.8	11.4	3.9			
12	15	437	1.90	77.42	11.5	13.9	11.5	3.9	**KH063-11N-80-06F**	39	336
14	18	365	2.25	64.62	11.8	14.1	11.8	4.2			
16	19	333	2.50	58.89	11.9	14.2	11.9	4.3			
19	23	274	3.00	48.56	12.1	14.4	12.1	4.4			
21	26	250	1.25	44.35	12.2	14.1	12.2	4.2			
26	32	199	2.30	35.15	12.3	14.4	11.3	4.4			
7.1	8.7	735	1.15	198.00	9.4	12.9	9.4	3.0			
9.0	11	582	1.45	156.92	10.7	13.4	10.7	3.5			
12	14	452	1.85	121.85	11.4	13.8	11.4	3.9			
14	17	371	2.25	99.98	11.8	14.1	11.8	4.1	**KH063-11N-80-04E**	37	336
17	21	303	1.90	81.53	12.0	14.3	12.0	4.3			
18	22	287	2.90	77.42	12.1	14.3	12.1	4.4			
32	39	165	1.90	44.35	12.3	14.5	10.4	4.6			
7.5	9.2	701	0.90	124.06	4.0	5.9	4.0	3.2			
9.7	12	543	1.15	96.08	6.9	10.4	6.9	3.7			
12	14	454	1.25	80.46	7.9	10.6	7.9	3.9			
13	16	413	1.50	73.08	8.2	10.8	8.2	4.1			
15	19	340	1.80	60.26	8.7	11.0	8.7	4.3	**KH053-11N-80-06F**	26	334
19	23	280	2.15	49.52	9.1	11.2	9.1	4.5			
22	27	237	2.55	42.00	9.3	11.3	9.3	4.6			
23	28	229	2.65	40.63	9.3	11.3	9.3	4.6			
24	30	216	1.25	38.32	9.4	11.0	9.4	4.3			
31	38	172	2.30	30.37	9.5	11.2	9.5	4.5			
7.3	8.9	723	0.85	194.73	3.3	4.4	3.3	3.1			
9.4	11	561	1.10	151.20	6.7	10.3	6.7	3.6			
11	14	461	1.35	124.06	7.8	10.6	7.8	3.9			
15	18	357	1.70	96.08	8.6	10.9	8.6	4.2			
18	21	299	1.90	80.46	9.0	11.1	9.0	4.4	**KH053-11N-80-04E**	24	334
19	24	271	2.25	73.08	9.1	11.2	9.1	4.5			
22	27	237	2.55	63.77	9.3	11.3	9.3	4.6			
23	29	224	2.70	60.26	9.3	11.3	9.3	4.6			
37	45	142	1.90	38.32	9.6	11.4	9.6	4.7			

Legend see page 261

P_N = 0.55 kW											IE1
50 Hz 0.55 kW	60 Hz 0.66 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	13	504	0.80	89.17	**	**	**	**	**KH043-11N-80-06F**	22	332
11	13	495	0.85	87.62	**	**	**	**			
13	16	412	1.00	72.92	3.5	5.4	3.5	2.3			
14	17	374	1.10	66.20	4.4	7.3	4.4	2.4			
16	20	325	1.25	57.58	5.1	8.2	5.1	2.6			
17	21	306	1.35	54.18	5.4	8.3	5.4	2.7			
20	24	266	0.80	47.07	**	**	**	**			
21	26	248	1.65	43.93	6.0	8.5	6.0	2.9			
24	30	217	1.25	38.49	6.3	8.4	6.3	2.8			
25	31	208	1.85	36.78	6.3	8.7	6.3	3.1			
31	38	168	2.15	29.81	6.6	8.8	6.6	3.2			
33	41	159	2.55	28.13	6.6	8.9	6.6	3.3			
39	48	133	2.35	23.57	6.8	8.8	6.8	3.2			
48	59	109	2.70	19.29	6.8	8.9	6.8	3.3			
10	12	516	0.80	139.08	**	**	**	**	**KH043-11N-80-04E**	20	332
12	15	423	0.95	113.83	3.2	4.7	3.2	2.2			
16	20	325	1.25	87.62	5.1	8.2	5.1	2.6			
19	24	271	1.50	72.92	5.8	8.4	5.8	2.8			
21	26	246	1.65	66.20	6.0	8.5	6.0	2.9			
25	30	214	1.90	57.58	6.3	8.6	6.3	3.0			
26	32	201	2.00	54.18	6.4	8.7	6.4	3.1			
30	37	175	1.15	47.07	6.5	8.6	6.5	3.0			
32	39	163	2.50	43.93	6.6	8.8	6.6	3.2			
37	45	143	1.90	38.49	6.7	8.8	6.7	3.2			
38	47	137	2.85	36.78	6.7	9.0	6.7	3.4			
39	47	136	2.95	36.54	6.7	9.0	6.7	3.4			
47	57	113	2.90	30.39	6.8	8.9	6.8	3.3			
20	25	263	0.80	46.48	**	**	**	**	**KH033-11N-80-06F**	19	330
24	29	219	0.95	38.80	3.4	2.4	3.4	2.4			
26	32	203	1.00	35.90	3.7	2.5	3.7	2.5			
31	38	171	1.20	30.29	4.2	2.7	4.2	2.7			
32	40	162	1.25	28.67	4.3	2.7	4.3	2.7			
38	47	138	1.20	24.38	4.5	2.7	4.5	2.7			
43	53	122	1.65	21.67	4.7	3.0	4.7	3.0			
48	59	109	1.50	19.37	4.8	2.9	4.8	2.9			
56	69	93	2.20	16.47	4.9	3.1	4.9	3.1			
62	76	84	1.95	14.96	4.9	3.0	4.9	3.0			
73	89	72	2.80	12.81	5.0	3.2	5.0	3.2			
78	95	67	2.45	11.94	5.0	3.2	5.0	3.2			
22	26	244	0.85	65.63	2.8	2.3	2.8	2.3	**KH033-11N-80-04E**	17	330
24	29	217	0.95	58.50	3.4	2.4	3.4	2.4			
28	35	185	1.10	49.88	4.0	2.6	4.0	2.6			
30	37	173	1.20	46.48	4.1	2.7	4.1	2.7			
36	44	144	1.40	38.80	4.5	2.8	4.5	2.8			
39	48	133	1.55	35.90	4.6	2.9	4.6	2.9			
47	57	112	1.80	30.29	4.7	3.0	4.7	3.0			
49	60	106	1.90	28.67	4.8	3.0	4.8	3.0			
58	71	90	1.80	24.38	4.9	3.0	4.9	3.0			
65	80	80	2.50	21.67	4.9	3.2	4.9	3.2			
73	89	72	2.30	19.37	5.0	3.1	5.0	3.1			
95	115	56	2.95	14.96	5.1	3.3	5.1	3.3			

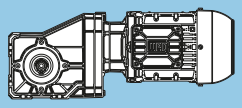
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P_N = 0.55 kW											IE1
50 Hz	60 Hz				at 50 Hz						
0.55 kW	0.66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
39	48	134	0.85	23.68	4.7	2.8	4.7	2.8			
45	55	117	0.90	20.63	4.9	2.8	4.9	2.8			
50	62	104	1.00	18.50	5.0	2.8	5.0	2.8			
60	74	87	1.10	15.41	5.1	2.8	5.1	2.8			
61	74	87	0.95	15.36	5.1	2.8	5.1	2.8			
67	83	78	1.20	13.81	5.1	2.8	5.1	2.8			
70	86	75	1.20	13.29	5.1	2.8	5.1	2.8			
78	96	67	1.35	11.92	5.2	2.8	5.2	2.8			
79	96	67	1.25	11.84	5.2	2.8	5.2	2.8			
80	98	66	1.30	11.60	5.2	2.8	5.2	2.8	**KH022-11N-80-06F**	17	328
89	110	59	1.45	10.40	5.2	2.8	5.2	2.8			
101	123	52	1.60	9.25	5.2	2.8	5.2	2.8			
109	134	48	1.65	8.51	5.2	2.8	5.2	2.8			
122	149	43	1.80	7.63	5.2	2.8	5.2	2.8			
135	165	39	1.90	6.91	5.0	2.8	5.0	2.8			
156	191	34	2.05	5.96	4.7	2.8	4.7	2.8			
179	219	29	2.25	5.20	4.5	2.8	4.5	2.8			
243	298	22	2.65	3.82	4.0	2.8	4.0	2.8			
36	44	145	0.80	39.00	**	**	**	**			
41	50	127	0.90	34.27	4.8	2.8	4.8	2.8			
46	56	114	1.00	30.73	4.9	2.8	4.9	2.8			
54	65	98	1.15	26.41	5.0	2.8	5.0	2.8			
59	72	89	0.95	24.05	5.1	2.8	5.1	2.8			
60	73	88	1.30	23.68	5.1	2.8	5.1	2.8			
69	84	77	1.35	20.63	5.1	2.8	5.1	2.8			
73	88	72	1.15	19.50	5.1	2.8	5.1	2.8			
76	93	69	1.50	18.50	5.2	2.8	5.2	2.8			
92	112	57	1.65	15.41	5.2	2.8	5.2	2.8			
102	125	51	1.85	13.81	5.2	2.8	5.2	2.8			
106	130	49	1.85	13.29	5.2	2.8	5.2	2.8	**KH022-11N-80-04E**	15	328
119	145	44	2.05	11.92	5.2	2.8	5.2	2.8			
120	146	44	1.85	11.84	5.2	2.8	5.2	2.8			
122	149	43	2.00	11.60	5.2	2.8	5.2	2.8			
136	166	39	2.25	10.40	5.0	2.8	5.0	2.8			
153	186	34	2.40	9.25	4.8	2.8	4.8	2.8			
166	203	32	2.45	8.51	4.6	2.8	4.6	2.8			
185	226	28	2.75	7.63	4.4	2.8	4.4	2.8			
205	250	26	2.90	6.91	4.3	2.8	4.3	2.8			
237	289	22	3.15	5.96	4.1	2.8	4.1	2.8			
272	332	19	3.40	5.20	3.9	2.8	3.9	2.8			
370	452	14	4.05	3.82	3.5	2.8	3.5	2.8			

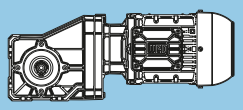
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P_N = 0.75 kW											IE3
50 Hz 0.75 kW	60 Hz 0.90 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
4.6	5.6	1571	1.95	206.12	27.1	42.7	27.1	10.2			
5.8	7.0	1243	2.45	163.14	28.0	43.2	28.0	10.7	**KH083-11P-90S/L-06E**	107	340
6.6	8.0	1085	2.80	142.45	28.3	43.4	28.3	10.9			
6.9	8.4	1032	2.95	206.12	28.4	43.5	28.4	11.0	**KH083-11P-80-04F**	101	340
3.7	4.5	1952	0.80	256.14	**	**	**	**			
4.8	5.8	1507	1.05	197.75	15.5	15.9	15.5	4.6			
5.7	6.9	1264	1.25	165.85	17.1	16.4	17.1	5.1			
7.2	8.8	992	1.60	130.16	18.5	17.0	18.5	5.7			
9.4	11	765	2.05	100.45	19.3	17.4	19.3	6.2			
11	14	633	2.45	83.09	19.7	17.7	18.9	6.4	**KH073-11P-90S/L-06E**	66	338
12	15	588	2.65	77.11	19.8	17.8	18.2	6.5			
13	16	538	2.90	70.67	19.9	17.9	17.6	6.6			
20	24	362	1.70	47.56	20.2	17.9	15.0	6.6			
26	31	280	2.75	36.72	20.3	18.1	13.5	6.9			
5.6	6.8	1283	1.25	256.14	17.0	16.3	17.0	5.1			
7.2	8.8	990	1.60	197.75	18.5	17.0	18.5	5.7			
8.6	10	831	1.90	165.85	19.1	17.3	19.1	6.0			
11	13	652	2.40	130.16	19.6	17.7	18.9	6.4	**KH073-11P-80-04F**	60	338
14	17	500	2.60	99.87	20.0	18.0	17.1	6.7			
30	37	238	2.60	47.56	20.4	18.3	12.8	7.0			
7.7	9.4	928	0.90	121.85	7.0	11.1	7.0	2.4			
9.4	11	762	1.10	99.98	9.2	12.9	9.2	2.9			
12	15	590	1.40	77.42	10.6	13.4	10.6	3.4			
15	18	492	1.70	64.62	11.2	13.7	11.2	3.7			
16	19	449	1.85	58.89	11.4	13.8	11.4	3.9			
19	24	370	2.25	48.56	11.8	14.1	11.8	4.1			
21	26	338	0.95	44.35	11.9	13.7	11.9	3.8	**KH063-11P-90S/L-06E**	46	336
23	28	314	2.65	41.17	12.0	14.3	12.0	4.3			
24	29	303	2.65	39.83	12.0	14.3	12.0	4.3			
27	33	268	1.70	35.15	12.1	14.1	11.6	4.1			
28	34	258	2.95	33.85	12.1	14.4	11.2	4.5			
34	42	208	2.45	27.29	12.3	14.3	10.5	4.4			
42	51	171	2.95	22.40	12.3	14.5	9.6	4.5			
7.2	8.8	992	0.85	198.00	5.9	8.7	5.9	2.2			
9.1	11	786	1.05	156.92	8.9	12.8	8.9	2.8			
12	14	610	1.35	121.85	10.5	13.3	10.5	3.4			
14	17	501	1.65	99.98	11.2	13.7	11.2	3.7			
18	22	388	2.15	77.42	11.7	14.0	11.7	4.1	**KH063-11P-80-04F**	40	336
22	27	324	2.55	64.62	11.9	14.2	11.9	4.3			
24	30	295	2.80	58.89	12.0	14.3	12.0	4.4			
32	39	222	1.45	44.35	12.2	14.3	10.8	4.3			
41	50	176	2.60	35.15	12.3	14.5	9.7	4.5			
9.8	12	732	0.85	96.08	3.0	3.8	3.0	3.1			
12	14	613	0.95	80.46	5.9	9.9	5.9	3.4			
13	16	557	1.10	73.08	6.7	10.3	6.7	3.6			
15	18	486	1.25	63.77	7.6	10.5	7.6	3.8			
16	19	459	1.35	60.26	7.8	10.6	7.8	3.9			
19	23	377	1.60	49.52	8.5	10.9	8.5	4.2			
22	27	320	1.90	42.00	8.9	11.0	8.9	4.3			
23	28	310	1.95	40.63	8.9	11.1	8.9	4.4	**KH053-11P-90S/L-06E**	33	334
25	30	292	0.95	38.32	9.0	10.7	9.0	4.0			
27	33	263	2.30	34.53	9.2	11.2	9.2	4.5			
30	36	240	2.55	31.46	9.3	11.3	9.3	4.6			
31	38	231	1.70	30.37	9.3	11.0	9.3	4.3			
34	42	209	2.80	27.39	9.4	11.4	9.4	4.7			
40	49	180	2.30	23.58	9.5	11.2	9.5	4.5			
49	59	147	2.85	19.35	9.6	11.3	9.6	4.6			

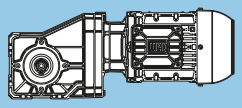
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P_N = 0.75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
0.75 kW	0.90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
9.5	12	757	0.80	151.20	**	**	**	**	**KH053-11P-80-04F**	26	334
12	14	621	1.00	124.06	5.7	9.5	5.7	3.4			
15	18	481	1.25	96.08	7.6	10.5	7.6	3.8			
18	22	403	1.40	80.46	8.3	10.8	8.3	4.1			
20	24	366	1.65	73.08	8.6	10.9	8.6	4.2			
22	27	319	1.90	63.77	8.9	11.0	8.9	4.3			
24	29	302	2.00	60.26	9.0	11.1	9.0	4.4			
29	35	248	2.45	49.52	9.2	11.2	9.2	4.5			
34	41	210	2.90	42.00	9.4	11.4	9.4	4.7			
35	43	204	2.95	40.63	9.4	11.4	9.4	4.7			
37	45	192	1.40	38.32	9.4	11.1	9.4	4.4			
47	57	152	2.60	30.37	9.6	11.3	9.6	4.6			
14	17	504	0.80	66.20	**	**	**	**	**KH043-11P-90S/L-06E**	29	332
16	20	439	0.95	57.58	2.7	3.6	2.7	2.1			
17	21	413	1.00	54.18	3.5	5.3	3.5	2.2			
21	26	340	1.20	44.64	4.9	8.1	4.9	2.5			
24	30	293	0.95	38.49	5.5	8.0	5.5	2.4			
26	31	280	1.40	36.78	5.7	8.4	5.7	2.8			
31	38	232	1.40	30.39	6.1	8.3	6.1	2.7			
32	38	227	1.60	29.81	6.2	8.6	6.2	3.0			
33	41	214	1.90	28.13	6.3	8.6	6.3	3.0			
40	49	180	1.75	23.57	6.5	8.6	6.5	3.0			
44	54	162	2.50	21.25	6.6	8.9	6.6	3.3			
49	59	147	2.05	19.29	6.7	8.7	6.7	3.1			
63	77	113	2.50	14.85	6.8	8.9	6.8	3.3			
16	20	439	0.95	87.62	2.7	3.6	2.7	2.1	**KH043-11P-80-04F**	23	332
20	24	365	1.10	72.92	4.5	7.5	4.5	2.4			
22	26	332	1.25	66.20	5.0	8.2	5.0	2.6			
25	30	288	1.40	57.58	5.6	8.3	5.6	2.7			
26	32	271	1.50	54.18	5.8	8.4	5.8	2.8			
30	37	236	0.85	47.07	6.1	8.3	6.1	2.7			
32	39	224	1.80	44.64	6.2	8.6	6.2	3.0			
33	40	220	1.85	43.93	6.2	8.6	6.2	3.0			
37	45	193	1.45	38.49	6.4	8.5	6.4	2.9			
39	47	184	2.10	36.78	6.5	8.8	6.5	3.2			
47	57	152	2.15	30.39	6.7	8.7	6.7	3.1			
48	58	149	2.45	29.81	6.7	8.9	6.7	3.3			
51	62	141	2.85	28.13	6.7	8.9	6.7	3.3			
61	74	118	2.65	23.57	6.8	8.9	6.8	3.3			
31	38	231	0.90	30.29	3.1	2.3	3.1	2.3	**KH033-11P-90S/L-06E**	26	330
33	40	218	0.95	28.67	3.4	2.4	3.4	2.4			
39	47	186	0.90	24.38	4.0	2.3	4.0	2.3			
43	53	165	1.25	21.67	4.2	2.7	4.2	2.7			
49	59	148	1.15	19.37	4.4	2.6	4.4	2.6			
57	70	125	1.60	16.47	4.6	2.9	4.6	2.9			
63	77	114	1.45	14.96	4.7	2.8	4.7	2.8			
73	89	98	2.05	12.81	4.8	3.1	4.8	3.1			
79	96	91	1.80	11.94	4.9	3.0	4.9	3.0			
94	115	76	2.65	10.00	5.0	3.2	5.0	3.2			
104	127	69	2.40	9.03	5.0	3.2	5.0	3.2			
137	167	52	2.90	6.86	5.1	3.3	5.1	3.3			

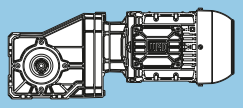
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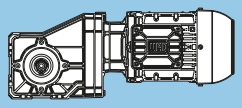
P_N = 0.75 kW											IE3
50 Hz 0.75 kW	60 Hz 0.90 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
29	35	250	0.85	49.88	2.6	2.2	2.6	2.2			
31	37	233	0.90	46.48	3.1	2.3	3.1	2.3			
37	45	194	1.05	38.80	3.8	2.6	3.8	2.6			
40	48	180	1.15	35.90	4.0	2.6	4.0	2.6			
47	57	152	1.35	30.29	4.4	2.8	4.4	2.8			
48	58	150	0.90	29.97	4.4	2.6	4.4	2.6			
50	61	144	1.40	28.67	4.5	2.8	4.5	2.8	**KH033-11P-80-04F**	19	330
59	71	122	1.35	24.38	4.7	2.8	4.7	2.8			
66	80	109	1.85	21.67	4.8	3.0	4.8	3.0			
74	90	97	1.70	19.37	4.9	3.0	4.9	3.0			
87	106	82	2.45	16.47	4.9	3.2	4.9	3.2			
96	116	75	2.20	14.96	5.0	3.1	5.0	3.1			
120	146	60	2.75	11.94	5.0	3.2	5.0	3.2			
61	74	117	0.80	15.41	**	**	**	**			
68	83	105	0.90	13.81	5.0	2.8	5.0	2.8			
71	86	101	0.90	13.29	5.0	2.8	5.0	2.8			
79	96	91	1.00	11.92	5.1	2.8	5.1	2.8			
81	99	88	1.00	11.60	5.1	2.8	5.1	2.8			
90	110	79	1.10	10.40	5.1	2.8	5.1	2.8			
102	124	70	1.15	9.25	5.2	2.8	5.2	2.8	**KH022-11P-90S/L-06E**	24	328
110	135	65	1.20	8.51	5.2	2.8	5.2	2.8			
123	150	58	1.35	7.63	5.2	2.8	5.2	2.8			
136	166	53	1.45	6.91	5.0	2.8	5.0	2.8			
158	192	45	1.55	5.96	4.8	2.8	4.8	2.8			
181	220	40	1.65	5.20	4.5	2.8	4.5	2.8			
246	300	29	2.00	3.82	4.1	2.8	4.1	2.8			
54	66	132	0.85	26.41	4.8	2.8	4.8	2.8			
60	73	119	0.95	23.68	4.9	2.8	4.9	2.8			
69	84	103	1.00	20.63	5.0	2.8	5.0	2.8			
73	89	98	0.85	19.50	5.0	2.8	5.0	2.8			
77	94	93	1.15	18.50	5.0	2.8	5.0	2.8			
93	113	77	1.25	15.41	5.1	2.8	5.1	2.8			
104	126	69	1.35	13.81	5.2	2.8	5.2	2.8			
108	131	67	1.35	13.29	5.2	2.8	5.2	2.8			
120	146	60	1.50	11.92	5.2	2.8	5.2	2.8			
121	147	59	1.40	11.84	5.2	2.8	5.2	2.8	**KH022-11P-80-04F**	17	328
123	150	58	1.50	11.60	5.2	2.8	5.2	2.8			
138	167	52	1.65	10.40	5.0	2.8	5.0	2.8			
155	188	46	1.75	9.25	4.8	2.8	4.8	2.8			
168	204	43	1.85	8.51	4.6	2.8	4.6	2.8			
187	228	38	2.05	7.63	4.5	2.8	4.5	2.8			
207	252	35	2.15	6.91	4.3	2.8	4.3	2.8			
240	292	30	2.35	5.96	4.1	2.8	4.1	2.8			
275	335	26	2.50	5.20	3.9	2.8	3.9	2.8			
374	455	19	3.00	3.82	3.5	2.8	3.5	2.8			

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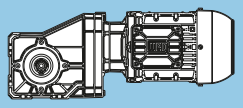
P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
5.7	6.9	1852	2.45	169.25	38.2	42.6	38.2	42.6	**KH093-11P-100L-06D**	161	342
6.7	8.1	1566	2.90	143.08	38.7	43.0	38.7	43.0			
7.1	8.5	1488	2.05	206.12	27.3	42.8	27.3	10.3	**KH083-11P-90S/L-04E**	105	340
8.9	11	1178	2.55	163.14	28.1	43.3	28.1	10.8			
10	12	1028	2.95	142.45	28.4	43.5	27.9	11.0			
4.7	5.7	2256	1.35	206.12	24.3	41.7	24.3	9.2	**KH083-11P-100L-06D**	111	340
5.9	7.1	1785	1.70	163.14	26.3	42.4	26.3	9.9			
6.7	8.2	1559	1.95	142.45	27.1	42.7	27.1	10.2			
7.6	9.3	1378	2.20	125.90	27.6	43.0	27.6	10.5			
9.0	11	1165	2.60	106.46	28.2	43.3	28.2	10.8			
10	13	1001	3.00	91.51	28.5	43.5	27.8	11.0			
5.7	6.9	1849	0.85	256.14	12.3	15.2	12.3	3.9	**KH073-11P-90S/L-04E**	64	338
7.4	8.9	1428	1.10	197.75	16.1	16.0	16.1	4.8			
8.8	11	1197	1.30	165.85	17.5	16.5	17.5	5.3			
11	14	940	1.65	130.16	18.7	17.1	18.7	5.8			
14	18	725	2.15	100.45	19.4	17.5	18.0	6.3			
15	18	721	1.80	99.87	19.4	17.5	17.6	6.3			
18	21	600	2.60	83.09	19.8	17.8	16.3	6.5			
19	23	557	2.80	77.11	19.9	17.8	15.8	6.6			
31	37	343	1.80	47.56	20.2	17.9	13.1	6.7			
40	48	265	2.90	36.72	20.3	18.2	11.8	6.9			
5.8	7.0	1815	0.90	165.85	12.6	15.2	12.6	4.0	**KH073-11P-100L-06D**	70	338
7.4	9.0	1424	1.10	130.16	16.1	16.1	16.1	4.8			
9.6	12	1099	1.45	100.45	18.0	16.7	18.0	5.5			
12	15	844	1.85	77.11	19.1	17.3	19.1	6.0			
14	16	773	2.05	70.67	19.3	17.4	18.2	6.2			
15	18	708	2.20	64.67	19.5	17.5	17.6	6.3			
16	19	670	2.35	61.25	19.6	17.6	17.1	6.4			
19	23	555	2.80	50.75	19.9	17.9	15.8	6.6			
20	24	520	1.20	47.56	19.9	17.4	15.8	6.1			
26	32	402	1.90	36.72	20.2	17.7	14.1	6.5			
31	38	337	2.75	30.79	20.3	17.9	13.1	6.7			
12	14	880	0.95	121.85	7.8	12.5	7.8	2.5	**KH063-11P-90S/L-04E**	44	336
15	18	722	1.15	99.98	9.6	13.0	9.6	3.0			
18	22	589	1.00	81.53	10.6	13.4	10.6	3.4			
19	23	559	1.50	77.42	10.8	13.5	10.8	3.5			
23	27	467	1.80	64.62	11.4	13.8	11.4	3.8			
25	30	425	1.95	58.89	11.5	13.9	11.5	4.0			
29	35	362	2.30	50.17	11.8	14.1	11.7	4.2			
30	36	351	2.35	48.56	11.9	14.1	11.5	4.2			
33	40	320	1.00	44.35	12.0	13.8	11.3	3.9			
35	43	297	2.80	41.17	12.0	14.3	10.8	4.4			
37	44	288	2.80	39.83	12.1	14.3	10.5	4.4			
41	50	254	1.80	35.15	12.2	14.1	10.2	4.2			
53	64	197	2.55	27.29	12.3	14.4	9.2	4.4			
12	15	847	1.00	77.42	8.2	12.6	8.2	2.6	**KH063-11P-100L-06D**	50	336
15	18	707	1.20	64.62	9.7	13.0	9.7	3.1			
16	20	644	1.30	58.89	10.2	13.2	10.2	3.3			
19	23	549	1.50	50.17	10.9	13.5	10.9	3.6			
20	24	531	1.55	48.56	11.0	13.6	11.0	3.6			
23	28	451	1.85	41.17	11.4	13.8	11.4	3.9			
24	29	436	1.85	39.83	11.5	13.9	11.5	3.9			
27	33	385	1.20	35.15	11.7	13.5	11.7	3.6			
28	34	370	2.05	33.85	11.8	14.1	11.8	4.1			
30	37	349	2.40	31.88	11.9	14.2	11.5	4.2			
34	42	305	2.35	27.83	12.0	14.3	10.9	4.3			
35	43	299	1.70	27.29	12.0	13.9	11.0	4.0			
40	48	265	2.95	24.25	12.1	14.4	10.2	4.5			
43	53	242	2.80	22.07	12.2	14.5	9.8	4.5			
55	67	190	2.65	17.34	12.3	14.4	9.0	4.5			

Legend see page 261

P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
15	18	694	0.90	96.08	4.2	6.3	4.2	3.2			
18	22	581	1.00	80.46	6.4	10.2	6.4	3.5			
20	24	528	1.15	73.08	7.1	10.4	7.1	3.7			
23	28	460	1.35	63.77	7.8	10.6	7.8	3.9			
24	29	435	1.40	60.26	8.0	10.7	8.0	4.0			
29	36	358	1.70	49.52	8.6	10.9	8.6	4.2			
35	42	303	2.00	42.00	9.0	11.1	9.0	4.4			
36	43	293	2.05	40.63	9.0	11.1	9.0	4.4	**KH053-11P-90S/L-04E**	31	334
38	46	277	1.00	38.32	9.1	10.8	9.1	4.1			
42	51	249	2.45	34.53	9.2	11.2	9.2	4.5			
46	56	227	2.65	31.46	9.3	11.3	9.3	4.6			
48	58	219	1.80	30.37	9.3	11.0	9.3	4.3			
53	64	198	2.95	27.39	9.4	11.4	9.4	4.7			
62	75	170	2.45	23.58	9.5	11.2	9.5	4.5			
75	91	140	3.00	19.35	9.6	11.4	9.6	4.7			
13	16	800	0.80	73.08	**	**	**	**			
15	18	698	0.90	63.77	4.1	6.1	4.1	3.2			
16	19	659	0.95	60.26	5.0	8.0	5.0	3.3			
19	24	542	1.15	49.52	6.9	10.4	6.9	3.7			
23	28	460	1.35	42.00	7.8	10.6	7.8	3.9			
24	29	445	1.35	40.63	8.0	10.7	8.0	4.0			
28	34	378	1.60	34.53	8.5	10.9	8.5	4.2			
31	37	344	1.75	31.46	8.7	11.0	8.7	4.3	**KH053-11P-100L-06D**	36	334
32	38	332	1.20	30.37	8.8	10.5	8.8	3.8			
35	43	300	1.95	27.39	9.0	11.1	9.0	4.4			
40	49	262	2.30	23.93	9.2	11.2	9.2	4.5			
41	49	258	1.65	23.58	9.2	10.8	9.2	4.1			
49	59	216	2.80	19.73	9.4	11.3	9.4	4.6			
50	60	212	2.00	19.35	9.4	11.1	9.4	4.4			
64	78	164	2.55	14.98	9.5	11.3	9.5	4.6			
20	24	526	0.80	72.92	**	**	**	**			
22	27	478	0.85	66.20	**	**	**	**			
25	31	416	1.00	57.58	3.4	5.1	3.4	2.2			
27	32	391	1.05	54.18	4.0	6.4	4.0	2.3			
33	40	317	1.30	43.93	5.2	8.2	5.2	2.6			
38	46	278	1.00	38.49	5.7	8.1	5.7	2.5			
40	48	266	1.45	36.78	5.8	8.4	5.8	2.8	**KH043-11P-90S/L-04E**	27	332
48	58	219	1.50	30.39	6.2	8.4	6.2	2.8			
49	59	215	1.70	29.81	6.3	8.6	6.3	3.0			
52	63	203	2.00	28.13	6.4	8.7	6.4	3.1			
62	75	170	1.85	23.57	6.6	8.6	6.6	3.0			
68	83	153	2.65	21.25	6.7	8.9	6.7	3.3			
75	91	139	2.15	19.29	6.7	8.8	6.7	3.2			
98	119	107	2.60	14.85	6.9	8.9	6.9	3.3			

Legend see page 261

*** ... on request*

P_N = 1.1 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.1 kW	1.3 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
22	26	488	0.85	44.64	**	**	**	**	**KH043-11P-100L-06D**	33	332
26	32	402	1.00	36.78	3.8	6.0	3.8	2.3			
32	39	326	1.15	29.81	5.1	8.2	5.1	2.6			
34	41	308	1.30	28.13	5.4	8.3	5.4	2.7			
41	49	258	1.20	23.57	5.9	8.2	5.9	2.6			
45	55	233	1.75	21.25	6.1	8.6	6.1	3.0			
50	60	211	1.40	19.29	6.3	8.4	6.3	2.8			
55	67	190	2.15	17.39	6.4	8.7	6.4	3.1			
65	78	162	1.75	14.85	6.6	8.7	6.6	3.1			
68	83	154	2.60	14.10	6.7	8.9	6.7	3.3			
86	104	123	2.15	11.22	6.8	8.9	6.8	3.3			
105	127	100	2.50	9.18	6.9	9.0	6.9	3.4			
129	157	81	2.95	7.44	6.9	9.1	6.4	3.5			
41	49	259	0.80	35.90	**	**	**	**	**KH033-11P-90S/L-04E**	24	330
48	58	219	0.95	30.29	3.4	2.4	3.4	2.4			
51	61	207	1.00	28.67	3.6	2.5	3.6	2.5			
60	72	176	0.95	24.38	4.1	2.4	4.1	2.4			
67	81	156	1.30	21.67	4.3	2.8	4.3	2.8			
75	91	140	1.20	19.37	4.5	2.6	4.5	2.6			
88	107	119	1.70	16.47	4.7	3.0	4.7	3.0			
97	118	108	1.55	14.96	4.8	2.9	4.8	2.9			
114	137	92	2.20	12.81	4.9	3.1	4.9	3.1			
122	147	86	1.90	11.94	4.9	3.0	4.9	3.0			
146	176	72	2.80	10.00	5.0	3.2	5.0	3.2			
161	195	65	2.55	9.03	5.0	3.2	5.0	3.2			
44	54	237	0.85	21.67	3.0	2.3	3.0	2.3	**KH033-11P-100L-06D**	29	330
50	60	212	0.80	19.37	**	**	**	**			
58	71	180	1.15	16.47	4.0	2.6	4.0	2.6			
64	78	164	1.00	14.96	4.3	2.5	4.3	2.5			
75	91	140	1.45	12.81	4.5	2.9	4.5	2.9			
80	98	131	1.25	11.94	4.6	2.7	4.6	2.7			
96	117	109	1.85	10.00	4.8	3.0	4.8	3.0			
106	129	99	1.65	9.03	4.8	2.9	4.8	2.9			
140	170	75	2.00	6.86	5.0	3.1	5.0	3.1			
180	218	58	2.35	5.34	5.0	3.2	5.0	3.2			
230	279	46	2.80	4.17	5.1	3.3	5.1	3.3			
79	95	134	0.80	18.50	**	**	**	**	**KH022-11P-90S/L-04E**	22	328
94	114	111	0.85	15.41	4.9	2.8	4.9	2.8			
105	127	100	0.95	13.81	5.0	2.8	5.0	2.8			
109	132	96	0.95	13.29	5.0	2.8	5.0	2.8			
122	148	86	1.05	11.92	5.1	2.8	5.1	2.8			
123	149	85	0.95	11.84	5.1	2.8	5.1	2.8			
125	152	84	1.05	11.60	5.1	2.8	5.1	2.8			
140	169	75	1.15	10.40	5.1	2.8	5.1	2.8			
157	190	67	1.25	9.25	4.9	2.8	4.9	2.8			
171	207	61	1.30	8.51	4.7	2.8	4.7	2.8			
191	231	55	1.40	7.63	4.5	2.8	4.5	2.8			
211	255	50	1.50	6.91	4.4	2.8	4.4	2.8			
244	295	43	1.65	5.96	4.1	2.8	4.1	2.8			
280	338	38	1.75	5.20	3.9	2.8	3.9	2.8			
381	461	28	2.10	3.82	3.5	2.8	3.5	2.8			

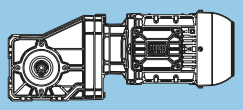
Legend see page 261

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P_N = 1.5 kW											IE3
50 Hz 1.5 kW	60 Hz 1.8 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
8.6	10	1672	2.70	169.25	38.5	42.9	38.5	42.9	**KH093-11P-90S/L-04F**	156	342
7.0	8.5	2036	1.50	206.12	25.3	42.0	25.3	9.5			
8.9	11	1612	1.90	163.14	26.9	42.6	26.9	10.1			
10	12	1407	2.15	142.45	27.5	42.9	27.5	10.4	**KH083-11P-90S/L-04F**	106	340
12	14	1244	2.45	125.90	28.0	43.2	27.2	10.7			
14	16	1052	2.90	106.46	28.4	43.4	25.4	10.9			
7.3	8.9	1954	0.80	197.75	**	**	**	**			
8.7	11	1638	0.95	165.85	14.4	15.6	14.4	4.4			
11	13	1286	1.25	130.16	17.0	16.3	17.0	5.1			
14	17	992	1.60	100.45	18.5	16.9	18.5	5.7			
15	18	987	1.35	99.87	18.5	17.0	18.5	5.7			
17	21	821	1.90	83.09	19.1	17.3	17.4	6.1			
19	23	762	2.05	77.11	19.3	17.4	16.7	6.2	**KH073-11P-90S/L-04F**	65	338
21	25	698	2.25	70.67	19.5	17.6	16.0	6.3			
22	27	639	2.45	64.67	19.7	17.7	15.5	6.4			
24	29	605	2.60	61.25	19.8	17.7	15.0	6.5			
30	37	470	1.35	47.56	20.0	17.5	13.9	6.3			
39	48	363	2.10	36.72	20.2	17.9	12.4	6.6			
47	57	304	3.00	30.79	20.3	18.1	11.5	6.8			
15	18	988	0.85	99.98	6.0	8.9	6.0	2.2			
19	23	765	1.10	77.42	9.1	12.8	9.1	2.9			
22	27	638	1.30	64.62	10.3	13.2	10.3	3.3			
25	30	582	1.45	58.89	10.7	13.4	10.7	3.5			
29	35	496	1.70	50.17	11.2	13.7	11.2	3.7			
30	36	480	1.75	48.56	11.3	13.7	11.3	3.8			
35	43	407	2.05	41.17	11.6	14.0	11.3	4.0			
36	44	393	2.05	39.83	11.7	14.0	11.2	4.1	**KH063-11P-90S/L-04F**	45	336
41	50	347	1.35	35.15	11.9	13.7	10.8	3.8			
43	52	334	2.30	33.85	11.9	14.2	10.3	4.2			
45	55	315	2.65	31.88	12.0	14.3	10.1	4.3			
52	63	275	2.60	27.83	12.1	14.4	9.5	4.4			
53	64	270	1.90	27.29	12.1	14.0	9.6	4.1			
65	78	221	2.30	22.40	12.2	14.3	8.8	4.3			
84	101	171	2.95	17.34	12.3	14.5	7.9	4.5			
20	24	722	0.85	73.08	3.4	4.6	3.4	3.1			
23	28	630	1.00	63.77	5.6	9.3	5.6	3.4			
24	29	595	1.05	60.26	6.2	10.2	6.2	3.5			
29	35	489	1.25	49.52	7.5	10.5	7.5	3.8			
35	42	415	1.45	42.00	8.2	10.7	8.2	4.0			
36	43	401	1.50	40.63	8.3	10.8	8.3	4.1			
42	51	341	1.80	34.53	8.7	11.0	8.7	4.3	**KH053-11P-90S/L-04F**	32	334
46	56	311	1.95	31.46	8.9	11.1	8.9	4.4			
48	58	300	1.35	30.37	9.0	10.7	9.0	4.0			
53	64	271	2.15	27.39	9.1	11.2	9.1	4.5			
61	73	236	2.55	23.93	9.3	11.3	9.3	4.6			
75	91	191	2.20	19.35	9.4	11.1	9.4	4.4			
97	117	148	2.80	14.98	9.6	11.3	9.1	4.6			

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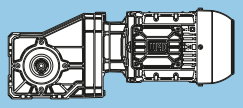
P_N = 1.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
1.5 kW	1.8 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
32	39	441	0.95	44.64	2.6	3.4	2.6	2.1			
33	40	434	0.95	43.93	2.9	4.1	2.9	2.2			
39	48	363	1.10	36.78	4.5	7.5	4.5	2.4			
40	48	361	1.15	36.54	4.6	7.8	4.6	2.5			
48	58	300	1.10	30.39	5.5	8.0	5.5	2.4			
49	59	295	1.25	29.81	5.5	8.3	5.5	2.7			
52	62	278	1.45	28.13	5.7	8.4	5.7	2.8			
62	74	233	1.35	23.57	6.1	8.3	6.1	2.7	**KH043-11P-90S/L-04F**	29	332
68	83	210	1.95	21.25	6.3	8.7	6.3	3.1			
75	91	191	1.55	19.29	6.4	8.5	6.4	2.9			
83	101	172	2.35	17.39	6.6	8.8	6.6	3.2			
98	118	147	1.90	14.85	6.7	8.7	6.7	3.1			
103	124	139	2.90	14.10	6.7	8.9	6.7	3.3			
129	156	111	2.40	11.22	6.8	8.9	6.7	3.3			
158	191	91	2.80	9.18	6.9	9.0	6.1	3.4			
67	81	214	0.95	21.67	3.5	2.4	3.5	2.4			
75	91	191	0.90	19.37	3.9	2.3	3.9	2.3			
88	107	163	1.25	16.47	4.3	2.7	4.3	2.7			
97	117	148	1.15	14.96	4.4	2.6	4.4	2.6			
113	137	127	1.60	12.81	4.6	2.9	4.6	2.9			
121	147	118	1.40	11.94	4.7	2.8	4.7	2.8	**KH033-11P-90S/L-04F**	25	330
145	176	99	2.05	10.00	4.8	3.1	4.8	3.1			
161	194	89	1.85	9.03	4.9	3.0	4.9	3.0			
211	256	68	2.20	6.86	5.0	3.2	5.0	3.2			
272	329	53	2.60	5.34	5.0	3.3	5.0	3.3			
122	147	118	0.80	11.92	**	**	**	**			
139	169	103	0.85	10.40	5.0	2.8	5.0	2.8			
157	190	91	0.90	9.25	5.0	2.8	5.0	2.8			
170	206	84	0.95	8.51	4.8	2.8	4.8	2.8			
190	230	75	1.05	7.63	4.6	2.8	4.6	2.8	**KH022-11P-90S/L-04F**	23	328
210	254	68	1.10	6.91	4.4	2.8	4.4	2.8			
243	294	59	1.20	5.96	4.2	2.8	4.2	2.8			
279	338	51	1.30	5.20	4.0	2.8	4.0	2.8			
380	459	38	1.55	3.82	3.6	2.8	3.6	2.8			

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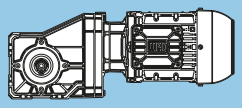
*** ... on request*

P_N = 2.2 kW										IE3
50 Hz 2.2 kW	60 Hz 2.6 kW				at 50 Hz					
					Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}	m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN	kg	
8.5	10	2478	1.85	169.25	36.7	41.8	36.7	41.8		
10	12	2095	2.15	143.08	37.7	42.3	37.7	42.3		
12	14	1813	2.50	123.86	38.2	42.7	38.2	42.7	**KH093-11P-100L-04E**	166	342
13	16	1606	2.85	109.70	38.6	43.0	38.6	43.0		
7.0	8.5	3018	1.00	206.12	19.2	33.9	19.2	8.0		
8.8	11	2389	1.30	163.14	23.6	41.5	23.6	9.0		
10	12	2086	1.45	142.45	25.1	41.9	25.1	9.4		
11	14	1843	1.65	125.90	26.1	42.3	26.1	9.8		
13	16	1559	1.95	106.46	27.1	42.7	27.1	10.2	**KH083-11P-100L-04E**	116	340
16	19	1340	2.25	91.51	27.7	43.0	25.5	10.5		
18	22	1170	2.60	79.89	28.1	43.3	24.1	10.8		
21	25	1002	3.00	68.44	28.5	43.5	22.5	11.0		
32	38	666	2.45	45.48	29.0	43.7	19.1	11.2		
11	13	1906	0.85	130.16	11.6	15.1	11.6	3.8		
14	17	1471	1.10	100.45	15.8	16.0	15.8	4.7		
17	21	1217	1.30	83.09	17.4	16.5	17.4	5.2		
19	23	1129	1.40	77.11	17.9	16.7	17.9	5.4		
20	25	1035	1.50	70.67	18.3	16.9	17.6	5.6		
22	27	947	1.65	64.67	18.7	17.0	16.8	5.8		
23	28	897	1.75	61.25	18.9	17.1	16.4	5.9		
28	34	743	2.10	50.75	19.4	17.5	15.0	6.2	**KH073-11P-100L-04E**	75	338
29	35	730	2.15	49.88	19.4	17.5	14.8	6.2		
34	41	624	2.50	42.61	19.7	17.7	13.7	6.5		
37	45	573	2.75	39.17	19.8	17.8	13.2	6.6		
39	48	538	1.45	36.72	19.9	17.3	13.2	6.1		
47	57	451	2.05	30.79	20.1	17.6	12.2	6.3		
59	72	354	2.60	24.17	20.2	17.9	11.0	6.6		
24	30	862	1.00	58.89	8.0	12.5	8.0	2.6		
29	35	735	1.15	50.17	9.4	12.9	9.4	3.0		
30	36	711	1.20	48.56	9.7	13.0	9.7	3.1		
35	42	603	1.40	41.17	10.5	13.4	10.5	3.4		
36	44	583	1.40	39.83	10.7	13.4	10.7	3.5		
42	52	496	1.55	33.85	11.2	13.7	11.2	3.7		
45	55	467	1.80	31.88	11.4	13.8	10.9	3.8		
52	63	407	1.80	27.83	11.6	14.0	10.2	4.0		
53	65	393	1.80	26.84	11.7	14.0	10.1	4.1	**KH063-11P-100L-04E**	55	336
59	72	355	2.25	24.25	11.8	14.1	9.6	4.2		
64	78	328	1.55	22.40	11.9	13.8	9.5	3.8		
65	79	323	2.10	22.07	11.9	14.2	9.2	4.3		
72	87	293	2.55	20.00	12.0	14.3	8.8	4.4		
83	101	254	2.00	17.34	12.2	14.1	8.4	4.2		
88	106	240	2.90	16.40	12.2	14.5	8.0	4.5		
109	132	193	2.60	13.19	12.3	14.4	7.4	4.4		
29	35	725	0.85	49.52	3.3	4.4	3.3	3.1		
34	42	615	1.00	42.00	5.9	9.9	5.9	3.4		
35	43	595	1.05	40.63	6.2	10.2	6.2	3.5		
42	51	506	1.20	34.53	7.3	10.5	7.3	3.8		
43	52	488	1.25	33.30	7.5	10.5	7.5	3.8		
46	55	461	1.35	31.46	7.8	10.6	7.8	3.9		
52	64	401	1.45	27.39	8.3	10.8	8.3	4.1		
60	73	350	1.75	23.93	8.7	10.9	8.7	4.2	**KH053-11P-100L-04E**	42	334
61	74	345	1.20	23.58	8.7	10.5	8.7	3.8		
73	88	289	2.10	19.73	9.0	11.1	9.0	4.4		
74	90	283	1.50	19.35	9.1	10.7	9.1	4.0		
89	108	237	2.55	16.19	9.3	11.3	9.3	4.6		
96	116	219	1.90	14.98	9.3	11.0	9.3	4.3		
104	127	201	3.00	13.75	9.4	11.4	9.1	4.7		
126	153	167	2.50	11.40	9.5	11.3	8.5	4.6		

Legend see page 261

P_N = 2.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
2.2 kW	2.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
48	59	436	0.85	29.81	2.8	3.9	2.8	2.2			
50	61	421	0.85	28.74	3.3	4.9	3.3	2.2			
51	62	412	1.00	28.13	3.5	5.4	3.5	2.3			
61	74	345	0.90	23.57	4.8	7.7	4.8	2.1			
68	82	311	1.30	21.25	5.3	8.3	5.3	2.7			
74	90	282	1.05	19.29	5.7	8.0	5.7	2.4			
83	100	255	1.60	17.39	5.9	8.5	5.9	2.9			
97	118	217	1.30	14.85	6.3	8.4	6.3	2.8			
102	124	206	1.95	14.10	6.3	8.7	6.3	3.1	**KH043-11P-100L-04E**	38	332
122	148	173	2.35	11.81	6.6	8.8	6.6	3.2			
128	156	164	1.60	11.22	6.6	8.7	6.6	3.1			
150	182	140	2.70	9.57	6.7	8.9	6.5	3.3			
155	189	135	2.75	9.23	6.7	9.0	6.4	3.4			
156	190	134	1.90	9.18	6.7	8.8	6.5	3.2			
193	235	109	2.25	7.44	6.8	8.9	5.9	3.3			
230	280	91	2.55	6.23	6.9	9.0	5.5	3.4			
284	346	74	3.00	5.05	6.9	9.1	5.0	3.5			
87	106	241	0.85	16.47	2.9	2.3	2.9	2.3			
112	136	188	1.10	12.81	3.9	2.6	3.9	2.6			
120	146	175	0.95	11.94	4.1	2.4	4.1	2.4			
144	175	146	1.40	10.00	4.4	2.8	4.4	2.8			
159	193	132	1.25	9.03	4.6	2.7	4.6	2.7	**KH033-11P-100L-04E**	35	330
209	254	100	1.50	6.86	4.8	2.9	4.8	2.9			
269	327	78	1.80	5.34	5.0	3.1	5.0	3.1			
344	418	61	2.10	4.17	4.7	3.2	4.7	3.2			

Legend see page 261

P_N = 3.0 kW											IE3
50 Hz	60 Hz				at 50 Hz						
3.0 kW	3.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
8.5	10	3367	1.35	169.25	33.7	40.7	33.7	40.7			
10	12	2847	1.60	143.08	35.6	41.4	35.6	41.4			
12	14	2464	1.85	123.86	36.7	41.9	36.7	41.9			
13	16	2183	2.10	109.70	37.5	42.2	37.5	42.2	**KH093-11P-L100L-04F**	173	342
15	18	1888	2.40	94.90	38.1	42.6	38.1	42.6			
16	19	1821	2.50	91.51	38.2	42.7	38.2	42.7			
18	22	1606	2.85	80.74	38.6	43.0	38.6	43.0			
8.8	11	3246	0.95	163.14	17.1	29.4	17.1	7.7			
10	12	2834	1.10	142.45	20.7	37.2	20.7	8.3			
11	14	2505	1.20	125.90	22.9	41.3	22.9	8.8			
14	16	2118	1.45	106.46	24.9	41.9	24.9	9.4			
16	19	1821	1.65	91.51	26.2	42.3	26.2	9.8			
18	22	1589	1.90	79.89	27.0	42.7	25.5	10.2			
21	25	1362	2.25	68.44	27.7	43.0	23.7	10.5	**KH083-11P-L100L-04F**	123	340
22	26	1313	2.30	66.00	27.8	43.1	23.3	10.6			
23	28	1256	2.30	63.12	27.9	43.1	22.8	10.6			
25	30	1159	2.60	58.25	28.2	43.3	21.9	10.8			
26	32	1096	2.75	55.11	28.3	43.4	21.5	10.9			
32	38	905	1.80	45.48	28.7	43.2	20.0	10.7			
40	48	716	2.30	35.99	29.0	43.6	18.1	11.1			
14	17	1999	0.80	100.45	**	**	**	**			
17	21	1653	0.95	83.09	14.3	15.6	14.3	4.3			
19	23	1534	1.05	77.11	15.3	15.8	15.3	4.6			
20	25	1406	1.15	70.67	16.2	16.1	16.2	4.8			
22	27	1287	1.25	64.67	17.0	16.3	17.0	5.1			
24	28	1219	1.30	61.25	17.4	16.5	17.4	5.2			
28	34	1029	1.55	51.72	18.3	16.9	16.2	5.6			
29	35	992	1.60	49.88	18.5	16.9	15.9	5.7			
34	41	848	1.85	42.61	19.0	17.2	14.7	6.0	**KH073-11P-L100L-04F**	82	338
37	44	779	2.00	39.17	19.3	17.4	14.1	6.1			
39	47	731	1.05	36.72	19.4	16.7	14.1	5.5			
44	54	645	2.45	32.40	19.7	17.7	12.9	6.4			
47	57	613	1.50	30.79	19.7	17.1	12.9	5.8			
52	63	548	2.85	27.56	19.9	17.9	11.9	6.6			
60	72	481	1.90	24.17	20.0	17.5	11.5	6.2			
77	93	371	2.50	18.65	20.2	17.8	10.3	6.6			
93	113	307	3.00	15.43	20.3	18.0	9.4	6.8			
29	35	998	0.85	50.17	5.8	8.5	5.8	2.2			
30	36	966	0.85	48.56	6.4	9.8	6.4	2.3			
35	42	819	1.05	41.17	8.6	12.7	8.6	2.7			
36	44	792	1.05	39.83	8.9	12.8	8.9	2.8			
43	51	673	1.15	33.85	10.0	13.1	10.0	3.2			
45	55	634	1.30	31.88	10.3	13.3	10.3	3.3			
52	63	554	1.30	27.83	10.9	13.5	10.9	3.6			
53	64	543	0.95	27.29	10.9	12.8	10.9	2.9			
54	65	534	1.35	26.84	11.0	13.6	10.8	3.6			
59	72	482	1.65	24.25	11.3	13.7	10.3	3.8			
64	78	446	1.15	22.40	11.5	13.3	10.2	3.3	**KH063-11P-L100L-04F**	62	336
65	79	439	1.55	22.07	11.5	13.9	9.8	3.9			
72	87	398	1.90	20.00	11.7	14.0	9.3	4.0			
83	100	345	1.45	17.34	11.9	13.7	9.0	3.8			
88	106	326	2.15	16.40	11.9	14.2	8.5	4.3			
103	125	277	2.40	13.94	12.1	14.4	7.9	4.4			
109	132	262	1.95	13.19	12.1	14.1	7.9	4.1			
126	152	228	2.75	11.46	12.2	14.5	7.2	4.6			
130	157	220	2.85	11.05	12.2	14.6	7.1	4.6			
132	160	216	2.35	10.88	12.2	14.3	7.2	4.3			
161	195	177	2.85	8.92	12.3	14.5	6.6	4.5			

Legend see page 261

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P_N = 3.0 kW										IE3
50 Hz	60 Hz				at 50 Hz					
3.0 kW	3.6 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
42	50	687	0.90	34.53	4.4	6.7	4.4	3.2			
43	52	663	0.95	33.30	5.0	8.0	5.0	3.3			
46	55	626	1.00	31.46	5.7	9.5	5.7	3.4			
53	64	545	1.10	27.39	6.9	10.3	6.9	3.6			
60	73	476	1.30	23.93	7.7	10.6	7.7	3.9			
61	74	469	0.90	23.58	7.7	9.9	7.7	3.2			
73	88	393	1.55	19.73	8.4	10.8	8.4	4.1			
74	90	385	1.10	19.35	8.4	10.3	8.4	3.6			
89	107	322	1.90	16.19	8.8	11.0	8.8	4.3	**KH053-11P-L100L-04F**	48	334
96	116	298	1.40	14.98	9.0	10.7	9.0	4.0			
105	127	274	2.20	13.75	9.1	11.2	9.1	4.5			
126	153	227	1.85	11.40	9.3	11.0	9.0	4.3			
127	154	225	2.70	11.31	9.3	11.3	8.7	4.6			
132	159	217	2.80	10.91	9.3	11.3	8.6	4.6			
153	185	187	2.25	9.40	9.5	11.2	8.2	4.5			
187	226	153	2.70	7.71	9.5	11.3	7.5	4.6			
68	82	423	0.95	21.25	3.2	4.7	3.2	2.2			
75	90	384	0.80	19.29	**	**	**	**			
83	100	346	1.20	17.39	4.8	8.1	4.8	2.5			
97	117	295	0.95	14.85	5.5	8.0	5.5	2.4			
102	123	281	1.45	14.10	5.7	8.4	5.7	2.8			
122	147	235	1.75	11.81	6.1	8.6	6.1	3.0			
128	155	223	1.20	11.22	6.2	8.4	6.2	2.8			
150	182	190	2.00	9.57	6.4	8.7	6.4	3.1	**KH043-11P-L100L-04F**	45	332
156	189	184	2.05	9.23	6.5	8.8	6.5	3.2			
157	190	183	1.40	9.18	6.5	8.6	6.5	3.0			
194	234	148	1.65	7.44	6.7	8.7	6.2	3.1			
231	279	124	1.90	6.23	6.8	8.9	5.7	3.3			
285	345	100	2.20	5.05	6.9	9.0	5.2	3.4			
296	357	97	2.30	4.87	6.9	9.0	5.2	3.4			
112	136	255	0.80	12.81	**	**	**	**			
144	174	199	1.05	10.00	3.7	2.5	3.7	2.5			
159	193	180	0.95	9.03	4.0	2.4	4.0	2.4	**KH033-11P-L100L-04F**	41	330
210	254	136	1.10	6.86	4.5	2.7	4.5	2.7			
270	326	106	1.30	5.34	4.8	2.9	4.8	2.9			
345	417	83	1.55	4.17	4.9	3.1	4.9	3.1			

Legend see page 261

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P_N = 4.0 kW											IE3
50 Hz 4.0 kW	60 Hz 4.8 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	12	3713	2.20	140.95	58.8	64.9	58.8	64.9			
12	14	3280	2.45	124.50	59.5	65.4	59.5	65.4	**KH103-11P-112M-04E**	292	344
13	16	2847	2.85	108.07	60.1	65.9	60.1	65.9			
14	17	2745	2.95	104.21	60.3	66.0	60.3	66.0			
8.6	10	4459	1.05	169.25	28.2	39.3	28.2	39.3			
10	12	3769	1.20	143.08	32.0	40.2	32.0	40.2			
12	14	3263	1.40	123.86	34.2	40.9	34.2	40.9			
13	16	2890	1.60	109.70	35.5	41.3	35.5	41.3			
15	18	2500	1.80	94.90	36.6	41.8	36.6	41.8			
16	19	2411	1.90	91.51	36.9	41.9	36.9	41.9	**KH093-11P-112M-04E**	174	342
18	22	2127	2.15	80.74	37.6	42.3	37.6	42.3			
21	26	1810	2.50	68.71	38.2	42.7	38.2	42.7			
23	27	1685	2.70	63.96	38.5	42.9	38.5	42.9			
24	30	1562	2.90	59.28	38.7	43.0	38.7	43.0			
39	47	978	2.85	37.13	39.4	43.3	39.4	43.3			
10	12	3753	0.80	142.45	**	**	**	**			
12	14	3317	0.95	125.90	16.3	27.7	16.3	7.6			
14	16	2805	1.10	106.46	20.9	37.7	20.9	8.4			
16	19	2411	1.25	91.51	23.4	41.4	23.4	8.9			
18	22	2105	1.45	79.89	25.0	41.9	25.0	9.4			
21	26	1803	1.70	68.44	26.3	42.3	25.3	9.8			
22	27	1739	1.75	66.00	26.5	42.4	24.7	9.9			
23	28	1663	1.75	63.12	26.8	42.5	24.2	10.0			
25	30	1535	2.00	58.25	27.2	42.7	23.3	10.2	**KH083-11P-112M-04E**	124	340
26	32	1452	2.10	55.11	27.4	42.9	22.7	10.4			
30	36	1287	2.35	48.87	27.9	43.1	21.3	10.6			
32	39	1198	1.40	45.48	28.1	42.6	21.1	10.1			
35	43	1085	2.80	41.19	28.3	43.4	19.8	10.9			
40	49	948	1.75	35.99	28.6	43.1	19.0	10.6			
46	56	828	2.35	31.43	28.8	43.3	17.8	10.8			
52	63	732	2.60	27.78	28.9	43.5	16.9	11.0			
19	23	2031	0.80	77.11	**	**	**	**			
21	25	1862	0.85	70.67	12.1	15.2	12.1	3.9			
22	27	1704	0.95	64.67	13.8	15.5	13.8	4.2			
24	29	1614	1.00	61.25	14.6	15.7	14.6	4.4			
28	34	1363	1.15	51.72	16.5	16.2	16.5	4.9			
29	35	1337	1.20	50.75	16.7	16.2	16.7	5.0			
34	41	1123	1.40	42.61	17.9	16.7	15.8	5.4			
37	45	1032	1.55	39.17	18.3	16.9	15.1	5.6			
39	48	967	0.80	36.72	**	**	**	**			
45	54	854	1.85	32.40	19.0	17.2	13.7	6.0	**KH073-11P-112M-04E**	83	338
47	57	811	1.15	30.79	19.2	16.5	13.9	5.2			
53	64	726	2.15	27.56	19.4	17.5	12.6	6.2			
60	73	637	1.45	24.17	19.7	17.0	12.3	5.8			
61	73	629	2.50	23.88	19.7	17.7	11.8	6.5			
72	87	531	2.95	20.17	19.9	17.9	10.9	6.7			
78	94	491	1.90	18.65	20.0	17.5	10.8	6.2			
94	114	407	2.25	15.43	20.2	17.7	9.9	6.5			
111	134	346	2.65	13.12	20.2	17.9	9.2	6.7			

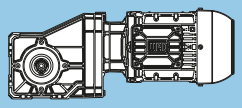
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P_N = 4.0 kW										IE3
50 Hz	60 Hz				at 50 Hz					
4.0 kW	4.8 kW				Output shaft		Hollow shaft			
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
35	43	1085	0.80	41.17	**	**	**	**			
36	44	1049	0.80	39.83	**	**	**	**			
43	52	892	0.85	33.85	7.6	12.4	7.6	2.5			
45	55	840	1.00	31.88	8.3	12.6	8.3	2.7			
52	63	733	1.00	27.83	9.5	12.9	9.5	3.0			
54	65	707	1.00	26.84	9.7	13.0	9.7	3.1			
60	72	639	1.25	24.25	10.3	13.2	10.3	3.3			
65	78	590	0.85	22.40	10.6	12.6	10.6	2.7			
66	80	581	1.15	22.07	10.7	13.4	10.5	3.5			
73	88	527	1.45	20.00	11.0	13.6	10.0	3.6			
84	101	457	1.10	17.34	11.4	13.2	9.6	3.3	**KH063-11P-112M-04E**	63	336
88	107	432	1.65	16.40	11.5	13.9	9.1	3.9			
104	126	367	1.85	13.94	11.8	14.1	8.3	4.1			
110	133	347	1.45	13.19	11.9	13.7	8.4	3.7			
127	153	302	2.10	11.46	12.0	14.3	7.6	4.3			
131	159	291	2.15	11.05	12.0	14.3	7.5	4.4			
133	161	287	1.75	10.88	12.1	14.0	7.6	4.0			
160	193	239	2.45	9.09	12.2	14.5	6.8	4.5			
163	197	235	2.15	8.92	12.2	14.2	6.9	4.3			
191	232	200	2.45	7.58	12.3	14.4	6.4	4.4			
233	282	164	2.80	6.23	12.3	14.5	5.9	4.6			
241	292	158	2.90	6.01	12.3	14.5	5.8	4.6			
53	64	722	0.80	27.39	**	**	**	**			
61	73	630	1.00	23.93	5.6	9.3	5.6	3.4			
73	89	520	1.20	19.73	7.2	10.4	7.2	3.7			
75	91	510	0.85	19.35	7.3	9.7	7.3	3.0			
90	108	427	1.45	16.19	8.1	10.7	8.1	4.0			
97	117	395	1.05	14.98	8.4	10.2	8.4	3.5			
105	128	362	1.70	13.75	8.6	10.9	8.6	4.2			
127	154	300	1.40	11.40	9.0	10.7	9.0	4.0	**KH053-11P-112M-04E**	49	334
128	155	298	2.05	11.31	9.0	11.1	9.0	4.4			
133	161	287	2.10	10.91	9.0	11.1	9.0	4.4			
154	187	248	1.70	9.40	9.2	10.9	8.6	4.2			
162	196	236	2.40	8.97	9.3	11.3	8.2	4.6			
188	228	203	2.05	7.71	9.4	11.1	7.9	4.4			
221	268	173	2.40	6.55	9.5	11.2	7.3	4.5			
269	326	142	2.95	5.39	9.2	11.4	6.7	4.7			
83	101	458	0.90	17.39	1.9	2.0	1.9	2.0			
103	124	371	1.10	14.10	4.4	7.3	4.4	2.4			
123	149	311	1.30	11.81	5.3	8.3	5.3	2.7			
129	156	296	0.90	11.22	5.5	8.0	5.5	2.4			
152	183	252	1.50	9.57	6.0	8.5	6.0	2.9			
157	190	243	1.55	9.23	6.0	8.5	6.0	2.9	**KH043-11P-112M-04E**	46	332
158	191	242	1.05	9.18	6.1	8.3	6.1	2.7			
195	236	196	1.25	7.44	6.4	8.5	6.4	2.9			
233	282	164	1.45	6.23	6.6	8.7	6.0	3.1			
287	348	133	1.70	5.05	6.8	8.8	5.5	3.2			
298	360	128	1.75	4.87	6.8	8.8	5.4	3.2			

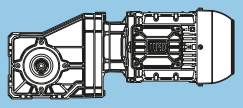
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P_N = 5.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
5.5 kW	6.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
9.7	12	5418	2.40	151.11	86.3	92.1	86.3	92.1			
11	13	4724	2.80	131.76	87.1	92.8	87.1	92.8	**KH123-11P-132S-04E**	433	346
12	14	4555	2.90	127.05	87.2	92.9	87.2	92.9			
10	13	5054	1.60	140.95	56.0	63.4	56.0	63.4			
12	14	4464	1.80	124.50	57.4	64.1	57.4	64.1			
14	17	3736	2.15	104.21	58.8	64.9	58.8	64.9	**KH103-11P-132S-04E**	310	344
16	19	3348	2.40	93.37	59.4	65.3	59.4	65.3			
18	22	2865	2.80	79.90	60.1	65.9	60.1	65.9			
10	12	5130	0.90	143.08	23.2	38.5	23.2	38.5			
12	14	4441	1.05	123.86	28.3	39.4	28.3	39.4			
13	16	3933	1.15	109.70	31.2	40.0	31.2	40.0			
15	19	3402	1.35	94.90	33.6	40.7	33.6	40.7			
16	19	3281	1.40	91.51	34.1	40.8	34.1	40.8			
18	22	2895	1.60	80.74	35.5	41.3	35.5	41.3			
21	26	2463	1.85	68.71	36.7	41.9	36.7	41.9	**KH093-11P-132S-04E**	192	342
23	28	2293	2.00	63.96	37.2	42.1	37.2	42.1			
25	30	2125	2.15	59.28	37.6	42.3	37.6	42.3			
27	33	1939	2.35	54.07	38.0	42.5	38.0	42.5			
31	38	1678	2.70	46.81	38.5	42.9	38.5	42.9			
39	48	1331	2.10	37.13	39.0	42.7	39.0	42.7			
47	56	1125	2.50	31.39	39.3	43.0	39.3	43.0			
54	65	974	2.90	27.18	39.4	43.3	39.4	43.3			
14	17	3817	0.80	106.46	**	**	**	**			
16	19	3281	0.95	91.51	16.7	28.6	16.7	7.7			
18	22	2864	1.05	79.89	20.5	36.8	20.5	8.3			
21	26	2454	1.25	68.44	23.2	41.4	23.2	8.9			
22	27	2366	1.30	66.00	23.7	41.5	23.7	9.0			
23	28	2263	1.30	63.12	24.2	41.7	24.2	9.2			
25	30	2088	1.45	58.25	25.1	41.9	25.1	9.4			
27	32	1976	1.55	55.11	25.6	42.1	24.3	9.6	**KH083-11P-132S-04E**	142	340
30	36	1752	1.75	48.87	26.4	42.4	23.0	9.9			
32	39	1631	1.00	45.48	26.9	41.7	22.8	9.2			
36	43	1477	2.05	41.19	27.3	42.8	21.0	10.3			
41	50	1270	2.40	35.41	27.9	43.1	19.6	10.6			
47	57	1108	2.75	30.91	28.3	43.4	18.4	10.9			
53	64	996	1.95	27.78	28.5	43.0	17.8	10.5			
62	75	842	2.30	23.49	28.8	43.3	16.5	10.8			
73	87	724	2.65	20.19	29.0	43.5	15.3	11.0			
28	34	1854	0.85	51.72	12.2	15.2	12.2	3.9			
29	35	1820	0.90	50.75	12.6	15.2	12.6	4.0			
34	41	1528	1.05	42.61	15.3	15.8	15.3	4.6			
37	45	1404	1.15	39.17	16.2	16.1	15.7	4.8			
45	54	1162	1.35	32.40	17.7	16.6	15.0	5.3			
48	57	1104	0.85	30.79	18.0	15.6	14.4	4.3			
53	64	988	1.60	27.56	18.5	17.0	13.7	5.7			
61	74	856	1.85	23.88	19.0	17.2	12.7	6.0			
73	88	723	2.15	20.17	19.4	17.5	11.6	6.3	**KH073-11P-132S-04E**	101	338
75	91	697	2.25	19.45	19.5	17.6	11.5	6.3			
79	95	669	1.40	18.65	19.6	16.9	11.6	5.7			
88	106	596	2.65	16.61	19.8	17.8	10.6	6.5			
95	114	553	1.65	15.43	19.9	17.3	10.6	6.0			
112	135	470	1.95	13.12	20.0	17.5	9.7	6.3			
129	155	408	2.25	11.37	20.1	17.7	9.1	6.5			
153	184	344	2.65	9.60	20.2	17.9	8.4	6.7			
158	191	332	2.75	9.26	20.3	18.0	8.3	6.7			

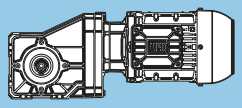
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P_N = 5.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
5.5 kW	6.6 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
60	73	869	0.90	24.25	7.9	12.5	7.9	2.6	**KH063-11P-132S-04E**	81	336
66	80	791	0.85	22.07	8.9	12.8	8.9	2.8			
73	88	717	1.05	20.00	9.6	13.0	9.6	3.0			
84	102	622	0.85	17.34	10.4	12.5	10.1	2.5			
89	108	588	1.20	16.40	10.6	13.4	9.9	3.4			
105	127	500	1.35	13.94	11.2	13.7	9.0	3.7			
111	134	473	1.10	13.19	11.3	13.1	9.1	3.2			
128	154	411	1.55	11.46	11.6	14.0	8.2	4.0			
133	160	396	1.60	11.05	11.7	14.0	8.0	4.1			
135	162	390	1.30	10.88	11.7	13.5	8.2	3.6			
161	194	326	1.80	9.09	11.9	14.2	7.3	4.3			
164	198	320	1.60	8.92	12.0	13.8	7.4	3.9			
193	233	272	1.80	7.58	12.1	14.0	6.8	4.1			
235	283	223	2.10	6.23	12.2	14.3	6.2	4.3			
244	294	215	2.15	6.01	12.2	14.3	6.1	4.3			
297	357	177	2.45	4.94	12.3	14.5	5.6	4.5			
74	89	707	0.85	19.73	3.8	5.5	3.8	3.2	**KH053-11P-132S-04E**	68	334
90	109	580	1.05	16.19	6.4	10.2	6.4	3.5			
98	118	537	0.80	14.98	**	**	**	**			
107	128	493	1.25	13.75	7.5	10.5	7.5	3.8			
129	155	409	1.05	11.40	8.3	10.2	8.3	3.5			
130	156	406	1.50	11.31	8.3	10.8	8.3	4.1			
134	162	391	1.55	10.91	8.4	10.8	8.4	4.1			
156	188	337	1.25	9.40	8.8	10.5	8.8	3.8			
163	197	322	1.80	8.97	8.9	11.0	8.7	4.3			
190	229	276	1.50	7.71	9.1	10.8	8.4	4.1			
224	269	235	1.80	6.55	9.3	10.9	7.7	4.2			
272	327	193	2.15	5.39	9.4	11.1	7.1	4.4			
282	340	186	2.25	5.19	9.4	11.2	6.9	4.5			
343	413	153	2.70	4.27	8.6	11.3	6.4	4.6			

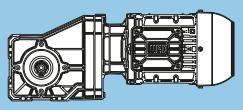
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P_N = 7.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
7.5 kW	9.0 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
9.7	12	7388	1.80	151.11	83.7	90.1	83.7	90.1			
11	13	6442	2.05	131.76	85.1	91.0	85.1	91.0			
12	14	6212	2.10	127.05	85.4	91.3	85.4	91.3			
13	16	5549	2.35	113.49	86.2	91.9	86.2	91.9	**KH123-11P-L132M-04F**	447	346
15	18	4778	2.75	97.73	87.0	92.7	87.0	92.7			
30	36	2403	2.50	49.16	88.7	95.1	88.7	95.1			
52	63	1370	2.50	28.03	87.3	95.8	87.3	95.8			
10	13	6891	1.20	140.95	50.4	61.3	50.4	61.3			
12	14	6087	1.35	124.50	53.2	62.2	53.2	62.2			
14	17	5095	1.60	104.21	55.9	63.3	55.9	63.3			
16	19	4565	1.80	93.37	57.2	64.0	57.2	64.0			
18	22	3906	2.05	79.90	58.5	64.7	58.5	64.7	**KH103-11P-L132M-04F**	324	344
21	26	3374	2.40	69.01	59.4	65.3	59.4	65.3			
28	33	2604	2.30	53.27	60.4	66.2	60.4	66.2			
37	45	1925	2.50	39.38	61.1	67.0	61.1	67.0			
48	58	1483	2.30	30.33	61.1	67.1	61.1	67.1			
65	79	1096	2.50	22.42	55.1	67.6	55.1	67.6			
13	16	5363	0.85	109.70	21.0	35.2	21.0	35.2			
15	19	4640	1.00	94.90	27.0	39.1	27.0	39.1			
16	19	4474	1.05	91.51	28.1	39.3	28.1	39.3			
18	22	3947	1.15	80.74	31.1	40.0	31.1	40.0			
21	26	3359	1.35	68.71	33.8	40.7	33.8	40.7			
23	28	3127	1.45	63.96	34.7	41.0	34.7	41.0			
25	30	2898	1.60	59.28	35.4	41.3	35.4	41.3			
27	33	2644	1.75	54.07	36.2	41.6	36.2	41.6			
31	38	2289	2.00	46.81	37.2	42.1	37.2	42.1	**KH093-11P-L132M-04F**	206	342
35	43	2027	2.25	41.46	37.8	42.4	37.8	42.4			
39	48	1815	1.55	37.13	38.2	41.8	38.2	41.8			
41	49	1753	2.60	35.86	38.3	42.8	38.3	42.8			
42	51	1691	2.50	34.58	38.5	42.9	38.5	42.9			
47	56	1535	1.85	31.39	38.7	42.3	38.7	42.3			
54	65	1329	2.15	27.18	39.0	42.7	39.0	42.7			
61	74	1177	2.55	24.07	39.2	42.9	39.2	42.9			
70	85	1018	2.95	20.82	39.4	43.2	39.4	43.2			
73	88	982	2.50	20.08	39.4	43.3	39.4	43.3			
18	22	3906	0.80	79.89	**	**	**	**			
21	26	3346	0.90	68.44	16.0	27.1	16.0	7.6			
22	27	3227	0.95	66.00	17.3	29.8	17.3	7.7			
23	28	3086	0.95	63.12	18.6	32.6	18.6	7.9			
25	30	2848	1.10	58.25	20.6	37.0	20.6	8.3			
27	32	2694	1.15	55.11	21.7	39.4	21.7	8.5			
30	36	2389	1.30	48.87	23.6	41.5	23.6	9.0			
36	43	2014	1.50	41.19	25.4	42.0	22.9	9.5			
41	50	1731	1.75	35.41	26.5	42.4	21.2	9.9			
47	57	1511	2.00	30.91	27.2	42.8	19.8	10.3			
53	64	1358	1.40	27.78	27.7	42.3	19.2	9.8	**KH083-11P-L132M-04F**	156	340
55	67	1295	2.30	26.48	27.8	43.1	18.3	10.6			
57	69	1249	2.40	25.54	28.0	43.2	18.0	10.7			
62	75	1148	1.70	23.49	28.2	42.7	17.7	10.2			
65	79	1102	2.60	22.54	28.3	43.4	16.9	10.9			
73	88	987	1.95	20.19	28.5	43.0	16.3	10.5			
77	94	925	2.95	18.91	28.6	43.6	15.5	11.1			
83	100	862	2.25	17.63	28.7	43.3	15.3	10.8			
97	117	738	2.65	15.10	28.9	43.5	14.3	11.0			
101	122	712	2.50	14.56	29.0	43.6	14.0	11.1			

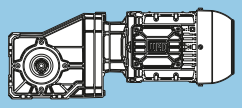
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P_N = 7.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
7.5 kW	9.0 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
37	45	1915	0.85	39.17	11.4	15.0	11.4	3.8	**KH073-11P-L132M-04F**	115	338
45	55	1584	1.00	32.40	14.9	15.7	13.3	4.5			
53	64	1347	1.20	27.56	16.6	16.2	13.4	5.0			
61	74	1168	1.35	23.88	17.7	16.6	13.4	5.3			
73	88	986	1.60	20.17	18.5	17.0	12.7	5.7			
75	91	951	1.65	19.45	18.7	17.0	12.5	5.8			
79	95	912	1.00	18.65	18.8	16.2	12.3	4.9			
88	107	812	1.95	16.61	19.2	17.3	11.5	6.1			
95	115	754	1.25	15.43	19.3	16.6	11.5	5.4			
112	135	641	1.45	13.12	19.7	17.0	10.6	5.7			
129	156	556	1.65	11.37	19.9	17.3	9.8	6.0			
153	184	469	1.95	9.60	20.0	17.5	9.0	6.3			
158	191	453	2.05	9.26	20.1	17.6	8.8	6.3			
185	224	387	2.40	7.91	20.2	17.8	8.2	6.5			
73	89	978	0.80	20.00	**	**	**	**	**KH063-11P-L132M-04F**	95	336
89	108	802	0.90	16.40	8.8	12.7	8.8	2.8			
105	127	682	1.00	13.94	9.9	13.1	9.2	3.2			
111	134	645	0.80	13.19	**	**	**	**			
128	154	560	1.15	11.46	10.8	13.5	9.0	3.5			
133	160	540	1.15	11.05	10.9	13.5	8.8	3.6			
135	163	532	0.95	10.88	11.0	12.9	8.6	2.9			
161	195	444	1.35	9.09	11.5	13.9	7.9	3.9			
164	198	436	1.15	8.92	11.5	13.3	8.1	3.4			
193	234	371	1.35	7.58	11.8	13.6	7.4	3.6			
235	284	305	1.55	6.23	12.0	13.9	6.7	3.9			
244	295	294	1.55	6.01	12.0	13.9	6.6	4.0			
297	358	242	1.80	4.94	12.2	14.2	6.0	4.2			
90	109	792	0.80	16.19	**	**	**	**	**KH053-11P-L132M-04F**	82	334
107	129	672	0.90	13.75	4.7	7.4	4.7	3.3			
130	156	553	1.10	11.31	6.8	10.3	6.8	3.6			
134	162	533	1.15	10.91	7.0	10.4	7.0	3.7			
156	188	460	0.90	9.40	7.8	9.9	7.8	3.2			
163	197	439	1.30	8.97	8.0	10.7	8.0	4.0			
190	230	377	1.10	7.71	8.5	10.3	8.5	3.6			
224	270	320	1.30	6.55	8.9	10.6	8.3	3.9			
272	328	264	1.60	5.39	9.2	10.8	7.5	4.1			
282	341	254	1.65	5.19	9.2	10.9	7.4	4.2			
343	415	209	2.00	4.27	9.0	11.1	6.7	4.4			

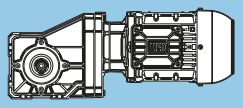
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*** ... on request*

P_N = 9.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
9.2 kW	11 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
9.7	12	9094	1.45	151.11	80.6	88.4	80.6	88.4			
11	14	7646	1.75	127.05	83.3	89.8	83.3	89.8			
13	16	6830	1.95	113.49	84.5	90.7	84.5	90.7			
15	18	5881	2.25	97.73	85.8	91.6	85.8	91.6			
17	21	5137	2.55	85.37	86.6	92.4	86.6	92.4	**KH123-11P-L132M-04G**	452	346
25	30	3519	2.50	58.47	88.1	94.0	88.1	94.0			
30	36	2958	2.00	49.16	88.4	94.5	88.4	94.5			
44	53	2006	2.50	33.34	88.9	95.0	88.9	95.0			
52	63	1687	2.00	28.03	88.1	95.4	88.1	95.4			
10	13	8482	0.95	140.95	43.3	59.5	43.3	59.5			
12	14	7492	1.10	124.50	48.0	60.6	48.0	60.6			
14	16	6503	1.25	108.07	51.8	61.7	51.8	61.7			
16	19	5619	1.45	93.37	54.6	62.7	54.6	62.7			
18	22	4808	1.70	79.90	56.6	63.7	56.6	63.7			
21	26	4153	1.95	69.01	58.0	64.4	58.0	64.4	**KH103-11P-L132M-04G**	329	344
27	33	3206	1.90	53.27	59.6	65.5	59.6	65.5			
31	38	2831	2.65	47.05	60.1	65.9	60.1	65.9			
37	45	2370	2.00	39.38	60.7	66.5	60.7	66.5			
48	58	1825	1.90	30.33	61.2	66.6	61.2	66.6			
54	66	1612	2.65	26.79	59.4	66.9	59.4	66.9			
65	79	1349	2.00	22.42	55.7	67.3	55.7	67.3			
15	19	5711	0.80	94.90	**	**	**	**			
16	19	5507	0.85	91.51	19.4	31.8	19.4	31.8			
18	22	4859	0.95	80.74	25.4	38.8	25.4	38.8			
21	26	4135	1.10	68.71	30.1	39.7	30.1	39.7			
23	28	3849	1.20	63.96	31.6	40.1	31.6	40.1			
25	30	3567	1.30	59.28	32.9	40.5	32.9	40.5			
27	33	3254	1.40	54.07	34.2	40.9	34.2	40.9			
31	38	2817	1.60	46.81	35.7	41.4	35.7	41.4			
35	43	2495	1.85	41.46	36.7	41.8	36.7	41.8			
39	48	2234	1.25	37.13	37.3	41.1	37.3	41.1	**KH093-11P-L132M-04G**	211	342
41	49	2158	2.10	35.86	37.5	42.3	37.5	42.3			
42	51	2081	2.00	34.58	37.7	42.4	37.7	42.4			
47	56	1889	1.50	31.39	38.1	41.7	38.1	41.7			
48	58	1836	2.50	30.51	38.2	42.7	38.2	42.7			
54	65	1636	1.75	27.18	38.6	42.2	38.6	42.2			
56	68	1563	2.90	25.97	38.7	43.0	38.7	43.0			
61	73	1448	2.10	24.07	38.9	42.5	38.9	42.5			
70	85	1253	2.40	20.82	39.1	42.8	39.1	42.8			
73	88	1208	2.00	20.08	39.2	42.9	39.2	42.9			
82	100	1066	2.85	17.72	39.3	43.1	39.3	43.1			

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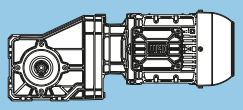
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P_N = 9.2 kW											IE3
50 Hz	60 Hz				at 50 Hz						
9.2 kW	11 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
22	27	3972	0.80	66.00	**	**	**	**	**KH083-11P-L132M-04G**	161	340
23	28	3798	0.80	63.12	**	**	**	**			
25	30	3505	0.90	58.25	14.0	22.8	14.0	7.3			
26	32	3316	0.95	55.11	16.3	27.7	16.3	7.6			
30	36	2941	1.05	48.87	19.9	35.5	19.9	8.2			
35	43	2479	1.25	41.19	23.0	41.3	23.0	8.8			
41	50	2131	1.45	35.41	24.9	41.9	22.6	9.4			
46	56	1891	1.05	31.43	25.9	41.2	21.9	8.7			
47	57	1860	1.65	30.91	26.0	42.3	21.0	9.8			
53	64	1672	1.15	27.78	26.7	41.6	20.4	9.1			
55	67	1594	1.90	26.48	27.0	42.6	19.3	10.1			
57	69	1537	1.95	25.54	27.2	42.7	19.0	10.2			
62	75	1414	1.40	23.49	27.5	42.2	18.7	9.7			
65	78	1356	2.10	22.54	27.7	43.0	17.8	10.5			
72	87	1215	1.60	20.19	28.0	42.6	17.3	10.1			
77	93	1138	2.40	18.91	28.2	43.3	16.3	10.8			
83	100	1061	1.85	17.63	28.4	42.9	16.1	10.4			
92	111	959	2.70	15.93	28.6	43.6	14.9	11.1			
97	117	909	2.15	15.10	28.7	43.2	14.9	10.7			
100	121	876	2.00	14.56	28.7	43.2	14.7	10.7			
114	137	773	2.55	12.85	28.9	43.4	13.8	10.9			
135	164	649	3.00	10.78	29.0	43.7	12.7	11.2			
45	54	1950	0.80	32.40	**	**	**	**	**KH073-11P-L132M-04G**	120	338
53	64	1659	0.95	27.56	14.2	15.6	11.8	4.3			
61	74	1437	1.10	23.88	16.0	16.0	12.0	4.8			
72	88	1214	1.30	20.17	17.4	16.5	12.1	5.2			
75	91	1170	1.35	19.45	17.6	16.6	12.1	5.3			
78	95	1122	0.85	18.65	17.9	15.5	11.2	4.2			
88	106	1000	1.60	16.61	18.5	16.9	12.0	5.7			
95	114	929	1.00	15.43	18.7	16.1	11.2	4.8			
111	135	790	1.20	13.12	19.2	16.5	11.2	5.3			
128	155	684	1.35	11.37	19.6	16.9	10.4	5.6			
152	184	578	1.60	9.60	19.8	17.2	9.5	5.9			
158	191	557	1.65	9.26	19.9	17.3	9.3	6.0			
185	223	476	1.95	7.91	20.0	17.5	8.6	6.3			
105	127	839	0.80	13.94	**	**	**	**	**KH063-11P-L132M-04G**	100	336
127	154	690	0.95	11.46	9.9	13.1	8.3	3.1			
132	160	665	0.95	11.05	10.1	13.2	8.3	3.2			
134	162	655	0.80	10.88	**	**	**	**			
161	194	547	1.10	9.09	10.9	13.5	8.2	3.6			
164	198	537	0.95	8.92	11.0	12.9	7.8	2.9			
193	233	456	1.10	7.58	11.4	13.2	7.8	3.3			
234	283	375	1.25	6.23	11.8	13.6	7.1	3.6			
243	294	362	1.30	6.01	11.8	13.6	7.0	3.7			
296	357	297	1.45	4.94	12.0	13.9	6.3	4.0			
129	156	681	0.90	11.31	4.5	6.9	4.5	3.2	**KH053-11P-L132M-04G**	87	334
134	162	657	0.95	10.91	5.1	8.2	5.1	3.3			
163	197	540	1.05	8.97	6.9	10.4	6.9	3.7			
189	229	464	0.90	7.71	7.8	9.9	7.8	3.2			
223	269	394	1.05	6.55	8.4	10.2	8.4	3.5			
271	327	324	1.30	5.39	8.8	10.5	8.0	3.8			
281	340	312	1.35	5.19	8.9	10.6	7.8	3.9			
342	413	257	1.65	4.27	9.2	10.8	7.1	4.1			

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P_N = 11 kW											IE3
50 Hz	60 Hz				at 50 Hz						
11 kW	13 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	12	10483	1.75	146.69	99.6	122.0	99.6	122.0			
12	14	9029	2.00	126.34	102.1	123.1	102.1	123.1			
13	16	7809	2.35	109.28	103.9	124.0	103.9	124.0			
15	18	6888	2.65	96.39	105.1	124.7	105.1	124.7	**KH153-22P-160M-04E**	746	348
26	31	4056	2.70	56.75	107.7	126.9	107.7	126.9			
41	50	2546	2.70	35.63	108.5	127.4	108.5	127.4			
9.7	12	10799	1.25	151.11	76.8	86.7	76.8	86.7			
11	13	9416	1.40	131.76	80.0	88.1	80.0	88.1			
13	16	8110	1.65	113.49	82.5	89.4	82.5	89.4			
15	18	6984	1.90	97.73	84.3	90.5	84.3	90.5			
17	21	6101	2.15	85.37	85.5	91.4	85.5	91.4			
20	24	5270	2.50	73.74	86.5	92.2	86.5	92.2	**KH123-22P-160M-04E**	514	346
24	29	4358	3.00	60.98	87.4	93.1	87.4	93.1			
25	30	4178	2.10	58.47	87.6	93.3	87.6	93.3			
29	35	3643	2.70	50.98	88.0	93.8	88.0	93.8			
44	53	2383	2.10	33.34	88.8	94.6	88.8	94.6			
51	61	2077	2.70	29.07	88.9	94.9	88.9	94.9			
12	14	8897	0.90	124.50	41.0	59.0	41.0	59.0			
14	16	7723	1.05	108.07	47.0	60.3	47.0	60.3			
16	19	6672	1.20	93.37	51.2	61.5	51.2	61.5			
18	22	5710	1.45	79.90	54.3	62.6	54.3	62.6			
21	26	4932	1.65	69.01	56.3	63.5	56.3	63.5			
25	30	4171	1.95	58.36	58.0	64.4	58.0	64.4			
31	37	3403	2.40	47.62	59.3	65.3	59.3	65.3	**KH103-22P-160M-04E**	391	344
36	43	2919	2.60	40.84	60.0	65.8	60.0	65.8			
38	46	2761	2.90	38.64	60.2	66.0	60.2	66.0			
42	50	2522	3.00	35.29	60.5	66.3	60.5	66.3			
55	66	1914	2.25	26.79	59.9	66.5	59.9	66.5			
63	76	1662	2.60	23.25	57.1	66.8	57.1	66.8			
73	88	1436	3.00	20.09	54.2	67.2	54.2	67.2			
18	22	5770	0.80	80.74	**	**	**	**			
21	26	4910	0.95	68.71	25.0	38.8	25.0	38.8			
25	30	4236	1.10	59.28	29.6	39.6	29.6	39.6			
30	36	3554	1.30	49.73	33.0	40.5	33.0	40.5			
35	43	2963	1.55	41.46	35.2	41.2	35.2	41.2			
36	44	2889	1.60	40.43	35.5	41.3	35.5	41.3			
41	49	2563	1.80	35.86	36.5	41.7	36.5	41.7			
47	56	2259	2.00	31.61	37.3	42.1	37.3	42.1	**KH093-22P-160M-04E**	273	342
48	58	2180	2.10	30.51	37.5	42.2	37.5	42.2			
57	68	1856	2.45	25.97	38.2	42.6	38.2	42.6			
61	74	1720	1.75	24.07	38.4	42.0	38.4	42.0			
66	79	1601	2.85	22.40	38.6	43.0	38.6	43.0			
71	85	1488	2.05	20.82	38.8	42.4	38.8	42.4			
83	100	1266	2.40	17.72	39.1	42.8	39.1	42.8			
97	118	1078	2.80	15.08	39.3	43.1	39.3	43.1			
30	36	3492	0.90	48.87	14.2	23.2	14.2	7.3			
36	43	2943	1.05	41.18	19.8	35.3	19.8	8.2			
44	53	2413	1.25	33.76	23.4	41.4	22.4	8.9			
48	57	2209	1.40	30.91	24.5	41.7	22.1	9.2			
56	67	1892	1.60	26.48	25.9	42.2	20.3	9.7			
65	79	1611	1.80	22.54	26.9	42.6	18.6	10.1			
78	94	1351	2.00	18.91	27.7	43.0	17.0	10.5			
83	101	1260	1.55	17.63	27.9	42.5	16.9	10.0	**KH083-22P-160M-04E**	223	340
92	111	1138	2.25	15.93	28.2	43.3	15.6	10.8			
97	118	1079	1.80	15.10	28.3	42.8	15.6	10.3			
113	136	933	2.60	13.06	28.6	43.6	14.1	10.7			
114	138	918	2.15	12.85	28.6	43.2	14.4	11.0			
136	165	770	2.55	10.78	28.9	43.5	13.2				
162	195	650	3.00	9.09	29.0	43.7	12.1	11.2			
62	74	1707	0.95	23.88	13.8	15.5	10.5	4.2			
73	88	1441	1.10	20.17	16.0	16.0	10.8	4.8			
89	107	1187	1.35	16.61	17.6	16.5	11.0	5.3	**KH073-22P-160M-04E**	182	338
129	156	813	1.15	11.37	19.2	16.5	10.3	5.2			
153	185	686	1.35	9.60	19.5	16.9	10.0	5.6			
186	224	565	1.65	7.91	19.8	17.2	9.0	6.0			

P_N = 15 kW										IE3
50 Hz 15 kW	60 Hz 18 kW				at 50 Hz Output shaft		at 50 Hz Hollow shaft			
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
10	12	14344	1.30	146.69	90.7	119.1	90.7	119.1	**KH153-22P-160L-04F**	769	348
12	14	12354	1.50	126.34	95.7	120.6	95.7	120.6			
13	16	10686	1.70	109.28	99.3	121.8	99.3	121.8			
15	18	9425	1.95	96.39	101.5	122.8	101.5	122.8			
18	21	8095	2.25	82.79	103.5	123.8	103.5	123.8			
21	26	6735	2.70	68.88	105.3	124.9	105.3	124.9			
26	31	5549	1.95	56.75	106.5	125.8	106.5	125.8			
30	36	4780	3.00	48.88	107.1	126.4	107.1	126.4			
41	50	3484	1.95	35.63	108.0	126.4	108.0	126.4			
48	58	3001	3.00	30.69	108.3	126.9	108.3	126.9			
9.7	12	14776	0.90	151.11	63.9	82.7	63.9	82.7	**KH123-22P-160L-04F**	537	346
11	13	12884	1.05	131.76	70.8	84.6	70.8	84.6			
13	16	11097	1.20	113.49	76.0	86.4	76.0	86.4			
15	18	9556	1.40	97.73	79.7	87.9	79.7	87.9			
17	21	8348	1.60	85.37	82.1	89.1	82.1	89.1			
20	24	7210	1.85	73.74	84.0	90.3	84.0	90.3			
24	29	5963	2.20	60.98	85.7	91.5	85.7	91.5			
25	30	5717	1.55	58.47	86.0	91.8	86.0	91.8			
29	35	4907	2.65	50.18	86.9	92.6	86.9	92.6			
33	40	4294	3.00	43.91	87.5	93.2	87.5	93.2			
44	53	3260	1.55	33.34	88.3	93.5	88.3	93.5			
50	61	2843	1.95	29.07	88.5	94.0	88.5	94.0			
59	71	2448	3.00	25.04	86.8	94.5	86.8	94.5			
14	16	10567	0.80	108.07	**	**	**	**	**KH103-22P-160L-04F**	414	344
16	19	9130	0.90	93.37	39.6	58.7	39.6	58.7			
18	22	7813	1.05	79.90	46.6	60.2	46.6	60.2			
21	26	6748	1.20	69.01	51.0	61.5	51.0	61.5			
25	30	5707	1.45	58.36	54.3	62.6	54.3	62.6			
31	37	4656	1.75	47.62	57.0	63.8	57.0	63.8			
36	43	3993	1.90	40.84	58.3	64.6	58.3	64.6			
38	46	3778	2.15	38.64	58.7	64.9	58.7	64.9			
42	50	3451	2.20	35.29	59.3	65.2	59.3	65.2			
49	59	2953	2.55	30.20	60.0	65.8	60.0	65.8			
55	66	2620	1.65	26.79	60.4	65.5	60.4	65.5			
56	68	2550	2.95	26.08	60.5	66.3	60.5	66.3			
63	76	2273	1.90	23.25	58.7	66.0	58.7	66.0			
73	88	1964	2.20	20.09	55.6	66.4	55.6	66.4			
85	103	1681	2.55	17.19	52.6	66.8	52.6	66.8			
99	120	1452	2.95	14.85	49.8	67.1	49.8	67.1			
25	30	5796	0.80	59.28	**	**	**	**	**KH093-22P-160L-04F**	296	342
29	36	4863	0.95	49.73	25.4	38.8	25.4	38.8			
35	43	4054	1.15	41.46	30.6	39.8	30.6	39.8			
36	44	3953	1.15	40.43	31.1	40.0	31.1	40.0			
41	49	3506	1.30	35.86	33.2	40.5	33.2	40.5			
46	56	3091	1.50	31.61	34.8	41.1	34.8	41.1			
48	58	2983	1.55	30.51	35.2	41.2	35.2	41.2			
56	68	2539	1.80	25.97	36.5	41.8	36.5	41.8			
61	74	2354	1.30	24.07	37.0	40.9	37.0	40.9			
65	79	2190	2.10	22.40	37.4	42.2	37.4	42.2			
70	85	2036	1.50	20.82	37.8	41.5	37.8	41.5			
78	94	1837	2.45	18.79	38.2	42.7	38.2	42.7			
83	100	1733	1.75	17.72	38.4	42.0	38.4	42.0			
97	118	1475	2.05	15.08	38.8	42.4	38.8	42.4			
113	136	1272	2.40	13.01	39.1	42.8	39.1	42.8			
134	163	1067	2.85	10.91	36.7	43.1	36.7	43.1			

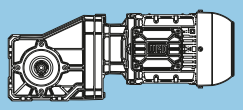
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P_N = 15 kW											IE3
50 Hz 15 kW	60 Hz 18 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
43	53	3301	0.95	33.76	16.5	28.1	16.5	7.6			
47	57	3022	1.00	30.91	19.2	33.9	19.1	8.0			
55	67	2589	1.15	26.48	22.4	41.0	19.3	8.7			
65	79	2204	1.30	22.54	24.5	41.7	19.3	9.2			
77	94	1849	1.50	18.91	26.1	42.3	18.8	9.8			
83	101	1724	1.15	17.63	26.5	41.5	18.3	9.0			
92	111	1558	1.65	15.93	27.1	42.7	17.0	10.2	**KH083-22P-160L-04F**	246	340
97	118	1477	1.35	15.10	27.3	42.0	17.1	9.5			
112	136	1277	1.90	13.06	27.9	43.1	15.3	10.6			
114	138	1256	1.55	12.85	27.9	42.5	15.7	10.0			
136	165	1054	1.85	10.78	28.4	42.9	14.3	10.4			
161	195	889	2.20	9.09	28.7	43.2	13.1	10.7			
197	238	728	2.70	7.45	28.9	43.5	11.8	11.0			
73	88	1972	0.80	20.17	**	**	**	**			
88	107	1624	1.00	16.61	14.5	15.6	8.8	4.4			
129	156	1112	0.85	11.37	17.9	15.5	8.5	4.3	**KH073-22P-160L-04F**	205	338
153	185	939	1.00	9.60	18.7	16.1	8.7	4.8			
185	224	773	1.20	7.91	19.3	16.6	8.8	5.3			

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P_N = 18.5 kW											IE3
50 Hz	60 Hz				at 50 Hz						
18.5 kW	22 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	12	17630	1.05	146.69	79.7	116.5	79.7	116.5	**KH153-22P-180M-04E**	783	348
12	14	15184	1.20	126.34	88.2	118.4	88.2	118.4			
13	16	13134	1.40	109.28	93.9	120.0	93.9	120.0			
15	18	11585	1.60	96.39	97.4	121.2	97.4	121.2			
18	21	9950	1.85	82.79	100.6	122.4	100.6	122.4			
21	26	8278	2.20	68.88	103.3	123.7	103.3	123.7			
26	31	6869	2.65	57.15	105.1	124.8	105.1	124.8			
30	36	5875	2.45	48.88	106.2	125.5	106.2	125.5			
41	50	4282	1.60	35.63	107.5	125.6	107.5	125.6			
48	58	3689	2.45	30.69	107.9	126.2	107.9	126.2			
11	13	15836	0.85	131.76	59.2	81.6	59.2	81.6	**KH123-22P-180M-04E**	551	346
13	16	13640	1.00	113.49	68.3	83.8	68.3	83.8			
15	18	11746	1.15	97.73	74.3	85.7	74.3	85.7			
17	21	10260	1.30	85.37	78.1	87.2	78.1	87.2			
20	24	8863	1.50	73.74	81.1	88.6	81.1	88.6			
24	29	7329	1.80	60.98	83.8	90.2	83.8	90.2			
29	35	6031	2.20	50.18	85.6	91.5	85.6	91.5			
33	40	5277	2.45	43.91	86.5	92.2	86.5	92.2			
36	43	4958	2.65	41.25	86.8	92.5	86.8	92.5			
39	47	4544	2.90	37.81	87.2	92.9	87.2	92.9			
51	61	3494	1.60	29.07	88.1	93.2	88.1	93.2			
59	71	3009	2.45	25.04	88.2	93.8	88.2	93.8			
18	22	9603	0.85	79.90	36.4	58.2	36.4	58.2	**KH103-22P-180M-04E**	428	344
21	26	8294	1.00	69.01	44.3	59.7	44.3	59.7			
25	30	7014	1.15	58.36	50.0	61.2	50.0	61.2			
31	37	5723	1.40	47.62	54.3	62.6	54.3	62.6			
36	43	4908	1.55	40.84	56.4	63.6	56.4	63.6			
38	46	4644	1.75	38.64	57.0	63.9	57.0	63.9			
42	50	4241	1.80	35.29	57.9	64.3	57.9	64.3			
48	58	3708	2.20	30.85	58.8	64.9	58.8	64.9			
49	59	3630	2.10	30.20	59.0	65.0	59.0	65.0			
56	68	3134	2.40	26.08	59.7	65.6	59.7	65.6			
63	76	2794	1.55	23.25	60.1	65.2	60.1	65.2			
67	80	2650	2.85	22.05	58.0	66.1	58.0	66.1			
73	88	2415	1.80	20.09	56.8	65.8	56.8	65.8			
86	103	2066	2.10	17.19	53.5	66.3	53.5	66.3			
99	120	1785	2.40	14.85	50.7	66.7	50.7	66.7			
117	141	1510	2.85	12.56	47.8	67.0	47.8	67.0			
30	36	5977	0.80	49.73	**	**	**	**	**KH093-22P-180M-04E**	310	342
36	44	4859	0.95	40.43	25.4	38.8	25.4	38.8			
41	49	4310	1.05	35.86	29.1	39.5	29.1	39.5			
47	56	3799	1.20	31.61	31.9	40.2	31.9	40.2			
48	58	3667	1.25	30.51	32.5	40.3	32.5	40.3			
57	68	3121	1.45	25.97	34.7	41.0	34.7	41.0			
66	79	2692	1.70	22.40	36.1	41.6	36.1	41.6			
71	85	2502	1.20	20.82	36.6	40.6	36.6	40.6			
78	94	2258	2.00	18.79	37.3	42.1	37.3	42.1			
83	100	2130	1.45	17.72	37.6	41.3	37.6	41.3			
96	116	1836	2.50	15.28	38.2	42.7	38.2	42.7			
97	118	1812	1.70	15.08	38.2	41.8	38.2	41.8			
113	136	1564	1.95	13.01	38.7	42.3	38.7	42.3			
135	163	1311	2.30	10.91	37.5	42.7	37.5	42.7			
166	200	1066	2.85	8.87	34.6	43.1	34.6	43.1			
56	67	3183	0.95	26.48	17.7	30.7	16.6	7.8	**KH083-22P-180M-04E**	260	340
65	79	2709	1.05	22.54	21.6	39.2	17.2	8.5			
78	94	2273	1.20	18.91	24.2	41.6	17.3	9.1			
92	111	1915	1.35	15.93	25.8	42.2	17.4	9.7			
97	118	1815	1.10	15.10	26.2	41.4	16.5	8.9			
113	136	1570	1.55	13.06	27.1	42.7	16.3	10.2			
114	138	1544	1.30	12.85	27.1	41.9	16.4	9.4			
136	165	1296	1.50	10.78	27.8	42.4	15.2	9.9			
162	195	1093	1.80	9.09	28.3	42.8	13.8	10.3			
197	238	895	2.20	7.45	28.7	43.2	12.5	10.7			

P_N = 22 kW											IE3
50 Hz	60 Hz				at 50 Hz						
22 kW	26 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
10	12	20966	0.90	146.69	63.6	111.2	63.6	111.2			
12	14	18057	1.00	126.34	77.9	116.2	77.9	116.2			
13	16	15619	1.20	109.28	86.8	118.1	86.8	118.1			
15	18	13777	1.35	96.39	92.2	119.5	92.2	119.5			
18	21	11833	1.55	82.79	96.9	121.0	96.9	121.0			
21	26	9845	1.85	68.88	100.8	122.5	100.8	122.5			
26	31	8168	2.25	57.15	103.4	123.8	103.4	123.8	**KH153-22P-180L-04F**	804	348
30	36	6986	2.05	48.88	105.0	124.7	105.0	124.7			
31	37	6812	2.65	47.66	105.2	124.8	105.2	124.8			
35	42	6043	2.95	42.28	106.0	125.4	106.0	125.4			
41	50	5092	1.35	35.63	106.9	124.7	106.9	124.7			
48	58	4386	2.05	30.69	107.4	125.5	107.4	125.5			
55	67	3793	2.95	26.54	107.8	126.1	107.8	126.1			
13	16	16221	0.85	113.49	57.3	81.2	57.3	81.2			
15	18	13968	0.95	97.73	67.1	83.5	67.1	83.5			
17	21	12202	1.10	85.37	73.0	85.3	73.0	85.3			
20	24	10539	1.25	73.74	77.4	86.9	77.4	86.9			
24	29	8716	1.50	60.98	81.4	88.8	81.4	88.8			
29	35	7172	1.85	50.18	84.0	90.3	84.0	90.3			
33	40	6276	2.05	43.91	85.3	91.2	85.3	91.2			
36	43	5896	2.25	41.25	85.8	91.6	85.8	91.6	**KH123-22P-180L-04F**	572	346
39	47	5404	2.45	37.81	86.4	92.1	86.4	92.1			
42	51	5005	2.60	35.02	86.8	92.5	86.8	92.5			
45	54	4721	2.80	33.03	87.1	92.8	87.1	92.8			
51	61	4155	1.35	29.07	87.6	92.4	87.6	92.4			
59	71	3579	2.05	25.04	88.0	93.1	88.0	93.1			
68	82	3081	2.65	21.56	85.0	93.7	85.0	93.7			
21	26	9863	0.85	69.01	34.5	57.7	34.5	57.7			
25	30	8341	1.00	58.36	44.1	59.6	44.1	59.6			
31	37	6806	1.20	47.62	50.8	61.4	50.8	61.4			
36	43	5837	1.30	40.84	53.9	62.5	53.9	62.5			
38	46	5523	1.45	38.64	54.8	62.9	54.8	62.9			
42	50	5044	1.50	35.29	56.1	63.4	56.1	63.4			
48	58	4409	1.85	30.85	57.5	64.1	57.5	64.1			
49	59	4316	1.75	30.20	57.7	64.2	57.7	64.2			
56	68	3727	2.05	26.08	58.8	64.9	58.8	64.9	**KH103-22P-180L-04F**	449	344
63	76	3323	1.30	23.25	59.5	64.5	59.5	64.5			
67	80	3152	2.40	22.05	59.3	65.6	59.3	65.6			
73	88	2871	1.50	20.09	58.1	65.1	58.1	65.1			
82	99	2573	2.95	18.00	54.8	66.2	54.8	66.2			
86	103	2457	1.75	17.19	54.5	65.7	54.5	65.7			
99	120	2122	2.05	14.85	51.6	66.2	51.6	66.2			
117	141	1795	2.40	12.56	48.5	66.6	48.5	66.6			
143	173	1465	2.95	10.25	45.1	67.1	45.1	67.1			
36	44	5778	0.80	40.43	**	**	**	**			
41	49	5125	0.90	35.86	23.2	38.5	23.2	38.5			
47	56	4518	1.00	31.61	27.8	39.3	27.8	39.3			
48	58	4361	1.05	30.51	28.8	39.5	28.8	39.5			
57	68	3712	1.25	25.97	32.3	40.3	32.3	40.3			
66	79	3202	1.45	22.40	34.4	40.9	34.4	40.9			
71	85	2976	1.05	20.82	35.2	39.8	35.2	39.8			
78	94	2686	1.70	18.79	36.1	41.6	36.1	41.6	**KH093-22P-180L-04F**	331	342
83	100	2533	1.20	17.72	36.6	40.6	36.6	40.6			
96	116	2184	2.10	15.28	37.4	42.2	37.4	42.2			
97	118	2155	1.40	15.08	37.5	41.2	37.5	41.2			
113	136	1859	1.65	13.01	38.1	41.8	38.1	41.8			
123	149	1708	2.65	11.95	38.4	42.8	38.4	42.8			
135	163	1559	1.95	10.91	38.4	42.3	38.4	42.3			
166	200	1268	2.40	8.87	35.4	42.8	35.4	42.8			

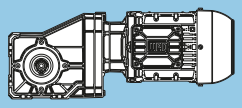
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P_N = 22 kW											IE3
50 Hz 22 kW	60 Hz 26 kW				at 50 Hz						
					Output shaft		Hollow shaft				
n_{50} min^{-1}	n_{60} min^{-1}	M_2 Nm	f_B	i	F_{rN} kN	F_{aN} kN	F_{rN} kN	F_{aN} kN		m kg	Dimension sheet see page
56	67	3785	0.80	26.48	**	**	**	**			
65	79	3222	0.90	22.54	17.3	29.8	15.0	7.7			
78	94	2703	1.00	18.91	21.6	39.2	15.5	8.5			
92	111	2277	1.15	15.93	24.2	41.6	15.8	9.1			
97	118	2158	0.90	15.10	24.7	40.7	14.9	8.2	**KH083-22P-180L-04F**	281	340
113	136	1867	1.30	13.06	26.0	42.2	15.9	9.7			
114	138	1837	1.10	12.85	26.1	41.3	15.1	8.8			
136	165	1541	1.30	10.78	27.1	41.9	15.1	9.4			
162	195	1299	1.50	9.09	27.8	42.4	14.6	9.9			
197	238	1065	1.85	7.45	28.4	42.9	13.1	10.4			

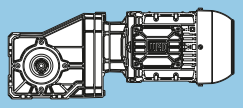
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P_N = 30 kW											IE3
50 Hz	60 Hz				at 50 Hz						
30 kW	36 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
14	16	21155	0.90	109.28	62.5	108.9	62.5	108.9			
15	18	18659	1.00	96.39	75.4	115.8	75.4	115.8			
18	22	16027	1.15	82.79	85.5	117.8	85.5	117.8			
21	26	13334	1.35	68.88	93.4	119.8	93.4	119.8			
26	31	11063	1.65	57.15	98.5	121.6	98.5	121.6			
30	36	9462	1.50	48.88	101.4	122.8	101.4	122.8			
31	37	9226	2.00	47.66	101.8	123.0	101.8	123.0			
35	42	8185	2.20	42.28	103.4	123.8	103.4	123.8	**KH153-22P-200L-04E**	862	348
36	43	7931	2.30	40.97	103.8	123.9	103.8	123.9			
40	48	7221	2.50	37.30	104.7	124.5	104.7	124.5			
42	50	6862	2.65	35.45	105.1	124.8	105.1	124.8			
46	56	6200	2.95	32.03	105.8	125.3	105.8	125.3			
48	58	5941	1.50	30.69	106.1	123.9	106.1	123.9			
56	67	5138	2.20	26.54	106.8	124.7	106.8	124.7			
63	76	4532	3.00	23.41	107.3	125.3	107.3	125.3			
17	21	16526	0.80	85.37	**	**	**	**			
20	24	14275	0.95	73.74	65.9	83.2	65.9	83.2			
24	29	11805	1.15	60.98	74.1	85.7	74.1	85.7			
29	35	9714	1.35	50.18	79.3	87.8	79.3	87.8			
34	41	8500	1.50	43.91	81.8	89.0	81.8	89.0			
36	43	7985	1.65	41.25	82.7	89.5	82.7	89.5			
39	47	7319	1.80	37.81	83.8	90.2	83.8	90.2			
42	51	6779	1.95	35.02	84.6	90.7	84.6	90.7			
45	54	6394	2.05	33.03	85.1	91.1	85.1	91.1	**KH123-22P-200L-04E**	630	346
50	60	5786	2.25	29.89	85.9	91.7	85.9	91.7			
52	62	5523	2.40	28.53	86.2	92.0	86.2	92.0			
59	71	4847	1.50	25.04	86.9	91.5	86.9	91.5			
63	75	4569	2.85	23.60	87.2	92.9	87.2	92.9			
69	83	4174	1.95	21.56	87.3	92.4	87.3	92.4			
79	94	3647	2.25	18.84	82.9	93.0	82.9	93.0			
91	109	3150	2.60	16.27	78.6	93.6	78.6	93.6			
31	37	9218	0.90	47.62	39.0	58.6	39.0	58.6			
38	46	7480	1.10	38.64	48.1	60.6	48.1	60.6			
42	50	6831	1.10	35.29	50.7	61.4	50.7	61.4			
48	58	5972	1.35	30.85	53.5	62.3	53.5	62.3			
49	59	5846	1.30	30.20	53.9	62.5	53.9	62.5			
57	68	5049	1.50	26.08	56.1	63.4	56.1	63.4			
67	81	4268	1.80	22.05	57.8	64.3	57.8	64.3			
74	89	3889	1.10	20.09	58.5	63.7	58.5	63.7	**KH103-22P-200L-04E**	507	344
82	99	3484	2.20	18.00	57.0	65.2	57.0	65.2			
86	104	3328	1.30	17.19	56.9	64.5	56.9	64.5			
100	120	2875	1.50	14.85	53.5	65.1	53.5	65.1			
101	122	2826	2.70	14.60	52.5	65.9	52.5	65.9			
118	142	2431	1.80	12.56	50.1	65.8	50.1	65.8			
144	174	1984	2.20	10.25	46.4	66.4	46.4	66.4			
178	214	1609	2.70	8.31	42.9	66.9	42.9	66.9			
49	58	5906	0.80	30.51	**	**	**	**			
57	69	5027	0.90	25.97	24.1	38.6	24.1	38.6			
66	79	4336	1.05	22.40	29.0	39.5	29.0	39.5			
79	95	3637	1.25	18.79	32.6	40.4	32.6	40.4			
84	100	3430	0.90	17.72	33.5	39.0	33.5	39.0			
97	116	2958	1.55	15.28	35.3	41.2	35.3	41.2			
98	118	2919	1.05	15.08	35.4	39.9	35.4	39.9	**KH093-22P-200L-04E**	389	342
114	137	2518	1.20	13.01	36.6	40.6	36.6	40.6			
124	149	2313	1.95	11.95	37.1	42.1	37.1	42.1			
136	163	2112	1.45	10.91	37.6	41.3	37.6	41.3			
167	201	1717	1.75	8.87	37.0	42.0	37.0	42.0			
213	256	1343	2.25	6.94	33.5	42.7	33.5	42.7			

Legend see page 261

*** ... on request*

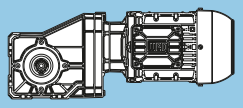
P_N = 37 kW											IE3
50 Hz	60 Hz				at 50 Hz						
37 kW	44 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
15	18	23013	0.80	96.39	**	**	**	**			
18	22	19766	0.95	82.79	70.1	114.9	70.1	114.9			
21	26	16445	1.10	68.88	84.0	117.5	84.0	117.5			
26	31	13645	1.35	57.15	92.6	119.6	92.6	119.6			
30	36	11670	1.25	48.88	97.3	121.1	97.3	121.1			
31	37	11379	1.60	47.66	97.9	121.3	97.9	121.3			
35	42	10094	1.80	42.28	100.3	122.3	100.3	122.3			
36	43	9782	1.85	40.97	100.9	122.5	100.9	122.5	**KH153-22P-200L-04F**	889	348
40	48	8905	2.05	37.30	102.3	123.2	102.3	123.2			
42	50	8464	2.15	35.45	103.0	123.5	103.0	123.5			
46	56	7647	2.40	32.03	104.1	124.2	104.1	124.2			
48	58	7327	1.25	30.69	104.5	122.4	104.5	122.4			
56	67	6363	2.85	26.65	105.7	125.1	105.7	125.1			
63	76	5589	2.45	23.41	106.4	124.2	106.4	124.2			
74	89	4801	2.80	20.11	107.1	125.0	107.1	125.0			
24	29	14559	0.90	60.98	64.8	82.9	64.8	82.9			
29	36	11980	1.10	50.18	73.6	85.5	73.6	85.5			
34	41	10484	1.25	43.91	77.6	87.0	77.6	87.0			
36	43	9848	1.35	41.25	79.0	87.6	79.0	87.6			
39	47	9027	1.45	37.81	80.8	88.5	80.8	88.5			
42	51	8361	1.60	35.02	82.0	89.1	82.0	89.1			
45	54	7886	1.65	33.03	82.9	89.6	82.9	89.6			
50	60	7136	1.85	29.89	84.1	90.3	84.1	90.3			
52	62	6812	1.95	28.53	84.6	90.7	84.6	90.7	**KH123-22P-200L-04F**	657	346
59	71	5978	1.25	25.04	85.7	90.2	85.7	90.2			
63	76	5635	2.35	23.60	86.1	91.9	86.1	91.9			
69	83	5147	1.60	21.56	86.6	91.2	86.6	91.2			
76	92	4637	2.85	19.42	85.0	92.9	85.0	92.9			
79	95	4498	1.85	18.84	85.0	92.0	85.0	92.0			
91	110	3884	2.10	16.27	80.4	92.7	80.4	92.7			
110	132	3214	2.55	13.46	74.9	93.6	74.9	93.6			
38	46	9225	0.90	38.64	39.0	58.6	39.0	58.6			
42	50	8425	0.90	35.29	43.6	59.5	43.6	59.5			
48	58	7365	1.10	30.85	48.6	60.8	48.6	60.8			
49	59	7210	1.05	30.20	49.2	60.9	49.2	60.9			
57	68	6227	1.25	26.08	52.7	62.1	52.7	62.1			
67	81	5264	1.45	22.05	55.5	63.2	55.5	63.2			
74	89	4796	0.90	20.09	56.7	62.4	56.7	62.4			
82	99	4298	1.75	18.00	57.7	64.3	57.7	64.3			
86	104	4104	1.05	17.19	58.1	63.4	58.1	63.4	**KH103-22P-200L-04F**	534	344
100	120	3545	1.25	14.85	55.3	64.2	55.3	64.2			
101	122	3486	2.20	14.60	54.1	65.2	54.1	65.2			
118	142	2999	1.45	12.56	51.7	65.0	51.7	65.0			
127	153	2784	2.70	11.66	49.4	66.0	49.4	66.0			
144	174	2447	1.75	10.25	47.6	65.7	47.6	65.7			
178	214	1984	2.20	8.31	43.9	66.4	43.9	66.4			
223	268	1585	2.70	6.64	40.3	66.9	40.3	66.9			

Legend see page 261

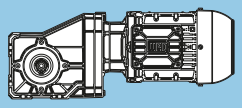
*** ... on request*

P_N = 45 kW											IE3
50 Hz	60 Hz				at 50 Hz						
45 kW	55 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
21	26	20001	0.90	68.88	68.9	114.7	68.9	114.7			
26	31	16595	1.10	57.15	83.5	117.3	83.5	117.3			
30	36	14193	1.00	48.88	91.1	119.2	91.1	119.2			
31	37	13839	1.35	47.66	92.0	119.4	92.0	119.4			
35	42	12277	1.50	42.28	95.9	120.6	95.9	120.6			
36	43	11897	1.55	40.97	96.8	120.9	96.8	120.9			
40	48	10831	1.70	37.30	99.0	121.7	99.0	121.7			
42	50	10294	1.75	35.45	100.0	122.1	100.0	122.1	**KH153-22P-225S/M-04F**	1026	348
46	56	9301	1.95	32.03	101.7	122.9	101.7	122.9			
48	58	8912	1.00	30.69	102.3	120.8	102.3	120.8			
56	67	7738	2.35	26.65	104.0	124.1	104.0	124.1			
63	76	6798	2.00	23.41	105.2	123.0	105.2	123.0			
67	81	6420	2.85	22.11	105.6	125.1	105.6	125.1			
74	89	5839	2.30	20.11	106.2	124.0	106.2	124.0			
88	107	4858	2.95	16.73	107.1	125.0	107.1	125.0			
29	36	14571	0.90	50.18	64.7	82.9	64.7	82.9			
34	41	12750	1.00	43.91	71.3	84.7	71.3	84.7			
36	43	11978	1.10	41.25	73.6	85.5	73.6	85.5			
39	47	10979	1.20	37.81	76.3	86.5	76.3	86.5			
42	51	10169	1.30	35.02	78.3	87.3	78.3	87.3			
45	54	9591	1.40	33.03	79.6	87.9	79.6	87.9			
50	60	8679	1.50	29.89	81.5	88.8	81.5	88.8			
52	62	8284	1.60	28.53	82.2	89.2	82.2	89.2			
59	71	7271	1.00	25.04	83.9	88.6	83.9	88.6	**KH123-22P-225S/M-04F**	794	346
63	76	6853	1.90	23.60	84.5	90.6	84.5	90.6			
69	83	6260	1.30	21.56	85.3	89.8	85.3	89.8			
76	92	5639	2.35	19.42	86.1	91.8	86.1	91.8			
79	95	5471	1.50	18.84	86.3	90.8	86.3	90.8			
91	110	4724	1.75	16.27	82.4	91.7	82.4	91.7			
93	112	4634	2.85	15.96	80.6	92.9	80.6	92.9			
110	132	3908	2.10	13.46	76.5	92.7	76.5	92.7			
134	161	3214	2.55	11.07	71.0	93.5	71.0	93.5			
48	58	8958	0.90	30.85	40.7	58.9	40.7	58.9			
49	59	8769	0.90	30.20	41.8	59.1	41.8	59.1			
57	68	7573	1.00	26.08	47.7	60.5	47.7	60.5			
67	81	6403	1.20	22.05	52.2	61.9	52.2	61.9			
82	99	5227	1.45	18.00	55.6	63.2	55.6	63.2			
86	104	4991	0.90	17.19	56.2	62.2	56.2	62.2			
100	120	4312	1.00	14.85	57.4	63.1	57.4	63.1	**KH103-22P-225S/M-04F**	671	344
101	122	4239	1.80	14.60	55.9	64.3	55.9	64.3			
118	142	3647	1.20	12.56	53.4	64.0	53.4	64.0			
127	153	3386	2.25	11.66	50.8	65.3	50.8	65.3			
144	174	2976	1.45	10.25	49.1	65.0	49.1	65.0			
178	214	2413	1.80	8.31	45.0	65.8	45.0	65.8			
223	268	1928	2.25	6.64	41.2	66.5	41.2	66.5			

Legend see page 261

P_N = 55 kW											IE3
50 Hz	60 Hz				at 50 Hz						
55 kW	66 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
26	31	20282	0.90	57.15	67.5	114.5	67.5	114.5			
31	37	16914	1.10	47.66	82.4	117.1	82.4	117.1			
36	44	14540	1.25	40.97	90.1	118.9	90.1	118.9			
40	48	13238	1.40	37.30	93.6	119.9	93.6	119.9			
42	50	12581	1.45	35.45	95.2	120.4	95.2	120.4			
46	56	11367	1.60	32.03	97.9	121.3	97.9	121.3			
56	67	9458	1.95	26.65	101.4	122.8	101.4	122.8	**KH153-22P-225S/M-04G**	1074	348
63	76	8308	1.65	23.41	103.2	121.4	103.2	121.4			
67	81	7847	2.30	22.11	103.9	124.0	103.9	124.0			
74	89	7137	1.90	20.11	104.8	122.6	104.8	122.6			
80	97	6544	2.80	18.44	105.5	125.0	105.5	125.0			
88	107	5937	2.40	16.73	106.1	123.9	106.1	123.9			
107	129	4926	2.90	13.88	107.0	124.9	107.0	124.9			
36	43	14640	0.90	41.25	64.5	82.8	64.5	82.8			
42	51	12429	1.05	35.02	72.3	85.0	72.3	85.0			
45	54	11722	1.15	33.03	74.3	85.8	74.3	85.8			
50	60	10608	1.25	29.89	77.3	86.9	77.3	86.9			
52	63	10125	1.30	28.53	78.4	87.4	78.4	87.4			
63	76	8376	1.60	23.60	82.0	89.1	82.0	89.1			
76	92	6892	1.90	19.42	84.4	90.6	84.4	90.6			
79	95	6686	1.25	18.84	84.7	89.3	84.7	89.3	**KH123-22P-225S/M-04G**	842	346
91	110	5774	1.45	16.27	85.0	90.4	85.0	90.4			
93	112	5664	2.30	15.96	82.9	91.8	82.9	91.8			
109	132	4809	2.75	13.55	77.7	92.7	77.7	92.7			
110	133	4777	1.75	13.46	78.6	91.6	78.6	91.6			
134	161	3929	2.10	11.07	72.7	92.7	72.7	92.7			
163	196	3230	2.55	9.10	67.4	93.5	67.4	93.5			
191	231	2743	3.00	7.73	63.5	94.1	63.5	94.1			

Legend see page 261

P_N = 75 kW											IE3
50 Hz	60 Hz				at 50 Hz						
75 kW	90 kW				Output shaft		Hollow shaft				
n_{50}	n_{60}	M_2	f_B	i	F_{rN}	F_{aN}	F_{rN}	F_{aN}		m	Dimension sheet see page
min^{-1}	min^{-1}	Nm			kN	kN	kN	kN		kg	
31	37	23065	0.80	47.66	**	**	**	**			
36	43	19828	0.95	40.97	69.8	114.9	69.8	114.9			
40	48	18051	1.00	37.30	77.9	116.2	77.9	116.2			
42	50	17156	1.05	35.45	81.5	116.9	81.5	116.9			
46	56	15501	1.20	32.03	87.2	118.2	87.2	118.2			
56	67	12897	1.40	26.65	94.4	120.2	94.4	120.2			
63	76	11329	1.20	23.41	98.0	118.3	98.0	118.3			
67	81	10700	1.70	22.11	99.2	121.8	99.2	121.8			
74	89	9732	1.40	20.11	101.0	120.0	101.0	120.0	**KH153-22P-250S/M-04F**	1178	348
80	97	8924	2.05	18.44	102.3	123.2	102.3	123.2			
88	106	8097	1.75	16.73	103.5	121.6	103.5	121.6			
93	112	7671	2.35	15.85	104.1	124.1	104.1	124.1			
107	128	6717	2.15	13.88	105.3	123.1	105.3	123.1			
108	130	6640	2.75	13.72	105.4	124.9	105.4	124.9			
128	154	5604	2.50	11.58	106.4	124.2	106.4	124.2			
149	179	4815	2.80	9.95	105.6	125.0	105.6	125.0			

Legend see page 261

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Selection tables - Gear units

Structure of the selection tables

1 Type	2 $i_{ges.}$	3 M_{2nenn}	4 n_2	5 i_{exakt}	6 IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					7 IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					8 NEMA adapter												
		[Nm]	[min^{-1}]		N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
K022																	
2 stages	9																
n_1=1400 min^{-1}	10																
Maximum torque 110 Nm	11																

1 Type	2 $i_{ges.}$	12 SERVO adapter										14 Input unit							
		n_{1max}	Adapter size 13									n_{1max}	Input shaft [mm] 15						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110

1 Type of gear unit

2 Total ratio

3 Permissible output torque at S1 operation (f_B = 1.0)

4 Output speed (gear unit) at n_1 = 1400 min^{-1}

5 Exact mathematical ratio

6 Possible motor frame sizes (Direct mounting)

7 Possible IEC adapter sizes

8 Possible NEMA adapter sizes

9 Number of gear stages

10 Motor speed

11 Maximum torque

12 Maximum input speed - SERVO adapter

13 Possible SERVO adapter sizes

14 Maximum input speed - direct mounting, IEC / NEMA adapter and input unit
Higher input speeds on request

15 Possible input shafts of the input unit

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K022	68.88	110	20	551/8	■	■											
	61.75	102	23	247/4	■	■											
	53.65	110	26	1073/20	■	■	■	■									
	48.10	110	29	481/10	■	■	■	■									
	43.50	110	32	87/2	■	■	■	■									
	39.00	110	36	39/1	■	■	■	■									
	34.27	110	41	377/11	■	■	■	■									
	30.88	51	45	247/8	■	■											
	30.73	110	46	338/11	■	■	■	■									
	26.41	110	53	1479/56	■	■	■	■									
	24.05	81	58	481/20	■	■	■	■									
	23.68	110	59	663/28	■	■	■	■									
2 stages	20.63	103	68	1073/52	■	■	■	■									
	19.50	81	72	39/2	■	■	■	■									
	18.50	102	76	37/2	■	■	■	■									
n_1=1400 min^{-1}	15.41	93	91	493/32	■	■	■	■									
	15.36	81	91	169/11	■	■	■	■									
Maximum torque	13.81	93	101	221/16	■	■	■	■									
110 Nm	13.29	89	105	319/24			■	■									
	11.92	89	117	143/12			■	■									
	11.84	81	118	663/56	■	■	■	■									
	11.60	85	121	58/5	■	■	■	■									
	10.40	85	135	52/5	■	■	■	■									
	9.25	81	151	37/4	■	■	■	■									
	8.51	77	164	783/92	■	■	■	■									
	7.63	77	183	351/46	■	■	■	■									
	6.91	74	203	221/32	■	■	■	■									
	5.96	69	235	143/24			■	■									
	5.20	65	269	26/5	■	■	■	■									
	3.82	57	367	351/92	■	■	■	■									
K033	217.88	200	6.4	1743/8	■	■	■	■									
	177.19	200	7.9	2835/16	■	■	■	■									
	140.80	200	9.9	6195/44	■	■	■	■									
	108.75	200	13	435/4	■	■	■	■	■								
	86.83	200	16	4515/52	■	■	■	■	■								
	71.93	200	19	1079/15	■	■	■	■									
	65.63	200	21	525/8	■	■	■	■	■								
	58.50	200	24	117/2	■	■	■	■									
	49.88	200	28	399/8	■	■	■	■	■								
	46.48	200	30	1534/33	■	■	■	■									
	38.80	200	36	1785/46	■	■	■	■	■								
3 stages	35.90	200	39	754/21	■	■	■	■	■								
	30.29	200	46	1575/52			■	■	■								
n_1=1400 min^{-1}	29.97	129	47	1079/36	■	■	■	■									
	28.67	200	49	86/3	■	■	■	■	■								
	24.38	160	57	195/8	■	■	■	■									
Maximum torque	21.67	200	65	65/3	■	■	■	■	■								
200 Nm	19.37	163	72	3835/198	■	■	■	■									
	16.47	200	85	247/15	■	■	■	■	■								
	14.96	163	94	1885/126	■	■	■	■	■								
	12.81	200	109	884/69	■	■	■	■	■								
	11.94	163	117	215/18	■	■	■	■	■								
	10.00	200	140	10/1			■	■	■								
	9.03	163	155	325/36	■	■	■	■	■								
	6.86	149	204	247/36	■	■	■	■	■								
	5.34	137	262	1105/207	■	■	■	■	■								
	4.17	126	336	25/6			■	■	■								

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K022	68.88	5000	■										-							
	61.75	5000	■										-							
	53.65	5000	■	■	■	■	■	■					3000	■						
	48.10	5000	■	■	■	■	■	■					3000	■						
	43.50	5000	■	■	■	■	■	■					3000	■						
	39.00	5000	■	■	■	■	■	■					3000	■						
	34.27	5000	■	■	■	■	■	■					3000	■						
	30.88	5000	■										-							
	30.73	5000	■	■	■	■	■	■					3000	■						
	26.41	5000	■	■	■	■	■	■	■				3000	■						
	24.05	5000	■	■	■	■	■	■					3000	■						
	23.68	5000	■	■	■	■	■	■	■				3000	■						
	20.63	5000	■	■	■	■	■	■	■				3000	■						
	19.50	5000	■	■	■	■	■	■					3000	■						
	18.50	5000	■	■	■	■	■	■	■				3000	■						
	15.41	4900	■	■	■	■	■	■	■				3000	■						
	15.36	5000	■	■	■	■	■	■	■				3000	■						
	13.81	4900	■	■	■	■	■	■	■				3000	■						
	13.29	4300		■	■	■	■	■	■				3000	■						
	11.92	4300		■	■	■	■	■	■				3000	■						
	11.84	5000	■	■	■	■	■	■	■				3000	■						
	11.60	3900	■	■	■	■	■	■	■				3000	■						
	10.40	3900	■	■	■	■	■	■	■				3000	■						
	9.25	5000	■	■	■	■	■	■	■				3000	■						
	8.51	3400	■	■	■	■	■	■	■				3000	■						
	7.63	3400	■	■	■	■	■	■	■				3000	■						
	6.91	4900	■	■	■	■	■	■	■				3000	■						
	5.96	4300		■	■	■	■	■	■				3000	■						
	5.20	3900	■	■	■	■	■	■	■				3000	■						
	3.82	3400	■	■	■	■	■	■	■				3000	■						
K033	217.88	5000	■	■	■	■	■	■					3000	■						
	177.19	5000	■	■	■	■	■	■					3000	■						
	140.80	5000	■	■	■	■	■	■					3000	■						
	108.75	5000	■	■	■	■	■	■	■				3000	■						
	86.83	5000	■	■	■	■	■	■	■				3000	■						
	71.93	5000	■	■	■	■	■	■					3000	■						
	65.63	5000	■	■	■	■	■	■	■				3000	■						
	58.50	5000	■	■	■	■	■	■					3000	■						
	49.88	4400	■	■	■	■	■	■	■				3000	■						
	46.48	5000	■	■	■	■	■	■					3000	■						
	38.80	3800	■	■	■	■	■	■	■				3000	■						
	35.90	5000	■	■	■	■	■	■	■				3000	■						
	30.29	3400		■	■	■	■	■	■				3000	■						
	29.97	5000	■	■	■	■	■	■	■				3000	■						
	28.67	5000	■	■	■	■	■	■	■				3000	■						
	24.38	5000	■	■	■	■	■	■	■				3000	■						
	21.67	5000	■	■	■	■	■	■	■				3000	■						
	19.37	5000	■	■	■	■	■	■	■				3000	■						
	16.47	4400	■	■	■	■	■	■	■				3000	■						
	14.96	5000	■	■	■	■	■	■	■				3000	■						
	12.81	3800	■	■	■	■	■	■	■				3000	■						
	11.94	5000	■	■	■	■	■	■	■				3000	■						
	10.00	3400		■	■	■	■	■	■				3000	■						
	9.03	5000	■	■	■	■	■	■	■				3000	■						
	6.86	4400	■	■	■	■	■	■	■				3000	■						
	5.34	3800	■	■	■	■	■	■	■				3000	■						
	4.17	3400		■	■	■	■	■	■				3000	■						

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K043	277.79	400	5	14445/52	■	■	■	■									
	227.16	400	6.2	23625/104	■	■	■	■									
	179.37	400	7.8	25650/143	■	■	■	■									
	139.08	400	10	50625/364	■	■	■	■	■	■							
	113.83	400	12	38475/338	■	■	■	■		■							
	89.17	378	16	535/6	■	■	■	■									
	87.62	400	16	18225/208	■	■	■	■	■	■							
	72.92	400	19	875/12	■	■	■	■									
	66.20	400	21	6885/104	■	■	■	■	■	■							
	57.58	400	24	1900/33	■	■	■	■									
	54.18	400	26	16200/299	■	■	■	■	■	■							
	47.07	200	30	93197/1980	■	■	■	■									
	44.64	400	31	625/14	■	■	■	■	■	■							
	43.93	400	32	7425/169			■	■	■	■							
	38.49	270	36	30485/792	■	■	■	■									
3 stages	36.78	384	38	3825/104			■	■	■	■							
	36.54	400	38	475/13	■	■	■	■	■	■							
	30.39	324	46	33098/1089	■	■	■	■									
n_1=1400 min^{-1}	29.81	361	47	775/26			■	■	■	■							
	28.74	357	49	20925/728					■	■							
Maximum torque	28.13	400	50	225/8	■	■	■	■	■	■							
400 Nm	23.57	307	59	21775/924	■	■	■	■	■	■							
	21.25	400	66	85/4	■	■	■	■	■	■							
	19.29	294	73	1273/66	■	■	■	■	■	■							
	17.39	400	81	400/23	■	■	■	■	■	■							
	14.85	278	94	2613/176	■	■	■	■	■	■							
	14.10	400	99	550/39			■	■	■	■							
	11.81	400	119	425/36			■	■	■	■							
	11.22	262	125	14807/1320	■	■	■	■	■	■							
	9.57	373	146	775/81			■	■	■	■							
	9.23	369	152	775/84					■	■							
	9.18	251	152	6968/759	■	■	■	■	■	■							
	7.44	240	188	67/9			■	■	■	■							
	6.23	231	225	14807/2376			■	■	■	■							
	5.05	221	277	27001/5346			■	■	■	■							
	4.87	219	287	27001/5544					■	■							

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K043	277.79	5000	■	■	■	■	■	■					3000	■						
	227.16	5000	■	■	■	■	■	■					3000	■						
	179.37	5000	■	■	■	■	■	■					3000	■						
	139.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	113.83	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	89.17	5000	■	■	■	■	■	■					3000	■						
	87.62	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	72.92	5000	■	■	■	■	■	■					3000	■						
	66.20	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	57.58	5000	■	■	■	■	■	■					3000	■						
	54.18	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	47.07	5000	■	■	■	■	■	■					3000	■						
	44.64	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	43.93	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	38.49	5000	■	■	■	■	■	■					3000	■						
	36.78	3400		■	■	■	■	■	■	■	■	■	3000	■	■					
	36.54	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	30.39	5000	■	■	■	■	■	■					3000	■						
	29.81	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	28.74	2900							■	■	■	■	2900		■					
	28.13	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	23.57	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	21.25	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	19.29	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	17.39	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	14.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	14.10	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.81	3400		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.22	4900	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	9.57	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	9.23	2900							■	■	■	■	2900		■					
	9.18	4200	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	7.44	3700		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.23	3400		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.05	3000		■	■	■	■	■	■	■	■	■	3000	■	■					
	4.87	2900							■	■	■	■	2900		■					

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K053	245.70	600	5.7	2457/10	■	■	■	■									
	194.73	600	7.2	2142/11	■	■	■	■									
	151.20	600	9.3	756/5	■	■	■	■	■	■	■						
	124.06	600	11	8064/65	■	■	■	■	■	■	■						
	96.08	600	15	3843/40	■	■	■	■	■	■	■						
	80.46	564	17	7644/95	■	■	■	■									
	73.08	600	19	1827/25	■	■	■	■	■	■	■						
	63.77	600	22	13328/209	■	■	■	■									
	60.26	600	23	1386/23	■	■	■	■	■	■	■						
	49.52	600	28	4704/95	■	■	■	■	■	■	■						
	49.43	600	28	3213/65			■	■	■	■	■						
	42.00	600	33	42/1			■	■	■	■	■						
	40.63	600	34	50176/1235	■	■	■	■	■	■	■						
	38.32	268	37	728/19	■	■	■	■									
	34.53	600	41	518/15			■	■	■	■	■						
3 stages	33.30	600	42	333/10					■	■	■						
	31.46	600	44	2989/95	■	■	■	■	■	■	■						
	30.37	392	46	19040/627	■	■	■	■									
n_1=1400 min^{-1}	27.39	577	51	630/23			■	■	■	■	■						
	23.93	600	58	11368/475	■	■	■	■	■	■	■						
Maximum torque	23.58	413	59	448/19	■	■	■	■	■	■	■						
600 Nm	19.73	600	71	8624/437	■	■	■	■	■	■	■						
	19.35	413	72	14336/741	■	■	■	■	■	■	■						
	16.19	600	86	19992/1235			■	■	■	■	■						
	14.98	413	93	854/57	■	■	■	■	■	■	■						
	13.75	600	102	784/57			■	■	■	■	■						
	11.40	413	123	3248/285	■	■	■	■	■	■	■						
	11.31	600	124	29008/2565			■	■	■	■	■						
	10.91	600	128	1036/95					■	■	■						
	9.40	413	149	12320/1311	■	■	■	■	■	■	■						
	8.97	565	156	3920/437			■	■	■	■	■						
	7.71	413	182	1904/247			■	■	■	■	■						
	6.55	413	214	1120/171			■	■	■	■	■						
	5.39	413	260	8288/1539			■	■	■	■	■						
	5.19	413	270	296/57					■	■	■						
	4.27	413	328	5600/1311			■	■	■	■	■						

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K053	245.70	5000	■	■	■	■	■	■					3000	■						
	194.73	5000	■	■	■	■	■	■					3000	■						
	151.20	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	124.06	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	96.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	80.46	5000	■	■	■	■	■	■					3000	■						
	73.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	63.77	5000	■	■	■	■	■	■					3000	■						
	60.26	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	49.52	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	49.43	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	42.00	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	40.63	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	38.32	5000	■	■	■	■	■	■					3000	■						
	34.53	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	33.30	3100							■	■	■	■	3000		■					
	31.46	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	30.37	5000	■	■	■	■	■	■					3000	■						
	27.39	2800		■	■	■	■	■	■	■	■	■	2800	■	■					
	23.93	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	23.58	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	19.73	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	19.35	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	16.19	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	14.98	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	13.75	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	11.40	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	11.31	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	10.91	3100							■	■	■	■	3000		■					
	9.40	4500	■	■	■	■	■	■	■	■	■	■	3000	■	■					
	8.97	2800		■	■	■	■	■	■	■	■	■	2800	■	■					
	7.71	3900		■	■	■	■	■	■	■	■	■	3000	■	■					
	6.55	3600		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.39	3200		■	■	■	■	■	■	■	■	■	3000	■	■					
	5.19	3100							■	■	■	■	3000		■					
	4.27	2800		■	■	■	■	■	■	■	■	■	2800	■	■					

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size											
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K063	198.00	820	7.1	198/1	■	■	■	■									
	156.92	820	8.9	2040/13	■	■	■	■									
	121.85	820	11	1584/13	■	■	■	■	■	■	■						
	99.98	820	14	16896/169	■	■	■	■	■	■	■						
	81.53	571	17	1386/17	■	■	■	■									
	77.42	820	18	2013/26	■	■	■	■	■	■	■						
	64.62	820	22	840/13	■	■	■	■									
	58.89	820	24	3828/65	■	■	■	■	■	■	■						
	50.17	820	28	11088/221	■	■	■	■	■	■	■						
	48.56	820	29	14520/299	■	■	■	■	■	■	■						
	44.35	311	32	754/17	■	■	■	■									
	41.17	820	34	118272/2873	■	■	■	■	■	■	■						
	39.83	795	35	6732/169			■	■	■	■	■						
	35.15	454	40	1160/33	■	■	■	■									
	33.85	757	41	440/13			■	■	■	■	■						
3 stages	31.88	820	44	14091/442	■	■	■	■	■	■	■						
	27.83	714	50	3256/117			■	■	■	■	■						
	27.29	500	51	464/17	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	26.84	707	52	2442/91					■	■	■						
	24.25	782	58	26796/1105	■	■	■	■	■	■	■						
Maximum torque 820 Nm	22.40	500	63	14848/663	■	■	■	■	■	■	■						
	22.07	666	63	6600/299			■	■	■	■	■						
	20.00	738	70	101640/5083	■	■	■	■	■	■	■						
	17.34	500	81	1769/102	■	■	■	■	■	■	■						
	16.40	695	85	2772/169			■	■	■	■	■						
	13.94	662	100	3080/221			■	■	■	■	■						
	13.19	500	106	3364/255	■	■	■	■	■	■	■						
	11.46	624	122	22792/1989			■	■	■	■	■						
	11.05	618	127	2442/221					■	■	■						
	10.88	500	129	12760/1173	■	■	■	■	■	■	■						
	9.09	582	154	46200/5083			■	■	■	■	■						
	8.92	500	157	116/13			■	■	■	■	■						
	7.58	487	185	1160/153			■	■	■	■	■						
	6.23	459	225	8584/1377			■	■	■	■	■						
	6.01	454	233	2146/357					■	■	■						
	4,94	428	283	5800/1173			■	■	■	■	■						

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K063	198.00	5000	■	■	■	■	■	■					3000	■						
	156.92	5000	■	■	■	■	■	■					3000	■						
	121.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	99.98	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	81.53	5000	■	■	■	■	■	■					3000	■						
	77.42	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	64.62	5000	■	■	■	■	■	■					3000	■						
	58.89	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	50.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	48.56	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	44.35	5000	■	■	■	■	■	■					3000	■						
	41.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	39.83	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	35.15	5000	■	■	■	■	■	■					3000	■						
	33.85	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	31.88	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	27.83	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	27.29	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	26.84	3200							■	■	■	■	3000		■	■				
	24.25	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	22.40	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	22.07	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
	20.00	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	17.34	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.40	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	13.94	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	13.19	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	11.46	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	11.05	3200							■	■	■	■	3000		■	■				
	10.88	4700	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	9.09	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			
	8.92	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	7.58	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	6.23	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	6.01	3200							■	■	■	■	3000		■	■				
	4.94	2900		■	■	■	■	■	■	■	■	■	2900	■	■	■	■			

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K073	256.14	1550	5.5	5635/22													
	197.75	1550	7.1	791/4	■	■	■	■	■	■	■						
	165.85	1550	8.4	2156/13	■	■	■	■	■	■	■						
	130.16	1550	11	4165/32	■	■	■	■	■	■	■						
	100.45	1550	14	2009/20	■	■	■	■	■	■	■						
	99.87	1288	14	18676/187	■	■	■	■									
	83.09	1550	17	1911/23	■	■	■	■	■	■	■						
	77.11	1550	18	6554/85	■	■	■	■	■	■	■						
	70.67	1550	20	3675/52			■	■	■	■	■						
	64.67	1550	22	71456/1105	■	■	■	■	■	■	■						
	61.25	1550	23	245/4			■	■	■	■	■	■					
	51.72	1550	27	931/18			■	■	■	■	■	■					
	50.75	1550	28	203/4	■	■	■	■	■	■	■						
	49.88	1550	28	399/8					■	■	■						
3 stages	47.56	613	29	26680/561	■	■	■	■									
	42.61	1550	33	980/23			■	■	■	■	■	■					
n_1=1400 min^{-1}	39.17	1550	36	16646/425	■	■	■	■	■	■	■						
	36.72	757	38	13108/357	■	■	■	■	■	■	■						
	32.40	1550	43	63336/1955	■	■	■	■	■	■	■						
Maximum torque 1550 Nm	30.79	910	45	20416/663	■	■	■	■	■	■	■						
	27.56	1550	51	6090/221			■	■	■	■	■						
	24.17	910	58	145/6	■	■	■	■	■	■	■						
	23.88	1550	59	406/17			■	■	■	■	■	■					
	20.17	1550	69	15428/765			■	■	■	■	■	■					
	19.45	1550	72	1653/85					■	■	■						
	18.65	910	75	4756/255	■	■	■	■	■	■	■						
	16.61	1550	84	6496/391			■	■	■	■	■	■					
	15.43	910	91	6032/391	■	■	■	■	■	■	■						
	13.12	910	107	2900/221			■	■	■	■	■						
	11.37	910	123	580/51			■	■	■	■	■	■					
	9.60	910	146	4408/459			■	■	■	■	■	■					
	9.26	910	151	1102/119					■	■	■						
	7.91	910	177	9280/1173			■	■	■	■	■	■					

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K073	256.14	5000	■	■	■	■	■	■					3000	■						
	197.75	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	165.85	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	130.16	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	100.45	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	99.87	5000	■	■	■	■	■	■					3000	■						
	83.09	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	77.11	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	70.67	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	64.67	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	61.25	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	51.72	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	50.75	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	49.88	3600							■	■	■	■	3000		■	■				
	47.56	5000	■	■	■	■	■	■					3000	■						
	42.61	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	39.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	36.72	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	32.40	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	30.79	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	27.56	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	24.17	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	23.88	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	20.17	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	19.45	3600							■	■	■	■	3000		■	■				
	18.65	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	16.61	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	15.43	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	13.12	4600		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	11.37	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	9.60	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	9.26	3600							■	■	■	■	3000		■	■				
	7.91	3300		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K083	206.12	3000	6.8	13398/65	■	■	■	■	■	■	■						
	163.14	3000	8.6	26103/160	■	■	■	■	■	■	■						
	142.45	3000	9.8	2849/20			■	■	■	■	■						
	125.90	3000	11	25179/200	■	■	■	■	■	■	■						
	106.46	3000	13	12243/115	■	■	■	■	■	■	■						
	91.51	3000	15	23793/260			■	■	■	■	■						
	79.89	3000	18	6391/80			■	■	■	■	■	■					
	79.75	2851	18	319/4	■	■	■	■	■	■	■						
	68.44	3000	20	616/9			■	■	■	■	■	■	■				
	66.00	3000	21	66/1					■	■	■						
	63.12	2860	22	16159/256	■	■	■	■	■	■	■						
	58.25	3000	24	6699/115			■	■	■	■	■	■	■				
	55.11	3000	25	5291/96			■	■	■	■	■						
	48.87	3000	29	2541/52					■	■	■	■	■				
	48.71	3000	29	15587/320	■	■	■	■	■	■	■						
	45.48	1626	31	2001/44	■	■	■	■	■	■	■						
	41.19	3000	34	7579/184	■	■	■	■	■	■	■						
3 stages	41.18	3000	34	9471/230					■	■	■	■	■				
	35.99	1631	39	101361/2816	■	■	■	■	■	■	■						
n_1=1400 min^{-1}	35.41	3000	40	1133/32			■	■	■	■	■						
	33.76	3000	41	4389/130								■	■				
	31.43	1916	45	11063/352			■	■	■	■	■						
Maximum torque 3000 Nm	30.91	3000	45	11869/384			■	■	■	■	■	■					
	27.78	1901	50	97773/3520	■	■	■	■	■	■	■						
	26.48	2972	53	715/27			■	■	■	■	■	■	■				
	25.54	2940	55	715/28					■	■	■						
	23.49	1916	60	2067/88	■	■	■	■	■	■	■						
	22.54	2832	62	4147/184			■	■	■	■	■	■	■				
	20.19	1886	69	7107/352			■	■	■	■	■						
	18.91	2686	74	605/32					■	■	■	■	■				
	17.63	1937	79	24817/1408			■	■	■	■	■	■					
	15.93	2552	88	5863/368					■	■	■	■	■				
	15.10	1937	93	1495/99			■	■	■	■	■	■	■				
	14.56	1748	96	4485/308					■	■	■						
	13.06	2404	107	209/16								■	■				
	12.85	1937	109	1131/88			■	■	■	■	■	■	■				
	10.78	1937	130	345/32					■	■	■	■	■				
	9.09	1937	154	1599/176					■	■	■	■	■				
	7.45	1937	188	1311/176								■	■				

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K083	206.12	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	163.14	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	142.45	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	125.90	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	106.46	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	91.51	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	79.89	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	79.75	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	68.44	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	66.00	3900							■	■	■	■	3000		■	■				
	63.12	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	58.25	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	55.11	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	48.87	3100							■	■	■	■	3000		■	■	■	■	■	
	48.71	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	45.48	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	41.19	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	41.18	2800							■	■	■	■	2800		■	■	■	■	■	
	35.99	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	35.41	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	33.76	-											2500				■	■	■	
	31.43	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	30.91	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	27.78	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	26.48	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	25.54	3900							■	■	■	■	3000		■	■				
	23.49	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	22.54	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	20.19	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	18.91	3100							■	■	■	■	3000		■	■	■	■	■	
	17.63	4500		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	15.93	2800							■	■	■	■	2800		■	■	■	■	■	
	15.10	4000		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	14.56	3900							■	■	■	■	3000		■	■				
	13.06	-											2500				■	■	■	
	12.85	3600		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	10.78	3100							■	■	■	■	3000		■	■	■	■		
	9.09	2800							■	■	■	■	2800		■	■	■	■		
	7.45	-											2500				■	■	■	

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Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K093	169.25	4500	8.3	21156/125	■	■	■	■	■	■	■						
	143.08	4500	9.8	49364/345	■	■	■	■	■	■	■						
	123.86	4500	11	241531/1950			■	■	■	■	■						
	109.70	4500	13	24682/225			■	■	■	■	■	■					
	94.90	4500	15	192167/2025			■	■	■	■	■	■	■				
	91.51	4500	15	192167/2100					■	■	■	■	■				
	80.74	4500	17	139277/1725			■	■	■	■	■	■	■				
	68.71	4500	20	66994/975					■	■	■	■	■	■			
	63.96	4500	22	1599/25	■	■	■	■	■	■	■						
	59.28	4500	24	102254/1725					■	■	■	■	■	■			
	54.07	4500	26	3731/69	■	■	■	■	■	■	■						
	49.73	4500	28	19393/390								■	■	■			
	46.81	4500	30	5617/120			■	■	■	■	■						
	41.46	4500	34	3731/90			■	■	■	■	■	■					
	40.43	4500	35	75809/1875								■	■	■			
3 stages	37.13	2785	38	8541/230	■	■	■	■	■	■	■						
	35.86	4500	39	58097/1620			■	■	■	■	■	■	■				
	34.58	4149	40	58097/1680					■	■	■						
n_1=1400 min^{-1}	31.61	4500	44	22919/725								■	■	■			
	31.39	2806	45	33215/1058	■	■	■	■	■	■	■						
Maximum torque	30.51	4500	46	42107/1380			■	■	■	■	■	■	■				
4500 Nm	27.18	2795	52	10001/368			■	■	■	■	■						
	25.97	4500	54	779/30					■	■	■	■	■	■			
	24.07	2991	58	6643/276			■	■	■	■	■	■					
	22.40	4500	62	15457/690					■	■	■	■	■	■			
	20.82	2991	67	103441/4968			■	■	■	■	■	■	■				
	20.08	2409	70	103441/5152					■	■	■						
	18.79	4500	75	451/24								■	■	■			
	17.72	2991	79	74971/4232			■	■	■	■	■	■	■				
	15.28	4500	92	22919/1500								■	■	■			
	15.08	2991	93	1387/92					■	■	■	■	■	■			
	13.01	2991	108	27521/2116					■	■	■	■	■	■			
	11.95	4500	117	6929/580								■	■	■			
	10.91	2991	128	4015/368								■	■	■			
	8.87	2991	158	40807/4600								■	■	■			
	6.94	2991	202	37011/5336								■	■	■			

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Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K093	169.25	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	143.08	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	123.86	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	109.70	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	94.90	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	91.51	4100							■	■	■	■	3000		■	■	■			
	80.74	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	68.71	3300							■	■	■	■	3000		■	■	■	■	■	
	63.96	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	59.28	3000							■	■	■	■	3000		■	■	■	■	■	
	54.07	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	49.73	-											2600				■	■	■	
	46.81	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	41.46	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	40.43	-											2300				■	■	■	
	37.13	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	35.86	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	34.58	4100							■	■	■	■	3000		■	■				
	31.61	-											2000				■	■	■	
	31.39	5000	■	■	■	■	■	■	■	■	■	■	3000	■	■	■				
	30.51	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	27.18	5000		■	■	■	■	■	■	■	■	■	3000	■	■	■				
	25.97	3300							■	■	■	■	3000		■	■	■	■	■	
	24.07	4800		■	■	■	■	■	■	■	■	■	3000	■	■	■	■			
	22.40	3000							■	■	■	■	3000		■	■	■	■	■	
	20.82	4200		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	20.08	4100							■	■	■	■	3000		■	■				
	18.79	-											2600				■	■	■	
	17.72	3700		■	■	■	■	■	■	■	■	■	3000	■	■	■	■	■		
	15.28	-											2300				■	■	■	
	15.08	3300							■	■	■	■	3000		■	■	■	■	■	
	13.01	3000							■	■	■	■	3000		■	■	■	■	■	
	11.95	-											2000				■	■	■	
	10.91	-											2600				■	■	■	
	8.87	-											2300				■	■	■	
	6.94	-											2000				■	■	■	

Legend see page 305

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K103	140.95	8000	9.9	128269/910						■	■						
	124.50	8000	11	13072/105						■	■	■					
	108.07	8000	13	20425/189						■	■	■	■				
	104.21	8000	13	20425/196						■	■						
	93.37	8000	15	3268/35						■	■	■	■				
	79.90	8000	18	72713/910						■	■	■	■	■	■		
	69.01	8000	20	55556/805						■	■	■	■	■	■		
	58.36	8000	24	817/14								■	■	■	■		
	53.27	5963	26	2983/56						■	■						
	47.62	8000	29	41667/875								■	■	■	■		
	47.05	7498	30	988/21						■	■	■					
	40.84	7498	34	30875/756						■	■	■	■				
	39.38	4728	36	30875/784						■	■						
	38.64	8000	36	39216/1015								■	■	■	■		
3 stages	35.29	7498	40	247/7						■	■	■	■				
	30.85	8000	45	30229/980									■	■	■		
n_1=1400 min^{-1}	30.33	3395	46	2669/88						■	■						
	30.20	7498	46	1691/56						■	■	■	■	■	■		
Maximum torque 8000 Nm	26.79	4269	52	884/33						■	■	■					
	26.08	7498	54	4199/161						■	■	■	■	■	■		
	23.25	4269	60	27625/1188						■	■	■	■				
	22.42	2692	62	27625/1232						■	■						
	22.05	7498	63	1235/56								■	■	■	■		
	20.09	4269	70	221/11						■	■	■	■				
	18.00	7498	78	12597/700								■	■	■	■		
	17.19	4269	81	1513/88						■	■	■	■	■	■		
	14.85	4269	94	3757/253						■	■	■	■	■	■		
	14.60	7498	96	2964/203								■	■	■	■		
	12.56	4269	111	1105/88								■	■	■	■		
	11.66	7498	120	9139/784									■	■	■		
	10.25	4269	137	11271/1100								■	■	■	■		
	8.31	4269	168	2652/319								■	■	■	■		
	6.64	4269	211	8177/1232									■	■	■		

Legend see page 305

Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K103	140.95	5000								■	■	■	3000		■	■				
	124.50	5000								■	■	■	3000		■	■	■			
	108.07	4500								■	■	■	3000		■	■	■	■		
	104.21	4400								■	■	■	3000		■	■				
	93.37	4000								■	■	■	3000		■	■	■	■		
	79.90	3500								■	■	■	3000		■	■	■	■	■	
	69.01	3200								■	■	■	3000		■	■	■	■	■	■
	58.36	-											2800				■	■	■	■
	53.27	5000								■	■	■	3000		■	■				
	47.62	-											2400				■	■	■	■
	47.05	5000								■	■	■	3000		■	■	■			
	40.84	4500								■	■	■	3000		■	■	■	■		
	39.38	4400								■	■	■	3000		■	■				
	38.64	-											2100				■	■	■	■
	35.29	4000								■	■	■	3000		■	■	■	■		
	30.85	-											1900					■	■	■
	30.33	5000								■	■	■	3000		■	■				
	30.20	3500								■	■	■	3000		■	■	■	■	■	
	26.79	5000								■	■	■	3000		■	■	■			
	26.08	3200								■	■	■	3000		■	■	■	■	■	■
	23.25	4500								■	■	■	3000		■	■	■	■		
	22.42	4400								■	■	■	3000		■	■				
	22.05	-											2800				■	■	■	■
	20.09	4000								■	■	■	3000		■	■	■	■		
	18.00	-											2400				■	■	■	■
	17.19	3500								■	■	■	3000		■	■	■	■	■	
	14.85	3200								■	■	■	3000		■	■	■	■	■	■
	14.60	-											2100				■	■	■	■
	12.56	-											2800				■	■	■	■
	11.66	-											1900					■	■	■
	10.25	-											2400				■	■	■	■
	8.31	-											2100				■	■	■	■
	6.64	-											1900					■	■	■

Legend see page 305

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	-	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K123	151.11	13000	9.3	12089/80						■	■	■					
	131.76	13000	11	5929/45						■	■	■	■				
	127.05	13000	11	2541/20						■	■						
	113.49	13000	12	26103/230						■	■	■	■				
	97.73	13000	14	2541/26						■	■	■	■	■	■		
	85.37	13000	16	3927/46						■	■	■	■	■	■	■	
	73.74	13000	19	19173/260								■	■	■	■	■	
	60.98	13000	23	7623/125								■	■	■	■	■	
	58.47	8768	24	22451/384						■	■	■					
	50.98	9688	27	11011/216						■	■	■	■				
	50.18	13000	28	14553/290								■	■	■	■	■	
	49.16	5899	28	1573/32						■	■						
	43.91	12727	32	16159/368						■	■	■	■				
	41.25	13000	34	165/4									■	■	■	■	
	37.81	13000	37	605/16						■	■	■	■	■	■		
3 stages	35.02	13000	40	10857/310									■	■	■	■	
	33.34	5000	42	46943/1408						■	■	■					
	33.03	13000	42	12155/368						■	■	■	■	■	■	■	
n_1=1400 min^{-1}	29.89	13000	47	2541/85									■	■	■	■	
	29.07	5525	48	2093/72						■	■	■	■				
Maximum torque	28.53	13000	49	913/32								■	■	■	■	■	
13000 Nm	28.03	3364	50	897/32						■	■						
	25.04	7258	56	4407/176						■	■	■	■				
	23.60	13000	59	4719/200								■	■	■	■	■	
	21.56	8053	65	345/16						■	■	■	■	■	■		
	19.42	13000	72	9009/464								■	■	■	■	■	
	18.84	8155	74	3315/176						■	■	■	■	■	■	■	
	16.27	8155	86	5727/352								■	■	■	■	■	
	15.96	13000	88	3575/224									■	■	■	■	
	13.55	13000	103	6721/496									■	■	■	■	
	13.46	8155	104	2691/200								■	■	■	■	■	
	11.57	13000	121	1573/136									■	■	■	■	
	11.07	8155	126	56511/5104								■	■	■	■	■	
	9.10	8155	154	22425/2464									■	■	■	■	
	7.73	8155	181	42159/5456									■	■	■	■	
	6.60	8155	212	897/136									■	■	■	■	

Legend see page 305

Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K123	151.11	5000								■	■	■	3000		■	■	■			
	131.76	4800								■	■	■	3000		■	■	■	■		
	127.05	4600								■	■	■	3000		■	■				
	113.49	4200								■	■	■	3000		■	■	■	■		
	97.73	3700								■	■	■	3000		■	■	■	■	■	
	85.37	3400								■	■	■	3000		■	■	■	■	■	■
	73.74	-											3000				■	■	■	■
	60.98	-											2600				■	■	■	■
	58.47	5000								■	■	■	3000		■	■	■			
	50.98	4800								■	■	■	3000		■	■	■	■		
	50.18	-											2200				■	■	■	■
	49.16	4600								■	■	■	3000		■	■				
	43.91	4200								■	■	■	3000		■	■	■	■		
	41.25	-											2000					■	■	■
	37.81	3700								■	■	■	3000		■	■	■	■	■	
	35.02	-											1800					■	■	■
	33.34	5000								■	■	■	3000		■	■	■			
	33.03	3400								■	■	■	3000		■	■	■	■	■	■
	29.89	-											1600						■	■
	29.07	4800								■	■	■	3000		■	■	■	■		
	28.53	-											3000					■	■	■
	28.03	4600								■	■	■	3000		■	■				
	25.04	4200								■	■	■	3000		■	■	■	■		
	23.60	-											2600				■	■	■	■
	21.56	3700								■	■	■	3000		■	■	■	■	■	
	19.42	-											2200				■	■	■	■
	18.84	3400								■	■	■	3000		■	■	■	■	■	■
	16.27	-											3000				■	■	■	■
	15.96	-											2000					■	■	■
	13.55	-											1800					■	■	■
	13.46	-											2600				■	■	■	■
	11.57	-											1600						■	■
	11.07	-											2200				■	■	■	■
	9.10	-											2000					■	■	■
	7.73	-											1800					■	■	■
	6.60	-											1600						■	■

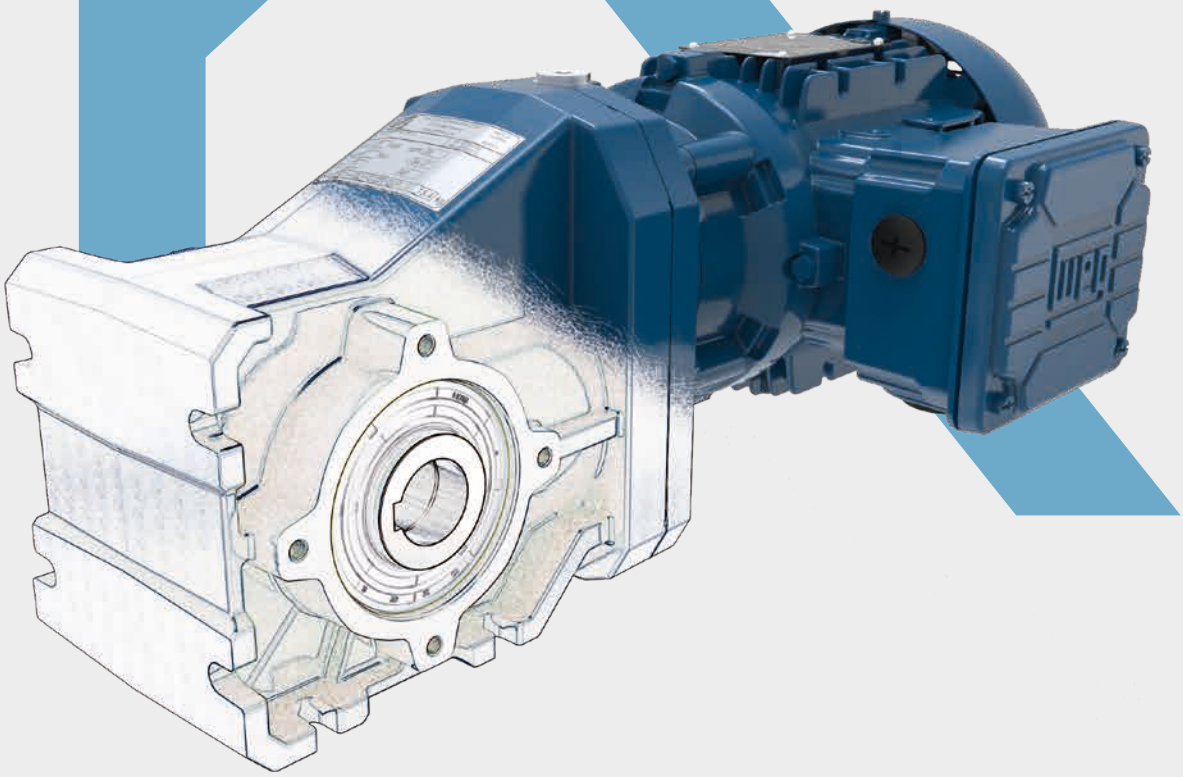
Legend see page 305

Type	$i_{ges.}$	M_{2nenn}	n_2	i_{exakt}	IEC motor frame size												
					63	71	80	90	100	112	132	160	180	200	225	250	-
					IEC adapter												
					I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
					NEMA adapter												
					N56		N143/145		N182	N184	N213/ 215	N254/ 256	N284/ 286	N324/ 326	N364	-	-
		[Nm]	[min^{-1}]														
K153	146.69	18000	9.5	6601/45								■	■				
	126.34	18000	11	23247/184								■	■				
	109.28	18000	13	28413/260								■	■	■	■		
	96.39	18000	15	88683/920								■	■	■	■	■	■
	82.79	18000	17	4305/52								■	■	■	■	■	■
	68.88	18000	20	1722/25								■	■	■	■	■	■
	57.15	18000	24	66297/1160								■	■	■	■	■	■
	56.75	10785	25	12259/216								■	■				
	48.88	14174	29	71955/1472								■	■				
	47.66	18000	29	3813/80									■	■	■	■	■
	42.28	17806	33	1353/32								■	■	■	■		
	40.97	18000	34	50799/1240									■	■	■	■	■
3 stages	37.30	18000	38	54899/1472								■	■	■	■	■	■
	35.63	6771	39	962/27								■	■				
	35.45	18000	39	6027/170									■	■	■	■	■
n_1=1400 min^{-1}	32.03	18000	44	1025/32								■	■	■	■	■	■
	30.69	8899	46	64935/2116								■	■				
Maximum torque	26.65	18000	53	533/20								■	■	■	■	■	■
18000 Nm	26.54	11178	53	1221/46								■	■	■	■		
	23.41	13593	60	49543/2116								■	■	■	■	■	■
	22.11	18000	63	41041/1856								■	■	■	■	■	■
	20.11	13390	70	925/46								■	■	■	■	■	■
	18.44	18000	76	16523/896									■	■	■	■	■
	16.73	14116	84	1924/115								■	■	■	■	■	■
	15.85	18000	88	31447/1984									■	■	■	■	■
	13.88	14116	101	37037/2668								■	■	■	■	■	■
	13.72	18000	102	3731/272									■	■	■	■	■
	11.58	13865	121	14911/1288									■	■	■	■	■
	9.95	13306	141	28379/2852									■	■	■	■	■
	8.61	12793	163	3367/391									■	■	■	■	■

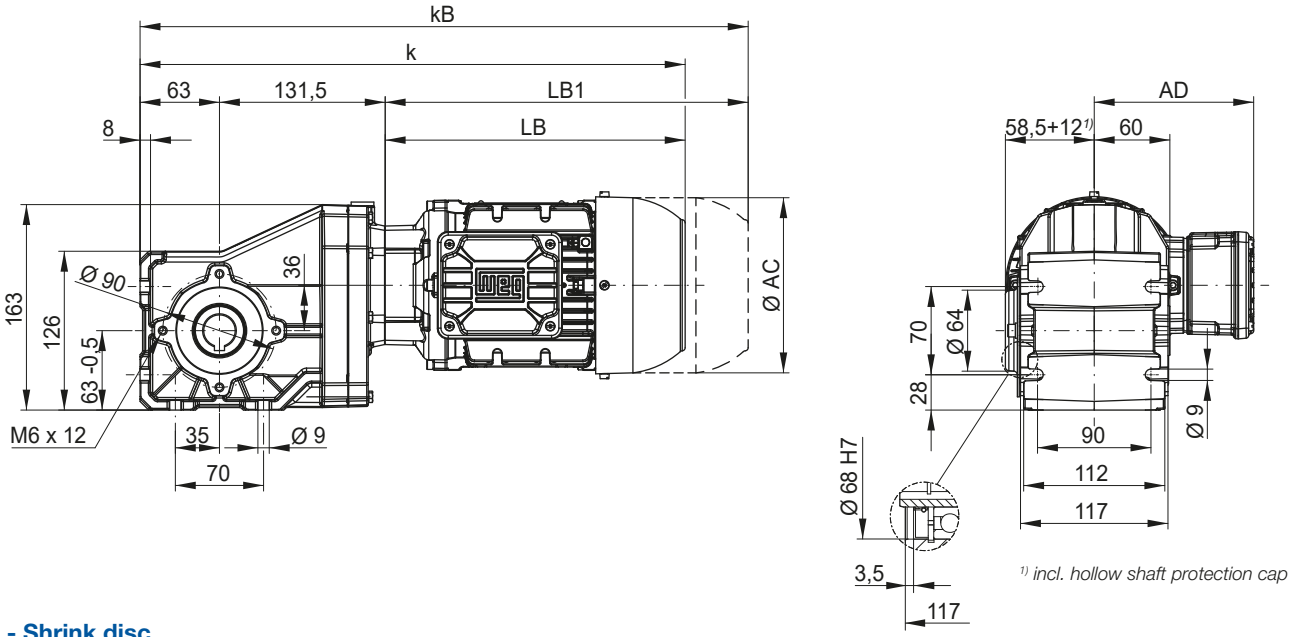
Legend see page 305

Type	$i_{ges.}$	SERVO adapter											Input unit							
		n_{1max}	Adapter size										n_{1max}	Input shaft [mm]						
		[min^{-1}]	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190	[min^{-1}]	19x40	24x50	28x60	38x80	42x110	48x110	55x110
K153	146.69	-											3000				■	■		
	126.34	-											3000				■	■		
	109.28	-											3000				■	■	■	
	96.39	-											3000				■	■	■	■
	82.79	-											3000				■	■	■	■
	68.88	-											2700				■	■	■	■
	57.15	-											2300				■	■	■	■
	56.75	-											3000				■	■		
	48.88	-											3000				■	■		
	47.66	-											2000					■	■	■
	42.28	-											3000				■	■	■	
	40.97	-											1800					■	■	■
	37.30	-											3000				■	■	■	■
	35.63	-											3000				■	■		
	35.45	-											1700						■	■
	32.03	-											3000				■	■	■	■
	30.69	-											3000				■	■		
	26.65	-											2700				■	■	■	■
	26.54	-											3000				■	■	■	
	23.41	-											3000				■	■	■	■
	22.11	-											2300				■	■	■	■
	20.11	-											3000				■	■	■	■
	18.44	-											2000					■	■	■
	16.73	-											2700				■	■	■	■
	15.85	-											1800					■	■	■
	13.88	-											2300				■	■	■	■
	13.72	-											1700						■	■
	11.58	-											2000					■	■	■
	9.95	-											1800					■	■	■
	8.61	-											1700						■	■

Legend see page 305



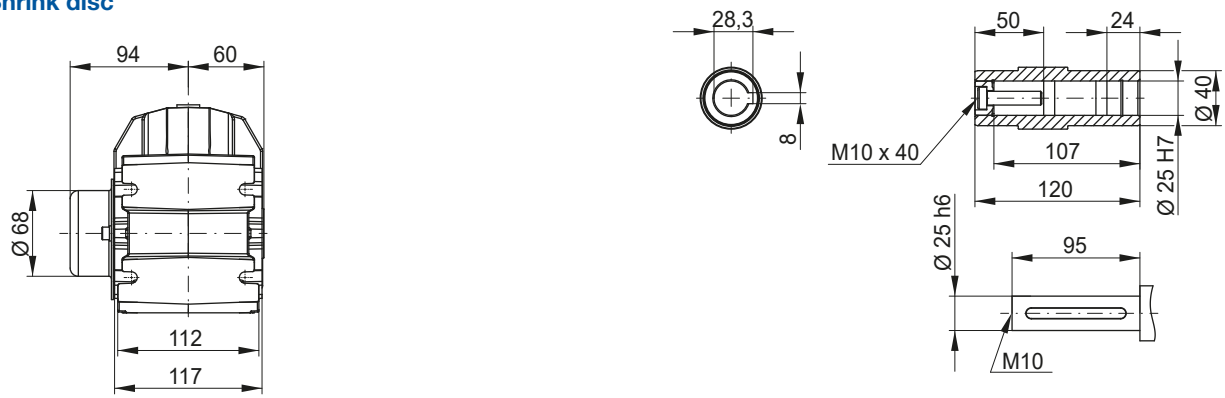
KH02 - Hollow shaft

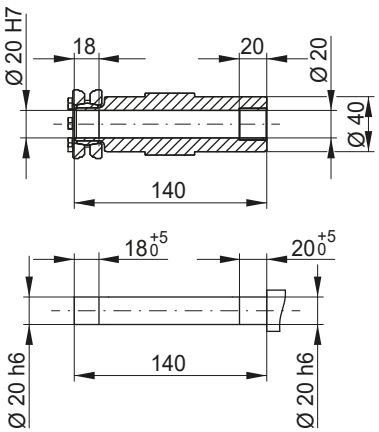


¹⁾ *incl. hollow shaft protection cap*

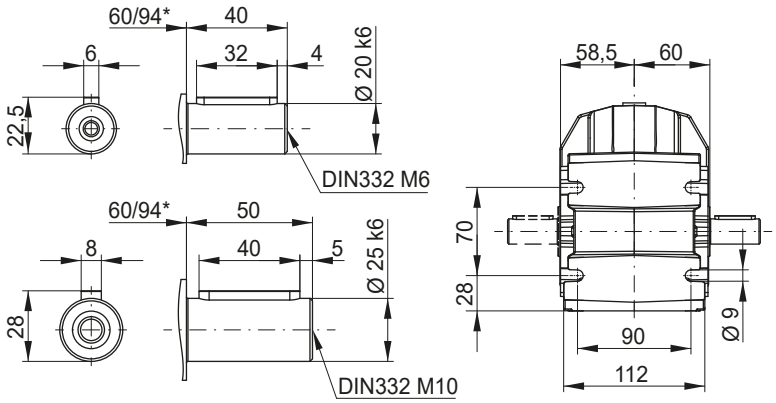
K

KD02 - Shrink disc





KS02 - Output shaft
KB02 - Output shaft on both sides

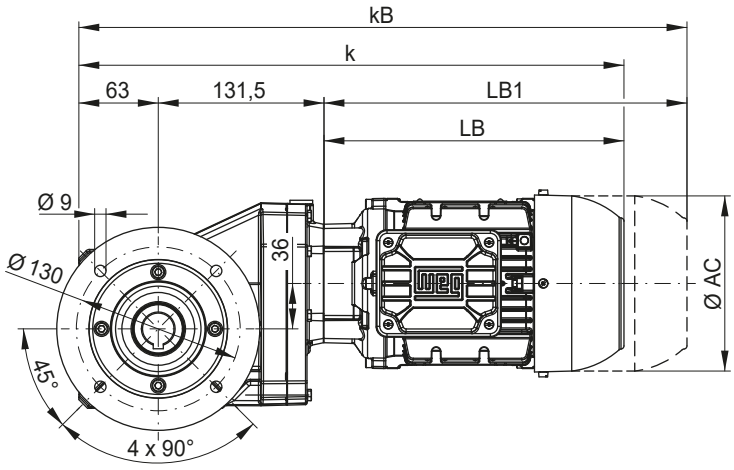


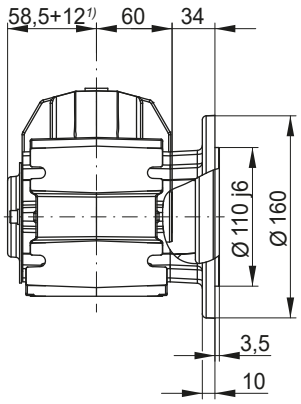
Motor fr. / Dimension	63	71	80	90S/L
AC	126	141	159	178
AD	125	133	142	152
k	399	433	441	483
kB	443	482	499	556
LB	204	238	246	288
LB1	248	287	304	361

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

**Designs KS(KB)/KF*

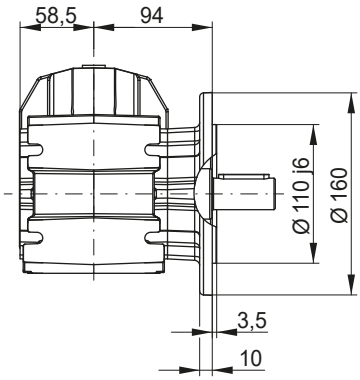
KO02 - B5 flange execution with hollow shaft



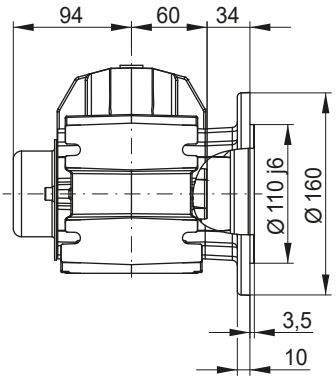


¹⁾ *incl. hollow shaft protection cap*

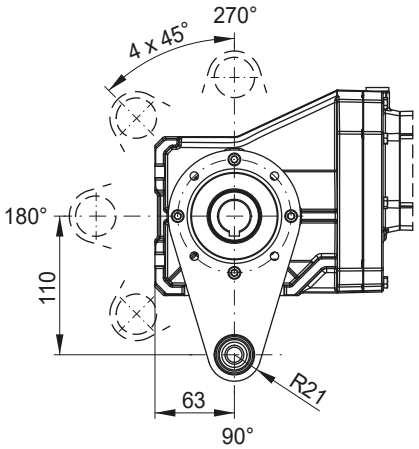
KF02 - B5 flange execution with output shaft

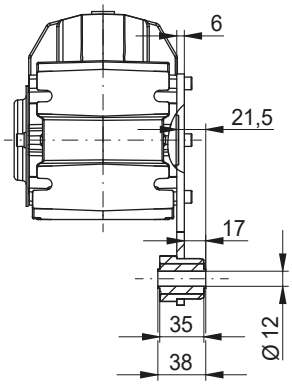


KP02 - B5 flange execution with hollow shaft and shrink disc



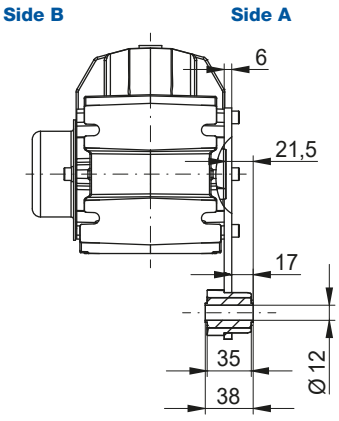
KT02 - Hollow shaft with torque arm **





Torque arm possible positions:
90 °, 135 °, 180 °, 225 °, 270 °

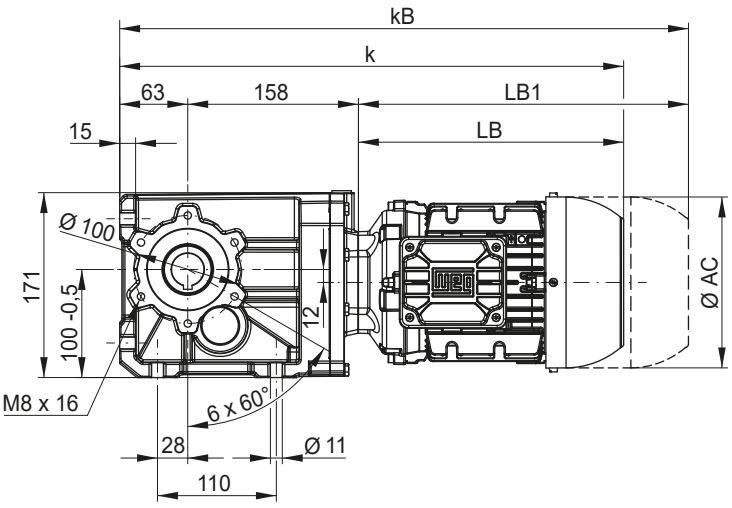
KU02 - Hollow shaft with shrink disc and torque arm **

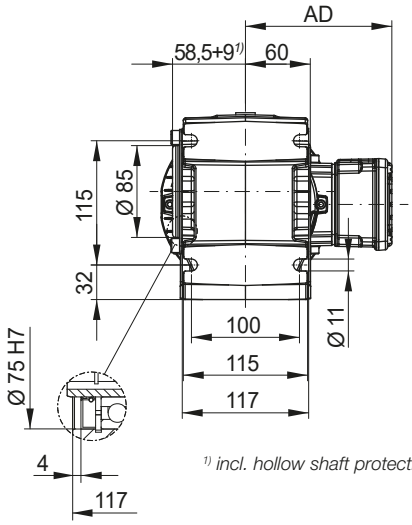


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

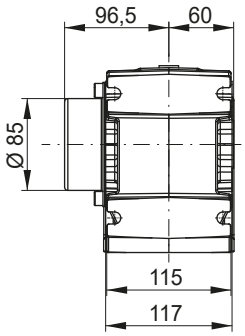
KH03 - Hollow shaft

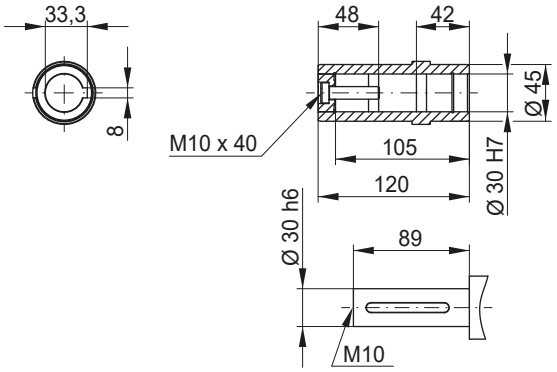


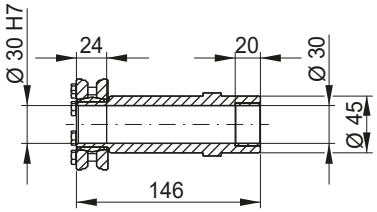


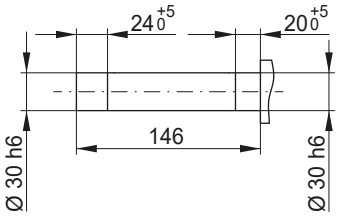
[1)] *incl. hollow shaft protection cap*

KD03 - Shrink disc

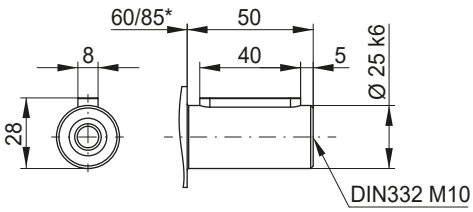


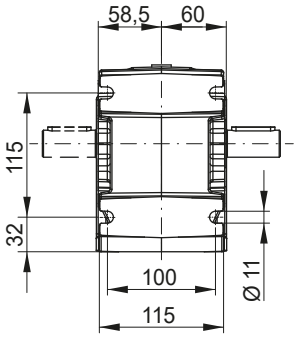






KS03 - Output shaft
KB03 - Output shaft on both sides



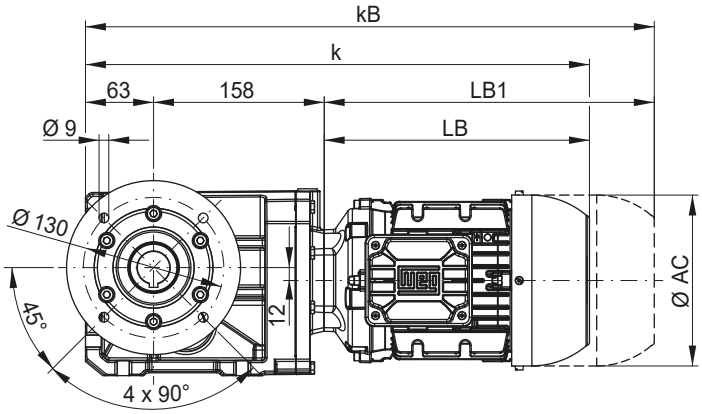


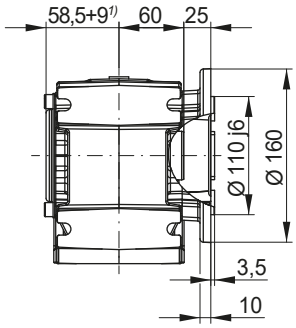
**Designs KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L
AC	126	141	159	178	199	199
AD	125	133	142	152	162	162
k	425	459	467	509	559	597
kB	469	508	525	582	643	681
LB	204	238	246	288	338	376
LB1	248	287	304	361	422	460

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

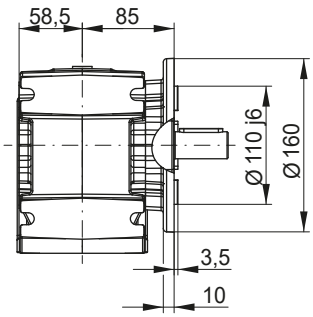
KO03 - B5 flange execution with hollow shaft



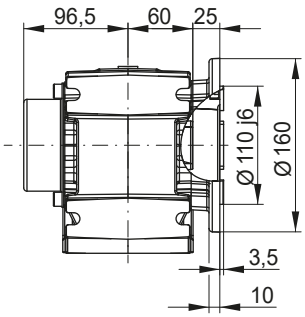


[1)] *incl. hollow shaft protection cap*

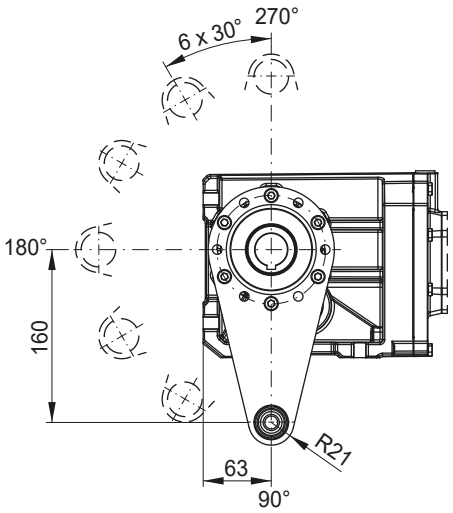
KF03 - B5 flange execution with output shaft

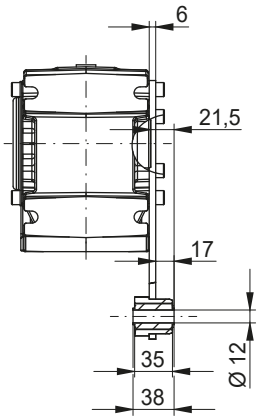


KP03 - B5 flange execution with hollow shaft and shrink disc



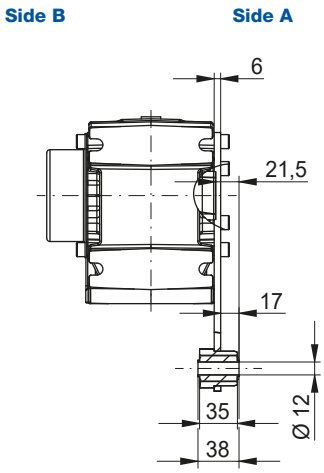
KT03 - Hollow shaft with torque arm **





Torque arm possible positions:
90 °, 120 °, 150 °, 180 °, 210 °, 240 °, 270 °

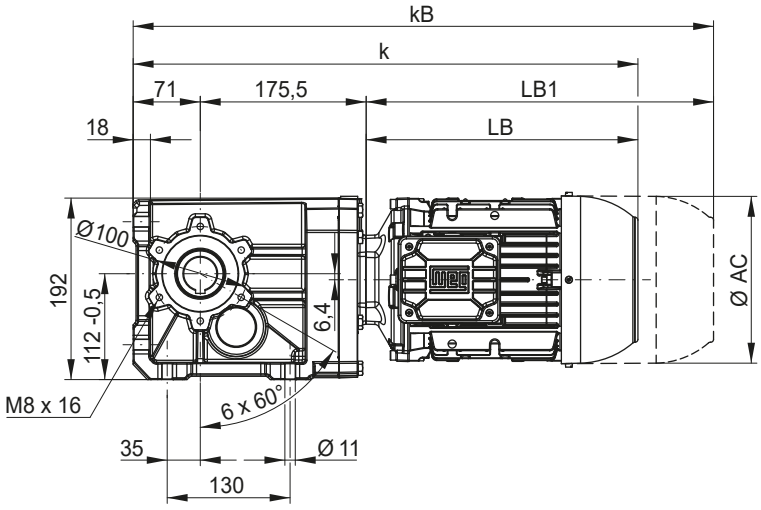
KU03 - Hollow shaft with shrink disc and torque arm **

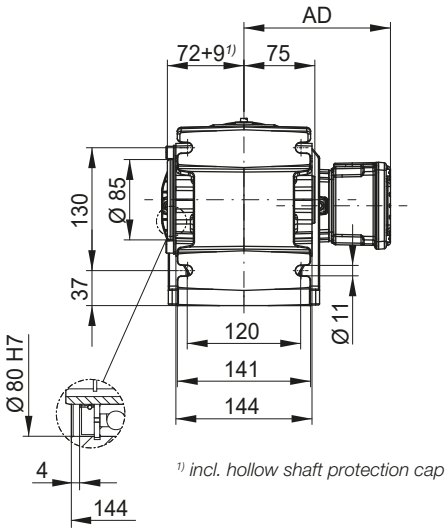


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

KH04 - Hollow shaft

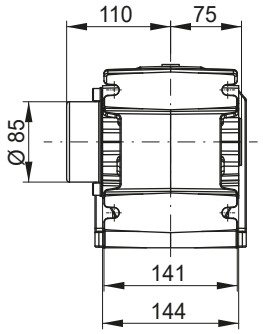


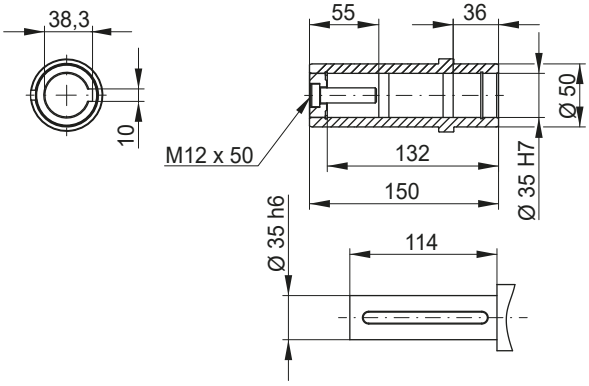


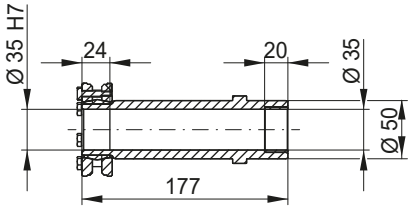
¹⁾ *incl. hollow shaft protection cap*

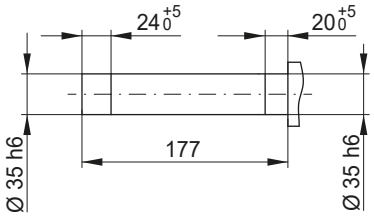
K

KD04 - Shrink disc

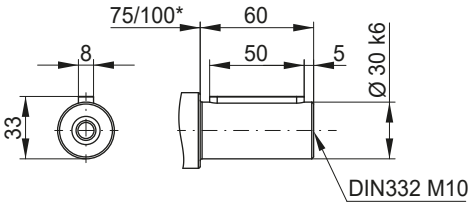


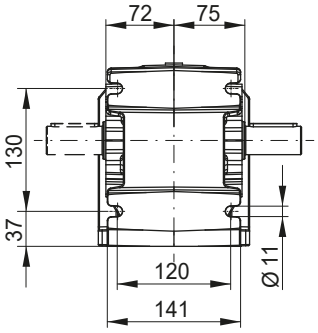






KS04 - Output shaft
KB04 - Output shaft on both sides



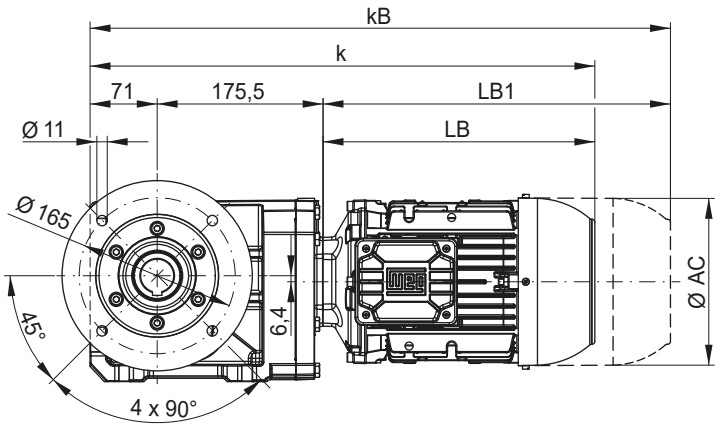


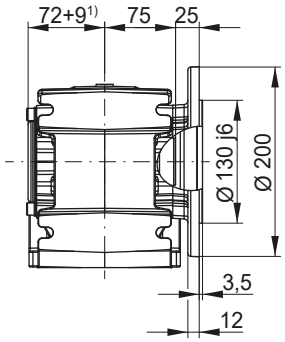
**Designs KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M
AC	126	141	159	178	199	199	221
AD	125	133	142	152	162	162	180
k	451	485	493	535	585	623	595
kB	495	534	551	608	669	707	682
LB	204	238	246	288	338	376	348
LB1	248	287	304	361	422	460	435

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

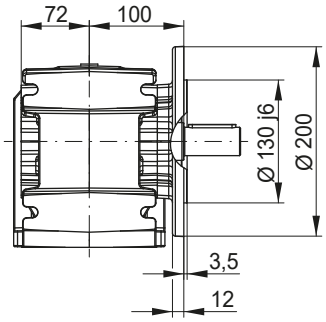
KO04 - B5 flange execution with hollow shaft



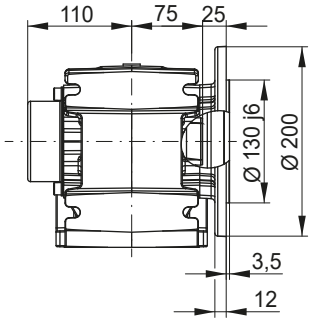


[1)] *incl. hollow shaft protection cap*

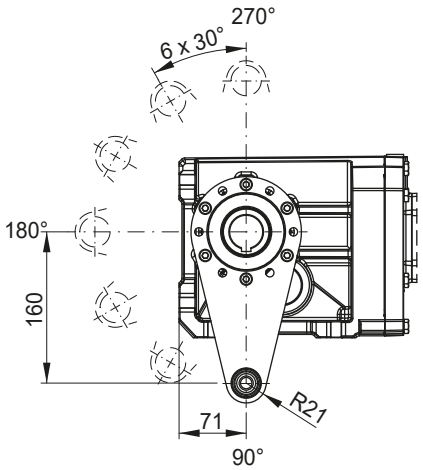
KF04 - B5 flange execution with output shaft



KP04 - B5 flange execution with hollow shaft and shrink disc

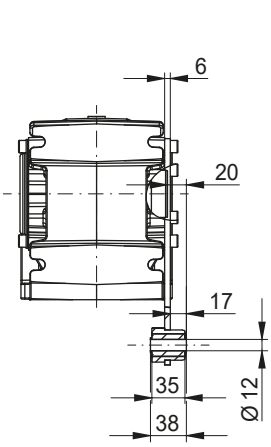


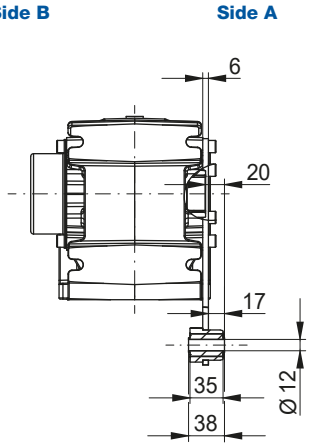
KT04 - Hollow shaft with torque arm **



Torque arm possible positions:
90 °, 120 °, 150 °, 180 °, 210 °, 240 °, 270 °

KU04 - Hollow shaft with shrink disc and torque arm **

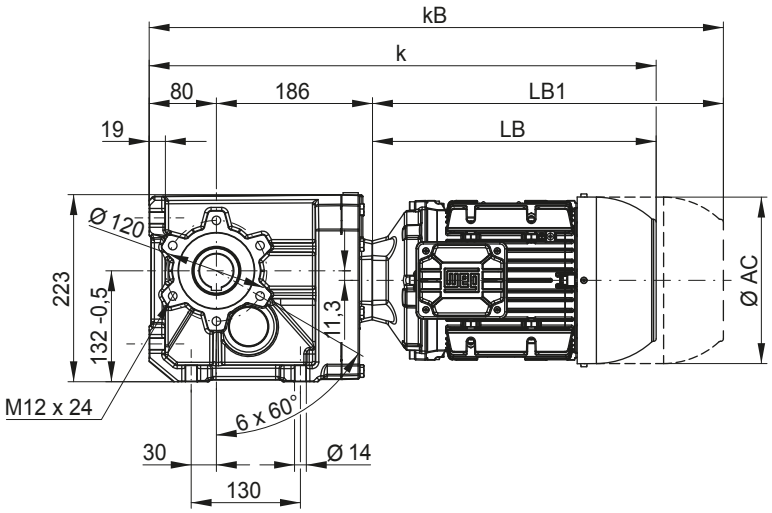


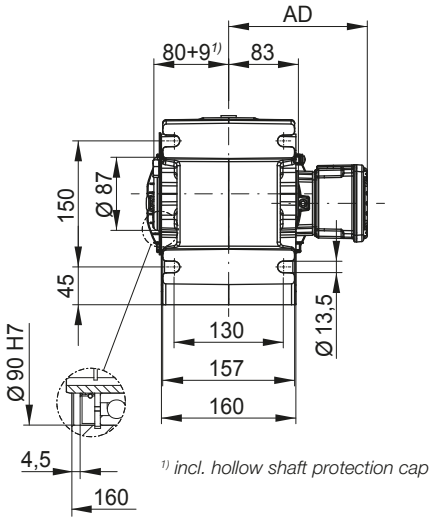


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

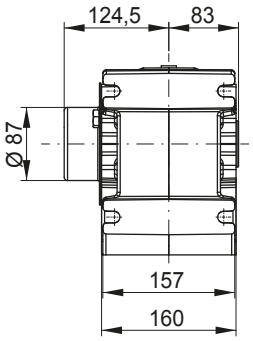
KH05 - Hollow shaft

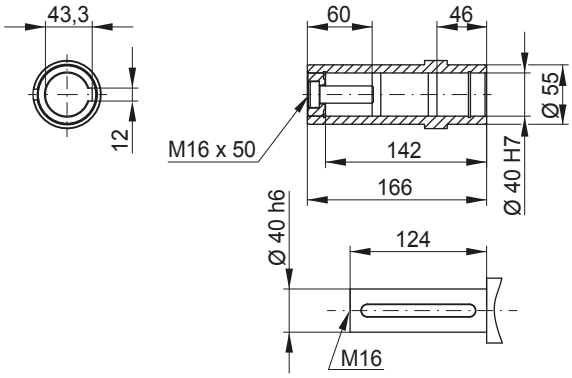


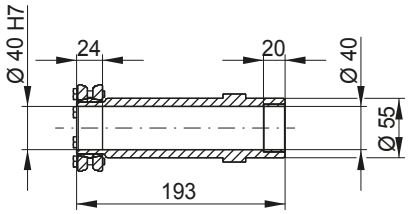


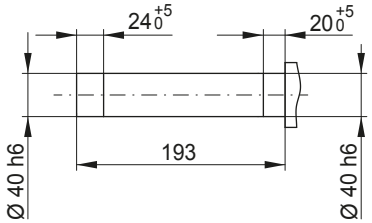
¹⁾ *incl. hollow shaft protection cap*

KD05 - Shrink disc

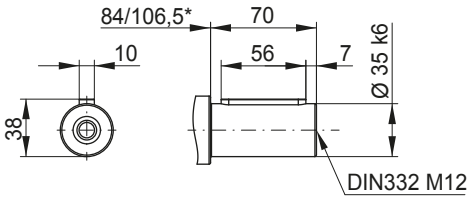


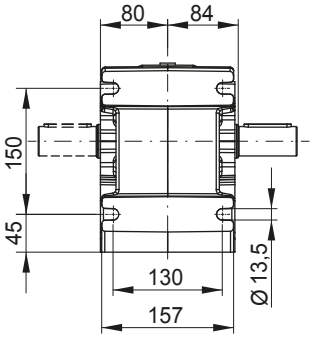






KS05 - Output shaft
KB05 - Output shaft on both sides



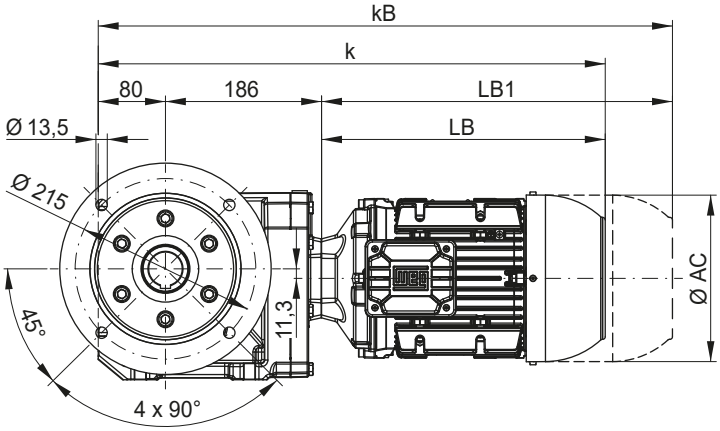


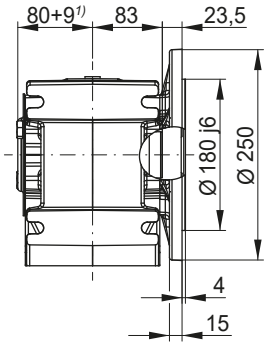
**Design KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	470	504	512	554	604	642	614	679	717
kB	514	553	570	627	688	726	701	797	835
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

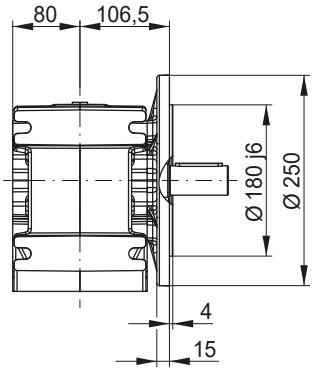
KO05 - B5 flange execution with hollow shaft



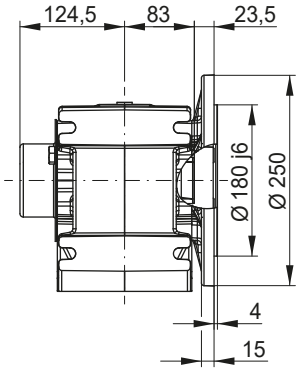


[1)] *incl. hollow shaft protection cap*

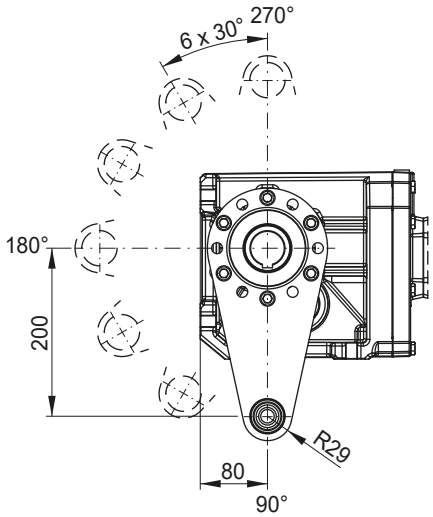
KF05 - B5 flange execution with output shaft



KP05 - B5 flange execution with hollow shaft and shrink disc

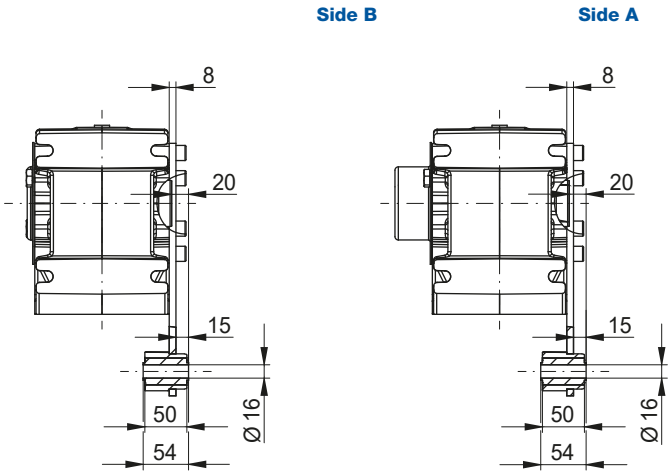


KT05 - Hollow shaft with torque arm **



Torque arm possible positions:
90 °, 120 °, 150 °, 180 °, 210 °, 240 °, 270 °

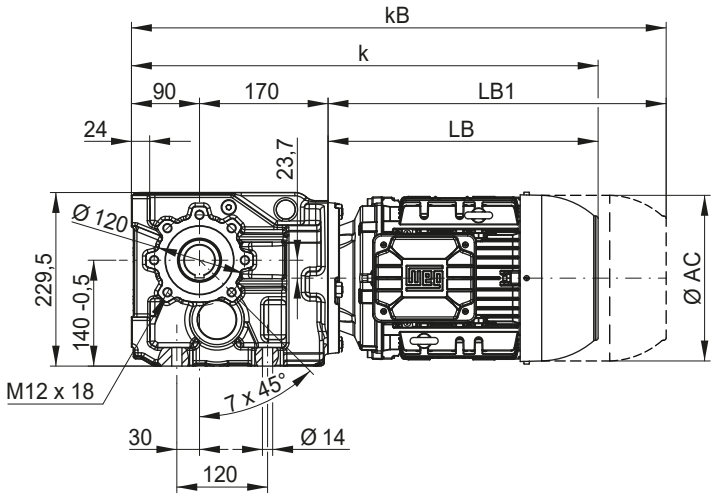
KU05 - Hollow shaft with shrink disc and torque arm **

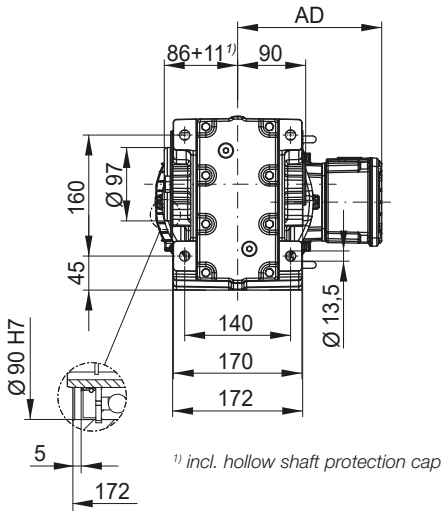


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

KH06 - Hollow shaft

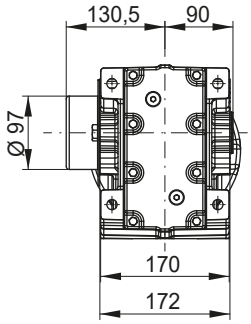


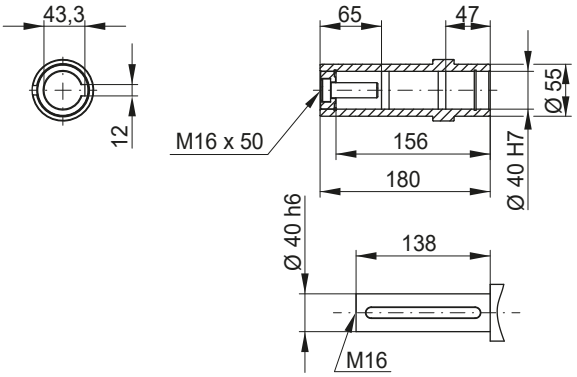


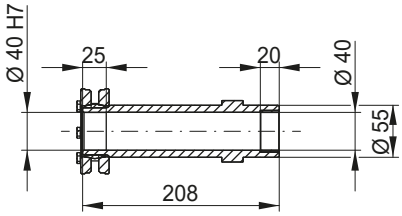
1) *incl. hollow shaft protection cap*

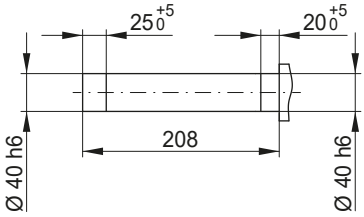
K

KD06 - Shrink disc

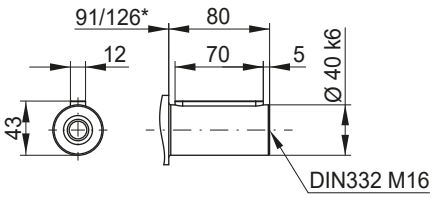


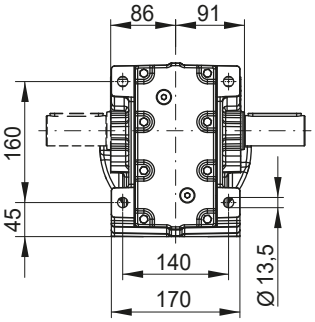






KS06 - Output shaft
KB06 - Output shaft on both sides



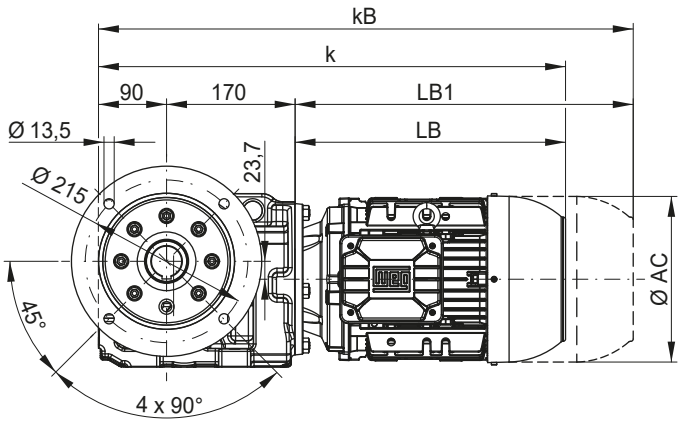


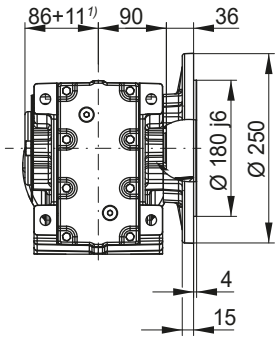
**Designs KS(KB)/KF*

Dimension \ Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
k	464	498	506	548	598	636	608	673	711
kB	508	547	564	621	682	720	695	791	829
LB	204	238	246	288	338	376	348	413	451
LB1	248	287	304	361	422	460	435	531	569

Motor dimension sheets see page 380. Description of motor lengths LB and LB1 see page 384.

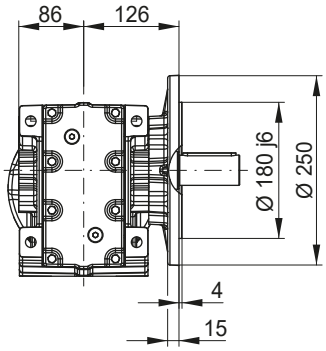
KO06 - B5 flange execution with hollow shaft



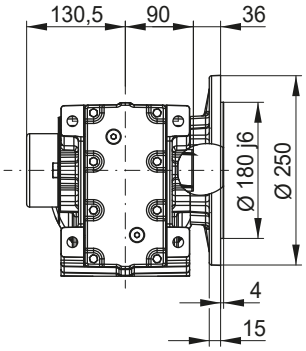


1) incl. hollow shaft protection cap

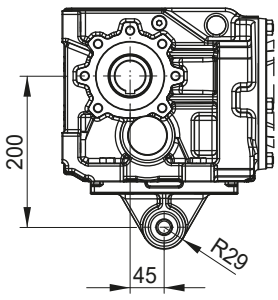
KF06 - B5 flange execution with output shaft

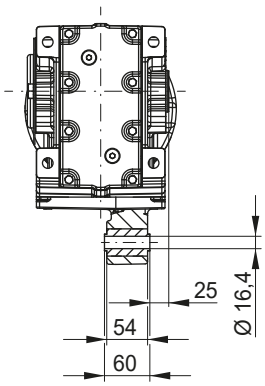


KP06 - B5 flange execution with hollow shaft and shrink disc

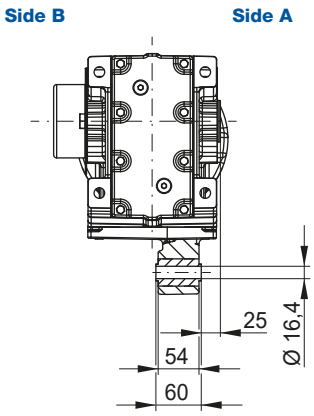


KT06 - Hollow shaft with torque arm **





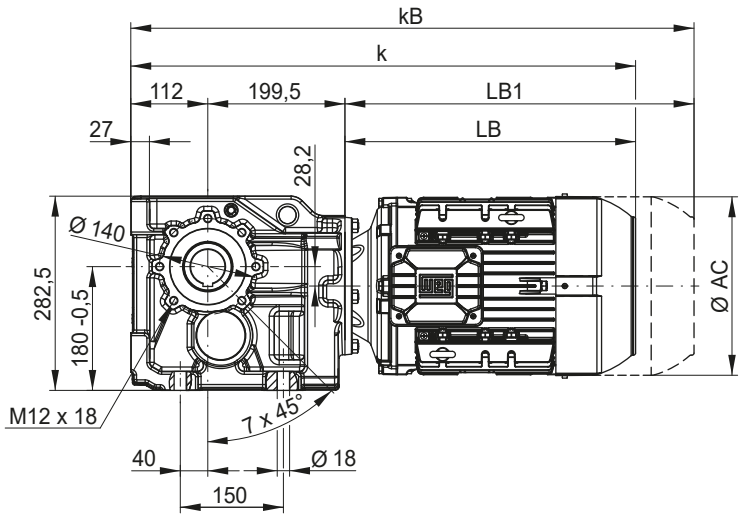
KU06 - Hollow shaft with shrink disc and torque arm **

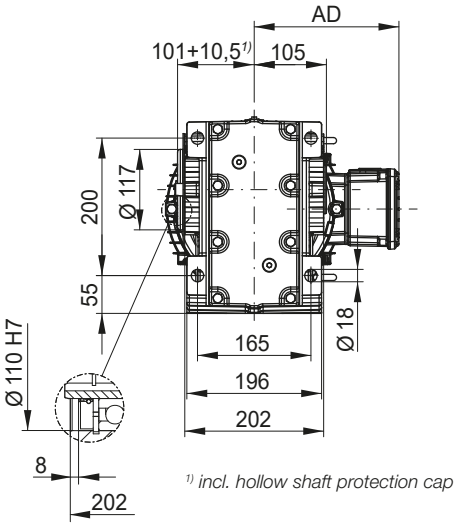


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

KH07 - Hollow shaft

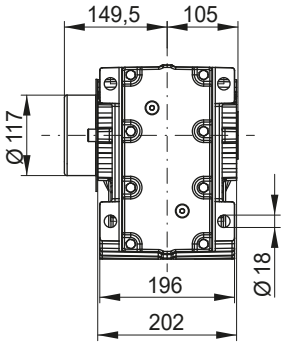


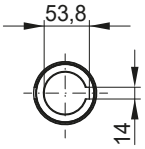


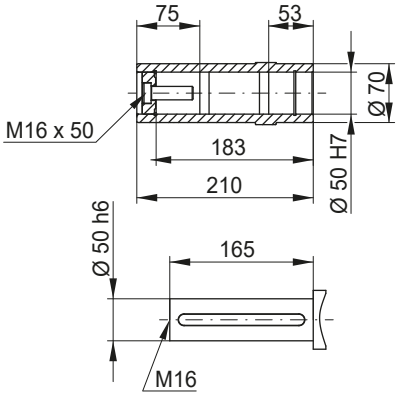
¹⁾ *incl. hollow shaft protection cap*

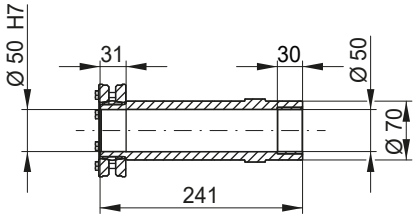
K

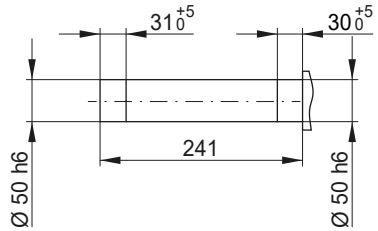
KD07 - Shrink disc



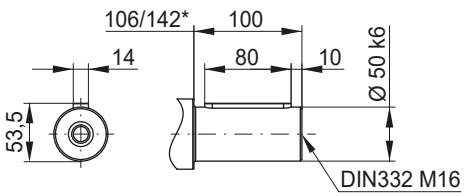


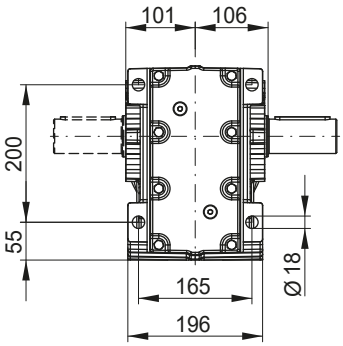






KS07 - Output shaft
KB07 - Output shaft on both sides



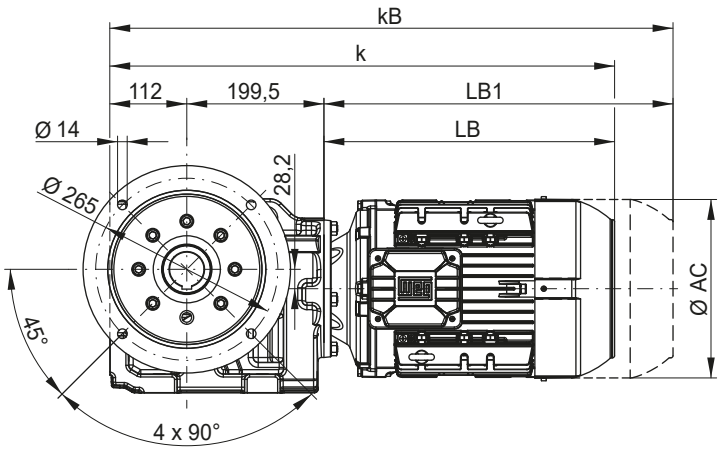


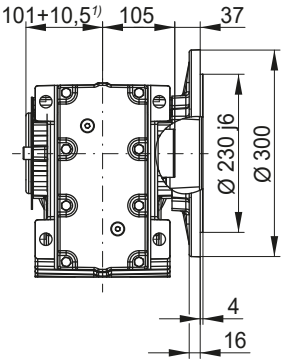
**Designs KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L
AC	126	141	159	178	199	199	221	261	261	329	329
AD	125	133	142	152	162	162	180	200	200	266	266
k	516	550	558	600	650	688	660	725	763	857	901
kB	560	599	616	673	734	772	747	843	881	981	1025
LB	204	238	246	288	338	376	348	413	451	545	589
LB1	248	287	304	361	422	460	435	531	569	669	713

Motor dimension sheets see page 380; Gear unit size K07 corresponds to motor flange FR-200. Description of motor lengths LB and LB1 see page 384.

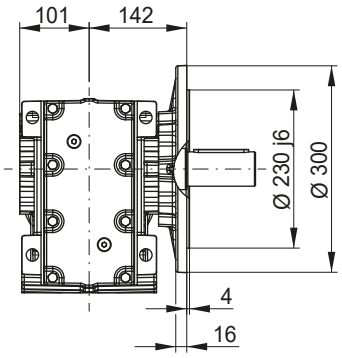
KO07 - B5 flange execution with hollow shaft



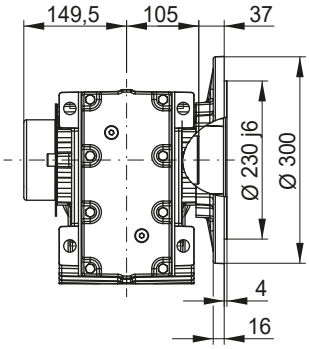


¹⁾ incl. hollow shaft protection cap

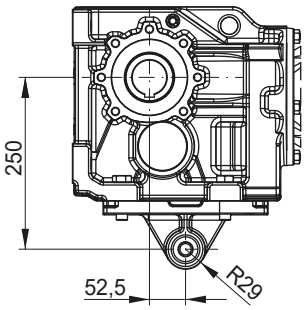
KF07 - B5 flange execution with output shaft

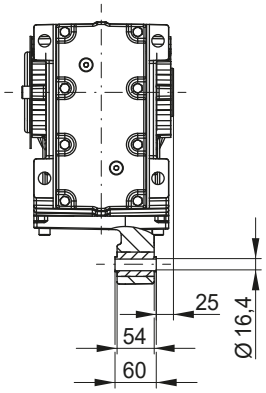


KP07 - B5 flange execution with hollow shaft and shrink disc

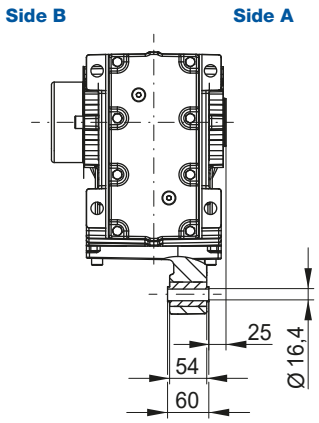


KT07 - Hollow shaft with torque arm **





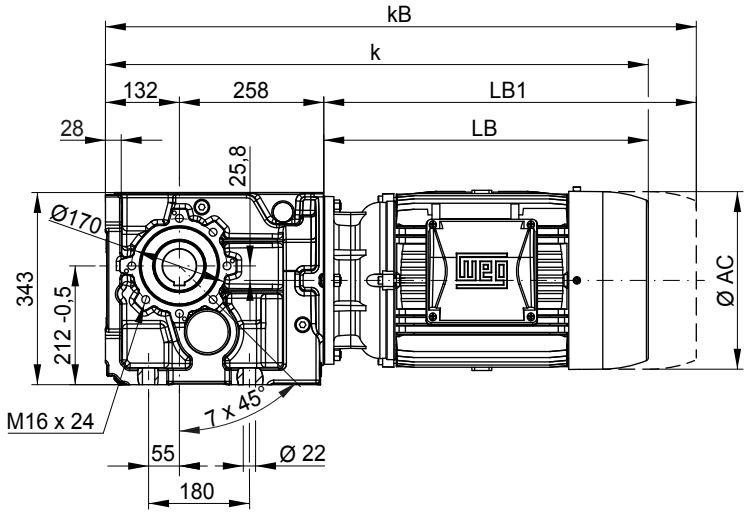
KU07 - Hollow shaft with shrink disc and torque arm **

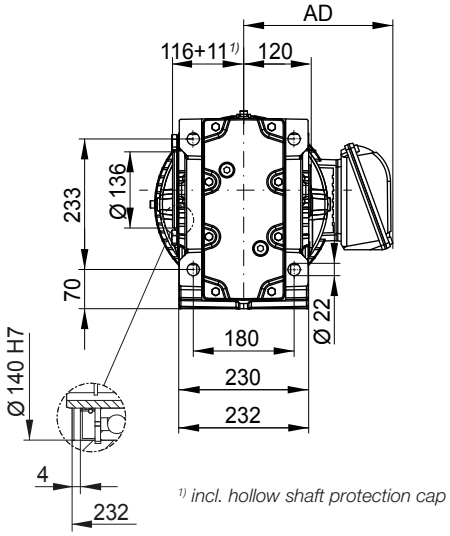


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

KH08 - Hollow shaft

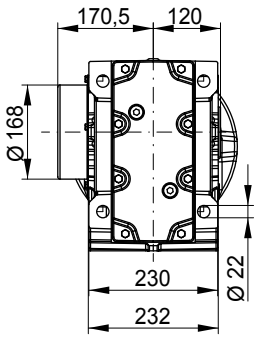


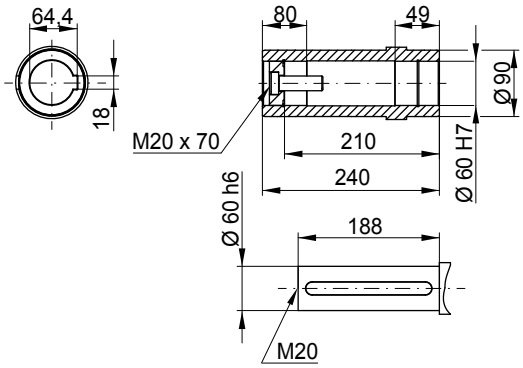


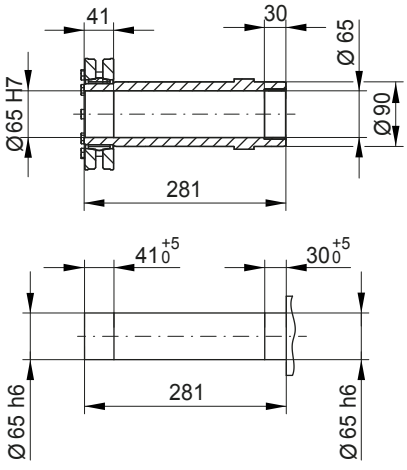
¹⁾ *incl. hollow shaft protection cap*

K

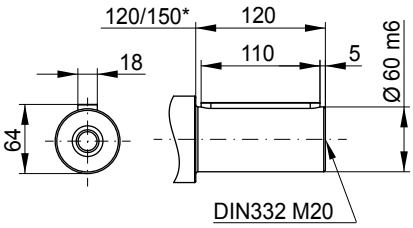
KD08 - Shrink disc

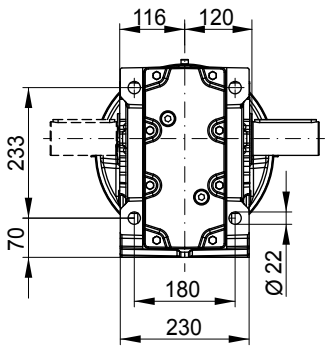






KS08 - Output shaft
KB08 - Output shaft on both sides



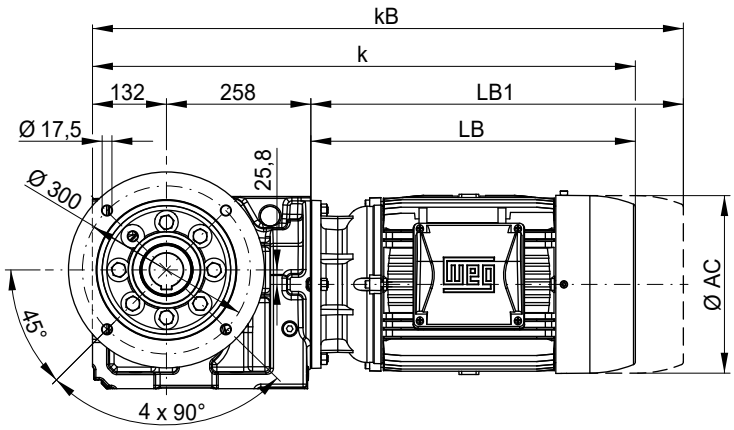


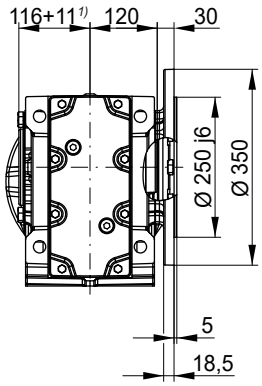
**Designs KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347
AD	125	133	142	152	162	162	180	200	200	266	266	281	281
k	594	628	636	678	728	766	738	803	841	925	969	993	1031
kB	638	677	694	751	812	850	825	921	959	1049	1093	1111	1149
LB	204	238	246	288	338	376	348	413	451	535	579	603	641
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759

Motor dimension sheets see page 380; Gear unit size K08 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

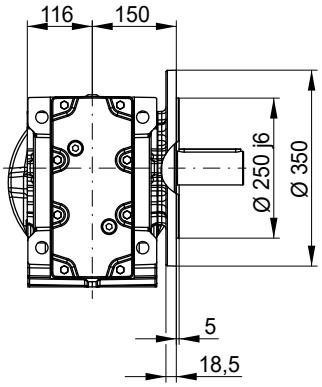
KO08 - B5 flange execution with hollow shaft



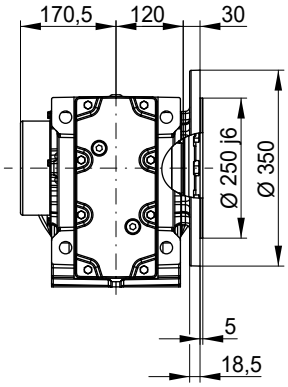


1) incl. hollow shaft protection cap

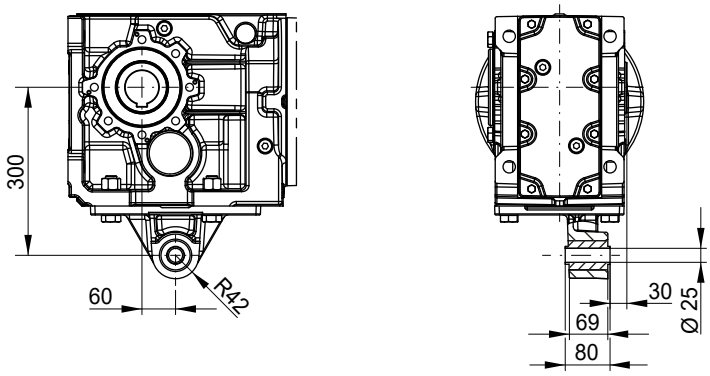
KF08 - B5 flange execution with output shaft



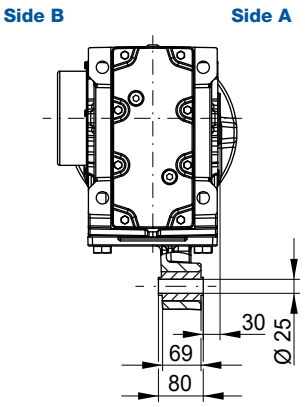
KP08 - B5 flange execution with hollow shaft and shrink disc



KT08 - Hollow shaft with torque arm **



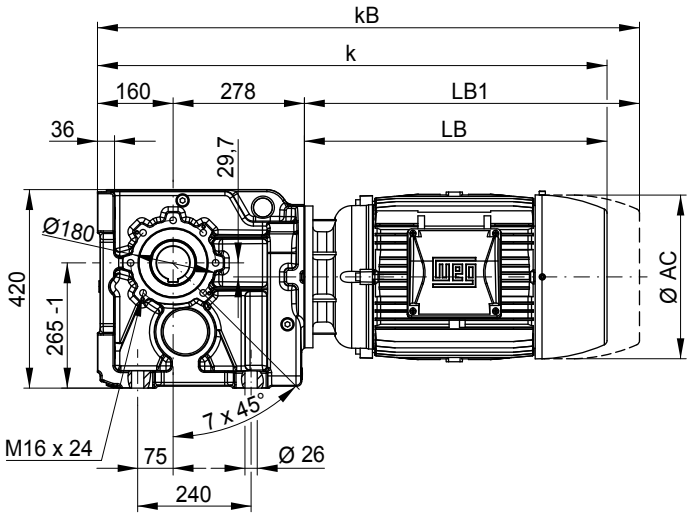
KU08 - Hollow shaft with shrink disc and torque arm **

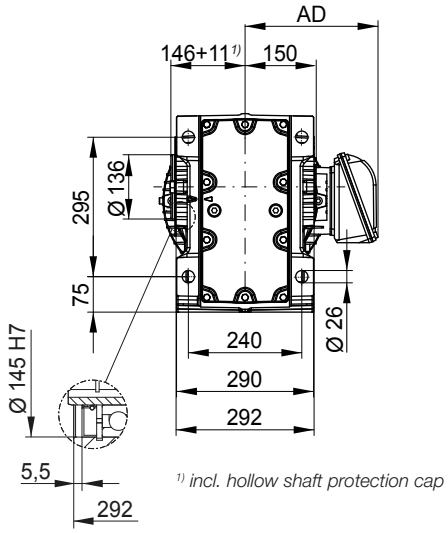


Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

KH09 - Hollow shaft

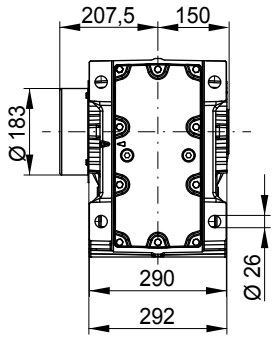


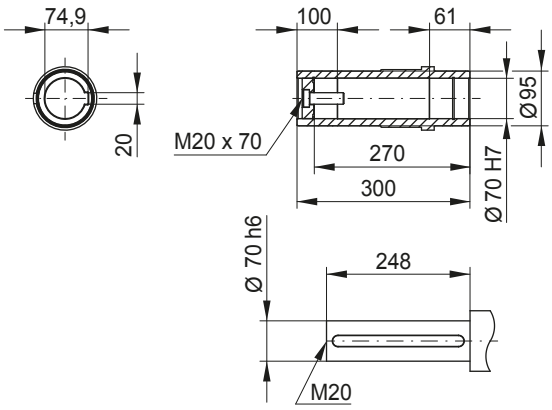


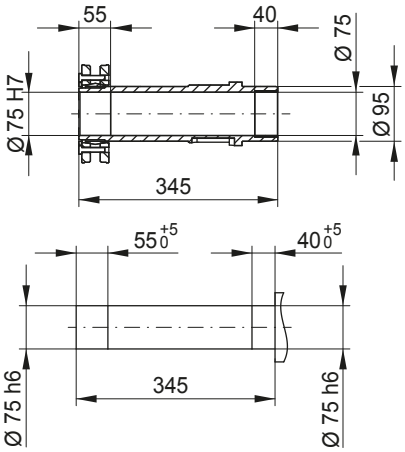
1) incl. hollow shaft protection cap

K

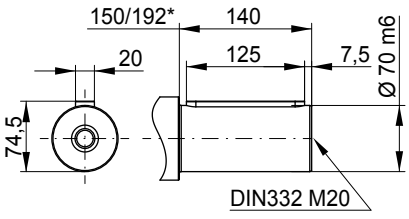
KD09 - Shrink disc

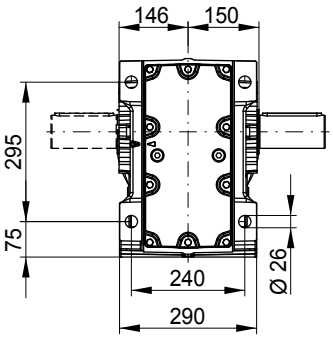






KS09 - Output shaft
KB09 - Output shaft on both sides



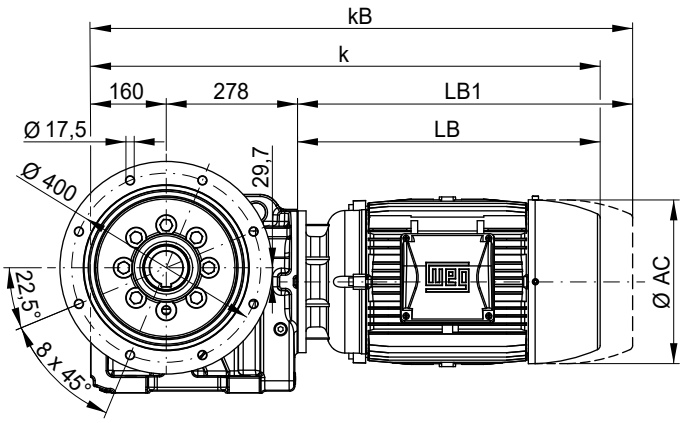


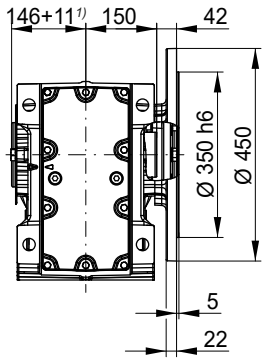
**Designs KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L
AC	126	141	159	178	199	199	221	261	261	329	329	347	347	386
AD	128	136	145	155	165	165	185	205	205	266	266	281	281	317
k	642	676	684	726	776	814	786	851	889	973	1017	1041	1079	1171
kB	686	725	742	799	860	898	873	969	1007	1097	1141	1159	1197	1297
LB	204	238	246	288	338	376	348	413	451	535	579	603	641	733
LB1	248	287	304	361	422	460	435	531	569	659	703	721	759	859

Motor dimension sheets see page 380; Gear unit size K09 corresponds to motor flange FR-300. Description of motor lengths LB and LB1 see page 384.

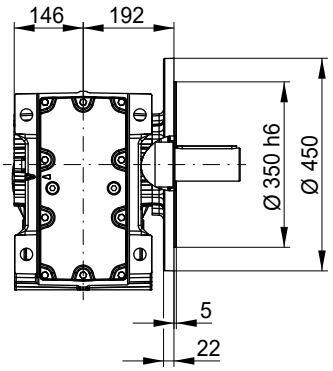
KO09 - B5 flange execution with hollow shaft



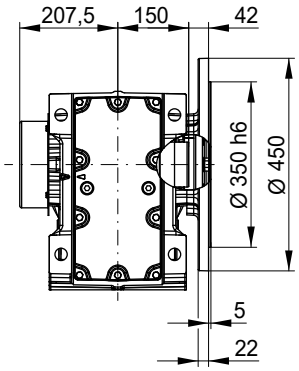


[1)] *incl. hollow shaft protection cap*

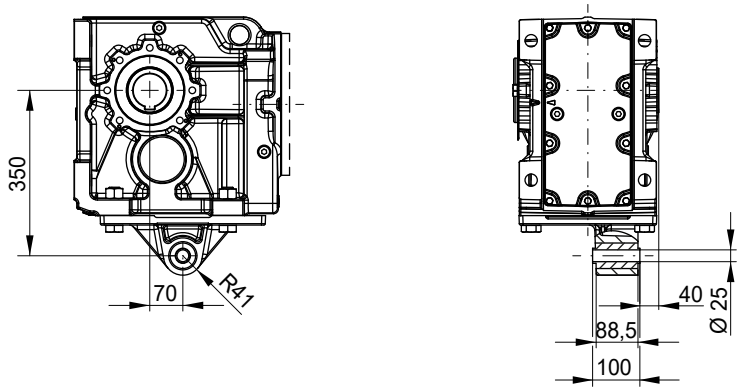
KF09 - B5 flange execution with output shaft



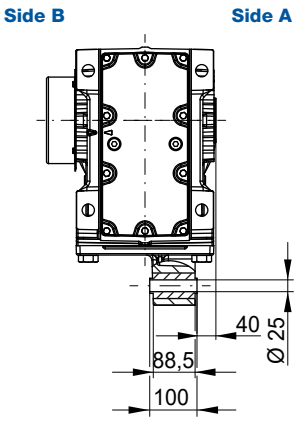
KP09 - B5 flange execution with hollow shaft and shrink disc



KT09 - Hollow shaft with torque arm **



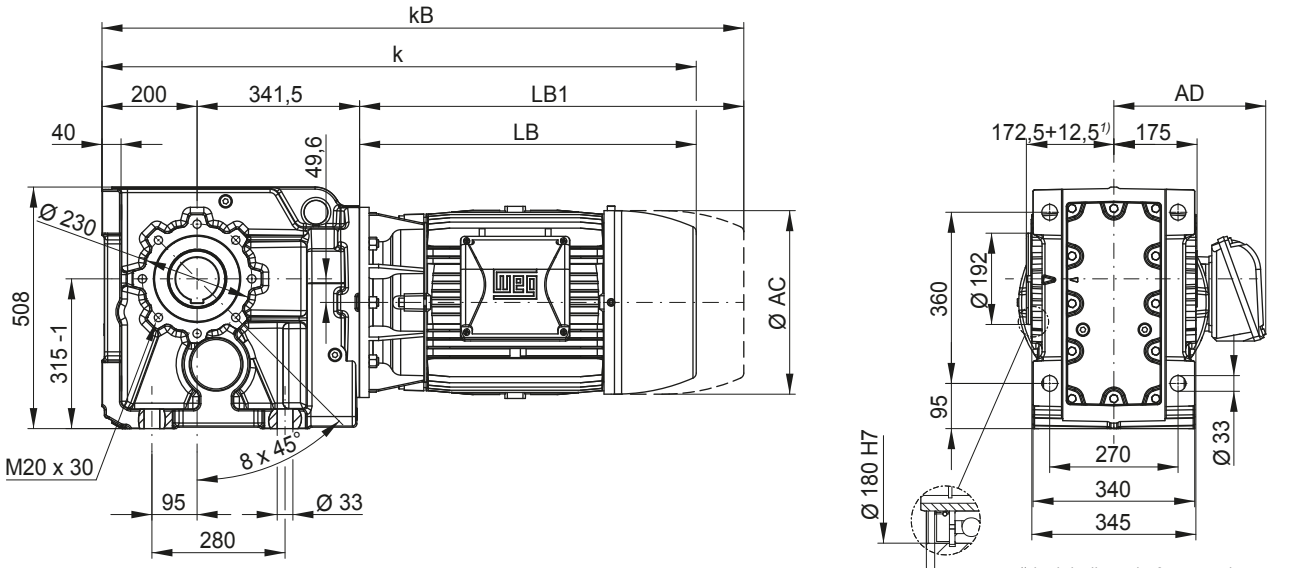
KU09 - Hollow shaft with shrink disc and torque arm **



Dimensions in mm.

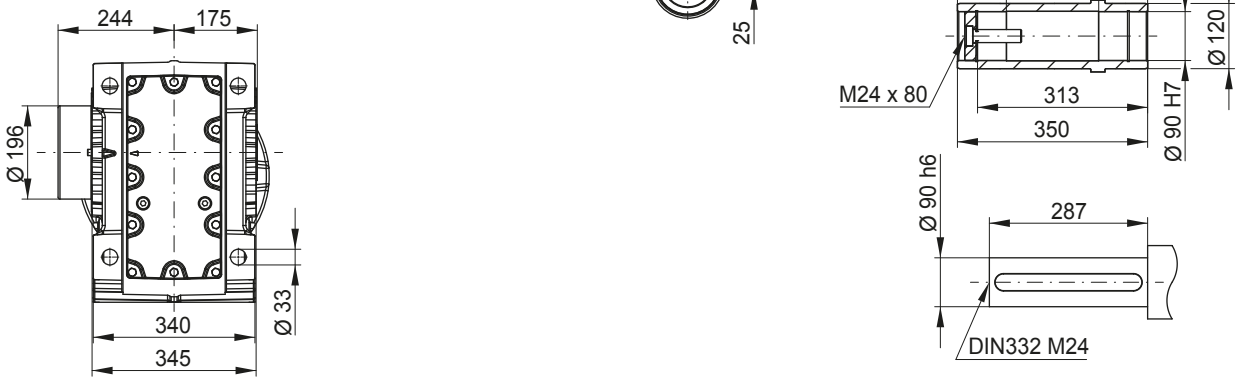
*** Torque arm may be mounted on side A or side B.*

KH10 - Hollow shaft

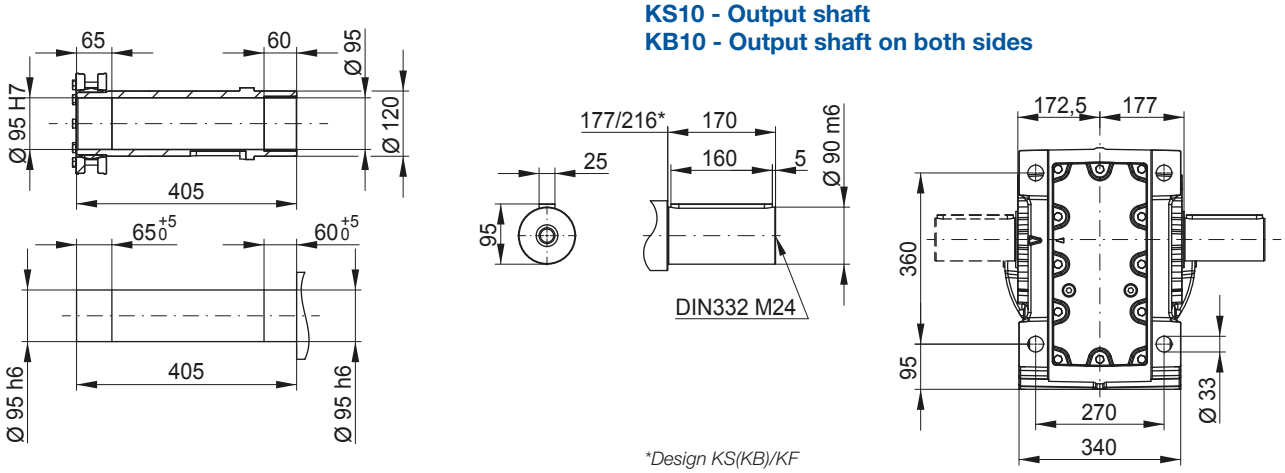


K

KD10 - Shrink disc



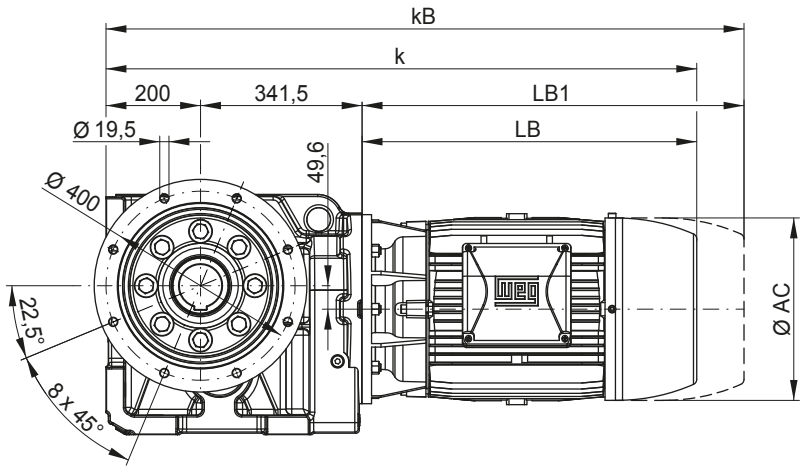
KS10 - Output shaft
KB10 - Output shaft on both sides

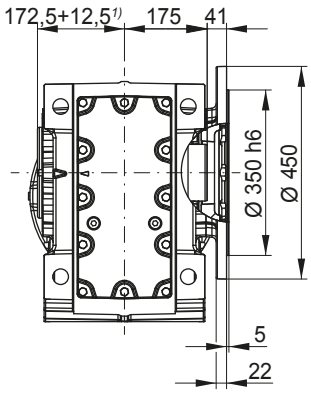


Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	890	955	993	1064	1108	1132	1170	1262	1370
kB	-	-	-	-	-	-	977	1073	1111	1188	1232	1250	1288	1388	1488
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size K10 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

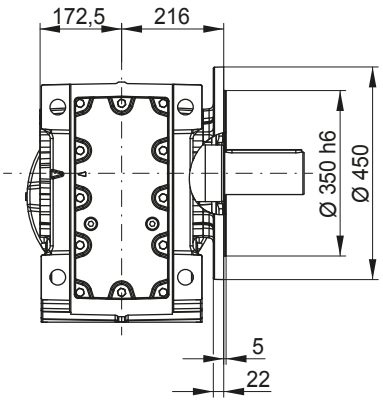
KO10 - B5 flange execution with hollow shaft



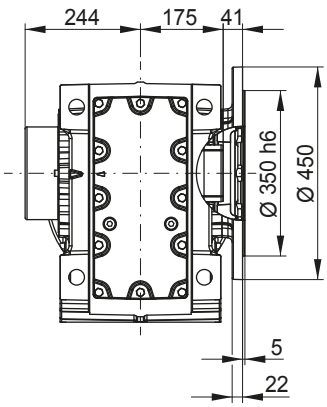


[1)] *incl. hollow shaft protection cap*

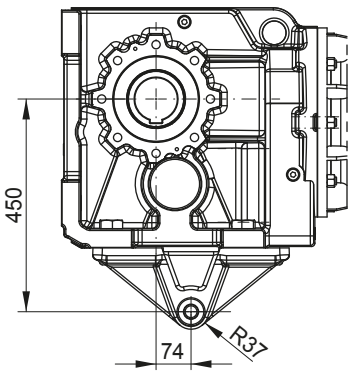
KF10 - B5 flange execution with output shaft



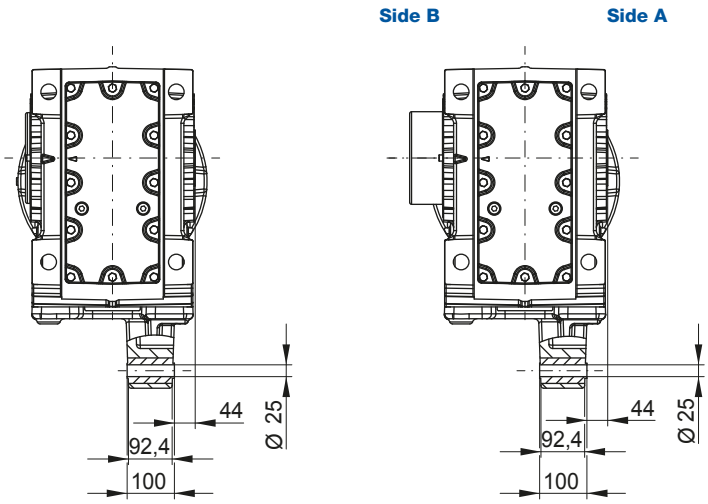
KP10 - B5 flange execution with hollow shaft and shrink disc



KT10 - Hollow shaft with torque arm **



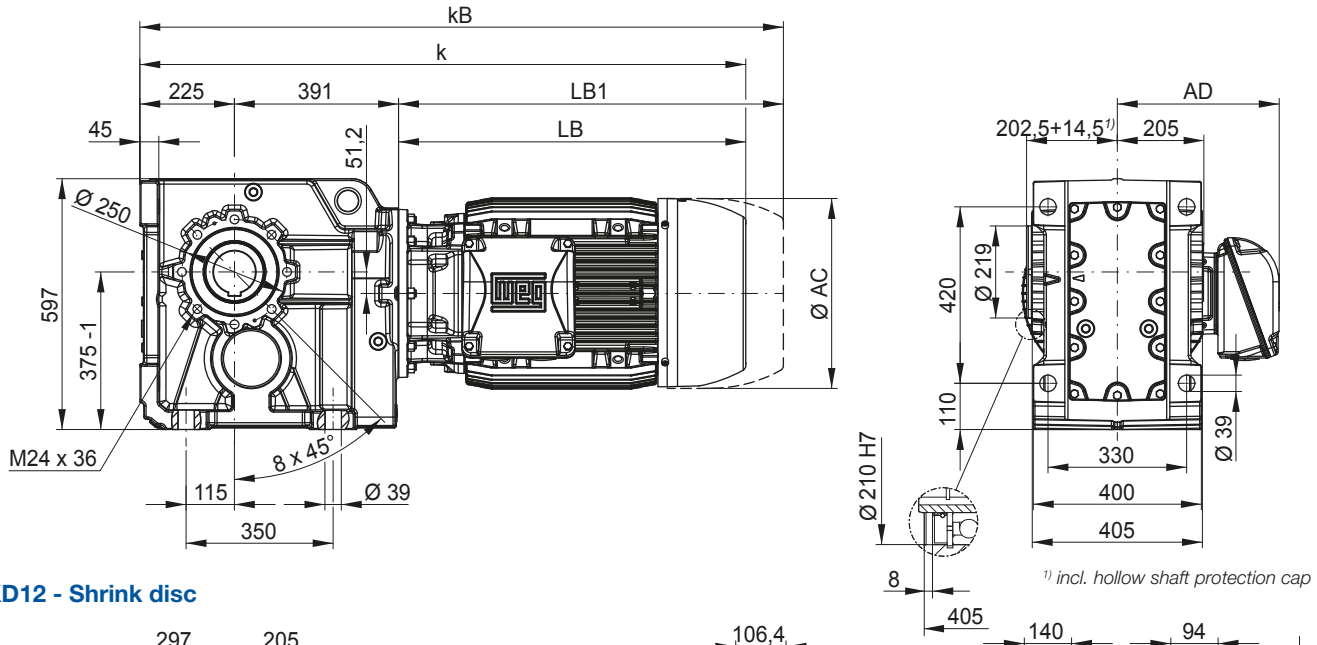
KU10 - Hollow shaft with shrink disc and torque arm **



Dimensions in mm.

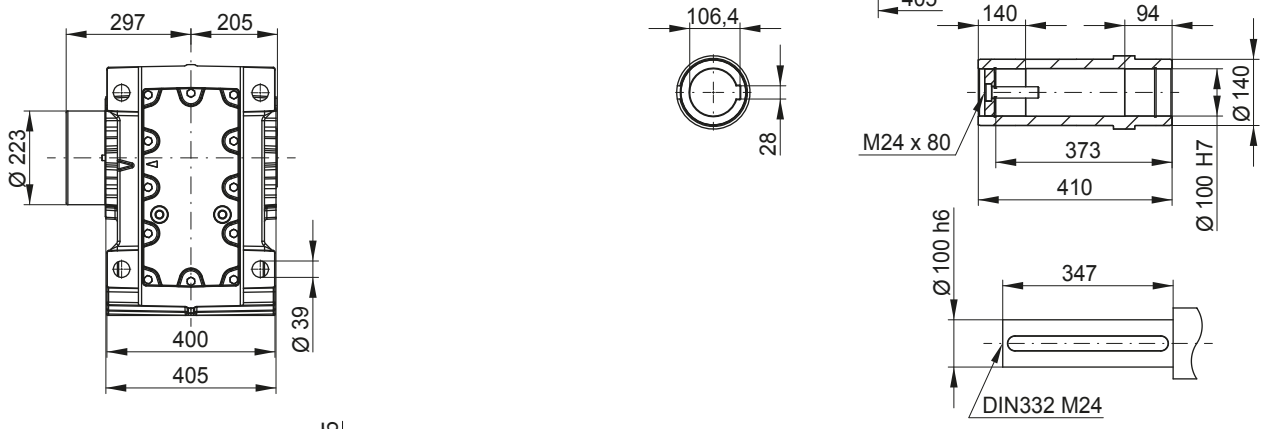
*** Torque arm may be mounted on side A or side B.*

KH12 - Hollow shaft

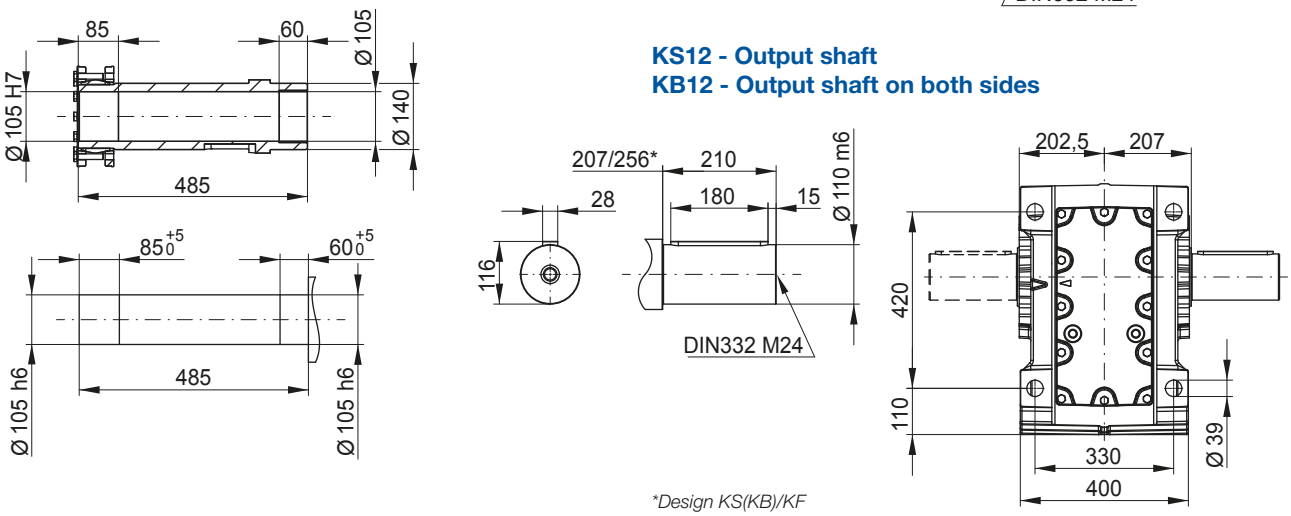


¹⁾ *incl. hollow shaft protection cap*

KD12 - Shrink disc



KS12 - Output shaft
KB12 - Output shaft on both sides

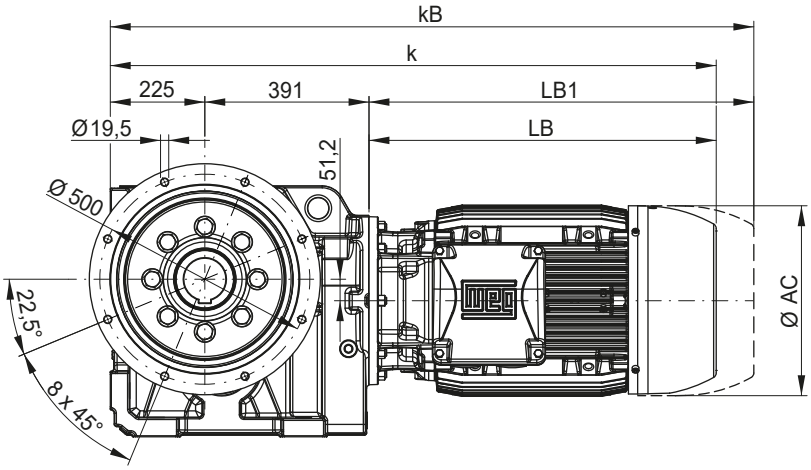


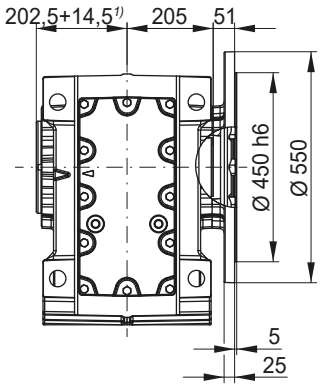
**Design KS(KB)/KF*

Dimension \ Motor fr.	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M
AC	-	-	-	-	-	-	221	261	261	329	329	347	347	386	453
AD	-	-	-	-	-	-	180	200	200	266	266	281	281	317	385
k	-	-	-	-	-	-	964	1029	1067	1138	1182	1206	1244	1336	1444
kB	-	-	-	-	-	-	1051	1147	1185	1262	1306	1324	1362	1462	1562
LB	-	-	-	-	-	-	348	413	451	522	566	590	628	720	828
LB1	-	-	-	-	-	-	435	531	569	646	690	708	746	846	946

Motor dimension sheets see page 380; Gear unit size K12 corresponds to motor flange FR-400. Description of motor lengths LB and LB1 see page 384.

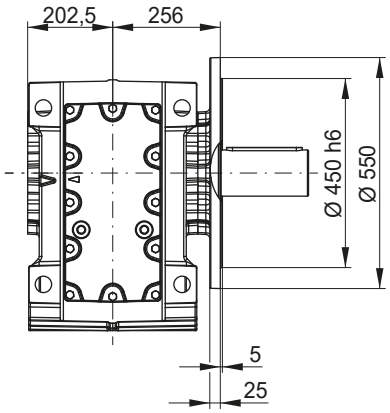
KO12 - B5 flange execution with hollow shaft



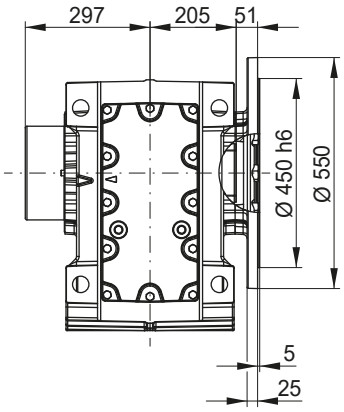


¹⁾ *incl. hollow shaft protection cap*

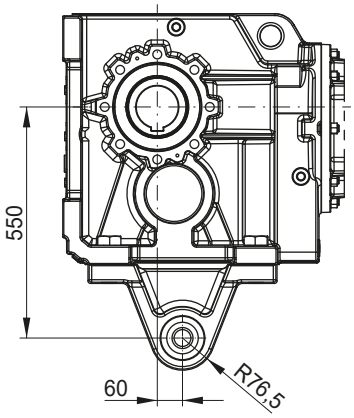
KF12 - B5 flange execution with output shaft



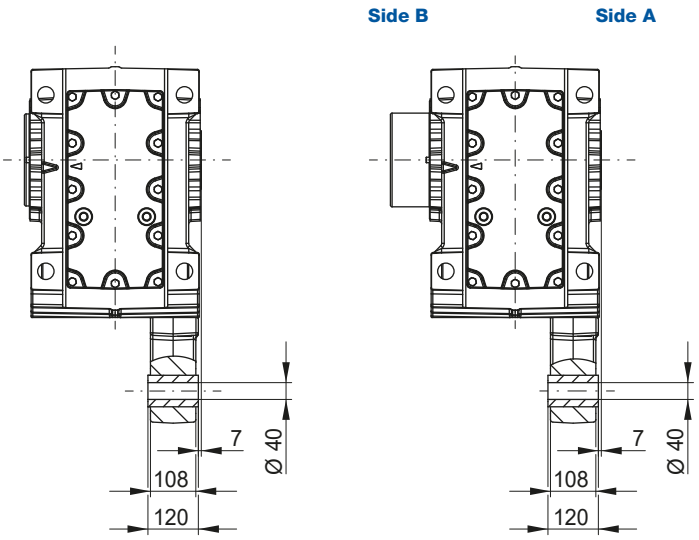
KP12 - B5 flange execution with hollow shaft and shrink disc



KT12 - Hollow shaft with torque arm **



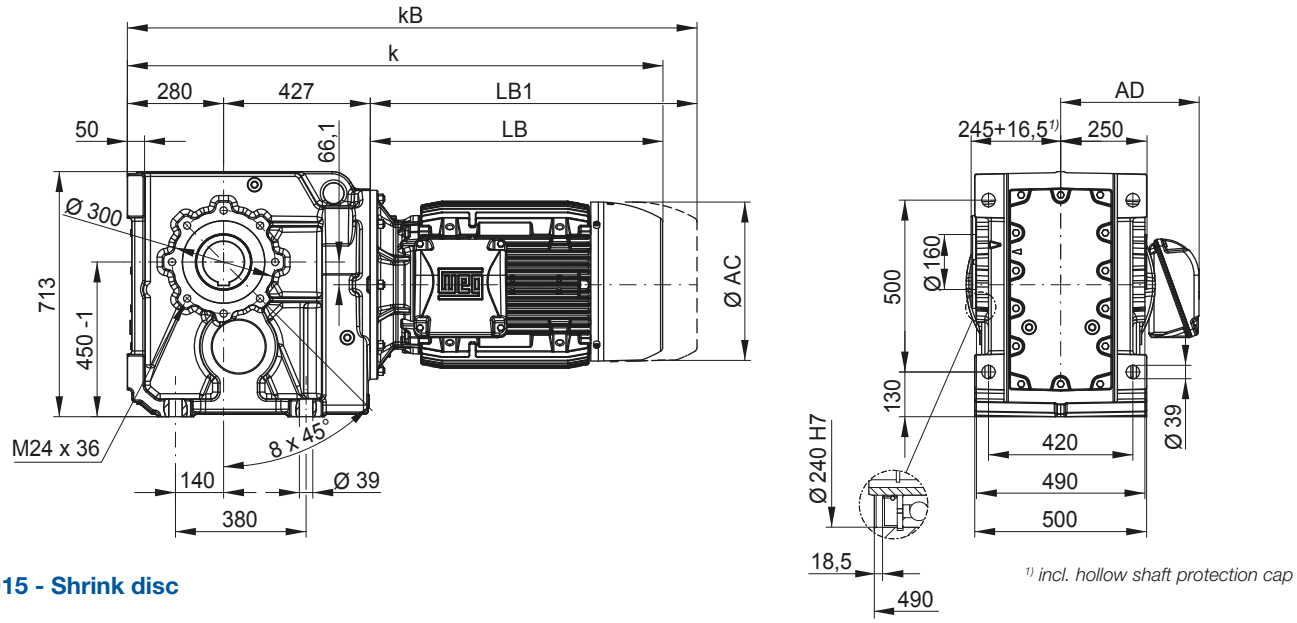
KU12 - Hollow shaft with shrink disc and torque arm **



Dimensions in mm.

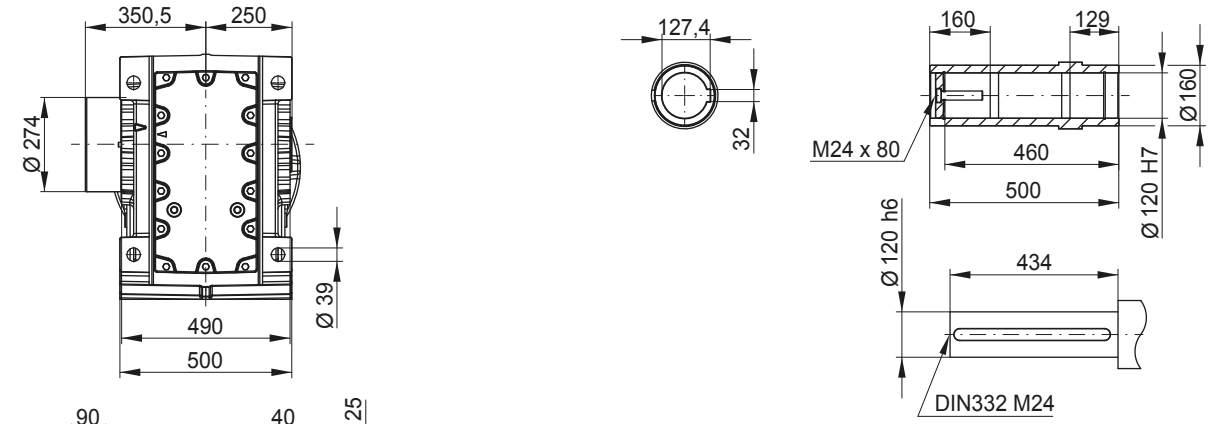
*** Torque arm may be mounted on side A or side B.*

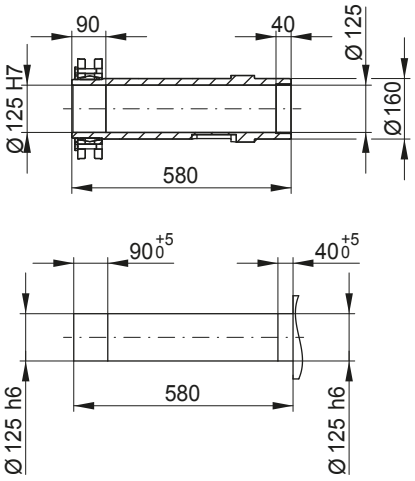
KH15 - Hollow shaft



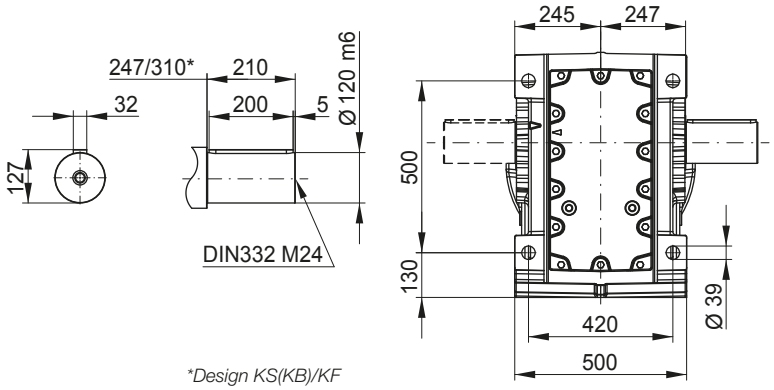
¹⁾ *incl. hollow shaft protection cap*

KD15 - Shrink disc





KS15 - Output shaft
KB15 - Output shaft on both sides

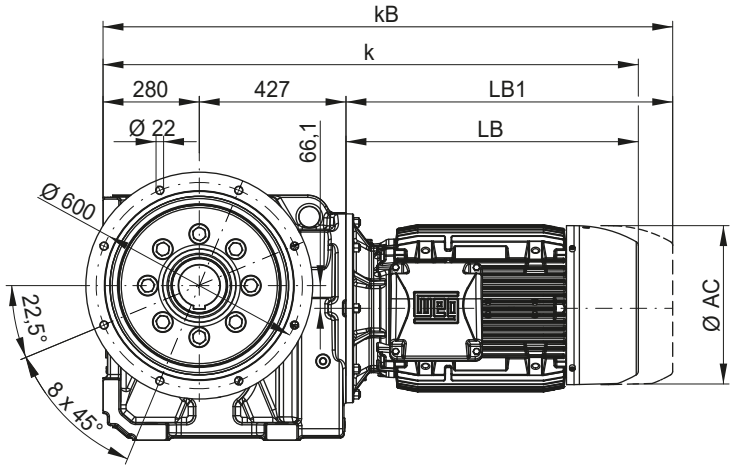


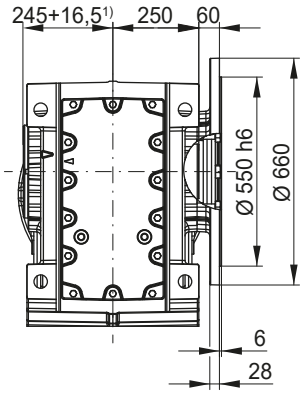
**Design KS(KB)/KF*

Motor fr. / Dimension	63	71	80	90S/L	100L	L100L	112M	132S,M	L132M	160M	160L	180M	180L	200L	225S/M	250S/M
AC	-	-	-	-	-	-	-	-	-	329	329	347	347	386	453	482
AD	-	-	-	-	-	-	-	-	-	266	266	281	281	317	385	403
k	-	-	-	-	-	-	-	-	-	1213	1257	1281	1319	1411	1519	1558
kB	-	-	-	-	-	-	-	-	-	1337	1381	1399	1437	1537	1637	1676
LB	-	-	-	-	-	-	-	-	-	506	550	574	612	704	812	851
LB1	-	-	-	-	-	-	-	-	-	630	674	692	730	830	930	969

Motor dimension sheets see page 380; Gear unit size K15 corresponds to motor flange FR-550. Description of motor lengths LB and LB1 see page 384.

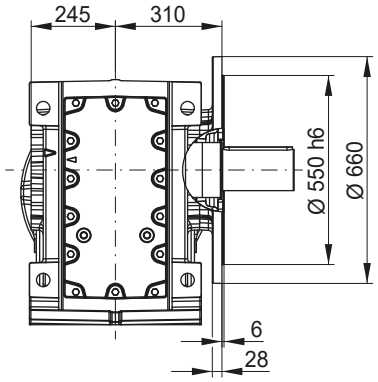
KO15 - B5 flange execution with hollow shaft



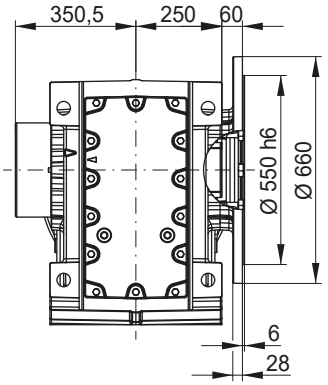


¹⁾ *incl. hollow shaft protection cap*

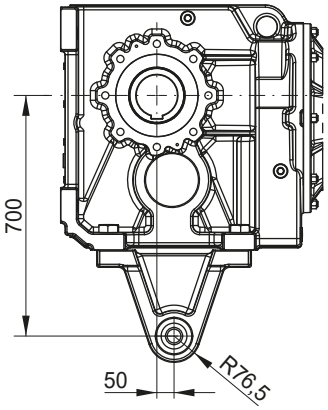
KF15 - B5 flange execution with output shaft



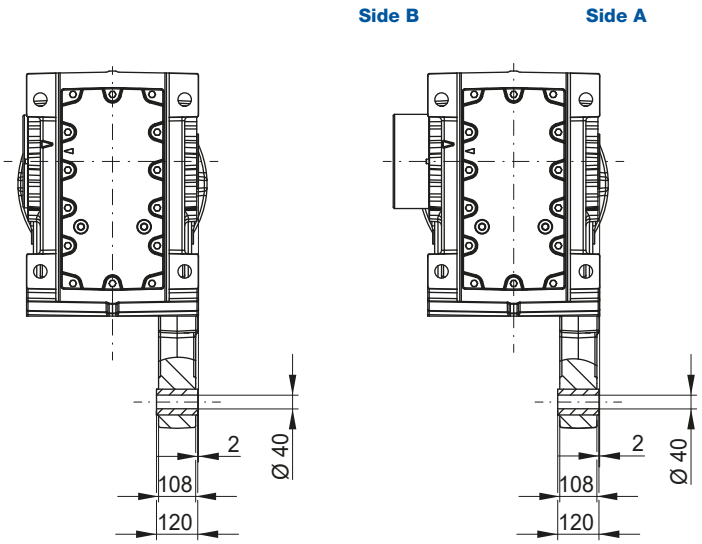
KP15 - B5 flange execution with hollow shaft and shrink disc



KT15 - Hollow shaft with torque arm **



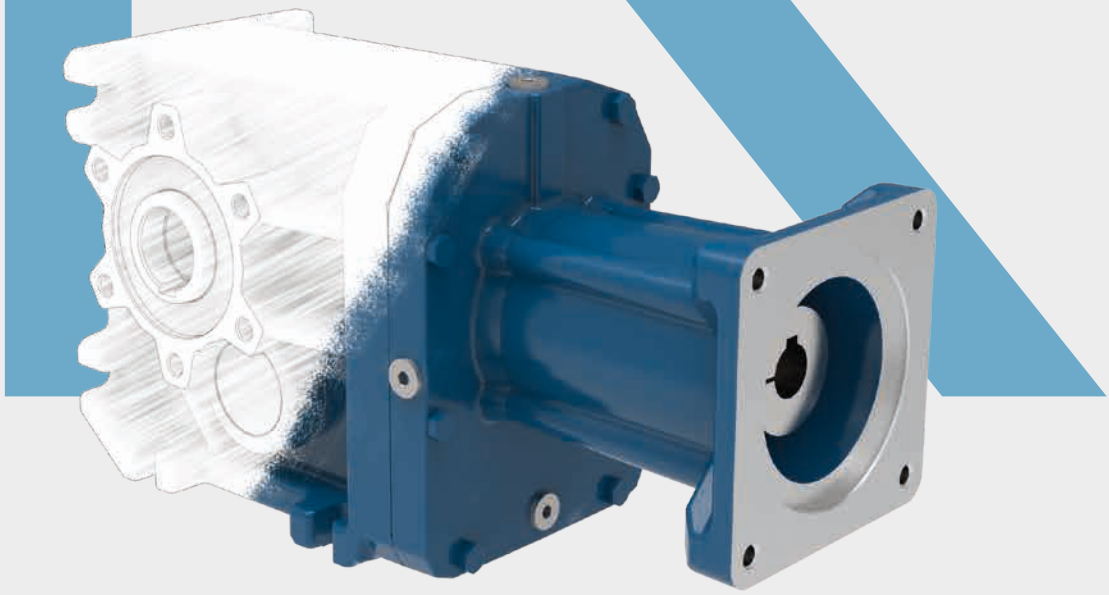
KU15 - Hollow shaft with shrink disc and torque arm **



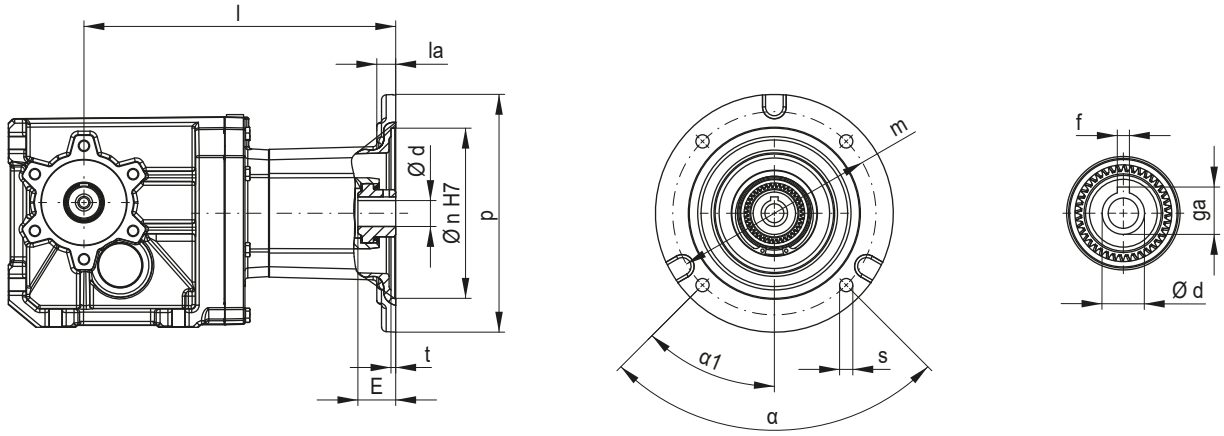
Dimensions in mm.

*** Torque arm may be mounted on side A or side B.*

K



IEC Adapter I63 to I280



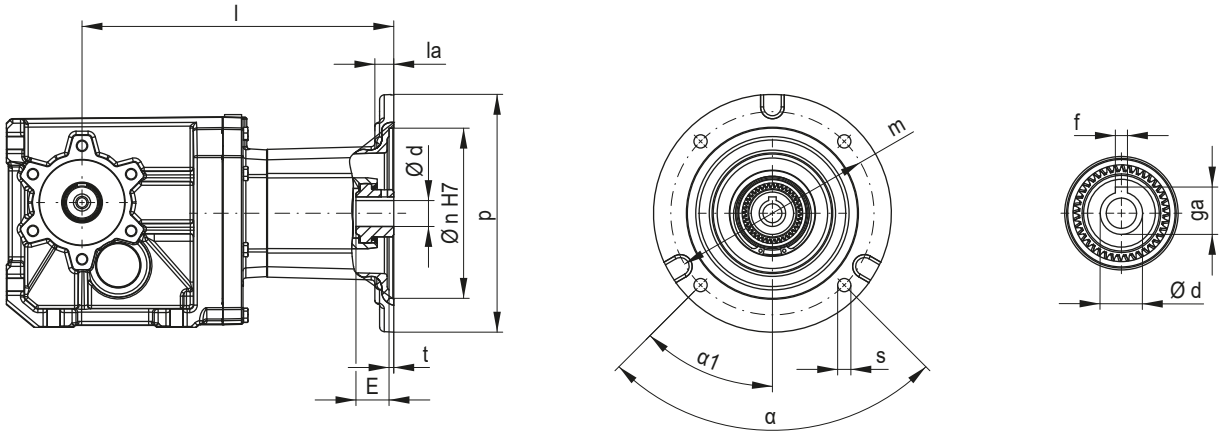
Type	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225		I250	I280	
p	160	160	200	200	250	250	300	350	350	400	400		550	550	
n	95	110	130	130	180	180	230	250	250	300	350		450	450	
la	22.5	10	13	13	15	20	15	35	35	20	20		20	20	
m	115	130	165	165	215	215	265	300	300	350	400		500	500	
t	4.5	4.5	4.5	4.5	5	5	5	5	5	5.5	5.5		5	5	
s	M8x16	M8x10	12	12	14	14	14	19	19	19	19		19	19	
α	90	90	90	90	90	90	90	90	90	90	45		45	45	
α_1	35	45	45	45	45	45	45	45	45	45	45		45	45	
d	11	14	19	24	28	28	38	42	48	55	55	60	65	65	75
f	4	5	6	8	8	8	10	12	14	16	16	18	18	18	20
ga	12.8	16.3	21.8	27.3	31.3	31.3	41.3	45.3	51.8	59.3	59.3	64.4	69.4	69.4	79.9
E [1]	25	32	43	47.5	63	100	85.5	111.5	111.5	114.5	114.5	140	146	146	

[1] Maximum motor shaft length for motors with key

Gear unit size	I63	I71	I80	I90	I100	I112	I132	I160	I180	I200	I225	I250	I280
	l												
K02	163.5	163.5	191.5	191.5	-	-	-	-	-	-	-	-	-
K03	190	190	218	218	249	-	-	-	-	-	-	-	-
K04	207.5	207.5	235.5	235.5	266.5	319.5	-	-	-	-	-	-	-
K05	218	218	246	246	277	330	341	-	-	-	-	-	-
K06	202.5	202.5	230.5	230.5	261.5	314.5	325.5	-	-	-	-	-	-
K07	232.5	232.5	260.5	260.5	291.5	344.5	355.5	441.5	-	-	-	-	-
K08	281.5	281.5	309.5	309.5	340.5	393.5	404.5	489	489	-	-	-	-
K09	301.5	301.5	329.5	329.5	360.5	413.5	424.5	509	509	537.5	-	-	-
K10	-	-	-	-	-	467.5	478.5	560.5	560.5	589	619	-	-
K12	-	-	-	-	-	516.5	527.5	609.5	609.5	638	668	757	757
K15	-	-	-	-	-	-	-	629.5	629.5	658	688	777	777

Dimensions in mm.

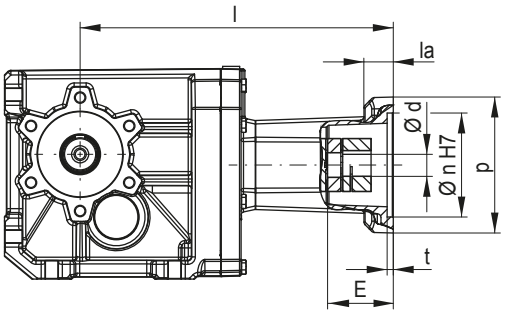
NEMA Adapter N56 to N364

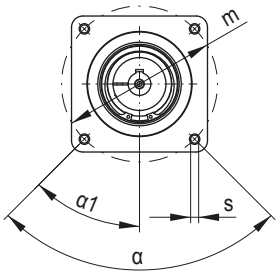


Type	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
p	170	170	250	250	300	225	280	350	400
n	114.3	114.3	215.9	215.9	215.9	215.9	266.7	317.5	317.5
la	13	13	10	16.8	10	30	35	15	15
m	149.225	149.225	184.15	184.15	184.15	184.15	228.6	279.4	279.4
t	4.5	4.5	5	3.2	5	5	3	5	5
s	11	11	14	14	14	14	14	16	16
α	90	90	90	90	90	90	90	90	90
α_1	45	45	45	45	45	45	45	45	45
d	15.875	22.225	28.575	28.575	34.925	41.275	47.625	53.975	60.325
f	4.775	4.775	6.350	6.350	7.950	9.525	12.700	12.700	15.875
ga	18.008	24.486	31.521	31.521	38.557	45.618	53.238	59.690	67.335
E	55	55	67.5	96.8	80.5	105.5	111.5	109.5	109.5

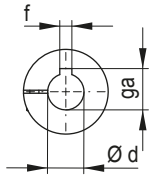
Gear unit size	N56	N143/145	N182	N184	N213/215	N254/256	N284/286	N324/326	N364
	l								
K02	191.5	191.5	-	-	-	-	-	-	-
K03	218	218	249	-	-	-	-	-	-
K04	235.5	235.5	266.5	319.5	-	-	-	-	-
K05	246	246	277	330	341	-	-	-	-
K06	230.5	230.5	261.5	314.5	325.5	-	-	-	-
K07	260.5	260.5	291.5	344.5	355.5	441.5	-	-	-
K08	309.5	309.5	340.5	393.5	404.5	489	492	-	-
K09	329.5	329.5	360.5	413.5	424.5	509	512	559.5	-
K10	-	-	-	467.5	478.5	560.5	563.5	611	626.5
K12	-	-	-	516.5	527.5	609.5	612.5	660	675.5
K15	-	-	-	-	-	629.5	632.5	695.5	695.5

SERVO Adapter S92 bis S190

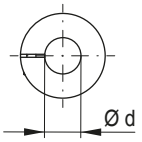




Shaft with key



Smooth shaft



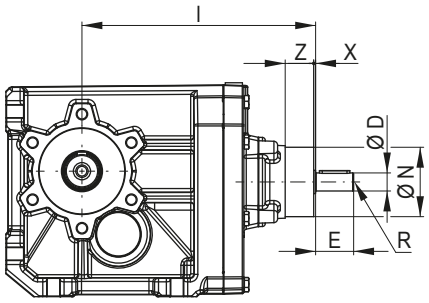
Type	S92			S105	S114		S115	S130				S141	S142		S180	S189		S190
p	101			144	144		144	144				144	144		197	197		197
n	80			95	95		110	110				110	130		114.3	130		180
la	17.5			31	31		31	31				31	31		35	32		38
m	100			115	130		130	145				165	165		200	215		215
t	6.5			6.5	6.5		6.5	6.5				6.5	6.5		6.5	6.5		6.5
s	M6x12			M8x16	M8x16		M8x16	M8x16				M8x16	M8x16		13.5	15		15
α	90°			90°	90°		90°	90°				90°	90°		90°	90°		90°
α_1	45°			45°	45°		45°	45°				45°	45°		45°	45°		45°
d [1]	14	16	19	19	19	24	24	19	22	24	28	24	24	32	35	32	38	38
f	5	5	6	6	6	8	8	6	6	8	8	8	8	10	10	10	10	10
ga	16.3	18.3	21.8	21.8	21.8	27.3	27.3	21.8	24.8	27.3	31.3	27.3	27.3	35.3	38.3	35.3	35.3	41.3
E [2]	47.5			69.5	69.5	53.5	53.5	75.5	75.5	62.5	62.5	66.5	62.5	62.5	65.5	73.5	59.5	86.5
E [3]	47.5			69.5	69.5	66.5	66.5	75.5	75.5	75.5	62.5	53.5	75.5	62.5	86.5	73.5	59.5	86.5

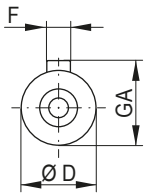
[1] Other shaft diameters on request
[2] Maximum motor shaft length for motors with key
[3] Maximum motor shaft length for motors with smooth shaft

Gear unit size	S92	S105	S114	S115	S130	S141	S142	S180	S189	S190
	l									
K02	229	277	277	277	277	277	277	-	-	-
K03	255.5	303.5	303.5	303.5	303.5	303.5	303.5	-	-	-
K04	273	321	321	321	321	321	321	391.5	385.5	412.5
K05	283.5	331.5	331.5	331.5	331.5	331.5	331.5	402	396	423
K06	268	316	316	316	316	316	316	386.5	380.5	407.5
K07	298	346	346	346	346	346	346	416.5	410.5	437.5
K08	347	395	395	395	395	395	395	465.5	459.5	486.5
K09	367	415	415	415	415	415	415	485.5	479.5	506.5
K10	-	-	-	-	-	-	-	539.5	533.5	560.5
K12	-	-	-	-	-	-	-	588.5	582.5	609.5
K15	-	-	-	-	-	-	-	-	-	-

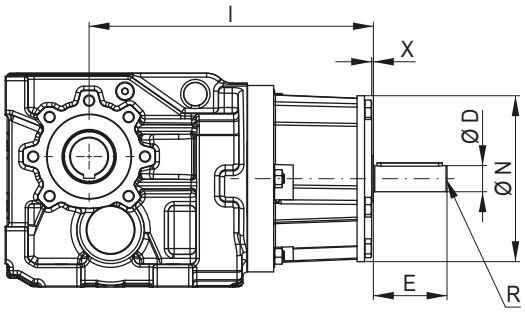
Dimensions in mm.

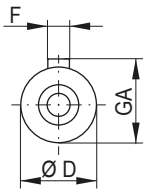
Input Unit U2, U3





Input Unit U5, U6, U7





Type	Input shaft [mm]						
	19x40	24x50	28x60	38x80	42x110	48x110	55x110
	U2	U3	U5			U6	U7
D	19	24	28	38	42	48	55
F	6	8	8	10	12	14	16
GA	21.5	27	31	41	45	51.5	59
E	40	50	60	80	110	110	110
N	73	101	178			235	290
X	2	2.5	1.9			6.5	4
Z	3	35	-			-	-
R	M6	M10	M10	M12	M16	M16	M20

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	< Ø 55 mm	k6
	≥ Ø 55 mm	m6

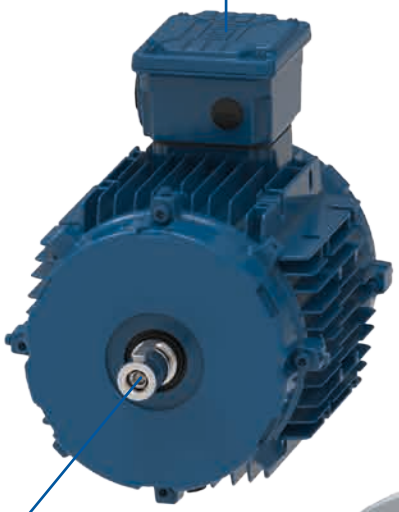
Gear unit size	Input shaft [mm]				
	19x40	24x50	28x60 38x80 42x110	48x110	55x110
	U2	U3	U5	U6	U7
	l				
K02	191.5	-	-	-	-
K03	218	-	-	-	-
K04	235.5	267.5	-	-	-
K05	246	278	-	-	-
K06	230.5	262.5	305	-	-
K07	260.5	292.5	335	-	-
K08	309.5	341.5	382.5	404.5	-
K09	329.5	361.5	402.5	424.5	-
K10	-	415.5	454	476	545
K12	-	464.5	503	525	594
K15	-	-	523	545	614



Modular System Motor



Terminal box designs
page 386

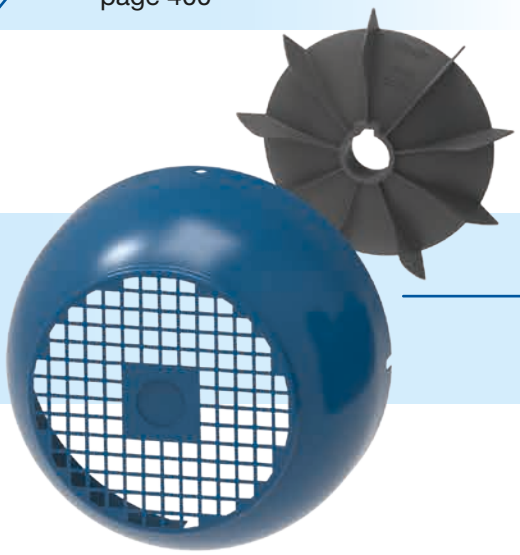




Brake systems
and back stops
page 389



Encoder systems
page 400





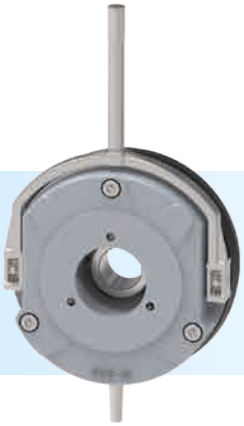
Ventilation systems
page 403



Motor series 11
with aluminium housing
(frame sizes 63 - 132)



Motor series 22
with cast iron housing
(frame sizes 160 - 250)





M

The modular motor system

Our motor system is an optimised and modularly designed kit. It includes harmonised modules like brakes, encoders, forced ventilation and connecting systems which are combined to the customer's requirements.
The significant advantage of this concept offers fast and reliable delivery times, not only to our local customers but also internationally, because WEG's competent sales network and assembling centres guarantee the availability of components worldwide.

Detailed description of the motor modules see from page 385.

The modular system motor

Due to special windings and clever connecting systems it's possible to use the same motor all over the world. Just a change of connection (4 possible options) and the motor can do its job reliably in Europe, USA or Far East, from 110 V to 690 V, 50 Hz and 60 Hz.

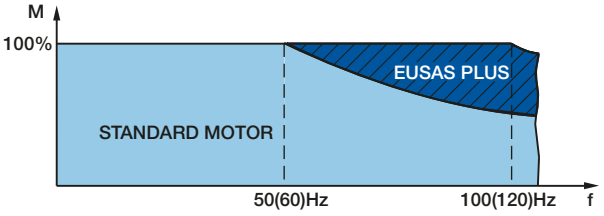
The modular system motor is available in two energy efficiency classes:
IE1: Series 11N, IEC frame sizes 63 to 80 (up to 0.55 kW)
IE3: Series 11P (aluminium), IEC sizes 80 to 132 (0.75 - 9.2 kW) and series 22P (cast iron), IEC sizes 160 and 250 (11-75 kW)
Motors in energy efficiency class IE4 on request

Advantages

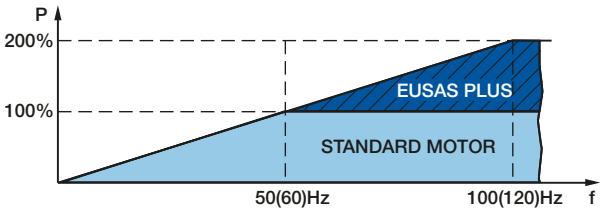
- Wide voltage range
- Switchable to all usual voltages worldwide (rated voltages):
  115-480 V - 50/60 Hz up to and including frame size 100
  200-690 V - 50/60 Hz for frame sizes 112 to 250
- Frequency inverter operation 100/120 Hz
- Ambient temperature -20 to +40 °C
- Nameplate with 50/60 Hz data
- Flexible adjustment of the terminal box
- Reinforced bearings (integral motor)
- Shaft system for immediate assembling of motor modules, like encoders, brakes, back stop, etc.
- Standard degree of protection IP55
- Thermal protection with bimetal switch and/or PTC thermistor
- Thermal class F
- System motor, prepared for flexible assembling of motor modules
- Certified for worldwide distribution: CE, CSA, UL, EAC

M

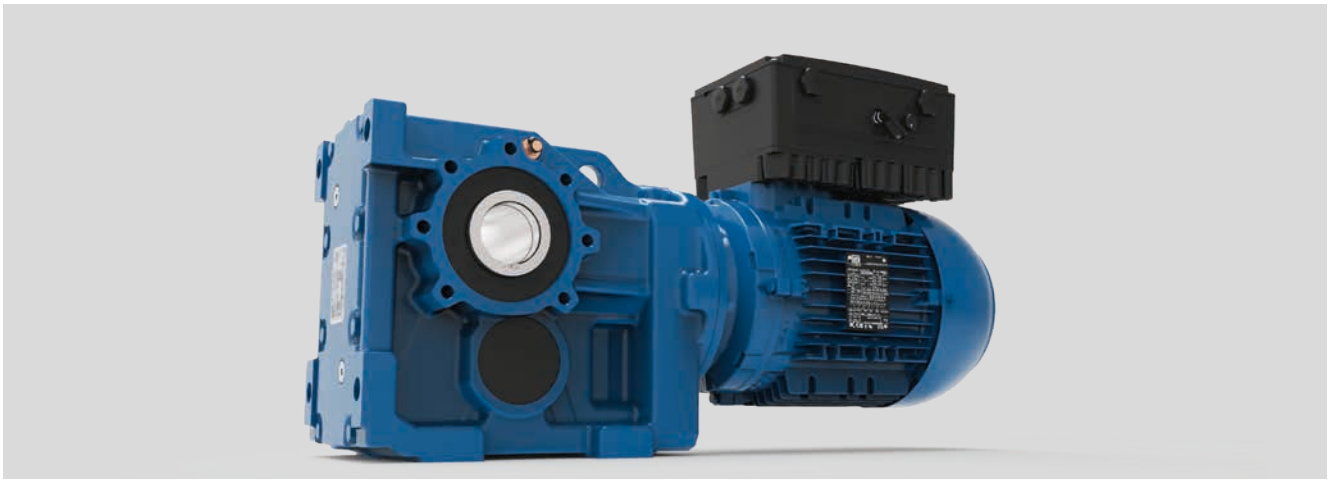
The ideal motor for frequency inverter operation
Switchable to 100/120 Hz. Simply switch over and use the double output.
The excellent combination of the modular system motor and variable speed drives by WEG (type CFW for various applications and decentralised motor drive MW500) enables drive systems with wide speed range.



Rated torque up to double rated speed



Two times rated power at double rated speed



WG20 geared motor with decentralised motor drive MW500

Type code

11P-EX-L100L-04F-LT-TH-SH-K1-KB-MIP-BR..-SG-FL-SD

1 2 3 4 3 5 6 7 8 9 10 11 12 13 14 15 16

1	Motor series:	11N = Aluminium motor in energy efficiency class IE1, frame sizes 63 - 80 (up to 0.55 kW) 11P = Aluminium motor in energy efficiency class IE3, frame sizes 80 - 132 (0.75 - 9.2 kW) 22P = Cast iron motor in energy efficiency class IE3, frame sizes 160 - 250 (11 - 75 kW)
2	ATEX execution:	when operated in explosive atmospheres, see page 368
3	Stator length:	L. .S .S/L .S/M .M .L
4	IEC frame size:	63 132 71 160 80 180 90 200 100 225 112 250
5	Number of poles:	04 = 4 poles 06 = 6 poles
6	Power indicator:	D E F G
7	High/Low temperatuer execution:	see page 385
8	Temperature control:	see page 385
9	Anti-condensation heating:	see page 385
10	Climatic protection:	see page 386
11	Drain:	see page 386
12	Terminal box designs:	see page 386
13	Brake systems, back stop:	see page 389
14	Encoder systems:	see page 400
15	Ventilation systems:	see page 403
16	Additional modules:	see page 405

M

Options

1. Basic execution

Description	Key	Page	IEC frame size											
			63	71	80	90	100	112	132	160	180	200	225	250
Switchable voltage (4 connections)	-	368	■	■	■	■	■	■	■	■	■	■	■	■
Temperature controller for switch off (+155 °C)	TH	385	■	■	■	■	■	■	■	□	□	□	□	□
PTC thermistor protection for switch off (+155 °C)	TF	385	■	■	■	■	■	■	■	■	■	■	■	■
Thermal class F (up to +155 °C)	-	368	■	■	■	■	■	■	■	■	■	■	■	■
Fixed bearing NDE	-	-	■	■	■	■	■	■	■	-	-	-	-	-
Fixed bearing DE	-	-	-	-	-	-	-	-	-	■	■	■	■	■
Degree of protection IP55	-	17	■	■	■	■	■	■	■	■	■	■	■	■
Certifications (CE, EAC, UL, CSA)	-	-	■	■	■	■	■	■	■	■	■	■	■	■

2. Electrical options

Description	Key	Page	IEC frame size											
			63	71	80	90	100	112	132	160	180	200	225	250
Special voltage SPECI-Volt	-	368	□	□	□	□	□	□	□	□	□	□	□	□
Temperature controller for warning and switch off	2TH	385	□	□	□	□	□	□	□	□	□	□	□	□
PTC thermistor protection for warning and switch off	2TF	385	□	□	□	□	□	□	□	□	□	□	□	□
Temperature sensor KTY	KTY	385	□	□	□	□	□	□	□	□	□	□	□	□
Temperature sensor Pt100	-	-	□	□	□	□	□	□	□	□	□	□	□	□
Anti-condensation heating 230 V	SH	385	-	□	□	□	□	□	□	□	□	□	□	□
Thermal class H (up to +180 °C)	-	-	□	□	□	□	□	□	□	□	□	□	□	□

3. Mechanical options

Description	Key	Page	IEC frame size											
			63	71	80	90	100	112	132	160	180	200	225	250
Degree of protection IP56	-	17	□	□	□	□	□	□	□	□	□	□	□	□
Degree of protection IP65	-	17	□	□	□	□	□	□	□	□	□	□	□	□
Degree of protection IP66	-	17	□	□	□	□	□	□	□	□	□	□	□	□
Degree of protection IP67	-	17	□	□	□	□	□	□	□	□	□	□	□	□
High temperature execution (max. +80 °C ambient temperature)	HT	385	□	□	□	□	□	□	□	□	□	□	□	□
Low temperature execution	LT	385	□	□	□	□	□	□	□	□	□	□	□	□
ATEX zone 2+22: II 3G Ex ec IIC T3 Gc / II 3D Ex tc IIIC T125°C Dc	EX	368	□	□	□	□	□	□	□	□	□	□	□	□
Humidity protection K1	K1	386	□	□	□	□	□	□	□	□	□	□	□	□
Corrosion protection K2	K2	386	□	□	□	□	□	□	□	□	□	□	□	□
Drain	KB	386	□	□	□	□	□	□	□	□	□	□	□	□
Multipin box	MIP	386	□	□	□	□	□	□	□	□	□	□	□	□
Multi-plug-connect systems	MIG..	387	□	□	□	□	□	□	□	□	□	-	-	-
Multi-plug-connect system for forced ventilation	MIG10-FL	387	□	□	□	□	□	□	□	□	□	□	□	□
Non-ventilated without NDE shaft end	U	404	□	□	□	□	□	□	□	□	□	□	□	□
Non-ventilated with NDE shaft end	UW	404	□	□	□	□	□	□	□	□	□	□	□	□
Different position of the terminal box	-	-	□	□	□	□	□	□	□	□	□	□	□	□
Relubrication	-	-	-	-	-	-	-	-	-	□	□	□	□	□

■ Standard
□ Special execution (on request)
□ Optional
- Not available

4. Options - motor modules

Description	Key	Page	IEC frame size											
			63	71	80	90	100	112	132	160	180	200	225	250
Spring loaded brake - IP55, 24 V	BR..	393												
Spring loaded brake - IP55, 102 V	BR..	393												
Spring loaded brake - IP55, 190 V, 195 V	BR..	393												
Double spring loaded brake in low noise execution	BBRHGD..	394	-											
Totally closed spring loaded brake - IP66	BRGH..	395	-											
Manual release for brake	(BR)H..	393	1)											
Locking device for manual release	(BR)HA..	393	1)											
Corrosion protection IP55 for brake	(BR)R..	393												
Dust protection IP65 for brake	(BR)S..	393	1)											
Corrosion and dust protection IP65 for brake	(BR)SR..	393	1)											
Brake in low noise execution	(BR)GD..	393	-											
Micro switch	(BR)M	393	2)	2)	2)									
Anti-condensation heating for brakes	-	395	-	-										
Fast excitation rectifier	-	397												
Back stop KKM	KKM	399					-	-	-	-	-	-	-	-
Back stop RSM	RSM	399	-	-	-	-								
Encoder outside the fan cover	I.	400												
Encoder inside the fan cover	S.	400	-											
Encoder (1024 pulses, HTL/TTL, IP66)	.G	400	I.	S.										
Mating plug for encoder without cable	-	-	I.	S.										
Mating plug for encoder with cable	-	-	I.	S.										
SINCOS encoder	.C	400	-	-										I. S.
Resolver	.R	400	-										-	-
Special encoder	.A	401												
SSI multiturn encoder	SS	401	-											
Heavy Duty encoder	SV	401	-	-	-									
Forced ventilation (TEFV)	FL	403												
Fly wheel fan	ZL	404	-							-	-	-	-	-
Hand wheel	HR	405	-											
Protection cap	SD	405												
Protection cap for encoders	ID	405	-	-	-									
Second shaft end - module shaft	ZWM	406	-											
Second shaft end - solid shaft	ZWV	406											-	-

5. Additional options

Description	Key	Page	IEC frame size											
			63	71	80	90	100	112	132	160	180	200	225	250
Special nameplate (aluminium)	-	-												
Second nameplate (not fixed, aluminium or stainless steel)	-	-												
Metal fan	ZM	404												
Vibration severity grade "B" (reduced) according to DIN IEC 60034-14	-	368												
Wide range grease (-40 °C to +175 °C)	-	-												

1) not possible with 2 Nm brake
2) Micro switch not possible for totally closed brakes at 2 and 5 Nm

Standard
Optional
Special execution (on request)
- Not available

M

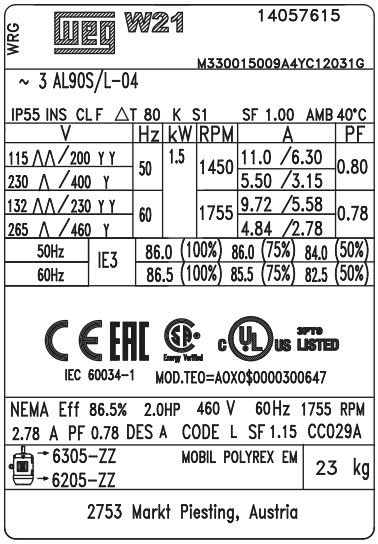
General information

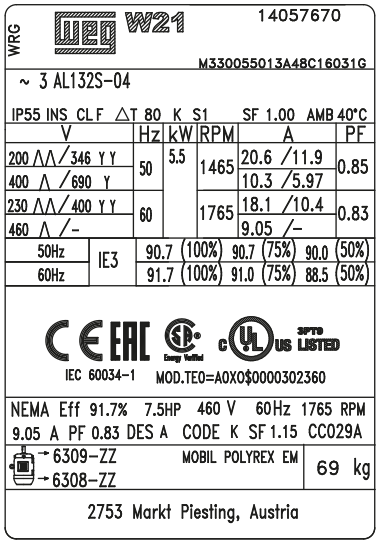
Frame size		63	71	80	90S/L	(L)100L	112M	(L)132M,S	160M,L	180M,L	200L	225S/M	250S/M
Mechanical features													
Mounting form		B14R							B5R				
Housing material		aluminium EN AC-46100							cast iron EN GJL-200				
Degree of protection		IP55											
Grounding		simple grounding - one inside the terminal box										double - in the terminal box and on the frame	
Cooling method		fan - IC411 (TEFC)											
Fan material		polypropylen										aluminium	
Fan cover material		sheet steel											
Endshields material		aluminium EN AC-46100 *							cast iron EN GJL-200				
Drain		rubber drain plug											
Bearings	Locking	without bearing cap with circlip - NDE							without bearing cap with circlip - DE			internal + external bearing cap and spring washers - NDE	
	DE	6203 ZZ	6204 ZZ	6205 ZZ	6305 ZZ	6207 ZZ	6307 ZZ	6309 ZZ	6309 ZZ-C3	6312 ZZ-C3	6314 ZZ-C3	6314 ZZ-C3	6316 ZZ-C3
	NDE	6201 ZZ	6203 ZZ	6203 ZZ	6205 ZZ	6206 ZZ	6206 ZZ	6308 ZZ	6209 ZZ-C3	6211 ZZ-C3	6212 ZZ-C3	6314 ZZ-C3	6314 ZZ-C3
Shaft seal	Type	radial shaft seal											
	DE	17x30x7	20x30x7	25x40x7	25x40x7	35x52x7	35x52x7	45x60x8	45x60x8	60x90x10	60x90x10	70x90x10	70x90x10
	NDE	12x22x7	17x28x5	17x28x5	25x35x7	30x40x4	30x40x4	40x56x8	45x62x7	55x70x8	60x75x8	70x85x8	70x85x8
	Material	NBR											
Lubrication	Type of grease	Mobil Polyrex EM											
	Grease fitting	without grease fitting											
Terminal block		9 poles											
Terminal box material		aluminium EN AC 47000							cast iron EN GJL-200				
Cable entry	Main	2 x M25x1.5					2 x M32x1.5		2 x M40x1.5		2 x M50x1,5	2 x M50x1,5	2 x M63x1,5
	Accessory	2 x M16x1.5											
	Plug	threaded plug for transport and storage; cable gland optional											
Shaft material		1.0511/1.1191 – C40/C45E – AISI 1040/45										1.7225 - 42CrMo4 - AISI 4140	
Direction of rotation		both directions											
Vibration		class A											
Nameplate material		stainless steel 1.4301 (AISI 304)											
Flange		FC-120					FC-160		FR-200 FR-250 FR-300 FR-400 FR-550	FR-250 FR-300 FR-400 FR-550	FR-300 FR-400 FR-550	FR-400 FR-550	FR-550
Electrical features													
Power [kW] 4 poles		0.12 - 0.18	0.25 - 0.37	0.55 - 0.75	1.1 - 1.5	2.2 - 3.0	4.0	5.5 - 9.2	11.0 - 15.0	18.5 - 22	30	45 - 55	75
Power [kW] 6 poles		0.12	0.18 - 0.25	0.37 - 0.55	0.75	1.1 - 1.5	2.2	3.0 - 5.5	-	-	-	-	-
Design		N											
Voltage / Frequency		Δ	230 V (50Hz) // 265 V (60Hz)				Δ	400 V (50 Hz) // 460 V (60 Hz)					
		ΔΔ	115 V (50 Hz) // 132 V (60Hz)				ΔΔ	200 V (50 Hz) // 230 V (60 Hz)					
		Y	400 V (50 Hz) // 460 V (60 Hz)				Y	690 V (50 Hz) // -					
		YY	200 V (50 Hz) // 230 V (60 Hz)				YY	346 V (50 Hz) // 400 V (60 Hz)					
Winding	Impregnation	dip										continuous flow impregnation	
	Insulation class	F (DT 80K)											

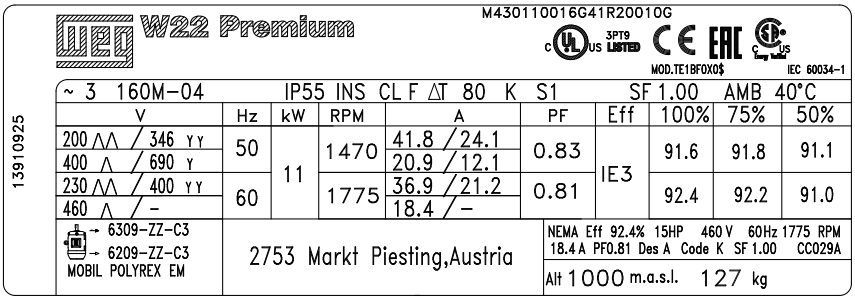
** Except frame sizes L100L and L132M: endshield (NDE) made from cast iron EN GJL-200*

1. Nameplate

The stainless steel plate is fixed on the frame and bears data for 50 Hz and 60 Hz. The information on the nameplate contains all relevant specifications of the product (see examples for motor frame sizes 90, 132 and 160).

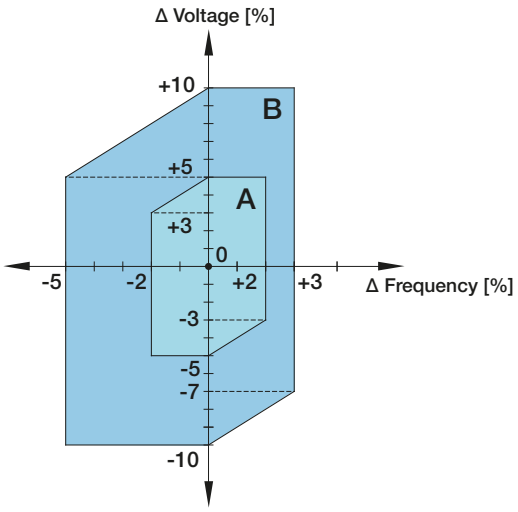






2. Voltage and frequency fluctuations

According to DIN EN 60034-1, a distinction is made between range A and range B (outside A) for voltage and frequency fluctuations. Range A and range B describe the permissible range in which frequency and voltage levels are permitted to deviate from the relevant measurement point (see illustration). The coordinate mean point “0” identifies the measurement point for the frequency and voltage in each case. The motor must be able to issue the rated torque in both ranges A and B.



Ranges A and B according to DIN EN 60034-1

Range A

In continuous operation in range A, the characteristics are permitted to vary from the rated operation, and the heating at the limits of range A can be around 10 K higher.

Range B

The deviations from the characteristics are permitted to be greater than in range A, the heating levels can be higher than at the measurement point. Duration and frequency of operation in range B should be limited. Corrective measures, e.g. power reduction, should be provided. If a machine has multiple rated voltages or a rated voltage range, the permissible voltage and frequency fluctuations apply for each individual value of the rated voltage.

3. Modes of operation

Duty type according to DIN EN 60034-1 and VDE 0530-1.
The duty type is designated by the abbreviations S1 to S10. For the duty types S4, S5 and S7 the duty cycles/hour (c/h) and the factor of inertia F_I should also be stated at the bottom.
The factor of inertia F_I is the ratio of the total load moment of inertia (referred to the motor shaft) and the motor moment of inertia, to the motor moment of inertia, i.e.

$$F_I = \frac{\Sigma J_{ex.red} + J_{mot}}{J_{mot}}$$

Definition		Example
S1	Continuous running duty with constant load	S1
S2	Short-time duty with constant load Duration of operation under rated conditions (recommended values: 10, 30, 60 or 90 min)	S2 10 min
S3	Intermittent periodic duty. Motor temperature not affected by starting operation Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Cycle duration (10 min unless otherwise stated)	S3 25 % 60 min
S4	Intermittent periodic duty. Motor temperature affected by starting operation Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Indication of the duty cycles per hour and of the factor of inertia F_I	S4 40 % 200, F_I=2
S5	Intermittent periodic duty. Motor temperature affected by starting operation and electric braking Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Indication of the duty cycles per hour and of the factor of inertia F_I	S5 15 % 300, F_I=1
S6	Continuous operation periodic duty. Cyclic duration factor (recommended values: 15, 25, 40 or 60 %): Cycle duration (10 min unless otherwise stated)	S6 25 % 60 min
S7	Continuous operation with starting and electric braking Indication of the duty cycles per hour and of the factor of inertia F_I	S7 200, F_I=1
S8	Continuous operation with related load/speed changes (Sequence of similar cycles) Speeds during the duty cycle Periods for which these speeds are maintained during the duty cycle Indication of the factor of inertia F_I	S8 3000^{min-1}, 10 min 1500^{min-1}, 15 min F_I=1.5
S9	Continuous operation duty with unrelated load/speed changes	S9
S10	Duty with discrete constant loads and speed	S10 F_I=0.6

Legend see page 396.

4. Rated power according to VDE 0530-1

The listed rated power of the motor corresponds to the output power according to VDE 0530-1 for continuous operation S1, frequency 50/60 Hz, max. ambient temperature +40 °C, max. altitude 1000 m above sea level.
According to this standard at rated values (voltage and frequency) the motors may be overloaded for two minutes by 1.5 times the rated current, without damage of the winding.
The motors are calculated by rated values according to thermal class B, but produced in class F and by operation with rated values fit for higher loads:

a. At rated power and rated voltage the ambient temperature may be increased from +40 °C to +60 °C.

b. Provided that ambient temperature does not exceed +40 °C, the normal capacity in continuous operation can be increased by appr. 10 %.

All technical data stated applies to rated frequency of 50 Hz and supply voltage of 400 V rated voltage at rated power.If the load changes, the stated values will deviate to higher or lower.

5. Power correction factors

S2			
Time [min]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.20	1.25
30		1.05	1.10
60		1.00	1.00
15	160 - 200	1.40	1.45
30		1.20	1.25
60		1.10	1.10
15	225 - 250	1.45	1.45
30		1.30	1.30
60		1.15	1.15

S3			
DC [%]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.15	1.40
25		1.10	1.30
40		1.05	1.20
60		1.03	1.10
15	160 - 200	1.30	1.40
25		1.20	1.30
40		1.10	1.20
60		1.05	1.10
15	225 - 250	1.35	1.40
25		1.25	1.30
40		1.15	1.20
60		1.05	1.10

S6			
DC [%]	Motor frame size	Poles	
		2	4-8
15	63 - 132	1.20	1.30
25		1.15	1.25
40		1.10	1.20
60		1.05	1.15
15	160 - 200	1.25	1.30
25		1.20	1.25
40		1.15	1.20
60		1.10	1.15
15	225 - 250	1.30	1.35
25		1.25	1.30
40		1.15	1.25
60		1.10	1.15

- Factors for low voltage safe area motors with insulation class F/B (ΔT80K)
- The breakdown torque should be at least 30 % higher than factors

6. Torque

The motors are fitted with squirrel-cage rotors suitable for direct online starting. The values of starting torque and break-down torque, expressed as a multiple of the rated torque, are given in the performance data. A deviation in the voltage from rated value changes the torques as an approximate function of the square of the voltages.

7. Efficiency class

Standard IEC 60034-30 defines uniform efficiency classes, valid for 2, 4, 6 and 8 pole asynchronous motors (50/60 Hz) with output powers of 0.12 kW to 1,000 kW. This standard divides 3-phase induction motors with cage rotor in efficicency classes IE1=standard efficiency, IE2=high efficiency and IE3=premium efficiency. Our motors are labelled with efficiency class and factor on the nameplate.

8. Motor protection

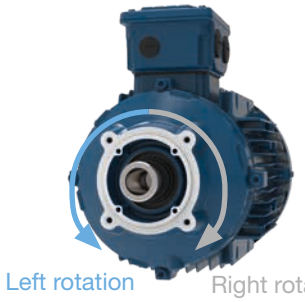
The correct selection of protective equipment determines essen-tially the operation reliability and service life of motors. Current dependent protection and thermal protective devices are available. Fuses do not protect the motor against overloads, they only protect the supply cables or switchboards against short circuits.

9. Overload protection (protection relay)

It is recommended to use starters with thermal overload pro-tection. The overloads should be adjusted to the rated current shown on the nameplate. Thermal protective devices (thermistors in windings) see page 385.

10. Speed and rotation direction

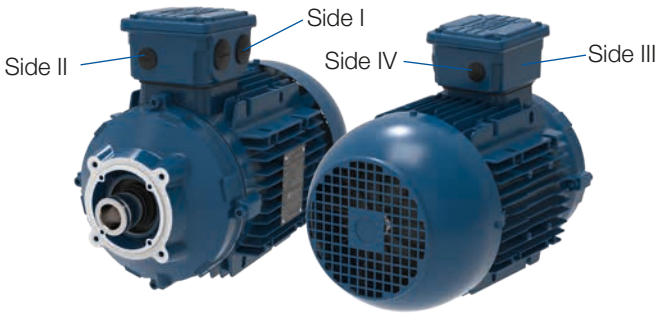
The rated speed is valid for the rated dates (voltage, frequency). The synchronous speed depends on the line frequency.
The motors are able for operation in both directions. By connection of U1, V1, W1 to L1, L2, L3 the rotation will be to the right if you look at the shaft from the drive-side. Left direction can be easily made by changing of two wires.



Rotation direction

11. Cable entry

For all frames, the terminal box can be rotated in 90° increments. Terminal boxes are not delivered with cable glands in standard. Motors are supplied with plastic threaded plugs in the cable entries to maintain the degree of protection during transport and storage. In order to guarantee the degree of protection, cable entries must comply with at least the same degree of protection indicated on the motor nameplate.



Side designation for cable entries

12. Motors for the Ex area according to Directive 2014/34/EU

The modular integral motors can be used in both safe area applications and explosion-proof areas. The motors are certified for category 3, zone 2+22.

Zone 2: II 3G Ex ec IIC T3 Gc
Zone 22: II 3D Ex tc IIIC T125°C Dc

The protection types in this case are increased safety (Ex ec) and protection by means of housing (Ex tc).
The motors can be used in a temperature range of -20 to +40 °C.

If temperatures deviate or additional motor options (brakes, encoders, etc.) are required, please contact us beforehand.

13. Cooling

The motors are totally enclosed fan cooled (TEFC) by means of external surface ventilation (IC411, as per IEC 60034-6). Maximum ambient temperature +40 °C. Please check the minimum distance “Y” (see dimension sheets from page 380) between cover and wall by mounting the motor.

- **Integral fans (TEFC, IC411)**

Particular attention has been dedicated to the shape in order to reduce noise and improve the efficiency of the motor. Radial construction has been selected to allow rotation in both directions.

- **Fan cover**

In treated steel plate, properly profiled to improve efficiency and reduce the noise produced by the fan.

- **Forced ventilation (TEFV, IC416) see also page 403**

For special operating conditions, e.g. increased permissible number of operations per hour or variable speed operation, the motors of IEC sizes 63 to 200 can be supplied with forced ventilation by means of a separately fitted fan motor.

M

14. Insulation

The motors in this catalogue comply with the requirements of thermal class F. All windings are impregnated with varnish with a high mechanical strength. The maximum temperature of the insulation is, according to thermal class F, at +155 °C. The motors are utilised at rated values according to thermal class B (+130 °C). Copper wire insulation and the impregnation varnish have a temperature index class F and therefore there is a large margin of safety in addition to high overload capacity. Motors from frame size 160 are equipped with the WISE® insulation system of the new W22 motor range by WEG.

15. Noise levels

Noise measurements were taken in accordance with standard IEC 60034-9 (see table to the right).

Frame size	Noise level - dB(A), Distance: 1 meter			
	50 Hz		60 Hz	
	4p	6p	4p	6p
63	44	43	48	47
71	43	43	47	47
80	44	43	48	47
90	49	45	51	49
100	53	44	54	53
112	56	52	56	52
132	56	53	58	55
160	61	56	-	-
180	61	56	-	-
200	63	60	-	-
225	63	61	-	-
250	64	61	-	-

16. Balancing of rotors

Motors comply with vibration strength level "A" according to standard IEC 60034-14. On request, motors may also be balanced according to level "B".

17. Shaft ends

Shaft ends of motors in frame sizes 63 up to 132 are equipped with a conical bore and do not have a key, while the frame sizes 160 to 250 have a shaft with closed end keyway. On the non-driven side, modular motors have a system shaft to mount motor modules, such as brakes, encoders, back stops, etc.

18. Voltage, current and frequency

In standard execution the motors are delivered with following rated voltages: see chapter 19 (basic connection).

Special voltages

Motors for special voltages and/or frequencies are available on request.

Speed and connection

Tolerance of the motor speed according to IEC 60034. Terminal board connection see page 369.

Connection

Direct connection

The starting torque in direct connection amounts to 160 to 330 % of the rated torque, depending on power and number of poles. The starting current is about 2.5 to 8 times of the rated current.

Star-delta starting

The star-delta (Y-D) starting is an easy way to reduce the starting current and starting torque. Motors can be started with this starting method whenever the supply voltage corresponds to the rated voltage of the motors in delta connections. Up from frame size 112 the standard modular motors are supplied with windings designed for this starting method (e.g. 400 V D / 690 V Y). A Y-D-starting is only possible with delta service connection (this shall be considered when selecting a motor!), as the motor is first Y-connected and is changed over to D-connection after the run-up phase. At Y-D-starting, the starting currents and torques will be reduced to about 1/3 of the values produced in case of direct-online starting. Attention should be paid to the fact that a current impulse is produced when changing over to D-connection.

19. Electrical connection

Motor series 11N and 11P (IEC frame sizes 63 to 100)

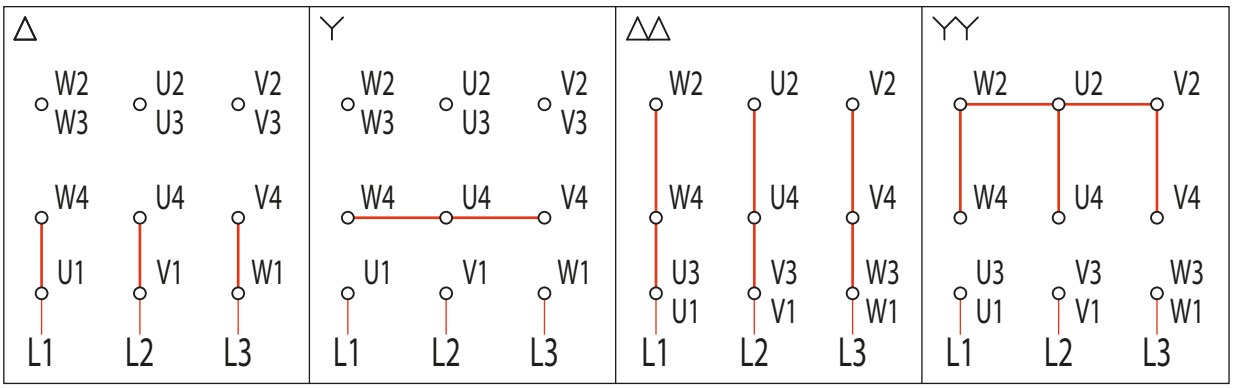
Possible connection		Rated voltages*		Frequency inverter operation	
		Rated power P_N	Increased rated power 1,2 x P_N		
△	Delta	230 V at 50 Hz 265 V at 60 Hz	- 265 V at 60 Hz	△	400 V, 87 Hz
△△	Delta - Delta	115 V at 50 Hz 132 V at 60 Hz	- 132 V at 60 Hz	△△	230 V, 100 Hz
Y	Star (basic connection)	400 V at 50 Hz 460 V at 60 Hz	- 460 V at 60 Hz	YY	400 V, 100 Hz
YY	Star - Star	200 V at 50 Hz 230 V at 60 Hz	- 230 V at 60 Hz	YY	460 V, 120 Hz

Motor series 11P and 22P (IEC frame sizes 112 to 250)

Possible connection		Rated voltages*		Frequency inverter operation	
		Rated power P_N	Increased rated power 1,2 x P_N		
△	Delta (basic connection)	400 V at 50 Hz 460 V at 60 Hz	- 460 V at 60 Hz	△△	400 V, 100 Hz
△△	Delta - Delta	200 V at 50 Hz 230 V at 60 Hz	- 230 V at 60 Hz		
Y	Star	690 V at 50 Hz -	-	△△	460 V, 120 Hz
YY	Star - Star	346 V at 50 Hz 400 V at 60 Hz	- 400 V at 60 Hz		

** Tolerances of rated voltages in compliance with range A according to DIN EN 60034-1 (see page 365)*

Terminal board connection



20. Variable speed drive application

The stator windings of the motors are wound with class F insulation (class H optional) and are suitable for either DOL starting or - regarding the limits shown in the tabel below - via a variable speed drive.

Rated voltage				
220-240/380-415 V (50 Hz) 400-460 V (60 Hz)				
Motor rated voltage	Voltage spikes	dV/dt *	Rise time *	Time between pulses
	At motor terminals (phase-phase)	At motor terminals (phase-phase)		
$V_{rated} < 460$ V	≤ 1600 V	≤ 5200 V/µs	≥ 0.1 µs	≥ 6 µs
460 V ≤ $V_{rated} < 575$ V	≤ 2000 V	≤ 6500 V/µs		
575 V ≤ $V_{rated} ≤ 1000$ V	≤ 2400 V	≤ 7800 V/µs		

** dV/dt and rise time definition according to NEMA MG1 - part 30*

Notes:

- In order to protect the motor insulation system, the maximum recommended switching frequency is 5 kHz.
- If one or more of the above conditions is not attended, a filter (load reactor or dV/dt filter) must be installed in the output of the VSD.
- General purpose motors with rated voltage greater than 575 V, which at the time of purchase did not have any indication of operation with VSD, are able to withstand the electrical limits set in the table above for rated voltage up to 575 V. If such conditions are not fully satisfied, output filters must be used.
- General purpose motors of the dual voltage type, for example 400/690 V or 380/660 V, which at the time of purchase did not have any indication of operation with VSD, are able to be driven by a VSD in the higher voltage only if the limits set in the table above for rated voltage up to 460 V are fully attended in the application. Otherwise, a load reactor or a dV/dt filter must be installed in the VSD output.

Electrical basic data

Notes for electrical basic data

The technical data according to selection tables (starting current, torques, power factor, etc.) are valid for the rated values, that means for the rated voltage and rated frequency.
If the motors are running on higher or lower voltage within the wide range voltage, the stator winding will be utilised according to thermal class F. In these cases a power increase in accordance to a. and b. on page 366 is not possible.
The design of the wide range winding permits supply voltage deviations in the indicated wide range voltage of ± 5 % without reduction of the power.

			1	2	3					4	5	6			7	8	9	10	11	12
Series	IEC frame size	Type	P_N [kW]	n_N [min^{-1}]	I_N at 115 V [A]	I_N at 200 V [A]	I_N at 230 V [A]	I_N at 400 V [A]	I_N at 690 V [A]	$\frac{I_A}{I_N}$ at 400 V	IE class	η 4/4 [%]	η 3/4 [%]	η 1/2 [%]	cosφ	M_N [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J_{mot} [kgm^2]	m [kg]

														13	14	15
		at 380 V			at 420 V			Frequency inverter operation 400 V / 87 Hz			Frequency inverter operation 400 V / 100 Hz			Brake		
Type	P_N [kW]	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	P_N [kW]	n_N [min^{-1}]	I_N [A]	P_N [kW]	n_N [min^{-1}]	I_N [A]	M_B [Nm]	J_B x10^{-3} [kgm^2]	m [kg]

M

1 P_N = Rated power

2 n_N = Rated speed

3 I_N = Rated current

4 I_A/I_N = Ratio of starting current to rated current

5 IE class = Efficiency class

6 η 4/4 (3/4, 1/2) = Efficiency at rated power, voltage and frequency

7 cosφ = Power factor

8 M_N = Rated torque

9 M_A/M_N = Ratio of starting torque to rated torque

10 M_K/M_N = Ratio of sweeping torque to rated torque

11 J_{mot} = Motor moment of inertia

12 m = Weight of the motor

13 M_B = Braking torque

14 J_B = Brake moment of inertia

15 m = Weight of the motor brake

4 Poles, 1500 min^{-1}, 50 Hz

Series	IEC frame size	Type	P_N [kW]	n_N [min^{-1}]	I_N at 115 V [A]	I_N at 200 V [A]	I_N at 230 V [A]	I_N at 400 V [A]	I_N at 690 V [A]	$\frac{I_A}{I_N}$ at 400 V	IE class	η 4/4 [%]	η 3/4 [%]	η 1/2 [%]	cosφ	M_N [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J_{mot} [kgm^2]	m [kg]
11N	63	11N-63-04E	0.12	1375	1.69	0.97	0.85	0.49	-	3.5	IE1	51.0	47.0	43.0	0.70	0.83	2.0	2.2	0.0003	5.0
		11N-63-04F	0.18	1370	2.16	1.24	1.08	0.62	-	3.5	IE1	58.0	54.0	46.0	0.72	1.26	2.0	2.2	0.0004	5.2
	71	11N-71-04E	0.25	1370	2.87	1.65	1.44	0.83	-	3.7	IE1	61.5	58.0	53.0	0.71	1.74	1.8	1.9	0.0004	6.0
		11N-71-04F	0.37	1365	3.69	2.12	1.84	1.06	-	3.7	IE1	66.0	62.0	58.0	0.76	2.59	2.0	2.0	0.0006	6.8
	80	11N-80-04E	0.55	1415	4.94	2.84	2.47	1.42	-	5.4	IE1	70.0	68.0	63.0	0.80	3.71	2.0	2.8	0.0019	8.8
11P	80	11P-80-04F	0.75	1430	5.70	3.28	2.85	1.64	-	7.0	IE3	82.5	82.0	80.0	0.80	5.01	3.2	3.4	0.0032	11.6
	90	11P-90S/L-04E	1.1	1455	8.35	4.80	4.17	2.40	-	7.6	IE3	84.8	84.5	83.0	0.78	7.22	2.5	3.3	0.0055	15.8
		11P-90S/L-04F	1.5	1450	11.2	6.42	5.58	3.21	-	7.4	IE3	85.5	85.0	84.0	0.79	9.88	2.6	3.4	0.0066	17.4
	100	11P-100L-04E	2.2	1435	16.3	9.40	8.15	4.70	-	7.6	IE3	86.7	86.5	85.0	0.78	14.6	2.5	3.0	0.0090	27.0
		11P-L100L-04F	3	1440	21.9	12.6	10.9	6.30	-	7.8	IE3	88.0	88.0	87.0	0.78	19.9	3.5	3.7	0.0120	33.6
	112	11P-112M-04E	4	1450	-	16.4	-	8.20	4.75	7.0	IE3	89.1	89.1	88.7	0.79	26.4	2.3	3.1	0.0182	34.5
	132	11P-132S-04E	5.5	1465	-	20.6	-	10.3	5.97	8.5	IE3	90.7	90.7	90.0	0.85	35.9	2.4	3.4	0.0528	53.4
		11P-L132M-04F	7.5	1465	-	28.4	-	14.2	8.22	8.5	IE3	90.6	90.0	87.5	0.84	48.9	2.5	3.4	0.0638	67.0
		11P-L132M-04G	9.2	1460	-	34.7	-	17.4	10.1	8.5	IE3	91.0	91.0	90.1	0.84	60.2	2.5	3.3	0.0730	72.0
22P	160	22P-160M-04E	11	1470	-	41.8	-	20.9	12.0	7.5	IE3	91.6	91.8	91.1	0.83	71.5	2.8	3.2	0.1191	134
		22P-160L-04F	15	1465	-	55.8	-	27.9	16.2	7.2	IE3	92.3	92.5	92.2	0.84	97.8	2.8	3.1	0.1534	157
	180	22P-180M-04E	18.5	1470	-	70.2	-	35.1	20.4	7.4	IE3	92.8	92.8	92.2	0.82	120	3.0	3.2	0.1740	171
		22P-180L-04F	22	1470	-	82.1	-	41.0	23.8	7.3	IE3	93.2	93.0	92.3	0.83	143	3.4	3.4	0.2097	192
	200	22P-200L-04E	30	1480	-	114	-	57.1	33.1	7.5	IE3	93.7	93.6	92.9	0.81	194	2.8	3.1	0.3202	250
		22P-200L-04F	37	1480	-	144	-	72.0	41.7	8.3	IE3	93.9	93.5	92.5	0.79	239	3.0	3.3	0.3869	277
	225	22P-225S/M-04F	45	1480	-	162	-	80.9	46.9	7.5	IE3	94.4	94.1	93.7	0.85	291	2.8	3.1	0.6733	414
		22P-225S/M-04G	55	1480	-	205	-	102	59.3	8.3	IE3	94.6	94.0	93.5	0.82	355	3.1	3.4	0.7347	462
	250	22P-250S/M-04F	75	1480	-	262	-	131	75.9	7.8	IE3	95.0	94.8	94.5	0.87	484	2.8	3.3	1.2200	566

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4 Poles, 1500 min^{-1}, 50 Hz

Type	P_N	at 380 V			at 420 V			Frequency inverter operation						Brake		
								400 V / 87 Hz			400 V / 100 Hz					
		I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	P_N	n_N	I_N	P_N	n_N	I_N	M_B	J_B	m
	[kW]	[A]			[A]			[kW]	[min^{-1}]	[A]	[kW]	[min^{-1}]	[A]	[Nm]	x10^{-3} [kgm^2]	[kg]
11N-63-04E	0.12	0.51	1.8	2.0	0.46	2.2	2.4	0.21	2393	0.89	0.24	2750	1.02	2 4	0.015 0.015	1.1 1.0
11N-63-04F	0.18	0.65	1.8	2.0	0.59	2.2	2.4	0.31	2384	1.13	0.36	2740	1.31			
11N-71-04E	0.25	0.87	1.6	1.7	0.79	2.0	2.1	0.44	2384	1.51	0.50	2740	1.73	4 2	0.015 0.015	1.0 1.1
11N-71-04F	0.37	1.12	1.8	1.8	1.01	2.2	2.2	0.64	2375	1.93	0.74	2730	2.23			
11N-80-04E	0.55	1.49	1.8	2.5	1.35	2.2	3.1	0.96	2462	2.59	1.1	2830	2.98	8 4	0.061 0.015	1.6 1.0
11P-80-04F	0.75	1.73	2.9	3.1	1.56	3.5	3.7	1.3	2488	2.99	1.5	2860	3.44			
11P-90S/L-04E	1.1	2.53	2.3	3.0	2.29	2.8	3.6	1.9	2532	4.38	2.2	2910	5.04	16 8	0.20 0.061	3.1 1.6
11P-90S/L-04F	1.5	3.38	2.3	3.1	3.06	2.9	3.7	2.6	2523	5.86	3	2900	6.74			
11P-100L-04E	2.2	4.95	2.3	2.7	4.48	2.8	3.3	3.8	2497	8.56	4.4	2870	9.87	32 16	0.45 0.20	4.2 3.1
11P-L100L-04F	3	6.63	3.2	3.3	6.00	3.9	4.1	5.2	2506	11.4	6	2880	13.2			
11P-112M-04E	4	8.63	2.1	2.8	7.81	2.5	3.4	-	-	-	8	2900	17.2	60 32	0.86 0.45	6.3 4.2
11P-132S-04E	5.5	10.8	2.2	3.1	9.81	2.6	3.7	-	-	-	11	2930	21.6	100 60	1.22 0.86	10.0 6.3
11P-L132M-04F	7.5	14.9	2.3	3.1	13.5	2.8	3.7	-	-	-	15	2930	29.8			
11P-L132M-04G	9.2	18.3	2.3	3.0	16.6	2.8	3.6	-	-	-	18.4	2920	36.5			
22P-160M-04E	11	22.0	2.5	2.9	19.9	3.1	3.5	-	-	-	22	2940	43.9	150 100	2.85 6.65	14.7 10.0
22P-160L-04F	15	29.4	2.5	2.8	26.6	3.1	3.4	-	-	-	30	2930	58.6			
22P-180M-04E	18.5	36.9	2.7	2.9	33.4	3.3	3.5	-	-	-	37	2940	73.7	250 150	6.65 2.85	21.5 14.7
22P-180L-04F	22	43.2	3.1	3.1	39.0	3.7	3.7	-	-	-	44	2940	86.1			
22P-200L-04E	30	60.1	2.5	2.8	54.4	3.1	3.4	-	-	-	60	2960	120	400 250	19.5 6.65	35 21.5
22P-200L-04F	37	75.8	2.7	3.0	68.6	3.3	3.6	-	-	-	74	2960	151			
22P-225S/M-04F	45	85.2	2.5	2.8	77.0	3.1	3.4	-	-	-	90	2960	170	400 250	19.5 6.65	35 21.5
22P-225S/M-04G	55	107	2.8	3.1	97.1	3.4	3.7	-	-	-	110	2960	214			
22P-250S/M-04F	75	138	2.5	3.0	125	3.1	3.6	-	-	-	150	2960	275	1000	45	73

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4 Poles, 1800 min^{-1}, 60 Hz

Series	IEC frame size	Type	P_N [kW]	n_N [min^{-1}]	I_N at 132 V [A]	I_N at 230 V [A]	I_N at 400 V [A]	I_N at 265 V [A]	I_N at 460 V [A]	$\frac{I_A}{I_N}$ at 460 V	IE class	η 4/4 [%]	η 3/4 [%]	η 1/2 [%]	cosφ	M_N [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J_{mot} [kgm^2]	m [kg]
11N	63	11N-63-04E	0.12	1695	1.54	0.88	0.51	0.77	0.44	5.0	IE1	62.0	55.0	42.0	0.55	0.68	3.2	4.2	0.0003	5.0
		11N-63-04F	0.18	1700	1.89	1.09	0.63	0.94	0.54	4.2	IE1	66.0	55.7	47.5	0.63	1.01	2.6	2.7	0.0004	5.2
	71	11N-71-04E	0.25	1700	2.40	1.38	0.80	1.20	0.69	3.7	IE1	68.0	65.0	55.0	0.67	1.41	2.1	2.2	0.0004	6.0
		11N-71-04F	0.37	1685	3.52	2.02	1.17	1.75	1.01	4.7	IE1	70.0	64.0	58.2	0.66	2.10	2.7	2.7	0.0006	6.8
	80	11N-80-04E	0.55	1725	4.29	2.46	1.42	2.14	1.23	6.5	IE1	74.0	71.0	64.9	0.76	3.05	2.5	3.6	0.0019	8.8
11P	80	11P-80-04F	0.75	1740	5.16	2.96	1.71	2.57	1.48	8.3	IE3	83.5	80.0	78.5	0.76	4.12	3.8	4.3	0.0032	11.6
	90	11P-90S/L-04E	1.1	1760	7.32	4.20	2.42	3.65	2.10	8.5	IE3	86.5	84.0	80.0	0.76	5.97	2.9	3.9	0.0055	15.8
		11P-90S/L-04F	1.5	1755	9.86	5.66	3.22	4.91	2.83	8.3	IE3	86.5	85.5	82.5	0.77	8.17	3.0	3.8	0.0066	17.4
	100	11P-100L-04E	2.2	1745	14.1	8.12	4.66	7.02	4.04	9.0	IE3	89.5	88.0	85.0	0.76	12.0	2.8	3.5	0.0090	27.0
		11P-L100L-04F	3	1740	19.0	10.9	6.27	9.46	5.43	8.6	IE3	89.5	86.5	84.0	0.77	16.5	4.6	4.8	0.0120	33.6
	112	11P-112M-04E	4	1755	-	14.6	8.37	-	7.28	8.0	IE3	89.5	89.5	87.5	0.77	21.8	2.5	3.5	0.0182	34.5
	132	11P-132S-04E	5.5	1765	-	18.1	10.4	-	9.07	8.9	IE3	91.7	91.0	88.5	0.83	29.8	2.6	4.3	0.0528	53.4
		11P-L132M-04F	7.5	1770	-	24.8	14.3	-	12.4	9.0	IE3	91.7	91.5	91.0	0.83	40.5	2.7	4.3	0.0638	67.0
		11P-L132M-04G	9.2	1765	-	30.7	17.7	-	15.4	9.0	IE3	91.7	91.5	90.4	0.82	49.8	2.6	3.8	0.0730	72.0
22P	160	22P-160M-04E	11	1775	-	36.9	21.2	-	18.4	8.2	IE3	92.4	92.2	91.0	0.81	59.2	3.0	3.7	0.1191	134
		22P-160L-04F	15	1775	-	49.4	28.4	-	24.7	7.6	IE3	93.0	92.9	92.0	0.82	80.7	2.9	3.5	0.1534	157
	180	22P-180M-04E	18.5	1775	-	61.3	35.2	-	30.6	7.7	IE3	93.6	93.0	92.0	0.81	99.6	3.4	3.6	0.1740	171
		22P-180L-04F	22	1775	-	72.0	41.4	-	36.0	8.5	IE3	93.6	93.2	92.1	0.82	118	3.5	3.8	0.2097	192
	200	22P-200L-04E	30	1780	-	100	57.5	-	50.0	8.3	IE3	94.1	93.7	92.6	0.80	161	2.9	3.5	0.3202	250
		22P-200L-04F	37	1782	-	124	71.5	-	62.2	9.3	IE3	94.5	94.0	93.0	0.79	198	3.5	3.6	0.3869	277
	225	22P-225S/M-04F	45	1782	-	142	81.4	-	70.8	8.6	IE3	95.0	94.5	93.0	0.84	241	3.2	3.5	0.6733	414
		22P-225S/M-04G	55	1785	-	179	103	-	89.3	9.6	IE3	95.4	94.5	93.8	0.81	294	3.7	4.2	0.7347	462
	250	22P-250S/M-04F	75	1780	-	229	132	-	115	8.2	IE3	95.4	95.0	94.1	0.86	403	3.2	4.1	1.2200	566

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4 Poles, 1800 min^{-1}, 60 Hz

Type	P_N	at 380 V			at 420 V			at 440 V			at 480 V			Frequency inverter operation						Brake		
														460 V / 105 Hz			460 V / 120 Hz			M_B	J_B	m
		I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	P_N	n_N	I_N	P_N	n_N	I_N		x10^{-3}	
	[kW]	[A]			[A]			[A]			[A]			[kW]	[min^{-1}]	[A]	[kW]	[min^{-1}]	[A]	[Nm]	[kgm^2]	[kg]
11N-63-04E	0.12	0.54	2.2	2.9	0.48	2.7	3.5	0.46	2.9	3.8	0.42	3.5	4.6	0.21	2966	0.81	0.24	3390	0.93	2	0.015	1.1
11N-63-04F	0.18	0.66	1.8	1.8	0.59	2.2	2.3	0.57	2.4	2.5	0.52	2.8	2.9	0.32	2975	0.99	0.36	3400	1.14	4	0.015	1.0
11N-71-04E	0.25	0.83	1.4	1.5	0.75	1.8	1.8	0.72	1.9	2.0	0.66	2.3	2.4	0.44	2975	1.26	0.50	3400	1.45	4	0.015	1.0
11N-71-04F	0.37	1.22	1.8	1.8	1.11	2.3	2.3	1.06	2.5	2.5	0.97	2.9	2.9	0.65	2949	1.84	0.74	3370	2.12	2	0.015	1.1
11N-80-04E	0.55	1.49	1.7	2.5	1.35	2.1	3.0	1.29	2.3	3.3	1.18	2.7	3.9	0.96	3019	2.25	1.1	3450	2.58	8	0.061	1.6
11P-80-04F	0.75	1.79	2.6	2.9	1.62	3.2	3.6	1.55	3.5	3.9	1.42	4.1	4.7	1.3	3045	2.70	1.5	3480	3.11	4	0.015	1.0
11P-90S/L-04E	1.1	2.54	2.0	2.7	2.30	2.4	3.3	2.20	2.7	3.6	2.01	3.2	4.2	1.9	3080	3.83	2.2	3520	4.41	16	0.20	3.1
11P-90S/L-04F	1.5	3.43	2.0	2.6	3.10	2.5	3.2	2.96	2.7	3.5	2.71	3.3	4.1	2.6	3071	5.16	3	3510	5.94	8	0.061	1.6
11P-100L-04E	2.2	4.89	1.9	2.4	4.42	2.3	2.9	4.22	2.6	3.2	3.87	3.0	3.8	3.9	3054	7.37	4.4	3490	8.48	32	0.45	4.2
11P-L100L-04F	3	6.57	3.1	3.3	5.95	3.8	4.0	5.68	4.2	4.4	5.20	5.0	5.2	5.3	3045	9.93	6	3480	11.4	16	0.20	3.1
11P-112M-04E	4	8.81	2.3	3.2	7.97	2.8	3.9	7.61	2.3	3.2	6.98	2.7	3.8	-	-	-	8	3510	15.3	60	0.86	6.3
11P-132S-04E	5.5	10.9	2.3	3.9	9.90	2.9	4.7	9.48	2.4	3.9	8.69	2.8	4.7	-	-	-	11	3530	19.0	32	0.45	4.2
11P-L132M-04F	7.5	15.1	2.4	3.9	13.6	3.0	4.7	13.0	2.5	3.9	11.9	2.9	4.7	-	-	-	15	3540	26.0	100	1.22	10.0
11P-L132M-04G	9.2	18.6	2.3	3.4	16.9	2.9	4.2	16.1	2.4	3.5	14.8	2.8	4.1	-	-	-	18.4	3530	32.3	60	0.86	6.3
22P-160M-04E	11	22.3	2.7	3.3	20.2	3.3	4.1	19.2	2.7	3.4	17.6	3.3	4.0	-	-	-	22	3550	38.6	150	2.85	14.7
22P-160L-04F	15	29.9	2.6	3.2	27.0	3.2	3.9	25.8	2.7	3.2	23.7	3.2	3.8	-	-	-	30	3550	51.9	100	6.65	10.0
22P-180M-04E	18.5	37.1	3.1	3.2	33.5	3.7	4.0	32.0	3.1	3.3	29.3	3.7	3.9	-	-	-	37	3550	64.3	250	6.65	21.5
22P-180L-04F	22	43.6	3.2	3.4	39.4	3.9	4.2	37.6	3.2	3.5	34.5	3.8	4.1	-	-	-	44	3550	75.6	150	2.85	14.7
22P-200L-04E	30	60.5	2.6	3.2	54.8	3.2	3.9	52.3	2.7	3.2	47.9	3.2	3.8	-	-	-	60	3560	105	400	19.5	35
22P-200L-04F	37	75.3	3.2	3.2	68.1	3.9	4.0	65.0	3.2	3.3	59.6	3.8	3.9	-	-	-	74	3564	131	250	6.65	21.5
22P-225S/M-04F	45	85.7	2.9	3.2	77.5	3.5	3.9	74.0	2.9	3.2	67.9	3.5	3.8	-	-	-	90	3564	149	400	19.5	35
22P-225S/M-04G	55	108	3.3	3.8	98.1	4.1	4.6	93.4	3.4	3.8	85.6	4.0	4.6	-	-	-	110	3570	188	250	6.65	21.5
22P-250S/M-04F	75	139	2.9	3.7	126	3.5	4.5	120	2.9	3.8	110	3.5	4.5	-	-	-	150	3560	242	1000	45	73

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6 Poles, 1000 min^{-1}, 50 Hz

Series	IEC frame size	Type	P_N [kW]	n_N [min^{-1}]	I_N at 115 V [A]	I_N at 200 V [A]	I_N at 230 V [A]	I_N at 400 V [A]	I_N at 690 V [A]	$\frac{I_A}{I_N}$ at 400 V	IE class	η 4/4 [%]	η 3/4 [%]	η 1/2 [%]	cosφ	M_N [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J_{mot} [kgm^2]	m [kg]
11N	63	11N-63-06F	0.12	890	1.87	1.08	0.94	0.54	-	2.6	IE1	48.0	47.0	43.0	0.67	1.29	1.7	1.6	0.00050	5.4
	71	11N-71-06E	0.18	895	2.89	1.66	1.45	0.83	-	3.5	IE1	54.0	52.0	48.0	0.58	1.92	1.8	2.4	0.00080	7.4
		11N-71-06F	0.25	900	3.83	2.20	1.92	1.10	-	3.5	IE1	57.5	57.0	56.5	0.57	2.65	2.2	2.2	0.00090	8.0
	80	11N-80-06E	0.37	920	4.10	2.36	2.05	1.18	-	3.8	IE1	62.0	60.0	55.0	0.73	3.84	1.7	1.7	0.00190	9.6
		11N-80-06F	0.55	930	5.53	3.18	2.77	1.59	-	4.0	IE1	65.8	65.8	65.0	0.76	5.65	2.0	2.6	0.00300	10.8
11P	90	11P-90S/L-06E	0.75	940	6.71	3.86	3.35	1.93	-	5.2	IE3	79.0	79.0	76.5	0.71	7.62	2.5	2.8	0.00660	17.8
	100	11P-100L-06D	1.1	960	9.74	5.60	4.87	2.80	-	6.0	IE3	81.0	80.0	77.0	0.70	10.9	2.1	3.2	0.01100	21.6
		11P-100L-06E	1.5	950	12.9	7.40	6.45	3.70	-	5.5	IE3	82.5	82.5	81.5	0.71	15.1	2.3	2.8	0.01430	25.4
	112	11P-112M-06E	2.2	960	-	10.4	-	5.22	3.03	6.4	IE3	84.5	84.5	83.0	0.72	21.9	2.4	2.9	0.02570	34.4
	132	11P-132S-06E	3	970	-	13.8	-	6.91	4.01	6.0	IE3	85.8	85.8	85.0	0.73	29.6	1.9	2.5	0.05660	55.0
		11P-132M-06F	4	960	-	18.0	-	8.99	5.21	6.5	IE3	86.8	86.8	86.0	0.74	39.8	2.2	2.5	0.05660	56.0
		11P-L132M-06G	5.5	970	-	25.0	-	12.5	7.25	7.3	IE3	88.0	87.0	86.0	0.72	54.2	2.1	2.5	0.07550	71.8

Legend see page 371

6 Poles, 1000 min^{-1}, 50 Hz

Type	P_N	at 380 V			at 420 V			Frequency inverter operation						Brake		
								400 V / 87 Hz			400 V / 100 Hz					
		I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	P_N	n_N	I_N	P_N	n_N	I_N	M_B	J_B	m
	[kW]	[A]			[A]			[kW]	[min^{-1}]	[A]	[kW]	[min^{-1}]	[A]	[Nm]	x10^{-3} [kgm^2]	[kg]
11N-63-06F	0.12	0.56	1.5	1.4	0.51	1.9	1.8	0.21	1549	0.98	0.24	1780	1.13	2 4	0.015 0.015	1.1 1.0
11N-71-06E	0.18	0.87	1.6	2.2	0.79	2.0	2.6	0.31	1557	1.52	0.36	1790	1.74	4 2	0.015 0.015	1.0 1.1
11N-71-06F	0.25	1.16	2.0	2.0	1.05	2.4	2.4	0.44	1566	2.02	0.50	1800	2.31			
11N-80-06E	0.37	1.24	1.5	1.5	1.12	1.9	1.9	0.64	1601	2.15	0.74	1840	2.48	8 4	0.061 0.015	1.6 1.0
11N-80-06F	0.55	1.67	1.8	2.3	1.51	2.2	2.9	0.96	1618	2.91	1.1	1860	3.34			
11P-90S/L-06E	0.75	2.03	2.3	2.5	1.84	2.8	3.1	1.3	1636	3.52	1.5	1880	4.05	16 8	0.20 0.061	3.1 1.6
11P-100L-06D	1.1	2.95	1.9	2.9	2.67	2.3	3.5	1.9	1670	5.11	2.2	1920	5.88	32 16	0.45 0.20	4.2 3.1
11P-100L-06E	1.5	3.89	2.1	2.5	3.52	2.5	3.1	2.6	1653	6.77	3.0	1900	7.77			
11P-112M-06E	2.2	5.49	2.2	2.6	4.97	2.6	3.2	-	-	-	4.4	1920	11.0	60 32	0.86 0.45	6.3 4.2
11P-132S-06E	3.0	7.27	1.7	2.3	6.58	2.1	2.8	-	-	-	6	1940	14.5	100 60	1.22 0.86	10.0 6.3
11P-132M-06F	4.0	9.46	2.0	2.3	8.56	2.4	2.8	-	-	-	8	1920	18.9			
11P-L132M-06G	5.5	13.2	1.9	2.3	11.90	2.3	2.8	-	-	-	11	1940	26.3			

Legend see page 371

6 Poles, 1200 min^{-1}, 60 Hz

Series	IEC frame size	Type	P_N [kW]	n_N [min^{-1}]	I_N at 132 V [A]	I_N at 230 V [A]	I_N at 400 V [A]	I_N at 265 V [A]	I_N at 460 V [A]	$\frac{I_A}{I_N}$ at 460 V	IE class	η 4/4 [%]	η 3/4 [%]	η 1/2 [%]	cosφ	M_N [Nm]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	J_{mot} [kgm^2]	m [kg]
11N	63	11N-63-06F	0.12	1105	1.67	0.96	0.55	0.83	0.48	2.9	IE1	53.2	50.4	46.6	0.59	1.04	2.0	2.0	0.00050	5.4
	71	11N-71-06E	0.18	1105	2.76	1.58	0.91	1.37	0.79	4.0	IE1	54.9	51.8	45.4	0.52	1.56	2.2	2.9	0.00080	7.4
		11N-71-06F	0.25	1110	3.52	2.02	1.17	1.75	1.01	3.7	IE1	58.5	58.0	57.5	0.53	2.15	2.6	2.6	0.00090	8.0
	80	11N-80-06E	0.37	1130	3.76	2.16	1.25	1.87	1.08	4.5	IE1	63.1	59.9	53.1	0.68	3.13	2.2	2.2	0.00190	9.6
		11N-80-06F	0.55	1140	5.54	3.18	1.84	2.76	1.59	5.0	IE1	67.0	67.0	65.0	0.65	4.57	2.5	3.4	0.00300	10.8
11P	90	11P-90S/L-06E	0.75	1145	5.82	3.34	1.92	2.90	1.66	6.2	IE3	82.5	80.0	77.0	0.69	6.26	2.9	3.4	0.00660	17.8
	100	11P-100L-06D	1.1	1165	8.22	4.72	2.73	4.10	2.36	7.9	IE3	87.5	81.0	76.0	0.67	9.02	2.4	3.8	0.01100	21.6
		11P-100L-06E	1.5	1155	11.0	6.30	3.63	5.48	3.14	6.3	IE2	86.5	85.5	82.5	0.69	12.4	2.5	3.2	0.01430	25.4
	112	11P-112M-06E	2.2	1165	-	8.88	5.11	-	4.44	7.6	IE2	87.5	85.5	82.5	0.71	18.0	2.6	3.4	0.02570	34.4
	132	11P-132S-06E	3	1165	-	12.0	6.91	-	6.00	6.3	IE3	89.5	88.5	85.5	0.70	24.6	1.8	2.9	0.05660	55.0
		11P-132M-06F	4	1165	-	15.8	9.09	-	7.90	6.6	IE3	89.5	88.5	85.5	0.71	32.8	1.9	3.0	0.05660	56.0
		11P-L132M-06G	5.5	1175	-	21.6	12.4	-	10.8	8.0	IE3	91.0	88.5	85.5	0.70	44.7	2.2	2.8	0.07550	71.8

M

Legend see page 371

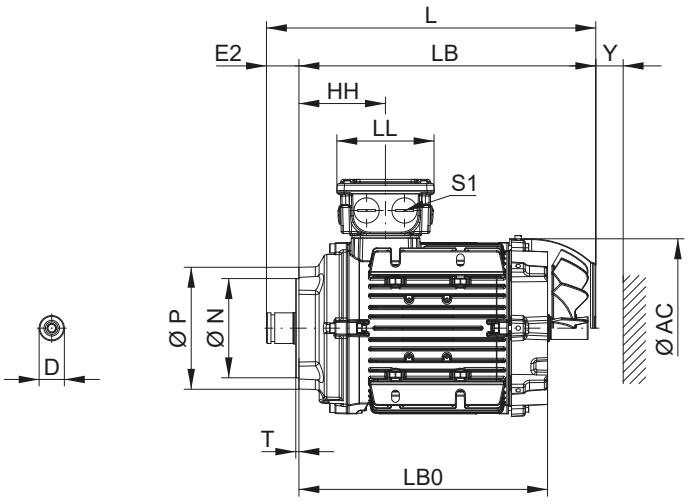
6 Poles, 1200 min^{-1}, 60 Hz

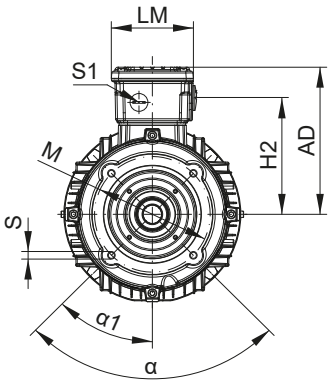
Type	P_N	at 380 V			at 420 V			at 440 V			at 480 V			Frequency inverter operation 460 V / 105 Hz			Frequency inverter operation 460 V / 120 Hz			Brake M_B	Brake J_B	m
	[kW]	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	I_N [A]	$\frac{M_A}{M_N}$	$\frac{M_K}{M_N}$	P_N [kW]	n_N [min^{-1}]	I_N [A]	P_N [kW]	n_N [min^{-1}]	I_N [A]	[Nm]	x10^{-3} [kgm^2]	[kg]
11N-63-06F	0.12	0.58	1.4	1.4	0.52	1.7	1.7	0.50	1.8	1.8	0.46	2.2	2.2	0.21	1934	0.87	0.24	2210	1.00	2 4	0.015 0.015	1.1 1.0
11N-71-06E	0.18	0.95	1.5	2.0	0.86	1.8	2.4	0.82	2.0	2.7	0.75	2.4	3.2	0.32	1934	1.44	0.36	2210	1.65	4 2	0.015 0.015	1.0 1.1
11N-71-06F	0.25	1.22	1.8	1.8	1.11	2.2	2.2	1.06	2.4	2.4	0.97	2.8	2.8	0.44	1943	1.84	0.50	2220	2.12			
11N-80-06E	0.37	1.31	1.5	1.5	1.18	1.8	1.8	1.13	2.0	2.0	1.04	2.4	2.4	0.65	1978	1.96	0.74	2260	2.27	8 4	0.061 0.015	1.6 1.0
11N-80-06F	0.55	1.92	1.7	2.3	1.74	2.1	2.8	1.66	2.3	3.1	1.52	2.7	3.7	0.96	1995	2.90	1.1	2280	3.34			
11P-90S/L-06E	0.75	2.01	2.0	2.3	1.82	2.4	2.8	1.74	2.7	3.1	1.59	3.2	3.7	1.31	2004	3.05	1.5	2290	3.49	16 8	0.20 0.061	3.1 1.6
11P-100L-06D	1.1	2.86	1.6	2.6	2.58	2.0	3.2	2.47	2.2	3.5	2.26	2.6	4.1	1.93	2039	4.31	2.2	2330	4.96	32 16	0.45 0.20	4.2 3.1
11P-100L-06E	1.5	3.80	1.7	2.2	3.44	2.1	2.7	3.28	2.3	2.9	3.01	2.7	3.5	2.63	2021	5.75	3	2310	6.59			
11P-112M-06E	2.2	5.38	2.3	3.1	4.87	2.9	3.7	4.64	2.4	3.1	4.26	2.8	3.7	-	-	-	4.4	2330	9.32	60 32	0.86 0.45	6.3 4.2
11P-132S-06E	3	7.27	1.6	2.6	6.58	2.0	3.2	6.27	1.6	2.7	5.75	2.0	3.2	-	-	-	6	2330	12.6	100 60	1.22 0.86	10.0 6.3
11P-132M-06F	4	9.57	1.7	2.7	8.66	2.1	3.3	8.26	1.7	2.7	7.57	2.1	3.3	-	-	-	8	2330	16.6			
11P-L132M-06G	5.5	13.1	2.0	2.5	11.8	2.4	3.1	11.3	2.0	2.6	10.4	2.4	3.0	-	-	-	11	2350	22.7			

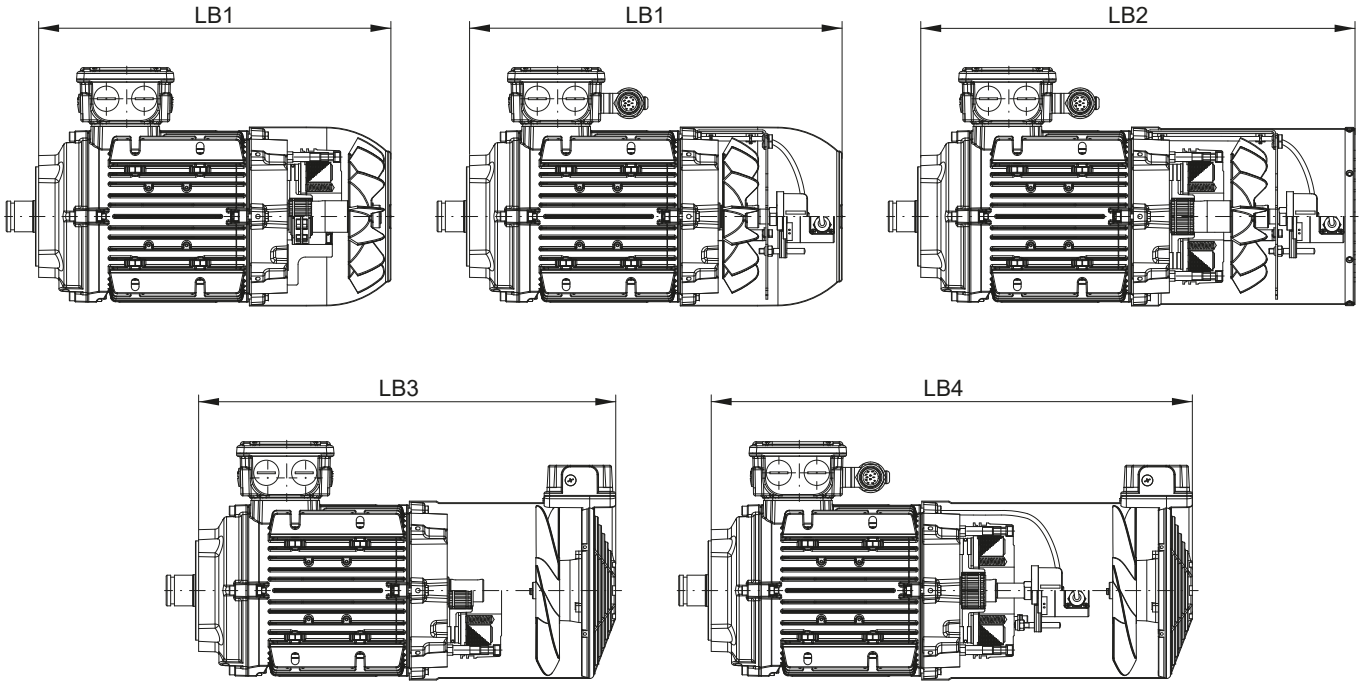
Legend see page 371

Dimension sheets

Integral motor frame sizes 63 - 132







Description of the dimensions L, LB, LB0,... see page 384

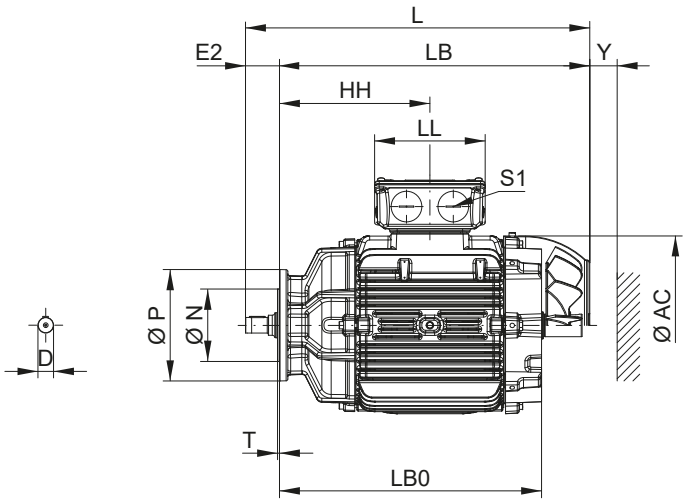
Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	≤ Ø 30 mm	j6
	> Ø 30 mm to Ø 50 mm	k6
	> Ø 50 mm	m6
N	≤ Ø 250 mm	j6
	> Ø 250 mm	h6

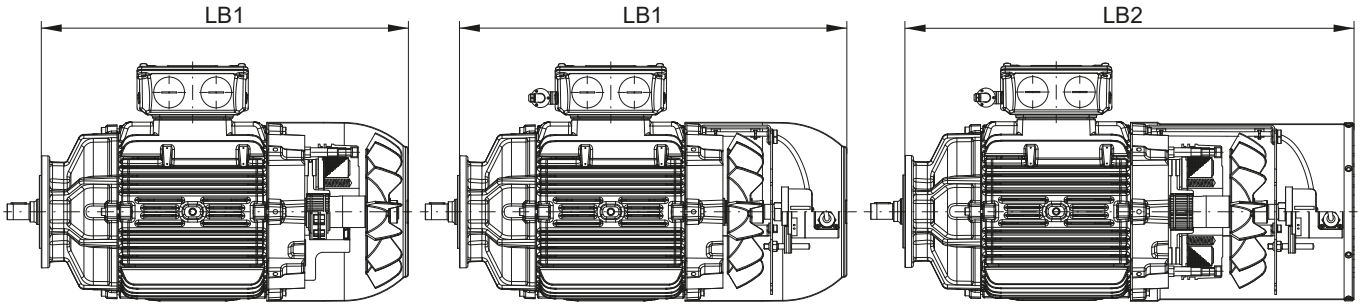
Dimension tolerances		
Dimension name	Dimensions	Permissible deviation
M	up to 200 mm	± 0.25 mm
	more than 200 up to 500 mm	± 0.5 mm
	ore than 500 mm	± 1.0 mm

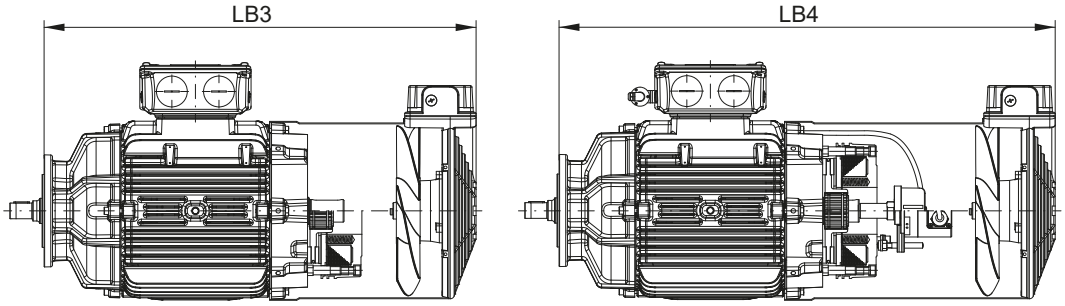
Dimensions in mm. Motor dimensions are typical values. Subject to change.

IEC frame size	63	71	80	90	100	L100	112	132	L132
AC	126	141	159	178	199	199	221	261	261
AD	125	133	142	152	162	162	180	200	200
D	16	19	24	24	34	34	34	42	42
E2	26	26	26	26	26	26	36	36	36
HH	83	91	88	88	107	107	117	122	122
H2	91	99	108	118	128	128	144	164	164
LL	108	108	108	108	108	108	137	137	137
LM	92	92	92	92	92	92	118	118	118
M	100	100	100	100	100	100	130	130	130
N	80	80	80	80	80	80	110	110	110
P	94	94	94	94	94	94	135	135	135
S	M6	M6	M6	M6	M6	M6	M8	M8	M8
S1	2 x M25 x 1.5 + 2 x M16 x 1.5						2 x M32 x 1.5 + 2 x M16 x 1.5		
T	3	3	3	3	3	3	4	4	4
Y	25	26	30	33	36	36	41	50	50
α	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°	4 x 90°
α_1	45°	45°	45°	45°	45°	45°	45°	45°	45°
L	230	264	272	314	364	402	384	449	487
LB	204	238	246	288	338	376	348	413	451
LB0	173	196	205	242	285	323	290	359	397
LB1	248	287	304	361	422	460	435	531	569
LB2	-	358	381	437	500	538	511	614	652
LB3	322	347	365	422	476	514	493	598	636
LB4	392	417	435	485	532	570	549	650	688

Integral motor frame sizes 160 to 250







Description of the dimensions L, LB, LB0,... see page 384

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
D	≥ Ø 28 mm	n6
N	≤ Ø 250 mm	j6
	> Ø 250 mm	h6

Dimension tolerances		
Dimension name	Dimensions	Permissible deviation
M	up to 200 mm	± 0.25 mm
	more than 200 up to 500 mm	± 0.5 mm
	more than 500 mm	± 1.0 mm

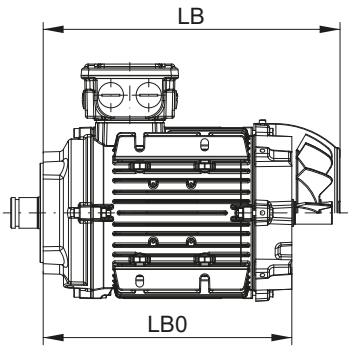
Dimensions in mm. Motor dimensions are typical values. Subject to change.

IEC frame size	160M					160L				
Motor flange	FR-200	FR-250	FR-300	FR-400	FR-550	FR-200	FR-250	FR-300	FR-400	FR-550
AC	329					329				
AD	266					266				
D	28					28				
E2	61	66	71	84	100	61	66	71	84	100
HH	270	265	260	257	241	270	265	260	257	241
H2	213					213				
LL	199					199				
LM	190					190				
M	165	215	265	300	400	165	215	265	300	400
N	130	180	230	300	450	130	180	230	300	450
P	200	250	300	400	550	200	250	300	400	550
S	12	15	15	19	19	12	15	15	19	19
S1	2 x M40 x 1.5 + 2 x M16 x 1.5					2 x M40 x 1.5 + 2 x M16 x 1.5				
T	3,5	4	4	5	5	3,5	4	4	5	5
Y	65					65				
α	4 x 90°					4 x 90°				
L	606					650				
LB	545	540	535	522	506	589	584	579	566	550
LB0	480	475	470	457	441	524	519	514	501	485
LB1	669	664	659	646	630	713	708	703	690	674
LB2	747	742	737	724	708	791	786	781	768	752
LB3	757	752	747	734	718	801	796	791	778	762
LB4	823	818	813	800	784	867	862	857	844	828

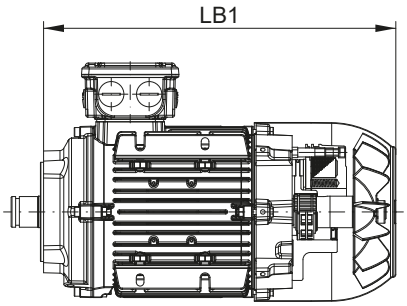
IEC frame size	180M				180L			
Motor flange	FR-250	FR-300	FR-400	FR-550	FR-250	FR-300	FR-400	FR-550
AC	347				347			
AD	281				281			
D	32				32			
E2	66	71	84	100	66	71	84	100
HH	303	298	285	269	303	298	285	269
H2	228				228			
LL	199				199			
LM	190				190			
M	215	265	300	400	215	265	300	400
N	180	230	300	450	180	230	300	450
P	250	300	400	550	250	300	400	550
S	15	15	19	19	15	15	19	19
S1	2 x M40 x 1.5 + 2 x M16 x 1.5				2 x M40 x 1.5 + 2 x M16 x 1.5			
T	4	4	5	5	4	4	5	5
Y	68				68			
α	4 x 90°				4 x 90°			
L	674				712			
LB	608	603	590	574	646	641	628	612
LB0	531	526	513	497	569	564	551	535
LB1	726	721	708	692	764	759	746	730
LB2	839	834	821	805	877	872	859	843
LB3	828	823	810	794	866	861	848	832
LB4	893	888	875	859	931	926	913	897

IEC frame size	200L			225S/M		250S/M
Motor flange	FR-300	FR-400	FR-550	FR-400	FR-550	FR-550
AC	386			453		482
AD	317			385		403
D	38			38		48
E2	71	84	100	84	100	100
HH	348	335	319	286	270	261
H2	260			304		321
LL	230			269		268
LM	218			286		286
M	265	300	400	300	400	400
N	230	300	450	300	450	450
P	300	400	550	400	550	550
S	15	19	19	19	19	19
S1	2 x M50 x 1.5 + 2 x M16 x 1.5			2 x M50 x 1.5 + 2x M16 x 1.5		2 x M63 x 1.5 + 2 x M16 x 1.5
T	4	5	5	5	5	5
Y	78			85		85
α	4 x 90°			8 x 45°		8 x 45°
L	804			912		951
LB	733	720	704	828	812	851
LB0	629	616	600	714	698	737
LB1	859	846	830	946	930	969
LB2	977	964	948	1062	1046	1085
LB3	929	916	900	1100	1084	1123
LB4	1009	996	980	1100	1084	1123

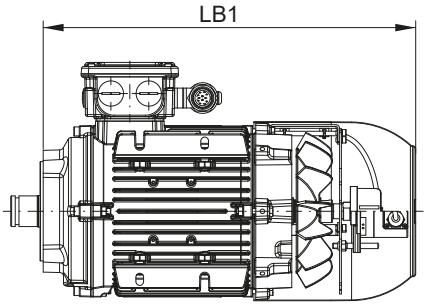
Length description motor modules



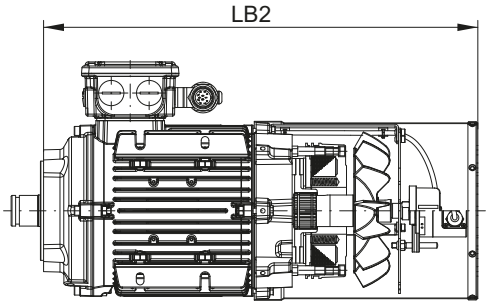
LB Self ventilated
LB0 Non-ventilated



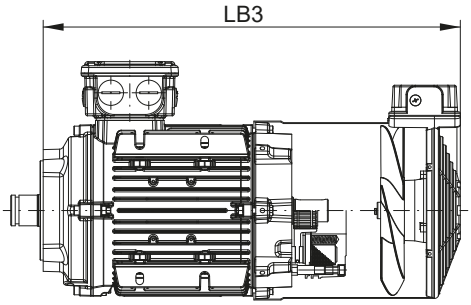
LB1 Self ventilated with brake or back stop type RSM



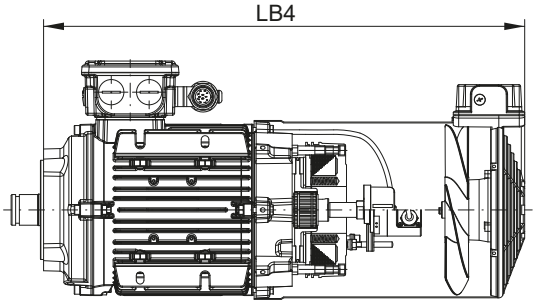
LB1 Self ventilated with standard encoder, SSI multiturn encoder or resolver



LB2 Self ventilated with brake and standard encoder, SSI multiturn encoder or resolver



LB3 Forced ventilation with or without brake



LB4 Forced ventilation with/without brake and standard encoder, SSI multiturn encoder or resolver

Motor modules

High / Low temperature execution

HT	High temperature execution
LT	Low temperature execution

To ensure steady operation even at increased or very low ambient temperatures, we offer specially adjusted motor executions with more resistant components.

Temperature control

TH	Bimetal switch for switch off
2TH	Bimetal switch for warning and switch off
TF	PTC thermistor for switch off
2TF	PTC thermistor for warning and switch off
KTY	Temperature sensor

In the standard version, the motors are designed with motor protection in the motor winding. In order to protect the winding of a three-phase induction motor against thermal overloads, resulting for example from overloading and operation with only two phases, one of the following devices can be provided:

TH - Bimetal switch „NC contact“ (+155 °C)
The contact is normally closed (NC); the disc opens when the winding's temperature reaches limits dangerous for the insulation system. When a limit temperature is reached, these bimetal switches (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

TF - PTC thermistor (+155 °C)
The most comprehensive protection against thermal overloading caused in starting against heavy masses, heavy alternating load and high frequency starting resp. brake operation or high ambient temperatures of the motor is provided by PTC thermistors installed in the motor winding.
The sensors are temperature sensitive resistors (PTC) which change value almost instantaneously at their response temperature. The switch off level corresponds to the thermal class of the insulation. This characteristic is used in combination with tripping devices (on request) to monitor the temperature of the motor. For warning purposes additional bimetal switches or PTC thermistors with lower switch off temperature can be fitted. These correspond to the key **2TH** and **2TF**.

KTY - Temperature sensor
This sensor is a semiconductor that changes its resistance depending on temperature in accordance with a defined characteristic. The evaluation is made by an extra tripping device (on request). The temperature sensor is embedded in the winding head of the motor in the same manner as a PTC thermistor. Evaluation is performed, for example, in the frequency inverter.

Anti-condensation heating

SH	Anti-condensation heating

Windings of motors, which are operating at conditions of extreme temperature changes or extreme climatic conditions, are endangered of condensation water. The built in anti-condensation heating warms up the motor windings after switching off and prevents the motor inside from condensation water.

During motor operation the anti-condensation heating must not be switched on. The limit temperature of the winding (+155 °C in thermal class F) must not be exceeded! Temperature control is advisable!

IEC frame size	Heating performance [W]
71	13
80	25
90	
100	
112	50
132	
160	75
180	
200	100
225	
250	

The anti-condensation heating must be supplied with a separate voltage.
Supply voltage: 230 V (1~) - Voltage range for IEC frame sizes: 71 to 200: 220 - 240 V, 50/60 Hz

Climatic protection

K1	Humidity protection
K2	Corrosion protection

The following standardised climatic protection executions are available for motors exposed to extreme climatic conditions:

K1 - Humidity protection
Humid warm climate or humid variable climate with max. relative air humidity of 92 %, also for areas on the seaside

K2 - Corrosion protection
Relative air humidity of more than 92 % (extreme formation of condensation water), furthermore against chemically aggressive gases and vapours of increased concentration

Drain

KB	Drain

In cases of increased air humidity, periodic duty, installation in the open air or when subject to extreme climatic conditions, the motors are endangered by the formation of condensation. The endshields have holes for drainage of water that may condense inside the frame. These holes are supplied with rubber drain plugs, which leave the factory in closed position and must be opened periodically to allow the exit of condensed water.

To determine the correct position of the hole the exact mounting position of the motor must be defined.

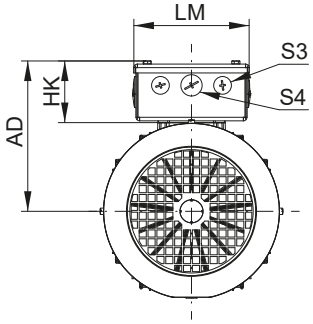
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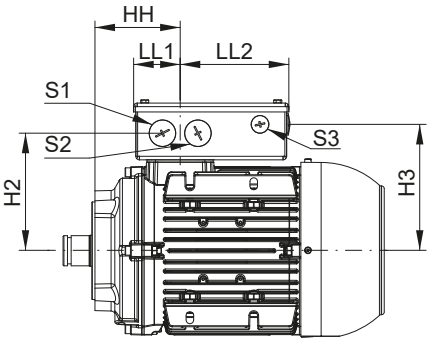
Terminal box designs

MIP	Multipin box
MIG..	MIG - connect systems

MIP - Multipin box
IEC frame sizes: 63 to 250

This extended terminal box was designed to permit additional options, such as brakes, incremental encoders, thermal elements, anti-condensation heating and the like, to be connected in an orderly fashion in the box.
The terminal box can be equipped with up to 22 sockets, including a brake rectifier. The terminal used are two-wire terminals fitted with cage clamp connectors. These are suitable for single-wire, multi-wire and fine-wire lines with diameters up to 4 mm^2.





IEC frame size		MIP box											
		AD	HH	HK	H2	H3	LM	LL1	LL2	S1	S2	S3	S4
63		132	90	69	95	99	130	52	122	2xM25	2xM25	4xM16	1xM20
71		140	99	69	103	107	130	52	122	2xM25	2xM25	4xM16	1xM20
80		149	95	69	112	116	130	52	122	2xM25	2xM25	4xM16	1xM20
90		159	96	69	122	126	130	52	122	2xM25	2xM25	4xM16	1xM20
100		169	109	69	132	136	130	52	122	2xM25	2xM25	4xM16	1xM20
112		182	130	70	144	154	140	68	138	2xM32	2xM32	4xM16	1xM25
132		202	123	70	164	174	140	68	138	2xM32	2xM32	4xM16	1xM25
160	FR-200	269	270	104	211	220	205	105	171	2xM50	2xM40	4xM16	1xM25
	FR-250		265										
	FR-300		260										
	FR-400		257										
	FR-550		241										
180	FR-250	284	303	104	231	240	205	105	171	2xM50	2xM40	4xM16	1xM25
	FR-300		298										
	FR-400		285										
	FR-550		269										
200	FR-300	300	348	104	250	256	205	105	177	2xM50	2xM40	4xM16	1xM25
	FR-400		335										
	FR-550		319										
225	FR-400	344	286	104	289	295	205	105	177	2xM50	2xM40	4xM16	1xM25
	FR-550		270										
250	FR-550	361	261	104	306	312	205	105	177	2xM50	2xM40	4xM16	1xM25

Dimensions in mm

MIG - connect system

Models: MIG10B, MIG16, MIG40, MIG10-FL
IEC frame sizes: 63 to 180 (MIG10-FL up to 250)

The MIG (Multiplug) - connect system is a standardised distributed connection system. It is used for the integration of power and control cabling into a single motor connector. The plug is assembled in-house and replaces the terminal box.

M

Most important advantages:

- Quick installation and service at site
- Avoiding wiring faults
- Motor replacement without electrical manipulation

For motor frame sizes 63 to 180 three MIG types of different power ratings are used. For each MIG model mating connectors are available:

MIG10B:
With 18 PINs and ground this most compact plug enables connection to motors up to a rated current of 10 A with voltages up to 400/690 V and protection degrees up to IP67. Beside the power wires a variety of auxiliary wires can be connected as well.

MIG16:
This MIG for mid-sized motors supports a maximum current of 16 A at 500 V with 10 PINs in total. In case a wider variety of auxiliary PINs is necessary a mixed holding can be offered (6 PINs -16 A; 12 PINs - auxiliary).

MIG40:
To achieve all contacts to be connected with one plug a mixed holding of PINs has to be used in this case. 6 PINs for 40 A at 400/690 V together with 12 PINs auxiliary guarantees full contactability.

For motor frame sizes 63 to 250 with forced ventilation the following MIG type is available:

MIG10-FL:
On demand this MIG can replace the normal forced ventilation connection. Thereby this motor module has all advantages of a MIG - connect plug system. The plug is equipped with 3 PINs and grounding and can be mounted on every forced ventilation size.

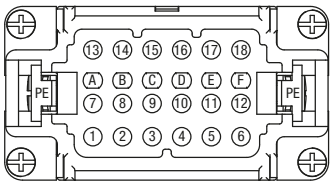


MIG40 execution

MIG - connect system overview table

IEC frame size		63	71	80	90	100	112	132	160	180
400 V, 50 Hz	4p	10B	10B	10B	10B	10B	16	16	40	40
	6p	10B	10B	10B	10B	10B	16	16	40	40
230 V, 50 Hz	4p	10B	10B	10B	10B	16	-	-	-	-
	6p	10B	10B	10B	10B	16	-	-	-	-
400 V, 100 Hz	4p	10B	10B	10B	10B	16	40	40	-	-
	6p	10B	10B	10B	10B	10B	16	40	-	-
460 V, 60 Hz	4p	10B	10B	10B	10B	10B	16	16	40	40
	6p	10B	10B	10B	10B	10B	16	16	40	40
460 V, 120 Hz	4p	10B	10B	10B	10B	16	16	40	-	-
	6p	10B	10B	10B	10B	10B	16	40	-	-

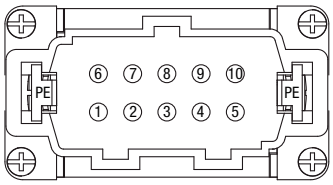
PIN assignment MIG10B



PIN	Assignment
PE	Grounding terminal
1	Winding connection U1
2	Winding connection V1
3	Winding connection W1
4*	Bimetal release 1 TH1
5	Brake heating tape
6	Anti-condensation heating
7	Winding connection W4
8	Winding connection U4
9	Winding connection V4
10*	Bimetal release 1 TH1
11	Brake heating tape
12	Anti-condensation heating

PIN	Assignment
13	Brake
14	Brake
15	Brake microswitch
16	Brake microswitch
17*	Bimetal release 2 TH2
18*	Bimetal release 2 TH2
*alternatively	
4	PTC thermistor 1 TF1
10	PTC thermistor 1 TF1
17	PTC thermistor 2 TF2
17	Resistance thermometer KTY1
18	PTC thermistor 2 TF2
18	Resistance thermometer KTY 1

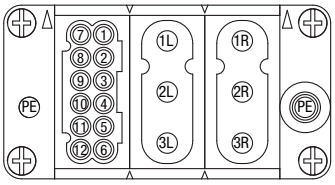
PIN assignment MIG16



PIN	Assignment
PE	Grounding terminal
1	Winding connection U1
2	Winding connection V1
3	Winding connection W1
4*	Brake
5*	Brake
6	Winding connection W4
7	Winding connection U4

PIN	Assignment
8	Winding connection V4
9*	Temperature sensor 1
10*	Temperature sensor 1
*alternatively	
9	Anti-condensation heating
10	Anti-condensation heating
4	Temperature sensor 2
5	Temperature sensor 2

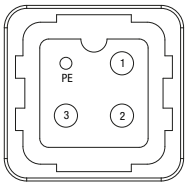
PIN assignment MIG40



PIN	Assignment
PE	Grounding terminal
1R	Winding connection U1
2R	Winding connection V1
3R	Winding connection W1
1L	Winding connection W4
2L	Winding connection U4
3L	Winding connection V4
1	Brake
2	Temperature sensor 1
3	Temperature sensor 2

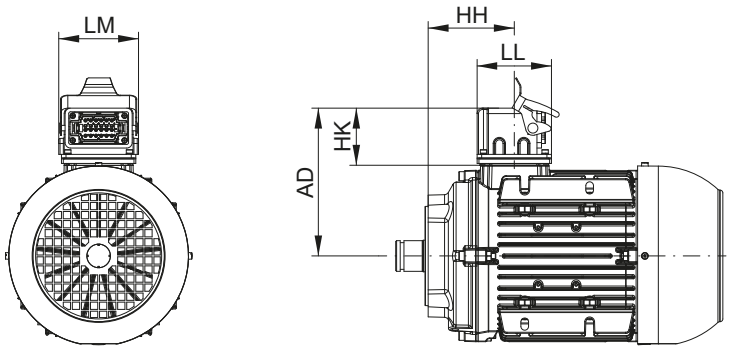
PIN	Assignment
4	Temperature sensor 3
5	Anti-condensation heating
6	
7	Brake
8	Temperature sensor 1
9	Temperature sensor 2
10	Temperature sensor 3
11	Anti-condensation heating
12	

PIN assignment MIG10-FL



PIN	Assignment
PE	Grounding terminal
1	Power connection L1
2	Power connection L2
3	Power connection L3

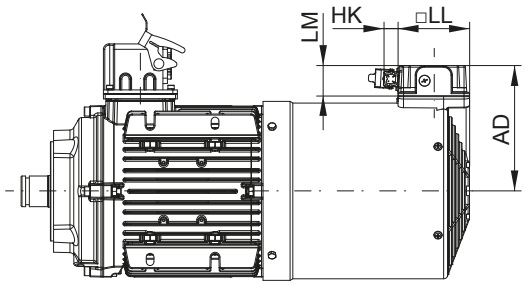
Dimension sheet MIG10B, MIG16, MIG40



IEC frame size		MIG - connect system					
		MIG Type	AD	HH	HK	LL	LM
63		10B	124	90	61	82	86
71		10B	132	99	61	82	86
80		10B	141	95	61	82	86
90		10B	151	96	61	82	86
100		10B / 16	161	109	61	82	86
112		16 / 40	173	130	61	82	86
132		16 / 40	193	123	61	82	86
160	FR-200	40	226	270	61	82	86
	FR-250			265			
	FR-300			260			
	FR-400			257			
	FR-550			241			
180	FR-250	40	241	303	61	82	86
	FR-300			298			
	FR-400			285			
	FR-550			269			

Dimensions in mm

Dimension sheet MIG10-FL



IEC frame size	MIG10-FL			
	AD	HK	□LL	LM
63	118	28	107	32
71	124			
80	134			
90	143			
100	152			
112	164			
132	185			
160	211			
180	211			
200	211			
225	211			
250	211			

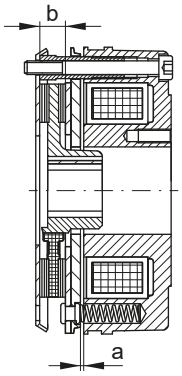
Dimensions in mm

M

Brake system and Back stop

BR..	Spring loaded brake
BBRHGD..	Double spring loaded brake
BRGH..	Totally closed spring loaded brake (Heavy Duty)
KKM	Back stop (frame sizes 63 to 90)
RSM	Back stop (frame sizes 100 to 250)

The mounted spring loaded brake is a single-disc brake with two friction surfaces. It is released electromagnetically and brakes by spring pressure, when the brake is de-energised. The DC-brake coil is supplied from a rectifier which is located in the motor terminal box and will be delivered as standard for AC-side connection.



a air gap
b brake lining thickness

Product information

- Voltages: Standard: 190 V DC (BR4, 8, 16, 32) or
  195 V DC (BR2, 5, 10, 20, 40, 60, 100, 150, 250, 400, 1000)
  Optional: 24 V DC
  Special execution: 102/103 V DC
- All bare parts corrosion protected
- Short switching times
- Large reserve for abrasion
- Designed for 100 % duty cycle and max. admissible temperature limit of +145 °C
- Degree of protection IP55 (standard)

On motors with brake-endshield on the non-driven side subsequent installation of brakes is possible (brake-motor-set available).

Function and adjustment (see illustration below)

When the brake is de-energised, the springs are pressing the armature disc (9) against the brake disc (7) and the friction plate (5). The motor shaft (3) is braked via the brake disc (7) and the gear hub (6). When the brake is energised, a magnetic field is built up and the armature disc (9) is pulled against the magnetic case with the coil (10). When the motor is running, the brake disc (7) can rotate freely from the brake surfaces. In the case of power failure, the brake functions automatically by spring force. A manual release (11) is optionally available (subsequent assembling is also possible).

Braking torque adjustment

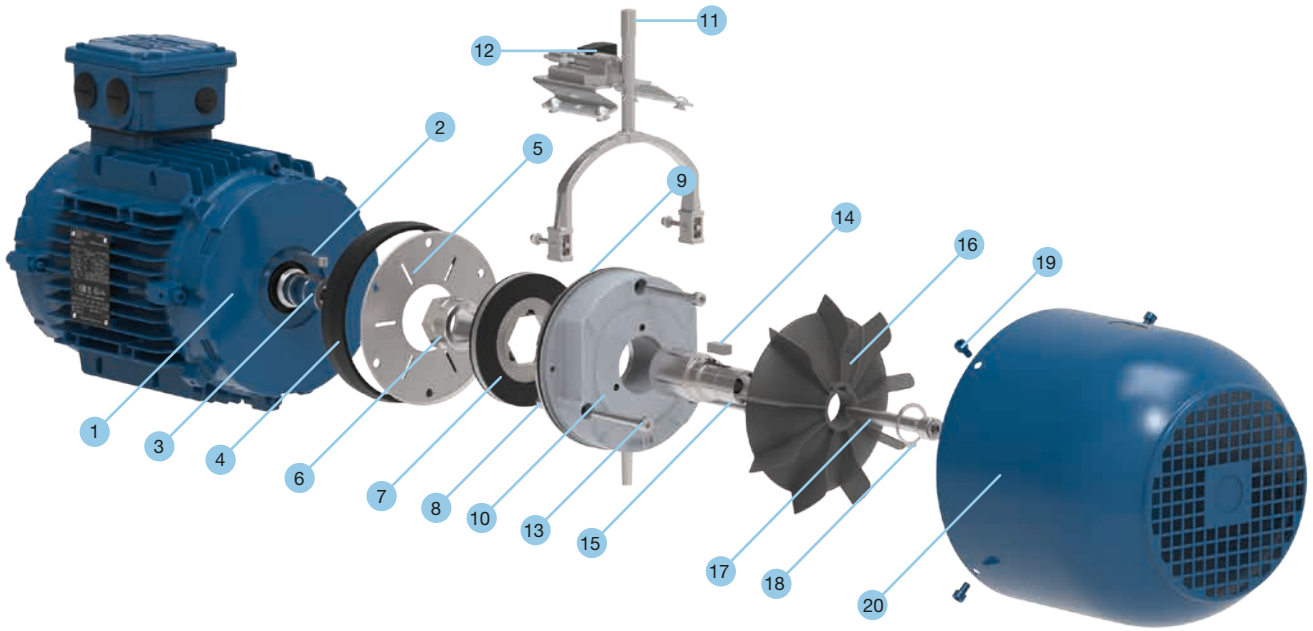
At delivering, the brakes and the brake motors are adjusted to the brake torque M_B. Brake torque reduction is done by removing of springs. Reduced brake torque on request.

Maintenance

Due to abrasion of the friction linings (7) the air gap "a" (see page 389) between magnetic case (10) and armature disc (9) expands. It is necessary to check and readjust the air gap in certain intervals or replace the brake disc (7).

Readjustment of the air gap

First of all the three fixing screws (13) must be loosened half a turn. Now the sleeve screws (8) can be screwed into the magnetic case (10) by turning counter-clockwise. By turning the three fixing screws (13) clockwise, the magnetic case (10) can be moved in direction to the armature disc (9), as long as the nominal air gap a_{normal} (see table on page 392) is obtained. Now the three sleeve screws (8) will be unscrewed clockwise from the magnetic case (10) and the fixing screws (13) will be fixed. Please check the air gap "a" with a feeler gauge, if it is symmetrical and adjust it if necessary.



1 Brake endshield
2 Key
3 Motor shaft
4 Dust protection ring
5 Friction plate
6 Gear hub
7 Brake disc with friction linings
8 Sleeve screws
9 Armature disc
10 Magnetic case
11 Manual release lever (optional)
12 Locking device
13 Socket cap screw
14 Key
15 Brake shaft extension
16 Fan
17 Socket cap screw
18 Retaining ring
19 Fan cover screws
20 Fan cover (brake execution)

Exploded view: Brake with manual release and locking device, frame size 100

Brake selection

As shown in the following selection table, it is possible to supply brake motors with different brake torques to correspond to the most possible applications. It is also possible to achieve an optimal adaption, by means of the mode of connection of the brake. If exact values about the application are available, we recommend to calculate the braking torque according to the following formulas on page 396, otherwise the proportion between motor rated torque (M_N) and braking torque (M_B) can be taken as an indication for the dimensioning of the brake and check, if the safety factor is sufficient.
For normal applications we recommend sizing the brake 1.5 - 2 times the motor rated torque (M_N), for special applications (lifting gears, switching operation, etc.) 2 - 3 times the motor torque and as holding brake approx. 1 time the rated torque.

Reduced brake torques on request.

- **Execution A - working brake**

M_B approx. 1.5 - 2 times M_N, or applications with medium masses to be accelerated and medium number of starts

- **Execution B - holding brake**

M_B approx. 1 time M_N for drives with small masses to be accelerated and number of starts resp. for keeping the drive stopped

Brake selection table

IEC frame size	BR.. Standard brake		BBRHGD.. Double brake		BRGH.. Totally closed brake	
	Standard Execution A M_B	Execution B M_B	Standard Execution A M_B	Execution B M_B	Standard Execution A M_B	Execution B M_B
63	2 Nm	4 Nm	-	-	-	-
71	4 Nm	2 Nm	2 x 6 Nm	-	5 Nm	-
80	8 Nm	4 Nm	2 x 12,5 Nm	2 x 6 Nm	10 Nm	5 Nm
90	16 Nm	8 Nm	2 x 25 Nm	2 x 12,5 Nm	20 Nm	10 Nm
100	32 Nm	16 Nm	2 x 50 Nm	2 x 25 Nm	40 Nm	20 Nm
112	60 Nm	32 Nm	2 x 75 Nm	2 x 50 Nm	60 Nm	40 Nm
132	100 Nm	60 Nm	2 x 125 Nm	2 x 75 Nm	100 Nm	60 Nm
160	150 Nm	100 Nm	2 x 187 Nm	2 x 125 Nm	150 Nm	100 Nm
180	250 Nm	150 Nm	2 x 300 Nm	2 x 187 Nm	250 Nm	150 Nm
200	400 Nm	250 Nm	2 x 500 Nm	2 x 300 Nm	400 Nm	250 Nm
225	400 Nm	250 Nm	2 x 500 Nm	2 x 300 Nm	400 Nm	250 Nm
250	1000 Nm	-	2 x 1200 Nm	-	1000 Nm	-

Spring loaded brake: electrical characteristics																		
U_{2nenn}=	U_2=	Brake size		2**	4*	5**	8*	10**	16*	20**	32*	40**	60**	100**	150**	250**	400**	1000**
[V]	[V]	M_B	[Nm]	2	4	5	8	10	16	20	32	40	60	100	150	250	400	1000
190* 195**	170-210 162-236	Coil current	[A]	0.13	0.11	0.13	0.13	0.18	0.16	0.20	0.21	0.26	0.32	0.42	0.50	0.65	0.85	0.83
		Power	[W]	26	20	26	25	36	30	38	40	50	63	82	99	127	165	162
		Resistance	[Ω]	1475	1805	1475	1444	1070	1203	990	903	754	600	464	385	300	230	235
24	19-28	Coil current	[A]	1.14	0.83	1.14	1.04	1.44	1.25	1.70	1.66	2.10	2.70	3.30	4.00	5.20	7.30	-
		Power	[W]	27	20	27	25	34	30	41	40	50	65	80	96	125	175	-
		Resistance	[Ω]	21	29	21	23	17	19	14	14	12	8.9	7.2	6.0	4.6	3.3	-
102 [1] ** 103 [1] *	85-133 93-113	Coil current	[A]	0.30	0.19	0.30	0.24	0.38	0.31	0.45	0.39	0.53	0.60	0.85	0.94	1.23	1.76	-
		Power	[W]	31	20	31	25	38	32	46	40	54	60	87	95	125	179	-
		Resistance	[Ω]	340	531	340	424	271	332	228	265	192	174	120	109	83	58	-

standard brake

[1] special execution (on demand)

Spring loaded brake: mechanical characteristics																
Brake size		**2**	**4**	**5**	**8**	**10**	**16**	**20**	**32**	**40**	**60**	**100**	**150**	**250**	**400**	**1000**
M_B	**[Nm]**	**2**	**4**	**5**	**8**	**10**	**16**	**20**	**32**	**40**	**60**	**100**	**150**	**250**	**400**	**1000**
M_{BS}	[Nm]	-	6	7.5	12	15	24	30	48	60	90	150	225	375	600	1500
P_{20}	[W]	26	20	26	25	36	30	38	40	50	63	82	100	127	165	162
J_B	[kgm²x10^{-3}]	0.015	0.015	0.015	0.061	0.045	0.20	0.172	0.45	0.45	0.86	1.22	2.85	6.65	19.5	45
P_R	[J/s]	80	*	80	*	100	*	130	*	160	200	250	300	350	400	450
W_{Rmax}	[Jx10^3]	3	3	3	7.5	6	12	12	24	25	35	50	75	105	150	200
W_{RN}	[Jx10^7]	5	8.5	5	15.8	12	26.4	20	53	35	60	125	200	340	420	450
a_{normal}	[mm]	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6
a_{max}	[mm]	0.6	0.5	0.6	0.5	0.7	0.5	0.8	0.75	0.9	1.0	1.1	1.1	1.2	1.2	1.7
b_{min}	[mm]	4.5	4.5	4.5	5.5	5.5	7.5	7.5	8.0	9.5	11.5	12.5	14.5	16.5	16.5	21
m	[kg]	1.1	1.0	1.1	1.6	1.9	3.1	3.1	4.2	4.6	6.3	10	14.7	21.5	35	73
t_2=	[ms]	35	45	35	57	45	76	60	115	80	120	160	200	220	300	320
t_1≈	[ms]	70	*	70	*	95	*	140	*	175	210	280	350	500	800	3000
t_1=	[ms]	30	28	30	31	45	47	60	53	75	90	120	150	180	200	160
Fits on IEC motor frame size		**63, 71**	**63, 71, 80**	**63, 71, 80**	**80, 90**	**80, 90**	**90, 100**	**90, 100**	**100, 112**	**100, 112**	**112, 132**	**132, 160**	**160, 180**	**180, 200, 225**	**200, 225**	**250**

** on request*

	Designation	Unit
Rated torque of spring loaded brake	M_B	[Nm]
Holding torque of the spring loaded brake	M_{BS}	[Nm]
Brake coil power consumption	P_{20}	[W]
Brake moment of inertia	J_B	[kgm²]
Frisction performance	P_R	[J/s]
Friction per switch cycle	W_{Rmax}	[J]
Friction until readjustment	W_{RN}	[J]
Air gap	a	[mm]

	Designation	Unit
Minimum brake rotor thickness	b	[mm]
Mass of moved machine parts	m	[kg]
Engaging time	t_1	[ms]
Release time of brake	t_2	[ms]
Output voltage DC rectifier	U_2=	[V]
For DC switching	=	-
For AC switching	≈	-

BR.. - Spring loaded brake

Degree of protection IP55.

BR.. Spring loaded brake without additional options

Possible options:

BRH.. With manual release
BRHA.. With manual release and locking device
BRR.. With corrosion protection IP55
BRS.. With dust protection IP65
BRSR.. With dust and corrosion protection IP65
BRGD.. Low noise execution

Ordering examples:

BR5 Brake 4 Nm

BRHASRGD32 Brake 32 Nm with manual release, locking device, dust and corrosion protection and low noise execution

BRM - Micro switch

When brake release monitoring is necessary, a micro switch (5) can be fitted to indicate brake release. This signal can be used to start the electric motor. When air gap “a” (see page 389) is at its maximum and the armature is no longer attracted to the magnet body the motor will not start and air gap “a” must be adjusted.
The installation of the micro switch is possible for brake sizes 5, 10, 20, 40, 60, 100, 150, 250, 400 and 1000.

BRH.. - Manual release

The installation of the manual release is possible for brakes > 4 Nm. The manual release (1) is necessary for manually releasing the brake in cases of power failure. Brakes will be supplied with manual releases fitted by factory. The adjustment of the manual release may not be changed, not even when air gap “a” (see page 389) is readjusted, as safety can be adversely affected.

BRHA.. - Manual release with locking device

In case of service the manual release can be fastened with a locking device. Take care that in rated condition the brake is released (see illustration on page 394). The 0° position of the manual release with locking device is **only possible** with motor frame sizes 225 and 250.

BRR.. - Corrosion protection

Protection class IP55. Consists of painted brake endshield and friction plate (3), which is made of non-corrosive material.

BRS.. - Dust protection

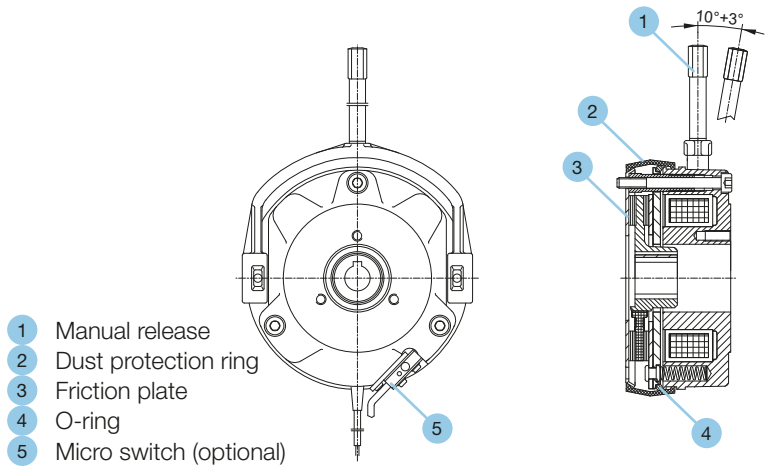
Protection class IP65. Consists of friction plate (3), which is made of non-corrosive material, dust protection ring (2) and shaft seal.

BRSR.. - Corrosion and dust protection

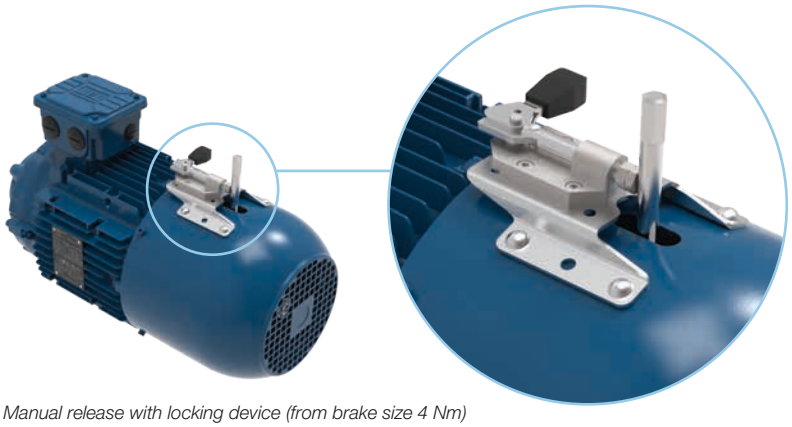
Protection class IP65. Consists of painted brake endshield, friction plate (3), which is made of a non-corrosive material, dust protection ring (2) and shaft seal.

BRGD.. - Low noise execution

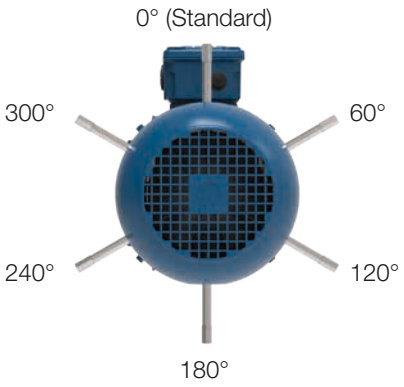
To reduce the switching noises of the spring loaded brake, the o-ring (4) can be inserted between armature plate and brake body.



1 Manual release
2 Dust protection ring
3 Friction plate
4 O-ring
5 Micro switch (optional)



Manual release with locking device (from brake size 4 Nm)



Possible positions of the manual release at the view of the motor fan cover. (The 0 ° position of the manual release with locking device is only possible with motor frame sizes 225 and 250.)

BBRHGD.. - Double spring loaded brake

Double brakes (from motor frame size 71) are two specially designed low noise brakes working independently of each other meeting high demands on safety.
As option a micro switch (5) is monitoring the function of the brakes. The brakes are executed per default in low noise execution and with manual release.

BBRHGD.. Double brake in low noise execution with manual release (standard)

Possible options:
BBRHSGD.. With dust protection IP65
BBRGD.. Without manual release

Ordering examples:

BBRHGD6 Double brake 2 x 6 Nm in low noise execution with manual release

BBRHSGD187 Double brake 2 x 187 Nm in low noise exec. with man. release and dust protection

BBRM - Micro switch

When brake release monitoring is necessary, a micro switch (5) can be fitted to indicate brake release. This signal can be used to start the electric motor. When air gap “a” (see page 389) is at its maximum and the armature is no longer attracted to the magnet body the motor will not start and air gap “a” must be re-adjusted.

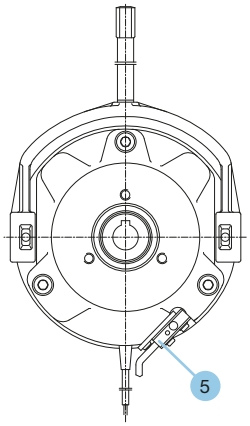
BBRHSGD.. - Dust protection

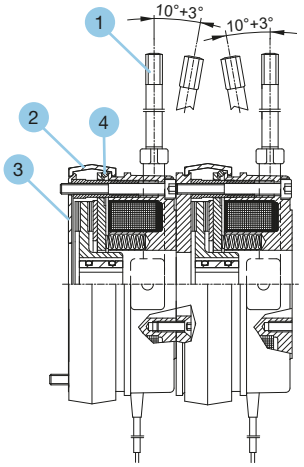
Protection class IP65. Consists of friction plate (3), which is made of non-corrosive material, dust protection ring (2) and shaft seal.

BBRHGD.. - Manual release

The manual release (1) for manually releasing of the brake in cases of power failure. Brakes will be supplied in standard with manual release fitted by factory. The adjustment of the manual release may not be changed, not even when air gap “a” (see page 389) is readjusted, as security can be adversely affected.

Possible positions of the manual release see on page 394.





1 Manual release
2 Dust protection ring
3 Friction plate
4 O-ring
5 Micro switch (optional)

BRGH - Totally closed spring loaded brake „heavy duty“

The fully capsulated brake design with dust and waterproof cable glands is in accordance with protection degree IP66. On ventilated motor executions IC411 the shaft passage is sealed by sealrings. The brake is executed with manual release in standard. On the brake disc a lining for high loads is fitted. Brake selection table see page 391.

BRGH..	Totally closed spring loaded brake with manual release
Possible options:	
BRGHA..	With manual release and locking device
BRG..	Without manual release

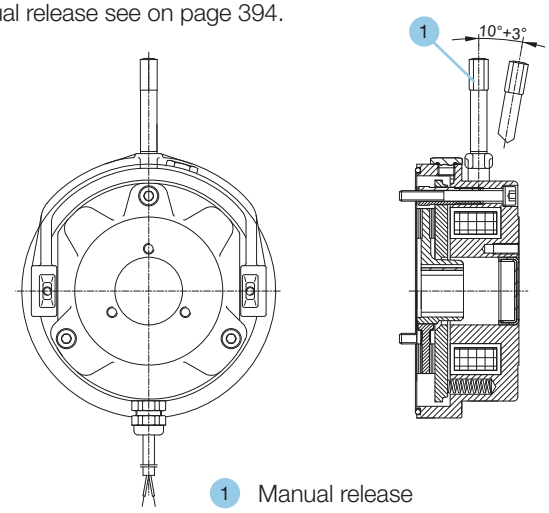
Ordering examples:

BRGH10	Brake 10 Nm with manual release
BRGHA150	Brake 150 Nm with manual release and locking device

BRGH.. - Manual release

The manual release (1) is necessary for manually releasing the brake in cases of power failure. Brakes will be supplied in standard with manual release fitted by factory.
The adjustment of the manual release may not be changed, not even when air gap “a” (see page 389) is readjusted, as safety can be adversely affected.

Possible positions of the manual release see on page 394.



1 Manual release

Anti-condensation heating for brakes

When operating at conditions of extreme temperature changes or extreme climatic conditions, the windings are endangered of condensation water. The built in anti-condensation heater warms up the magnet windings after switching off and prevents the brakes inside from condensation water.
The anti-condensation heating must be supplied with a separate voltage.
Supply voltage 230 V (1~)
Voltage range: 220 - 230 V, 50/60 Hz

Brake size [Nm]	Performance [W]
10	16
20	29
40	33
60	35
100	48
150	53
250	70
400	128
1000	131

Calculation of the brake torque

If the mass moment of inertia, the rotation speed and the permissible braking time of the machine are known, the torque of the spring loaded brake can be calculated.

	Formula	Unit
Load moment (static load)	$M_L = F \cdot r$	[Nm]
Braking torque (dynamic load) There is a pure dynamic load if fly-wheels, rolls, etc. have to be slowed down and when the static load is very insignificant.	$M_a = 1{,}046 \cdot 10^2 \cdot J_{zus} \cdot \frac{n}{t - t_1}$ $M_{aerf} = M_a \cdot K \leq M_B$	[Nm]
Braking torque (dynamic and static load) n most applications there is also dynamic load in addition to static load.	$M_{aerf} = (M_a \pm M_L) \cdot K$ $M_{aerf} = (1{,}046 \cdot 10^2 \cdot J_{zus} \cdot \frac{n}{t_B} \pm M_L) \cdot K$ $M_{aerf} \leq M_B$	[Nm]
Estimated determination of braking torque	$M_{aerf} = 9{,}55 \cdot 10^3 \cdot \frac{P}{n} \cdot K$ $M_{aerf} \leq M_B$	[Nm]
Deceleration time	$t = t_B + t_1$	[ms]
Acceleration time	$t_A = \frac{J_{ges} \cdot n_1}{9{,}55 \cdot (M_A \pm M_L)} + t_2$ $J_{ges} = J_E + J_{zus}$	[s] [kgm²]
Braking time	$t_B = \frac{J_{ges} \cdot n_1}{9{,}55 \cdot (M_A \pm M_L)}$ $J_{ges} = J_E + J_{zus}$	[s] [kgm²]
The conversion of several mass moments of inertia with different rotation speeds in a mass moment of inertia reduced to the motor shaft	$J_{zus} = \frac{J_2 \cdot n_2^2 + J_3 \cdot n_3^2 \ldots}{n_1^2}$	[kgm²]
Conversion of straight-line moved machine parts into a corresponding J on the motor shaft	$J = 91{,}2 \cdot m \cdot \frac{v^2}{n_1^2}$	[kgm²]
Friction per switch cycle	$W_R = \frac{J_{zus} \cdot n^2}{182{,}5} \cdot \frac{M_B}{M_B \pm M_L}$ $W_R < W_{Rmax}$	[J]
Friction performance	$P_R = W_R \cdot S$ $P_R < P_{Rmax}$	[J/s]

Designation	Unit	Description
M_L	[Nm]	Load moment Sign + : when the load moment acts decelerating (lifts when going up) Sign - : when the load moment acts accelerating (lifts when going down)
M_{aerf}	[Nm]	Necessary braking torque
M_a	[Nm]	Braking torque
M_A	[Nm]	Starting torque of motor
M_B	[Nm]	Rated torque of spring loaded brake
K	-	Safety factor according to the operating conditions (1...3)
F	[N]	Force
F_I	-	Factor of inertia
r	[m]	Lever arm
m	[kg]	Mass of moved machine parts
J, J_1, J_2	[kgm²]	Mass moment of inertia
J_E	[kgm²]	Proper mass moment of inertia
J_{ges}	[kgm²]	Total mass moment of inertia
J_{mot}	[kgm²]	Mass moment of inertia of the motor

Designation	Unit	Description
J_{zus}	[kgm²]	Additional mass moment of inertia
K	-	Safety factor K ≥ 2
P	[kW]	Power
P_R	[J/s]	Friction performance
P_{Rmax}	[J/s]	Maximum friction performance
n	[min^{-1}]	Rotation speed
n_1	[min^{-1}]	Rotation speed of motor
n_2, n_3	[min^{-1}]	Rotation speeds
t	[ms]	Deceleration time
t_A	[s]	Acceleration time
t_B	[s]	Braking time
t_1	[ms]	Engaging time
t_2	[ms]	Release time of brake
v	[m/s]	Speed
W_R	[J]	Friction work per switch cycle
W_{Rmax}	[J]	Permissible friction per switch cycle
S	[s^{-1}]	Number of switch cycle per second

Rectifier

Power supply

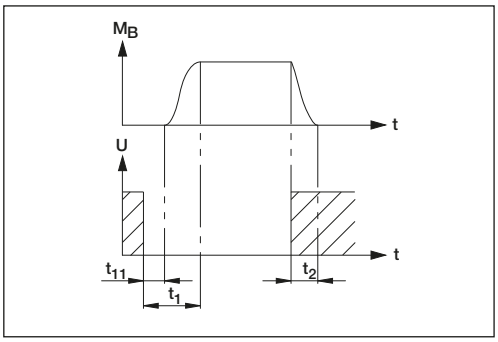
The DC-brake coil is normally supplied by a half wave rectifier incorporated in the motor terminal box and is also available for coil voltages 162-236 V DC, 85-133 V DC or 24 V DC (24 V with block terminal for external power supply!) Corresponding rectifiers and coil voltages are optionally available for all special voltages. The rectifiers are equipped with varistors to protect them against over-voltages.
At number of starts more than 1/s, please contact us for rectifier loading capacity.

Switching modes

By default brake motors will be delivered with connected rectifier for AC-side switching. For DC-side switching the bridge between terminals 5 and 6 must be removed and a switching contact must be connected. Start-up of motor only with connecting brake.

- **AC-side switching** *is executed before the rectifier on AC-side. Here the magnetic field is de-energised slowly, the brake interrupts softly with delay. (Release time t_1≈)*

- **DC-side switching** *is executed between rectifier and coil. Thereby an extremely low degree of overrunning is achieved. For all gear units, which require exact braking, especially for lifting gears, a DC-side switching of the brake is absolutely required. (Release time t_1=)*



	Designation	Unit
Braking torque	M_B	[Nm]
Voltage	U	[V DC]
Engaging time	t_1	[ms]
Response delay (time from switching power off until braking torque increases)	t_{11}	[ms]
Release time (time from switching power on until braking torque begins to decrease)	t_2	[ms]

M

Rectifier selection

- *Half-wave and bridge rectifier*

The half wave rectifier which halves the supply voltage is the most cost effective. The bridge rectifier produces 90 % DC voltage from the AC supply voltage. Both rectifiers are available for switching on AC or DC side. Varistors in the input and output protect the rectifiers against surge voltages.

Half-wave rectifier: $U_{2=} = 0.45 \times U_{1\sim}$ $I_{max} = 1$ A

Bridge rectifier: $U_{2=} = 0.9 \times U_{1\sim}$ $I_{max} = 2$ A

- *Fast excitation rectifier*

For motor frame sizes 63-132 this rectifier can't be installed in the standard terminal box.
The high-speed rectifier uses special connections to make different direct voltages available on the terminals. This means that the following brake operating modes can be selected:

1. Rapid response: Brake voltage level equal to the holding voltage of the fast excitation rectifier: The ventilation time of the brake is reduced.
2. Power reduction: Brake voltage level equal to overexcitation voltage of the fast excitation rectifier: reduced performance losses in the brake coil, engage time of the brake is reduced.

Max. connection voltage: $U_1\sim$ = 500 V AC
Max. permissible connections: 600 connections/h
Max. permissible switching capacity: 210 W

Rectifier type	System	U_N [V]	I_N [A]
FBGR-E500/220-GS	Half-wave rectifier	500	1
FBGR-B400/345-GS	Bridge rectifier	400	2
FBGR-S500/220-GS480	Fast excitiation rectifier	500	2

Overexcitation phase (voltage)	T = 0 - 500 ms (± 200 ms)	$U_{2=} = 0.9 \times U_{1\sim}$	$I_N = 4$ A
Holding phase (voltage)	T > 500 ms	$U_{2=} = 0.45 \times U_{1\sim}$	$I_N = 2$ A

Connection examples

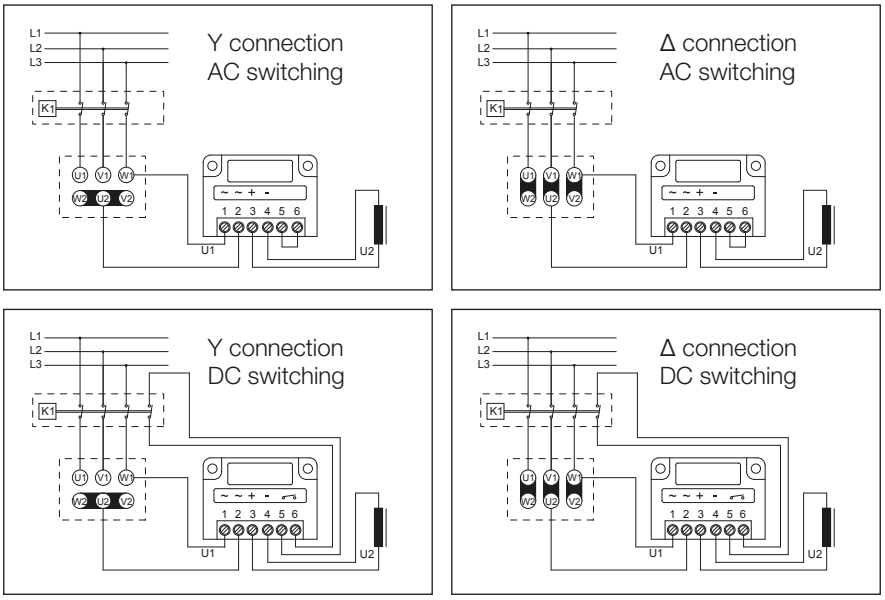
3~ U_N [V]	Connection	U_1~ [V]	Rectifier type	Designation U_1~	U_2= [V]	Brake coil voltage [V]
380-420-480	Δ	380-420-480	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
380-420-480	Y	380-400-480	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
660-690-725	Y	380-400-420	FBGR-E500/220-GS	480 V~	169-187-214	190/195 (162-236)
220-240	Δ	220-240	FBGR-B400/345-GS	230 V~	195-214	190/195 (162-236)
330-365-415	YY	190-210-240	FBGR-B400/345-GS	230 V~	169-187-214	190/195 (162-236)
190-210-240	ΔΔ	190-210-240	FBGR-B400/345-GS	230 V~	169-187-214	190/195 (162-236)
500	Δ	500	FBGR-E500/220-GS	480 V~	223	190/195 (162-236)
380-420-480	Y	220-240-280	FBGR-E500/220-GS	480 V~	98-107-125	102 (85-133) 1)
220-240-280	Δ	220-240-280	FBGR-E500/220-GS	480 V~	98-107-125	102 (85-133) 1)
330-365-415	YY	190-210-240	FBGR-E500/220-GS	480 V~	85-94-107	102 (85-133) 1)
190-210-240	ΔΔ	190-210-240	FBGR-E500/220-GS	480 V~	85-94-107	102 (85-133) 1)
500	Y	290	FBGR-E500/220-GS	480 V~	129	102 (85-133) 1)

standard brake

1) special execution

	Designation	Unit
Maximum rated output current DC rectifier	I_N	[A]
3~ rated motor voltage	3~ U_N	[V]
Maximum rated input voltage AC rectifier	U_N	[V]
Supply voltage AC rectifier	U_1~	[V]
Output voltage DC rectifier	U_2=	[V]

Switching diagram for braking motor (star-delta connection)



Back stop

Installing a back stop guarantees that the motor
a. can start only in one direction
b. can't be turned in wrong direction from counteract torques

KKM	Back stop (IEC frame size 63 to 90)
RSM	Back stop (IEC frame size 100 to 250)

The applied free wheels of the clamping bodies are mounted on the motor endshield (NDE) in such a manner, that the standard motor dimension LB up to motor size 90 will not be lengthened. From motor size 100 the motor dimension LB1 is valid.
The back stop has been largely dimensioned and corresponds approx. to the motor starting torque (M_A) to prevent a damage in case of short-time-starting against the back stop at switchings made by error. Nevertheless, the free direction of rotation must be determined first, especially at big motor powers and we recommend for the first starting the star connection and only then the delta connection at correct rotation.

Fields of application:

- Drives for elevators and inclined lifts
- Pumps and fans with backpressure ratchet
- Gearmotors for conveyors with non-reverse characteristic

KKM - Back stop (ball bearing free-wheelings)

The elements have bearing characteristics and are used instead of the bearing on the fan side. The outer dimensions are identical to the deep-groove ball bearings.

- *Function*

Rolling elements and spring loaded clamping bodies are built in between inner and outer ring. The rolling elements and ratchet elements are fixed in a plastic cage. Torque transmitting is made by tight fits on the inner and outer ring.
The elements are grease prelubricated. They are maintenance-free for 10,000 to 20,000 hours under normal working conditions.

- *Mounting*

The KKM back stop will be mounted instead of the bearing on the non-driven side.

RSM - Back stop (with centrifugal mechanism)

Because the mounted back stops have no bearing properties, they are mounted directly near the non-drive bearing. Above the lifting speed the centrifugal elements are working contactless and so they are maintenance free under normal conditions.

- *Mounting*

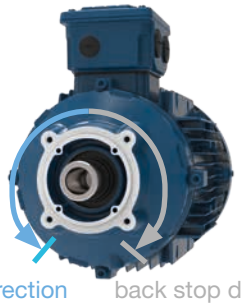
The centrifugal elements are mounted directly near the non-driven side bearing between bearing and fan under the fan cover. The inner ring of the back stop is connected with the shaft with a key DIN 6885-1.

- *Direction of rotation*

The direction of rotation has to be given with the ordering.

- *Back stop direction*

Back stop direction at a view on output shaft right or left.
By turning the entire back stop system by 180°, the back stop direction can be reversed (applies only for RSM!).



back stop direction left

back stop direction right

Back stop overview

IEC frame size	Back stop type	Torque [Nm]	Motor length dimension (see page 380)
63	KKM	7.4	LB
71	KKM	13.5	LB
80	KKM	40	LB
90	KKM	68	LB
100	RSM	150	LB1
112	RSM	150	LB1
132	RSM	390	LB1
160	RSM	580	LB1
180	RSM	580	LB1
200	RSM	1050	LB1
225	RSM	1050	LB1
250	RSM	2100	LB1

Encoder systems

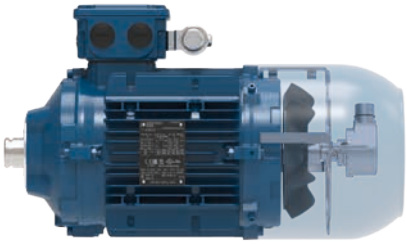
I.	Encoder outside the fan cover
S.	Encoder inside the fan cover



Encoder outside the fan cover



Standard position connector (M23)



Encoder inside the fan cover

Modular design

We are using encoders with hollow shaft (ø 12 mm) open at one end. The modular motor shafts are fit to attach an encoder set. The mounting of encoders therefore is easy and immediately possible. Add-on kits are easy to retrofit.

Mounting of encoders

The encoders are equipped with an integral bearing and connected directly on the non-driven motor shaft side. During angular acceleration of the shaft the stator coupling must absorb only the torque resulting from friction in the bearing.

IG, SG - Standard encoder

Available for IEC motor frame sizes 63 to 250 (IG) / 71 to 250 (SG)
Type: Kübler Sendix 5020
Pulses per revolution: 1024
Output signal: HTL or TTL
Voltage supply: 10-30 V at HTL, 5 V at TTL
Degree of protection: IP66
IG standard: with PIN connector (M23) on the encoder
SG standard: with PIN connector (M23) on the terminal box (mating connector not included in delivery)

Other numbers of pulses per revolution on request.

IC, SC - SINCOS encoder

Available for IEC motor frame sizes 80 to 225 (IC) / 80 to 250 (SC)
Pulses per revolution: 1024
Output signal: Sinus 1VSS
Voltage supply: 10-30 V or 5 V
IC standard: with PIN connector (M23) on the encoder
SC standard: with PIN connector (M23) on the terminal box (mating connector not included in delivery)

Other numbers of pulses per revolution on request.

Encoders in standard mechanical designs can also be implemented as electric SINCOS versions. In this case, signals A and B are available on the output as sinusoidal voltage signals with a signal level of 1 VSS or one 0 pulse once per rotation. These can be used in many different ways in the downstream electronics. Via interpolation of the two signals shifted by 90°, very high resolutions are achieved and can therefore also be used with very slow movements for speed control.

IR, SR - Resolver

Available for IEC motor frame sizes 71 to 200
Degree of protection: IP54 (IP66 on request)
IR standard: with 0.6 m cable (open one way, 6 strands)
SR standard: with 0.6 m cable (open one way, 6 strands)

Resolvers are primarily 2-pole, electromagnetic measuring transducers for converting the angle position of a rotor into an electrical value. Resolvers are wear-free and robust, as the most important elements for acquiring the information consist only of iron core and copper coils. Contamination therefore plays a lesser role.
The configuration consists of 2 stator coils positioned at an offset of 90° (S1/S3 and S2/S4) and a rotating rotor coil (R1/R2).

In this process, the rotor coil supply is inductive, in other words, brushless. The R1/R2 rotor coil is excited using a sinusoidal alternating voltage. The amplitudes of the voltages induced in stator coils S1/S3 and S2/S4 depend on the rotor angle.

Input voltage: $E_{(R1/R2)} = E \times \sin(\omega t)$

Output: $E_{(S1/S3)} = T_r \times E_{(R1/R2)} \times \cos(\varphi)$
$E_{(S2/S4)} = T_r \times E_{(R1/R2)} \times \sin(\varphi)$

Standard input voltage: $E_{(R1/R2)} = 7$ V
Standard transformation ratio: $T_r = 0.5$

SS - SSI multi turn encoder

Available for IEC motor frame sizes 71 to 250
Digits per revolution: 8192 at 4096 possible rotations
Output signal: TTL
Voltage supply: 5 V
Degree of protection: IP66
SS standard execution: with PIN connector on the terminal box

The SSI multiturn absolute encoder signalises a single exactly defined position to the drive frequency controller. Maximum permissable number of motor revolutions can be 4096. The resolution is 8192 steps per revolution. The serial communication is corresponding to the specification of the SSI-protocol. SSI means Synchronous Serial Interface.

The permissible cable length is 100 m at least if EMC-compatible wiring is guaranteed.

SV - Heavy Duty encoder

Available for IEC motor frame sizes 90 to 250
Pulses per revolution: 1024
Output signal: HTL or TTL
Voltage supply: 10 - 30 V at HTL, 5 V at TTL
Degree of protection: IP65
Optional insulation inserts available to protect against shaft currents.

The Heavy Duty encoder boasts a high degree of ruggedness in a very compact design. Its special construction makes it perfect for all applications in very harsh environments.

IA, SA - Special encoder

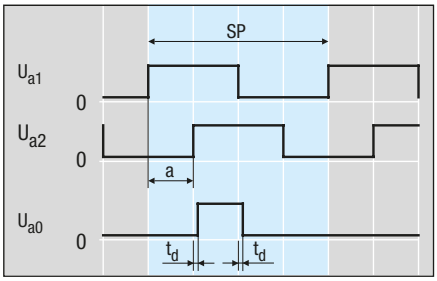
The mounting of special encoders is possible on request.

Type of signal

- **HTL-/TTL - output signal**

Encoders with HTL/TTL square-wave output signals incorporate a circuit that digitises scanning signals, providing two 90° (el.) phase-shifted HTL-/TTL square-wave pulse trains U_{a1} and U_{a2} and a reference pulse U_{a0}, which is gated with the incremental signals U_{a1} and U_{a2}.
The integrated electronics also generate the inverse signals of all square-wave pulse trains. The distance between two successive edges of the combined pulse trains U_{a1} and U_{a2} is one measuring step. HTL/TTL square-wave signals can be transmitted to the subsequent electronics (without inverting: max. cable length 100 m; with inverting: 250 m), provided that the specified 5 V ± 5 % supply voltage is maintained at the encoder.

Extended cable length is possible with fiber-optic cable.



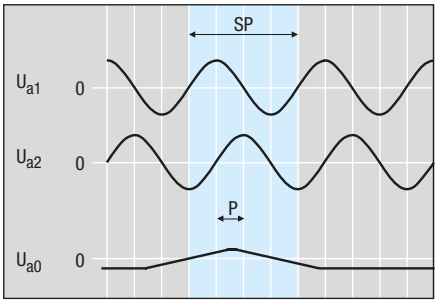
HTL/TTL

HTL signal levels
$U_H \geq 2.1$ V at $I_H = 20$ mA
$U_L \leq 2.8$ V at $I_L = 20$ mA
with power supply +24 V, without cable

TTL signal levels
$U_H \geq 2.5$ V at $I_H = 20$ mA
$U_L \leq 0.5$ V at $I_L = 20$ mA

- **1VPP - output signals**

The sinusoidal incremental signals U_{a1} and U_{a2} are phase-shifted by 90° and have signal levels of approximately 1VPP. The signal peaks from the reference mark signal have a usable component of approximately 0.5 V.
Signal interpolation and digitalisation can be performed by electronics, which output TTL-compatible signals.
Voltage signals can be transmitted to the subsequent electronics unit over cables as long as 50 m, provided that the specified 5 V ± 5 % supply voltage is maintained at the encoder. Encoders that produce voltage signals have sensor line connections for detection of the supply voltage at the encoder; corresponding control systems in the subsequent electronics can then maintain the voltage tolerance.



1VSS

	Designation
Encoder signals	U_{a1} , U_{a2}
Reference pulse	U_{a0}
Signal level HIGH	U_H
Signal level LOW	U_L
Edge separation	a
Phase shift	P
Current at signal level HIGH	I_H
Current at signal level LOW	I_L
Signal period	SP
Delay time	t_d

M

Ventilation systems

FL	Forced ventilation
ZL	Fly wheel fan
ZM	Metal fan
U	Non-ventilated without NDE shaft end
UW	Non-ventilated with NDE shaft end

FL - Forced ventilation (TEFV, IC416)

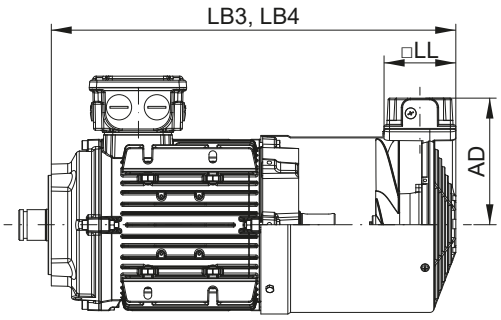
IEC frame sizes: 63 to 250

At applications with high starting frequencies, startings against heavy masses, heavy alternating load and operations with frequency inverters, self ventilation of the motor sometimes will not be sufficient and forced ventilation is necessary.
At frequencies under 30 Hz forced ventilation is recommended in order not to thermally overstrain the motor.

Forced ventilation currents (2 pole ventilation motor)

IEC frame size	Phases Connection	Capacitor	50 Hz					60 Hz				
			Voltage range	Current	Power	Air current capacity	Noise level	Voltage range	Current	Power	Air current capacity	Noise level
		µF	V	A[1)]	W[1)]	m³/h	db(A)	V	A[1)]	W[1)]	m³/h	dB(A)
63	3~Y	-	346-525	0.09	28	54	47	380-575	0.08	29	69	52
	3~Δ	-	200-303	0.15	28			220-332	0.14	29		
	1~⊥Δ	1.5	230-277	0.18	46			230-277	0.21	54		
71	3~Y	-	346-525	0.09	29	78	51	380-575	0.07	28	99	56
	3~Δ	-	200-303	0.15	29			220-332	0.13	28		
	1~⊥Δ	1.5	230-277	0.18	48			230-277	0.21	56		
80	3~Y	-	346-525	0.09	33	128	54	380-575	0.07	36	151	58
	3~Δ	-	200-303	0.16	33			220-332	0.13	36		
	1~⊥Δ	1.5	230-277	0.19	48			230-277	0.22	59		
90	3~Y	-	346-525	0.22	78	216	59	380-575	0.18	71	258	63
	3~Δ	-	200-303	0.39	78			220-332	0.32	71		
	1~⊥Δ	3.0	220-277	0.29	59			220-277	0.23	61		
100	3~Y	-	346-525	0.21	80	278	60	380-575	0.18	80	328	65
	3~Δ	-	200-303	0.37	80			220-332	0.30	80		
	1~⊥Δ	3.0	220-277	0.29	62			220-277	0.28	73		
112	3~Y	-	346-525	0.20	87	355	62	380-575	0.17	93	418	66
	3~Δ	-	200-303	0.35	87			220-332	0.29	93		
	1~⊥Δ	3.0	220-277	0.27	64			220-277	0.36	88		
132	3~Y	-	346-525	0.37	160	550	67	380-575	0.32	180	650	71
	3~Δ	-	200-303	0.64	160			220-332	0.55	180		
	1~⊥Δ	6.0	230-277	0.52	125			230-277	0.61	163		
160	3~Y	-	346-525	0.74	314	980	73	380-575	0.62	391	1160	77
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
180	3~Y	-	346-525	0.74	314	1200	74	380-575	0.62	391	1379	80
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
200	3~Y	-	346-525	0.74	314	1324	74	380-575	0.62	391	1575	81
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
225	3~Y	-	346-525	0.74	314			380-575	0.62	391		
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		
250	3~Y	-	346-525	0.74	314			380-575	0.62	391		
	3~Δ	-	200-303	1.28	314			220-332	1.08	391		
	1~⊥Δ	12	230-277	1.05	246			230-277	1.52	390		

1) maximum permissible values



IEC frame size	AD	□LL
63	118	107
71	124	107
80	134	107
90	143	107
100	152	107
112	164	107
132	185	107
160	211	107
180	211	107
200	211	107
225	211	107
250	211	107

Dimensions in mm. Dimensions LB3 and LB4 see drawings from page 380

ZL - Fly wheel fan

IEC frame sizes: 71 to 132 (special execution)

Fly wheel fans increase the inertial moment of the standard motors by a multiple and help to decrease the start up time of the motors. Motors with fly wheel fan often are used at crane drives or machine-systems where a soft start up is required. Available for motor sizes 71 to 132 on request, exchangeable without modification with standard fan, pay attention to the reduced starting frequency! Braking by reversal and driving up against a buffer stop is not permissible.

Motor without brake: $J_{ges} = J_{mot} + J_{ZL}$
Brake motor: $J_{ges} = J_{mot} + J_{ZL} + J_B$

	Designation	Unit
Total mass moment of inertia	J_{ges}	[kgm²]
Mass moment of motor	J_{mot}	[kgm²]
Mass moment of brake	J_B	[kgm²]
Mass moment of fly wheel fan	J_{ZL}	[kgm²]
Weight of fly wheel fan	m	[kg]

IEC frame size	J_{ZL} [kgm²] x 10^{-3}	m [kg]
71	2	1.3
80	2	1.3
90	3	1.6
100	10	3.3
112	10	3.3
132	14	3.8

ZM - Metal fan

IEC frame size: 63 to 250

For ambient temperatures which are lesser than or greater than the operation temperatures of the standard plastic fan wheels, the ventilation can be provided via metal fan wheels. These can be manufactured from aluminium, steel plate or cast iron. Using a metal fan can be appropriate in the event of difficult climatic conditions.

U - Non-ventilated without NDE shaft end (TENV)

IEC frame size: 63 to 250

In this version, there is no fan or fan cover. The NDE is completely enclosed. A cover plate is used as the sealing component. This prevents dirt, water, etc. from entering the motor.



UW - Non-ventilated with NDE shaft end (TENV)

IEC frame size: 63 to 250

This design is realised by omitting the fan. The standard fan cover is used as contact protection for the remaining NDE rotating shaft. Motors of these designs are intended for use in systems where fans or fan covers integrated into the motor are not appropriate due to the environmental conditions, for design reasons or at the customer's request.
The motors are therefore designed without integrated fans or fan covers.

In the non-ventilated version, the resulting reduction in nominal motor output must be observed!



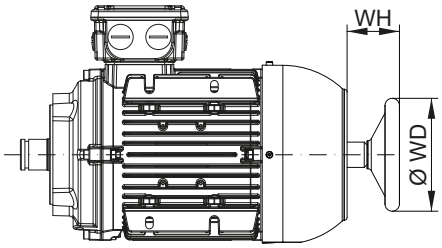
Additional modules

HR	Hand wheel
SD	Protection cap
ID	Protection cap for encoders
ZWM	Second shaft end - module shaft
ZWV	Second shaft end - solid shaft

HR - Hand wheel

IEC frame sizes: 71 to 250

By using a second shaft end it is possible to fit a hand wheel.



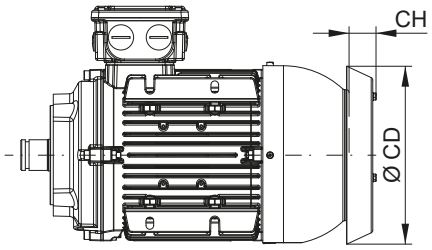
IEC frame size	ØWD	WH
71	125	51
80	125	51
90	125	51
100	125	51
112	125	51
132	200	60
160	200	60
180	200	60
200	200	60
225	200	60
250	200	60

Dimensions in mm.

SD - Protection cap

IEC frame sizes: 63 to 250

When installed vertically with the shaft downward, e.g. IM V1, the air intake opening can be protected against water and foreign substance by means of a protective cap.



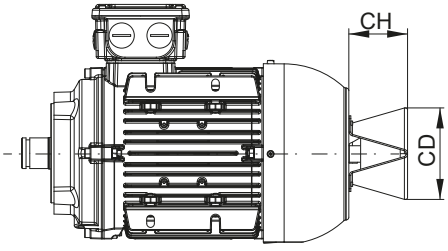
IEC frame size	ØCD	CH
63	124	20
71	139	20
80	157	20
90	176	20
100	197	32
112	219	35
132	254	35
160	266	52
180	310	57
200	380	67
225	427	72
250	427	72

Dimensions in mm.

ID - Protection cap for encoders

IEC frame sizes: 90 to 250

If mounted outside the fan cover, the encoder may be protected against foreign matter and other external influence by a separate protection cap.



Protection cap for	CD	CH
IG standard encoder	74	116
IV Heavy Duty encoder	115	183

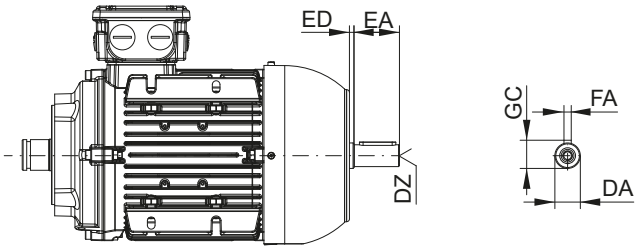
Dimensions in mm.

ZW. - Second shaft end

Motors with or without brake can be supplied with a second free shaft end.

ZWM: Module shaft
IEC frame sizes: 71 to 250. This shaft end can be used to transfer half the rated output of the motor.

ZWV: Solid shaft
IEC frame sizes: 63 to 200. Available on request.



IEC frame size	DA	DZ [2]	EA	ED	FA	GC
63 [1]	11	M4	23	-	4	12.5
71	14	M5	30	5	5	16
80	14	M5	30	5	5	16
90	19	M6	40	5	6	21.5
100	24	M8	50	5	8	27
112	24	M8	50	5	8	27
132	28	M10	60	5	8	31
160	38	M12	80	5	10	41
180	38	M12	80	5	10	41
200	38	M12	80	5	10	41
225 [2]	38	M12	80	5	10	41
250 [2]	38	M12	80	5	10	41

Tolerances		
Dimension name	ISO tolerance DIN EN ISO 286-2	
DA	≤ Ø 30 mm	j6
	> Ø 30 mm up to Ø 50 mm	k6

Dimensions in mm. [1] ZWV only [2] ZWM only [3] centre hole with thread according to DIN 332-1

M

Standards

The motors comply with the competent standards and specifications, especially with the following:

Title	IEC	DIN / EN / VDE
Rotating electrical machines Rating and performance	IEC 60034-1 IEC 60085	DIN EN 60034-1
Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	IEC 60034-2-1	DIN EN 60034-2-1
Degrees of protection provided by integral design of rotating electrical machines (IP Code)	IEC 60034-5	DIN EN 60034-5
Methods of cooling (IC Code)	IEC 60034-6	DIN EN 60034-6
Classification of types of construction, mounting arrangements and terminal box position (IM Code)	IEC 60034-7	DIN EN 60034-7
Terminal markings and direction of rotation	IEC 60034-8	DIN EN 60034-8
Noise limits	IEC 60034-9	DIN EN 60034-9
Starting performance of single-speed three-phase cage induction motors	IEC 60034-12	DIN EN 60034-12
Mechanical vibration of certain machines with shaft heights 56 mm and higher - measurement, evaluation and limits of vibration severity	IEC 60034-14	DIN EN 60034-14
Dimensions and output series for rotating electrical machines	IEC 60072-1	DIN EN 50347
Thermal protection	IEC 60034-11	DIN EN 60034-11
CENELEC standard voltages	IEC 60038	DIN EN 60038

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The values shown are subject to change without prior notice.