DANA BREVINI® Motion Systems

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Product Catalog

Brevini® Planetary Gearboxes
Industrial Series

Torques from 300 Nm to 35.000 Nm

Planetary solutions

Brevini® Industrial Series planetary gearboxes with its modularity, wide range of characteristics and variants, allows to meet every possible application needs for both Industrial and Mobile applications.

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Technical and dimensional data

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Description	Measurement unit	Symbol
Radial load constant		c
Diameter of element mounted on shaft	[mm]	d
Permissible axial load on output shaft	[N]	F_{a2}
Required axial load on the output shaft	[N]	F_{aR2}
Permissible radial load on input/output shaft	[N]	$F_{r1,2}$
Required radial load on the input/output shaft	[N]	$F_{rR1,2}$
Power increase factor		f_I
Thermal factor		f_K
Environmental factor		f_R
Duty factor		f_S
Speed factor		f_V
Operating life	[h]	h
Required operating life	[h]	h_R
Duty cycle		I
Reduction ratio		i
Input/output duration factor		$L_{h1,2}$
Number of starts per hour	[1/h]	N
Input speed	[rpm]	n_1
Max input speed	[rpm]	n_{1MAX}
Output speed	[rpm]	n_2
Hydraulic motor operating pressure	[bar]	p_A
Input power	[kW]	P_1
Output power	[kW]	P_2
Thermal power to be dissipated	[kW]	P_C
Electric motor nominal power	[kW]	P_n
Thermal power	[kW]	P_T
Corrected thermal power	[kW]	P_{T1}
Hydraulic motor capacity	[l/min]	q
Brake safety factor		S_f
Required input torque	[Nm]	T_{1R}
Transmissible output torque	[Nm]	T_2
Output braking torque	[Nm]	T_{2B}
Max output torque	[Nm]	T_{2MAX}
Nominal output torque	[Nm]	T_{2N}
Required output torque	[Nm]	T_{2R}
Required maximum output torque	[Nm]	T_{2RMAX}
Input braking torque	[Nm]	T_B
Required input braking torque	[Nm]	T_{BR}
Work environment temperature	[°C]	t_a
Operating time	[s]	t_f
Stopping time	[s]	t_r
Hydraulic motor displacement	[cm^3]	V
Required hydraulic motor displacement	[cm^3]	V_R
Input/output radial load application distance	[mm]	$X_{1,2}$
Dynamic efficiency		η_d
Hydraulic motor mechanical efficiency		η_{mh}
Hydraulic motor volumetric efficiency		η_v

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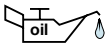
In-line gearboxes	EM, ED, ET, EQ, PD	
Right-angle gearboxes	EC, PDA	
Tightening torque		
Lubrication		
Additional Planetary Stage on Bevel Gear		
Bevel gear dimensions by ratios		
Refer to page		

Outputs		
Male splined shaft	MN, MR, MNS9, MNR	
Female splined shaft	FE, FET	
Keyed cylindrical shaft	MN1, MR1, PD, PDA, MN1S9	
Keyed hollow shaft	FP, FP1	
Hollow shaft for shrink disc	FS	
Male hexagonal shaft	ME	

Inputs		
Universal coupling		
Direct coupling		
Central Joint Flange		
Male support		
Light male support		
Flanges for electric and hydraulic motors		
Brakes		

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Brevini Industrial Series

The Brevini Industrial series is a complete range of modular planetary gearboxes that combines high performance with low cost and size. The commercial success this range has achieved for more than 40 years testifies to its quality, reliability, ease of installation and low maintenance requirements.
Brevini Industrial series covers a full range of sizes that ensure optimum durability, quiet operation in all working conditions and efficiency to reduce operating costs and maximise availability.

The ISO 9001:2000 quality system for design, development, production, assembly and after-sales service guarantees a high supply standard at an international level.

The Brevini Industrial Series

The modular transmission system offers customers various benefits, including:
- Short lead times due to a high level of standardisation.
- The torque is distributed proportionately among the sizes means the most suitable gearbox can be selected for every application.
- High product quality.
- Numerous available variants allow more flexible configuration for a wide range of applications.
- Customised variants based on the modular system.

Available options:
- From 1 to 4 planetary stages with the in-line configuration.
- From 2 to 4 stages with the right-angle configuration.
- Configurations with more stages are available on request.
- 15 sizes based on the principle of modularity.

Construction and Design:
- Flange, shaft and foot mounting options.
- Keyed cylindrical shafts: male and female.
- Splined shafts: male and female
- Female cylindrical shaft with retaining ring.
  Horizontal and vertical installation possible.

Output torques
T_{2N} from 1000 Nm to 25000 Nm

Ratios:
- i = 3.4 up to 3000 with the in-line configuration.
- i = 10 up to 3000 with the right-angle configuration.
- i > 3000 by combining more than 4 planetary stages.

Casings
The Brevini Industrial series casings basically consist of an input flange, reduction stages, intermediate coupling flanges and output supports.
They are dimensioned to suit the loads transmitted through the gearbox, which increase from the input to the output.

Casing materials:
- Input supports: EN-GJL-250 grey cast iron.
- Rim: high-quality hardened steel.
- Intermediate coupling flange: EN-GJS-400-15 spheroidal-graphite cast iron.
- Output supports: EN-GJS-400-15 spheroidal-graphite cast iron.

Output shafts:
- Solid shaft, keyed or splined according to DIN5482.
- Hollow shaft, keyed, splined according to DIN5482 or with keyway.

Available inputs:
- Direct coupling with adapter flange for electric and hydraulic motors.
- Keyed solid shaft.
- SAHR (Spring Applied Hydraulically Released) brakes.

Gears
The Brevini Industrial series uses gears designed to optimise load distribution and minimise noise. The case-hardening processes are applied to the gears in-house to ensure control over the entire production process.

Bearings:
Only Class A bearings are used in the planet carriers to ensure that they meet the durability criteria required for industrial applications.

Seals:
The following sealing systems are available as standard for the input and output shafts:
- NBR and FKM radial shaft seals, VMQ on request.
- Taconite seals on input and output shafts exposed to harsh environmental conditions.

Lubrication:
- Oil bath lubricated gears and roller bearings as standard.
- Sight glass plug as standard for vertical mounting configurations.

Accessories:

Output:
Available for male splined output shaft:
- Wheel flange.
- Sleeve.
- Integrated pinion.
- Tab washer.

Available for female hollow output shaft:
- Keyway.
- Tab washer.

Available for female splined output shaft:
- Splined rod.

Input:
- Anti-backlash devices.

General:
- Quoted dimensional drawings are available as CAD files for various computer systems and interfaces.
- Digital programs for selecting units.
- Gear, shaft and bearing calculations with calculation proof.
- Surface protection: painting cycles according to ISO 12944.

Noise level:
- The gearbox noise level may vary with the size and number of stages, so no specific value has been declared.
- If the noise does not cause abnormal vibration or overheating, do not consider it to be a risk for the application.
- Unless specifically requested by the customer during the selection process or while developing the gearbox, the gearbox noise is not considered for design purposes.
- Warranty claims related to noise will be assessed case-by-case.

Nominal output torque
T_{2N} [Nm]
This is the conventional output torque that defines the size of the gearbox.

Transmissible output torque
T_2 [Nm]
This is the output torque that the gearbox can transmit with a uniform and continuous load (duty factor fs=1), for different values of gearbox input speed and a **duration of 10000 hours**.

The T_2 values are calculated according to ISO 6336 for the gears and ISO 281 for the bearings, and are given in the size selection tables.

Max output torque
T_{2MAX} [Nm]
This is the peak transmissible output torque that a gearbox can provide for short periods. For drives involving a high number of starts or reversals, the maximum operational torque must also be limited to suit the strength of the gears or shafts. The T_{2MAX} values are given in the size selection tables.

Required output torque
T_{2R} [Nm]
This is the output torque required by the application, which must always be less than the transmissible output torque T_2 of the selected gearbox.

Required maximum output torque
T_{2RMAX} [Nm]
This is the maximum output torque required by the application, which must always be less than the maximum transmissible output torque T_{2MAX} of the selected gearbox.

Input braking torque
T_B [Nm]
This is the static braking torque delivered by the multi-disc brake that may be installed on the gearbox input.
The T_B values for the various brake configurations are given in the “Oil bath multi-disc brakes” section.

Required input braking torque
T_{BR} [Nm]
This is the braking torque required at the gearbox input if the application involves the use of an input brake.
It can be calculated with the following equation:

$$T_{BR} = \frac{S_f \times T_{2R}}{i} \quad [Nm] \qquad \textbf{(1)}$$

where

- S_f is the brake safety factor
- T_{2R} is the required output torque
- i is the reduction ratio

The brake safety factor S_f depends on the type of application and must be specified by the customer. Sometimes its minimum value is indicated by specific regulations relevant to the application.

Input speed
n_1 [rpm]
This is the speed of the motor coupled to the gearbox or, in general, the speed of the gearbox input stage. For drives with pulleys and belts, for example, its value must take the reduction ratio into account.

Max input speed
n_{1MAX} [rpm]
This is the maximum gearbox input speed for short periods or for intermittent duty. The gearbox may remain at a speed of n_{1MAX} for a maximum of 1 minute followed by a cooling period. If longer periods at that speed are expected and/or higher speed values are foreseen, we recommend contacting the Dana Sales Department.
The n_{1MAX} values are given in the selection tables.

Output speed

n_2 [rpm]

This is the gearbox output speed. It can be calculated with the following formula:

$$n_2 = \frac{n_1}{i} \quad [rpm] \qquad (2)$$

where n_1 is the input speed and i is the gearbox reduction ratio.

Reduction ratio

i

This is the ratio between the input speed n_1 and output speed n_2.

$$i = \frac{n_1}{n_2} \qquad (3)$$

Input power

P_1 [kW]

This is the power applied to the gearbox input. It can be calculated with the following formula:

$$P_1 = \frac{P_2}{\eta_d} \quad [kW] \qquad (4)$$

where

- P_2 is the output power
- η_d is the dynamic efficiency of the gearbox, the value of which is given in the table (4)

Output power

P_2 [kW]

This is the power transmitted at the gearbox output. It can be calculated with the following formula:

$$P_2 = \frac{T_{2R} \times n_2}{9550} \quad [kW] \qquad (5)$$

where T_{2R} is the required output torque and n_2 is the output speed.

Thermal power

P_T [kW]

This is the power that the gearbox can transmit continuously in the following conditions:

- with splash lubrication, without an auxiliary cooling circuit
- with horizontal mounting
- at an input speed of 1500 rpm
- for a maximum oil temperature of 80°C (oil viscosity ISO VG150)
- at an ambient temperature of 20°C
- for use in a “large environment”

The P_T values are given in the tables for selection of the various sizes.

If the type of operation, mounting position, input speed, ambient temperature or operating environment are different from those indicated above, it is advisable to use the factors f_K, f_V and f_R given below to correct the thermal power.

Thermal factor

f_K

With work cycles that involve intermittent gearbox use and/or an ambient temperature other than 20°C, the gearbox thermal rating can be adjusted to the specific application with the factor f_K given in the table below.

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	Duty cycle I [%]	Ambient temperature [°C]				
		10°	20°	30°	40°	50°
f_K	100	1.15	1	0.85	0.7	0.6
	80	1.25	1.1	1	0.85	0.7
	60	1.4	1.25	1.1	1	0.85
	40	1.6	1.4	1.25	1.1	1
	20	1.8	1.6	1.4	1.25	1.1

Tab.(1)

The duty cycle I can be calculated as follows:

$$I = \frac{t_f}{t_r + t_f} \times 100 \quad \textbf{(6)}$$

where t_f is the operating time at constant power and t_r is the rest time.

Speed factor

f_V

If the input speed is not 1500 rpm, the thermal power can be adapted to the specific situation with the factor f_V given in the table below. The table refers to the different gearbox mounting positions.

	Mounting position	n_1 [rpm]					
		3000	2500	2000	1500	1000	700
f_V	Horizontal mounting	0.50	0.65	0.80	1.00	1.15	1.30
	Vertical mounting	0.40	0.48	0.58	0.71	0.88	1.00

Tab.(2)

Environmental factor

f_R

If the gearbox is located in a restricted space or outdoors, the thermal power can be adapted with the aid of the factor f_R given in the table below.

	Restricted environment	Large environment	Outdoors
f_R	0.70	1.00	1.35

Tab.(3)

In general, the corrected thermal power of the gearbox will be

$$P_{T1} = P_T \times f_K \times f_V \times f_R \quad [kW] \quad \textbf{(7)}$$

The power P_1 applied to the gearbox must always be less than the corrected thermal power P_{T1}.

$$P_1 \leq P_{T1} \quad \textbf{(8)}$$

If the thermal power of the gearbox is less than the power applied, even in just one possible operating cycle condition, an auxiliary cooling circuit must be provided.
In such conditions, the thermal power to be dissipated P_C can be calculated with the following equation:

$$P_C = (P_1 - P_{T1}) \times (1 - \eta_d) \quad [kW] \quad \textbf{(9)}$$

where η_d is the dynamic efficiency of the gearbox given by the table (4).

Temperature

[°C]

The recommended ambient temperature is in the range -20°C/+40°C. The ideal gearbox operating temperature is from 50°C to 70°C, which corresponds to an oil temperature of approximately 60°C to 80°C. For short periods, the oil temperature can reach 90°C.
The best system to keep the temperature under control is to use an auxiliary heat exchange system.
For low ambient temperatures, or for applications involving high operating temperatures, select appropriate lubricants and seals made of suitable materials.
Seals made of different types of elastomer, such as nitrile butadiene (NB), fluoride (PF) and silicone(SI), are available for this purpose.
Contact the Dana Sales Department for the relevant indications. The “Lubrication” section contains advice on choosing the most appropriate lubricant for different conditions.

Dynamic efficiency

η_d

This is given by the ratio between the output power P_2 transmitted by the gearbox and power P_1 applied at the input, and can be calculated with the following formula:

$$\eta_d = \frac{P_2}{P_1} \qquad \textbf{(10)}$$

Its value depends on many factors, including: transmitted power, input speed, lubricant viscosity, operating temperature and reduction ratio. The table below gives the approximate dynamic efficiency values.

	Reduction stages			
	1	2	3	4
	EM	ED - EC	ET - EC	EQ - EC
η_d	0.98	0.96	0.94	0.92

Tab.(4)

Duty factor

f_S

The duty factor depends on the type of prime mover and the type of machine driven by the gearbox. This is an empirical value drawn from experience with various applications, and takes into account load variations, transmission shocks and the variation uncertainty related to the parameters involved in power transmission.
The table below gives the duty factor values according to the nature of the load, the type of drive (electric, hydraulic and endothermic motor) and the number of starts per hour of the driven machine.

	Nature of the load		**Drive type**	**No. of starts/h**				
				16	32	63	125	250
f_S	**a**	Smooth	Electric mot.	1.05	1.10	1.15	1.25	1.40
			Hydraulic mot.	1.05	1.05	1.10	1.15	1.20
			Endothermic engine	1.25	--	--	--	--
	b	Variable with moderate shocks	Electric mot.	1.10	1.15	1.20	1.40	1.60
			Hydraulic mot.	1.05	1.00	1.10	1.20	1.30
			Endothermic engine	1.50	--	--	--	--
	c	Variable with strong shocks	Electric mot.	1.20	1.30	1.40	1.60	1.80
			Hydraulic mot.	1.10	1.20	1.25	1.35	1.50
			Endothermic engine	2.00	--	--	--	--

Tab.(5)

Regarding the nature of the load, the table below (6) classifies the most common machines into the three levels **a**, **b** and **c** given in the previous table (5).

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Nature of the load	Application field		Driven machine
a	Stirrers/Mixers		Liquids
b			Semi-liquids
b			Non-homogeneous liquid
b	Stone and clay processing		Brick presses
b			Tile machine
c			Compactors
a	Conveyors		Screw
a			Fed smoothly
b		For continuous cycle	Not fed smoothly
b			With motion reversal
c	Crane	Port	Load lifting
c			Auxiliary lifting
c			Arm lifting
c			Arm rotation
c			Crane travel
c		Container	Container lifting
c			Arm lifting
c		Industrial applications	Main lifting
c			Auxiliary lifting
c			Bridge
c			Trolley movement
b	Shredders		Stones and metals

Nature of the load	Application field		Driven machine
b	Dredgers		Cable coiler
b			Conveyor
c			Cutter head
b			Sieves
b			Bucket conveyor
b			Winches
b	Elevators		Bucket
a			Escalator
b	Extruders		In general
b		Plastic	Variable speed
b			Fixed speed
b		Rubber	Continuous cycle - screw
b			Intermittent cycle - screw
b		Food	Plate
b			Belt
b			Screw
a	Food industry		Cereal processing
b			Pasta mixers
b			Meat mincing

Tab. (6)

Nature of the load	Application field	Driven machine
b	Lifters/Elevators	Continuous cycle
b		Intermittent cycle
b		Skip lifting
b	Washing machines	Drums
b		Washing machine
c	Metal processing	Tippers
b		Ingot pusher
c		Shears
b		Extruder
b		Winder
b	Woodworking machines	Conveyors
b		Continuous cycle
b		Log processing
b		Planer
b		Traverser
b		Debarker
b		Planer feed
b		Chain traverser
b	Fabric processing	Dosing systems
b		Calenders
b		Driers

Nature of the load	Application field	Driven machine
b	Tape processing	Taping machnines
a		Winder & Unwinder
b		Trimmer
b		Flattener
b		Cylinder regulation
b		Scrap treatment
c		Shears
b		Slitters
b	Concrete processing	Concrete oven
b		Driers
b		Mixers
b	Plastic processing	Batch mixer
b		Continuous cycle mixer
b		Calenders
b	Rubber processing	Batch mixer
b		Continuous cycle mixer
b		Calenders
b		Sand heating

Tab. (6)

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Nature of the load	Application field		Driven machine
b	Paper processing		Stirrers (mixers)
b			Liquid stirrers
b			Calenders
c			Chippers
b			Chipper feeder
b			Polishing rollers
b		Conveyors	Bark chips
c			Logs
b		Driers	Cutter
b			Conveyors
b			Extruders
b		Screeners	Chips
b			Rotary
c			Vibrating
b			Size press
b			Super calender
b			Thickener (AC motor)
b			Thickener (DC motor)
b			Washing machine (AC motor)
b			Washing machine (DC motor)

Nature of the load	Application field		Driven machine
b	Water treatment		Bar screen
b			Chemical feeders
b			Dehydrator screens
b			Scum breakers
b			Mixer
b			Sludge collector
b			Thickener
b			Vacuum filters
a		Screens	Air washing
b			Rotary for gravel
c	Sugar processing		Beetroot slicer
b			Cane crushers
b			Shredders
b			Grinders

Tab. (6)

Lifetime factor

L_{h1}, L_{h2}

This is the product of the gearbox input speed n_1 or output speed n_2 and the hours of operation required by the application h_R:

$$L_{h1} = n_1 \times h_R \quad \textbf{(11)}$$

$$L_{h2} = n_2 \times h_R \quad \textbf{(12)}$$

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Permissible radial loads on output / input shafts

F_{r2}, F_{r1} [N]

For each gearbox size, the selection tables give the diagrams of permissible radial loads F_{r2} and F_{r1} on the output and input shafts respectively as a function of the distance X between the load application point and the shaft shoulder; the values are given for various values of bearing duration factor nxh.

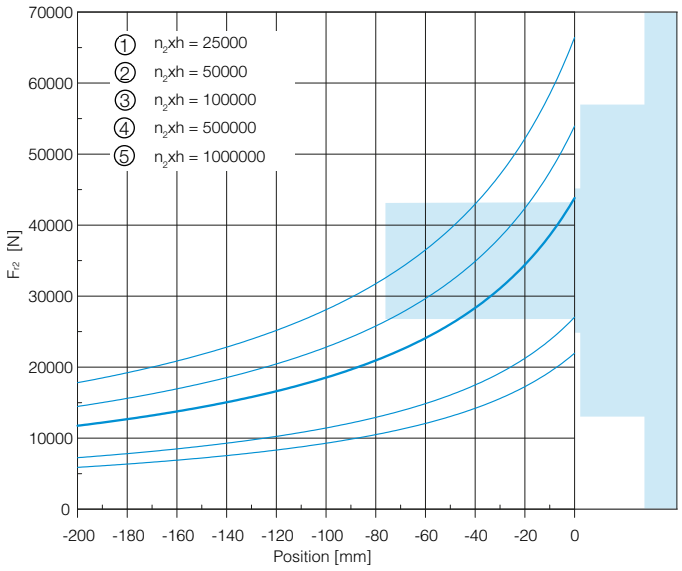


Fig. (1)

Contact the Dana Sales Department for duration factors $n_2xh < 25000$ cycles.

For sizes 150, 155, 250 and 255, the radial loads on output supports MN, MN1, MR and MR1 only apply if both support spigots are used on the customer's structure.
Contact the Dana Sales Department if the second spigot is not used.

Permissible output shaft axial loads

F_{a2} [N] and F_{a2MAX} [N]

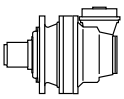
For each gearbox size, the tables give the permissible axial loads F_{a2} for continuous duration and F_{a2MAX} for intermittent duration.
If there are radial and axial loads on the output shaft at the same time, we recommend contacting the Dana Sales Department.
FE and FET gearboxes with female output shafts are normally used to transmit torque only, and are not designed to withstand radial and/or axial loads.

When using FP, FP1 and FS gearboxes with hollow shafts, contact the Dana Sales Department if there are axial loads.

The characteristic application data is required when selecting the gearbox; the list below can be used for that purpose.

Type of application:

	Description	Value	
T_{2R}	Required output torque		[Nm]
T_{2RMAX}	Required maximum output torque		[Nm]
n_2	Output speed		[rpm]
n_1	Input speed		[rpm]
P_2	Output power		[kW]
F_{rR2}	Required radial load on the output shaft		[N]
X_2 *	Radial load F_{rR2} application distance		[mm]
F_{aR2} **	Required axial load on the output shaft		[N]
F_{rR1}	Required radial load on the input shaft		[N]
X_1 *	Radial load F_{rR1} application distance		[mm]
h_R	Required duration		[h]
I	Duty cycle		[%]
N	Number of starts per hour		[1/h]
t_a	Work environment temperature		[°C]

Type of configuration required:  ☐ In-line  ☐ Right-angle

Output support type:

Parking brake: Yes ☐ No ☐

T_{BR}	Required braking torque:		[Nm]

Mounting position:

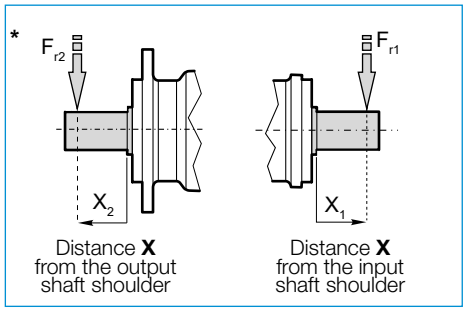
Motor type:

Hydraulic ☐ Electric ☐ Endothermic ☐ Other ☐

Work environment:

Restricted ☐ Large ☐ Outdoors ☐

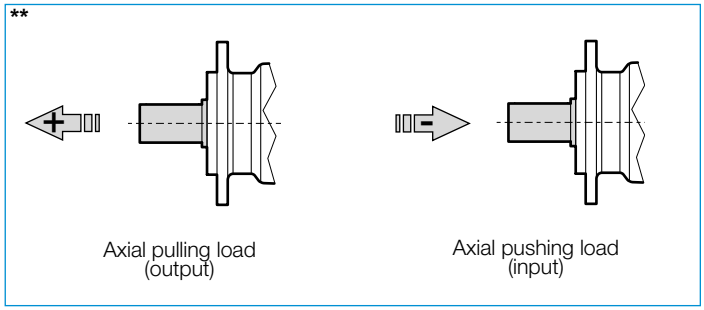
* **X** is the distance between the load application point and the shaft shoulder (see diagrams in the selection tables)



Distance **X** from the output shaft shoulder

Distance **X** from the input shaft shoulder

** indicate the gearbox output loads with "+" and the input loads with "-".



Axial pulling load (output)

Axial pushing load (input)

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Make the selection as indicated below:

- select the appropriate duty factor f_S from the tables (5) and (6) above on the basis of the application, drive type and expected number of starts;
- calculate the required duration factor from the required duration h_R and the output speed n_2;

$$L_{h2} = n_2 \times h_R \qquad \textbf{(13)}$$

- calculate the required reduction ratio;

$$i = \frac{n_1}{n_2} \qquad \textbf{(14)}$$

- from the selection tables, choose the gearbox and configuration (in-line or right-angle) whose specifications satisfy the equation;

$$T_{2R} \times f_S \leq T_2 \qquad \textbf{(15)}$$

The chosen gearbox must have a reduction ratio as close as possible to the required ratio.

This type of selection is suitable when the required torque and rotation speed are almost constant during use; for an operating cycle with highly variable loads and speeds, base the selection on the gearbox size that is best for the application.
To do this, we recommend contacting the Dana Sales Department.

If a multi-disc brake is required at the gearbox input, proceed as follows:

1. calculate the required braking torque T_{BR} using the formula (1) on page A5:
2. from the brake selection tables (see the “Oil bath multi-disc brakes” section), choose the brake with the braking torque T_B that satisfies the equation:

$$T_{BR} \leq T_B \qquad \textbf{(17)}$$

After selecting the gearbox, carry out the following checks:

- check that the input speed n_1 required by the application is lower than the maximum permissible value n_{1MAX} given in the gearbox selection table
- check that the maximum torque required by the application T_{2RMAX} is lower than the maximum permissible torque T_{2MAX} given in the gearbox selection table
- check that the radial loads acting on the shafts F_{rR1} and F_{rR2} are lower than those given in the gearbox support selection table. The radial loads on the output shaft can be calculated as follows:

$$F_{rR2} = \frac{2000 \times T_{2R} \times f_S \times c}{d} \quad [N] \qquad \textbf{(18)}$$

The radial loads on the input shaft can be calculated as follows:

$$F_{rR1} = \frac{2000 \times T_{2R} \times f_S \times c}{d \times i \times \eta_d} \quad [N] \qquad \textbf{(19)}$$

Where T_{2R} is the required output torque, f_S is the duty factor and η_d is the dynamic efficiency of the gearbox.
Also,

c is a constant that depends on the type of transmission element mounted on the shaft.
The constant can have the following values:

c = 1 chain pinions
c = 1.06 gear wheels
c = 2 belt pulleys

d is the diameter (mm) of the transmission element mounted on the shaft.

Using the value X_2, refer to the output support selection tables for the selected gearbox, locate the permissible radial load F_{r2} for a duration factor $n_2xh \geq L_{h2}$ and check:

$$F_{rR2} \leq F_{r2} \qquad \textbf{(20)}$$

Similarly, using the value X_1, refer to the input support selection tables for the selected gearbox, locate the permissible radial load F_{r1} for a duration factor $n_1xh \geq L_{h1}$ and check:

$$F_{rR1} \leq F_{r1} \qquad \textbf{(21)}$$

check that the axial loads on the output shafts F_{aR2} are lower than those given in the output support selection tables. To do so, refer to the support selection tables for the selected gearbox, identify the permissible load for continuous and intermittent duration, F_{a2} and F_{a2MAX} respectively, and check that:

$$F_{aR2} \leq F_{a2} \quad \text{for continuous duration}$$
$$F_{aR2} \leq F_{a2MAX} \quad \text{for intermittent duration} \qquad \textbf{(22)}$$

If the radial and axial loads vary significantly during use, or the application involves numerous reversals, contact the Dana Sales Department for a more thorough check.
Take into account the recommendations given in the “Permissible loads on output shafts” section (page A12).

Check that the applied power P_1 is always lower than the corrected thermal power P_{T1} given by the formula (8). If the corrected thermal power of the gearbox is less than the power to be transmitted, even in just one of the possible operating cycle conditions, an auxiliary cooling circuit must be provided. Contact the Dana Sales Department to select this circuit.

If an input brake has been selected for the gearbox concerned, check that the calculated gearbox output braking torque is less than the maximum output torque T_{2MAX} transmissible by the gearbox:

1. calculate the gearbox output braking torque

$$T_{2B} = T_B \times i \quad [Nm] \qquad \textbf{(23)}$$

2. check that

$$T_{2B} \leq T_{2MAX} \qquad \textbf{(24)}$$

This section provides some general information that is useful for selecting the gearbox drive motor.

Hydraulic motor
Based on the application, choose the most appropriate type of motor according to the table below. The values are only a guide

Type of application	**Light**		**Medium**		**Heavy**	
Operating pressure p_A [bar]	< 175		175 – 250		250 – 450	
Motor type	Orbital	Gear	Radial piston	Axial piston	Cam	Axial piston
Speed n_1 [rpm]	< 700	< 3000	< 500	< 4000	< 200	< 4000
Mechanical efficiency η_{mh}	0.80	0.85	0.95	0.93	0.93	0.93
Volumetric efficiency η_v	0.90	0.87	0.95	0.95	0.95	0.95

Tab. (7)

Determine the required gearbox input torque with the formula:

$$T_{1R} = \frac{T_{2R}}{i \times \eta_d} \quad [Nm] \qquad \textbf{(25)}$$

Where T_{2R} is the required output torque and η_d is the dynamic efficiency of the gearbox (table 4)

Calculate the theoretical displacement required for the hydraulic motor with the following formula:

$$V_R = \frac{62.8 \times T_{1R}}{p_A \times \eta_{mh}} \quad [cm^3] \qquad \textbf{(26)}$$

where η_{mh} is the mechanical efficiency of the selected hydraulic motor (table 7) and p_A is the operating pressure of the motor. The actual motor displacement V must be such that:

$$V_R \leq V \qquad \textbf{(27)}$$

Lastly, calculate the required flow q for the motor feed:

$$q = \frac{V \times n_1}{1000 \times \eta_v} \quad [l/min] \qquad \textbf{(28)}$$

where n_1 is the gearbox input speed and η_v is the volumetric efficiency of the chosen motor (table 7).

Refer to the Dana Fluid Power catalogue, or the technical data sheets of other manufacturers for the final motor choice.

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Electric motor
Calculate the gearbox input power with the formula:

$$P_1 = \frac{P_2}{\eta_d} \text{ [kW]} \quad \textbf{(29)}$$

Where P_2 is the output power and hd is the dynamic efficiency of the chosen gearbox (table 4).
From the technical data tables of the manufacturers of electric motors, select a motor whose nominal power P_n is such that:

$$P_1 \leq P_n \quad \textbf{(30)}$$

Unless otherwise specified, the power P_n refers to continuous duty S1. If the operating conditions of the motors are different from S1, identify the corresponding type of duty according to the EN 60034-1 (CEI 2-3)/IEC 34-1 standards.

For S2 and S3 with motor sizes smaller than or equal to 132, a suitable factor f_l can be used to obtain the power increase relative to continuous duty S1.

The power increase factor fl can be obtained from the following table:

	Type of duty							
	S2				**S3**			
	Cycle duration [min]				**Duty cycle I [%]**			
	10	30	60	90	15%	25%	40%	60%
f_l	1.4	1.2	1.1	1.05	1.4	1.25	1.13	1.07

Tab. (8)

For the definition of the duty cycle I, refer to the formula (6) on page A7.

For duty S2 and S3, select an electric motor whose nominal power P_n satisfies the following equation:

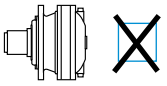
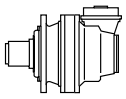
$$P_1 \leq P_n \times f_l \quad \textbf{(31)}$$

EXAMPLE OF SELECTING THE GEARBOX

The characteristic application data is required when selecting the gearbox; the list below can be used for that purpose.

Type of application: **CONVEYOR NOT FED SMOOTHLY**

	Description	Value	
T_{2R}	Required output torque	4500	[Nm]
T_{2RMAX}	Required maximum output torque	8000	[Nm]
n_2	Output speed	12	[rpm]
n_1	Input speed	1500	[rpm]
P_2	Output power	-	[kW]
F_{rR2}	Required radial load on the output shaft	40000	[N]
X_2 *	Radial load F_{rR2} application distance	40	[mm]
F_{aR2} **	Required axial load on the output shaft	-	[N]
F_{rR1}	Required radial load on the input shaft	-	[N]
X_1 *	Radial load F_{rR1} application distance	-	[mm]
h_R	Required duration	10000	[h]
I	Duty cycle	100	[%]
N	Number of starts per hour	3	[1/h]
t_a	Work environment temperature	20	[°C]

Type of configuration required:  X  ☐

Output support type:

Parking brake: Yes ☐ No X

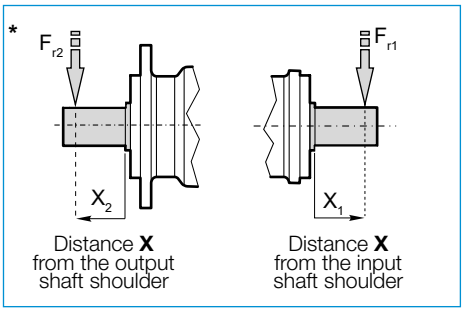
T_{BR}	Required braking torque:		[Nm]

Mounting position:

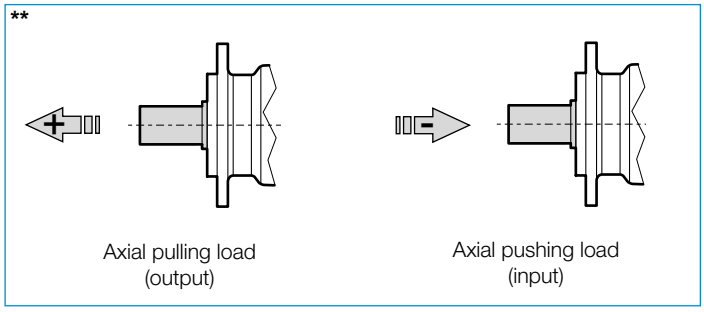
Motor type:
Hydraulic ☐ Electric X Endothermic ☐ Other ☐

Work environment:
Restricted ☐ Large X Outdoors ☐

* **X** is the distance between the load application point and the shaft shoulder (see diagrams in the selection tables)



** indicate the gearbox output loads with "+" and the input loads with "-".



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Selecting the gearbox
Calculate the factor L_{h2} from the formula (12):

$$L_{h2} = 12 \times 10000 = 120000$$

(all data in the selection tables is intended for a duration of 10000 [h])

Calculate the required reduction ratio according to the formula (3)

$$i = \frac{1500}{12} = 125$$

From the table (6), assess the type of load for this application “conveyor not smoothly fed”; load type “**b”** in this case (variable with moderate shocks).

Then use the load type “**b**”, number of starts/hour N < 16 and the type of electric motor to get the duty factor fs = 1.10 from the table (5).

From the selection tables, choose the gearbox and configuration whose specifications satisfy the equation (15)

$$T_{2R} \times f_S = 4500 \times 1.10 = 4950 \leq T_2$$

The chosen gearbox must have a reduction ratio that is as close as possible to the calculated reduction ratio i=125.

From the table (9) at the end of the section, identify the size of the gearbox with a nominal torque T_{2N} immediately higher than the value calculated previously $T_{2R} \times f_S = 4500 \times 1.10 = 4950$ [Nm]

Grandezza	i		[mm]		[mm]	[mm]	[mm]	T_{2N} [Nm]
010	3.38-3282	B40X36 DIN5482	42	A40X36 DIN5482	50	-	-	1000
020	3.08-3235	B58X53 DIN5482	65	A58X53 DIN5482	75	50 70	69.4	2100
030	15.37-3097	B58X53 DIN5482	65	A58X53 DIN5482	75	65	-	3800
040	15.37-3170	B58X53 DIN5482	65	-	-	-	-	3800
045	3.50-3301	B58X53 DIN5482	65	A58X53 DIN5482	75	65 70	-	3800
046	3.50-3301	B58X53 DIN5482	65	-	-	-	69.4	3800
065	3.50-3170	B70X64 DIN5482	80	B70X64 DIN5482	90	70 80	70	6400
067	12.25-201.0	B70X64 DIN5482	80	B70X64 DIN5482	90	80	-	6400
090	4.08-3207	B80X74 DIN5482	90	B70X64 DIN5482	100	90	69.4	9200
091	11.22-42.37	B80X74 DIN5482	90	B70X64 DIN5482	100	90	-	9200
150	3.90 - 3460	B80X74 B100x94 DIN5482	100	B80X74 DIN5482	120	100	69.4	13000
155	19.50-272.7	B80X74 B100x94 DIN5482	100	B80X74 DIN5482	120	100	-	13000
250	4.04-2741	B100X94 DIN5482	110	B100X94 DIN5482	130	110	-	20000

EXAMPLE OF SELECTING THE GEARBOX

Therefore consider size 065 and the performance table that corresponds to the selected gearbox type (in this case in-line).
Identify the solution with the reduction ratio "i" closest to the previously calculated required ratio of 125 from the performance table for size 065; the table indicates that a suitable solution is **ET3065**, with:

i = 123.9
T_2 = 5642 [Nm]
n_2 = 12.1 [rpm]
n_1 = 1500 [rpm]

i_{eff}	1500 n_1 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	T_{2MAX} [Nm]	P_T [kW]
EM 1065 / PD 1065											
3.50	429	2241	101	286	2531	76	143	3116	46.8	10000	
3.86	389	2307	94	259	2605	71	130	3207	43.5	10000	
4.33	346	2346	85	231	2650	64	115	3262	39.5	10000	30
5.00	300	2401	75	200	2712	57	100	3336	35.0	10000	
6.00	250	2502	66	167	2826	49.3	83	3480	30.4	10000	
ED 2065 / PD 2065											
10.78	139	3110	45.3	93	3512	34.1	46.4	4324	21.0	9800	
12.25	122	3264	41.9	82	3686	31.5	40.8	4536	19.4	9800	
13.51	111	3359	39.1	74	3794	29.4	37.0	4671	18.1	10000	
15.16	99	3417	35.4	66	3859	26.7	33.0	4751	16.4	10000	
17.88	84	3590	31.5	56	4055	23.8	28.0	4998	14.6	10000	
20.65	73	3674	26.0	48.4	4150	21.0	24.2	5106	13.0	10000	
22.39	67	3841	27.0	44.7	4338	20.3	22.3	5340	12.5	10000	18
25.98	58	4016	24.3	38.5	4536	18.3	19.2	5140	10.4	10000	
27.99	54	3334	18.7	35.7	3567	13.3	17.9	3916	7.3	10000	
30.00	50	4110	21.5	33.3	4642	16.2	16.7	5479	9.6	10000	
36.25	41.4	4319	18.7	27.6	4820	13.3	13.8	5075	7.3	10000	
43.50	34.5	3971	14.2	23.0	4197	10.0	11.5	4422	5.3	10000	
ET 3065 / PD 3065											
51.22	29.3	4924	15.1	19.5	5561	11.4	9.8	6150	6.3	10000	
53.78	27.9	5067	14.9	18.6	5745	11.2	9.3	7073	6.9	10000	
60.44	24.8	5174	13.4	16.5	5844	10.1	8.3	6246	5.4	10000	
73.50	20.4	5058	10.8	13.6	5549	7.9	6.8	6254	4.5	10000	
78.51	19.1	5597	11.2	12.7	6005	8.0	6.4	6600	4.4	10000	
90.93	16.5	5849	10.1	11.0	6085	7.0	5.5	6510	3.9	10000	
98.27	15.3	5841	9.3	10.2	6112	6.5	5.1	6560	3.5	10000	
116.6	13.6	6079	8.6	9.0	6361	6.0	4.5	7297	3.5	10000	
123.9	12.1	5642	7.2	8.1	5851	4.9	4.0	6651	2.8	10000	14
134.3	11.2	6051	7.1	7.4	6315	4.9	3.7	6760	2.6	10000	
155.1	9.7	5757	5.8	6.4	6024	4.1	3.2	6968	2.4	10000	
189.0	8.3	5834	5.1	5.6	6219	3.6	2.8	7170	2.1	10000	
208.2	7.2	5910	4.6	4.8	6413	3.2	2.4	7269	1.8	10000	
217.5	6.9	5495	4.0	4.6	5735	2.8	2.3	6146	1.5	10000	
251.6	6.0	5581	3.5	4.0	5821	2.4	2.0	6233	1.3	10000	
272.8	5.5	5375	3.1	3.7	5552	2.1	1.8	5836	1.1	10000	
EC 4065 / PD 4065											
322.7	4.6	7604	3.7	3.1	7906	2.6	1.5	9121	1.5	10000	

Check that the transmissible torque T_2 is greater than the torque required by the application T_{2R} x f_S = 4950 [Nm] according to the formula (15)

$$T_2 = 5642 > 4950 = T_{2R} \times f_S$$

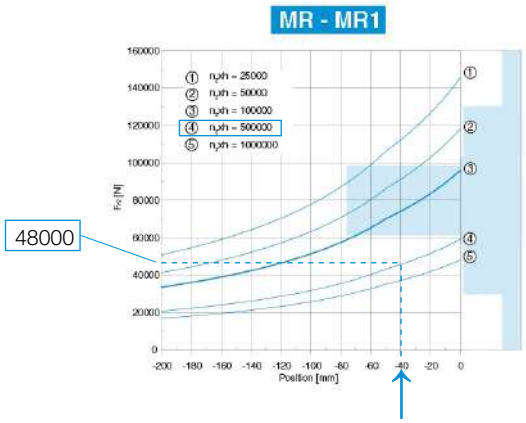
The chosen gearbox is **ET3065** with **i=123.9**.

Checking the maximum torque

The performance table gives a maximum transmissible torque T_{2MAX}= 10000 [Nm] for the selected ET3065 gearbox, with a reduction ratio i = 123.9.
This value is higher than the maximum required by the application T_{2RMAX}, which is 8000 [Nm]. The selected gearbox is therefore suitable for transmitting the required maximum torque.

Checking the loads on the shafts

The tables of "Male splined shaft" output supports for size 065 (see page 065/4) show that three types of male support are available: MR, MR1, ME. Assume the MR is the selected type.
Use the load application distance **X_2 = 40 [mm]** (from the application data), refer to the load graph F_{r2} for the chosen output (MR) and intersect the curve for n_2 x h = 500000 that satisfies the condition n_2 x h ≥ L_{h2}=120000 (calculated previously).
The load application axis of this curve gives the permissible radial load, which is **F_{r2}=48000 [N].**



Contact your local DANA representative for duration factors n_2 x h < 25000 cycles.

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Since the permissible radial load value just defined F_{r2}, is greater than the required radial load F_{rR2} according to the formula (20), the selected support is suitable to operate in the required conditions.

$$F_{rR2} = 40000 \text{ [N]} < F_{r2} = 48000 \text{ [N]}$$

Checking the thermal power
The formula (5) can be used to calculate the transmitted output power:

$$P_2 = \frac{4500 \times 12}{9550} = 5.7 \text{ [kW]}$$

Considering a dynamic efficiency $\eta_d = 0.94$ for the **ET3065** gearbox as given by the table (4), the formula (4) can be used to calculate the power applied to the gearbox input:

$$P_1 = \frac{5.7}{0.94} = 6.0 \text{ [kW]}$$

The selection data table for the selected gearbox **ET3065** gives a dissipable thermal power of $P_T = 14$ kW.

Assuming a duty cycle I = 100 % and an ambient temperature of 20°C (as given in the initial data on page A18), the table (1) on page A7 gives a thermal factor $f_K = 1.0$.
With an input speed $n_1 = 1500$ rpm and a horizontal mounting position, the table (2) gives a speed factor $f_V = 1.0$.
Lastly, for a “large” work environment, the table (3) gives an environmental factor $f_R = 1.0$.
According to the formula (7), the corrected thermal power is:

$$P_{T1} = 14 \times 1.0 \times 1.0 \times 1.0 = 14 \text{ [kW]}$$

The applied power P_1 is lower than the corrected thermal power P_{T1}, according to the formula (8):

$$P_1 = 6.0 \text{ [kW]} \leq P_{T1} = 14 \text{ [kW]}$$

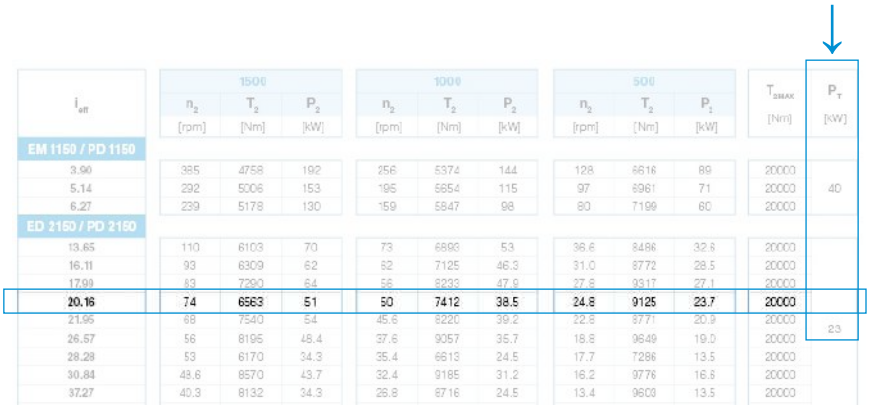
The selected gearbox is suitable for operation without the need to provide an auxiliary cooling circuit.

EXAMPLE OF SELECTING THE COOLING CIRCUIT

An **ED2150/FE** gearbox with a reduction ratio i = 20.16 must work in the following conditions:

- input speed n_1 = 1500 rpm;
- applied input power P_1 = 20 kW;
- horizontal mounting position;
- ambient temperature t_a = 30°C;
- duty cycle I = 100%
- work environment: restricted

The selection data table for the **ED2150** gearbox concerned gives a dissipable thermal power P_t = 23 kW.



i_{off}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_1 [kW]	T_{2MAX} [Nm]	P_T [kW]
EM 1150 / PD 1150											
3.90	385	4758	192	256	5374	144	128	6618	89	20000	
5.14	292	5006	153	195	5654	115	97	6961	71	20000	40
6.27	239	5178	130	159	5847	98	80	7199	60	20000	
ED 2150 / PD 2150											
13.65	110	6103	70	73	6898	53	36.6	8486	32.6	20000	
16.11	93	6309	62	62	7125	46.3	31.0	8772	28.5	20000	
17.99	83	7290	64	56	8233	47.9	27.8	9317	27.1	20000	
20.16	**74**	**6563**	**51**	**50**	**7412**	**38.5**	**24.8**	**9125**	**23.7**	**20000**	
21.95	68	7540	54	45.6	8220	39.2	22.8	9771	20.9	20000	23
26.57	56	8195	48.4	37.6	9057	35.7	18.8	9649	19.0	20000	
28.28	53	6170	34.3	35.4	6813	24.5	17.7	7286	13.5	20000	
30.84	48.6	8570	43.7	32.4	9185	31.2	16.2	9776	16.8	20000	
37.27	40.3	8132	34.3	26.8	8716	24.5	13.4	9603	13.5	20000	

Assuming a duty cycle I = 100% and an ambient temperature of 30°C, the table (1) on page A7 gives a thermal factor f_K = 0.85.
With an input speed n_1 = 1500 rpm and a horizontal mounting position, the table (2) gives a speed factor f_V = 1.0.
Lastly, for a "restricted" work environment, the table (3) gives an environmental factor f_R = 0.70.
According to the formula (7), the corrected thermal power is:

$$P_{T1} = 23 \times 0.85 \times 1.0 \times 0.70 = 13.6 \text{ [kW]}$$

The applied power P_1 is not lower than the corrected thermal power P_{T1}, according to the formula (8):

$$P_1 = 20 \text{ [kW]} \leq P_{T1} = 13.6 \text{ [kW]} \longrightarrow \textbf{Condition not verified!}$$

Therefore, an auxiliary cooling circuit is required for the gearbox concerned.

Then calculate the thermal power to be dissipated, according to the formula (9). To do this, get the dynamic efficiency η_d = 0.96 for the ED2150 gearbox from the table (4).
The thermal power to be dissipated $P_c = (P_1 - P_{T1}) \times (1 - \eta_d)$ must therefore be

$$P_c = (20 - 13.6) \times (1 - 0.96) = 0.25 \text{ [kW]}$$

After establishing the thermal power to be dissipated P_C, contact your local DANA representative to select the most suitable cooling circuit from those available.

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EXAMPLE OF SELECTING THE MULTI-DISC BRAKE

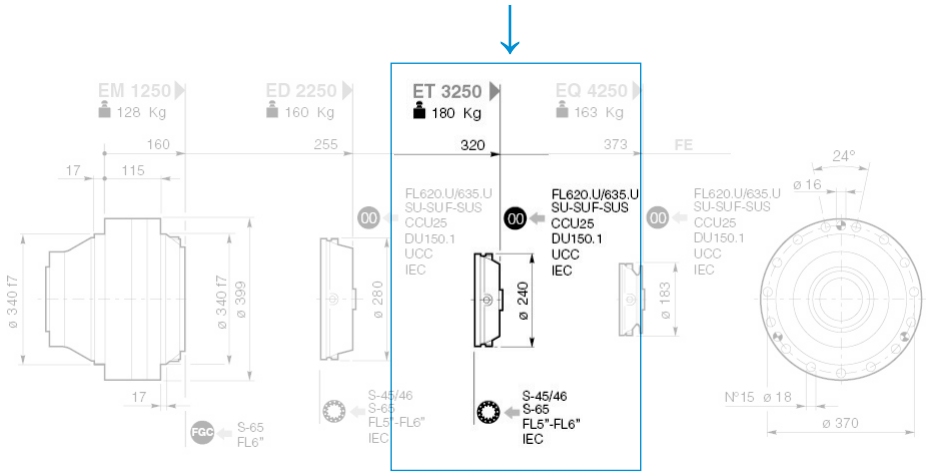
An ET3250/FE gearbox with a reduction ratio i = 70.7 must work in the following conditions:

- required output torque T_{2R} = 18000 Nm
- brake safety factor S_f = 1.2

Use the equation (1) on page A5 to calculate the required braking torque:

$$T_{BR} = \frac{1.2 \times 18000}{70.7} = 306 \text{ [Nm]}$$

The dimensional tables for the ET3250/FE gearbox give the type of multi-disc disk brake, which is FL620/FL635/FL5 or FL6 depending on the input type.



In the table for the FL type on page B17 of the “Oil-bath multi-disc disk brakes” section, select the brake with a braking torque T_B immediately higher than the torque T_{BR} just calculated.

	T_B [Nm]	P [bar]	P_{max} [bar]	Vo [l] orizzontale	Vo [l] verticale	Va [cm³] lamelle nuove
FL250.4C	181	13.28	315	0.3	0.6	15
FL250.6C	278	13.28	315	0.3	0.6	15
FL350.6C	**417**	**19.92**	**315**	**0.3**	**0.6**	**15**
FL350.8C	571	19.92	315	0.3	0.6	15
FL450.6C	540	25.59	315	0.3	0.6	15
FL450.8C	737	25.59	315	0.3	0.6	15
FL650.10C	642	19.92	315	0.5	1.0	15
FL650.12C	792	19.92	315	0.5	1.0	15
FL650.14C	949	19.92	315	0.5	1.0	15
FL750.10C	834	25.59	315	0.5	1.0	15
FL750.12C	1027	25.59	315	0.0	1.0	15
FL750.14C	1229	25.59	315	0.5	1.0	15
FL960.12C	1528	21.98	315	1.2	2.4	22
FL960.14C	1783	21.98	315	1.2	2.4	22
FL960.16C	2038	21.98	315	1.2	2.4	22
FL960.18C	2293	21.98	315	1.2	2.4	22

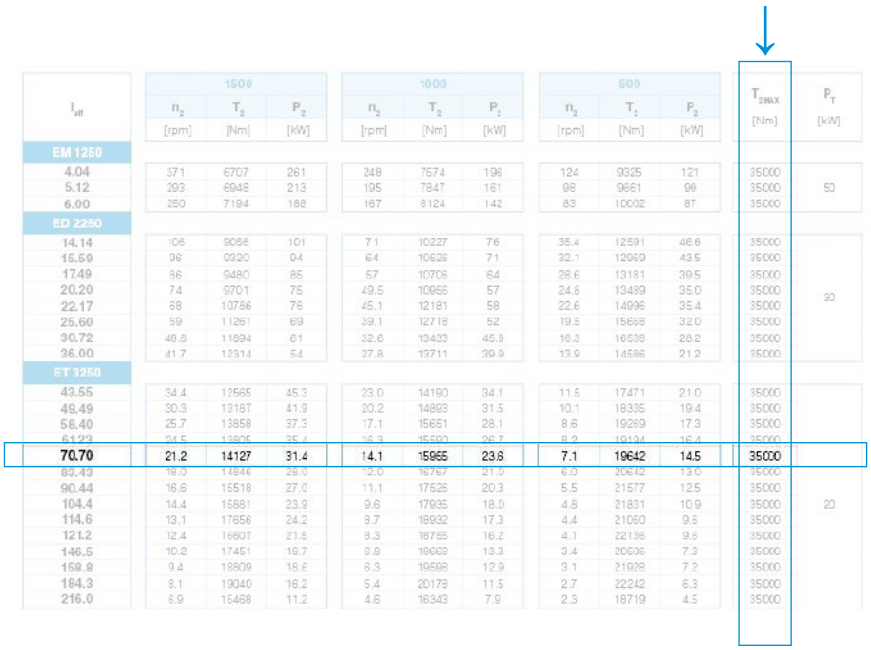
This gives brake type FL350.6C, with a static braking torque T_B = 417 [Nm].
The formula (23) on A15 can be used to calculate the gearbox output braking torque:

$$T_{2B} = 417 \times 70.70 = 29480 \text{ [Nm]}$$

Click *i* button to return to main index

EXAMPLE OF SELECTING THE MULTI-DISC BRAKE

The selection table for ET3250 gearboxes gives the maximum transmissible torque T_{2MAX} for the ratio i = 70.70, which is T_{2MAX} = 35000˙500 [Nm]



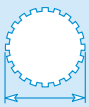
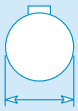
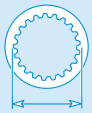
I_{tr}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	T_{2MAX} [Nm]	P_T [kW]
EM 1250											
4.04	371	6707	261	248	7574	196	124	9325	121	35000	
5.12	293	6948	213	195	7847	161	98	9661	99	35000	50
6.00	250	7194	188	167	8124	142	83	10002	87	35000	
ED 2250											
14.14	106	9056	101	71	10227	76	35.4	12591	46.6	35000	
15.59	96	9320	94	64	10526	71	32.1	12969	43.5	35000	
17.49	86	9480	85	57	10706	64	28.6	13181	39.5	35000	
20.20	74	9701	75	49.5	10955	57	24.8	13489	35.0	35000	30
22.17	68	10788	76	45.1	12181	58	22.6	14996	35.4	35000	
25.60	59	11261	69	39.1	12716	52	19.5	15668	32.0	35000	
30.72	48.8	11694	61	32.6	13433	45.8	16.3	16538	28.2	35000	
36.00	41.7	12314	54	27.8	13711	39.9	13.9	14538	21.2	35000	
ET 3250											
43.55	34.4	12565	45.3	23.0	14190	34.1	11.5	17471	21.0	35000	
49.49	30.3	13187	41.9	20.2	14893	31.5	10.1	18335	19.4	35000	
58.40	25.7	13858	37.3	17.1	15651	28.1	8.6	19289	17.3	35000	
61.23	24.5	13805	35.4	16.3	15590	26.7	8.2	19134	16.4	35000	
70.70	**21.2**	**14127**	**31.4**	**14.1**	**15965**	**23.8**	**7.1**	**19642**	**14.5**	**35000**	
83.43	18.0	14846	28.0	12.0	16767	21.0	6.0	20642	13.0	35000	
90.44	16.6	15518	27.0	11.1	17526	20.3	5.5	21577	12.5	35000	
104.4	14.4	15881	23.9	9.6	17935	18.0	4.8	21831	10.9	35000	20
114.6	13.1	17656	24.2	8.7	18932	17.3	4.4	21060	9.6	35000	
121.2	12.4	16607	21.5	8.3	18755	16.2	4.1	22136	9.6	35000	
146.5	10.2	17451	18.7	6.9	19668	13.3	3.4	20606	7.3	35000	
159.8	9.4	18809	18.6	6.3	19598	12.9	3.1	21928	7.2	35000	
184.3	8.1	19040	16.2	5.4	20179	11.5	2.7	22242	6.3	35000	
216.0	6.9	15468	11.2	4.6	16343	7.9	2.3	18719	4.5	35000	

The gearbox output braking torque T_{2B} is lower than the maximum torque transmitted by the gearbox, according to the equation (24) on page A15:

$$T_{2B} = 29480 \text{ [Nm]} \leq T_{2MAX} = 35000 \text{ [Nm]}$$

The selected brake is therefore suitable for the gearbox concerned.

Click *i* button to return to main index

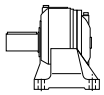
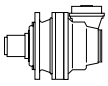
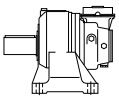
Size	i		 [mm]		 [mm]	 [mm]	 [mm]	T_{2N} [Nm]
010	3.38-3282	B40X36 DIN5482	42	A40X36 DIN5482	50	-	-	1000
020	3.08-3235	B58X53 DIN5482	65	A58X53 DIN5482	75	50 70	69.4	2100
030	15.37-3097	B58X53 DIN5482	65	A58X53 DIN5482	75	65	-	3800
040	15.37-3170	B58X53 DIN5482	65	-	-	-	-	3800
045	3.50-3301	B58X53 DIN5482	65	A58X53 DIN5482	75	65 70	-	3800
046	3.50-3301	B58X53 DIN5482	65	-	-	-	69.4	3800
065	3.50-3170	B70X64 DIN5482	80	B70X64 DIN5482	90	70 80	70	6400
067	12.25-201.0	B70X64 DIN5482	80	B70X64 DIN5482	90	80	-	6400
090	4.08-3207	B80X74 DIN5482	90	B70X64 DIN5482	100	90	69.4	9200
091	11.22-42.37	B80X74 DIN5482	90	B70X64 DIN5482	100	90	-	9200
150	3.90 – 3460	B80X74 B100x94 DIN5482	100	B80X74 DIN5482	120	100	69.4	13000
155	19.50-272.7	B80X74 B100x94 DIN5482	100	B80X74 DIN5482	120	100	-	13000
250	4.04-2741	B100X94 DIN5482	110	B100X94 DIN5482	130	110	-	20000
255	16.48-2744	B100X94 DIN5482	110	B100X94 DIN5482	130	110	-	20000
320	19.95-245.3	-	-	B100X94 DIN5482	-	-	-	25000

Tab. (9)

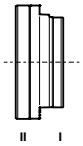
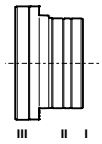
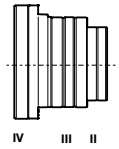
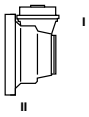
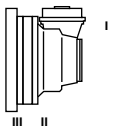
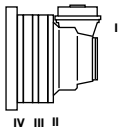
Click *i* button to return to main index

EM	1	020	MR

VERSION

- Linear
  - PD 
  - EM
  - ED 
  - ET
  - EQ
- Right-angle
  - EC 
  - PDA 

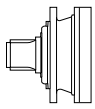
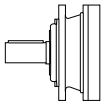
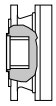
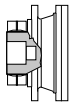
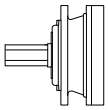
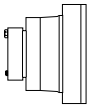
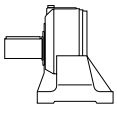
STAGES

- Linear
  - 1 
  - 2 
  - 3 
  - 4 
- Right-angle
  - 2 
  - 3 
  - 4 

SIZE

- 010
- 020
- 030
- 040
- 045
- 046
- 065
- 067
- 090
- 091
- 150
- 155
- 250
- 255
- 320

OUTPUT CONFIGURATION

- Flanged version
  - MN
MR
MNR
MNS9 
  - MN1
MR1
MN1S9 
  - FE
FET 
  - FS 
  - ME 
  - FP
FP1 
- Version with feet
  - MR1 

Designation example: **EM1020 / MR / 3.50 / S-45CR1 / B3**

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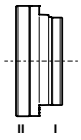
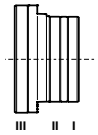
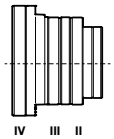
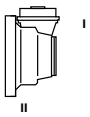
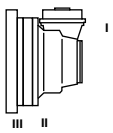
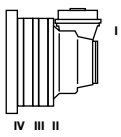
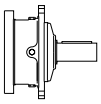
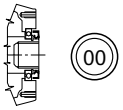
3.50	S-45CR1	B3

ACTUAL RATIO

- Linear
  - 3.08 ↕ 7.25 
  - 10.41 ↕ 50.32 
  - 59.36 ↕ 325.7 
  - 360.4 ↕ 3160 
- Right-angle
  - 10.50 ↕ 33.50 
  - 46.09 ↕ 516.1 
  - 276.6 ↕ 3235 

INPUT CONFIGURATION

- Male input supports
  - S-45CR1
  - S-46C1
  - S-46C1.RL
  - S-65CR1
  - S-65CR1.RL
  - S-45SR
  - S-65SR 
  - 48.82
  - 45.70 
- Multi-disc brakes
  - FL250
  - FL350
  - FL450
  - FL650
  - FL750
  - FL960 
- Universal input
  - 00 

MOUNTING POSITION

- Linear
  - B3
  - B6
  - B7
  - ...
- Right-angle
  - V6A
  - V6B
  - V6A
  - V6B
  - B3A
  - ...

Designation example: **EM1020 / MR / 3.50 / S-45CR1 / B3**

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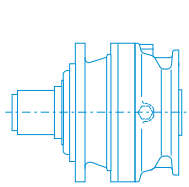
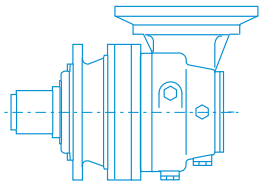
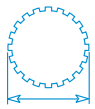
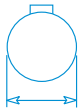
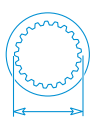


010



i_{eff}	3.38 - 3282
T_N (Nm)	1000
	B40X36 DIN5482
	42 mm
	A40X36 DIN5482
	50 mm

10000
hours life

010

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1010 / PD 1010												
3.38	444	410	19.1	296	463	14.4	148	570	8.8			
4.39	342	431	15.4	228	487	11.6	114	600	7.2			
6.00	250	412	10.8	167	453	7.9	83	510	4.5	3000	1600	12
6.94	216	387	8.8	144	407	6.2	72	457	3.5			
10.50	143	206	3.1	95	213	2.1	47.6	224	1.1			
ED 2010 / PD 2010												
11.42	131	591	8.1	88	667	6.1	43.8	821	3.8			
14.84	101	639	6.8	67	722	5.1	33.7	889	3.1			
19.27	78	672	5.5	52	759	4.1	25.9	816	2.2			
20.28	74	702	5.4	49.3	793	4.1	24.7	916	2.4			
23.46	64	733	4.9	42.6	828	3.7	21.3	921	2.1			
26.34	57	738	4.4	38.0	803	3.2	19.0	825	1.6	3000	1600	8
30.47	49.2	771	4.0	32.8	808	2.8	16.4	829	1.4			
36.00	41.7	561	2.4	27.8	589	1.7	13.9	636	0.93			
41.64	36.0	571	2.2	24.0	599	1.5	12.0	646	0.81			
48.16	31.1	512	1.7	20.8	537	1.2	10.4	581	0.63			
ET 3010 / PD 3010												
65.14	23.0	918	2.2	15.4	931	1.5	7.7	952	0.77			
68.55	21.9	920	2.1	14.6	933	1.4	7.3	954	0.73			
79.29	18.9	925	1.8	12.6	937	1.2	6.3	958	0.63			
89.03	16.8	928	1.6	11.2	941	1.1	5.6	961	0.57			
103.0	14.6	933	1.4	9.7	945	1.0	4.9	966	0.49			
115.6	13.0	836	1.1	8.6	847	0.77	4.3	865	0.39			
121.7	12.3	938	1.2	8.2	950	0.82	4.1	970	0.42			
140.7	10.7	943	1.1	7.1	955	0.71	3.6	975	0.36			
162.8	9.2	947	0.91	6.1	959	0.62	3.1	979	0.32			
182.8	8.2	848	0.73	5.5	859	0.49	2.7	877	0.25			
211.4	7.1	852	0.63	4.7	863	0.43	2.4	880	0.22			
216.0	6.9	684	0.50	4.6	732	0.36	2.3	799	0.19	3000	1600	5
246.3	6.1	959	0.61	4.1	971	0.41	2.0	990	0.21			
276.6	5.4	859	0.49	3.6	870	0.33	1.8	887	0.17			
319.9	4.7	863	0.42	3.1	873	0.29	1.6	900	0.15			
372.6	4.0	824	0.35	2.7	846	0.24	1.3	883	0.12			
378.0	4.0	759	0.32	2.6	796	0.22	1.3	854	0.12			
437.2	3.4	786	0.28	2.3	800	0.19	1.1	873	0.11			
484.0	3.1	874	0.28	2.1	884	0.19	1.0	961	0.10			
661.5	2.3	800	0.19	1.5	836	0.13	0.76	930	0.07			
765.1	2.0	772	0.16	1.3	823	0.11	0.65	915	0.06			
EQ 4010 / PD 4010												
131	11.5	951	1.1	7.7	963	0.77	3.8	983	0.39			
170	8.8	958	0.89	5.9	970	0.60	2.9	990	0.31			
232	6.5	968	0.66	4.3	980	0.44	2.2	999	0.23			
286	5.2	974	0.54	3.5	986	0.36	1.7	1005	0.18			
301	5.0	975	0.51	3.3	987	0.34	1.7	1007	0.17			
348	4.3	980	0.44	2.9	991	0.30	1.4	1011	0.15			
405	3.7	984	0.38	2.5	996	0.26	1.2	1029	0.13			
452	3.3	987	0.34	2.2	999	0.23	1.1	1047	0.12			
527	2.8	991	0.30	1.9	1003	0.20	0.9	1072	0.11			
550	2.7	993	0.28	1.8	1004	0.19	0.9	1080	0.10			
618	2.4	996	0.25	1.6	1008	0.17	0.8	1099	0.09			
720	2.1	1000	0.22	1.4	1012	0.15	0.7	1126	0.08			
832	1.8	1005	0.19	1.2	1034	0.13	0.6	1151	0.07	3000	1600	3
935	1.6	1008	0.17	1.1	1053	0.12	0.5	1172	0.07			
977	1.5	1009	0.16	1.0	1060	0.11	0.5	1180	0.06			
1.130	1.3	1017	0.14	0.9	1084	0.10	0.4	1206	0.06			
1.278	1.2	1037	0.13	0.8	1105	0.09	0.4	1229	0.05			
1.478	1.0	1061	0.11	0.7	1130	0.08	0.3	1256	0.04			
1.636	0.9	1078	0.10	0.6	1148	0.07	0.3	1276	0.04			
1.709	0.9	1086	0.10	0.6	1156	0.07	0.3	1284	0.04			
1.919	0.8	1014	0.08	0.5	1079	0.06	0.3	1198	0.03			
2.236	0.7	1132	0.08	0.4	1204	0.06	0.2	1337	0.03			
2.586	0.6	1158	0.07	0.4	1231	0.05	0.2	1366	0.03			
2.904	0.5	1081	0.06	0.3	1149	0.04	0.2	1274	0.02			

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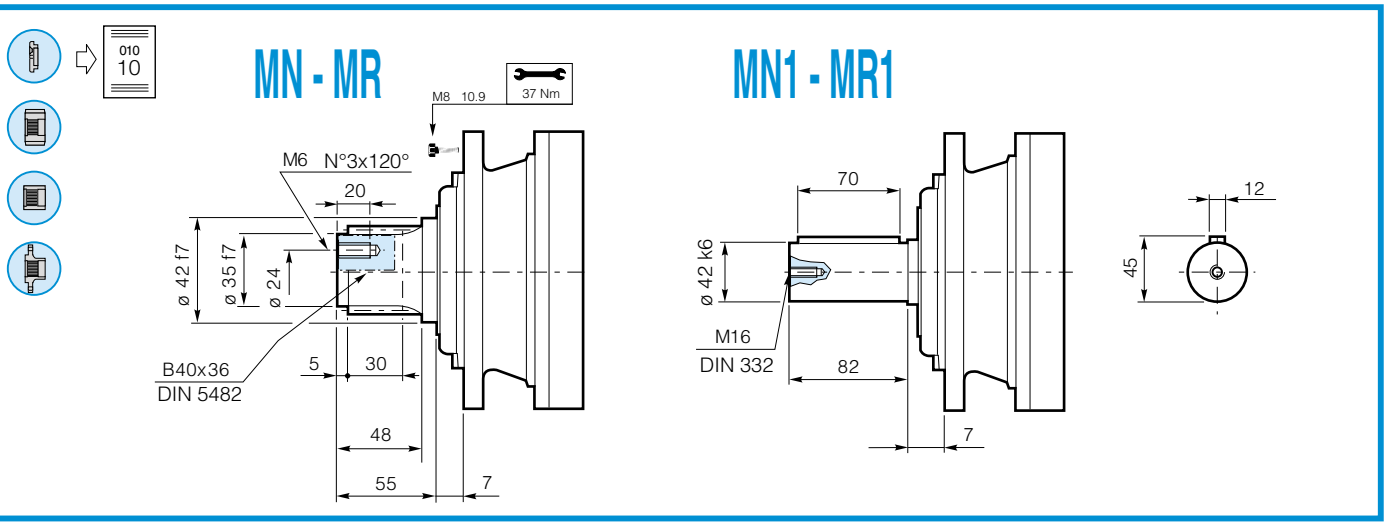
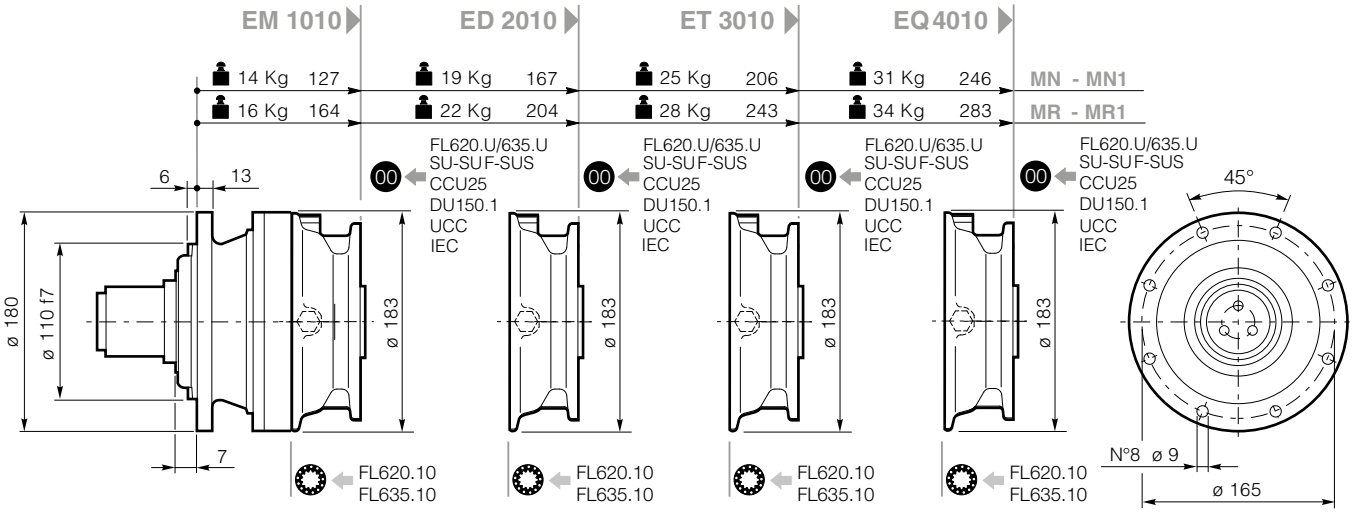
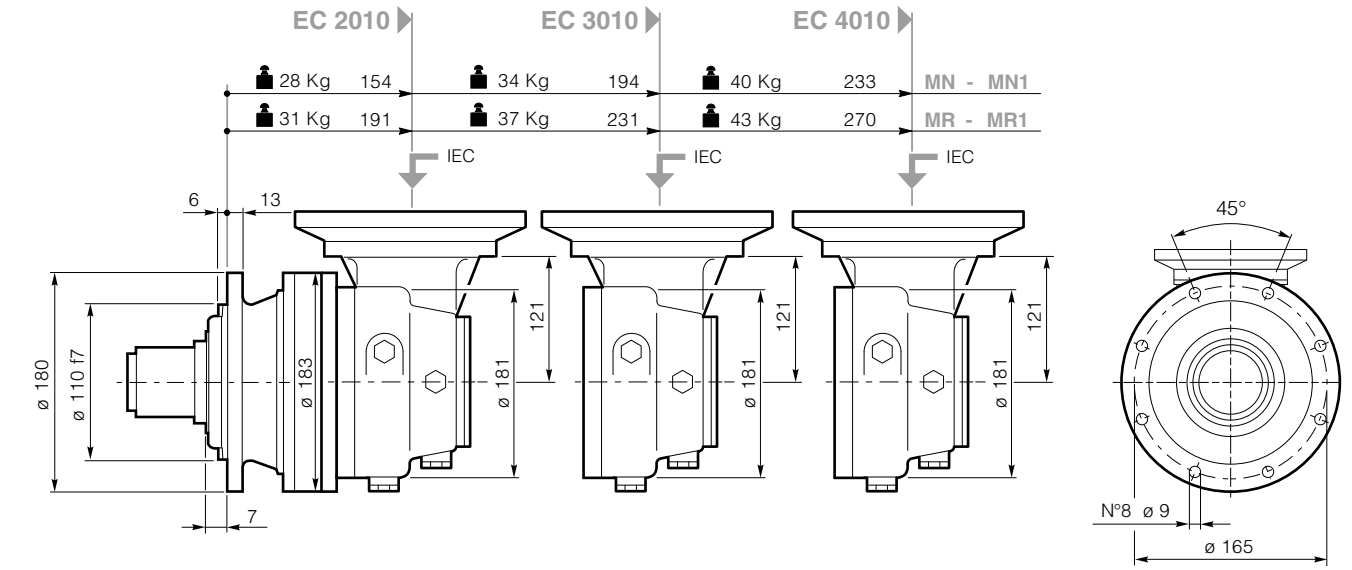
10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 2010 / PDA 2010												
10.14	148	331	5.1	99	374	3.9	49.3	460	2.4	3000	1600	5
13.17	114	430	5.1	76	486	3.9	38.0	598	2.4			
16.53	91	330	3.1	61	373	2.4	30.3	459	1.5			
18.00	83	510	4.5	56	540	3.1	27.8	589	1.7			
21.47	70	429	3.1	46.6	485	2.4	23.3	597	1.5			
29.34	51	546	2.9	34.1	575	2.1	17.0	622	1.1			
33.94	44.2	489	2.3	29.5	515	1.6	14.7	559	0.86			
40.68	36.9	524	2.0	24.6	592	1.5	12.3	645	0.83			
47.05	31.9	510	1.7	21.3	536	1.2	10.6	580	0.65			
EC 3010 / PDA 3010												
34.27	43.8	821	3.8	29.2	910	2.8	14.6	933	1.4	3000	1600	4
44.51	33.7	889	3.1	22.5	919	2.2	11.2	941	1.1			
55.87	26.9	913	2.6	17.9	926	1.7	9.0	948	0.89			
60.84	24.7	916	2.4	16.4	929	1.6	8.2	950	0.82			
72.56	20.7	922	2.0	13.8	935	1.4	6.9	955	0.69			
77.46	19.4	924	1.9	12.9	937	1.3	6.5	957	0.65			
91.40	16.4	829	1.4	10.9	841	0.96	5.5	859	0.49			
99.17	15.1	932	1.5	10.1	944	1.0	5.0	965	0.51			
114.7	13.1	936	1.3	8.7	949	0.87	4.4	969	0.44			
128.8	11.6	839	1.0	7.8	850	0.69	3.9	868	0.35			
137.5	10.9	942	1.1	7.3	954	0.73	3.6	974	0.37			
159.0	9.4	946	0.94	6.3	958	0.63	3.1	978	0.32			
173.5	8.6	785	0.71	5.8	806	0.49	2.9	842	0.25			
206.6	7.3	852	0.65	4.8	862	0.44	2.4	880	0.22			
225.4	6.7	854	0.60	4.4	864	0.40	2.2	882	0.21			
240.6	6.2	801	0.52	4.2	823	0.36	2.1	859	0.19			
282.3	5.3	708	0.39	3.5	780	0.29	1.8	815	0.15			
312.5	4.8	862	0.43	3.2	873	0.29	1.6	896	0.15			
356.3	4.2	650	0.29	2.8	718	0.21	1.4	813	0.12			
427.1	3.5	782	0.29	2.3	799	0.20	1.2	870	0.11			
494.1	3.0	704	0.22	2.0	769	0.16	1.0	856	0.09			
EC 4010 / PDA 4010												
150.5	10.0	945	0.99	6.6	957	0.67	3.3	976	0.34	3000	1600	2.2
188.8	7.9	951	0.79	5.3	963	0.53	2.6	983	0.27			
205.6	7.3	954	0.73	4.9	966	0.49	2.4	985	0.25			
261.8	5.7	961	0.58	3.8	973	0.39	1.9	992	0.20			
267.1	5.6	961	0.57	3.7	973	0.38	1.9	993	0.20			
318.5	4.7	967	0.48	3.1	978	0.32	1.6	998	0.16			
359.9	4.2	970	0.42	2.8	982	0.29	1.4	1001	0.15			
387.7	3.9	972	0.39	2.6	984	0.27	1.3	1011	0.14			
441.6	3.4	976	0.35	2.3	987	0.23	1.1	1032	0.12			
503.6	3.0	980	0.31	2.0	991	0.21	0.99	1054	0.11			
537.6	2.8	981	0.29	1.9	993	0.19	0.93	1065	0.10			
638.8	2.3	986	0.24	1.6	998	0.16	0.78	1094	0.09			
688.2	2.2	988	0.23	1.5	1000	0.15	0.73	1106	0.08			
813.3	1.8	993	0.19	1.2	1019	0.13	0.61	1135	0.07			
893.9	1.7	890	0.16	1.1	949	0.11	0.56	1057	0.06			
1056	1.4	1001	0.15	0.95	1062	0.11	0.47	1182	0.06			
1104	1.4	1003	0.14	0.91	1069	0.10	0.45	1190	0.06			
1204	1.2	1017	0.13	0.83	1084	0.09	0.42	1206	0.05			
1444	1.0	1046	0.11	0.69	1115	0.08	0.35	1239	0.05			
1670	0.90	1070	0.10	0.60	1140	0.07	0.30	1267	0.04			
1822	0.82	914	0.08	0.55	972	0.06	0.27	1080	0.03			
1959	0.77	929	0.07	0.51	987	0.05	0.26	1094	0.03			
2169	0.69	1023	0.07	0.46	1088	0.05	0.23	1208	0.03			
2527	0.59	961	0.06	0.40	1022	0.04	0.20	1135	0.02			
2964	0.51	989	0.05	0.34	1050	0.04	0.17	1163	0.02			
3282	0.46	1090	0.05	0.30	1158	0.04	0.15	1284	0.02			

GEARBOX DIMENSIONS WITH OUTPUT







00 → B13 | SU-SUF SUS → 010 8 | FL620 FL635 → 010 9 | IEC Motor → 010 9 | CCU25 → B15 | DU150.1 UCC → B16

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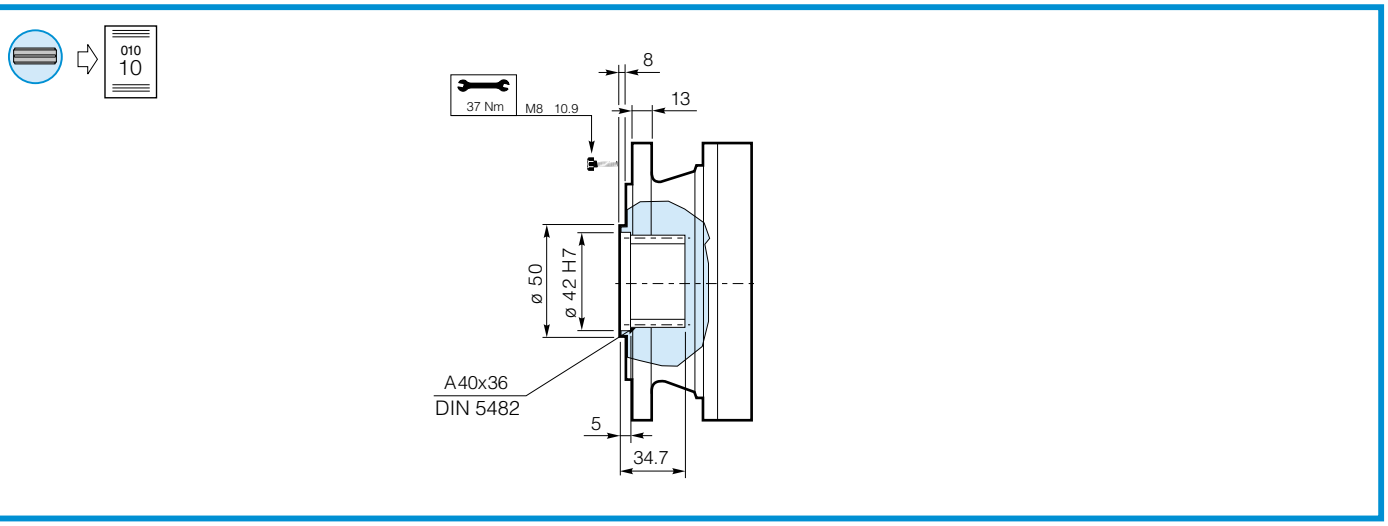

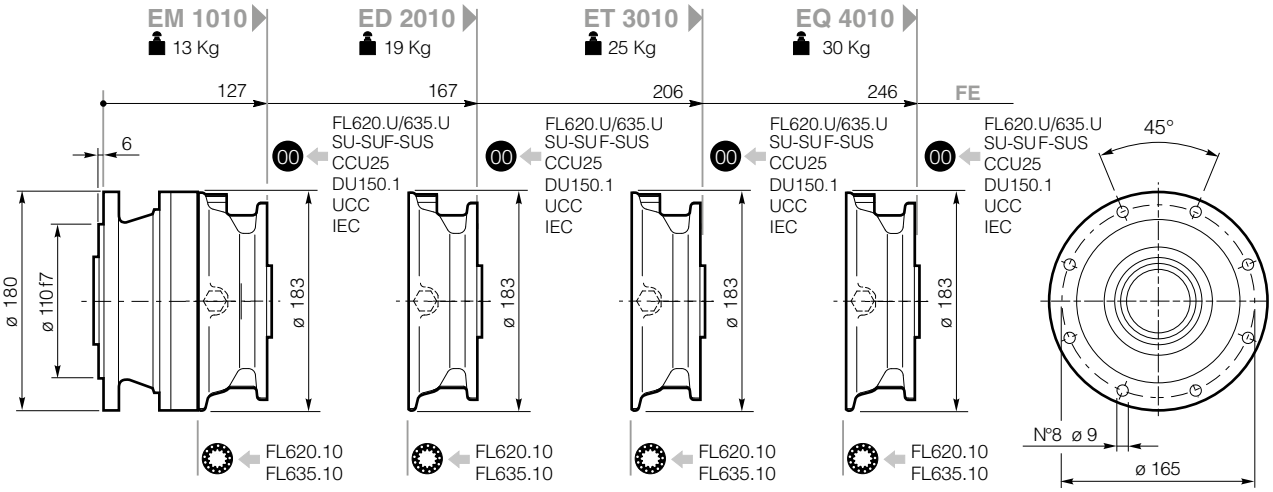

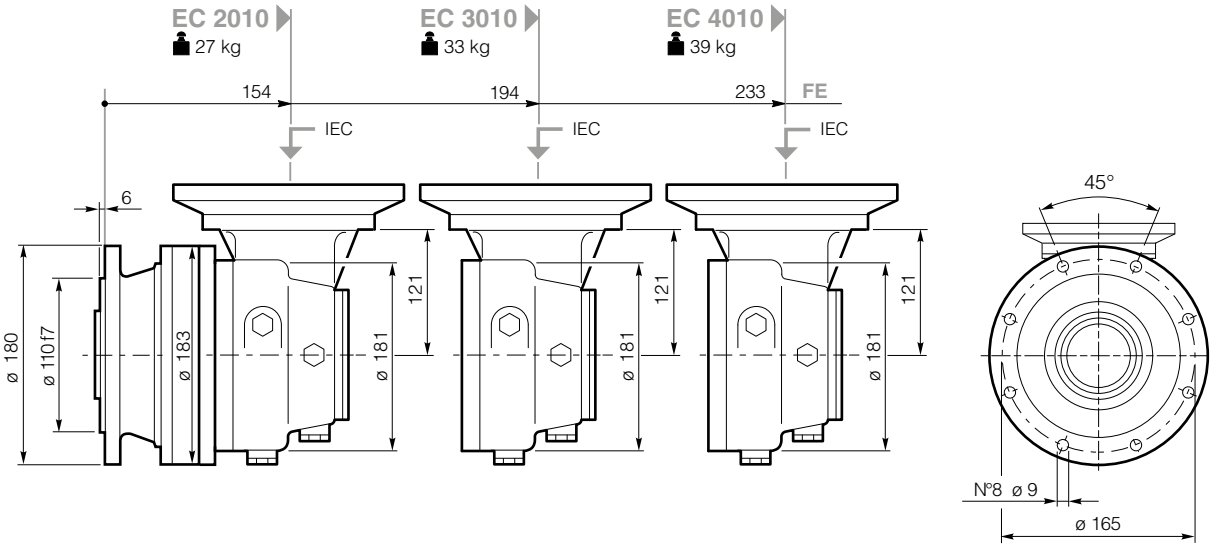

00 → B13 SU-SUF SUS → 010 8 FL620 FL635 → 010 9 IEC Motor → 010 9 CCU25 → B15 DU150.1 UCC → B16

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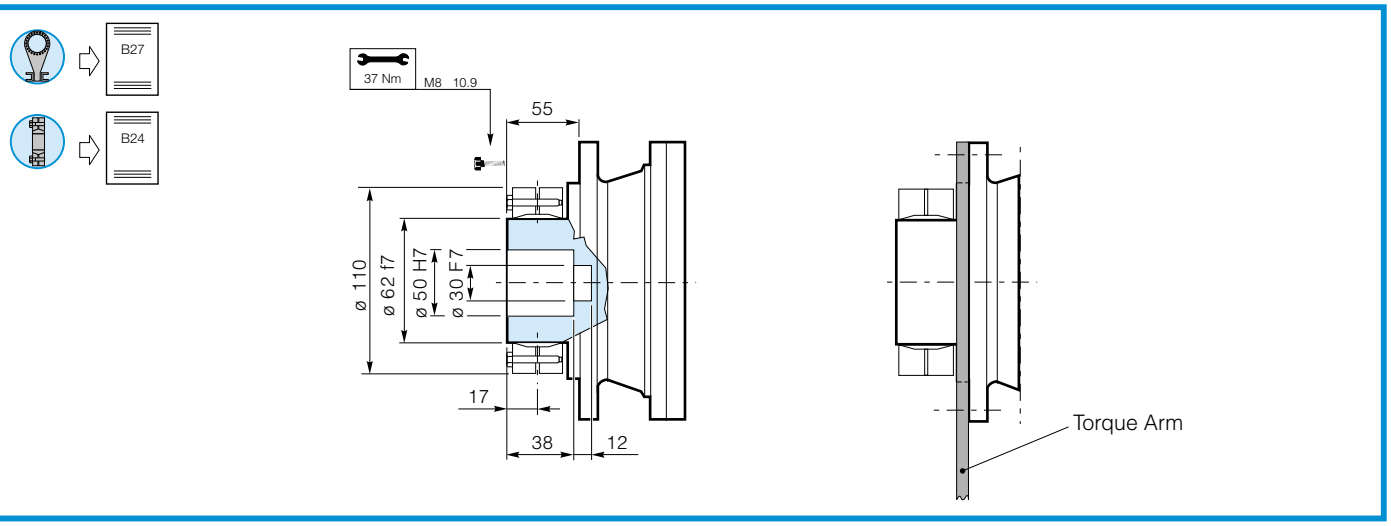
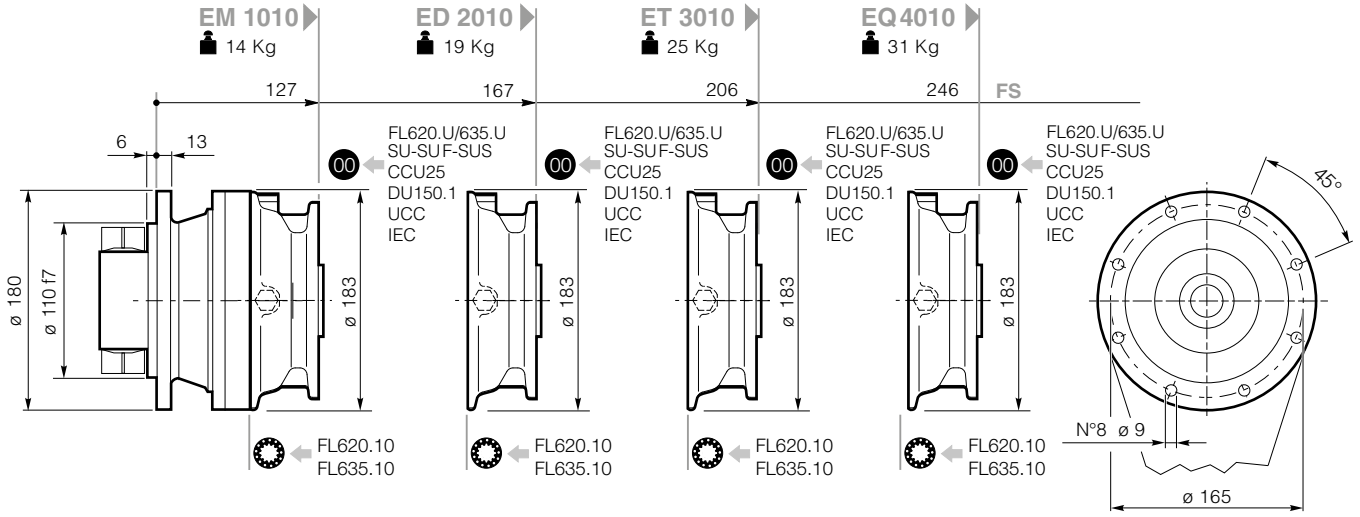
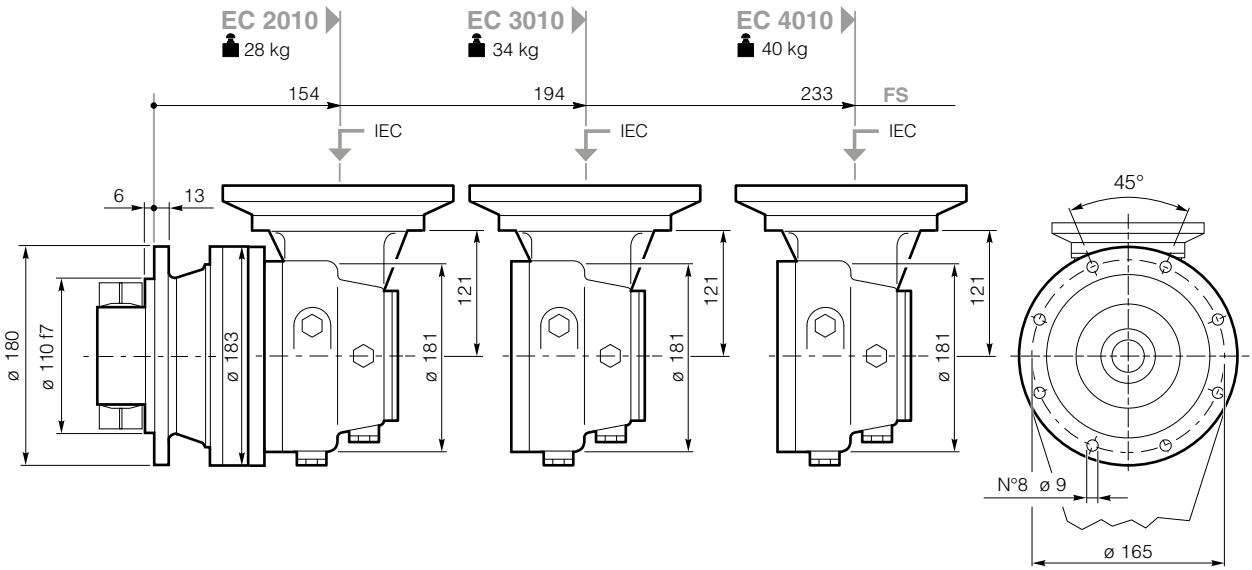
GEARBOX DIMENSIONS WITH OUTPUT







00 → B13 | SU-SUF SUS → 010 8 | FL620 FL635 → 010 9 | IEC Motor → 010 9 | CCU25 → B15 | DU150.1 UCC → B16

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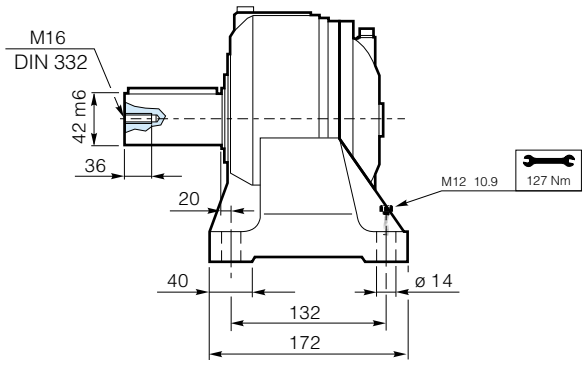
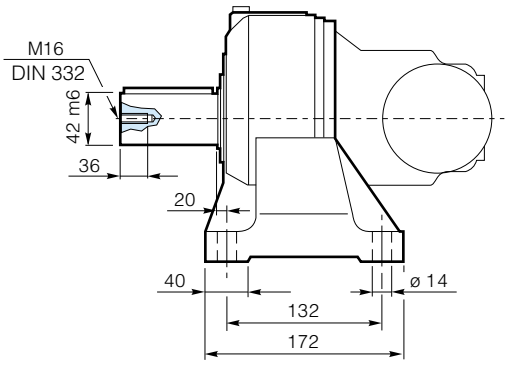
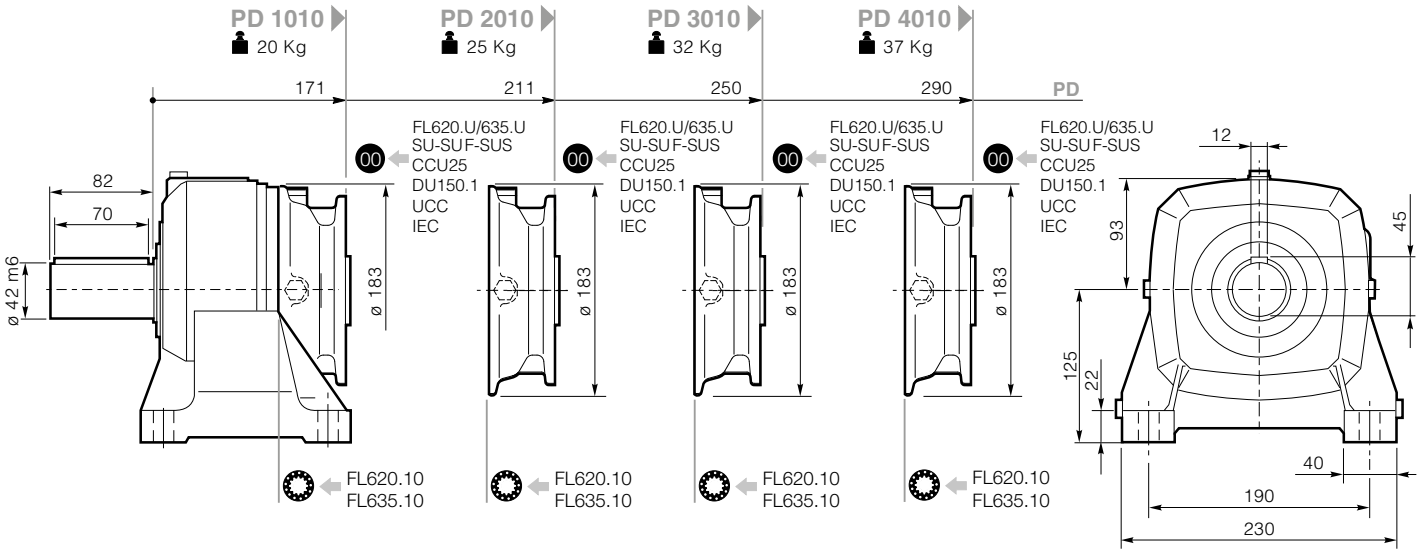
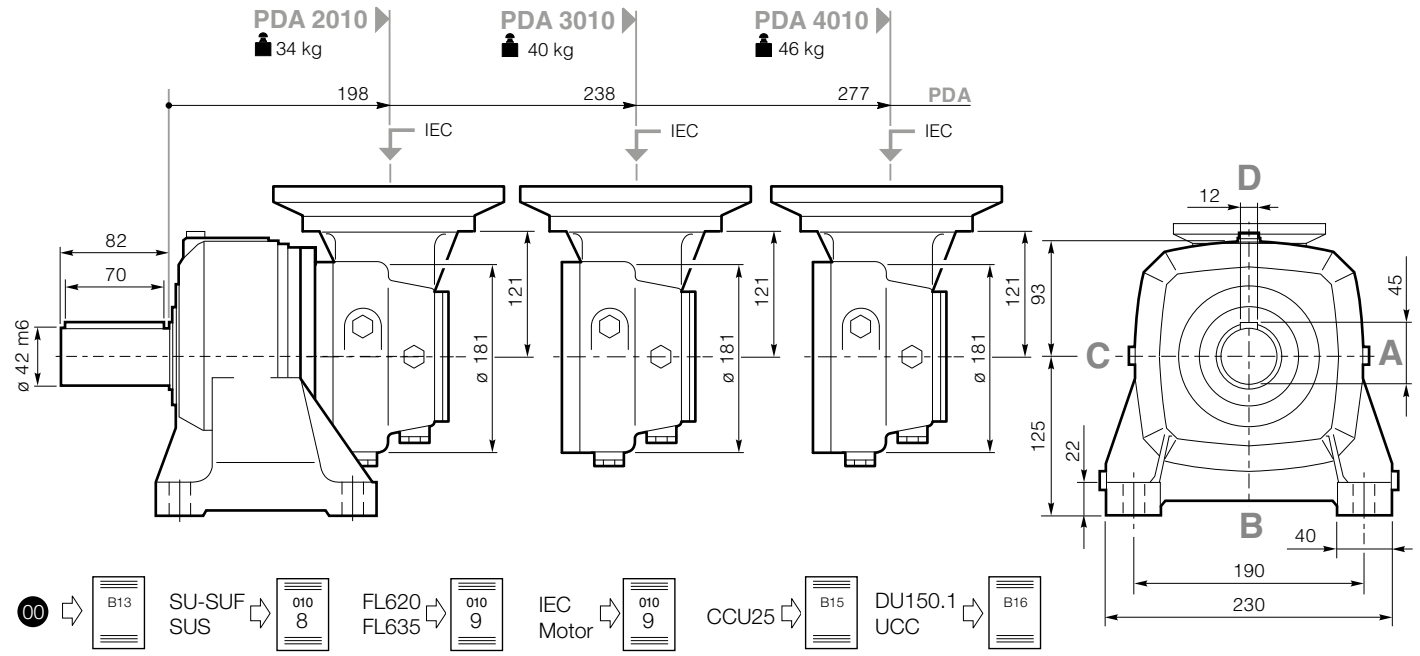
PD



PDA







00 → B13 | SU-SUF SUS → 010 8 | FL620 FL635 → 010 9 | IEC Motor → 010 9 | CCU25 → B15 | DU150.1 UCC → B16

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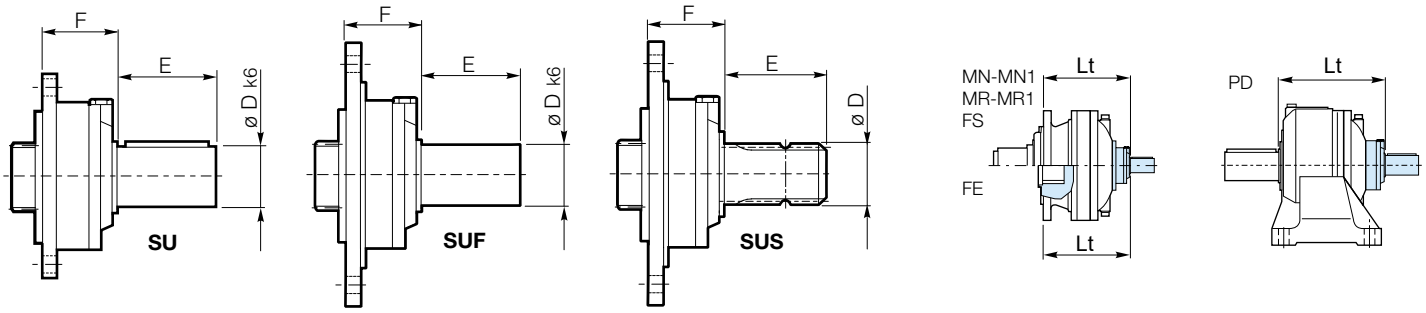
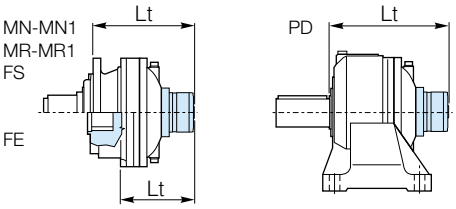
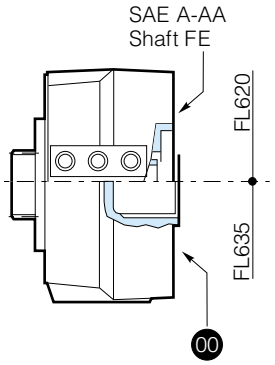
SU - SUF - SUS



	D	E	F		Lt 00		
					MN-MN1-FE-FS	MR-MR1	PD
SU1 28x50	28	50	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SU2 40x58	40	58	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SU3 48x82	48	82	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SU 42x80	42	80	101.5	EM/PD 1010	229	266	273
				ED/PD 2010	268	305	312
				ET/PD 3010	308	345	352
				EQ/PD 4010	347	384	391
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	EM/PD 1010	229	266	273
				ED/PD 2010	268	305	312
				ET/PD 3010	308	345	352
				EQ/PD 4010	347	384	391
SU2 1.5x3.25	38.10	82.55	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SUF1 28x50	28	50	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SUF2 40x58	40	58	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350
SUF3 48x82	48	82	60	EM/PD 1010	187	224	231
				ED/PD 2010	227	264	271
				ET/PD 3010	266	303	310
				EQ/PD 4010	306	343	350

FL620.10 - FL635.10 / FL620.U - FL635.U

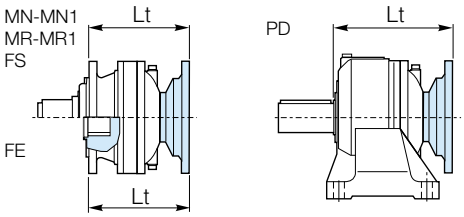




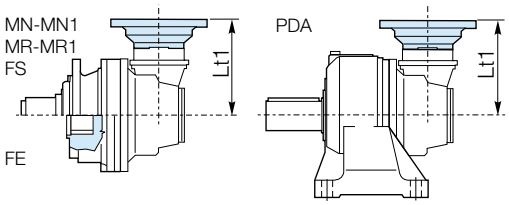
		Lt 00		
		MN-MN1-FE-FS	MR-MR1	PD
FL620.U	EM/PD 1010	232	268.5	275.5
	ED/PD 2010	271	308.5	315.5
	ET/PD 3010	311	347.5	354.5
	EQ/PD 4010	350	387.5	394.5
FL635.U	EM/PD 1010	218	255	262
	ED/PD 2010	258	295	302
	ET/PD 3010	297	334	341
	EQ/PD 4010	337	374	381

		Lt		
		MN-MN1-FE-FS	MR-MR1	PD
FL620.10	EM/PD 1010	190.5	227.5	234.5
	ED/PD 2010	230.5	267.5	274
	ET/PD 3010	269.5	306.5	320.5
	EQ/PD 4010	309.5	346.5	360.5
FL635.10	EM/PD 1010	172	209	172
	ED/PD 2010	212	249	212
	ET/PD 3010	251	288	251
	EQ/PD 4010	291	328	291

IEC Motor

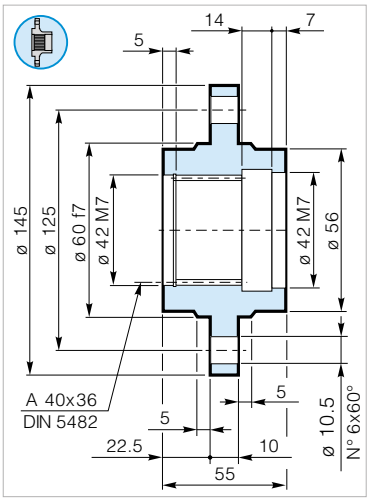


		Lt 00				
		IEC				
		63	71	80-90	100-112	132
EM1010	MN-MN1-FE-FS	147	149	154	155	222
	MR-MR1	184	186	191	192	259
ED2010	MN-MN1-FE-FS	187	189	194	195	262
	MR-MR1	224	226	231	232	299
ET3010	MN-MN1-FE-FS	226	228	233	234	301
	MR-MR1	263	265	270	271	338
EQ 4010	MN-MN1-FE-FS	266	268	273	274	341
	MR-MR1	303	305	310	311	378
PD1010	PD	191	193	198	199	266
PD 2010		231	233	238	239	306
PD 3010		270	272	277	278	345
PD 4010		310	312	317	318	385

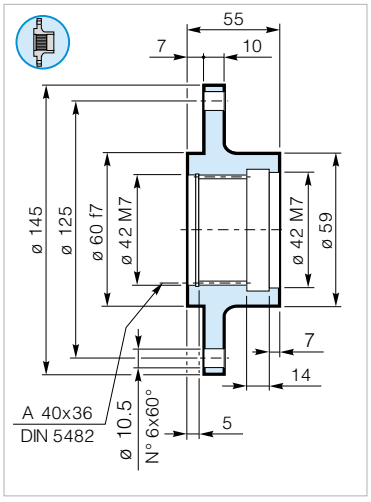


		Lt1				
		IEC				
		63	71	80-90	100-112	132
EC 2010	MN-MN1-FE-FS-PDA	151	151	151	151	238
EC 3010						
EC 4010						

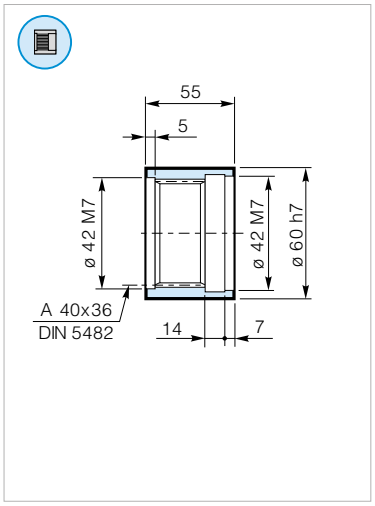
FA 010 Wheel Flange



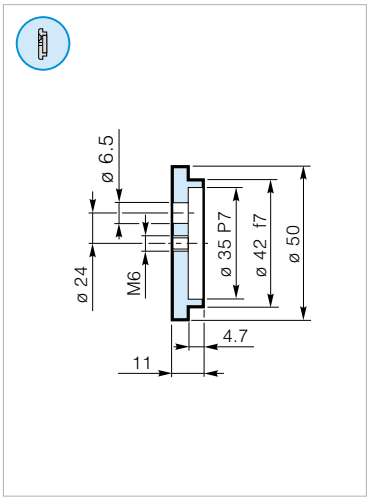
FR 010 Wheel Flange



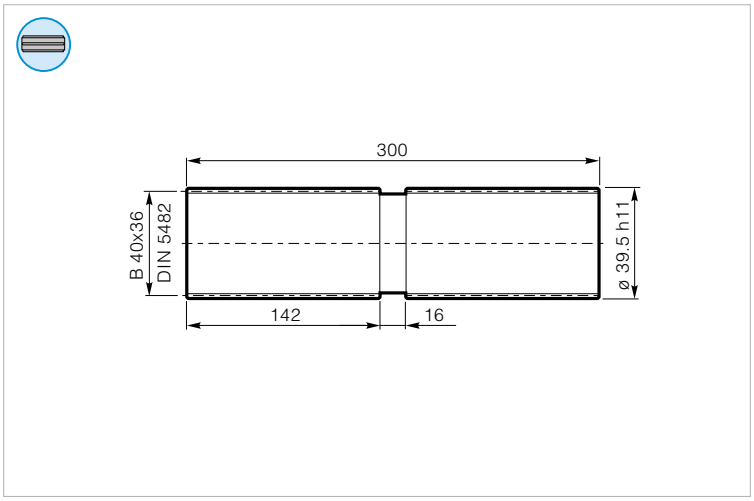
MS 010 Splined Sleeve



RDF 010 Lock Washer



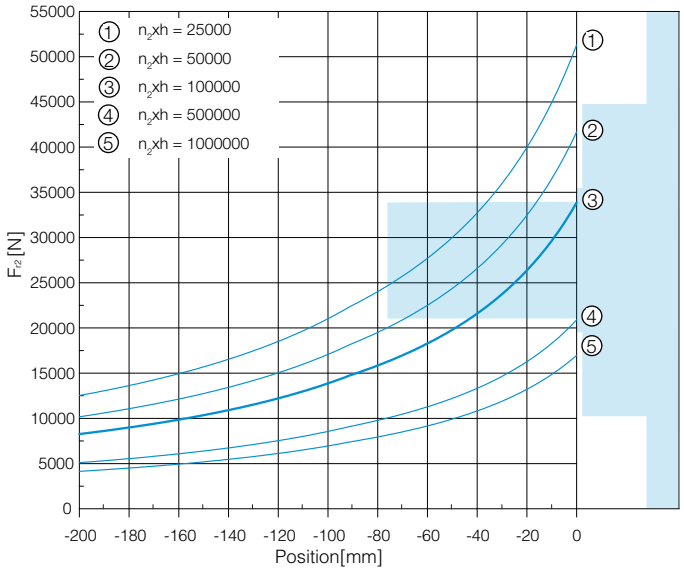
BS 010 Splined Bar



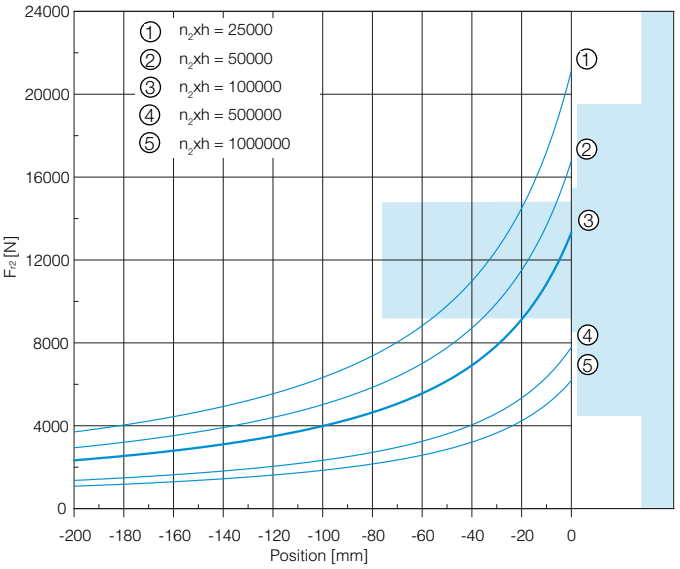
Code: 39126730100 Mat: High mechanical resistance alloyed steel

Output Radial Loads

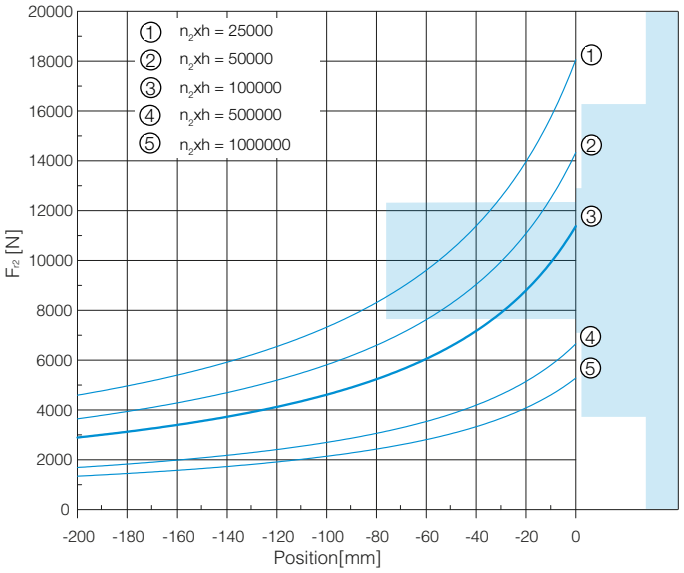
MR - MR1



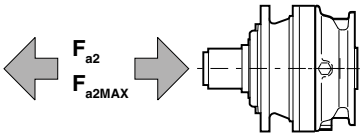
MN - MN1



PD

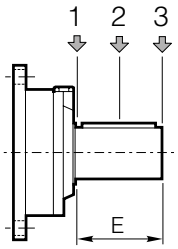


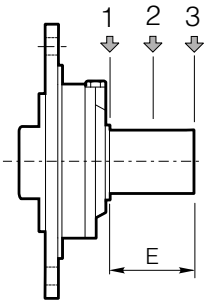
Output Axial Loads

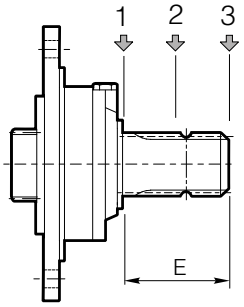


		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	9000	9000	6000
F_{a2MAX}	[N]	9000	9000	6000

Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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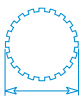
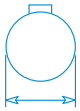
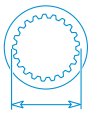
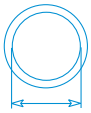
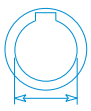
020

Page

i_{eff}	3.08 - 3235
T_{2N} (Nm)	2100
	B58X53 DIN5482
	65 mm
	A58X53 DIN5482
	75 mm
	69.4 mm
	50 - 70 mm

10000
hours life

020

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1020 / PD 1020												
3.08	487	888	45.3	325	1003	34.1	162	1235	21.0			
3.50	429	972	43.6	286	1098	32.9	143	1351	20.2			
4.13	363	1005	38.2	242	1135	28.8	121	1397	17.7			
5.17	290	1045	31.8	193	1159	23.5	97	1287	13.0	3000	2800	20
6.00	250	1001	26.2	167	1077	18.8	83	1187	10.4			
7.25	207	863	18.7	138	924	13.3	69	1015	7.3			
ED 2020 / PD 2020												
10.41	144	1263	19.1	96	1427	14.4	48.0	1756	8.8			
11.83	127	1401	18.6	85	1582	14.0	42.3	1948	8.6			
13.52	111	1329	15.4	74	1501	11.6	37.0	1848	7.2			
15.37	98	1510	15.4	65	1705	11.6	32.5	2036	6.9			
18.13	83	1566	13.6	55	1715	9.9	27.6	1840	5.3			
21.00	71	1445	10.8	47.6	1585	7.9	23.8	1787	4.5			
22.70	66	1348	9.3	44.1	1411	6.5	22.0	1515	3.5	3000	2800	12
24.78	61	1697	10.8	40.4	1772	7.5	20.2	1895	4.0			
28.66	52	1600	8.8	34.9	1683	6.2	17.4	1890	3.5			
31.02	48.4	1397	7.1	32.2	1458	4.9	16.1	1561	2.6			
35.88	41.8	1419	6.2	27.9	1480	4.3	13.9	1582	2.3			
41.64	36.0	1305	4.9	24.0	1360	3.4	12.0	1453	1.8			
50.32	29.8	1116	3.5	19.9	1164	2.4	9.9	1246	1.3			
ET 3020 / PD3020												
59.36	25.3	2071	5.5	16.8	2276	4.0	8.4	2514	2.2			
61.28	24.5	1861	4.8	16.3	1933	3.3	8.2	2078	1.8			
70.98	21.1	2121	4.7	14.1	2201	3.2	7.0	2471	1.8			
82.10	18.3	2150	4.1	12.2	2229	2.8	6.1	2545	1.6			
92.19	16.3	2172	3.7	10.8	2259	2.6	5.4	2606	1.5			
106.6	14.1	2201	3.2	9.4	2329	2.3	4.7	2683	1.3			
108.8	13.8	1963	2.8	9.2	2035	2.0	4.6	2341	1.1			
126.0	11.9	1963	2.4	7.9	2062	1.7	4.0	2228	0.93			
145.7	10.3	1999	2.2	6.9	2097	1.5	3.4	2263	0.81	3000	2800	8
161.3	9.3	2333	2.3	6.2	2536	1.6	3.1	2800	0.91			
172.0	8.7	2049	1.9	5.8	2231	1.4	2.9	2567	0.78			
198.9	7.5	2113	1.7	5.0	2221	1.2	2.5	2401	0.63			
220.5	6.8	2099	1.5	4.5	2196	1.0	2.3	2364	0.56			
260.2	5.8	2235	1.3	3.8	2428	0.98	1.9	2785	0.56			
289.0	5.2	1583	0.86	3.5	1727	0.63	1.7	1994	0.36			
325.7	4.6	1833	0.88	3.1	1995	0.64	1.5	2297	0.37			
EQ 4020 / PD4020												
360.4	4.2	2748	1.2	2.8	2800	0.82	1.4	2800	0.41			
404.7	3.7	2800	1.1	2.5	2800	0.73	1.2	2800	0.35			
468.1	3.2	2800	0.94	2.1	2800	0.62	1.1	2800	0.32			
502.5	3.0	2554	0.80	2.0	2766	0.58	0.99	2800	0.29			
569.8	2.6	2800	0.76	1.8	2800	0.53	0.88	2800	0.26			
639.8	2.3	2800	0.67	1.6	2800	0.47	0.78	2800	0.23			
708.2	2.1	2800	0.62	1.4	2800	0.41	0.71	2800	0.21			
835.7	1.8	2800	0.53	1.2	2800	0.35	0.60	2800	0.18			
892.1	1.7	2800	0.50	1.1	2800	0.32	0.56	2800	0.16			
1032	1.5	2800	0.44	0.97	2800	0.28	0.48	2800	0.14			
1120	1.3	2800	0.38	0.89	2800	0.26	0.45	2800	0.13	3000	2800	4
1323	1.1	2659	0.32	0.76	2789	0.22	0.38	2800	0.11			
1380	1.1	2641	0.30	0.72	2800	0.21	0.36	2800	0.11			
1561	0.96	2800	0.28	0.64	2800	0.19	0.32	2800	0.09			
1806	0.83	2800	0.24	0.55	2800	0.16	0.28	2800	0.08			
1999	0.75	2800	0.22	0.50	2800	0.15	0.25	2800	0.07			
2315	0.65	2800	0.19	0.43	2800	0.13	0.22	2800	0.06			
2615	0.57	2783	0.17	0.38	2800	0.11	0.19	2800	0.06			
2732	0.55	2800	0.16	0.37	2800	0.11	0.18	2800	0.05			
3160	0.47	2800	0.14	0.32	2800	0.09	0.16	2800	0.05			

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10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 2020 / PDA 2020												
10.50*	143	1351	20.2	95	1526	15.2	47.6	1879	9.4			
12.39*	121	1397	17.7	81	1578	13.3	40.4	1772	7.5			
14.23	105	1392	15.4	70	1572	11.6	35.1	1936	7.1			
16.17	93	1538	14.9	62	1737	11.3	30.9	2047	6.6			
18.00*	83	1187	10.4	56	1245	7.2	27.8	1340	3.9	3000	2800	8
19.08	79	1590	13.1	52	1724	9.5	26.2	1849	5.1			
21.75*	69	1015	7.3	46.0	1064	5.1	23.0	1147	2.8			
23.89	63	1357	8.9	41.9	1419	6.2	20.9	1522	3.3			
27.72	54	1249	7.1	36.1	1305	4.9	18.0	1398	2.6			
33.50	44.8	1067	5.0	29.9	1116	3.5	14.9	1198	1.9			
EC 3020 / PDA 3020												
46.09	32.5	1507	5.1	21.7	1702	3.9	10.8	2095	2.4			
52.42	28.6	1476	4.4	19.1	1536	3.1	9.5	1639	1.6			
57.85	25.9	1157	3.1	17.3	1307	2.4	8.6	1609	1.5			
63.00	23.8	1787	4.5	15.9	1892	3.1	7.9	2062	1.7			
68.26	22.0	1366	3.1	14.6	1542	2.4	7.3	1899	1.5			
75.13	20.0	1503	3.1	13.3	1698	2.4	6.7	2090	1.5			
88.66	16.9	1774	3.1	11.3	1998	2.4	5.6	2245	1.3			
102.7	14.6	1913	2.9	9.7	2013	2.1	4.9	2179	1.1			
111.0	13.5	1587	2.2	9.0	1647	1.6	4.5	1841	0.87			
121.2	12.4	1982	2.6	8.3	2073	1.8	4.1	2393	1.0			
142.4	10.5	1835	2.0	7.0	2073	1.5	3.5	2258	0.83	3000	2800	5
168.0	8.9	2040	1.9	6.0	2220	1.4	3.0	2555	0.80			
175.5	8.5	1655	1.5	5.7	1751	1.0	2.8	2026	0.61			
194.3	7.7	2103	1.7	5.1	2215	1.2	2.6	2395	0.65			
210.3	7.1	1682	1.3	4.8	1820	0.91	2.4	2103	0.52			
243.3	6.2	1722	1.1	4.1	1877	0.81	2.1	2166	0.47			
282.3	5.3	1575	0.88	3.5	1718	0.64	1.8	1985	0.37			
308.1	4.9	1393	0.71	3.2	1430	0.49	1.6	1495	0.25			
368.1	4.1	1226	0.52	2.7	1259	0.36	1.4	1315	0.19			
427.1	3.5	1423	0.52	2.3	1461	0.36	1.2	1526	0.19			
516.1	2.9	1478	0.45	1.9	1613	0.33	0.97	1844	0.19			
EC 4020 / PDA 4020												
276.6	5.4	2606	1.5	3.6	2800	1.1	1.8	2800	0.53			
319.9	4.7	2683	1.3	3.1	2800	0.91	1.6	2800	0.47			
347.1	4.3	2727	1.2	2.9	2800	0.85	1.4	2800	0.41			
401.5	3.7	2800	1.1	2.5	2800	0.73	1.2	2800	0.35			
450.8	3.3	2800	0.97	2.2	2800	0.65	1.1	2800	0.32			
521.4	2.9	2800	0.85	1.9	2800	0.56	0.96	2800	0.28			
556.6	2.7	2800	0.79	1.8	2800	0.53	0.90	2800	0.26			
625.0	2.4	2800	0.70	1.6	2800	0.47	0.80	2800	0.23			
712.7	2.1	2382	0.53	1.4	2526	0.37	0.70	2800	0.21			
788.9	1.9	2800	0.56	1.3	2800	0.38	0.63	2800	0.18			
853.1	1.8	2496	0.46	1.2	2604	0.32	0.59	2800	0.17			
988.1	1.5	2478	0.39	1.0	2732	0.29	0.51	2800	0.15	3000	2800	3
1094	1.4	2800	0.41	0.91	2800	0.27	0.46	2800	0.13			
1247	1.2	2275	0.29	0.80	2513	0.21	0.40	2800	0.12			
1495	1.0	2737	0.29	0.67	2798	0.20	0.33	2800	0.10			
1616	0.93	2536	0.25	0.62	2742	0.18	0.31	2800	0.09			
1729	0.87	2466	0.22	0.58	2693	0.16	0.29	2800	0.09			
2040	0.74	2800	0.22	0.49	2800	0.14	0.25	2800	0.07			
2208	0.68	2694	0.19	0.45	2800	0.13	0.23	2800	0.07			
2554	0.59	2770	0.17	0.39	2800	0.11	0.20	2800	0.06			
2787	0.54	1399	0.08	0.36	1487	0.06	0.18	1652	0.03			
3235	0.46	1623	0.08	0.31	1726	0.06	0.15	2800	0.04			

* (bg) All highlighted ratio (is. 10.50) have particular dimensions of bevel gears in some versions. See dimensional tables.

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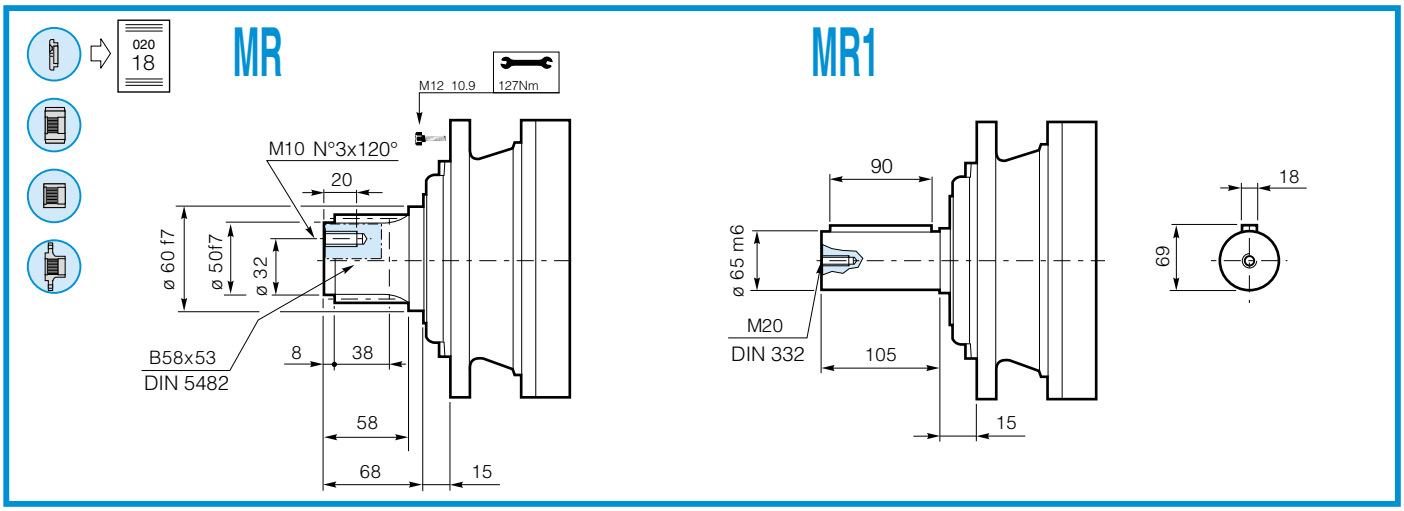
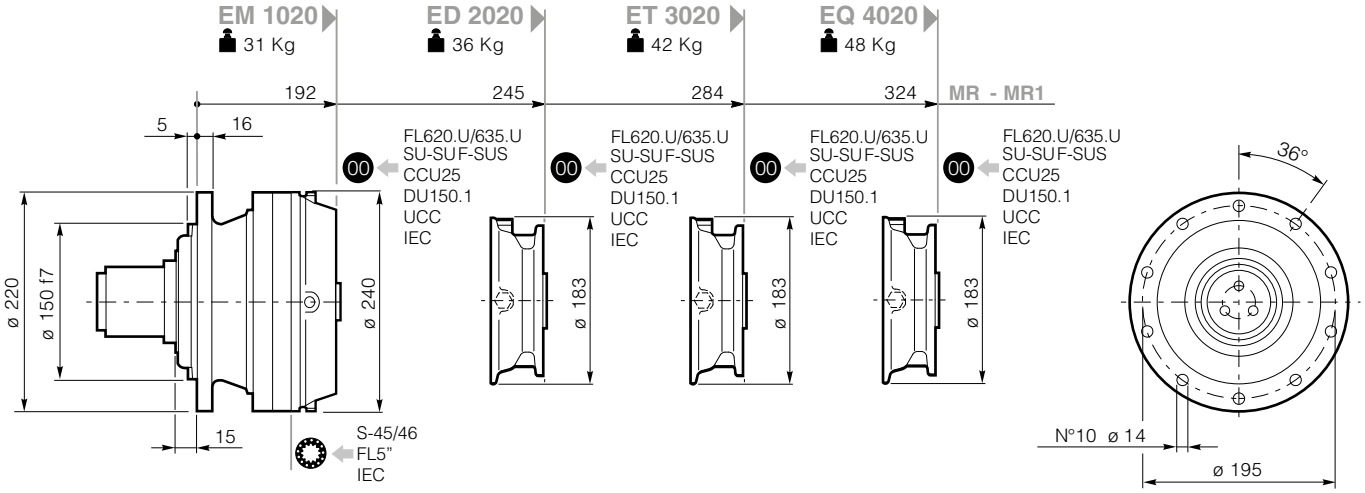
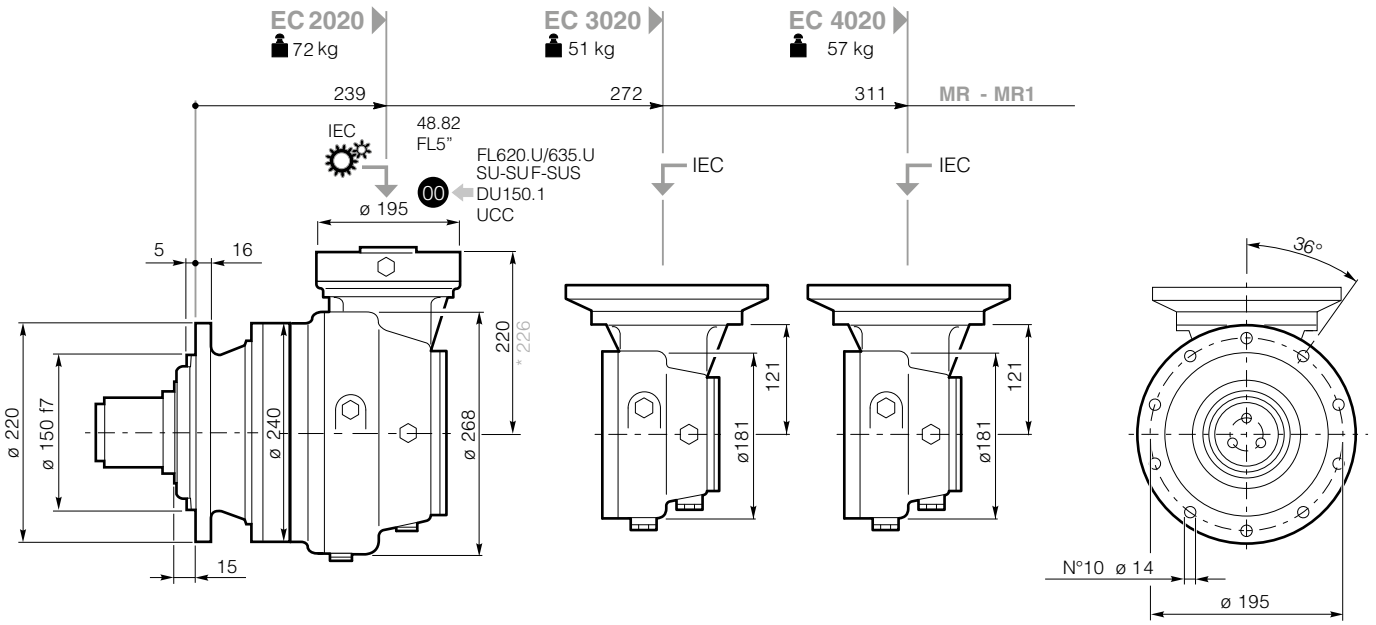
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 | S-45/46 48.82 020 12 | SU-SUF SUS 020 13 | FL5" FL620 FL635 020 14 | IEC 020 17 | 020 16 | CCU25 B15 | DU150.1 UCC B16 | * bg 020 3

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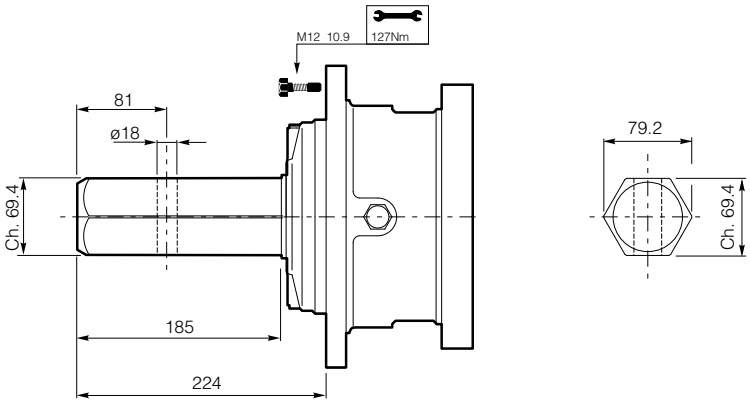

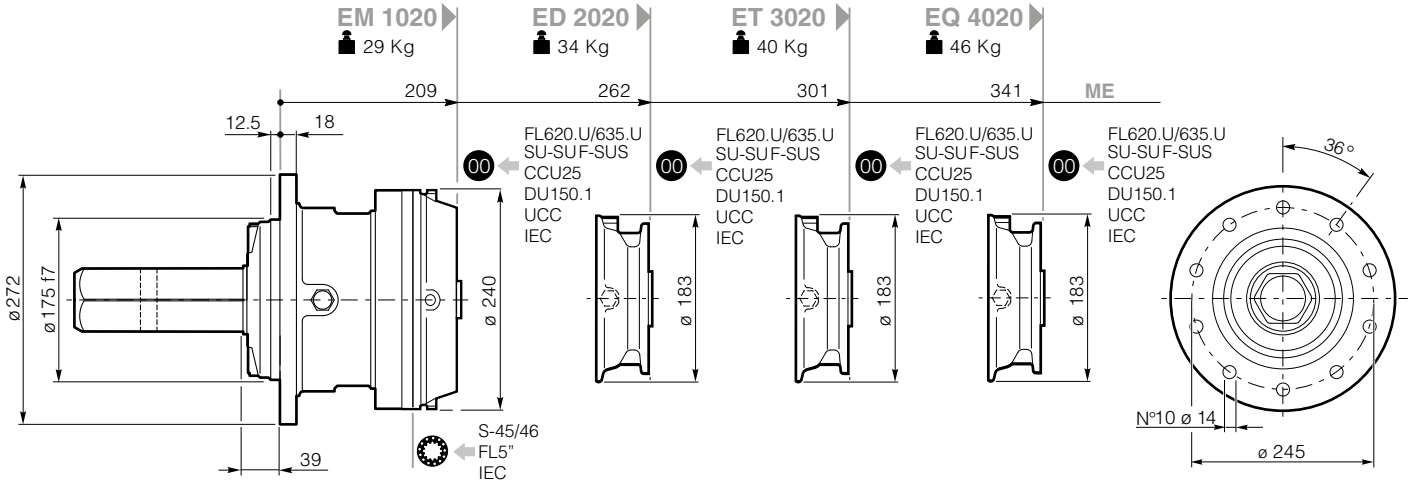

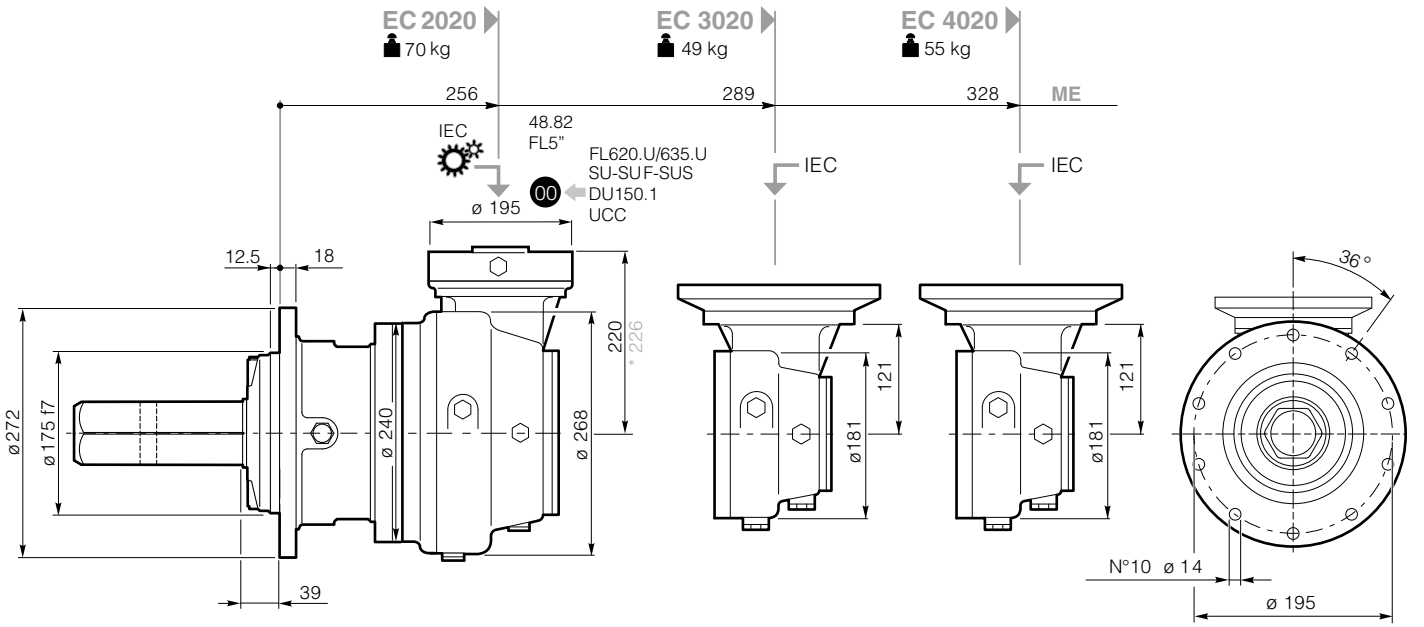

00 B13 | S-45/46 48.82 020 12 | SU-SUF SUS 020 13 | FL5" FL620 FL635 020 14 | IEC 020 17 | 020 16 | CCU25 B15 | DU150.1 UCC B16 | * bg 020 3

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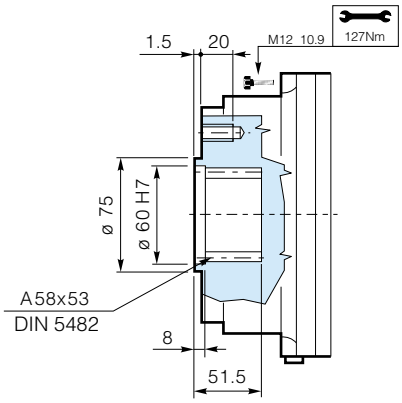
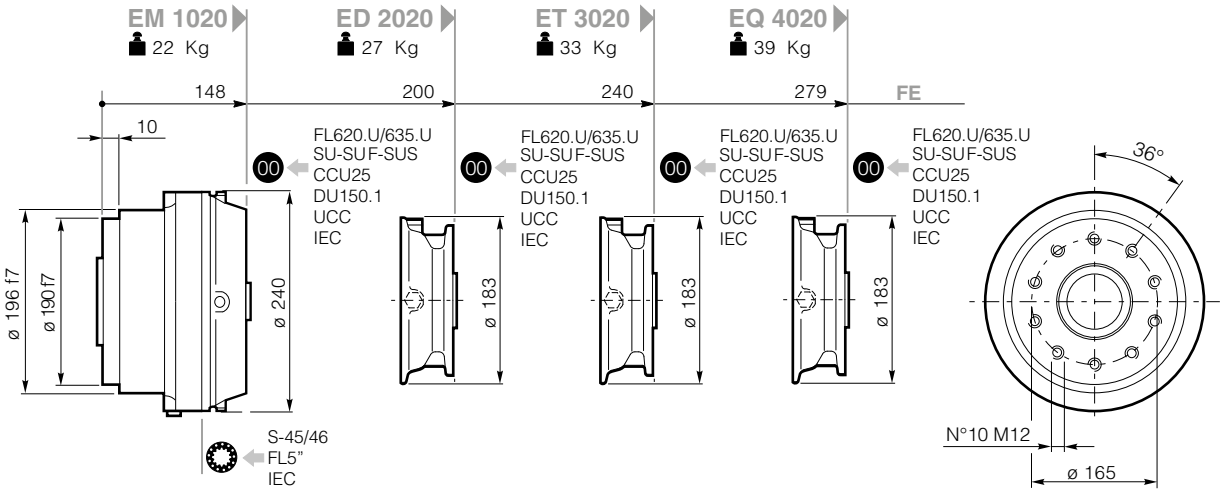
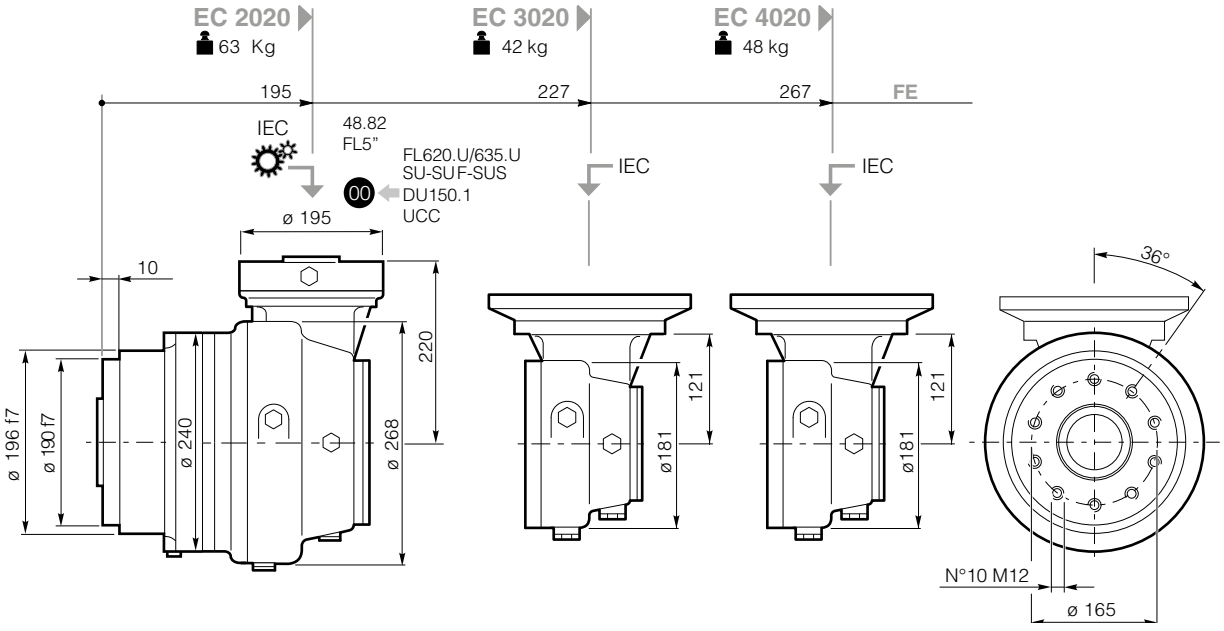
GEARBOX DIMENSIONS WITH OUTPUT

020 18



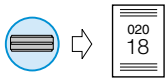


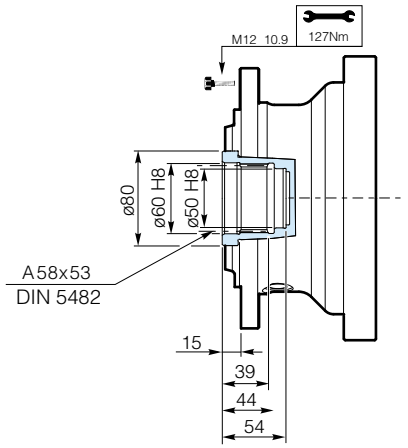


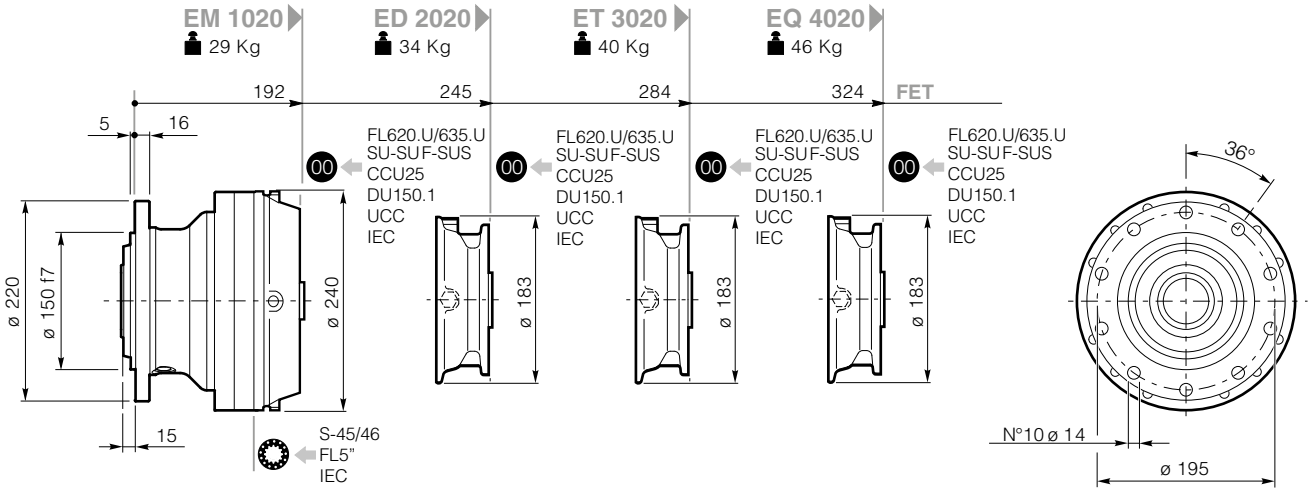
00 B13 | S-45/46 48.82 020 12 | SU-SUF SUS 020 13 | FL5" FL620 FL635 020 14 | IEC 020 17 | 020 16 | CCU25 B15 | DU150.1 UCC B16 | * bg 020 3

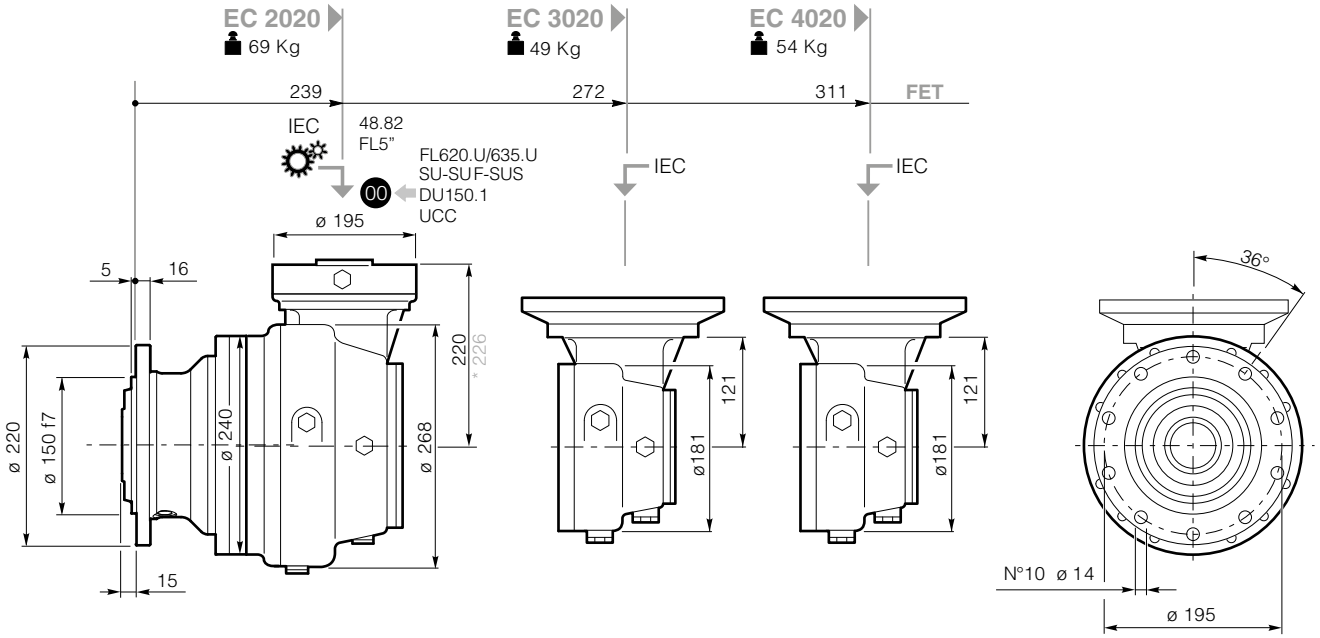
Click **DANA** button to return to section index

Click *i* button to return to main index









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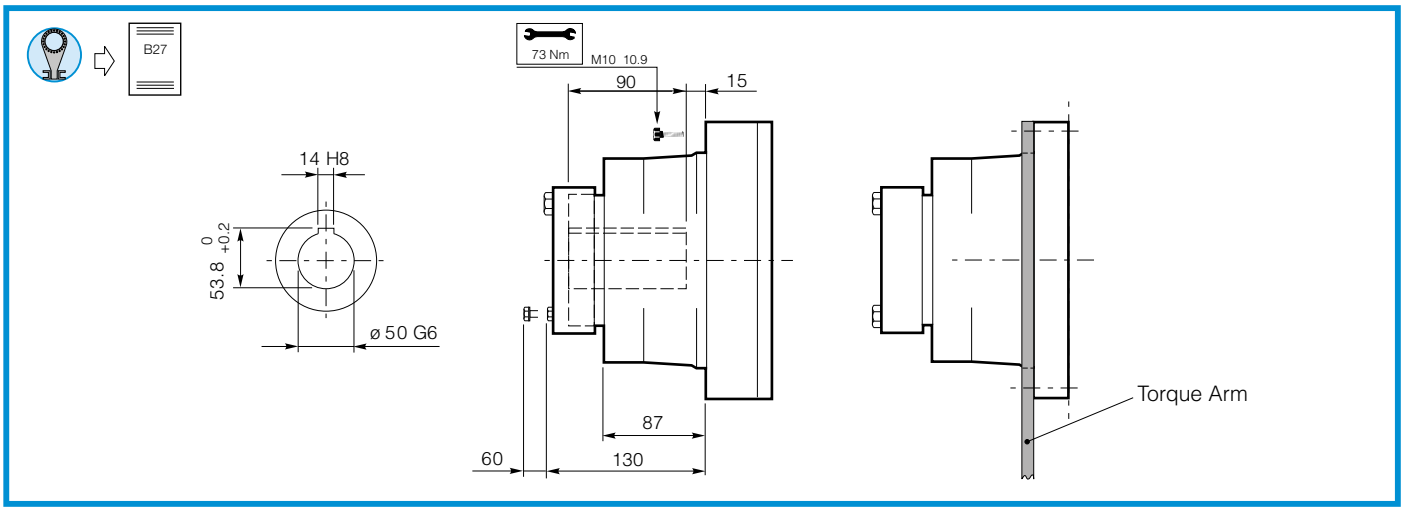
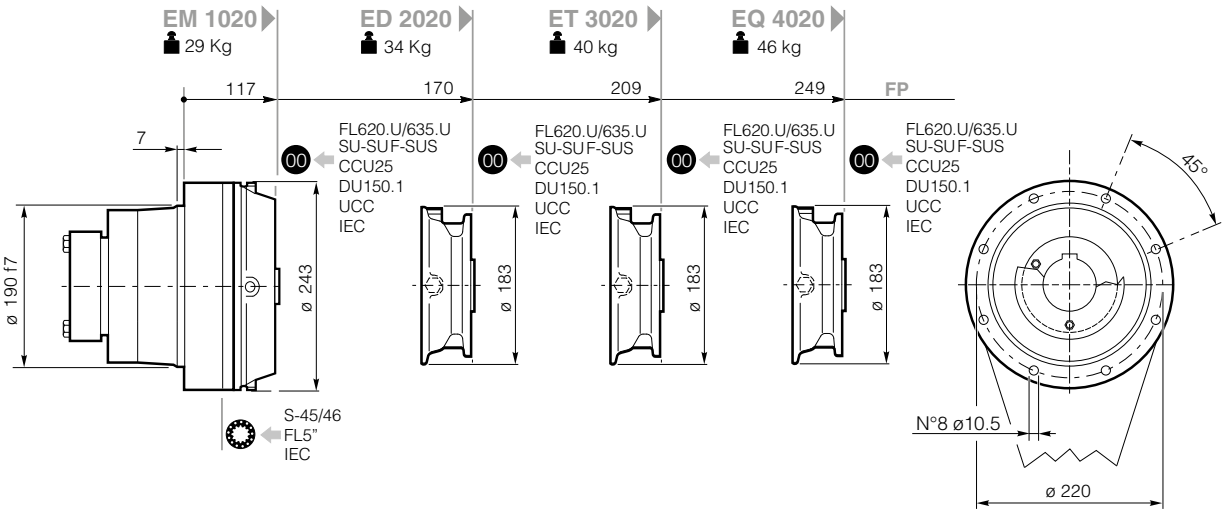
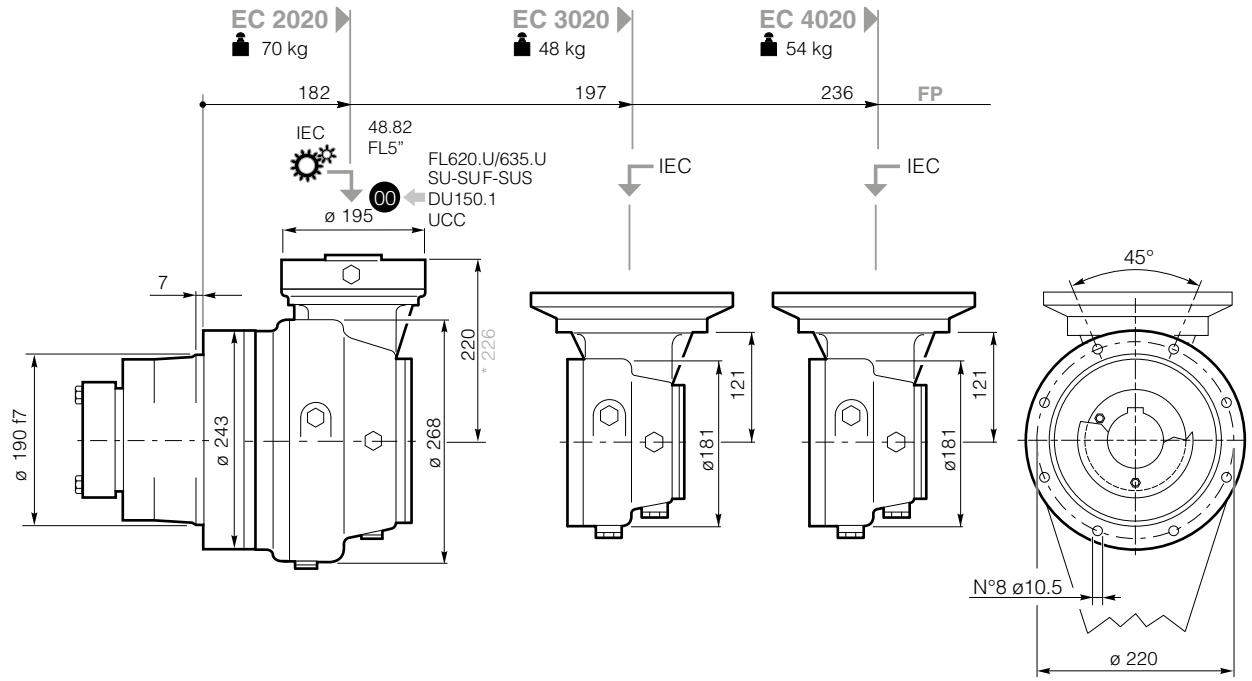
Click *i* button to return to main index

Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT



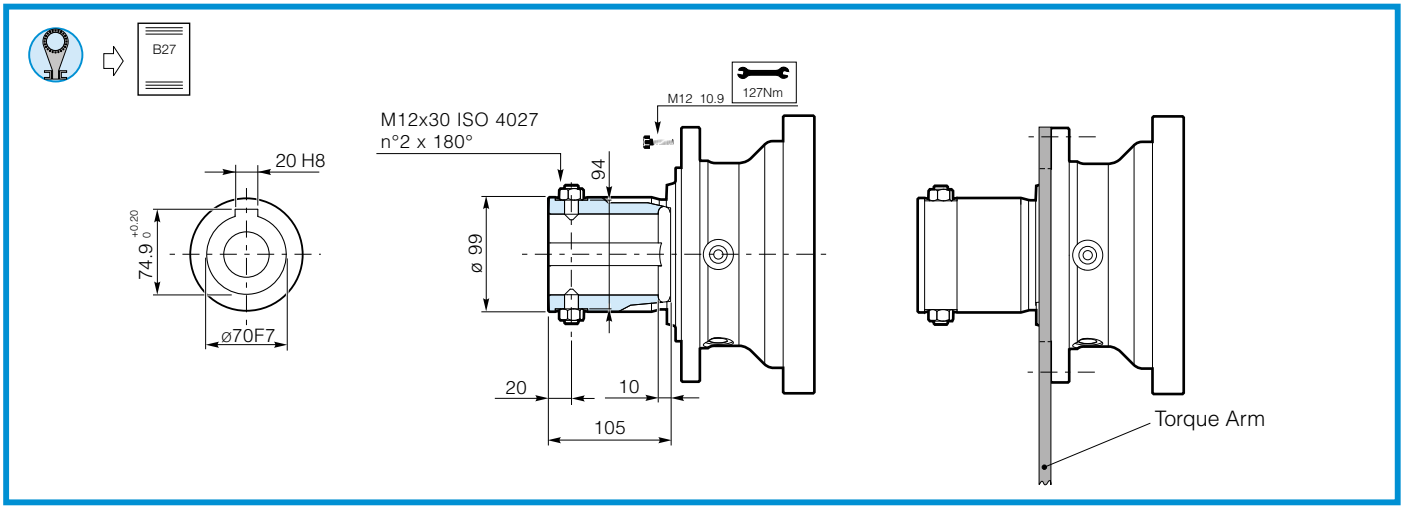


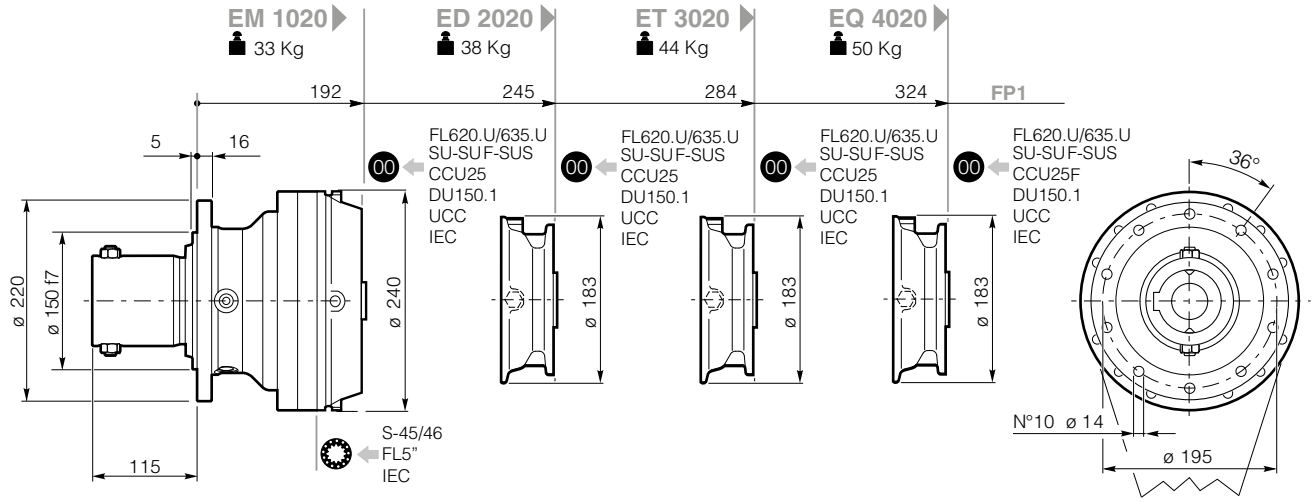


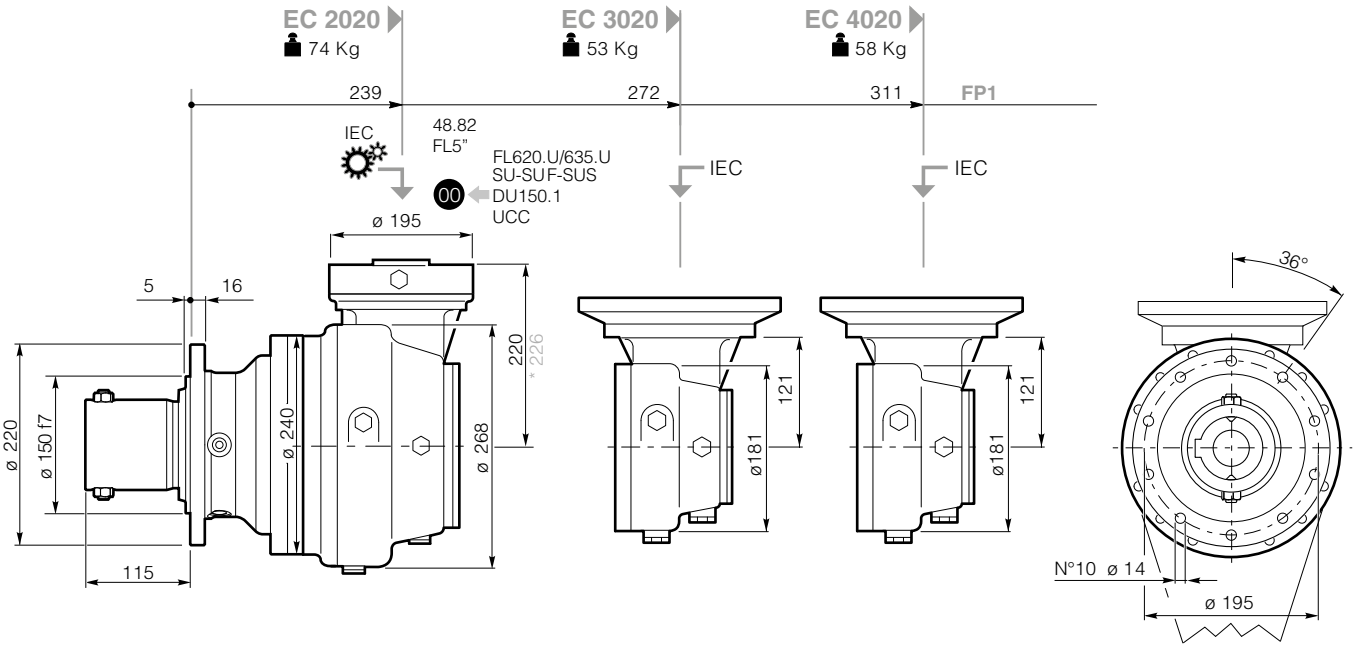
00 B13 | S-45/46 48.82 → 020 12 | SU-SUF SUS → 020 13 | FL5" FL620 FL635 → 020 14 | IEC → 020 17 | 020 16 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 020 3

Click **DANA** button to return to section index

Click *i* button to return to main index





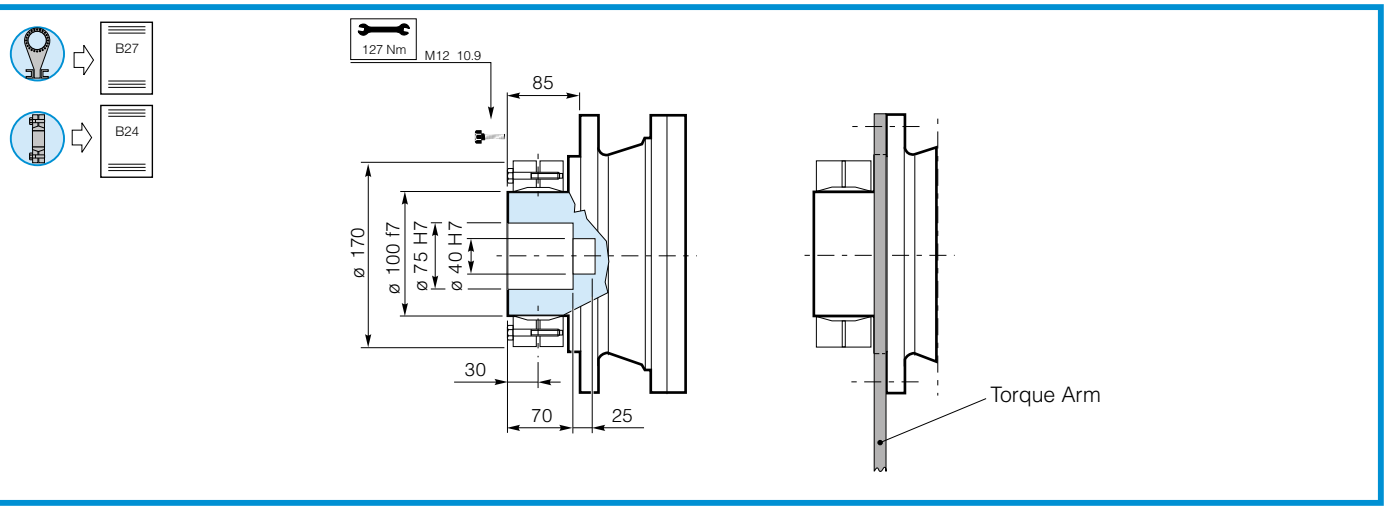


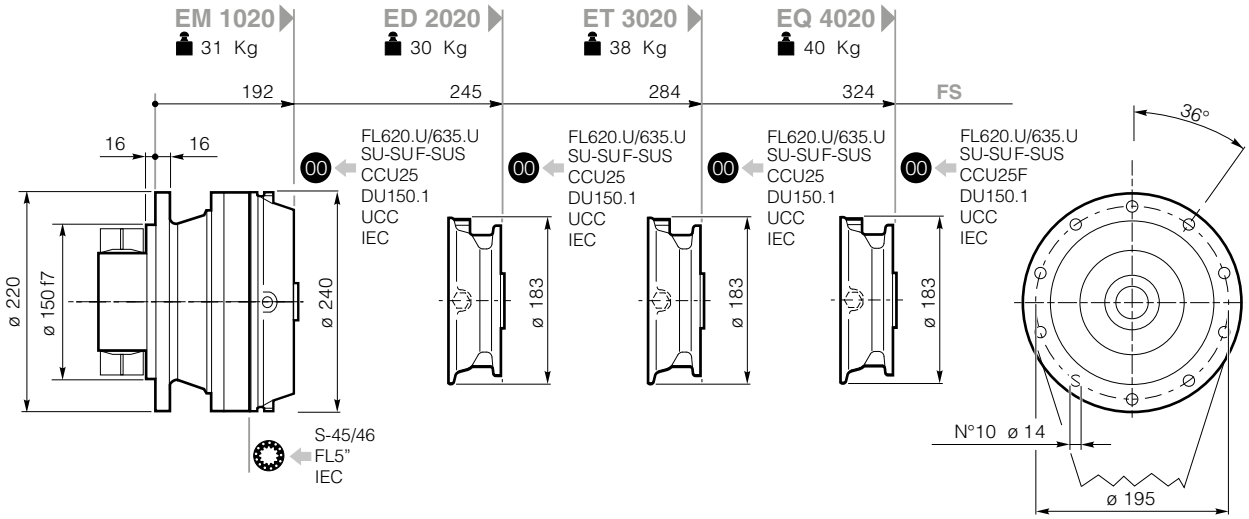
00 B13 S-45/46 48.82 → 020 12 SU-SUF SUS → 020 13 FL5" FL620 FL635 → 020 14 IEC → 020 17 → 020 16 CCU25 → B15 DU150.1 UCC → B16 * bg → 020 3

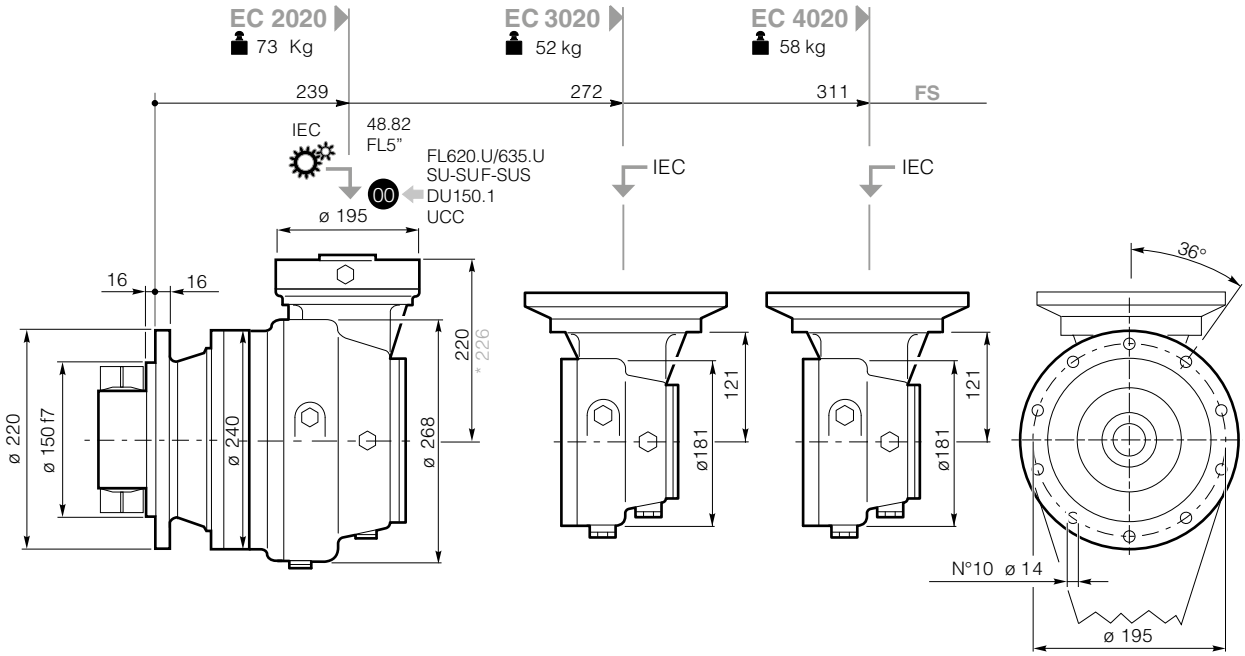
Click *i* button to return to main index

Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 020 12 SU-SUF SUS → 020 13 FL5" FL620 FL635 → 020 14 IEC → 020 17 → 020 16 CCU25 → B15 DU150.1 UCC → B16 * bg → 020 3

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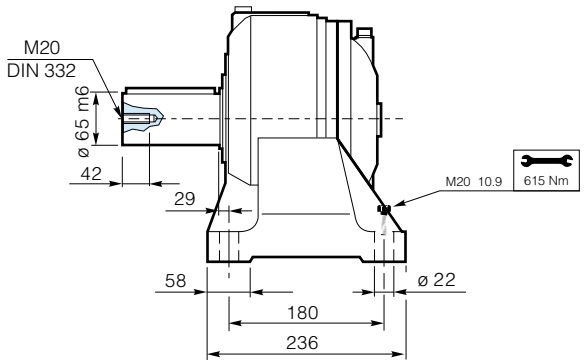
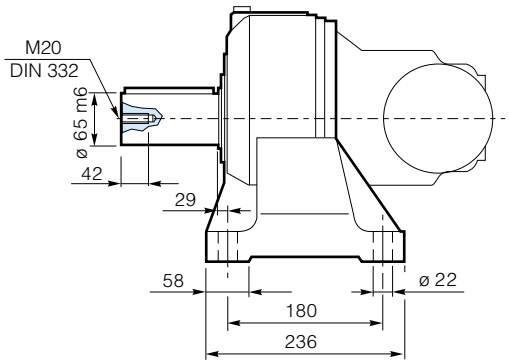
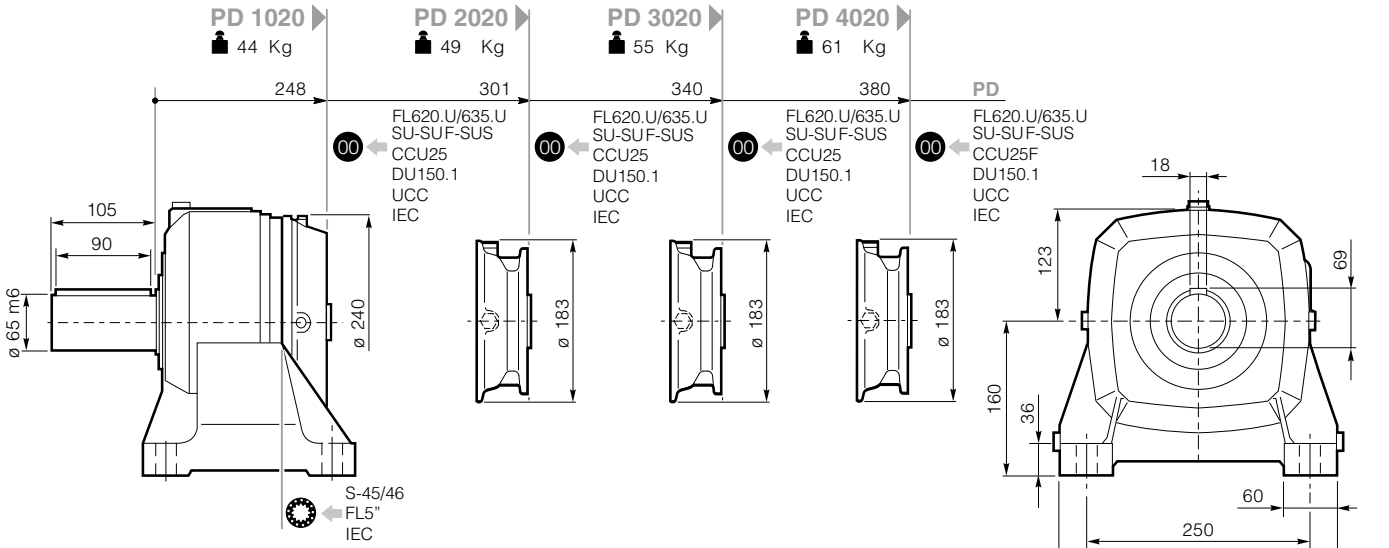
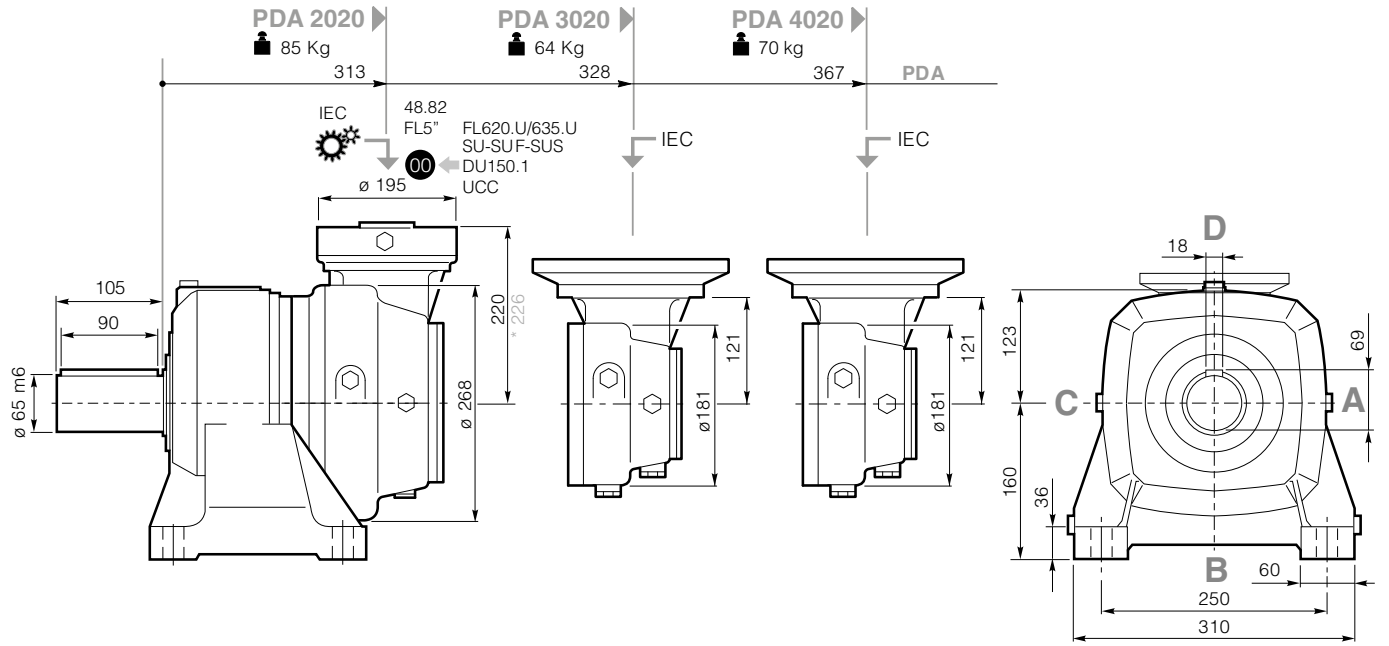
PD



PDA







00 B13 | S-45/46 48.82 020 12 | SU-SUF SUS 020 13 | FL5" FL620 FL635 020 14 | IEC 020 17 | 020 16 | CCU25 B15 | DU150.1 UCC B16 | * bg 020 3

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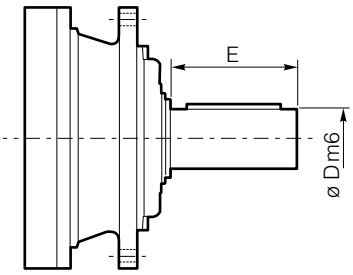
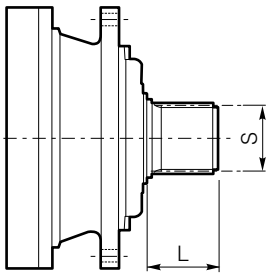
Click **DANA** button to return to section index

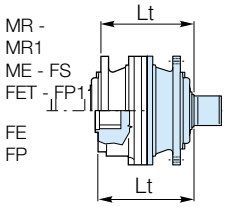
S-45CR1 - S-46C1 - S-45SR

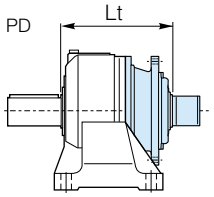


S-45CR1 - S-46C1



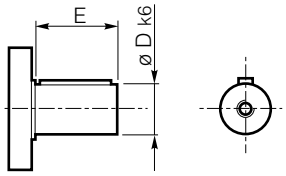
S-45SR

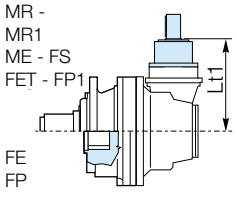


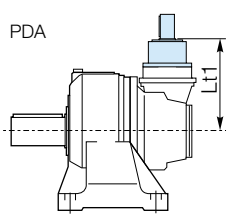


	D	E	L	S		Lt				
						MR-MR1-FS-FET-FP1	ME	FE	FP	PD
S-45CR1	65	105	-	-	EM/PD 1020	255	272	210	180	311
S-46C1	65	105	-	-		296	313	252	221	352
S-45SR	-	-	68	B58x53 DIN5480		255	272	210	180	311

48.82

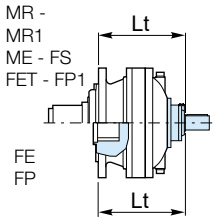


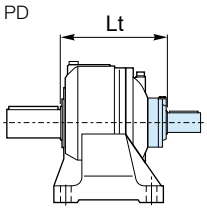


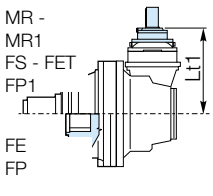


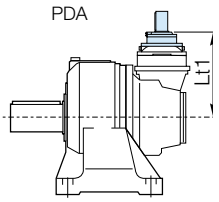
	D	E		Lt1
				MR - MR1 - ME - FS - FE - FET - FP - FP1 - PDA
48.82	48	82	EC/PDA 2020	280

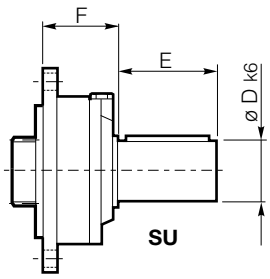
SU - SUF - SUS

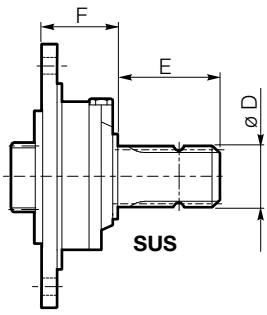


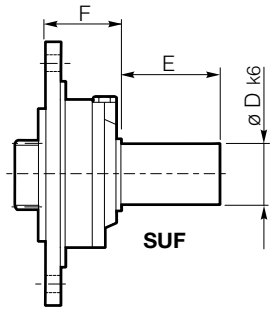










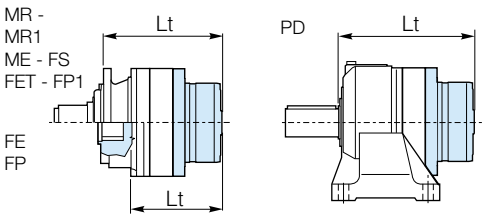


	D	E	F		Lt (00) MR-MR1-FS-FET-FP1	ME	FE	FP	PD
SU1 28x50	28	50	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SU2 40x58	40	58	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SU3 48x82	48	82	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SU 42x80	42	80	101.5	EM/PD 1020	294	311	249	219	350
				ED/PD 2020	346	363	302	271	402
				ET/PD 3020	386	403	341	311	442
				EQ/PD 4020	425	442	381	350	481
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EM/PD 1020	294	311	249	219	349.5
				ED/PD 2020	346	363	302	271	402.5
				ET/PD 3020	386	403	341	311	441.5
				EQ/PD 4020	425	442	381	350	481.5
SU2 1.5x3.25	38.10	82.55	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SUF1 28x50	28	50	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SUF2 40x58	40	58	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440
SUF3 48x82	48	82	60	EM/PD 1020	252	269	208	177	308
				ED/PD 2020	305	322	260	230	361
				ET/PD 3020	344	361	300	269	400
				EQ/PD 4020	384	401	339	309	440

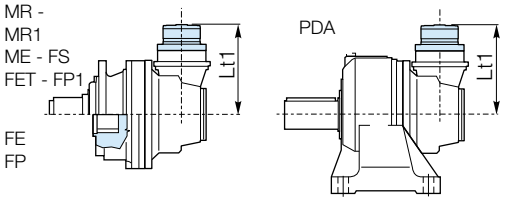
	D	E	F		Lt1 (00) MR-MR1-FS-FET-FP1-ME-FE-FP-PDA
SU1 28x50	28	50	60	EC/PDA 2020	280
SU2 40x58	40	58	60	EC/PDA 2020*	286
SU3 48x82	48	82	60		
SU 42x80	42	80	101.5	EC/PDA 2020	322
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC/PDA 2020*	328
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2020	280
SUF1 28x50	28	50	60	EC/PDA 2020*	286
SUF2 40x58	40	58	60		
SUF3 48x82	48	82	60		

* bg 020 3

FL5” FL250 - FL350 - FL450

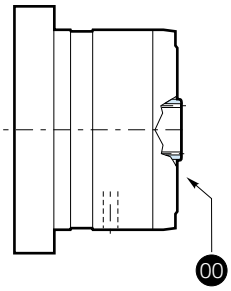


		Lt				
		MR-MR1-FS-FET-FP1	ME	FE	FP	PD
FL250 FL350 FL450	EM/PD 1020	286	302	241	211	342

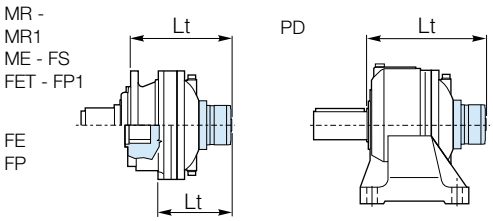


		Lt1
		MR - MR1 - ME - FS - FE - FET - FP - FP1 - PDA
FL250 FL350 FL450	EC/PDA 2020	280
	EC/PDA 2020*	377

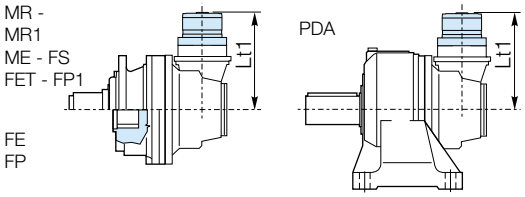
* bg 020 3



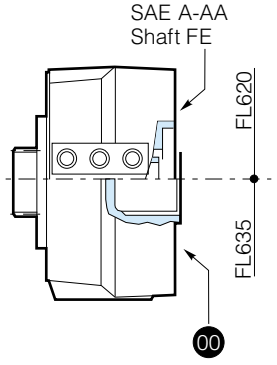
FL620.10 - FL635.10 / FL620.U - FL635.U



		Lt				00
		MR-MR1-FS-FET-FP1	ME	FE	FP	PD
FL620.U	EM/PD 1020	297	314	252	222	353
	ED/PD 2020	349	366	305	274	405
	ET/PD 3020	389	406	344	314	445
	EQ/PD 4020	428	445	384	353	484
FL635.U	EM/PD 1020	283	300	239	208	339
	ED/PD 2020	336	353	291	261	392
	ET/PD 3020	375	392	331	300	431
	EQ/PD 4020	415	432	370	340	471



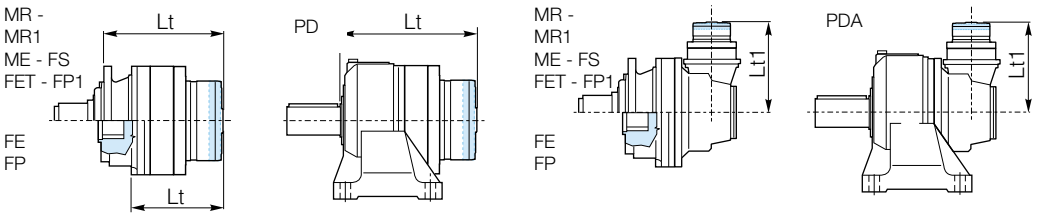
		Lt				
		MR-MR1-FS-FET-FP1	ME	FE	FP	PD
FL620.10	ED/PD 2020	308	325	264	233	364
	ET/PD 3020	348	365	303	273	404
	EQ/PD 4020	387	404	343	312	443
FL635.10	ED/PD 2020	290	307	246	215	346
	ET/PD 3020	330	347	285	255	386
	EQ/PD 4020	369	386	325	294	425



		Lt1
		MR - MR1 - ME - FS - FE - FET - FP - FP1 - PDA
FL620.U	EC/PDA 2020	325
	EC/PDA 2020*	331
FL635.U	EC/PDA 2020	311
	EC/PDA 2020*	317

* bg 020 3

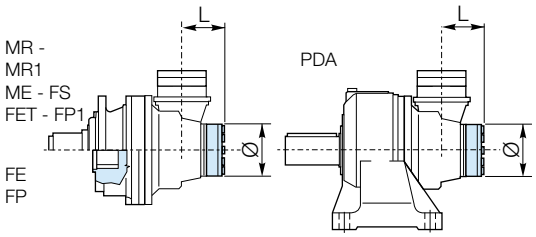
RL



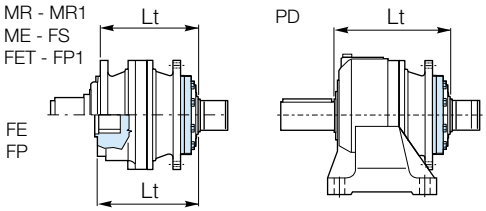
				Lt				
				MR-MR1-FS-FET-FP1	ME	FE	FP	PD
RL	+	FL250 FL350 FL450	EM/PD 1020	312	329	267	237	368

				Lt1
				MR - MR1 - ME - FS - FE - FET - FP - FP1 - PDA
RL	+	FL250 FL350 FL450	EC/PDA 2020	306
			EC/PDA 2020*	403

* bg 020 3

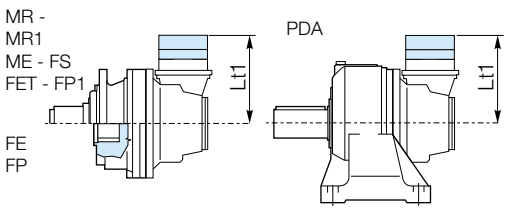


				L	Ø
RL	+	CC40	EC/PDA 2020	135.2	150
			EC/PDA 2020*		

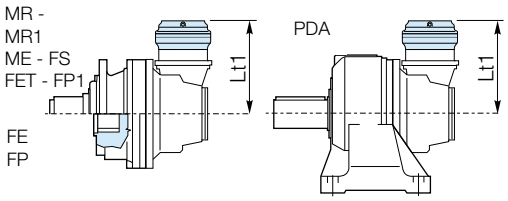


				Lt				
				MR-MR1-FS-FET-FP1	ME	FE	FP	PD
RL	+	S46C1	EM/PD 1020	316	333	272	241	372

ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

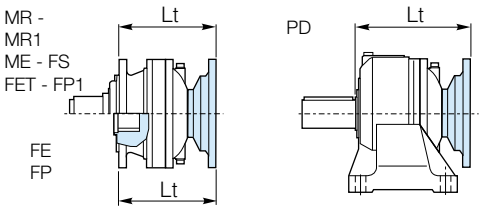


ED2010 - ED2020 ED2021

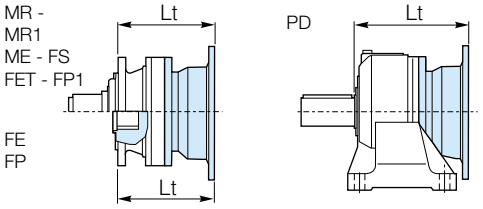
		Lt1	
		EC2020 PDA2020	EC2020* PDA2020*
	EM1010	327	333
	EM1020	345	351
	ED2010	366	372
	ED2020	398	404
	ED2021	413	419

* bg 020 3

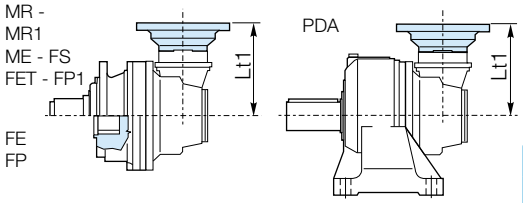
IEC Motor



		Lt 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EM 1020	MR-MR1-FS-FET-FP1	212	214	219	220	287	318	329	359
	ME	229	231	236	237	304	335	346	376
	FE	168	170	175	176	243	274	285	315
	FP	137	139	144	145	212	243	254	284
ED 2020	MR-MR1-FS-FET-FP1	265	267	272	273	340	371	382	412
	ME	282	284	289	290	357	388	399	429
	FE	220	222	227	228	295	326	337	367
	FP	190	192	197	198	265	296	307	337
ET 3020	MR-MR1-FS-FET-FP1	304	306	311	312	379	410	421	451
	ME	321	323	328	329	396	427	438	468
	FE	260	262	267	268	335	366	377	407
	FP	229	231	236	237	304	335	346	376
EQ 4020	MR-MR1-FS-FET-FP1	344	346	351	352	419	450	461	491
	ME	361	363	368	369	436	467	478	508
	FE	299	301	306	307	374	405	416	446
	FP	269	271	276	277	344	375	386	416
PD 1020	PD	268	270	275	276	343	374	385	415
PD 2020		321	323	328	379	396	427	438	468
PD 3020		360	362	367	373	435	466	477	507
PD 4020		400	402	407	408	475	506	517	547



		Lt IEC	
		160 180	200
EM 1020	MR-MR1-FS-FET-FP1	318	328
	ME	335	345
	FE	274	284
	FP	243	253
PD 1020	PD	374	384

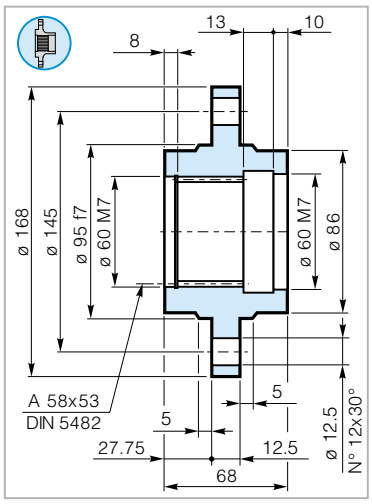


		Lt1 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 2020	MR - MR1 - ME - FS - FE FET - FP - FP1 - PDA	240	242	247	248	315	346	357	387
EC/PDA 2020*		246	248	253	254	321	352	363	393

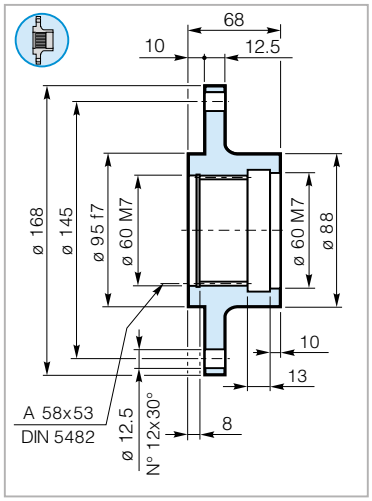
		Lt1 IEC				
		63	71	80 90	100 112	132
EC/PDA 3020	MR - MR1 - ME - FS - FE FET - FP - FP1 - PDA	151	151	151	151	238
EC/PDA 4020		151	151	151	151	238

* bg 020 3

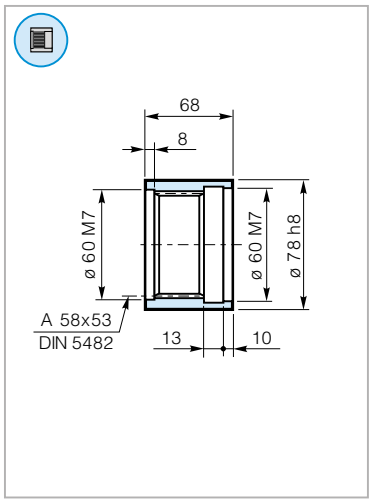
FA 020 Wheel Flange



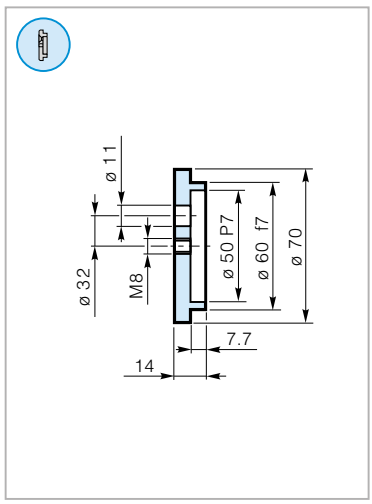
FR 020 Wheel Flange



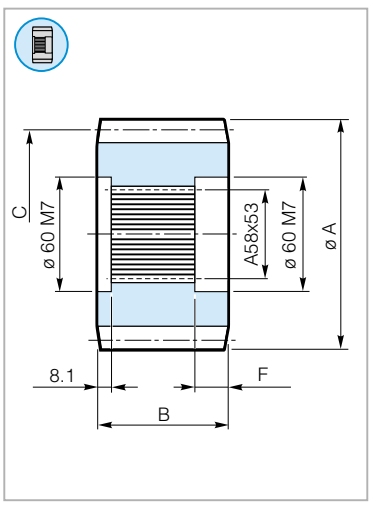
MS 020 Splined Sleeve



RDF 020 Lock Washer

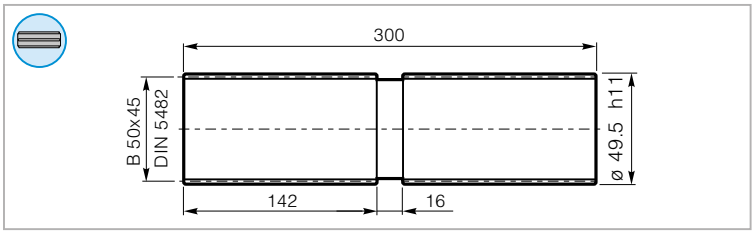


Pinions



A	B	C			F
		m	z	x	
115	68	8	12	0,4	23,5
99,6	68	6	14	0,5	23,5
128	68	8	13	0,7	23,5
141	68	8	15	0,5	23,5
131	75	8	14	0,5	23,5
132	65	6	20	0	23,5
118	76	8	12	0,5	23,5
121	82	8	12	0,6	23,5

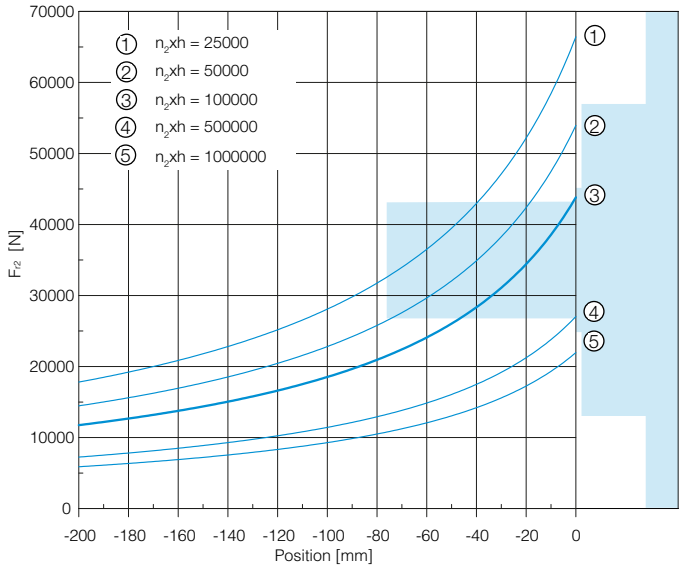
BS 020 Splined Bar



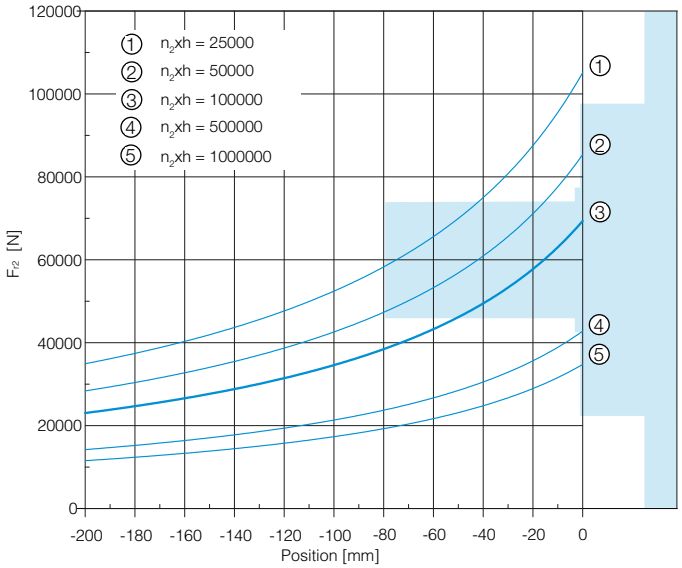
Code: 39126930100
Mat: High mechanical resistance alloyed steel

Output Radial Loads

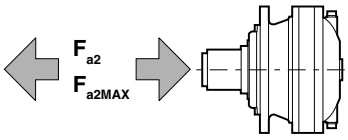
MR - MR1



PD

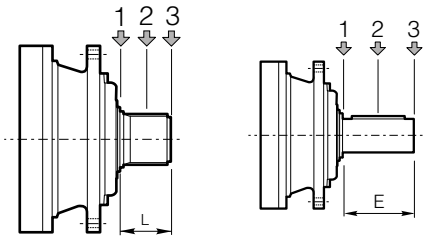


Output Axial Loads

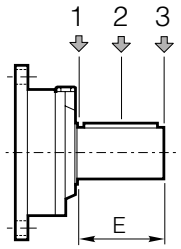


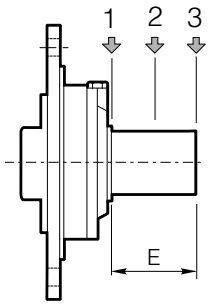
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	-	35000	25000
F_{a2MAX}	[N]	-	60000	25000

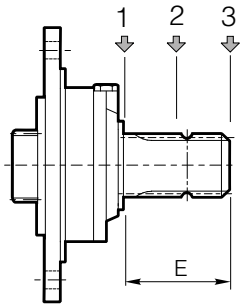
Input Radial Loads



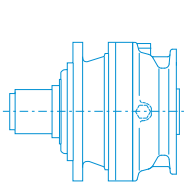
Type	L	E	F_{r1} [N] $n_1 . h = 10^7$ 1	2	3	$n_1 . h = 10^8$ 1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000



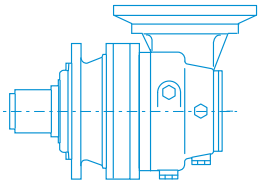


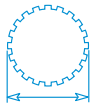
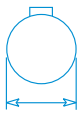
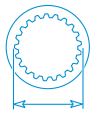
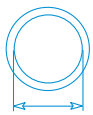
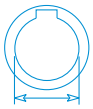


Type	E	F_{r1} [N] $n_1 . h = 10^7$ 1	2	3	$n_1 . h = 10^8$ 1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700



030



i_{eff}	15.37 - 3097
T_{2N} (Nm)	3800
	B58X53 DIN5482
	65 mm
	A58X53 DIN5482
	75 mm
	65 mm

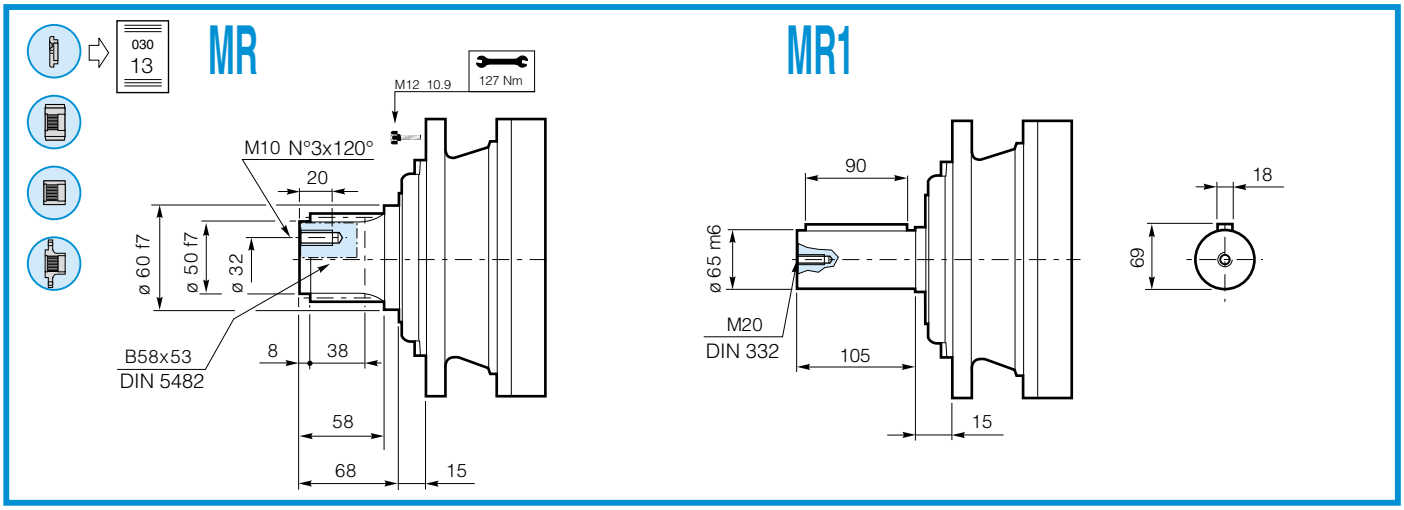
10000
hours life

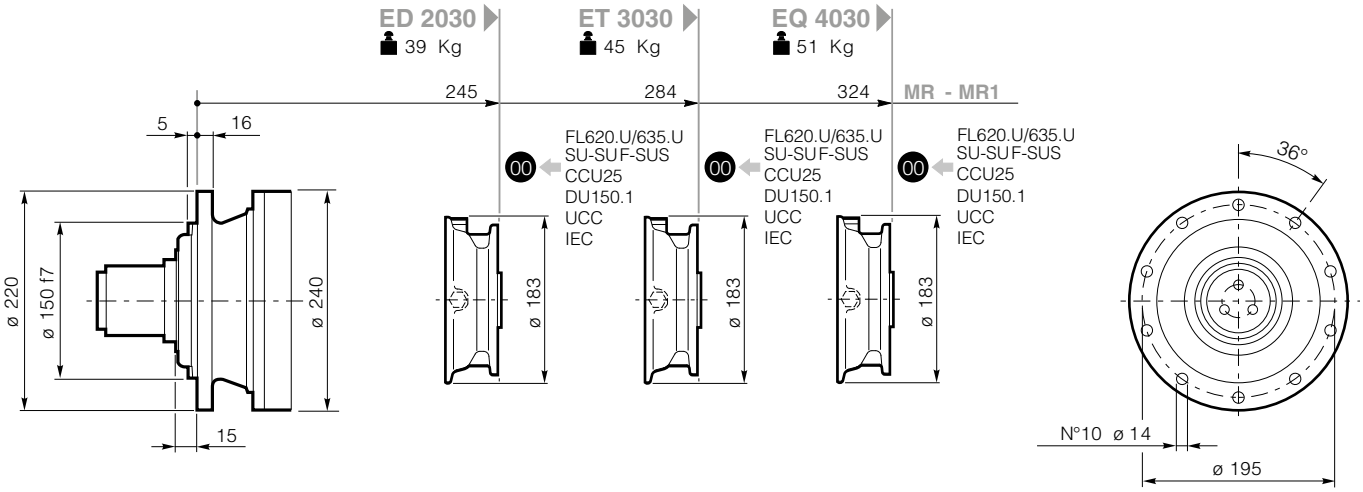
i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
ED 2030 / PD 2030												
15.37	98	1114	15.4	65	1705	11.6	32.5	2100	7.2	3000	5600	12
17.47	86	1565	19.1	57	2395	14.4	28.6	2732	8.2			
20.28	74	1628	17.1	49.3	2314	12.0	24.7	2494	6.4			
22.70	66	1646	15.4	44.1	2519	11.6	22.0	2805	6.5			
26.34	57	1680	13.6	38.0	2383	9.5	19.0	2560	5.1			
31.02	48.4	1575	10.8	32.2	2342	7.9	16.1	2639	4.5		6000	
36.00	41.7	1740	10.3	27.8	2463	7.2	13.9	2640	3.8			
41.64	36.0	1716	8.8	24.0	2446	6.2	12.0	2678	3.4			
43.50	34.5	1496	7.3	23.0	2119	5.1	11.5	2276	2.7			
50.32	29.8	1520	6.4	19.9	2152	4.5	9.9	2309	2.4			
ET 3030 / PD 3030												
59.06	25.4	2765	7.4	16.9	2879	5.1	8.5	3076	2.7	3000	6000	8
61.28	24.5	2640	6.8	16.3	2982	5.1	8.2	3671	3.1			
70.98	21.1	2457	5.4	14.1	2775	4.1	7.0	3206	2.4			
83.76	17.9	2900	5.4	11.9	3275	4.1	6.0	3783	2.4			
89.03	16.8	2591	4.6	11.2	2695	3.2	5.6	2876	1.7			
96.88	15.5	3029	4.9	10.3	3421	3.7	5.2	3803	2.1			
108.8	13.8	3051	4.4	9.2	3320	3.2	4.6	3410	1.6			
124.2	12.1	2447	3.1	8.1	2528	2.1	4.0	2658	1.1			
146.6	10.2	2888	3.1	6.8	2983	2.1	3.4	3137	1.1			
157.5	9.5	3042	3.0	6.3	3179	2.1	3.2	3695	1.2			
186.1	8.1	2901	2.4	5.4	3046	1.7	2.7	3292	0.93			
198.9	7.5	2115	1.7	5.0	2221	1.2	2.5	2401	0.63			
215.3	7.0	2953	2.2	4.6	3098	1.5	2.3	3343	0.81			
249.0	6.0	2648	1.7	4.0	2780	1.2	2.0	3006	0.63			
289.0	5.2	2924	1.6	3.5	3197	1.2	1.7	3489	0.63			
325.7	4.6	3101	1.5	3.1	3244	1.0	1.5	3492	0.56			
EQ 4030 / PD 4030												
367.7	4.1	3835	1.6	2.7	3888	1.1	1.4	3972	0.57	3000	6000	4
404.7	3.7	2928	1.1	2.5	2966	0.77	1.2	3029	0.39			
460.3	3.3	3674	1.3	2.2	4000	0.91	1.1	4605	0.52			
495.4	3.0	3874	1.2	2.0	3925	0.83	1.0	4008	0.42			
581.3	2.6	3894	1.1	1.7	3944	0.71	0.86	4027	0.36			
643.5	2.3	3907	0.95	1.6	3956	0.64	0.78	4039	0.33			
691.5	2.2	4002	0.91	1.4	4348	0.66	0.72	4494	0.34			
817.1	1.8	4142	0.80	1.2	4424	0.57	0.61	4516	0.29			
879.4	1.7	3945	0.71	1.1	3994	0.48	0.57	4075	0.24			
1017	1.5	3963	0.61	0.98	4011	0.41	0.49	4092	0.21			
1142	1.3	3550	0.49	0.88	3593	0.33	0.44	3666	0.17			
1304	1.2	2886	0.35	0.77	2961	0.24	0.38	3092	0.12			
1430	1.0	4445	0.49	0.70	4498	0.33	0.35	4589	0.17			
1539	0.97	3406	0.35	0.65	3494	0.24	0.32	3649	0.12			
1806	0.83	3248	0.28	0.55	3304	0.19	0.28	3607	0.11			
1999	0.75	3610	0.28	0.50	3652	0.19	0.25	3969	0.10			
2268	0.66	4502	0.31	0.44	4781	0.22	0.22	5124	0.12			
2502	0.60	4519	0.28	0.40	4572	0.19	0.20	4969	0.10			
2904	0.52	4726	0.26	0.34	5112	0.18	0.17	5767	0.10			
3170	0.47	4042	0.20	0.32	4382	0.15	0.16	5013	0.08			

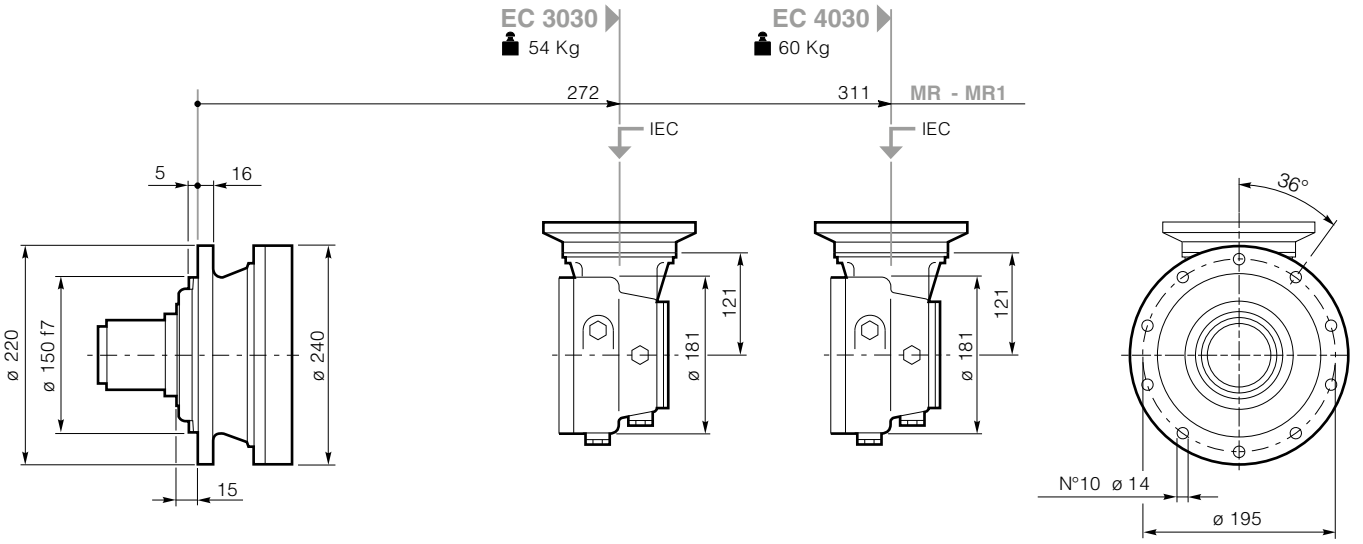
10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 3030 / PDA 3030												
35.49	42.3	1160	5.1	28.2	1310	3.9	14.1	1613	2.4			
41.88	35.8	1369	5.1	23.9	1546	3.9	11.9	1903	2.4			
46.09	32.5	1507	5.1	21.7	1702	3.9	10.8	2095	2.4			
52.42	28.6	1714	5.1	19.1	1935	3.9	9.5	2383	2.4			
54.39	27.6	1778	5.1	18.4	2008	3.9	9.2	2472	2.4			
60.84	24.7	1989	5.1	16.4	2246	3.9	8.2	2765	2.4			
68.09	22.0	2226	5.1	14.7	2514	3.9	7.3	3095	2.4			
79.02	19.0	2560	5.1	12.7	2664	3.5	6.3	2845	1.9			
88.66	16.9	1774	3.1	11.3	2003	2.4	5.6	2467	1.5			
99.17	15.1	1984	3.1	10.1	2241	2.4	5.0	2759	1.5	3000	6000	5
111.0	13.5	2221	3.1	9.0	2508	2.4	4.5	3088	1.5			
128.8	11.6	2577	3.1	7.8	2791	2.3	3.9	3118	1.3			
140.2	10.7	2023	2.3	7.1	2130	1.6	3.6	2310	0.86			
151.7	9.9	2826	2.9	6.6	2973	2.1	3.3	3219	1.1			
176.0	8.5	2767	2.5	5.7	2873	1.7	2.8	3336	0.99			
203.6	7.4	2805	2.2	4.9	2960	1.5	2.5	3356	0.86			
215.8	7.0	2391	1.7	4.6	2486	1.2	2.3	2894	0.70			
244.1	6.1	2853	1.8	4.1	3081	1.3	2.0	3576	0.77			
282.3	5.3	2908	1.6	3.5	3181	1.2	1.8	3480	0.65			
EC 4030 / PDA 4030												
319.9	4.7	3817	1.9	3.1	3870	1.3	1.6	3956	0.65			
347.1	4.3	3262	1.5	2.9	3306	1.0	1.4	3377	0.51			
401.5	3.7	3278	1.3	2.5	3321	0.87	1.2	3392	0.44			
473.7	3.2	3868	1.3	2.1	3919	0.87	1.1	4002	0.44			
481.2	3.1	3298	1.1	2.1	3340	0.73	1.0	3410	0.37			
567.9	2.6	3891	1.1	1.8	3941	0.73	0.88	4024	0.37			
656.8	2.3	3909	0.94	1.5	3959	0.63	0.76	4041	0.32			
716.7	2.1	3242	0.71	1.4	3329	0.49	0.70	3479	0.25			
822.2	1.8	4147	0.79	1.2	4502	0.57	0.61	5059	0.32			
930.9	1.6	3528	0.60	1.1	3572	0.40	0.54	3645	0.21			
993.8	1.5	3312	0.52	1.0	3399	0.36	0.50	3551	0.19	3000	6000	3
1165	1.3	4417	0.60	0.86	4471	0.40	0.43	4563	0.21			
1291	1.2	3563	0.43	0.77	3606	0.29	0.39	3704	0.15			
1352	1.1	4059	0.47	0.74	4403	0.34	0.37	5043	0.20			
1616	0.93	4461	0.43	0.62	4514	0.29	0.31	4637	0.15			
1848	0.81	4322	0.37	0.54	4683	0.27	0.27	4963	0.14			
1959	0.77	3815	0.31	0.51	4218	0.23	0.26	4817	0.13			
2208	0.68	4043	0.29	0.45	4134	0.20	0.23	4500	0.11			
2563	0.59	4611	0.28	0.39	4798	0.20	0.20	5222	0.11			
2964	0.51	4227	0.22	0.34	4616	0.16	0.17	5138	0.09			
3097	0.48	4023	0.20	0.32	4362	0.15	0.16	4991	0.08			

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 SU-SUF SUS 030 11 FL620 FL635 030 12 IEC 030 12 CCU25 B15 DU150.1 UCC B16

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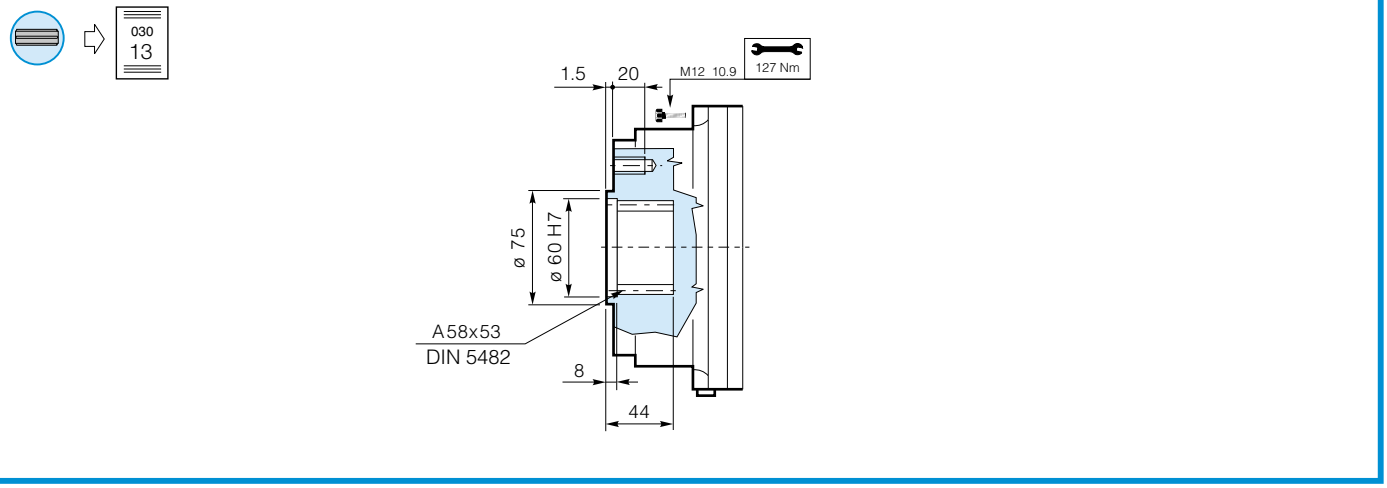

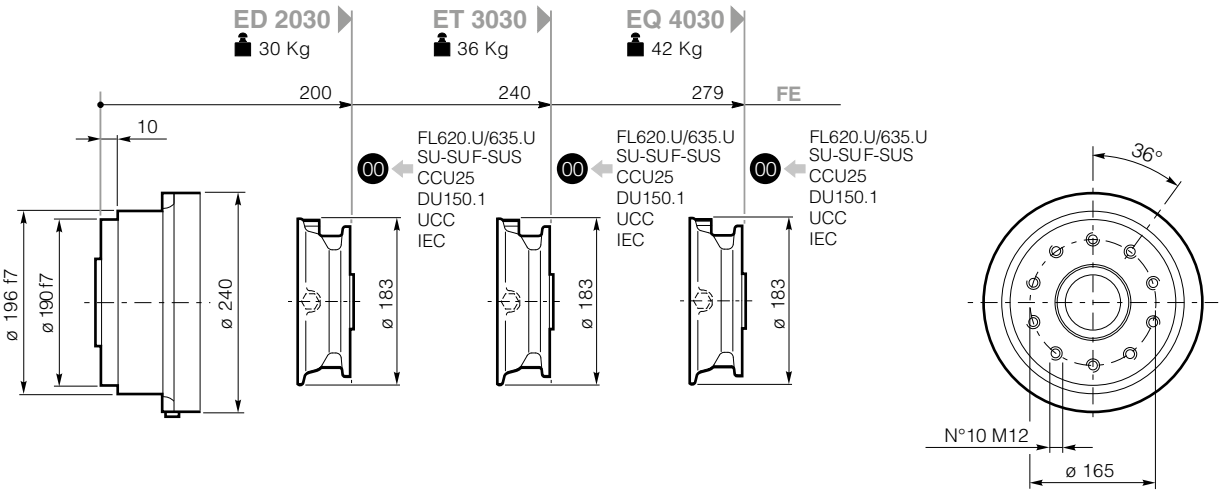

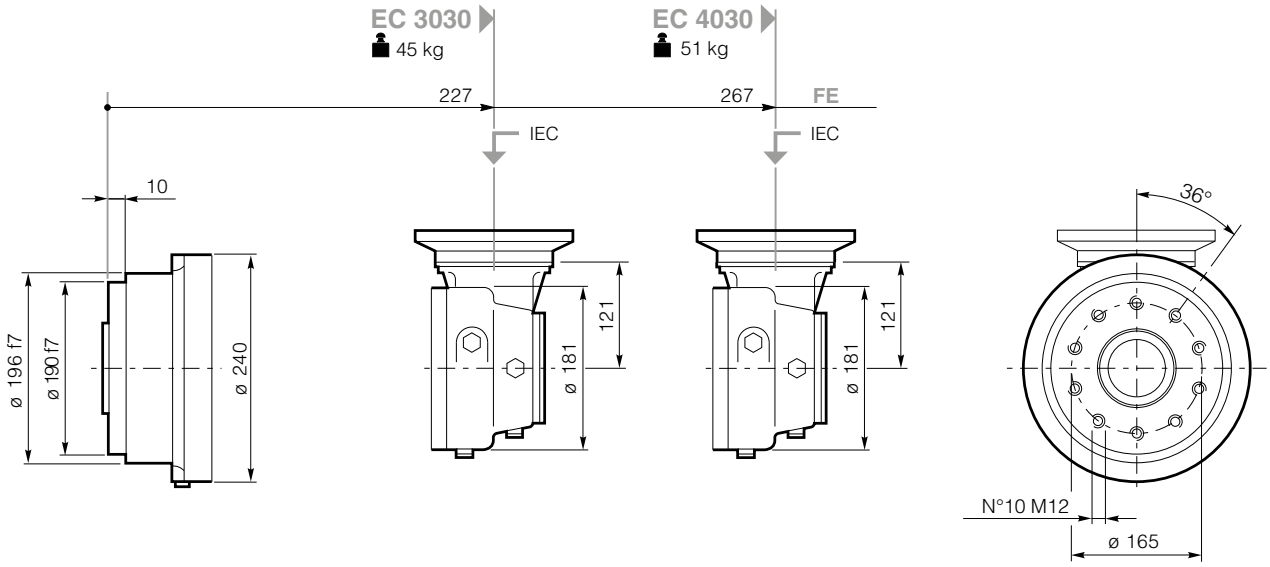

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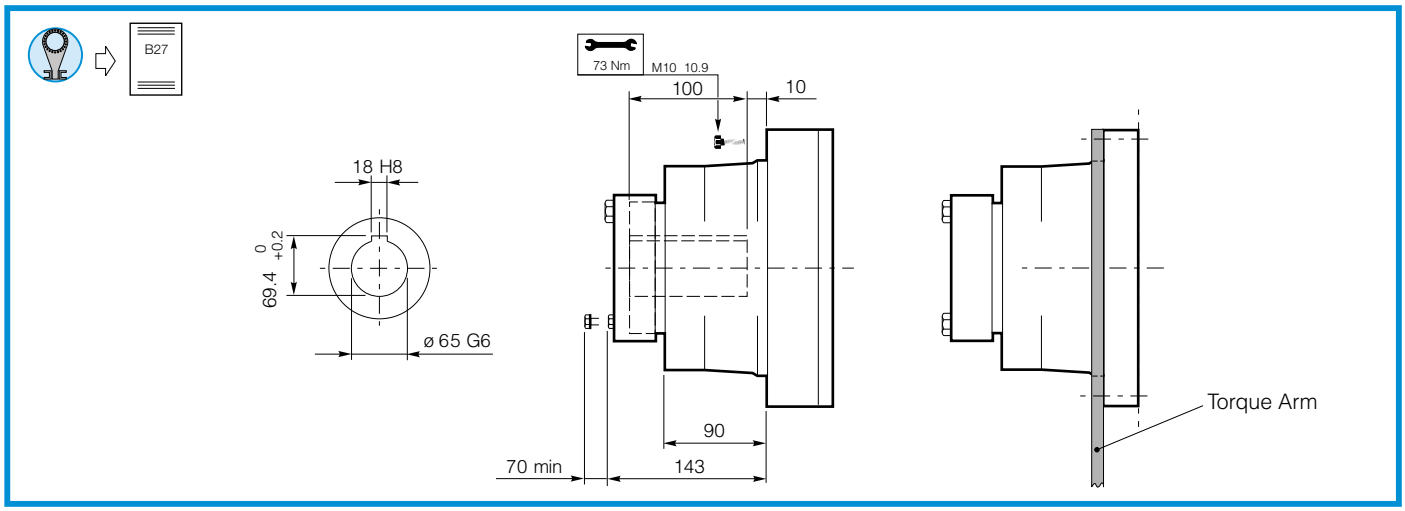
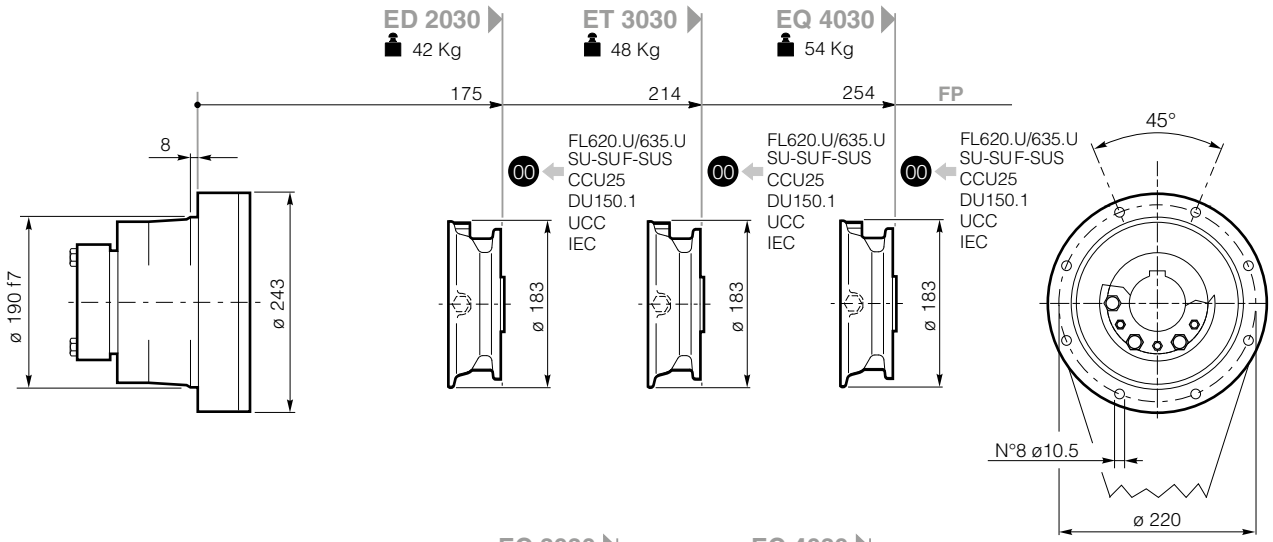
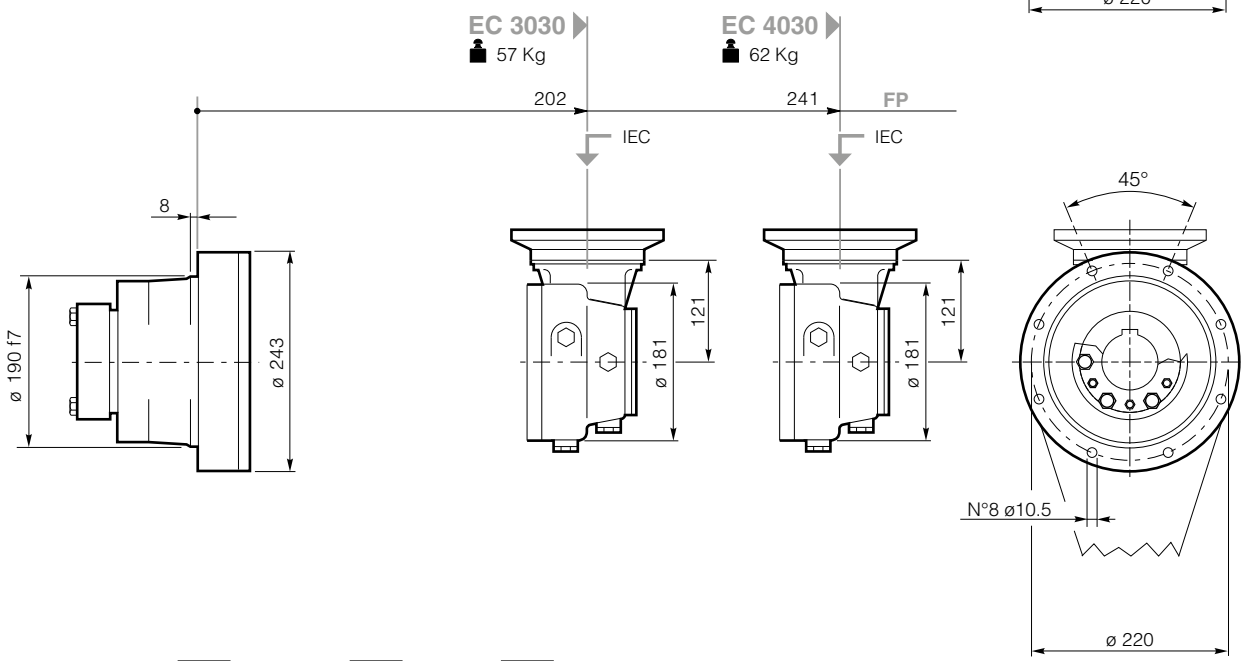
GEARBOX DIMENSIONS WITH OUTPUT







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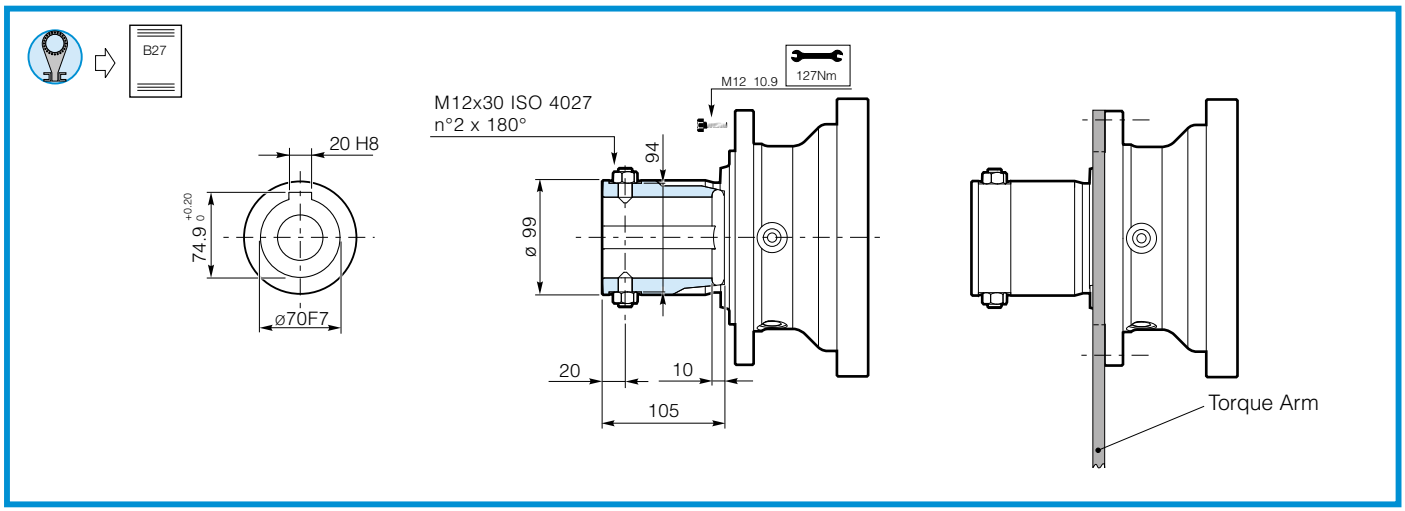

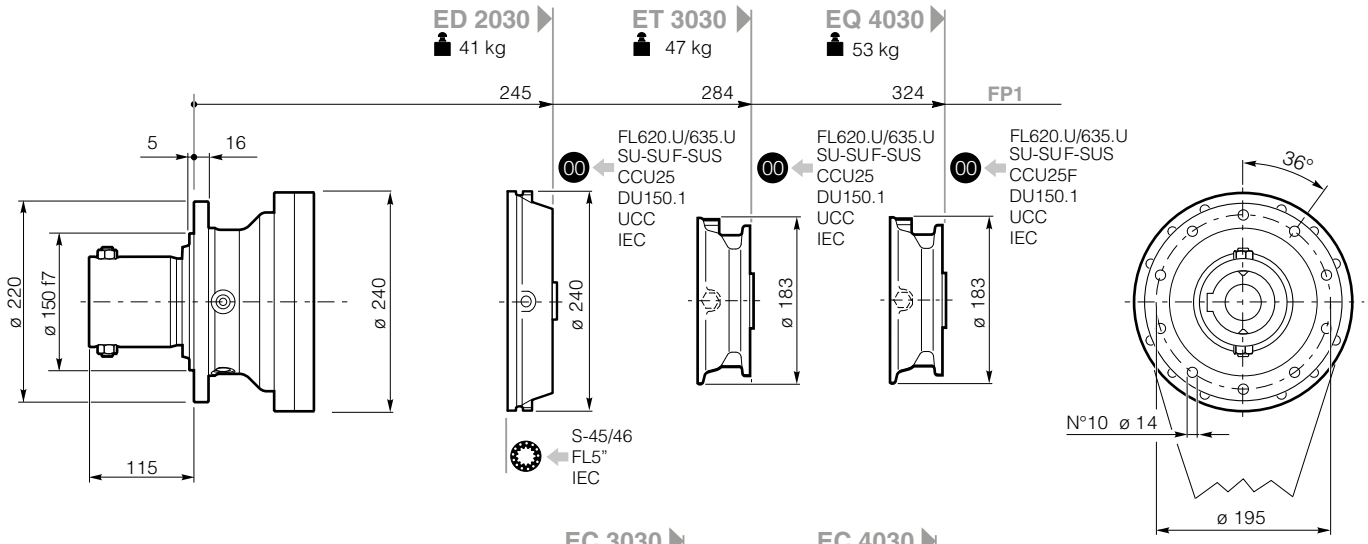

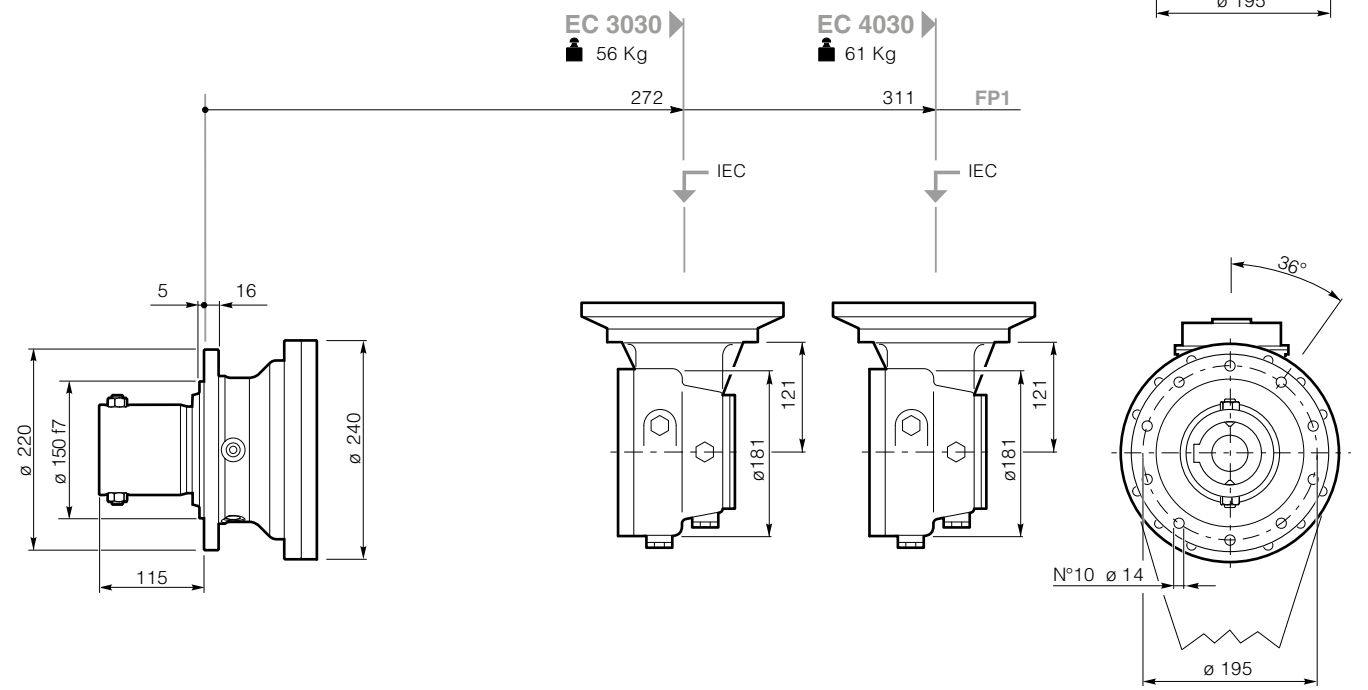

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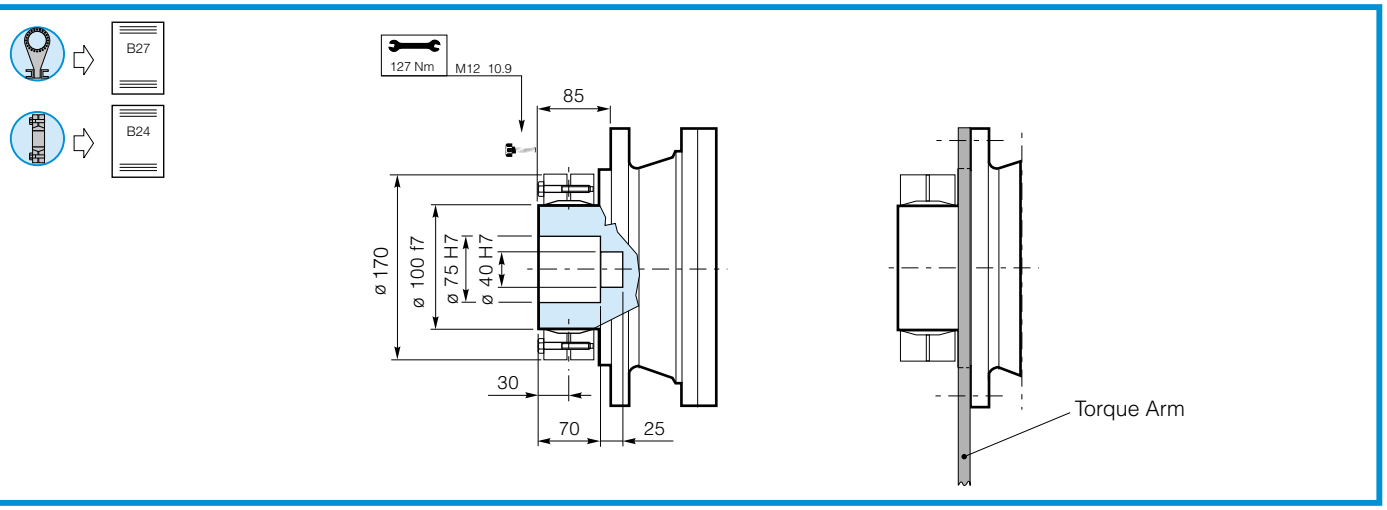
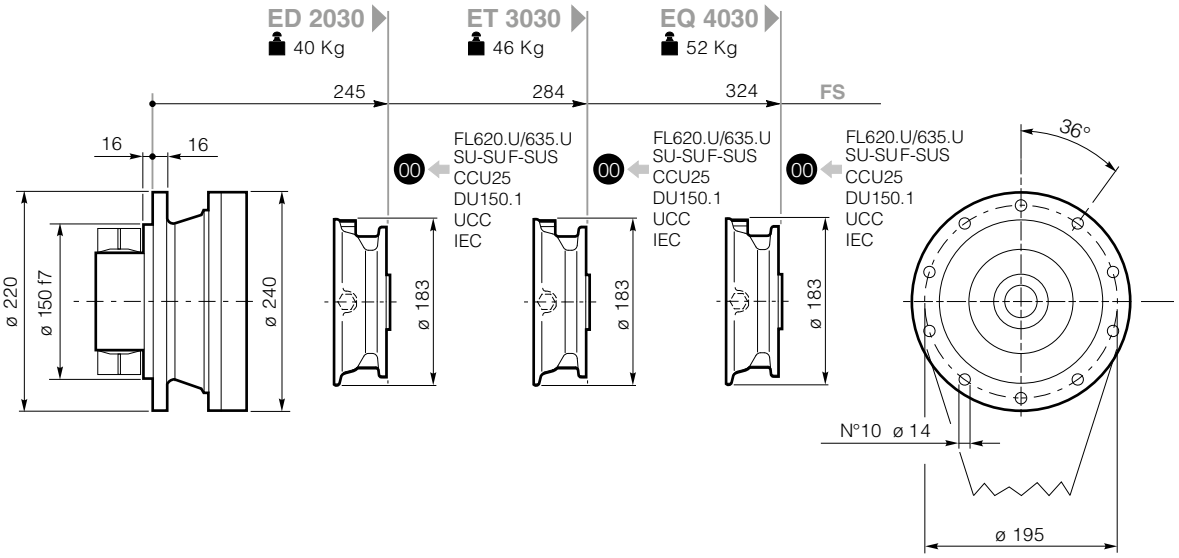
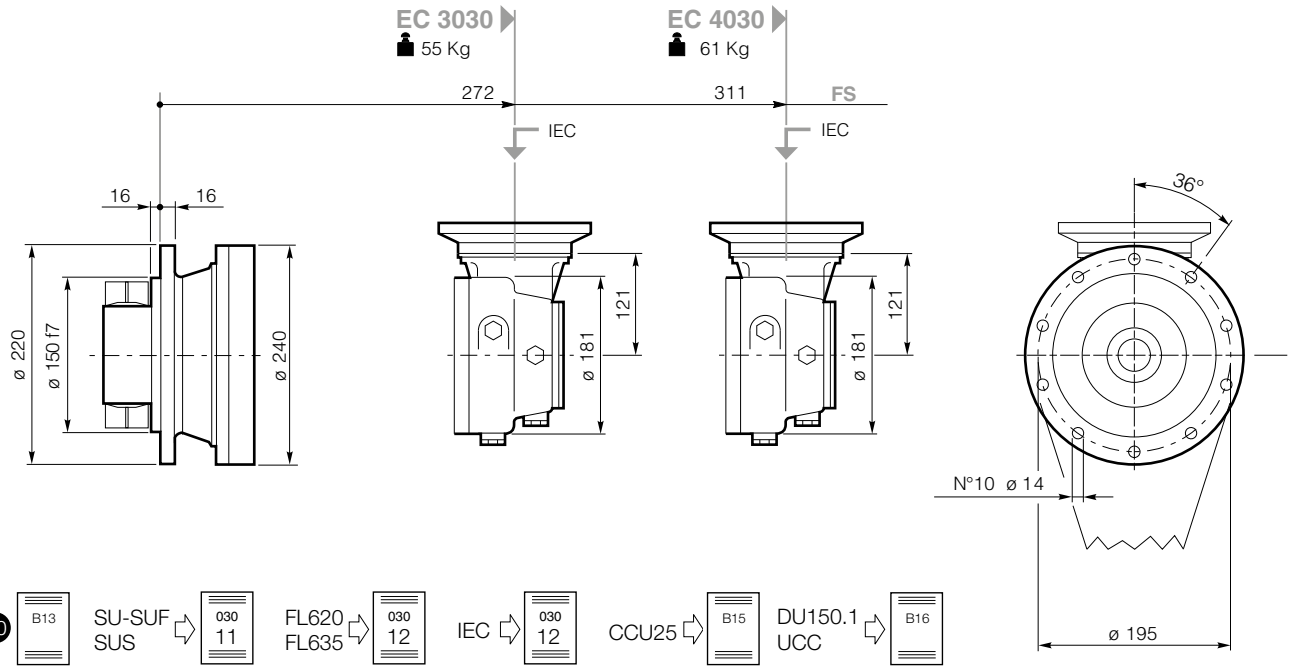
GEARBOX DIMENSIONS WITH OUTPUT







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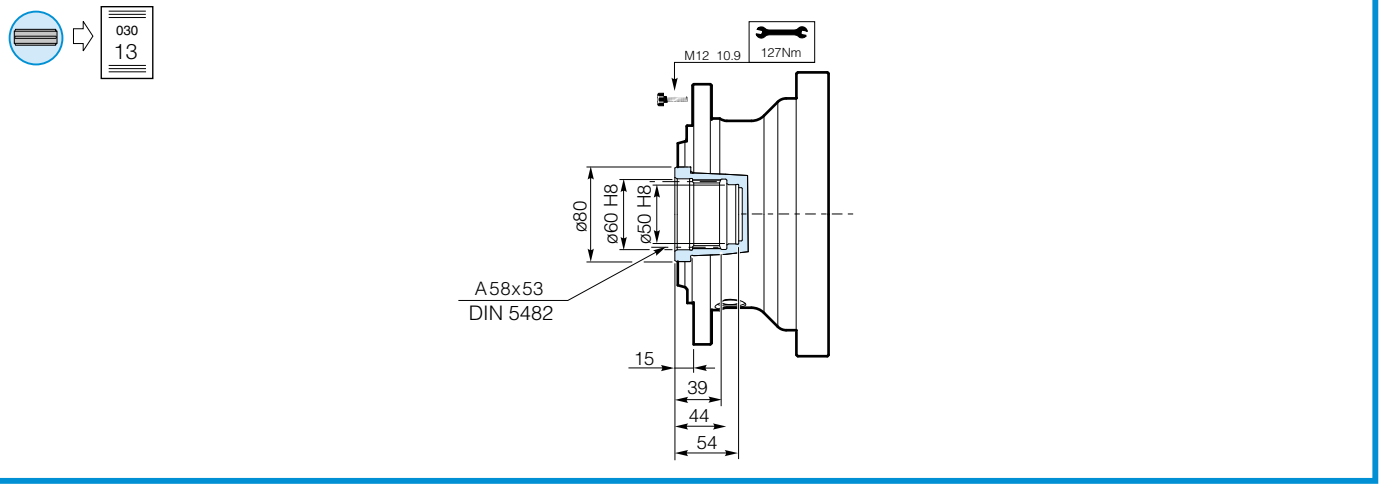

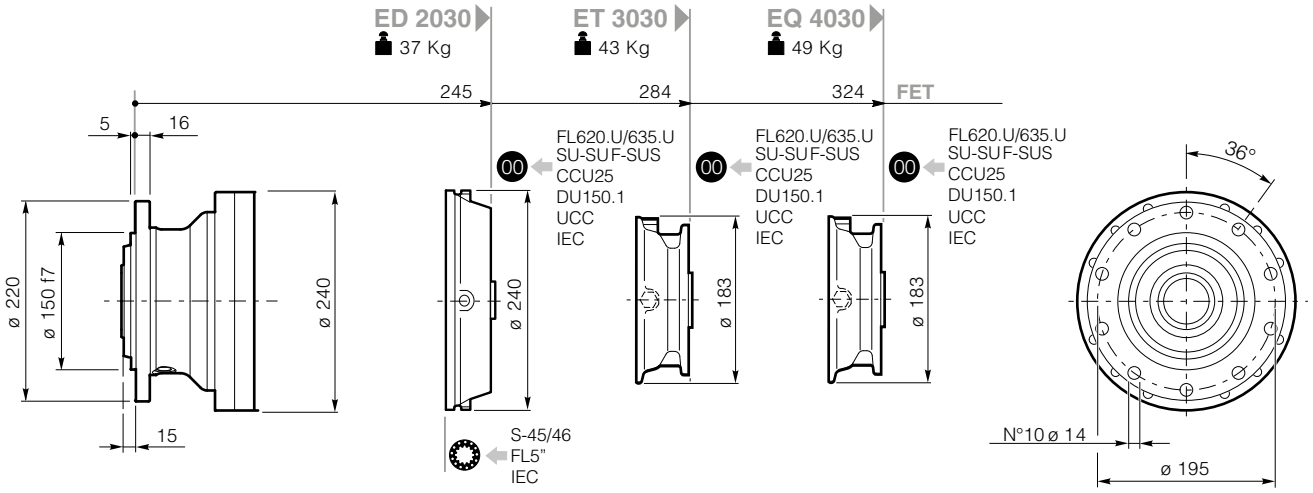

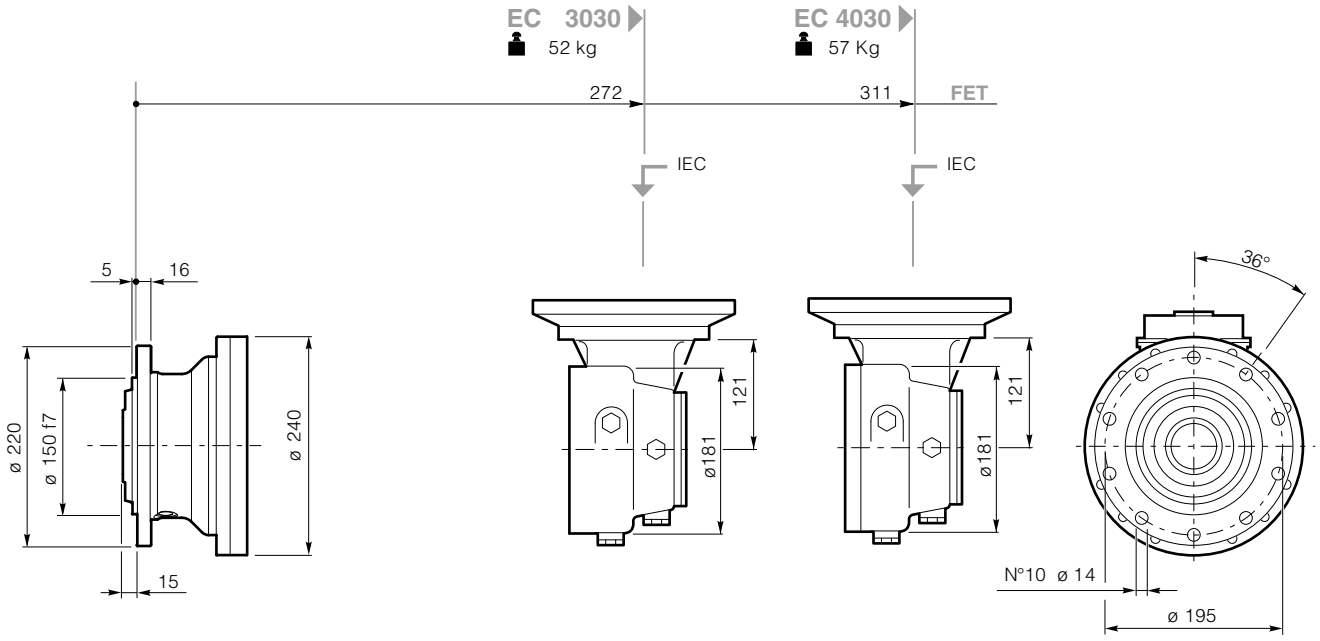

00 B13 SU-SUF SUS 030 11 FL620 FL635 030 12 IEC 030 12 CCU25 B15 DU150.1 UCC B16

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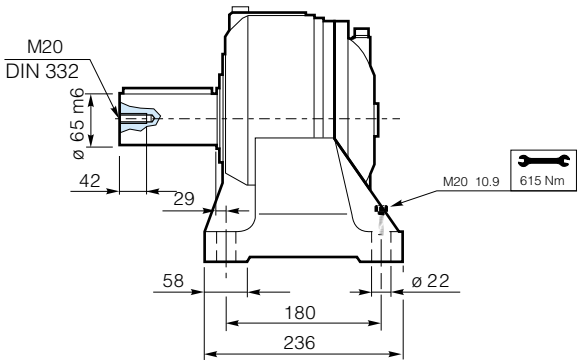
GEARBOX DIMENSIONS WITH OUTPUT

PD



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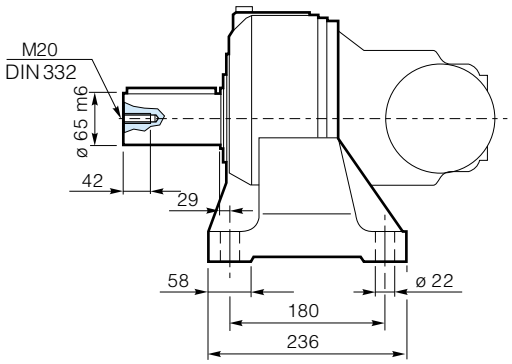

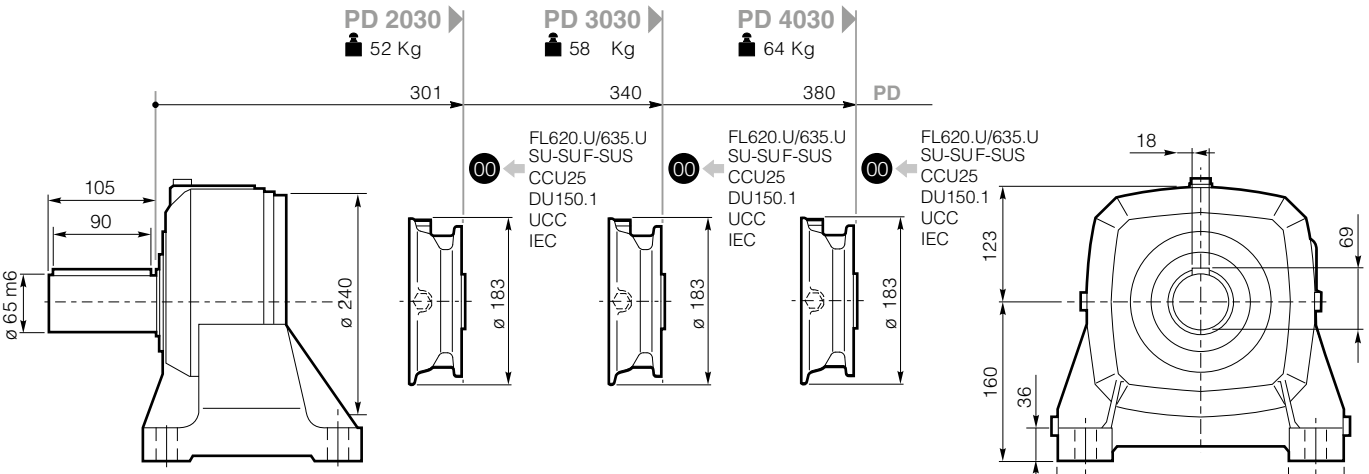

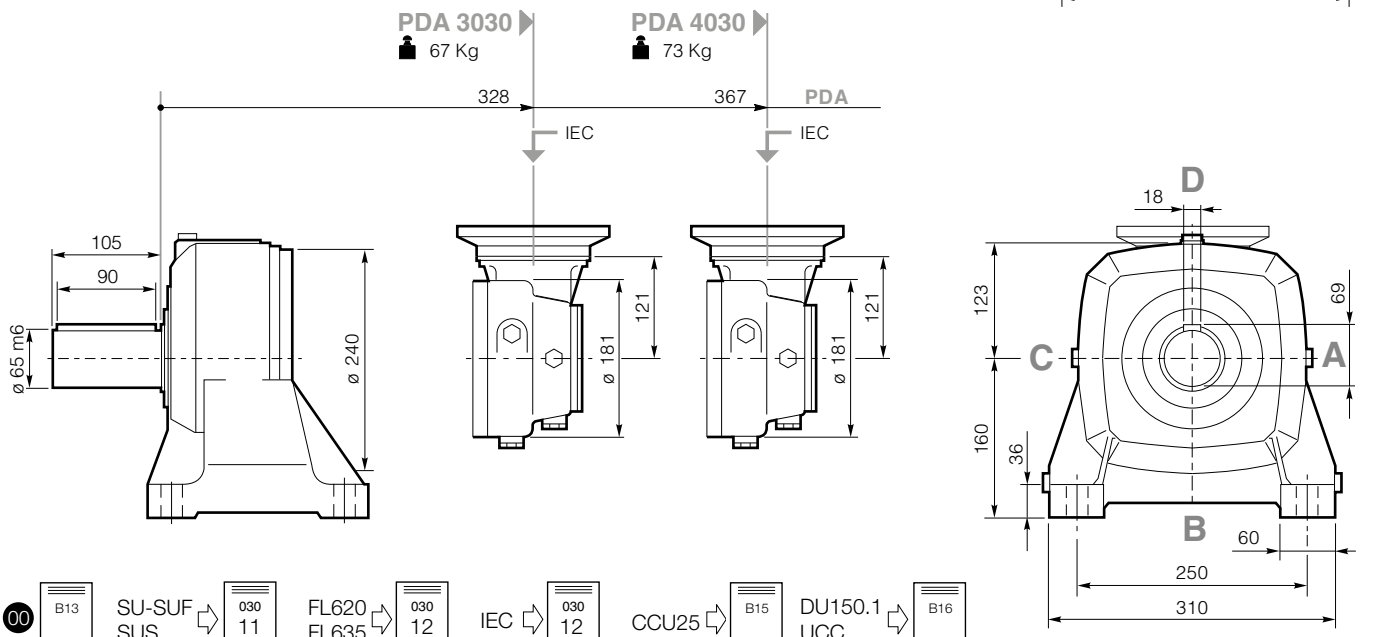

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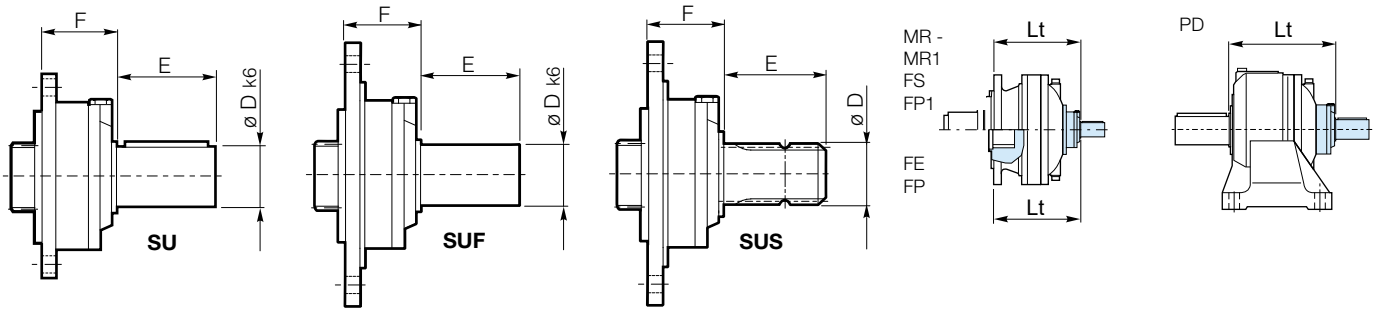
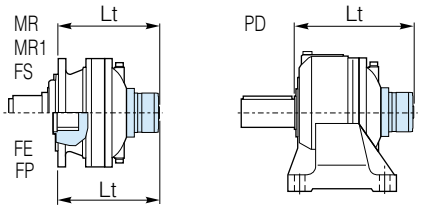
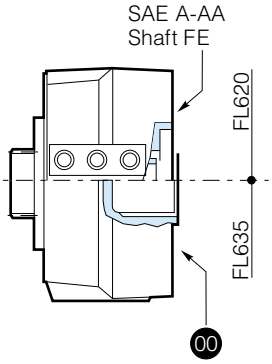
SU - SUF - SUS



	D	E	F		Lt			
					MR-MR1-FS-FET-FP1	FE	FP	PD
SU1 28x50	28	50	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SU2 40x58	40	58	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SU3 48x82	48	82	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SU 42x80	42	80	101.5	ED/PD 2030	346	302	276	402
				ET/PD 3030	386	341	316	442
				EQ/PD 4030	425	381	355	481
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	ED/PD2030	346	302	276	402
				ET/PD 3030	386	341	316	442
				EQ/PD 4030	425	381	355	481
SU2 1.5x3.25	38.10	82.55	60	ED/PD 2030	305	260	235	361
				ET /PD3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SUF1 28x50	28	50	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SUF2 40x58	40	58	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440
SUF3 48x82	48	82	60	ED/PD 2030	305	260	235	361
				ET/PD 3030	344	300	274	400
				EQ/PD 4030	384	339	314	440

FL620.10 - FL635.10 / FL620.U - FL635.U

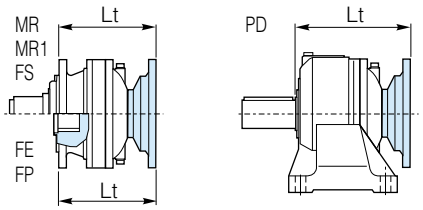




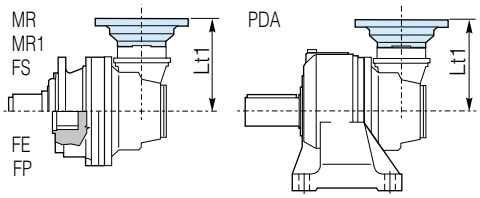
		Lt 00			
		MR-MR1-FS-FET-FP1	FE	FP	PD
FL620.U	ED/PD 2030	349	305	279	405
	ET/PD 3030	389	344	319	445
	EQ/PD 4030	428	384	358	484
FL635.U	ED/PD 2030	336	291	266	392
	ET/PD 3030	375	331	305	431
	EQ/PD 4030	415	370	345	471

		Lt			
		MR-MR1-FS-FET-FP1	FE	FP	PD
FL620.10	ED/PD 2030	308	264	238	364
	ET/PD 3030	348	303	278	404
	EQ/PD 4030	387	343	317	443
FL635.10	ED/PD 2030	290	246	220	346
	ET/PD 3030	330	285	260	386
	EQ/PD 4030	369	325	299	425

IEC Motor

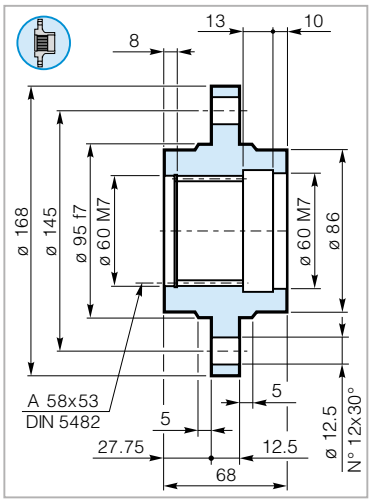


		Lt 00				
		IEC				
		63	71	80-90	100-112	132
ED 2030	MR-MR1-FS-FET-FP1	265	267	272	273	340
ET 3030	MR-MR1-FS-FET-FP1	304	306	311	312	379
EQ 4030	MR-MR1-FS-FET-FP1	344	346	351	352	419
ED 2030	FE	220	222	227	228	295
ET 3030	FE	260	262	267	268	335
EQ 4030	FE	299	301	306	307	374
ED 2030	FP	195	197	202	203	270
ET 3030	FP	234	236	241	242	309
EQ 4030	FP	274	276	281	282	349
PD 2030	PD	320.5	322.5	327.5	328.5	395.5
PD 3030	PD	360	362	367	368	435
PD 4030	PD	399.5	401.5	406.5	407.5	474.5

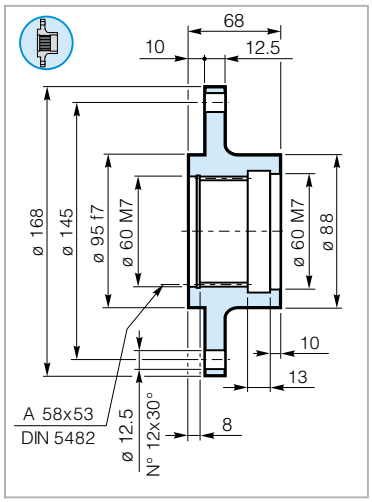


		Lt1				
		IEC				
		63	71	80-90	100-112	132
EC/PDA 3030	MR-MR1-FE-FS-FP-FET-FP1-PDA	151	151	151	151	238
EC/PDA 3030	MR-MR1-FE-FS-FP-FET-FP1-PDA	151	151	151	151	238

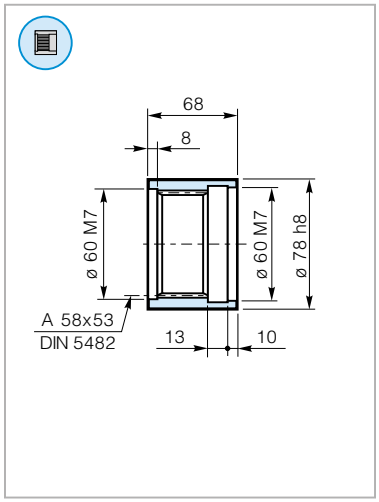
FA 045 Wheel Flange



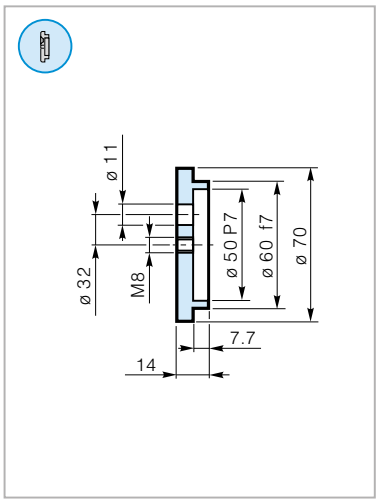
FR 045 Wheel Flange



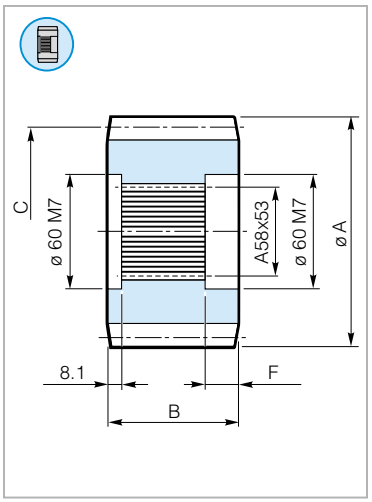
MS 045 Splined Sleeve



RDF 045 Lock Washer

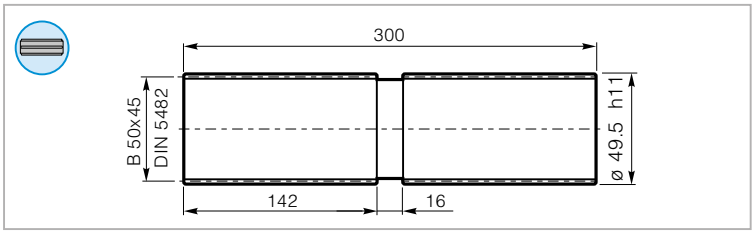


Pinions



A	B	C			F
		m	z	x	
115	68	8	12	0,4	23,5
99,6	68	6	14	0,5	23,5
128	68	8	13	0,7	23,5
141	68	8	15	0,5	23,5
131	75	8	14	0,5	23,5
132	65	6	20	0	23,5
118	76	8	12	0,5	23,5
121	82	8	12	0,6	23,5

BS 045 Splined Bar



Code: 39126930100
Mat: High mechanical resistance alloyed steel

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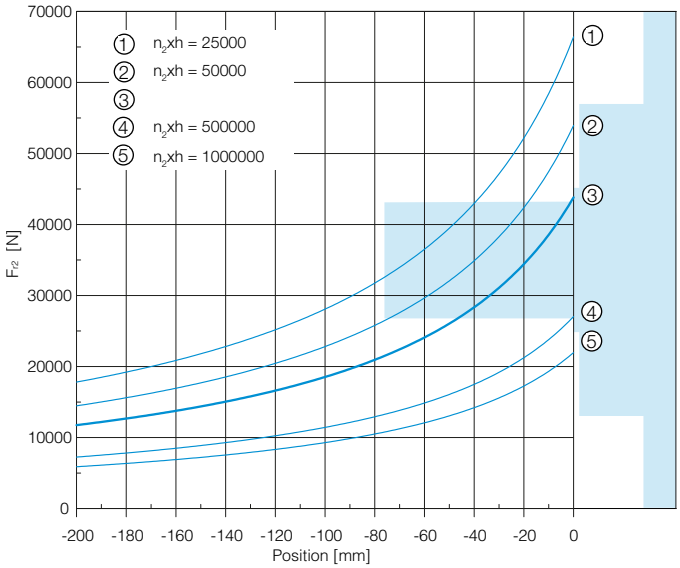
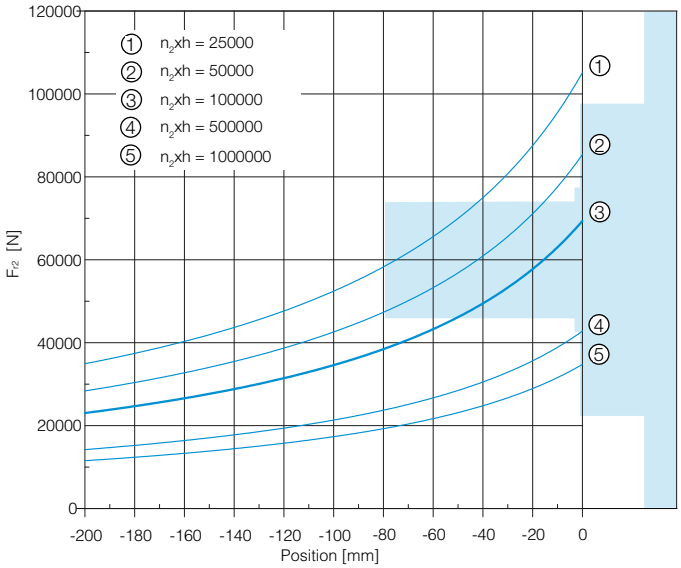
Output Radial Loads

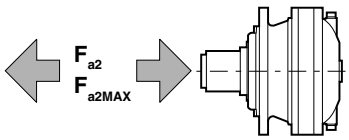
MR - MR1



PD

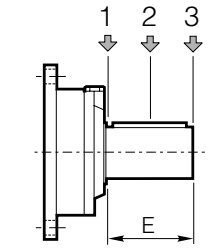


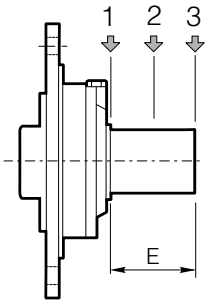
Output Axial Loads

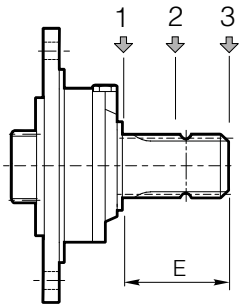


		Flange mounted	PD-PDA
		MR-MR1	MR1
F_{a2}	[N]	35000	25000
F_{a2MAX}	[N]	60000	25000

Input Radial Loads

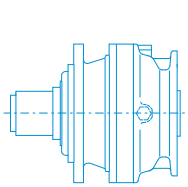






		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

040



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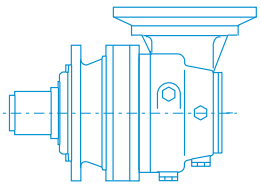
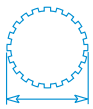
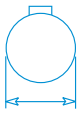
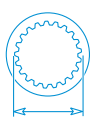
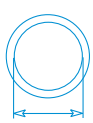


i_{eff}	15.37 - 3170
T_{2N} (Nm)	3800
	B58X53 DIN5482
	65 mm
	-
	-

10000
hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
ED 2040 / PD 2040												
15.37	98	1510	15.4	65	1705	11.6	32.5	2100	7.2	3000	5600	12
17.47	86	2121	19.1	57	2395	14.4	28.6	2732	8.2			
20.28	74	2206	17.1	49.3	2314	12.0	24.7	2494	6.4			
22.70	66	2231	15.4	44.1	2519	11.6	22.0	2805	6.5			
26.34	57	2276	13.6	38.0	2383	9.5	19.0	2560	5.1			
31.02	48.4	2134	10.8	32.2	2342	7.9	16.1	2639	4.5		6000	
36.00	41.7	2358	10.3	27.8	2463	7.2	13.9	2640	3.8			
41.64	36.0	2325	8.8	24.0	2446	6.2	12.0	2678	3.4			
43.50	34.5	2027	7.3	23.0	2119	5.1	11.5	2276	2.7			
50.32	29.8	2060	6.4	19.9	2152	4.5	9.9	2309	2.4			
ET 3040 / PD 3040												
59.06	25.4	2765	7.4	16.9	2879	5.1	8.5	3076	2.7	3000	6000	8
61.28	24.5	2640	6.8	16.3	2982	5.1	8.2	3671	3.1			
70.98	21.1	2457	5.4	14.1	2775	4.1	7.0	3206	2.4			
83.76	17.9	2900	5.4	11.9	3275	4.1	6.0	3783	2.4			
89.03	16.8	2591	4.6	11.2	2695	3.2	5.6	2876	1.7			
96.88	15.5	3029	4.9	10.3	3421	3.7	5.2	3803	2.1			
108.8	13.8	3051	4.4	9.2	3320	3.2	4.6	3410	1.6			
124.2	12.1	2447	3.1	8.1	2528	2.1	4.0	2658	1.1			
146.6	10.2	2888	3.1	6.8	2983	2.1	3.4	3137	1.1			
157.5	9.5	3042	3.0	6.3	3179	2.1	3.2	3695	1.2			
186.1	8.1	2901	2.4	5.4	3046	1.7	2.7	3292	0.93			
198.9	7.5	2115	1.7	5.0	2221	1.2	2.5	2401	0.63			
215.3	7.0	2953	2.2	4.6	3098	1.5	2.3	3343	0.81			
249.0	6.0	2648	1.7	4.0	2780	1.2	2.0	3006	0.63			
289.0	5.2	2924	1.6	3.5	3197	1.2	1.7	3489	0.63			
325.7	4.6	3101	1.5	3.1	3244	1.0	1.5	3492	0.56			
EQ 4040 / PD 4040												
367.7	4.1	3835	1.6	2.7	3888	1.1	1.4	3972	0.57	3000	6000	4
404.7	3.7	2928	1.1	2.5	2966	0.77	1.2	3029	0.39			
460.3	3.3	3674	1.3	2.2	4000	0.91	1.1	4605	0.52			
495.4	3.0	3874	1.2	2.0	3925	0.83	1.0	4008	0.42			
581.3	2.6	3894	1.1	1.7	3944	0.71	0.86	4027	0.36			
643.5	2.3	3907	0.95	1.6	3956	0.64	0.78	4039	0.33			
691.5	2.2	4002	0.91	1.4	4348	0.66	0.72	4494	0.34			
817.1	1.8	4142	0.80	1.2	4424	0.57	0.61	4516	0.29			
879.4	1.7	3945	0.71	1.1	3994	0.48	0.57	4075	0.24			
1017	1.5	3963	0.61	0.98	4011	0.41	0.49	4092	0.21			
1142	1.3	3550	0.49	0.88	3593	0.33	0.44	3666	0.17			
1304	1.2	2886	0.35	0.77	2961	0.24	0.38	3092	0.12			
1430	1.0	4445	0.49	0.70	4498	0.33	0.35	4589	0.17			
1539	0.97	3406	0.35	0.65	3494	0.24	0.32	3649	0.12			
1806	0.83	3248	0.28	0.55	3304	0.19	0.28	3607	0.11			
1999	0.75	3610	0.28	0.50	3652	0.19	0.25	3969	0.10			
2268	0.66	4502	0.31	0.44	4781	0.22	0.22	5124	0.12			
2502	0.60	4519	0.28	0.40	4572	0.19	0.20	4969	0.10			
2904	0.52	4726	0.26	0.34	5112	0.18	0.17	5767	0.10			
3170	0.47	4042	0.20	0.32	4382	0.15	0.16	5013	0.08			

040

Click **DANA** button to return to section index

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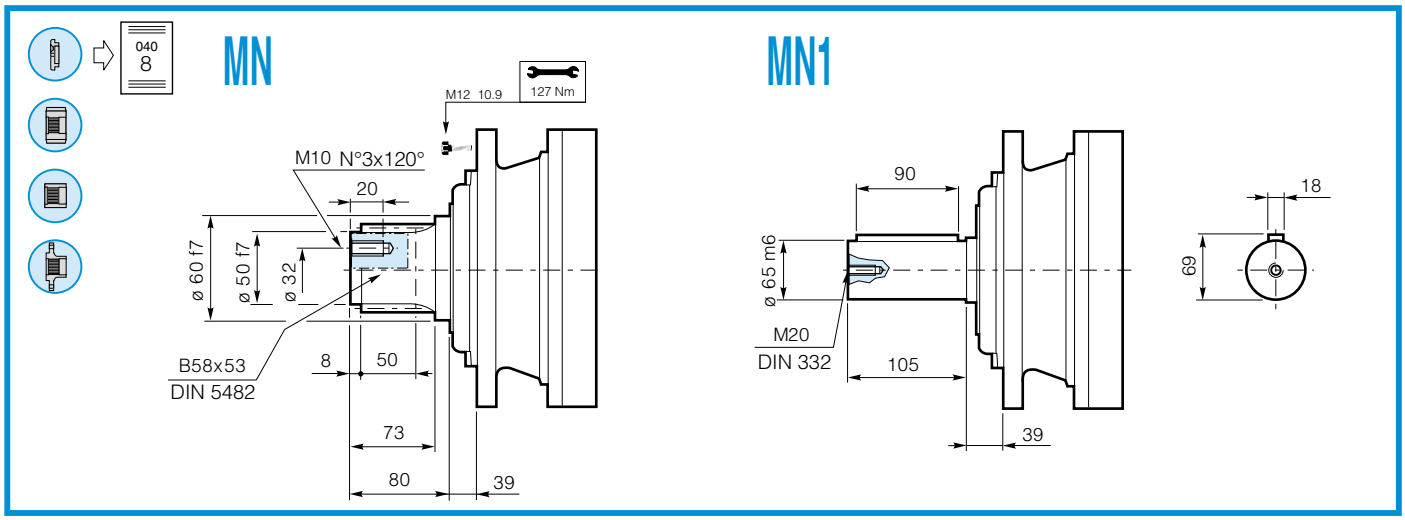
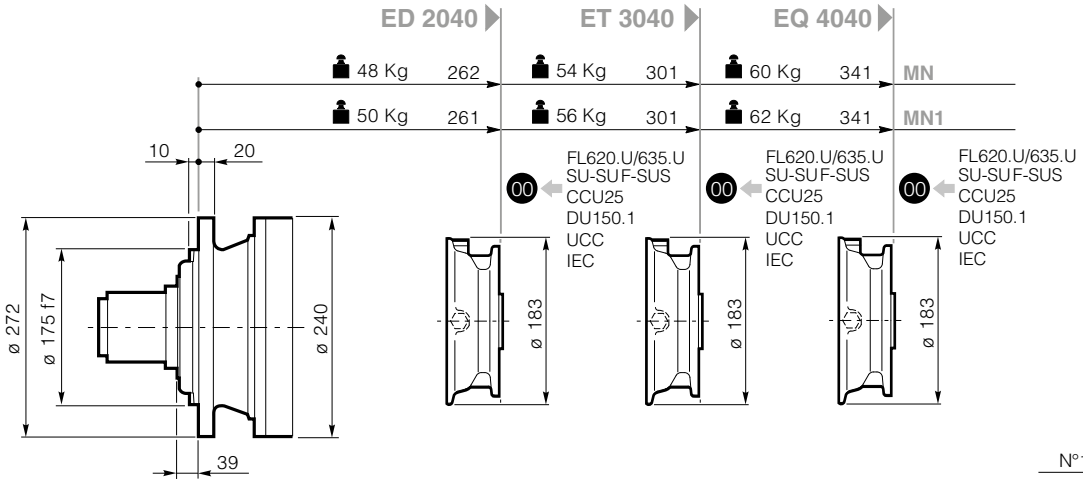
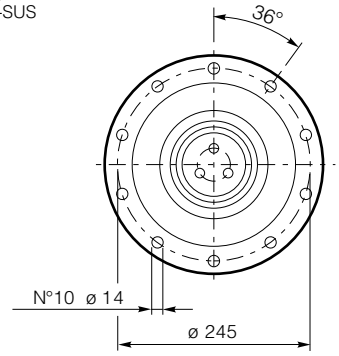
10000 hours life

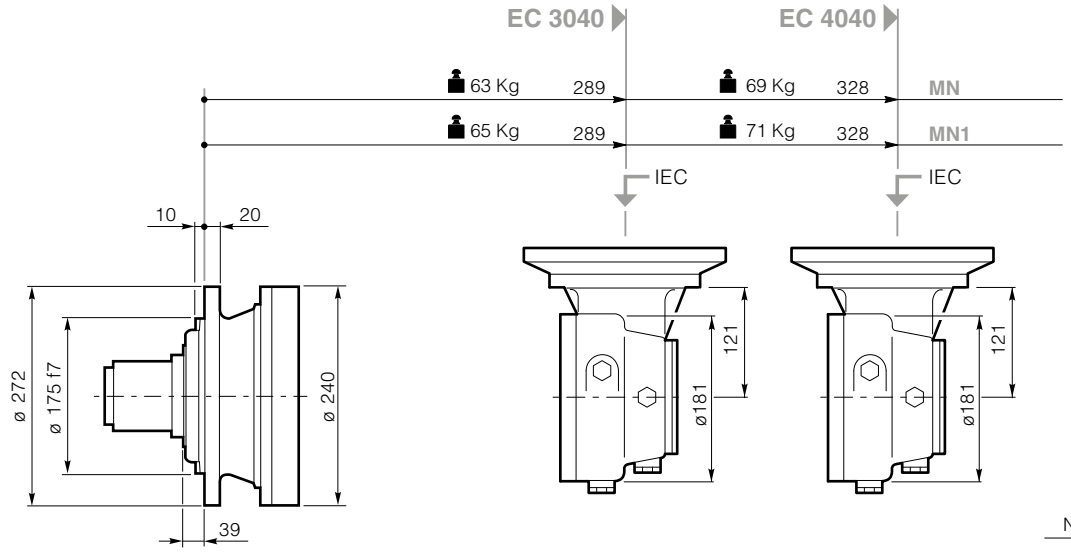
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 3040 / PDA 3040												
35.49	42.3	1160	5.1	28.2	1310	3.9	14.1	1613	2.4			
41.88	35.8	1369	5.1	23.9	1546	3.9	11.9	1903	2.4			
46.09	32.5	1507	5.1	21.7	1702	3.9	10.8	2095	2.4			
52.42	28.6	1714	5.1	19.1	1935	3.9	9.5	2383	2.4			
54.39	27.6	1778	5.1	18.4	2008	3.9	9.2	2472	2.4			
60.84	24.7	1989	5.1	16.4	2246	3.9	8.2	2765	2.4			
68.09	22.0	2226	5.1	14.7	2514	3.9	7.3	3095	2.4			
79.02	19.0	2560	5.1	12.7	2664	3.5	6.3	2845	1.9			
88.66	16.9	1774	3.1	11.3	2003	2.4	5.6	2467	1.5			
99.17	15.1	1984	3.1	10.1	2241	2.4	5.0	2759	1.5	3000	6000	5
111.0	13.5	2221	3.1	9.0	2508	2.4	4.5	3088	1.5			
128.8	11.6	2577	3.1	7.8	2791	2.3	3.9	3118	1.3			
140.2	10.7	2023	2.3	7.1	2130	1.6	3.6	2310	0.86			
151.7	9.9	2826	2.9	6.6	2973	2.1	3.3	3219	1.1			
176.0	8.5	2767	2.5	5.7	2873	1.7	2.8	3336	0.99			
203.6	7.4	2805	2.2	4.9	2960	1.5	2.5	3356	0.86			
215.8	7.0	2391	1.7	4.6	2486	1.2	2.3	2894	0.70			
244.1	6.1	2853	1.8	4.1	3081	1.3	2.0	3576	0.77			
282.3	5.3	2908	1.6	3.5	3181	1.2	1.8	3480	0.65			
EC 4040 / PDA 4040												
319.9	4.7	3817	1.9	3.1	3870	1.3	1.6	3956	0.65			
347.1	4.3	3262	1.5	2.9	3306	1.0	1.4	3377	0.51			
401.5	3.7	3278	1.3	2.5	3321	0.87	1.2	3392	0.44			
473.7	3.2	3868	1.3	2.1	3919	0.87	1.1	4002	0.44			
481.2	3.1	3298	1.1	2.1	3340	0.73	1.0	3410	0.37			
567.9	2.6	3891	1.1	1.8	3941	0.73	0.88	4024	0.37			
656.8	2.3	3909	0.94	1.5	3959	0.63	0.76	4041	0.32			
716.7	2.1	3242	0.71	1.4	3329	0.49	0.70	3479	0.25			
822.2	1.8	4147	0.79	1.2	4502	0.57	0.61	5059	0.32			
930.9	1.6	3528	0.60	1.1	3572	0.40	0.54	3645	0.21			
993.8	1.5	3312	0.52	1.0	3399	0.36	0.50	3551	0.19	3000	6000	3
1165	1.3	4417	0.60	0.86	4471	0.40	0.43	4563	0.21			
1291	1.2	3563	0.43	0.77	3606	0.29	0.39	3704	0.15			
1352	1.1	4059	0.47	0.74	4403	0.34	0.37	5043	0.20			
1616	0.93	4461	0.43	0.62	4514	0.29	0.31	4637	0.15			
1848	0.81	4322	0.37	0.54	4683	0.27	0.27	4963	0.14			
1959	0.77	3815	0.31	0.51	4218	0.23	0.26	4817	0.13			
2208	0.68	4043	0.29	0.45	4134	0.20	0.23	4500	0.11			
2563	0.59	4611	0.28	0.39	4798	0.20	0.20	5222	0.11			
2964	0.51	4227	0.22	0.34	4616	0.16	0.17	5138	0.09			
3097	0.48	4023	0.20	0.32	4362	0.15	0.16	4991	0.08			

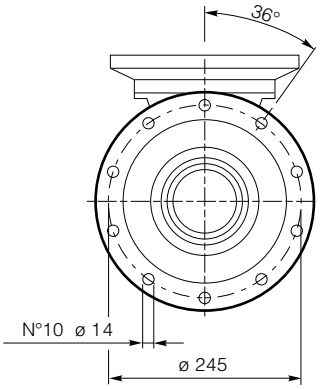
GEARBOX DIMENSIONS WITH OUTPUT











00 B13 SU-SUF SUS 040 6 FL620 FL635 040 7 IEC 040 7 CCU25 B15 DU150.1 UCC B16

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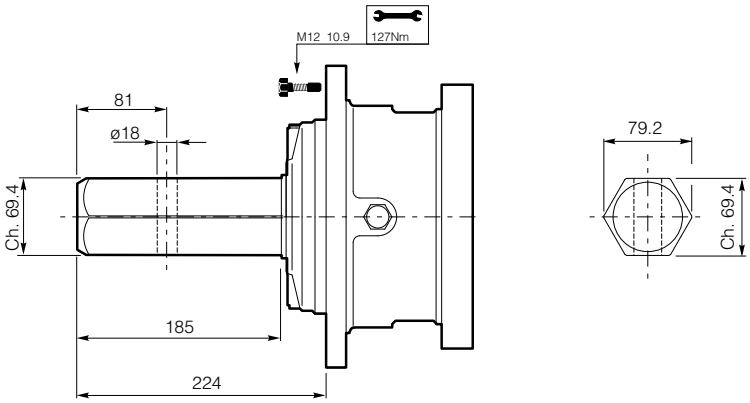

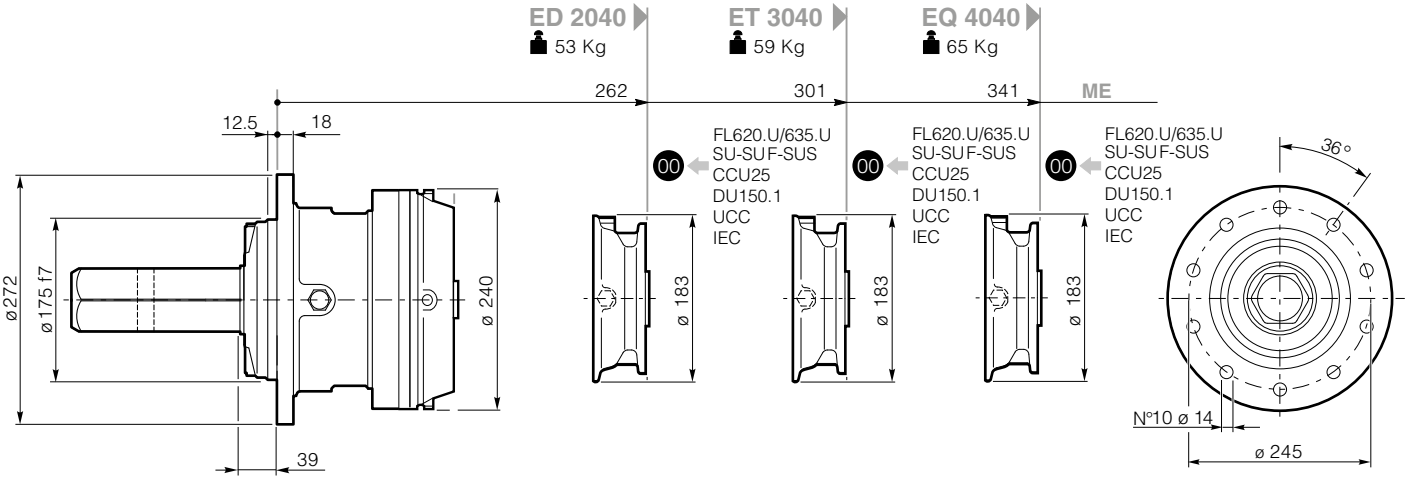

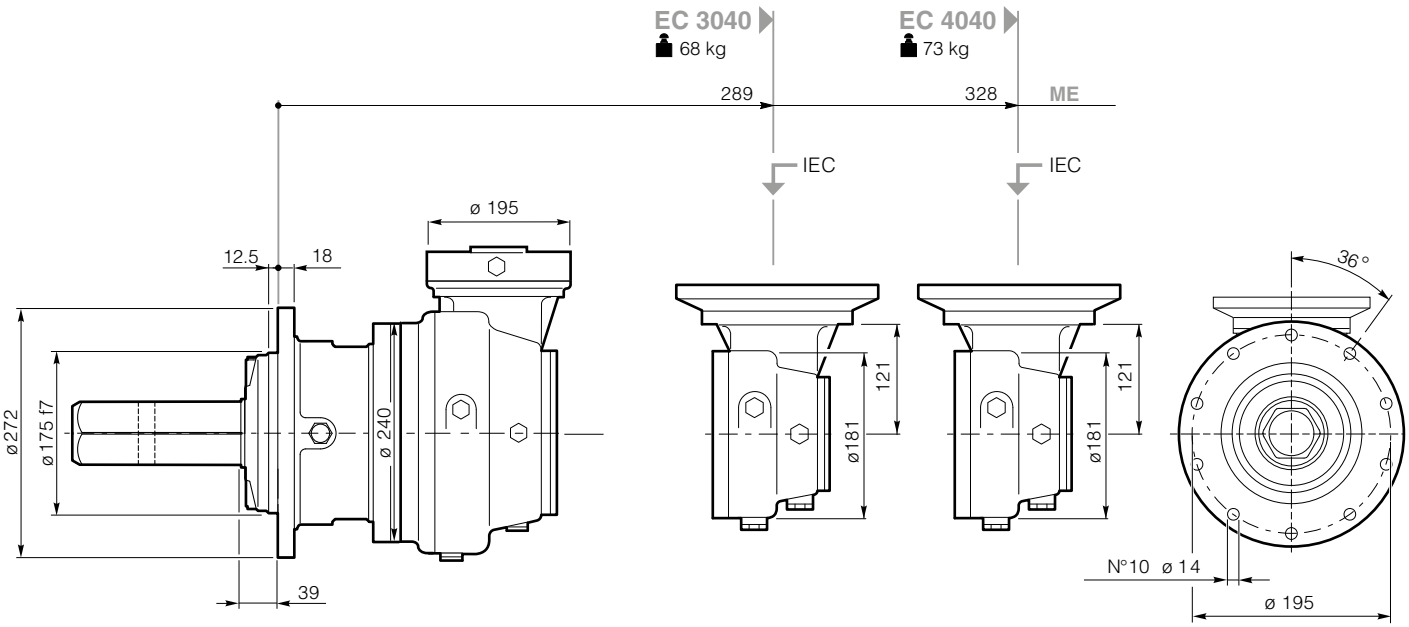

00 B13 SU-SUF SUS 040 6 FL620 FL635 040 7 IEC 040 7 CCU25 B15 DU150.1 UCC B16

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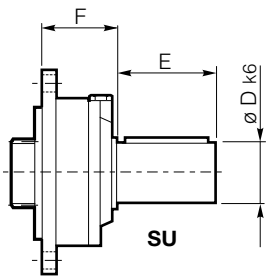
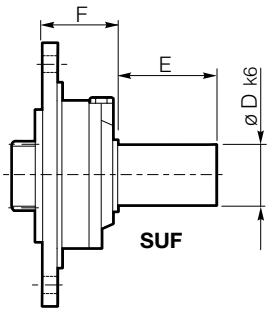
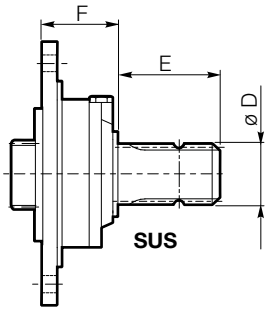
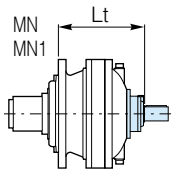
SU - SUF - SUS





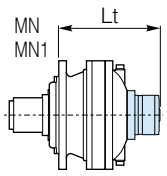


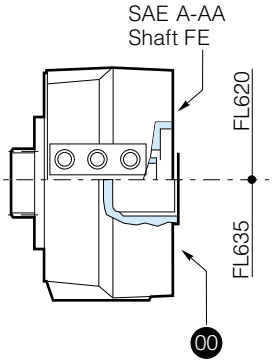


040

	D	E	F		Lt 00 MN - MN1-ME
SU1 28x50	28	50	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SU2 40x58	40	58	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SU3 48x82	48	82	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SU 42x80	42	80	101.5	ED 2040	363
				ET 3040	403
				EQ 4040	442
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	ED 2040	363
				ET 3040	403
				EQ 4040	442
SU2 1.5x3.25	38.10	82.55	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SUF1 28x50	28	50	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SUF2 40x58	40	58	60	ED 2040	322
				ET 3040	361
				EQ 4040	401
SUF3 48x82	48	82	60	ED 2040	322
				ET 3040	361
				EQ 4040	401

FL620.10 - FL635.10 / FL620.U - FL635.U

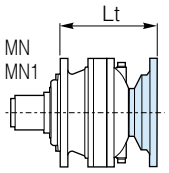




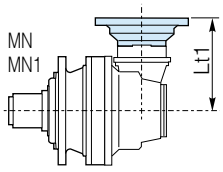
		Lt 00
		MN-MN1-ME
FL620.U	ED 2040	366
	ET 3040	406
	EQ 4040	445
FL635.U	ED 2040	353
	ET 3040	392
	EQ 4040	432

		Lt
		MN-MN1-ME
FL620.10	ED 2040	325
	ET 3040	365
	EQ 4040	404
FL635.10	ED 2040	307
	ET 3040	347
	EQ 4040	386

IEC Motor

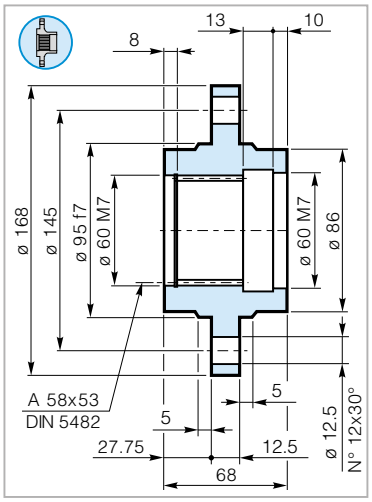


		Lt 00				
		IEC				
		63	71	80 90	100 112	132
ED 2040	MN-MN1-ME	282	284	289	290	357
ET 3040	MN-MN1-ME	321	323	328	329	396
EQ 4040	MN-MN1-ME	361	363	368	369	436

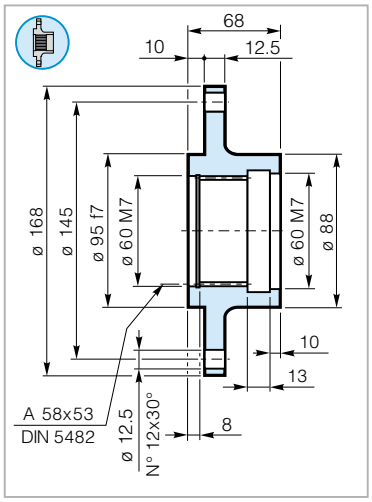


		Lt1				
		IEC				
		63	71	80 90	100 112	132
EC 3040	MN-MN1-ME	151	151	151	151	238
EC 4040	MN-MN1-ME	151	151	151	151	238

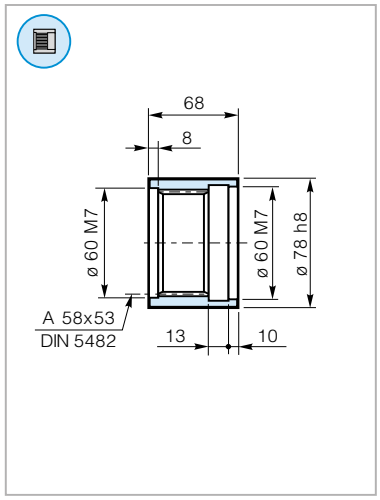
FA 045 Wheel Flange



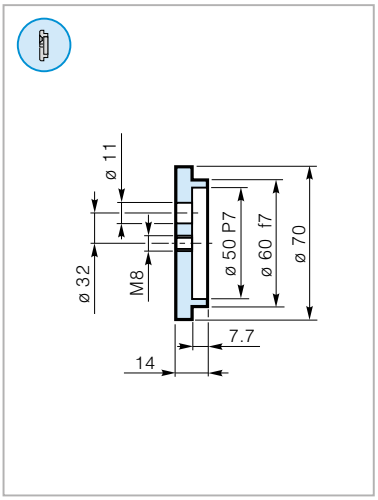
FR 045 Wheel Flange



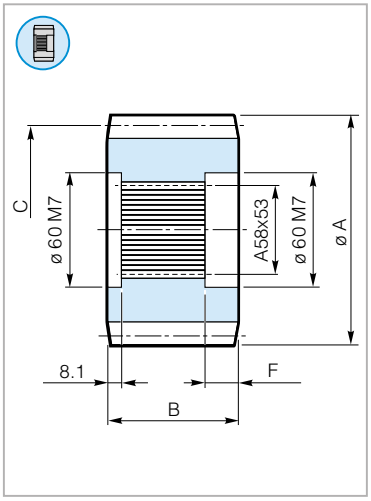
MS 045 Splined Sleeve



RDF 045 Lock Washer

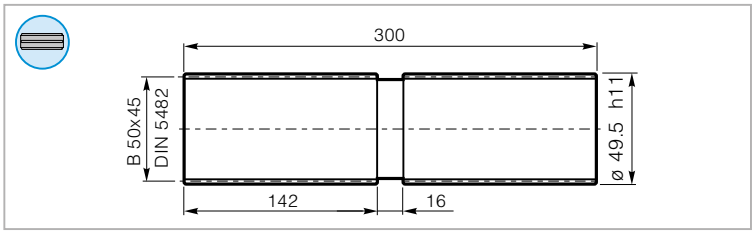


Pinions



A	B	C			F
		m	z	x	
99,6	80	6	14	0,5	23,5
115	80	8	12	0,4	23,5
143	80	10	12	0,4	23,5
136	80	8	15	0	23,5
142	80	10	13	0	23,5
133	90	8	14	0,5	23,5
162	103	10	14	0,3	23,5

BS 045 Splined Bar



Code: 39126930100
Mat: High mechanical resistance alloyed steel

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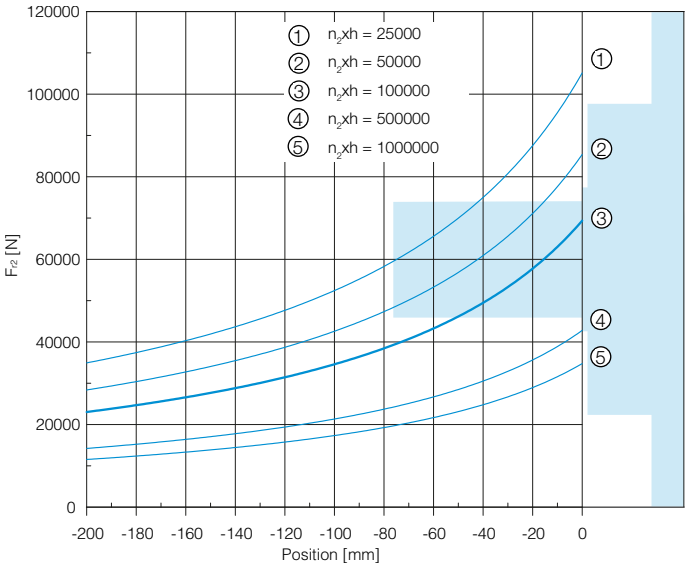
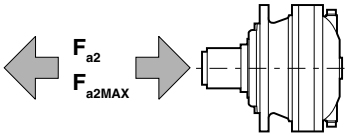
Output Radial Loads

MN - MN1

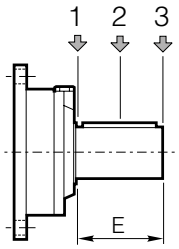


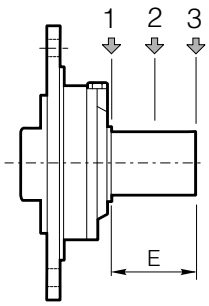
Output Axial Loads

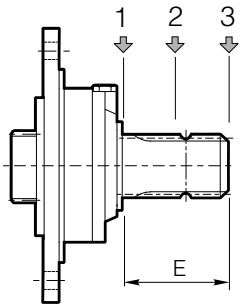


		Flange mounted
		MN-MN1
F_{a2}	[N]	45000
F_{a2MAX}	[N]	80000

Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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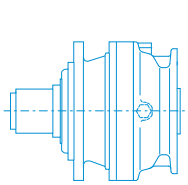
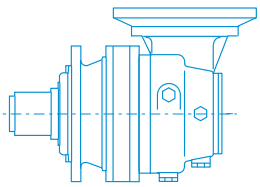
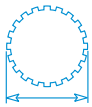
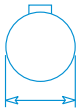
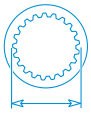
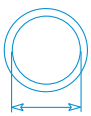
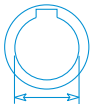


045



i_{eff}	3.50 - 3301
T_{2N} (Nm)	3800
	B58X53 DIN5482
	65 mm
	A58X53 DIN5482
	75 mm
	65 - 70 mm

10000
hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EM 1045 / PD 1045												
3.50	429	1565	70	286	1767	53	143	2175	32.6	3000	5600	20
4.13	363	1617	62	242	1827	46.3	121	2249	28.5			
5.17	290	1682	51	193	1900	38.5	97	2339	23.7		6000	
6.00	250	1732	45.4	167	1956	34.1	83	2173	19.0			
7.25	207	1582	34.3	138	1695	24.5	69	1868	13.5			
ED 2045 / PD 2045												
59.06	139	2193	32.0	93	2476	24.1	46.4	3049	14.8	3000	6000	15
61.28	122	2278	29.2	82	2573	22.0	40.8	3168	13.5			
70.98	104	2394	26.0	69	2704	19.6	34.6	3329	12.1			
83.76	88	2475	22.8	59	2795	17.2	29.3	3393	10.4			
89.03	83	2561	22.2	55	2893	16.7	27.6	3562	10.3			
96.88	71	2678	20.0	47.6	3025	15.1	23.8	3724	9.3			
108.8	59	2835	17.6	39.4	3202	13.2	19.7	3553	7.3			
124.2	50	2931	15.4	33.4	3310	11.6	16.7	3583	6.3			
146.6	48.4	2582	13.1	32.2	2698	9.1	16.1	2893	4.9			
157.5	41.7	2358	10.3	27.8	2463	7.2	13.9	2640	3.8			
186.1	34.5	2407	8.7	23.0	2511	6.0	11.5	2689	3.2			
198.9	28.5	2070	6.2	19.0	2161	4.3	9.5	2319	2.3			
ET 3045 / PD 3045												
53.78	27.9	3552	10.4	18.6	3961	7.7	9.3	4314	4.2	3000	6000	10
63.46	23.6	3732	9.2	15.8	4022	6.6	7.9	4469	3.7			
73.50	20.4	3901	8.3	13.6	4077	5.8	6.8	4609	3.3			
79.44	18.9	3955	7.8	12.6	4106	5.4	6.3	4684	3.1			
92.19	16.3	4010	6.8	10.8	4174	4.7	5.4	4831	2.7			
100.3	15.0	4042	6.3	10.0	4250	4.4	5.0	4915	2.6			
108.6	13.8	4071	5.9	9.2	4323	4.2	4.6	4996	2.4			
125.6	11.9	4125	5.2	8.0	4459	3.7	4.0	5146	2.1			
145.7	10.3	4221	4.6	6.9	4601	3.3	3.4	5088	1.8			
152.3	9.9	3846	4.0	6.6	4014	2.8	3.3	4302	1.5			
176.1	8.5	3907	3.5	5.7	4074	2.4	2.8	4363	1.3			
207.8	7.2	3970	3.0	4.8	4326	2.2	2.4	4941	1.2			
224.2	6.7	4035	2.8	4.5	4395	2.1	2.2	4798	1.1			
260.2	5.8	4165	2.5	3.8	4532	1.8	1.9	4970	1.0			
280.7	5.3	3302	1.8	3.6	3605	1.3	1.8	4167	0.78			
314.4	4.8	4334	2.2	3.2	4711	1.6	1.6	5022	0.84			
364.8	4.1	2542	1.1	2.7	2788	0.80	1.4	3244	0.47			
EQ 4045 / PD 4045												
404.7	3.7	5051	2.0	2.5	5245	1.4	1.2	5615	0.73	3000	6000	6
441.0	3.4	5312	1.9	2.3	5418	1.3	1.1	5684	0.68			
510.1	2.9	5382	1.7	2.0	5439	1.1	0.98	5803	0.60			
551.3	2.7	5393	1.5	1.8	5449	1.0	0.91	5867	0.56			
639.8	2.3	5270	1.3	1.6	5470	0.90	0.78	5992	0.49			
696.2	2.2	5425	1.2	1.4	5495	0.83	0.72	6000	0.45			
773.1	1.9	4524	0.92	1.3	4698	0.64	0.65	5463	0.37			
913.5	1.6	4595	0.79	1.1	4866	0.56	0.55	5662	0.33			
1011	1.5	5477	0.85	0.99	5796	0.60	0.49	6000	0.31			
1140	1.3	5565	0.77	0.88	5895	0.54	0.44	6000	0.28			
1222	1.2	4743	0.61	0.82	5190	0.45	0.41	6021	0.26			
1442	1.0	5337	0.58	0.69	5652	0.41	0.35	6226	0.23			
1599	0.94	5036	0.50	0.63	5502	0.36	0.31	6366	0.21			
1849	0.81	5200	0.44	0.54	5676	0.32	0.27	6559	0.19			
1995	0.75	4415	0.35	0.50	4530	0.24	0.25	4730	0.12			
2315	0.65	5124	0.35	0.43	5257	0.24	0.22	5489	0.12			
2623	0.57	4633	0.28	0.38	5013	0.20	0.19	5720	0.11			
2798	0.54	5687	0.32	0.36	6000	0.23	0.18	6000	0.11			
3301	0.45	5997	0.29	0.30	6000	0.19	0.15	6000	0.09			

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10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EC 2045 / PDA 2045												
10.50*	143	2175	32.6	95	2457	24.5	47.6	3025	15.1	3000	6000	10
12.39*	121	2249	28.5	81	2540	21.5	40.4	3127	13.2			
16.17	93	1582	15.4	62	1787	11.6	30.9	2200	7.1			
18.00*	83	2173	19.0	56	2283	13.3	27.8	2463	7.2			
19.08	79	1867	15.4	52	2109	11.6	26.2	2596	7.1			
21.75*	69	1868	13.5	46.0	1962	9.4	23.0	2119	5.1			
23.89	63	2337	15.4	41.9	2624	11.5	20.9	2820	6.2			
27.72	54	2290	13.0	36.1	2396	9.1	18.0	2573	4.9			
33.50	44.8	1968	9.2	29.9	2060	6.4	14.9	2216	3.5			
EC 3045 / PDA 3045												
36.75	40.8	3168	13.5	27.2	3578	10.2	13.6	4077	5.8	3000	6000	7
43.37*	34.6	3329	12.1	23.1	3760	9.1	11.5	4138	5.0			
49.80	30.1	3471	10.9	20.1	3920	8.2	10.0	4244	4.5			
56.60	26.5	3606	10.0	17.7	3980	7.4	8.8	4362	4.0			
63.00*	23.8	3724	9.3	15.9	4020	6.7	7.9	4462	3.7			
73.57	20.4	2827	6.0	13.6	2941	4.2	6.8	3139	2.2			
83.60	17.9	3974	7.5	12.0	4125	5.2	6.0	4734	3.0			
89.83*	16.7	3583	6.3	11.1	3719	4.3	5.6	4196	2.4			
97.02	15.5	4029	6.5	10.3	4220	4.6	5.2	4882	2.6			
114.5	13.1	3664	5.0	8.7	3810	3.5	4.4	4414	2.0			
123.5	12.1	2973	3.8	8.1	3088	2.6	4.0	3508	1.5			
138.3	10.8	3728	4.2	7.2	3969	3.0	3.6	4590	1.7			
166.3	9.0	2752	2.6	6.0	2858	1.8	3.0	3296	1.0			
173.2	8.7	3069	2.8	5.8	3246	2.0	2.9	3770	1.1			
201.0	7.5	2801	2.2	5.0	2951	1.5	2.5	3432	0.89			
242.8	6.2	2419	1.6	4.1	2541	1.1	2.1	2970	0.64			
EC 4045 / PDA 4045												
276.6	5.4	4831	2.7	3.6	5063	1.9	1.8	5396	1.0	3000	6000	3
310.3	4.8	4946	2.5	3.2	5369	1.8	1.6	5466	0.92			
347.1	4.3	4978	2.3	2.9	5171	1.6	1.4	5493	0.83			
414.7	3.6	5246	2.0	2.4	5410	1.4	1.2	5635	0.71			
450.8	3.3	5103	1.8	2.2	5297	1.2	1.1	5702	0.66			
498.3	3.0	5379	1.7	2.0	5435	1.1	1.0	5784	0.61			
570.0	2.6	4066	1.1	1.8	4179	0.77	0.88	4372	0.40			
625.0	2.4	5259	1.3	1.6	5456	0.91	0.80	5972	0.50			
712.7	2.1	5322	1.2	1.4	5514	0.81	0.70	6000	0.44			
799.3	1.9	4538	0.89	1.3	4722	0.62	0.63	5502	0.36			
929.1	1.6	4202	0.71	1.1	4315	0.49	0.54	4509	0.25			
988.1	1.5	5474	0.87	1.0	5777	0.61	0.51	6000	0.32			
1078	1.4	4877	0.71	0.93	5008	0.49	0.46	5233	0.25			
1194	1.3	4718	0.62	0.84	5164	0.45	0.42	5991	0.26			
1409	1.1	5319	0.59	0.71	5633	0.42	0.35	6000	0.22			
1593	0.94	4738	0.47	0.63	5130	0.34	0.31	5859	0.19			
1806	0.83	5174	0.45	0.55	5648	0.33	0.28	6000	0.18			
1925	0.78	4918	0.40	0.52	5322	0.29	0.26	6000	0.16			
2208	0.68	5052	0.36	0.45	5465	0.26	0.23	6000	0.14			
2563	0.59	4611	0.28	0.39	4990	0.20	0.20	5695	0.12			
2668	0.56	5242	0.31	0.37	5666	0.22	0.19	6000	0.12			
3097	0.48	4785	0.24	0.32	5176	0.18	0.16	5900	0.10			

* (bg) All highlighted ratio (is. 10.50) have particular dimensions of bevel gears in some versions. See dimensional tables.

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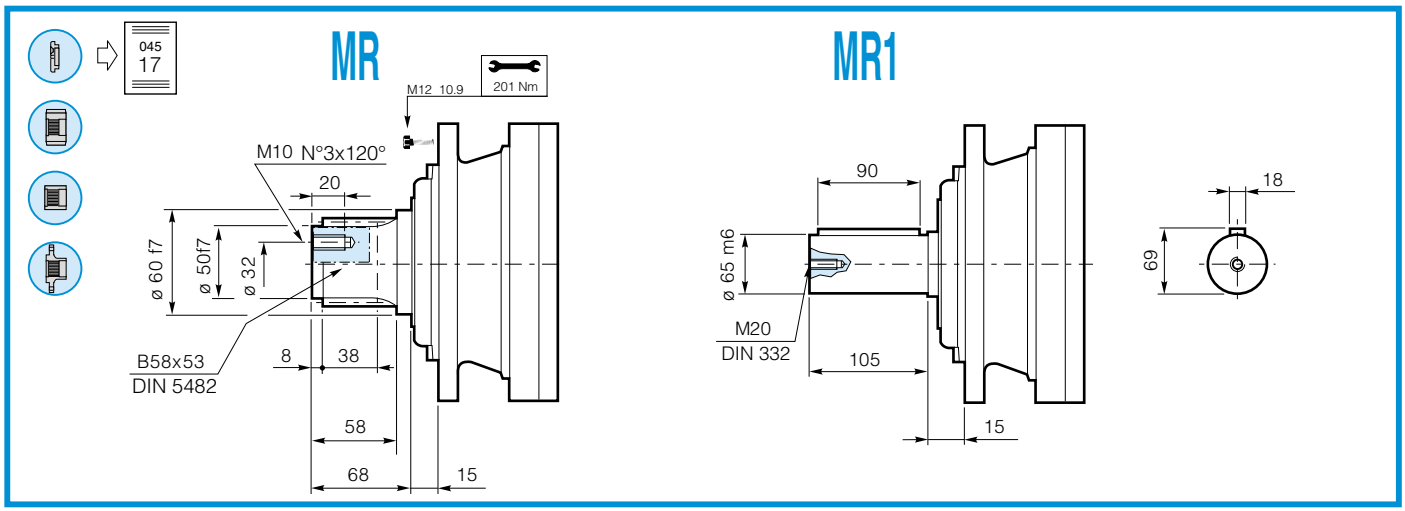
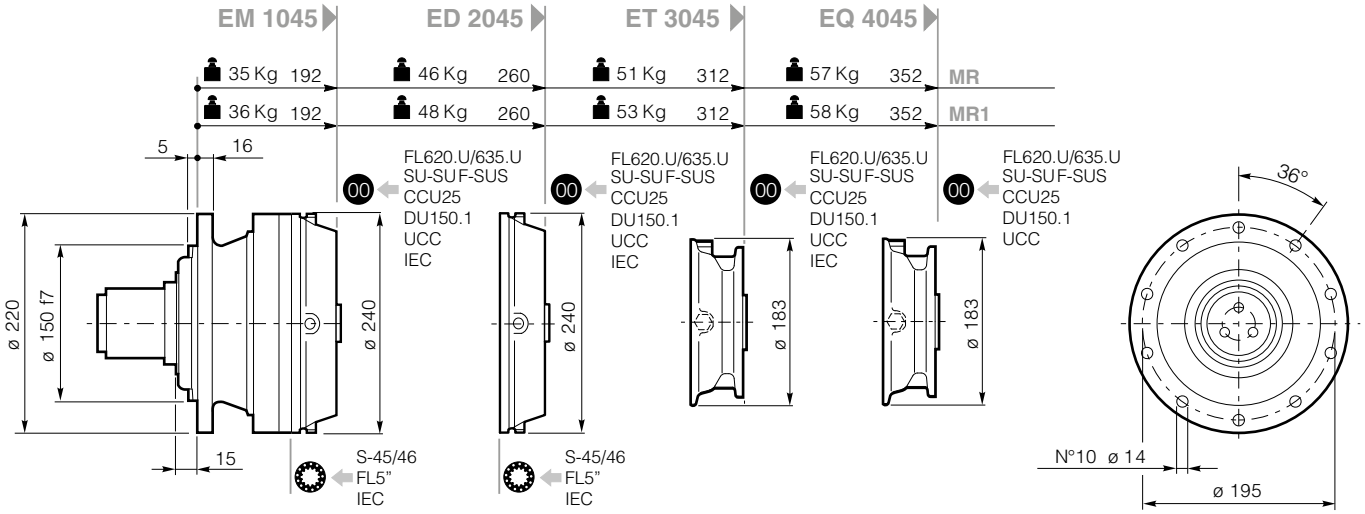
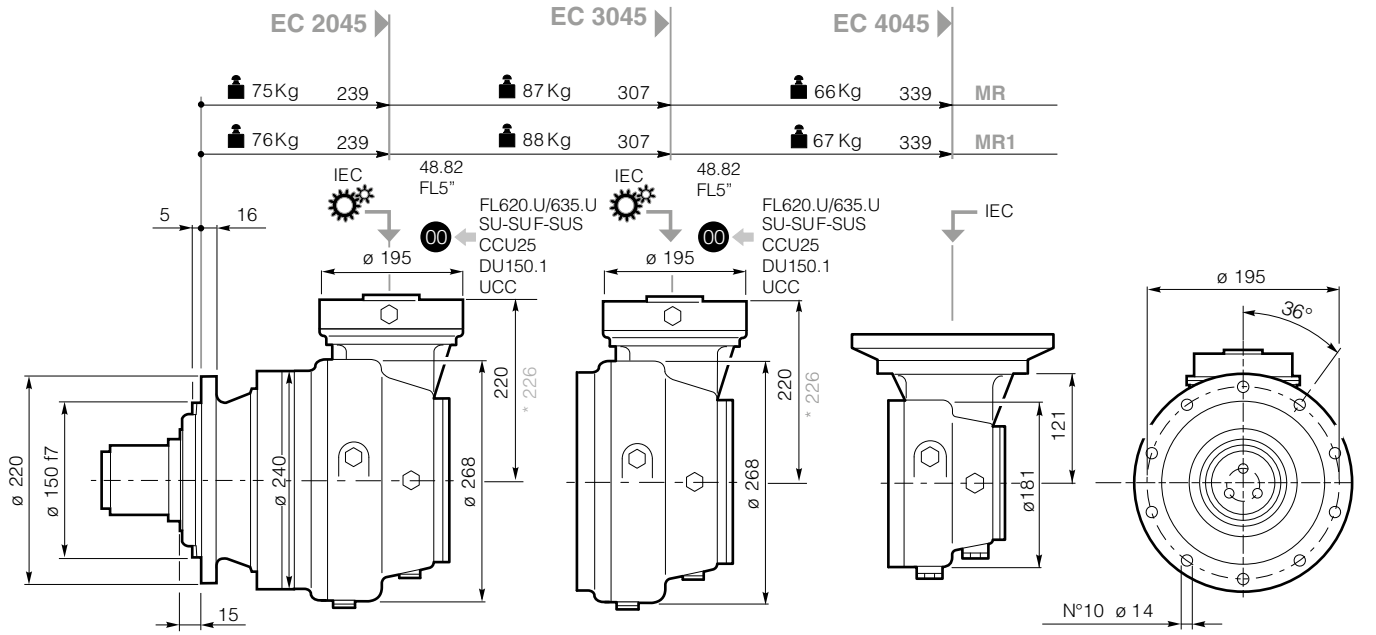
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 045 11 | SU-SUF SUS → 045 12 | FL5" FL620 FL635 → 045 13 | IEC → 045 16 | 045 15 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 045 3

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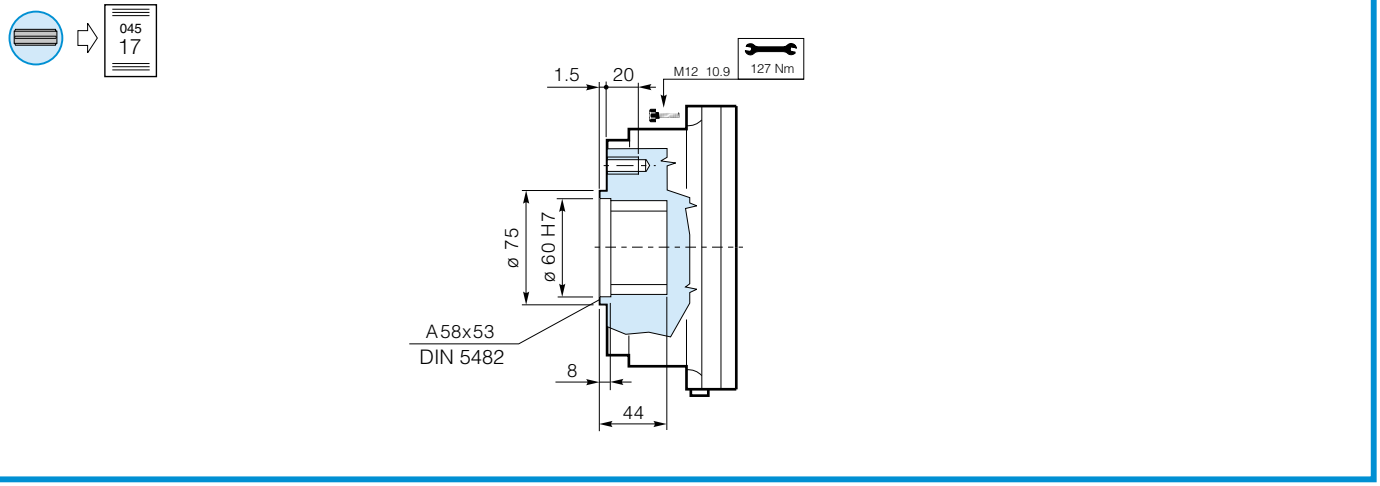

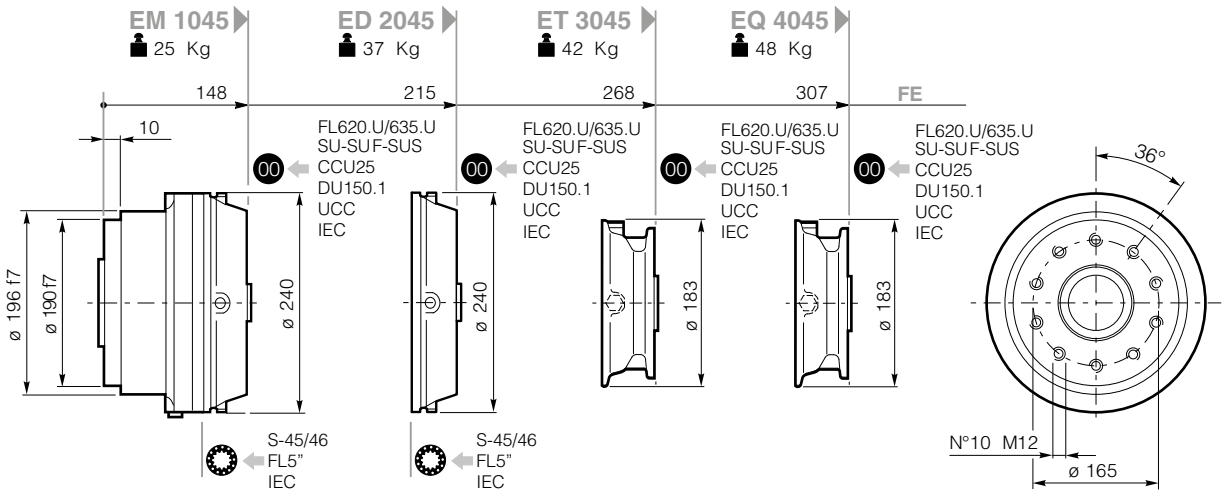

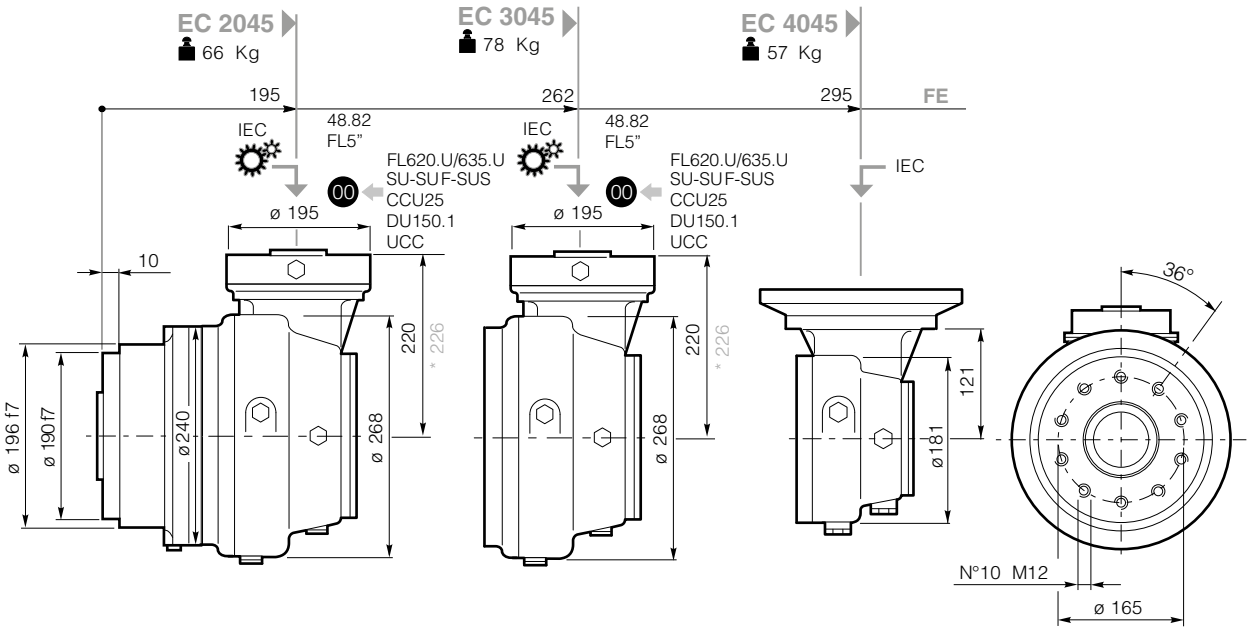

00 B13 | S-45/46 48.82 045 11 | SU-SUF SUS 045 12 | FL5" FL620 FL635 045 13 | IEC 045 16 | 045 15 | CCU25 B15 | DU150.1 UCC B16 | * bg 045 3

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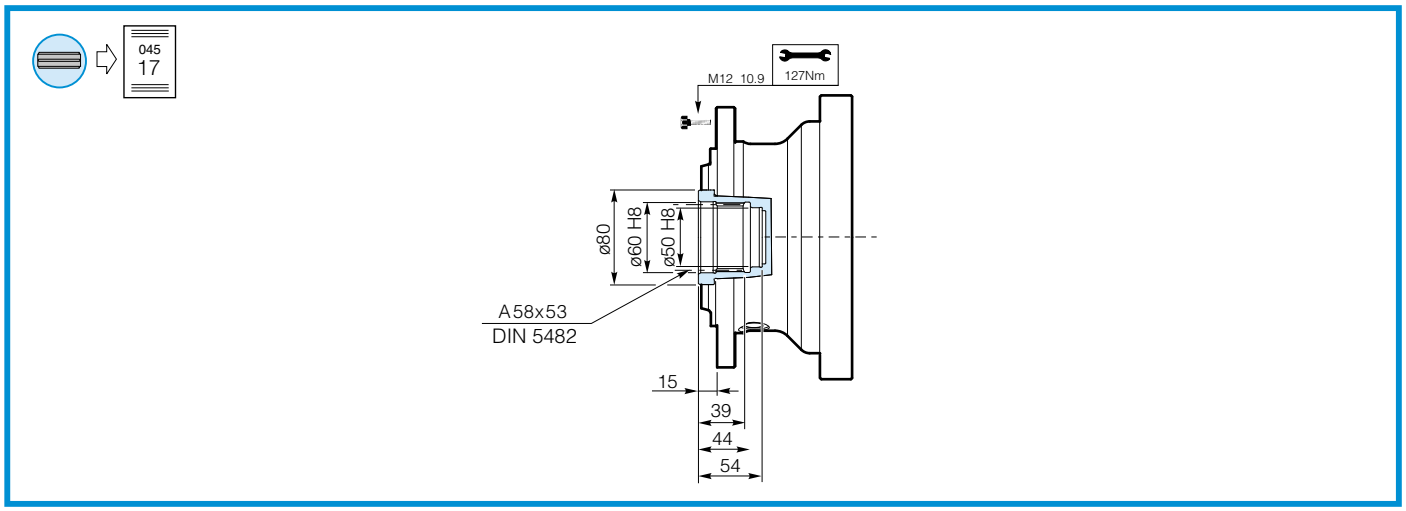
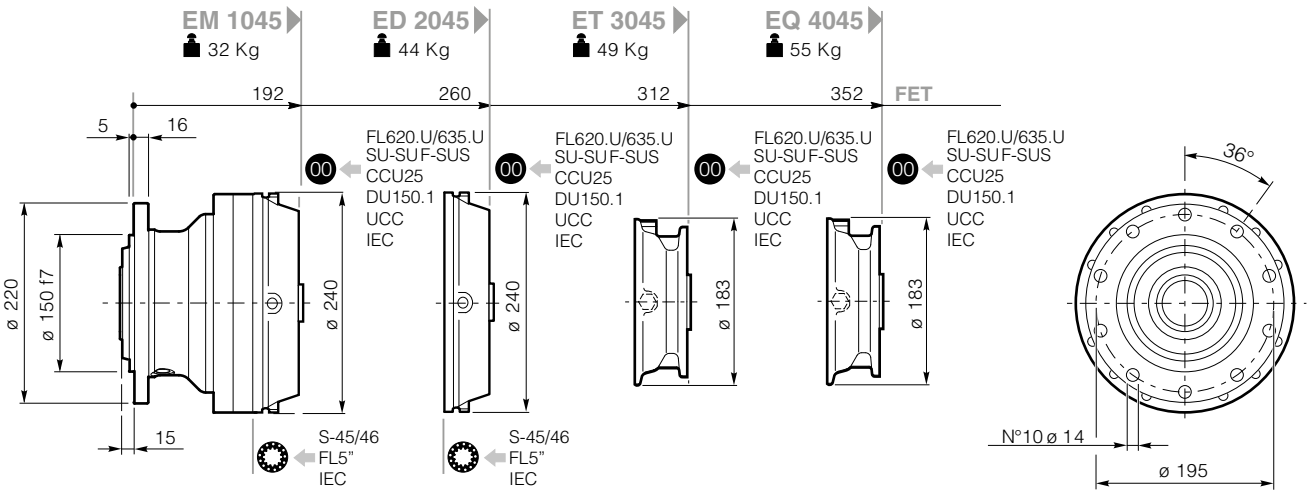
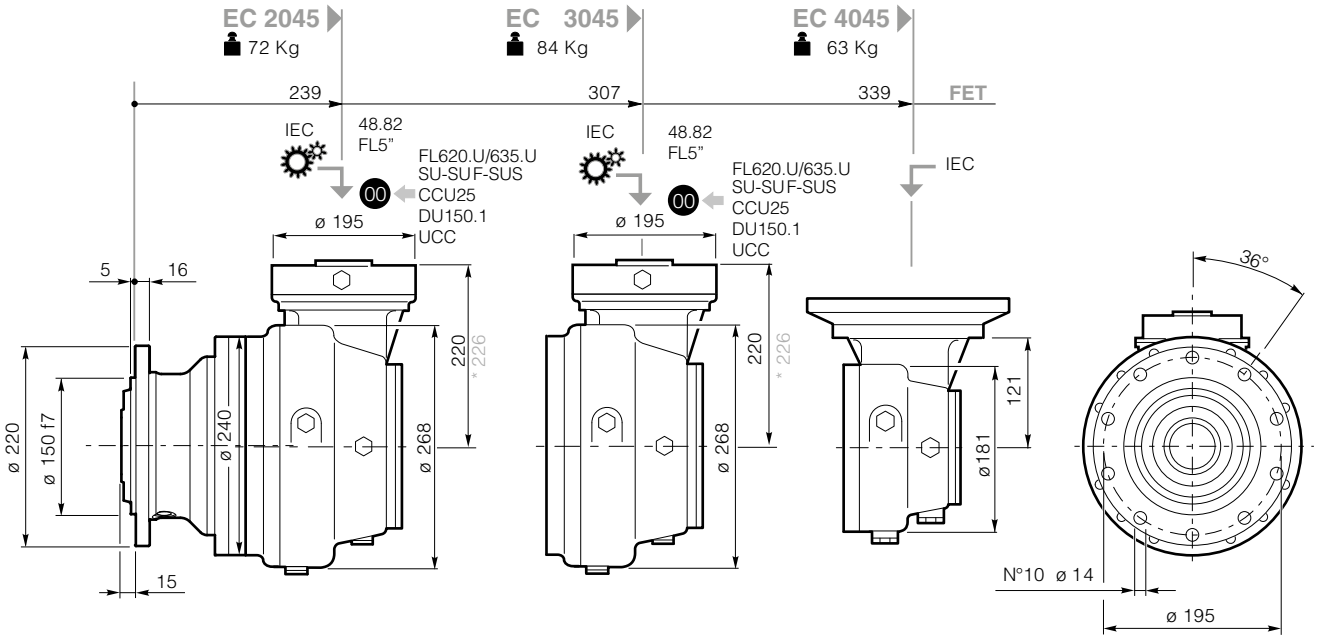
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 | S-45/46 48.82 045 11 | SU-SUF SUS 045 12 | FL5" FL620 FL635 045 13 | IEC 045 16 | 045 15 | CCU25 B15 | DU150.1 UCC B16 | * bg 045 3

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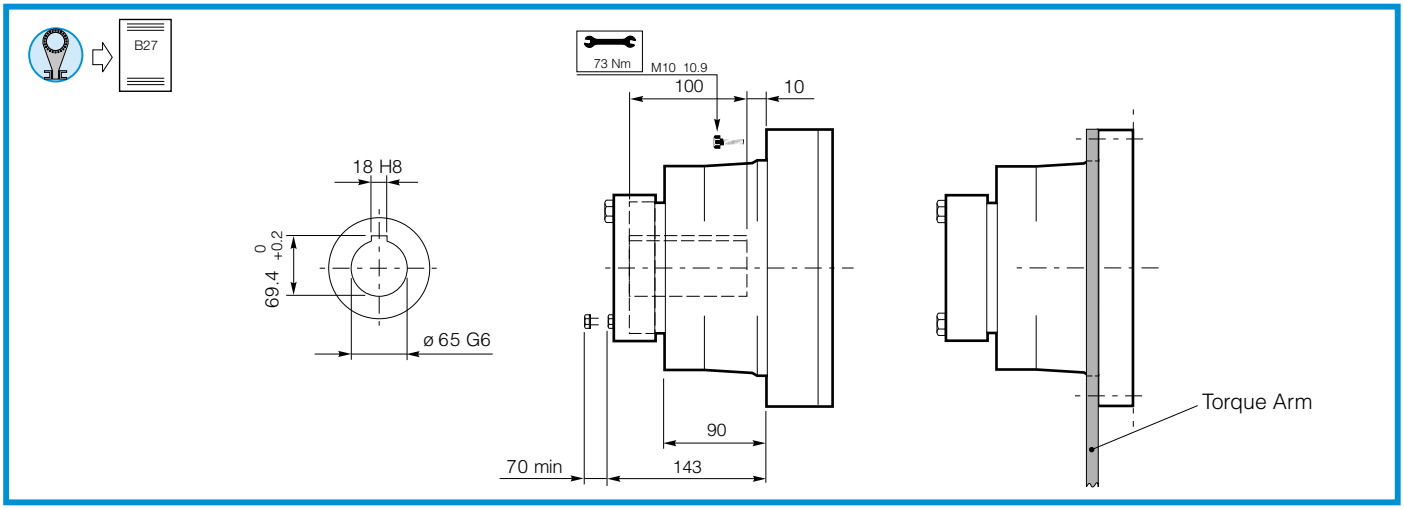

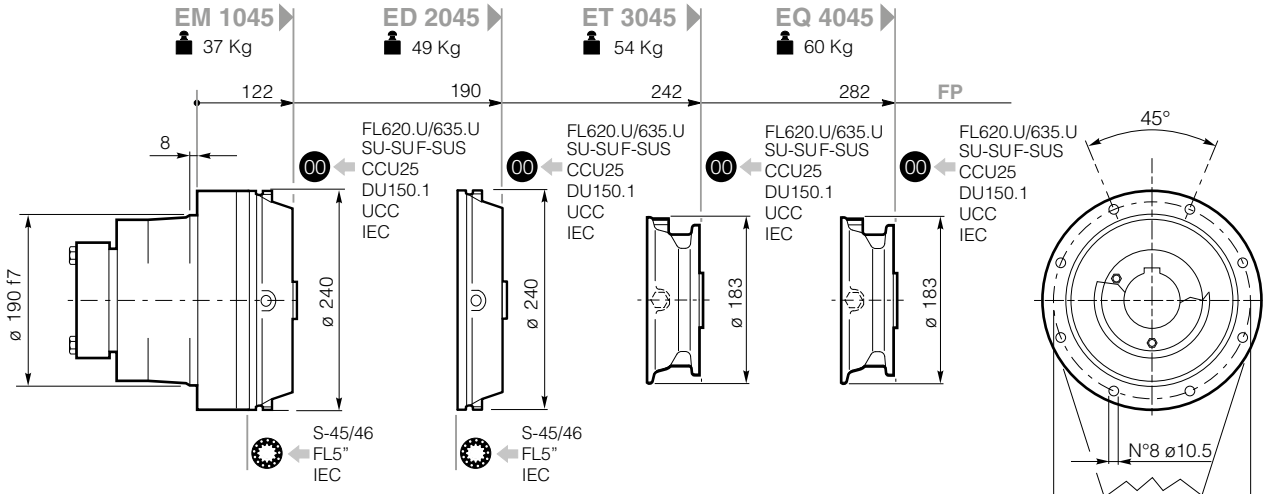

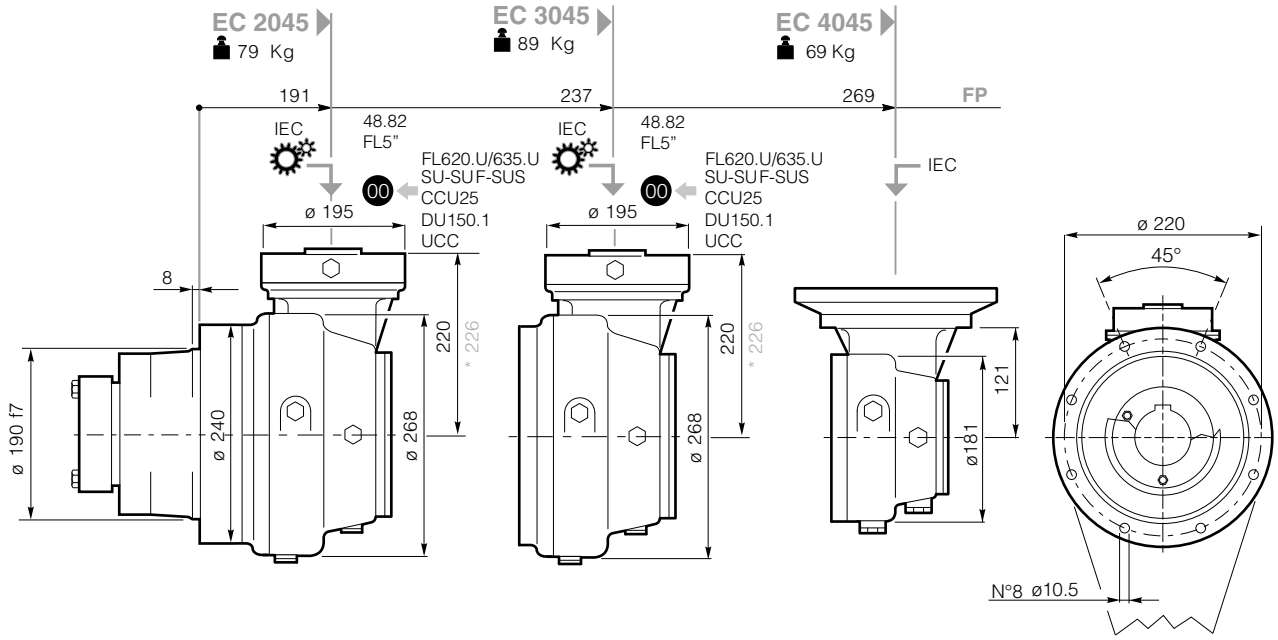

00 B13 S-45/46 48.82 045 11 | SU-SUF SUS 045 12 | FL5" FL620 FL635 045 13 | IEC 045 16 | 045 15 | CCU25 B15 | DU150.1 UCC B16 | * bg 045 3

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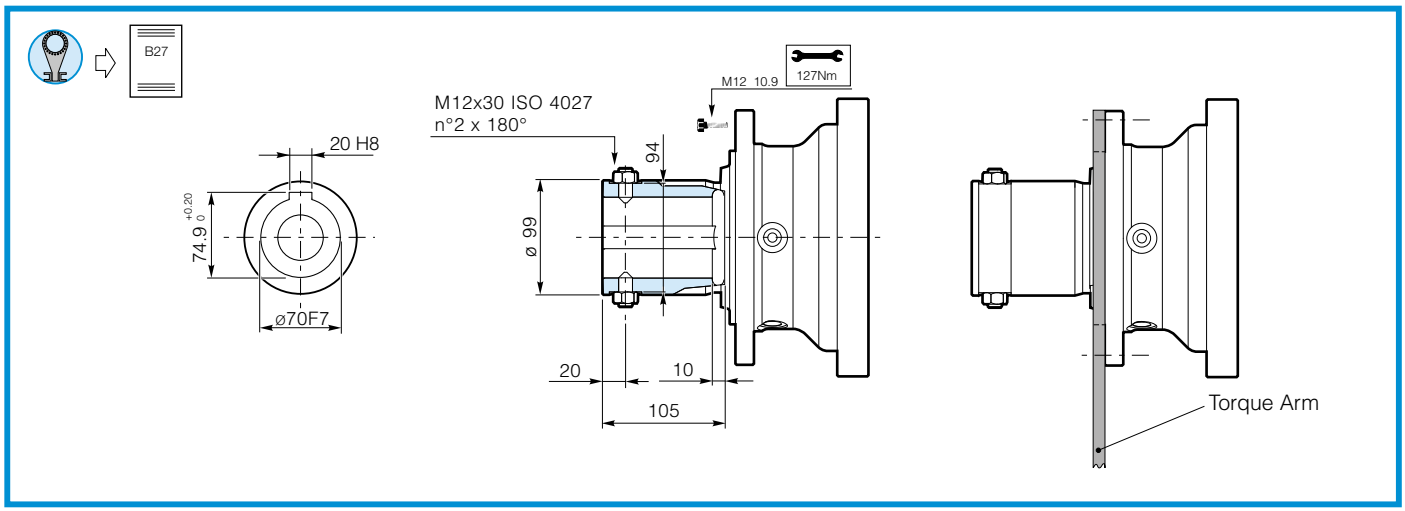
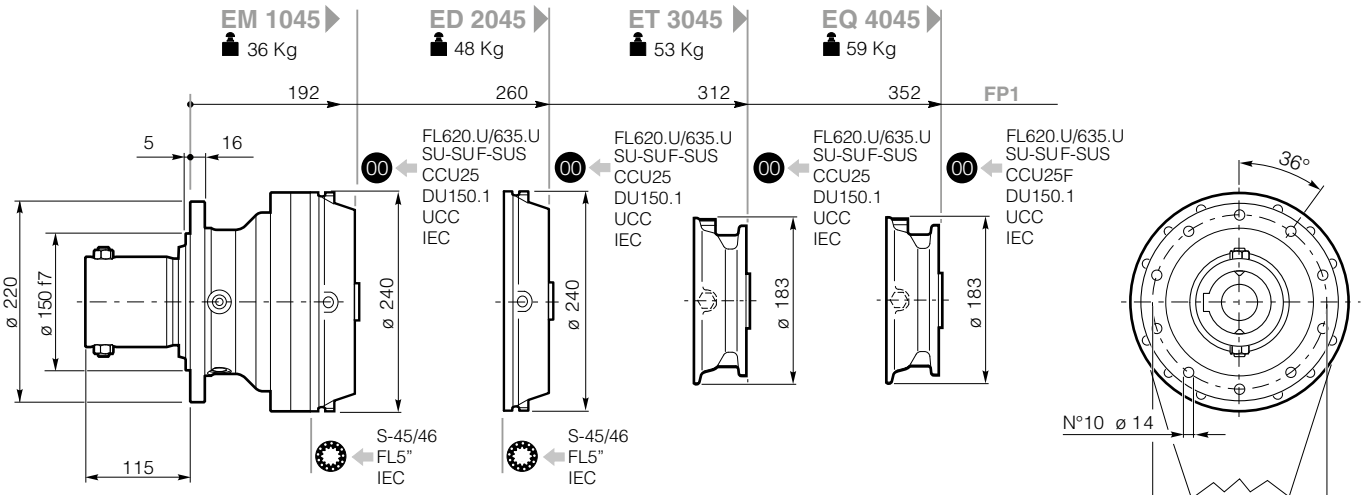
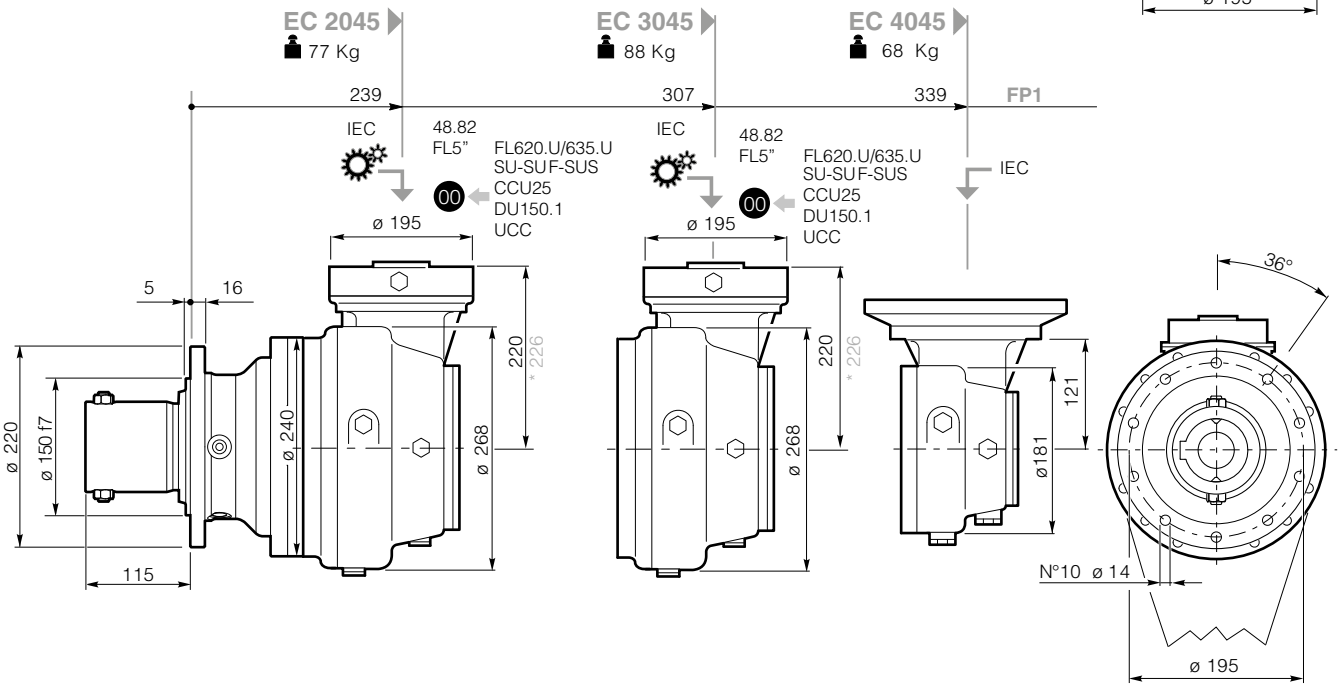
Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT







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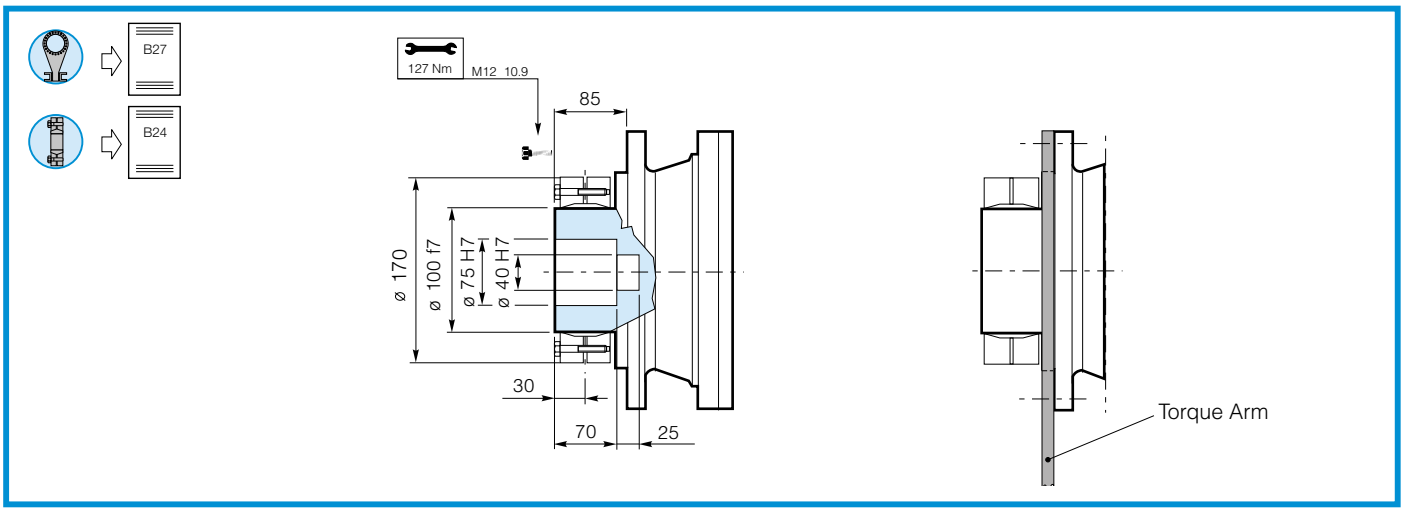

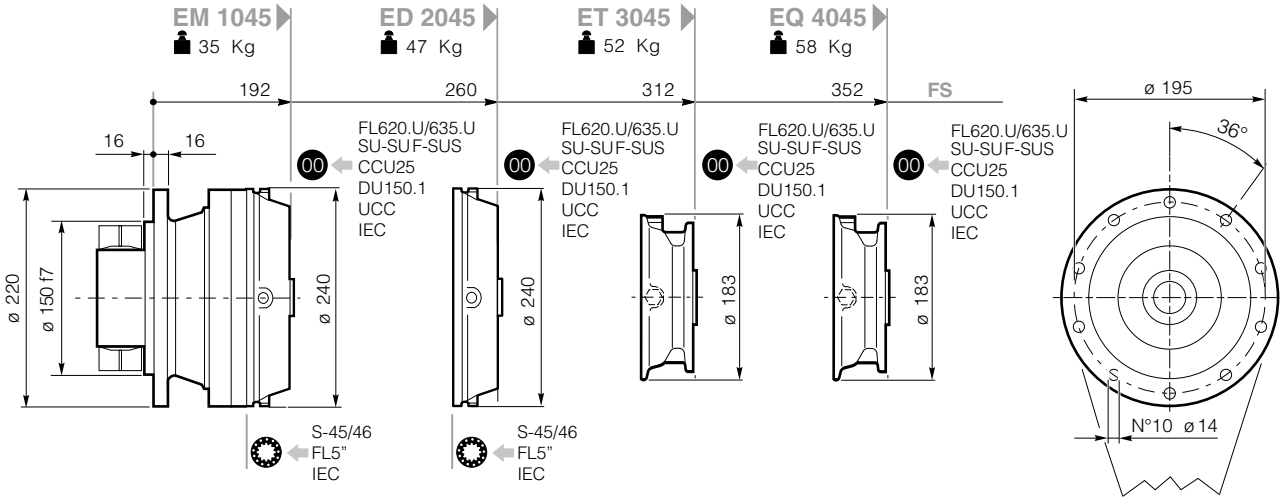

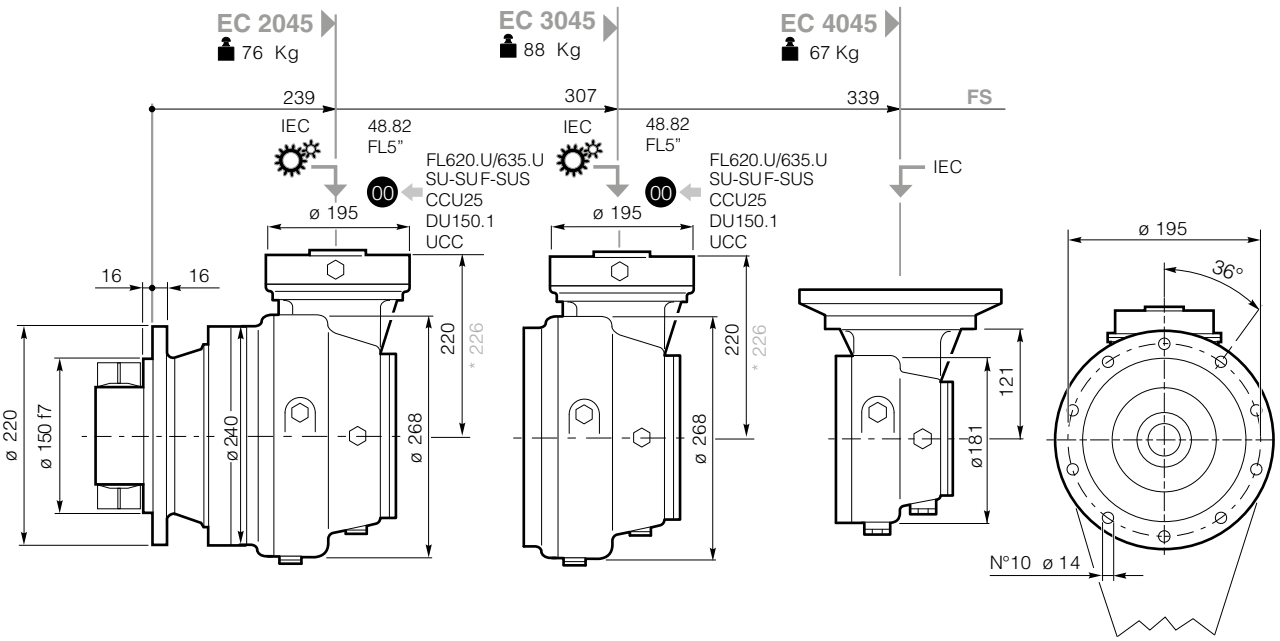

00 B13 S-45/46 48.82 045 11 | SU-SUF SUS 045 12 | FL5" FL620 FL635 045 13 | IEC 045 16 | 045 15 | CCU25 B15 | DU150.1 UCC B16 | * bg 045 3

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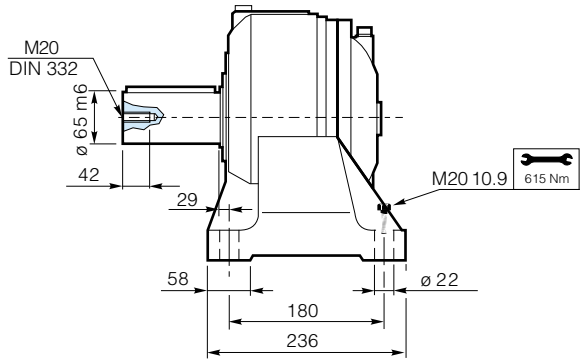
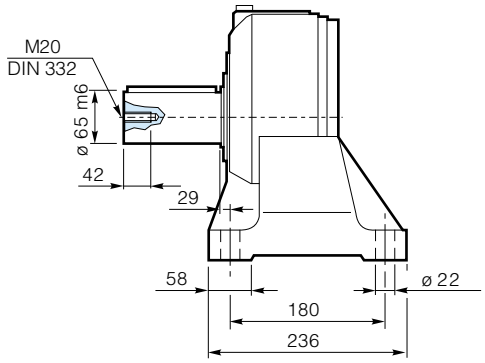
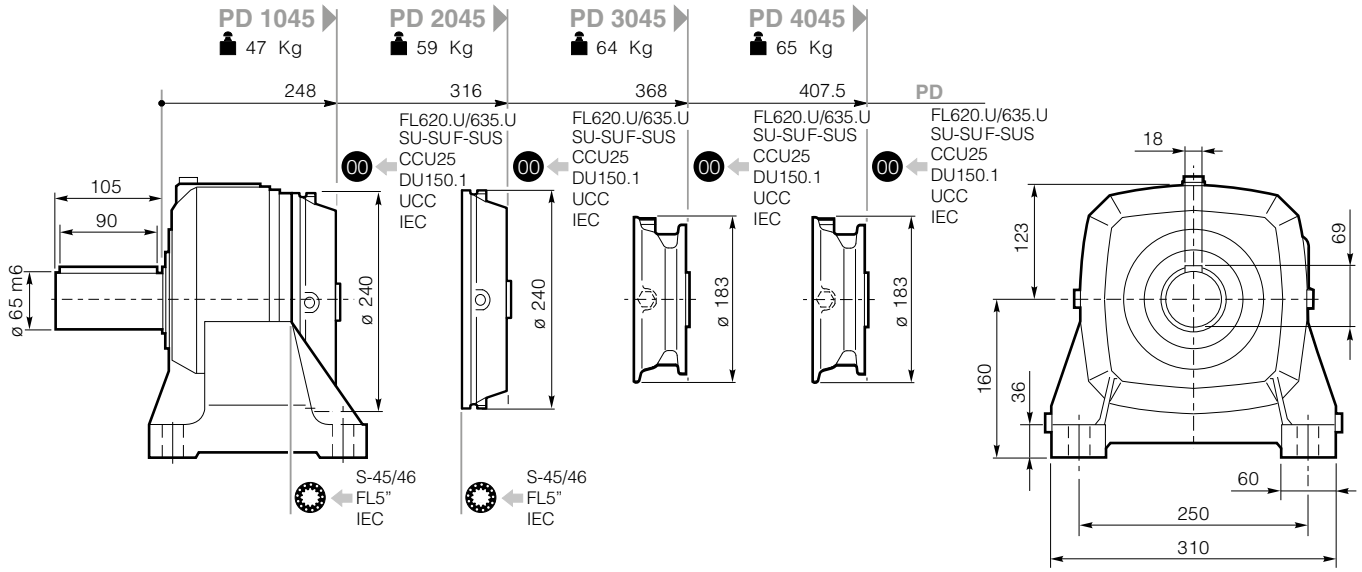
GEARBOX DIMENSIONS WITH OUTPUT

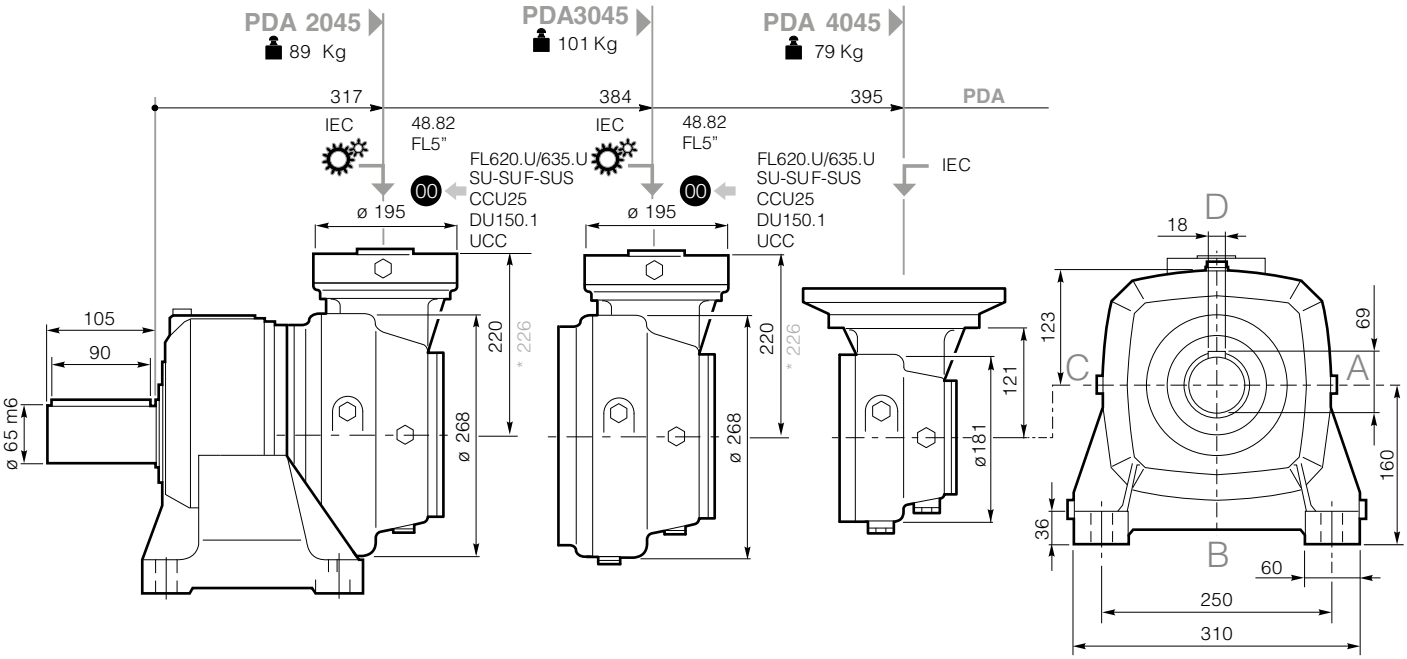
PD



PDA







00 B13 | S-45/46 48.82 045 11 | SU-SUF SUS 045 12 | FL5" FL620 FL635 045 13 | IEC 045 16 | 045 15 | CCU25 B15 | DU150.1 UCC B16 | * bg 045 3

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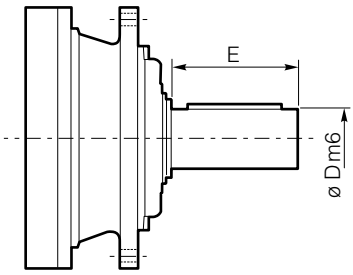
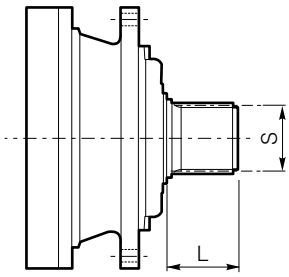
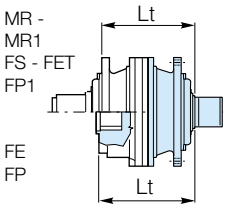
S-45CR1 - S-46C1 - S-45SR

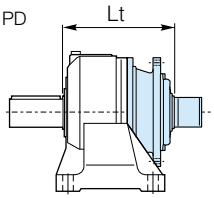


S45 CR1 - S46 C1



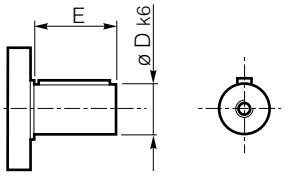
S45 SR

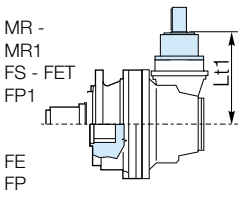


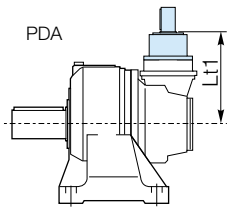


	D	E	L	S		Lt			
						MR-MR1-FS-FET-FP1	FE	FP	PD
S-45CR1	65	105	-	-	EM/PD 1045	255	210	185	311
					ED/PD 2045	322	278	252	378
S-46C1	65	105	-	-	EM/PD 1045	296	252	226	352
					ED/PD 2045	364	319	294	420
S-45SR	-	-	68	B58x53 DIN5480	EM/PD 1045	255	210	185	311
					ED/PD 2045	322	278	252	378

48.82

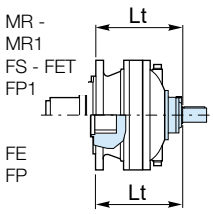


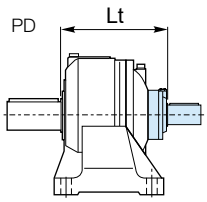


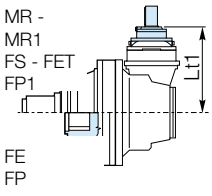


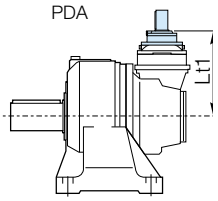
	D	E		Lt1
				MR - MR1 - FS - FE - FET - FP - FP1 - PDA
48.82	48	82	EC/PDA 2045	280
			EC/PDA 3045	280

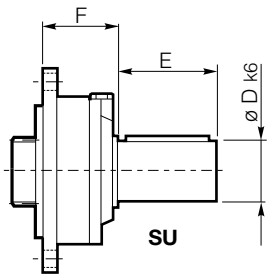
SU - SUF - SUS

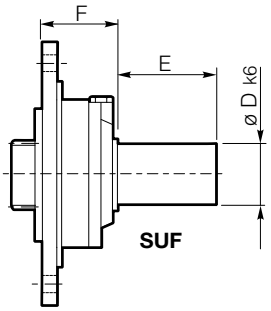


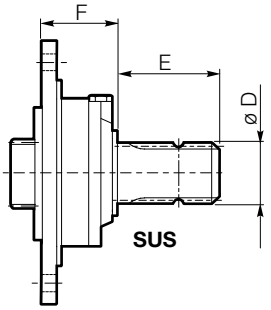












	D	E	F		Lt 00 MR-MR1-FS-FET-FP1	FE	FP	PD
SU1 28x50	28	50	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SU2 40x58	40	58	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SU3 48x82	48	82	60	EM/PD1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SU 42x80	42	80	101.5	EM/PD 1045	294	249	224	350
				ED/PD 2045	361	317	291	417
				ET/PD 3045	414	369	344	470
				EQ/PD 4045	453	409	383	509
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	EM/PD 1045	294	249	224	350
				ED/PD 2045	361	317	291	417
				ET/PD 3045	414	369	344	470
				EQ/PD 4045	453	409	383	509
SU2 1.5x3.25	38.10	82.55	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SUF1 28x50	28	50	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SUF2 40x58	40	58	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468
SUF3 48x82	48	82	60	EM/PD 1045	252	208	182	308
				ED/PD 2045	320	275	250	376
				ET/PD 3045	372	328	302	428
				EQ/PD 4045	412	367	342	468

	D	E	F		Lt1 00 MR-MR1-FS-FET-FP1-FE-FP-PDA
SU1 28x50	28	50	60	EC/PDA 2045 EC/PDA 3045	280
SU2 40x58	40	58	60		
SU3 48x82	48	82	60	EC/PDA 2045* EC/PDA 3045*	286
SU 42x80	42	80	101.5	EC/PDA 2045 EC/PDA 3045	322
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	EC/PDA 2045* EC/PDA 3045*	328
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2045 EC/PDA 3045	280
SUF1 28x50	28	50	60		
SUF2 40x58	40	58	60	EC/PDA 2045* EC/PDA 3045*	286
SUF3 48x82	48	82	60		

* bg 045 3

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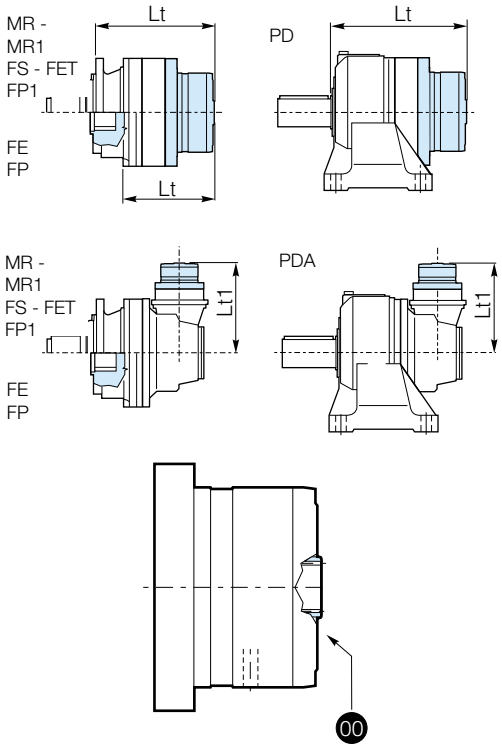
FL5” FL250 - FL350 - FL450 / FL750

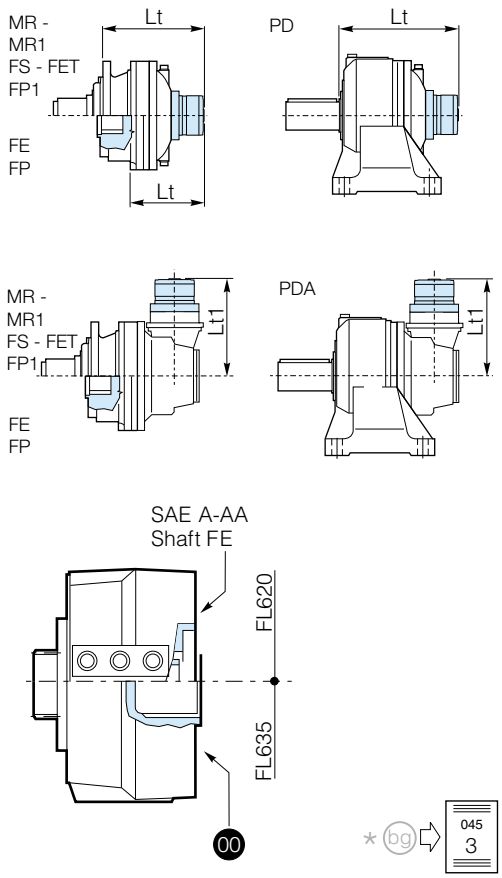


		Lt			
		MR-MR1-FS-FET-FP1	FE	FP	PD
FL250 FL350 FL450	EM/PD 1045	286	241	216	342
	ED/PD 2045	353	309	283	409
FL750	EM/PD 1045	299	255	229	355
	ED/PD 2045	367	322	297	423

		Lt1
		MR - MR1 - FS - FE - FET - FP - FP1 - PDA
FL250 FL350 FL450	EC/PDA 2045	280
	EC/PDA 2045*	377
	EC/PDA 3045	280
	EC/PDA 3045*	377

* bg 045 3

FL620.10 - FL635.10 / FL620.U - FL635.U



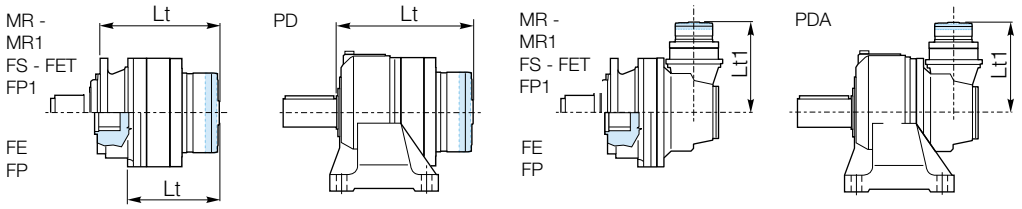
		Lt			
		MR-MR1-FS-FET-FP1	FE	FP	PD
FL620.U	EM/PD 1045	297	252	227	353
	ED/PD 2045	364	320	294	420
	ET/PD 3045	417	372	347	473
	EQ/PD 4045	456	412	386	512
FL635.U	EM/PD 1045	283	239	213	339
	ED/PD 2045	351	306	281	407
	ET/PD 3045	403	359	333	459
	EQ/PD 4045	443	398	373	499

		Lt			
		MR-MR1-FS-FET-FP1	FE	FP	PD
FL620.10	ET/PD 3045	376	331	306	432
	EQ/PD 4045	415	371	345	471
FL635.10	ET/PD 3045	358	313	288	414
	EQ/PD 4045	397	353	327	453

		Lt1
		MR - MR1 - FS - FE - FET - FP - FP1 - PDA
FL620.U	EC/PDA 2045	325
	EC/PDA 2045*	331
	EC/PDA 3045	325
	EC/PDA 3045*	331
FL635.U	EC/PDA 2045	311
	EC/PDA 2045*	317
	EC/PDA 3045	311
	EC/PDA 3045*	317

* bg 045 3

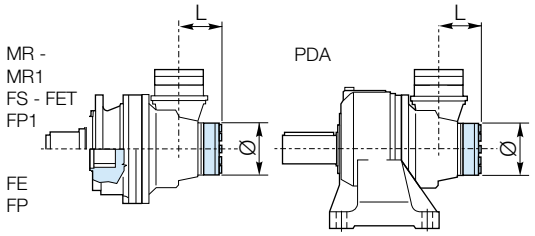
RL



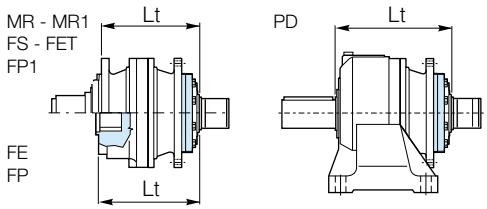
				Lt			
				MR-MR1-FS-FET-FP1	FE	FP	PD
RL	+	FL250 FL350 FL450	EM/PD 1045	312	267	242	368
			ED/PD 2045	379	335	309	435
		FL750	EM/PD 1045	325	281	255	381
			ED/PD 2045	393	348	323	449

				Lt1
				MR - MR1 - FS - FE - FET - FP - FP1 - PDA
RL	+	FL250 FL350 FL450	EC/PDA 2045	306
			EC/PDA 2045*	403
			EC/PDA 3045	306
			EC/PDA 3045*	403

* bg 045 3



				L	Ø
RL	+	CC40	EC/PDA 2045	135.2	150
			EC/PDA 3045	135.2	150



				Lt			
				MR-MR1-FS-FE-FET-FP-FP1	FE	FP	PD
RL	+	S46C1	EM/PD 1045	316	272	246	372
			ED/PD 2045	384	339	314	440

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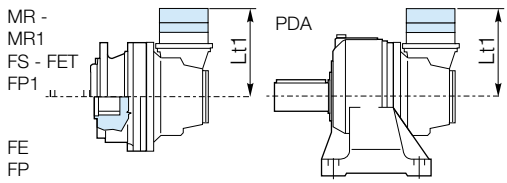
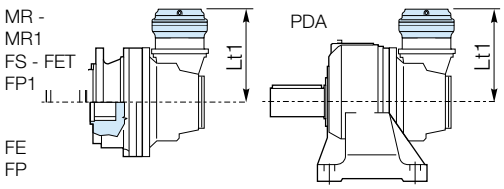
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

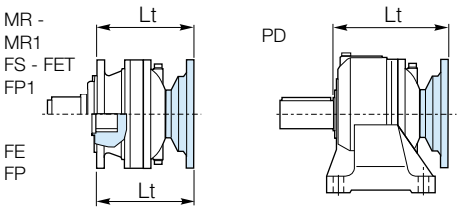


ED2010 - ED2020 ED2021

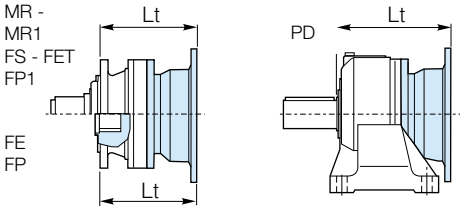
		Lt1		
		EC2045 PDA2045	EC2045* PDA2045*	**EC3045 PDA3045**
	EM1010	327	333	327
	EM1020	345	351	345
	ED2010	366	372	366
	ED2020	398	404	398
	ED2021	413	419	413

* bg 045 3

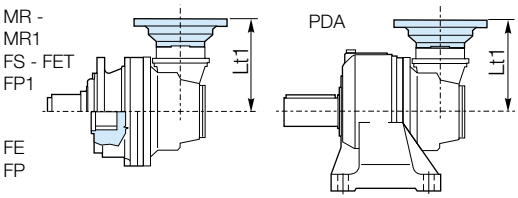
IEC Motor



		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EM 1045	MR-MR1-FS-FET-FP1	212	214	219	220	287	318	329	359
	FE	168	170	175	176	243	274	285	315
	FP	142	144	149	150	217	248	259	289
ED 2045	MR-MR1-FS-FET-FP1	280	282	287	288	355	386	397	427
	FE	235	237	242	243	310	341	352	382
	FP	210	212	217	218	285	316	327	357
ET 3045	MR-MR1-FS-FET-FP1	332	334	339	340	407	438	449	479
	FE	288	290	295	296	363	394	405	435
	FP	262	294	269	270	337	368	379	409
EQ 4045	MR-MR1-FS-FET-FP1	372	374	379	380	447	478	489	519
	FE	327	329	334	335	402	433	444	474
	FP	302	304	309	310	377	408	419	449
PD 1045	PD	268	270	275	276	343	374	385	415
PD 2045		336	338	343	344	411	442	453	483
PD 3045		388	390	395	396	463	494	505	535
PD 4045		428	430	435	436	503	534	545	575



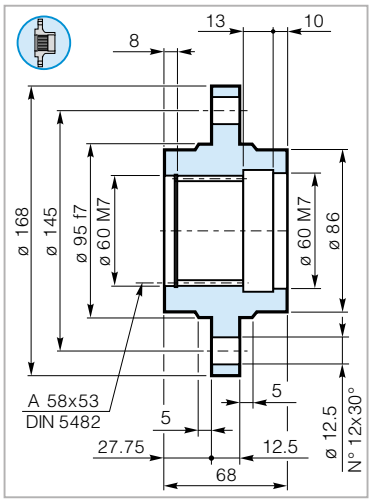
		Lt		
		IEC		
		160 180	200	225
EM 1045	MR-MR1-FS-FET-FP1	318	328	-
	FE	274	284	-
	FP	248	258	-
ED 2045	MR-MR1-FS-FET-FP1	386	396	-
	FE	341	351	-
	FP	316	326	-
PD 1045	PD	374	384	414
PD 2045		442	452	-



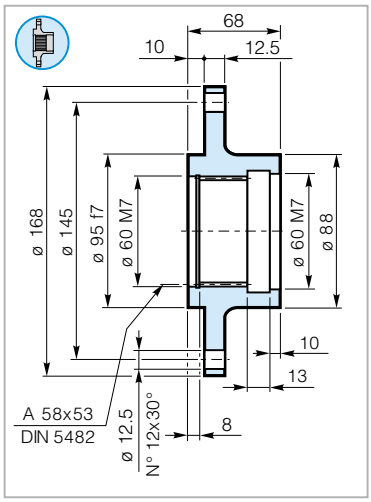
		Lt1							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 2045	MR - MR1 - FS - FE FET - FP - FP1 - PDA	240	242	247	248	315	346	357	387
EC/PDA 2045*		246	248	253	254	321	352	363	393
EC/PDA 3045		240	242	247	248	315	346	357	387
EC/PDA 3045*		246	248	253	254	321	352	363	393
EC/PDA 4045		151	151	151	151	238	-	-	-

* bg 045 3

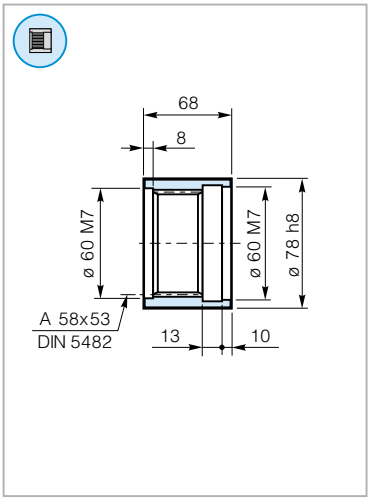
FA 045 Wheel Flange



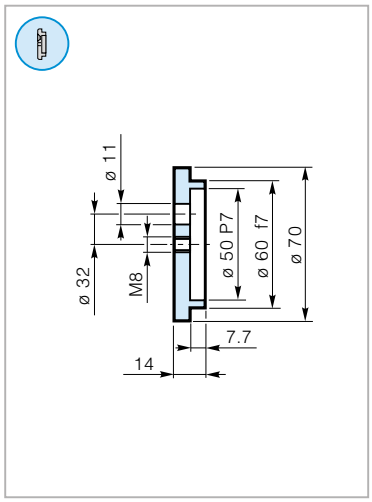
FR 045 Wheel Flange



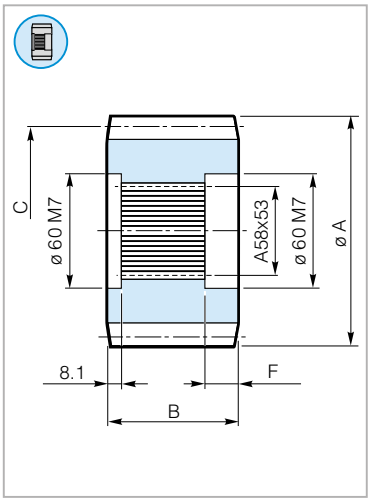
MS 045 Splined Sleeve



RDF 045 Lock Washer

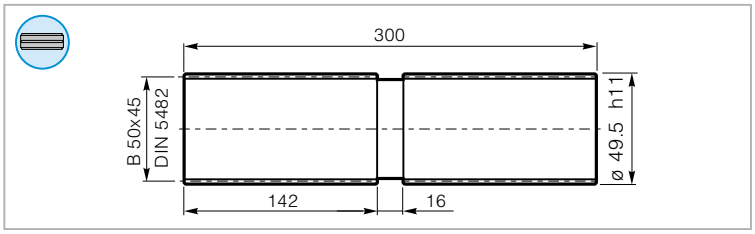


Pinions



A	B	C			F
		m	z	x	
115	68	8	12	0,4	23,5
99,6	68	6	14	0,5	23,5
128	68	8	13	0,7	23,5
141	68	8	15	0,5	23,5
131	75	8	14	0,5	23,5
132	65	6	20	0	23,5
118	76	8	12	0,5	23,5
121	82	8	12	0,6	23,5

BS 045 Splined Bar



Code: 39126930100
Mat: High mechanical resistance alloyed steel

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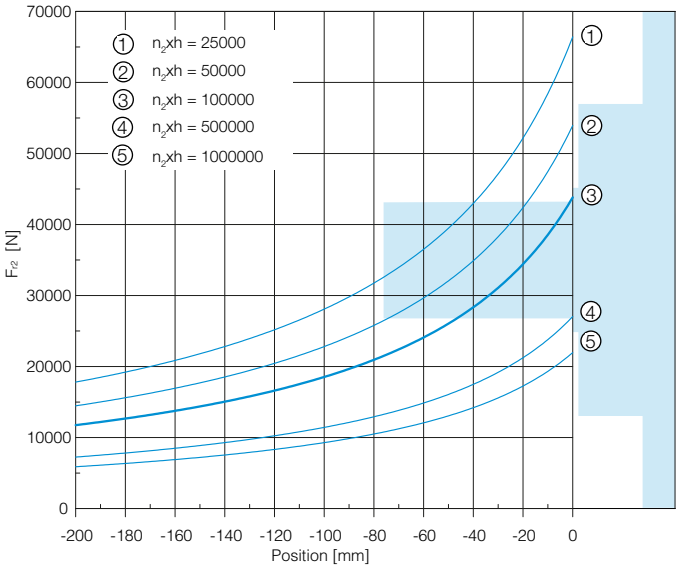
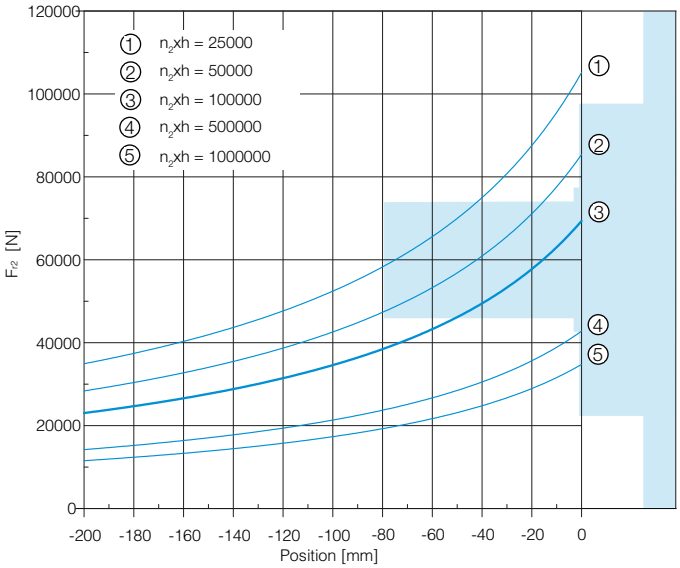
Output Radial Loads

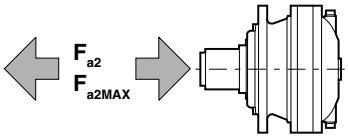
MR - MR1



PD

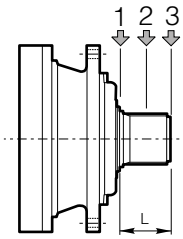


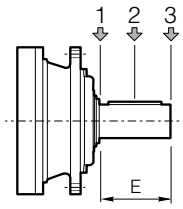
Output Axial Loads



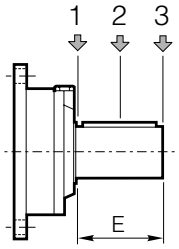
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	–	35000	25000
F_{a2MAX}	[N]	–	60000	25000

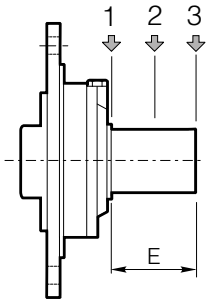
Input Radial Loads

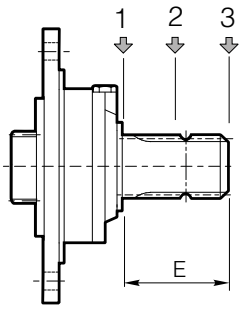




			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000

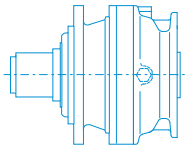




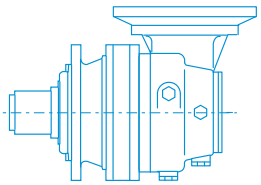


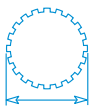
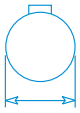
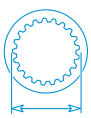
		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

Pagina intenzionalmente lasciata vuota



046



i_{eff}	3.50 - 3301
T_{2N} (Nm)	3800
	B58X53 DIN5482
	65 mm
	-
	69.4 mm

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10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EM 1046 / PD 1046												
3.50	429	1565	70	286	1767	53	143	2175	32.6	3000	5600	20
4.13	363	1617	62	242	1827	46.3	121	2249	28.5			
5.17	290	1682	51	193	1900	38.5	97	2339	23.7		6000	
6.00	250	1732	45.4	167	1956	34.1	83	2173	19.0			
7.25	207	1582	34.3	138	1695	24.5	69	1868	13.5			
ED 2046 / PD 2046												
59.06	139	2193	32.0	93	2476	24.1	46.4	3049	14.8	3000	6000	15
61.28	122	2278	29.2	82	2573	22.0	40.8	3168	13.5			
70.98	104	2394	26.0	69	2704	19.6	34.6	3329	12.1			
83.76	88	2475	22.8	59	2795	17.2	29.3	3393	10.4			
89.03	83	2561	22.2	55	2893	16.7	27.6	3562	10.3			
96.88	71	2678	20.0	47.6	3025	15.1	23.8	3724	9.3			
108.8	59	2835	17.6	39.4	3202	13.2	19.7	3553	7.3			
124.2	50	2931	15.4	33.4	3310	11.6	16.7	3583	6.3			
146.6	48.4	2582	13.1	32.2	2698	9.1	16.1	2893	4.9			
157.5	41.7	2358	10.3	27.8	2463	7.2	13.9	2640	3.8			
186.1	34.5	2407	8.7	23.0	2511	6.0	11.5	2689	3.2			
198.9	28.5	2070	6.2	19.0	2161	4.3	9.5	2319	2.3			
ET 3046 / PD 3046												
53.78	27.9	3552	10.4	18.6	3961	7.7	9.3	4314	4.2	3000	6000	10
63.46	23.6	3732	9.2	15.8	4022	6.6	7.9	4469	3.7			
73.50	20.4	3901	8.3	13.6	4077	5.8	6.8	4609	3.3			
79.44	18.9	3955	7.8	12.6	4106	5.4	6.3	4684	3.1			
92.19	16.3	4010	6.8	10.8	4174	4.7	5.4	4831	2.7			
100.3	15.0	4042	6.3	10.0	4250	4.4	5.0	4915	2.6			
108.6	13.8	4071	5.9	9.2	4323	4.2	4.6	4996	2.4			
125.6	11.9	4125	5.2	8.0	4459	3.7	4.0	5146	2.1			
145.7	10.3	4221	4.6	6.9	4601	3.3	3.4	5088	1.8			
152.3	9.9	3846	4.0	6.6	4014	2.8	3.3	4302	1.5			
176.1	8.5	3907	3.5	5.7	4074	2.4	2.8	4363	1.3			
207.8	7.2	3970	3.0	4.8	4326	2.2	2.4	4941	1.2			
224.2	6.7	4035	2.8	4.5	4395	2.1	2.2	4798	1.1			
260.2	5.8	4165	2.5	3.8	4532	1.8	1.9	4970	1.0			
280.7	5.3	3302	1.8	3.6	3605	1.3	1.8	4167	0.78			
314.4	4.8	4334	2.2	3.2	4711	1.6	1.6	5022	0.84			
364.8	4.1	2542	1.1	2.7	2788	0.80	1.4	3244	0.47			
EQ 4046 / PD4046												
404.7	3.7	5051	2.0	2.5	5245	1.4	1.2	5615	0.73	3000	6000	6
441.0	3.4	5312	1.9	2.3	5418	1.3	1.1	5684	0.68			
510.1	2.9	5382	1.7	2.0	5439	1.1	0.98	5803	0.60			
551.3	2.7	5393	1.5	1.8	5449	1.0	0.91	5867	0.56			
639.8	2.3	5270	1.3	1.6	5470	0.90	0.78	5992	0.49			
696.2	2.2	5425	1.2	1.4	5495	0.83	0.72	6000	0.45			
773.1	1.9	4524	0.92	1.3	4698	0.64	0.65	5463	0.37			
913.5	1.6	4595	0.79	1.1	4866	0.56	0.55	5662	0.33			
1011	1.5	5477	0.85	0.99	5796	0.60	0.49	6000	0.31			
1140	1.3	5565	0.77	0.88	5895	0.54	0.44	6000	0.28			
1222	1.2	4743	0.61	0.82	5190	0.45	0.41	6021	0.26			
1442	1.0	5337	0.58	0.69	5652	0.41	0.35	6226	0.23			
1599	0.94	5036	0.50	0.63	5502	0.36	0.31	6366	0.21			
1849	0.81	5200	0.44	0.54	5676	0.32	0.27	6559	0.19			
1995	0.75	4415	0.35	0.50	4530	0.24	0.25	4730	0.12			
2315	0.65	5124	0.35	0.43	5257	0.24	0.22	5489	0.12			
2623	0.57	4633	0.28	0.38	5013	0.20	0.19	5720	0.11			
2798	0.54	5687	0.32	0.36	6000	0.23	0.18	6000	0.11			
3301	0.45	5997	0.29	0.30	6000	0.19	0.15	6000	0.09			

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10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EC 2046 / PDA 2046												
10.50	143	2175	32.6	95	2457	24.5	47.6	3025	15.1	3000	6000	10
12.39	121	2249	28.5	81	2540	21.5	40.4	3127	13.2			
16.17	93	1582	15.4	62	1787	11.6	30.9	2200	7.1			
18.00	83	2173	19.0	56	2283	13.3	27.8	2463	7.2			
19.08	79	1867	15.4	52	2109	11.6	26.2	2596	7.1			
21.75	69	1868	13.5	46.0	1962	9.4	23.0	2119	5.1			
23.89	63	2337	15.4	41.9	2624	11.5	20.9	2820	6.2			
27.72	54	2290	13.0	36.1	2396	9.1	18.0	2573	4.9			
33.50	44.8	1968	9.2	29.9	2060	6.4	14.9	2216	3.5			
EC 3046 / PDA 3046												
36.75	40.8	3168	13.5	27.2	3578	10.2	13.6	4077	5.8	3000	6000	7
43.37	34.6	3329	12.1	23.1	3760	9.1	11.5	4138	5.0			
49.80	30.1	3471	10.9	20.1	3920	8.2	10.0	4244	4.5			
56.60	26.5	3606	10.0	17.7	3980	7.4	8.8	4362	4.0			
63.00	23.8	3724	9.3	15.9	4020	6.7	7.9	4462	3.7			
73.57	20.4	2827	6.0	13.6	2941	4.2	6.8	3139	2.2			
83.60	17.9	3974	7.5	12.0	4125	5.2	6.0	4734	3.0			
89.83	16.7	3583	6.3	11.1	3719	4.3	5.6	4196	2.4			
97.02	15.5	4029	6.5	10.3	4220	4.6	5.2	4882	2.6			
114.5	13.1	3664	5.0	8.7	3810	3.5	4.4	4414	2.0			
123.5	12.1	2973	3.8	8.1	3088	2.6	4.0	3508	1.5			
138.3	10.8	3728	4.2	7.2	3969	3.0	3.6	4590	1.7			
166.3	9.0	2752	2.6	6.0	2858	1.8	3.0	3296	1.0			
173.2	8.7	3069	2.8	5.8	3246	2.0	2.9	3770	1.1			
201.0	7.5	2801	2.2	5.0	2951	1.5	2.5	3432	0.89			
242.8	6.2	2419	1.6	4.1	2541	1.1	2.1	2970	0.64			
EC 4046 / PDA 4046												
276.6	5.4	4831	2.7	3.6	5063	1.9	1.8	5396	1.0	3000	6000	3
310.3	4.8	4946	2.5	3.2	5369	1.8	1.6	5466	0.92			
347.1	4.3	4978	2.3	2.9	5171	1.6	1.4	5493	0.83			
414.7	3.6	5246	2.0	2.4	5410	1.4	1.2	5635	0.71			
450.8	3.3	5103	1.8	2.2	5297	1.2	1.1	5702	0.66			
498.3	3.0	5379	1.7	2.0	5435	1.1	1.0	5784	0.61			
570.0	2.6	4066	1.1	1.8	4179	0.77	0.88	4372	0.40			
625.0	2.4	5259	1.3	1.6	5456	0.91	0.80	5972	0.50			
712.7	2.1	5322	1.2	1.4	5514	0.81	0.70	6000	0.44			
799.3	1.9	4538	0.89	1.3	4722	0.62	0.63	5502	0.36			
929.1	1.6	4202	0.71	1.1	4315	0.49	0.54	4509	0.25			
988.1	1.5	5474	0.87	1.0	5777	0.61	0.51	6000	0.32			
1078	1.4	4877	0.71	0.93	5008	0.49	0.46	5233	0.25			
1194	1.3	4718	0.62	0.84	5164	0.45	0.42	5991	0.26			
1409	1.1	5319	0.59	0.71	5633	0.42	0.35	6000	0.22			
1593	0.94	4738	0.47	0.63	5130	0.34	0.31	5859	0.19			
1806	0.83	5174	0.45	0.55	5648	0.33	0.28	6000	0.18			
1925	0.78	4918	0.40	0.52	5322	0.29	0.26	6000	0.16			
2208	0.68	5052	0.36	0.45	5465	0.26	0.23	6000	0.14			
2563	0.59	4611	0.28	0.39	4990	0.20	0.20	5695	0.12			
2668	0.56	5242	0.31	0.37	5666	0.22	0.19	6000	0.12			
3097	0.48	4785	0.24	0.32	5176	0.18	0.16	5900	0.10			

* (bg) All highlighted ratio (is. 10.50) have particular dimensions of bevel gears in some versions. See dimensional tables.

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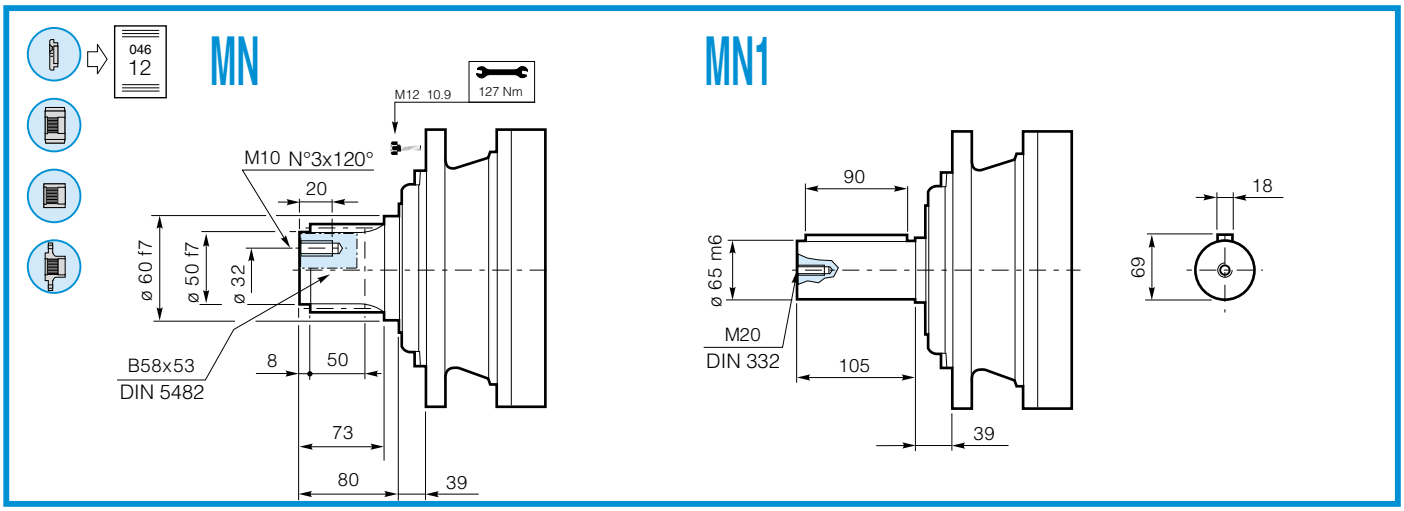
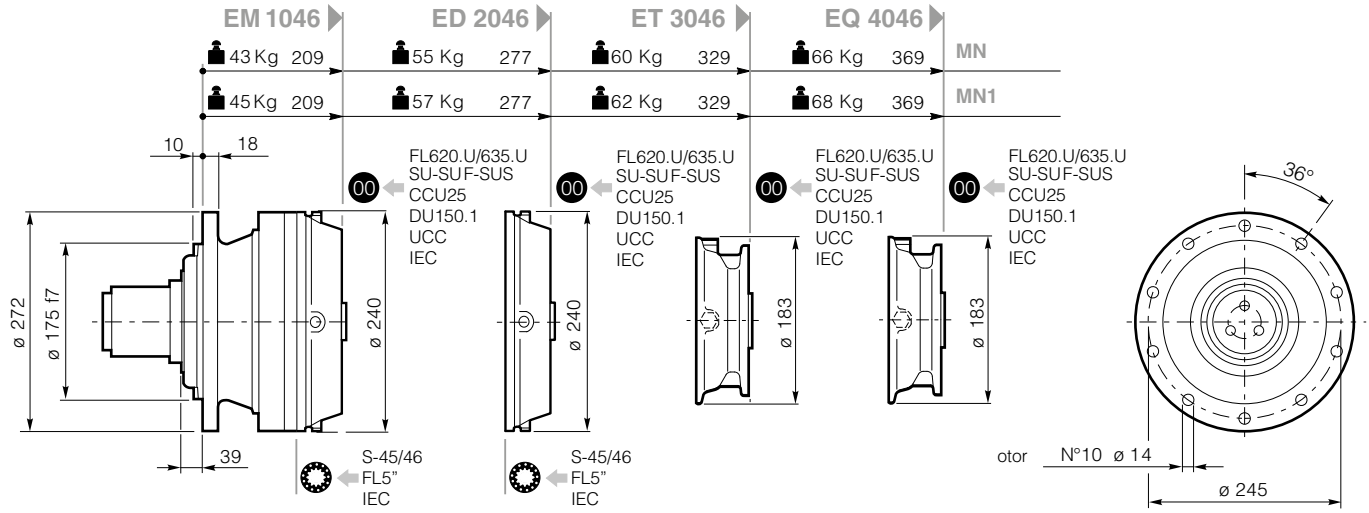
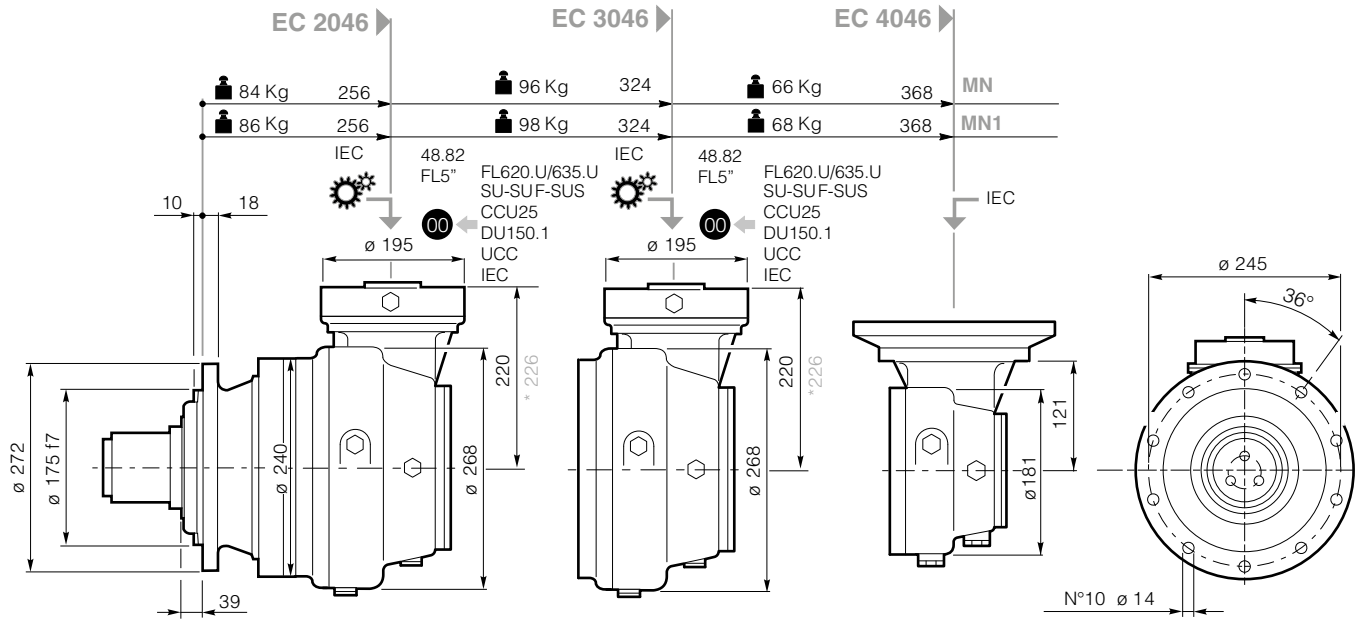
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 046 6 | SU-SUF SUS → 046 7 | FL5" FL620 FL635 → 046 8 | IEC → 046 10 | → 046 10 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 045 3

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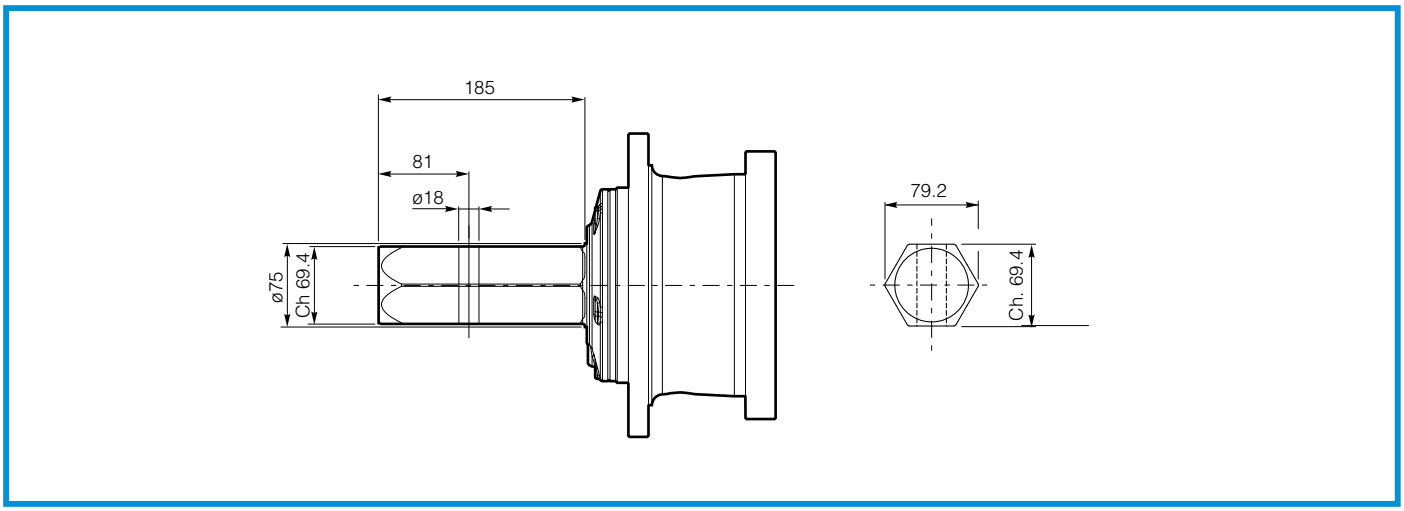

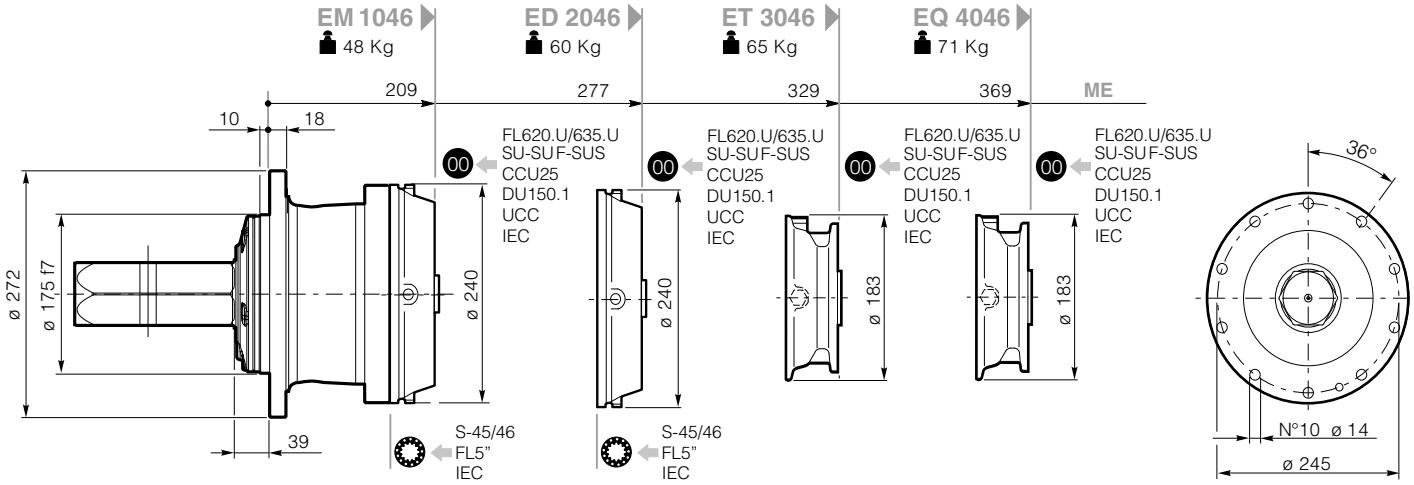

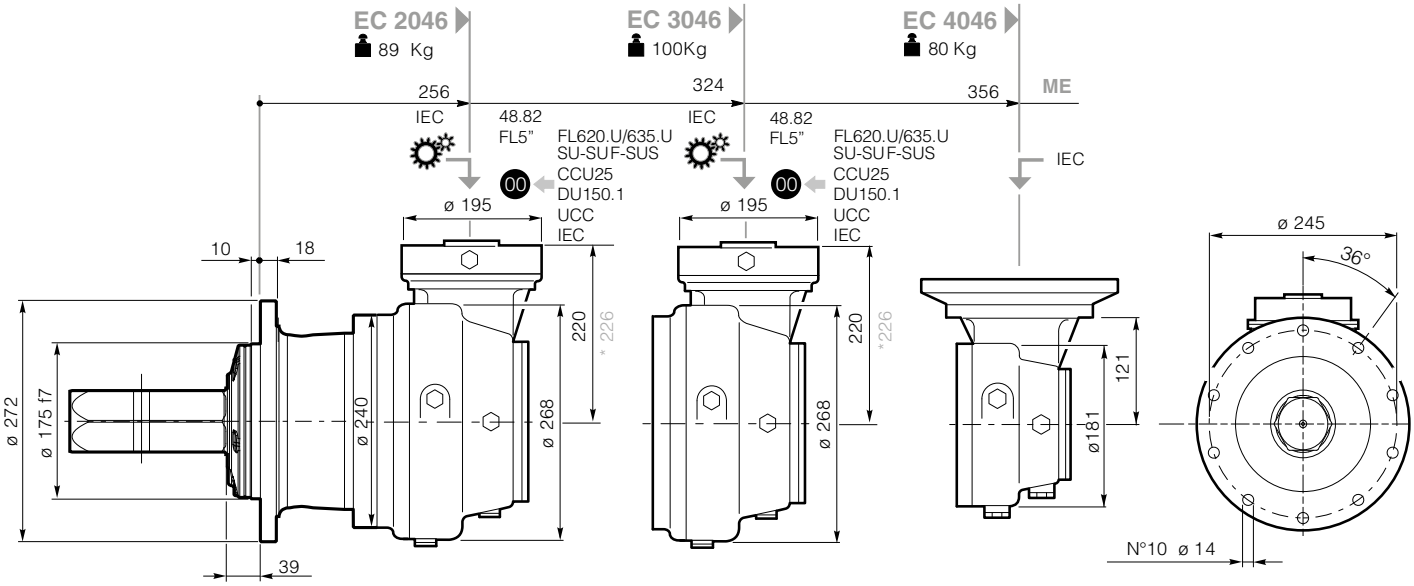

00 B13 S-45/46 48.82 → 046 6 SU-SUF SUS → 046 7 FL5" FL620 FL635 → 046 8 IEC → 046 10 → 046 10 CCU25 → B15 DU150.1 UCC → B16 * bg → 045 3

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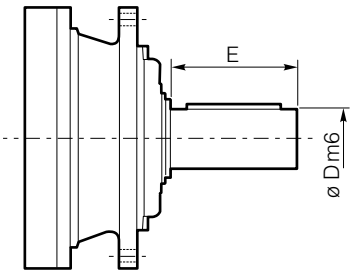
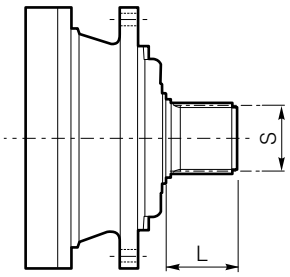
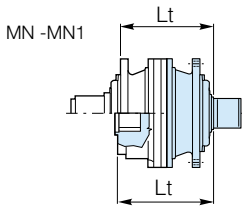
S-45CR1 - S-46C1 - S-45SR



S-45CR1 - S-46C1

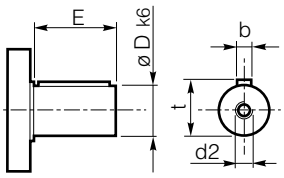


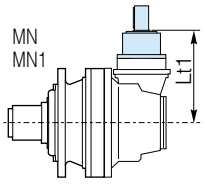
S-45SR



	D m6	E	L	S		Lt MN - MN1 - ME
S-45CR1	65	105	-	-	EM 1046	272
					ED 2046	339
S-46C1	65	105	-	-	EM 1046	313
					ED 2046	381
S-45SR	-	-	68	B58x53 DIN5480	EM 1046	272
					ED 2046	339

48.82





	D	E		Lt1 MN - MN1 - ME
48.82	48	82	EC 2046	280
			EC 3046	280

For the input configuration S46C1, 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

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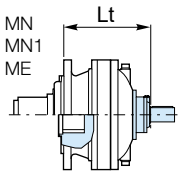
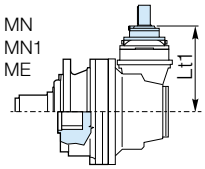
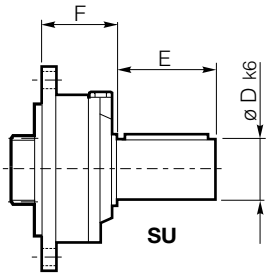
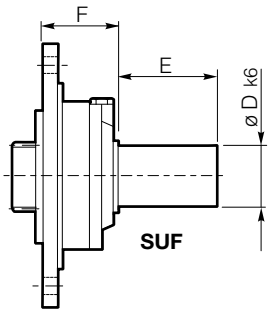
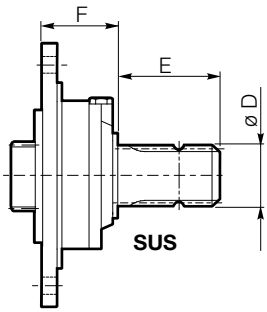
SU - SUF - SUS











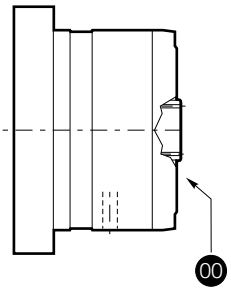
	D	E	F		Lt 00 MN - MN1 -ME
SU1 28x50	28	50	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SU2 40x58	40	58	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SU3 48x82	48	82	60	EM1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SU 42x80	42	80	101.5	EM 1046	311
				ED 2046	378
				ET 3046	431
				EQ 4046	470
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EM 1046	311
				ED 2046	378
				ET 3046	431
				EQ 4046	470
SU2 1.5x3.25	38.10	82.55	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SUF1 28x50	28	50	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SUF2 40x58	40	58	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429
SUF3 48x82	48	82	60	EM 1046	269
				ED 2046	337
				ET 3046	389
				EQ 4046	429

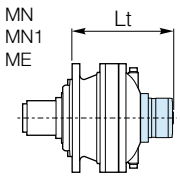
	D	E	F		Lt1 00 MN-MN1-ME
SU1 28x50	28	50	60	EC 2046 EC 3046	280
SU2 40x58	40	58	60		
SU3 48x82	48	82	60	EC 2046* EC 3046*	286
SU 42x80	42	80	101.5	EC 2046 EC 3046	322
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC 2046* EC 3046*	328
SU2 1.5x3.25	38.10	82.55	60	EC 2046 EC 3046	280
SUF1 28x50	28	50	60		
SUF2 40x58	40	58	60	EC 2046* EC 3046*	286
SUF3 48x82	48	82	60		

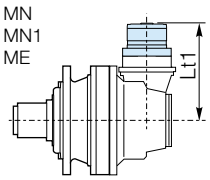
* bg 045 3

046

FL5” FL250 - FL350 - FL450 / FL750





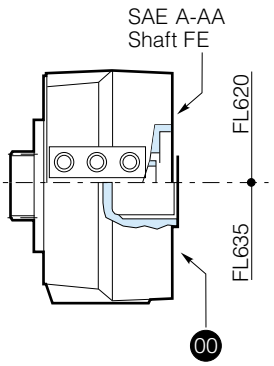


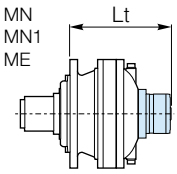
		Lt MN - MN1 - ME
FL250 FL350 FL450	EM 1046	303
	ED 2046	370
FL650 FL750	EM 1046	316
	ED 2046	384

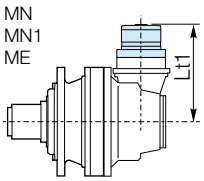
		Lt1 MN - MN1 - ME
FL250 FL350 FL450	EC 2046	280
	EC 2046*	377
	EC 3046	280
	EC 3046*	377

* bg 046 3

FL620.10 - FL635.10 / FL620.U - FL635.U







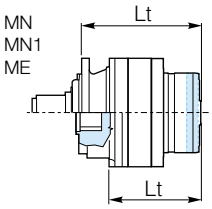
		Lt 00 MN - MN1 - ME
FL620.U	EM 1046	314
	ED 2046	381
	ET 3046	434
	EQ 4046	473
FL635.U	EM 1046	300
	ED 2046	368
	ET 3046	420
	EQ 4046	460

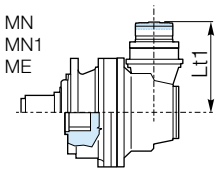
		Lt MN - MN1 - ME
FL620.10	ED 2046	393
	ET 3046	432
FL635.10	ED 2046	375
	ET 3046	414

		Lt1 00 MN - MN1 - ME
FL620.U	EC 2046	325
	EC 2046*	331
	EC 3046	325
	EC 3046*	331
FL635.U	EC 2046	311
	EC 2046*	317
	EC 3046	311
	EC 3046*	317

* bg 046 3

RL

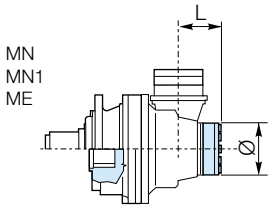




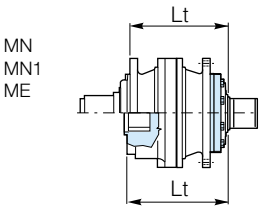
				Lt
				MN - MN1 - ME
RL	+	FL250 FL350 FL450	EM 1046	329
			ED 2046	396
		FL750	EM 1046	342
			ED 2046	410

				Lt1
				MN - MN1 - ME
RL	+	FL250 FL350 FL450	EC 2046	306
			EC 2046*	403
			EC 3046	306
			EC 3046*	403

* bg 045 3



				L	Ø
RL	+	CC40	EC2046	135.2	150
			EC3046	135.2	150



				Lt
				MN - MN1 - ME
RL	+	S46C1	EM 1046	333
			ED 2046	401

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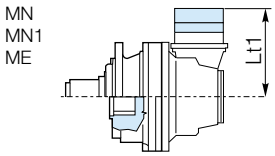
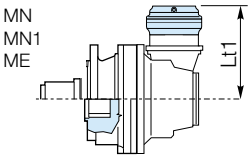
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

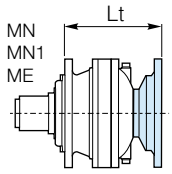


ED2010 - ED2020 ED2022

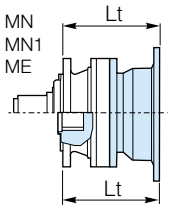
		Lt1			
		EC2046 PDA2046	EC2046* PDA2046*	**EC3046 PDA3046**	EC3046* PDA3046*
	EM1010	327	333	327	333
	EM1020	345	351	345	351
	ED2010	366	372	366	372
	ED2020	398	404	398	404
	ED2021	413	419	413	419

* bg 046 3

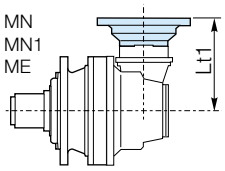
IEC Motor



		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EM 1046	MN-MN1-ME	229	231	236	237	304	335	346	376
ED 2046	MN-MN1-ME	297	299	304	305	372	403	414	444
ET 3046	MN-MN1-ME	349	351	356	357	424	455	466	496
EQ 4046	MN-MN1-ME	389	391	396	397	464	495	506	536

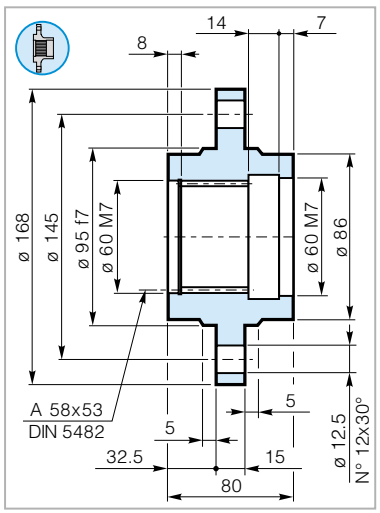


		Lt	
		IEC	
		160 180	200
EM 1046	MN-MN1-ME	335	345
ED 2046	MN-MN1-ME	403	413

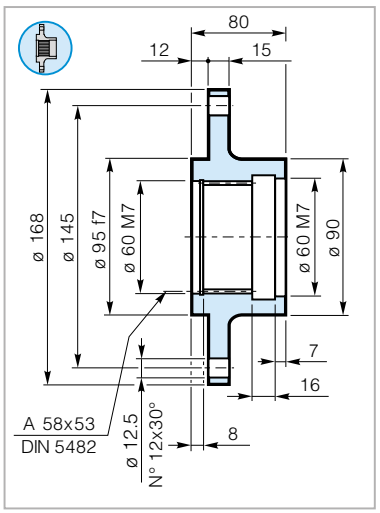


		Lt1 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC 2046	MN-MN1-ME	240	242	247	248	315	346	357	387
EC 2046*	MN-MN1-ME	246	248	253	254	321	352	363	393
EC 3046	MN-MN1-ME	240	242	247	248	315	346	357	387
EC 3046*	MN-MN1-ME	246	248	253	254	321	352	363	393
EC 4046	MN-MN1-ME	151	151	151	151	238	-	-	-

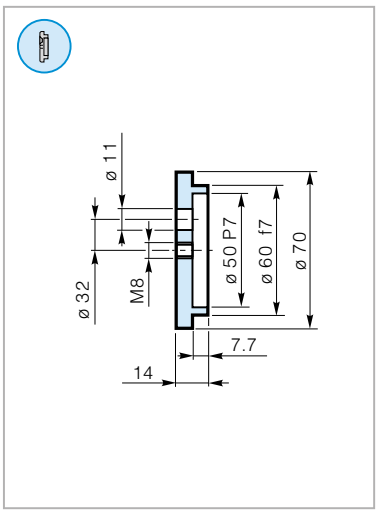
FA Wheel Flange



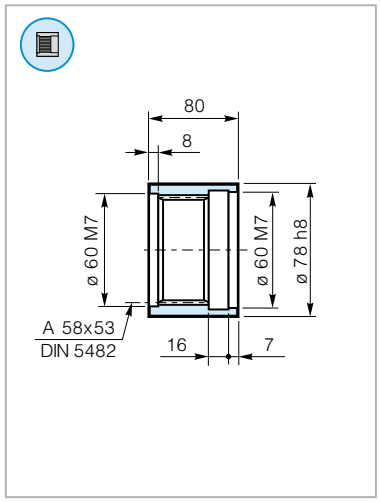
FR Wheel Flange



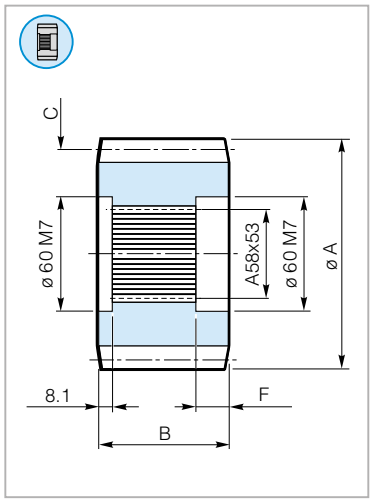
RDF Lock Washer



MS Splined Sleeve

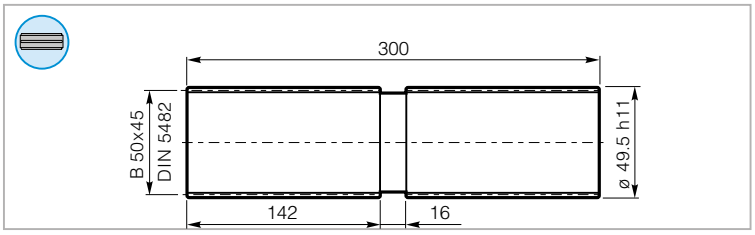


Pinions



A	B	C			F
		m	z	x	
99,6	80	6	14	0,5	23,5
115	80	8	12	0,4	23,5
143	80	10	12	0,4	23,5
136	80	8	15	0	23,5
142	80	10	13	0	23,5
133	90	8	14	0,5	23,5
162	103	10	14	0,3	23,5

BS Splined Bar



Code: 39126930100
Mat.: High mechanical resistance alloyed steel

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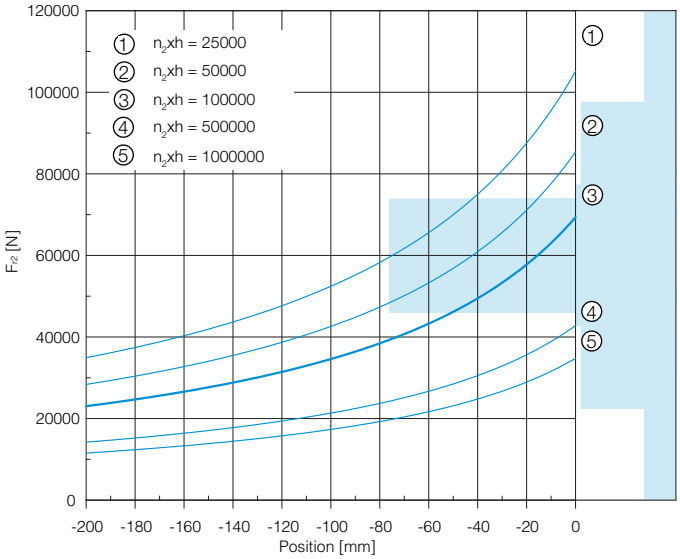
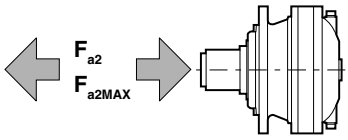
Output Radial Loads

MN - MN1

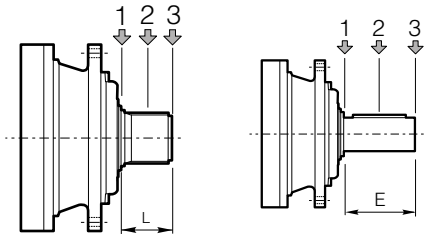


Output Axial Loads



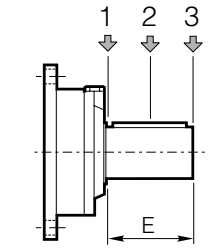
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	45000	-	-
F_{a2MAX}	[N]	80000	-	-

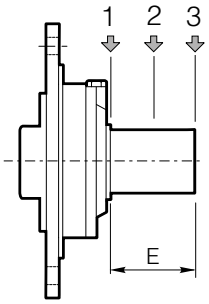
Input Radial Loads

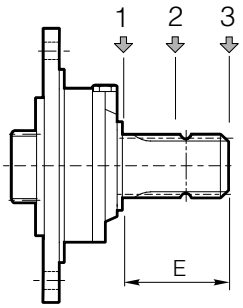


			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000

Input Radial Loads

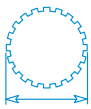
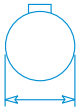
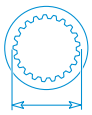
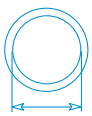
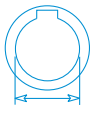






		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

065

i_{eff}	3.50 - 3170
T_{2N} (Nm)	6400
	B70X64 DIN5482
	80 mm
	B70X64 DIN5482
	90 mm
	70 mm
	70 - 80 mm

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10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EM 1065 / PD 1065												
3.50	429	2241	101	286	2531	76	143	3116	46.6			
3.86	389	2307	94	259	2605	71	130	3207	43.5			
4.33	346	2346	85	231	2650	64	115	3262	39.5	2500	10000	30
5.00	300	2401	75	200	2712	57	100	3338	35.0			
6.00	250	2502	66	167	2826	49.3	83	3480	30.4			
ED 2065 / PD 2065												
10.78	139	3110	45.3	93	3512	34.1	46.4	4324	21.0		9800	
12.25	122	3264	41.9	82	3686	31.5	40.8	4538	19.4			
13.51	111	3359	39.1	74	3794	29.4	37.0	4671	18.1			
15.16	99	3417	35.4	66	3859	26.7	33.0	4751	16.4			
17.88	84	3590	31.5	56	4055	23.8	28.0	4992	14.6			
20.65	73	3674	28.0	48.4	4150	21.0	24.2	5109	13.0	3000		18
22.39	67	3841	27.0	44.7	4338	20.3	22.3	5340	12.5		10000	
25.98	58	4016	24.3	38.5	4536	18.3	19.2	5140	10.4			
27.99	54	3334	18.7	35.7	3567	13.3	17.9	3918	7.3			
30.00	50	4110	21.5	33.3	4642	16.2	16.7	5479	9.6			
36.25	41.4	4319	18.7	27.6	4620	13.3	13.8	5075	7.3			
43.50	34.5	3971	14.3	23.0	4137	10.0	11.5	4422	5.3			
ET 3065 / PD 3065												
51.22	29.3	4924	15.1	19.5	5561	11.4	9.8	6150	6.3			
53.78	27.9	5087	14.9	18.6	5745	11.2	9.3	7073	6.9			
60.44	24.8	5174	13.4	16.5	5844	10.1	8.3	6246	5.4			
73.50	20.4	5058	10.8	13.6	5549	7.9	6.8	6254	4.5			
78.51	19.1	5597	11.2	12.7	6005	8.0	6.4	6603	4.4			
90.93	16.5	5849	10.1	11.0	6085	7.0	5.5	6810	3.9			
98.27	15.3	5841	9.3	10.2	6112	6.5	5.1	6560	3.5			
110.6	13.6	6079	8.6	9.0	6361	6.0	4.5	7297	3.5			
123.9	12.1	5642	7.2	8.1	5851	4.9	4.0	6651	2.8	3000	10000	14
134.3	11.2	6051	7.1	7.4	6315	4.9	3.7	6760	2.6			
155.1	9.7	5757	5.8	6.4	6024	4.1	3.2	6968	2.4			
180.0	8.3	5834	5.1	5.6	6219	3.6	2.8	7170	2.1			
208.2	7.2	5910	4.5	4.8	6413	3.2	2.4	7269	1.8			
217.5	6.9	5495	4.0	4.6	5735	2.8	2.3	6146	1.5			
251.6	6.0	5581	3.5	4.0	5821	2.4	2.0	6233	1.3			
272.8	5.5	5375	3.1	3.7	5552	2.1	1.8	5838	1.1			
EQ 4065 / PD 4065												
322.7	4.6	7604	3.7	3.1	7906	2.6	1.5	9121	1.5			
373.2	4.0	7704	3.2	2.7	8152	2.3	1.3	9392	1.3			
411.6	3.6	7683	2.9	2.4	8332	2.1	1.2	9537	1.2			
441.0	3.4	6873	2.4	2.3	7218	1.7	1.1	7800	0.93			
510.1	2.9	6998	2.2	2.0	7341	1.5	0.98	7923	0.81			
555.3	2.7	7619	2.2	1.8	7992	1.5	0.90	8626	0.81			
631.1	2.4	8077	2.0	1.6	8750	1.5	0.79	9802	0.81			
696.2	2.2	7397	1.7	1.4	7774	1.2	0.72	8406	0.63			
771.8	1.9	7348	1.5	1.3	7688	1.0	0.65	8274	0.56			
892.7	1.7	6595	1.2	1.1	6907	0.81	0.56	7448	0.44			
994.6	1.5	8119	1.3	1.0	8789	0.93	0.50	10000	0.52	3000	10000	8
1104	1.4	8159	1.2	0.91	8545	0.81	0.45	9215	0.44			
1303	1.2	9309	1.1	0.77	10000	0.81	0.38	10000	0.40			
1445	1.0	7916	0.86	0.69	8637	0.63	0.35	9973	0.36			
1631	0.92	8185	0.79	0.61	8905	0.57	0.31	10000	0.32			
1884	0.80	9194	0.77	0.53	9932	0.55	0.27	10000	0.26			
2095	0.72	7243	0.54	0.48	7839	0.39	0.24	8946	0.22			
2186	0.69	8653	0.62	0.46	9419	0.45	0.23	10000	0.24			
2468	0.61	5462	0.35	0.41	5604	0.24	0.20	5852	0.12			
2850	0.53	6307	0.35	0.35	6471	0.24	0.18	6757	0.12			
3170	0.47	7852	0.39	0.32	8486	0.28	0.16	9665	0.16			

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10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EC 2065 / PDA 2065												
10.50	143	2368	35.4	95	2674	26.7	47.6	3292	16.4	3000	10000	14
12.39	130	2611	35.4	86	2949	26.7	43.2	3631	16.4			
16.17	115	2929	35.4	77	3308	26.7	38.5	4073	16.4			
18.00	93	1582	15.4	62	1787	11.6	30.9	2200	7.1			
19.08	84	1745	15.4	56	1971	11.6	28.0	2426	7.1			
21.75	75	1957	15.4	50	2211	11.6	25.0	2722	7.1			
23.89	65	2260	15.4	43.3	2553	11.6	21.6	3143	7.1			
27.72	54	2713	15.4	36.1	3063	11.6	18.0	3772	7.1			
EC 3065 / PDA 3065												
40.53	37.0	4671	18.1	24.7	5275	13.6	12.3	6131	7.9	3000	10000	11
45.47	33.0	4751	16.4	22.0	5365	12.4	11.0	6085	7.0			
49.80	30.1	4874	15.4	20.1	5504	11.6	10.0	6777	7.1			
56.60	26.5	5166	14.3	17.7	5834	10.8	8.8	7164	6.6			
62.42	24.0	5317	13.4	16.0	5987	10.0	8.0	6527	5.5			
70.02	21.4	5408	12.1	14.3	5944	8.9	7.1	6445	4.8			
80.85	18.6	5424	10.5	12.4	5631	7.3	6.2	6079	3.9			
92.20	16.3	5238	8.9	10.8	5478	6.2	5.4	5877	3.3			
103.4	14.5	5875	8.9	9.7	6145	6.2	4.8	6592	3.3			
108.8	13.8	5075	7.3	9.2	5323	5.1	4.6	5735	2.8			
120.0	12.5	5408	7.1	8.3	5650	4.9	4.2	6056	2.6			
138.6	10.8	5699	6.5	7.2	5909	4.5	3.6	6808	2.6			
166.3	9.0	4523	4.3	6.0	4695	3.0	3.0	5404	1.7			
201.0	7.5	4603	3.6	5.0	4846	2.5	2.5	5624	1.5			
EC 4065 / PDA 4065												
220.5	6.8	6254	4.5	4.5	6623	3.1	2.3	7218	1.7	3000	10000	7
255.0	5.9	5607	3.5	3.9	5936	2.4	2.0	6476	1.3			
281.3	5.3	6184	3.5	3.6	6546	2.4	1.8	7142	1.3			
315.5	4.8	6937	3.5	3.2	7343	2.4	1.6	8012	1.3			
359.4	4.2	6696	2.9	2.8	7045	2.1	1.4	7629	1.1			
415.7	3.6	6001	2.3	2.4	6318	1.6	1.2	6852	0.86			
451.1	3.3	5815	2.0	2.2	6567	1.5	1.1	8085	0.94			
498.3	3.0	6424	2.0	2.0	7255	1.5	1.0	7903	0.83			
576.4	2.6	6257	1.7	1.7	6570	1.2	0.87	7105	0.65			
635.7	2.4	6901	1.7	1.6	7246	1.2	0.79	7836	0.65			
713.1	2.1	7741	1.7	1.4	8128	1.2	0.70	8791	0.65			
823.4	1.8	7820	1.5	1.2	8472	1.1	0.61	9682	0.62			
892.9	1.7	7513	1.3	1.1	7794	0.91	0.56	9031	0.53			
1018	1.5	7603	1.2	0.98	8012	0.82	0.49	9281	0.48			
1149	1.3	5199	0.71	0.87	5338	0.49	0.44	5579	0.25			
1220	1.2	7729	1.0	0.82	8332	0.72	0.41	9635	0.41			
1412	1.1	7876	0.88	0.71	8594	0.64	0.35	9926	0.37			
1594	0.94	5311	0.52	0.63	5451	0.36	0.31	5694	0.19			
1840	0.82	6133	0.52	0.54	6295	0.36	0.27	6575	0.19			
1861	0.81	6874	0.58	0.54	7520	0.42	0.27	8717	0.25			
2136	0.70	7118	0.52	0.47	7305	0.36	0.23	7631	0.19			
2581	0.58	7391	0.45	0.39	8069	0.33	0.19	9221	0.19			
3097	0.48	7817	0.40	0.32	8449	0.29	0.16	9623	0.16			

* (bg) All highlighted ratio (is. 10.50) have particular dimensions of bevel gears in some versions. See dimensional tables.

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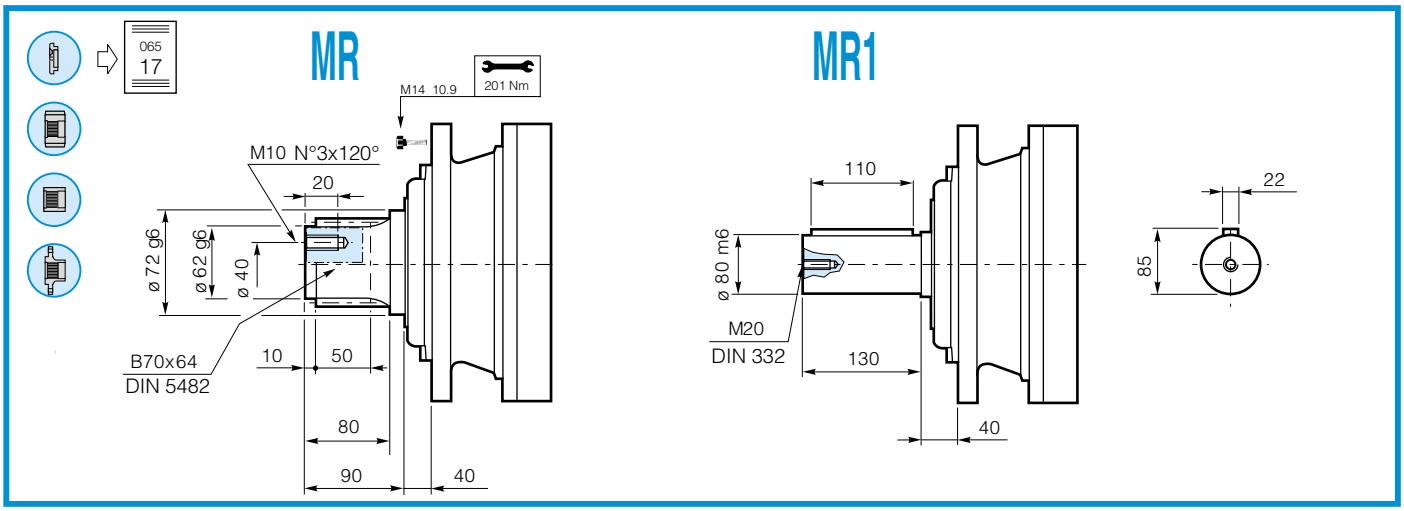
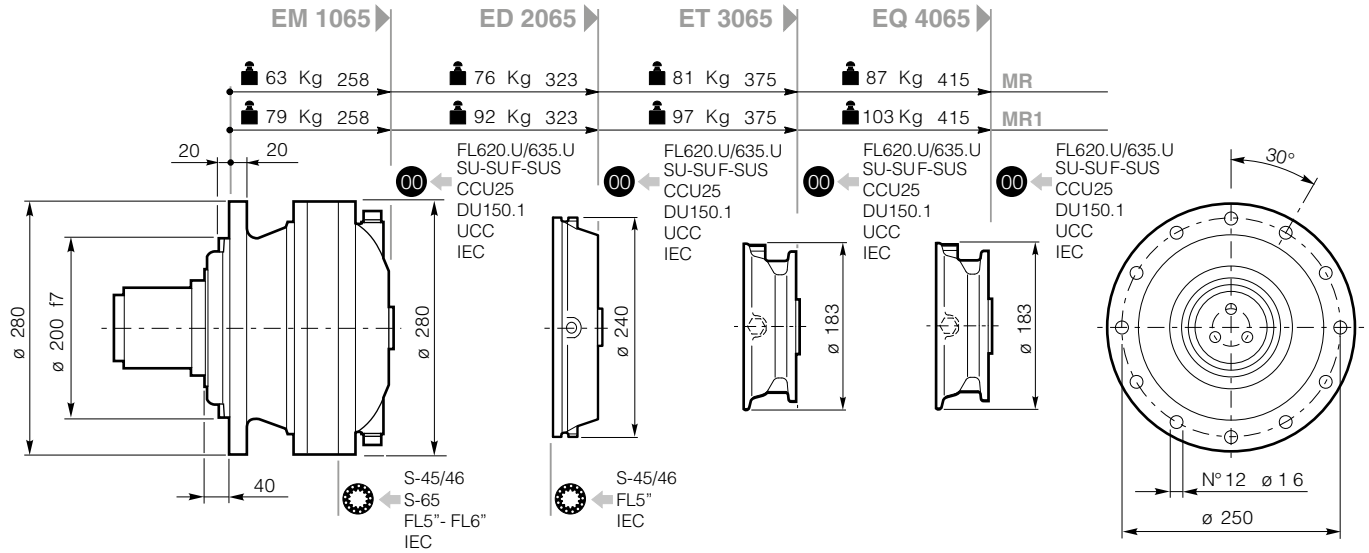
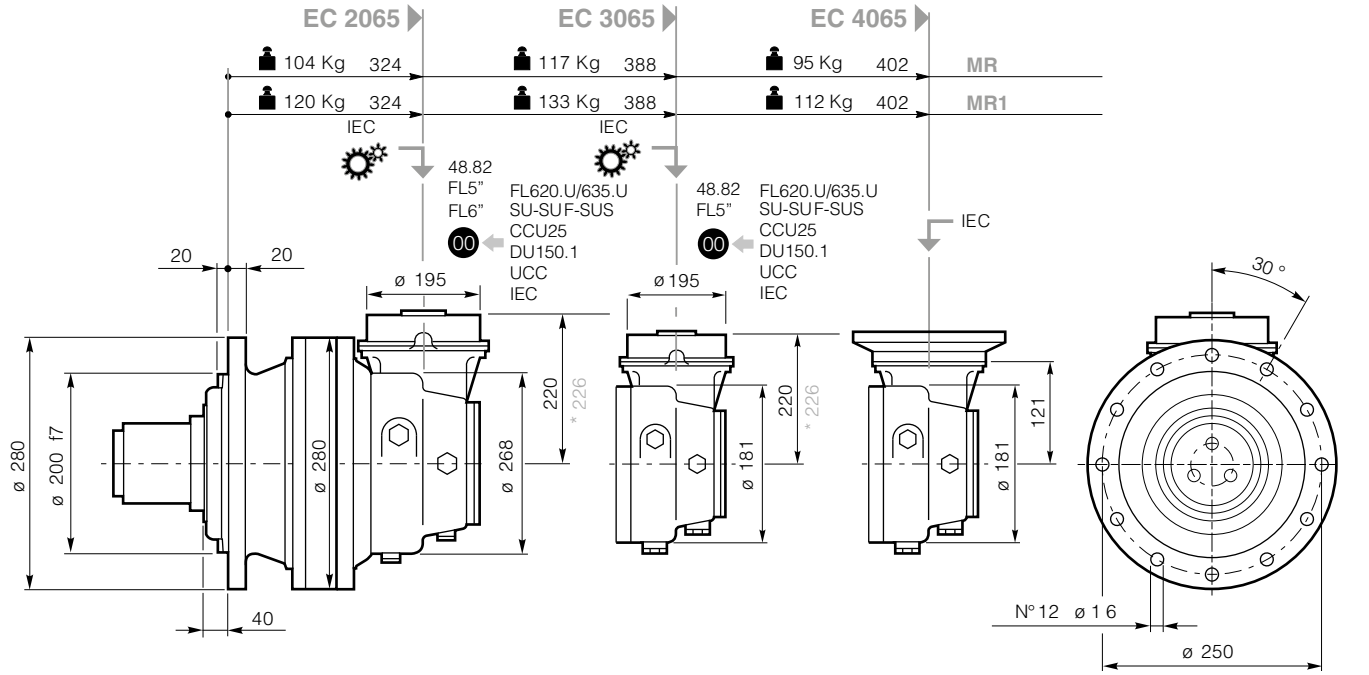
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 065 11 SU-SUF SUS 065 12 FL5"- FL6" FL620 FL635 065 13 IEC 065 16 065 15 CCU25 B15 DU150.1 UCC B16 * bg 065 3

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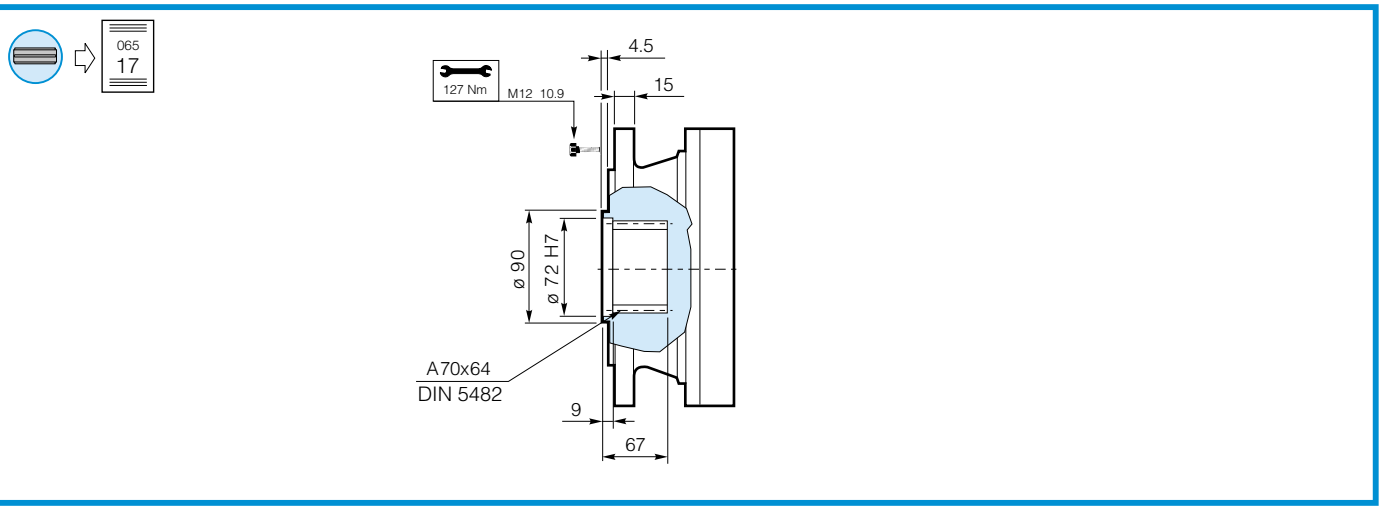

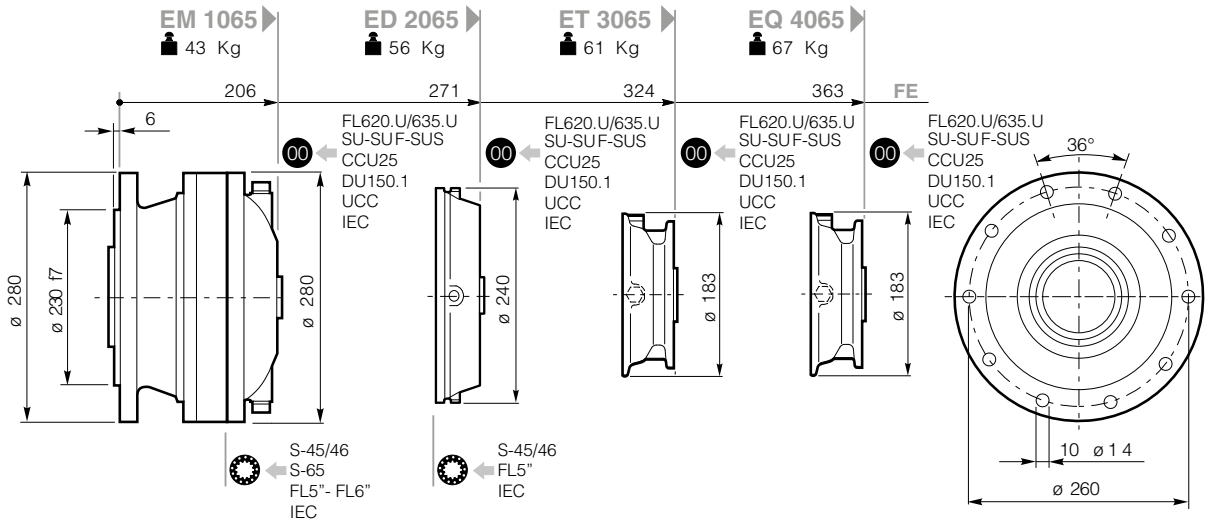

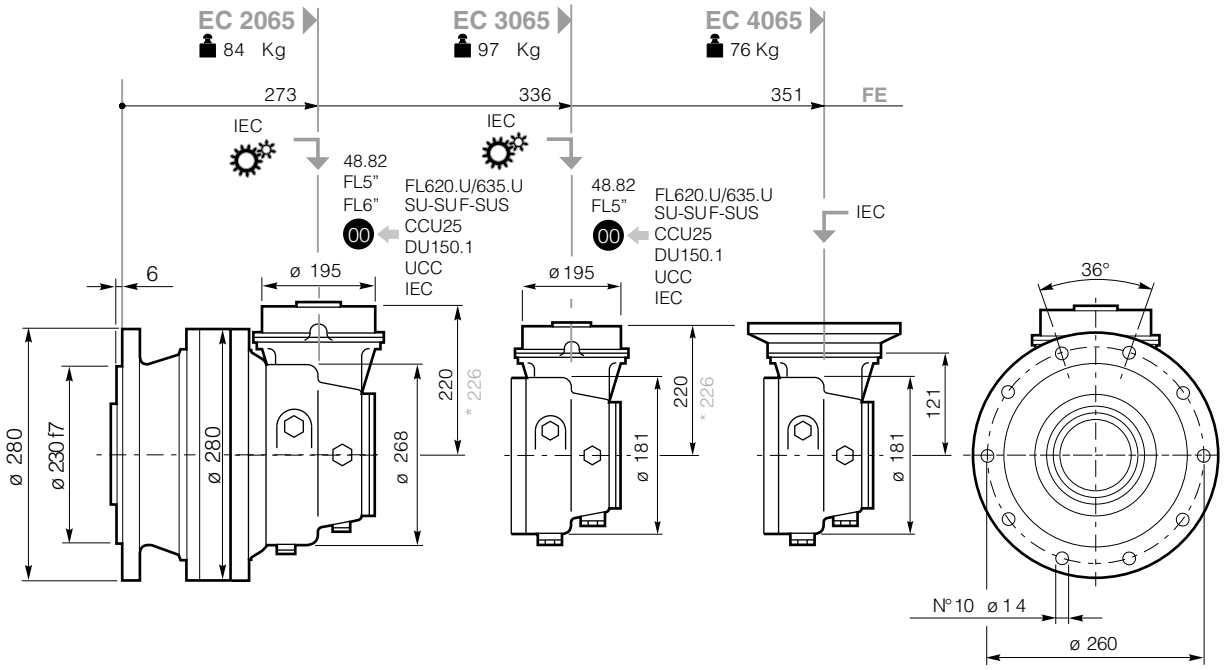

00 B13 S-45/46 48.82 → 065 11 | SU-SUF SUS → 065 12 | FL5"- FL6" FL620 FL635 → 065 13 | IEC → 065 16 | 065 15 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 065 3

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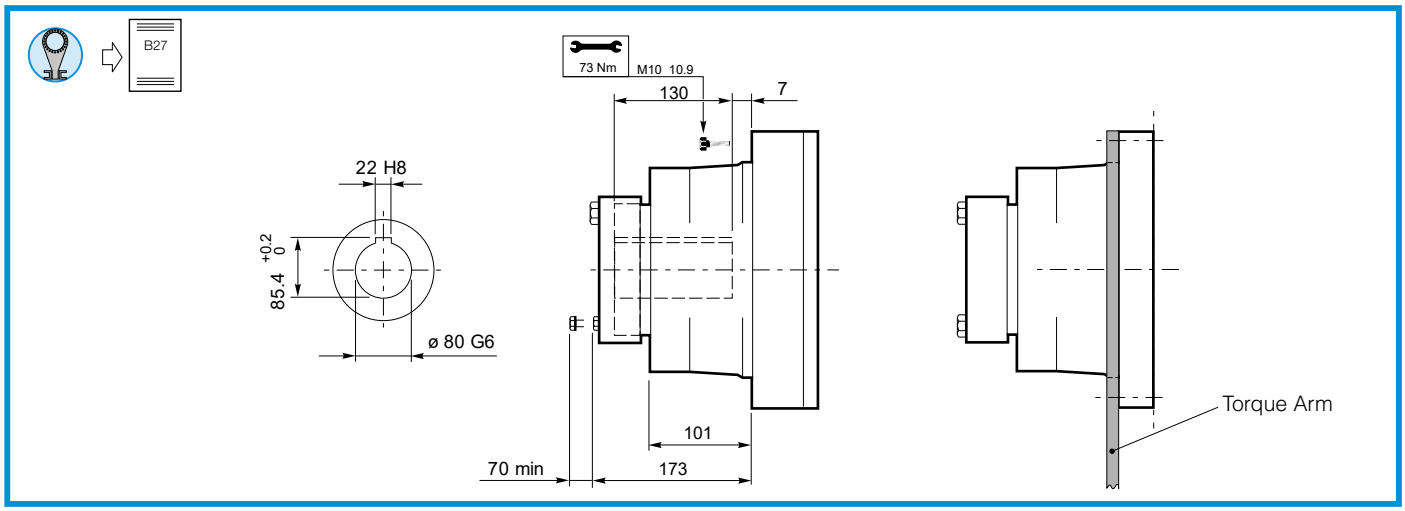
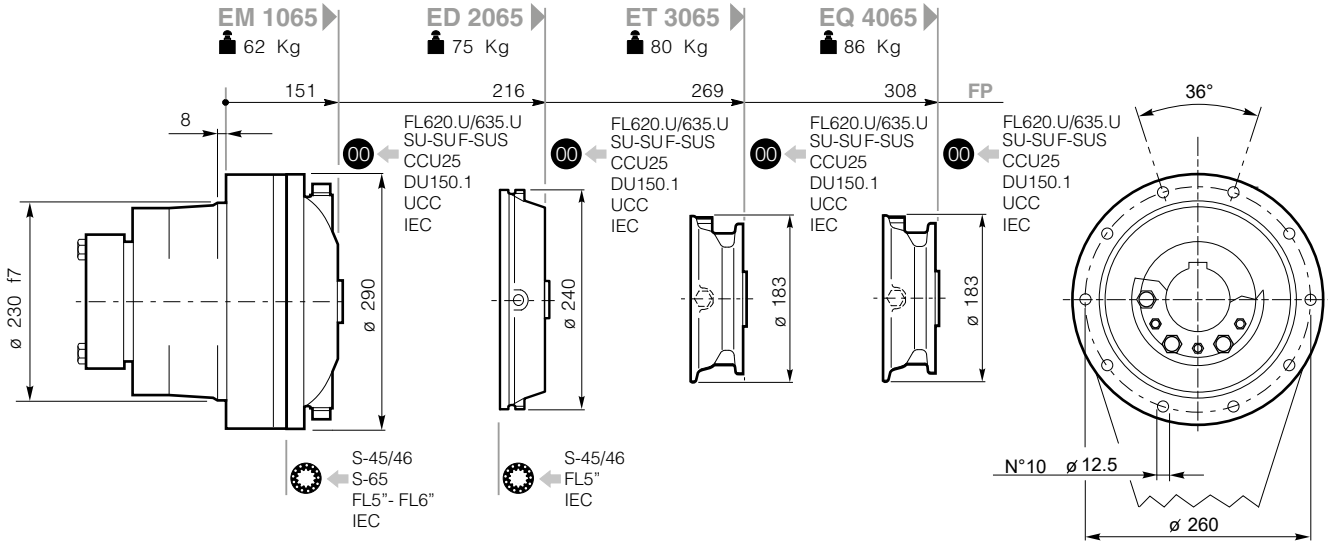
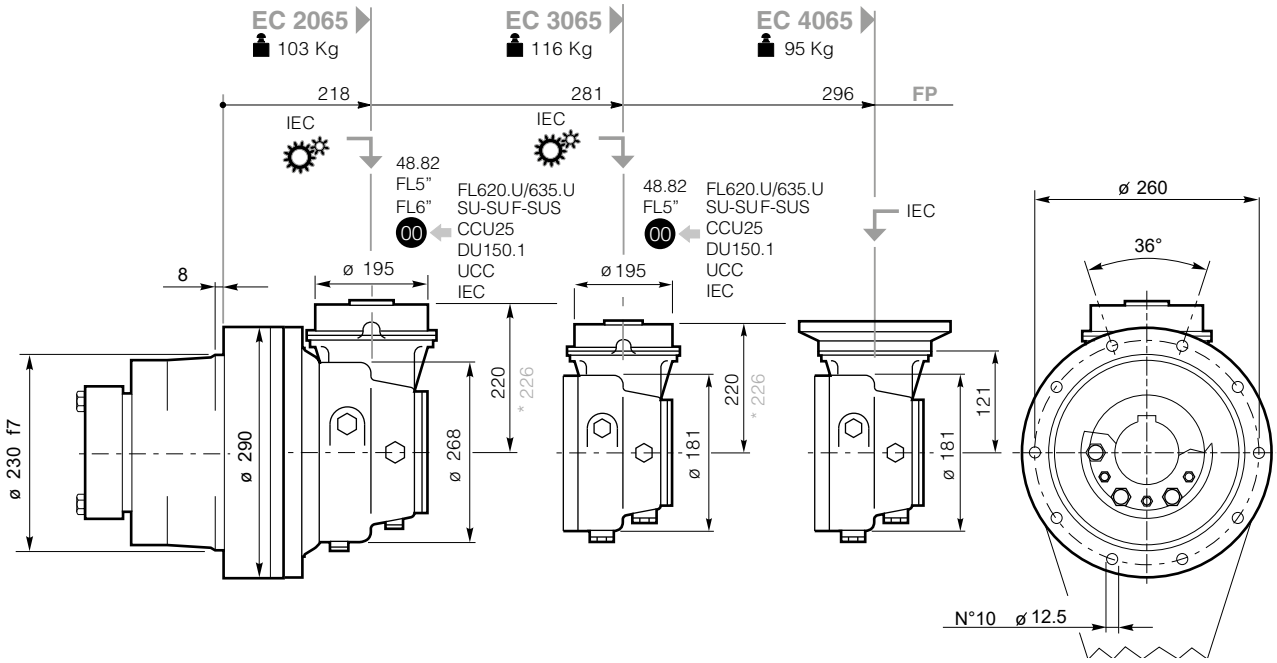
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 065 11 SU-SUF SUS 065 12 FL5"- FL6" FL620 FL635 065 13 IEC 065 16 065 15 CCU25 B15 DU150.1 UCC B16 * bg 065 3

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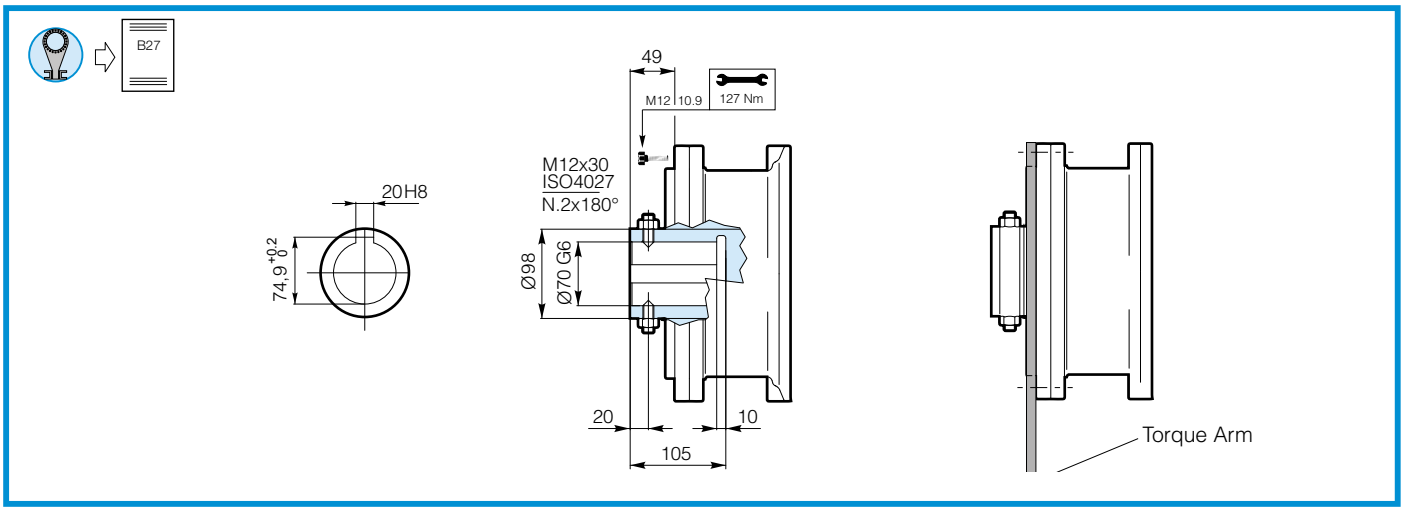

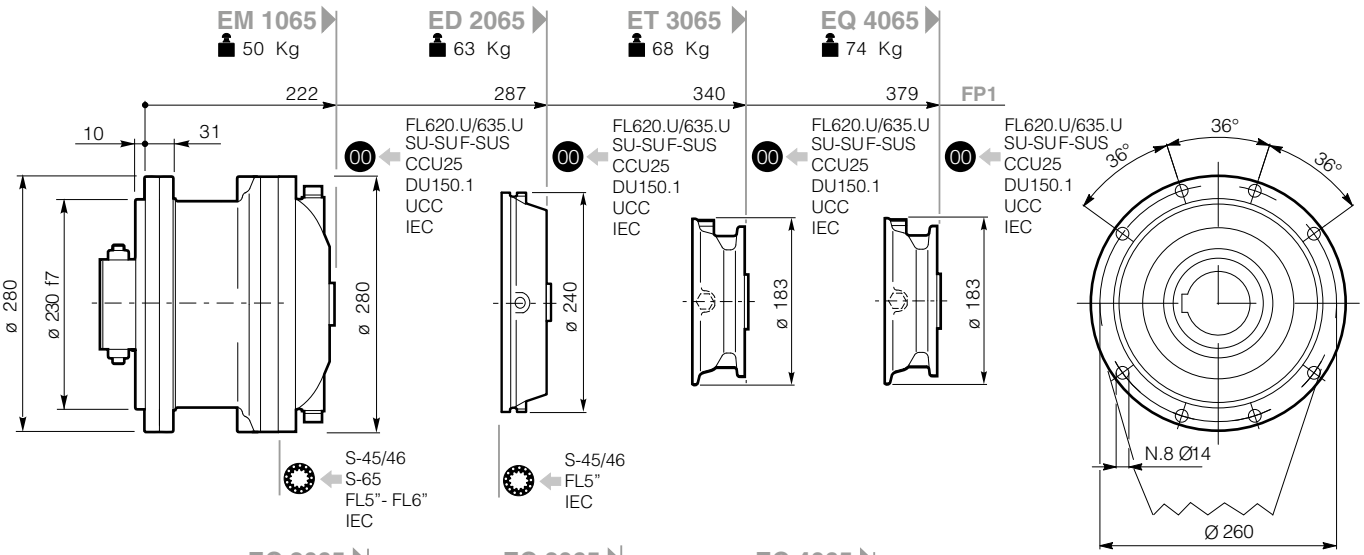

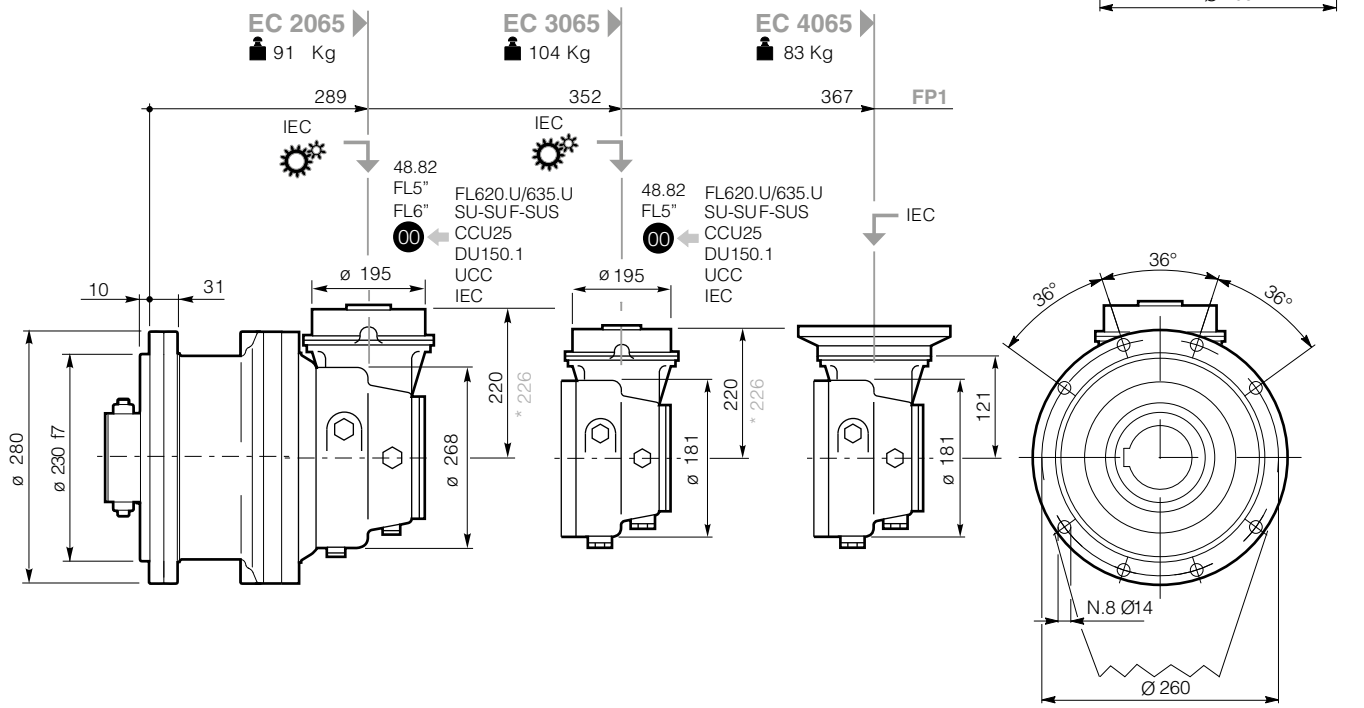

00 B13 S-45/46 48.82 065 11 SU-SUF SUS 065 12 FL5"- FL6" FL620 FL635 065 13 IEC 065 16 065 15 CCU25 B15 DU150.1 UCC B16 * bg 065 3

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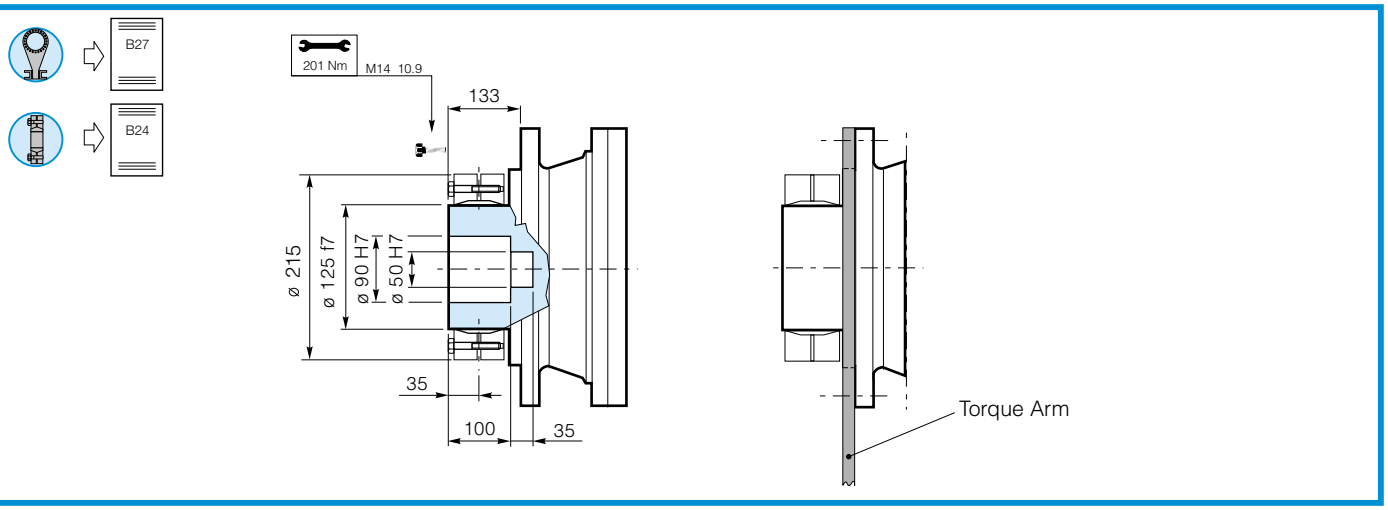
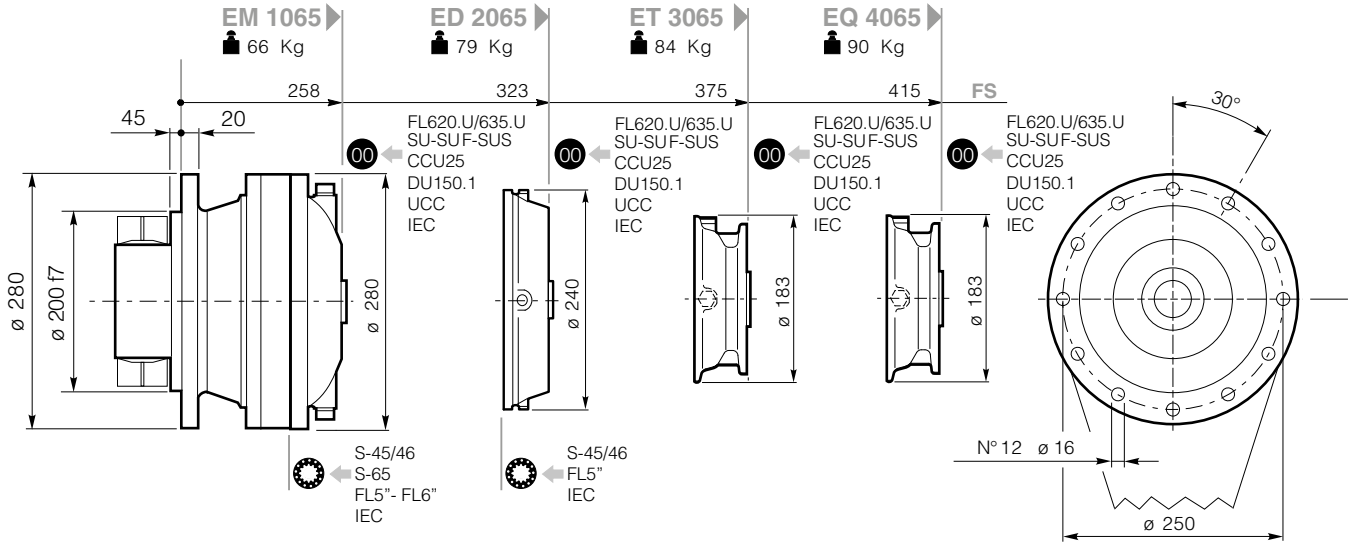
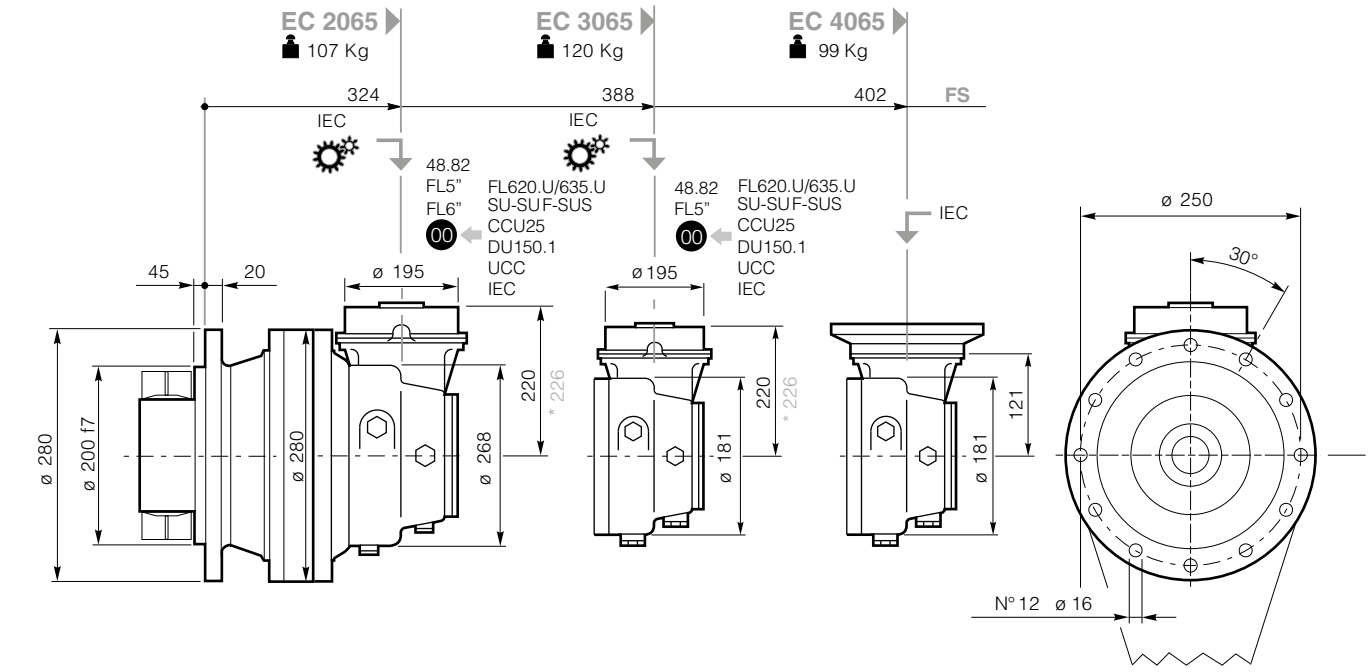
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 065 11 SU-SUF SUS 065 12 FL5"- FL6" FL620 FL635 065 13 IEC 065 16 065 15 CCU25 B15 DU150.1 UCC B16 * bg 065 3

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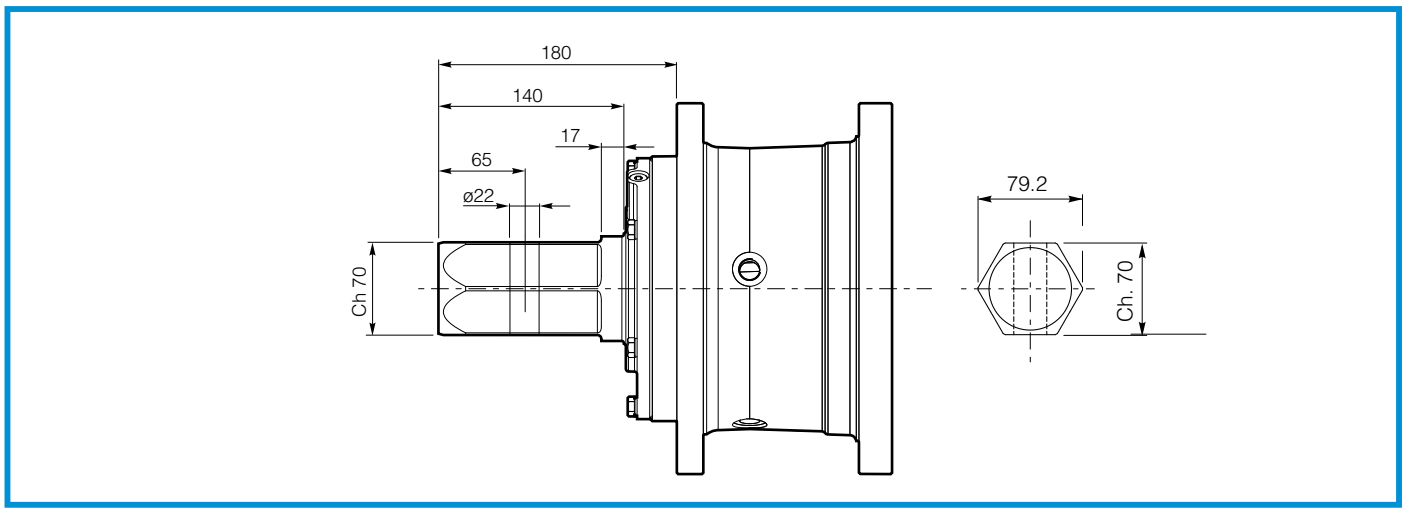

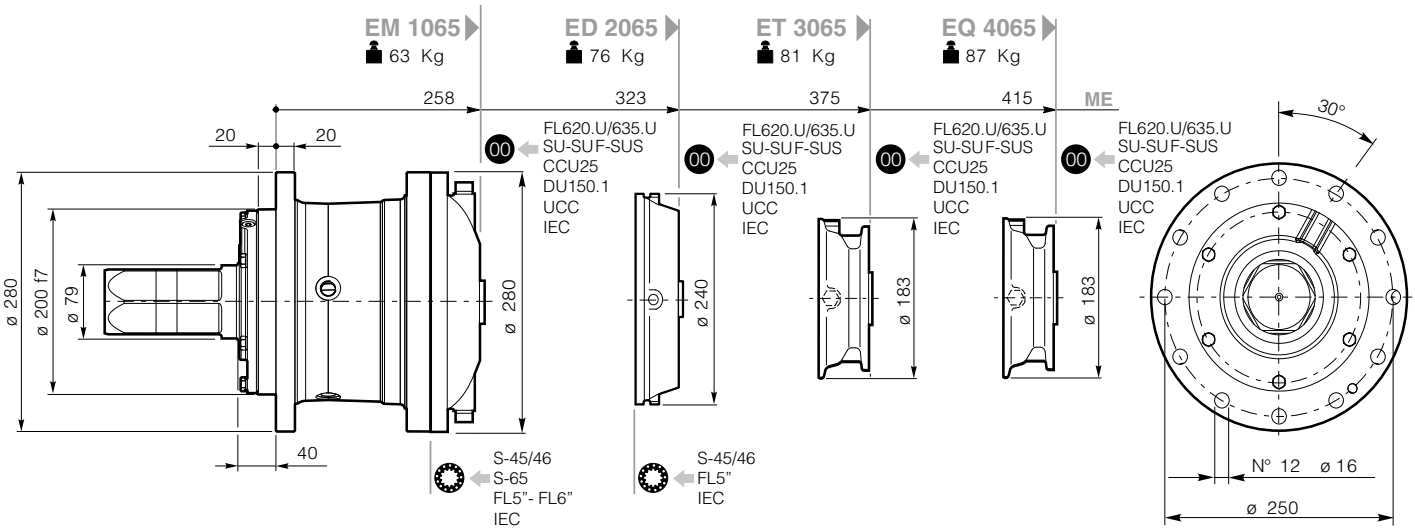

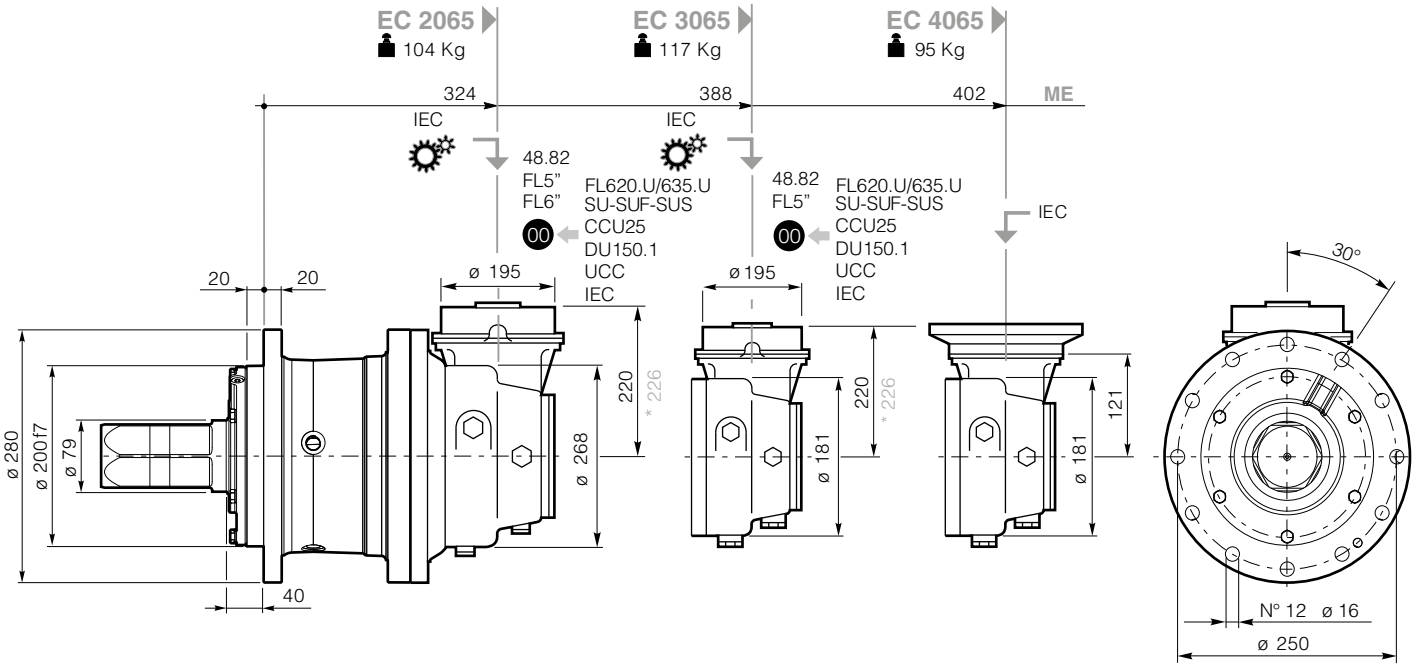

00 B13 S-45/46 48.82 → 065 11 SU-SUF SUS → 065 12 FL5"- FL6" FL620 FL635 → 065 13 IEC → 065 16 → 065 15 CCU25 → B15 DU150.1 UCC → B16 * bg → 065 3

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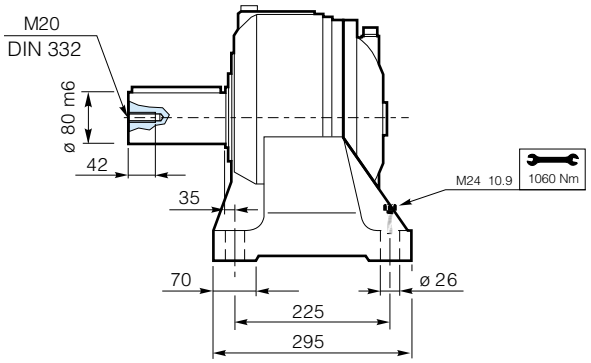
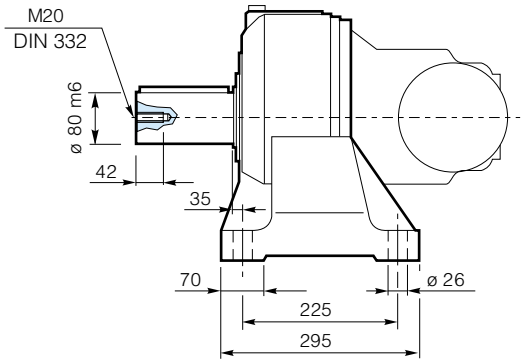
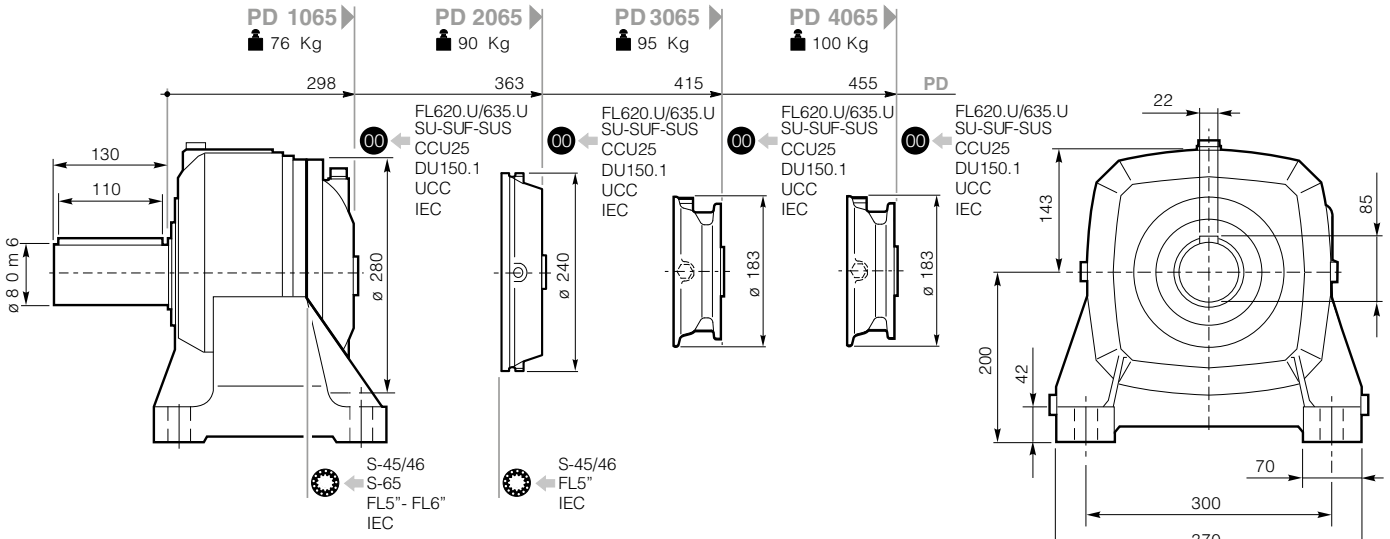
GEARBOX DIMENSIONS WITH OUTPUT

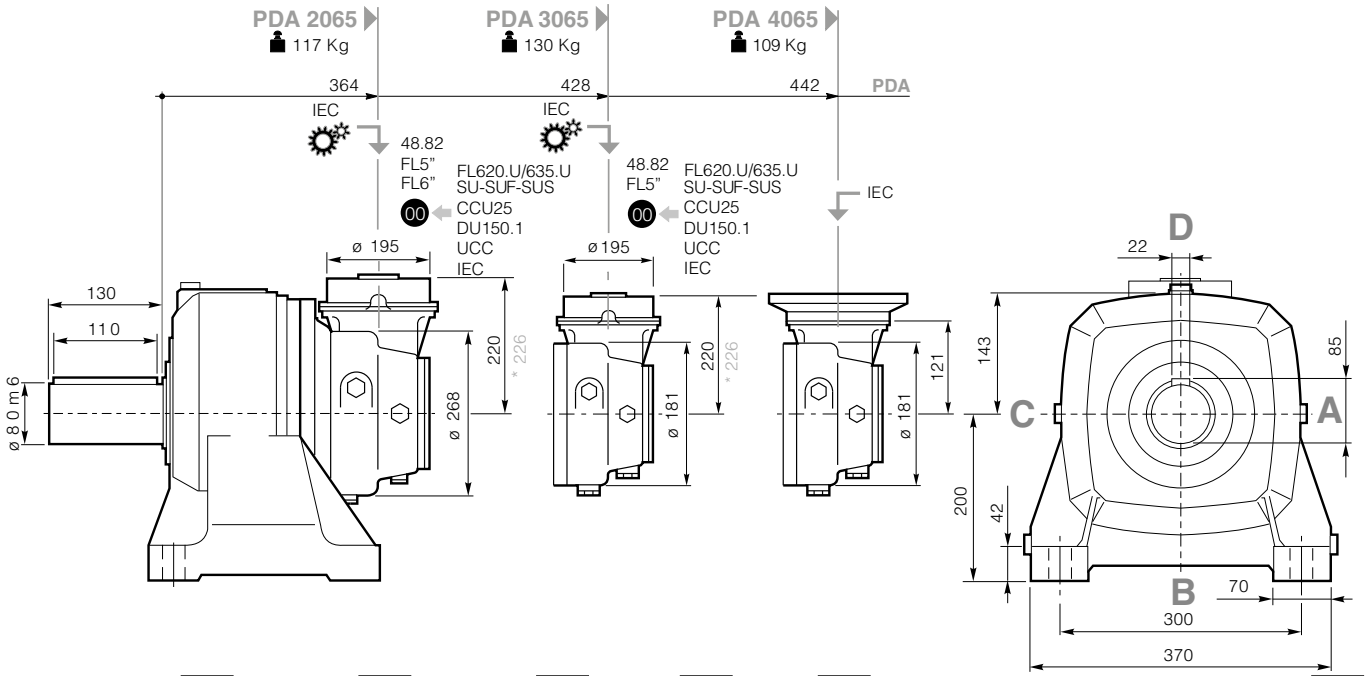
PD



PDA







00 B13 S-45/46 48.82 → 065 11 SU-SUF SUS → 065 12 FL5"- FL6" FL620 FL635 → 065 13 IEC → 065 16 → 065 15 CCU25 → B15 DU150.1 UCC → B16 * bg → 065 3

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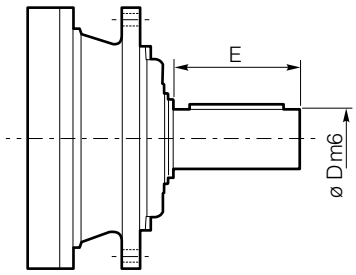
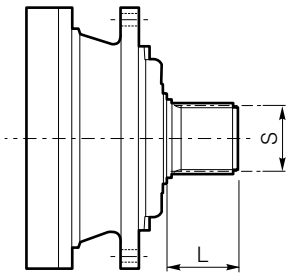
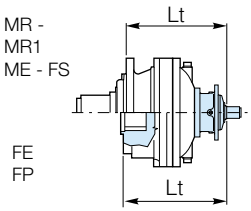
S-45CR1 - S-46C1 - S-65CR1 - S-45SR - S-65SR

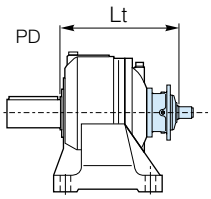


S-45CR1 - S-46C1 - S-65CR1



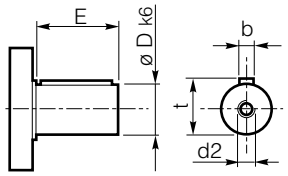
S-45SR - S-65SR

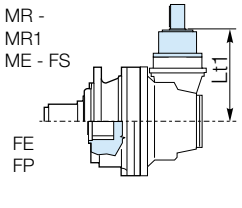


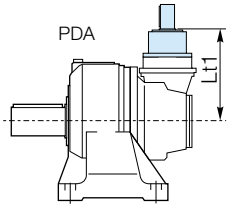


	Dm6	E	L	S		Lt				
						MR-MR1-FS-ME	FE	FP1	FP	PD
S-45CR1	65	105	-	-	EM/PD 1065	385	334	350	279	425
					ED/PD 2065	385	334	350	279	425
S-46C1	65	105	-	-	EM/PD 1065	427	375	391	320	467
					ED/PD 2065	427	375	391	320	467
S-45SR	-	-	68	B58x53	EM/PD 1065	385	334	350	279	425
					ED/PD 2065	385	334	350	279	425
S-65CR1	80	130	-	-	EM/PD 1065	424	373	389	318	464
S-65SR	-	-	90	B70x64	EM/PD 1065	424	373	389	318	464

48.82

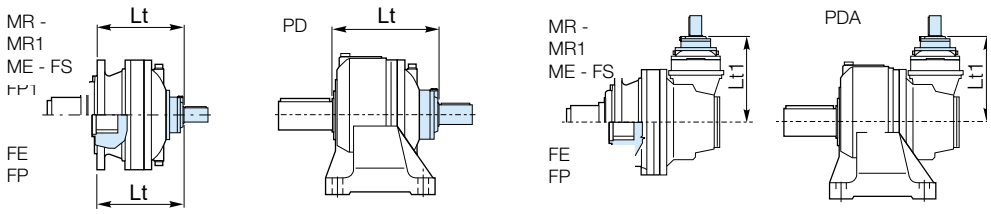


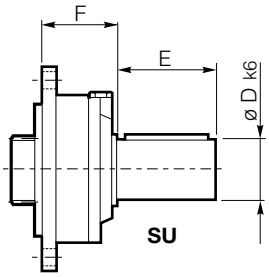


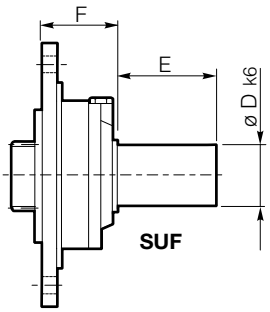


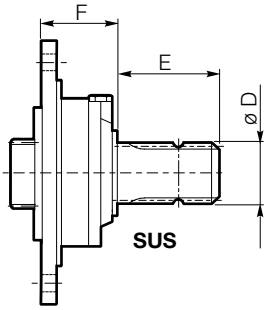
	D	E		Lt1
				MR-MR1-FS-FE-FP-FP1-ME-PDA
48.82	48	82	EC/PDA 2065	280
			EC/PDA 3065	280

SU - SUF - SUS









	D	E	F		Lt 00				
					MR-MR1-FS-ME	FE	FP1	FP	PD
SU1 28x50	28	50	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SU2 40x58	40	58	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SU3 48x82	48	82	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SU 42x80	42	80	101.5	EM/PD 1065	359	308	324	253	399
				ED/PD 2065	424	373	389	318	464
				ET/PD 3065	477	425	441	370	517
				EQ/PD 4065	516	465	481	410	556
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	EM/PD 1065	359	308	324	253	399
				ED/PD 2065	424	373	389	318	464
				ET/PD 3065	477	425	441	370	517
				EQ/PD 4065	516	465	481	410	556
SU2 1.5x3.25	38.10	82.55	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SUF1 28x50	28	50	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SUF2 40x58	40	58	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515
SUF3 48x82	48	82	60	EM/PD 1065	318	266	282	211	358
				ED/PD 2065	383	331	347	276	423
				ET/PD 3065	435	384	400	329	475
				EQ/PD 4065	475	423	439	368	515

	D	E	F		Lt1 00
					MR-MR1-FS-ME-FE-FP1-FP-PDA
SU1 28x50	28	50	60	EC/PDA 2065	280
SU2 40x58	40	58	60	EC/PDA 3065	
SU3 48x82	48	82	60	EC/PDA 2065*	286
				EC/PDA 3065*	
SU 42x80	42	80	101.5	EC/PDA 2065	322
				EC/PDA 3065	
SUS 1 3/8”	1 3/8” DIN9611	97	101.5	EC/PDA 2065*	328
				EC/PDA 3065*	
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2065	280
SUF1 28x50	28	50	60	EC/PDA 3065	
SUF2 40x58	40	58	60	EC/PDA 2065*	286
SUF3 48x82	48	82	60	EC/PDA 3065*	

* bg ⇨ 065 3

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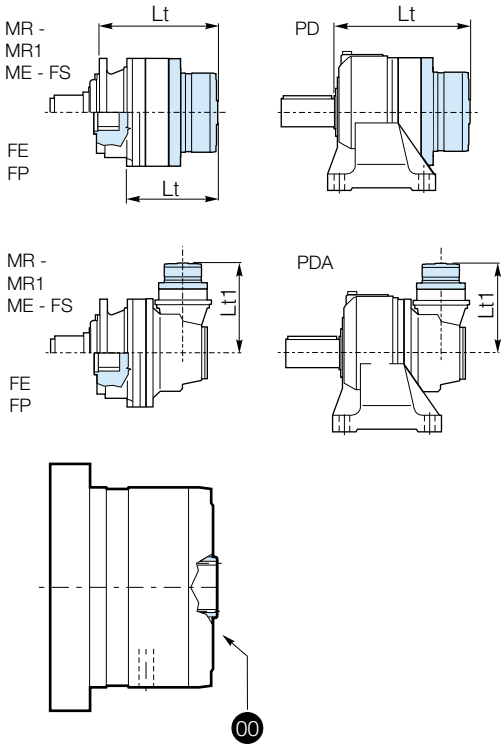
FL5” FL6” FL250 - FL350 - FL450 / FL750

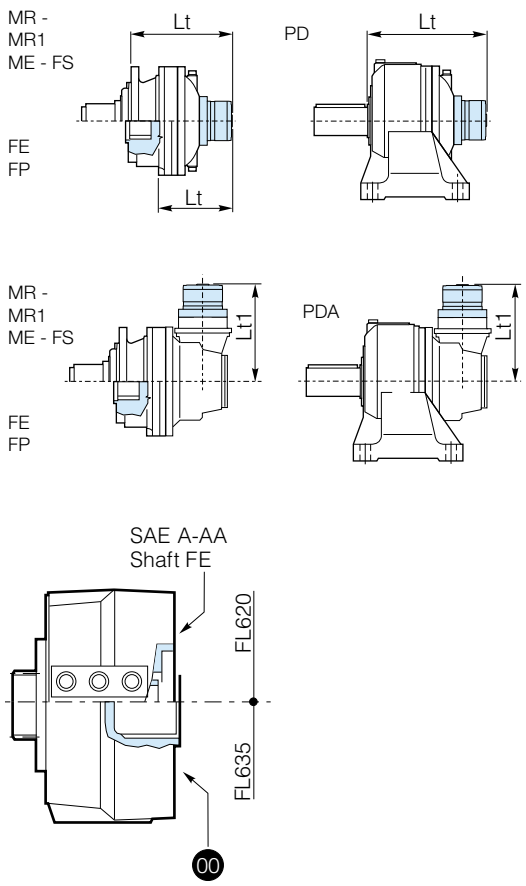


		Lt				
		MR-MR1-FS-ME	FE	FP1	FP	PD
FL250 FL350 FL450	EM/PD 1065	363	312	328	257	403
	ED/PD 2065	416	365	381	310	456
FL750	EM/PD 1065	377	325	341	270	417
	ED/PD 2065	430	378	394	323	470
FL960	EM/PD 1065	391	339	355	284	431

		Lt1
		MR - MR1 - FS - ME - FE - FP-FP1- PDA
FL250 FL350 FL450	EC/PDA 2065	280
	EC/PDA 2065*	377
	EC/PDA 3065	280
	EC/PDA 3065*	377

* bg 065 3

FL620.10 - FL635.10 / FL620.U - FL635.U



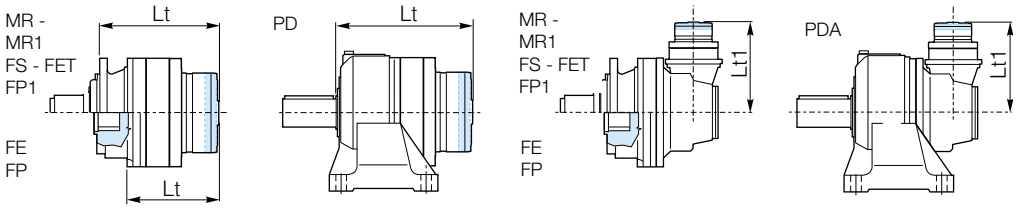
		Lt 00				
		MR-MR1-FS-ME	FE	FP1	FP	PD
FL620.U	EM/PD 1065	362	311	327	256	402
	ED/PD 2065	427	376	392	321	467
	ET/PD 3065	480	428	444	373	520
	EQ/PD 4065	519	468	484	413	559
FL635.U	EM/PD 1065	350	297	313	242	389
	ED/PD 2065	414	362	378	307	454
	ET/PD 3065	466	415	431	360	506
	EQ/PD 4065	506	454	470	399	546

		Lt				
		MR-MR1-FS-ME	FE	FP1	FP	PD
FL620.10	ED/PD 3065	439	387	403	332	479
	ET/PD 4065	478	427	443	372	518
FL635.10	ED/PD 3065	421	369	385	314	461
	ET/PD 4065	460	409	425	354	500

		Lt1 00				
		MR-MR1-FS-ME	FE	FP1	FP	PDA
FL620.U	EC/PDA 2065	325	325	325	325	325
	EC/PDA 2065*	331	331	331	331	331
	EC/PDA 3065	325	325	325	325	325
	EC/PDA 3065*	331	331	331	331	331
FL635.U	EC/PDA 2065	311	311	311	311	311
	EC/PDA 2065*	317	317	317	317	317
	EC/PDA 3065	311	311	311	311	311
	EC/PDA 3065*	317	317	317	317	317

* bg 065 3

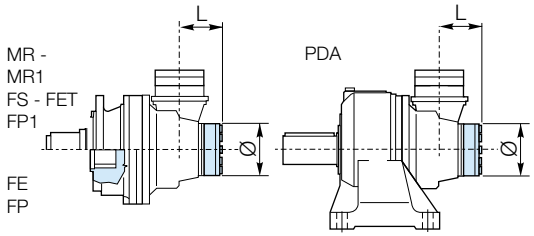
RL



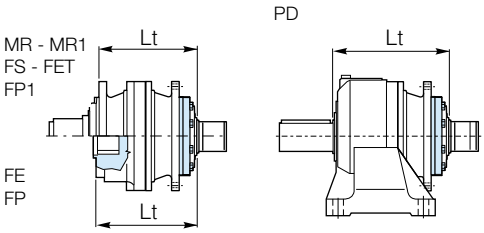
				Lt				
				MR-MR1-FS-ME	FE	FP1	FP	PD
RL	+	FL250 FL350 FL450	EM/PD 1065	389	338	354	283	429
			ED/PD 2065	442	391	407	336	482
		FL750	EM/PD 1065	403	351	367	296	443
			ED/PD 2065	456	404	420	349	496

				Lt1
				MR - MR1 - FS - FE - ME - FP - FP1 - PDA
RL	+	FL250 FL350 FL450	EC/PDA 2065	306
			EC/PDA 2065*	403
			EC/PDA 3065	306
			EC/PDA 3065*	403
		FL750	EC/PDA 2065	306
			EC/PDA 2065*	403
			EC/PDA 3065	306
			EC/PDA 3065*	403

* bg 065 3



				L	Ø
RL	+	CC40	EC/PDA 2065	135.2	150
			EC/PDA 3065	135.2	150



				Lt				
				MR-MR1-FS-ME	FE	FP1	FP	PD
RL	+	S46C1	EM/PD 1065	447	395	411	340	487
			ED/PD 2065	447	395	411	340	487

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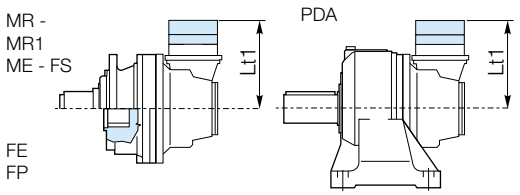
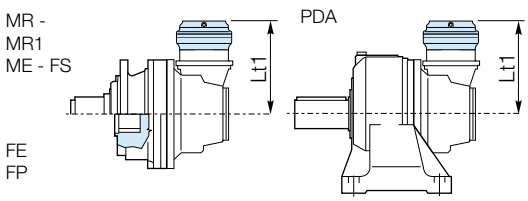
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

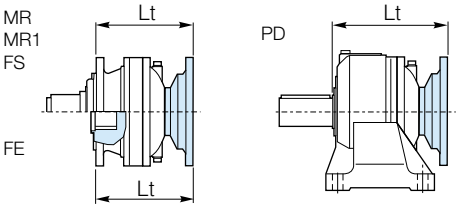


ED2010 - ED2020 ED2022

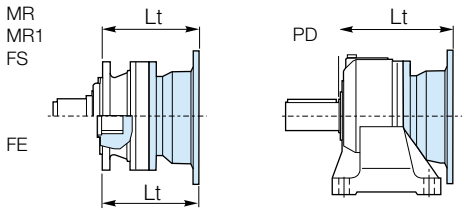
		Lt1			
		EC2065 PDA2065	EC2065* PDA2065*	**EC3065 PDA3065**	EC3065* PDA3065*
	EM1010	327	333	327	333
	EM1020	345	351	345	351
	ED2010	366	372	366	372
	ED2020	398	404	398	404
	ED2021	413	419	413	419

* (bg) 065 3

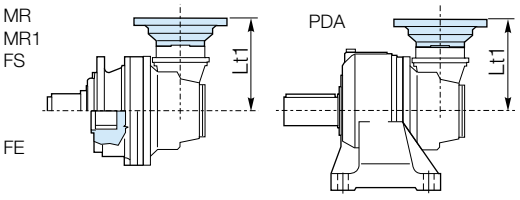
IEC Motor



		Lt (00) IEC							
		63	71	80 90	100 112	132	160 180	200	225
EM 1065	MR-MR1-FS-ME	278	280	285	286	353	384	395	425
EM1065	FE	226	228	233	234	301	332	343	373
EM 1065	FP	171	173	178	179	246	277	288	318
EM 1065	FP1	242	244	249	250	317	348	359	389
ED 2065	MR-MR1-FS-ME	343	345	350	351	418	449	460	490
ED 2065	FE	291	293	298	299	366	397	408	438
ED 2065	FP	236	238	243	244	311	342	353	383
ED 2065	FP1	307	309	314	315	382	413	424	454
ET 3065	MR-MR1-FS-ME	395	397	402	403	470	501	512	542
ET 3065	FE	344	346	351	352	419	450	461	491
ET 3065	FP	289	291	296	297	364	395	406	436
ET 3065	FP1	360	362	367	368	435	466	477	507
EQ 4065	MR-MR1-FS-ME	435	437	442	443	510	541	552	582
EQ 4065	FE	383	385	390	391	458	489	500	530
EQ 4065	FP	328	330	335	336	403	434	445	475
EQ 4065	FP1	399	401	406	407	474	505	516	546
PD 1065	PD	318	320	325	326	393	424	435	465
PD 2065		383	385	390	391	458	489	500	530
PD 3065		435	437	442	443	510	541	552	582
PD 4065		475	477	482	483	550	581	592	622



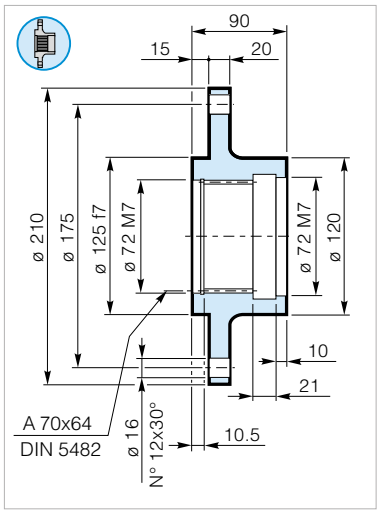
		Lt IEC		
		160 180	200	225
EM 1065	MR-MR1-FS-ME	364	394	424
EM1065	FE	312	342	372
EM 1065	FP	257	287	317
EM 1065	FP1	328	358	388
ED 2065	MR-MR1-FS-ME	449	459	489
ED 2065	FE	397	407	437
ED 2065	FP	342	352	382
EM 1065	FP1	413	423	453
PD 1065	PD	404	434	464
PD 2065		489	499	529



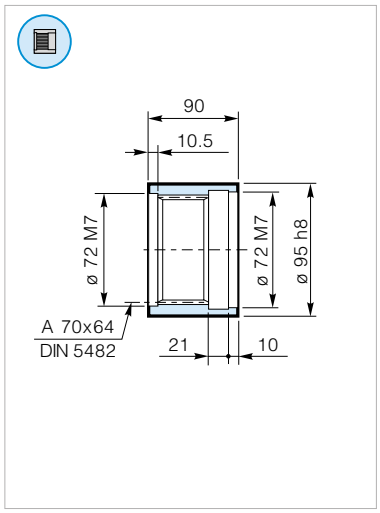
		Lt1 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC 2065	MR-MR1-FE-ME-FS FP-FP1-PDA	240	242	247	248	315	346	357	387
EC 2065*		246	248	253	254	321	352	363	393
EC 3065		240	242	247	248	315	346	357	387
EC 3065*		246	248	253	254	321	352	363	393
EC 4065		151	151	151	151	238	-	-	-
EC 4065*		151	151	151	151	238	-	-	-

* bg 065 3

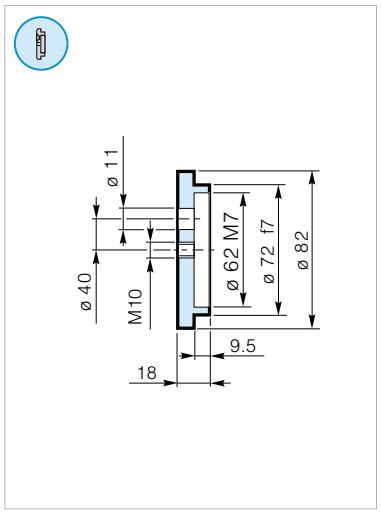
FR 065 Wheel Flange



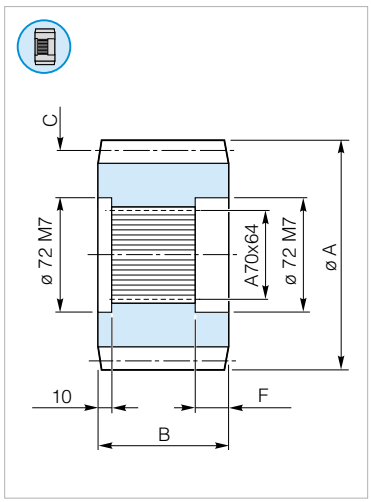
MS 065 Splined Sleeve



RDF 065 Lock Washer

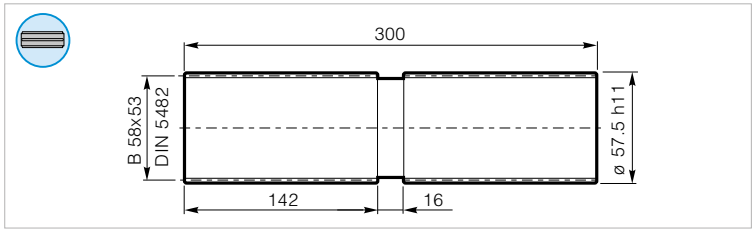


Pinions



A	B	C			F
		m	z	x	
136	80	10	11	0,5	31,0
160	90	10	13	0,5	31,0
149	90	10	12	0,5	31,0
170	98	10	15	0	31,0
160	99	10	13	0,5	31,0
138	100	10	11	0,5	31,0
160	105	10	13	0,5	31,0
219	115	16	11	0,4	31,0
249	115	14	15	0,5	31,0

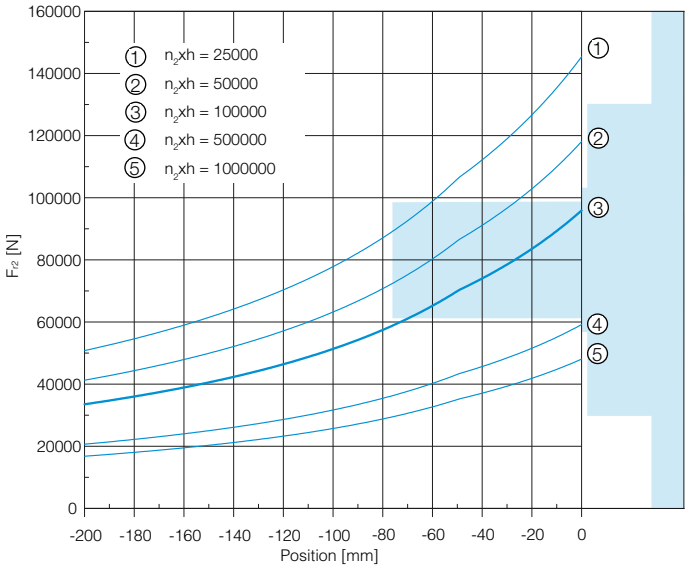
BS 065 Splined Bar



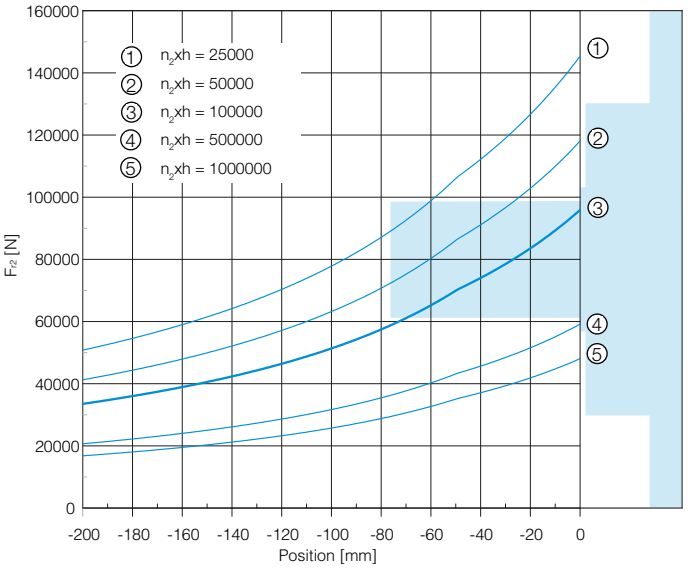
Code: 39127030100
Mat.: High mechanical resistance alloyed steel

Output Radial Loads

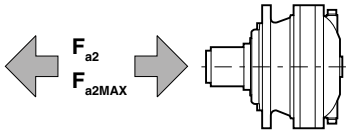
MR - MR1



PD

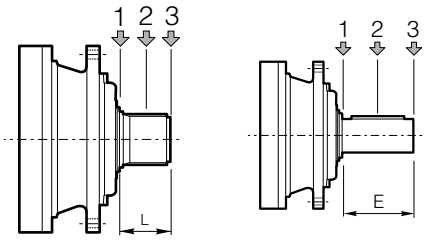


Output Axial Loads



		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	–	50000	30000
F_{a2MAX}	[N]	–	90000	30000

Input Radial Loads



			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800

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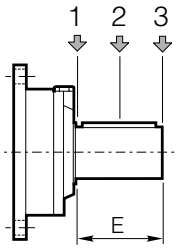
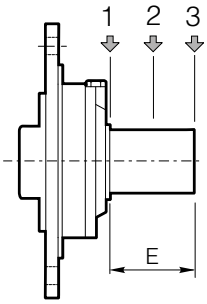
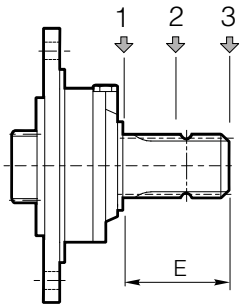
Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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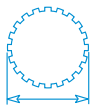
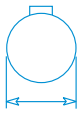
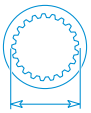
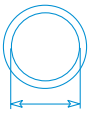
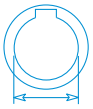
067

Page

i_{eff}	12.25 - 201.0
T_{2N} (Nm)	6400
	B70X64 DIN5482
	80 mm
	B70X64 DIN5482
	90 mm
	80 mm

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10000
hours life

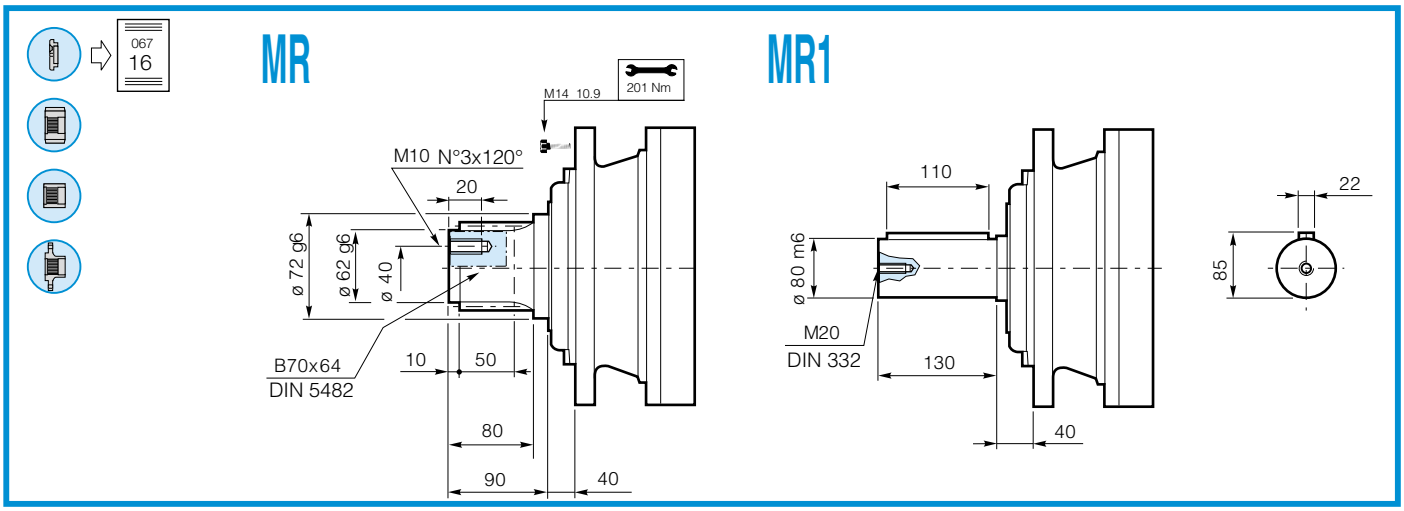
i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
ED 2067 / PD 2067												
12.25	122	3264	41.9	82	3686	31.5	40.8	4538	19.4	3000	9800	18
14.46	104	3430	37.3	69	3874	28.1	34.6	4769	17.3			
15.16	99	3417	35.4	66	3859	26.7	33.0	4751	16.4			
18.10	83	3669	31.9	55	4144	24.0	27.6	5102	14.8			
21.00	71	3837	28.7	47.6	4333	21.6	23.8	5335	13.3			
22.39	67	3841	27.0	44.7	4338	20.3	22.3	5340	12.5			
25.38	59	4061	25.1	39.4	4586	18.9	19.7	5646	11.7		10000	
27.99	54	4179	23.5	35.7	4720	17.7	17.9	5811	10.9			
31.39	47.8	4251	21.3	31.9	4801	16.0	15.9	5885	9.8			
36.25	41.4	4350	18.9	27.6	4913	14.2	13.8	5575	8.1			
43.50	34.5	3971	14.3	23.0	4137	10.0	11.5	4422	5.3			
ET 3067 / PD 3067												
50.59	29.6	4995	15.5	19.8	5641	11.7	9.9	6945	7.2	3000	10000	14
55.80	26.9	5141	14.5	17.9	5806	10.9	9.0	6373	6.0			
63.33	23.7	5343	13.3	15.8	6034	10.0	7.9	7366	6.1			
73.50	20.4	5587	11.9	13.6	6310	9.0	6.8	7597	5.4			
78.35	19.1	5593	11.2	12.8	6004	8.0	6.4	6600	4.4			
88.81	16.9	5914	10.5	11.3	6678	7.9	5.6	7898	4.7			
104.8	14.3	6215	9.3	9.5	7018	7.0	4.8	8169	4.1			
108.6	13.8	5968	8.6	9.2	6188	6.0	4.6	7082	3.4			
126.0	11.9	6568	8.2	7.9	7358	6.1	4.0	8478	3.5			
144.7	10.4	6227	6.8	6.9	6734	4.9	3.5	7766	2.8			
152.3	9.8	6180	6.4	6.6	6649	4.6	3.3	7668	2.6			
184.0	8.2	6297	5.4	5.4	6860	3.9	2.7	7901	2.2			
202.9	7.4	6639	5.1	4.9	7224	3.7	2.5	8308	2.1			
227.6	6.6	6556	4.5	4.4	7134	3.3	2.2	8205	1.9			
262.8	5.7	6183	3.7	3.8	6733	2.7	1.9	7753	1.5			
315.4	4.8	4894	2.4	3.2	5343	1.8	1.6	6175	1.0			

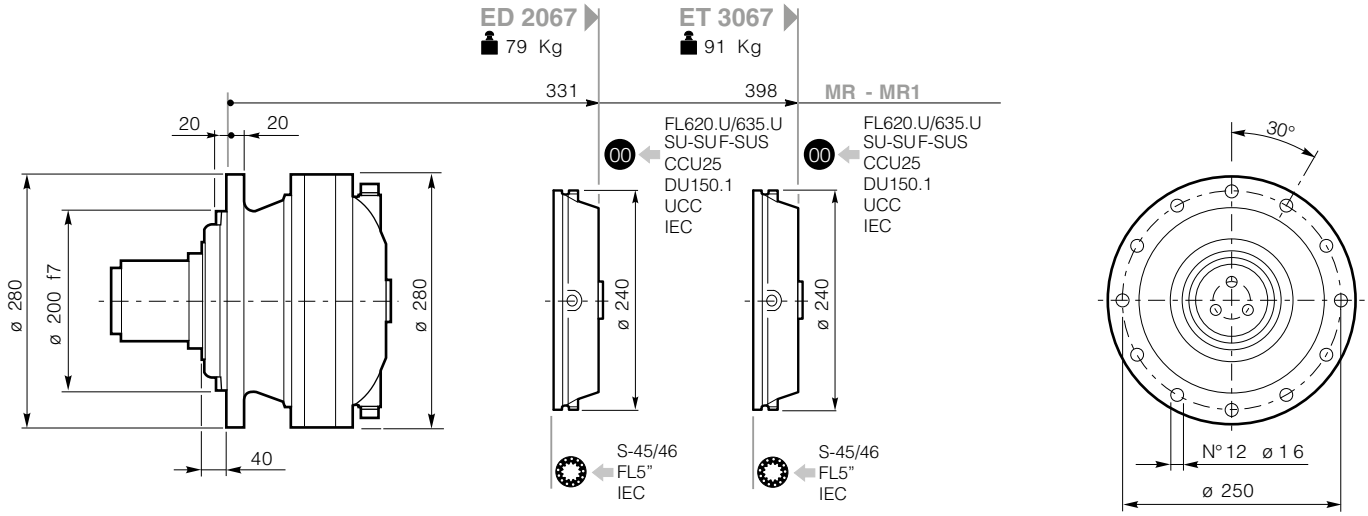
10000
hours life

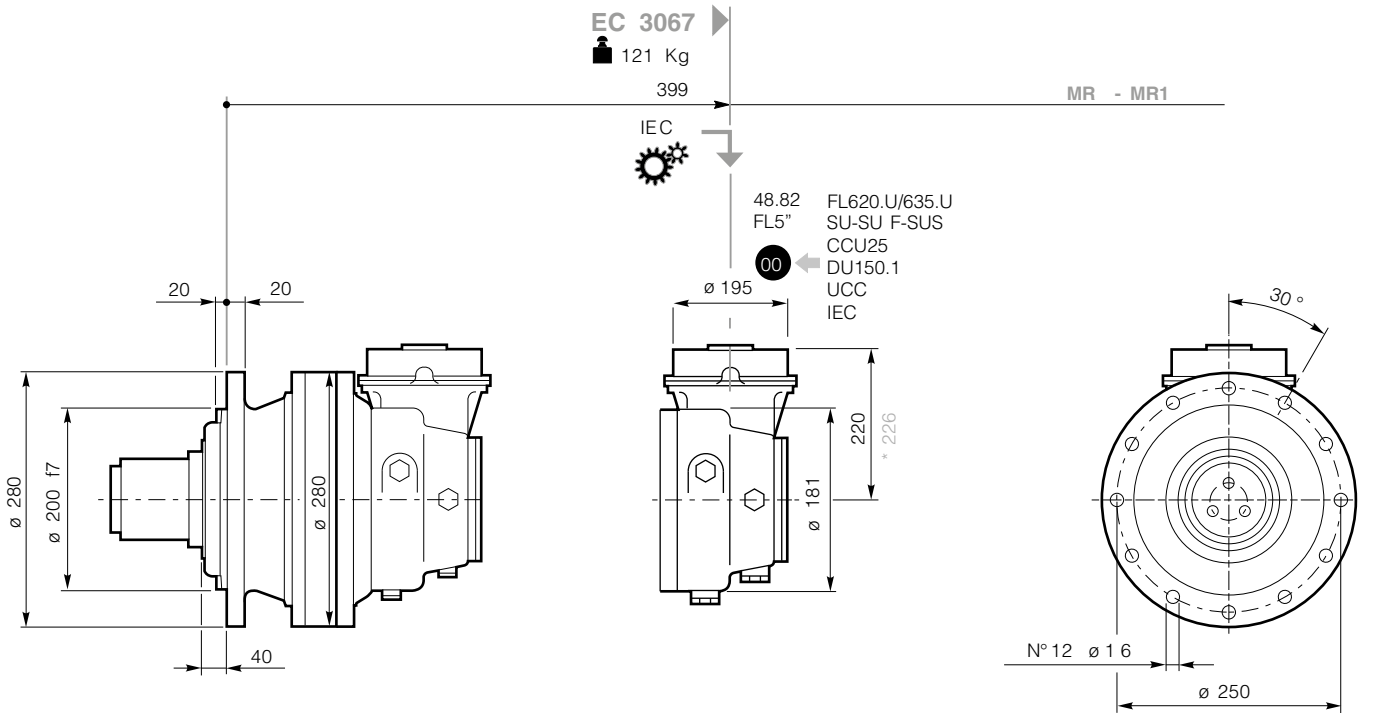
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 3067 / PDA 3067												
40.53	37.0	4671	18.1	24.7	5275	13.6	12.3	6131	7.9	3000	10000	11
43.37	34.6	4769	17.3	23.1	5386	13.0	11.5	6631	8.0			
47.83	31.4	4908	16.1	20.9	5543	12.1	10.5	6222	6.8			
56.60	26.5	5166	14.3	17.7	5834	10.8	8.8	7183	6.6			
63.00	23.8	5317	13.3	15.9	5987	9.9	7.9	6527	5.4			
70.02	21.4	5408	12.1	14.3	5944	8.9	7.1	6445	4.8			
83.60	17.9	5807	10.9	12.0	6558	8.2	6.0	7801	4.9			
92.20	16.3	5977	10.2	10.8	6202	7.0	5.4	7083	4.0			
97.02	15.5	6072	9.8	10.3	6858	7.4	5.2	8042	4.3			
117.2	12.8	6427	8.6	8.5	7211	6.4	4.3	7758	3.5			
120.0	12.5	6016	7.9	8.3	6237	5.4	4.2	7212	3.1			
145.0	10.3	6118	6.6	6.9	6493	4.7	3.4	7496	2.7			
167.5	9.0	5797	5.4	6.0	6124	3.8	3.0	7078	2.2			
201.0	7.5	4603	3.6	5.0	4846	2.5	2.5	5624	1.5			

* (bg) ⇨ All highlighted ratio (is. 40.53) have particular dimensions of bevel gears in some versions. See dimensional tables.

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 067 10 SU-SUF SUS → 067 11 FL5"- FL6" FL620 FL635 → 067 12 IEC → 067 15 → 067 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 067 3

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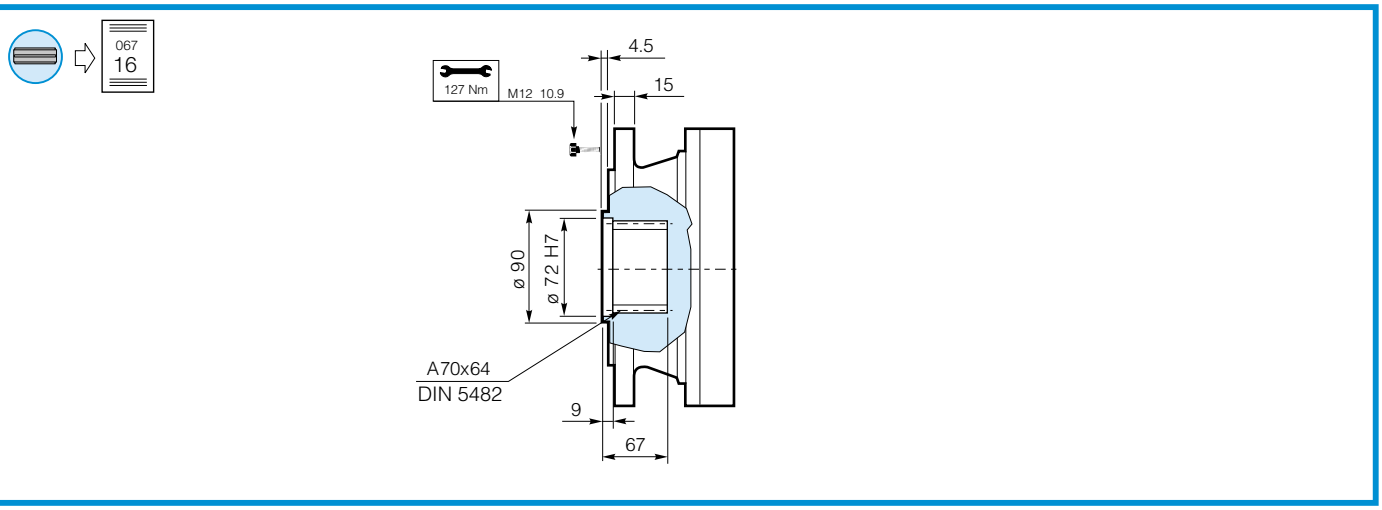

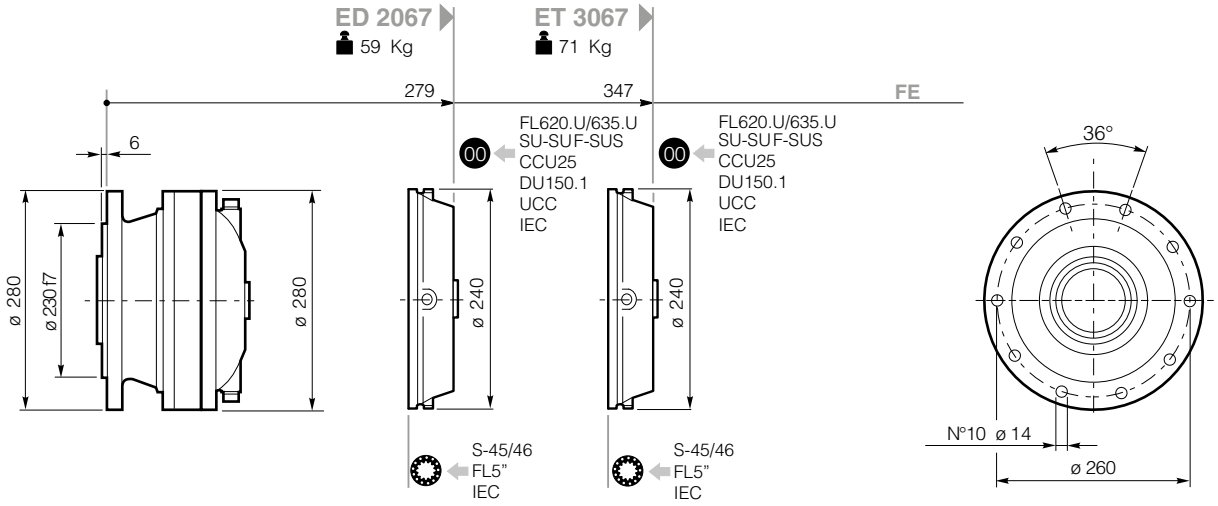

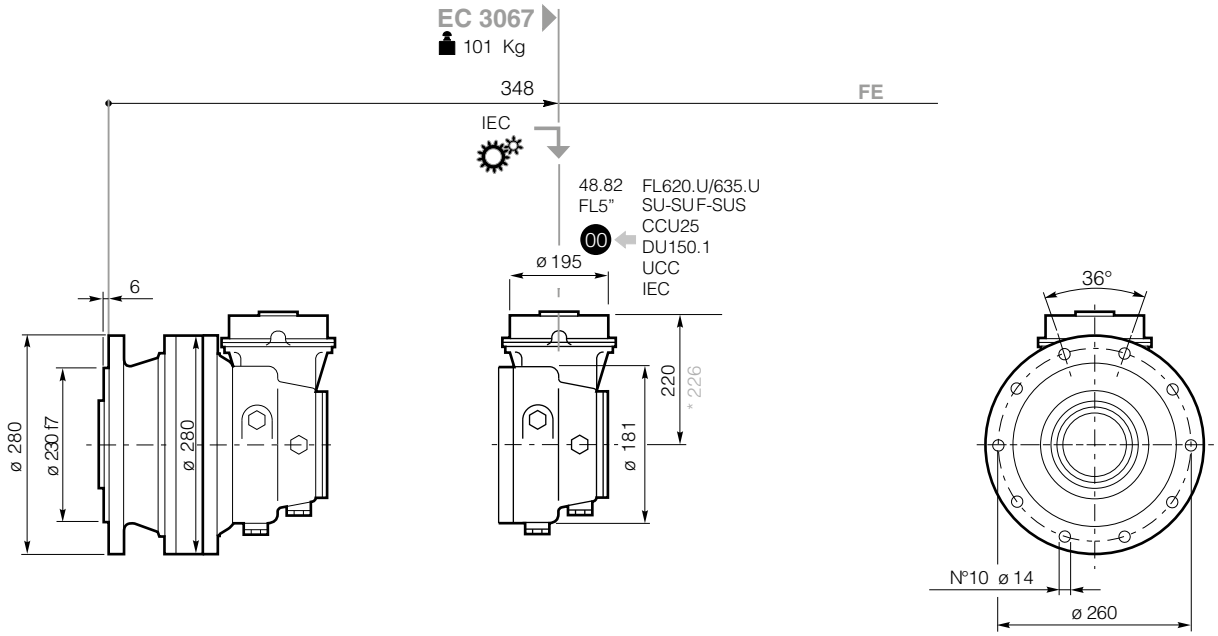

00 B13 S-45/46 48.82 → 067 10 SU-SUF SUS → 067 11 FL5"- FL6" FL620 FL635 → 067 12 IEC → 067 15 → 067 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 067 3

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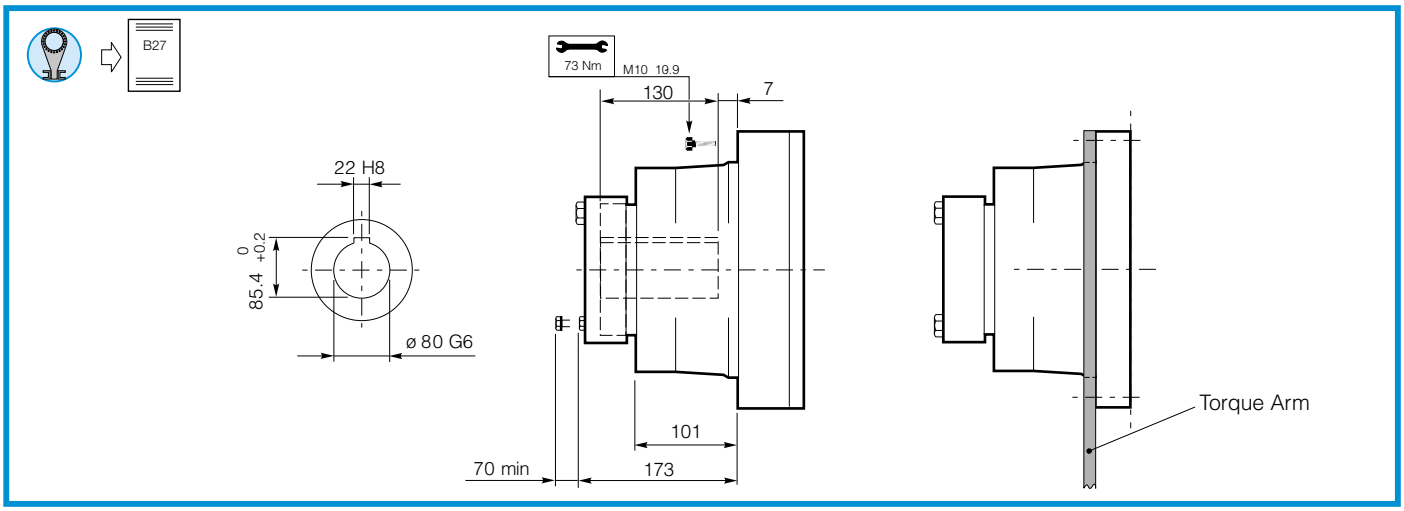
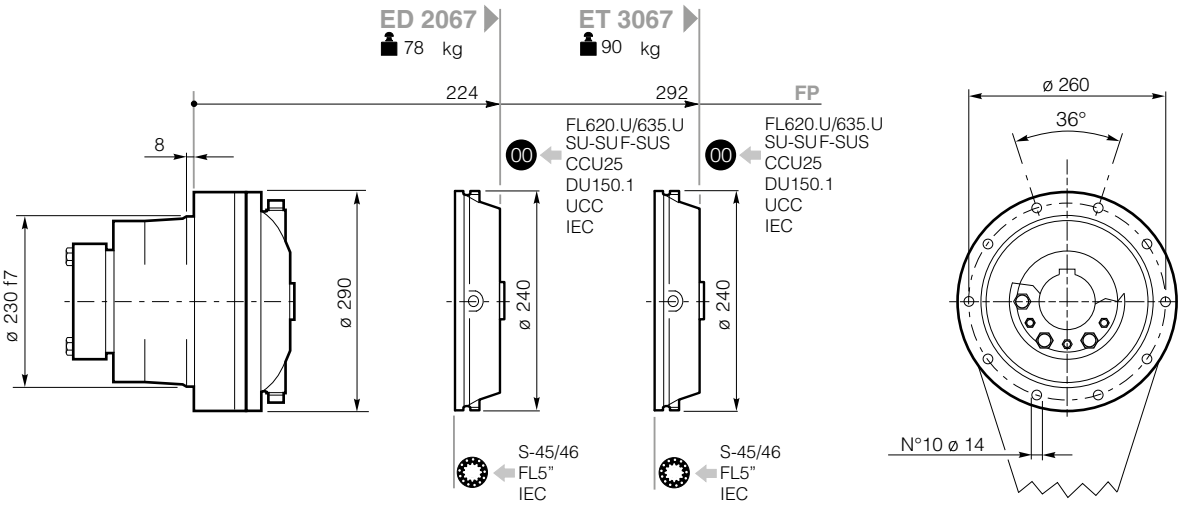
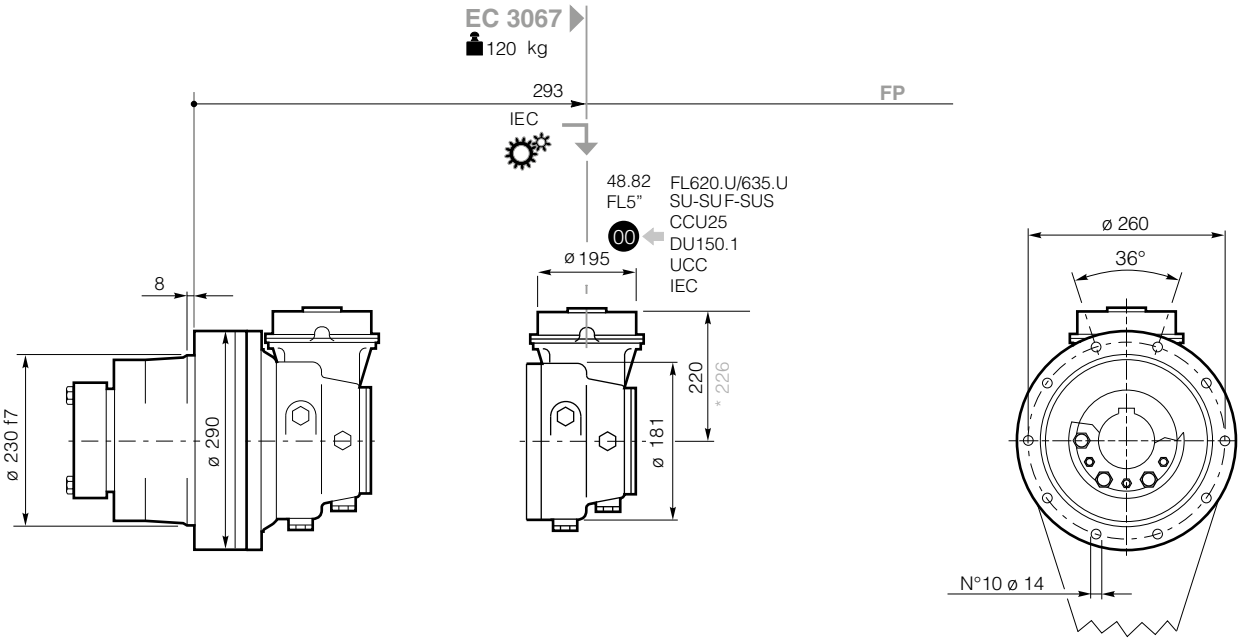
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 067 10 SU-SUF SUS → 067 11 FL5"- FL6" FL620 FL635 → 067 12 IEC → 067 15 → 067 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 067 3

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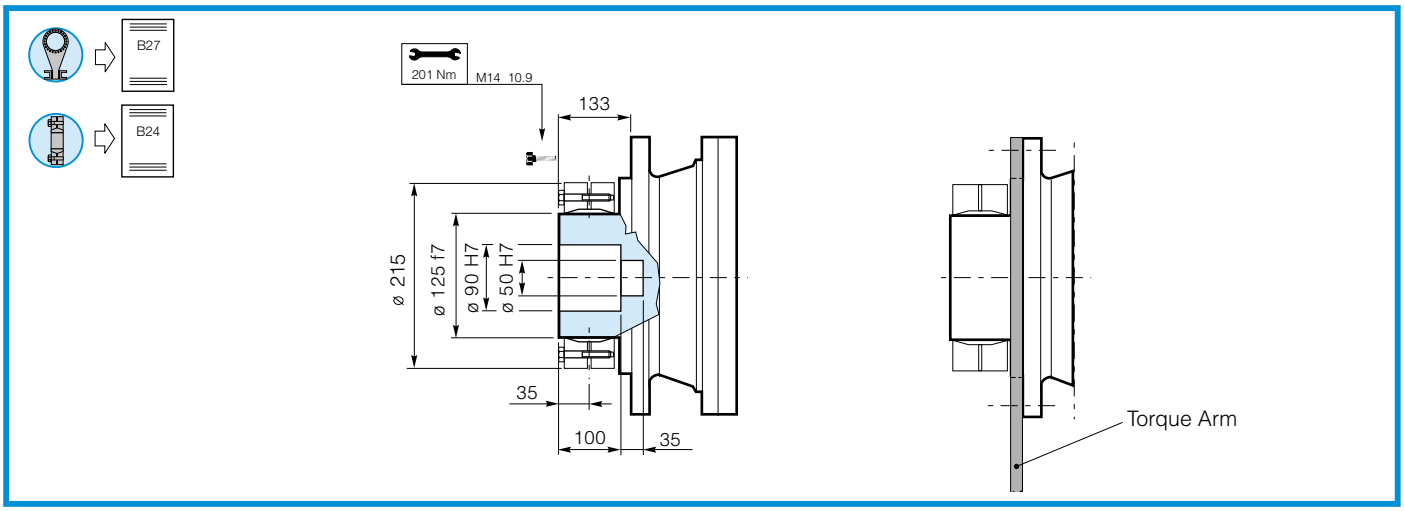

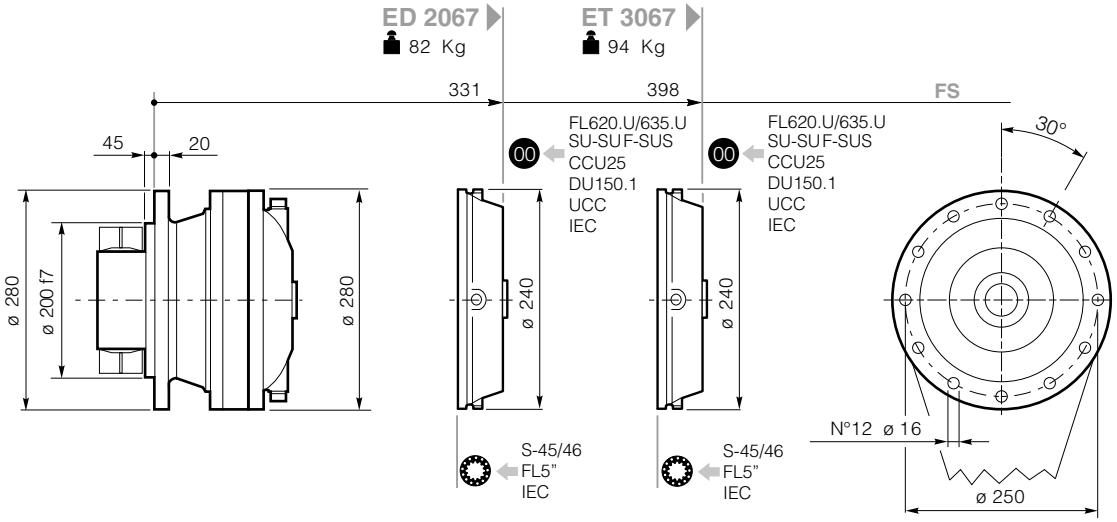

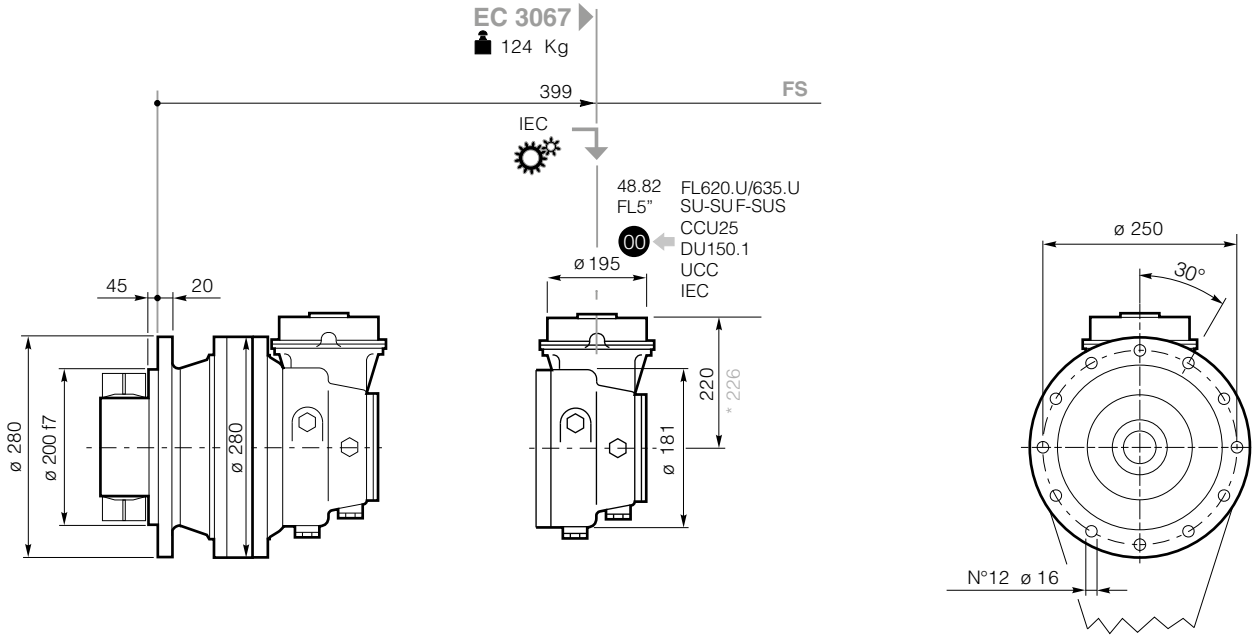

00 B13 | S-45/46 48.82 Q67 10 | SU-SUF SUS Q67 11 | FL5"- FL6" FL620 FL635 Q67 12 | IEC Q67 15 | Q67 14 | CCU25 B15 | DU150.1 UCC B16 | * bg 067 3

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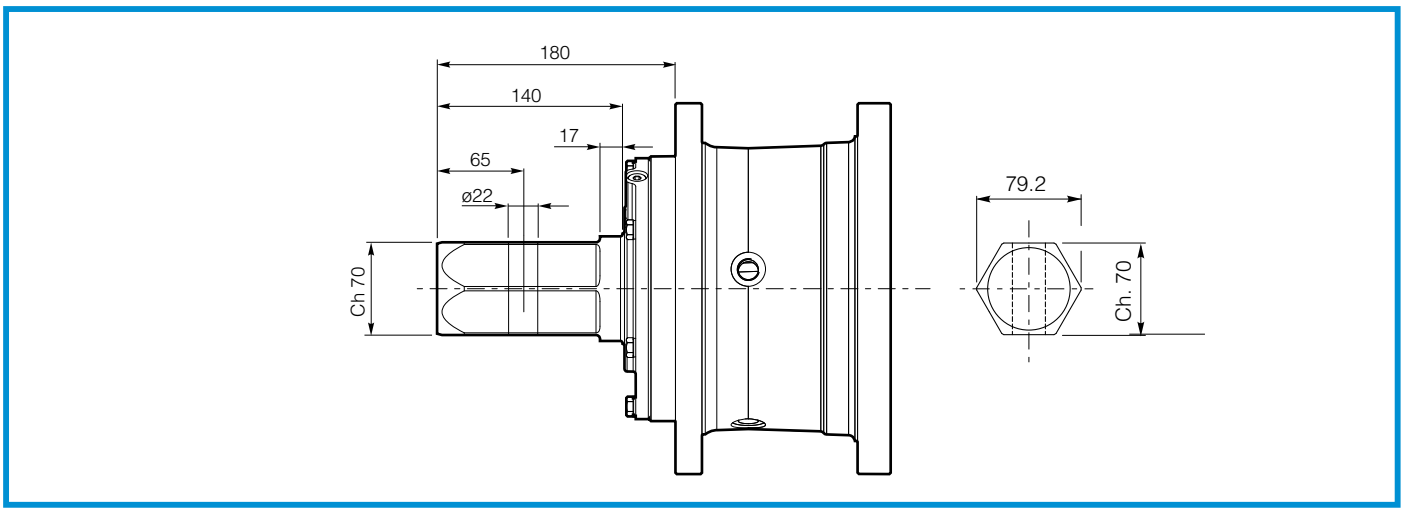
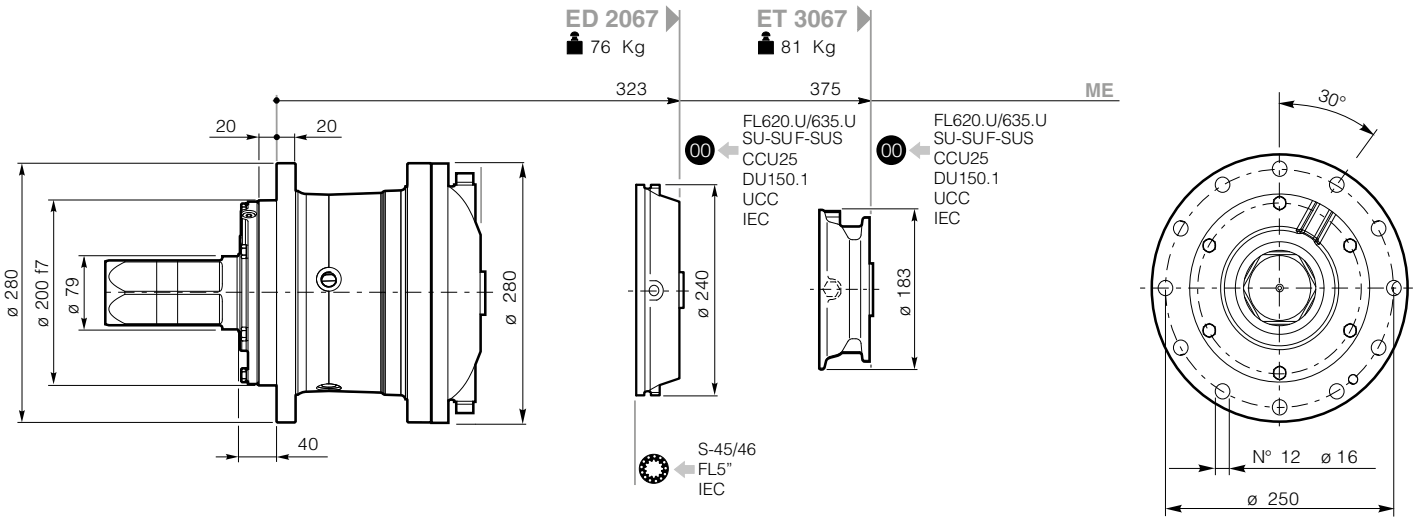
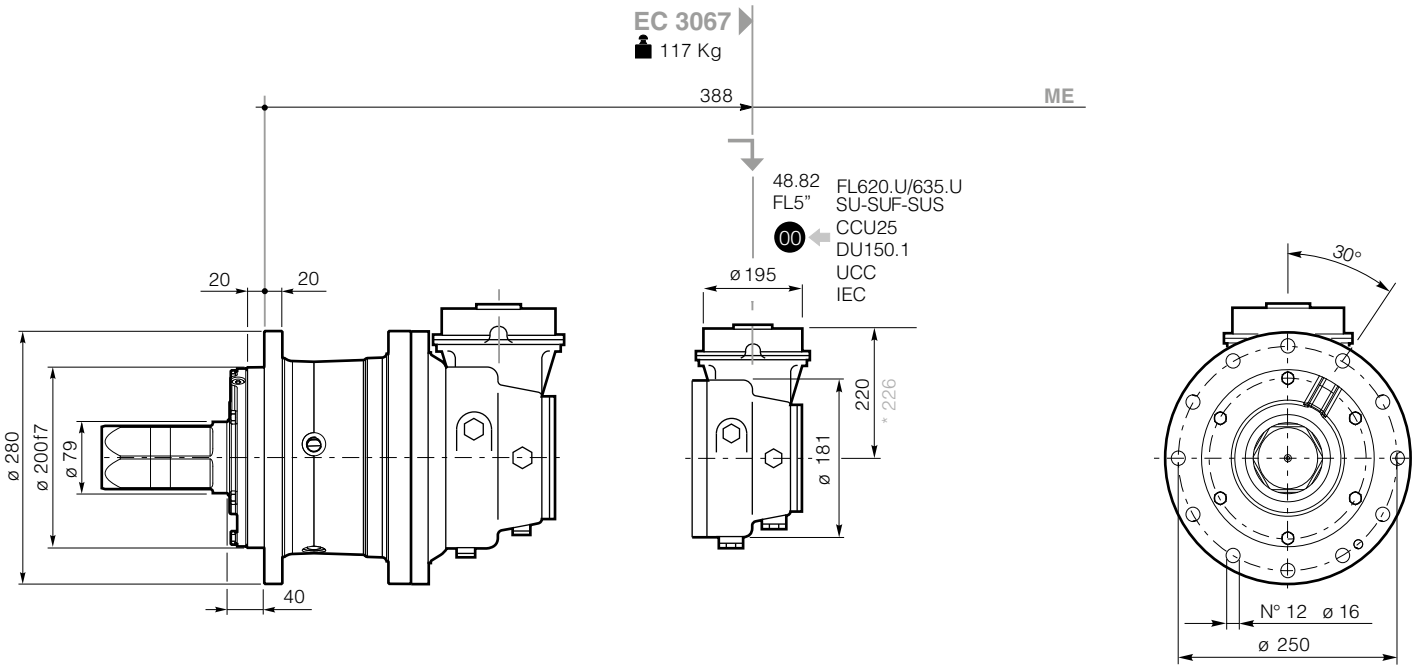
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 067 10 SU-SUF SUS → 067 11 FL5"- FL6" FL620 FL635 → 067 12 IEC → 067 15 → 067 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 067 3

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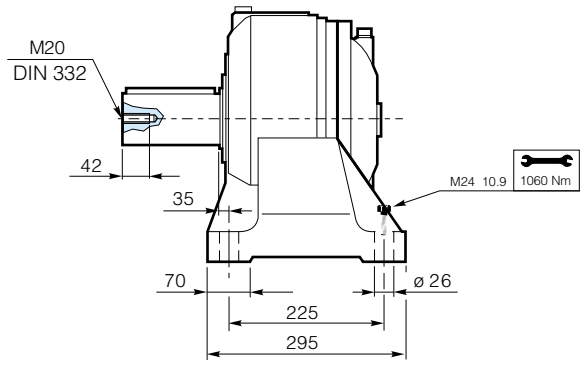
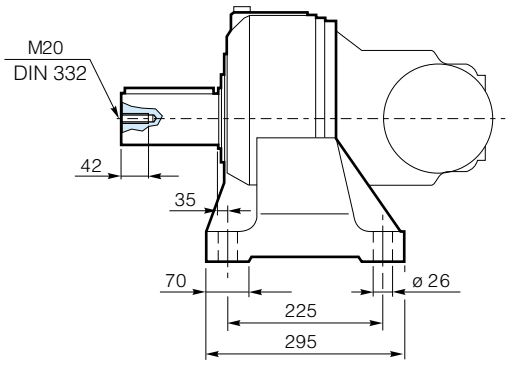
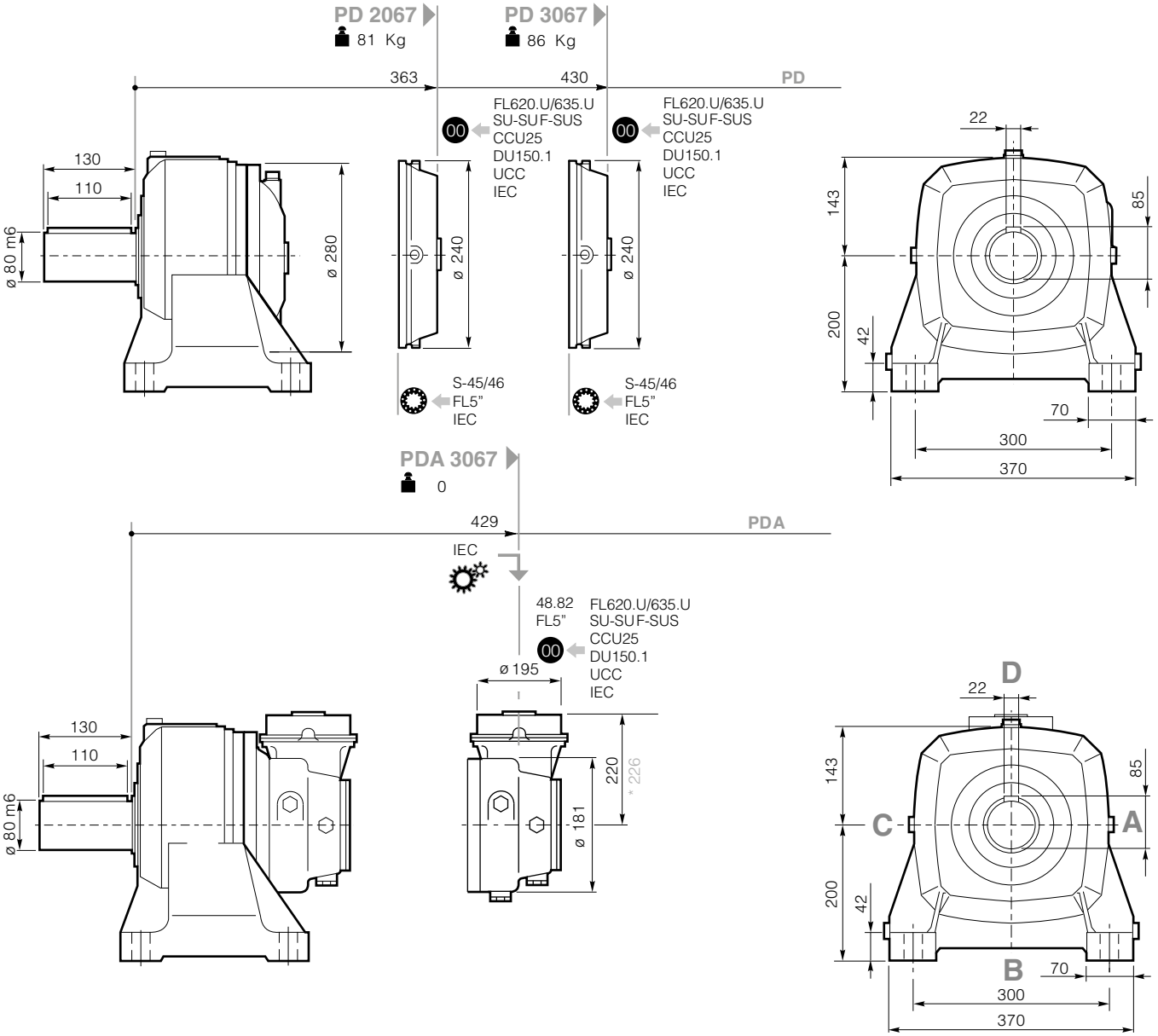
PD



PDA





00 B13 S-45/46 48.82 → 067 10 SU-SUF SUS → 067 11 FL5"- FL6" FL620 FL635 → 067 12 IEC → 067 15 → 067 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 067 3

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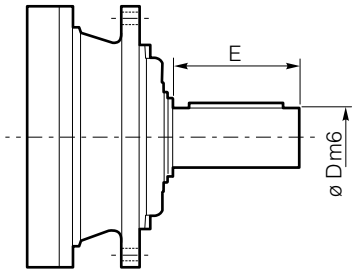
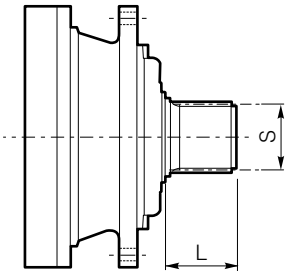
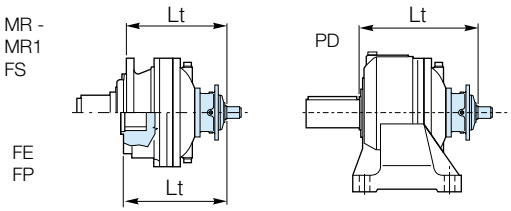
S-45CR1 - S-46C1 - S-45SR



S-45CR1 - S-46C1

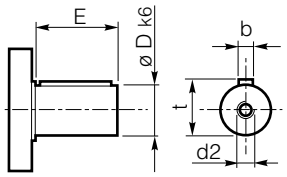


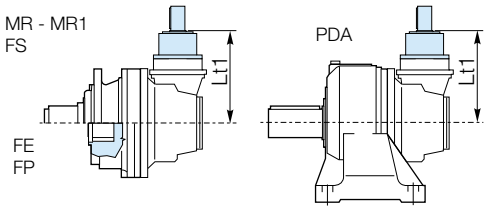
S-45SR



	D m6	E	L	S		Lt			
						MR-MR1-FS-ME	FE	FP	PD
S-45CR1	65	105	-	-	ED/PD 2067	393	342	287	433
					ET/PD 3067	461	409	354	501
S-46C1	65	105	-	-	ED/PD 2067	435	383	328	475
					ET/PD 3067	502	451	396	542
S-45SR	-	-	68	B58x53	ED/PD 2067	393	342	287	433
					ET/PD 3067	461	409	354	501

48.82

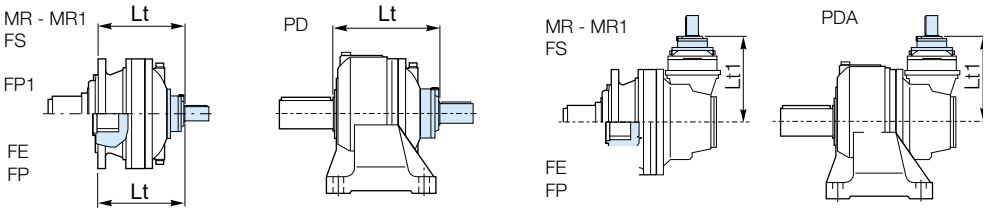


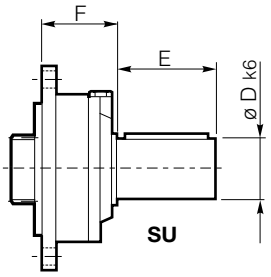


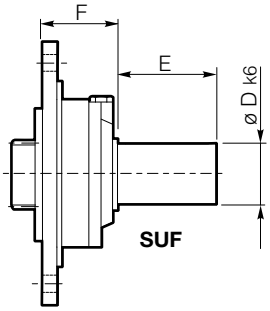
	D	E		Lt1
				MR-MR1-FS-FE-FP-PDA
48.82	48	82	EC/PDA 3067	280

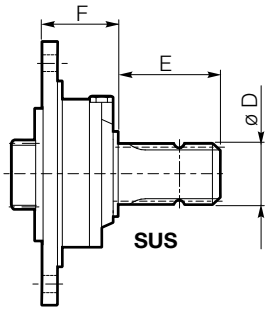
For the input configuration S46C1, 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

SU - SUF - SUS







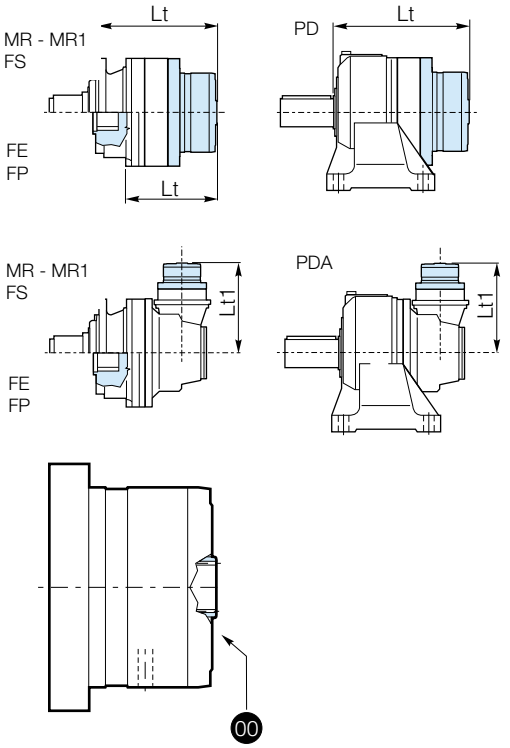


	D	E	F		Lt 00 MR-MR1-FS-ME	FE	FP	PD
SU1 28x50	28	50	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SU2 40x58	40	58	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SU3 48x82	48	82	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SU 42x80	42	80	101.5	ED/PD 2067	432	381	326	472
				ET/PD 3067	500	448	393	540
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	ED/PD 2067	432	381	326	472
				ET/PD 3067	500	448	393	540
SU2 1.5x3.25	38.10	82.55	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SUF1 28x50	28	50	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SUF2 40x58	40	58	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498
SUF3 48x82	48	82	60	ED/PD 2067	391	339	284	431
				ET/PD 3067	458	407	352	498

	D	E	F		Lt1 00 MR-MR1-FS-FE-FP-ME-PDA
SU1 28x50	28	50	60	EC/PDA 3067	280
SU2 40x58	40	58	60	EC/PDA 3065*	286
SU3 48x82	48	82	60		
SU 42x80	42	80	101.5	EC/PDA 3067	321.5
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC/PDA 3067*	327.5
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 3067	280
SUF1 28x50	28	50	60	EC/PDA 3067*	286
SUF2 40x58	40	58	60		
SUF3 48x82	48	82	60		

* bg 067 3

FL620.10 - FL635.10 / FL620.U - FL635.U

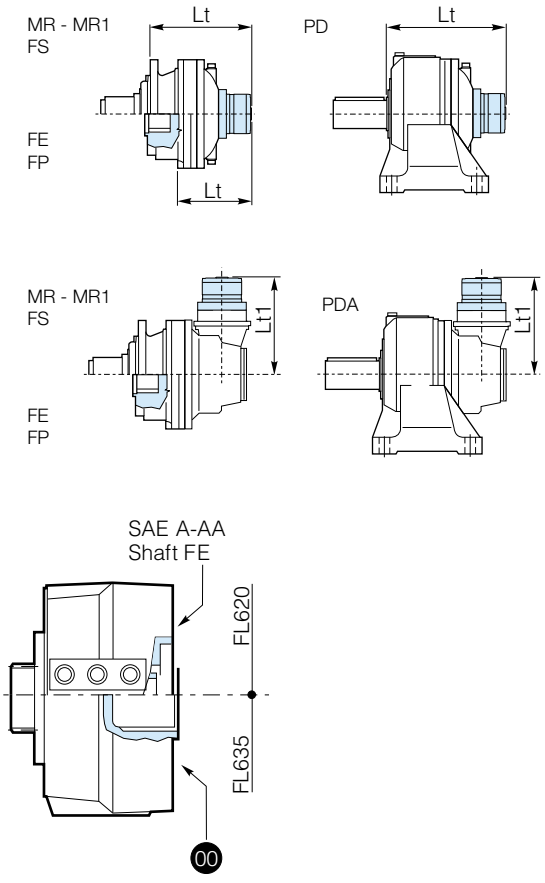


		Lt			
		MR-MR1-FS-ME	FE	FP	PD
FL250 FL350 FL450	ED/PD 2067	424	373	318	464
	ET/PD 3067	492	440	385	532
FL650 FL750	ED/PD 2067	438	386	331	478
	ET/PD 3067	505	454	399	545

		Lt1			
		MR-MR1-FS-ME	FE	FP	PDA
FL250 FL350 FL450	EC/PDA 3067	280	280	280	280
	EC/PDA 3067*	377	377	377	377

* bg 067 3

FL620.10 - FL635.10 / FL620.U - FL635.U



		Lt			
		MR-MR1-FS-ME	FE	FP	PD
FL620.U	ED/PD 2067	435	384	329	475
	ET/PD 3067	503	451	396	543
FL635.U	ED/PD 2067	422	370	315	462
	ET/PD 3067	489	438	383	529

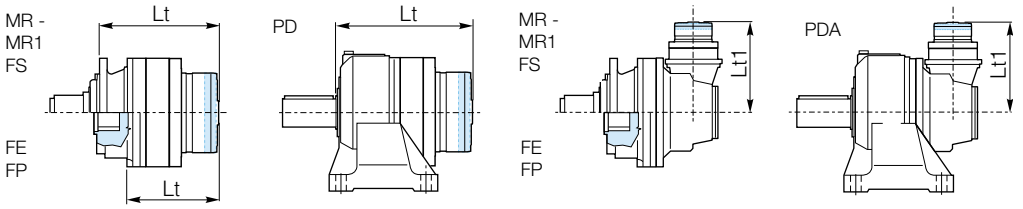
		Lt1			
		MR-MR1-FS-ME	FE	FP	PDA
FL620.U	EC/PDA 3067	325	325	325	325
	EC/PDA 3067*	331	331	331	331
FL635.U	EC/PDA 3067	311	311	311	311
	EC/PDA 3067*	317	317	317	317

* bg 067 3

Click **DANA** button to return to section index

Click *i* button to return to main index

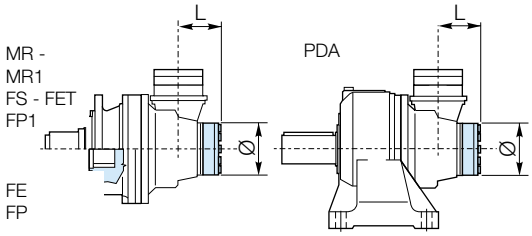
RL



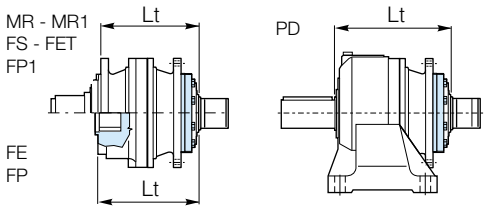
				Lt			
				MR-MR1-FS-ME	FE	FP	PD
RL	+	FL250 FL350 FL450	ED/PD 2067	450	399	344	490
			ET/PD 3067	518	466	411	558
		FL650 FL750	ED/PD 2067	464	412	357	504
			ET/PD 3067	531	480	425	571

				Lt1
				MR-MR1-FS-FE-ME-FP-PDA
RL	+	FL250 FL350 FL450	EC/PDA 3067	306
			EC/PDA 3067*	403

* bg 067 3

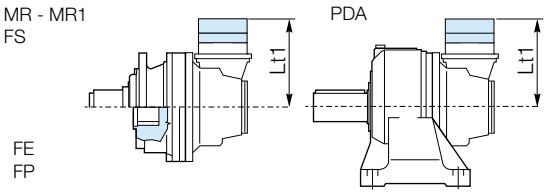


				L	Ø
RL	+	CC40	EC/PDA 3067	135.2	150

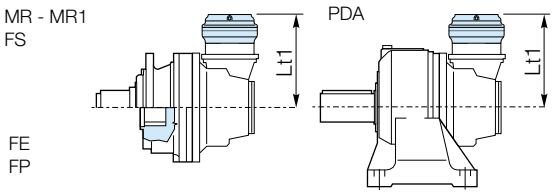


				Lt			
				MR-MR1-FS-ME	FE	FP	PD
RL	+	S46C1	ED/PD 2067	455	403	348	495
			ET/PD 3067	522	471	416	562

ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

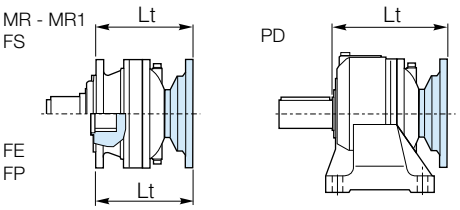


ED2010 - ED2020 ED2022

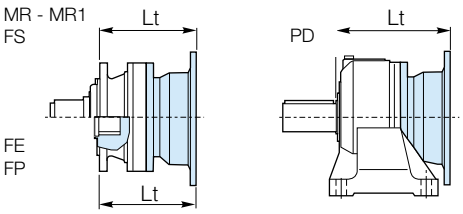
	Lt1	
	EC3067 PDA3067	EC3067* PDA3067*
EM1010	327	333
EM1020	345	351
ED2010	366	373
ED2020	398	404
ED2021	413	419

* bg 067 3

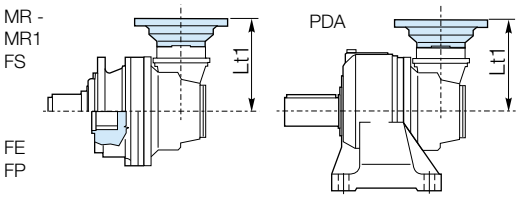
IEC Motor



		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2067	MR-MR1-FS-ME	351	353	358	359	426	457	468	498
ED 2067	FE	299	301	306	307	374	405	416	446
ED 2067	FP	244	246	251	252	319	350	361	391
ET 3067	MR-MR1-FS-ME	418	420	425	426	493	524	535	565
ET 3067	FE	367	369	374	375	442	473	484	514
ET 3067	FP	312	314	319	320	387	418	429	459
PD 2067	PD	391	393	398	399	466	497	508	538
PD 3067		458	460	465	466	533	564	575	605

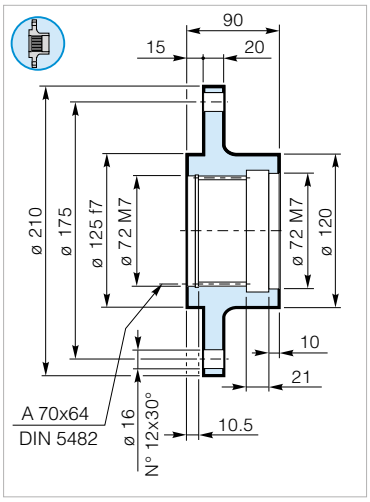


		Lt		
		IEC		
		160 180	200	225
ED 2067	MR-MR1-FS-ME	457	467	497
ED 2067	FE	405	415	445
ED 2067	FP	350	360	390
ED 2067	PD	497	507	537
ET 3067	MR-MR1-FS-ME	524	534	-
ET 3067	FE	473	483	-
ET 3067	FP	418	428	-
PD 3067	PD	564	574	-

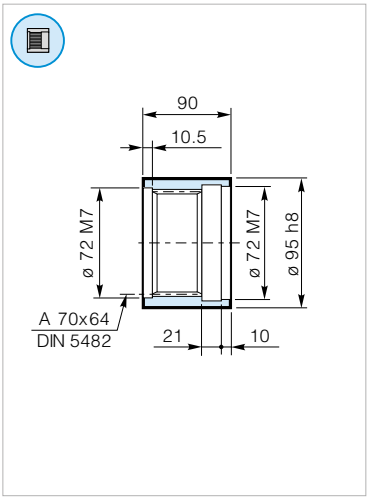


		Lt1							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC 3067	MR-MR1-FE-FS-FP	240	242	247	248	315	346	357	
EC 3067*	MR-MR1-FE-FS-FP	246	248	253	254	321	352	363	
PDA 3067	PDA	240	242	247	248	315	346	357	
PDA 3067*	PDA	246	248	253	254	321	352	363	

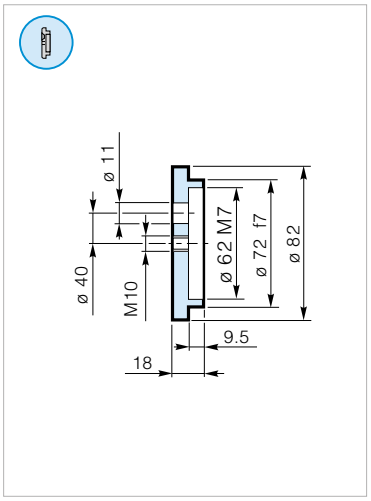
FR 065 Wheel Flange



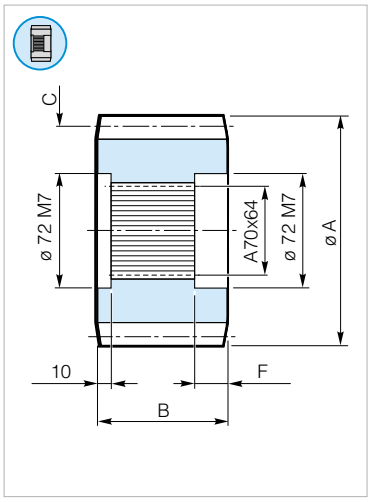
MS 065 Splined Sleeve



RDF 065 Lock Washer

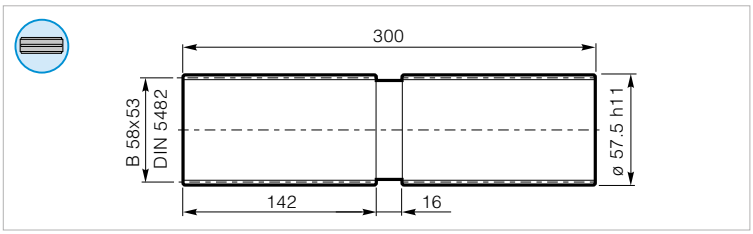


Pinions



A	B	C			F
		m	z	x	
136	80	10	11	0,5	31,0
160	90	10	13	0,5	31,0
149	90	10	12	0,5	31,0
170	98	10	15	0	31,0
160	99	10	13	0,5	31,0
138	100	10	11	0,5	31,0
160	105	10	13	0,5	31,0
219	115	16	11	0,4	31,0
249	115	14	15	0,5	31,0

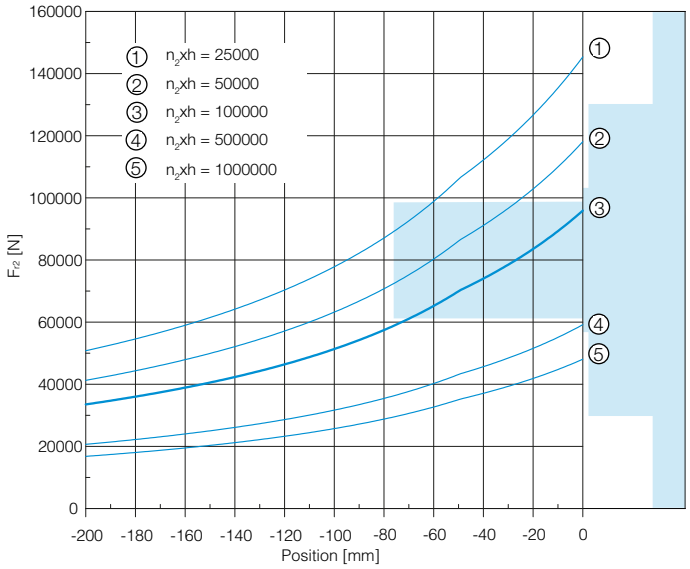
BS 065 Splined Bar



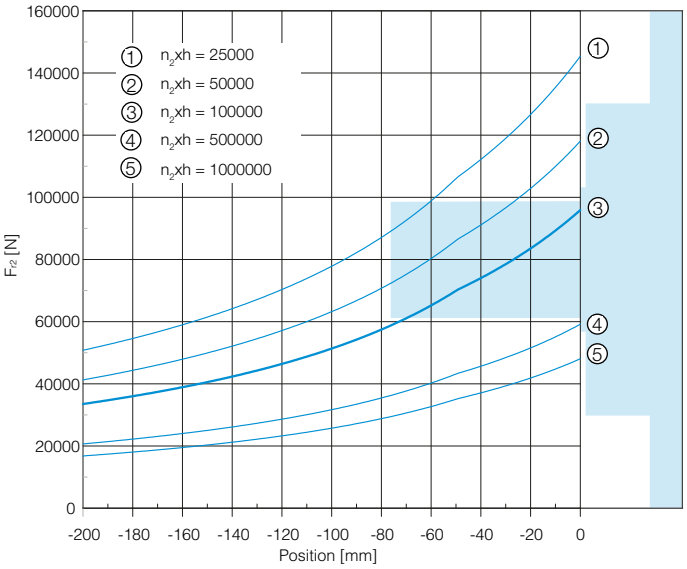
Code: 39127030100
Mat.: High mechanical resistance alloyed steel

Output Radial Loads

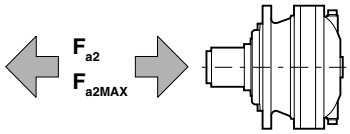
MR - MR1



PD

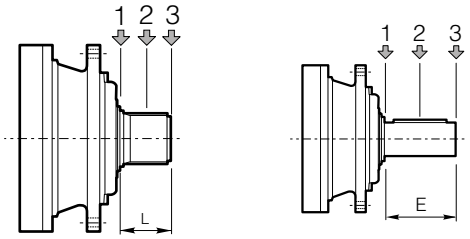


Output Axial Loads



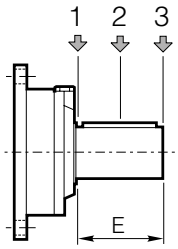
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	–	50000	30000
F_{a2MAX}	[N]	–	90000	30000

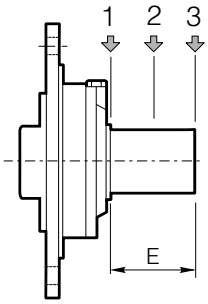
Input Radial Loads

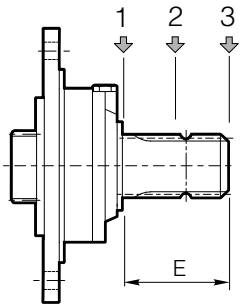


			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000

Input Radial Loads

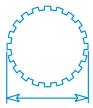
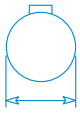
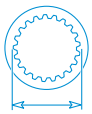
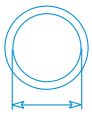
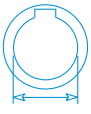






		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

090

i_{eff}	4.08 - 3207
T_{2N} (Nm)	9200
	B80X74 DIN5482
	90 mm
	B70X64 DIN5482
	100 mm
	69.4 mm
	90 mm

10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1090 / PD 1090												
4.08	368	2936	113	245	2447	114.0	123	3013	69.7			
5.05	297	3054	95	198	2545	96.6	99	3134	59.0			
5.81	258	3122	84	172	2602	85.8	86	3204	52.4	2500	11070	53.6
6.92	217	3246	74	145	2706	73.8	72	3331	45.9			
8.70	172	2868	52	115	2271	49.6	57	2506	27.4			
ED 2090 / PD 2090												
14.28	105	4276	47.0	70	3564	47.5	35.0	4387	29.2			
16.85	89	4493	41.9	59	3745	42.2	29.7	4611	26.0			
17.68	85	4447	39.5	57	3706	40.0	28.3	4564	24.5			
21.09	71	4807	35.8	47.4	4006	36.2	23.7	4932	22.3			
24.48	61	5026	32.3	40.8	4189	32.6	20.4	5158	20.0			
29.58	51	5320	28.3	33.8	4434	28.6	16.9	5459	17.6	3000	15000	23
30.30	49.5	5228	27.1	33.0	4357	27.4	16.5	5365	16.9			
36.61	41.0	5533	23.7	27.3	4612	24.0	13.7	5677	14.8			
41.52	36.1	4902	18.5	24.1	3769	17.3	12.0	4027	9.3			
44.98	33.3	3629	12.7	22.2	2804	11.8	11.1	3020	6.4			
50.17	29.9	4998	15.7	19.9	3839	14.6	10.0	4097	7.8			
ET 3090 / PD 3090												
58.98	25.4	6543	17.4	17.0	5454	17.6	8.5	6714	10.9			
61.86	24.2	6476	16.4	16.2	5398	16.6	8.1	6128	9.4			
73.83	20.3	7000	14.9	13.5	5834	15.0	6.8	7182	9.3			
75.40	19.9	7044	14.7	13.3	5871	14.9	6.6	7228	9.1			
87.12	17.2	7356	13.3	11.5	6131	13.4	5.7	7548	8.2			
101.1	14.8	7692	12.0	9.9	6411	12.1	4.9	7663	7.2			
109.1	13.8	7869	11.3	9.2	6559	11.4	4.6	8074	7.1			
126.6	11.9	8228	10.2	7.9	6858	10.3	4.0	8443	6.3			
146.9	10.2	8604	9.2	6.8	7171	9.3	3.4	7951	5.1	3000	15000	15
152.9	9.8	8709	8.9	6.5	7258	9.0	3.3	8873	5.5			
177.5	8.5	9107	8.1	5.6	7563	8.0	2.8	8098	4.3			
209.2	7.2	7381	5.5	4.8	5771	5.2	2.4	6638	3.1			
219.7	6.8	8429	6.0	4.6	6759	5.9	2.3	7758	3.4			
252.7	5.9	7502	4.7	4.0	5999	4.6	2.0	6891	2.5			
265.4	5.7	8765	5.2	3.8	7022	5.1	1.9	8049	3.0			
305.4	4.9	7776	4.0	3.3	6233	3.9	1.6	7150	2.3			
363.7	4.1	6105	2.6	2.7	4907	2.5	1.4	5651	1.5			
EQ 4090 / PD 4090												
409.3	409.3	302	548.9	2.4	9467	4.43	1.2	10085	2.28			
443.0	443.0	327	594.1	2.3	9579	4.16	1.1	10194	2.15			
512.4	512.4	378	687.1	2.0	9612	3.62	0.98	10398	1.88			
555.6	555.6	410	745.1	1.8	9384	3.22	0.90	10514	1.74			
654.3	654.3	483	877.4	1.5	9611	2.82	0.76	10749	1.61			
718.5	718.5	530	963.5	1.4	9906	2.68	0.70	10886	1.48			
779.1	779.1	575	1044.8	1.3	8787	2.15	0.64	10224	1.25			
878.3	878.3	648	1177.8	1.1	10182	2.15	0.57	11070	1.21			
1019	1019	752	1366.5	0.98	9327	1.74	0.49	10822	1.01			
1145	1145	845	1535.4	0.87	10556	1.74	0.44	11070	0.93	3000	15000	11
1232	1232	909	1652.1	0.81	9719	1.48	0.41	11070	0.86			
1329	1329	981	1782.2	0.75	10771	1.61	0.38	11070	0.80			
1606	1606	1185	2153.6	0.62	11050	1.31	0.31	11070	0.66			
1864	1864	1376	2499.6	0.54	10619	1.09	0.27	11070	0.56			
1988	1988	1467	2665.9	0.50	10322	0.99	0.25	11070	0.52			
2307	2307	1703	3093.7	0.43	10609	0.87	0.22	11070	0.47			
2524	2524	1863	3384.7	0.40	7196	0.55	0.20	8192	0.31			
2787	2787	2057	3737.4	0.36	10981	0.75	0.18	11070	0.38			
3207	3207	2367	4300.6	0.31	9771	0.58	0.16	11070	0.34			

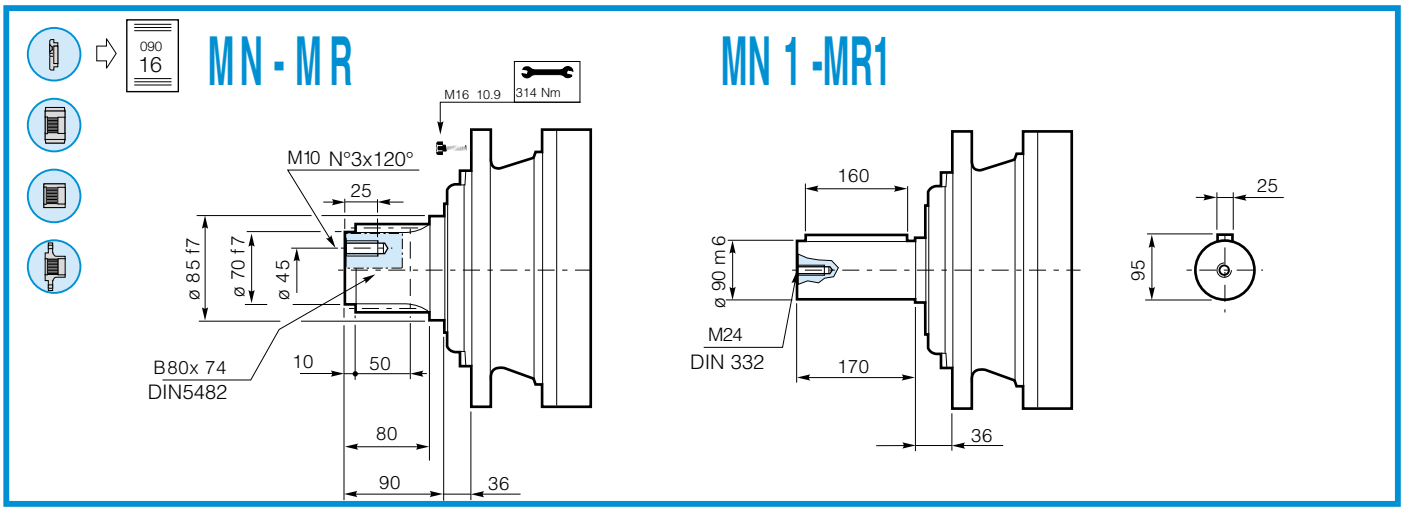
10000 hours life

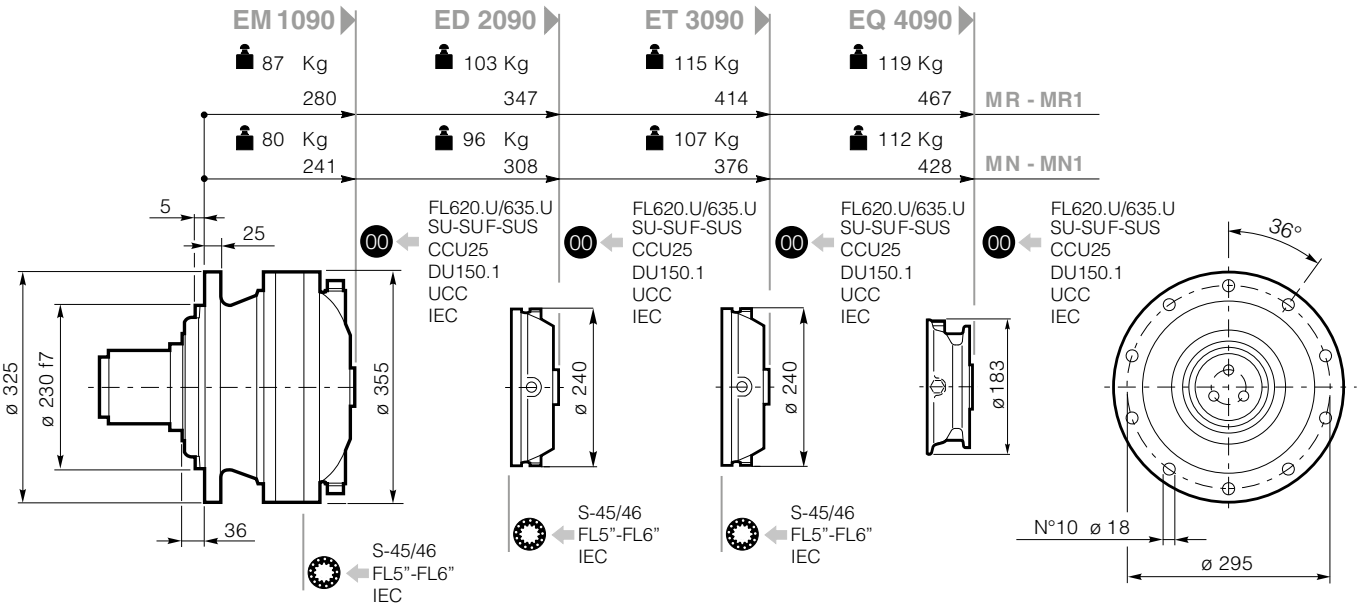
i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EC 2090 / PDA 2090												
12.24	123	2760	35.4	82	3117	26.7	40.8	3838	16.4	3000	15000	18
15.15	99	3416	35.4	66	3858	26.7	33.0	4750	16.4			
17.43	86	3931	35.4	57	4439	26.7	28.7	5465	16.4			
20.76	72	4514	34.2	48.2	4753	24.0	24.1	5107	12.9			
23.33	64	2283	15.4	42.9	2578	11.6	21.4	3174	7.1			
26.84	56	2627	15.4	37.3	2966	11.6	18.6	3652	7.1			
31.97	46.9	3129	15.4	31.3	3533	11.6	15.6	4350	7.1			
40.19	37.3	3582	14.0	24.9	3753	9.8	12.4	4045	5.3			
EC 3090 / PDA 3090												
42.84	35.0	5945	21.8	23.3	6714	16.4	11.7	8266	10.1	3000	15000	15
50.55	29.7	6248	19.4	19.8	7056	14.6	9.9	8687	9.0			
53.03	28.3	6184	18.3	18.9	6983	13.8	9.4	8194	8.1			
65.97	22.7	6457	15.4	15.2	7292	11.6	7.6	8977	7.1			
73.44	20.4	6989	14.9	13.6	7893	11.3	6.8	9717	6.9			
77.85	19.3	7112	14.4	12.8	8032	10.8	6.4	9888	6.7			
90.90	16.5	7269	12.6	11.0	8085	9.3	5.5	8813	5.1			
97.45	15.4	7608	12.3	10.3	8592	9.2	5.1	10578	5.7			
113.1	13.3	7955	11.1	8.8	8984	8.3	4.4	10501	4.9			
120.6	12.4	7913	10.3	8.3	8286	7.2	4.1	9334	4.1			
140.0	10.7	8104	9.1	7.1	8393	6.3	3.6	9617	3.6			
161.1	9.3	7216	7.0	6.2	7474	4.9	3.1	8537	2.8			
169.1	8.9	8238	7.7	5.9	8684	5.4	3.0	9985	3.1			
194.6	7.7	7336	5.9	5.1	7704	4.1	2.6	8867	2.4			
231.8	6.5	5772	3.9	4.3	6047	2.7	2.2	6990	1.6			
EC 4090 / PDA 4090												
285.8	5.2	8898	4.9	3.5	9657	3.5	1.7	11063	2.0	3000	15000	10
321.5	4.7	10884	5.3	3.1	12248	4.0	1.6	13220	2.2			
341.1	4.4	11078	5.1	2.9	12149	3.7	1.5	13144	2.0			
395.8	3.8	11585	4.6	2.5	12747	3.4	1.3	13603	1.8			
467.1	3.2	12173	4.1	2.1	12996	2.9	1.1	13913	1.6			
503.8	3.0	12131	3.8	2.0	12602	2.6	0.99	14058	1.5			
564.4	2.7	12624	3.5	1.8	13056	2.4	0.89	14276	1.3			
623.6	2.4	10399	2.6	1.6	11250	1.9	0.80	12829	1.1			
706.5	2.1	12523	2.8	1.4	13246	2.0	0.71	14717	1.1			
820.0	1.8	11431	2.2	1.2	12043	1.5	0.61	14005	0.89			
874.5	1.7	11105	2.0	1.1	12000	1.4	0.57	13661	0.82			
1015	1.5	11427	1.8	0.99	12342	1.3	0.49	14042	0.72			
1168	1.3	10154	1.4	0.86	10972	0.98	0.43	12491	0.56			
1226	1.2	11847	1.5	0.82	12789	1.1	0.41	14537	0.62			
1411	1.1	10530	1.2	0.71	11371	0.84	0.35	12934	0.48			
1680	0.89	8340	0.78	0.60	9023	0.56	0.30	10291	0.32			
1748	0.86	6325	0.57	0.57	6890	0.41	0.29	7939	0.24			
2113	0.71	6585	0.49	0.47	7165	0.36	0.24	8245	0.20			

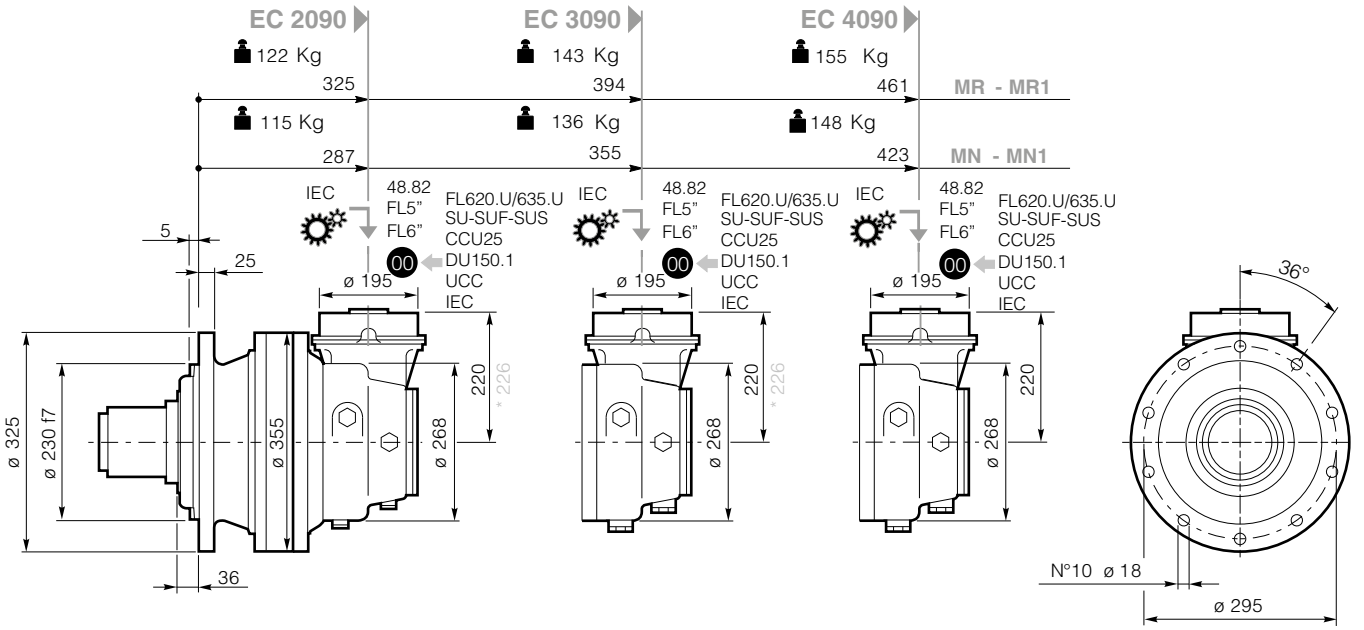
090

* (bg) All highlighted ratio (is. 12.24) have particular dimensions of bevel gears in some versions. See dimensional tables.

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 090 10 SU-SUF SUS → 090 11 FL5"- FL6' FL620 FL635 → 090 12 IEC → 090 15 → 090 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 090 3

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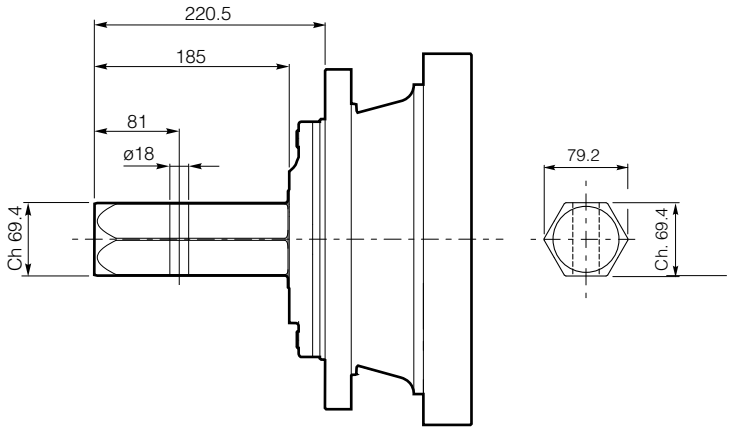

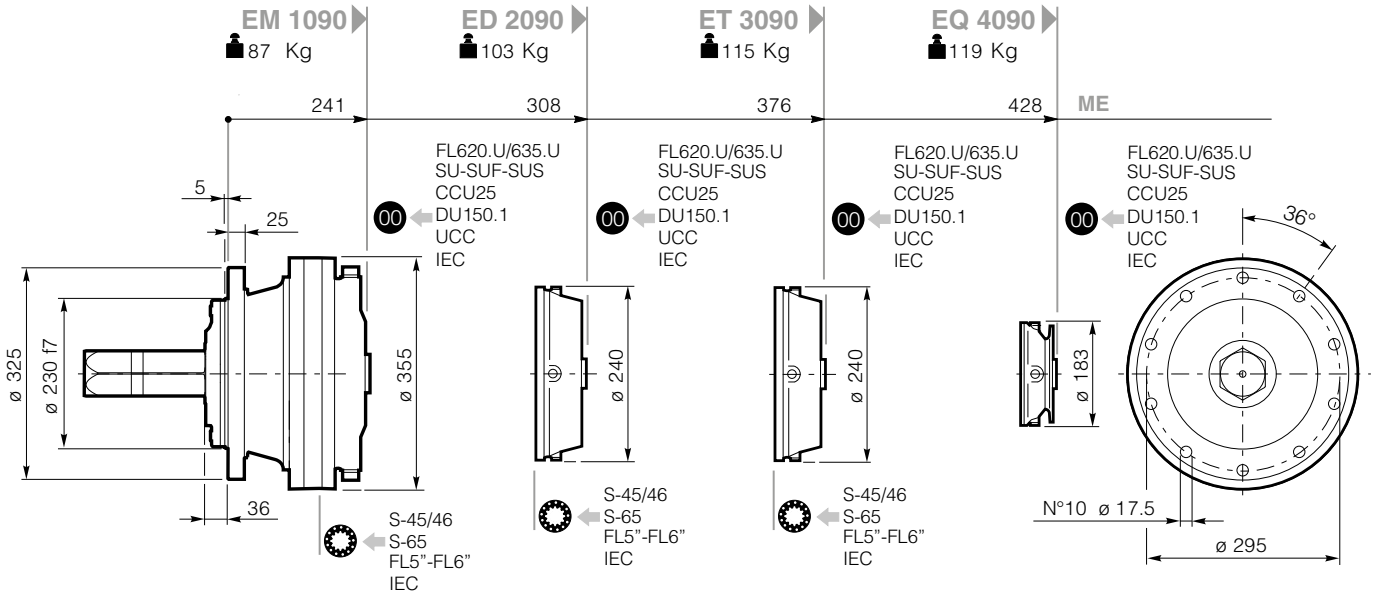

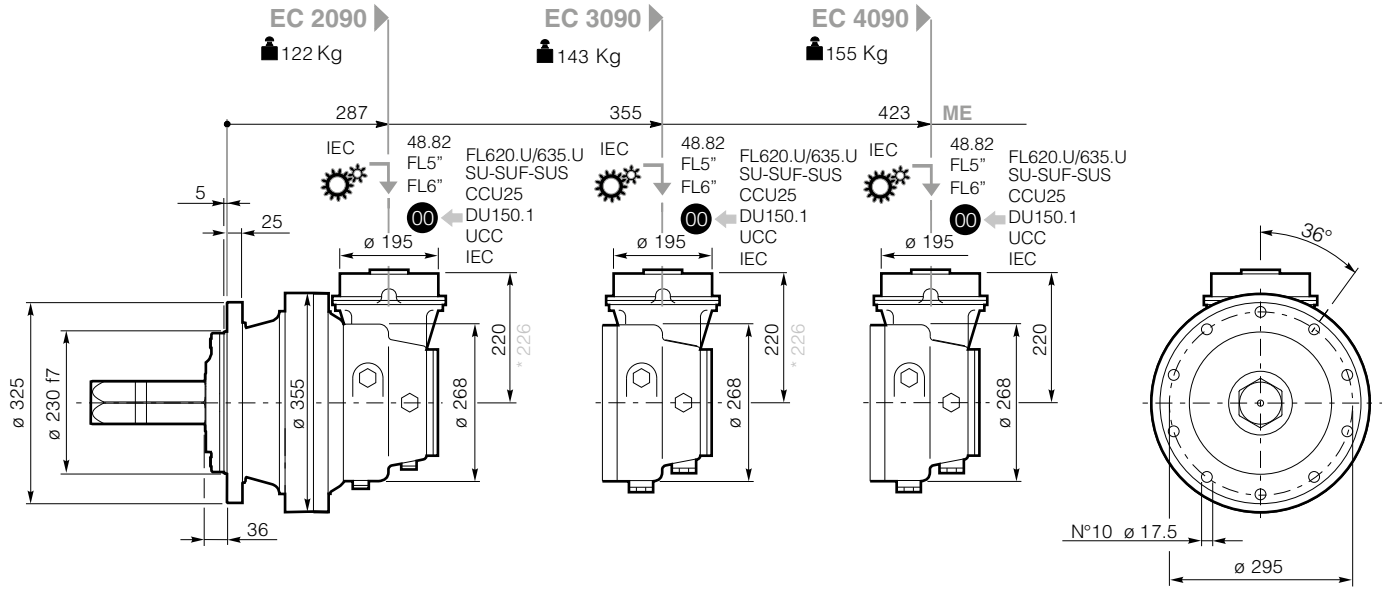

00 B13 S-45/46 48.82 → 090 10 | SU-SUF SUS → 090 11 | FL5"- FL6' FL620 FL635 → 090 12 | IEC → 090 15 | 090 14 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 090 3

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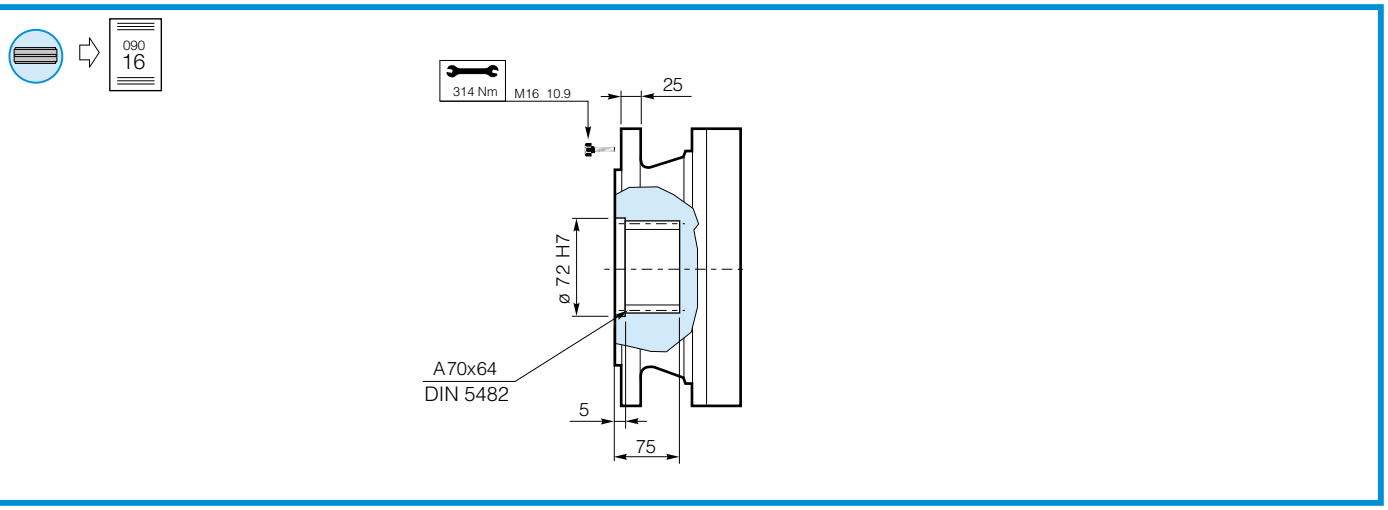
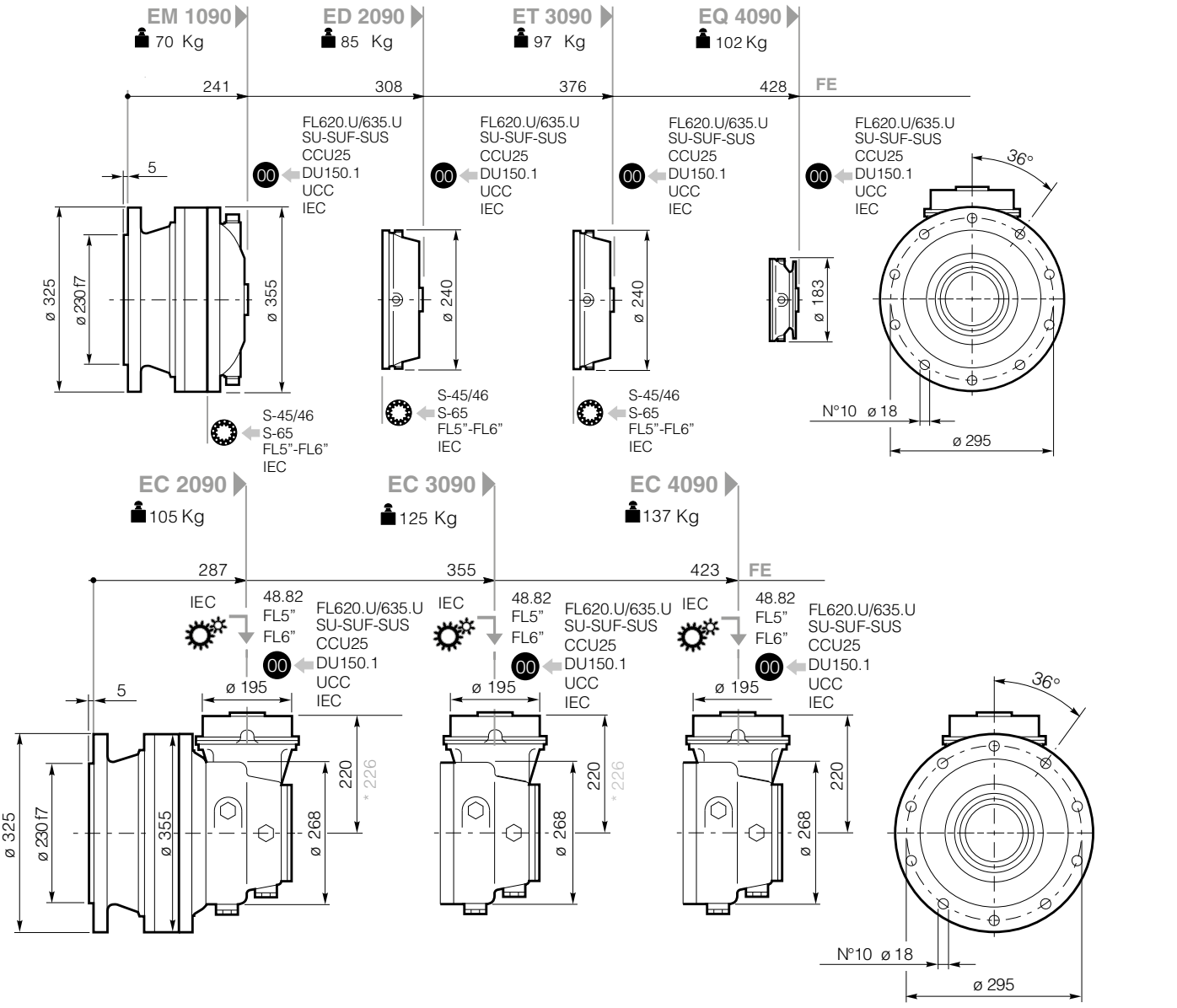
GEARBOX DIMENSIONS WITH OUTPUT





00 B13 S-45/46 48.82 → 090 10 SU-SUF SUS → 090 11 FL5"- FL6' FL620 FL635 → 090 12 IEC → 090 15 → 090 14 CCU25 → B15 DU150.1 UCC → B16 * bg → 090 3

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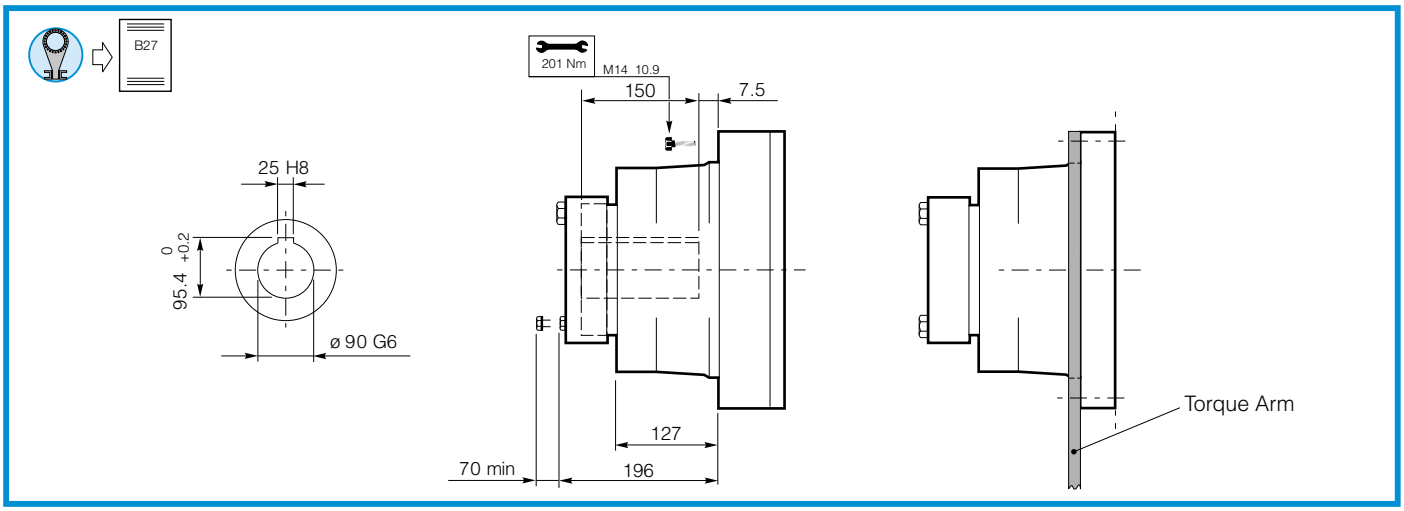

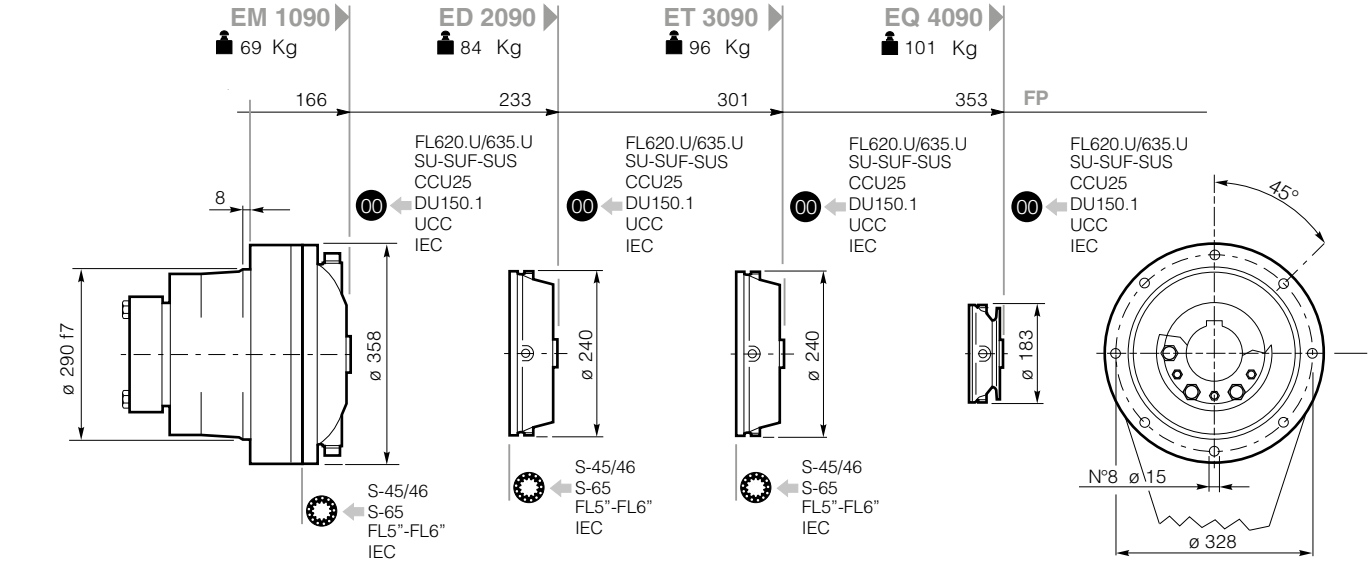

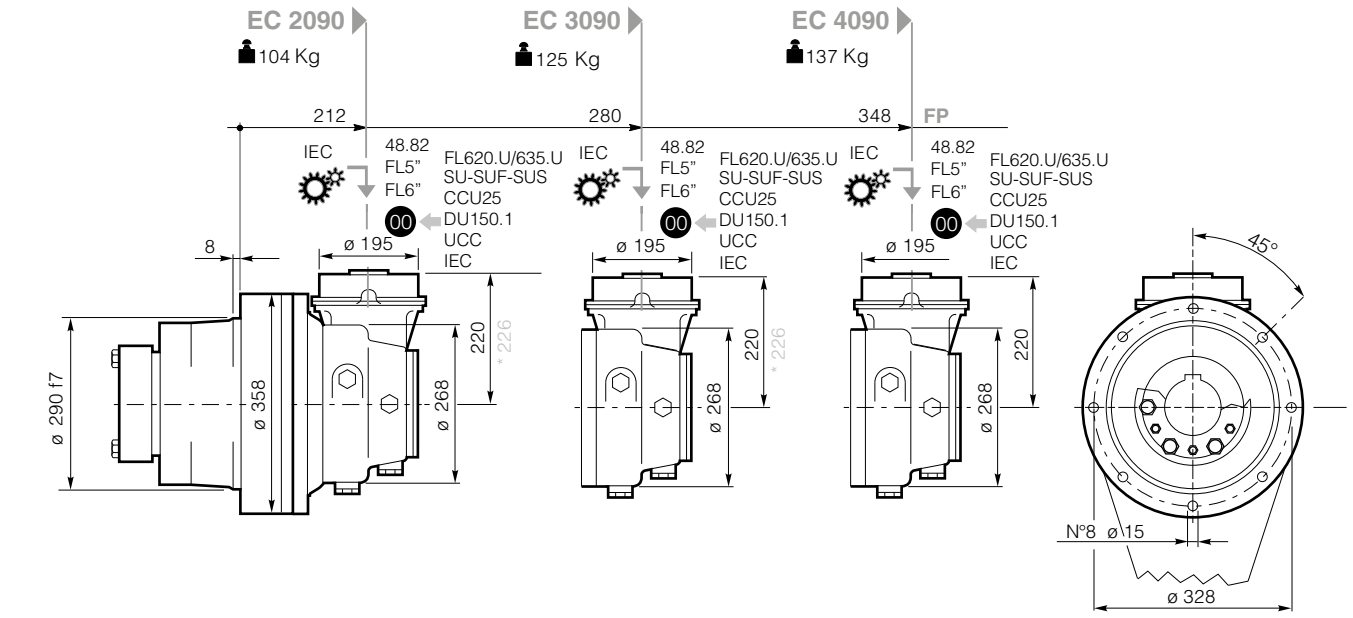

00 B13 S-45/46 48.82 090 10 | SU-SUF SUS 090 11 | FL5"- FL6' FL620 FL635 090 12 | IEC 090 15 | 090 14 | CCU25 B15 | DU150.1 UCC B16 | * bg 090 3

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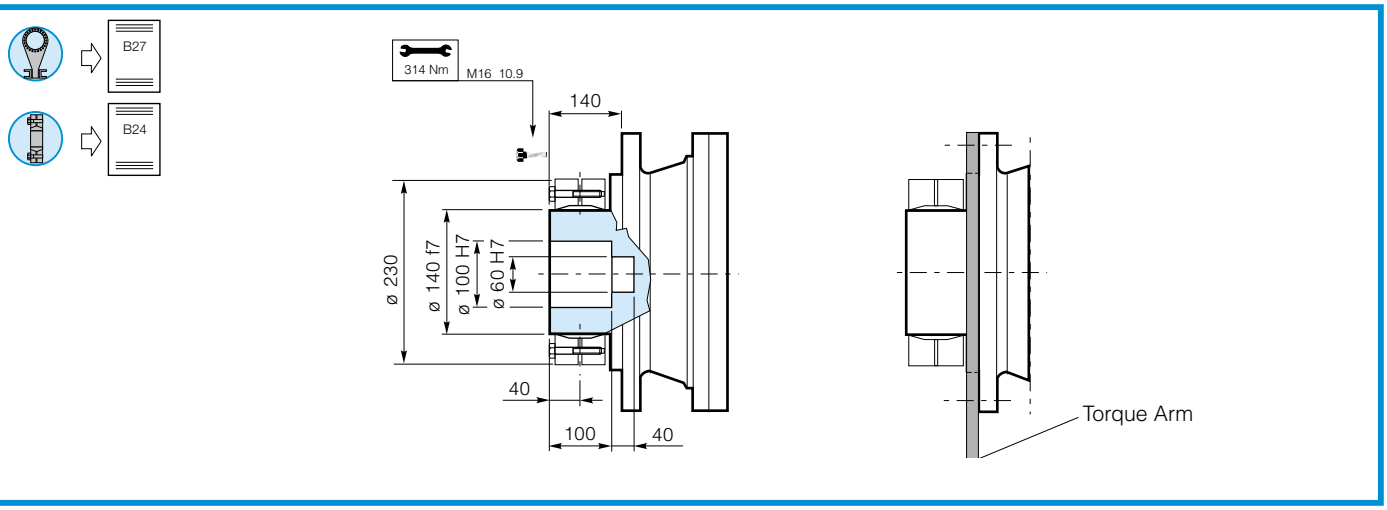
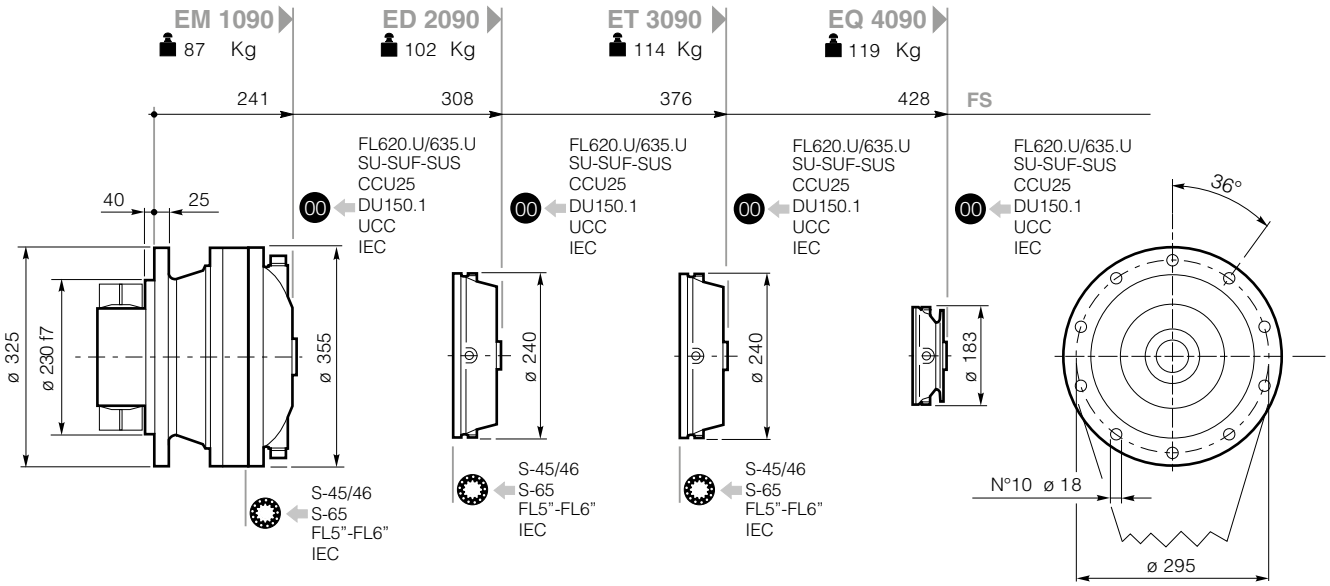
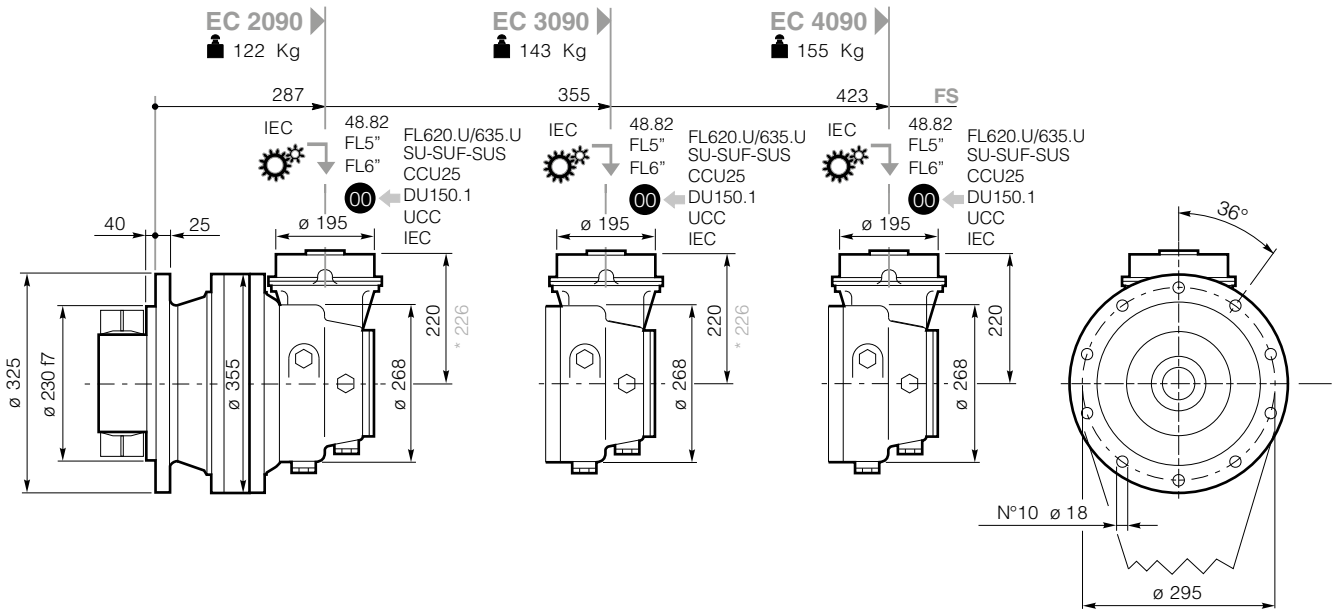
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 ⇨ 090 10 SU-SUF SUS ⇨ 090 11 FL5"- FL6' FL620 FL635 ⇨ 090 12 IEC ⇨ 090 15 ⇨ 090 14 CCU25 ⇨ B15 DU150.1 UCC ⇨ B16 * bg ⇨ 090 3

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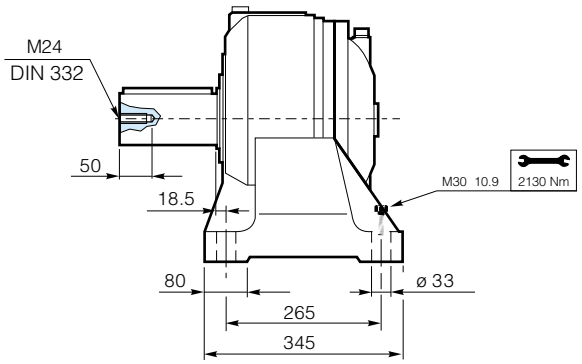
PD



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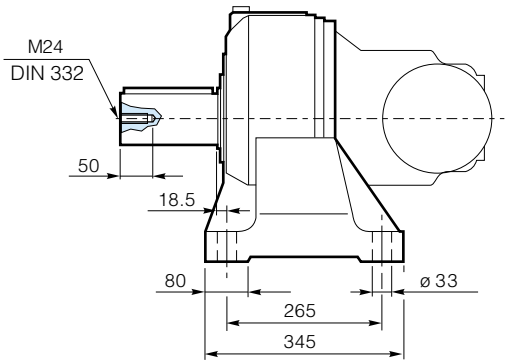

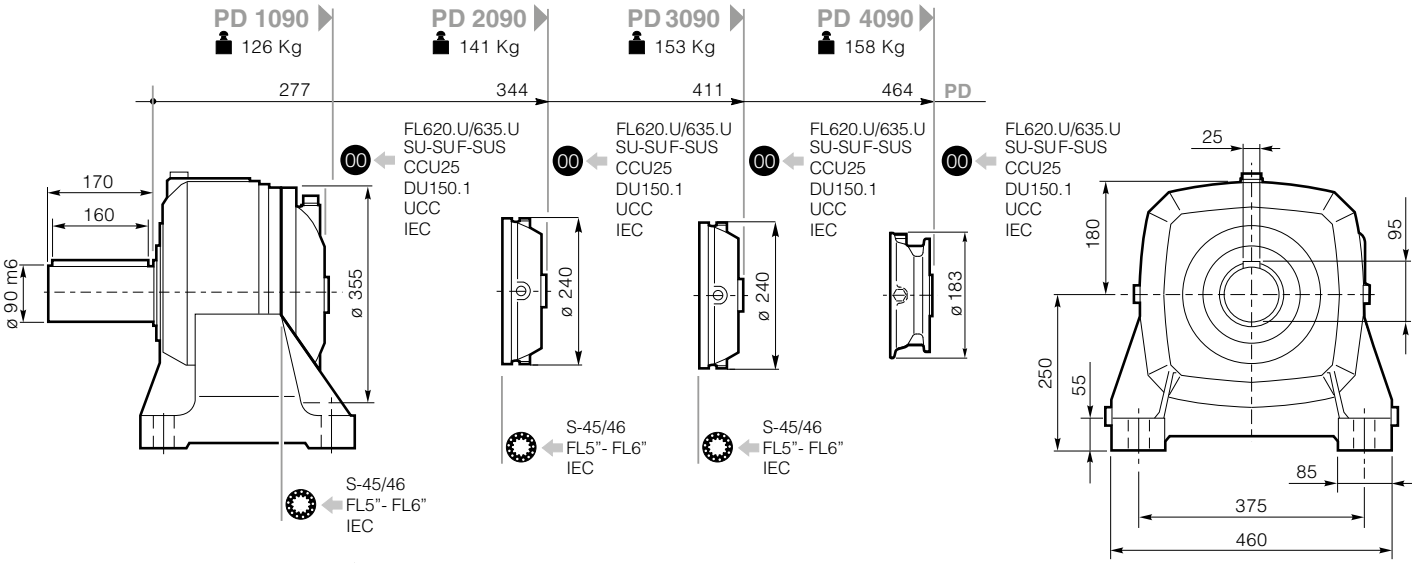

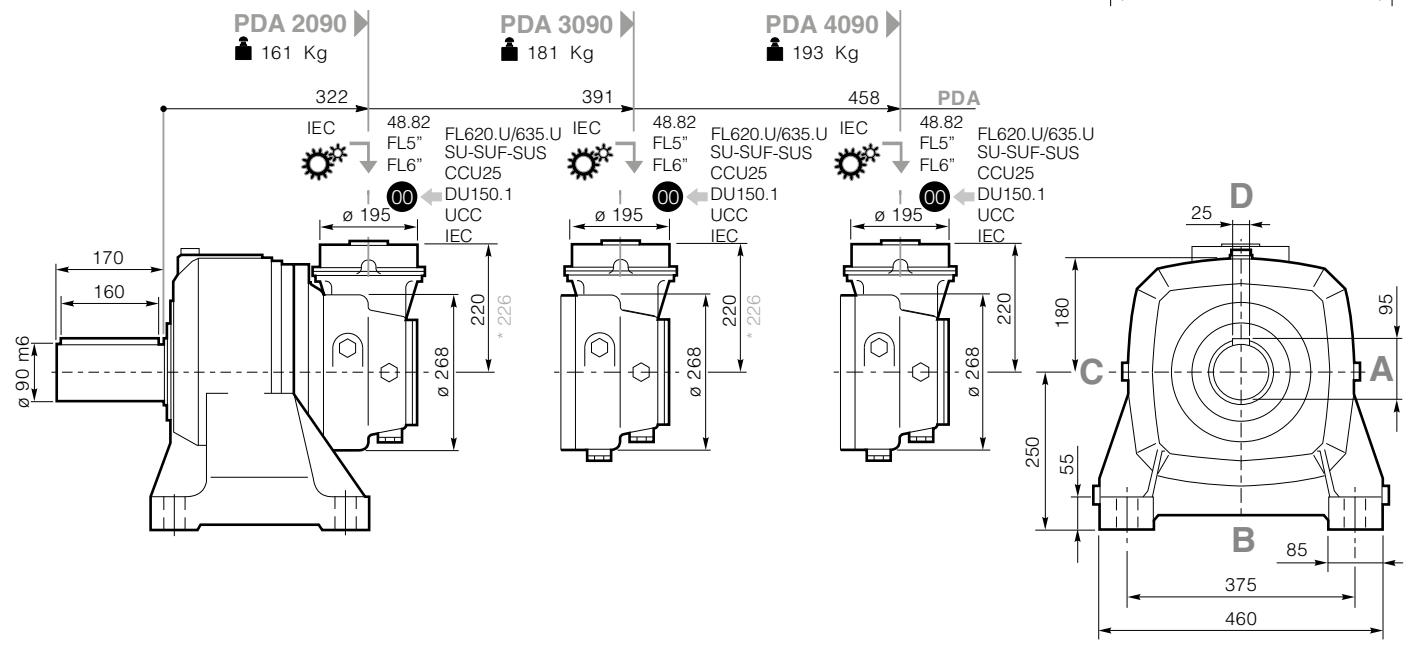

00 B13 S-45/46 48.82 → 090 10 | SU-SUF SUS → 090 11 | FL5"- FL6' FL620 FL635 → 090 12 | IEC → 090 15 | 090 14 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 090 3

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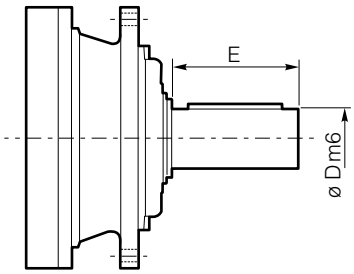
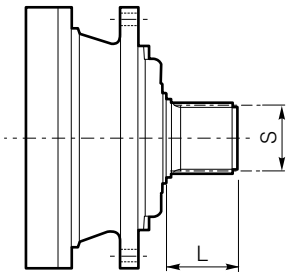
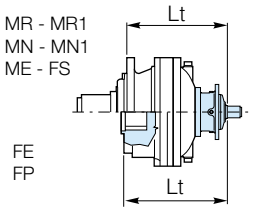
S-45CR1 - S-46C1 - S-65CR1 - S-45SR - S-65SR

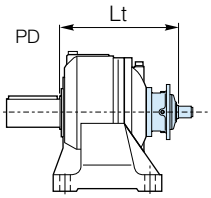


S-45CR1 - S-46C1 - S-65CR1



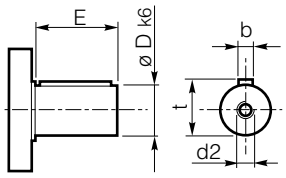
S-45SR - S-65SR

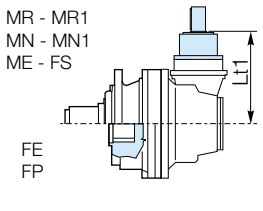


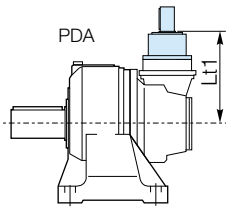


	D m6	E	L	S		MN-MN1-FS-FE-ME	MR-MR1	FP	PD
S-45CR1	65	105	-	-	EM/PD 1090	371	409	296	406
					ED/PD 2090	371	409	296	406
					ET/PD 3090	438	477	363	464
S-46C1	65	105	-	-	EM/PD 1090	412	451	337	448
					ED/PD 2090	412	451	337	448
					ET/PD 3090	480	518	405	515
S-45SR	-	-	68	B58x53	EM/PD 1090	371	409	296	406
					ED/PD 2090	371	409	296	406
S-65CR1	80	130	-	-	EM1090	410	448.5	335	445.5
S-65SR	-	-	90	B70x64	EM1090	410	448.5	335	445.5

48.82







	D	E		Lt1
				MN-MN1-MR-MR1-FS-FE-FP-ME-PDA
48.82	48	82	EC/PDA 2090	280
			EC/PDA 3090	280
			EC/PDA 4090	280

For the input configuration S46C1, 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

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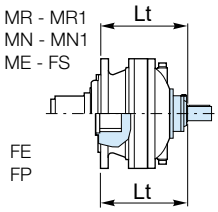
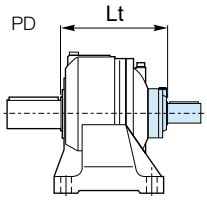
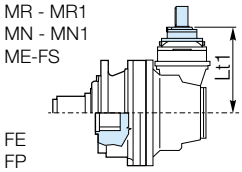
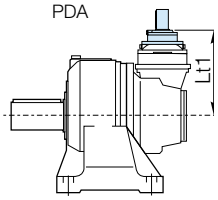
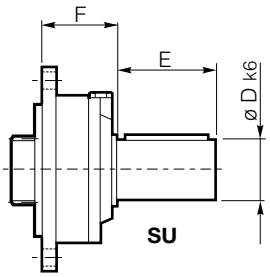
SU - SUF - SUS

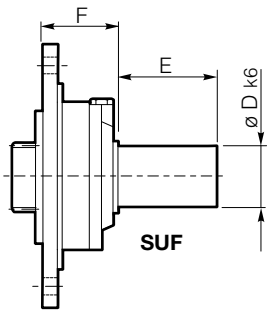


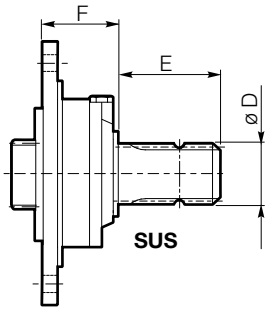












	D	E	F		Lt 00			
					MN-MN1-FS-FE-ME	MR-MR1	FP	PD
SU1 28x50	28	50	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SU2 40x58	40	58	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SU3 48x82	48	82	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SU 42x80	42	80	101.5	EM/PD 1090	343	382	268	379
				ED/PD 2090	410	449	335	446
				ET/PD 3090	477	516	402	513
				EQ/PD 4090	530	568	455	565
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EM/PD 1090	343	382	268	379
				ED/PD 2090	410	449	335	446
				ET/PD 3090	477	516	402	513
				EQ/PD 4090	530	568	455	565
SU2 1.5x3.25	38.10	82.55	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SUF1 28x50	28	50	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SUF2 40x58	40	58	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524
SUF3 48x82	48	82	60	EM/PD 1090	301	340	226	337
				ED/PD 2090	368	407	293	404
				ET/PD 3090	436	474	361	471
				EQ/PD 4090	488	527	413	524

	D	E	F		Lt1 00
					MR-MR1-MN-MN1-FS-FE-ME-FP-PDA
SU1 28x50	28	50	60	EC/PDA 2090 EC/PDA 3090 EC/PDA 4090	280
SU2 40x58	40	58	60		
SU3 48x82	48	82	60	EC/PDA 2090* EC/PDA 3090*	286
SU 42x80	42	80	101.5	EC/PDA 2090 EC/PDA 3090 EC/PDA 4090	322
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC/PDA 2090* EC/PDA 3090*	328
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2090 EC/PDA 3090 EC/PDA 4090	280
SUF1 28x50	28	50	60		
SUF2 40x58	40	58	60	EC/PDA 2090* EC/PDA 3090*	286
SUF3 48x82	48	82	60		

* bg 090 3

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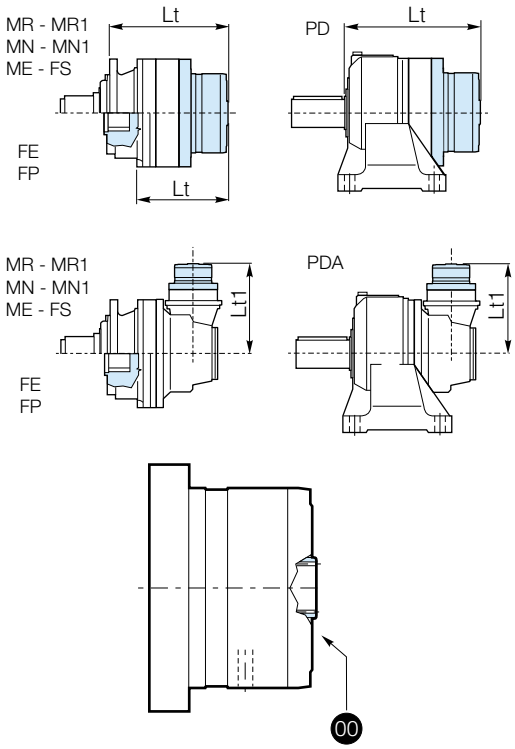
FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750



		Lt			
		MN-MN1-FE-FS-ME	MR-MR1	FP	PD
FL250 FL350 FL450	EM/PD 1090	341	380	266	377
	ED/PD 2090	402	440	327	438
	ET/PD 3090	469	508	394	505
FL650 FL750	EM/PD 1090	355	393	280	390
	ED/PD 2090	415	454	340	451
	ET/PD 3090	483	521	408	518
FL960	EM/PD 1090	369	407	294	404
	ED/PD 2090	442	481	367	478

		Lt1
		MN-MN1-FE-FS-ME-MR-MR1-FP-PDA
FL250 FL350 FL450	EC/PDA 2090	280
	EC/PDA 2090*	377
	EC/PDA 3090	280
	EC/PDA 3090*	377
	EC/PDA 4090	280
	EC/PDA 4090*	377

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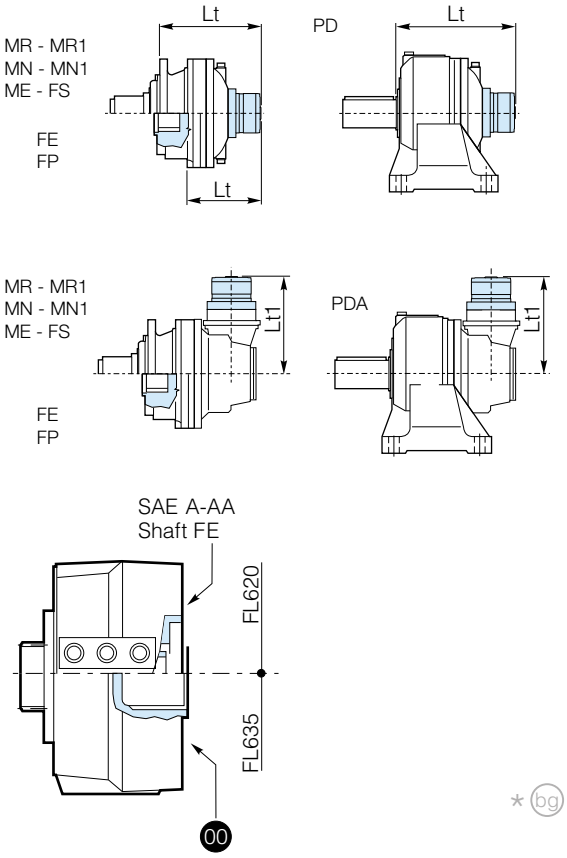
FL620.10 - FL635.10 / FL620.U - FL635.U



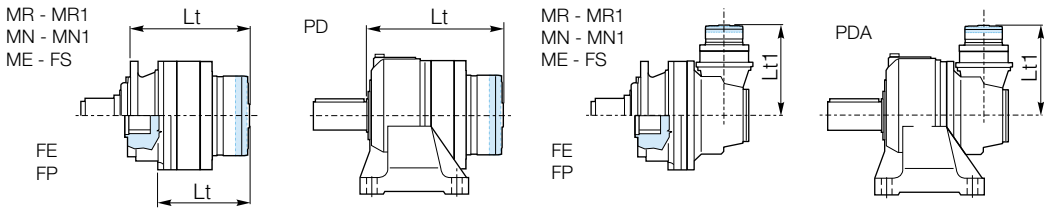
		Lt			
		MN-MN1 FE-FS-ME	MR-MR1	FP	PD
FL620.U	EM/PD 1090	346	384	271	381
	ED/PD 2090	413	451	338	448
	ET/PD 3090	480	519	405	516
	EQ/PD 4090	533	571	458	568
FL635.U	EM/PD 1090	332	371	257	368
	ED/PD 2090	399	438	324	435
	ET/PD 3090	467	505	392	502
	EQ/PD 4090	519	558	444	555

		Lt			
		MN-MN1 FE-FS-ME	MR-MR1	FP	PD
FL620.10	EQ/PD 4090	492	530	417	527
FL635.10	EQ/PD 4090	474	512	399	509

		Lt1			
		MN-MN1 FE-FS-ME	MR-MR1	FP	PDA
FL620.U	EC/PDA 2090	325	325	325	325
	EC/PDA 2090*	331	331	331	331
	EC/PDA 3090	325	325	325	325
	EC/PDA 3090*	331	331	331	331
	EC/PDA 4090	325	325	325	325
	EC/PDA 4090*	331	331	331	331
FL635.U	EC/PDA 2090	311	311	311	311
	EC/PDA 2090*	317	317	317	317
	EC/PDA 3090	311	311	311	311
	EC/PDA 3090*	317	317	317	317
	EC/PDA 4090	311	311	311	311
	EC/PDA 4090*	317	317	317	317

* bg 090 3

RL



				Lt			
				MN-MN1-FE-FS-ME	MR-MR1	FP	PD
RL	+	FL250 FL350 FL450	EM/PD 1090	367	405	292	402
			ED/PD 2090	428	466	353	463
			ET/PD 3090	495	534	420	531
		FL650 FL750	EM/PD 1090	381	419	306	416
			ED/PD 2090	441	480	366	477
			ET/PD 3090	509	547	434	544
		FL960	EM/PD 1090	395	433	320	430
			ED/PD 2090	468	507	393	504

				Lt1
				MR-MR1- MN-MN1-FS-FE-ME-FP-PDA
RL	+	FL250 FL350 FL450	EC/PDA 2090	306
			EC/PDA 2090*	403
			EC/PDA 3090	306
			EC/PDA 3090*	403
			EC/PDA 4090	306
			EC/PDA 4090*	403

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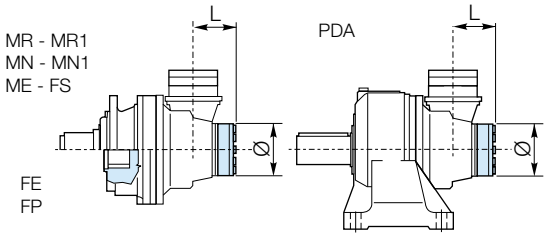
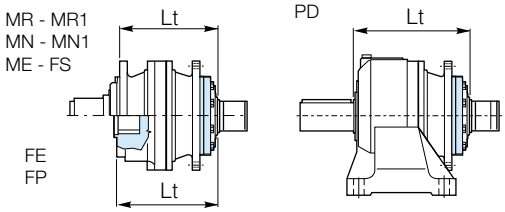


				L	Ø
RL	+	CC40	EC/PDA 2090	135.2	150
			EC/PDA 3090	135.2	150
			EC/PDA 4090	135.2	150



				Lt			
				MN-MN1-FE-FS-ME	MR-MR1	FP	PD
RL	+	S46C1	EM/PD 1090	432	471	357	468
			ED/PD 2090	432	471	357	468
			ET/PD 3090	500	538	425	535

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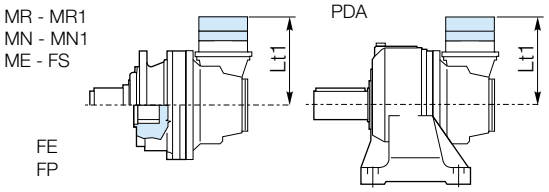
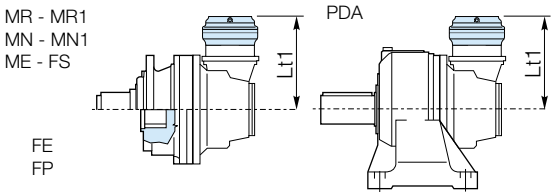
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020



ED2010 - ED2020 ED2021

		Lt1				
		EC2090 PDA2090	EC2090* PDA2090*	**EC3090 PDA3090**	EC3090* PDA3090*	**EC4090 PDA4090**
	EM1010	327	333	327	333	327
	EM1020	345	351	345	351	345
	ED2010	366	372	366	372	366
	ED2020	398	404	398	404	398
	ED2021	413	419	413	419	413

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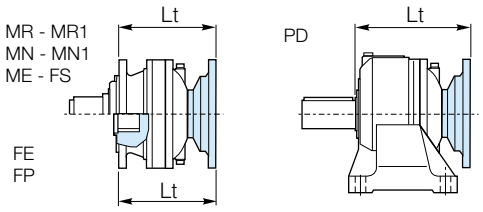
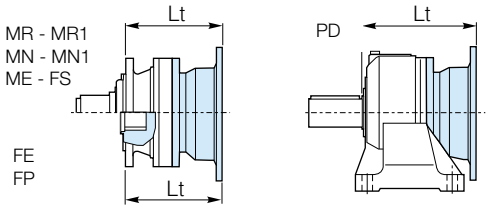
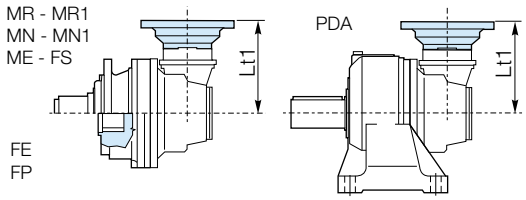
IEC Motor



		Lt 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EM 1090	MN-MN1-FE-FS-ME	261	263	268	269	336	367	378	408
EM 1090	MR-MR1	300	302	307	308	375	406	417	447
EM 1090	FP	186	188	193	194	261	292	303	333
ED 2090	MN-MN1-FE-FS-ME	328	330	335	336	403	434	445	475
ED 2090	MR-MR1	367	369	374	375	442	473	484	514
ED 2090	FP	253	255	260	261	328	359	370	400
ET 3090	MN-MN1-FE-FS-ME	396	398	403	404	471	502	513	543
ET 3090	MR-MR1	434	436	441	442	509	540	551	581
ET 3090	FP	321	314	328	329	396	427	438	468
EQ 4090	MN-MN1-FE-FS-ME	448	450	455	456	523	554	565	595
EQ 4090	MR-MR1	487	489	494	495	562	593	604	634
EQ 4090	FP	373	375	380	381	448	479	490	520
PD 1090	PD	297	299	304	305	372	403	414	444
PD 2090	PD	364	366	371	372	439	470	481	511
PD 3090	PD	431	433	438	439	506	537	548	578
PD 4090	PD	484	486	491	492	559	590	601	631



		Lt IEC		
		160 180	200	225
EM 1090	MN-MN1-FE-FS-ME	341	380	408
EM 1090	MR-MR1	380	419	447
EM 1090	FP	266	305	333
ED 2090	MN-MN1-FE-FS-ME	434	444	474
ED 2090	MR-MR1	473	483	513
ED 2090	FP	359	369	399
ET 3090	MN-MN1-FE-FS-ME	505	512	-
ET 3090	MR-MR1	540	550	-
ET 3090	FP	427	437	-



		Lt1 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 2090	MN-MR-MN1-MR1 FE-FS-ME-FP-PDA	240	242	247	248	315	346	357	387
EC/PDA 2090*		246	248	253	254	321	352	363	393
EC/PDA 3090		240	242	247	248	315	346	357	387
EC/PDA 3090*		246	248	253	254	321	352	363	393
EC/PDA 4090		240	242	247	248	315	346	357	387

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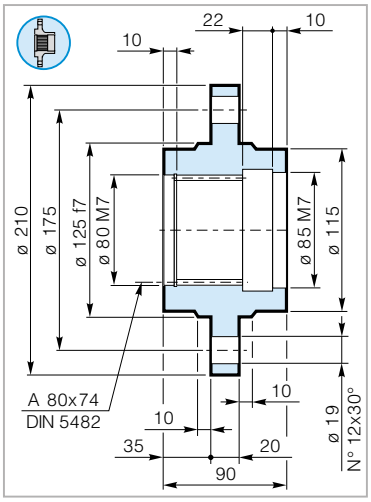
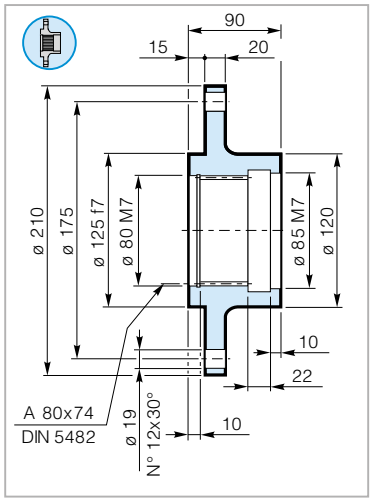
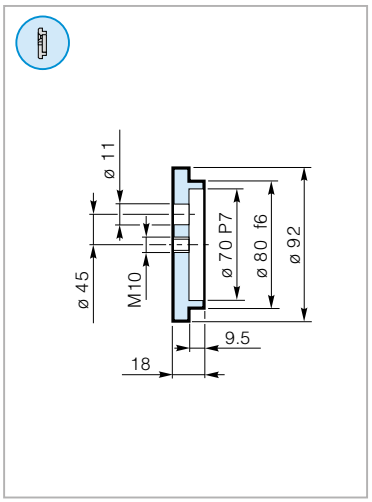
FA 090 Wheel Flange



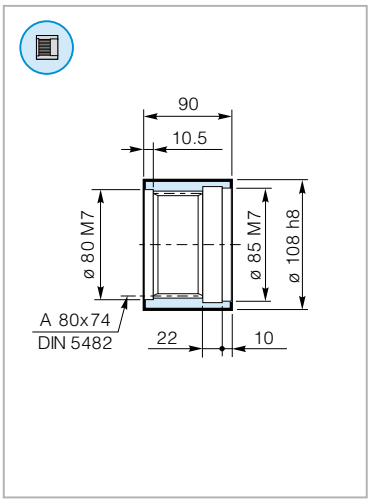
FR 090 Wheel Flange



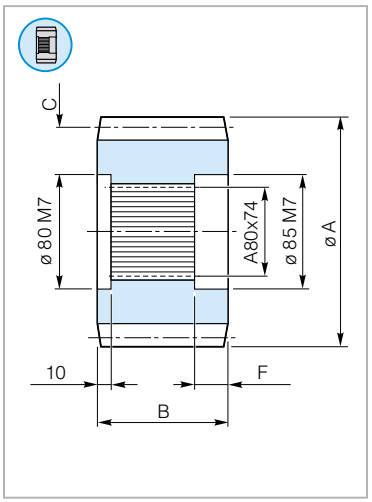
RDF 090 Lock Washer



MS 090 Splined Sleeve

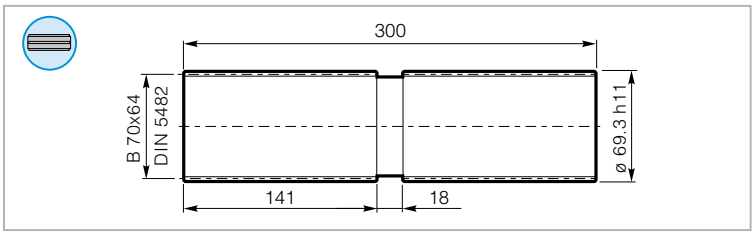


Pinions



A	B	C			F
		m	z	x	
180	88	10	15	0,5	31,0
162	100	10	14	0,3	31,0
145	90	10	12	0,5	31,0

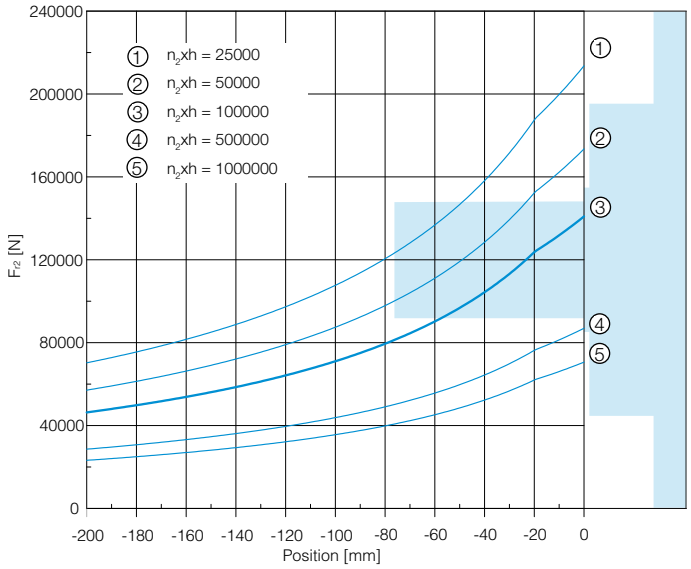
BS 090 Splined Bar



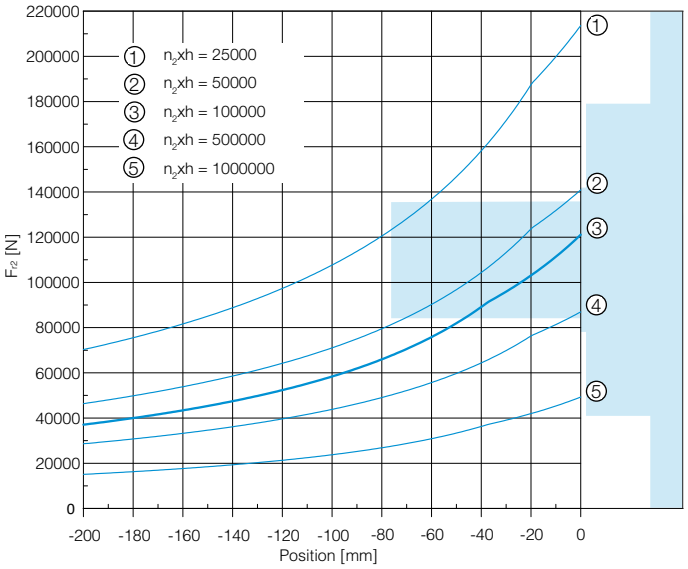
Code: 39127130100
Mat. High mechanical resistance alloyed steel

Output Radial Loads

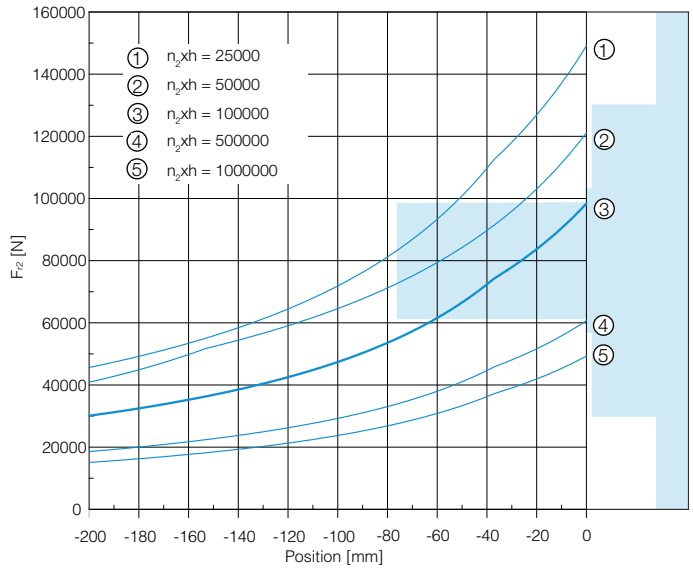
MR - MR1



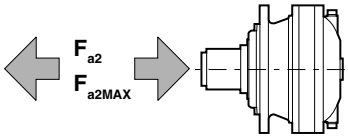
MN - MN1



PD

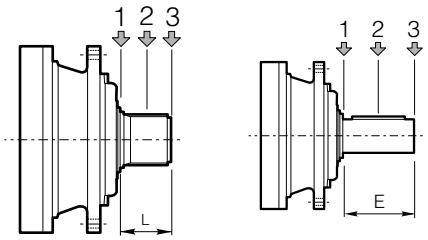


Output Axial Loads



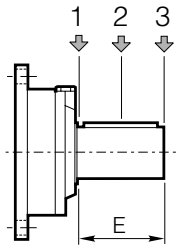
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	48000	80000	35000
F_{a2MAX}	[N]	60000	90000	35000

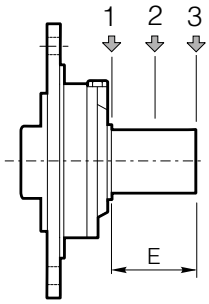
Input Radial Loads

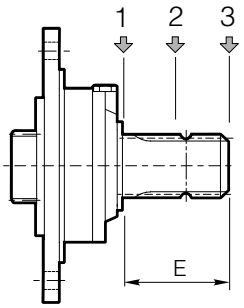


			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800

Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

DANA BREVINI® Motion Systems

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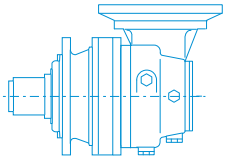
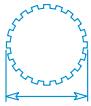
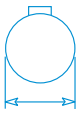
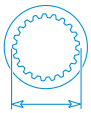
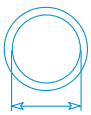
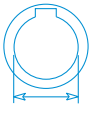
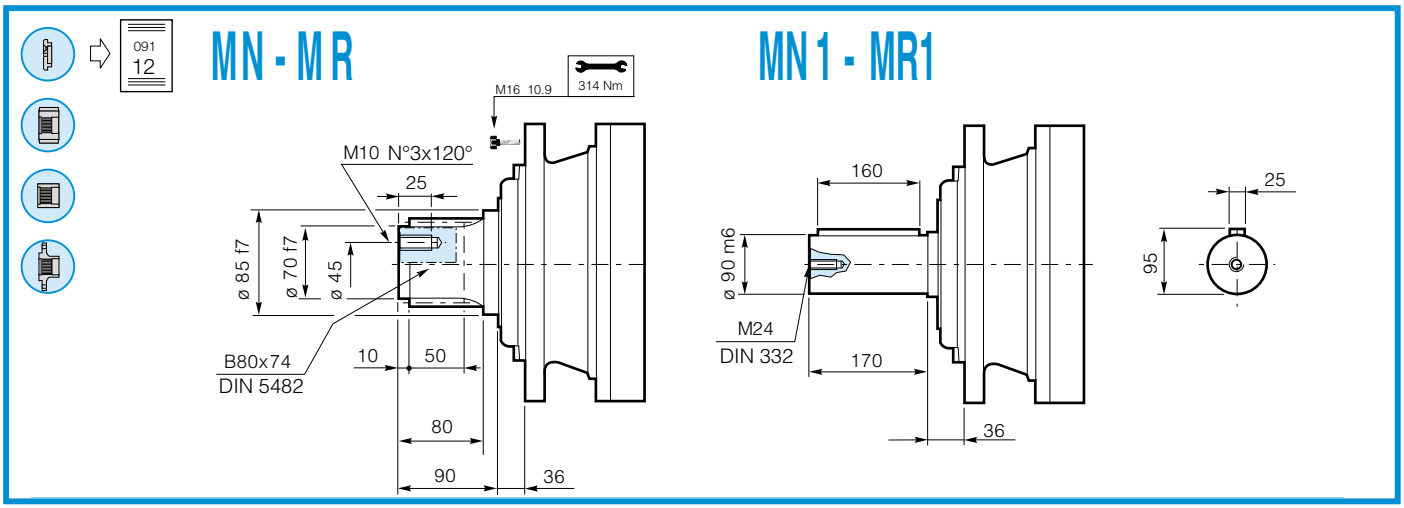
091

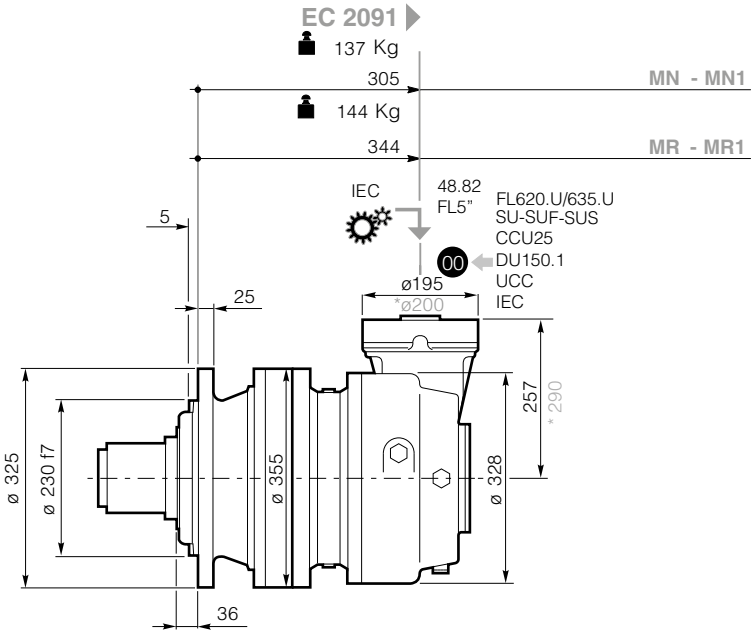


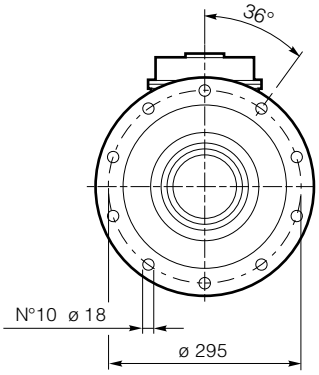
i_{eff}	11.22 - 42.37
T_{2N} (Nm)	9200
	B80X74 DIN5482
	90 mm
	B70X64 DIN5482
	100 mm
	90 mm

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2	T_2	P_2	n_2	T_2	P_2	n_2	T_2	P_2			
EC 2091 / PDA 2091	[rpm]	[Nm]	[kW]	[rpm]	[Nm]	[kW]	[rpm]	[Nm]	[kW]	[rpm]	[Nm]	[kW]
11.22	134	3977	56	89	4492	41.9	44.6	5530	25.8			
13.89	108	4137	46.8	72	4672	35.2	36.0	5752	21.7			
15.98	94	4229	41.6	63	4776	31.3	31.3	5880	19.3			
17.68	85	3970	35.3	57	4484	26.6	28.3	5520	16.4			
20.34	74	4547	35.1	49.2	5135	26.4	24.6	6322	16.3	3000	15000	18
24.59	61	3971	25.4	40.7	4485	19.1	20.3	5522	11.8			
28.29	53	4569	25.4	35.3	5160	19.1	17.7	6353	11.8			
33.70	44.5	4794	22.4	29.7	5002	15.5	14.8	5351	8.3			
42.37	35.4	3604	13.4	23.6	3775	9.3	11.8	4067	5.0			







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00 B13 | 48.82 091 9 | SU-SUF SUS 091 9 | FL5" 091 10 | IEC 091 11 | 091 11 | CCU25 B15 | DU150.1 UCC B16

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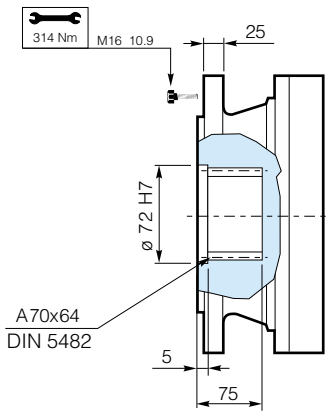
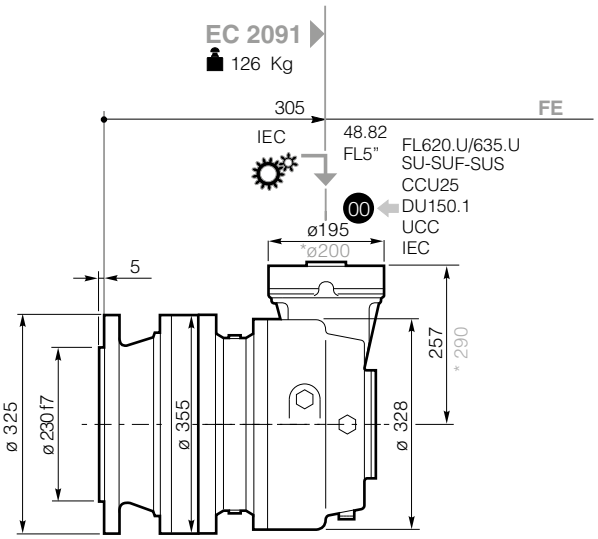
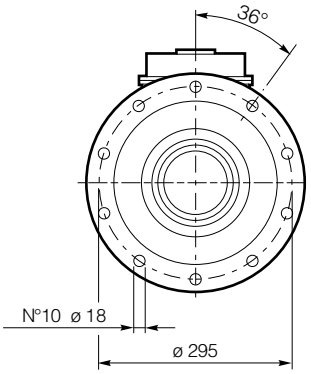
GEARBOX DIMENSIONS WITH OUTPUT

091 12







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00 B13 | 48.82 091 9 | SU-SUF SUS 091 9 | FL5" 091 10 | IEC 091 11 | 091 11 | CCU25 B15 | DU150.1 UCC B16

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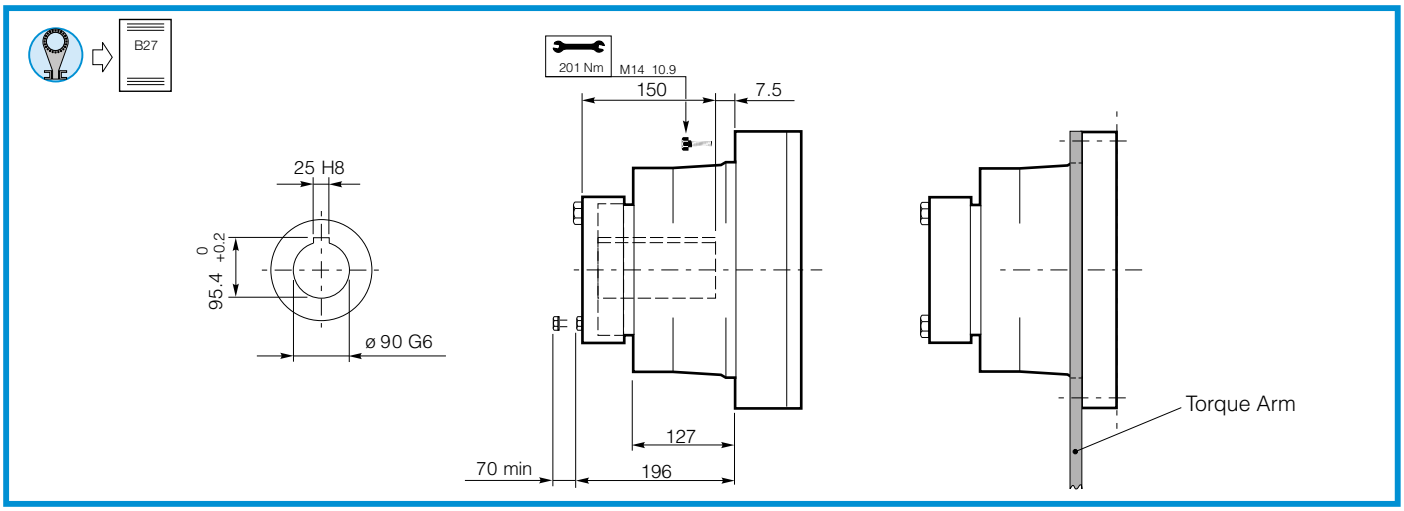

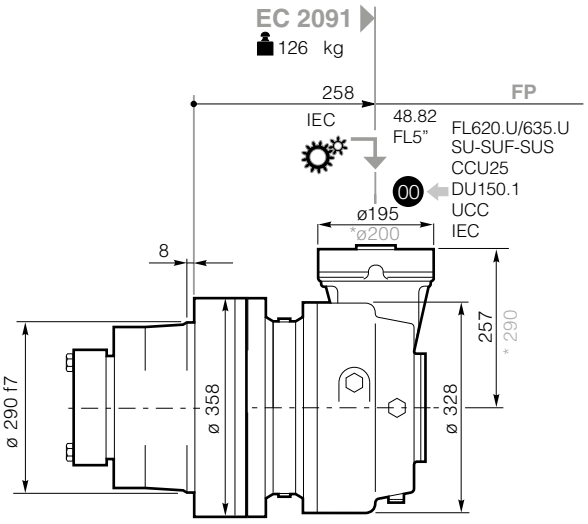

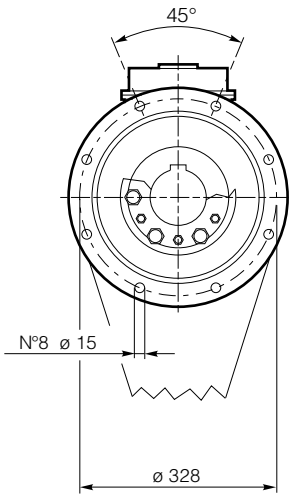

00 B13 | 48.82 091 9 | SU-SUF SUS 091 9 | FL5" 091 10 | IEC 091 11 | 091 11 | CCU25 B15 | DU150.1 UCC B16

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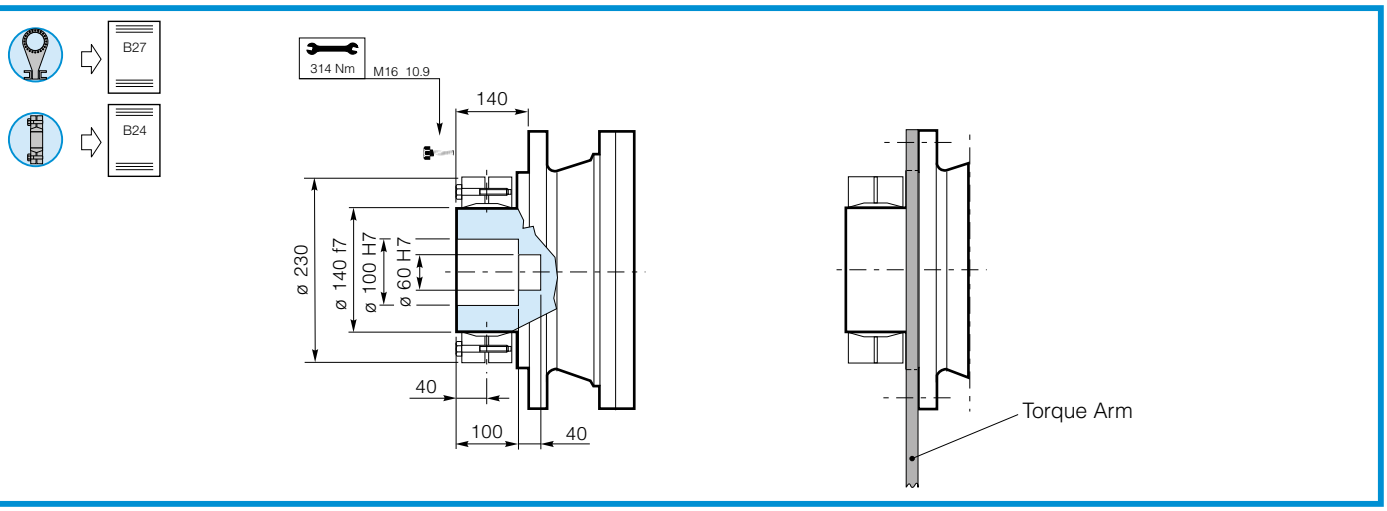
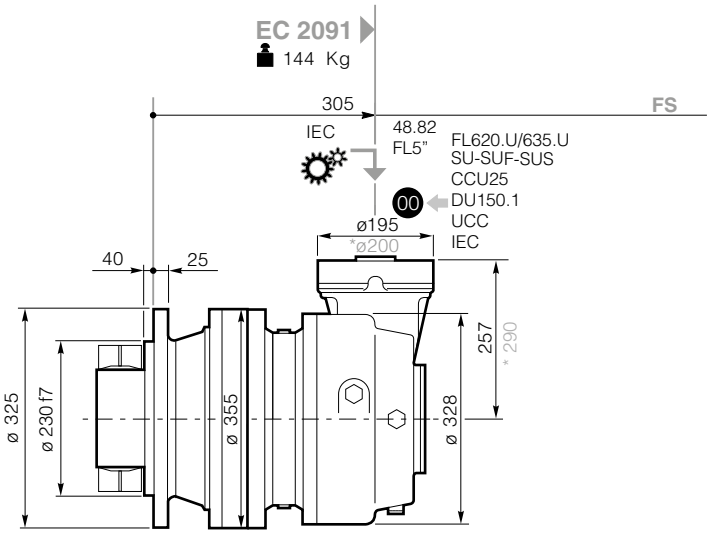
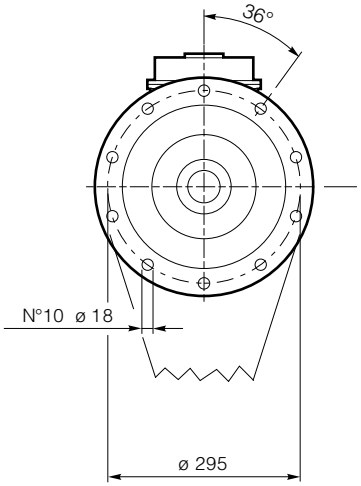
GEARBOX DIMENSIONS WITH OUTPUT







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00 B13 | 48.82 091 9 | SU-SUF SUS 091 9 | FL5" 091 10 | IEC 091 11 | 091 11 | CCU25 B15 | DU150.1 UCC B16

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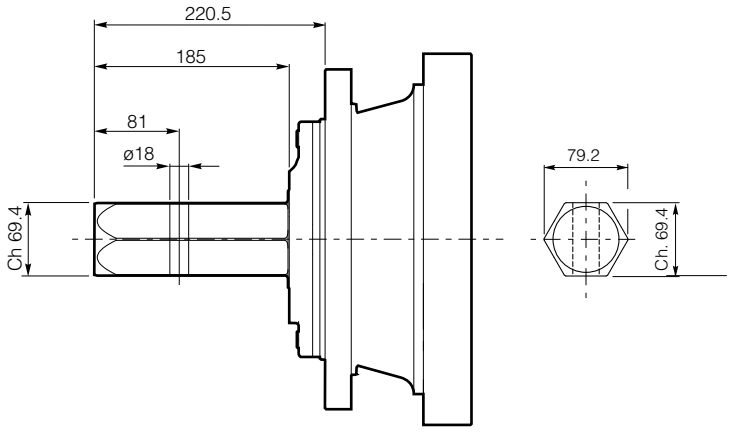

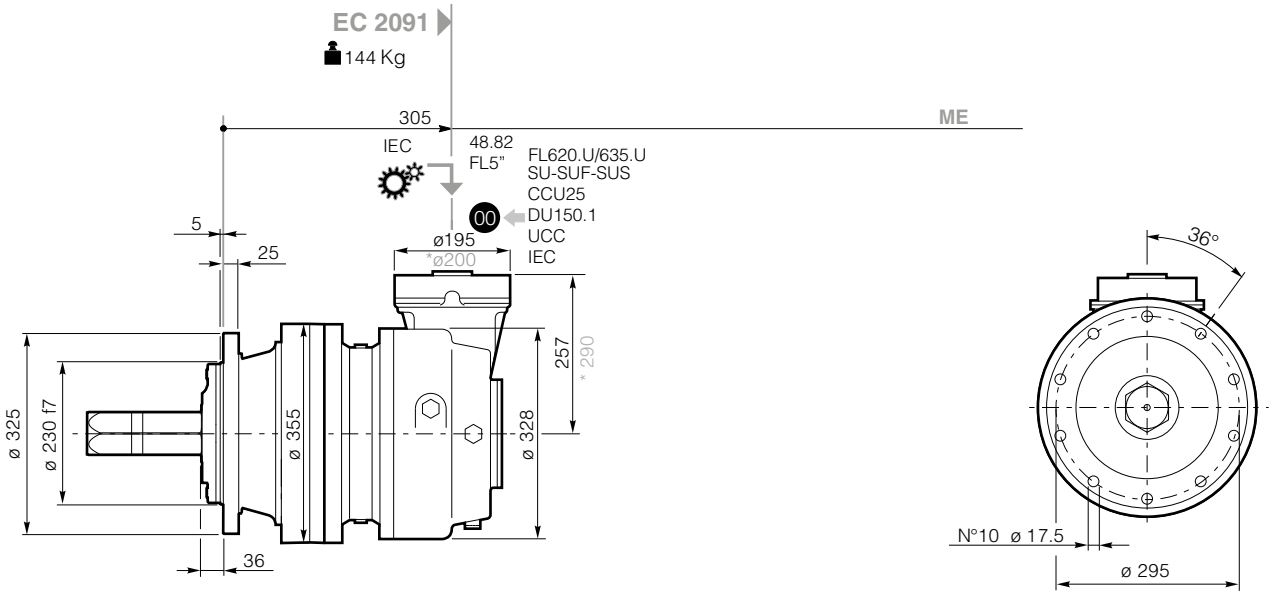

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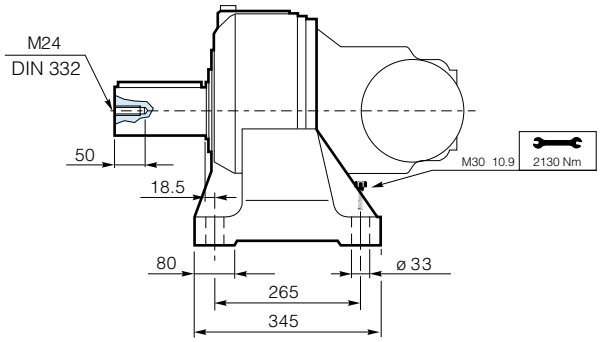
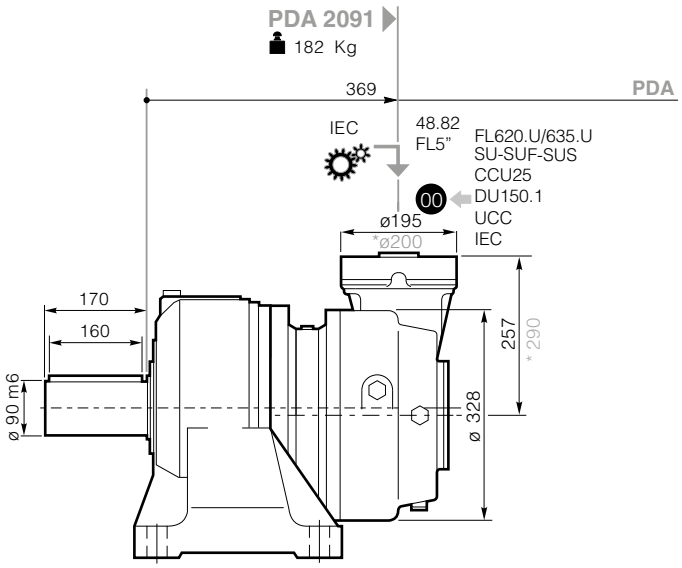
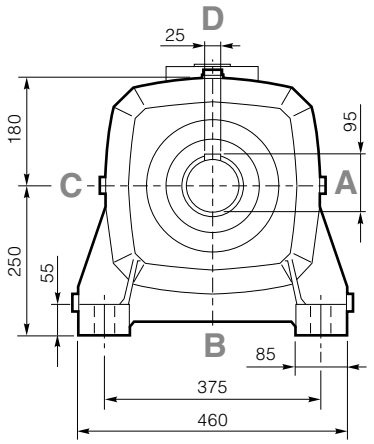
GEARBOX DIMENSIONS WITH OUTPUT







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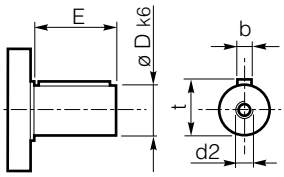
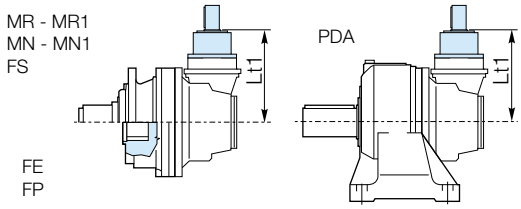
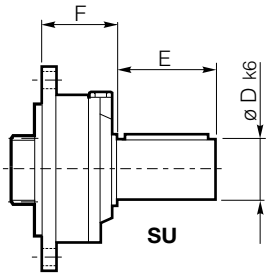
48.82

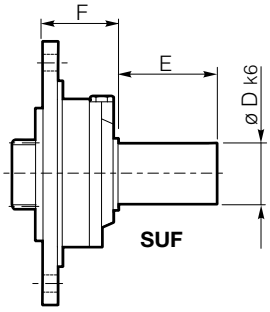


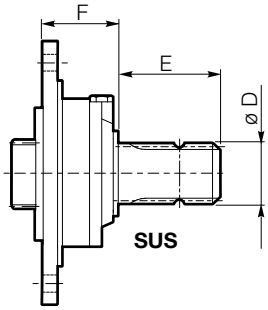


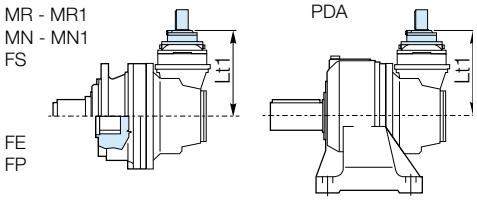
	D	E		Lt1
				MN-MN1-MR-MR1-FS-FE-ME-FP-PDA
48.82	48	82	EC/PDA 2091	317

SU - SUF - SUS









	D	E	F		Lt1 00
					MR-MR1-MN-MN1-FS-FE-ME-FP-PDA
SU1 28x50	28	50	60	EC/PDA 2091	317
SU2 40x58	40	58	60		
SU3 48x82	48	82	60		
SU 42x80	42	80	101.5	EC/PDA 2091	359
SUS 1 3/8"	1 3/8" DIN9611	97	101.5		
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2091	317
SUF1 28x50	28	50	60		
SUF2 40x58	40	58	60		
SUF3 48x82	48	82	60		

For the input configuration 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

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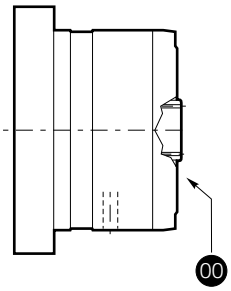
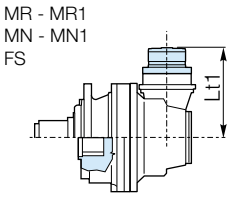
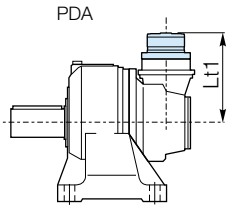
FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750

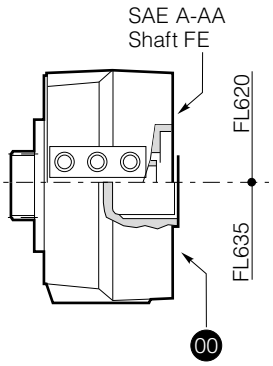


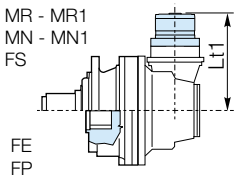


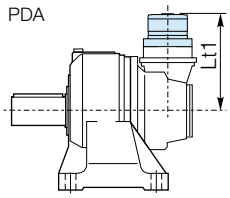


		Lt1 MN-MN1-MR-MR1-FE-ME-FS-FP-PDA			
FL250 FL350 FL450	EC/PDA 2091	409	409	409	409
FL650 FL750	EC/PDA 2091	422	422	422	422

FL620.U - FL635.U



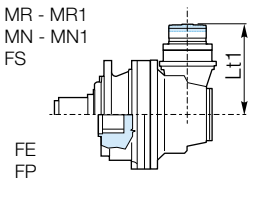


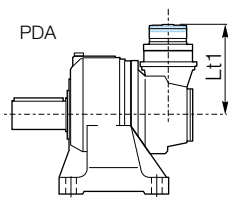


		Lt1 MN-MN1-MR-MR1-FE-ME-FS-FP-PDA			
FL620.U	EC/PDA 2091	362	362	362	362
FL635.U	EC/PDA 2091	348	348	348	348

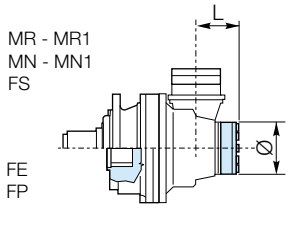
BACKSTOP DEVICE

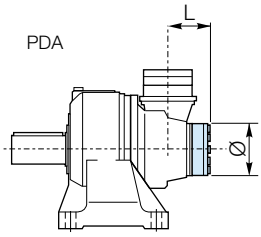
RL





				Lt1 MR-MR1- MN-MN1-FS-FE-ME-FP-PDA
RL	+	FL250 FL350 FL450	EC/PDA 2091	435





				L	Ø
RL	+	CC40	EC/PDA 2091	135.2	150

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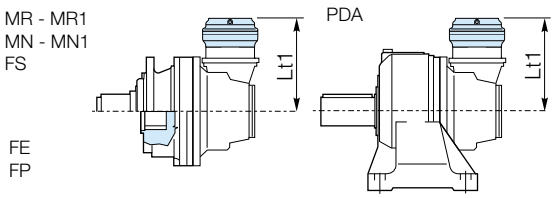
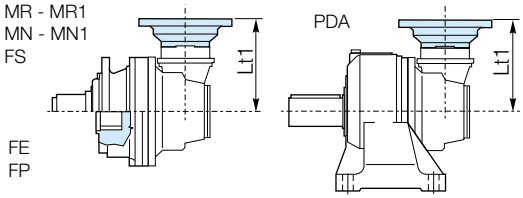
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



ED2010 - ED2020 ED2021

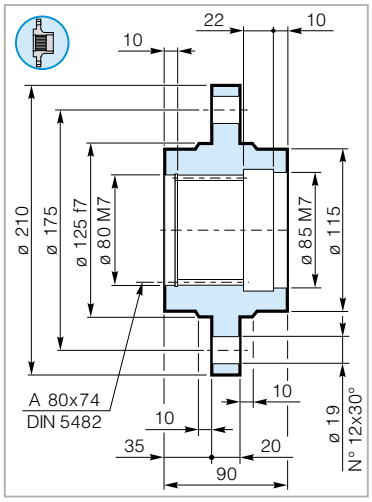
	Lt1
	EC2091 PDA2091
EM1010	364
EM1020	382
ED2010	403
ED2020	435
ED2021	450

IEC Motor

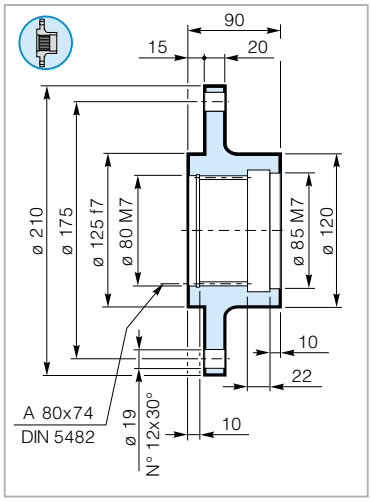


		Lt1							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 2091	MN-MR-MN1-MR1 FE-ME-FS-FP-PDA	277	279	284	285	352	383	394	424

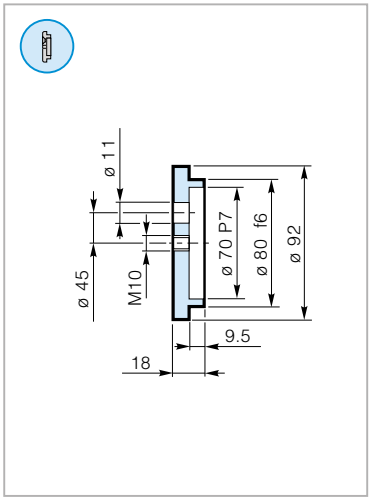
FA 090 Wheel Flange



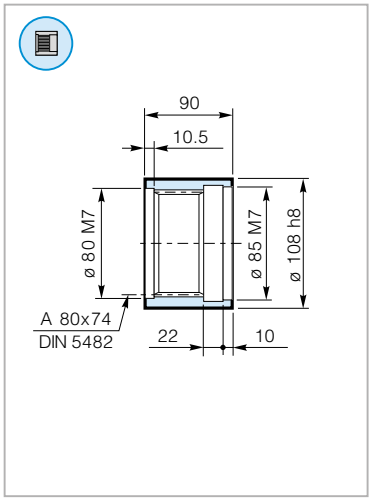
FR 090 Wheel Flange



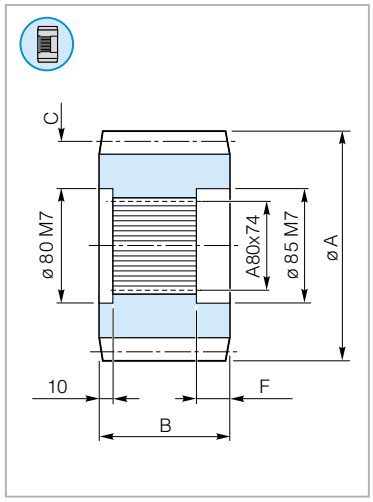
RDF 090 Lock Washer



MS 090 Splined Sleeve



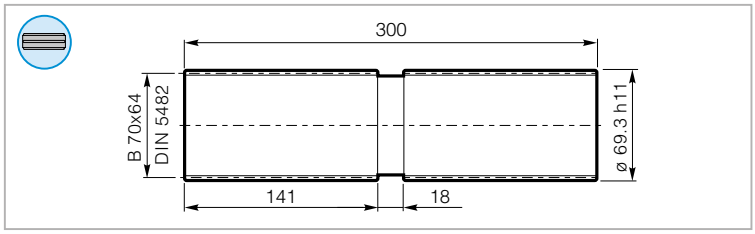
Pinions



A	B	C			F
		m	z	x	
180	88	10	15	0,5	31,0
162	100	10	14	0,3	31,0
145	90	10	12	0,5	31,0

091

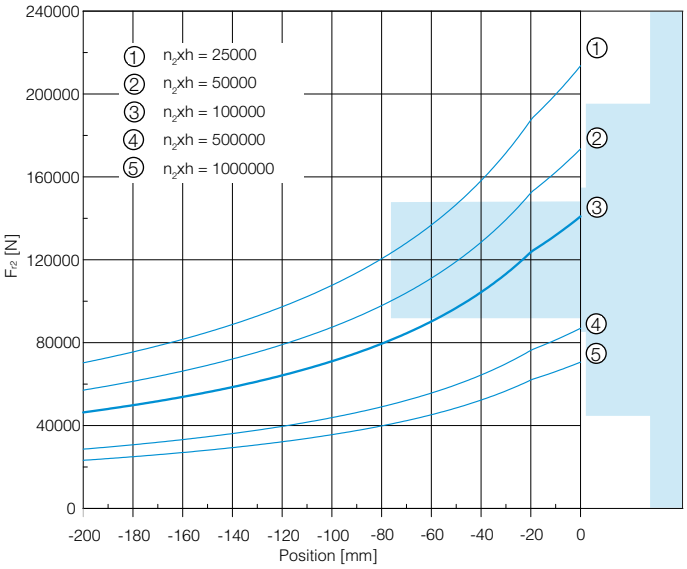
BS 090 Splined Bar



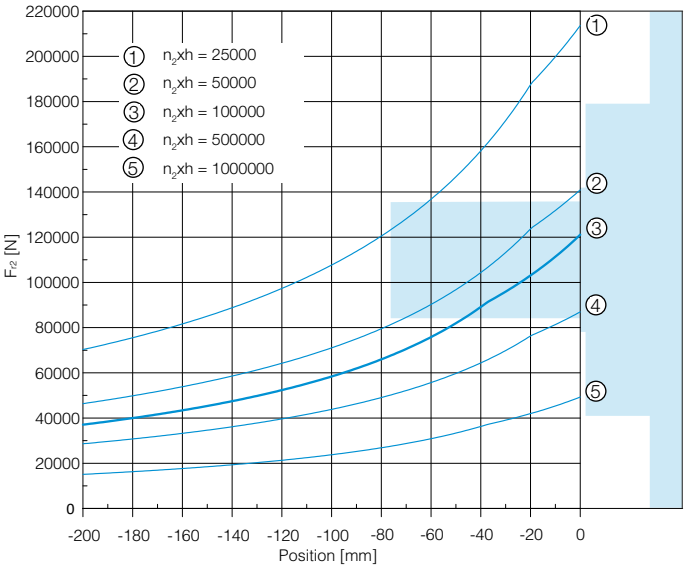
Code: 39127130100
Mat. High mechanical resistance alloyed steel

Output Radial Loads

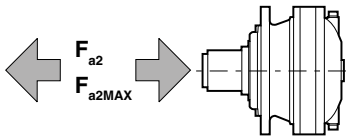
MR - MR1



MN - MN1

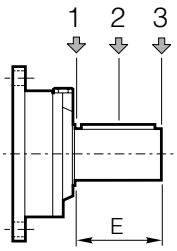


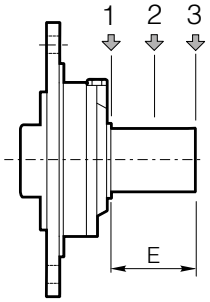
Output Axial Loads

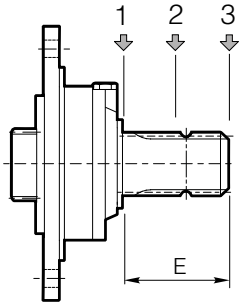


		Flange mounted		PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	48000	80000	35000
F_{a2MAX}	[N]	60000	90000	35000

Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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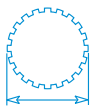
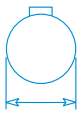
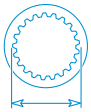
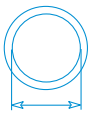
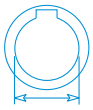
150

i_{eff}	3.90 - 3460
T_{2N} (Nm)	13000
	B80X74 B100x94 DIN5482
	100 mm
	B80X74 DIN5482
	120 mm
	100 mm
	69.4 mm

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1150 / PD 1150												
3.90	385	4758	192	256	5374	144	128	6616	89	2500	20000	40
5.14	292	5006	153	195	5654	115	97	6961	71			
6.27	239	5178	130	159	5847	98	80	7199	60			
ED 2150 / PD 2150												
13.65	110	6103	70	73	6893	53	36.6	8486	32.6	3000	20000	23
16.11	93	6309	62	62	7125	46.3	31.0	8772	28.5			
17.99	83	7290	64	56	8233	47.9	27.8	9317	27.1			
20.16	74	6563	51	50	7412	38.5	24.8	9125	23.7			
21.95	68	7540	54	45.6	8220	39.2	22.8	8771	20.9			
26.57	56	8195	48.4	37.6	9057	35.7	18.8	9649	19.0			
28.28	53	6170	34.3	35.4	6613	24.5	17.7	7286	13.5			
30.84	48.6	8570	43.7	32.4	9185	31.2	16.2	9776	16.6			
37.27	40.3	8132	34.3	26.8	8716	24.5	13.4	9603	13.5			
45.46	33.0	8477	29.3	22.0	8799	20.3	11.0	9353	10.8			
ET 3150 / PD 3150												
47.78	31.4	8888	29.2	20.9	10037	22.0	10.5	12357	13.5	3000	20000	15
56.37	26.6	9340	26.0	17.7	10548	19.6	8.9	12986	12.1			
62.96	23.8	9448	23.6	15.9	9794	16.3	7.9	10392	8.6			
70.57	21.3	9991	22.2	14.2	11283	16.7	7.1	13892	10.3			
81.90	18.3	10447	20.0	12.2	11799	15.1	6.1	14526	9.3			
93.01	16.1	9781	16.5	10.8	10129	11.4	5.4	11021	6.2			
98.96	15.2	11058	17.6	10.1	12488	13.2	5.1	13856	7.3			
107.9	13.9	9908	14.4	9.3	10258	10.0	4.6	11354	5.5			
127.4	11.8	10050	12.4	7.9	10402	8.6	3.9	11733	4.8			
137.4	10.9	10115	11.6	7.3	10468	8.0	3.6	11910	4.5			
159.4	9.4	10244	10.1	6.3	10684	7.0	3.1	12263	4.0			
185.0	8.1	10374	8.8	5.4	11010	6.2	2.7	12623	3.6			
192.7	7.8	10409	8.5	5.2	11099	6.0	2.6	12722	3.5			
223.6	6.7	10539	7.4	4.5	11434	5.4	2.2	13093	3.1			
235.0	6.4	9797	6.5	4.3	10399	4.6	2.1	11934	2.7			
270.2	5.6	10643	6.2	3.7	11112	4.3	1.9	11921	2.3			
329.6	4.6	10258	4.9	3.0	11128	3.5	1.5	12743	2.0			
EQ 4150 / PD 4150												
359.5	4.2	15642	6.8	2.8	16279	4.7	1.4	18842	2.7	3000	20000	11
391.2	3.8	15764	6.3	2.6	16578	4.4	1.3	19172	2.6			
461.7	3.2	14336	4.9	2.2	14970	3.4	1.1	17336	2.0			
491.4	3.1	16094	5.1	2.0	17403	3.7	1.0	19575	2.1			
568.4	2.6	16464	4.6	1.8	17944	3.3	0.88	19845	1.8			
645.5	2.3	12997	3.2	1.5	14044	2.3	0.77	15988	1.3			
700.7	2.1	15008	3.4	1.4	16365	2.4	0.71	18879	1.4			
810.4	1.9	15486	3.0	1.2	16872	2.2	0.62	19271	1.2			
883.9	1.7	13803	2.5	1.1	14900	1.8	0.57	16938	1.0			
1039	1.4	15905	2.4	0.96	16561	1.7	0.48	17700	0.89			
1110	1.4	14412	2.0	0.90	15418	1.5	0.45	17656	0.83			
1226	1.2	16903	2.2	0.82	18375	1.6	0.41	19586	0.84			
1342	1.1	14755	1.7	0.75	16075	1.3	0.37	18272	0.71			
1552	0.97	15177	1.5	0.64	16539	1.1	0.32	18757	0.63			
1875	0.80	13067	1.1	0.53	14330	0.80	0.27	16674	0.47			
2023	0.74	16117	1.3	0.49	17360	0.90	0.25	19669	0.51			
2348	0.64	16565	1.1	0.43	17836	0.80	0.21	20000	0.44			
2468	0.61	15148	0.96	0.41	16325	0.69	0.20	18512	0.39			
2837	0.53	14358	0.80	0.35	15701	0.58	0.18	18194	0.34			
3460	0.43	16125	0.73	0.29	17364	0.53	0.14	19665	0.30			

150

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10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 2150 / PDA 2150												
10.73	140	4179	61	93	4719	46.1	46.6	5810	28.4			
14.14	106	5508	61	71	6220	46.1	35.4	7658	28.4		20000	
17.99	83	4041	35.3	56	4564	26.6	27.8	5619	16.4			
18.99	79	3067	25.4	53	3463	19.1	26.3	4264	11.8	3000	16483	18
21.95	68	4929	35.3	45.6	5567	26.6	22.8	6854	16.4			
25.03	60	4042	25.4	40.0	4565	19.1	20.0	5620	11.8		20000	
30.53	49.1	4931	25.4	32.8	5568	19.1	16.4	6856	11.8			
EC 3150 / PDA 3150												
48.32	31.0	8772	28.5	20.7	9907	21.5	10.3	12197	13.2			
53.97	27.8	9317	27.1	18.5	9662	18.7	9.3	10258	10.0			
63.06	23.8	6172	15.4	15.9	6970	11.6	7.9	8581	7.1			
74.41	20.2	7283	15.4	13.4	8225	11.6	6.7	10126	7.1			
83.11	18.0	8134	15.4	12.0	9186	11.6	6.0	10774	6.8			
92.52	16.2	9776	16.6	10.8	10124	11.5	5.4	11010	6.2			
98.07	15.3	9598	15.4	10.2	10175	10.9	5.1	11139	5.9	3000	20000	15
111.8	13.4	9603	13.5	8.9	10087	9.4	4.5	10893	5.1			
122.8	12.2	10019	12.8	8.1	10369	8.8	4.1	11648	5.0			
142.5	10.5	10147	11.2	7.0	10500	7.7	3.5	11995	4.4			
149.8	10.0	9429	9.9	6.7	9760	6.8	3.3	10918	3.8			
172.2	8.7	10118	9.2	5.8	10590	6.4	2.9	11394	3.5			
210.0	7.1	9704	7.3	4.8	10164	5.1	2.4	11674	2.9			
EC 4150 / PDA 4150												
260.5	5.8	14782	8.9	3.8	15762	6.3	1.9	17618	3.5			
296.9	5.1	13856	7.3	3.4	14532	5.1	1.7	15656	2.8			
326.0	4.6	15501	7.5	3.1	16087	5.2	1.5	18465	3.0			
350.3	4.3	13973	6.3	2.9	14507	4.3	1.4	16365	2.4			
384.7	3.9	14096	5.8	2.6	14631	4.0	1.3	16690	2.3			
457.2	3.3	14576	5.0	2.2	15235	3.5	1.1	16354	1.9			
498.7	3.0	12363	3.9	2.0	13370	2.8	1.0	15240	1.6			
555.1	2.7	12623	3.6	1.8	13647	2.6	0.90	15418	1.5			
634.7	2.4	12955	3.2	1.6	13999	2.3	0.79	15938	1.3	3000	20000	10
711.0	2.1	13241	2.9	1.4	14303	2.1	0.70	16275	1.2			
810.5	1.9	11921	2.3	1.2	12403	1.6	0.62	13868	0.90			
890.1	1.7	13821	2.4	1.1	14920	1.8	0.56	16960	1.0			
1033	1.5	14217	2.2	0.97	15172	1.5	0.48	17427	0.88			
1086	1.4	12975	1.9	0.92	14015	1.4	0.46	15947	0.77			
1248	1.2	12435	1.6	0.80	13063	1.1	0.40	15269	0.64			
1523	0.99	13838	1.4	0.66	14932	1.0	0.33	16965	0.58			

* (bg) All highlighted ratio (is. 10.73) have particular dimensions of bevel gears in some versions. See dimensional tables.

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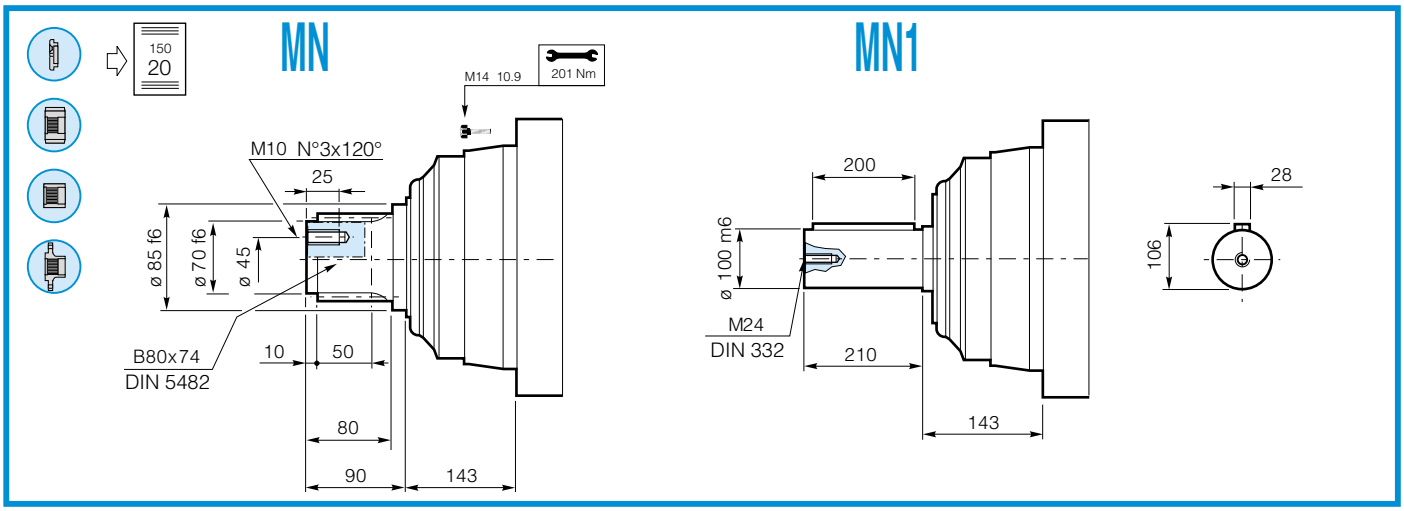
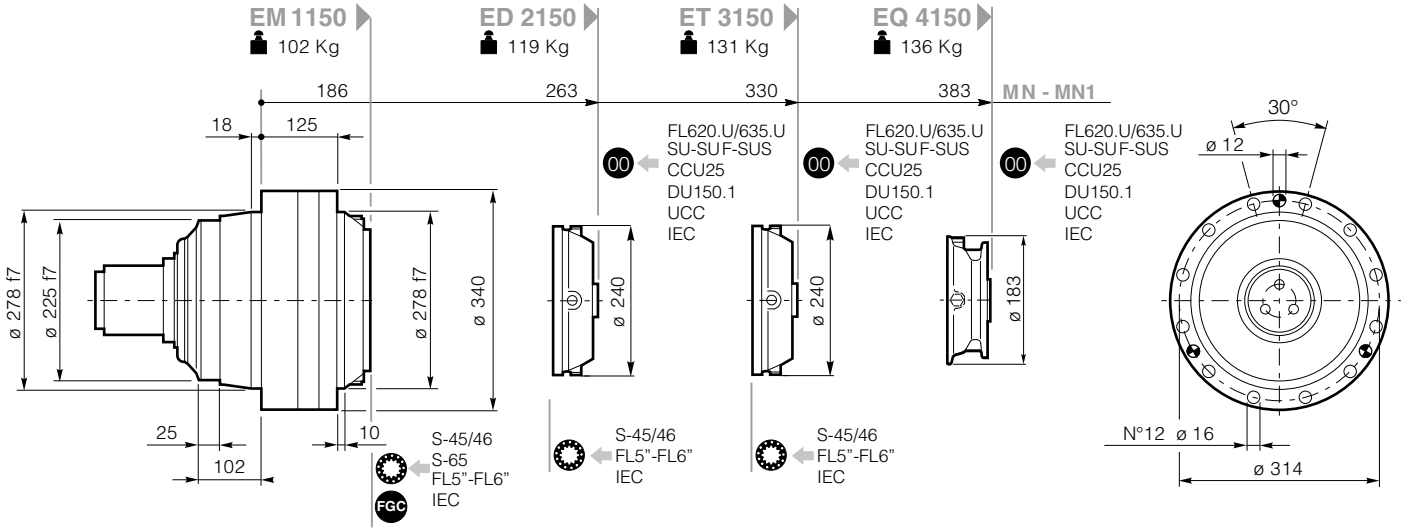
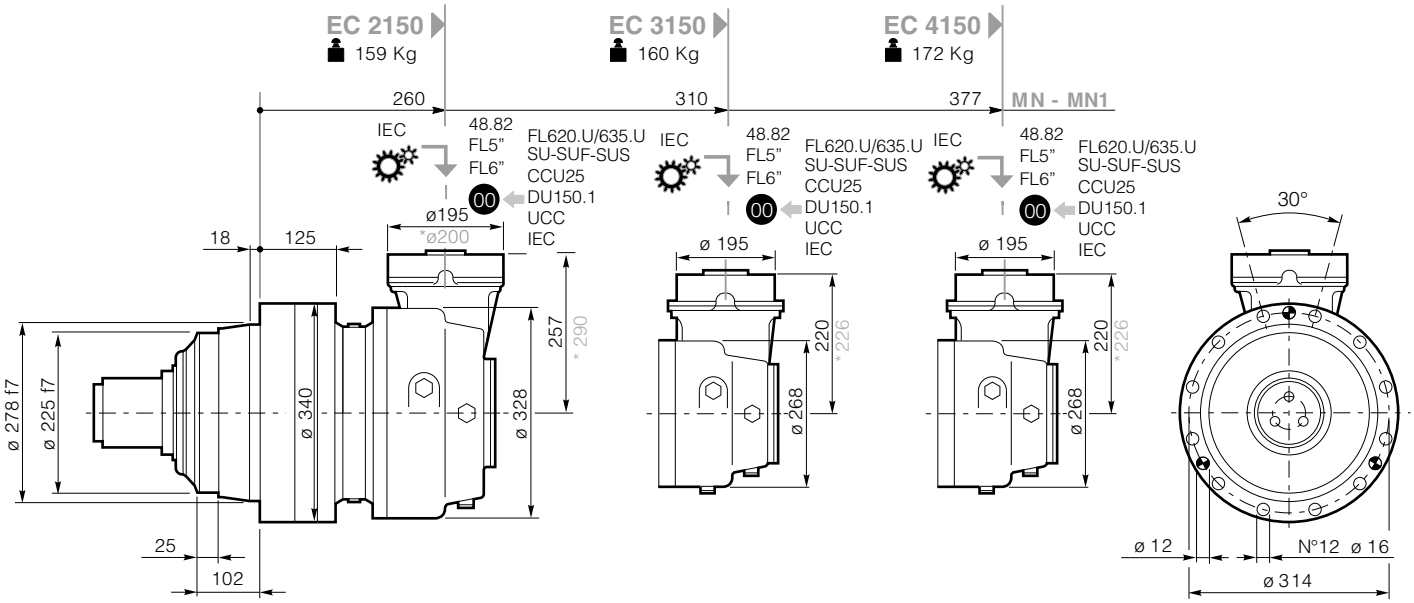
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 150 13
SU-SUF SUS → 150 14
FL5"- FL6" FL620 FL635 → 150 12
IEC → 150 19
→ 150 18
CCU25 → B15
DU150.1 UCC → B16
* bg → 150 3

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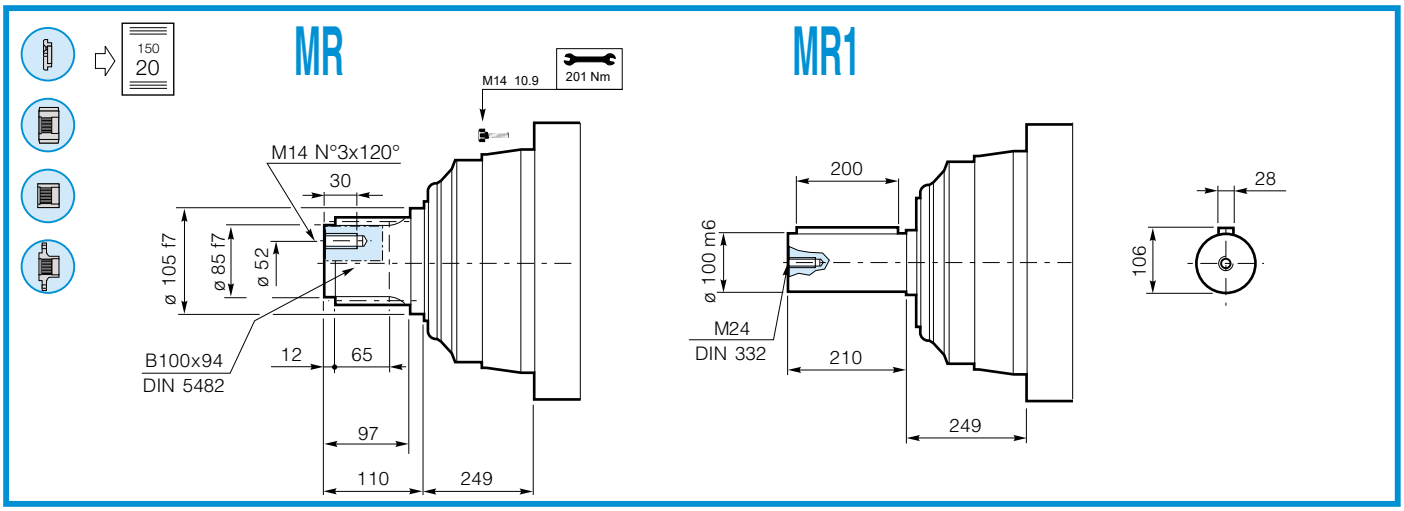

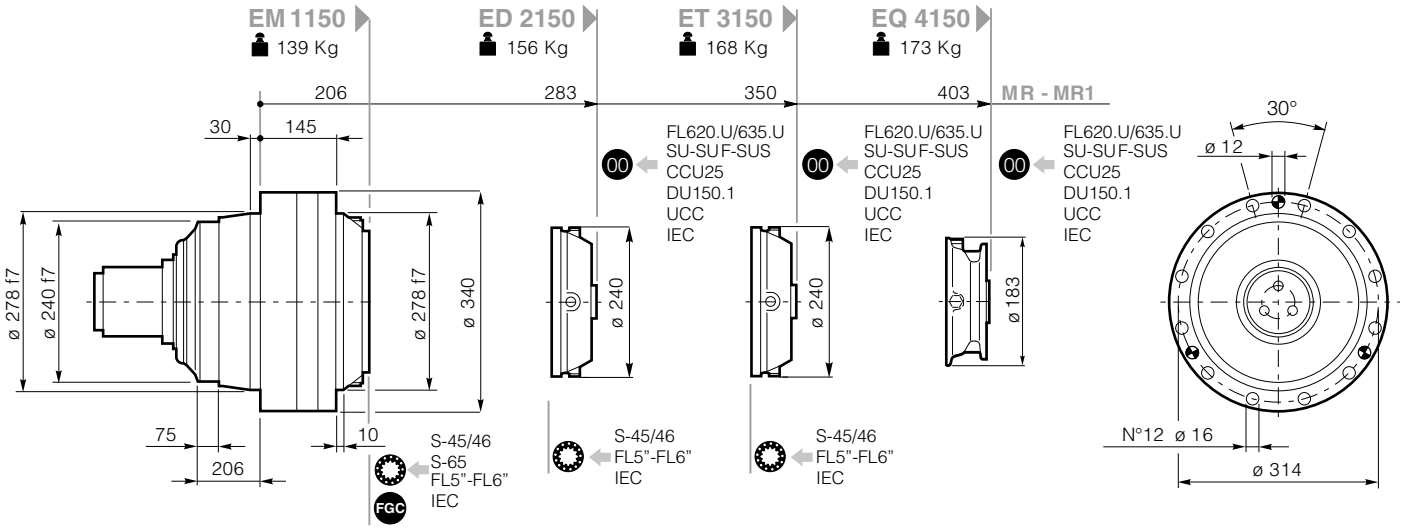

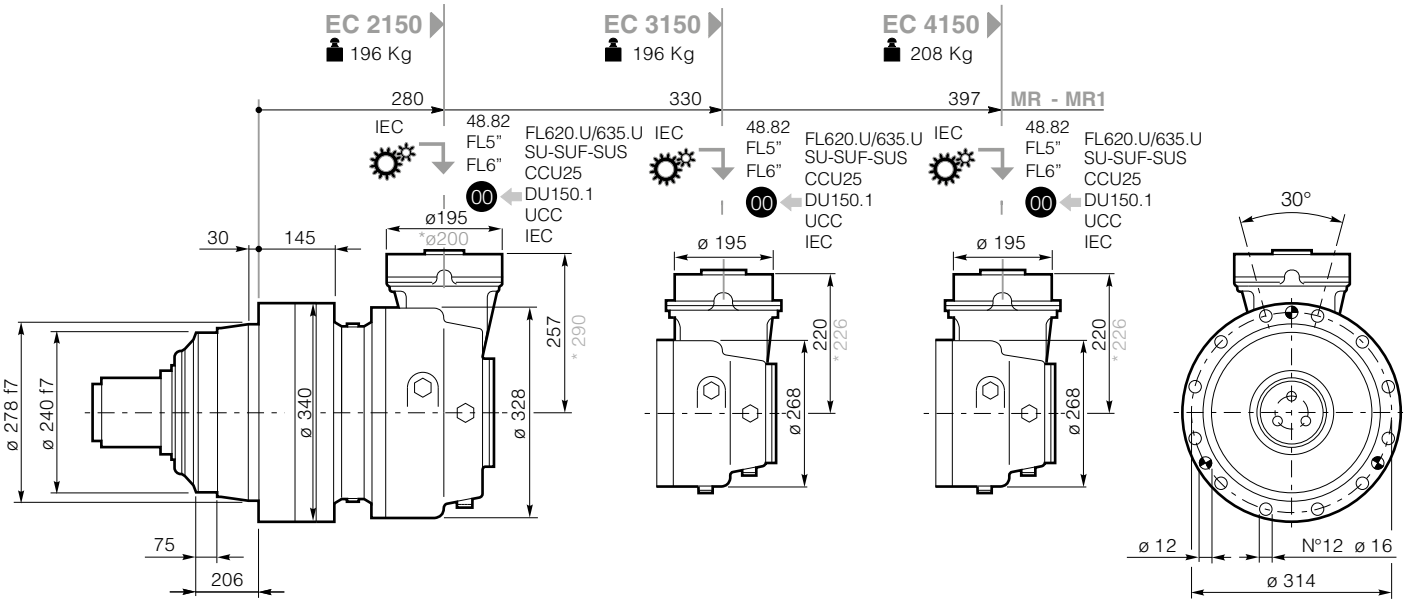

00 B13 S-45/46 48.82 ⇨ 150 13 SU-SUF SUS ⇨ 150 14 FL5"- FL6' FL620 FL635 ⇨ 150 12 IEC ⇨ 150 19 ⇨ 150 18 CCU25 ⇨ B15 DU150.1 UCC ⇨ B16 * bg ⇨ 150 3

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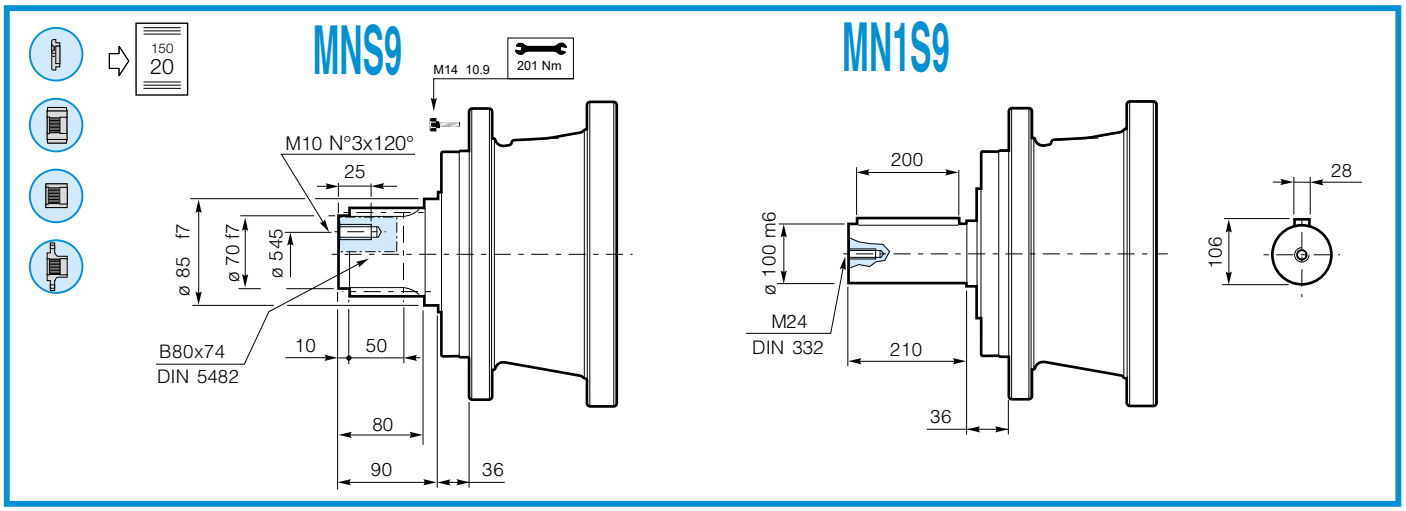
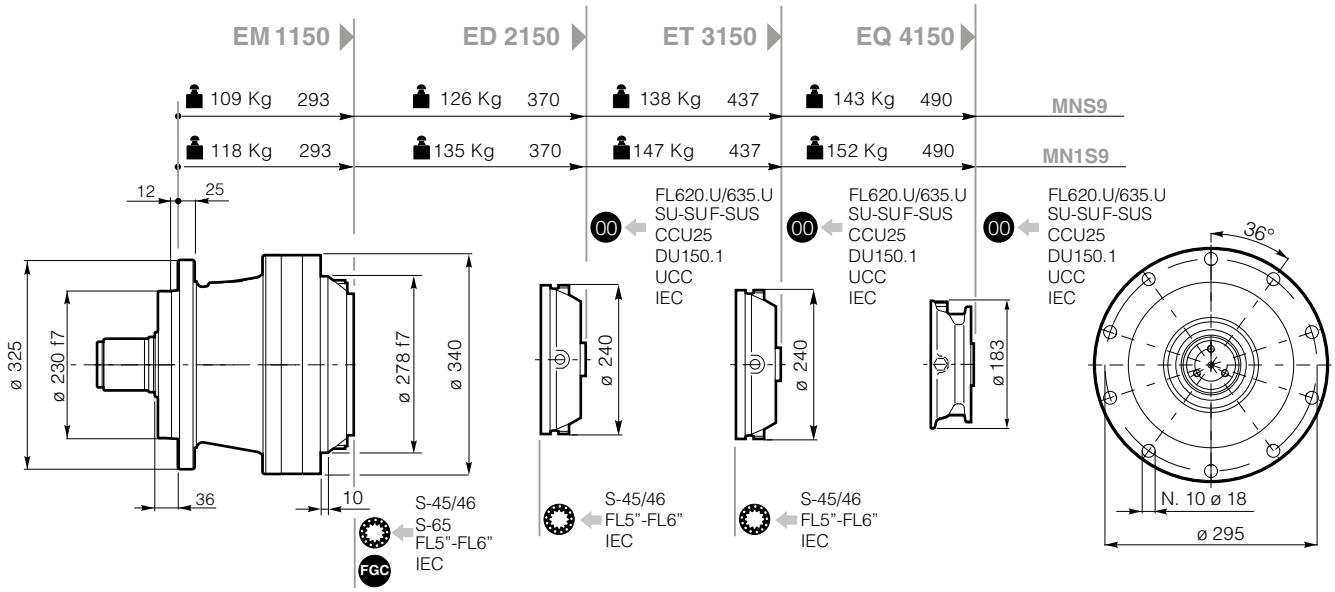
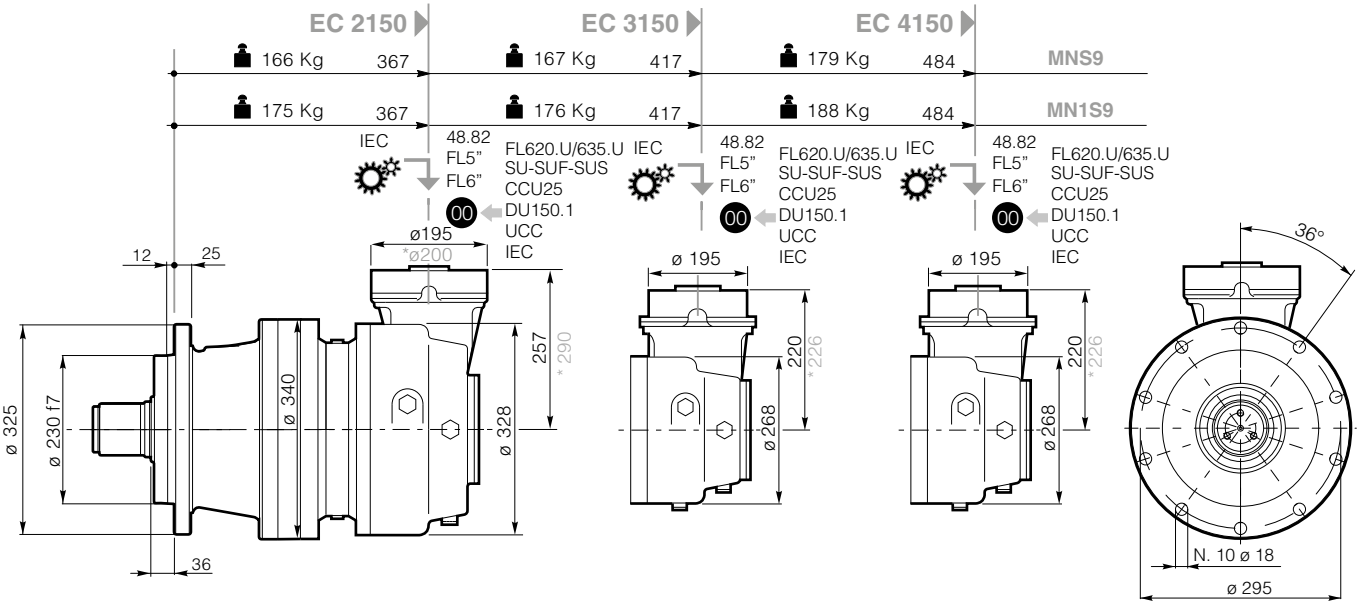
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 150 13 | SU-SUF SUS → 150 14 | FL5"- FL6" FL620 FL635 → 150 12 | IEC → 150 19 | 150 18 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 150 3

Click **DANA** button to return to section index

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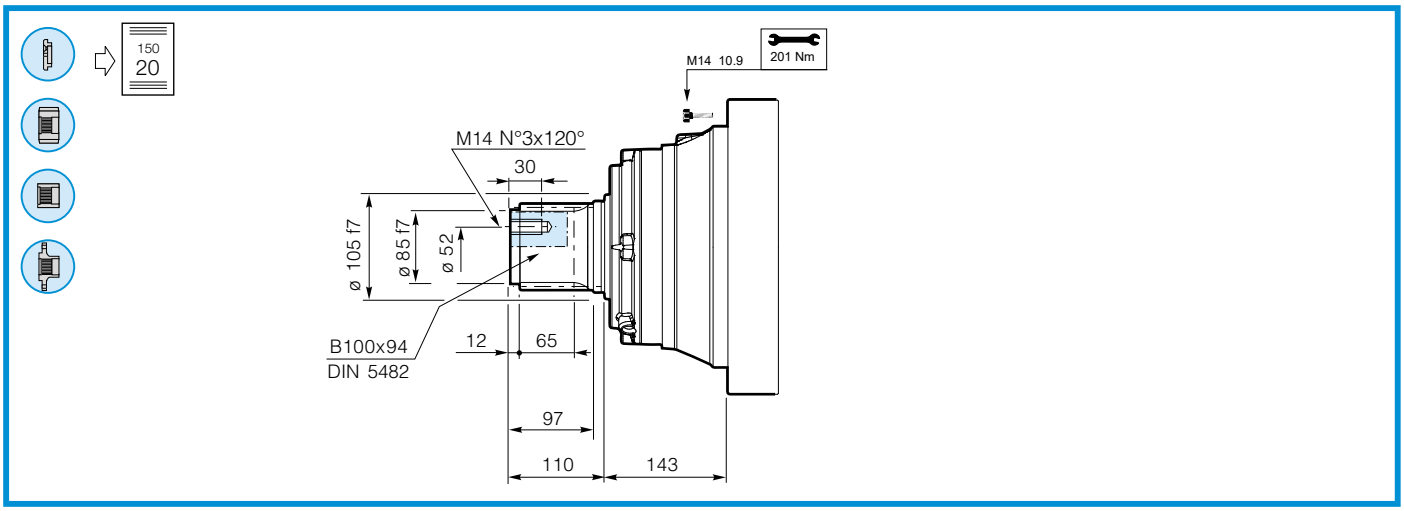

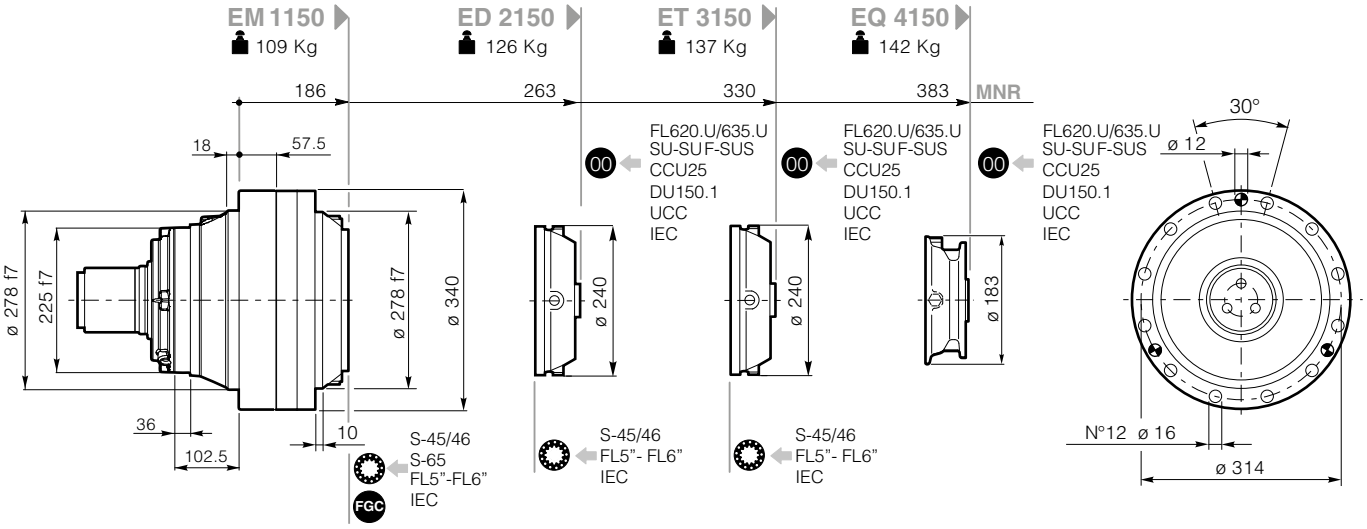

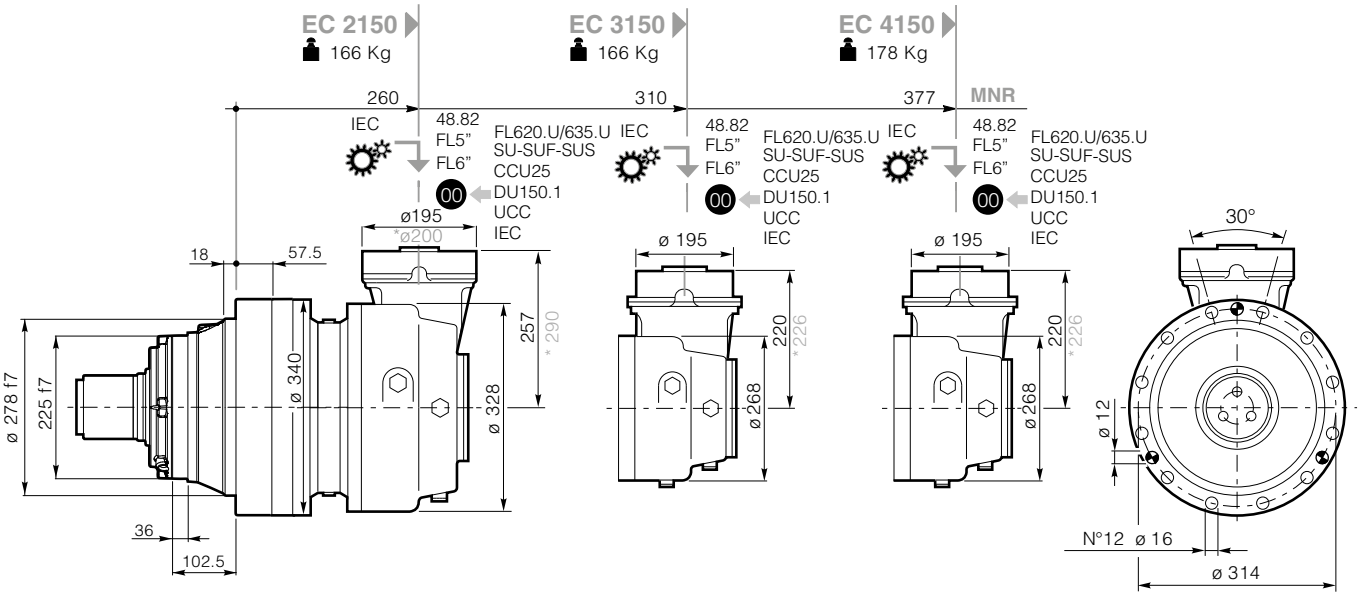

00 B13 S-45/46 48.82 → 150 13 | SU-SUF SUS → 150 14 | FL5"- FL6' FL620 FL635 → 150 12 | IEC → 150 19 | 150 18 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 150 3

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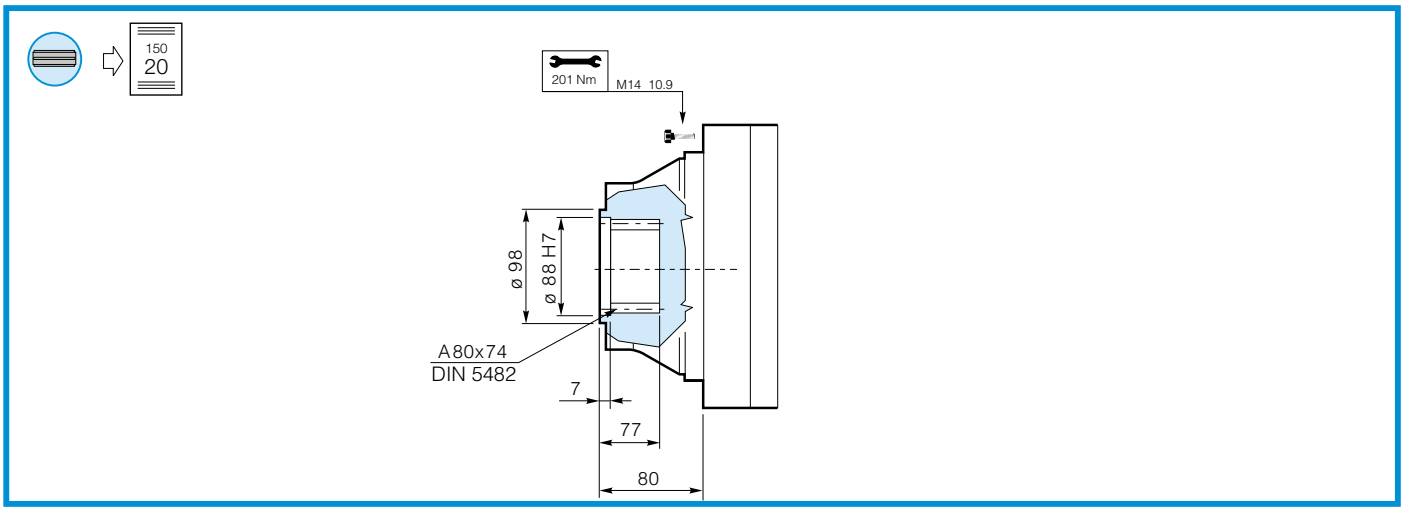
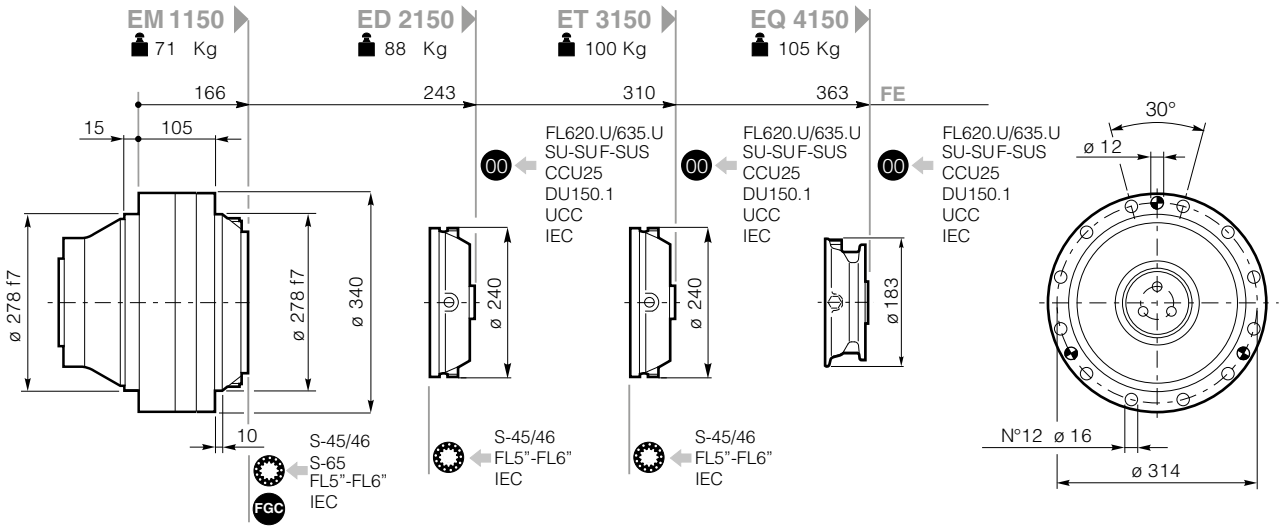
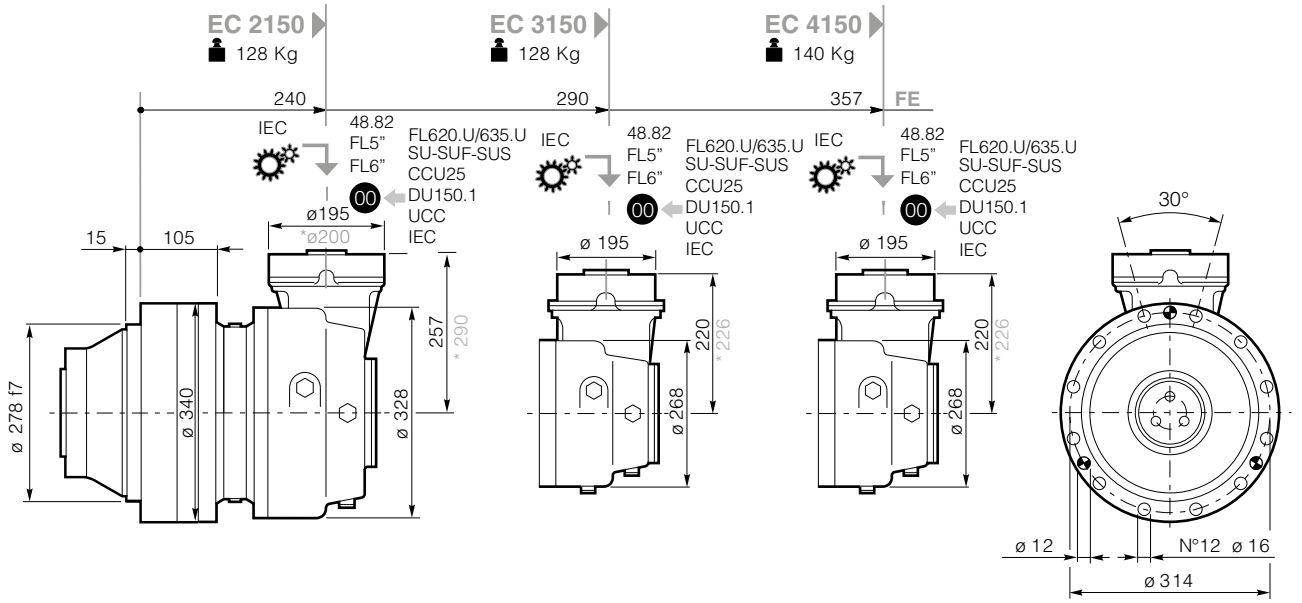
GEARBOX DIMENSIONS WITH OUTPUT



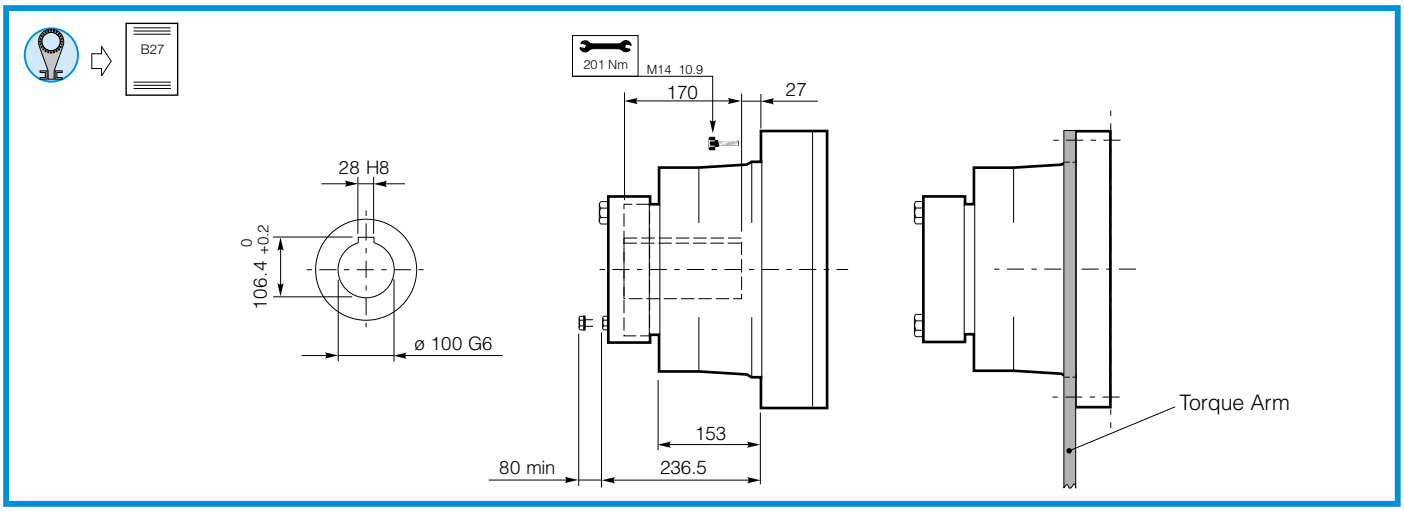


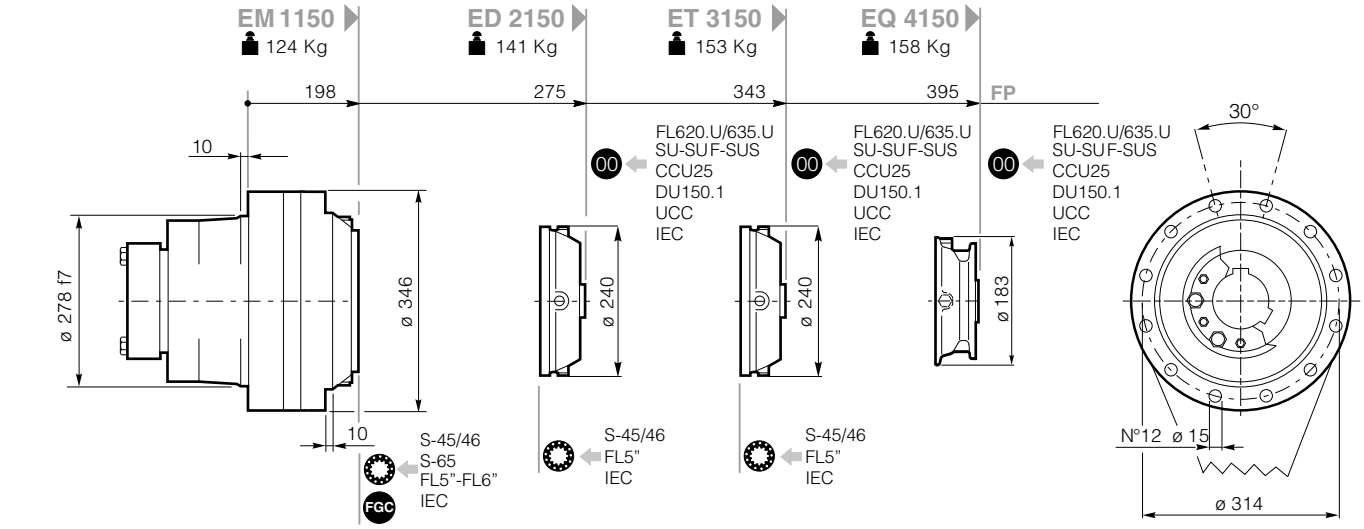


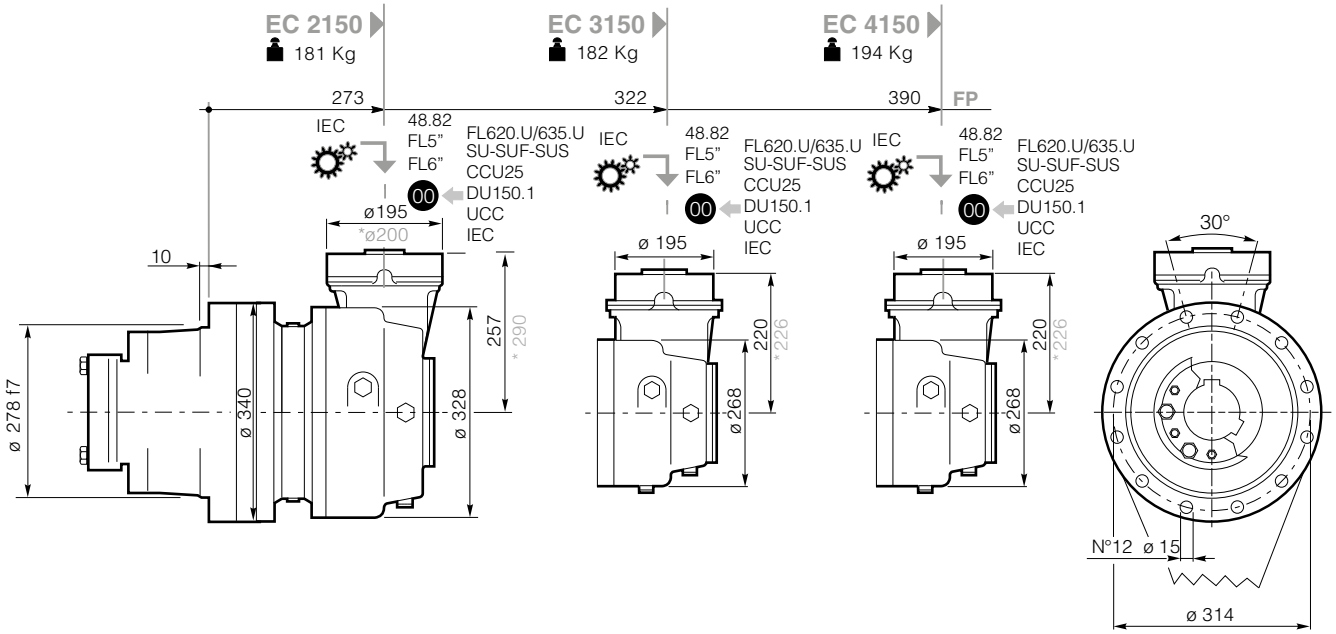
00 B13 S-45/46 48.82 → 150 13 SU-SUF SUS → 150 14 FL5"- FL6" FL620 FL635 → 150 12 IEC → 150 19 → 150 18 CCU25 → B15 DU150.1 UCC → B16 * bg → 150 3

Click **DANA** button to return to section index

Click *i* button to return to main index







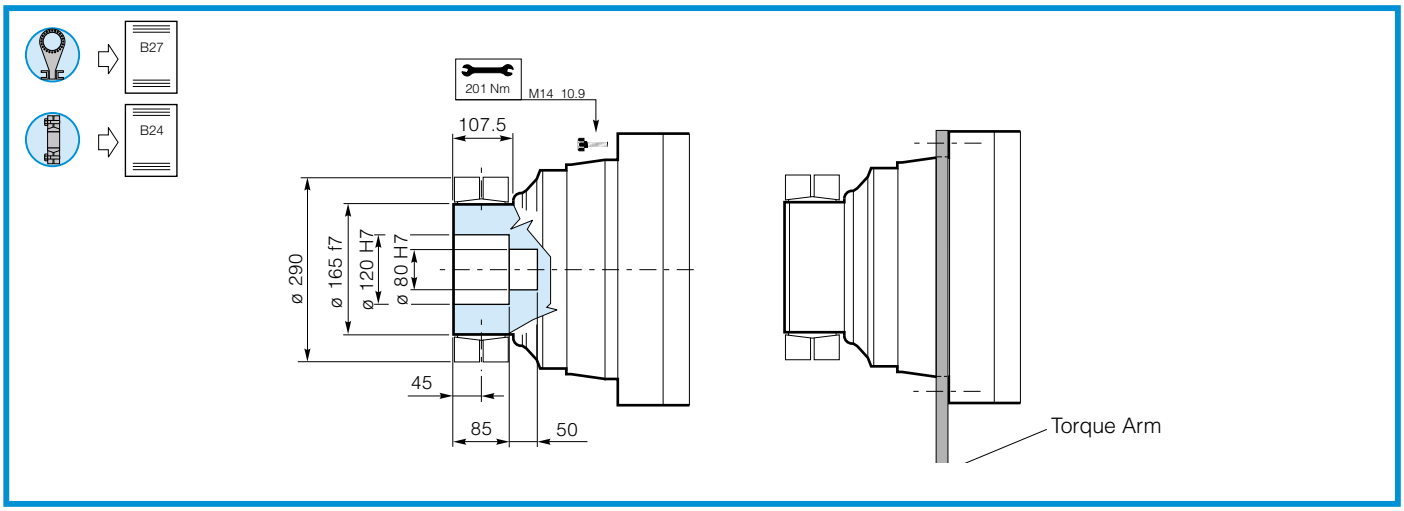
150

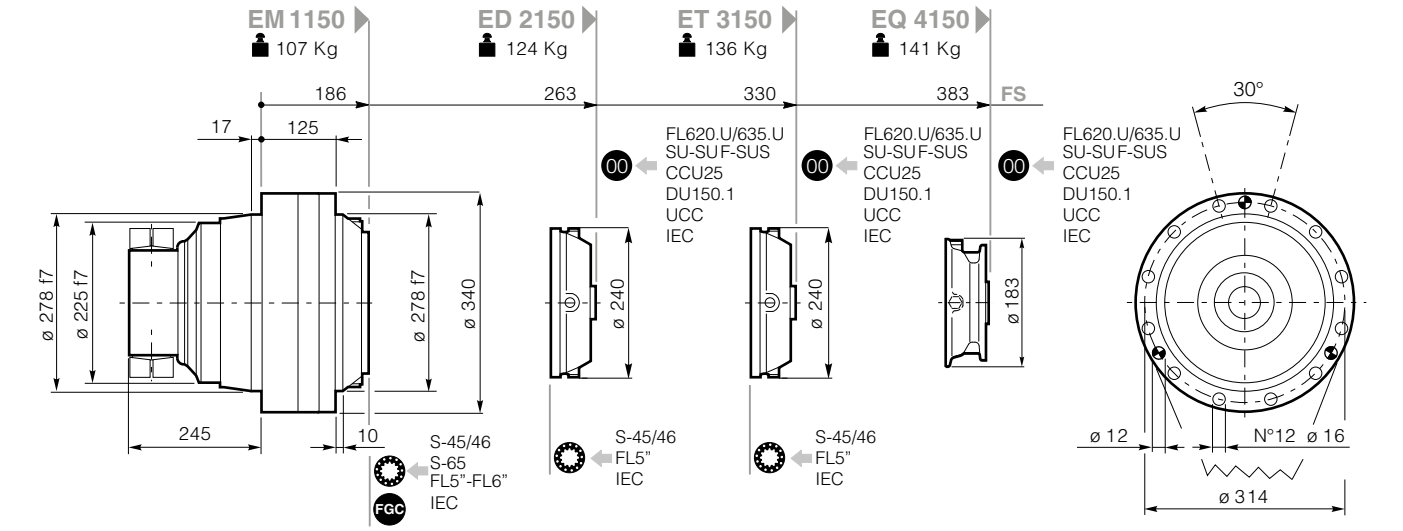
00 B13 S-45/46 48.82 → 150 13 | SU-SUF SUS → 150 14 | FL5"- FL6' FL620 FL635 → 150 12 | IEC → 150 19 | → 150 18 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 150 3

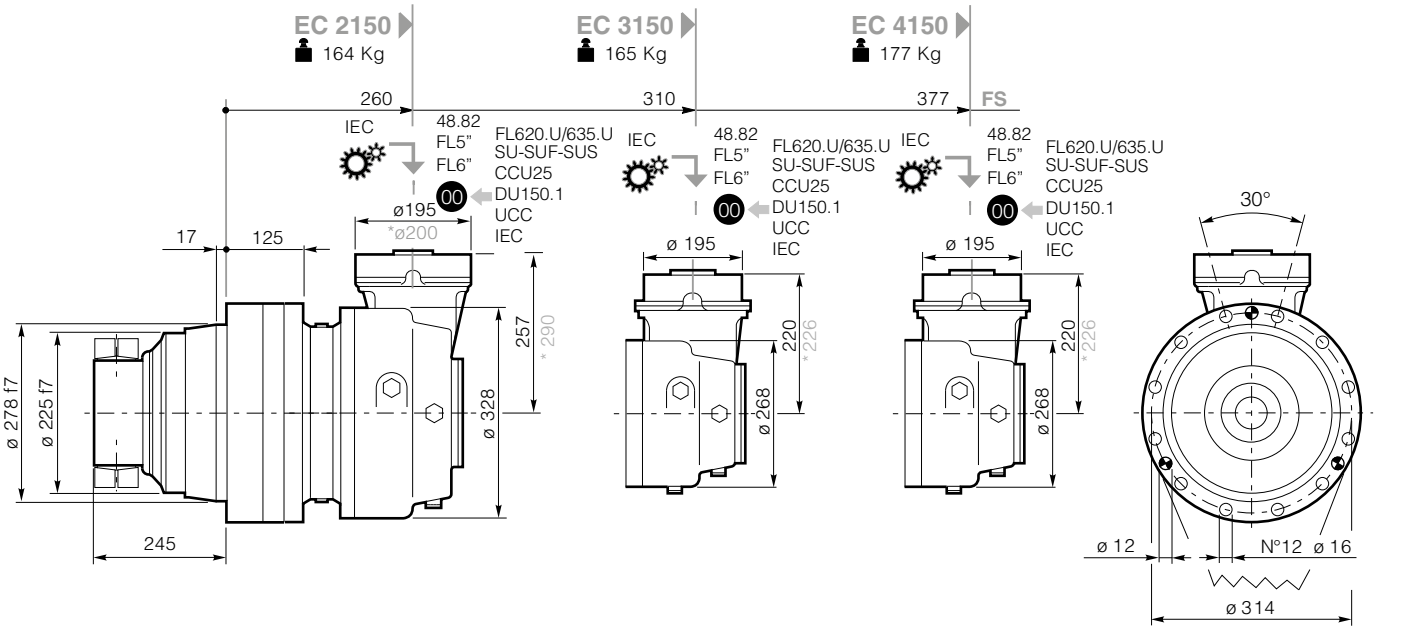
Click *i* button to return to main index

Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT



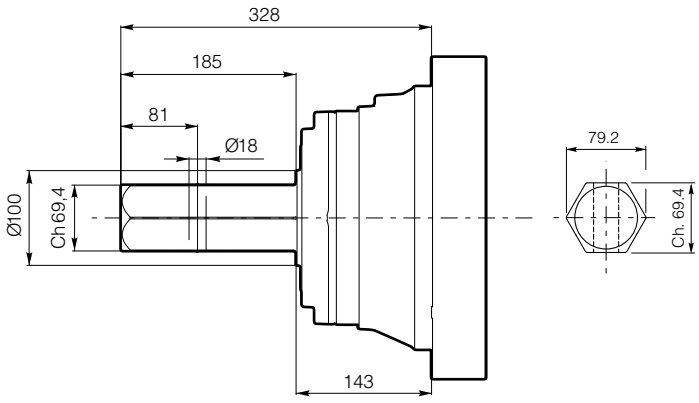


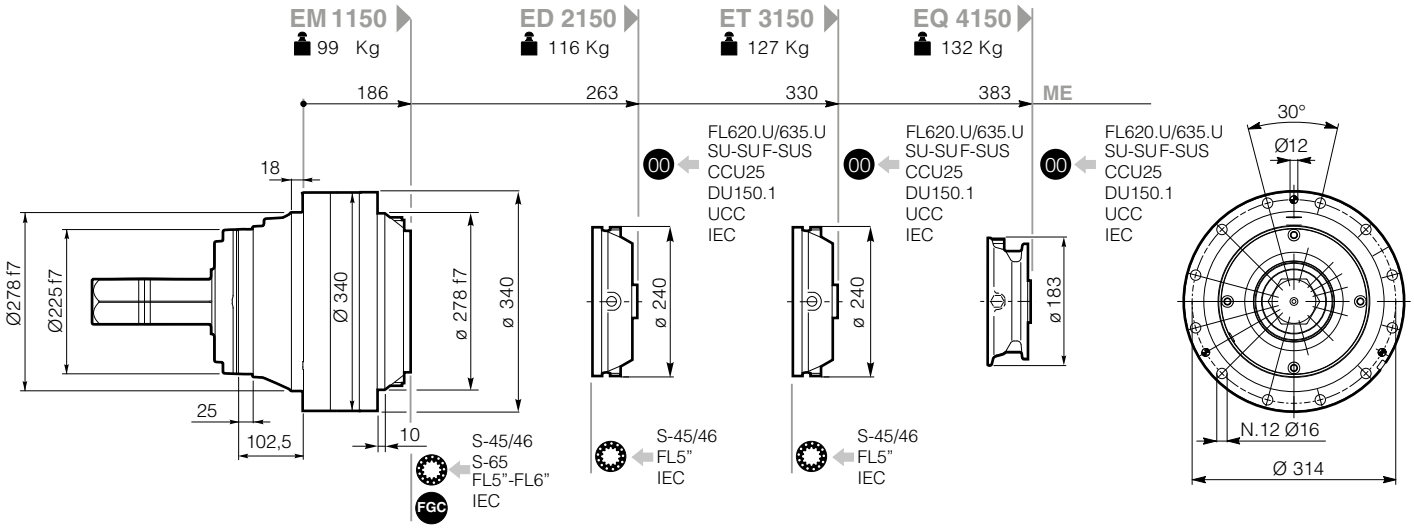


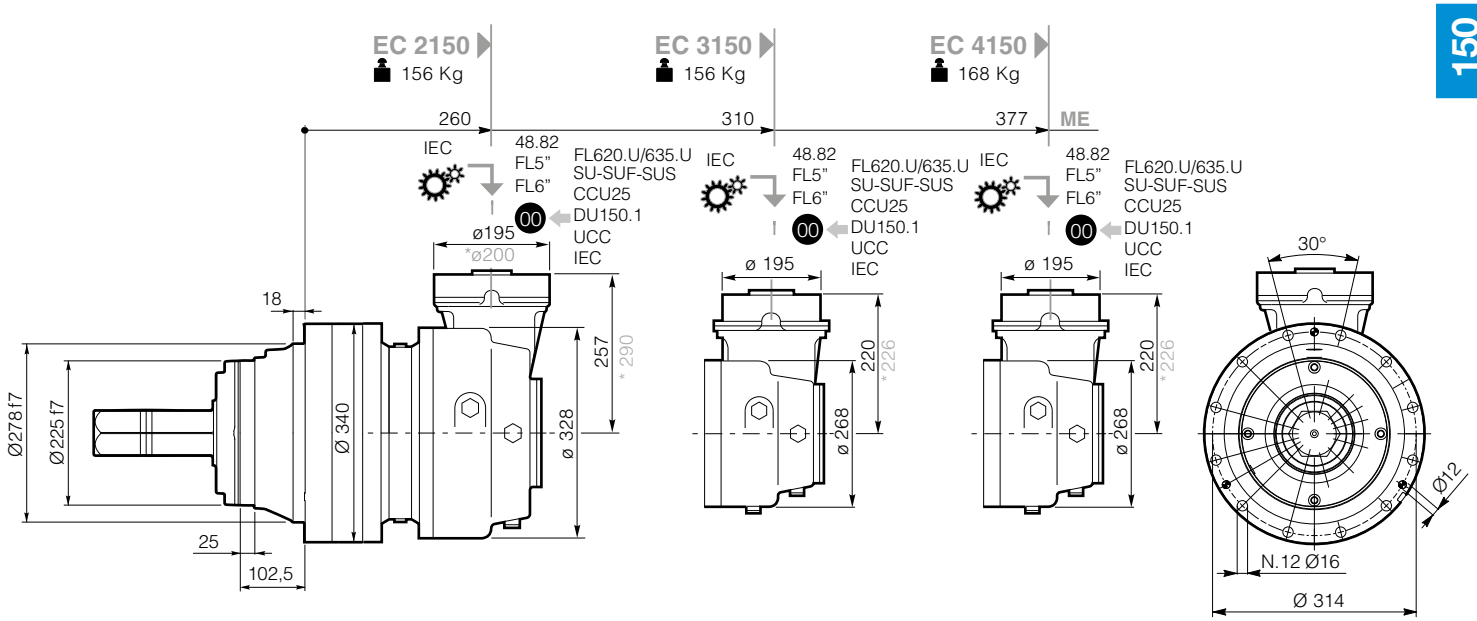
00 B13 S-45/46 48.82 ⇨ 150 13 SU-SUF SUS ⇨ 150 14 FL5"- FL6" FL620 FL635 ⇨ 150 12 IEC ⇨ 150 19 ⇨ 150 18 CCU25 ⇨ B15 DU150.1 UCC ⇨ B16 * bg ⇨ 150 3

Click **DANA** button to return to section index

Click *i* button to return to main index







150

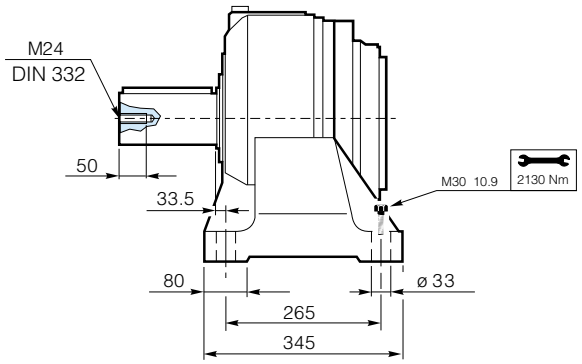
00 B13 S-45/46 48.82 → 150 13 | SU-SUF SUS → 150 14 | FL5"- FL6' FL620 FL635 → 150 12 | IEC → 150 19 | 150 18 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 150 3

Click *i* button to return to main index

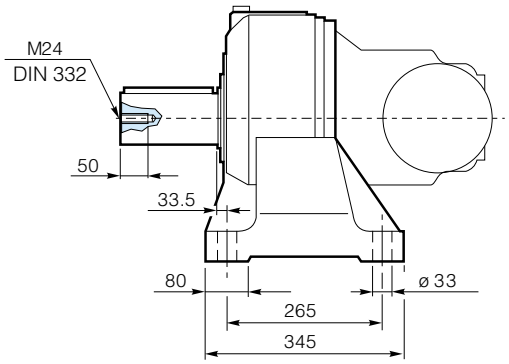
Click **DANA** button to return to section index

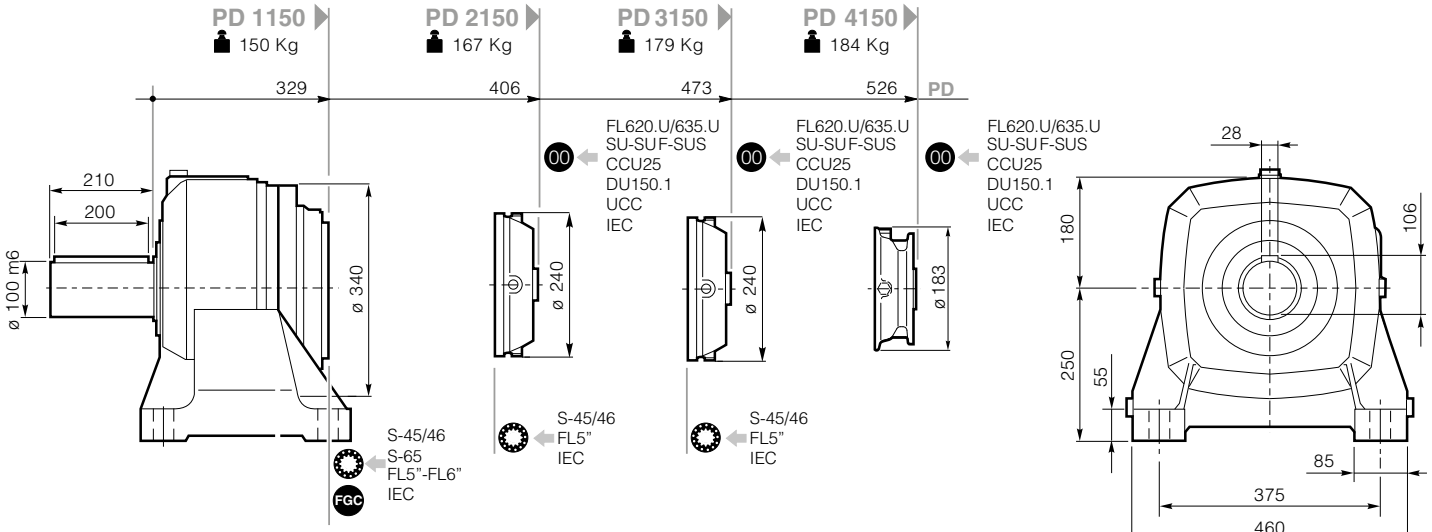
GEARBOX DIMENSIONS WITH OUTPUT

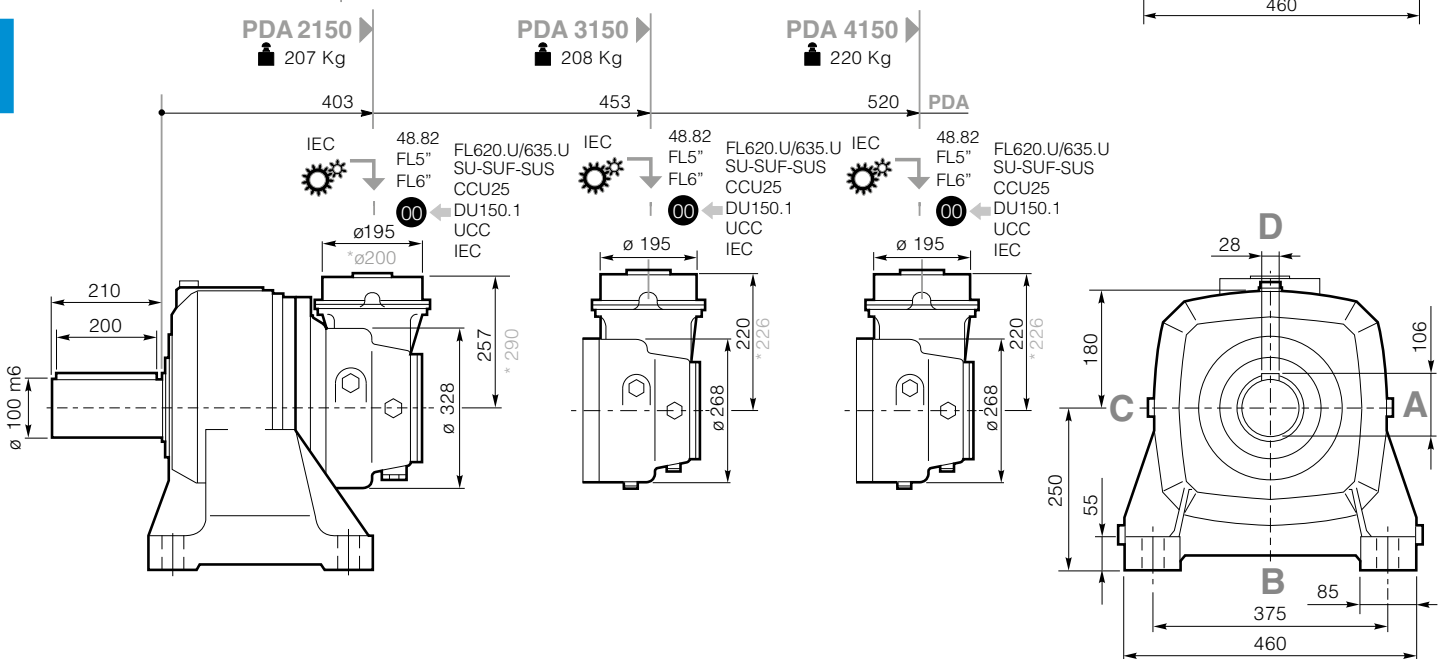
PD



PDA





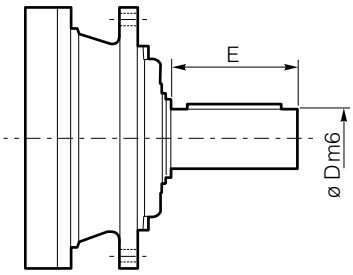


00 B13 S-45/46 48.82 → 150 13 | SU-SUF SUS → 150 14 | FL5"- FL6" FL620 FL635 → 150 12 | IEC → 150 19 | → 150 18 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 150 3

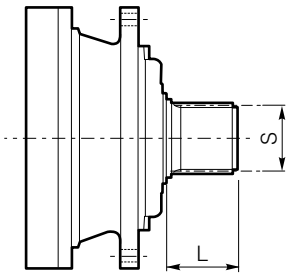
Click **DANA** button to return to section index

Click *i* button to return to main index

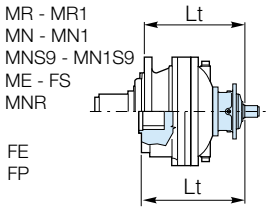
S-45CR1 - S-46C1 - S-45SR - S-65CR1 - S-65SR

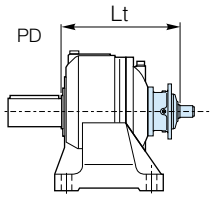


S-45CR1 - S-46C1 - S-65CR1



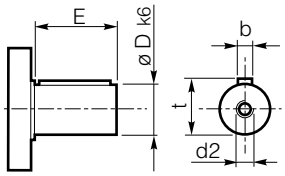
S-45SR - S-65SR

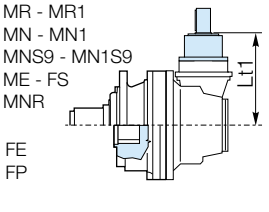


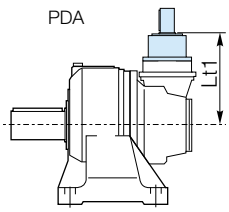


	D m6	E	L	S		Lt					
						MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
S-45CR1	65	105	-	-	EM/PD 1150	325	345	432	305	338	468
					ED/PD 2150	325	345	432	305	338	468
					ET/PD 3150	393	413	500	373	405	536
S-46C1	65	105	-	-	EM/PD 1150	367	387	474	347	379	510
					ED/PD 2150	367	387	474	347	379	510
					ET/PD 3150	434	454	541	414	447	577
S-45SR	-	-	68	B58x53	EM/PD 1150	325	345	432	305	338	468
					ED/PD 2150	325	345	432	305	338	468
					ET/PD 3150	393	413	500	373	405	536
S-65CR1	80	130	-	-	EM1150	366	386	473	346	378	509
S-65SR	-	-	90	B70x64	EM1150	366	386	473	346	378	509

48.82



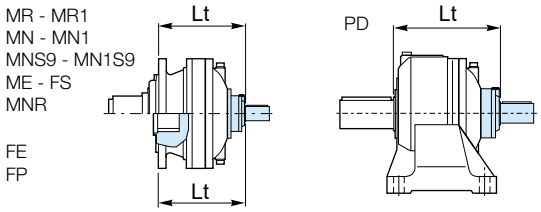


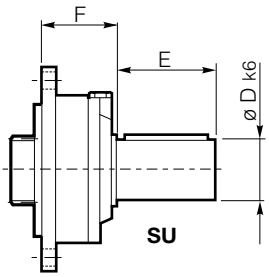


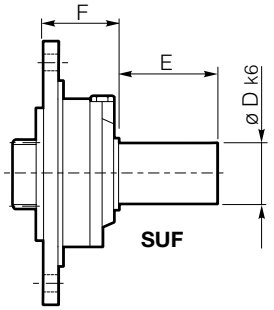
	D	E		Lt1
				MN-MN1-MR-MR1-MNS9-MN1S9-ME-FS-MNR--FE-FP-PDA
48.82	48	82	EC/PDA 2150	317
			EC/PDA 3150	280
			EC/PDA 4150	280

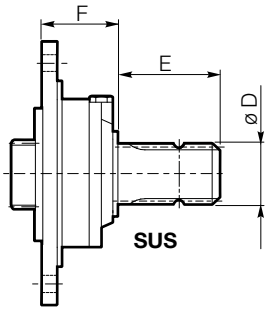
For the input configuration S46C1, S65CR1, 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

SU - SUF - SUS



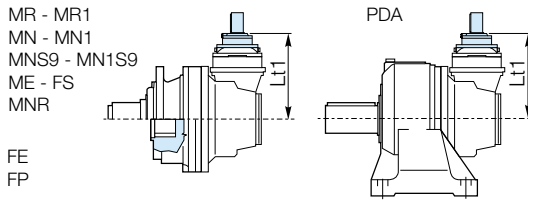


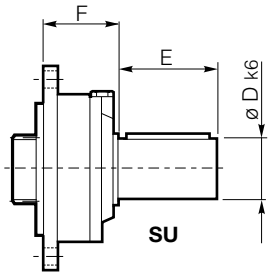


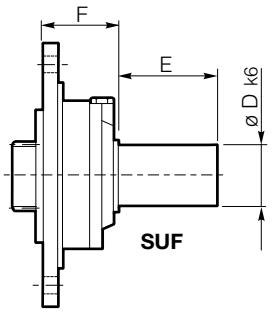


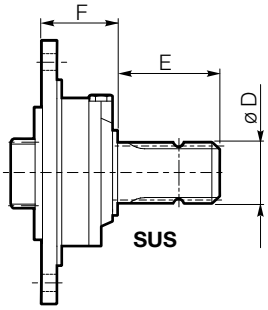
	D	E	F		Lt 00					
					MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
SU1 28x50	28	50	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SU2 40x58	40	58	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SU3 48x82	48	82	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SU 42x80	42	80	101.5	ED/PD 2150	364	384	471	344	377	507
				ET/PD 3150	432	452	539	412	444	575
				EQ/PD 4150	484	504	591	464	497	627
SUS 1 3/8”	1 3/8”	97	101.5	ED/PD 2150	364	384	471	344	377	507
				ET/PD 3150	432	452	539	412	444	575
				EQ/PD 4150	484	504	591	464	497	627
SU2 1.5x3.25	38.10	82.55	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SUF1 28x50	28	50	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SUF2 40x58	40	58	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586
SUF3 48x82	48	82	60	ED/PD 2150	323	343	430	303	335	466
				ET/PD 3150	390	410	497	370	403	533
				EQ/PD 4150	443	463	550	423	455	586

SU - SUF - SUS





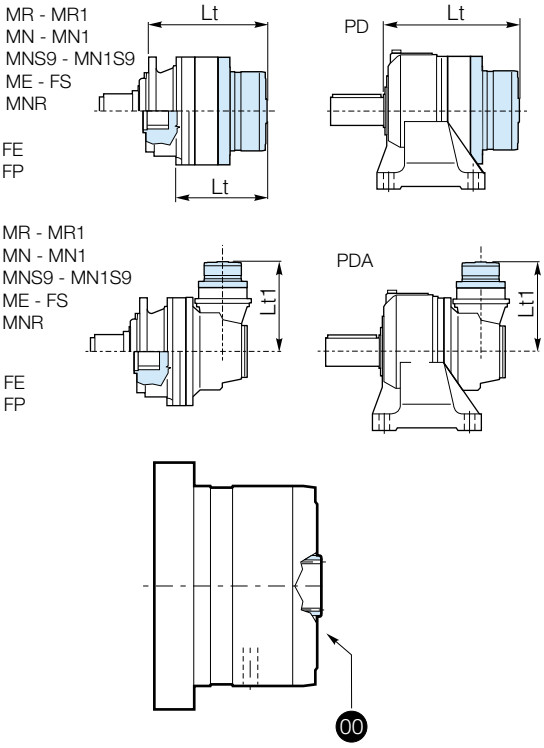




	D	E	F		Lt1 (00) MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PDA
SU1 28x50	28	50	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SU2 40x58	40	58	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SU3 48x82	48	82	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SU 42x80	42	80	101.5	EC/PDA 2150	359	359	359	359	359	359
				EC /PDA2150*	392	392	392	392	392	392
				EC/PDA 3150	322	322	322	322	322	322
				EC/PDA 3150*	328	328	328	328	328	328
				EC/PDA 4150	322	322	322	322	322	322
				EC/PDA 4150*	328	328	328	328	328	328
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC/PDA 2150	359	359	359	359	359	359
				EC/PDA 2150*	392	392	392	392	392	392
				EC/PDA 3150	322	322	322	322	322	322
				EC/PDA 3150*	328	328	328	328	328	328
				EC/PDA 4150	322	322	322	322	322	322
				EC/PDA 4150*	328	328	328	328	328	328
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SUF1 28x50	28	50	60	EC/PDA 2150	317	317	317	317	317	317
				EC /PDA2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SUF2 40x58	40	58	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286
SUF3 48x82	48	82	60	EC/PDA 2150	317	317	317	317	317	317
				EC/PDA 2150*	350	350	350	350	350	350
				EC/PDA 3150	280	280	280	280	280	280
				EC/PDA 3150*	286	286	286	286	286	286
				EC/PDA 4150	280	280	280	280	280	280
				EC/PDA 4150*	286	286	286	286	286	286

* bg → 150 3

FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750

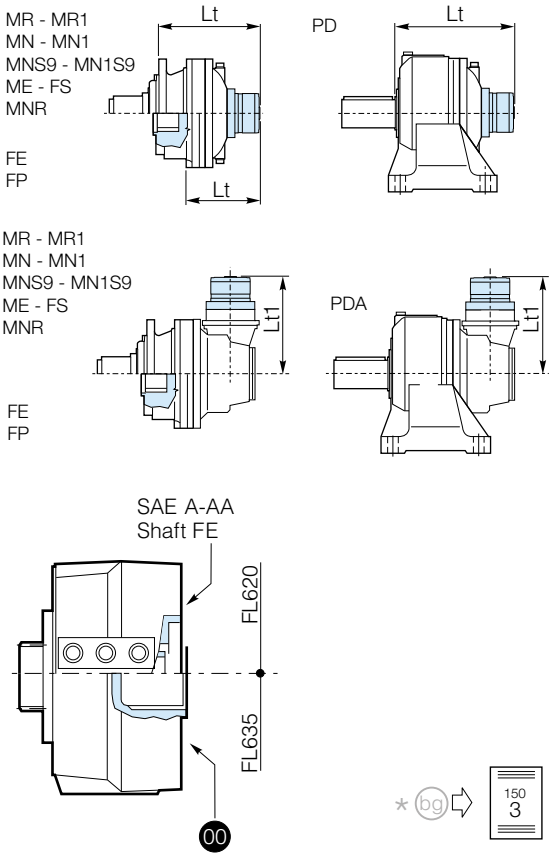


		Lt					
		MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
FL250 FL350 FL450	EM/PD 1150	296	316	403	276	309	439
	ED/PD 2150	356	376	463	336	369	499
	ET/PD 3150	424	444	531	404	436	567
FL650 FL750	EM/PD 1150	310	330	417	290	322	453
	ED/PD 2150	370	390	477	350	382	513
	ET/PD 3150	437	457	544	417	450	580
FL960	EM/PD 1150	324	344	431	304	337	467
	ED/PD 2150	397	417	504	377	409	540

		Lt1					
		MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PDD
FL250 FL350 FL450	EC/PDA 2150	409	409	409	409	409	409
	EC/PDA 2150*	442	442	442	442	442	442
	EC/PDA 3150	280	280	280	280	280	280
	EC/PDA 3150*	377	377	377	377	377	377
	EC/PDA 4150	280	280	280	280	280	280
	EC/PDA 4150*	377	377	377	377	377	377
FL650 FL750	EC/PDA 2150	422	422	422	422	422	422
	EC/PDA 2150*	455	455	455	455	455	455
	EC/PDA 3150	294	294	294	294	294	294
	EC/PDA 3150*	391.5	391.5	391.5	391.5	391.5	391.5
	EC/PDA 4150	294	294	294	294	294	294
	EC/PDA 4150*	391.5	391.5	391.5	391.5	391.5	391.5

* bg ⇨ 150 3

FL620.10 - FL635.10 / FL620.U - FL635.U



		Lt					00
		MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
FL620.U	ED/PD 2150	367	387	474	347	380	510
	ET/PD 3150	435	455	542	415	447	578
	EQ/PD 4150	487	507	594	467	500	630
FL635.U	ED/PD 2150	354	374	461	334	366	497
	ET/PD 3150	421	441	528	401	434	564
	EQ/PD 4150	474	494	581	454	486	617

		Lt					
		MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
FL620.10	EQ/PD 4150	446	466	553	426	459	589
FL635.10	EQ/PD 4150	428	448	535	408	441	571

		Lt1					00
		MN-MN1 MNR-FS-ME	MR MR1	MNS9 MN1S9	FE	FP	PDA
FL620.U	EC/PDA 2150	362	362	362	362	362	362
	EC/PDA 2150*	395	395	395	395	395	395
	EC/PDA 3150	325	325	325	325	325	325
	EC/PDA 3150*	331	331	331	331	331	331
	EC/PDA 4150	325	325	325	325	325	325
	EC/PDA 4150*	331	331	331	331	331	331
FL635.U	EC/PDA 2150	348	348	348	348	348	348
	EC/PDA 2150*	381	381	381	381	381	381
	EC/PDA 3150	311	311	311	311	311	311
	EC/PDA 3150*	317	317	317	317	317	317
	EC/PDA 4150	311	311	311	311	311	311
	EC/PDA 4150*	317	317	317	317	317	317

* bg ⇨ 150 3

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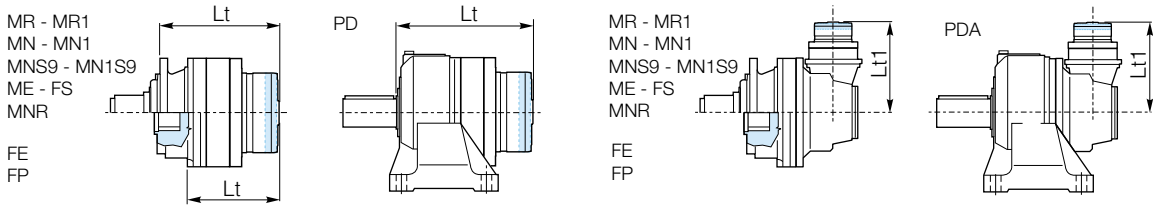
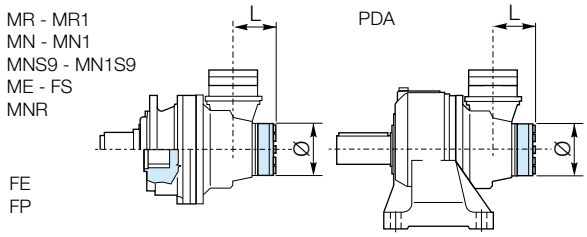
RL



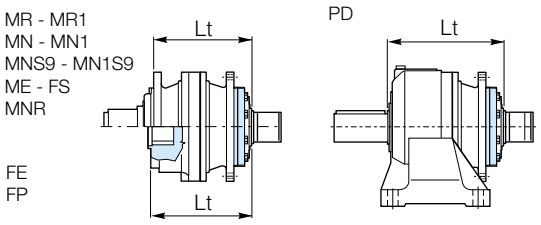
				Lt					
				MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
RL	+	FL250 FL350 FL450	EM/PD 1150	322	342	429	302	335	465
			ED/PD 2150	382	402	489	362	395	525
			ET/PD 3150	450	470	557	430	462	593
		FL650 FL750	EM/PD 1150	336	356	443	316	348	479
			ED/PD 2150	396	416	503	376	408	539
			ET/PD 3150	463	483	570	443	476	606
		FL960	EM/PD 1150	350	370	457	330	363	493
			ED/PD 2150	423	443	530	403	435	566

				Lt1
				MR-MR1-MN-MN1-MNR-MNS9-MN1S9-FS-FE-ME-FP-PDA
RL	+	FL250 FL350 FL450	EC/PDA 2150	435
			EC/PDA 2150*	468
			EC/PDA 3150	306
			EC/PDA 3150*	404
			EC/PDA 4150	306
			EC/PDA 4150*	404

* (bg) 150 3



				L	Ø
RL	+	CC40	EC/PDA 3150	135.2	150
			EC/PDA 4150	135.2	150



				Lt					
				MN-MN1 MNR-FS-ME	MR-MR1	MNS9 MN1S9	FE	FP	PD
RL	+	S46C1	EM/PD 1150	366	407	473	367	399	530
			ED/PD 2150	387	407	494	367	399	530
			ET/PD 3150	454	474	561	434	466	597

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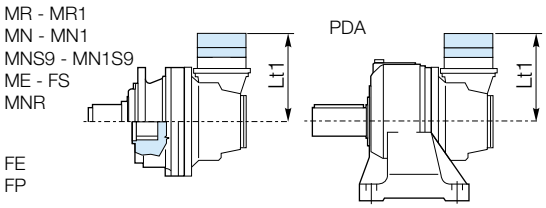
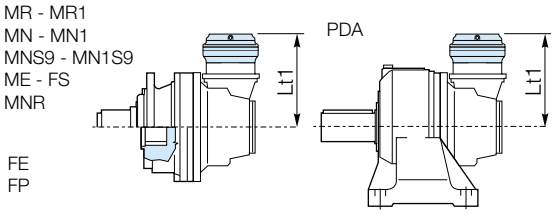
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020

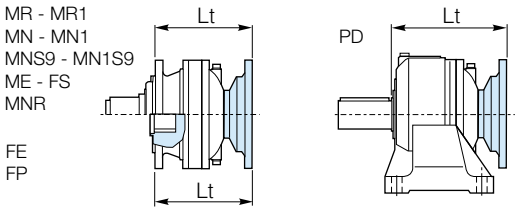


ED2010 - ED2020 ED2021

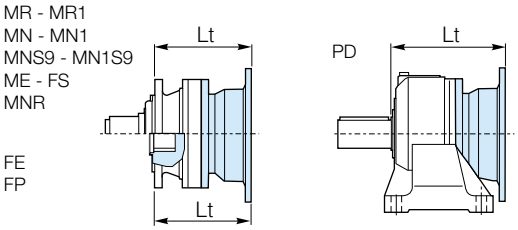
		Lt1					
		EC2150 PDA2150	EC2150* PDA2150*	**EC3150 PDA3150**	EC3150* PDA3150*	**EC4150 PDA4150**	EC4150* PDA4150*
	EM1010	364	397	327	333	327	333
	EM1020	382	415	345	351	345	351
	ED2010	403.5	436.5	366.5	372.5	366.5	372.5
	ED2020	434.5	467.5	397.5	403.5	397.5	403.5
	ED2021	449.9	482.9	412.9	418.9	412.9	418.9

* bg 150 3

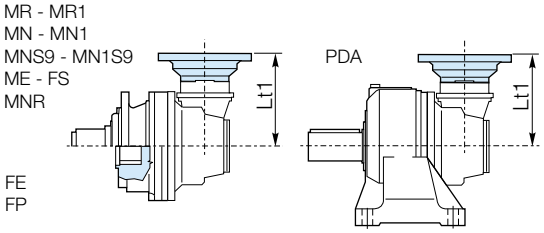
IEC Motor



		Lt 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2150	MN-MN1-MNR-FS-ME	283	285	290	291	358	389	400	430
ED 2150	MR-MR1	303	305	310	311	378	409	420	450
ED 2150	MNS9-MN1S9	390	392	397	398	465	496	507	537
ED 2150	FE	263	265	270	271	338	369	380	410
ED 2150	FP	295	297	302	303	370	401	412	442
ET 3150	MN-MN1-MNR-FS-ME	350	352	357	358	425	456	467	497
ET 3150	MR-MR1	370	372	377	378	445	476	487	517
ET 3150	MNS9-MN1S9	457	459	464	465	532	563	574	604
ET 3150	FE	330	332	337	338	405	436	447	477
ET 3150	FP	363	365	370	371	438	469	480	510
EQ 4150	MN-MN1-MNR-FS-ME	403	405	410	411	478	509	520	550
EQ 4150	MR-MR1	423	425	430	431	498	529	540	570
EQ 4150	MNS9-MN1S9	510	512	517	518	585	616	627	657
EQ 4150	FE	383	385	390	391	458	489	500	530
EQ 4150	FP	415	417	422	423	490	521	532	562
PD 2150	PD	426	428	433	433	501	532	543	573
PD 3150	PD	493	495	501	500	568	599	610	640
PD 4150	PD	546	548	553	553	621	652	663	693



		Lt IEC		
		160 180	200	225
EM 1150	MN-MN1-MNR-FS-ME	296	296	318
EM 1150	MR-MR1	316	316	338
EM 1150	MNS9-MN1S9	403	403	425
EM 1150	FE	276	276	298
EM 1150	FP	308	308	331
ED 2150	MN-MN1-MNR-FS-ME	389	399	429
ED 2150	MR-MR1	409	419	449
ED 2150	MNS9-MN1S9	496	506	536
ED 2150	FE	369	379	409
ED 2150	FP	401	411	441
ET 3150	MN-MN1-MNR-FS-ME	456	466	-
ET 3150	MR-MR1	476	486	-
ET 3150	MNS9-MN1S9	563	573	-
ET 3150	FE	436	446	-
ET 3150	FP	469	479	-
PD 1150	PD	439	439	461
PD 2150	PD	532	542	572
PD 3150	PD	599	609	-



* bg 150 3

		Lt1 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 2150	MN-MR-MN1-MR1 MNR-MNS9-MN1S9 FE-FS-FP-PDA	277	279	284	285	352	383	394	424
EC/PDA 2150*		310	312	317	318	385	416	427	457
EC/PDA 3150		240	242	247	248	315	346	357	387
EC/PDA 3150*		246	248	253	254	321	352	363	393
EC/PDA 4150		240	242	247	248	315	346	357	387
EC/PDA 4150*		246	248	253	254	321	352	363	393

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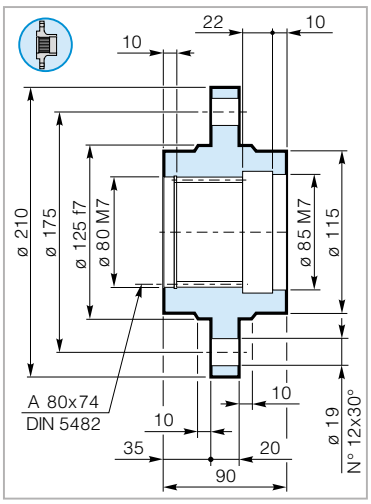
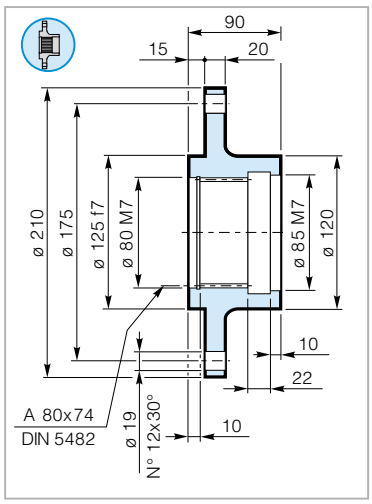
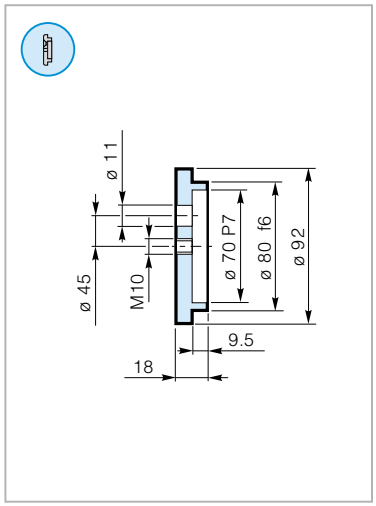
FA 150 Wheel Flange



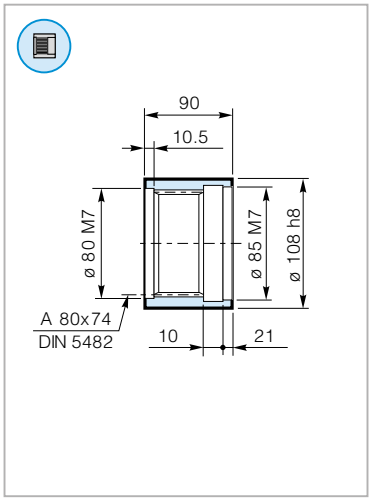
FR 150 Wheel Flange



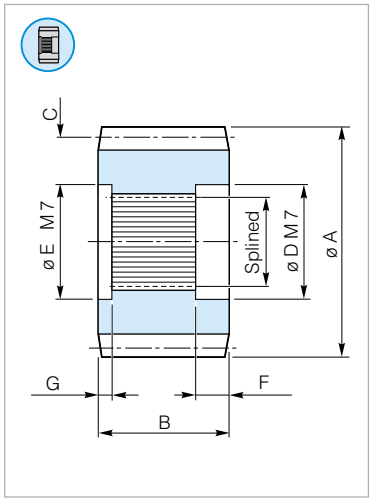
RDF 150 Lock Washer



MS 150 Splined Sleeve

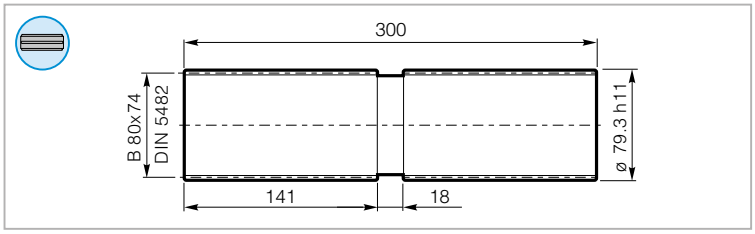


Pinions



	Splined	A	B	C			D	E	F	G
				m	z	x				
MN MNS9	A80x74 DIN 5482	180	88	10	15	0,5	85	80	31,0	10
		162	100	10	14	0,3	85	80	31,0	10
		145	90	10	12	0,5	85	80	31,0	10
MR MNR	A100x94 DIN 5482	200	83	10	18	0	105	105	37,0	22
		204	90	12	15	0	105	105	37,0	22
		178	105	10	15	0,6	105	105	37,0	22
		252	120	14	15	0,5	105	105	37,0	22
		252	120	14	15	0,5	105	105	37,0	22

BS 150 Splined Bar



Code: 39127230100
Mat. High mechanical resistance alloyed steel

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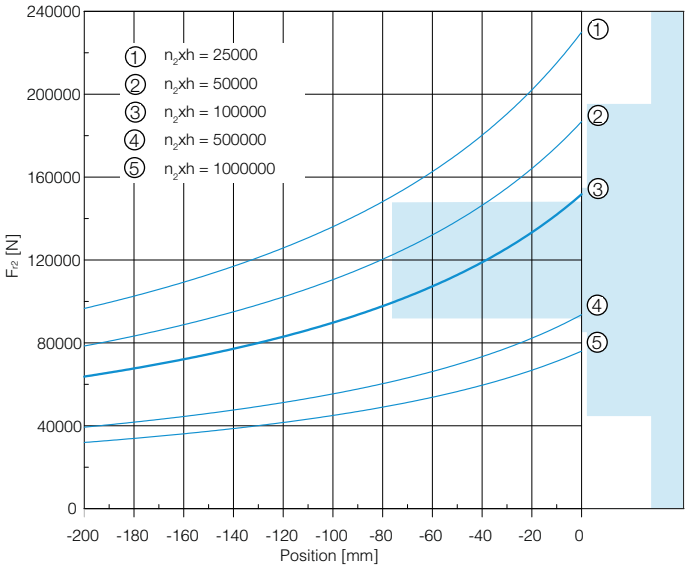
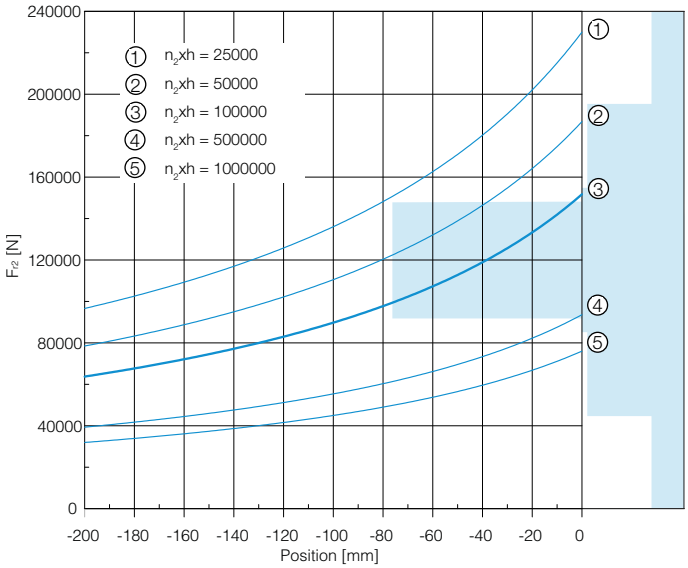
Output Radial Loads

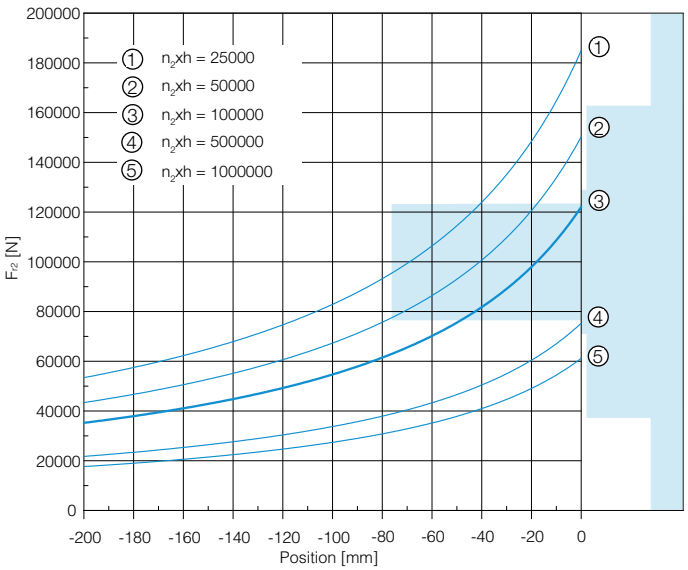
MR - MR1



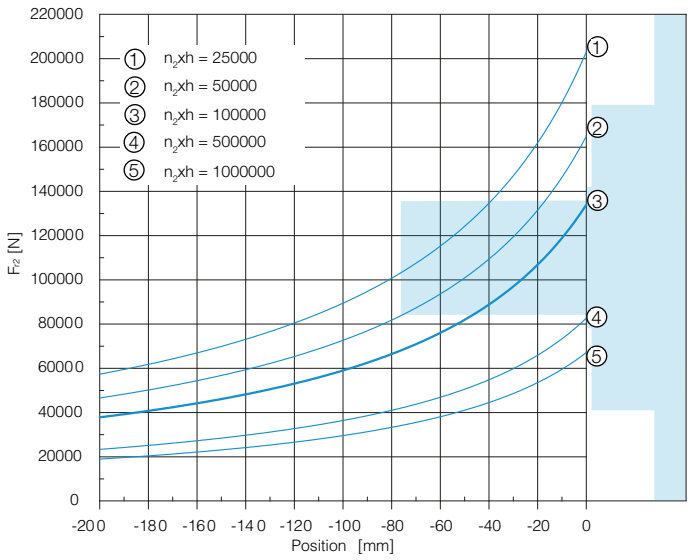
MN - MN1 - MNS9 - MN1S9



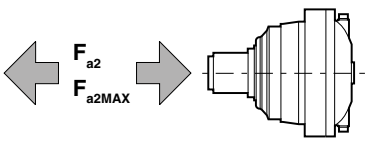
PD



MNR



Output Axial Loads



		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	68000	100000	40000
F_{a2MAX}	[N]	6800000	100000	40000

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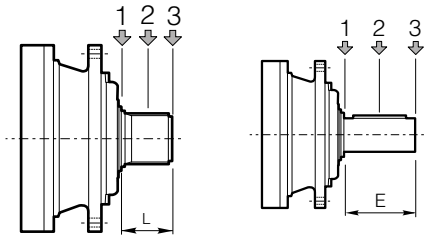
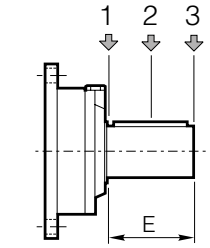
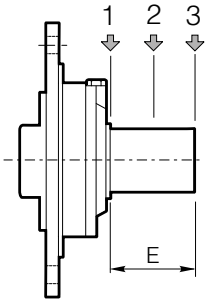
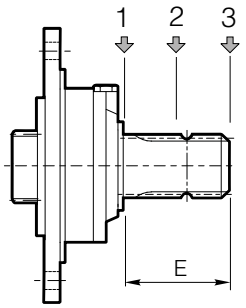
Input Radial Loads



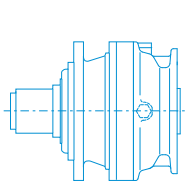
			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800



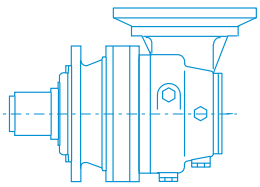


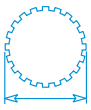
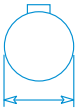
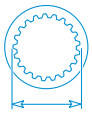
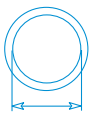
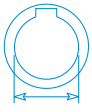


		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700



155



i_{eff}	19.50 - 272.7
T_{2N} (Nm)	13000
	B80X74 B100x94 DIN5482
	100 mm
	B80X74 DIN5482
	120 mm
	100 mm

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
ED 2155 / PD 2155												
19.50	77	7712	62	51	8709	46.8	25.6	10722	28.8	2500	20000	23
23.40	64	8145	55	42.7	9199	41.2	21.4	11325	25.3			
ET 3155 / PD 3155												
47.78	31.4	10090	33.2	20.9	11395	25.0	10.5	13411	14.7	3000	20000	15
56.37	26.6	10604	29.5	17.7	11976	22.2	8.9	13721	12.7			
62.17	24.1	10920	27.6	16.1	12333	20.8	8.0	13992	11.8			
70.57	21.3	11343	25.3	14.2	12810	19.0	7.1	14349	10.6			
80.54	18.6	11802	23.0	12.4	13221	17.2	6.2	14727	9.6			
87.31	17.2	12091	21.8	11.5	13310	16.0	5.7	14962	9.0			
100.8	14.9	12624	19.7	9.9	13471	14.0	5.0	15388	8.0			
109.1	13.7	12928	18.6	9.2	13631	13.1	4.6	15627	7.5			
122.4	12.3	13236	17.0	8.2	13949	11.9	4.1	15978	6.8			
141.4	10.6	13396	14.9	7.1	14353	10.6	3.5	16425	6.1			
161.4	9.3	10255	10.0	6.2	10710	7.0	3.1	12291	4.0			
169.7	8.8	13729	12.7	5.9	14878	9.2	2.9	17006	5.3			
185.0	8.1	10374	8.8	5.4	11010	6.2	2.7	12623	3.6			
196.8	7.6	9651	7.7	5.1	10030	5.3	2.5	11526	3.1			
223.6	6.7	10539	7.4	4.5	11434	5.4	2.2	13093	3.1			
272.7	5.5	9920	5.7	3.7	10715	4.1	1.8	12286	2.4			

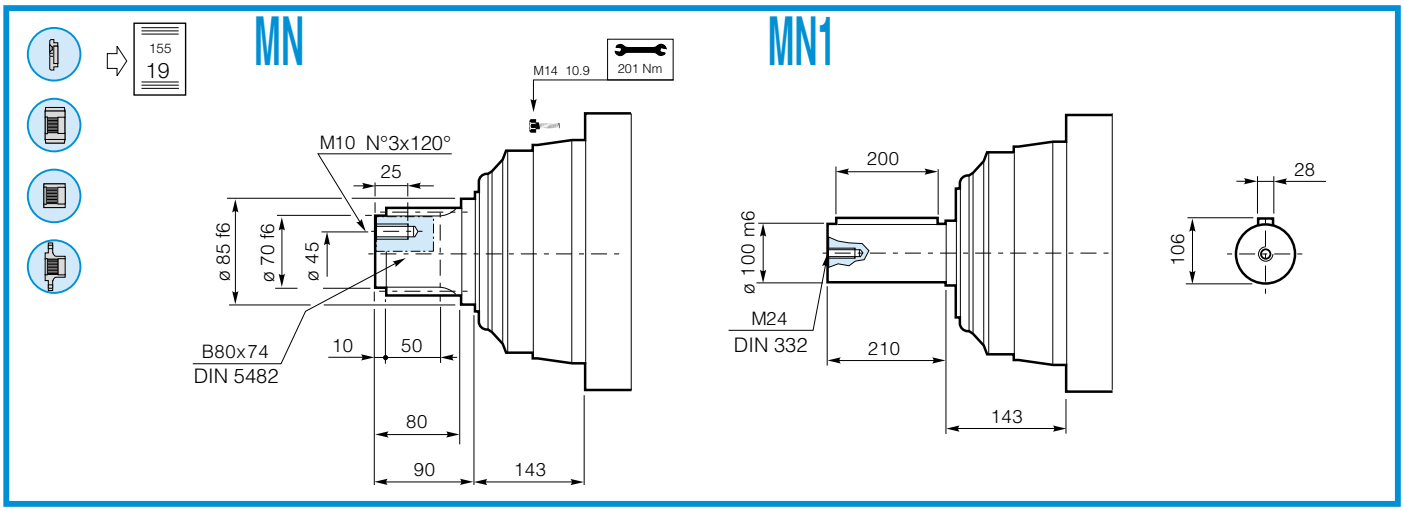
10000 hours life

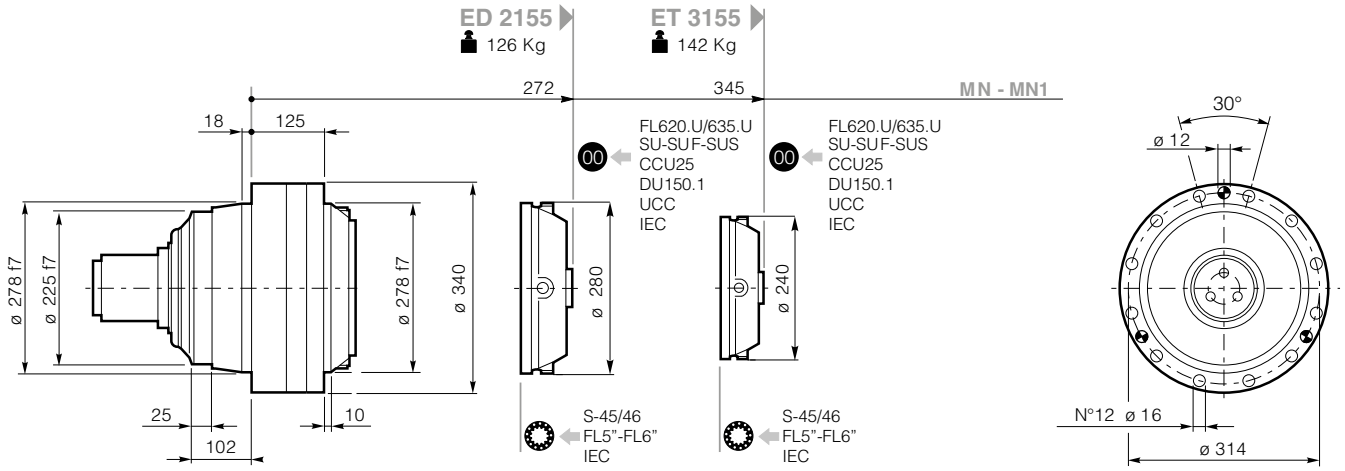
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 3155 / PDA 3155												
40.95	36.6	9235	35.4	24.4	10430	26.7	12.2	12841	16.4			
45.16	33.2	9921	34.5	22.1	11205	26.0	11.1	13348	15.5			
50.66	29.6	10269	31.8	19.7	11598	24.0	9.9	13477	13.9			
58.50	25.6	10722	28.8	17.1	12109	21.7	8.5	13823	12.4			
63.06	23.8	6172	15.4	15.9	6970	11.6	7.9	8581	7.1			
70.20	21.4	11325	25.3	14.2	12790	19.1	7.1	14334	10.7			
78.02	19.2	7635	15.4	12.8	8623	11.6	6.4	10616	7.1	3000	20000	15
90.09	16.7	8817	15.4	11.1	9957	11.6	5.6	12259	7.1			
102.8	14.6	9866	15.1	9.7	10215	10.4	4.9	11245	5.7			
108.1	13.9	10580	15.4	9.3	11949	11.6	4.6	14711	7.1			
118.7	12.6	9990	13.2	8.4	10340	9.1	4.2	11571	5.1			
142.5	10.5	10147	11.2	7.0	10500	7.7	3.5	11995	4.4			
173.8	8.6	9550	8.6	5.8	9883	6.0	2.9	11246	3.4			

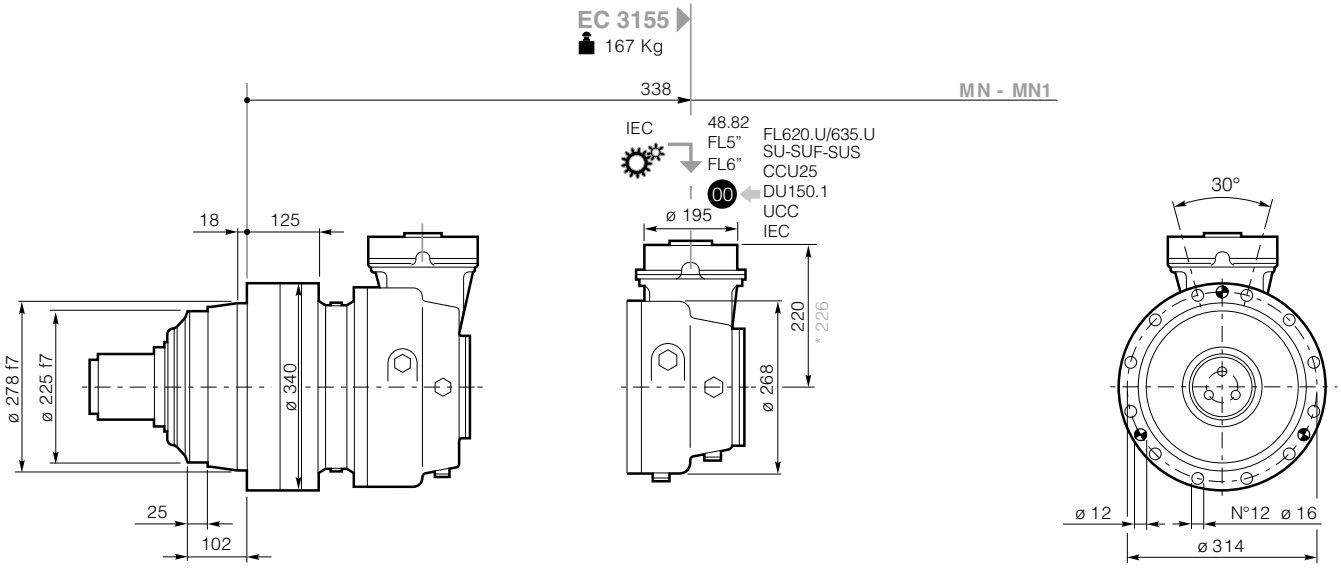
155

* (bg) All highlighted ratio (is. 45.16) have particular dimensions of bevel gears in some versions. See dimensional tables.

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 155 13 | SU-SUF SUS → 155 14 | FL5"- FL6" FL620 FL635 → 155 15 | IEC → 155 18 | 155 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 155 3

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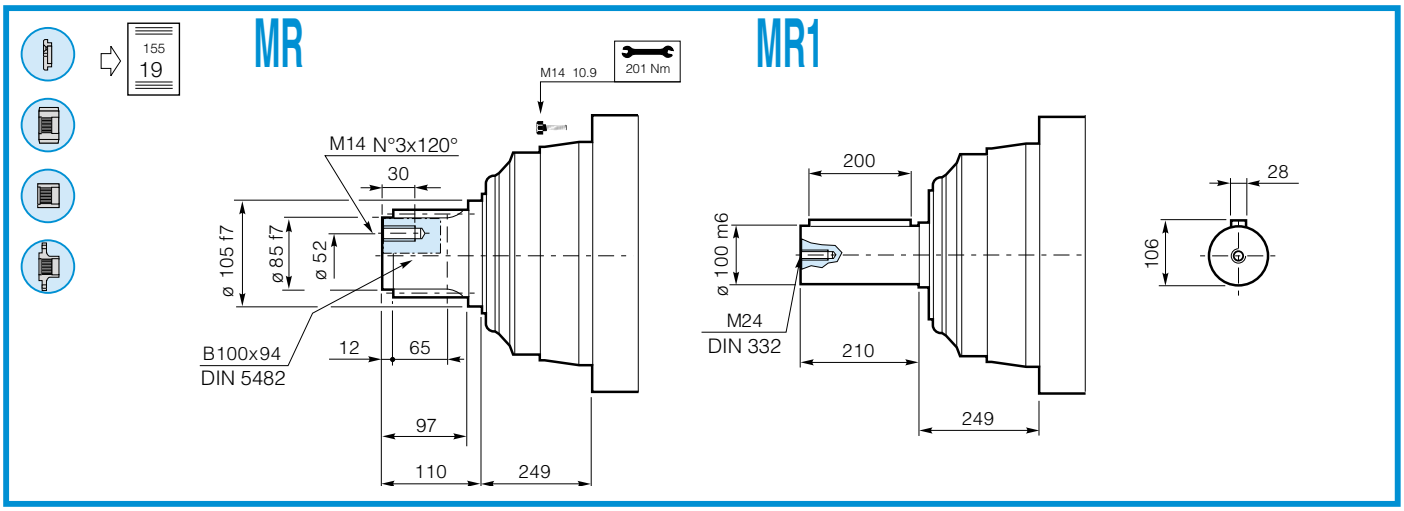

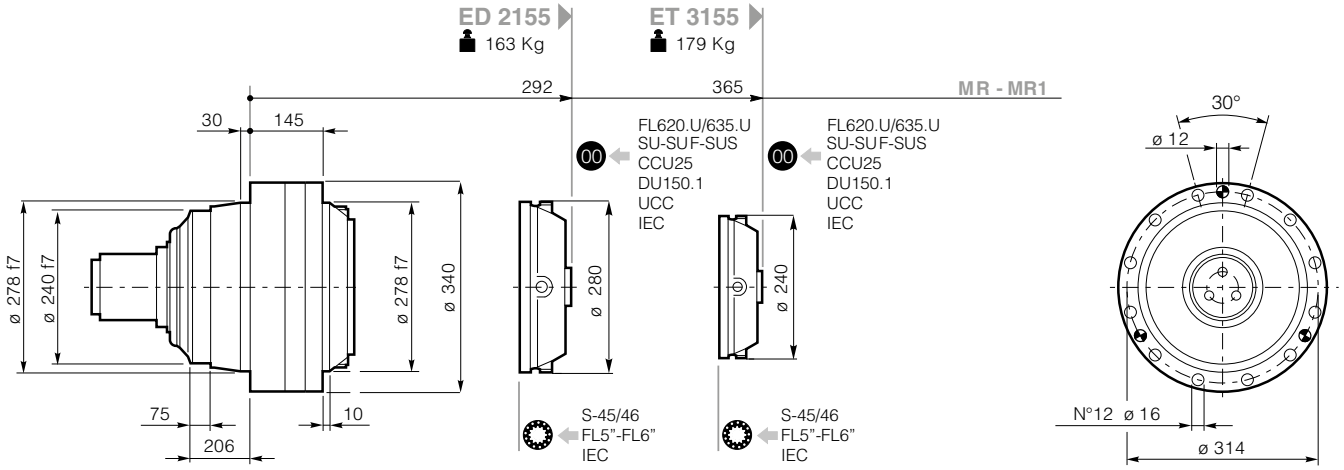

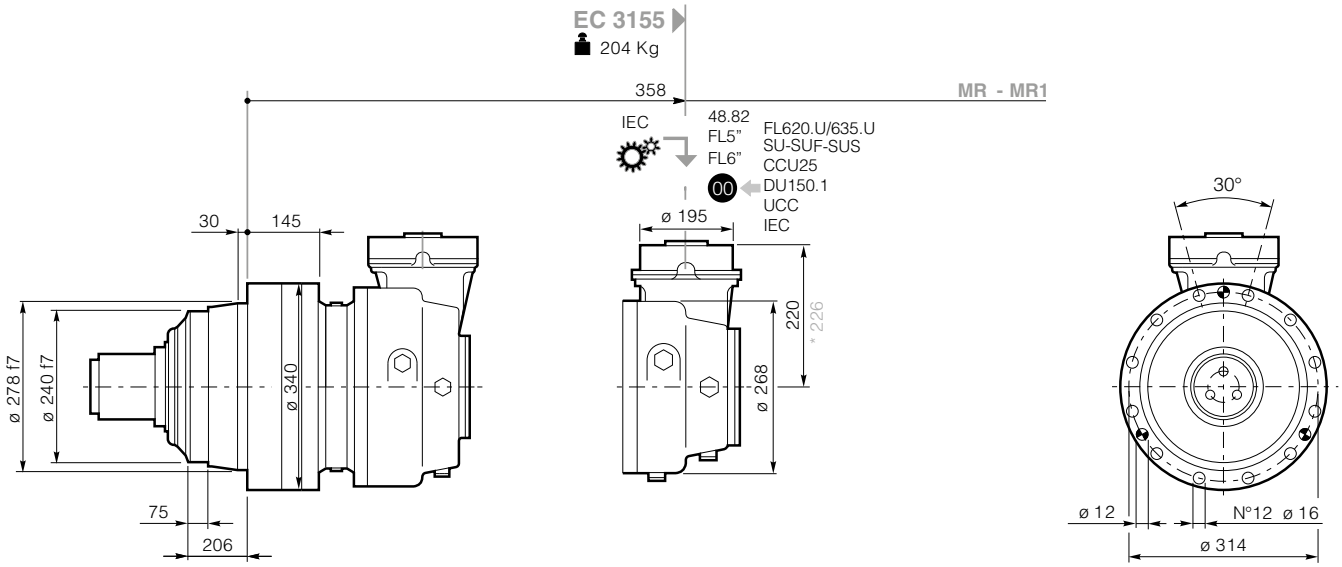

155

00 B13 S-45/46 48.82 155 13 | SU-SUF SUS 155 14 | FL5"- FL6' FL620 FL635 155 15 | IEC 155 18 | 155 | CCU25 B15 | DU150.1 UCC B16 | * bg 155 3

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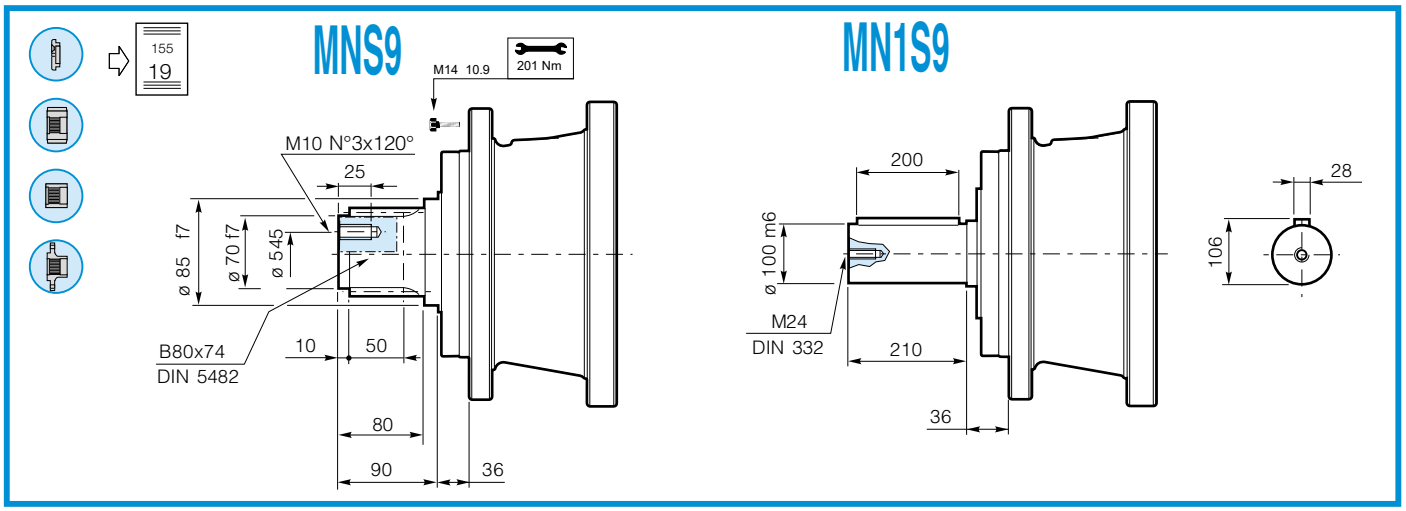
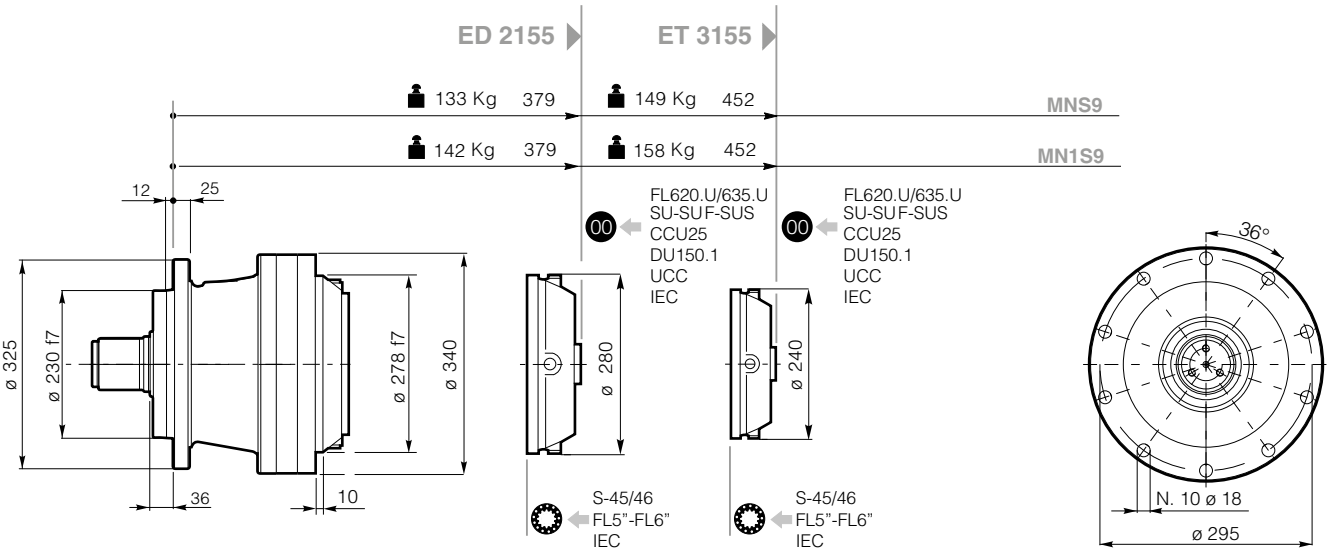
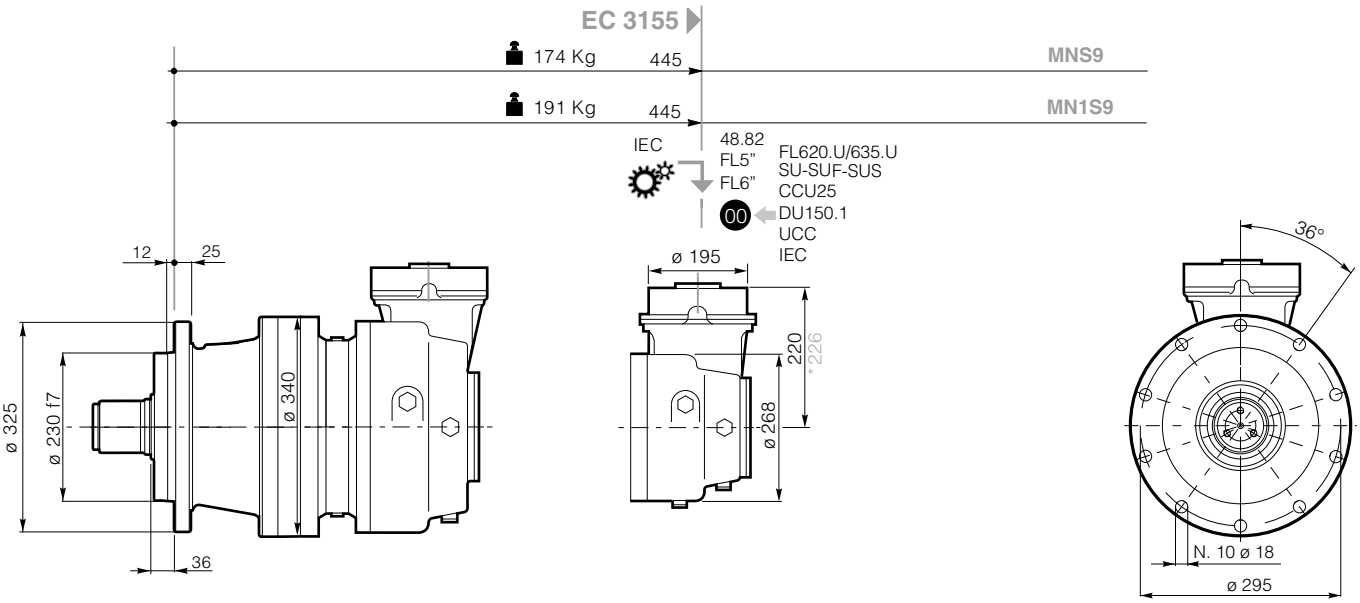
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 155 13 | SU-SUF SUS → 155 14 | FL5"- FL6" FL620 FL635 → 155 15 | IEC → 155 18 | → 155 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 155 3

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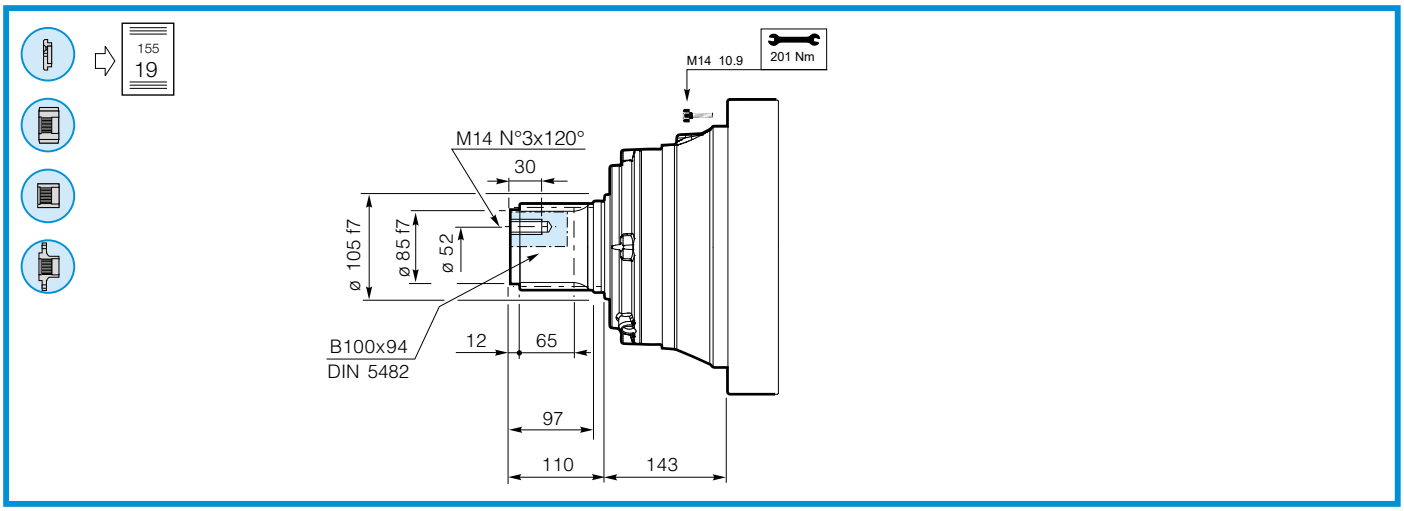

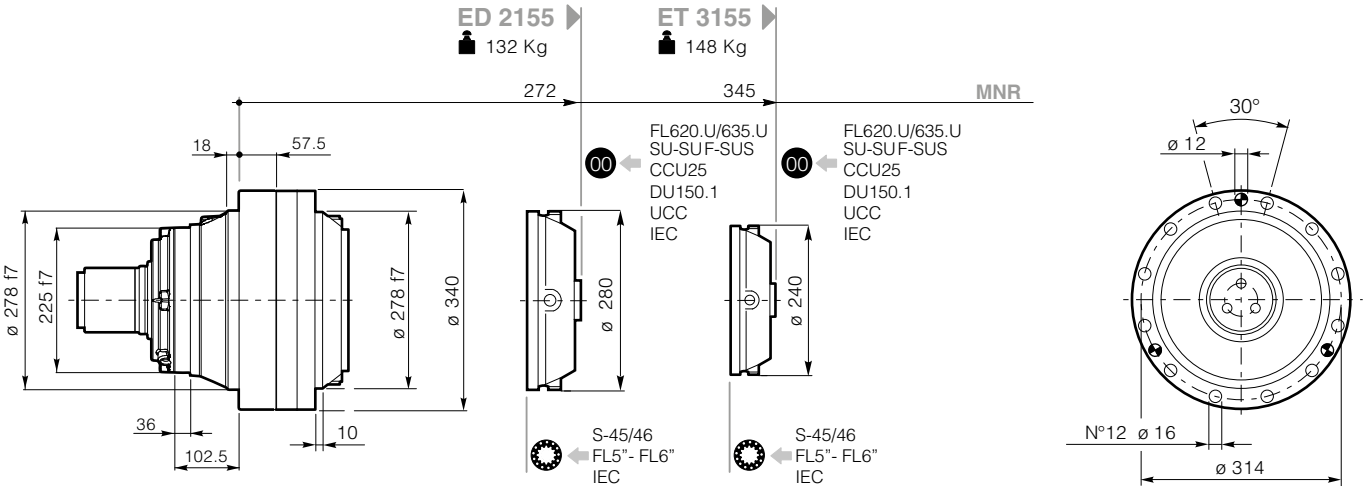

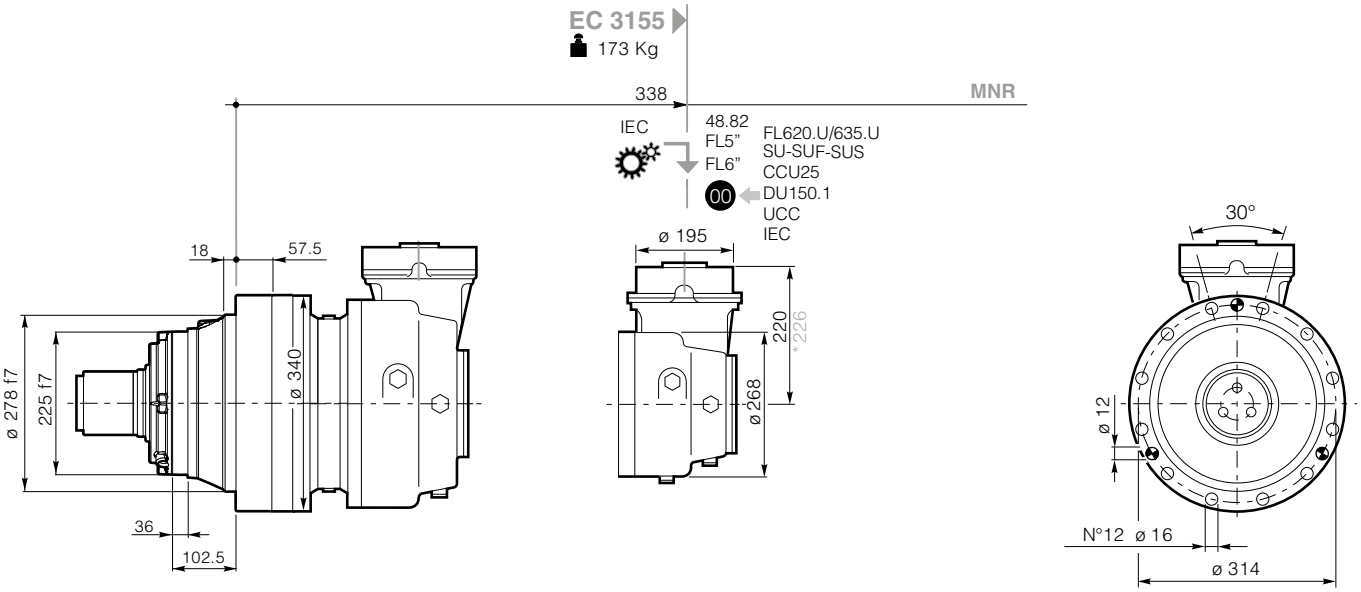

00 B13 S-45/46 48.82 ⇨ 155 13 | SU-SUF SUS ⇨ 155 14 | FL5"- FL6' FL620 FL635 ⇨ 155 15 | IEC ⇨ 155 18 | ⇨ 155 | CCU25 ⇨ B15 | DU150.1 UCC ⇨ B16 | * bg ⇨ 155 3

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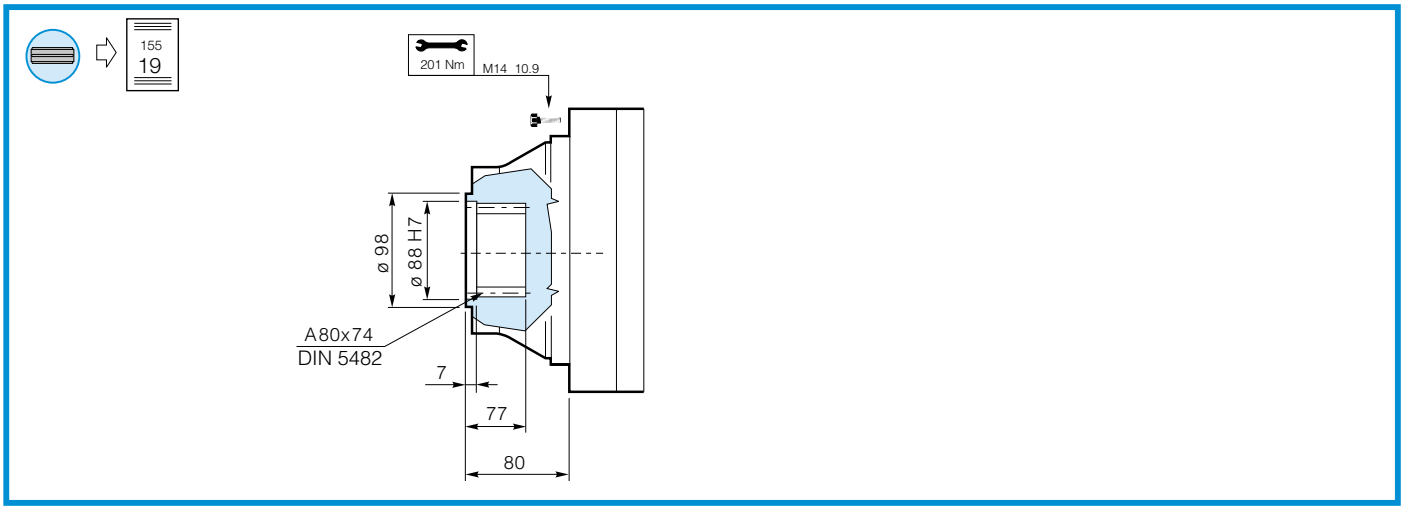
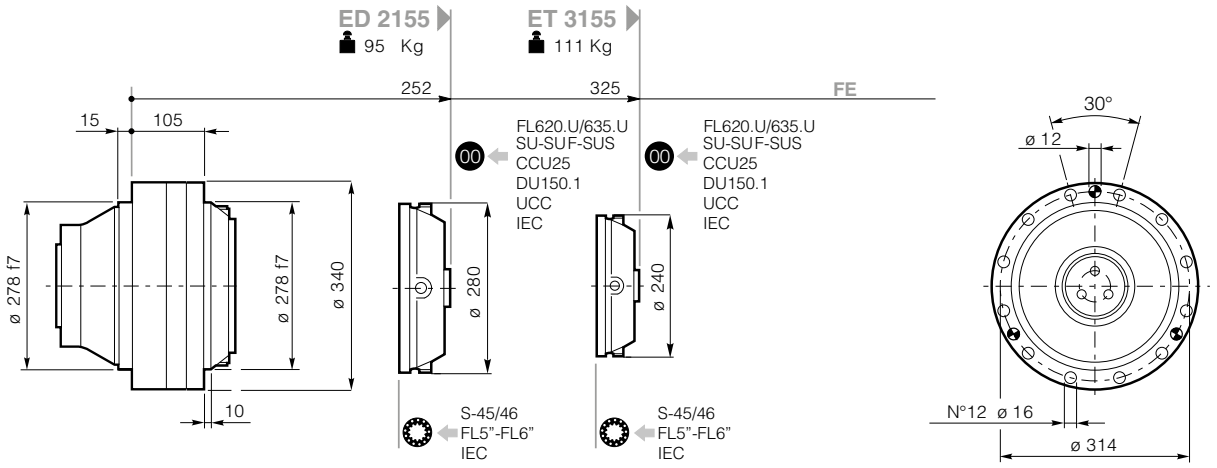
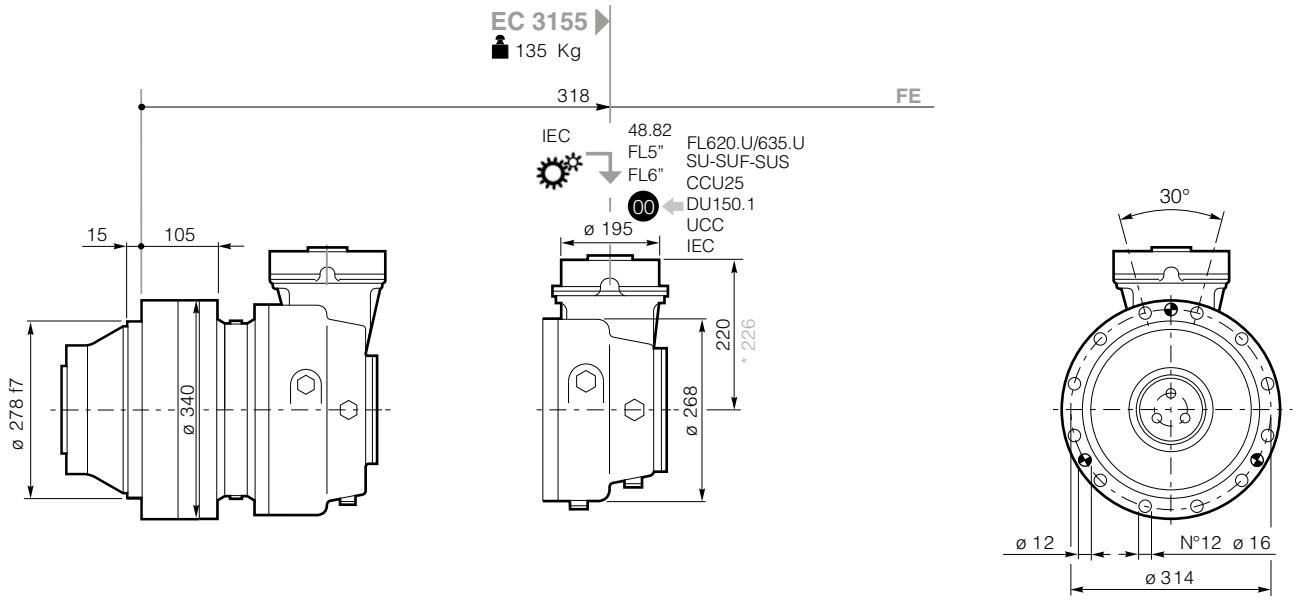
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 155 13 SU-SUF SUS → 155 14 FL5"- FL6" FL620 FL635 → 155 15 IEC → 155 18 → 155 CCU25 → B15 DU150.1 UCC → B16 * bg → 155 3

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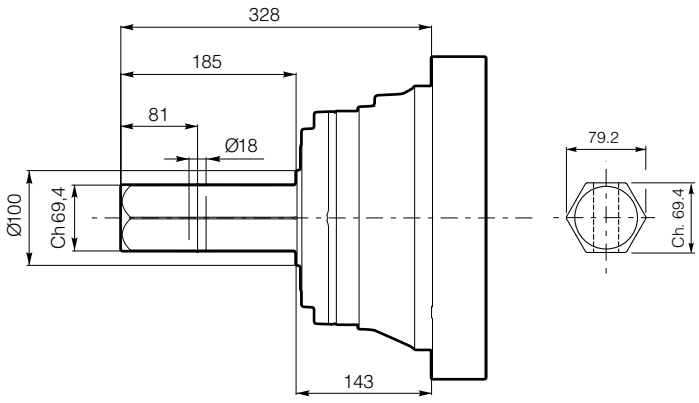

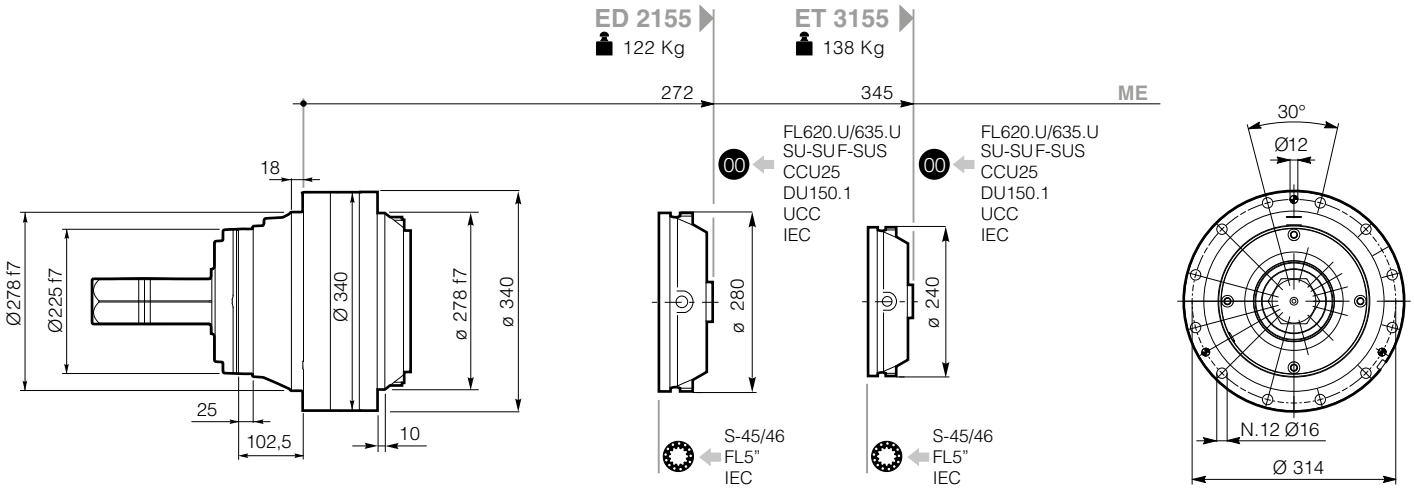

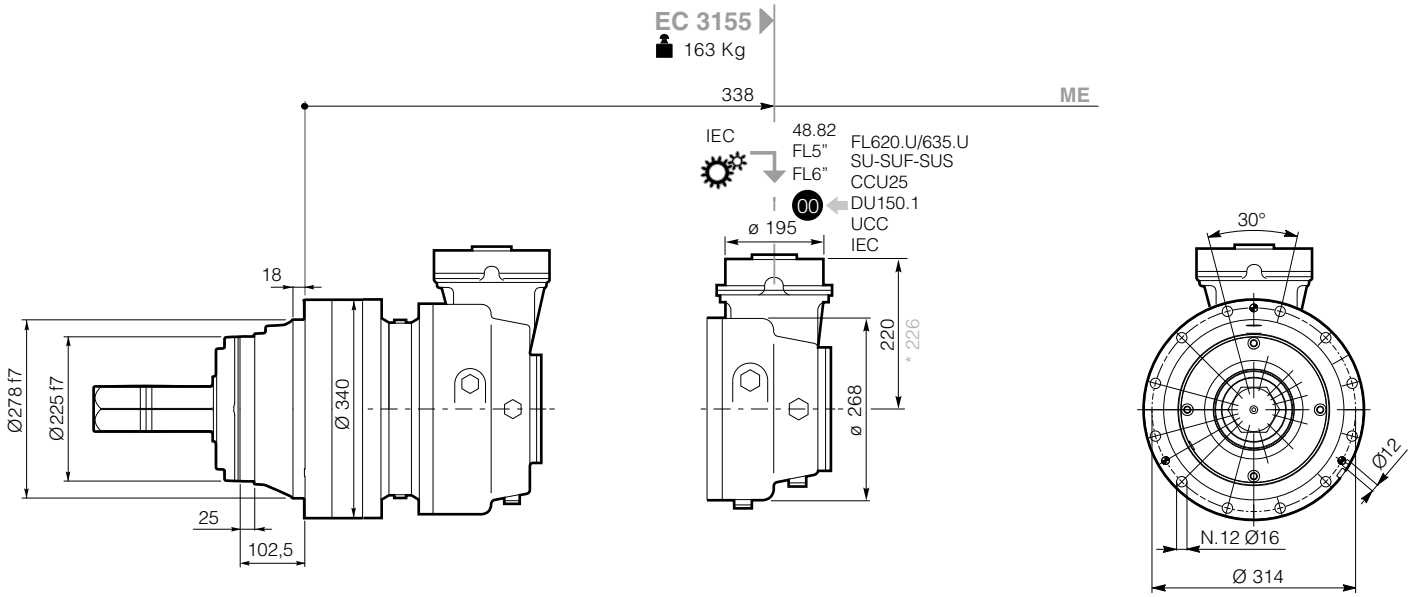

00 B13 S-45/46 48.82 ⇨ 155 13 SU-SUF SUS ⇨ 155 14 FL5"- FL6' FL620 FL635 ⇨ 155 15 IEC ⇨ 155 18 ⇨ 155 CCU25 ⇨ B15 DU150.1 UCC ⇨ B16 * bg ⇨ 155 3

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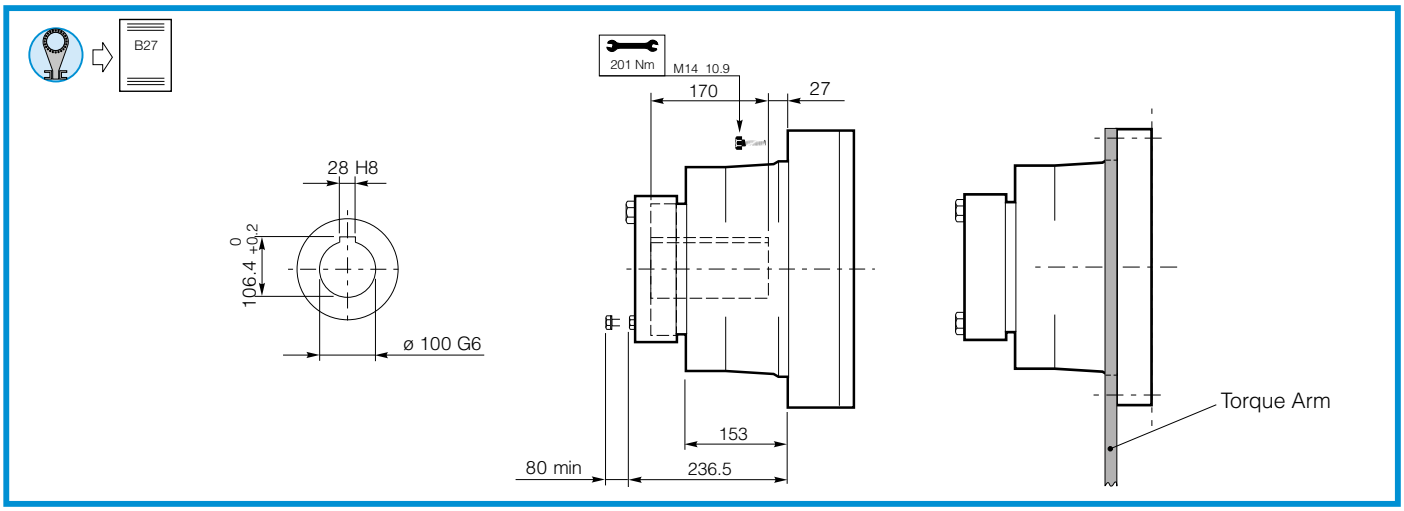
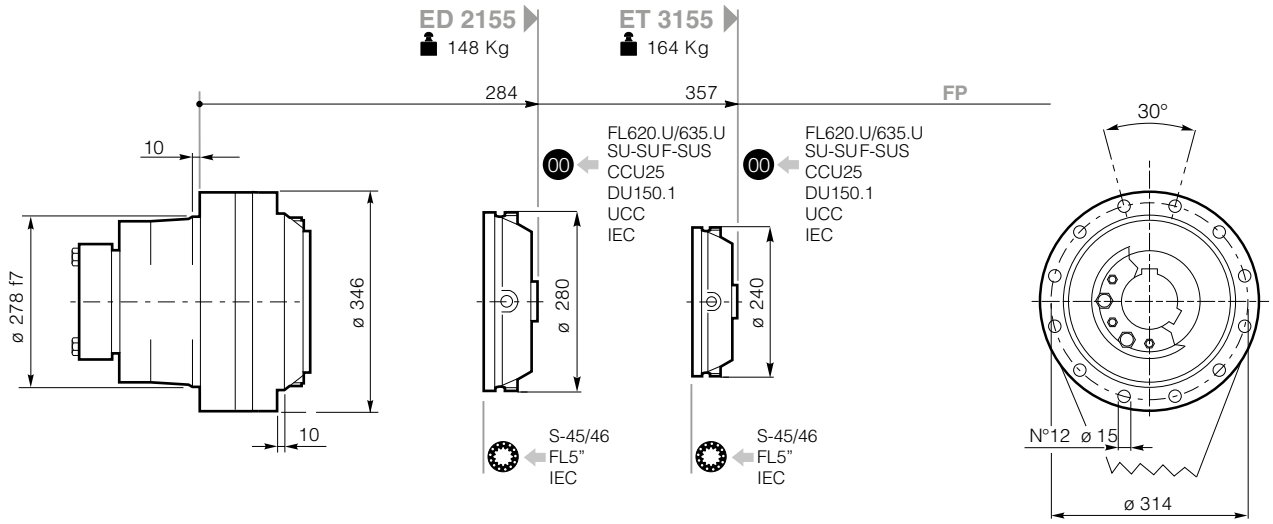
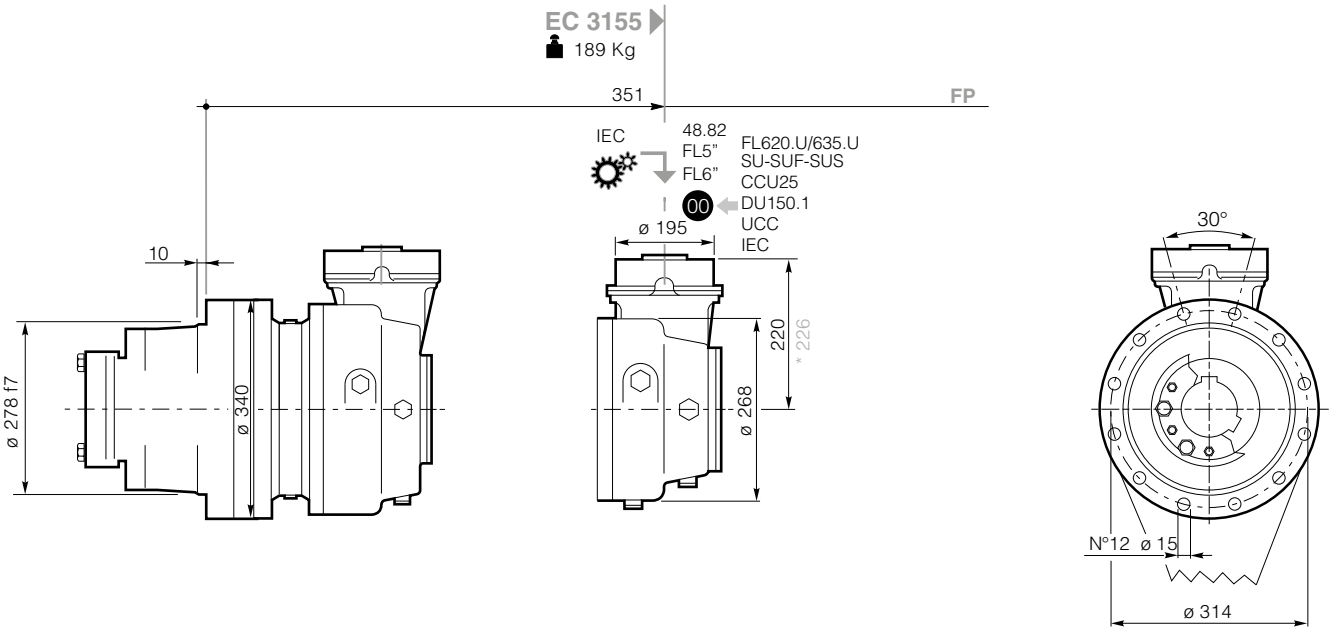
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 155 13 | SU-SUF SUS → 155 14 | FL5"- FL6" FL620 FL635 → 155 15 | IEC → 155 18 | → 155 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 155 3

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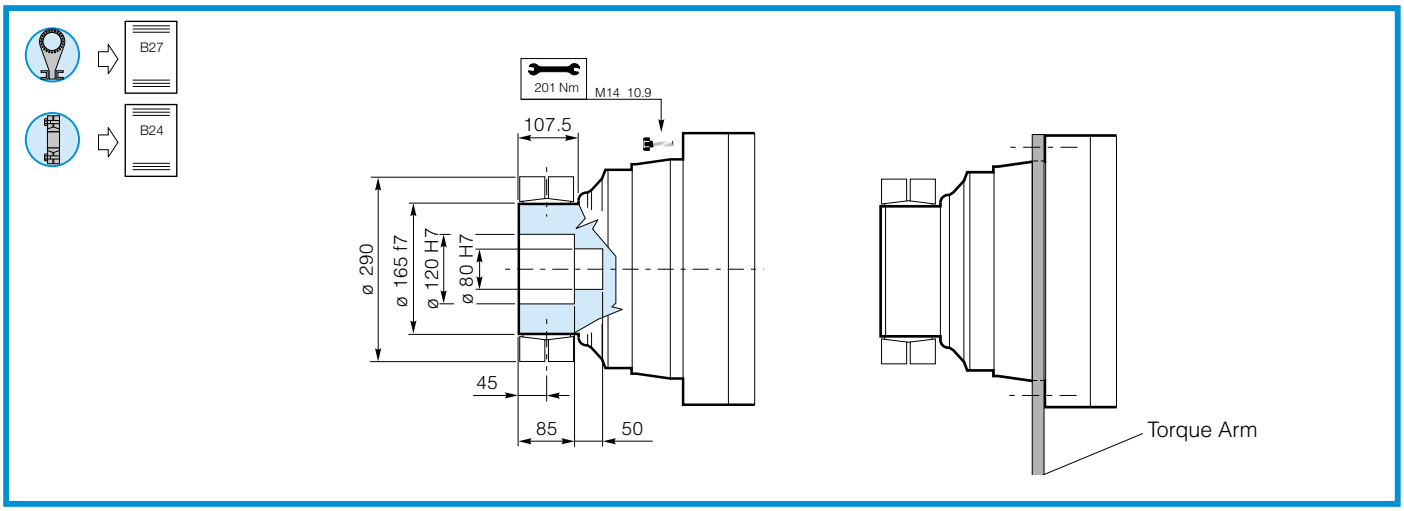

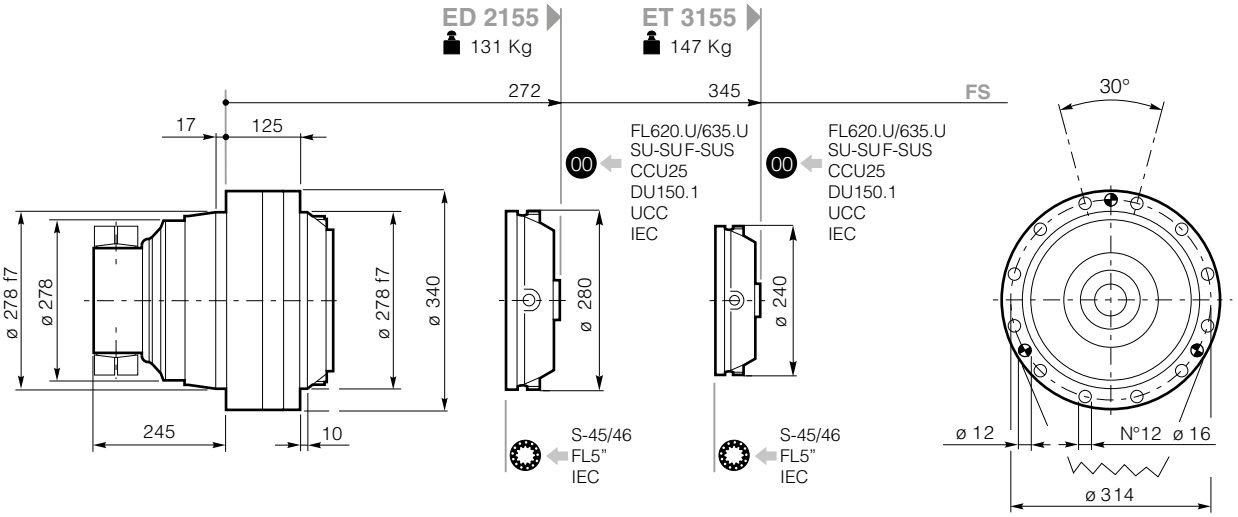

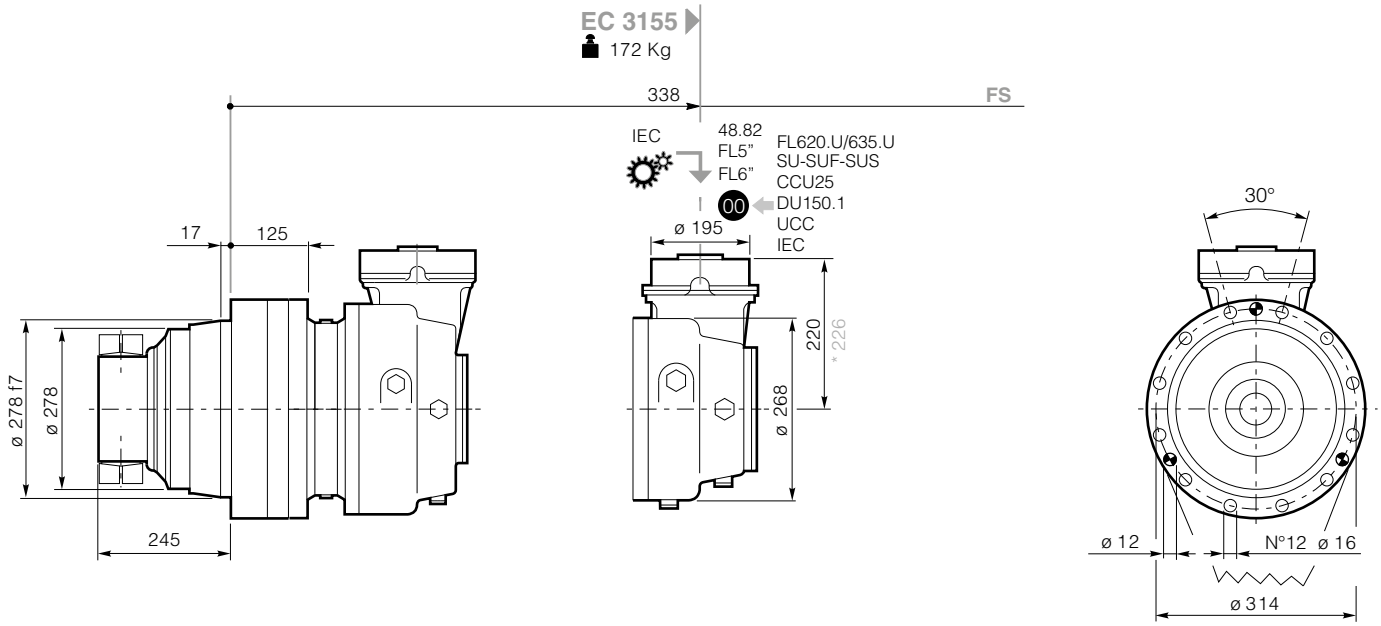

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00 B13 S-45/46 48.82 → 155 13 | SU-SUF SUS → 155 14 | FL5"- FL6' FL620 FL635 → 155 15 | IEC → 155 18 | 155 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 155 3

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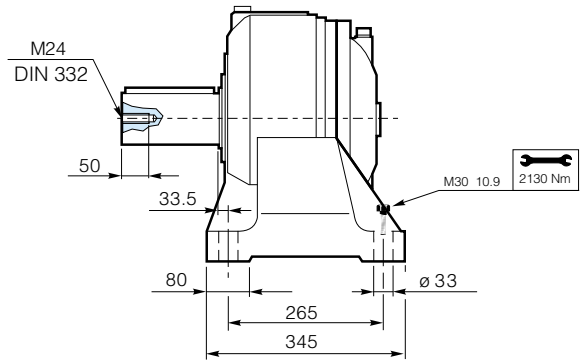
GEARBOX DIMENSIONS WITH OUTPUT

PD



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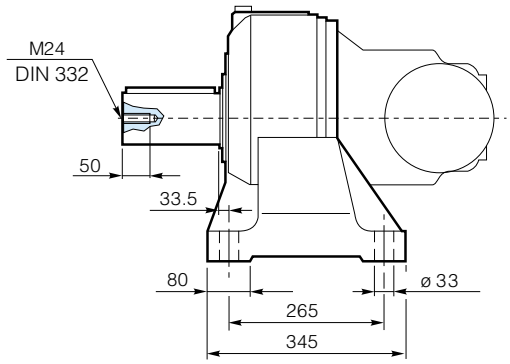

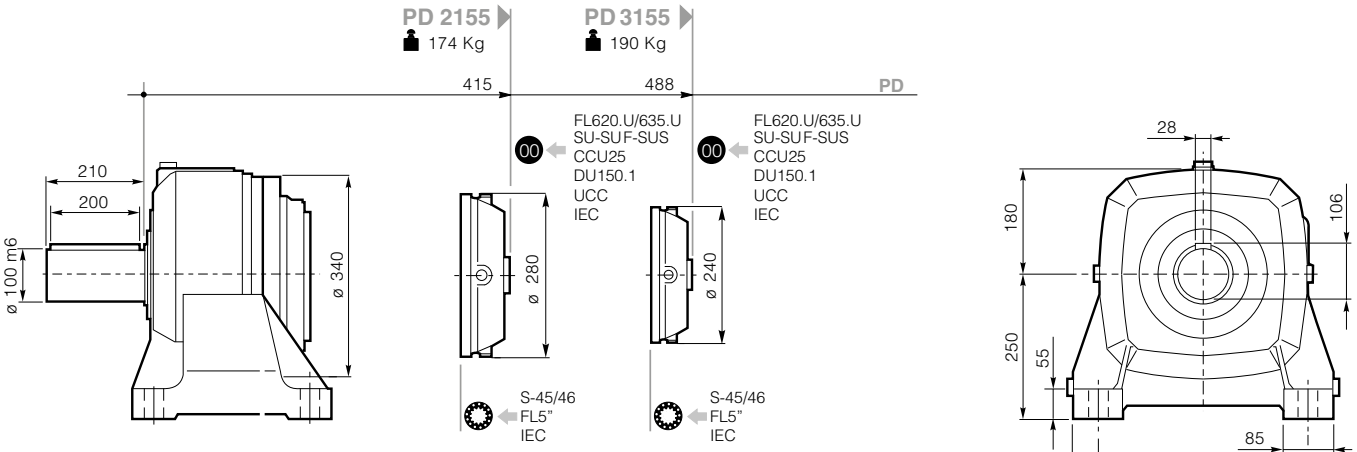

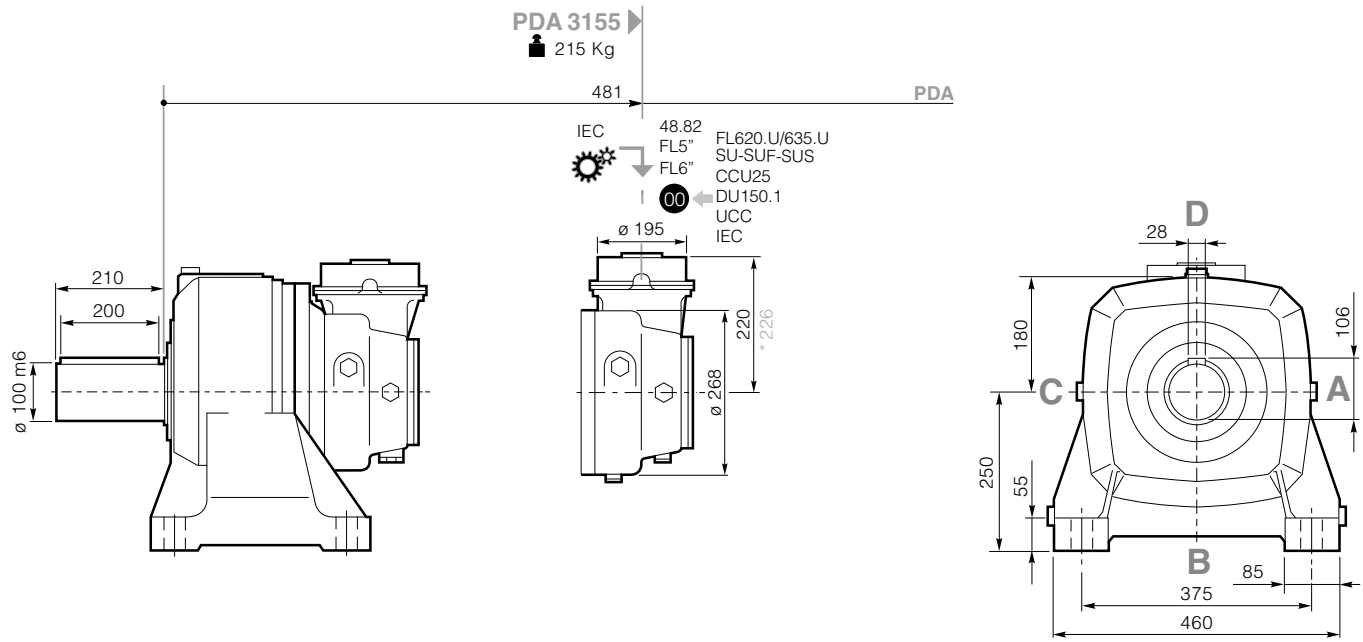

00 B13 S-45/46 48.82 ⇨ 155 13 SU-SUF SUS ⇨ 155 14 FL5"- FL6" FL620 FL635 ⇨ 155 15 IEC ⇨ 155 18 ⇨ 155 CCU25 ⇨ B15 DU150.1 UCC ⇨ B16 * bg ⇨ 155 3

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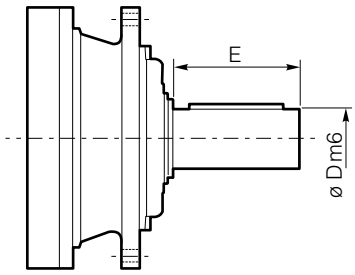
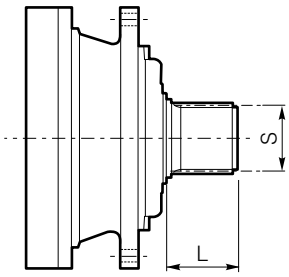
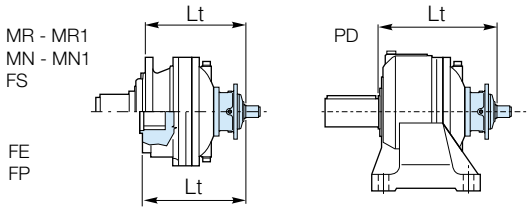
S-45CR1 - S-46C1 - S-45SR - S-65CR1 - S-65SR



S-45CR1 - S-46C1 - S-65CR1

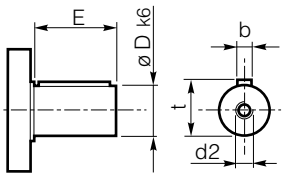


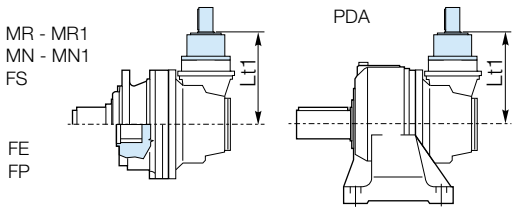
S-45SR - S-65SR



	D m6	E	L	S		Lt					
						MN-MN1-FS ME-MNR	MR-MR1	MNS9-MN1S9	FE	FP	PD
S-45CR1	65	105	-	-	ED/PD 2155	399	419	506	379	412	542
					ET/PD 3155	407	427	514	387	420	550
S-46C1	65	105	-	-	ED/PD 2155	441	461	548	421	453	584
					ET/PD 3155	449	469	556	429	461	592
S-45SR	-	-	68		ED/PD 2155	399	419	506	379	412	542
					ET/PD 3155	407	427	514	387	420	550
S-65CR1	80	130	-	-	ED/PD 2155	438	458	545	418	451	581
S-65SR	-	-	90								

48.82





	D	E		Lt1
				MN-MN1-MR-MR1-MNR-MNS9-MN1S9-FS-FE-ME-FP-PDA
48.82	48	82	EC/PDA 3155	280

For the input configuration S46C1, S65CR1, 4882 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

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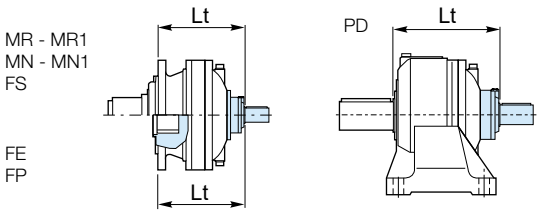
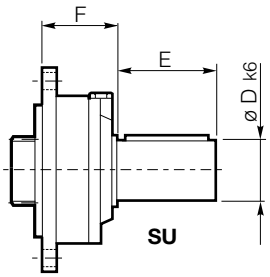
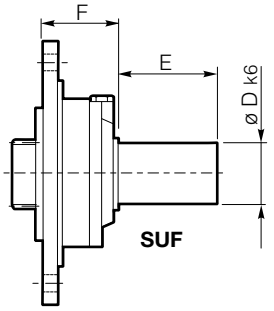
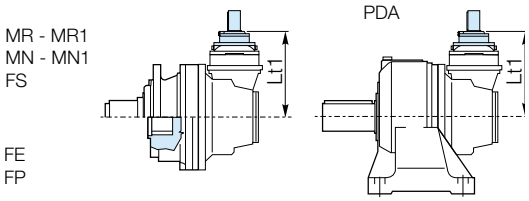
SU - SUF - SUS



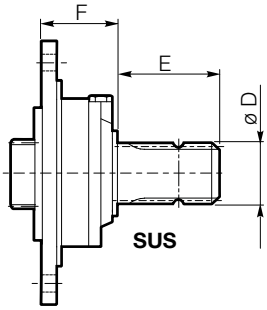


	D	E	F		Lt					
					MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PD
SU1 28x50	28	50	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SU2 40x58	40	58	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SU3 48x82	48	82	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SU 42x80	42	80	101.5	ED/PD 2155	373	480	393	353	386	516
				ET/PD 3155	446	553	466	426	459	589
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	ED/PD 2155	373	480	393	353	386	516
				ET/PD 3155	446	553	466	426	459	589
SU2 1.5x3.25	38.10	82.55	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SUF1 28x50	28	50	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SUF2 40x58	40	58	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548
SUF3 48x82	48	82	60	ED/PD 2155	332	439	352	312	344	475
				ET/PD 3155	405	512	425	385	417	548



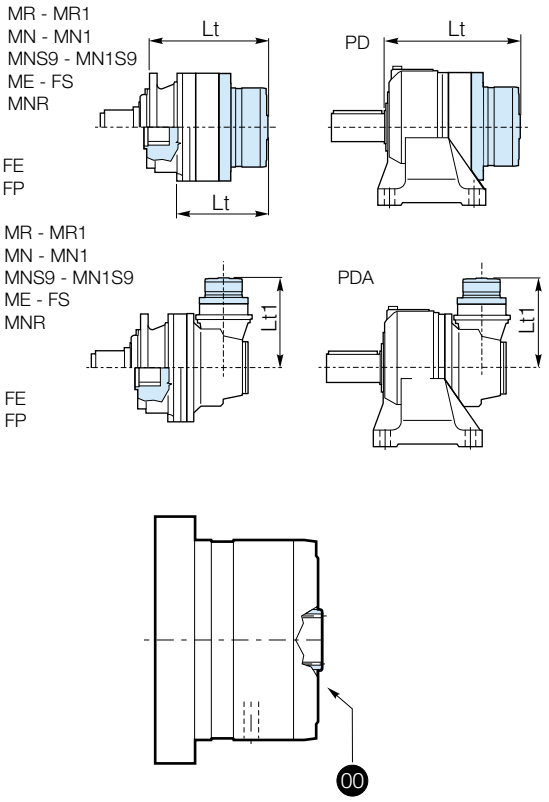


	D	E	F		Lt1					
					MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PDA
SU1 28x50	28	50	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SU2 40x58	40	58	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SU3 48x82	48	82	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SU 42x80	42	80	101.5	EC/PDA 3155	322	322	322	322	322	322
				EC/PDA 3155*	328	328	328	328	328	328
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC/PDA 3155	322	322	322	322	322	322
				EC/PDA 3155*	328	328	328	328	328	328
SU2 1.5x3.25	38.10	82.55	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SUF1 28x50	28	50	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SUF2 40x58	40	58	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286
SUF3 48x82	48	82	60	EC/PDA 3155	280	280	280	280	280	280
				EC/PDA 3155*	286	286	286	286	286	286



* bg 155 3

FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750

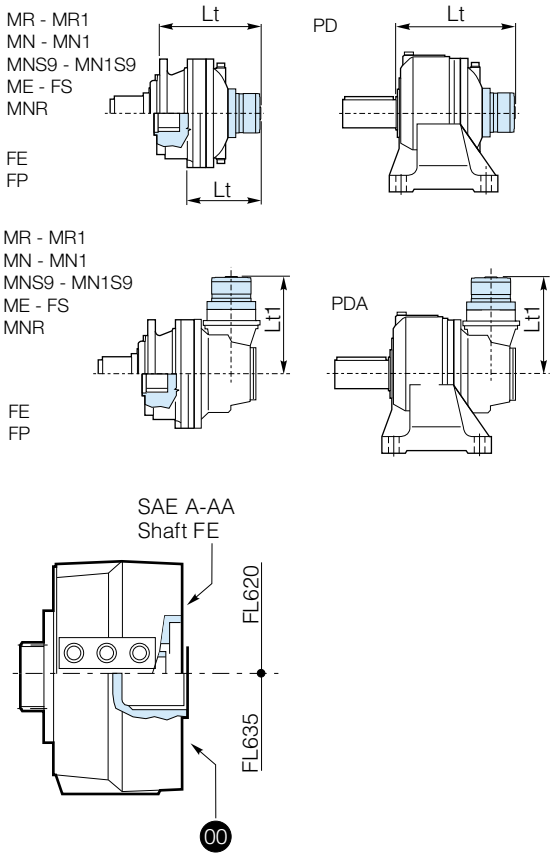


		Lt					
		MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PD
FL250 FL350 FL450	ED/PD 2155	377	484	397	357	390	520
	ET/PD 3155	438	545	458	418	451	581
FL650 FL750	ED/PD 2155	391	498	411	371	403	534
	ET/PD 3155	452	559	472	432	464	595
FL960	ED/PD 2155	405	512	425	385	417	548
	ET/PD 3155	479	586	499	459	491	622

		Lt1					
		MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PDD
FL250 FL350 FL450	EC/PDA 3155	280	280	280	280	280	280
	EC/PDA 3155*	377	377	377	377	377	377

* bg 155 3

FL620.10 - FL635.10 / FL620.U - FL635.U

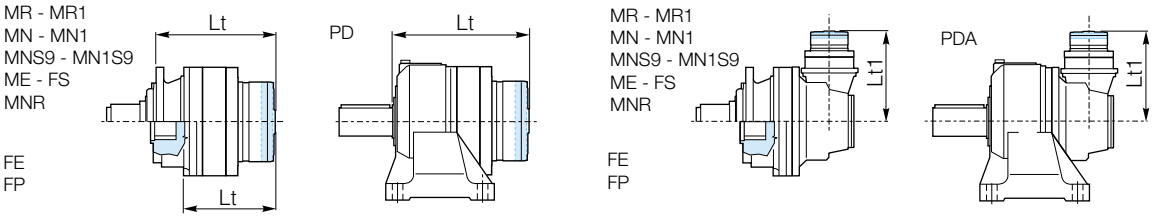


		Lt					
		MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PD
FL620.U	ED/PD 2155	376	483	396	356	389	519
	ET/PD 3155	449	556	469	429	462	592
FL635.U	ED/PD 2155	363	470	383	343	375	506
	ET/PD 3155	436	543	456	416	448	579

		Lt1					
		MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR MR1	FE	FP	PDA
FL620.U	EC/PDA 3155	325	325	325	325	325	325
	EC/PDA 3155*	331	331	331	331	331	331
FL635.U	EC/PDA 3155	311	311	311	311	311	311
	EC/PDA 3155*	317	317	317	317	317	317

* bg 155 3

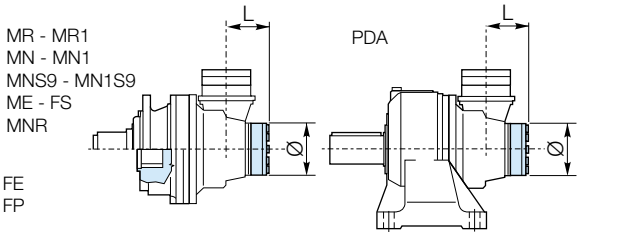
RL



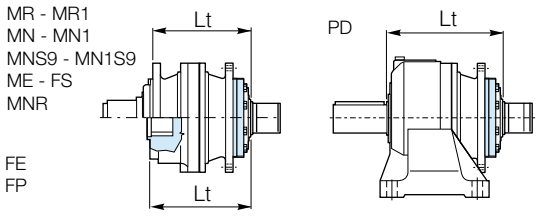
				Lt					
				MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PD
RL	+	FL250 FL350 FL450	ED/PD 2155	403	510	423	383	416	546
			ET/PD 3155	464	571	484	444	477	607
		FL650 FL750	ED/PD 2155	417	524	437	397	429	560
			ET/PD 3155	478	585	498	458	490	621
		FL960	ED/PD 2155	431	538	451	411	443	574

				Lt1
				MR-MR1-MN-MN1-MNR-MNS9-MN1S9-FS-FE-ME-FP-PDA
RL	+	FL250 FL350 FL450	EC/PDA 3155	306
			EC/PDA 3155*	403

* bg 155 3



				L	Ø
RL	+	CC40	EC/PDA 3155	135.2	150



				Lt					
				MN-MN1 FS-ME-MNR	MNS9 MN1S9	MR-MR1	FE	FP	PD
RL	+	S46C1	ED/PD 2155	461	568	481	441	473	604
			ET/PD 3155	469	576	489	449	481	612

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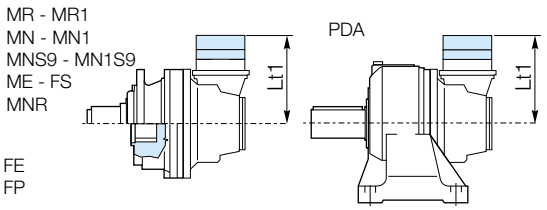
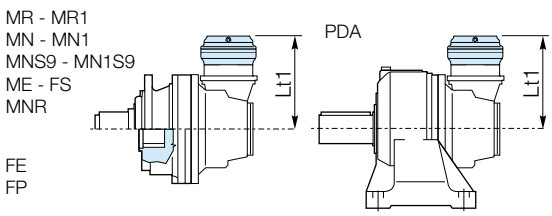
ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020



ED2010 - ED2020 ED2021

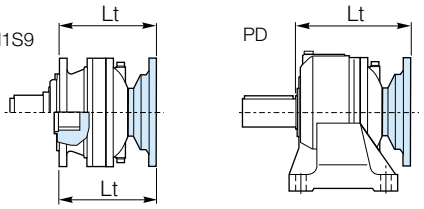
		Lt1	
		EC3155 PDA3155	EC3155* PDA3155*
	EM1010	327	333
	EM1020	345	351
	ED2010	366	372
	ED2020	398	404
	ED2021	413	419

* (bg) 155 3

IEC Motor

MR - MR1
MN - MN1
MNS9 - MN1S9
ME - FS
MNR

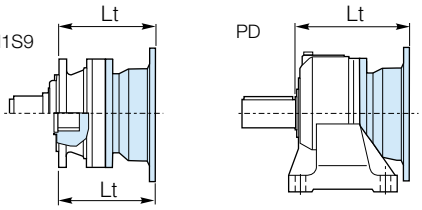
FE
FP



		Lt 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2155	MN-MN1-FS-MNR-ME	292	294	299	300	367	398	409	439
ED 2155	MNS9-MN1S9	399	401	406	407	474	505	516	546
ED 2155	MR-MR1	312	314	319	320	387	418	429	459
ED 2155	FE	272	274	279	280	347	378	389	419
ED 2155	FP	304	306	311	312	379	410	421	451
ET 3155	MN-MN1-FS-MNR-ME	365	367	372	373	440	471	482	512
ET 3155	MNS9-MN1S	472	474	479	480	547	578	589	619
ET 3155	MR-MR1	385	387	392	393	460	491	502	532
ET 3155	FE	345	347	352	353	420	451	462	492
ET 3155	FP	377	379	384	385	452	483	494	524
PD 2155	PD	435	437	442	443	510	541	552	582
PD 3155	PD	508	510	515	516	583	614	625	655

MR - MR1
MN - MN1
MNS9 - MN1S9
ME - FS
MNR

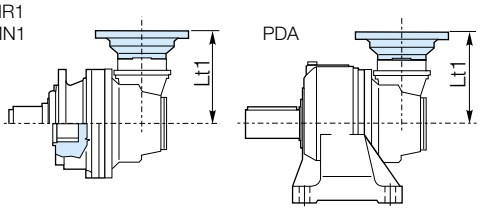
FE
FP



		Lt IEC		
		160 180	200	225
ED 2155	MN-MN1-FS-MNR-ME	378	408	438
ED 2155	MNS9-MN1S9	485	515	545
ED 2155	MR-MR1	398	428	458
ED 2155	FE	358	388	418
ED 2155	FP	390	420	450
ET 3155	MN-MN1-FS-MNR-ME	471	481	511
ET 3155	MNS9-MN1S	578	588	618
ET 3155	MR-MR1	491	501	531
ET 3155	FE	451	461	491
ET 3155	FP	483	493	523
PD 2155	PD	521	551	581
PD 3155	PD	614	624	654

MR - MR1
MN - MN1
FS

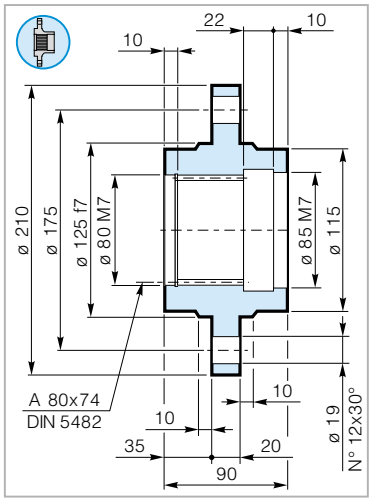
FE
FP



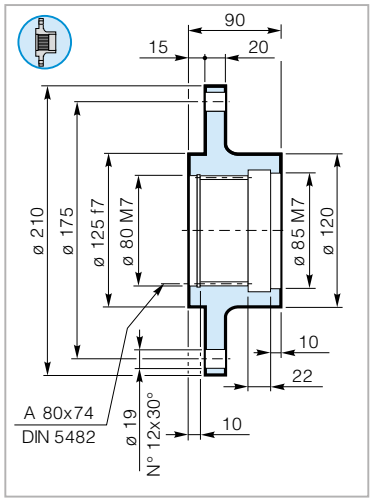
		Lt1 00 IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC/PDA 3155	MN-MR-MN1-MR1-ME-MNR-MNS9 MN1S9- FE-FS FP-PDA	240	242	247	248	315	346	357	387
EC/PDA 3155*		246	248	253	254	321	352	363	393

* bg 155 3

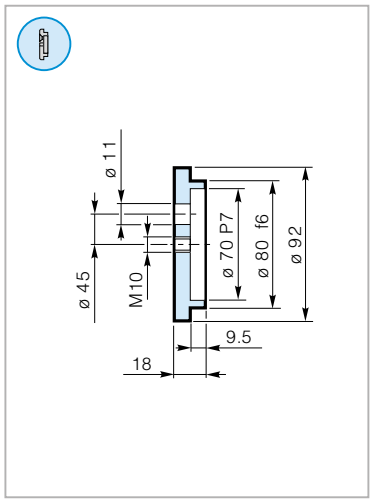
FA 150 Wheel Flange



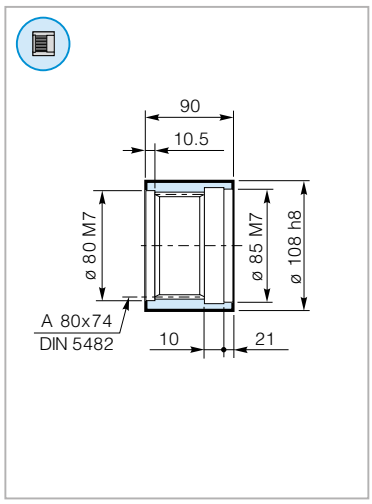
FR 150 Wheel Flange



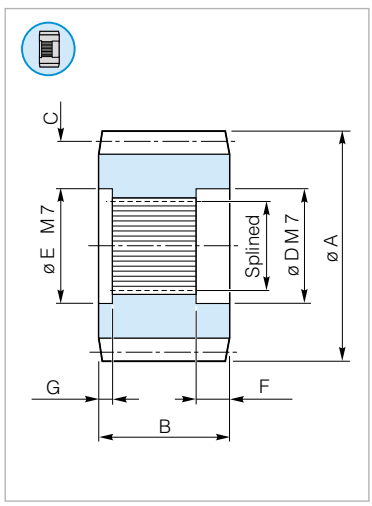
RDF 150 Lock Washer



MS 150 Splined Sleeve

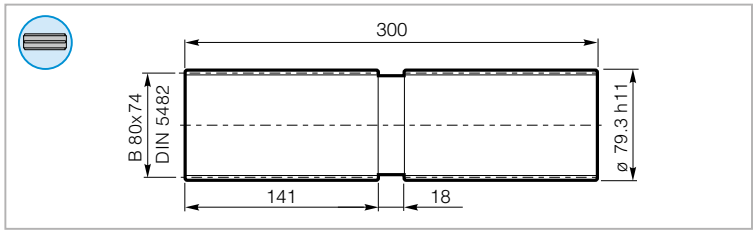


Pinions



	Splined	A	B	C			D	E	F	G
				m	z	x				
MN MNS9	A80x74 DIN 5482	180	88	10	15	0,5	85	80	31,0	10
		162	100	10	14	0,3	85	80	31,0	10
		145	90	10	12	0,5	85	80	31,0	10
MR MNR	A100x94 DIN 5482	200	83	10	18	0	105	105	37,0	22
		204	90	12	15	0	105	105	37,0	22
		178	105	10	15	0,6	105	105	37,0	22
		252	120	14	15	0,5	105	105	37,0	22
		252	120	14	15	0,5	105	105	37,0	22

BS 150 Splined Bar



Code: 39127230100
Mat. High mechanical resistance alloyed steel

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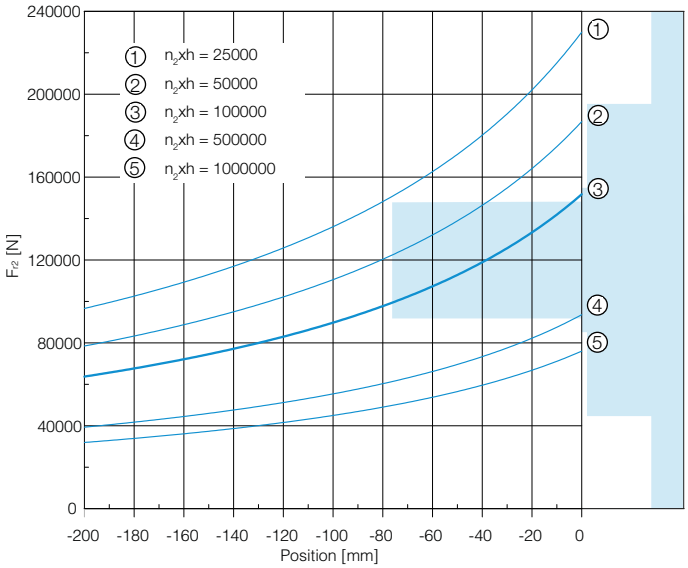
Click *i* button to return to main index

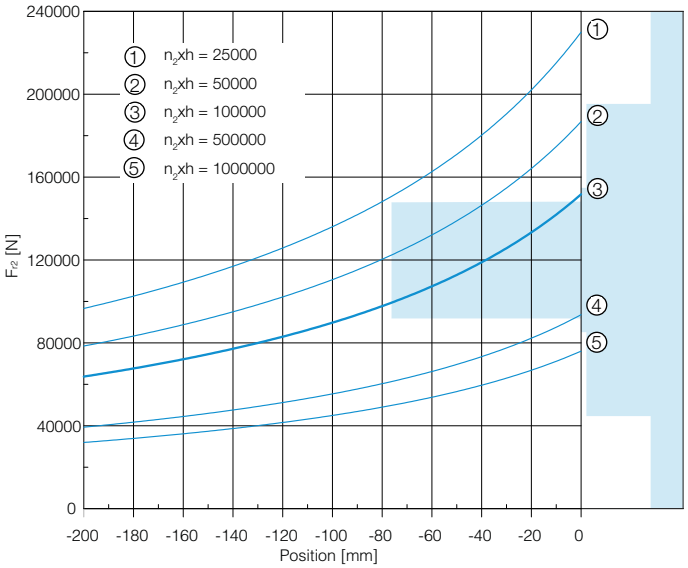
Click **DANA** button to return to section index

Output Radial Loads

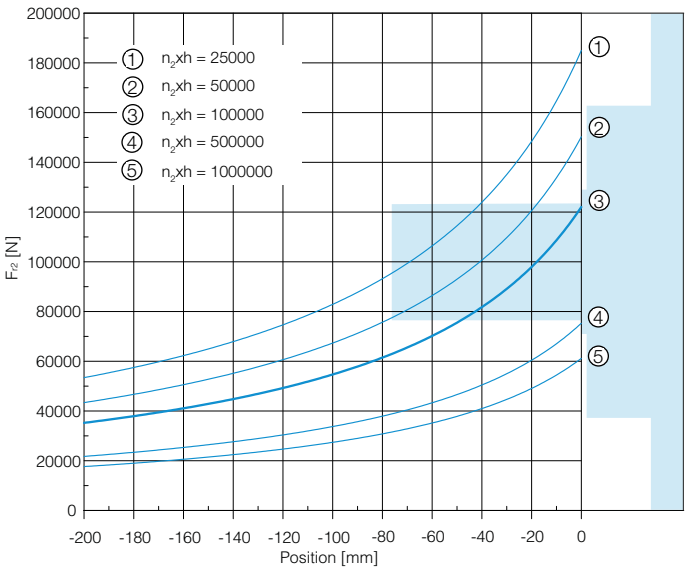
MR - MR1



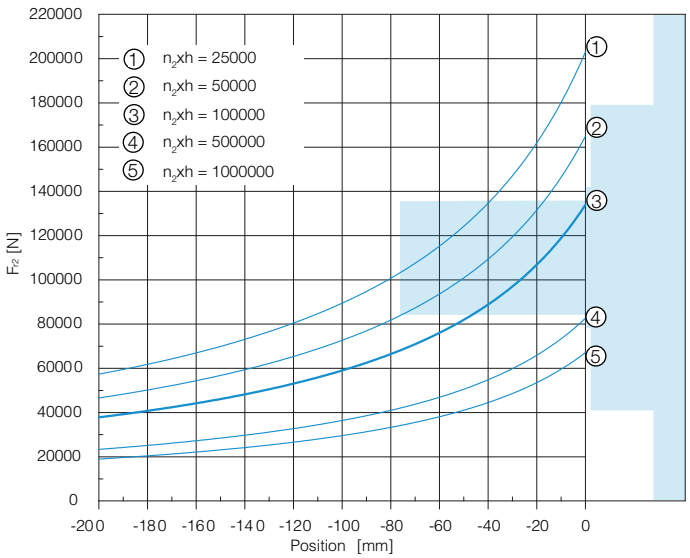
MN - MN1 - MNS9 - MN1S9



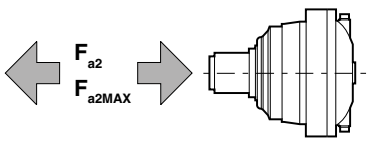
PD



MNR

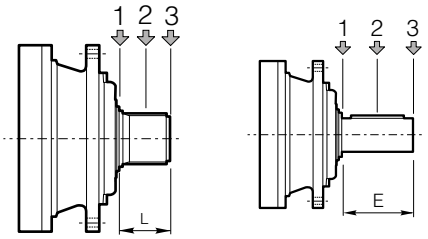


Output Axial Loads

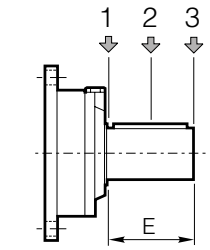


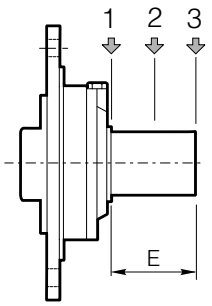
		Flange mounted		PD-PDA
		MN-MN1-MNS9-MN1S9	MR-MR1	MR1
F_{a2}	[N]	68000	100000	40000
F_{a2MAX}	[N]	6800000	100000	40000

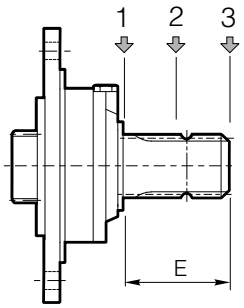
Input Radial Loads



Type	L	E	F_{r1} [N] $n_1 . h = 10^7$ 1	2	3	$n_1 . h = 10^8$ 1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800







Type	E	F_{r1} [N] $n_1 . h = 10^7$ 1	2	3	$n_1 . h = 10^8$ 1	2	3
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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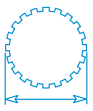
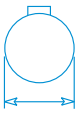
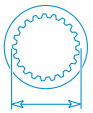
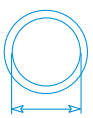
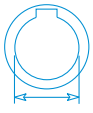
i_{eff}	4.04 - 2741
T_{2N} (Nm)	20000
	B100X94 DIN5482
	110 mm
	B100X94 DIN5482
	130 mm
	110 mm

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1250												
4.04	371	6707	261	248	7574	196	124	9325	121	2500	35000	50
5.12	293	6948	213	195	7847	161	98	9661	99			
6.00	250	7194	188	167	8124	142	83	10002	87			
ED 2250												
14.14	106	9056	101	71	10227	76	35.4	12591	46.6	2500	35000	30
15.59	96	9320	94	64	10526	71	32.1	12959	43.5			
17.49	86	9480	85	57	10706	64	28.6	13181	39.5			
20.20	74	9701	75	49.5	10956	57	24.8	13489	35.0			
22.17	68	10786	76	45.1	12181	58	22.6	14996	35.4			
25.60	59	11261	69	39.1	12718	52	19.5	15658	32.0			
30.72	48.8	11894	61	32.6	13433	45.8	16.3	16538	28.2			
36.00	41.7	12314	54	27.8	13711	39.9	13.9	14586	21.2			
ET 3250												
43.55	34.4	12565	45.3	23.0	14190	34.1	11.5	17471	21.0	3000	35000	20
49.49	30.3	13187	41.9	20.2	14893	31.5	10.1	18335	19.4			
58.40	25.7	13858	37.3	17.1	15651	28.1	8.6	19269	17.3			
61.23	24.5	13805	35.4	16.3	15590	26.7	8.2	19194	16.4			
70.70	21.2	14127	31.4	14.1	15955	23.6	7.1	19642	14.5			
83.43	18.0	14846	28.0	12.0	16767	21.0	6.0	20642	13.0			
90.44	16.6	15518	27.0	11.1	17526	20.3	5.5	21577	12.5			
104.4	14.4	15881	23.9	9.6	17935	18.0	4.8	21831	10.9			
114.6	13.1	17656	24.2	8.7	18932	17.3	4.4	21050	9.6			
121.2	12.4	16607	21.5	8.3	18755	16.2	4.1	22136	9.6			
146.5	10.2	17451	18.7	6.8	18668	13.3	3.4	20506	7.3			
158.8	9.4	18809	18.6	6.3	19598	12.9	3.1	21928	7.2			
184.3	8.1	19040	16.2	5.4	20178	11.5	2.7	22242	6.3			
216.0	6.9	15468	11.2	4.6	16343	7.9	2.3	18719	4.5			
261.0	5.7	15713	9.5	3.8	16968	6.8	1.9	19411	3.9			
EQ 4250												
282.7	5.3	22231	12.4	3.5	24311	9.0	1.8	27017	5.0	3000	35000	15
310.4	4.8	21812	11.0	3.2	22644	7.6	1.6	24291	4.1			
350.4	4.3	23452	10.5	2.9	25059	7.5	1.4	26805	4.0			
405.3	3.7	22633	8.8	2.5	23809	6.2	1.2	26733	3.5			
438.6	3.4	19760	7.1	2.3	20624	4.9	1.1	22075	2.6			
490.7	3.1	22752	7.3	2.0	23596	5.0	1.0	26762	2.9			
579.0	2.6	23095	6.3	1.7	23945	4.3	0.86	27696	2.5			
627.7	2.4	24833	6.2	1.6	25894	4.3	0.80	27687	2.3			
724.8	2.1	23564	5.1	1.4	25109	3.6	0.69	29001	2.1			
795.4	1.9	24677	4.9	1.3	26600	3.5	0.63	30169	2.0			
878.7	1.7	22200	4.0	1.1	23169	2.8	0.57	24830	1.5			
1016	1.5	22549	3.5	0.98	23517	2.4	0.49	25182	1.3			
1102	1.4	21717	3.1	0.91	22433	2.1	0.45	23587	1.1			
1273	1.2	25078	3.1	0.79	25905	2.1	0.39	27237	1.1			
1336	1.1	24140	2.8	0.75	26267	2.1	0.37	30411	1.2			
1546	0.97	24819	2.5	0.65	27102	1.8	0.32	31337	1.1			
1845	0.81	21425	1.8	0.54	23340	1.3	0.27	26895	0.76			
1935	0.78	26068	2.1	0.52	28428	1.5	0.26	32808	0.89			
2268	0.66	23687	1.6	0.44	25505	1.2	0.22	28884	0.67			
2339	0.64	27152	1.8	0.43	29579	1.3	0.21	34085	0.76			
2741	0.55	24522	1.4	0.36	26393	1.0	0.18	29869	0.57			

10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [Nm]	1500 P_2 [kW]	1000 n_2 [rpm]	1000 T_2 [Nm]	1000 P_2 [kW]	500 n_2 [rpm]	500 T_2 [Nm]	500 P_2 [kW]	n_{1MAX} [rpm]	T_{2MAX} [Nm]	P_T [kW]
EC 2250												
11.11	135	4329	61	90	4889	46.1	45.0	6019	28.4			
14.08	107	5486	61	71	6196	46.1	35.5	7628	28.4		35000	
16.50	91	6429	61	61	7261	46.1	30.3	8939	28.4			
17.92	84	4025	35.3	56	4546	26.6	27.9	5597	16.4	3000	26476	18
21.00	71	4717	35.3	47.6	5327	26.6	23.8	6559	16.4		31027	
24.93	60	4026	25.4	40.1	4547	19.1	20.1	5598	11.8		21639	
29.22	51	4718	25.4	34.2	5329	19.1	17.1	6561	11.8		25359	
EC 3250												
46.78	32.1	10551	35.4	21.4	11915	26.7	10.7	14670	16.4			
52.48	28.6	11835	35.4	19.1	13366	26.7	9.5	16456	16.4			
53.76	27.9	12124	35.4	18.6	13692	26.7	9.3	16858	16.4			
60.60	24.8	13489	35.0	16.5	15233	26.3	8.3	18755	16.2			
72.05	20.8	7051	15.4	13.9	7963	11.6	6.9	9804	7.1			
80.82	18.6	7910	15.4	12.4	8933	11.6	6.2	10998	7.1			
93.32	16.1	9134	15.4	10.7	10315	11.6	5.4	12699	7.1	3000	35000	14
102.4	14.6	10024	15.4	9.8	11321	11.6	4.9	13938	7.1			
112.0	13.4	10960	15.4	8.9	12378	11.6	4.5	15239	7.1			
118.3	12.7	11575	15.4	8.5	13073	11.6	4.2	16094	7.1			
141.9	10.6	13890	15.4	7.0	15687	11.6	3.5	19313	7.1			
166.3	9.0	15133	14.3	6.0	15655	9.9	3.0	17795	5.6			
EC 4250												
212.1	7.1	19642	14.5	4.7	21862	10.8	2.4	23291	5.8			
228.6	6.6	20871	14.3	4.4	23357	10.7	2.2	26584	6.1			
252.2	5.9	21481	13.4	4.0	23793	9.9	2.0	26371	5.5			
282.9	5.3	21848	12.1	3.5	24014	8.9	1.8	26041	4.8			
314.9	4.8	20767	10.4	3.2	21786	7.2	1.6	23449	3.9			
363.6	4.1	22136	9.6	2.8	22971	6.6	1.4	25126	3.6			
392.0	3.8	17662	7.1	2.6	18453	4.9	1.3	19778	2.6			
432.3	3.5	19478	7.1	2.3	20351	4.9	1.2	21813	2.6			
484.9	3.1	21850	7.1	2.1	22829	4.9	1.0	24468	2.6	3000	35000	10
559.9	2.7	23025	6.5	1.8	23874	4.5	0.89	27506	2.6			
614.5	2.4	23513	6.0	1.6	25363	4.3	0.81	28797	2.5			
709.6	2.1	24157	5.3	1.4	26047	3.8	0.70	29556	2.2			
811.9	1.8	18598	3.6	1.2	19578	2.5	0.62	22723	1.5			
857.5	1.7	25025	4.6	1.2	26969	3.3	0.58	30579	1.9			
1029	1.5	23570	3.6	0.97	24811	2.5	0.49	28798	1.5			
1206	1.2	21065	2.7	0.83	22719	2.0	0.41	25791	1.1			

* (bg) All highlighted ratio (is. 11.11) have particular dimensions of bevel gears in some versions. See dimensional tables.

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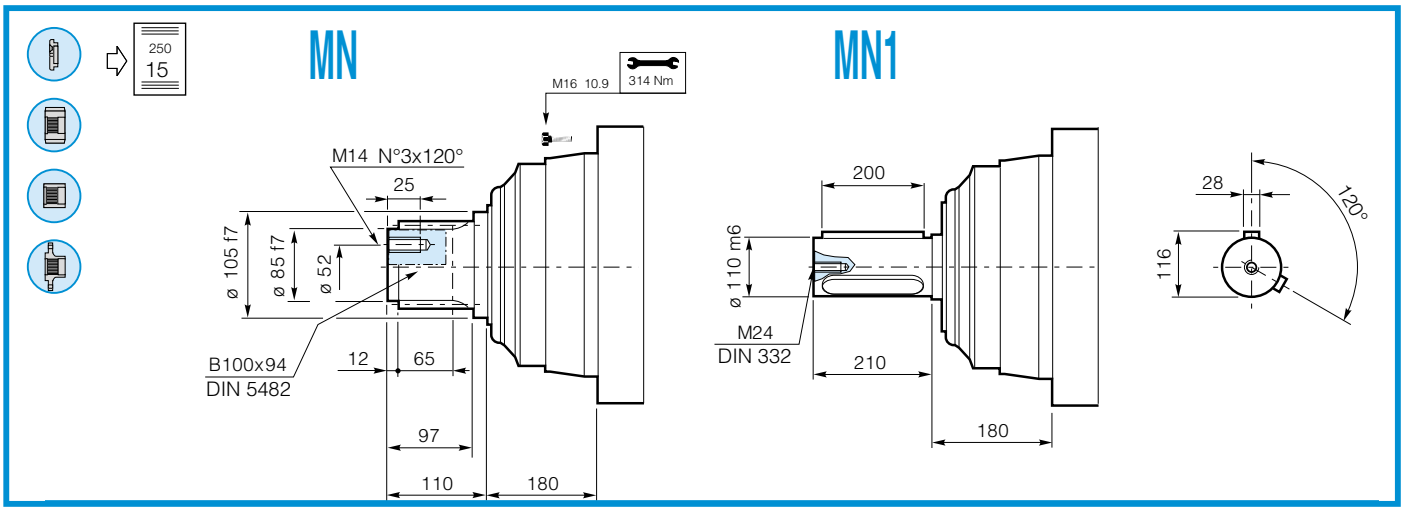
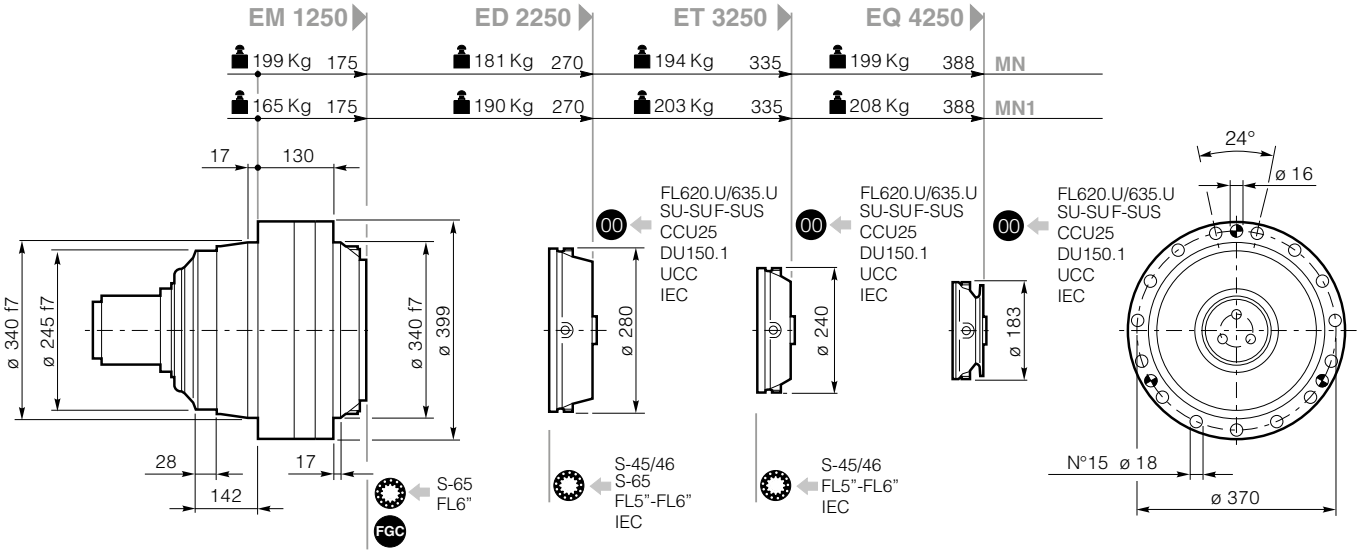
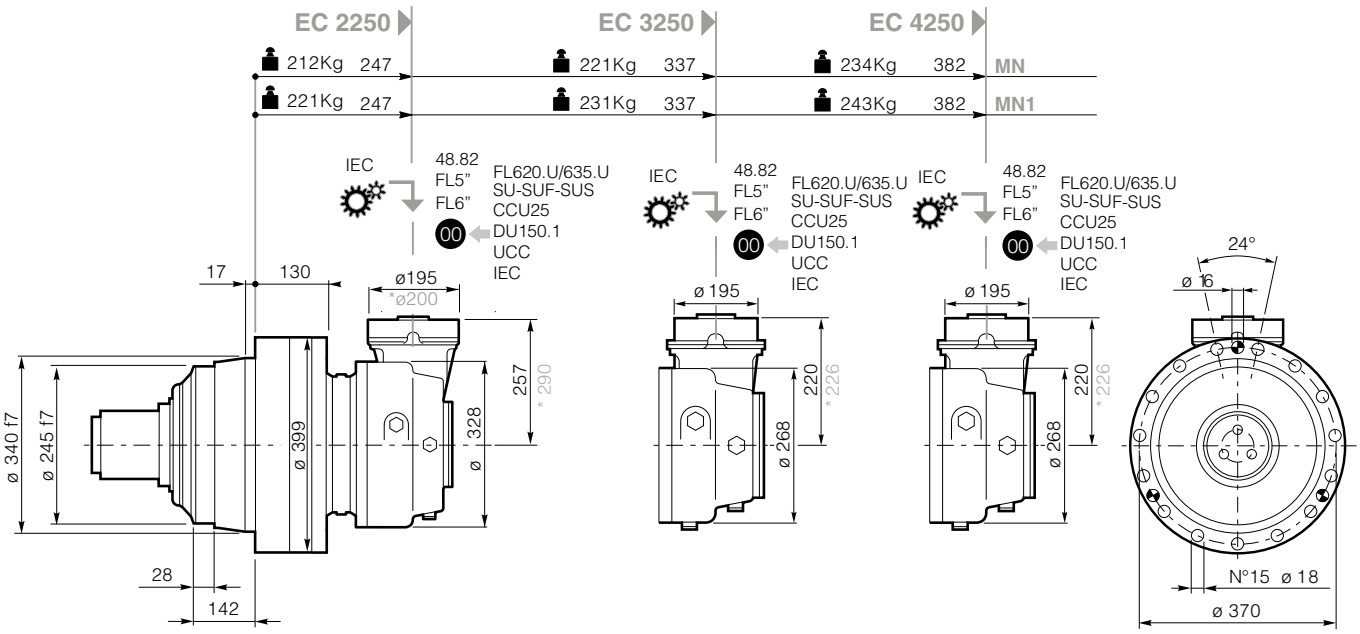
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 250 8 SU-SUF SUS → 250 9 FL5"- FL6" FL620 FL635 → 250 11 IEC → 250 14 → 250 13 CCU25 → B15 DU150.1 UCC → B16 * bg → 250 3

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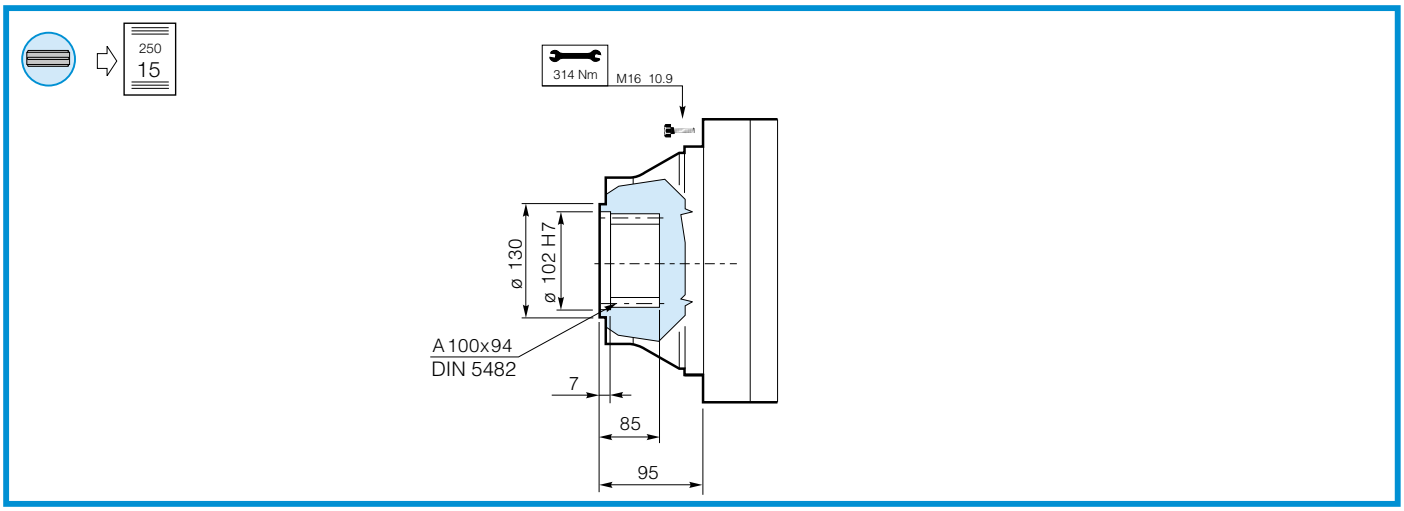

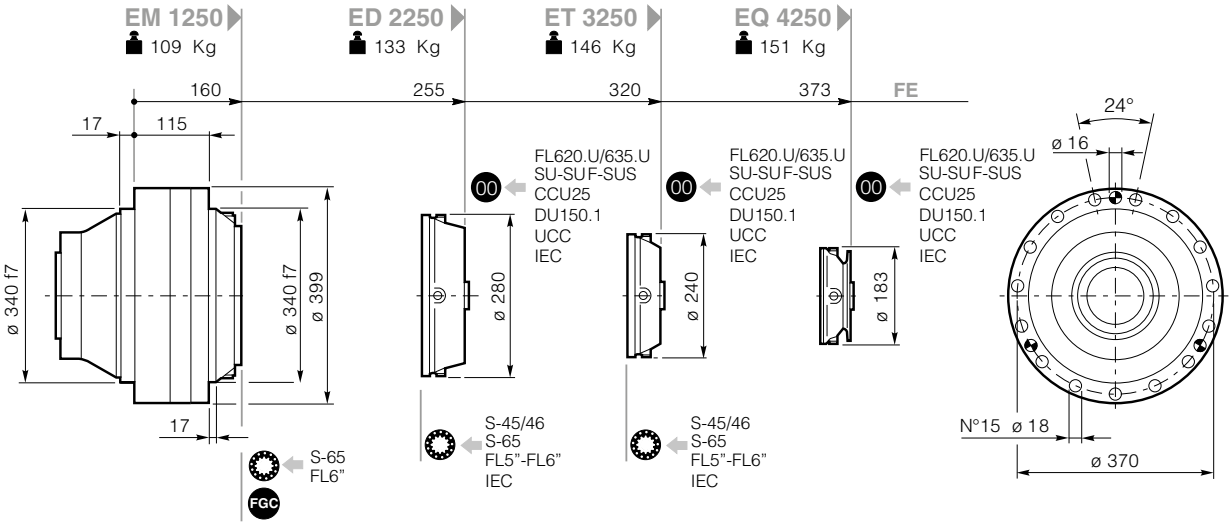

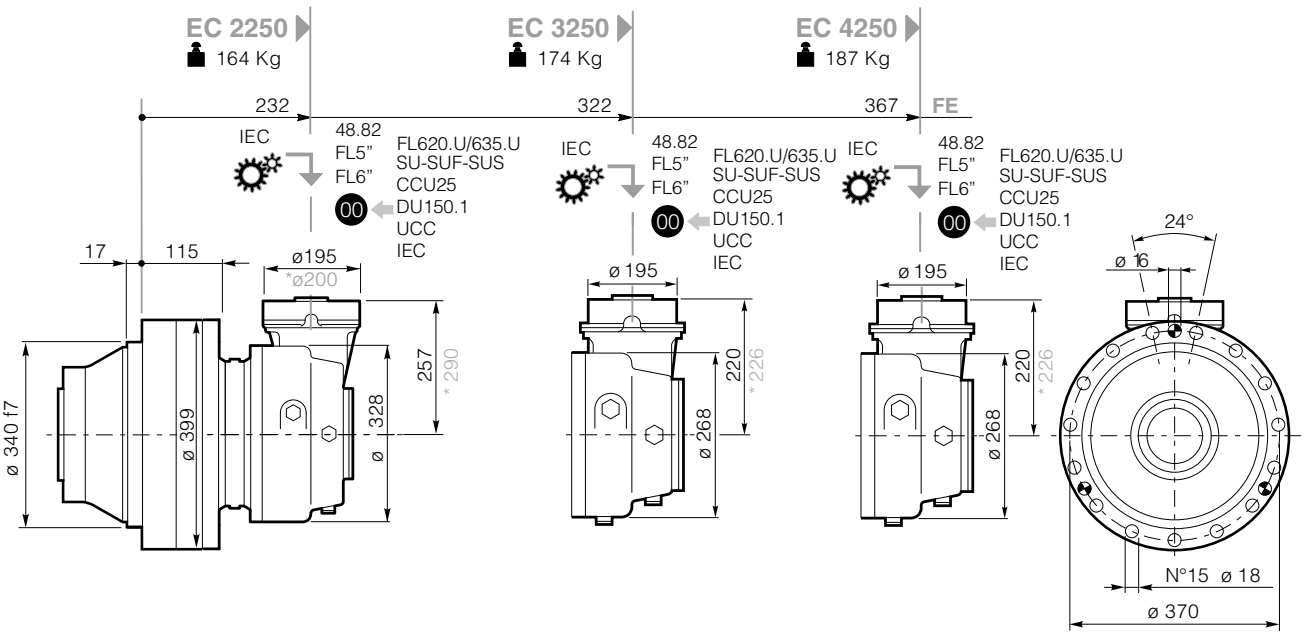

00 B13 S-45/46 48.82 → 250 8 | SU-SUF SUS → 250 9 | FL5"- FL6' FL620 FL635 → 250 11 | IEC → 250 14 | 250 13 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 250 3

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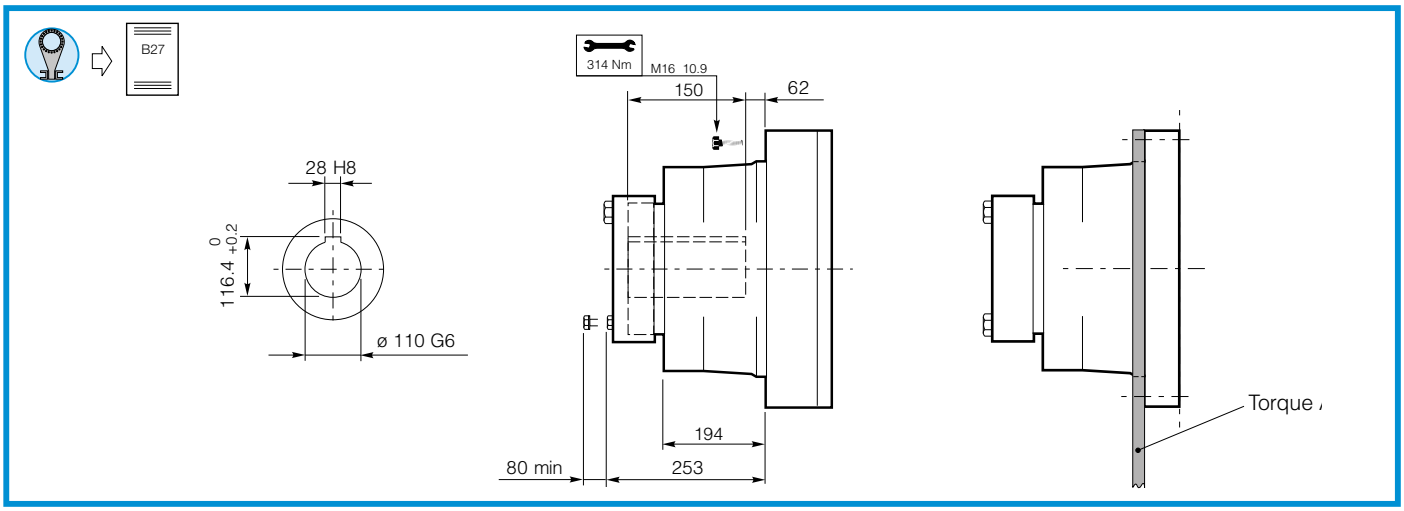
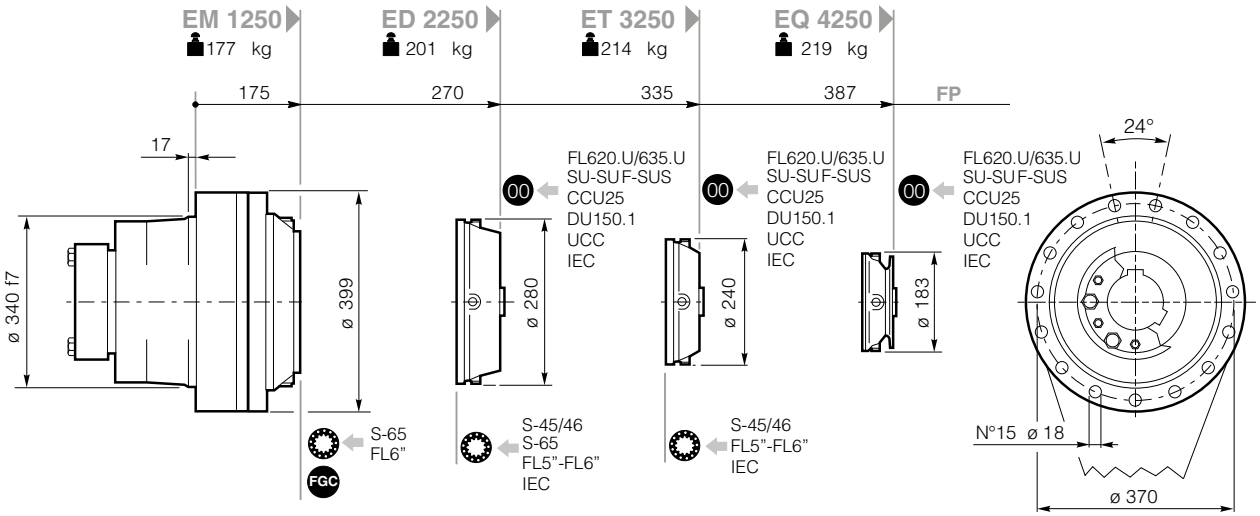
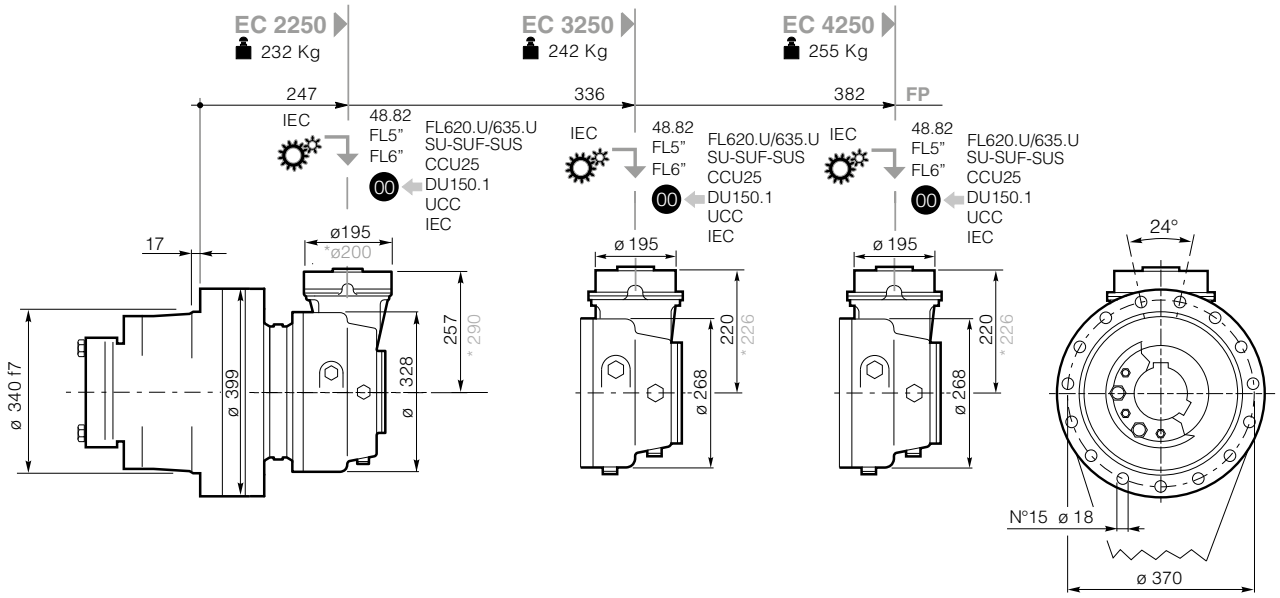
GEARBOX DIMENSIONS WITH OUTPUT







00 B13 S-45/46 48.82 → 250 8 | SU-SUF SUS → 250 9 | FL5"- FL6" FL620 FL635 → 250 11 | IEC → 250 14 | 250 13 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 250 3

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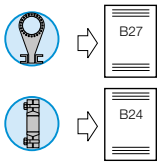

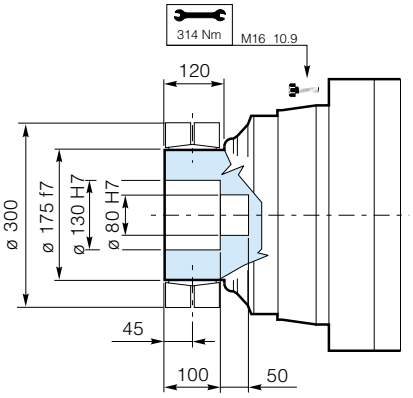

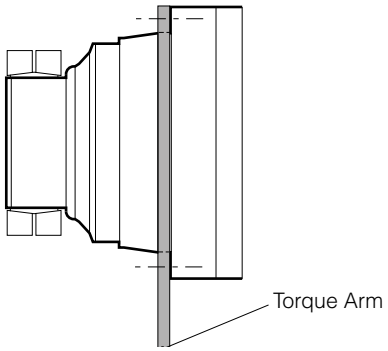

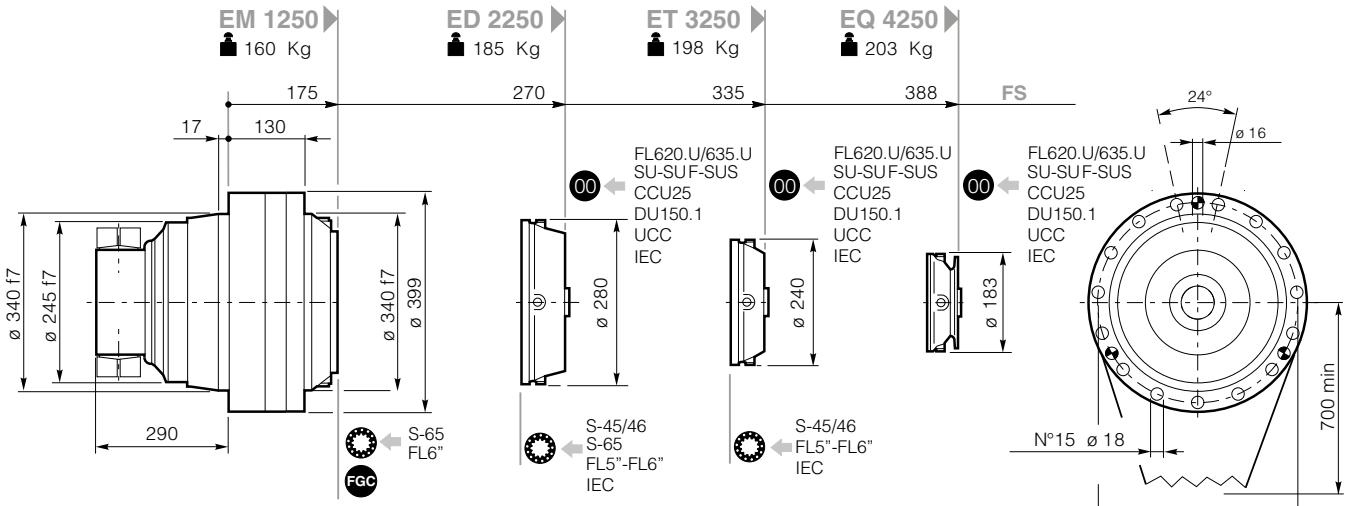

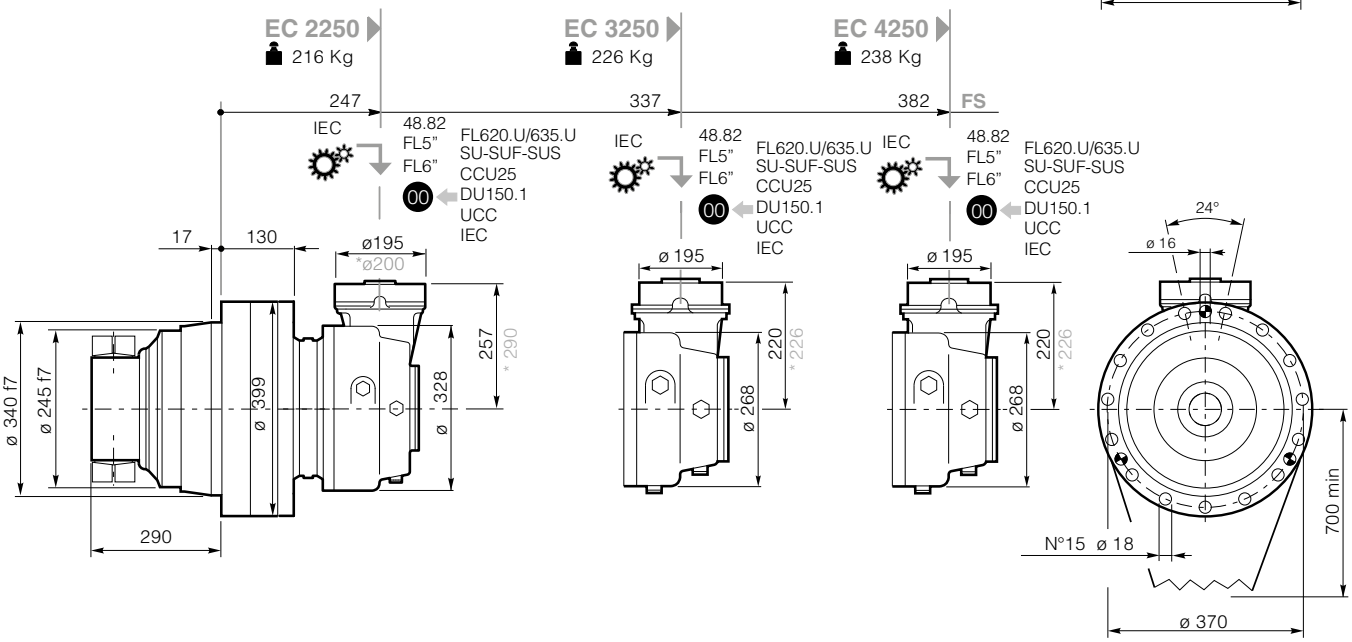

00 B13 S-45/46 48.82 → 250 8 | SU-SUF SUS → 250 9 | FL5"- FL6' FL620 FL635 → 250 11 | IEC → 250 14 | 250 13 | CCU25 → B15 | DU150.1 UCC → B16 | * bg → 250 3

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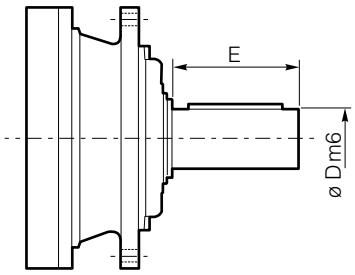
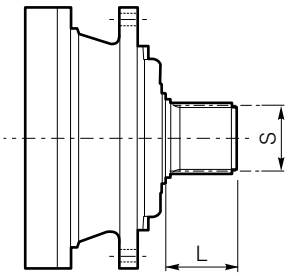
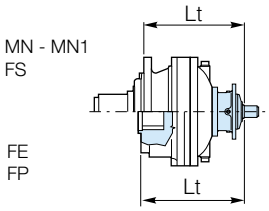
S-45CR1 - S-46C1 - S-45SR - S-65CR1 - S-65SR



S-45CR1 - S-46C1 - S-65CR1

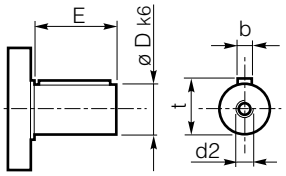


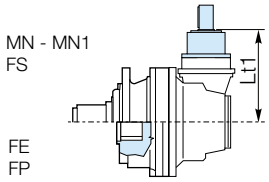
S-45SR - S-65SR



	D m6	E	L	S		Lt FGC	
						MN-MN1 FS-FP	FE
S-45CR1	65	105	-	-	EM 1250	313	298
					ED 2250	398	383
					ET 3250	398	383
S-46C1	65	105	-	-	EM 1250	354	339
					ED 2250	439	424
					ET 3250	439	424
S-45SR	-	-	68	B58x53	EM 1250	313	298
					ED 2250	398	383
					ET 3250	398	383
S-65CR1	80	130	-	-	EM 1250	403	388
					ED 2250	437	422
S-65SR	-	-	90	70x64	EM 1250	403	388
					ED 2250	437	422

48.82





	D	E		Lt1
				MN-MN1-FS-FE-FP
48.82	48	82	EC 2250	317
			EC 3250	280
			EC 4250	280

For the input configuration S46C1, S65CR1, 48.82 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

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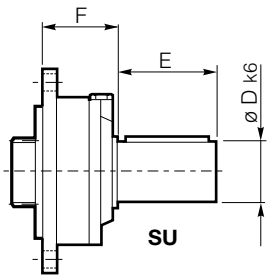
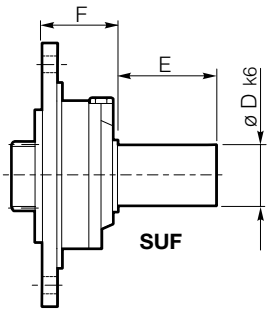
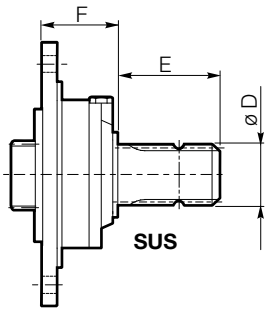
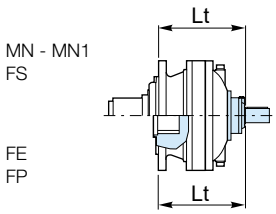
SU - SUF - SUS



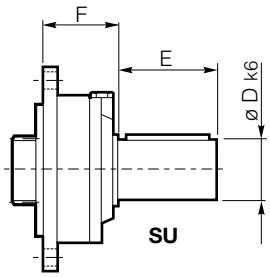


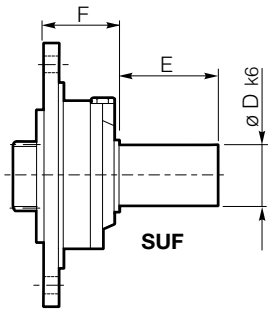


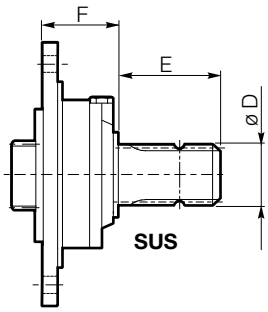


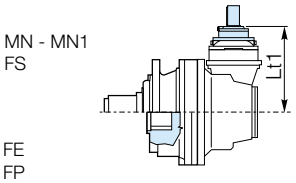
	D	E	F		Lt 00	
					MN-MN1 FS-FP	FE
SU1 28x50	28	50	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SU2 40x58	40	58	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SU3 48x82	48	82	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SU 42x80	42	80	101.5	ED 2250	372	357
				ET 3250	437	422
				EQ 4250	489	474
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	ED 2250	372	357
				ET 3250	437	422
				EQ 4250	489	474
SU2 1.5x3.25	38.10	82.55	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SUF1 28x50	28	50	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SUF2 40x58	40	58	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433
SUF3 48x82	48	82	60	ED 2250	330	315
				ET 3250	395	380
				EQ 4250	448	433

SU - SUF - SUS





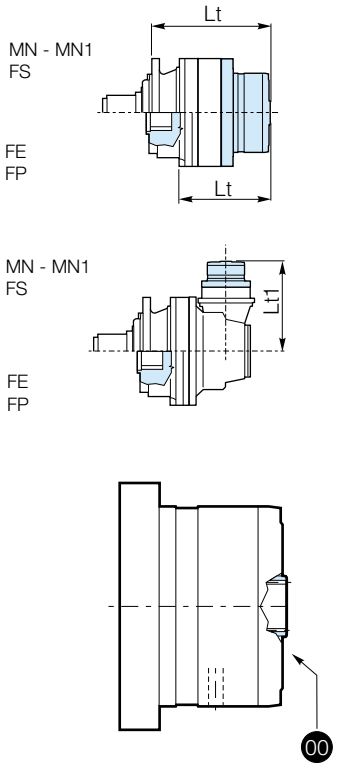




	D	E	F		Lt1 (00) MN-MN1 FS-FP	Lt1 (00) FE
SU1 28x50	28	50	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SU2 40x58	40	58	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SU3 48x82	48	82	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SU 42x80	42	80	101.5	**EC 2250**	359	359
				EC 2250*	392	392
				EC 3250	322	322
				EC 3250*	328	328
				EC 4250	322	322
				EC 4250*	328	328
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	**EC 2250**	359	359
				EC 2250*	392	392
				EC 3250	322	322
				EC 3250*	328	328
				EC 4250	322	322
				EC 4250*	328	328
SU2 1.5x3.25	38.10	82.55	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SUF1 28x50	28	50	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SUF2 40x58	40	58	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286
SUF3 48x82	48	82	60	**EC 2250**	317	317
				EC 2250*	350	350
				EC 3250	280	280
				EC 3250*	286	286
				EC 4250	280	280
				EC 4250*	286	286

* (bg) ⇨ 250 3

FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750

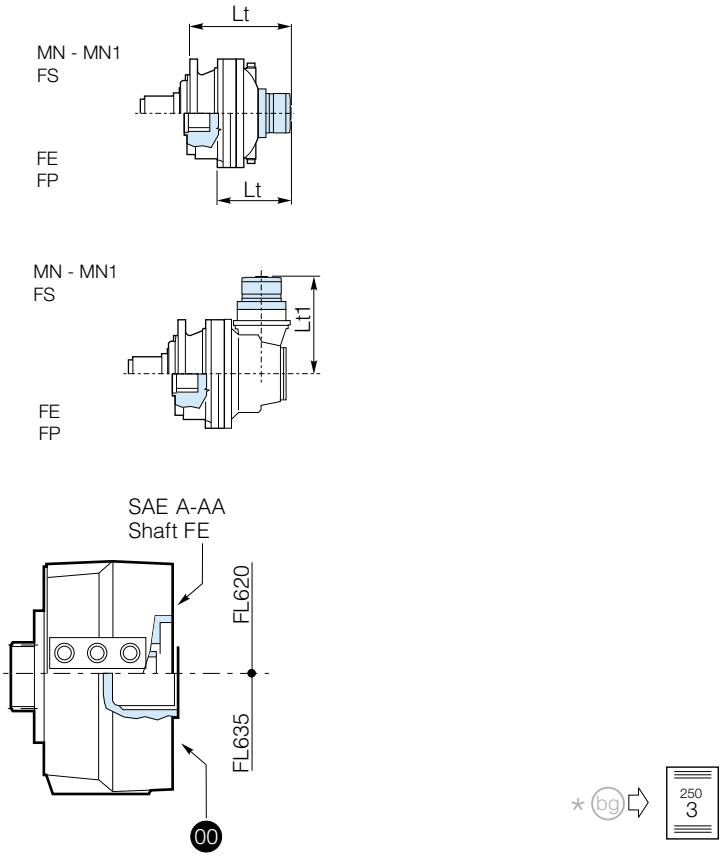


		Lt	
		MN-MN1 FS-FP	FE
FL250 FL350 FL450	ED 2250	376	361
	ET 3250	429	414
FL650 FL750	ED 2250	389	374
	ET 3250	442	427
FL960	EM 1250	311	296
	ED 2250	403	388

		Lt1	
		MN-MN1 FS-FP	FE
FL250 FL350 FL450	EC 2250	409	409
	EC 2250*	442	442
	EC 3250	280	280
	EC 3250*	377	377
	EC 4250	280	280
	EC 4250*	377	377
FL650 FL750	EC 2250	422	422
	EC 2250*	455	455
	EC 3250	294	294
	EC 3250*	391	391
	EC 4250	294	294
	EC 4250*	391	391

* bg ⇨ 250 3

FL620.10 - FL635.10 / FL620.U - FL635.U



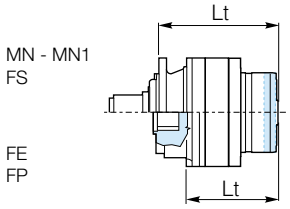
		Lt	
		MN-MN1 FS-FP	FE
FL620.U	ED 2250	375	360
	ET 3250	440	425
	EQ 4250	492	477
FL635.U	ED 2250	361	346
	ET 3250	426	411
	EQ 4250	479	464

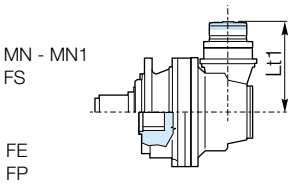
		Lt	
		MN-MN1 FS-FP	FE
FL620.10	EQ 4250	451	436
FL635.10	EQ 4250	433	418

		Lt1	
		MN-MN1 FS-FP	FE
FL620.U	EC 2250	362	362
	EC 2250*	395	395
	EC 3250	325	325
	EC 3250*	331	331
	EC 4250	325	325
	EC 4250*	331	331
FL635.U	EC 2250	348	348
	EC 2250*	381	381
	EC 3250	311	311
	EC 3250*	317	317
	EC 4250	311	311
	EC 4250*	317	317

* bg ⇨ 250 3

RL

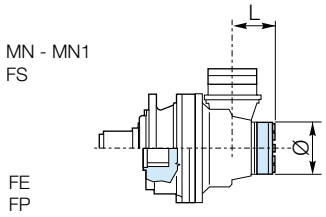




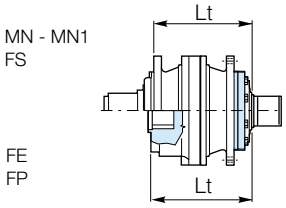
				Lt	
				MN-MN1 FS-FP	FE
RL	+	FL250 FL350 FL450	ED 2250	402	387
			ET 3250	455	440
		FL650 FL750	ED 2250	415	400
			ET 3250	468	453
		FL960	EM 1250	337	322
			ED 2250	429	414

				Lt1
				MN-MN1-FS-FP-FE
RL	+	FL250 FL350 FL450	EC 2250	435
			EC 2250*	468
			EC 3250	306
			EC 3250*	403
			EC 4250	306
			EC 4250*	403
		FL650 FL750	EC 2250	448
			EC 2250*	481
			EC 3250	306
			EC 3250*	403
			EC 4250	306
			EC 4250*	403

* bg 250 3



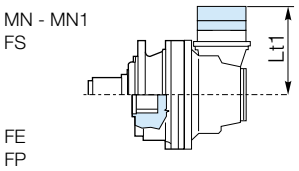
				L	Ø
RL	+	CC40	EC3250	135.2	150
			EC4250	135.2	150



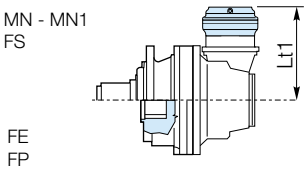
				Lt	
				MN-MN1 FS-FP	FE
RL	+	S46C1	EM 1250	374	359
			ED 2250	459	444
			ET 3250	459	444

Click **DANA** button to return to section index

Click *i* button to return to main index



EM1010 - EM1020

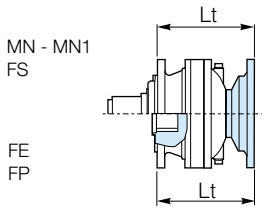


ED2010 - ED2020 - ED2021

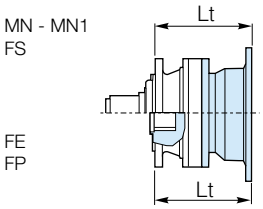
	Lt1					
	EC2250	EC2250*	**EC3250**	EC3250*	**EC4250**	EC4250*
EM1010	364	397	327	333	327	333
EM1020	382	415	345	351	345	351
ED2010	403	436	366	372	366	372
ED2020	435	468	398	404	398	404
ED2021	450	483	413	419	413	419

* bg 250 3

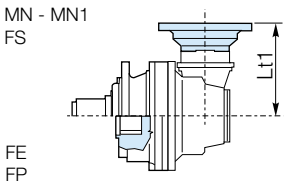
IEC Motor



		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2250	MN-MN1-FS	290	292	297	298	365	396	407	437
ED 2250	FE	275	277	282	283	350	381	392	422
ED 2250	FP	290	292	297	298	365	396	407	437
ET 3250	MN-MN1-FS	355	357	362	363	430	461	472	502
ET 3250	FE	340	342	347	348	415	446	457	487
ET 3250	FP	355	357	362	363	430	461	472	502
EQ 4250	MN-MN1-FS	408	410	415	416	483	514	525	555
EQ 4250	FE	393	395	400	401	468	499	510	540
EQ 4250	FP	407	409	414	415	482	513	524	554



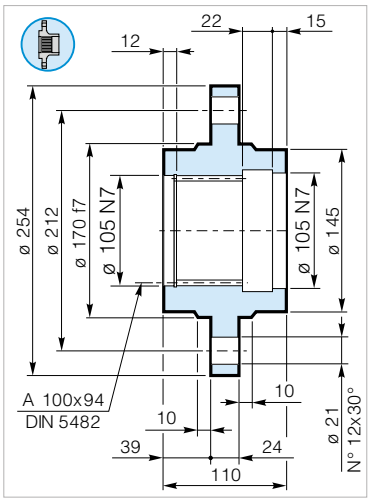
		Lt		
		IEC		
		160 180	200	225
EM 2250	MN-MN1-FS	283	283	306
EM 2250	FE	268	268	291
EM 2250	FP	283	283	305
ED 2250	MN-MN1-FS	376	406	436
ED 2250	FE	361	391	421
ED 2250	FP	376	406	436
ET 3250	MN-MN1-FS	461	471	501
ET 3250	FE	446	456	486
ET 3250	FP	461	471	501



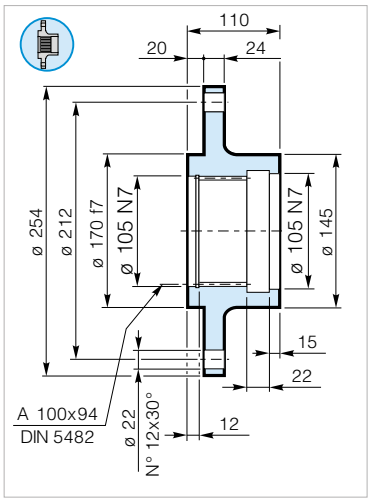
		Lt1 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC 2250	MN-MN1-FE-FS-FP	277	279	284	285	352	383	394	424
EC 2250*		310	312	317	318	385	416	427	457
EC 3250		240	242	247	248	315	346	357	387
EC 3250*		246	248	253	254	321	352	363	393
EC 4250		240	242	247	248	315	346	357	387
EC 4250*		246	248	253	254	321	352	363	393

* bg ⇨ 250 3

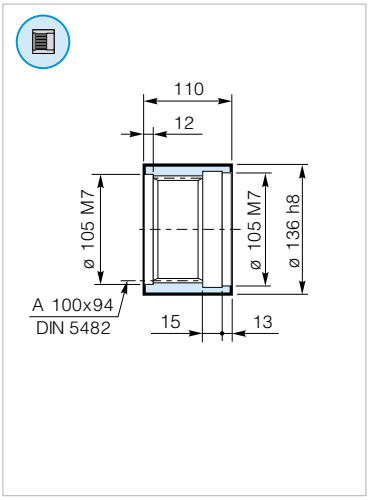
FA 250 Wheel Flange



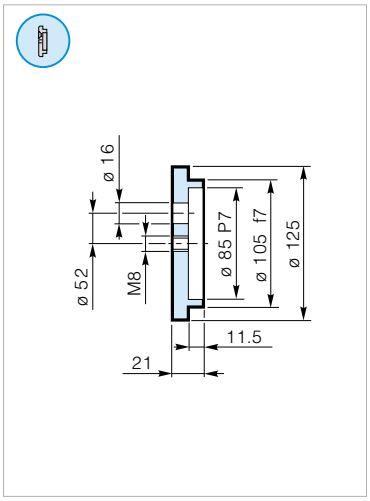
FR 250 Wheel Flange



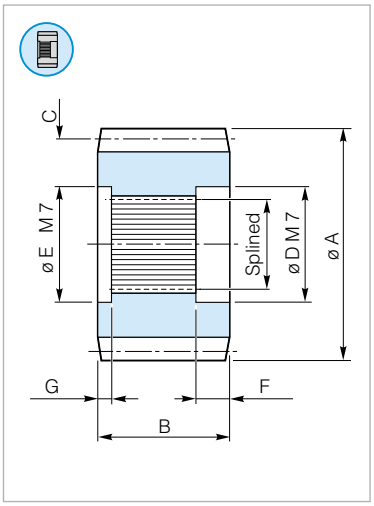
MS 250 Splined Sleeve



RDF 250 Lock Washer

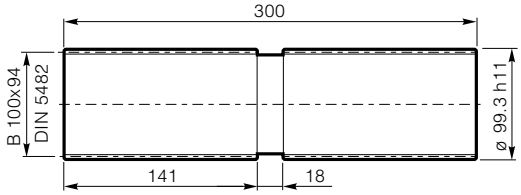


Pinions



Splined	A	B	C			D	E	F	G
			m	z	x				
A100x94 DIN 5482	200	83	10	18	0	105	105	37,0	22
	204	90	12	15	0	105	105	37,0	22
	178	105	10	15	0,6	105	105	37,0	22
	252	120	14	15	0,5	105	105	37,0	22
	252	120	14	15	0,5	105	105	37,0	22

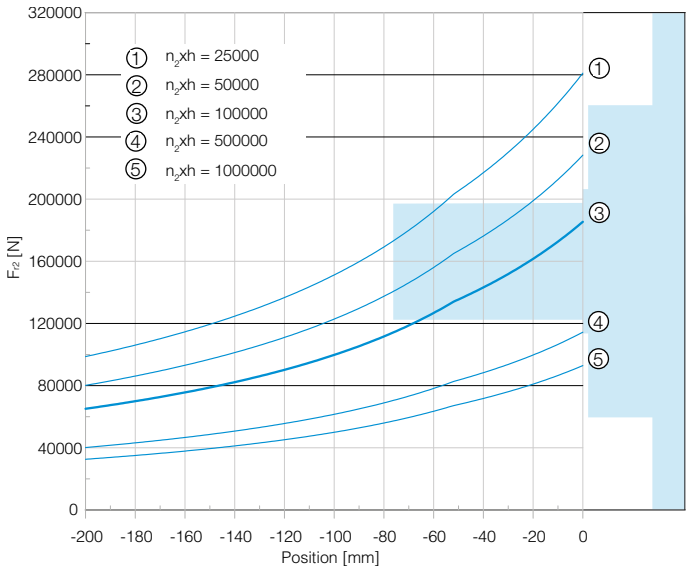
BS 250 Splined Bar



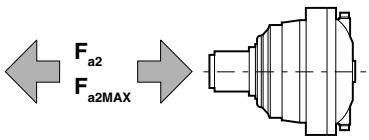
Code: 39127330100
Mat.:High mechanical resistance alloyed steel

Output Radial Loads

MN - MN1



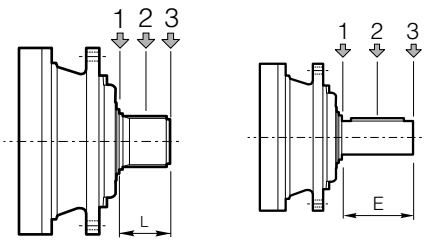
Output Axial Loads



		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	100000	–	–
F_{a2MAX}	[N]	100000	–	–

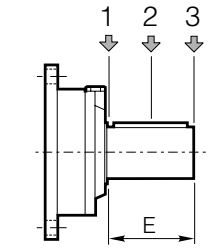
250

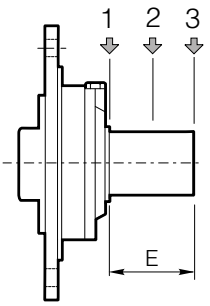
Input Radial Loads

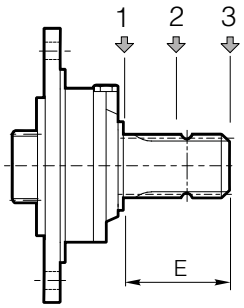


			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800

Input Radial Loads







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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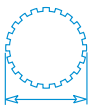
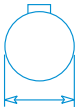
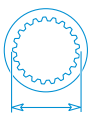
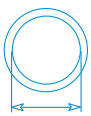
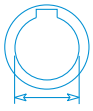
255

i_{eff}	16.48 - 2744
T_{2N} (Nm)	20000
	B100X94 DIN5482
	110 mm
	B100X94 DIN5482
	130 mm
	110 mm

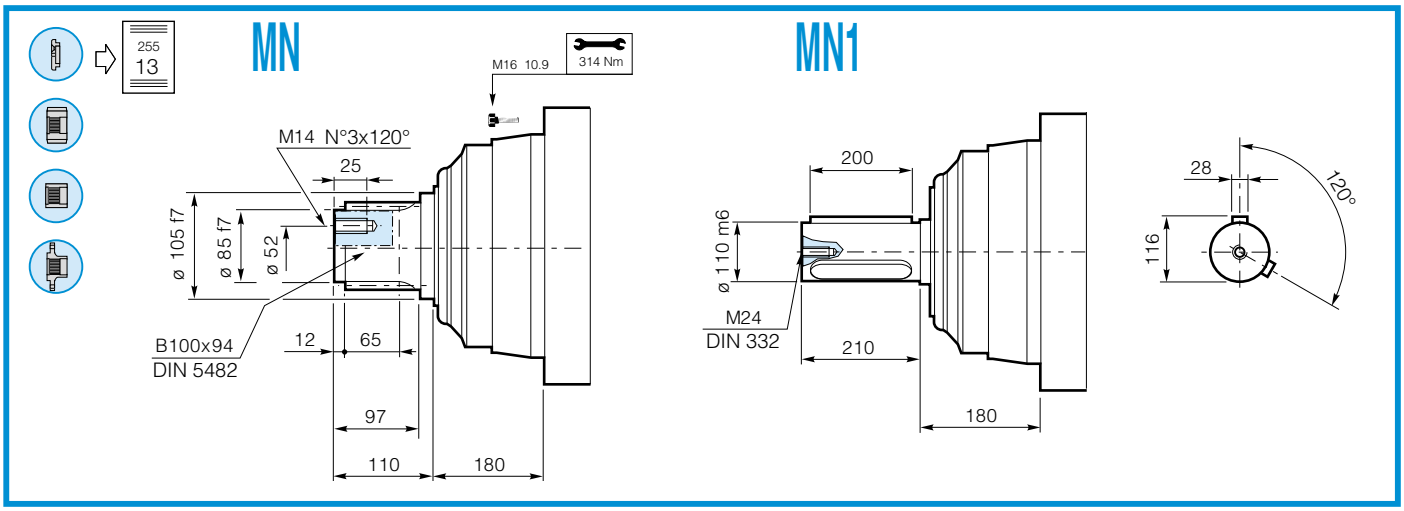
10000
hours life

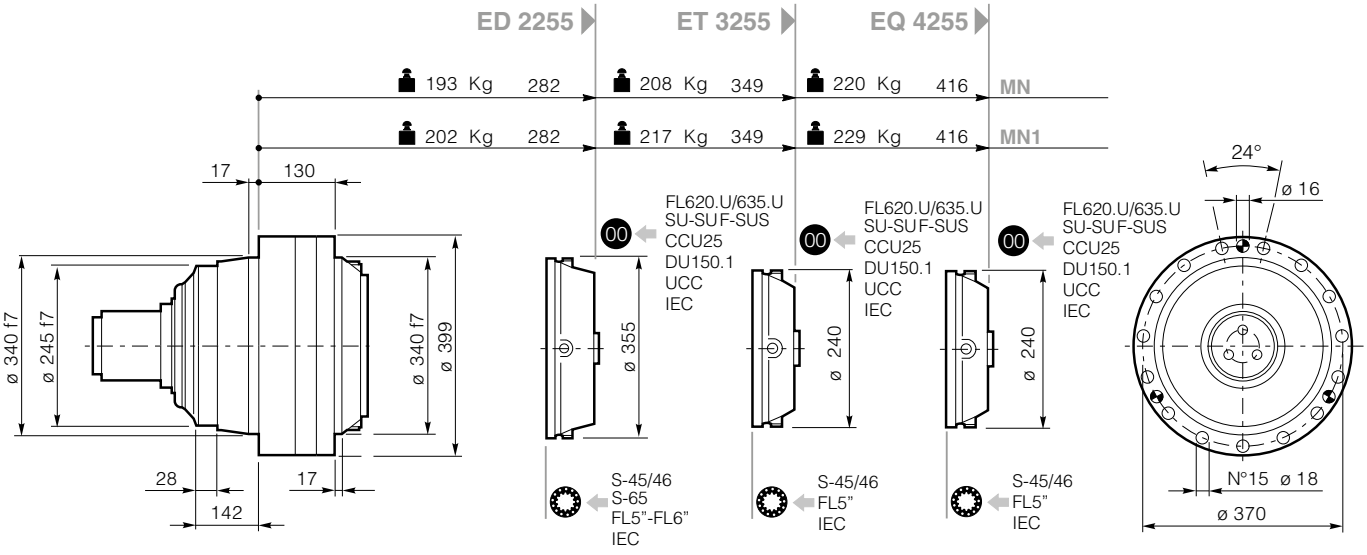
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
ED 2255												
16.48	91	10226	97	61	11549	73	30.3	14219	45.2	2500	35000	30
20.40	74	10902	84	49.0	12312	63	24.5	15158	38.9			
23.47	64	11370	76	42.6	12841	57	21.3	15809	35.3			
25.86	58	11295	69	38.7	12756	52	19.3	15705	31.8			
27.96	54	11983	67	35.8	13533	51	17.9	16661	31.2			
29.75	50	11780	62	33.6	13304	46.8	16.8	16379	28.8			
30.30	49.5	11694	61	33.0	13206	45.6	16.5	14368	24.8			
35.43	42.3	12415	55	28.2	14020	41.4	14.1	17261	25.5			
41.52	36.1	12853	48.6	24.1	13892	35.0	12.0	14766	18.6			
44.54	33.7	13297	46.9	22.5	15017	35.3	11.2	17387	20.4			
52.20	28.7	13668	41.1	19.2	14180	28.4	9.6	15057	15.1			
ET 3255												
57.69	26.0	14892	40.5	17.3	16818	30.5	8.7	20474	18.6	3000	35000	20
68.08	22.0	15650	36.1	14.7	17674	27.2	7.3	21146	16.3			
71.41	21.0	15876	34.9	14.0	17929	26.3	7.0	21343	15.7			
84.26	17.8	16684	31.1	11.9	18842	23.4	5.9	22036	13.7			
90.50	16.6	16448	28.6	11.1	18566	21.5	5.5	20106	11.6			
105.5	14.2	17847	26.6	9.5	20155	20.0	4.7	23003	11.4			
115.5	13.0	18338	24.9	8.7	19870	18.0	4.3	21283	9.7			
122.4	12.3	18662	23.9	8.2	20712	17.7	4.1	23661	10.1			
144.5	10.4	19496	21.2	6.9	20331	14.7	3.5	21740	7.9			
155.1	9.7	18773	19.0	6.4	19507	13.2	3.2	22308	7.5			
183.2	8.2	19030	16.3	5.5	20153	11.5	2.7	23022	6.6			
202.7	7.4	20193	15.7	4.9	21018	10.9	2.5	22430	5.8			
230.3	6.5	18584	12.7	4.3	19459	8.8	2.2	20954	4.8			
256.9	5.8	19890	12.2	3.9	21516	8.8	1.9	24532	5.0			
267.3	5.6	18906	11.1	3.7	19779	7.8	1.9	21278	4.2			
322.9	4.6	19314	9.4	3.1	20186	6.5	1.5	21692	3.5			
EQ 4255												
346.1	4.3	23398	10.6	2.9	25248	7.6	1.4	28679	4.3	3000	35000	15
404.1	3.7	21596	8.4	2.5	22424	5.8	1.2	23862	3.1			
435.6	3.4	24434	8.8	2.3	26347	6.3	1.1	29898	3.6			
505.6	3.0	25123	7.8	2.0	27079	5.6	0.99	30710	3.2			
545.3	2.8	25479	7.3	1.8	27458	5.3	0.92	31129	3.0			
632.9	2.4	26192	6.5	1.6	28215	4.7	0.79	31969	2.6			
734.5	2.0	26921	5.8	1.4	28989	4.1	0.68	32828	2.3			
802.1	1.9	24715	4.8	1.2	26640	3.5	0.62	30214	2.0			
887.5	1.7	27870	4.9	1.1	29998	3.5	0.56	33947	2.0			
969.1	1.5	25599	4.2	1.0	27579	3.0	0.52	31257	1.7			
1125	1.3	26312	3.7	0.89	28337	2.6	0.44	32098	1.5			
1275	1.2	26928	3.3	0.78	28991	2.4	0.39	32823	1.3			
1382	1.1	22478	2.6	0.72	23391	1.8	0.36	27360	1.0			
1541	0.97	27875	2.8	0.65	29998	2.0	0.32	33941	1.2			
1862	0.81	28850	2.4	0.54	31034	1.7	0.27	35000	1.0			
1938	0.77	23238	1.9	0.52	25230	1.4	0.26	29497	0.80			
2341	0.64	23986	1.6	0.43	26352	1.2	0.21	30741	0.69			
2744	0.55	24527	1.4	0.36	26399	1.0	0.18	29876	0.57			

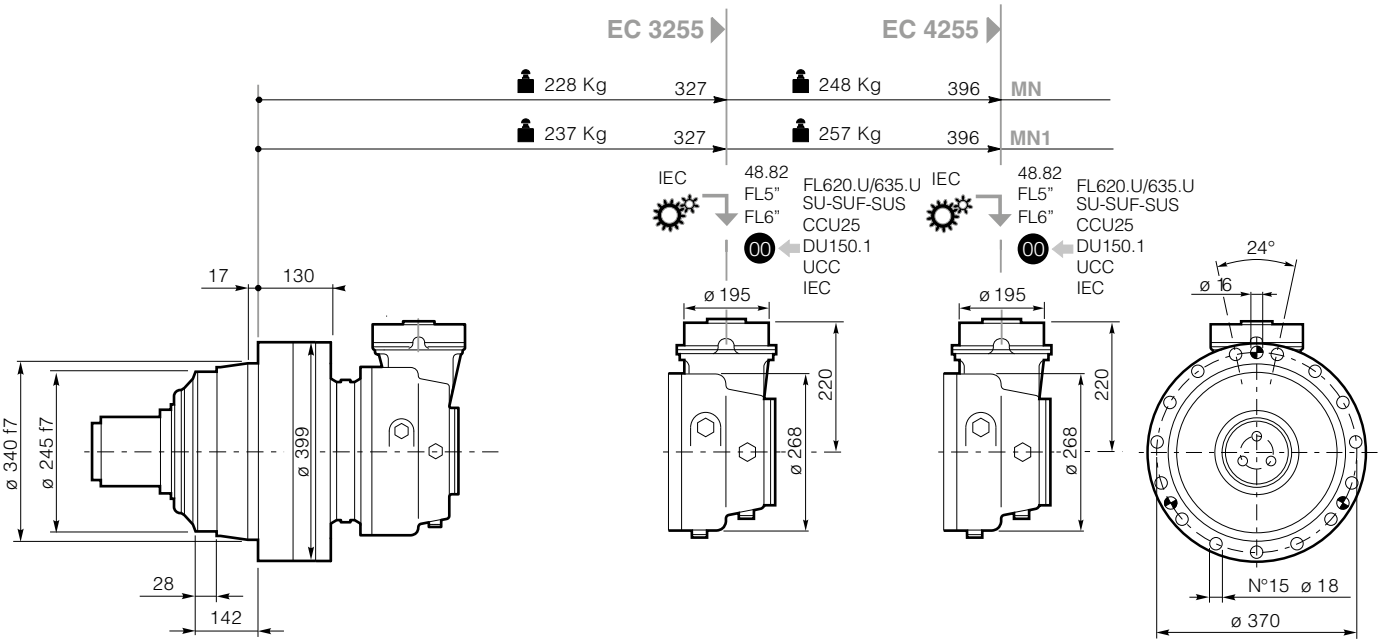
10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EC 3255												
49.45	30.3	11152	35.4	20.2	12595	26.7	10.1	15506	16.4	3000	35000	14
61.21	24.5	13803	35.4	16.3	15589	26.7	8.2	19192	16.4			
70.42	21.3	15809	35.3	14.2	17854	26.6	7.1	21286	15.8			
77.57	19.3	15705	31.8	12.9	17736	23.9	6.4	19507	13.2			
94.26	15.9	9225	15.4	10.6	10418	11.6	5.3	12826	7.1			
96.51	15.5	9445	15.4	10.4	10667	11.6	5.2	13133	7.1			
108.4	13.8	10613	15.4	9.2	11986	11.6	4.6	14757	7.1			
129.2	11.6	12641	15.4	7.7	14276	11.6	3.9	17576	7.1			
137.4	10.9	13451	15.4	7.3	15190	11.6	3.6	18702	7.1			
163.7	9.2	16020	15.4	6.1	18093	11.6	3.1	22275	7.1			
205.8	7.3	18340	14.0	4.9	19217	9.8	2.4	20710	5.3			
EC 4255												
266.5	5.6	22261	13.1	3.8	24043	9.4	1.9	27344	5.4	3000	35000	10
314.5	4.8	22976	11.5	3.2	24801	8.3	1.6	28183	4.7			
346.4	4.3	21283	9.7	2.9	22108	6.7	1.4	23539	3.6			
389.3	3.9	23922	9.7	2.6	25805	6.9	1.3	29296	3.9			
456.9	3.3	24653	8.5	2.2	26580	6.1	1.1	30156	3.5			
487.3	3.1	24951	8.0	2.1	26897	5.8	1.0	30507	3.3			
565.5	2.7	25652	7.1	1.8	27641	5.1	0.88	31333	2.9			
650.7	2.3	26327	6.4	1.5	28358	4.6	0.77	32127	2.6			
683.4	2.2	26566	6.1	1.5	28612	4.4	0.73	32409	2.5			
786.2	1.9	27259	5.4	1.3	29348	3.9	0.64	33227	2.2			
936.4	1.6	23322	3.9	1.1	24430	2.7	0.53	28240	1.6			
982.1	1.5	25662	4.1	1.0	27646	2.9	0.51	31331	1.7			
1064	1.4	21898	3.2	0.94	22800	2.2	0.47	25781	1.3			
1187	1.3	26573	3.5	0.84	28615	2.5	0.42	32406	1.4			
1492	1.0	22649	2.4	0.67	23732	1.7	0.34	27836	0.98			
1748	0.86	22577	2.0	0.57	24326	1.5	0.29	27574	0.83			

GEARBOX DIMENSIONS WITH OUTPUT



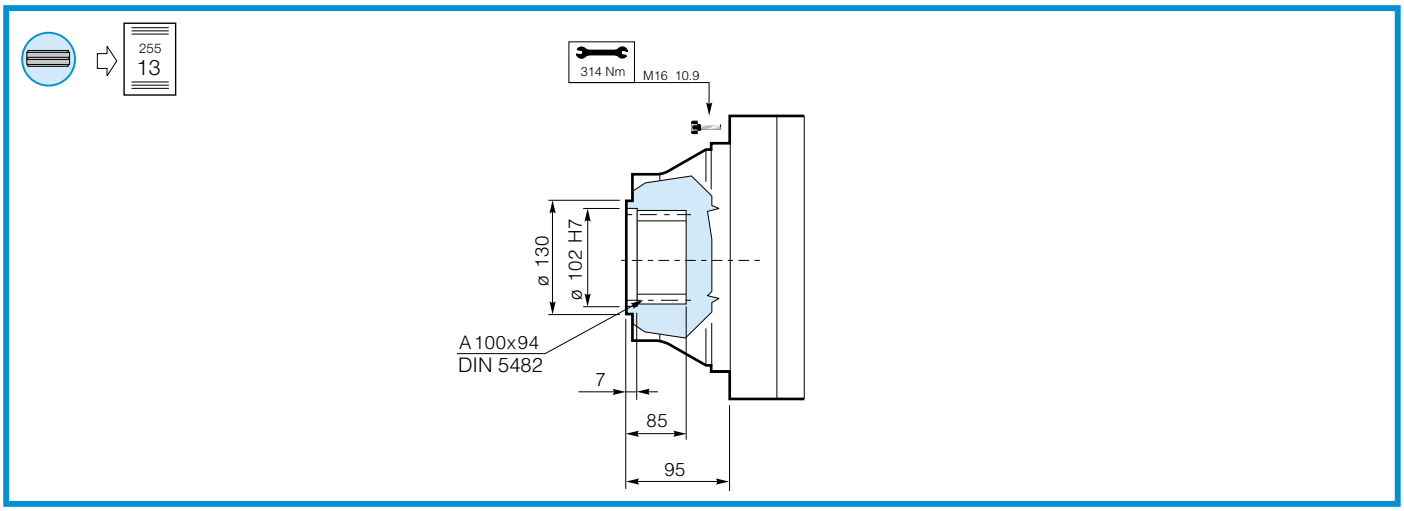


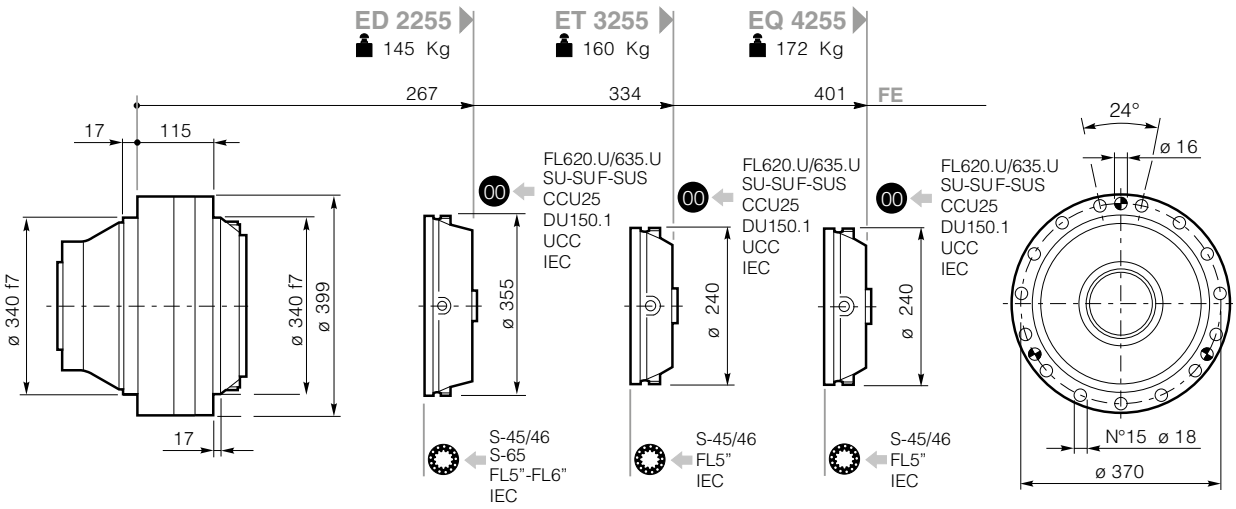


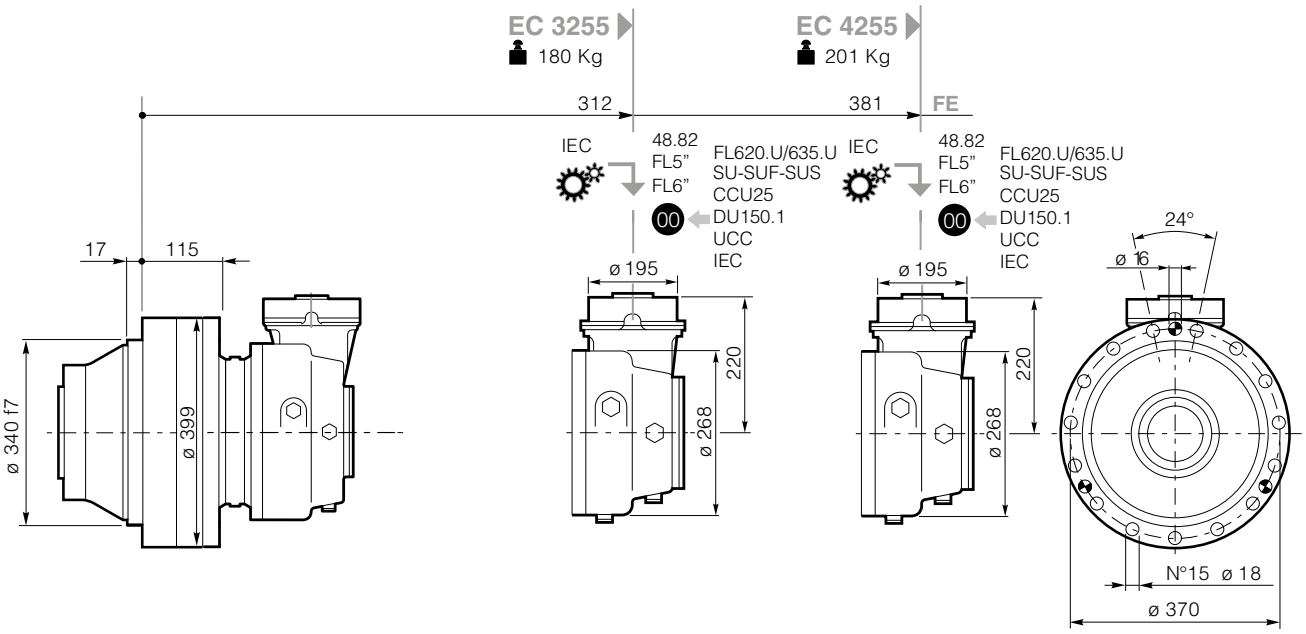
00 B13
S-45/46 48.82 255 8
SU-SUF SUS 255 9
FL5"- FL6' FL620 FL635 255 10
IEC 255 12
255 12
CCU25 B15
DU150.1 UCC B16

Click **DANA** button to return to section index

Click *i* button to return to main index







00 B13
S-45/46 48.82 255 8
SU-SUF SUS 255 9
FL5"- FL6' FL620 FL635 255 10
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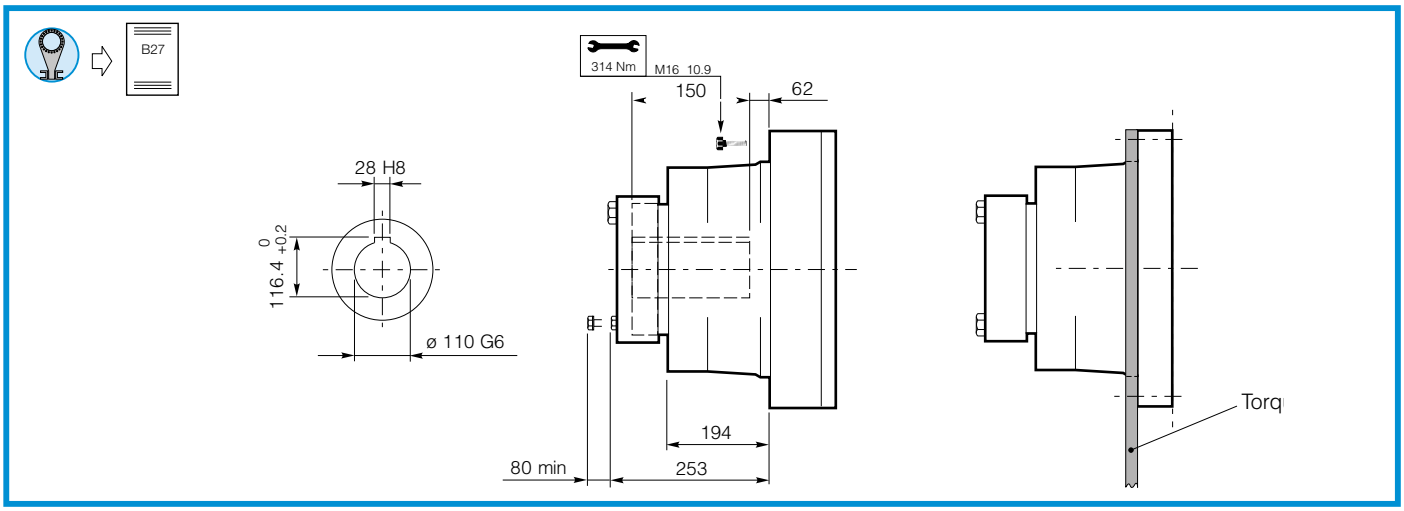
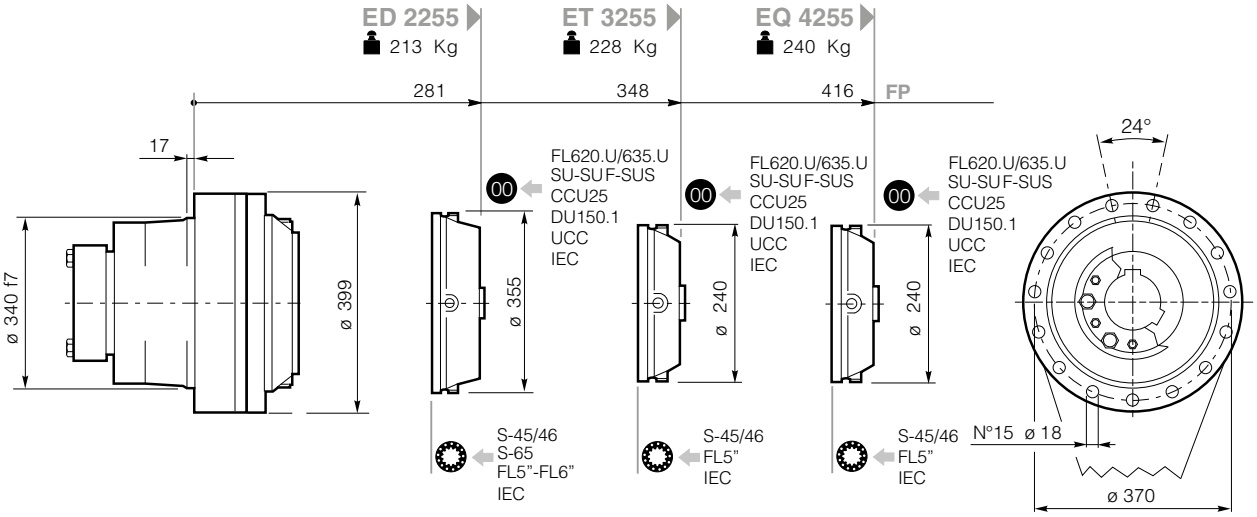
255 12
CCU25 B15
DU150.1 UCC B16

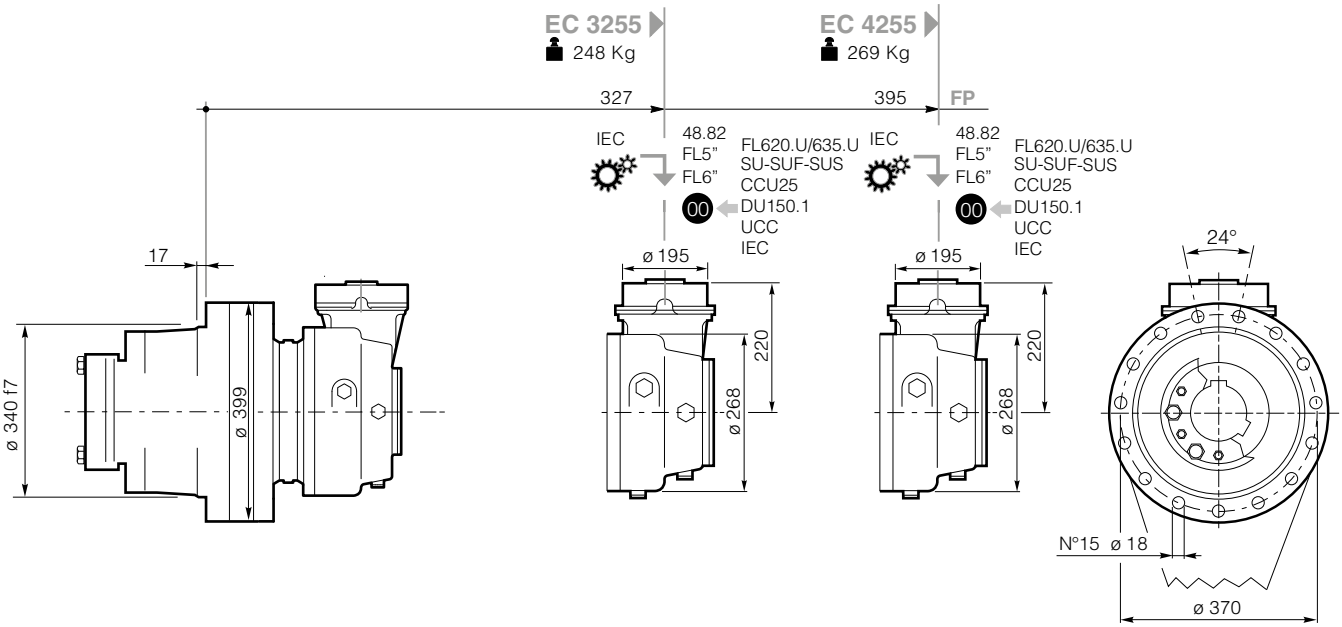
Click *i* button to return to main index

Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT







00 B13 | S-45/46 48.82 255 8 | SU-SUF SUS 255 9 | FL5"- FL6' FL620 FL635 255 10 | IEC 255 12 | 255 12 | CCU25 B15 | DU150.1 UCC B16

Click **DANA** button to return to section index

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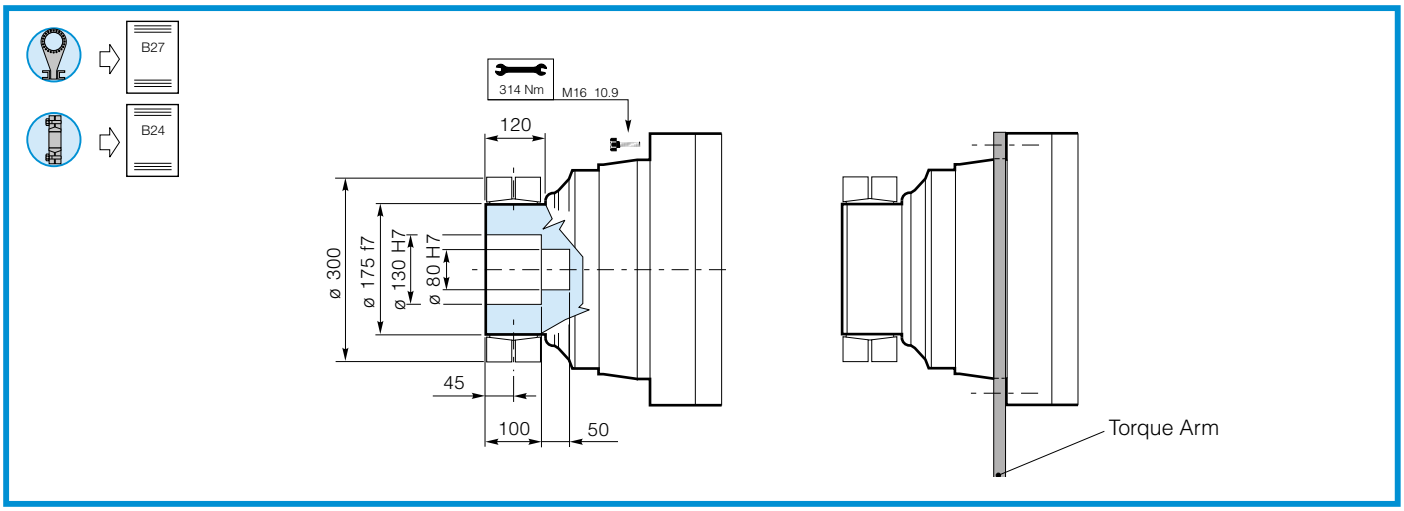

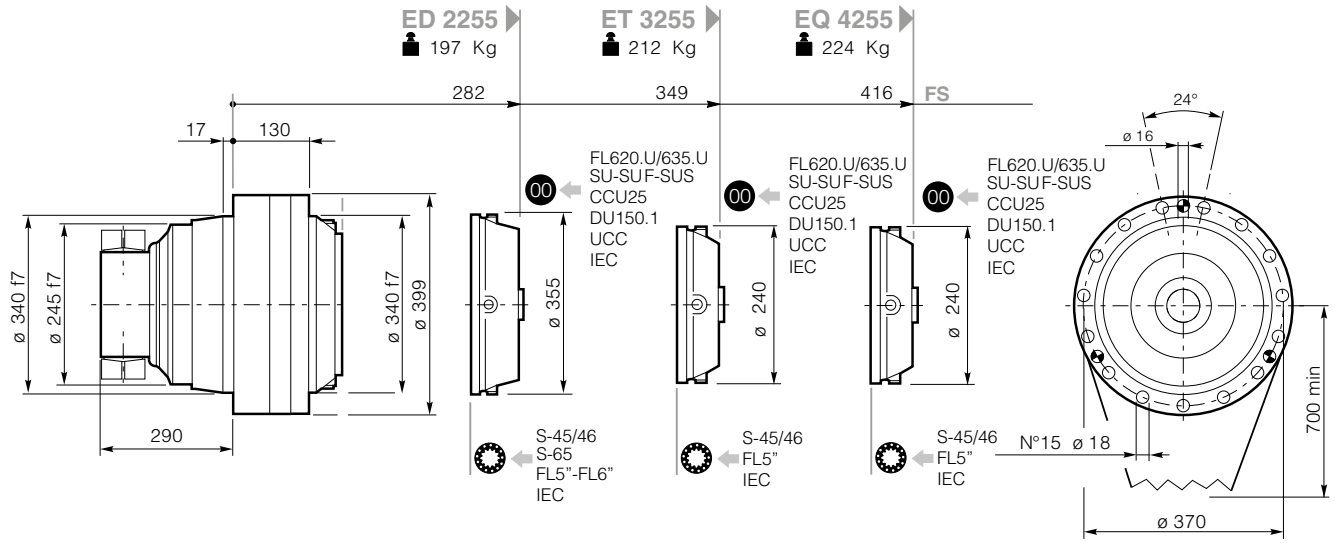

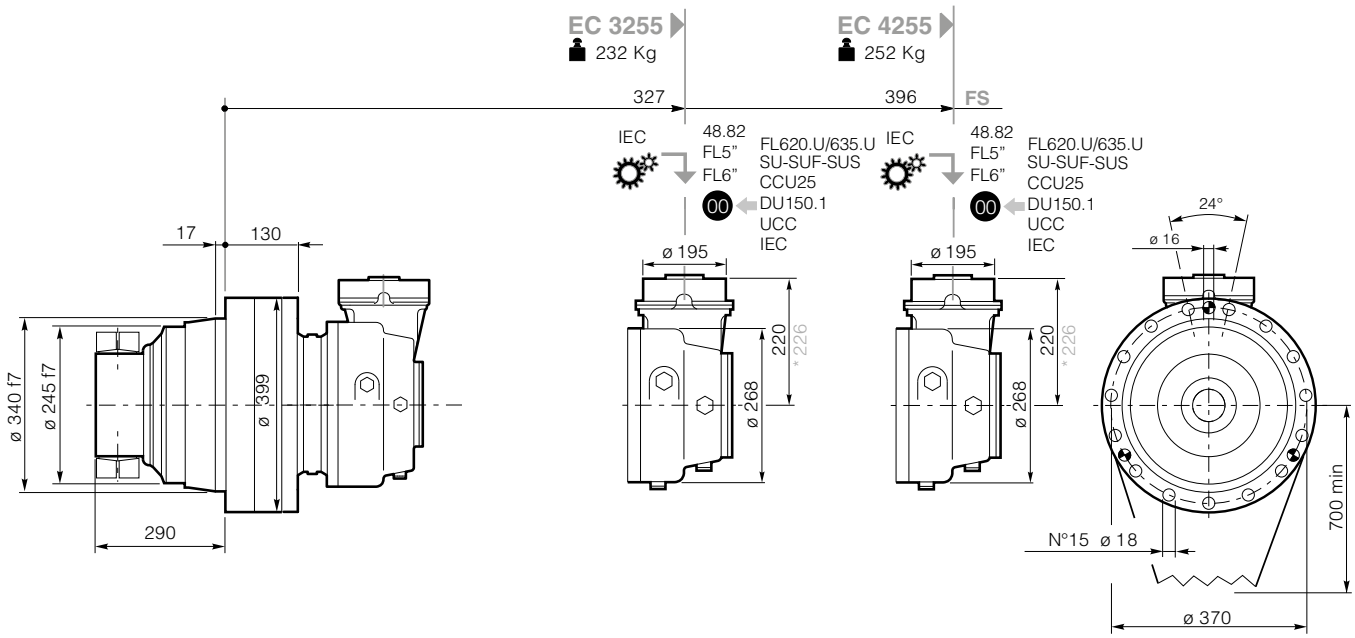

00 B13
S-45/46 48.82 255 8
SU-SUF SUS 255 9
FL5"- FL6' FL620 FL635 255 10
IEC 255 12
255 12
CCU25 B15
DU150.1 UCC B16

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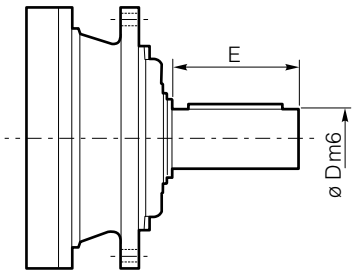
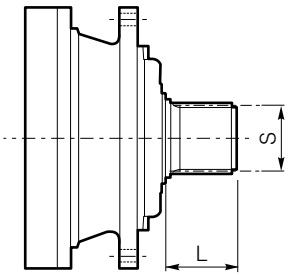
Click **DANA** button to return to section index

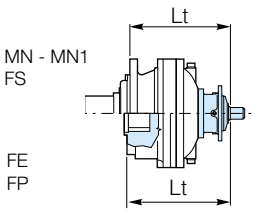
S-45CR1 - S-46C1 - S-45SR - S-65CR1 - S-65SR



S-45CR1 - S-46C1 - S-65CR1

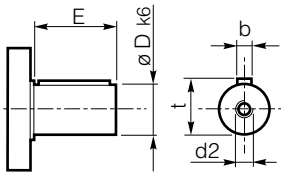


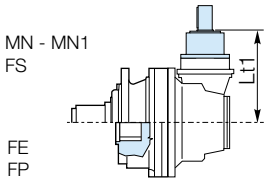
S-45SR - S-65SR



	D m6	E	L	S		Lt		
						MR-MR1-FS	FE	FP
S-45CR1	65	105	-	-	ED 2255	411	396	411
					ET 3255	411	396	411
					EQ 4255	479	464	478
S-46C1	65	105	-	-	ED 2255	452	438	452
					ET 3255	452	438	452
					EQ 4255	520	505	520
S-45SR	-	-	68	B58x53	ED 2255	411	396	411
					ET 3255	411	396	411
					EQ 4255	479	464	478
S-65CR1	80	130	-	-	ED 2255	451	436	450
S-65SR	-	-	90	B70x64	ED 2255	451	436	450

48.82

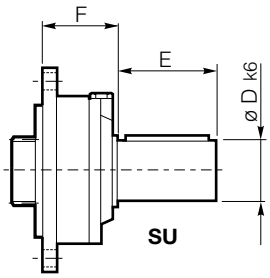


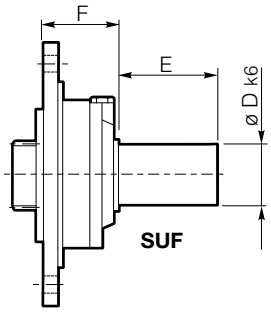


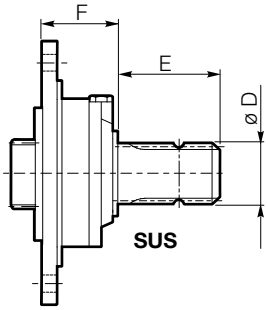
	D	E		Lt1
				MN-MN1-FS-FE-FP
48.82	48	82	EC 3255	280
			EC 4255	280

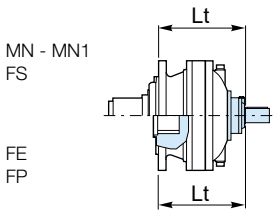
For the input configuration S46C1, S65CR1, 48.82 (CC40 - CC41), FL5" can be fitted with an anti-return device.
For further information and technical data, contact Dana Sale Technical Support

SU - SUF - SUS





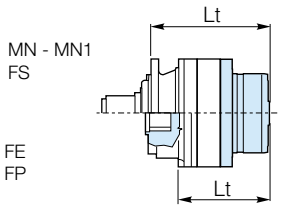


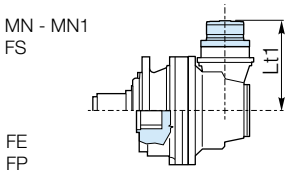


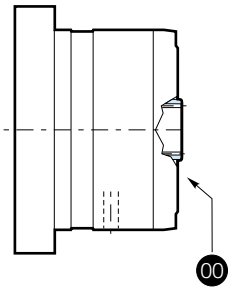
	D	E	F		Lt 00	
					MN-MN1 FS-FP	FE
SU1 28x50	28	50	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461
SU2 40x58	40	58	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461
SU3 48x82	48	82	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461
SU 42x80	42	80	101.5	ED 2255	383	368
				ET 3255	450	435
				EQ 4255	518	503
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	ED 2255	383	368
				ET 3255	450	435
				EQ 4255	518	503
SU2 1.5x3.25	38.10	82.55	60	ED 2255	383	368
				ET 3255	450	435
				EQ 4255	518	503
SUF1 28x50	28	50	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461
SUF2 40x58	40	58	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461
SUF3 48x82	48	82	60	ED 2255	342	327
				ET 3255	409	394
				EQ 4255	476	461

	D	E	F		Lt1 00	
					MN-MN1 FS-FP	FE
SU1 28x50	28	50	60	EC 3255	280	280
				EC 4255	280	280
SU2 40x58	40	58	60	EC 3255	280	280
				EC 4255	280	280
SU3 48x82	48	82	60	EC 3255	280	280
				EC 4255	280	280
SU 42x80	42	80	101.5	EC 3255	322	322
				EC 4255	322	322
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	EC 3255	322	322
				EC 4255	322	322
SU2 1.5x3.25	38.10	82.55	60	EC 3255	280	280
				EC 4255	280	280
SUF1 28x50	28	50	60	EC 3255	280	280
				EC 4255	280	280
SUF2 40x58	40	58	60	EC 3255	280	280
				EC 4255	280	280
SUF3 48x82	48	82	60	EC 3255	280	280
				EC 4255	280	280

FL5” FL6” FL250 - FL350 - FL450 / FL650 - FL750



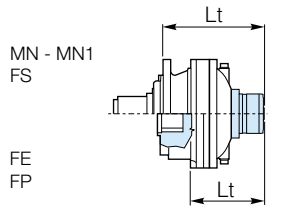


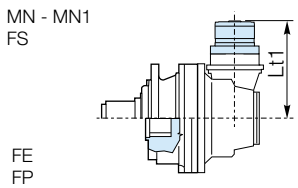


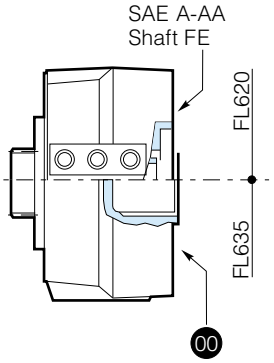
		Lt		
		MN-MN1-FS	FE	FP
FL250 FL350 FL450	ED 2255	381	366	381
	ET 3255	442	427	442
	EQ 4255	510	595	509
FL650 FL750	ED 2255	395	380	395
	ET 3255	456	441	455
	EQ 4255	523	508	523
FL960	ED 2255	409	394	409
	ET 3255	483	468	482

		Lt1		
		MN-MN1-FS	FE	FP
FL250 FL350 FL450	EC 3255	280	280	280
	EC 4255	280	280	280
FL650 FL750	EC 3255	294	294	294
	EC 4255	294	294	294

FL620.10 - FL635.10 / FL620.U - FL635.U



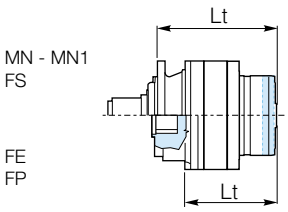


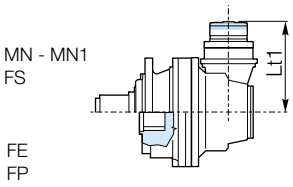


		Lt		
		MN-MN1-FS	FE	FP
FL620.U	ED 2255	386	371	386
	ET 3255	453	438	453
	EQ 4255	521	506	520
FL635.U	ED 2255	373	358	372
	ET 3255	440	425	439
	EQ 4255	507	492	507

		Lt1		
		MN-MN1-FS	FE	FP
FL620.U	EC 3255	325	325	325
	EC 4255	325	325	325
FL635.U	EC 3255	311	311	311
	EC 4255	311	311	311

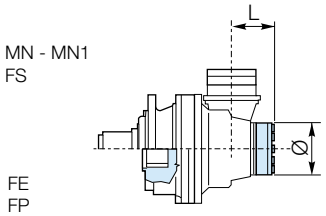
RL



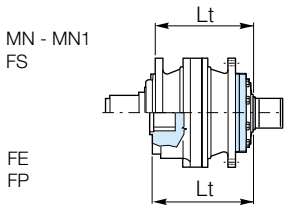


				Lt		
				MN-MN1 FS	FE	FP
RL	+	FL250 FL350 FL450	ED 2255	407	392	407
			ET 3255	468	453	468
			EQ 4255	536	521	535
		FL650 FL750	ED 2255	421	406	421
			ET 3255	482	467	481
			EQ 4255	549	534	549
		FL960	ED 2255	435	420	435
			ET 3255	509	494	508

				Lt1
				MN-MN1-FS-FP-FE
RL	+	FL250 FL350 FL450	EC 3255	306
			EC 4255	306
		FL650 FL750	EC 3255	319

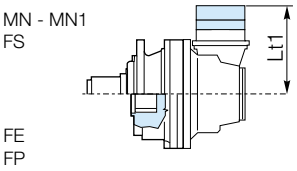


				L	Ø
RL	+	CC40	EC3255	135.2	150
			EC4255	135.2	150

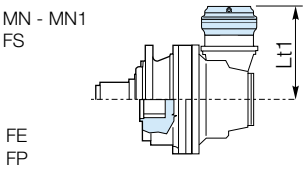


				Lt		
				MN-MN1 FS	FE	FP
RL	+	S46C1	ED 2255	472.5	457.5	472
			ET 3255	472.5	457.5	472
			EQ 3255	539	524	538.5

ADDITIONAL PLANETARY STAGE ON BEVEL GEAR



EM1010 - EM1020



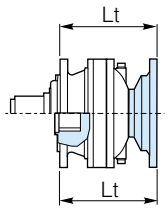
ED2010 - ED2020 ED2021

		Lt1	
		EC3255	EC4255
	EM1010	327	327
	EM1020	345	345
	ED2010	366	366
	ED2020	398	398
	ED2021	413	413

IEC Motor

MN - MN1
FS

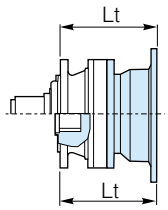
FE
FP



		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2255	MN-MN1-FS-FP	302	304	309	310	377	408	419	449
ED 2255	FE	287	289	294	295	362	393	404	434
ET 3255	MN-MN1-FS-FP	369	371	376	377	444	475	486	516
ET 3255	FE	354	356	361	362	429	460	471	501
EQ 4255	MN-MN1-FS-FP	436	438	443	444	511	542	553	583
EQ 4255	FE	421	423	428	429	496	527	538	568

MN - MN1
FS

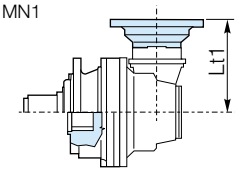
FE
FP



		Lt		
		IEC		
		160 180	200	225
ED 2255	MN-MN1-FS-FP	382	421	404
ED 2255	FE	367	406	389
ET 3255	MN-MN1-FS-FP	475	485	515
ET 3255	FE	460	470	500
EQ 4255	MN-MN1-FS-FP	542	552	-
EQ 4255	FE	527	537	-

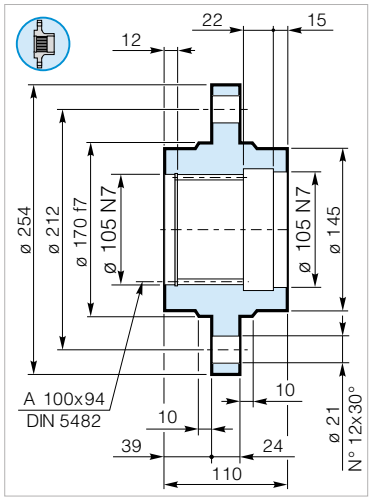
MN - MN1
FS

FE
FP

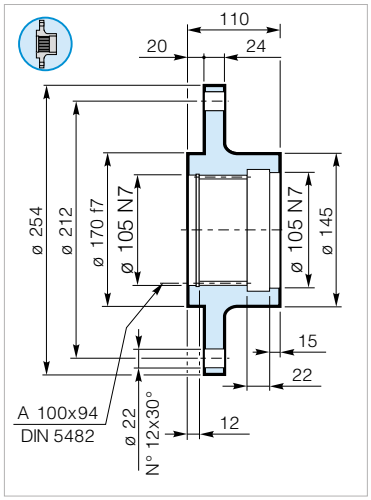


		Lt1 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
EC 3255	MN-MN1-FE-FS-FP	240	242	247	248	315	346	357	387
EC 4255	MN-MN1-FE-FS-FP	240	242	247	248	315	346	357	387

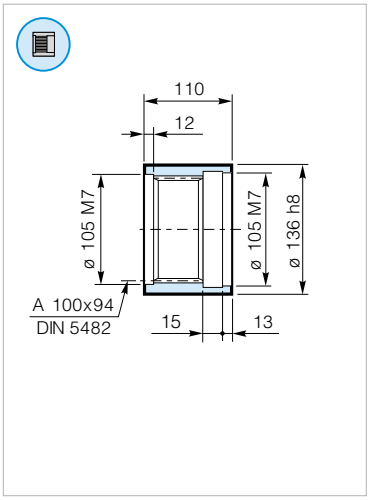
FA 250 Wheel Flange



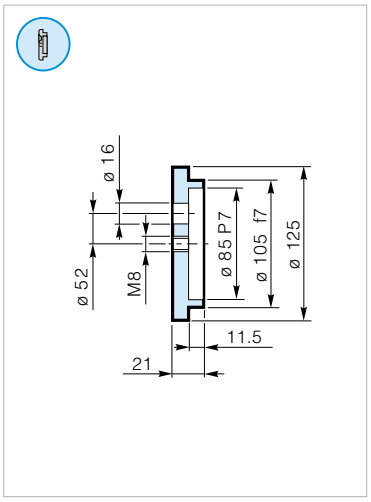
FR 250 Wheel Flange



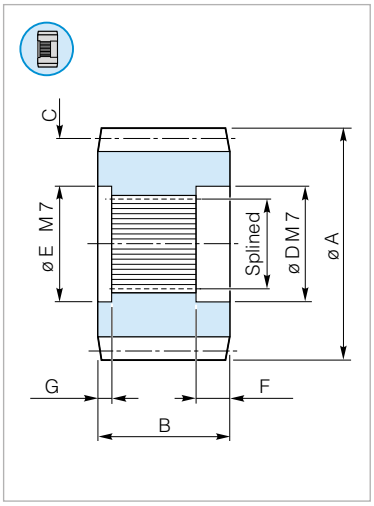
MS 250 Splined Sleeve



RDF 250 Lock Washer

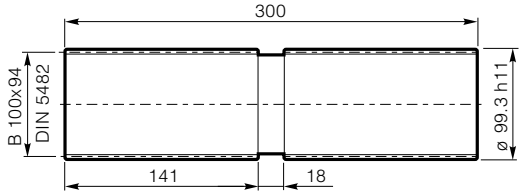


Pinions



Splined	A	B	C			D	E	F	G
			m	z	x				
A100x94 DIN 5482	200	83	10	18	0	105	105	37,0	22
	204	90	12	15	0	105	105	37,0	22
	178	105	10	15	0,6	105	105	37,0	22
	252	120	14	15	0,5	105	105	37,0	22
	252	120	14	15	0,5	105	105	37,0	22

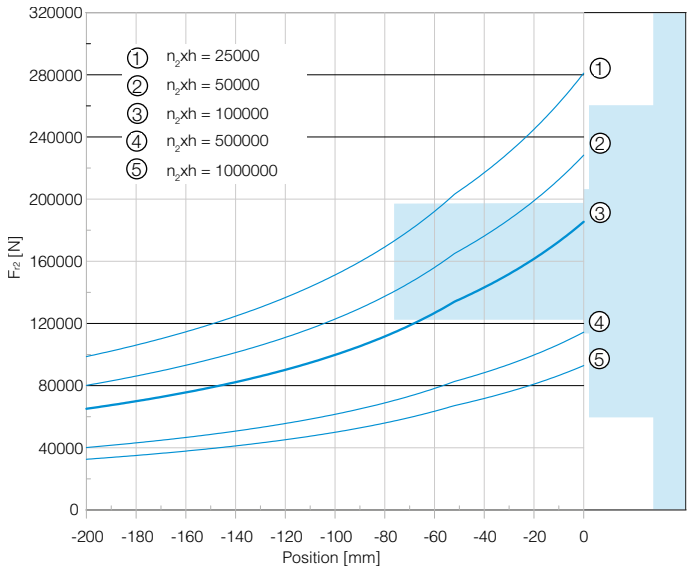
BS 250 Splined Bar



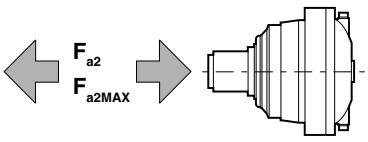
Code: 39127330100
Mat.:High mechanical resistance alloyed steel

Output Radial Loads

MN - MN1

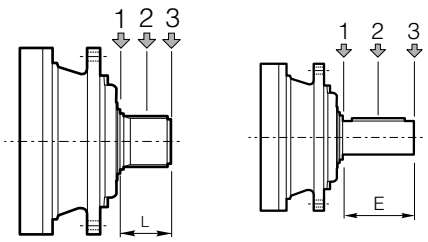


Output Axial Loads



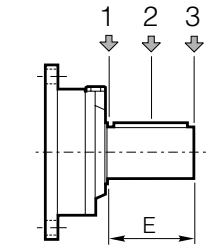
		Flange mounted		PD-PDA
		MN-MN1	MR-MR1	MR1
F_{a2}	[N]	100000	–	–
F_{a2MAX}	[N]	100000	–	–

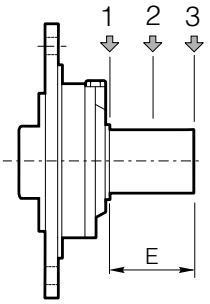
Input Radial Loads

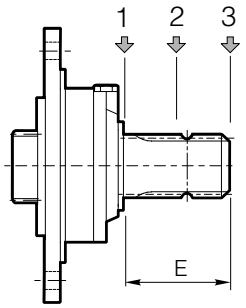


			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800

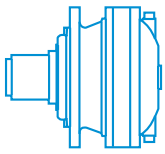
Input Radial Loads



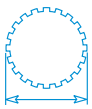
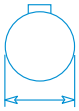
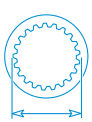
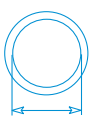




		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

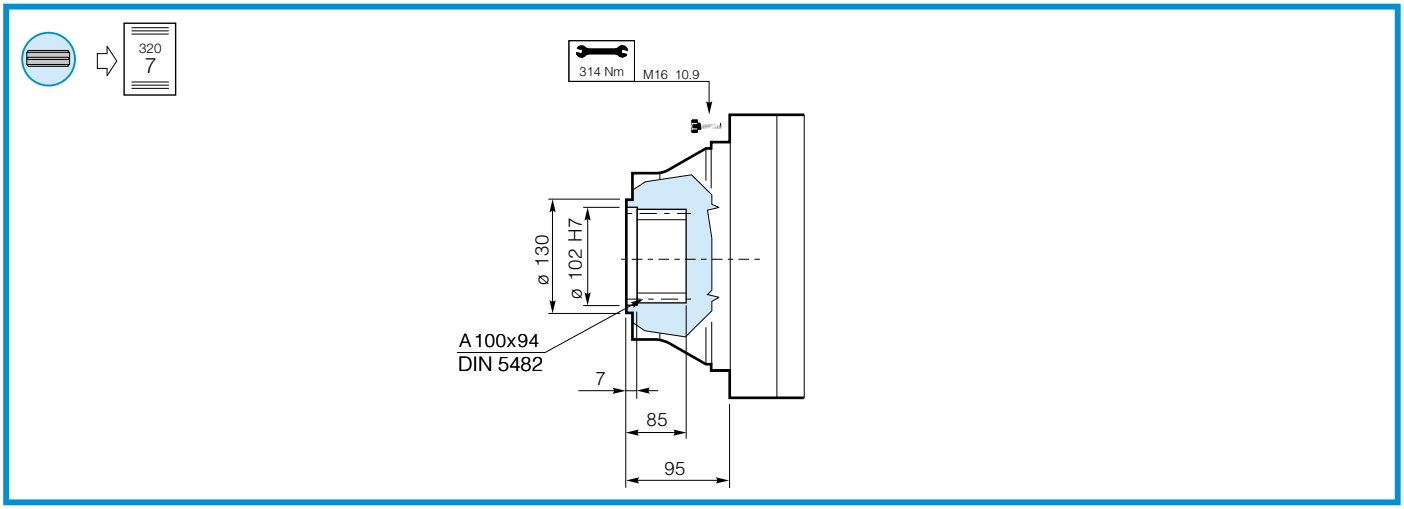


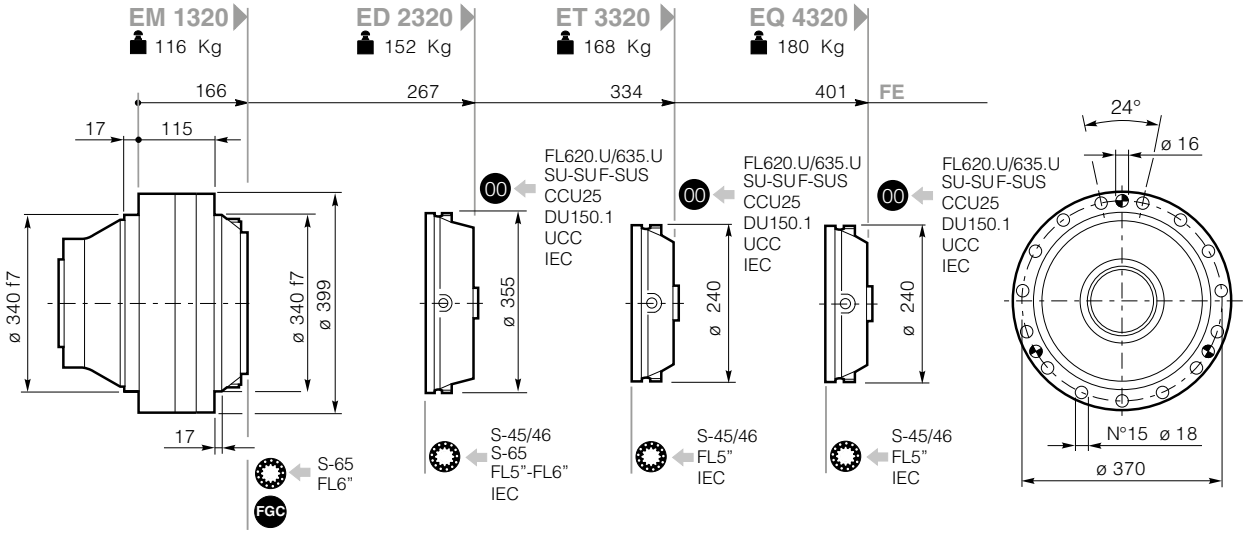
320

i_{eff}	19.95 - 245.3
T_N (Nm)	25000
	-
	-
	B100X94 DIN5482
	-

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	n_2 [rpm]	T_2 [Nm]	P_2 [kW]	[rpm]	[Nm]	[kW]
EM 1320												
4.89	307	9221	296	204	10413	223	102	12820	137	2500	42000	30
ED 2320												
19.95	75	14059	111	50	15877	83	25.1	19547	51			
24.69	61	14935	95	40.5	16867	72	20.2	20766	44.0			
28.41	53	15269	84	35.2	17244	64	17.6	21229	39.1	2500	35000	30
33.84	44.3	15877	74	29.6	17931	55	14.8	22076	34.2			
42.54	35.3	14027	52	23.5	15048	37.0	11.8	16606	20.4			
ET 3320												
69.83	21.5	20472	46.1	14.3	23121	34.7	7.2	24587	18.4			
82.40	18.2	21515	41.0	12.1	23517	29.9	6.1	24927	15.8			
86.43	17.4	21749	39.5	11.6	23613	28.6	5.8	25025	15.2			
103.2	14.5	23014	35.0	9.7	23971	24.3	4.8	25693	13.0			
117.3	12.8	23367	31.3	8.5	24232	21.6	4.3	26359	11.8			
127.7	11.8	23582	29.0	7.8	24404	20.0	3.9	26802	11.0	3000	35000	20
148.2	10.1	23883	25.3	6.8	24708	17.5	3.4	27598	9.8			
170.5	8.8	24167	22.3	5.9	24997	15.4	2.9	28362	8.7			
179.0	8.4	24267	21.3	5.6	25098	14.7	2.8	28634	8.4			
206.0	7.3	24553	18.7	4.9	25685	13.1	2.4	29420	7.5			
245.3	6.1	24442	15.7	4.1	25441	10.9	2.0	27149	5.8			
EQ 4320												
215.1	6.97	24642	18.0	4.65	25907	12.6	2.32	29666	7.2			
253.8	5.91	24982	15.5	3.94	26770	11.0	1.97	30622	6.3			
266.2	5.63	25080	14.8	3.76	27024	10.6	1.88	30903	6.1			
288.4	5.20	25334	13.8	3.47	27452	10.0	1.73	31377	5.7			
317.7	4.72	25828	12.8	3.15	27976	9.2	1.57	31958	5.3			
368.7	4.07	26602	11.3	2.71	28797	8.2	1.36	32868	4.7			
419.0	3.58	27280	10.2	2.39	29517	7.4	1.19	33666	4.2			
456.4	3.29	27740	9.5	2.19	30005	6.9	1.10	34208	3.9			
527.3	2.84	28532	8.5	1.90	30846	6.1	0.95	35140	3.5			
551.4	2.72	28781	8.2	1.81	31110	5.9	0.91	35433	3.4			
660.1	2.27	29796	7.1	1.52	32189	5.1	0.76	36630	2.9	3000	42000	15
747.8	2.01	30518	6.4	1.34	32955	4.6	0.67	37480	2.6			
766.0	1.96	30658	6.3	1.31	33104	4.5	0.65	37645	2.6			
925.6	1.62	31781	5.4	1.08	34297	3.9	0.54	38970	2.2			
1048.7	1.43	32540	4.9	0.95	35103	3.5	0.48	39864	2.0			
1074.2	1.40	32687	4.8	0.93	35260	3.4	0.47	40039	2.0			
1298.0	1.16	33869	4.1	0.77	36516	2.9	0.39	41432	1.7			
1493.3	1.00	34766	3.7	0.67	37469	2.6	0.33	42490	1.5			
1594.6	0.94	21873	2.2	0.63	23275	1.5	0.31	27261	0.9			
1778.7	0.84	29856	2.6	0.56	32515	1.9	0.28	37445	1.1			
2236.2	0.67	22909	1.6	0.45	25168	1.2	0.22	29360	0.7			





00 B13 | S-45/46 320 4 | SU-SUF SUS 320 4 | FL5"- FL6' FL620 FL635 320 5 | IEC 320 6 | CCU25 B15 | DU150.1 UCC B16

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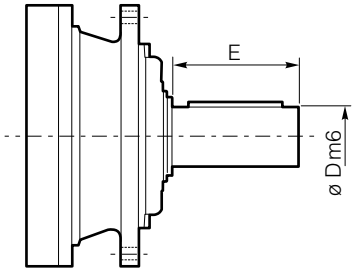
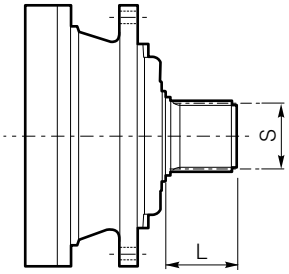
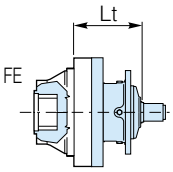
S-45CR1 - S-46C1 - S-45SR - S-65CR1 - S-65SR



S-45CR1 - S-46C1 - S-65CR1

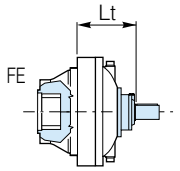


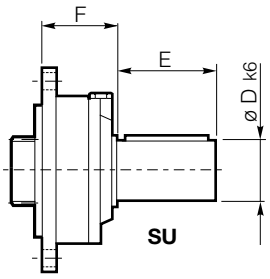
S-45SR - S-65SR



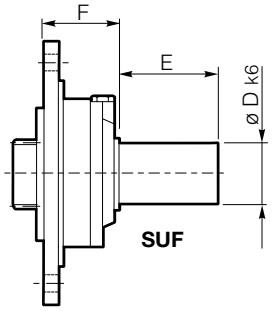
	D m6	E	L	S		Lt FE
S-45CR1	65	105	-	-	ED 2320	396
					ET 3320	396
					EQ 4320	464
S-46C1	65	105	-	-	ED 2320	438
					ET 3320	438
					EQ 4320	505
S-45SR	-	-	68	B58x53	ED 2320	396
					ET 3320	396
					EQ 4320	464
S-65CR1	80	130	-	-	ED 2320	436
S-65SR	-	-	90	B70x64	ED 2320	436

SU - SUF - SUS

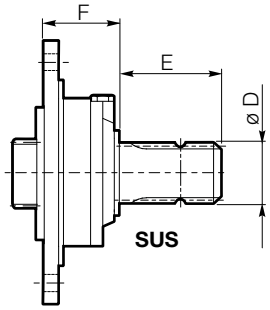




SU



SUF



SUS

	D	E	F		Lt FE
SU1 28x50	28	50	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SU2 40x58	40	58	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SU3 48x82	48	82	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SU 42x80	42	80	101.5	ED 2320	368
				ET 3320	435
				EQ 4320	503
SUS 1 3/8"	1 3/8" DIN9611	97	101.5	ED 2320	368
				ET 3320	435
				EQ 4320	503
SU2 1.5x3.25	38.10	82.55	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SUF1 28x50	28	50	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SUF2 40x58	40	58	60	ED 2320	327
				ET 3320	394
				EQ 4320	461
SUF3 48x82	48	82	60	ED 2320	327
				ET 3320	394
				EQ 4320	461

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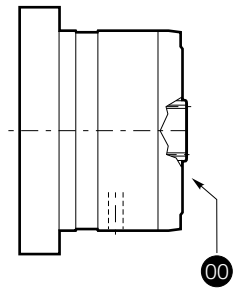
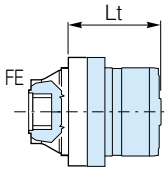
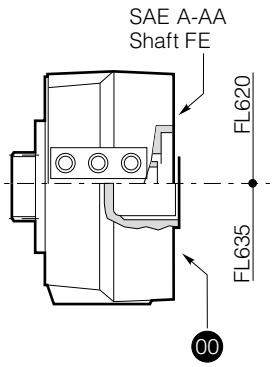
FL5” FL250 - FL350 - FL450 / FL650 - FL750 FL6”

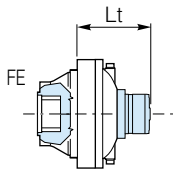




		Lt ⭘
		FE
FL250 FL350 FL450	ED 2320	366
	ET 3320	427
	EQ 4320	495
FL650 FL750	ED 2320	380
	ET 3320	441
	EQ 4320	508
FL960	ED 2320	394
	ET 3320	468

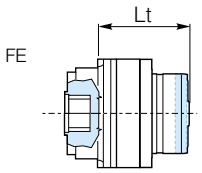
FL620.10 - FL635.10 / FL620.U - FL635.U



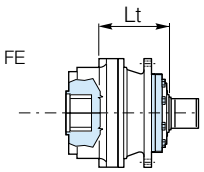


		Lt 00
		FE
FL620.U	ED 2320	371
	ET 3320	438
	EQ 4320	506
FL635.U	ED 2320	358
	ET 3320	425
	EQ 4320	492

RL

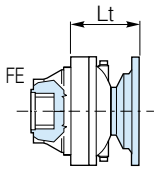


				Lt FE
RL	+	FL250 FL350 FL450	ED 2320	392
			ET 3320	453
			EQ 4320	521
		FL650 FL750	ED 2320	406
			ET 3320	467
			EQ 4320	534
		FL960	ED 2320	420
			ET 3320	494

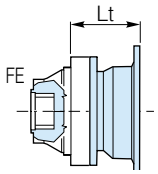


				Lt FE
RL	+	S46C1	ED 2320	458
			ET 3320	458
			EQ 4320	525

IEC Motor

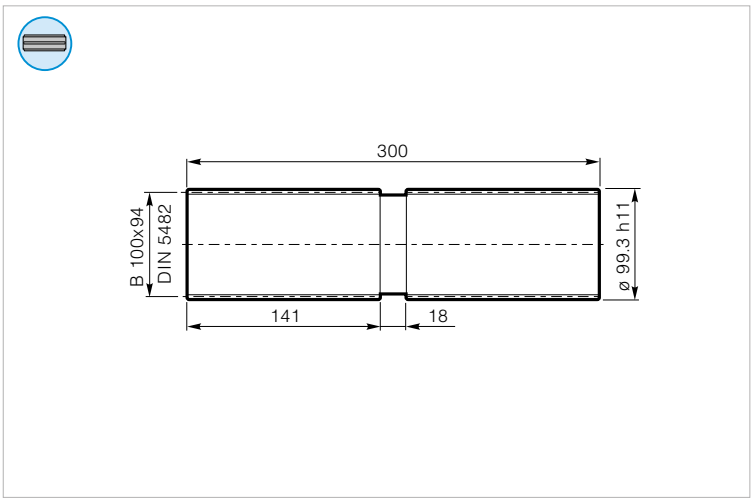


		Lt 00							
		IEC							
		63	71	80 90	100 112	132	160 180	200	225
ED 2320	FE	287	289	294	295	362	393	404	434
ET 3320	FE	354	356	361	362	429	460	471	501
EQ 4320	FE	421	423	428	429	496	527	538	568



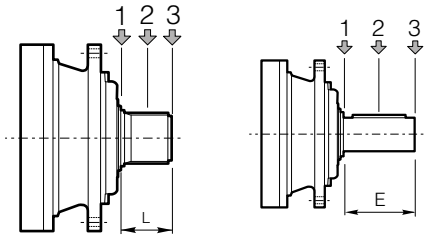
		Lt		
		IEC		
		160 180	200	225
ED 2320	FE	367	406	389
ET 3320	FE	460	470	500
EQ 4320	FE	527	537	-

BS 250 Splined Bar

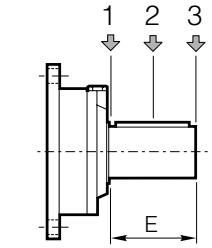


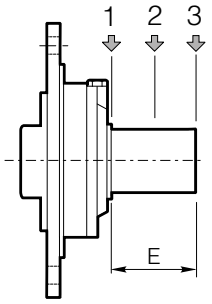
Code: 39127330100
Mat.: High mechanical resistance alloyed steel

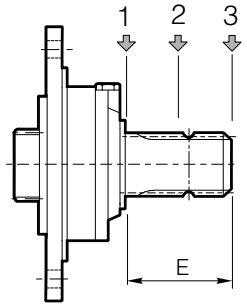
Input Radial Loads



			F_{r1} [N]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	L	E	1	2	3	1	2	3
S-45CR1	-	105	10000	6000	4000	5000	3000	2000
S-46C1	-	105	14000	8800	6400	7000	4400	3200
S-45SR	68	-	10000	6000	4000	5000	3000	2000
S-65CR1	-	130	23800	15500	9600	11900	7800	4800
S-65SR	90	-	23800	15500	9600	11900	7800	4800







		F_{r1} [N]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	80	3000	2000	1500	1400	1000	700
SU1 28x50	50	3000	2000	1500	1400	1000	700
SU2 40x58	58	3000	2000	1500	1400	1000	700
SU3 48x82	82	3000	2000	1500	1400	1000	700
SUS 1 3/8”	97	2800	1800	1500	1300	900	600
SU2 1 1/2”x 3 1/4”	82.55	3000	2000	1500	1400	1000	700
SUF1 28x50	50	3000	2000	1500	1400	1000	700
SUF2 40x58	58	3000	2000	1500	1400	1000	700
SUF3 48x82	82	3000	2000	1500	1400	1000	700

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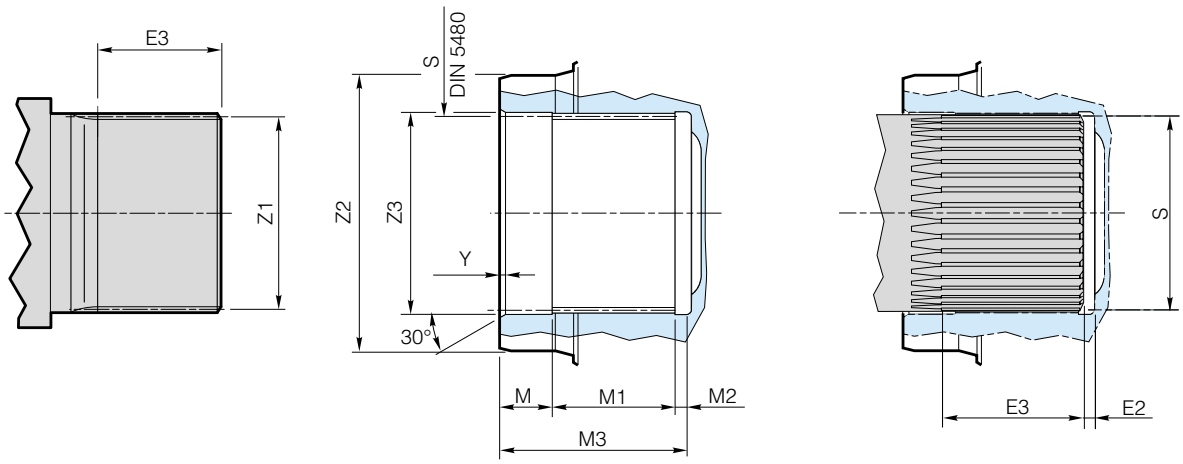
B

OUTPUT

FE Female splined shaft



Type	M3	M	M1	M2	Y	S	Z2	Z3	Z1	E2	E3
010	34.7	5	24.7	5	0.5	A40x36 H10	50 f8	36 H11	B40x36 c9	2	>30
020	51.5	8	43.6	-	1.0	A58x53 H10	75 f7	60 H7	B58x53 c9	2	>44
030	44	8	36	-	1.5	A58x53 H10	75 f7	60 H7	B58x53 c9	2	>36
045	44	8	36	-	1.5	A58x53 H10	75 f7	60 H7	B58x53 c9	2	>36
065-067	67	9	50	8	1.0	A70x64 H10	90 g7	72 H7	B70X64 c9	2	>58
090-091	75	5	62	8	1.0	A70X64 H10	90 h8	72 H7	B70X64 c9	2	>70
150-155	77	7	70	-	1.5	A80x74 H10	100 f7	88 H7	B80x74 c9	2	>70
250-255	85	7	78	-	1.5	A100x94 H10	130 f7	102 H7	B100x94 c9	2	>78
320	85	7	78	-	1.5	A100x94 H10	130 f7	102 H7	B100x94 c9	2	>78

Click *i* button to return to main index

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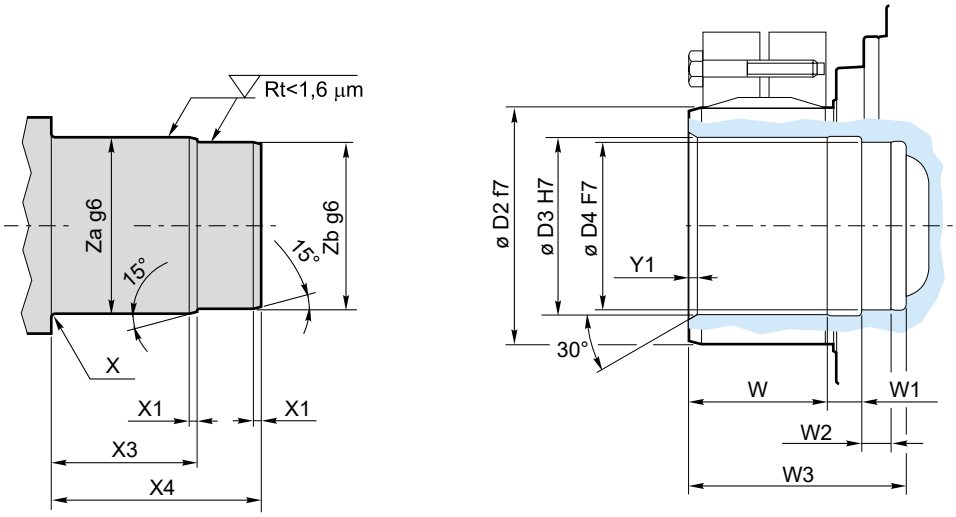
Details & Installation

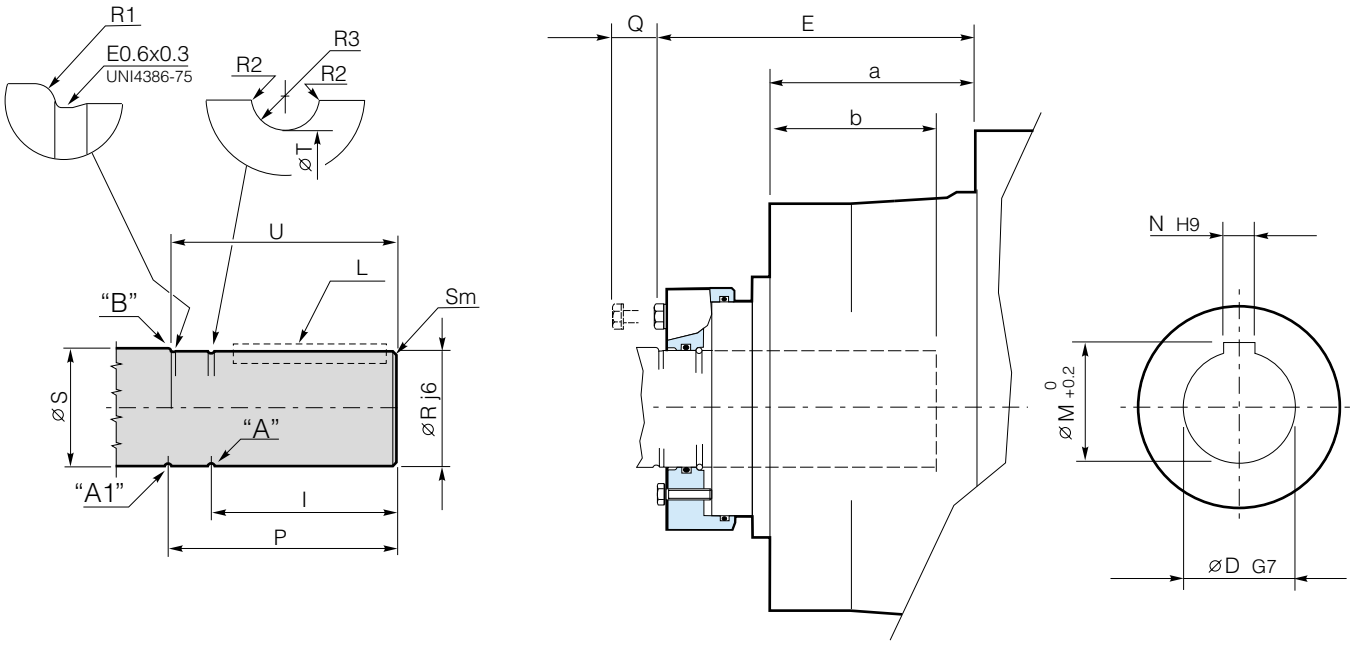
FS Hollow shaft for shrink disc



Type	W	W1	W2	W3	D2	D3	D4	Y1	X	X1	X3	X4	Za	Zb
010	29	9	10	50	62	50	30	2	R 2	3	33	48	50	30
020	54	16	23	95	100	75	40	2	R 2	3	52	92	75	40
030	54	16	23	95	100	75	40	2	R 2	3	52	92	75	40
045	54	16	23	95	100	75	40	2	R 2	3	52	92	75	40
065-067	80	20	33	135	125	90	50	2	R 2	3	62	132	90	50
090-091	80	20	38	140	140	100	60	2	R 2	3	69	135	100	60
150-155	79	6	47	135	165	120	80	5	R 2	3	79	130	120	80
250-255	80	20	47	150	175	130	80	2	R 1.5	5	81	145	130	80

To check the mating with the coupling, see page B24.

FP Keyed hollow shaft with retaining ring



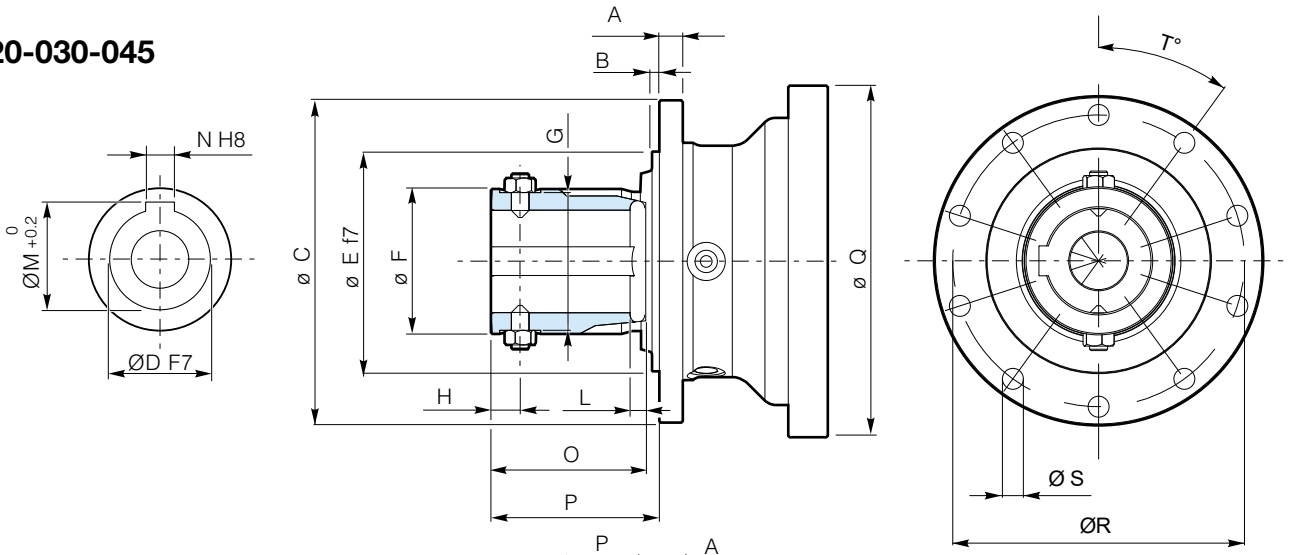
"A" mandatory groove for clamping
"A1" or "B" alternative grooves for extraction

Type	D	M	N	R	R1	R2	R3	S	T	I	P	L	U	E	Q	a	b	Sm
020	50	53.8	14	50	1.3	0.4	1.4	$52.3^{+0.2}_{+0.1}$	47.5	97.5	119.5	14x9x70	118	130	70	87	72	1.5-2
030	65	69.4	18	65	1.6	0.4	1.8	$68^{+0.2}_{+0.1}$	61.8	107.5	131.5	18x11x90	130	143	70	90	80	1.5-2
045	65	69.4	18	65	1.6	0.4	1.8	$68^{+0.2}_{+0.1}$	61.8	107.5	131.5	18x11x91	130	143	70	90	80	1.5-3
065-067	80	85.4	22	80	1.6	0.4	1.8	$83^{+0.2}_{-0.1}$	76.8	138	162.5	22x14x110	161	173	70	101	94	2
090-091	90	95.4	25	90	1.6	0.4	1.8	$93^{+0.2}_{+0.1}$	86.8	158	183.5	25x14x125	182	196	70	121.5	114	2
150-155	100	106.4	28	100	1.6	0.4	1.8	$103^{+0.2}_{+0.1}$	96.8	180	206	28x16x140	204	236.5	80	149	122	2
250-255	110	116.4	28	110	3	0.3	3.4	$115.8^{+0.2}_{+0.1}$	104	159	186	28x16x125	183	253	80	192	130	2

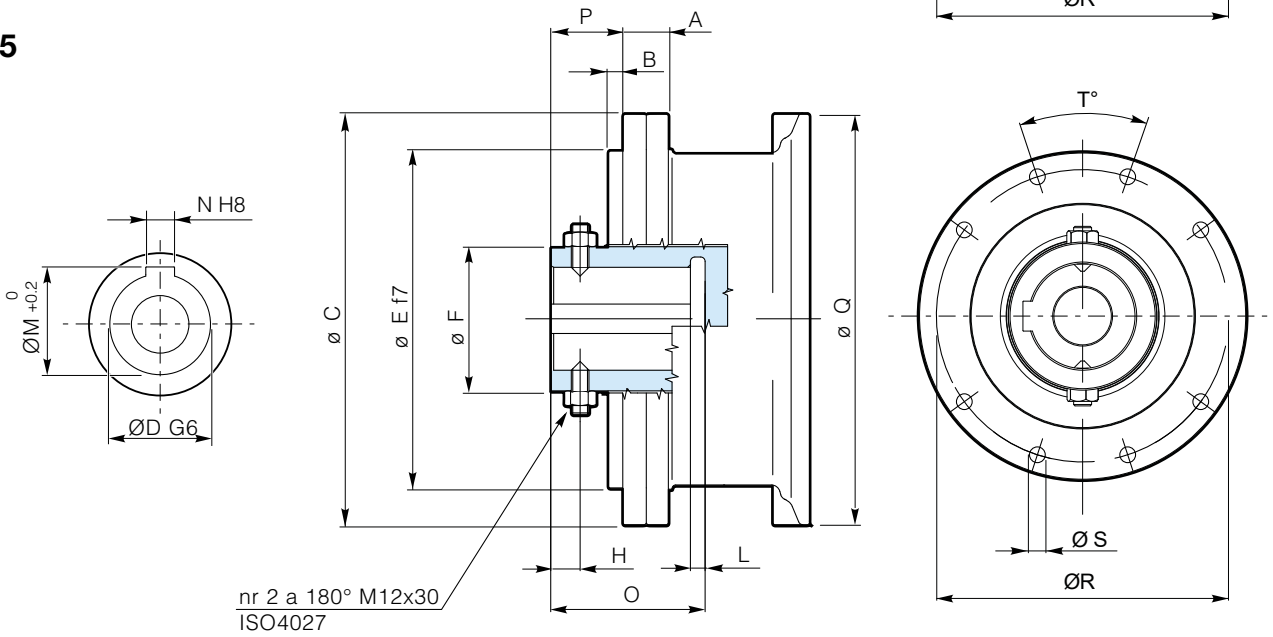
Details & Installation

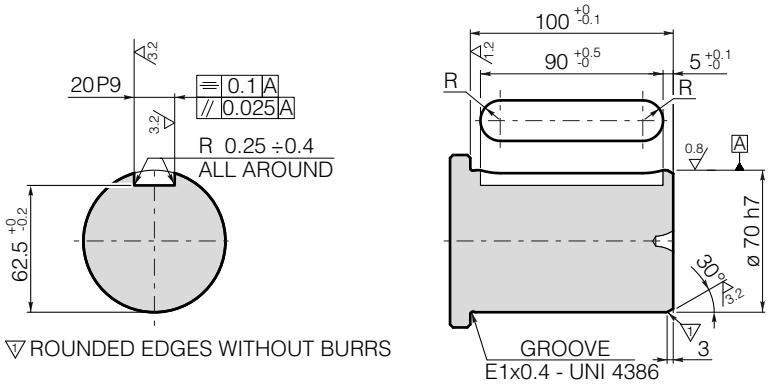
FP1 Keyed hollow shaft with retaining grub screws

020-030-045



065





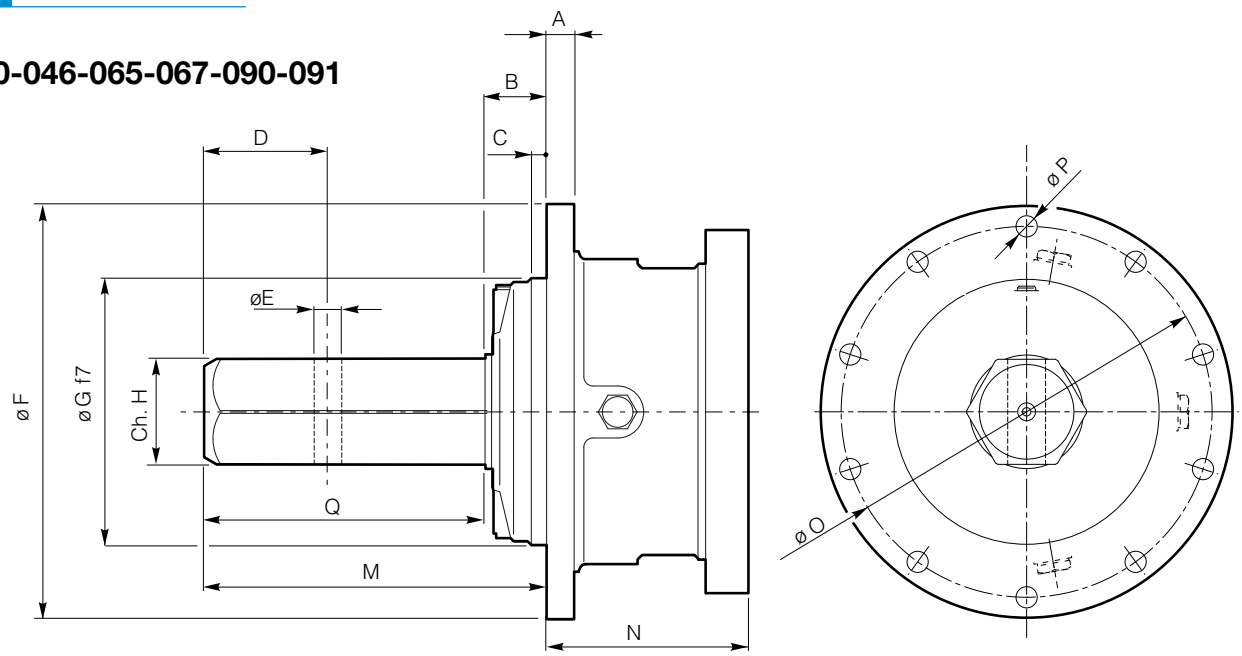
Type	A	B	C	D	E	F	G	H	L	M	N	O	P	Q	R	S	T
020	16	5	220	70	150	99	94	20	10	74.9	20	105	115	240	195	14 nr10	36°
030	16	5	220	70	150	99	94	20	10	74.9	20	105	115	240	195	14 nr10	36°
045	16	5	220	70	150	99	94	20	10	74.9	20	105	115	240	195	14 nr10	36°
065	31	10	280	70	230	98	-	20	10	74.9	20	105	49	280	260	14 nr8	36°

Click **DANA** button to return to section index

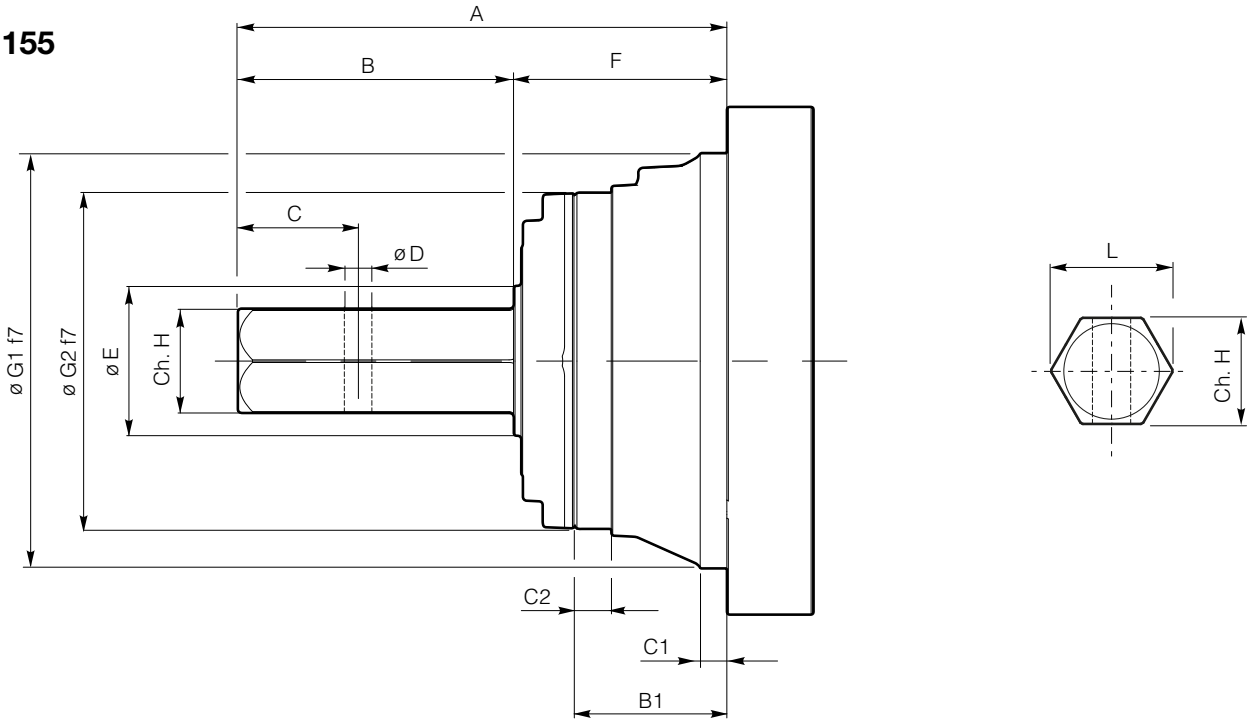
Click *i* button to return to main index

ME Hexagonal shaft

020-040-046-065-067-090-091



150-155



Type	A	B	C	D	E	F	G	H	L	M	N	O	P	Q
020	18	39	12.5	81	18	272	175	69.4	79.2	224	132	245	14 nr.10	185
040-046	18	39	12.5	81	18	272	175	69.4	79.2	224	132	245	14 nr.10	185
065-067	20	40	20	65	22	280	200	70	79	180	162.5	250	12 nr.16	140
090-091	25	35	5	81	18	325	230	69.4	79.2	220.5	140	295	17.5 nr.10	185

Type	A	B	B1	C	C1	C2	D	E	F	G1	G2	H	L	O	P
150-155	328	185	102.5	81	18	25	18	100	143	278	225	69.4	79.2	314	16 nr.12

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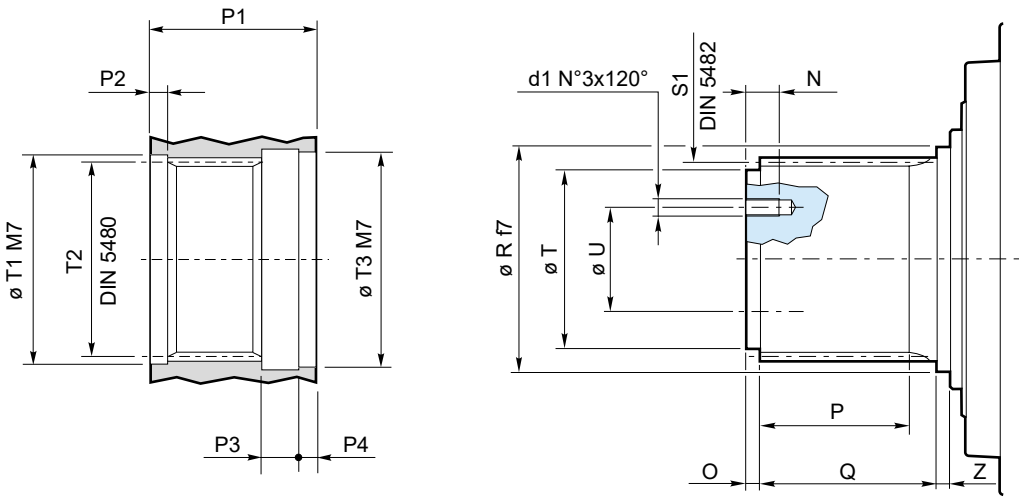
Details & Installation

MN Splined shaft

MR Reinforced splined shaft

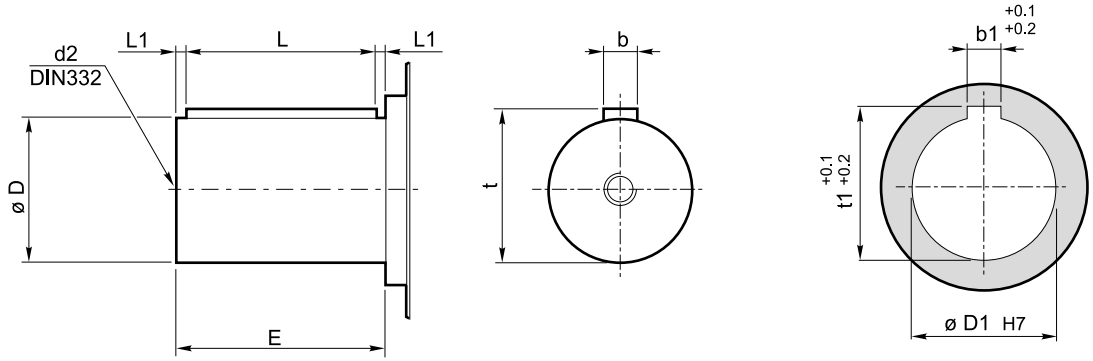


Type		d1	N	O	P	P1	P2	P3	P4	Q	R	S1	T	T1	T2	T3	U	Z
010	**MN-MR**	M6	20	5	30	55	5	14	7	43	42	B40x36 c9	35 f7	42	A40x36	42	24	7
020	**MR**	M10	20	8	38	68	8	13	10	58	60	B58x53 c9	50 f7	60	A58x53	60	32	8
030	**MR**	M10	20	8	38	68	8	13	10	58	60	B58x53 c9	50 f7	60	A58x53	60	32	8
040	**MN**	M10	20	8	50	68	8	13	10	58	60	B58x53 c9	50 f7	60	A58x53	60	32	8
045	**MR**	M10	20	8	38	68	8	13	10	58	60	B58x53 c9	50 f7	60	A58x53	60	32	8
046	**MN**	M10	20	8	50	80	8	16	7	73	60	B58x53 c9	50 f7	60	A58x53	60	32	7
065-067	**MR**	M10	20	10	50	90	10.5	21	10	80	72	B70x64 c9	62 f7	72	A70x64	72	40	10
090-091	**MN-MR**	M10	25	10	50	90	10.5	22	10	80	85	B80x74 c9	70 f7	80	A80x74	85	45	10
150-155	**MN**	M10	25	10	50	90	10.5	22	10	80	85	B80x74 c9	70 h7	80	A80x74	85	45	10
	MR	M14	30	12	65	110	12	22	15	98	105	B100x94 c9	85 h7	105	A100x94	105	52	12
250-255	**MN**	M14	25	12	65	110	12	22	15	97	105	B100x94 c9	85 f7	105	A100x94	105	52	13

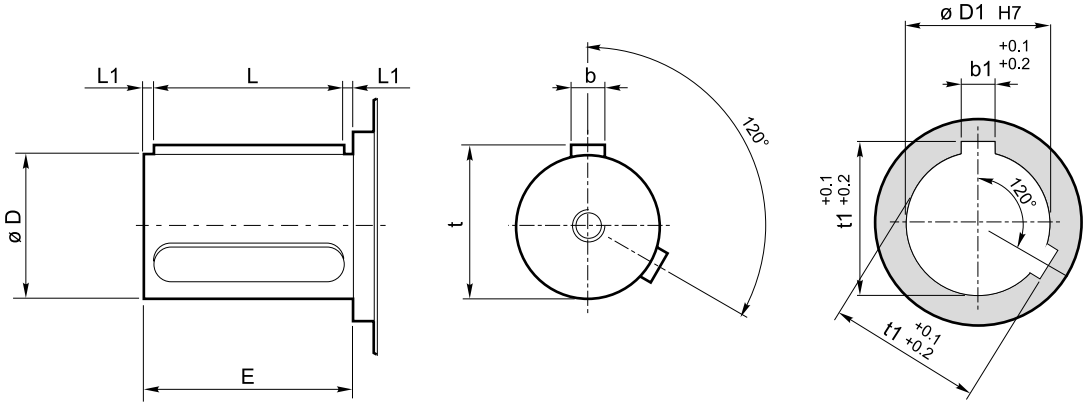
MN1 Keyed cylindrical shaft

MR1 Reinforced keyed cylindrical shaft

010 – 155



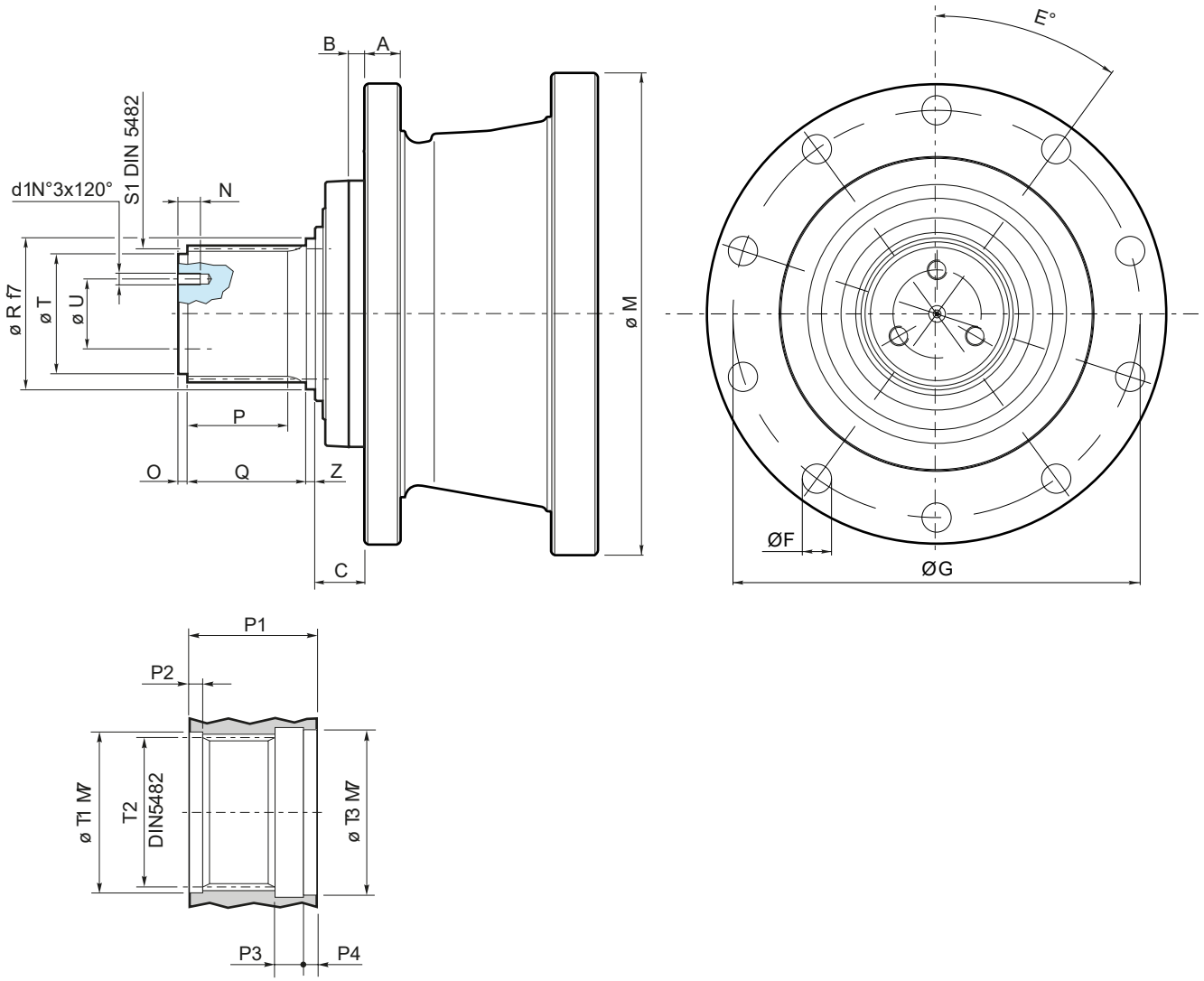
250-255



Type		D	E	L	L1	t	b	d2	D1	t1	b1
010	MN1-MR1	42 k6	82	70	6	45	12	M16	42	45	12
020	MR1	65 m6	105	90	7.5	69	18	M20	65	69	18
030	MR1	65 m6	105	90	7.5	69	18	M20	65	69	18
040	MN1	65 m6	105	90	7.5	69	18	M20	65	69	18
045	MR1	65 m6	105	90	7.5	69	18	M20	65	69	18
046	MN1	65 m6	105	90	7.5	69	18	M20	65	69	18
065-067	MR1	80 m6	130	110	10	85	22	M20	80	85	22
090-091	MN1-MR1	90 m6	170	160	5	95	25	M24	90	95	25
150-155	MN1	100 m6	210	200	5	106	28	M24	100	106	28
	MR1	100 m6	210	200	5	106	28	M24	100	106	28
250-255	MN1	110 m6	210	200	5	116	28	M24	100	116	28

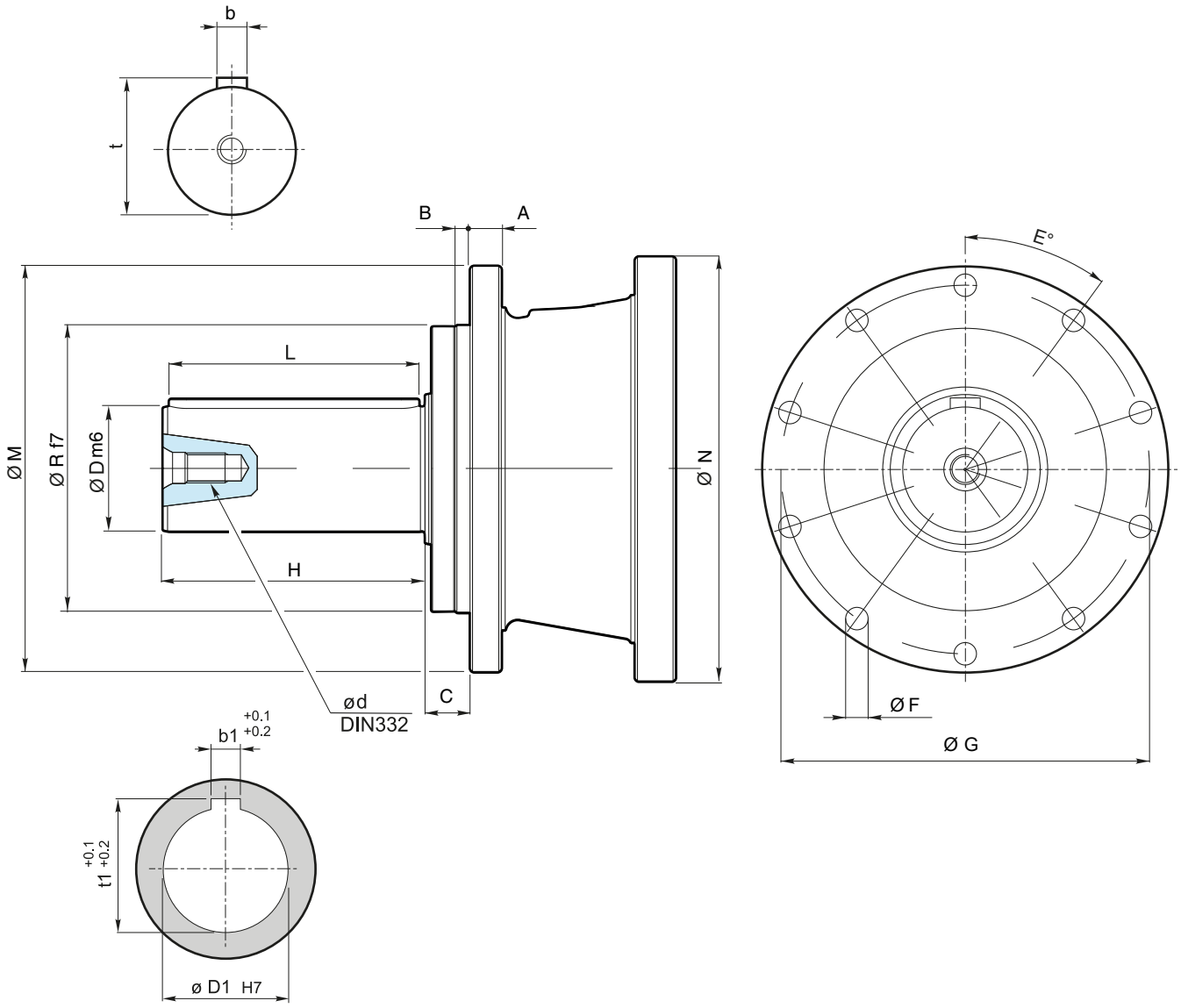
Details & Installation

MNS9 Splined shaft and advanced flange



Type		A	B	C	E	F	G	d1	M	N	O	P	P1	P2	P3	P4	Q	R	S1	T	T1	T2	T3	U	Z
150-155	MNS9	25	12	36	36°	18	295	M10	340	25	10	50	90	10.5	22	10	70	85	B80x74 c9	70	80	A80x74	85	45	10

MN1S9 Keyed cylindrical shaft and advanced flange



Type	A	B	b	C	D	d	E	F	G	H	L	M	N	R	t	b1	D1	t1
150-155 MN1S9	25	12	28	36	100	M24	36°	18	295	210	200	325	340	230	106	25	90	95

Details & Installation

Click *i* button to return to main index

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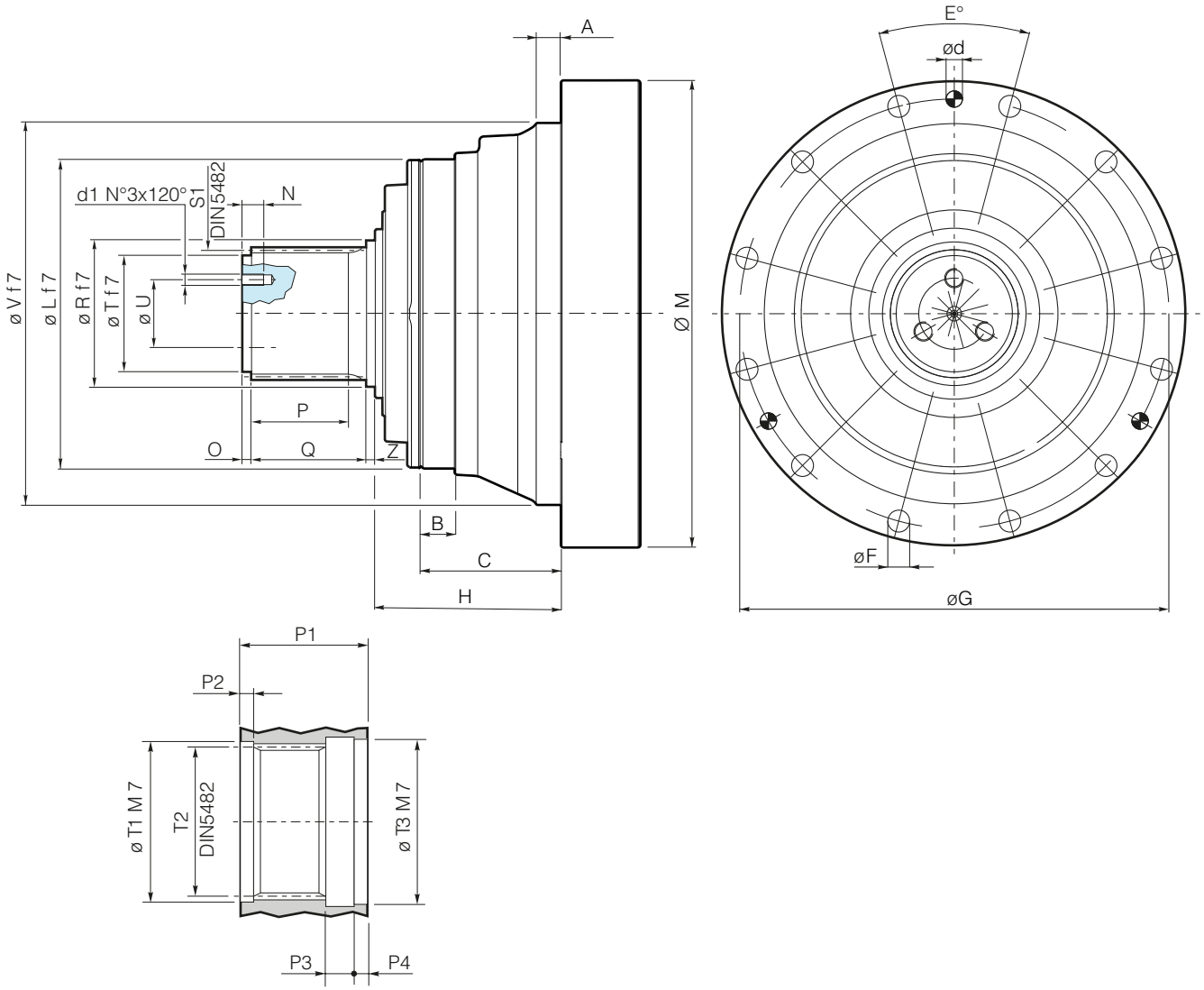
MNR Reinforced splined shaft

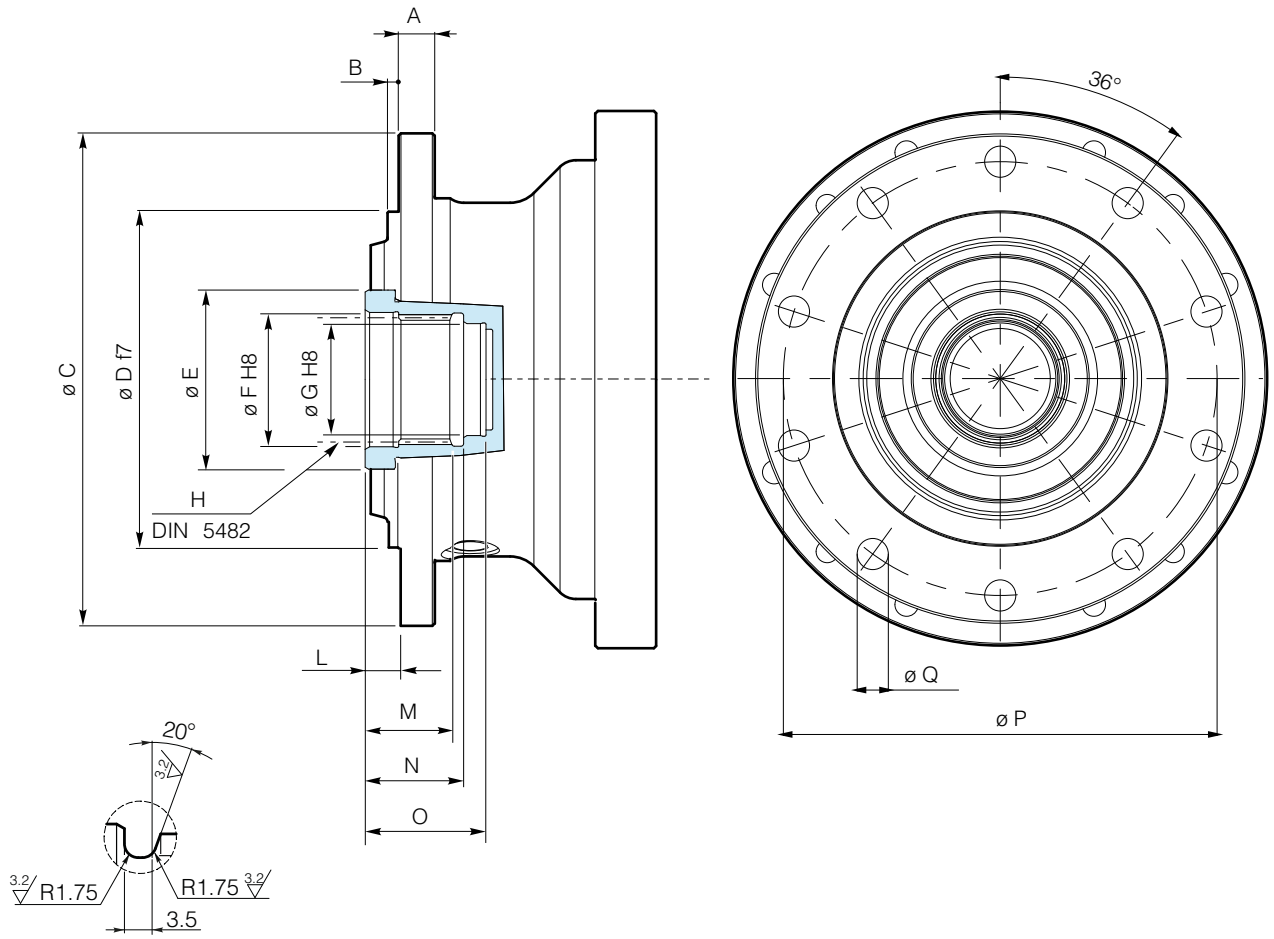


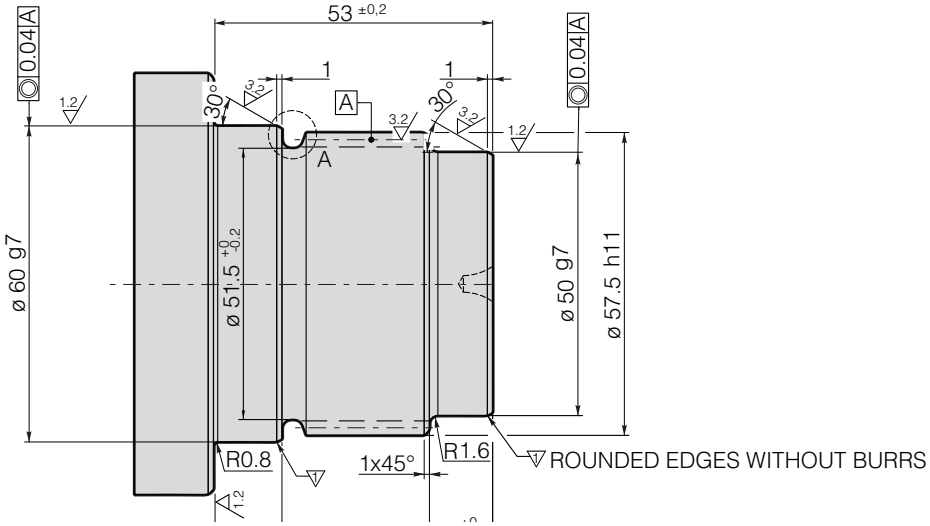
Type		A	B	C	E	d	d1	F	G	H	L	M	N	O	P	P1	P2	P3	P4	Q	R	S1	T	T1	T2	T3	U	V	Z
150-155	MNR	18	25	102.5	30°	12	M14	16	314	143	225	340	30	12	65	110	12	22	15	85	105	B100x94 c9	85	105	A100x94	105	52	278	13

Click **DANA** button to return to section index

Click *i* button to return to main index

FET Female splined shaft and advanced flange





Type	A	B	C	D	E	F	G	H	L	M	N	O	P	Q
020	16	5	220	150	80	60	50	A58x53	15	39	44	54	195	14 nr.10
030	16	5	220	150	80	60	50	A58x53	15	39	44	54	195	14 nr.10
045	16	5	220	150	80	60	50	A58x53	15	39	44	54	195	14 nr.10

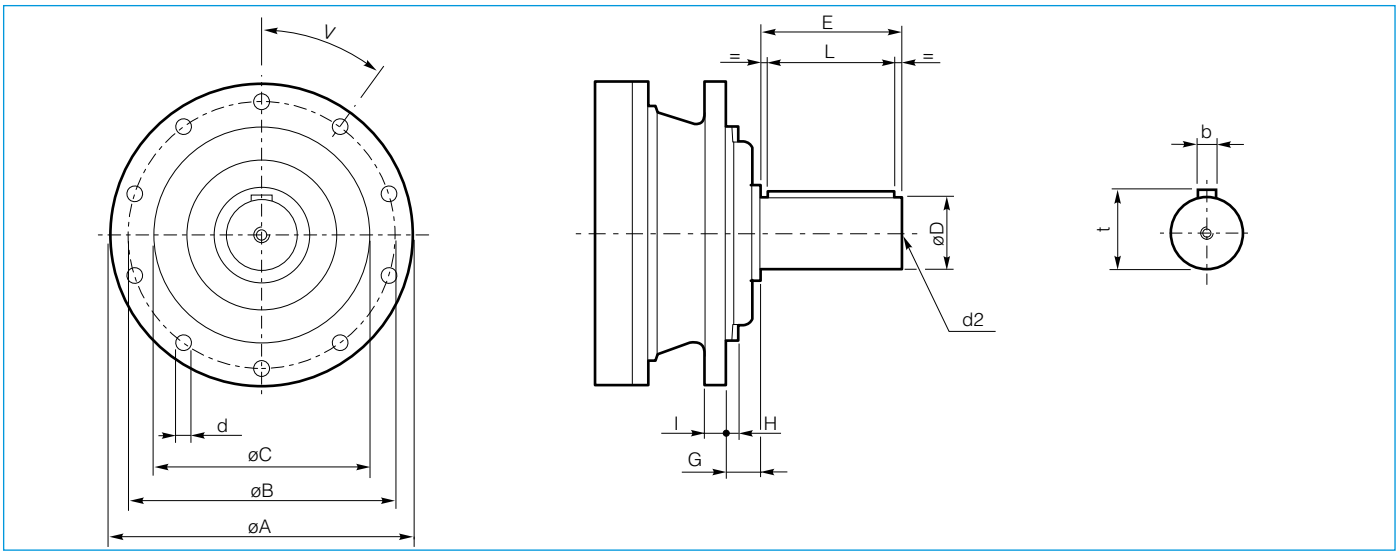
Details & Installation

Click *i* button to return to main index

Click **DANA** button to return to section index

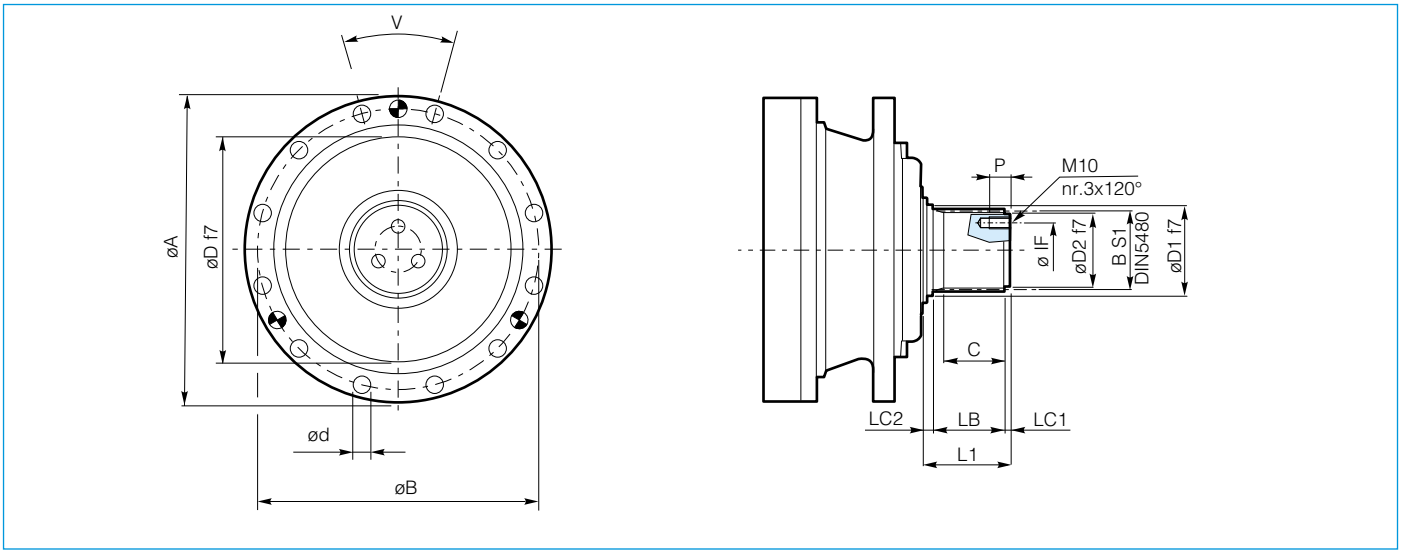
Male input supports

The input shafts described below are used when the drive motor, which is usually electric, is coupled to the input shaft by a flexible coupling, cardan shaft or belt. The normal mounting position is with the axis horizontal; the lubrication must be adapted for other mounting positions.
Please contact your local DANA representative for more details.
The maximum working speed is typically 1800 min-1. For the permissible loads, refer to the dedicated section for the size concerned.
ILS shafts are specifically for use with a flexible coupling.
These types are suitable for use on specific sizes of gearbox, as indicated in the corresponding dimension tables



Type	A	B	C f7	D m6	E	G	H	I	L	b	d	d2 DIN332	t	V
S-45CR1	220	195	150	65	105	15	5	16	90	18	14	M20x42	69	10x36°
S-46C1	272	245	175	65	105	39	10	18	90	18	14	M20x42	69	10x36°
S-46C1.RL*	272	245	175	65	85	39	10	18	90	18	14	M20x42	69	10x36°
S-65CR1	280	250	200	80	130	40	14.5	20	110	22	16	M20x42	85	10x36°
S-65CR1.RL*	280	250	200	80	130	40	14.5	20	110	22	16	M20x42	85	10x36°

* Presence of Backstop. Direction of backstop deviceing rotation:
- OR clockwise
- AO counterclockwise



Type	A	B	D	d	V	D1	D2	S1 DIN5480	IF	M	P	L1	LC1	LC2	C	LB
S-45SR	240	195	150	14	10x36°	60	50	B58x53	32	M10	20	68	8	10	38	50
S-65SR	280	250	200	16	12x30°	72	62	B70x64	40	M10	20	90	10	10.5	50	69.5

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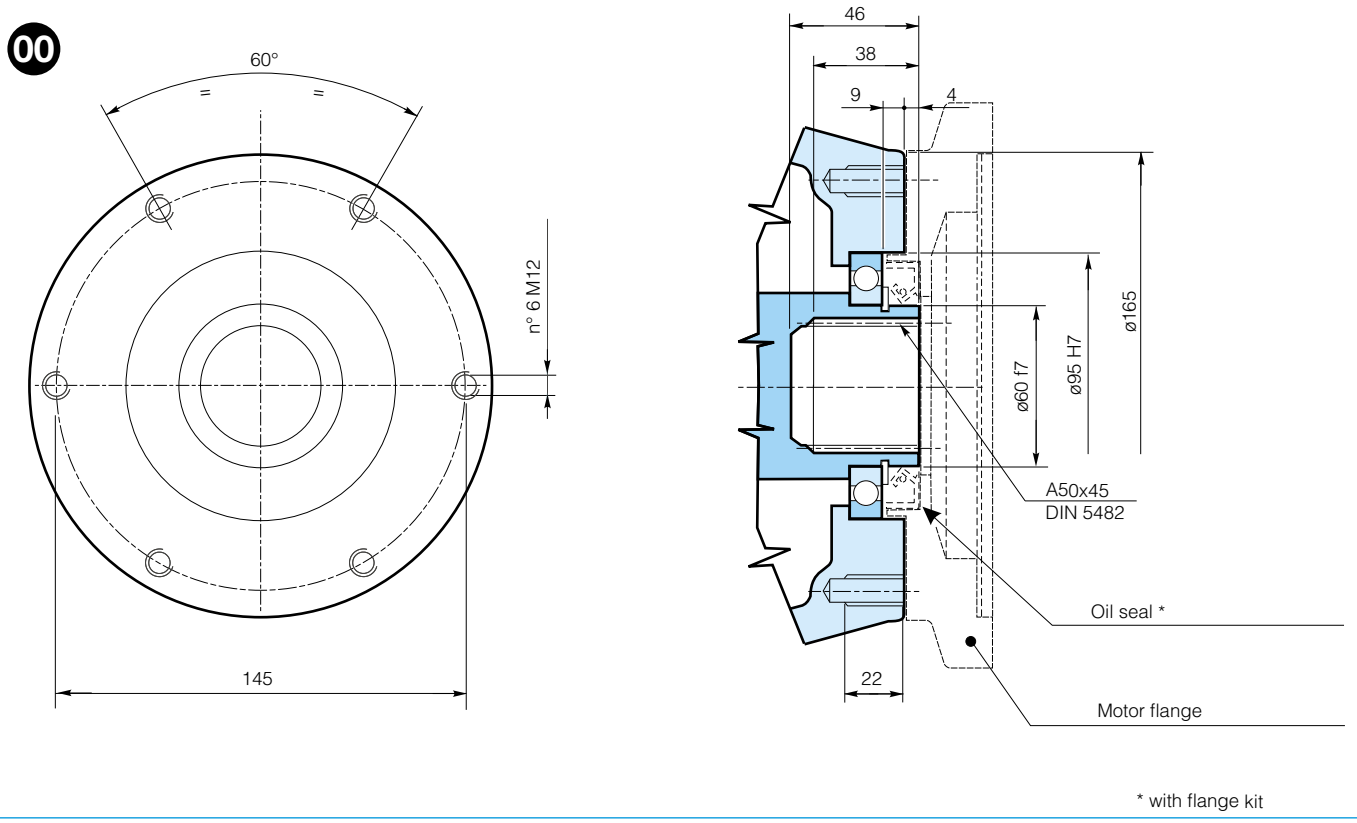
Universal inputs

The universal input is a configuration mounted on the gearbox input so that various types of drives can be coupled by means of a special flange and adapter sleeve.
There are two different universal input sizes, depending on the size mounted as the gearbox input stage.
The dimension tables for the various sizes give the applicability.

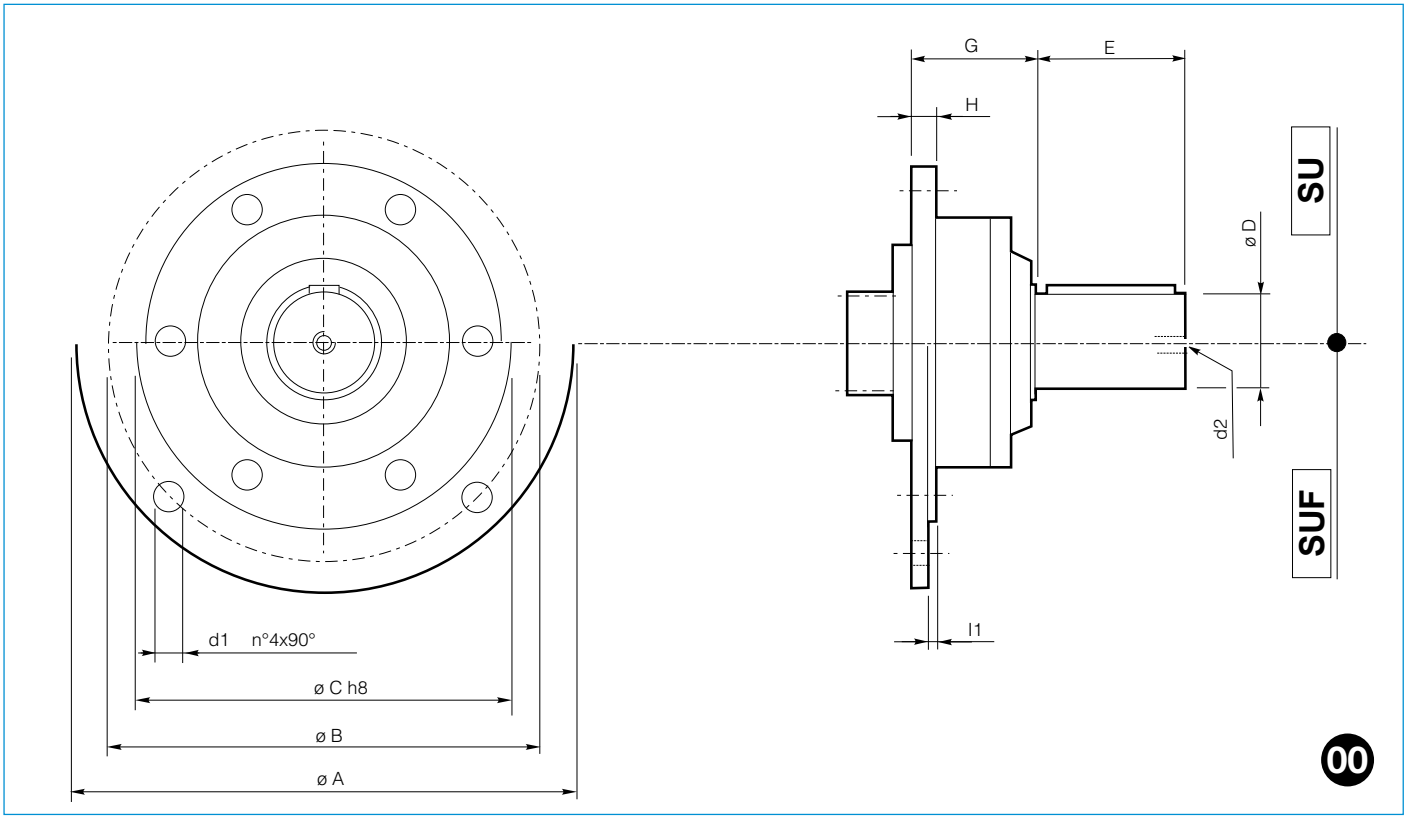
CAUTION!
Size 00 is normally used for motors weighing up to approximately 100 kg and 1000 Nm of maximum torque.



Details & Installation

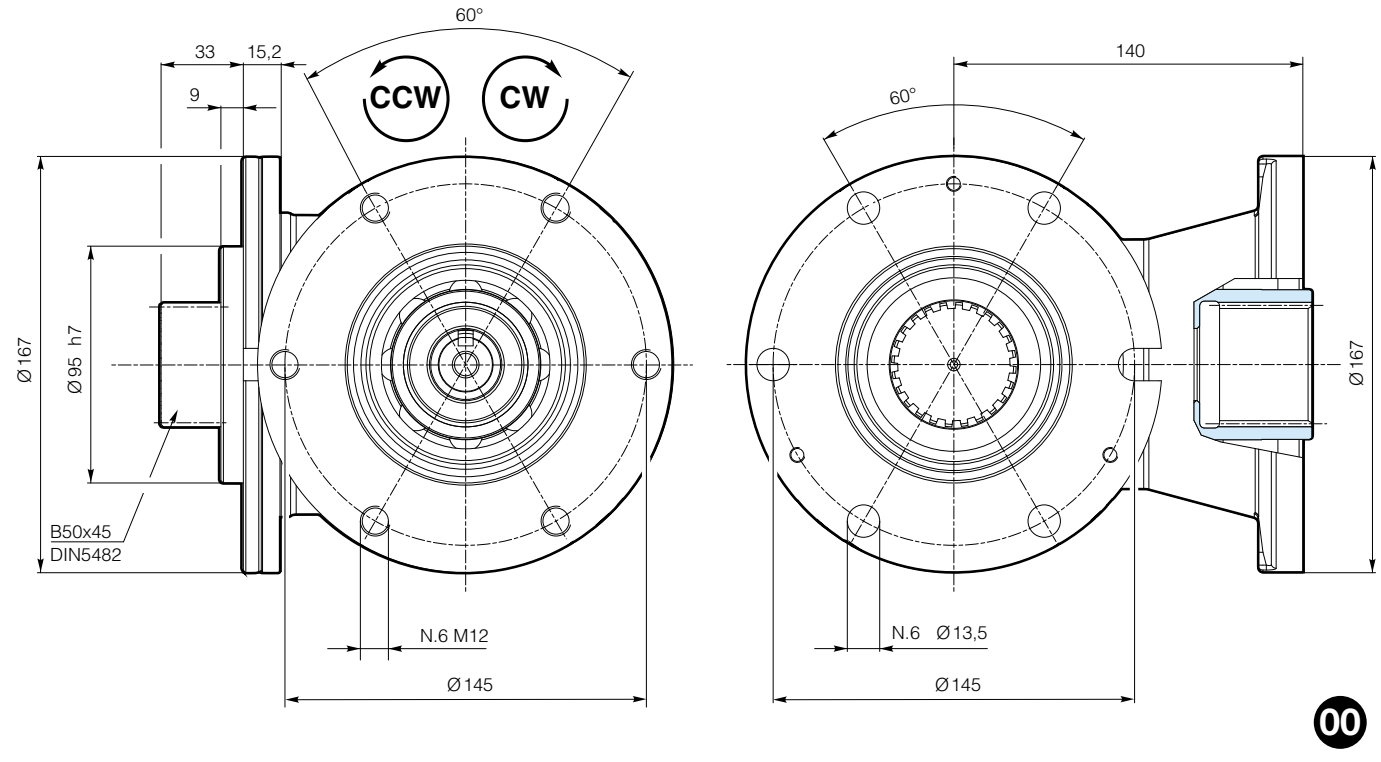
Male supports for universal inputs

SU/SUF types are generally used with a flexible coupling. They can be mounted directly to any type of gearbox with universal input 00, and can be supplied separately. See the gearbox section for the dimensions and radial loads.



Type	A	B	C	D	E	d1	d2	G	H	l1
SU1 28x50	-	-	-	28	50	-	M10x22	60	12	-
SU2 40x58	-	-	-	40	58	-	M10x22	60	12	-
SU3 48x82	-	-	-	48	82	-	M10x25	60	12	-
SU 42x80	-	-	-	42	80	-	M10x22	101.5	14	-
SUS 1 3/8"	-	-	-	1 3/8" DIN 9611	97	-	-	101.5	14	-
SU2 1.5x3.25	-	-	-	38.1	82.55	-	5/8" -11 UNC	60	14	-
SUF1 28x50	250	215	180	28	50	13	M10x22	60	12	3
SUF2 40x58	250	215	180	40	58	13	M10x22	60	12	3
SUF3 48x82	250	215	180	48	82	13	M10x25	60	12	3

CCU25 - Universal bevel gears



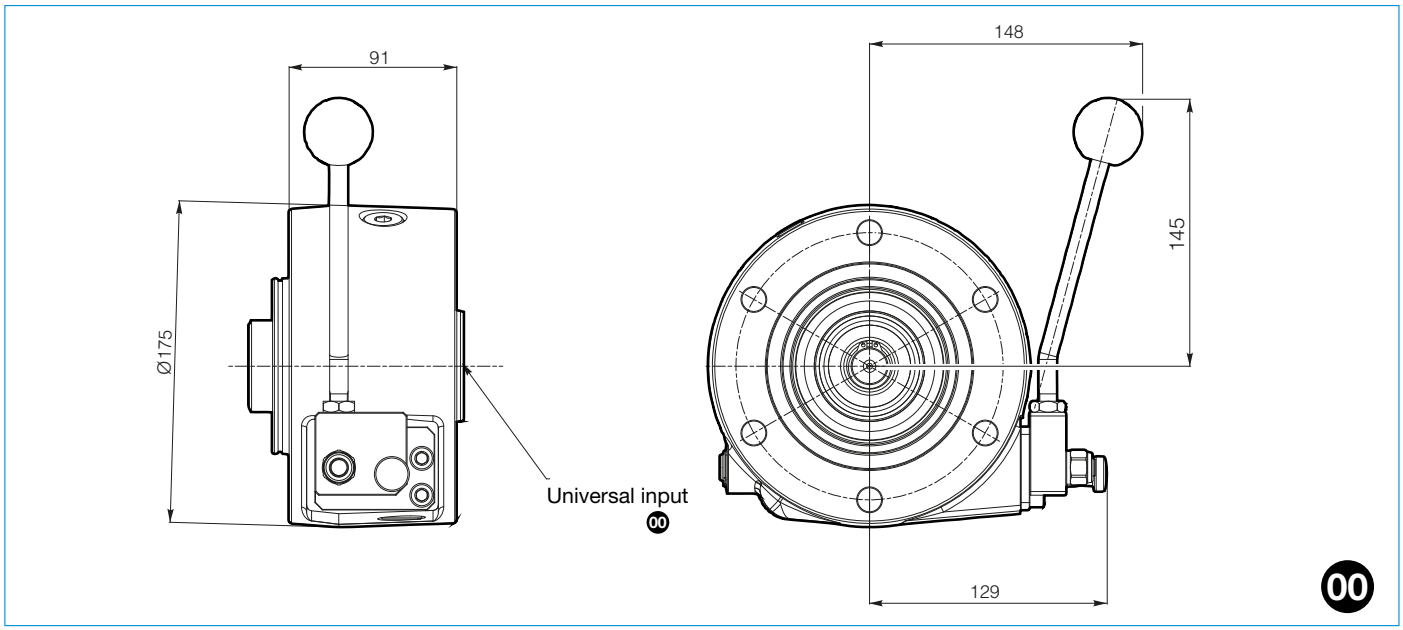
				n_1 1500 [rpm]			n_1 1000 [rpm]			n_1 500 [rpm]		
				n_2	T_1	P_1	n_2	T_1	P_1	n_2	T_1	P_1
				[rpm]	[Nm]	[kW]	[rpm]	[Nm]	[kW]	[rpm]	[Nm]	[kW]
Type	**Rotation ***	i_{eff}	n_{1max}									
CCU25-2.23	CW	2.23	3500	672.6	61.24	9.62	448.4	69.16	7.24	224.2	85.15	4.46
CCU25-2.23	CCW	2.23	3500	672.6	42.09	6.61	448.4	47.53	4.98	224.2	58.52	3.06

* Direction of rotation as viewed from the gearbox input (CW = clockwise, CCW = counter-clockwise).

Details & Installation

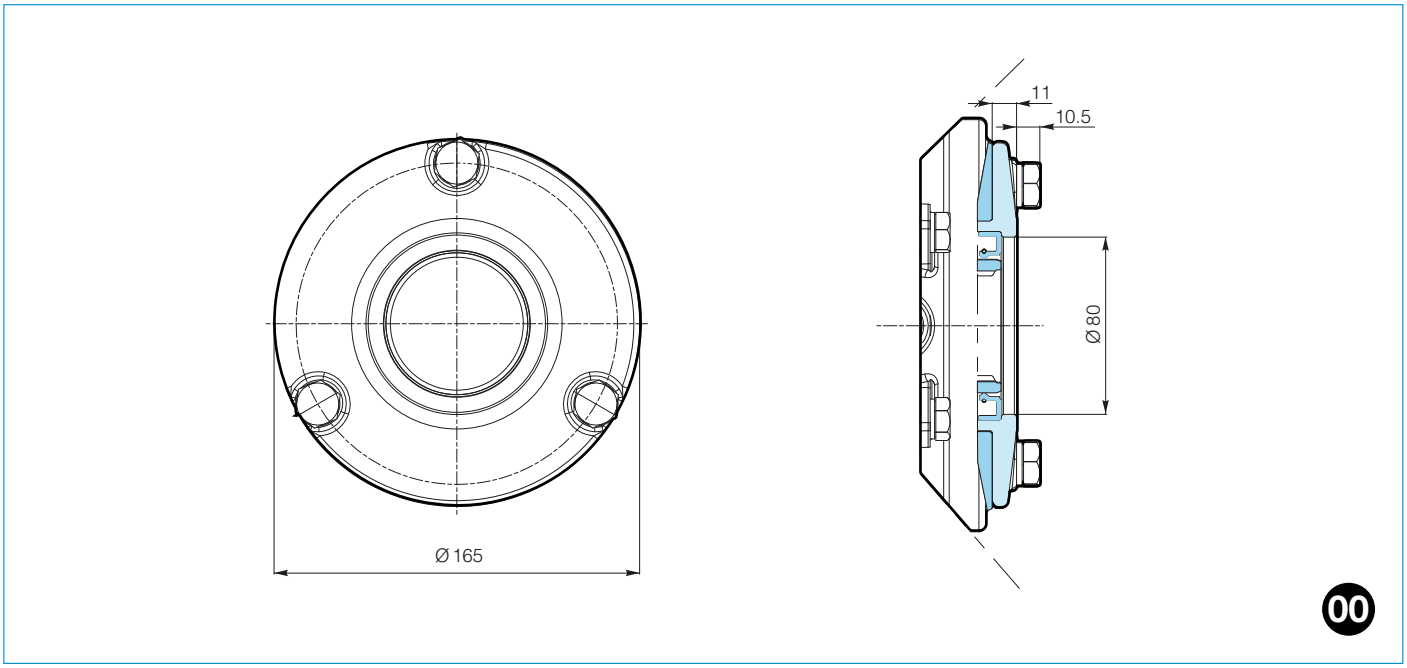
DU150.1 - Universal decoupling

The **DU150.1** is a manual decoupling device, which can be used to temporarily interrupt the transmission of torque and speed between the gearbox input and output.
Both when decoupling and when coupling again, it can only be operated with the gearbox stationary and without any load applied to it.



Type	T_{max} [Nm]	n_{max} [rpm]	P [kW]
DU150.1	1500	1500	30

UCC - Universal protection cover



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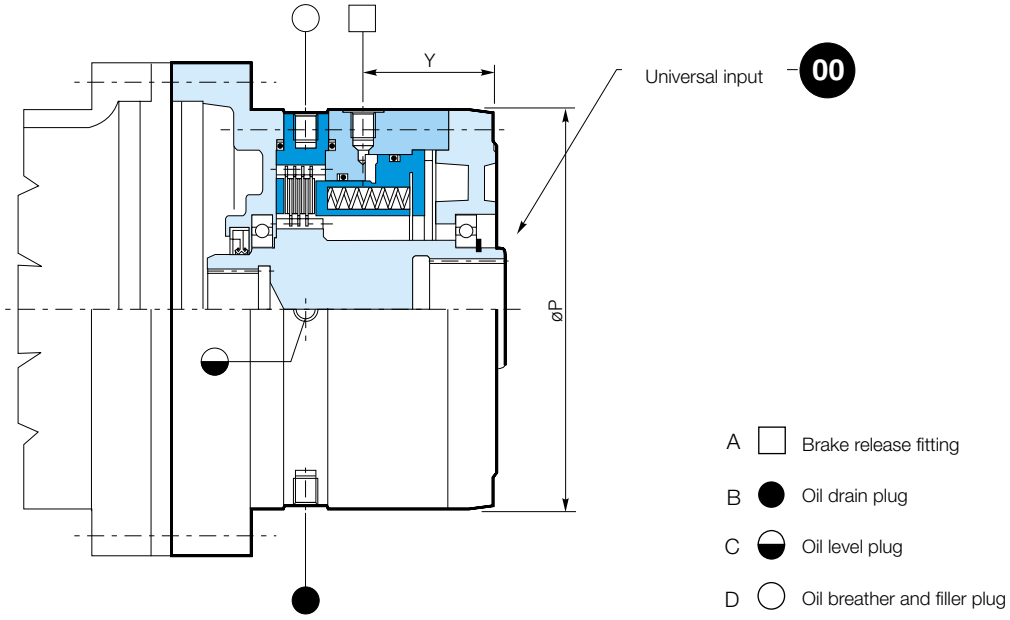
Oil-bath multi-disc brakes

The gearbox inputs can be equipped with hydraulically released oil-bath multi-disc brakes.

	T_B [Nm]	P [bar]	P_{max} [bar]	Vo [l]		Va [cm³]
				horizontal	vertical	new plates
FL250.4C	181	14	315	0.3	0.6	15
FL250.6C	278	14	315	0.3	0.6	15
FL350.6C	417	20	315	0.3	0.6	15
FL350.8C	571	20	315	0.3	0.6	15
FL450.6C	540	26	315	0.3	0.6	15
FL450.8C	737	26	315	0.3	0.6	15
FL620.14C	273	26	210	0.2	0.4	15
FL635.4C	125	15	300	0.2	0.4	15
FL.635.6C	188	15	300	0.2	0.4	15
FL635.10C	314	15	300	0.2	0.4	15
FL635.12C	377	15	300	0.2	0.4	15
FL650.10C	642	20	315	0.5	1.0	15
FL650.12C	792	20	315	0.5	1.0	15
FL650.14C	949	20	315	0.5	1.0	15
FL750.10C	834	26	315	0.5	1.0	15
FL750.12C	1027	26	315	0.0	1.0	15
FL750.14C	1229	26	315	0.5	1.0	15
FL960.12C	1528	22	315	1.2	2.4	22
FL960.14C	1783	22	315	1.2	2.4	22
FL960.16C	2038	22	315	1.2	2.4	22
FL960.18C	2293	22	315	1.2	2.4	22

T_B: Average static brake torque
P: Brake release pressure
Pmax: Max. pressure
Vo: Oil volume
Va: Oil volume for brake release control



	P [mm]	Y [mm]	Fitting				kg
			A	B	C	D	
FL250	195	67	M12X1.5	R 1/4"	R 1/4"	R 1/4"	24
FL350	195	67	M12X1.5	R 1/4"	R 1/4"	R 1/4"	24
FL450	195	67	M12X1.5	R 1/4"	R 1/4"	R 1/4"	26
FL650	195	67	M12X1.5	R 1/4"	R 1/4"	R 1/4"	36
FL750	195	67	M12X1.5	R 1/4"	R 1/4"	R 1/4"	37
FL960	225	72.5	M12X1.5	R 1/4"	R 1/4"	R 1/4"	42

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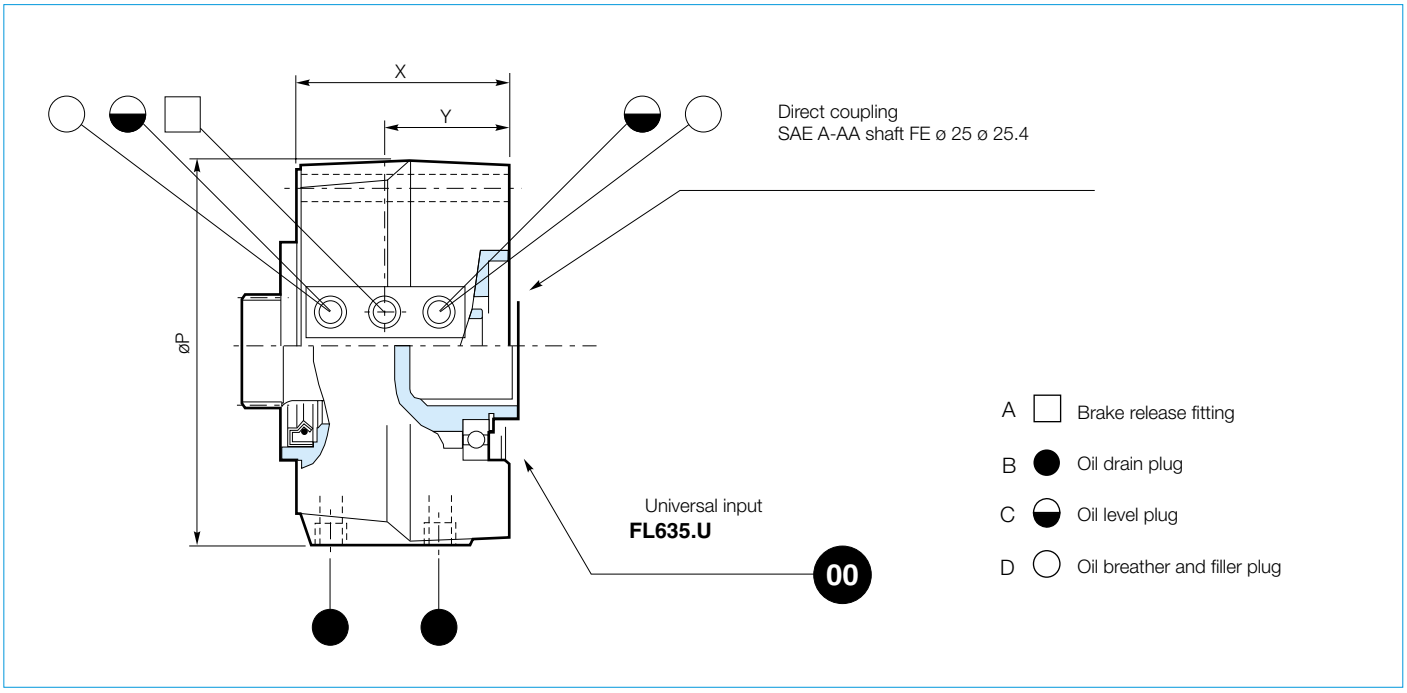
Universal multi-disc brakes

	T_B [Nm]	P [bar]	P_{max} [bar]	Vo [l]		Va [cm³]
				horizontal	vertical	new plates
FL620.U	271	24.9	210	0.1	0.2	10
FL635.U	377	13.6	315	0.1	0.2	10

T_B: Average static torque
P: Brake release pressure
Pmax: Max. pressure
Vo: Oil volume
Va: Oil volume for brake release control



	P [mm]	X [mm]	Y [mm]	Fitting				kg	Code
				A	B	C	D		
FL620.U	161	104.5	46	M10x1	R 1/8"	R 1/8"	R 1/8"	8	C1103704120 (shaft FE ϕ 25) C1103704120 (shaft FE ϕ 25.4)
FL635.U	165	91	59	M12x1.5	R 1/4"	R 1/4"	R 1/4"	9	C1109200160

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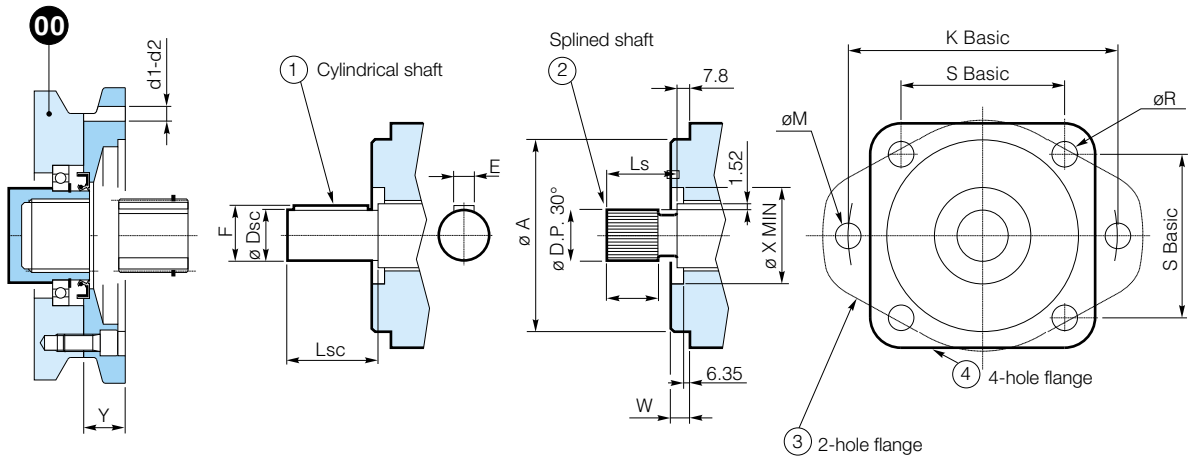
SAE J 744C motor flanges



SAE	Ø A [mm]	W [mm]	Ø X MIN. [mm]	K basic [mm]	Ø M [mm]	S basic [mm]	Ø R [mm]	Splined shaft				Cylindrical shaft			
								No. of teeth	30° D.P.	LS [mm]	LA MIN. [mm]	Ø DSC [mm]	LSC [mm]	F [mm]	E [mm]
A	82.55	6.35	-	106.4	13	75.22	-	9	16/32	24	7.6	15.88	24	17.6	4
B	101.6	9.65	50.8	146	14.3	89.8	14.3	13	16/32	33.3	10.2	22.22	33.3	24.95	6.35
B-B	101.6	9.65	50.8	146	14.3	89.8	14.3	15	16/32	38.1	12.7	25.4	38.1	28.1	6.35
C	127.0	12.7	63.5	181	17.5	114.5	14.3	14	12/24	47.6	15.2	31.75	47.6	35.2	7.8
C-C	127.0	12.7	63.5	181	17.5	114.5	14.3	17	12/24	54	17.8	38.1	54	42.25	9,525
D	152.4	12.7	70	228.6	20.6	161.6	20.6	13	8/16	66.67	20.3	44.45	66.67	49.3	11.1
E	165.1	15.87	70	317.5	27	224.5	20.6	13	8/16	66.67	20.3	44.45	66.67	49.3	11.1

SAE	Y [mm]	No. of Bolts	Order code					
			Flange with d1			Flange with d2		
			d1 Metric	Splined shaft	Cylindrical shaft	d2 [in]	Splined shaft	Cylindrical shaft
A	25	2 – 4	M10 T.U. 15	61125502680	61125500900	3/8 0.59 Min	61147702680	61147700900
B	25	2 – 4	M12 T.U. 25	61125700580	61125700460	1/2 - 13 1.00 Min	61143900580	61143900460
B-B	25	2 – 4	M12 T.U. 25	61125701940	61125700500	1/2 - 13 1.00 Min	61143901940	61143900460
C	28	2	M16 T.U. 20	61101801480	61101800510	5/8-11 0.78 Min	61145301480	61145300510
		4	M14 T.U. 20			1/2-13 0.78 Min		
C-C	79	2	M16 T.U. 20	61101802540	61101801750	5/8-11 0.78 Min	61145302540	61145301750
		4	M14 T.U. 20			1/2-13 0.78 Min		
D	93	2 – 4	M18 T.U. 20	61103501930	61103501720	3/4 - 10 1.00 Min	61147801930	61147801720
E	93	2 – 4	Æ 22 T.U. 30	61118201930	61118201720	Ø 0.875 1.11 Min	61118201930	61118201720

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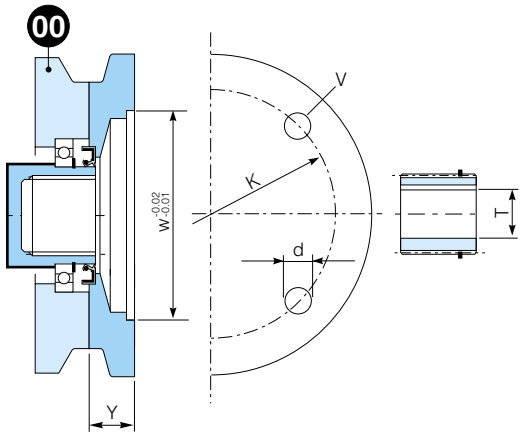
NEMA motor flanges



NEMA Motor size	Motor coupling flange					Sleeve		Order code
						T		
	W [in]	V [in]	d [in]	K [in]	Y [in]	Diameter [in]	Key [in]	
143/145 TD	9	4	0.55	10	1.18	0,875	0,187	61135501060
182/184 TC	8.5	4	0.55	7.25	1.18	1,125	0.25	61130800070
182/184 TD	9	4	0.55	10	1.18	1.25	0.25	61135502200
210 TD	9	4	0.55	10	1.18	1,375	0,312	61135502500
213/215 TC	8.5	4	0.55	7.25	1.81	1,375	0,312	61130802500

Dimensions in inches
In addition to the flanges given in the table, other models are available on request.

Supply status

Unless otherwise specified in the contract, the gearboxes are painted externally with an anticorrosive 2-component water-soluble epoxy resin based primer, blue RAL 5012.
The protection is suitable for withstanding normal industrial environments (also outdoors) and can be finished with synthetic, nitro-synthetic or 2-component enamel paints.
In case of particularly aggressive ambient conditions, it is necessary to use special painting cycles, which can be carried out on request. The machined external parts of the gearbox, such as the shaft ends, support surfaces, spigots, etc., must be protected with antioxidant oil (Tectyl).
The inside walls of the gearbox casings are painted with oil-proof paint and the kinematic mechanisms are protected with antioxidant oil. Unless otherwise specified in the contract, all gearboxes are supplied without lubricant, as shown by a special sticker applied to the gearbox to indicate its condition.
The gearboxes are packed and shipped in crates or on pallets able to withstand normal industrial environments.
Each gearbox comes with an "Installation and Maintenance Manual", "Manufacturer's Declaration" and "Certificate of Conformity" 2.1 according to EN10204.

Storage conditions

If the product is to be stored for more than 2 months:

- protect shafts and spigots with a film of grease or corrosion protection products
- fill the gearbox completely with the lubricant required for the application
- store in a dry place with a temperature from -5 °C to +30 °C
- protect the gearbox from dirt, dust and damp
- always place a wooden support or other material between the gearbox and the ground to prevent direct contact with the ground.

When storing for more than 1 year, the rotary seals will lose efficiency. In this case, it is advisable to carry out a periodic check by turning the input shaft by hand to rotate the gears.
If there is a negative multi-disc brake, release the brake with a hydraulic pump or similar (see the "Oil bath multi-disc brakes" section for the brake release pressure).
At start-up, it is advisable to replace the seals.

General

The gearboxes must be carefully installed by suitably trained technical personnel.
Preparation for operation must occur in compliance with all the technical specifications given on the reference Dimensional Drawing.
All installation operations must ensure:

1. safety of operators and third parties
2. correct gearbox operation
3. safe operation

In this respect:

- any arbitrary tampering with the gearbox and with any accessories originally provided is strictly prohibited
- when lifting and transporting, do not knock the shaft ends and use specific lifting straps or the eye-bolts provided for this purpose, and make sure that the lifting equipment has adequate lifting capacity
- never carry out welding work on gearboxes.
- only carry out installation or maintenance work with the gearbox stationary. It is therefore advisable to ensure that the driving force cannot be activated unintentionally.
- regarding the gearbox input, electric or hydraulic motors are often mounted with the DANA 00 universal flange system (see the "Universal Input" section). Note that the 00 flange is normally used for motors weighing up to approximately 100 kg and 1000 Nm of maximum torque. Specific adapters can be used with heavier motors: in this case, please contact you local DANA representative.
- with connections involving the use of rotating parts such as shafts, couplings or pulleys with belts, always provide adequate accident-prevention protection.

For flange-mounted gearboxes, we recommend observing the following requirements:

- the structures to which the gearboxes are secured must be rigid, with flat machined support surfaces that are free of paint, perpendicular to the driven shaft, and centred with a tolerance of H8.
- the mating surfaces must be perfectly degreased in advance.
- take care to align the gearbox with the driven shaft, especially with gearboxes that have splined female outputs, which cannot take external radial or axial loads.
- use at least class 10.9 screws with 75% tightening yield strength for fastening
- during assembly, take care to avoid violent axial impacts that could damage the inner bearings.
- the drive parts to be keyed to the output must be machined as specified in the “Outputs” section.

Note:
For right-angle gearboxes with male input shafts, the input shaft may not be in its ideal position during installation. To remedy this situation, we recommend:

- when connecting with couplings that are able to recover misalignments, measure the existing misalignment and check that it is acceptable for the coupling; if the misalignment is too big, shim the motor to bring it within the permissible play
- when connecting with mechanical parts that do not allow an play adjustment, align the motor using shims.

Shaft mounting

Before mounting, carefully clean the mating surfaces and lubricate them with suitable anti-seizure products (except for versions with FS hollow shafts - see the "Shrink disc" section).
Installation and removal must be carried out with suitable equipment, such as pullers and puller screws, using the threaded holes provided on the shafts; in any case, avoid any impacts or shocks that could cause permanent damage to the internal parts of the gearbox.
For the sizes of the driven shaft, refer to the section "Outputs".

Flange and foot support mounting

The mating surfaces must be machined with a degree of finish that ensures the required coefficient of friction (approx. Ra 3.2 mm). To ensure alignment between the gearbox, motor and driven machine, observe the tolerances given in the diagrams below.
Before installation, clean and degrease the mating surfaces thoroughly, removing any traces of paint.
If the maximum torque to be transmitted is higher than $0.7 \times T_{2MAX}$, or if frequent reversals are foreseen, apply a suitable adhesive product for clamping on the coupling surfaces.
Installation must ensure the alignment of the gearbox and the shaft to be driven, or the gearbox and the motor whenever the motor is not directly flange-mounted to the gearbox.

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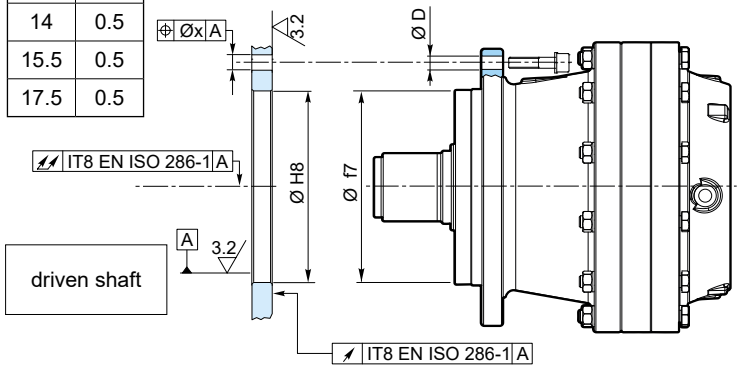
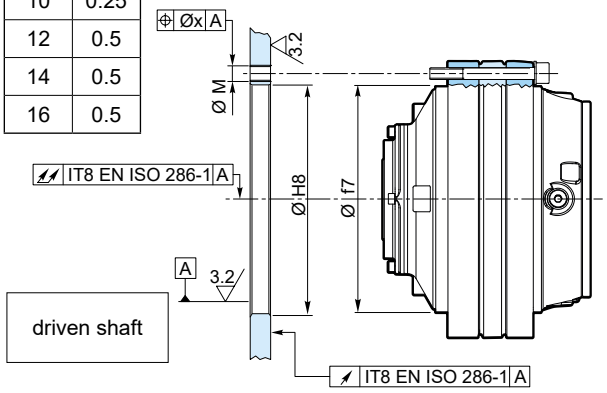
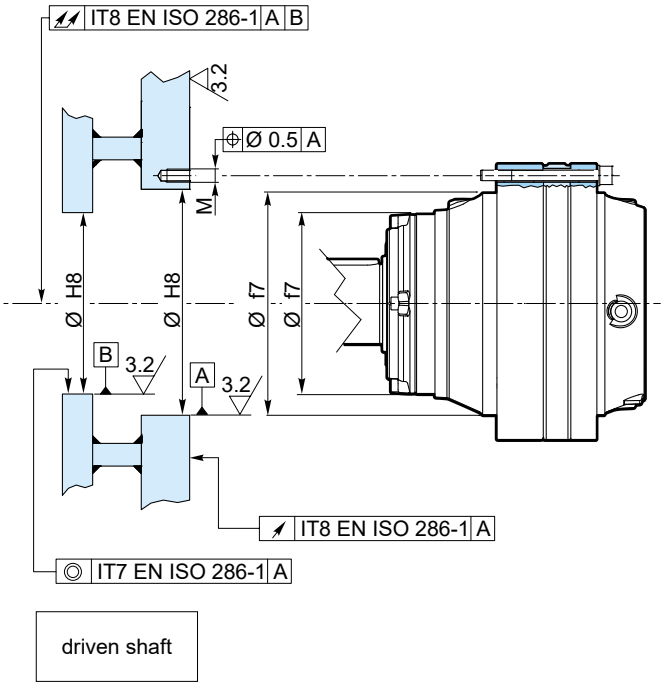
D	x
11	0.25
13.5	0.5
14	0.5
15.5	0.5
17.5	0.5

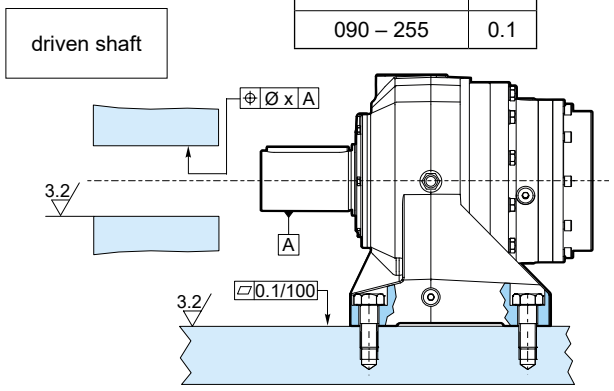


M	x
10	0.25
12	0.5
14	0.5
16	0.5





Size	x
010 – 067	0.05
090 – 255	0.1



A particularly important measure to prevent stress on the gearbox support flanges even during mounting, is to ensure that the mounting counter-flange adheres perfectly to the gearbox flange before tightening the fastening screws.

Fastening screws

Secure the gearboxes with class 10.9 screws with ISO 7089 washers (300 HV min.)
The screws must be tightened (depending on their size) according to the torque values given in the dimension table for the specific size; the tightening torque values refer to screws in the conditions of supply, or with phosphate coating.

Do not lubricate the screws before tightening, as the consequent variation in surface friction coefficient of could overload the screws during tightening
Always check the tightening torque of the screws after the first few hours of machine operation.

The shrink discs are fitted on FS output shafts.
Given below are the characteristics and measures to be considered for correct assembly and disassembly of these parts used for the transmission of motion.

Mounting

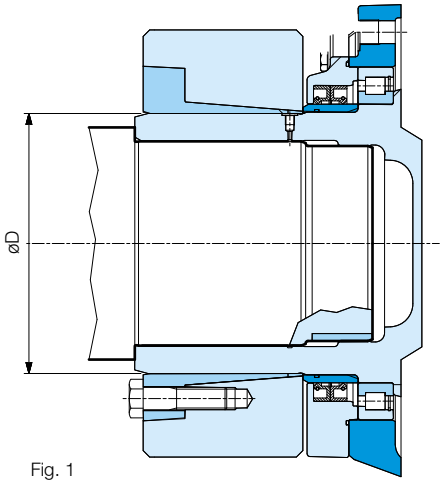


Fig. 1

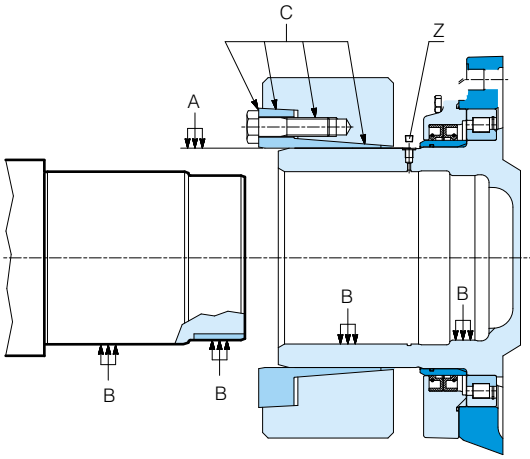


Fig. 2

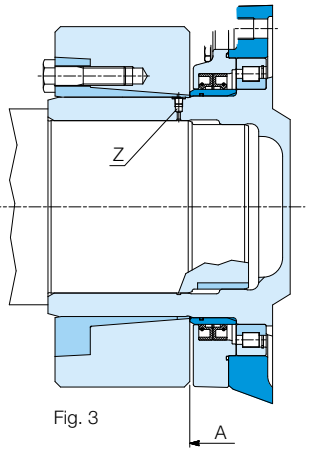


Fig. 3

	T_N [Nm]	D [mm]	T_{GN} [Nm]	Dimensions
010	1000	62	2200	62x110
020	2100	100	7500	100x170
045	3800	100	7500	100x170
065 – 067	6400	125	13000	125x215
090 – 091	9200	140	17600	140x230
150 – 155	13000	165	35000	165x290
250 – 255	20000	175	41000	175x300

T_N: Nominal gearbox torque
T_{GN}: Nominal coupling torque
D: Shaft diameter

1. Thoroughly clean and degrease the shaft and its seat (see point B). To facilitate subsequent removal, it is advisable to make the small spigot for the shaft from a suitably machined bushing.

2. Lubricate the coupling seat (see point A) with molybdenum disulfide grease (MoS_2). When new, the coupling does not have to be disassembled for greasing. Greasing of the areas C is advisable only when reinstalling a used coupling.

3. Fit the coupling on the gearbox without tightening the screws. If the mounting position is vertical and the respective shaft is facing downward, make sure the coupling cannot slip off and fall. In all cases, never tighten the screws before fitting the shaft in its seat.

4. Fit the shaft in its seat. Mounting must take place without any interference, and this is only possible with precise gearbox/shaft alignment using suitable lifting equipment.

CAUTION!
Assembly must be carried out without applying axial forces, blows or impacts that could damage the gearbox bearings.

5. Fit the coupling up against the shoulder on the shaft before tightening the screws.

6. Tighten the screws gradually in a circular order, using a suitable torque wrench set to the tightening torque specified in the table below. Carry out final tightening, setting the wrench to a torque of 3-5% higher than that indicated.

Set the wrench to the torque specified in the table and make sure that no screws can be tightened further, otherwise repeat the procedure from point 5.
Mounting is complete and correct if the front surfaces of the inner and outer ring are at the same level.

The tightening torque does not have to be rechecked after the coupling is put into service.

7. Protect the coupling area with suitable sheet metal casing (point P) if there is risk of stones, sand or other material damaging the coupling or the gearbox seals.

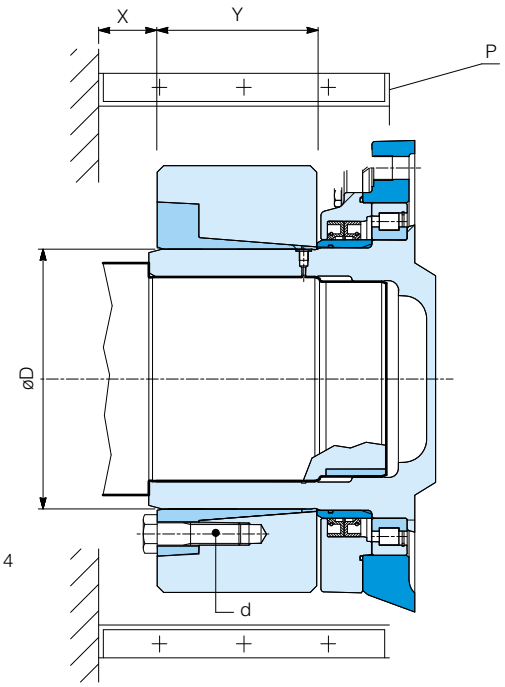
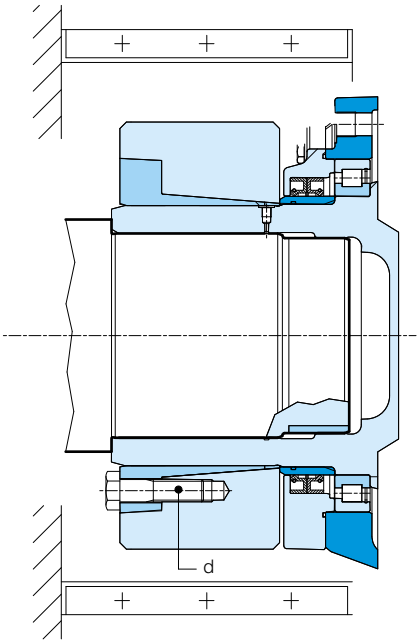


Fig. 4

Dimensions	Y [mm]	d	T [Nm]
010	62x110	29	M8	30
020	100x170	43	M10	59
045	100x170	44	M8	30
065 – 067	125x215	54	M10	59
090 – 091	140x230	60.5	M12	100
150 – 155	165x290	71	M16	250
250 – 255	175x300	71	M16	250

Disassembly



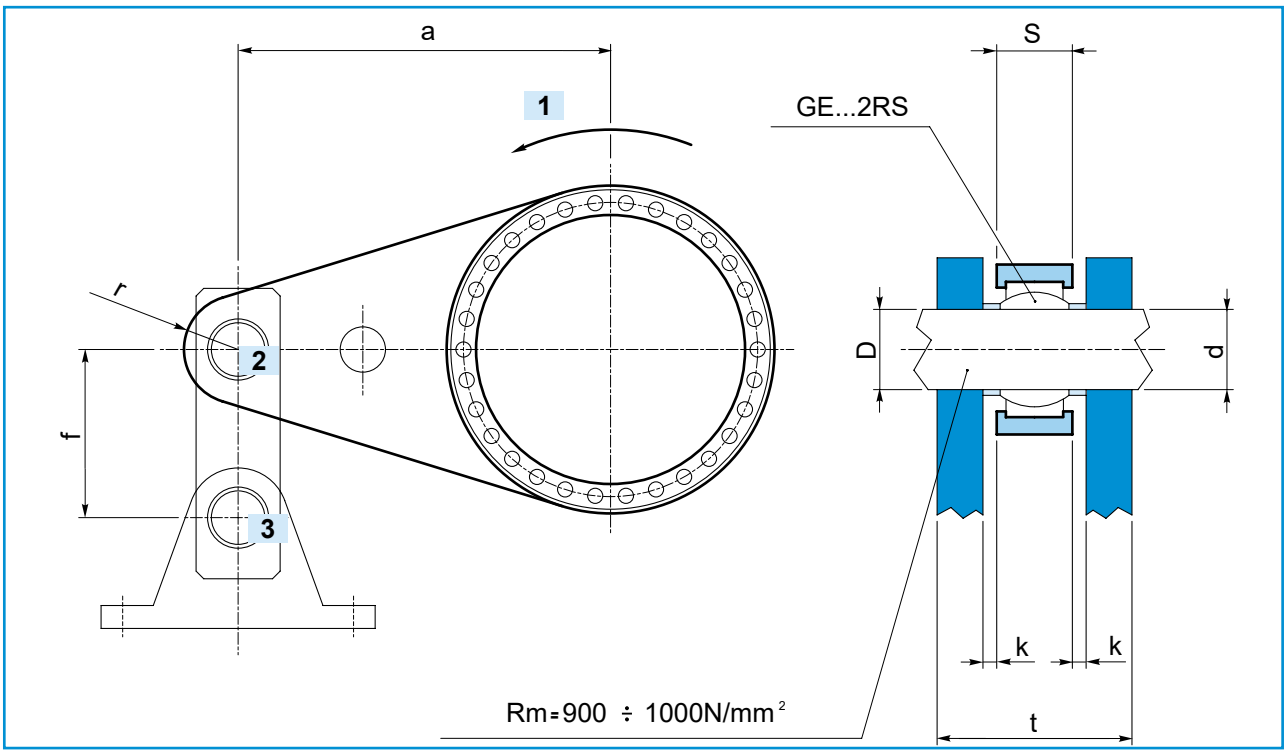
1) Loosen the screws “d” in several passes and in sequence so that the coupling can move on the hub.

CAUTION! Do not undo the screws completely so that the rings can separate on their own.
High axial forces could cause violent removal, resulting in a hazard to operators.

2) This normally releases the clamping unit. Use suitable equipment to support the gearbox and separate the gearbox from the machine shaft.

CAUTION!
Refer to the maintenance manual to check the permissible axial loads.

Indications for torque arm construction and anchoring



1
Preferential direction of rotation output shaft side

2 – 3
GE...2RS in positions 2 and 3

	a min [mm]	s [mm]	r min [mm]	f min [mm]	GE...2RS	D [mm]	d [mm]	k [mm]	t min [mm]
010	200	15	30	80	20	20	20	2	35
020	300	15	30	80	20	20	20	2	35
030-045	300	20	35	100	25	25	25	3	46
065-067	400	20	35	100	25	25	25	3	46
090-091	500	25	40	150	30	30	30	3	55
150-155	600	25	40	150	30	30	30	3	55
250-255	700	30	45	150	35	35	35	4	66

Mounting the arm

1. The torque arm must be free to move axially and have enough play in the couplings to allow small gearbox oscillations (always present) without overloading the gearbox. Therefore ball joints must be used in all connections.

2. It is advisable to use long-life ball joints in which the rubbing surfaces are protected with PTFE. Alternatively, “steel to steel” joints can be used, provided they are greased periodically.
3. The anchoring connecting rod must be parallel to the torque arm in order to ensure the side clearance “k” (unloaded), which ensures free movement of the structure in case of deformation.
4. The fixed support to which the second end of the connecting rod is connected must ensure adequate anchorage for the load.
5. The torque arm and corresponding connecting rod may have different design solutions from those proposed, but the following measures must be taken:

CAUTION!
Do not carry out any welding work involving the gearbox, not even earthing.

6. Always use a torque wrench to tighten the coupling screws.

DANA gearboxes are supplied without lubricant; therefore the user must fill them correctly before starting the machine.

Essential oil specifications

The important parameters to consider when choosing the oil type are:

- viscosity under nominal operating conditions
- additives

The same oil must lubricate the bearings and the gears and all these components work inside the same box, in different operating conditions.

Viscosity

Nominal viscosity refers to a temperature of 40 °C, but decreases rapidly as the temperature increases. If the gearbox operating temperature is from 50 °C to 70 °C, a nominal viscosity can be chosen from the following guide table; choose the highest viscosity if a higher operating temperature is expected.

Output speed n_2 [rpm]	**Working temperature**	
	50° C	**70° C**
$n_2 \geq 20$	VG 150	VG 220
$5 < n_2 < 20$	VG 220	VG 320
$n_2 \leq 5$	VG 320	VG 460

Special attention must be paid to highly loaded output stages and those with very low speeds (<1 rpm). In such cases, always use high viscosity oils and with a good amount of Extreme Pressure (EP) additive.

Additives

In addition to the normal anti-foam and antioxidant additives, it is important to use oils with additives offering EP (extreme-pressure) and anti-wear properties, according to ISO 67436 L-CKC or DIN 515173 CLP. The lower the gearbox output speed, the more marked the EP characteristics of the products have to be. It should be remembered that the chemical compounds replacing hydrodynamic lubrication are formed to the detriment of the original EP load.

Therefore in case of very low speeds and high loads, it is important to observe the maintenance intervals so as not to lower the lubricating properties of the oil excessively.

Oil types

Oil types

The oils available generally belong to three large families.

- Mineral oils
- Polyalphaolefin (PAO) synthetic oils
- Polyalkylene glycol (PAG) synthetic oils

The most suitable choice is generally tied to the conditions of use.

Gearboxes that are not particularly loaded and with an intermittent operating cycle but without considerable temperature ranges can be lubricated with mineral oil.
In cases of heavy use, when the gearboxes are highly and continuously loaded resulting in a temperature increase, it is best to use polyalphaolefin synthetic lubricants.
The use of polyalkylene glycol oils is not allowed as they are not compatible with other oils and are often completely mixable with water:;this phenomenon is particularly dangerous because it can go unnoticed, but rapidly diminishes the lubricating properties of the oil. Moreover, these lubricants may chemically attack the oil seals and paint inside the gearbox.

In addition to the above, there are also hydraulic oils and oils for the food industry.
The former are used for negative brakes.
The latter are used specifically in the food industry as they are special products that are not harmful to health.
The tables below contain lubricants offered by the best-known manufacturers, with specifications suitable for lubricating DANA gearboxes.

Contamination

During normal operation, due to run-in of the surfaces, metallic microparticles will inevitably form in the oil.
This contamination can shorten the life of the bearings, resulting in premature gearbox failure.
To limit and control this phenomenon, without resorting to frequent and costly oil changes, a suitable auxiliary oil circulation system with filtering and cooling of the oil must be provided.
This system offers the dual advantage of controlling the level of contamination through the use of special filters and stabilising the operating temperature at a level more suitable for ensuring the required viscosity.

For lubrication problems with gearboxes intended for special uses, it is advisable to contact your local DANA representative regarding the construction type and operating parameters.

Lubricant oils for general use

Manufacturer	Mineral Oil			Polyalphaolefin Synthetic Oils (PAO)		
	ISO VG 150	ISO VG 220	ISO VG 320	ISO VG 150	ISO VG 220	ISO VG 320
ADDINOL	Eco Gear 150 M	Eco Gear 220 M	Eco Gear 320 M	Eco Gear 150 S	Eco Gear 220 S	Eco Gear 320 S
ARAL	Degol BG 50 Plus	Degol BG 220 Plus	Degol BG 320 Plus	Degol PAS 150	Degol PAS 220	Degol PAS 320
BP	Energol GR-XP 150	Energol GR-XP 220	Energol GR-XP 320	Enersyn EPX 150	Enersyn EPX 220	Enersyn EPX 320
CASTROL	Alpha SP 150	Alpha SP 220	Alpha SP 320	Alphasyn EP 150	Alphasyn EP 220	Alphasyn EP 320
CEPSA	Engranajes XMP 150	Engranajes XMP 220	Engranajes XMP 320	-	Aerogear Synt 220	Aerogear Synt 320
CHEVRON	-	-	-	Tegra Synthetic Gear 150	Tegra Synthetic Gear 220	Tegra Synthetic Gear 320
ENI	Blasia 150	Blasia 220	Blasia 320	Blasia SX 150	Blasia SX 220	Blasia SX 320
FUCHS	Renolin CLP Gear Oil 150	Renolin CLP Gear Oil 220	Renolin CLP Gear Oil 320	Renolin Unisyn CLP 150	Renolin Unisyn CLP 220	Renolin Unisyn CLP 320
KLÜBER	Klüberoil GEM 1-150 N	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klübersynth GEM 4-150 N	Klübersynth GEM 4-220 N	Klübersynth GEM 4-320 N
LUBRITECH	Gearmaster CLP 150	Gearmaster CLP 220	Gearmaster CLP 320	Gearmaster SYN 150	Gearmaster SYN 220	Gearmaster SYN 320
MOBIL	Mobilgear XMP 150	Mobilgear XMP 220	Mobilgear XMP 320	Mobil SHC Gear 150	Mobil SHC Gear 220	Mobil SHC Gear 320
MOLIKOTE	L-0115	L-0122	L-0132	L-2115	L-2122	L-2132
NILS	Ripress EP 150	Ripress EP 220	Ripress EP 320	Atoil Synth PAO 150	-	Atol Synth PAO 320
Q8	Goya NT 150	Goya NT 220	Goya NT 320	El Greco 150	El Greco 220	El Greco 320
REPSOL	Super Tauro 150	Super Tauro 220	Super Tauro 320	Super Tauro Sintetico 150	Super Tauro Sintetico 220	Super Tauro Sintetico 320
SHELL	Omala S2 G 150	Omala S2 G 220	Omala S2 320	Omala S4 GX 150	Omala S4 GX 220	Omala S4 GX 320
SUNOCO	Sun EP 150	Sun EP 220	Sun EP 320	-	-	-
TEXACO	Meropa 150	Meropa 220	Meropa 320	Pinnacle EP 150	Pinnacle EP 220	Pinnacle EP 320
TOTAL	Carter EP 150	Carter EP 220	Carter EP 320	Carter SH 150	Carter SH 220	Carter SH 320
TRIBOL	1100/150	1100/220	1100/320	-	-	1510/320

Click **DANA** button to return to section index

Click *i* button to return to main index

Lubricant oils for use in the food industry

(USDA-H1 and NSF-H1 approved)

Manufacturer	Hydraulic Oil			Gear Oil		
	ISO VG 32	**ISO VG 46**	**ISO VG 68**	**ISO VG 150**	**ISO VG 220**	**ISO VG 320**
ARAL	Eural Hyd 32	Eural Hyd 46	Eural Hyd 68	Eural Gear 150	Eural Gear 220	-
CASTROL	Optileb HY 32	Optileb HY 46	Optileb HY 68	Optileb GT 150	Optileb GT 220	Optileb GT 320
CHEVRON	Lubricating Oil FM 32	Lubricating Oil FM 46	Lubricating Oil FM 68	-	Lubricating Oil FM 220	-
ENI	Rocol Foodlube Hi-Power 32	Rocol Foodlube Hi-Power 46	Rocol Foodlube Hi-Power 68	Rocol Foodlube Hi-Torque 150	Rocol Foodlube Hi-Torque 220	Rocol Foodlube Hi-Torque 320
FUCHS	Cassida Fluid HF 32	Cassida Fluid HF 46	Cassida Fluid HF 68	Cassida Fluid GL 150	Cassida Fluid GL 220	Cassida Fluid GL 320
KLÜBER	Klüberfood 4 NH1-32	Klüberfood 4 NH1-46	Klüberfood 4 NH1-68	Klüberoil 4 UH1-150N	Klüberoil 4 UH1-220N	Klüberoil 4 UH1-320N
MOBIL	Mobil SHC Cibus 32	Mobil SHC Cibus 46	Mobil SHC Clbus 68	Mobil SHC Cibus 150	Mobil SHC Clbus 220	Mobil SHC Cibus 320
NILS	Mizar 32	Mizar 46	Mizar 68	Ripress Synt Food 150	Ripress Synt Food 220	Ripress Synt Food 320
TEXACO	Cygnus Hydraulic Oil 32	Cygnus Hydraulic Oil 32	Cygnus Hydraulic Oil 32	Cygnus Gear PAO 150	Cygnus Gear PAO 220	-
TRIBOL	Foodproof 1840/32	Foodproof 1840/46	Foodproof 1840/68	-	Foodproof 1810/220	Foodproof 1810/320

Details & Installation

Oil checking with unforced lubrication

Horizontal mounting
Levels
When the gearbox is mounted horizontally, the normal level to ensure correct lubrication is at the centre line, Fig. (A). For applications with very low output rotation speeds (n2 ≤ 5 rpm), it is advisable to fix the level at a value above 50–100 mm. Fig. (B).
The correct level can be easily checked using a transparent tube positioned as shown in figure (B).
If the output speed is extremely low (n2 ≤ 1 rpm), or if long idle periods are expected, it is advisable to fill the entire box. In this case a special auxiliary tank must be provided.
To fit an instrument for visually checking the level (or by means of an electrical signal), mount it as shown in the diagram in Fig. (C).
Mount the breather plug above the sight glass with a tube that is long enough. Connect the top part (empty) of the gearbox just below the breather. This will prevent the leakage of oil.

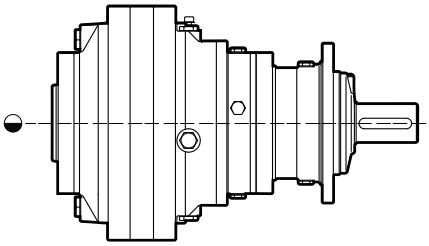


Fig. A

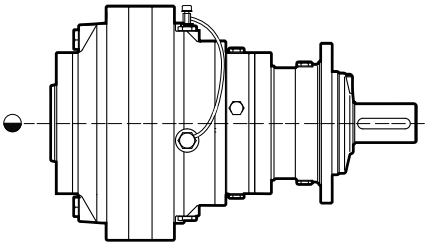


Fig. B

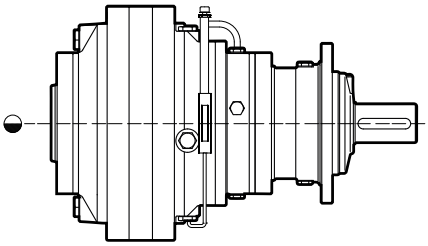
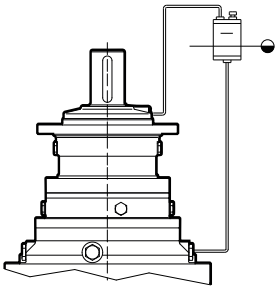


Fig. C

Expansion vessel
Several rules must be followed with vertical mounting, and in any case whenever the gearbox has to be filled completely.
During filling, an air bubble can form at the top, at the output shaft rotary seal, which must be eliminated to ensure that the seal is lubricated properly.
Also, since the oil volume increases with the temperature, an auxiliary tank must be provided to allow it to expand without creating hazardous pressures inside the gearbox.



For dimensioning, the oil expansion volume (Ve) must be determined at the operating temperature:

$$V_e = V_t \times \Delta T / 1000$$

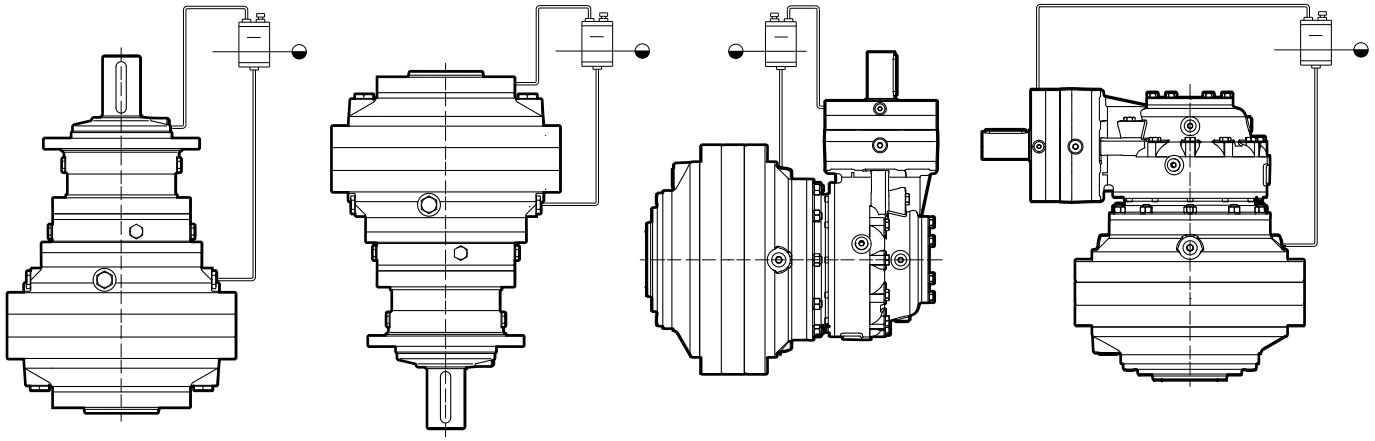
V_t = total oil volume
ΔT = difference between operating temperature and ambient temperature

The capacity (Vs) of the expansion vessel is:

$$V_S = 2 \times V_e$$

To remove any residual air, the holes at the top of the gearbox and the top of the expansion tank must be connected; the latter must be located at a height that allows the gearbox to be filled up to the minimum level. It is advisable to make the bleed pipe or the expansion vessel with transparent material in order to easily check the exact position of the lubricant level.

Vertical in-line mounting and right-angle versions
The gearboxes must be completely full, so an expansion vessel must be fitted. As already mentioned, it is very important to connect the top gearbox breather to the expansion vessel to allow the oil to rise up to the rotary seal ring on the upper gearbox shaft.
When fitting an instrument for visual checking (or by means of a special electric signal), the instrument must be placed on the side of the tank.



Auxiliary cooling and filtering systems

If the power applied is greater than the thermal power that can be dissipated by the gearbox, an auxiliary cooling system (air-oil) must be used to dissipate the excess thermal power and keep the lubricating oil clean by means of constant filtering.

To fulfil this function, DANA offers a range of cooling units: contact your local DANA representative for details. The control units consist of an air-oil heat exchanger, a filter, an electric motor, a hydraulic pump with safety valve and a coaxial fan integral with the pump. If a different type of auxiliary system is to be fitted, make sure not to use systems with an external tank.

If an auxiliary tank is required (e.g. for cooling several gearboxes with a single system), we recommend contacting your local DANA representative. When designing an oil circulation circuit, it is advisable for the suction to be at the lowest point, so that this branch of the circuit can also be used to drain the gearbox.

In any case, the oil suction and delivery points must be far enough apart to ensure that fresh oil passes through the gearbox. The diameter of the oil holes is very important, especially in suction. In fact, the pump tends to cavitate if the holes are too small. Not being able to change the pump delivery, which is a function of the power to be dissipated, the capacity of the holes must be verified.

When sucking oil from the input supports or flanges of fast gearboxes, the use of one hole may be insufficient for the entire flow; therefore 2 or 3 holes must be connected by means of a manifold connected to the suction pipe.
Delivery is usually less problematic since, if the natural flow rate is too low, a small pressure is generated which ensures the flow.

For correct dimensioning of the circuit, it is advisable to follow these rules.

Suction:

- suck from several holes when the oil speed v_o is higher than 1.30 m/s with just one hole;

Delivery:

- deliver to several holes when the oil velocity v_o is higher than 2.10 m/s with just one hole.

The speed can be obtained from the table below, or calculated with the following equation:

$$V = (Q \times 21.2) / d^2$$

where:

V = oil speed in m/s
Q = flow rate in l/min
d = inside diameter of the union in mm

The calculation takes the kinematic oil viscosity of 60 cSt into account.

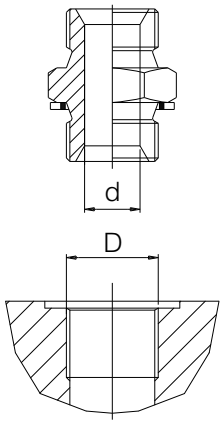


Fig. 15

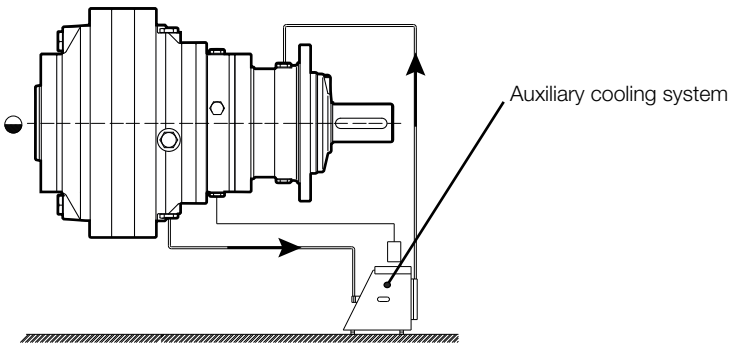
	Oil speed table [m/s]					
	Hole diam.					
D (nom.)	G 1/4”	G 3/8”	G 1/2”	G 3/4”	G 1”	G 1 1/4”
d [mm]	7	10	12	16	22	30

Oil speed table [m/s]						
Pump delivery [l/min]						
6	2.59	1.27	0.9	0.5	0.26	0.14
12	5.19	2.54	1.76	1	0.52	0.28
20	8.6	4.4	2.94	1.65	0.87	0.47

Oil checking with auxiliary cooling system

In-line horizontal gearbox

Refer to the figure below to check the oil level and the position of the cooling circuit fittings.



In-line and right-angle vertical gearbox
Refer to Fig. (D), (E) and (F) to check the oil level and the position of the cooling circuit fittings.

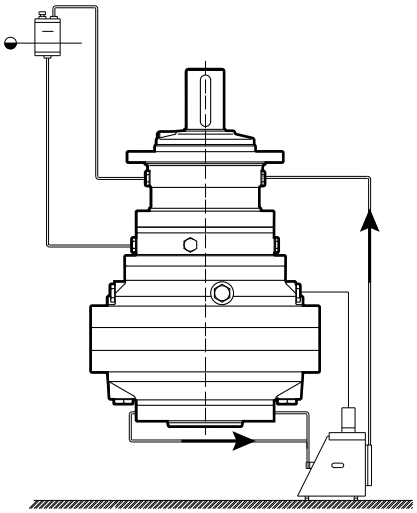


Fig. D

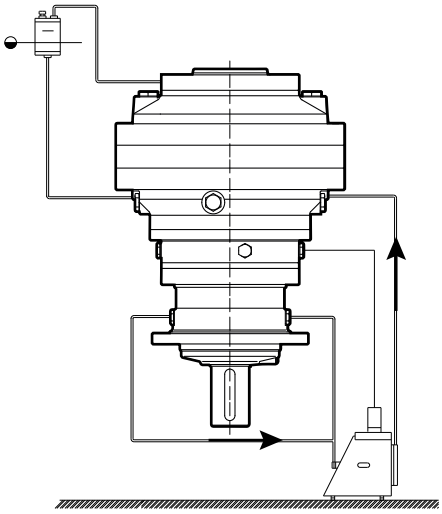


Fig. E

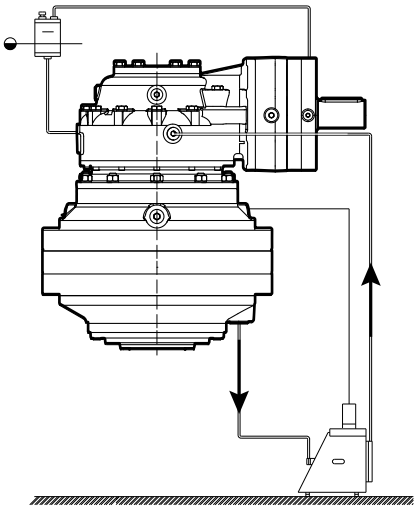


Fig. F

Caution
The auxiliary oil cooling and filtration systems described above are the minimum condition required to control the gearbox lubrication. The end-user can always extend the system by adding auxiliary safety checks on the flow, temperature and level.
The system may also be fitted with valves to facilitate oil changes with the aid of the service pump and auxiliary suction filter to protect the pump from unwanted debris from inside the gearbox.

Oil change

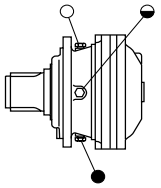
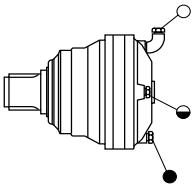
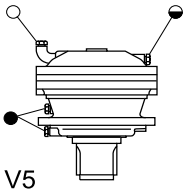
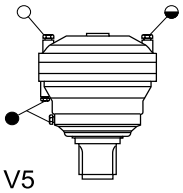
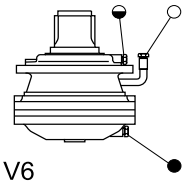
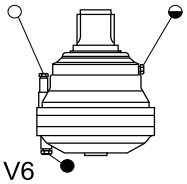
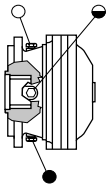
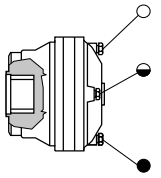
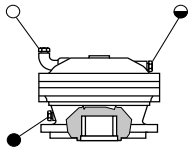
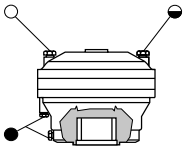
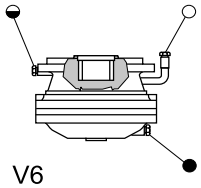
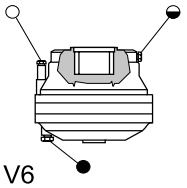
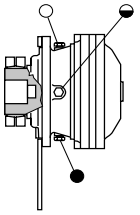
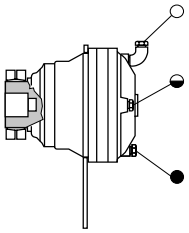
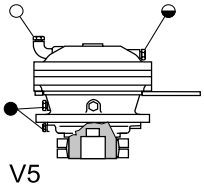
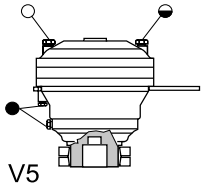
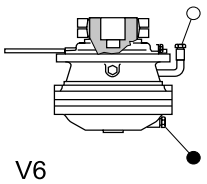
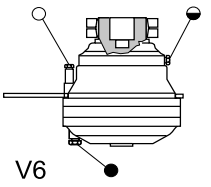
If there is no filtering and cooling circuit, the first oil change must be done after 500–600 hours of operation.
Subsequently, the following oil change frequencies are recommended:

Oil temperature [°C]	**Oil change interval** [h]	
	Synthetic Oil	**Mineral Oil**
≤ 65	10'000	4'000
65 – 80	8'000	3'000

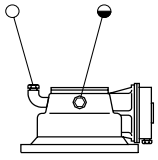
In case of heavy duty applications, the above values must be halved. The values given in the table refer to a work environments free from external contamination.
It is advisable to carry out the oil change with the gearbox hot, (approximately 40°C) to prevent sludge from forming and to help it drain completely.

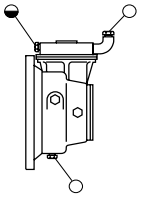
For the correct procedure, follow the rules given in the installation and maintenance manual supplied with each gearbox.
It is advisable to check the oil level periodically.
Check for leaks if more than 10% the total volume has to be added.

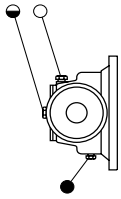
Mounting positions and plugs

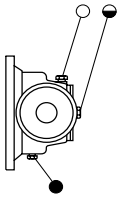
		Horizontal position		Vertical position	
		010-091	150-320	010-091	150-320
AXIAL	MN-MR-MN1-MR1	 B3	 B3	 V5	 V5
				 V6	 V6
	FE	 B3	 B3	 V5	 V5
				 V6	 V6
	FS	 B3	 B3	 V5	 V5
				 V6	 V6

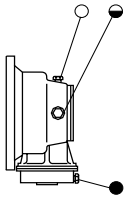
RIGHT-ANGLE

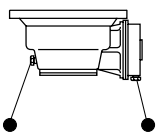
 V5B

 B3D

 B3C

 B3A

 B3B

 V6B

● Oil drain plug

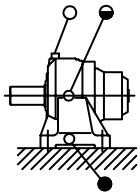
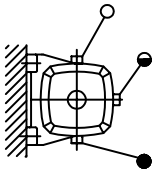
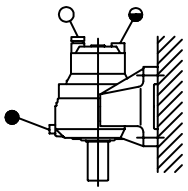
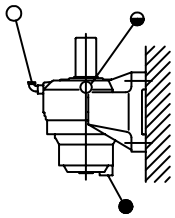
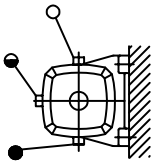
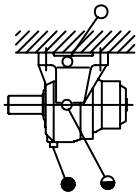
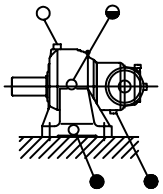
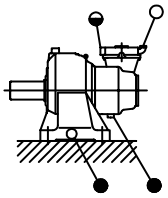
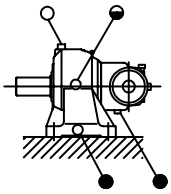
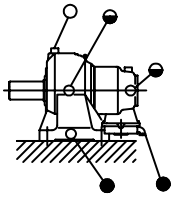
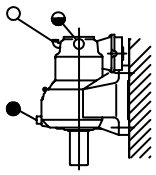
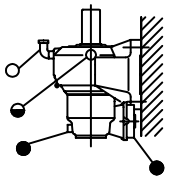
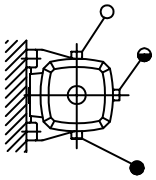
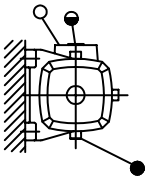
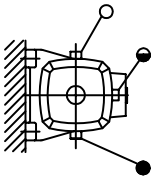
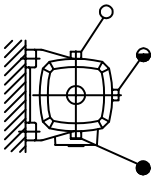
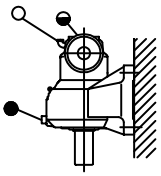
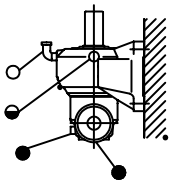
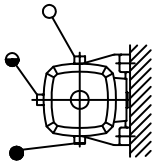
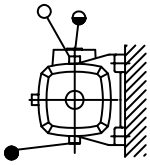
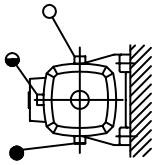
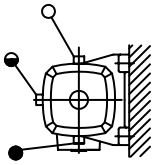
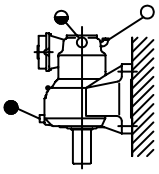
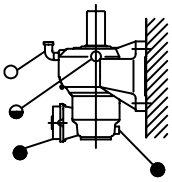
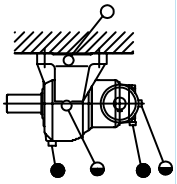
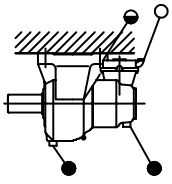
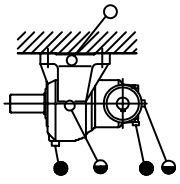
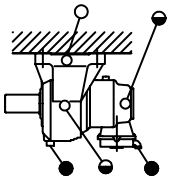
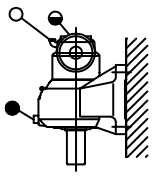
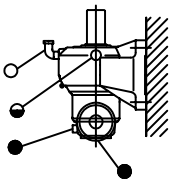
◒ Oil level plug

○ Oil breather and filler plug

Click **DANA** button to return to section index

Click *i* button to return to main index

Mounting positions and plugs

	Horizontal position				Vertical position	
AXIAL	B3 		B6 			
	B7 		B8 		V5	V6
RIGHT-ANGLE	B3C 	B3D 	B3A 	B3B 	V5B 	V6B 
	B6B 	B6C 	B6D 	B6A 	V5A 	V6A 
	B7B 	B7A 	B7D 	B7C 	V5D 	V6D 
	B8A 	B8B 	B8C 	B8D 	V5C 	V6C 

Details & Installation

Lubricant quantity [l]

010		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1010	MN/MN1	0.5	1	-
	MR/MR1	0.5	1	-
	FE	0.5	1	-
	FS	0.5	1	-
ED 2010	MN/MN1	0.8	1.6	-
	MR/MR1	0.8	1.6	-
	FE	0.8	1.6	-
	FS	0.8	1.6	-
EC 2010	MN/MN1	-	-	-
	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
ET 3010	MN/MN1	0.9	1.8	-
	MR/MR1	0.9	1.8	-
	FE	0.9	1.8	-
	FS	0.9	1.8	-
EC 3010	MN/MN1	-	-	-
	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
EC 4010	MN/MN1	-	-	-
	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
PD 1010	MR1	1.1	2	-
PD 2010	MR1	1.3	2.3	-
PD 3010	MR1	1.4	2.5	-
PDA 2010	MR1	-	-	-
PDA 3010	MR1	-	-	-
PDA 4010	MR1	-	-	-

020		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1020	MR/MR1	1	2	-
	FE	1.2	2.4	-
	FS	1	2	-
	ME			
	FET			
	FP1			
	FP	-	-	-
ED 2020	MR/MR1	1.2	2.4	-
	FE	1.5	3	-
	FS	1.2	2.4	-
	ME			
	FET			
	FP1			
	FP	-	-	-
EC 2020	MR/MR1	2.2	4.4	-
	FE	2.3	4.6	-
	FS	2.2	4.4	-
	ME			
	FET			
	FP1			
	FP	-	-	-
ET 3020	MR/MR1	1.6	3.2	-
	FE	1.7	3.4	-
	FS	1.6	3.2	-
	ME			
	FET			
	FP1			
	FP	-	-	-
EC 3020	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
	ME			
	FET			
	FP1			
	FP	-	-	-
EQ 4020	MR/MR1	1.7	3.4	-
	FE	1.8	3.6	-
	FS	1.7	3.4	-
	ME			
	FET			
	FP1			
	FP	-	-	-
EC 4020	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
	ME			
	FET			
	FP1			
	FP	-	-	-
PD 1020	MR1	3.6	6.8	-
PD 2020	MR1	3.8	7.2	-
PD 3020	MR1	4	7.5	-
PD 4020	MR1	4.3	8	-
PDA 2020	MR1	-	-	-
PDA 3020	MR1	-	-	-
PDA 4020	MR1	-	-	-

030		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
ED 2030	MR/MR1	1.3	2.6	-
	FE	1.1	2.2	-
	FP			
	FP1			
	FET			
	FS	1.3	2.6	-
ET 3030	MR/MR1	1.6	3.2	-
	FE	1.6	3.2	-
	FP			
	FP1			
	FET			
	FS	1.6	3.2	-
EC 3030	MR/MR1	-	-	-
	FE	-	-	-
	FP			
	FP1			
	FET			
	FS	-	-	-
EQ 4030	MR/MR1	1.7	3.4	-
	FE	1.7	3.4	-
	FP			
	FP1			
	FET			
	FS	1.7	3.4	-
EC 4030	MR/MR1	-	-	-
	FE	-	-	-
	FP			
	FP1			
	FET			
	FS	-	-	-
PD 2030	MR1	3.6	6.8	-
PD 3030	MR1	3.8	7.1	-
PD 4030	MR1	4.1	7.6	-
PDA 3030	MR1	-	-	-
PDA 4030	MR1	-	-	-

Lubricant quantity [l]

040		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
ED 2040	MN/MN1	1.7	3.4	-
	ME			
ET 3040	MN/MN1	1.7	3.4	-
	ME			
EC 3040	MN/MN1	-	-	-
	ME			
EQ 4040	MN/MN1	1.8	3.6	-
	ME			
EC 4040	MN/MN1	-	-	-
	ME			

045		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1045	MR/MR1	1	2	-
	FE	1.1	2.2	-
	FS	1	2	-
	FET			
	FP1			
	FP	-	-	-
ED 2045	MR/MR1	1.6	3.2	-
	FE	1.5	3	-
	FS	1.6	3.2	-
	FET			
	FP1			
	FP	-	-	-
EC 2045	MR/MR1	2	4	-
	FE	2.1	4.2	-
	FS	2	4	-
	FET			
	FP1			
	FP	-	-	-
ET 3045	MR/MR1	1.6	3.2	-
	FE	1.6	3.2	-
	FS	1.6	3.2	-
	FET			
	FP1			
	FP	-	-	-
EC 3045	MR/MR1	3	6	-
	FE	3.2	6.4	-
	FS	3	6	-
	FET			
	FP1			
	FP	-	-	-
EQ 4045	MR/MR1	2.2	4.4	-
	FE	2.5	5	-
	FS	2.2	4.4	-
	FET			
	FP1			
	FP	-	-	-
EC 4045	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
	FET			
	FP1			
	FP	-	-	-
PD 1045	MR1	3.4	6.5	-
PD 2045	MR1	4	7.6	8.4
PD 3045	MR1	4.2	8	10.8
PD 4045	MR1	4.5	8.2	-
PDA 2045	MR1	4	8	8.5
PDA 3045	MR1	5.5	7.5	11
PDA 4045	MR1	-	-	-

046		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1046	MN/MN1	1.2	2.4	-
	ME			
ED 2046	MN/MN1	2	4	-
	ME			
EC 2046	MN/MN1	2.5	5	-
	ME			
ET 3046	MN/MN1	1.8	3.6	-
	ME			
EC 3046	MN/MN1	3.3	6.6	-
	ME			
EQ 4046	MN/MN1	2.2	4.4	-
	ME			
EC 4046	MN/MN1	-	-	-
	ME			

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065		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1065	MR/MR1	1.6	3.2	-
	FE	1.8	3.6	-
	FS	1.6	3.2	-
	ME			
	FP1			
	FP	-	-	-
ED 2065	MR/MR1	2.4	4.8	-
	FE	2.6	5.2	-
	FS	2.4	4.8	-
	ME			
	FP1			
	FP	-	-	-
EC 2065	MR/MR1	2.7	5.4	-
	FE	2.9	5.8	-
	FS	2.7	5.4	-
	ME			
	FP1			
	FP	-	-	-
ET 3065	MR/MR1	2.3	4.6	-
	FE	2.5	5	-
	FS	2.3	4.6	-
	ME			
	FP1			
	FP	-	-	-
EC 3065	MR/MR1	3.7	7.4	-
	FE	3.8	7.6	-
	FS	3.7	7.4	-
	ME			
	FP1			
	FP	-	-	-
EQ 4065	MR/MR1	2.5	5	-
	FE	2.8	5.6	-
	FS	2.5	5	-
	ME			
	FP1			
	FP	-	-	-
EC 4065	MR/MR1	-	-	-
	FE	-	-	-
	FS	-	-	-
	ME			
	FP1			
	FP	-	-	-
PD 1065	MR1	5	9	-
PD 2065	MR1	5.8	10.5	-
PD 3065	MR1	6	11	-
PD 4065	MR1	6.4	11.8	-
PDA 2065	MR1	6	11.4	12
PDA 2065	MR1	7	13.8	14
PDA 3065	MR1	-	-	-

067		Mounting position B3 B6 B7 B8	V5 V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
ED 2067	MR/MR1	2.4	4.8	-
	FE	2.6	5.2	-
	FS	2.4	4.8	-
	ME			
	FP	-	-	-
EC 2067	MR/MR1	2.7	5.4	-
	FE	2.9	5.8	-
	FS	2.7	5.4	-
	ME			
	FP	-	-	-
ET 3067	MR/MR1	2.3	4.6	-
	FE	2.5	5	-
	FS	2.3	4.6	-
	ME			
	FP	-	-	-
EC 3067	MR/MR1	3.7	7.4	-
	FE	3.8	7.6	-
	FS	3.7	7.4	-
	ME			
	FP	-	-	-
PD 2067	MR1	5.8	10.5	-
PD 3067	MR1	6	11	-
PDA 2067	MR1	6	11.4	12
PDA 2067	MR1	7	13.8	14
PDA 3067	MR1	-	-	-

090		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1090	MN/MN1	2.2	4.4	-
	MR/MR1	3	6	-
	ME			
	FE	2.2	4.4	-
	FS	2.2	4.4	-
	FP	-	-	-
ED 2090	MN/MN1	2.2	4.4	-
	MR/MR1	3.5	7	-
	ME			
	FE	3.2	6.4	-
	FS	2.2	4.4	-
	FP	-	-	-
EC 2090	MN/MN1	5	10	-
	MR/MR1	6	12	-
	ME			
	FE	5.2	10.4	-
	FS	5	10	-
	FP	-	-	-
ET 3090	MN/MN1	3.3	6.6	-
	MR/MR1	3.2	6.4	-
	ME			
	FE	3.2	6.4	-
	FS	3.3	6.6	-
	FP	-	-	-
EC 3090	MN/MN1	5.2	10.4	-
	MR/MR1	6.2	12.4	-
	ME			
	FE	5.5	11	-
	FS	5.2	10.4	-
	FP	-	-	-
EQ 4090	MN/MN1	4	8	-
	MR/MR1	5	10	-
	ME			
	FE	3.8	7.6	-
	FS	4	8	-
	FP	-	-	-
EC 4090	MN/MN1	5.5	11	-
	MR/MR1	6.5	13	-
	ME			
	FE	5.8	11.6	-
	FS	5.5	11	-
	FP	-	-	-
PD 1090	MR1	5.2	9.5	-
PD 2090	MR1	6	11	-
PD 3090	MR1	6.3	11.6	-
PD 4090	MR1	7	13	-
PDA 2090	MR1	8.5	14.8	15
PDA 2090	MR1	9	15.4	15.5
PDA 3090	MR1	9.5	16	16

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091		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EC 2091	MN/MN1	5	10	-
	MR/MR1	6	12	-
	ME			
	FE	5.2	10.4	-
	FS	5	10	-
	FP	-	-	-
PDA 2091	MR1	8.5	14.8	15

150		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1150	MN/MN1	2.5	5	-
	MR/MR1	4.5	9	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	1.8	3.6	-
	FS	2.5	5	-
	FP	-	-	-
ED 2150	MN/MN1	3.2	6.4	-
	MR/MR1	5	10	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	2.5	5	-
	FS	3.2	6.4	-
	FP	-	-	-
EC 2150	MN/MN1	5	10	-
	MR/MR1	7	14	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3	12	-
	FS	5	10	-
	FP	-	-	-
ET 3150	MN/MN1	3.5	7	-
	MR/MR1	5.3	10.6	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3	6	-
	FS	3.5	7	-
	FP	-	-	-
EC 3150	MN/MN1	4.4	8.8	-
	MR/MR1	6	12	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3.7	7.4	-
	FS	4.4	8.8	-
	FP	-	-	-
EQ 4150	MN/MN1	3.7	7.4	-
	MR/MR1	5.5	11	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3.5	7	-
	FS	3.7	7.4	-
	FP	-	-	-
EC 4150	MN/MN1	5.5	11	-
	MR/MR1	6	12	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3.5	7	-
	FS	5.5	11	-
	FP	-	-	-

150		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
PD 1150	MR1	5.5	10.2	-
PD 2150	MR1	6.3	11.6	-
PD 3150	MR1	6.5	12	-
PD 4150	MR1	11	13.4	-
PDA 2150	MR1	10	15.2	15.5
PDA 3150	MR1	9	15.7	16
PDA 4150	MR1	9	16.4	16.5

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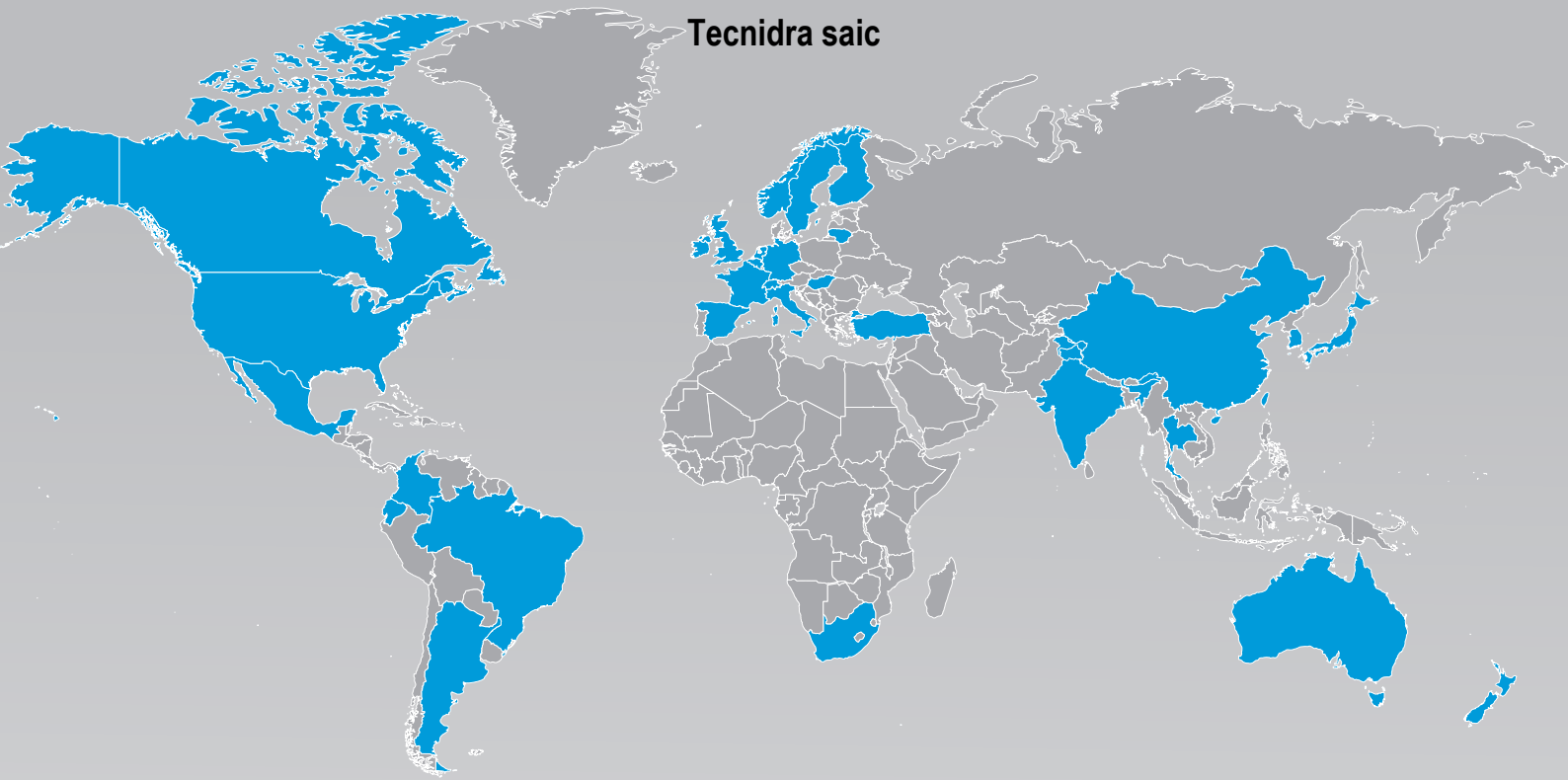
155		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
ED 2155	MN/MN1	3.2	6.4	-
	MR/MR1	5	10	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	2.5	5	-
	FS	3.2	6.4	-
	FP	-	-	-
EC 2155	MN/MN1	5	10	-
	MR/MR1	7	14	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3	12	-
	FS	5	10	-
	FP	-	-	-
ET 3155	MN/MN1	3.5	7	-
	MR/MR1	5.3	10.6	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3	6	-
	FS	3.5	7	-
	FP	-	-	-
EC 3155	MN/MN1	4.4	8.8	-
	MR/MR1	6	12	-
	MNS9			
	MN1S9			
	MNR			
	ME			
	FE	3.7	7.4	-
	FS	4.4	8.8	-
	FP	-	-	-
PD 2155	MR1	6.3	11.6	-
PD 3155	MR1	6.5	12	-
PDA 3155	MR1	9	15.7	16

250		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1250	MN/MN1	3.8	7	-
	FE	2.5	5	-
	FS	3.8	7	-
	FP	-	-	-
ED 2250	MN/MN1	4.5	9	-
	FE	3.5	7	-
	FS	4.5	9	-
	FP	-	-	-
EC 2250	MN/MN1	6.5	13	-
	FE	5	10	-
	FS	6.5	13	-
	FP	-	-	-
ET 3250	MN/MN1	5	10	-
	FE	4.5	9	-
	FS	5	10	-
	FP	-	-	-
EC 3250	MN/MN1	5.7	11.4	-
	FE	6	12	-
	FS	5.7	11.4	-
	FP	-	-	-
EQ 4250	MN/MN1	5.2	10.4	-
	FE	4.8	9.6	-
	FS	5.2	10.4	-
	FP	-	-	-
EC 4250	MN/MN1	7	14	-
	FE	5.7	11.4	-
	FS	7	14	-
	FP	-	-	-

255		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
ED 2255	MN/MN1	4.5	9	-
	FE	3.5	7	-
	FS	4.5	9	-
	FP	-	-	-
ET 3255	MN/MN1	5	10	-
	FE	4.5	9	-
	FS	5	10	-
	FP	-	-	-
EC 3255	MN/MN1	5.7	11.4	-
	FE	6	12	-
	FS	5.7	11.4	-
	FP	-	-	-
EQ 4255	MN/MN1	5.2	10.4	-
	FE	4.8	9.6	-
	FS	5.2	10.4	-
	FP	-	-	-
EC 4255	MN/MN1	7	14	-
	FE	5.7	11.4	-
	FS	7	14	-
	FP	-	-	-

320		Mounting position B3 B6 B7 B8	V5/ V6	V5A V6A B3D V5B V6B B6C V5C V6C B7A V5D V6D B8B
EM 1320	FE			
ED 2320	FE	3.5	7	-
ET 3320	FE	4.5	9	-
EQ 2320	FE			



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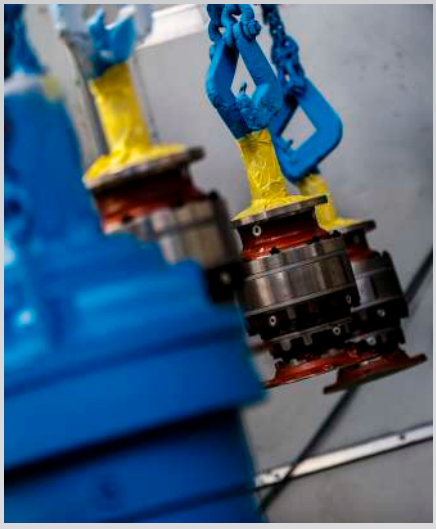

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