DANA BREVINI® Motion Systems

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Product Catalog

Brevini® Planetary Gearboxes
S Series

Torques from 11.800 ft-lb to 811.300 ft-lb

Industrial solutions

Brevini® S Series planetary gearboxes are designed to ensure effective performances and quite operation in multiple possible configurations.

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i

Description	Measurement unit	Symbol
Radial load constant		c
Diameter of element mounted on shaft	[in]	d
Permissible axial load on output shaft	[lbf]	F_{a2}
Required axial load on the output shaft	[lbf]	F_{aR2}
Permissible radial load on input/output shaft	[lbf]	$F_{r1,2}$
Required radial load on the input/output shaft	[lbf]	$F_{rR1,2}$
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	[HP]	P_1
Output power	[HP]	P_2
Thermal power to be dissipated	[HP]	P_C
Electric motor nominal power	[HP]	P_n
Thermal power	[HP]	P_T
Corrected thermal power	[HP]	P_{T1}
Hydraulic motor capacity	[US Gal/min]	q
Brake safety factor		S_f
Required input torque	[ftlb]	T_{1R}
Transmissible output torque	[ftlb]	T_2
Output braking torque	[ftlb]	T_{2B}
Max output torque	[ftlb]	T_{2MAX}
Nominal output torque	[ftlb]	T_{2N}
Required output torque	[ftlb]	T_{2R}
Required maximum output torque	[ftlb]	T_{2RMAX}
Input braking torque	[ftlb]	T_B
Required input braking torque	[ftlb]	T_{BR}
Work environment temperature	[°F]	t_a
Operating time	[s]	t_f
Stopping time	[s]	t_r
Hydraulic motor displacement	[in^3]	V
Required hydraulic motor displacement	[in^3]	V_R
Input/output radial load application distance	[in]	$X_{1,2}$
Dynamic efficiency		η_d
Hydraulic motor mechanical efficiency		η_{mh}
Hydraulic motor volumetric efficiency		η_v

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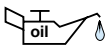
In-line gearboxes	SL	
Right-angle gearboxes	SC	
Tightening torque	[ftlb]	
Lubrication	[US Gal]	

Bevel gear dimensions by ratios	
Refer to page	

Outputs					
Female splined shaft	FE FAR		Male splined shaft	MP	
Hollow shaft for shrink disc	FS		Keyed cylindrical shaft	MP1	

Inputs	
Universal coupling	
Universal coupling	
Direct coupling	

Accessories	
Wheel flange	
Pinion	
Splined sleeve	
Lock washer	

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 coinercial 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
- 9 sizes based on the principle of modularity

Construction and Design:
- 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 25000 ftlb to 390000 ftlb

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

IN-LINE AND RIGHT-ANGLE PLANETARY GEARBOXES

Gears
The Brevini S 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
- 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} [ftlb]
This is the conventional output torque that defines the size of the gearbox.

Transmissible output torque T_2 [ftlb]
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} [ftlb]
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} [ftlb]
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} [ftlb]
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 [ftlb]
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} [ftlb]
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:

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

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

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

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

$$P_2 = \frac{T_{2R} \times n_2}{5200} \quad [HP] \qquad (5)$$

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

Thermal power P_T [HP]
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 176 °F (oil viscosity ISO VG150)
- at an ambient temperature of 68 °F
- 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 68 °F, the gearbox thermal rating can be adjusted to the specific application with the factor f_K given in the table below.

	Duty cycle I [%]	Ambient temperature [°F]				
		50°	68°	86°	104°	122°
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:

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

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

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

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

$$P_1 \leq P_{T1} \qquad (8)$$

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:

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

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

Temperature [°F]
The recoinended ambient temperature is in the range -4°F/+104°F. The ideal gearbox operating temperature is from 122°F to 158°F, which corresponds to an oil temperature of approximately 140°F to 176°F. For short periods, the oil temperature can reach 194°F.
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 coinon machines into the three levels **a**, **b** and **c** given in the previous table (5).

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		Triiner
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)

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.

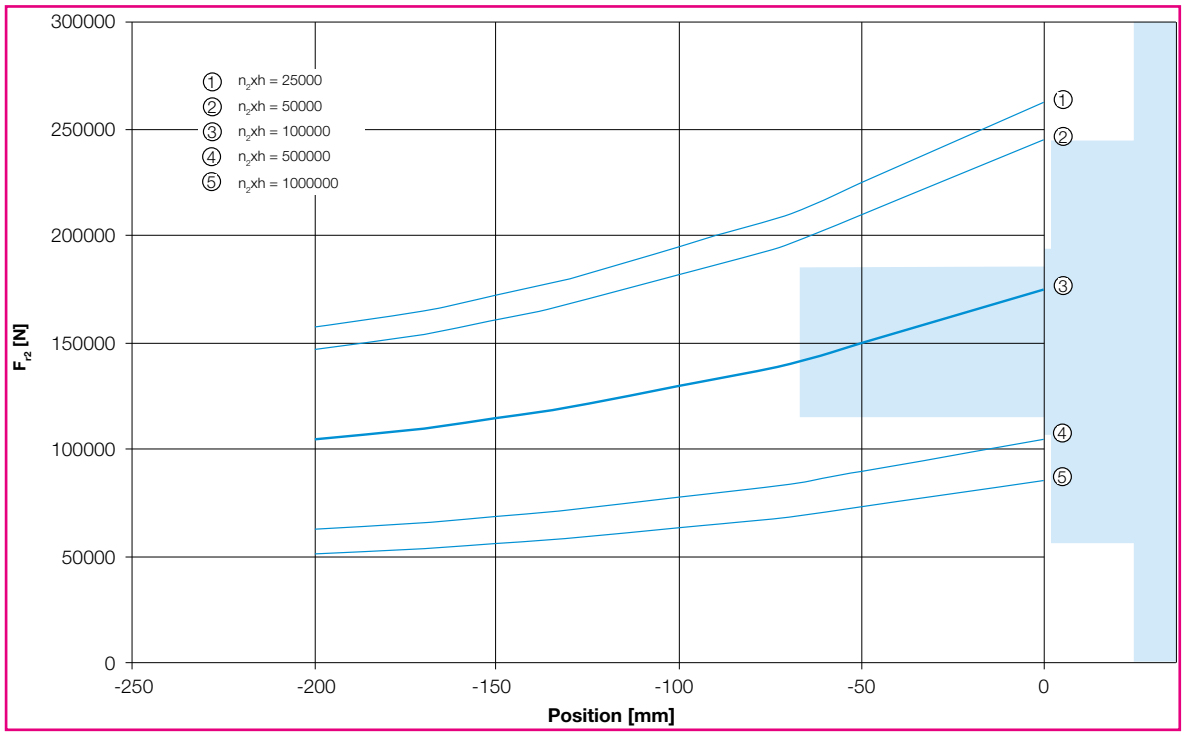


Fig. (1)

Contact the Dana Sales Department for duration factors $n_2$xh < 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} [lbf] and F_{a2MAX} [lbf]

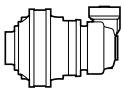
For each gearbox size, the tables give the permissible axial loads F_{a2} for continuous duration and F_{a2MAX} for intermittent duration.
If there are radial and axial loads on the output shaft at the same time, we recoinend contacting the Dana Sales Department.
FE and FET gearboxes with female output 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		[ftlb]
T_{2RMAX}	Required maximum output torque		[ftlb]
n_2	Output speed		[rpm]
n_1	Input speed		[rpm]
P_2	Output power		[HP]
F_{rR2}	Required radial load on the output shaft		[N]
X_2 *	Radial load F_{rR2} application distance		[in]
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		[in]
h_R	Required duration		[h]
I	Duty cycle		[%]
N	Number of starts per hour		[1/h]
t_a	Work environment temperature		[°F]

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

Output support type:

Parking brake: Yes ☐ No ☐

T_{BR}	Required braking torque:		[ftlb]

Mounting position:

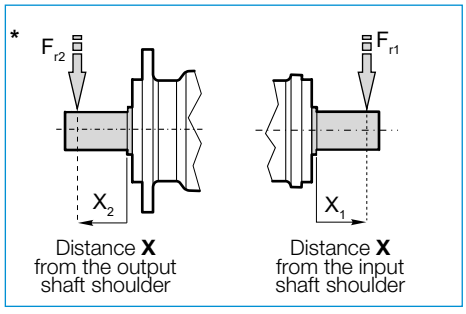
Motor type:

Hydraulic ☐ Electric ☐ Endothermic ☐ Other ☐

Work environment:

Restricted ☐ Large ☐ Outdoors ☐

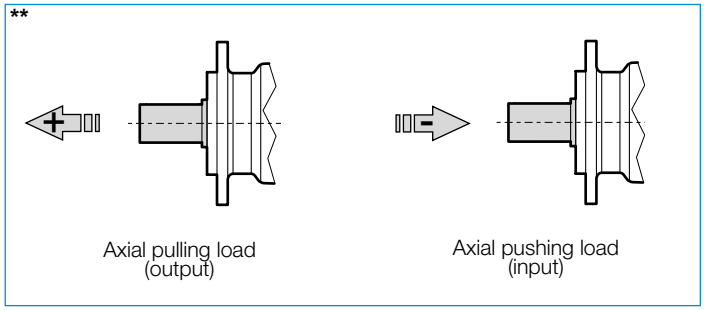
* **X** is the distance between the load application point and the shaft shoulder (see diagrams in the selection tables)



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)

Click *i* button to return to main index

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

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 recoinend 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:

$$F_{rR2} = \frac{24 \times T_{2R} \times f_S \times c}{d} \quad [lbf] \qquad \textbf{(18)}$$

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

$$F_{rR1} = \frac{24 \times T_{2R} \times f_S \times c}{d \times i \times \eta_d} \quad [lbf] \qquad \textbf{(19)}$$

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 (in) 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 recoinendations 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

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

2. check that

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

CHOOSING THE MOTOR

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 [psi]	< 2500		2500 – 3600		3600 – 6500	
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:

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

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:

$$V_R = \frac{74 \times T_{1R}}{p_A \times \eta_{mh}} \quad [in^3] \qquad \textbf{(26)}$$

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:

$$q = 0.0043 \times \frac{V \times n_1}{\eta_v} \quad [gal/min] \qquad \textbf{(28)}$$

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.

Electric motor
Calculate the gearbox input power with the formula:

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

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:

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

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:

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

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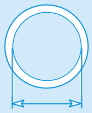
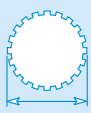
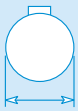
Motion Systems

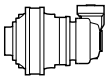
Size	i	[in]	 [in]	 [in]	 [in]	T_{2N} [ftlb]
300	4.04-2401	N120x5x30x22x9H DIN 5480	5.512	W120x3x30x38x8f DIN 5480	4.724	25000
400	4.18-1958	N140x5x30x26x9H DIN 5480	5.512	W130x3x30x42x8f DIN 5480	5.118	35000
600	4.18-2785	N150x5x30x28x9H DIN 5480	6.496	W150x5x30x28x8f DIN 5480	6.299	47000
850	4.18-1987	N170x5x30x32x9H DIN 5480	7.087	W170x5x30x32x8f DIN 5480	6.693	66000
1200	4.18-1620	N200x5x30x38x9H DIN 5480	8.661	W200x5x30x38x8f DIN 5480	7.874	98000
1800	4.18-2305	N210x5x30x40x9H DIN 5480	9.449	W220x5x30x42x8f DIN 5480	9.843	140000
2500	4.18-1987	N240x5x30x46x9H DIN 5480	10.236	-	-	190000
3500	4.18-1620	N280x8x30x34x9H DIN 5480	11.417	-	-	273000
5000	4.18-1338	N340x8x30x41x9H DIN 5480	13.386	-	-	390000
7500	85.80-11486	N400x8x30x48x9H DIN 5480	15.748	-	-	542000

Tab. (9)

DESIGNATION

SL	400	1	MP

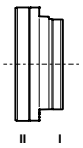
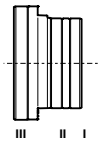
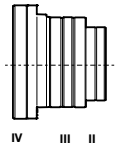
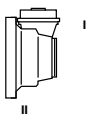
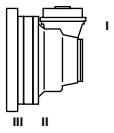
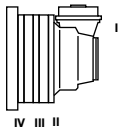
VERSION

- Linear
  - **SL**
- Right-angle
  - **SC** 

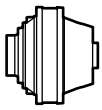
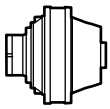
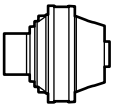
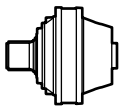
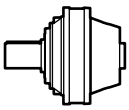
SIZE

- **300**
- **400**
- **600**
- **850**
- **1200**
- **1800**
- **2500**
- **3500**
- **5000**
- **7500**

STAGES

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

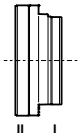
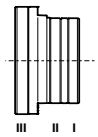
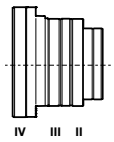
OUTPUT CONFIGURATION

- Flanged version
  - **FE** 
  - **FAR** 
  - **FS** 
  - **MP** 
  - **MP1** 

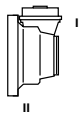
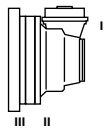
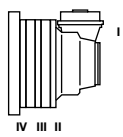
4.18	IS300	B3	FR S400

ACTUAL RATIO

Linear

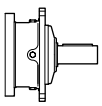
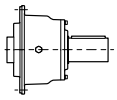
- 4.04 – 7.36
- 15.96 – 45.00 
- 55.85 – 218.2 
- 172.0 – 2785 

Right-angle

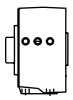
- 10.26 – 27.36 
- 42.89 – 201.4 
- 167.6 – 1871 

INPUT CONFIGURATION

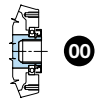
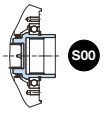
Male input supports

- S-45CR1
- S-46C1
- S-65CR1
- S-90CR1 
- ISL150
- ISL250
- ISL300
- IS300
- IS600
- IS850 
- 65.105
- 48.82
- 45.70

Multi-disc brakes

- FL250
- FL350
- FL450
- FL650
- FL750
- FL960
- FL620.U
- FL635.U 

Universal input

- 00 
- S00 

MOUNTING POSITION

Linear

- B3
- V5
- V6

Right-angle

- B3A
- B3C
- B3B
- B3D
- V5B
- V6B

ADDITIONAL ACCESSORIES *

- FR..
- MS..
- RDF..

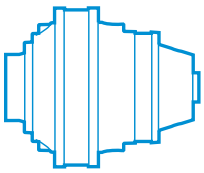
* based on actual configuration

Click *i* button to return to main index

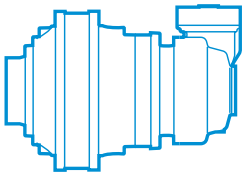
Click **DANA** button to return to section index

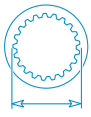
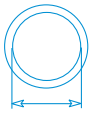
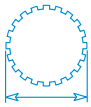
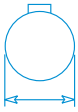
DANA
BREVINI®
Motion Systems

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts	8
Brakes	10
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



300



i_{eff}	4.04 - 2401
T_{2N}	25000 ftlb
	N120x5x30x22x9H DIN5480
	5.512 in
	W120x3x30x38x8f DIN5480
	4.724 in

10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [ftlb]	1500 P_2 [HP]	1000 n_2 [rpm]	1000 T_2 [ftlb]	1000 P_2 [HP]	500 n_2 [rpm]	500 T_2 [ftlb]	500 P_2 [HP]	n_{1MAX} [rpm]	T_{2MAX} [ftlb]	P_T [HP]
SL3001												
4.04				248	12067	569	124	14855	350		56050	
4.50				222	12249	519	111	15080	319		54575	
5.12	1)			195	12587	468	98	15496	288	2000	43513	79
6.00				167	12927	410	83	15273	243		39825	
7.36				136	10101	261	68	10540	137		26550	
SL3002												
15.96	94	16048	287	63	18123	216	31	22313	133		56050	
17.86	84	16572	266	56	18716	200	28	23042	123		56050	
19.89	75	16940	243	50	19131	184	25	23028	110		54575	
22.77	66	17641	221	44	19923	166	22	23219	97		54575	
24.24	62	17516	207	41	19782	156	21	24172	95		56050	
27.00	56	18566	196	37	20967	148	18	23463	83	2500	54575	51
30.72	49	17406	162	33	17844	110	16	18619	58		43513	
33.75	44	18639	158	30	19109	107	15	19938	56		43144	
38.4	39	17645	131	26	18090	90	13	18876	47		43513	
45.00	33	16156	102	22	16563	70	11	17282	37		39825	
SL3003												
55.85	27	23369	119	18	24382	83	9.0	25487	43			
62.50	24	23948	110	16	24551	75	8.0	25924	39			
71.55	21	24148	97	14	24756	66	7.0	26460	35			
79.79	19	24310	87	12	24922	60	6.3	26900	32			
93.57	16	24548	75	11	25167	51	5.3	27556	28			
105.0	14	24722	67	9.5	25345	46	4.8	28039	25	2500	56050	33
107.1	14	24753	66	9.3	25377	45	4.7	28126	25			
122.7	12	24960	58	8.2	25850	40	4.1	28707	22			
145.4	10	25222	49	6.9	26525	35	3.4	29457	19			
162.0	9.3	24482	43	6.2	25674	30	3.1	28512	17		54575	
SL3004												
172.0	8.7	25589	43	5.8	27207	30	2.9	30215	17			
195.5	7.7	26088	38	5.1	27738	27	2.6	30805	15			
230.7	6.5	26750	33	4.3	28442	23	2.2	31586	13			
261.3	5.7	27259	30	3.8	28983	21	1.9	31108	11			
288.8	5.2	27674	27	3.5	29424	19	1.7	32677	11			
330.0	4.5	28238	24	3.0	30024	17	1.5	33343	10			
369.9	4.1	28730	22	2.7	30547	16	1.4	33924	8.7			
414.6	3.6	29230	20	2.4	31079	14	1.2	34514	7.9		56050	
463.9	3.2	29732	18	2.2	31612	13	1.1	35106	7.2			
518.7	2.9	30238	17	1.9	32151	12	0.96	35705	6.6			
578.5	2.6	30740	15	1.7	32685	11	0.86	36298	6.0			
647.3	2.3	31268	14	1.5	33246	10	0.77	36921	5.4	3000		23
741.0	2.0	31914	12	1.3	33932	8.7	0.67	37683	4.8			
776.8	1.9	32142	12	1.3	34175	8.3	0.64	37953	4.7			
889.2	1.7	32806	11	1.1	34882	7.5	0.56	38737	4.2			
990.5	1.5	31754	9.1	1.0	33762	6.4	0.50	37494	3.6			
1175	1.3	32583	7.9	0.85	34643	5.6	0.43	38472	3.1		54575	
1205	1.2	25380	6.0	0.83	26873	4.3	0.41	29843	2.4			
1392	1.1	25938	5.4	0.72	27464	3.8	0.36	30500	2.1		43513	
1670	0.90	26664	4.6	0.60	28232	3.2	0.30	31353	1.7			
1733	0.87	15933	2.7	0.58	16940	1.9	0.29	18813	1.1		26550	
1958	0.77	24335	3.5	0.51	25874	2.5	0.26	28734	1.3		39825	
2401	0.62	16738	2.0	0.42	17797	1.5	0.21	19764	0.8		26550	

1) Consult the DANA area contact person.

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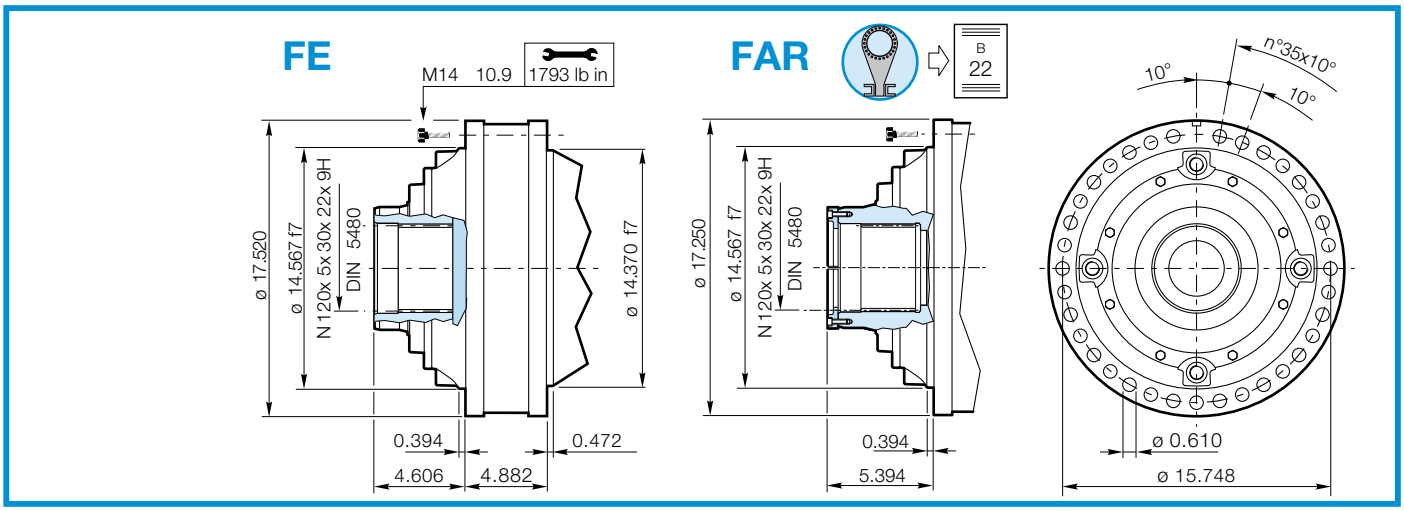
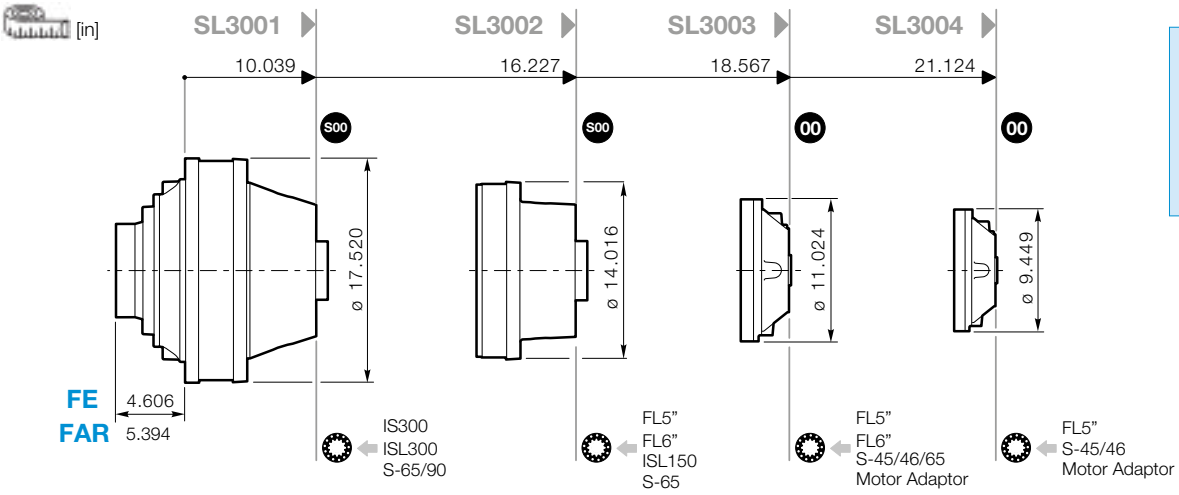
10000 hours life

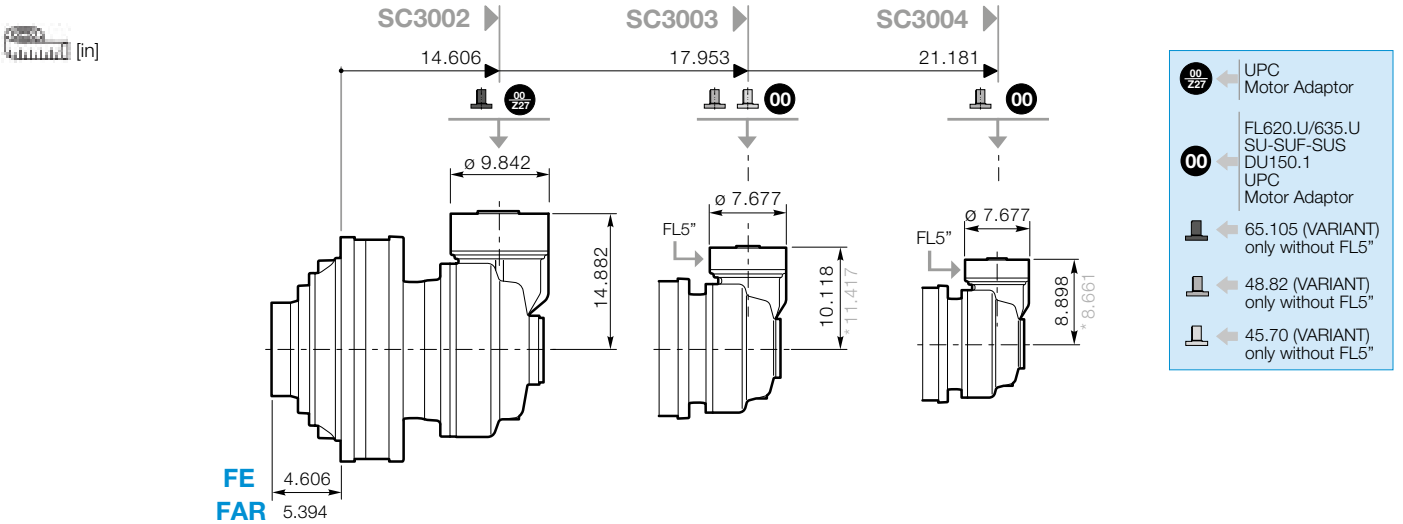
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC3002												
10.26	146	6172	172	97	6971	129	49	8582	79		37096	
11.43	131	6875	172	87	7764	129	44	9559	79	1800	41300	
13.01	115	7823	172	77	8835	129	38	10876	79		43513	
15.24	98	9167	172	66	10352	129	33	12745	79		39825	28
17.52	86	11292	184	57	12752	138	28	15700	86	1500	39825	
20.52	73	8823	123	49	9964	93	24	12267	57	2500	42480	
21.49	70	10522	139	47	10787	95	23	11256	50	1500	26550	
SC3003												
43.88*	34	12612	82	23	14243	62	11	17536	38			
49.11*	30	14113	82	20	15938	62	10	19622	38		56050	
56.22*	27	16156	82	18	18246	62	8.9	22464	38			
62.62*	24	17996	82	16	20323	62	8.0	24706	38			
74.25*	20	21339	82	13	23926	61	6.7	25338	32	2000	54575	
83.33*	18	17805	61	12	18253	42	6.0	19046	22		56050	24
92.81*	16	19832	61	11	20331	42	5.4	21215	22		54575	
99.00*	15	16957	49	10	17384	33	5.1	18296	18		39825	
107.5	14	17814	47	9.3	19269	34	4.7	20792	18		43513	
126.0	12	17209	39	7.9	17642	27	4.0	18976	14	3000	39825	
134.4	11	19056	40	7.4	19535	28	3.7	21506	15		43513	
SC3004												
167.60	9.0	25487	43	6.0	27099	31	3.0	30094	17			
187.50	8.0	25924	39	5.3	27564	28	2.7	30611	16			
207.30	7.2	26321	36	4.8	27986	26	2.4	31079	14			
232.00	6.5	26772	33	4.3	28465	23	2.2	31612	13	2700		
254.50	5.9	27151	30	3.9	28868	22	2.0	31058	12			
287.20	5.2	27652	27	3.5	29401	19	1.7	32651	11			
321.40	4.7	28126	25	3.1	29905	18	1.6	33211	9.8		56050	
368.0	4.1	28707	22	2.7	30523	16	1.4	33897	8.7			
412.5*	3.6	29208	20	2.4	31055	14	1.2	34488	7.9			17
472.2*	3.2	29811	18	2.1	31697	13	1.1	35201	7.1			
495.0*	3.0	30024	17	2.0	31923	12	1.0	35452	6.8			
566.7*	2.6	30645	15	1.8	32583	11	0.88	36185	6.0			
631.2*	2.4	29662	13	1.6	31538	9.5	0.79	35023	5.2	3500	54575	
718.1*	2.1	23467	9.4	1.4	24952	6.6	0.70	27710	3.6			
768.2*	2.0	23708	8.9	1.3	25207	6.3	0.65	27877	3.5		43513	
887.0*	1.7	24229	7.8	1.1	25762	5.5	0.56	28490	3.1			
1040*	1.4	22113	6.0	0.96	23512	4.3	0.48	26110	2.4		39825	

* (bg) All the ratios in light grey (ie. 43.88) have particular dimensions of bevel gears in some versions. See dimensional tables.

GEARBOX DIMENSIONS WITH OUTPUT







* bg → 300 3 S-45/46//65/90 IS ISL → 300 8 SU SUF SUS → 300 9 65.105 48.82 45.70 → 300 9 FL5” FL6” FL620/635 → 300 10 Motor Adaptor → 300 12
00 → B 11
00 Z27 → B 11
S00 → B 12

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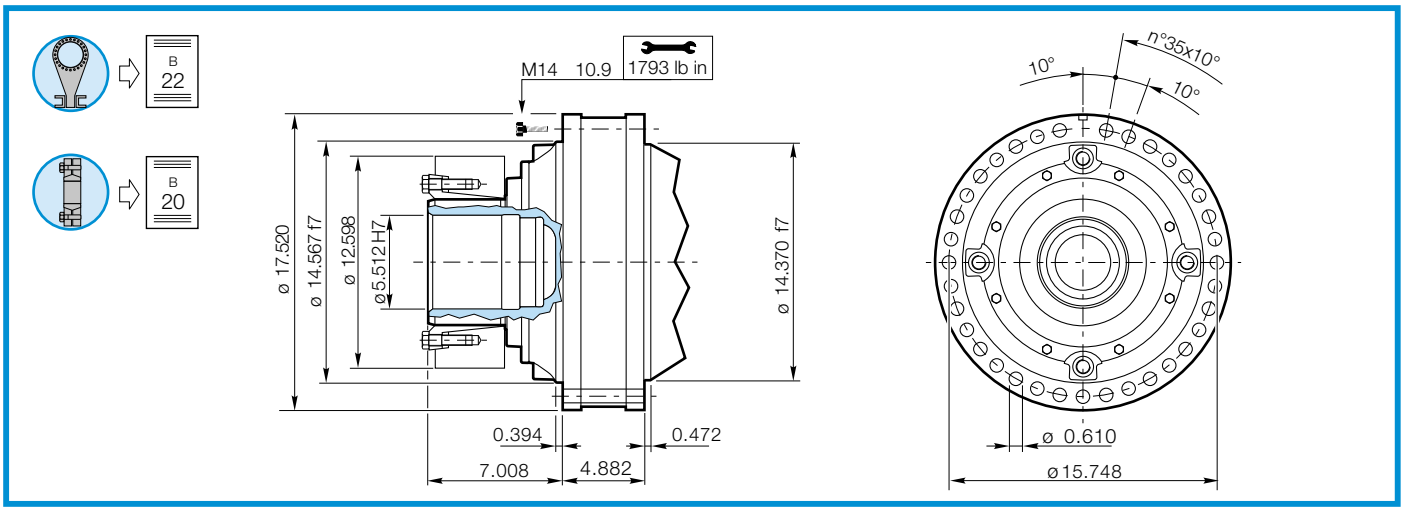

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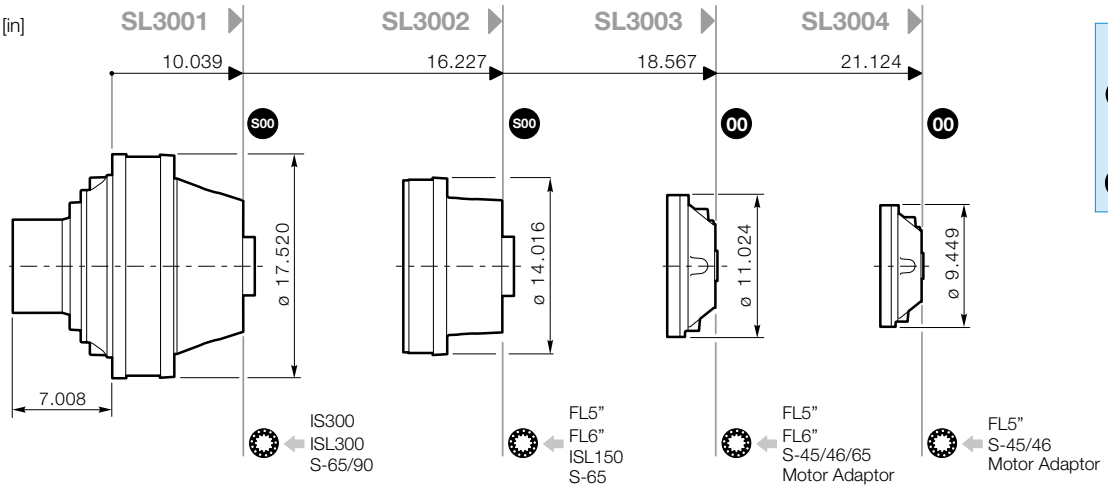

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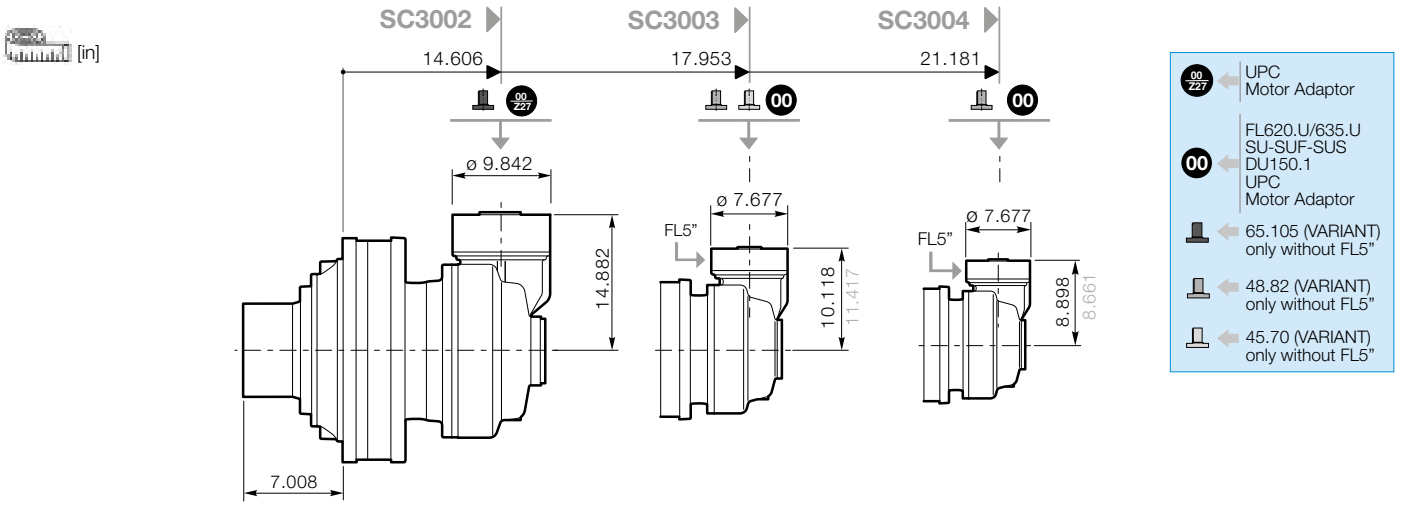

* bg ⇨ 300 3 S-45/46//65/90 IS ISL ⇨ 300 8 SU SUF SUS ⇨ 300 9 65.105 48.82 45.70 ⇨ 300 9 FL5” FL6” FL620/635 ⇨ 300 10 Motor Adaptor ⇨ 300 12 00 ⇨ B 11 00 227 ⇨ B 11 S00 ⇨ B 12

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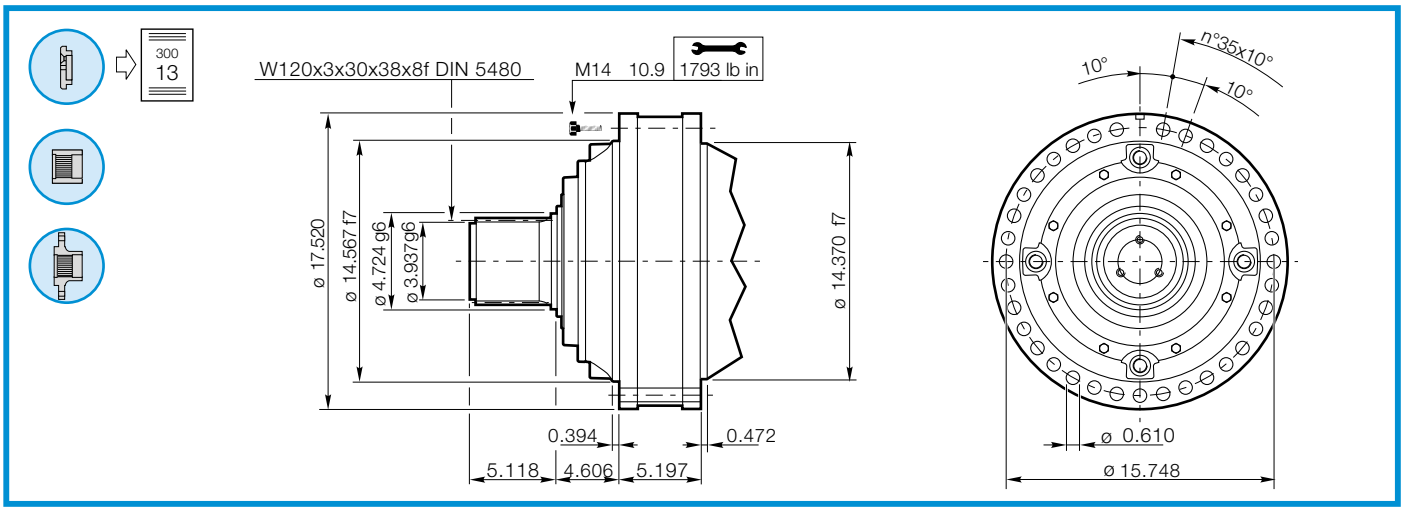
GEARBOX DIMENSIONS WITH OUTPUT



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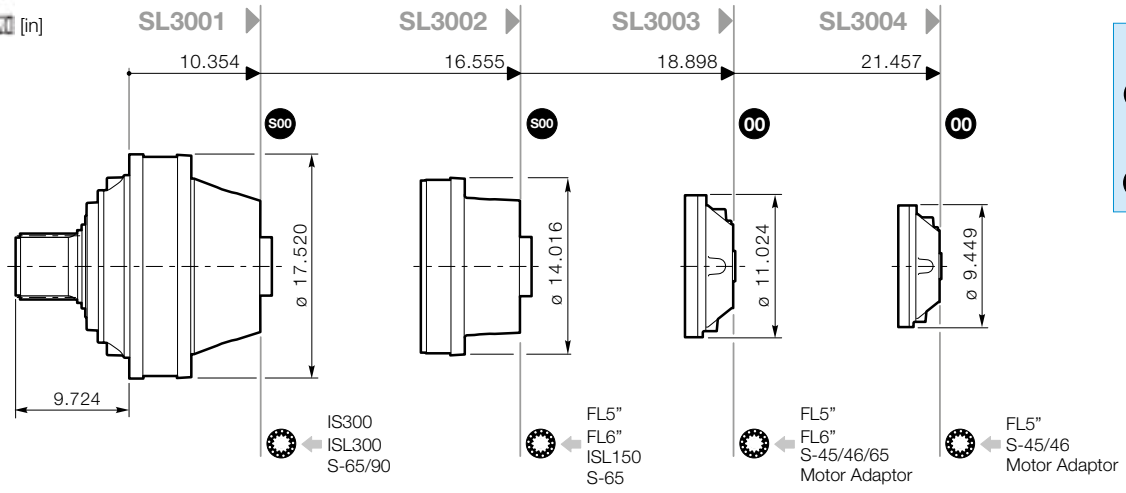

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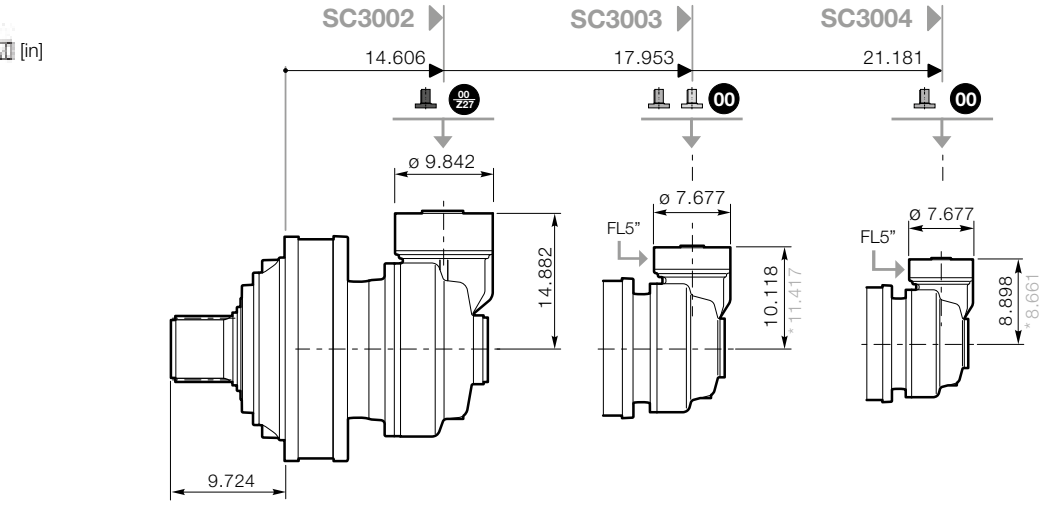

* bg → 300 3 S-45/46//65/90 IS ISL → 300 8 SU SUF SUS → 300 9 65.105 48.82 45.70 → 300 9 FL5" FL6" FL620/635 → 300 10 Motor Adaptor → 300 12
00 → B 11
00 Z27 → B 11
S00 → B 12

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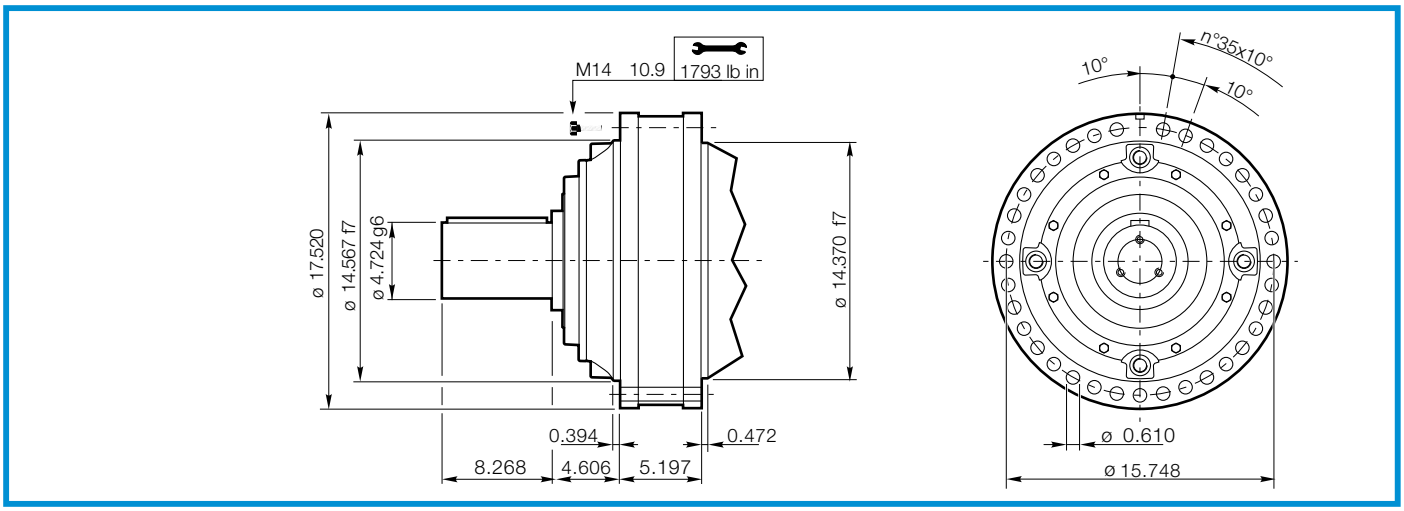

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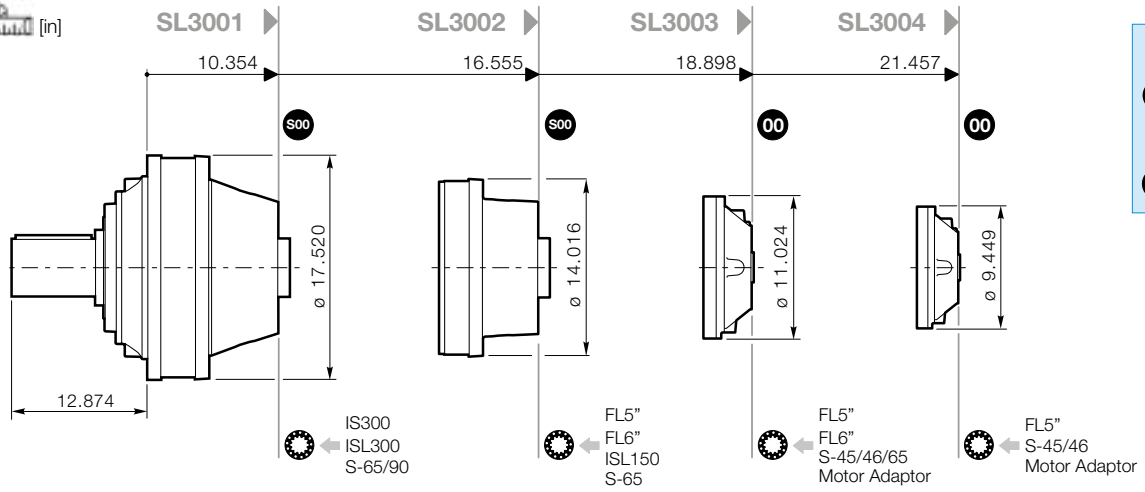
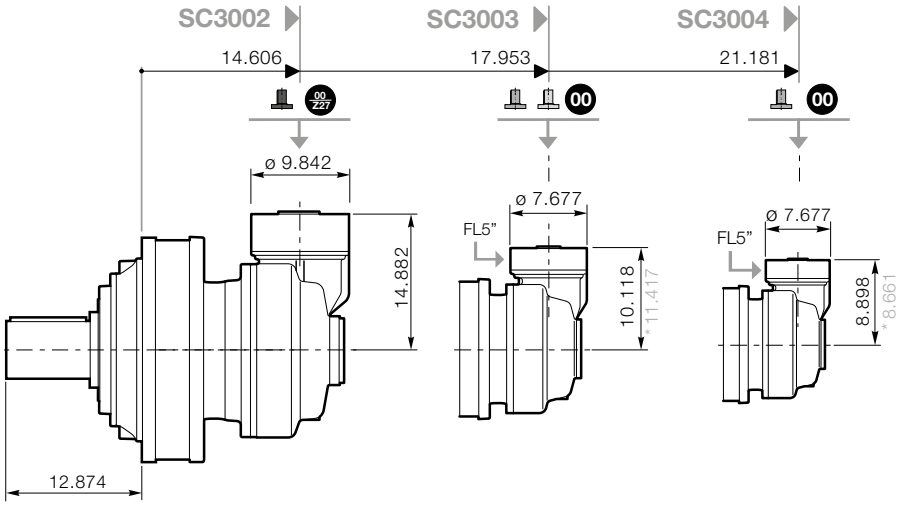


00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

45.70 (VARIANT) only without FL5"

* bg ⇨ 300 3 S-45/46//65/90 IS ISL ⇨ 300 8 SU SUF SUS ⇨ 300 9 65.105 48.82 45.70 ⇨ 300 9 FL5" FL6" FL620/635 ⇨ 300 10 Motor Adaptor ⇨ 300 12 00 ⇨ B 11 00 Z27 ⇨ B 11 S00 ⇨ B 12

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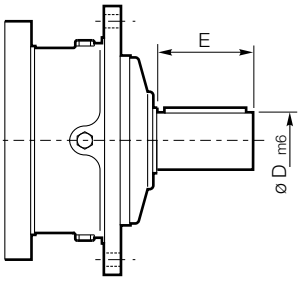
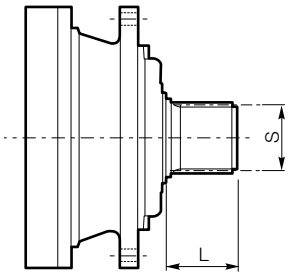
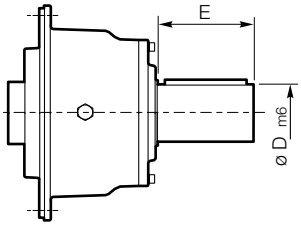
S-45 S-46 S-65 S-90 IS ISL



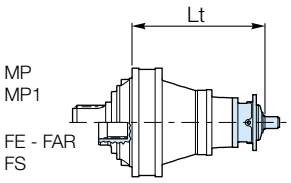
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

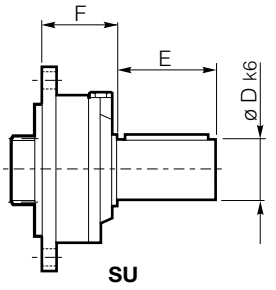


IS / ISL

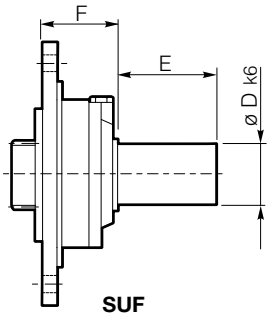


	D m6	E	L	S DIN5482		Lt			
						SL3001	SL3002	SL3003	SL3004
S-45CR1	2.559	4.134	-	-	FE-FAR-FS	-	-	23.596	23.596
					MP-MP1	-	-	23.911	23.911
S-45SR	-	-	2.677	B58x53	FE-FAR-FS	-	-	23.596	23.596
					MP-MP1	-	-	23.911	23.911
S-46C1	2.559	4.134	-	-	FE-FAR-FS	-	-	25.236	25.236
					MP-MP1	-	-	25.551	25.551
S-46C2	2.500	4.250	-	-	FE-FAR-FS	-	-	25.236	-
					MP-MP1	-	-	25.551	-
S-46S	-	-	2.677	B58x53	FE-FAR-FS	-	-	25.236	25.236
					MP-MP1	-	-	25.551	25.551
S-65CR1	3.150	5.118	-	-	FE-FAR-FS	18.130	23.799	25.138	-
					MP-MP1	18.445	24.114	25.453	-
S-90CR1	3.543	6.693	-	-	FE-FAR-FS	18.366	-	-	-
					MP-MP1	18.681	-	-	-
ISL150	3.543	5.118	-	-	FE-FAR-FS	-	18.996	-	-
					MP-MP1	-	19.311	-	-
ISL300	3.543	5.118	-	-	FE-FAR-FS	12.795	-	-	-
					MP-MP1	13.110	--	-	-
IS300	3.937	8.268	-	-	FE-FAR-FS	17.559		-	-
					MP-MP1	17.874	-	-	-

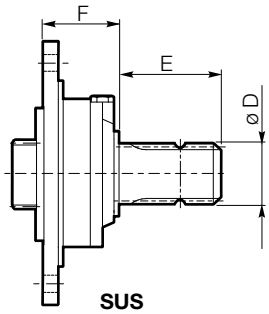
SU - SUF - SUS



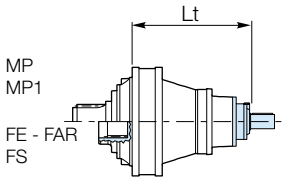
SU

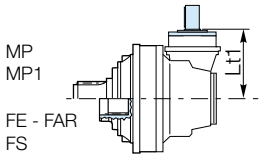


SUF



SUS

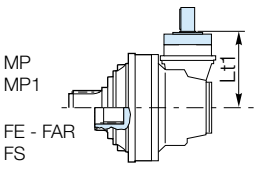


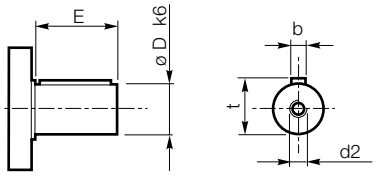


	D k6	E	F		Lt - Lt1 (00) SL3003	SL3004	SC3002	SC3003	SC3004
SU/SUF.1	1.102	1.969	2.362	FE-FAR-FS	20.945	23.504	17.244	12.480	11.260
				MP-MP1	21.260	23.819		13.779*	11.024*
SU/SUF.2	1.575	2.283	2.362	FE-FAR-FS	20.945	23.504	17.244	12.480	11.260
				MP-MP1	21.260	23.819		13.779*	11.024*
SU/SUF.3	1.890	3.228	2.362	FE-FAR-FS	20.945	23.504	17.244	12.480	11.260
				MP-MP1	21.260	23.819		13.779*	11.024*
SU2 1.5X3.25	1.500	3.250	2.362	FE-FAR-FS	20.945	23.504	17.244	12.480	11.260
				MP-MP1	21.260	23.819		13.779*	11.024*
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	FE-FAR-FS	22.579	25.138	18.878	14.114	12.894
				MP-MP1	22.894	25.453		15.413*	12.657*
SU 42x80	1.890	3.150	3.996	FE-FAR-FS	22.579	25.138	18.878	14.114	12.894
				MP-MP1	22.894	25.453		15.413*	12.657*

* bg 300 3

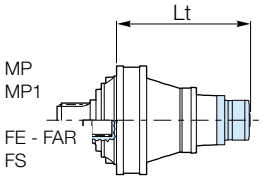
65.105 - 48.82 - 45.70

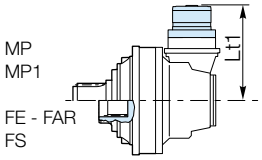


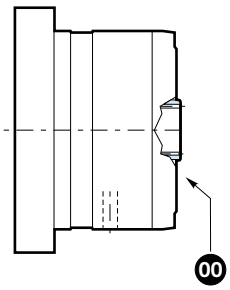


		D k6	E	b	t	d2		Lt1 SC3002	SC3003	SC3004
	65.105	2.559	4.134	0.709	2.717	M20x1.680	FE-FAR-FS	14.803	-	-
							MP-MP1			
	48.82	1.890	3.228	0.551	2.028	M10x0.866	FE-FAR-FS	-	13.779	11.024
							MP-MP1			
	45.70	1.772	2.756	0.551	1.909	M10x0.866	FE-FAR-FS	-	13.386	-
							MP-MP1			

FL5” - FL6”



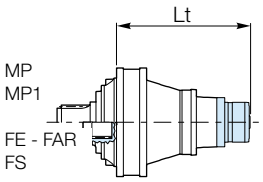


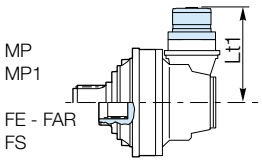


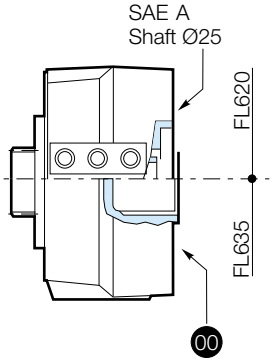
			Lt - Lt1					
			SL3001	SL3002	SL3003	SL3004	SC3003	SC3004
FL5”	FL250.4C FL250.6C	FE-FAR-FS	-	19.350	22.736	24.823	16.083	11.260
		MP-MP1	-	19.665	23.051	25.138	17.382*	11.024*
	FL350.6C FL350.8C	FE-FAR-FS	-	19.350	22.736	24.823	16.083	11.260
		MP-MP1	-	19.665	23.051	25.138	17.382*	11.024*
	FL450.6C FL450.8C	FE-FAR-FS	-	19.350	22.736	24.823	16.083	11.260
		MP-MP1	-	19.665	23.051	25.138	17.382*	11.024*
	FL650.10C FL650.12C FL650.14C	FE-FAR-FS	-	19.882	23.268	25.354	16.614	11.791
		MP-MP1	-	20.197	23.583	25.669	17.913*	11.555*
	FL750.10C FL750.12C FL750.14C	FE-FAR-FS	-	19.882	23.268	25.354	16.614	11.791
		MP-MP1	-	20.197	23.583	25.669	17.913*	11.555*
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	FE-FAR-FS	15.276	20.433	23.819	-	-	-
		MP-MP1	15.591	20.748	24.134	-	-	-

* bg 300 3

FL620.U - FL635.U



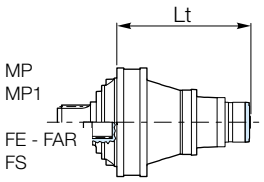


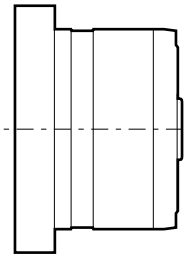


		Lt - Lt1				
		SL3003	SL3004	SC3002	SC3003	SC3004
FL620.U	FE-FAR-FS	22.697	25.256	18.996	14.232	13.012
	MP-MP1	23.012	25.571		15.531*	12.775*
FL635.U	FE-FAR-FS	22.165	24.724	18.465	13.701	12.480
	MP-MP1	22.480	25.039		15.000*	12.244*

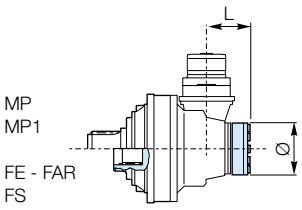
* bg 300 3

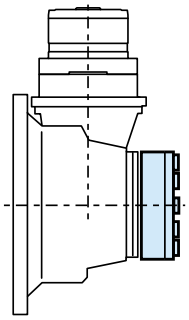
RL



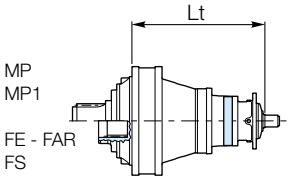


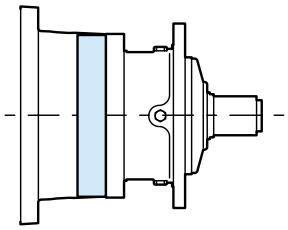
				Lt			
				SL3001	SL3002	SL3003	SL3004
RL	+	FL250 FL350 FL450	FE-FAR-FS	-	20.374	23.760	25.846
			MP-MP1	-	20.689	24.075	26.161
		FL650 FL750	FE-FAR-FS	-	20.906	24.291	26.378
			MP-MP1	-	21.220	24.606	26.693
		FL960	FE-FAR-FS	16.299	21.457	24.843	-
			MP-MP1	16.614	21.772	25.157	-





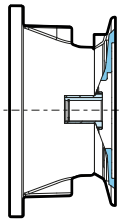
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

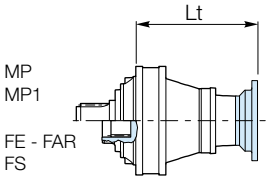


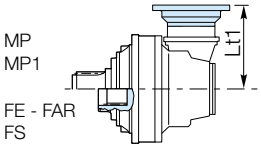


				Lt	
				SL3003	SL3004
RL	+	S46C1	FE-FAR-FS	26.024	26.024
			MP-MP1	26.339	26.339

IEC Motor







		Lt - Lt1						
		SL3001 S00	SL3002 S00	SL3003 00	SL3004 00	SC3002 00 227	SC3003 00	SC3004 00
IEC 80 -90	FE-FAR-FS	-	-	-	22.205	-	-	9.961
	MP-MP1	-	-	-	22.520	-	-	9.724*
IEC 100 - 112	FE-FAR-FS	-	-	-	22.244	-	-	10.000
	MP-MP1	-	-	-	22.559	-	-	9.764*
IEC 132	FE-FAR-FS	-	-	-	24.882	-	13.858	12.638
	MP-MP1	-	-	-	25.197	-	14.370*	12.402*
IEC 160	FE-FAR-FS	-	-	22.795	26.102	-	15.079	13.858
	MP-MP1	-	-	23.110	26.417	-	16.378*	13.622*
IEC 180	FE-FAR-FS	-	-	22.795	26.102	19.862	15.079	13.858
	MP-MP1	-	-	23.110	26.417		16.378*	13.622*
IEC 200	FE-FAR-FS	12.992	19.193	23.976	26.496	21.280	15.512	-
	MP-MP1	13.307	19.508	24.291	26.811		16.811*	-
IEC 225	FE-FAR-FS	14.173	20.374	23.976	26.496	21.181	16.693	-
	MP-MP1	14.488	20.689	25.472	27.992		17.992*	-
IEC 250	FE-FAR-FS	14.173	-	-	-	-	-	-
	MP-MP1	14.488	-	-	-	-	-	-
SHAFT_IEC225	FE-FAR-FS	14.173	-	-	-	22.047	-	-
	MP-MP1	14.488	-	-	-		-	-

* bg ⇨ 300 3

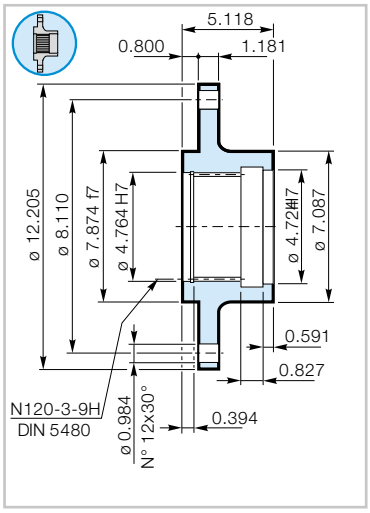
NEMA Motor

Please consult NEMA Motor Flange in page ⇨ B 15

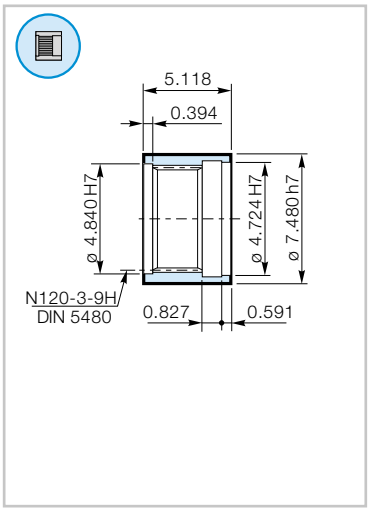
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page ⇨ B 14

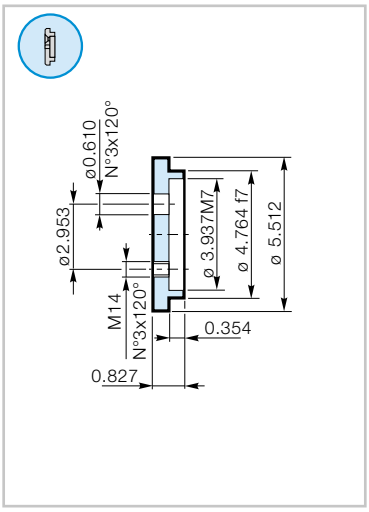
FR 400 Wheel Flange



MS 400 Splined Sleeve



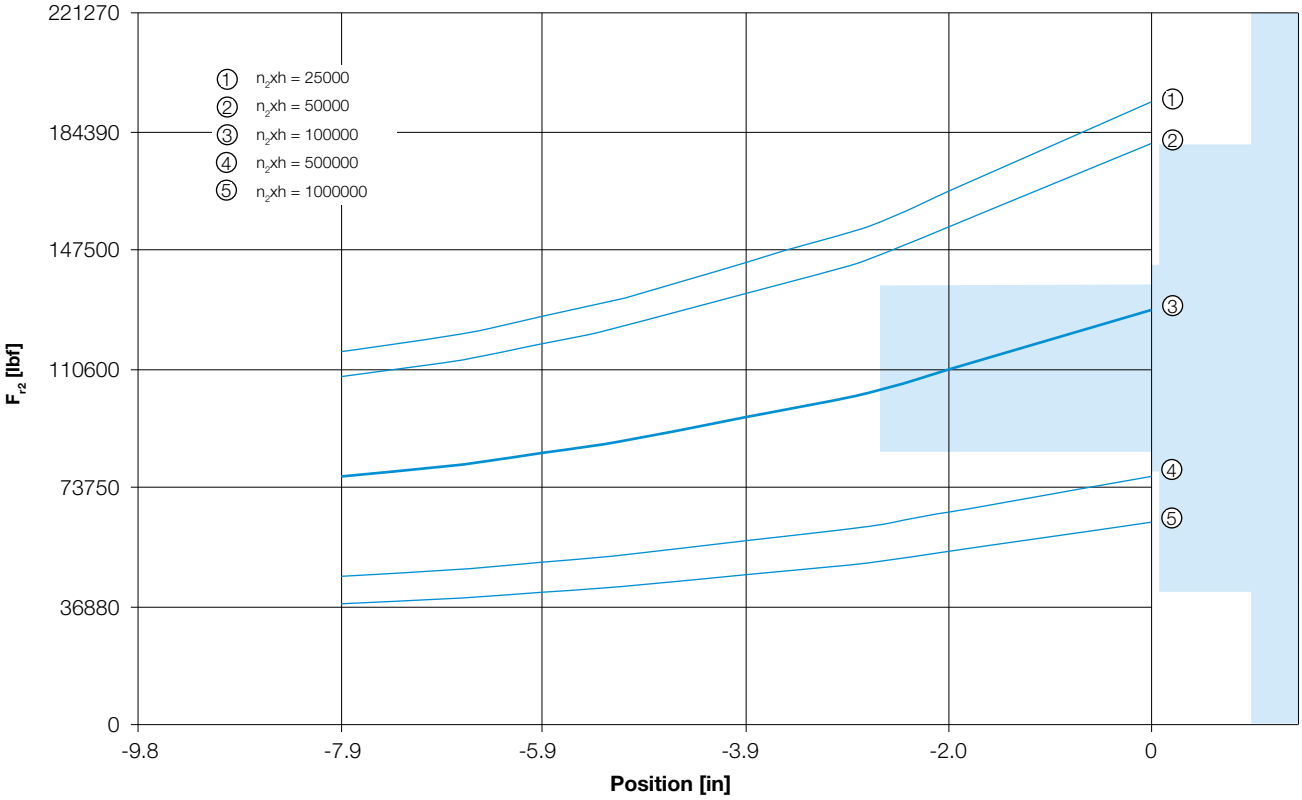
RDF S300 Lock Washer



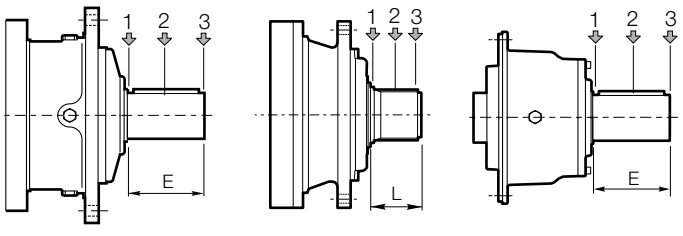
Output Radial Loads

Gearbox output version for:
SL, SC

MP - MP1

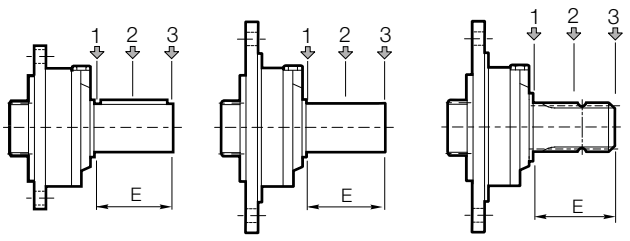


Input Radial Loads



S... IS / ISL

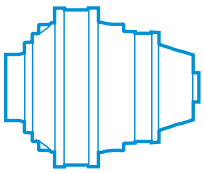
			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**L**	**1**	**2**	**3**	**1**	**2**	**3**
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL150	5.118	-	1716	967	673	860	485	337
ISL300	5.118	-	1716	967	673	860	485	337
IS300	8.268	-	10974	7434	5151	5500	3726	2582



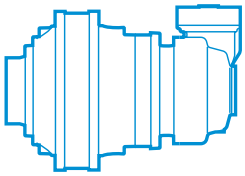
SU SUF SUS

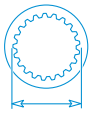
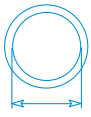
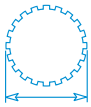
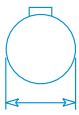
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts	8
Brakes	10
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



400



i_{eff}	4.18 - 1958
T_{2N}	35000 ftlb
	N140x5x30x26x9H DIN5480
	5.512 in
	W130x3x30x42x8f DIN5480
	5.118 in

TECHNICAL DATA

10000 hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [ftlb]	1500 P_2 [HP]	1000 n_2 [rpm]	1000 T_2 [ftlb]	1000 P_2 [HP]	500 n_2 [rpm]	500 T_2 [ftlb]	500 P_2 [HP]	n_{1MAX} [rpm]	T_{2MAX} [ftlb]	P_T [HP]
SL4001												
4.18	1)			239	16117	734	120	19842	452	2000	61950	79
4.89				204	16580	645	102	20413	397		61950	
6.00				167	17236	547	83	20115	319		53100	
SL4002												
16.51	91	16604	287	61	18752	216	30	23086	133	2500	61950	51
18.48	81	17147	266	54	19365	200	27	23841	123			
19.32	78	19424	287	52	21937	216	26	27007	133			
21.61	69	20059	266	46	22654	200	23	27862	123			
24.74	61	20370	235	40	23006	177	20	28094	109			
29.34	51	21202	207	34	23944	156	17	28389	93			
30.36	49	20771	196	33	21294	134	17	22219	70		53100	
36.00	42	20989	166	28	21517	114	14	22452	59			
45.00	33	21278	135	22	21815	93	11	22762	48			
SL4003												
57.79	26	24179	119	17	27306	90	8.7	33618	55	2500	61950	34
64.67	23	24969	110	16	28199	83	7.7	34717	51			
67.60	22	27934	118	15	28637	80	7.4	29881	42			
83.64	18	28301	97	12	29013	66	6.0	30274	34			
93.59	16	28496	87	11	29215	59	5.3	30492	31			
102.7	15	28659	79	9.7	29381	54	4.9	30923	29			
110.9	14	29352	75	9.0	33148	57	4.5	37692	32			
126.9	12	29807	67	7.9	33662	51	3.9	38471	29			
146.7	10	29294	57	6.8	30031	39	3.4	32637	21			
159.1	9.4	22992	41	6.3	23572	28	3.1	25229	15		53100	
SL4004												
178.0	8.4	33884	54	5.6	36461	39	2.8	40491	22	3000	61950	23
202.3	7.4	35209	50	4.9	37172	35	2.5	41282	19			
226.3	6.6	35598	45	4.4	37810	32	2.2	41990	18			
259.1	5.8	36295	40	3.9	38591	28	1.9	41958	15			
288.9	5.2	36899	36	3.5	39233	26	1.7	43570	14			
330.4	4.5	37655	33	3.0	40037	23	1.5	44462	13			
370.1	4.1	38308	30	2.7	40731	21	1.4	43632	11			
419.0	3.6	39032	27	2.4	41501	19	1.2	46089	10			
468.8	3.2	39702	24	2.1	42213	17	1.1	46879	9.5			
524.1	2.9	40377	22	1.9	41987	15	1.0	45989	8.3			
580.0	2.6	41001	20	1.7	43594	14	0.86	48412	7.9			
656.1	2.3	41524	18	1.5	42843	12	0.76	47578	6.8			
718.2	2.1	42348	17	1.4	45027	12	0.70	50003	6.6			
803.7	1.9	43074	15	1.2	45799	11	0.62	50861	6.0			
920.1	1.6	42408	13	1.1	45091	9.4	0.54	50075	5.2			
1042	1.4	28392	7.8	1.0	30188	5.5	0.48	33400	3.1		53100	
1076	1.4	37365	9.9	0.93	39728	7.0	0.46	44119	3.9		61950	
1276	1.2	38340	8.6	0.78	40649	6.0	0.39	45142	3.4			
1413	1.1	29729	6.0	0.71	31491	4.3	0.35	34972	2.4		53100	
1631	0.92	30383	5.4	0.61	32185	3.8	0.31	35742	2.1			
1958	0.77	31232	4.6	0.51	33084	3.2	0.26	36742	1.7			

1) Consult the DANA area contact person.

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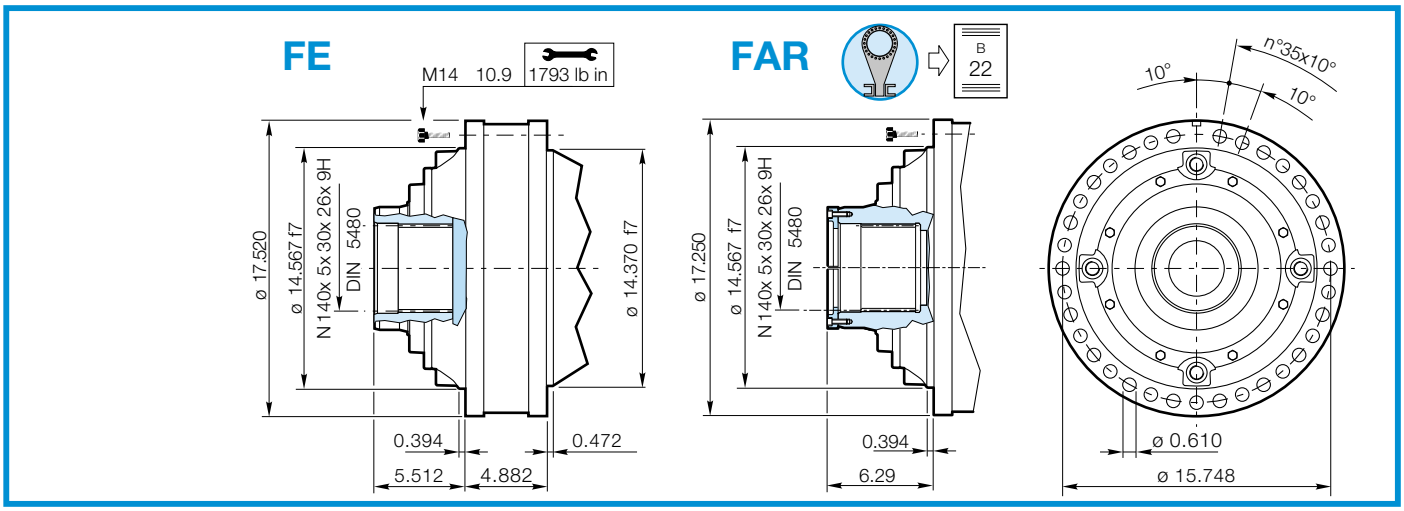
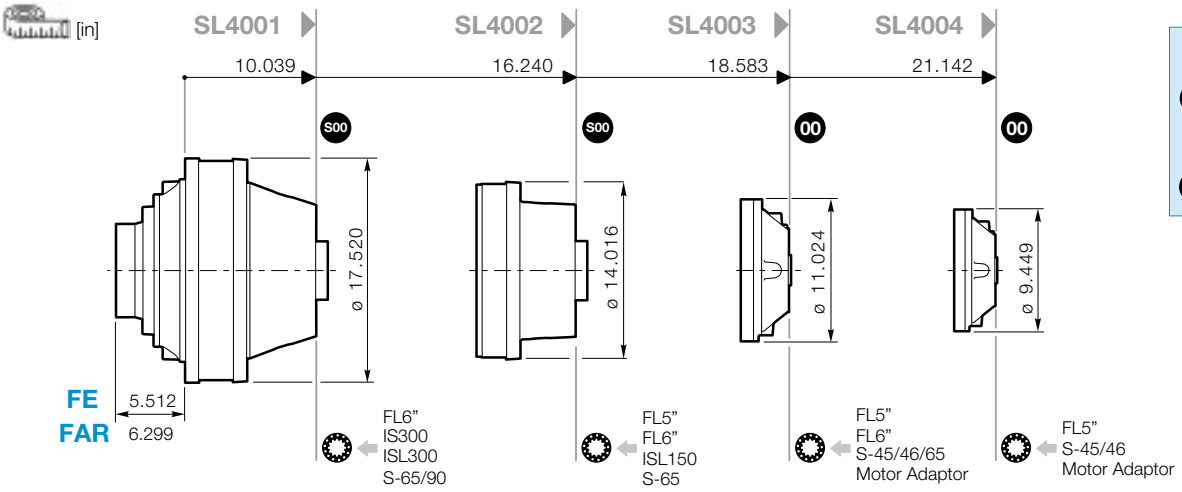
10000 hours life

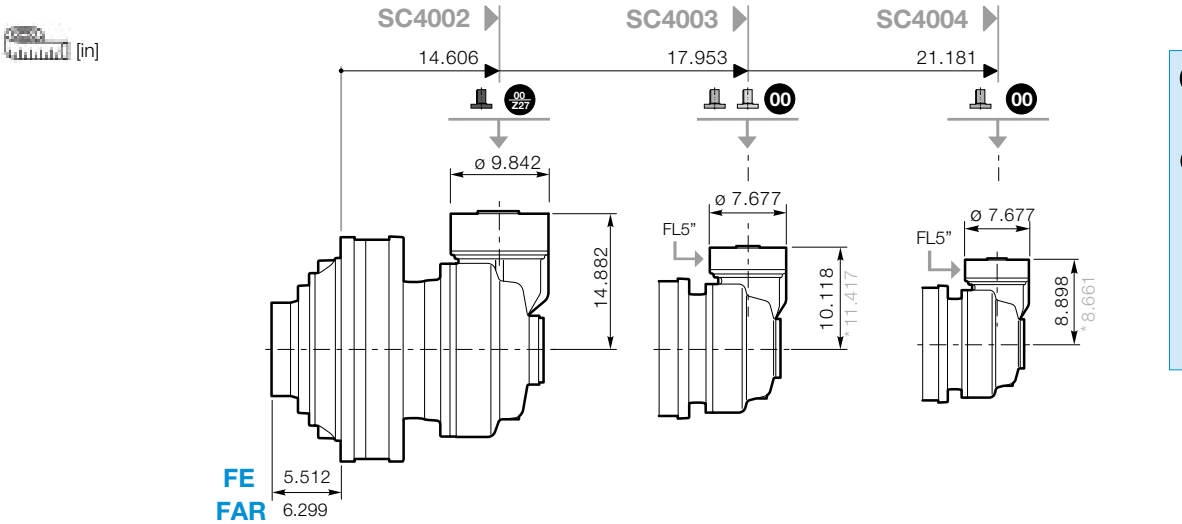
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC4002												
12.21	123	7867	184	82	8884	138	41	10938	86		60396	
14.28	105	9203	184	70	10393	138	35	12796	86	1500	61950	
15.24	98	9167	172	66	10352	129	32.8	12745	79		53100	
17.52	86	11292	184	57	12752	138	28.5	15700	86		53100	28
19.06	79	8195	123	52	9255	93	26.2	11394	57		39444	
22.30	67	9587	123	44.8	10827	93	22.4	13330	57	2500	46143	
27.36	55	11763	123	36.5	13285	93	18.3	16356	57		53100	
SC4003												
45.41*	33.0	13049	82	22.0	14737	62	11	18143	38			
50.81*	29.5	14602	82	19.7	16491	62	9.8	20302	38		61950	
58.17*	25.8	16716	82	17.2	18878	62	8.6	23242	38			
65.18*	23.0	18730	82	15.3	21153	62	7.7	23285	34		53100	
72.93*	20.6	20959	82	13.7	22470	59	6.9	23446	31	2000		
80.69*	18.6	23188	82	12.4	26187	62	6.2	30207	36		61950	24
86.21*	17.4	18422	61	11.6	18886	42	5.8	19706	22			
99.00*	15.2	22333	64	10.1	22895	44	5.1	23890	23		53100	
109.7	13.7	18179	47	9.1	19168	33	4.6	20000	17	3000	61950	
123.8*	12.1	22641	52	8.1	23211	36	4.0	24288	19	2000	53100	
142.9	10.5	17018	34	7.0	19219	26	3.5	23661	16	3500	61950	
157.5	9.5	22978	42	6.3	23556	28	3.2	25190	15	3000	53100	
SC4004												
173.4	8.7	28836	47	5.8	32566	36	2.9	40093	22			
194.0	7.7	32267	47	5.2	36441	36	2.6	41022	20			
214.5	7.0	35481	47	4.7	37504	33	2.3	41650	19			
247.7	6.1	36049	42	4.0	38329	30	2.0	42566	16	2700		
277.1	5.4	36667	38	3.6	38986	27	1.8	43296	15			
317.3	4.7	37424	34	3.2	39792	24	1.6	42627	13			
371.2	4.0	31807	25	2.7	33819	17	1.3	37557	9.7		61950	
380.7	3.9	38471	29	2.6	40905	21	1.3	43819	11			
457.7*	3.3	33036	21	2.2	37310	16	1.1	45934	9.5			17
512.1*	2.9	36968	21	2.0	41749	16	0.98	47510	8.9			
586.3*	2.6	41068	20	1.7	42277	14	0.85	46776	7.6			
599.1*	2.5	34196	16	1.7	36359	12	0.83	40378	6.4			
685.9*	2.2	34903	14	1.5	37110	10	0.73	41213	5.8	3500		
813.3*	1.8	35814	13	1.2	38079	8.9	0.61	42167	5.0			
900.2*	1.7	27770	8.9	1.1	29527	6.3	0.56	32668	3.5			
1040*	1.4	28381	7.8	0.96	30176	5.5	0.48	33387	3.1		53100	
1247*	1.2	29175	6.7	0.80	31020	4.7	0.40	34320	2.7			

* (bg) All the ratios in light grey (ie. 45.41) have particular dimensions of bevel gears in some versions. See dimensional tables.

GEARBOX DIMENSIONS WITH OUTPUT







* bg → 400 3 S-45/46/65/90 IS ISL → 400 8 SU SUF SUS → 400 9 65.105 48.82 45.70 → 400 9 FL5" FL6" FL620/635 → 400 10 Motor Adaptor → 400 12
00 → B 11 → 00 Z27 → B 11 → S00 → B 12

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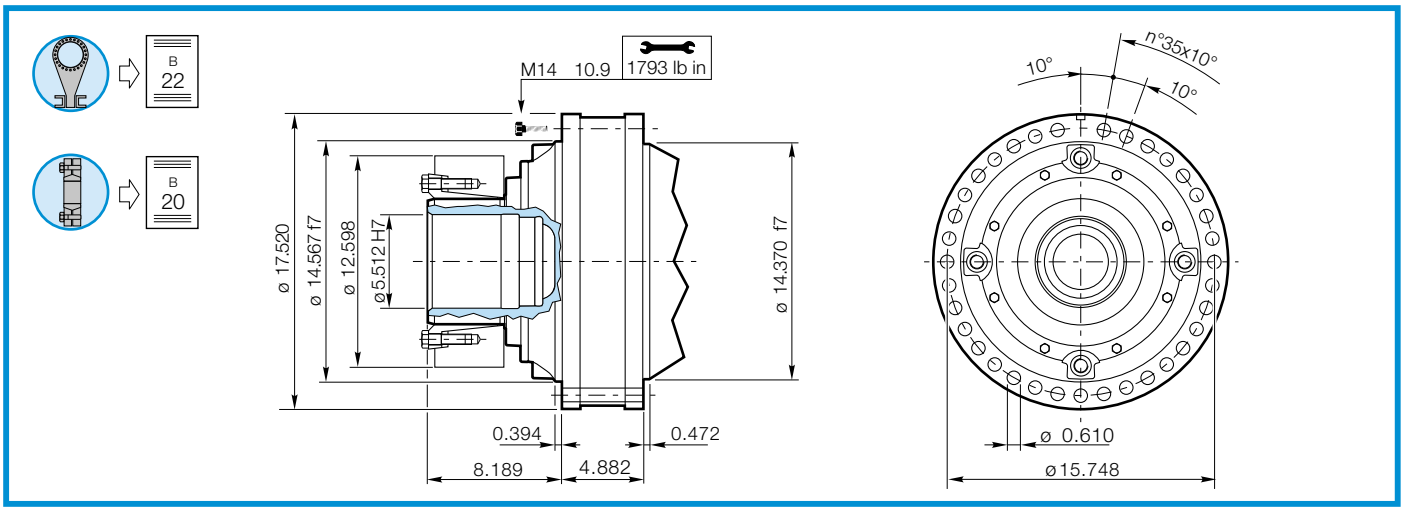

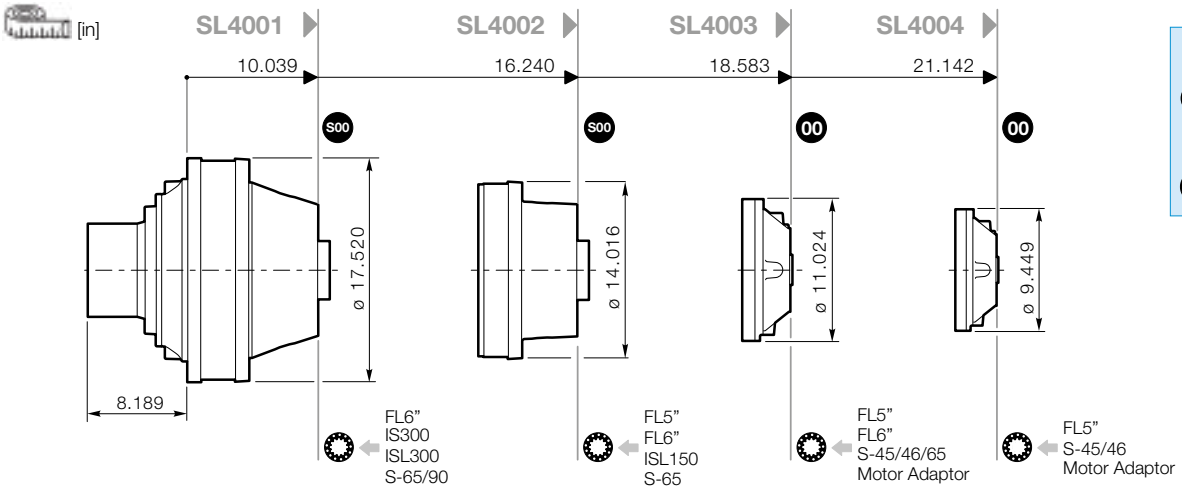

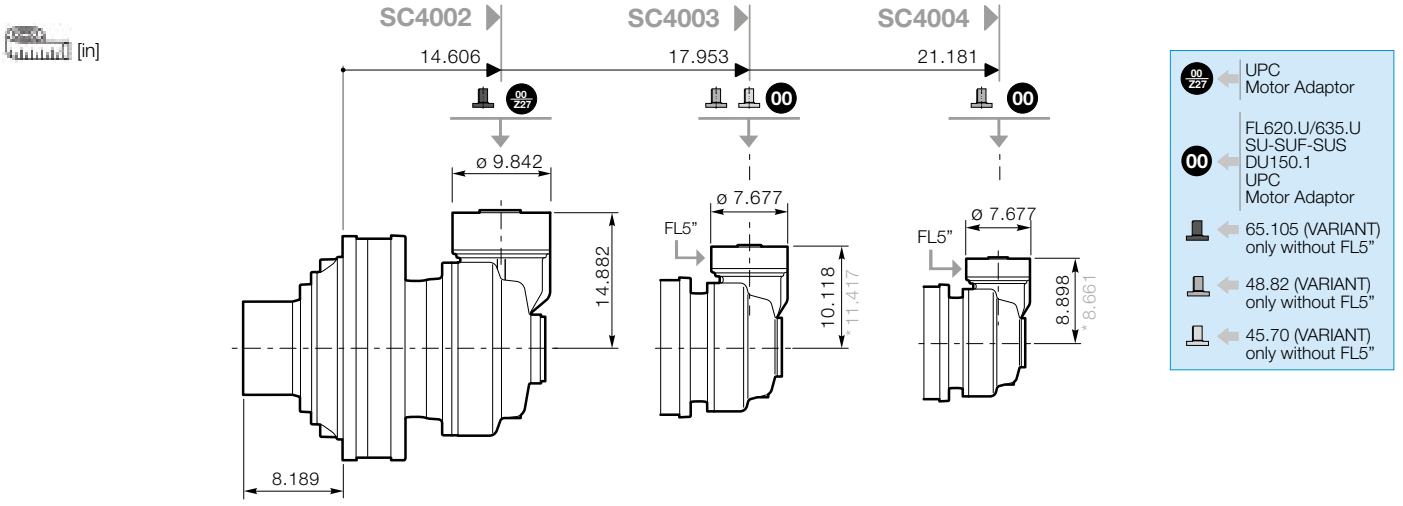

* bg → 400 3 → S-45/46/65/90 IS ISL → 400 8 → SU SUF SUS → 400 9 → 65.105 48.82 45.70 → 400 9 → FL5" FL6" FL620/635 → 400 10 → Motor Adaptor → 400 12 → 00 → B 11 → 00 227 → B 11 → S00 → B 12

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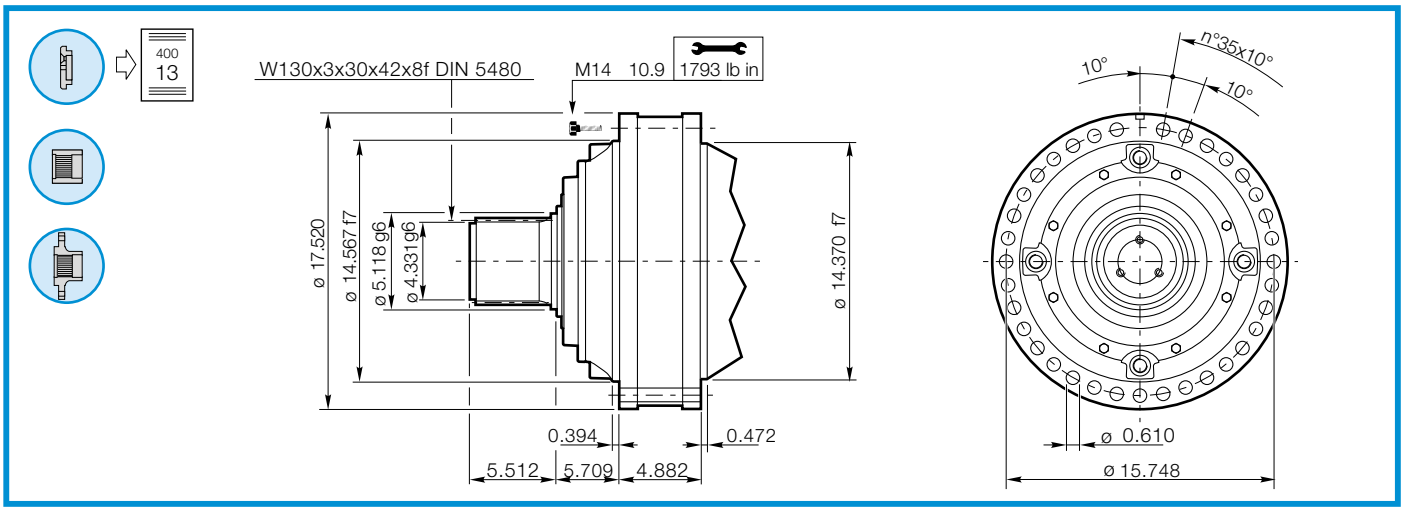
GEARBOX DIMENSIONS WITH OUTPUT



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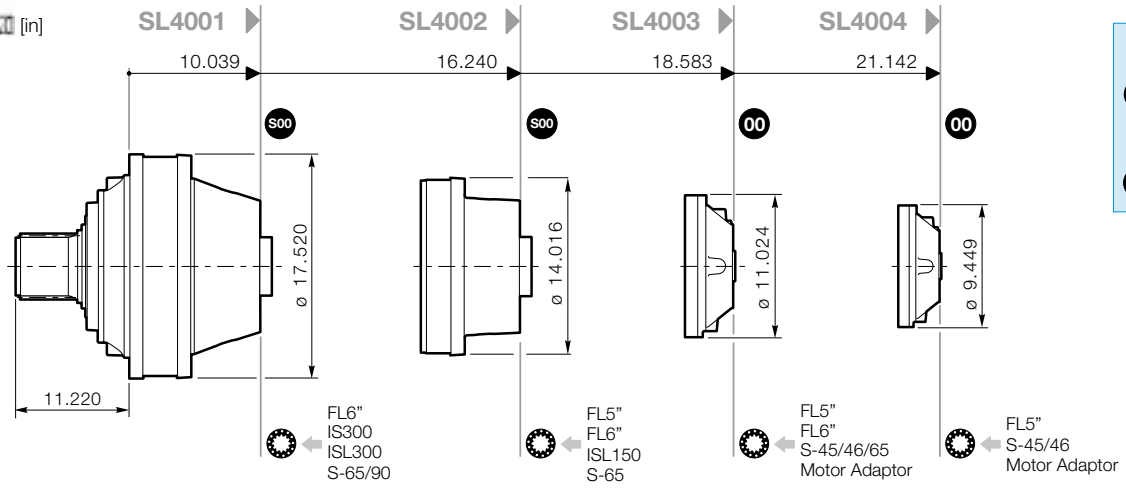
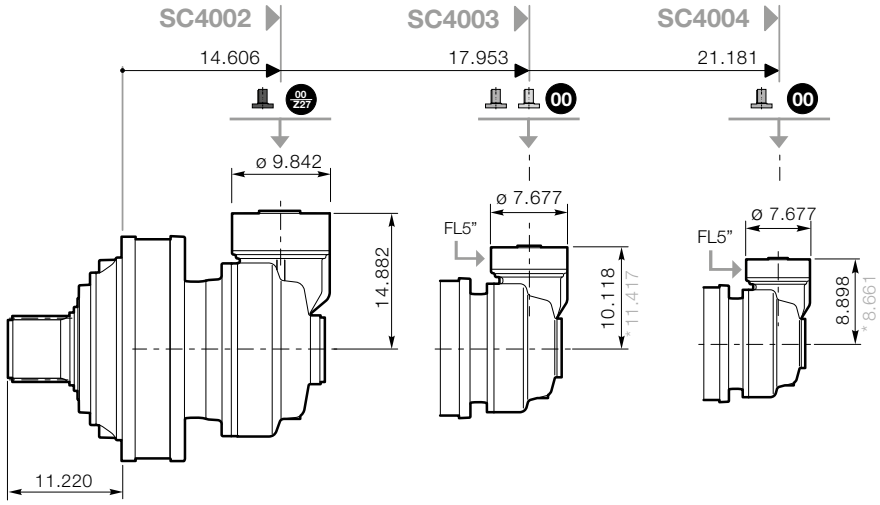


00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC
Motor Adaptor

00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5"

48.82 (VARIANT)
only without FL5"

45.70 (VARIANT)
only without FL5"

* (bg) → 400 3 S-45/46/65/90 IS ISL → 400 8 SU SUF SUS → 400 9 65.105 48.82 45.70 → 400 9 FL5" FL6" FL620/635 → 400 10 Motor Adaptor → 400 12 00 → B 11 00 Z27 → B 11 S00 → B 12

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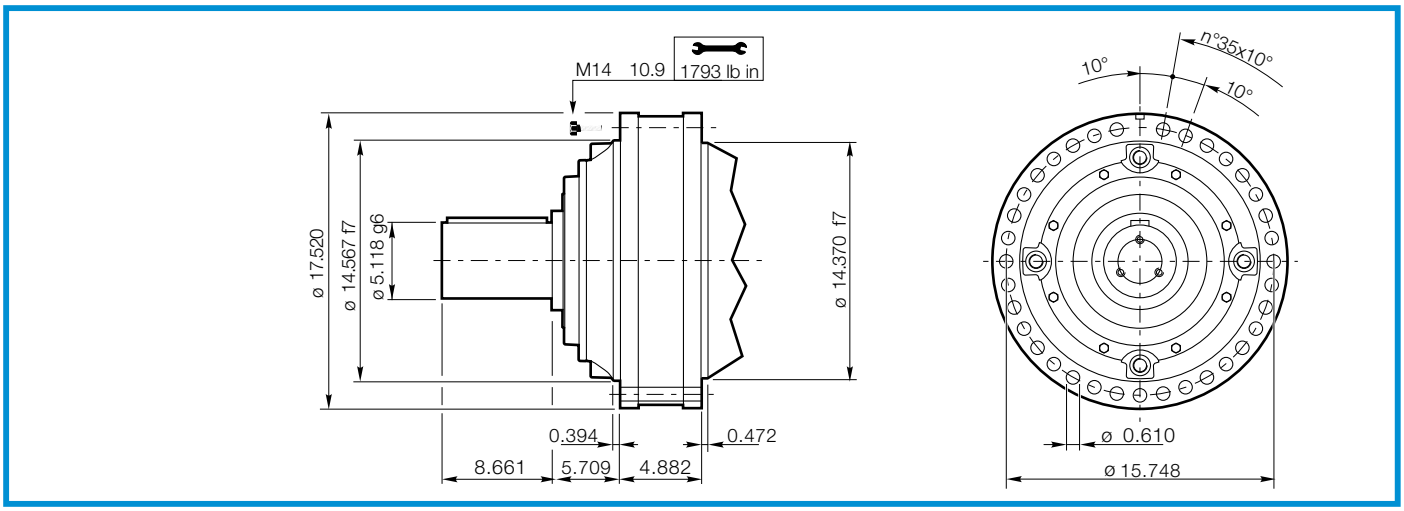

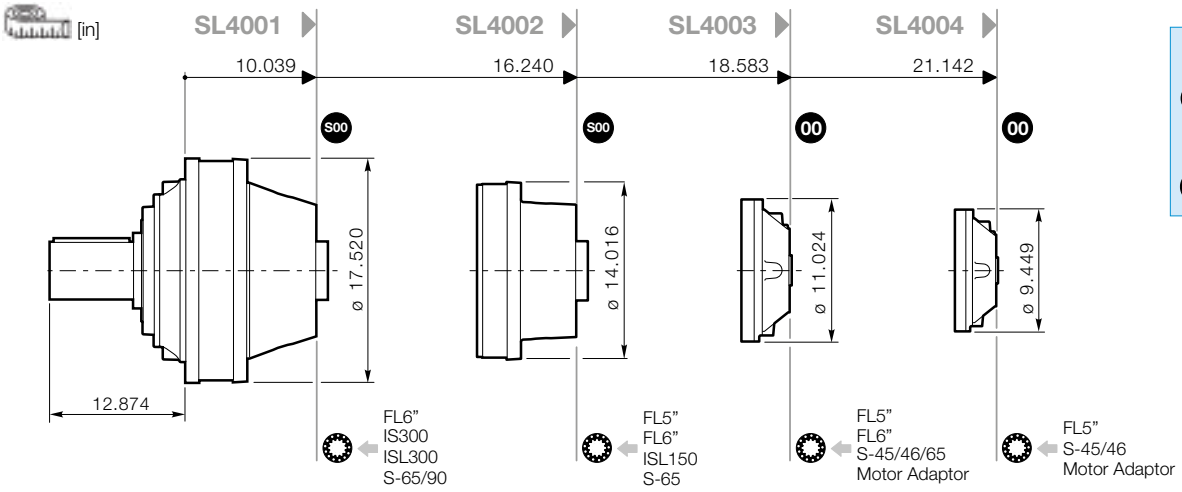

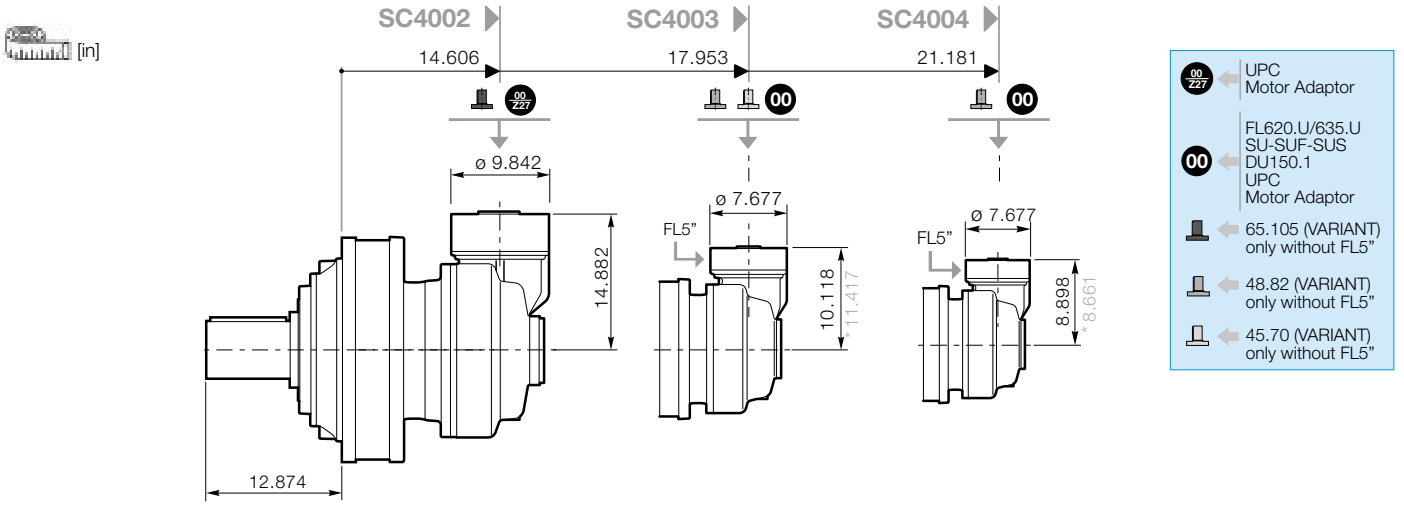

* bg → 400 3 → S-45/46/65/90 IS ISL → 400 8 → SU SUF SUS → 400 9 → 65.105 48.82 45.70 → 400 9 → FL5" FL6" FL620/635 → 400 10 → Motor Adaptor → 400 12 → 00 → B 11 → 00 Z27 → B 11 → S00 → B 12

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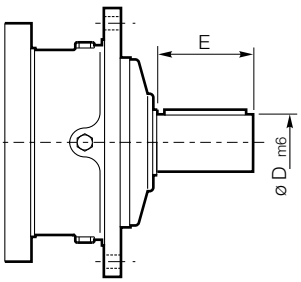
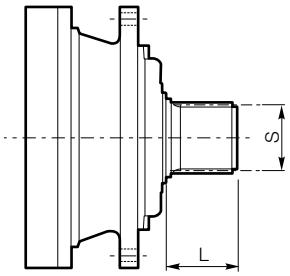
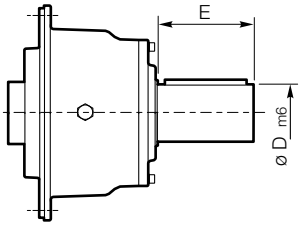
S-45 S-46 S-65 S-90 IS ISL



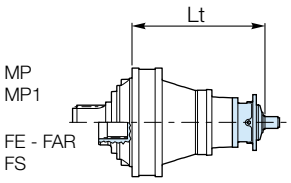
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

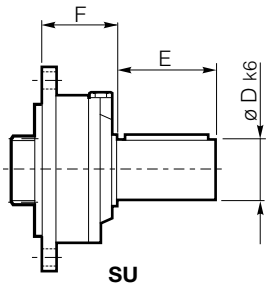


IS / ISL

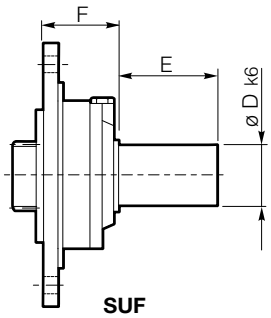


	D m6	E	L	S DIN5482	Lt			
					SL4001	SL4002	SL4003	SL4004
S-45CR1	2.559	4.134	-	-	-	-	23.583	23.583
S-45SR	-	-	2.677	B58x53	-	-	23.583	23.583
S-46C1	2.559	4.134	-	-	-	-	25.236	25.236
S-46C2	2.500	4.250	-	-	-	-	25.236	25.236
S-46S	-	-	2.677	B58x53	-	-	25.236	25.236
S-65CR1	3.150	5.118	-	-	18.130	23.799	25.138	-
S-90CR1	3.543	6.693	-	-	18.366	-	-	-
ISL150	3.543	5.118	-	-	-	18.996	-	-
ISL300	3.543	5.118	-	-	12.795	-	-	-
IS300	3.937	8.268	-	-	17.559	-		-

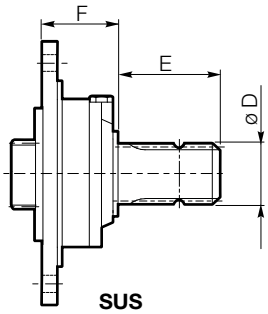
SU - SUF - SUS



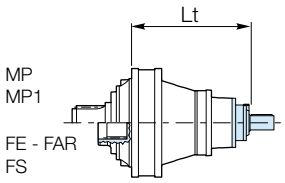
SU

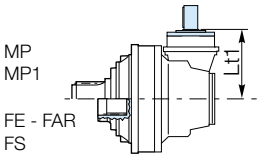


SUF



SUS

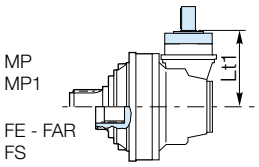


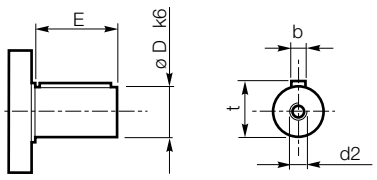


	D k6	E	F	Lt - Lt1 (00)				
				SL4003	SL4004	SC4002	SC4003	SC4004
SU/SUF.1	1.102	1.969	2.362	20.945	23.504	17.244	12.480	11.260
							13.779*	11.024*
SU/SUF.2	1.575	2.283	2.362	20.945	23.504	17.244	12.480	11.260
							13.779*	11.024*
SU/SUF.3	1.890	3.228	2.362	20.945	23.504	17.244	12.480	11.260
							13.779*	11.024*
SU2 1.5X3.25	1.500	3.250	2.362	20.945	23.504	17.244	12.480	11.260
							13.779*	11.024*
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	22.579	25.138	18.878	14.114	12.894
							15.413*	12.657*
SU 42x80	1.890	3.150	3.996	573.5	638.5	479.5	14.114	12.894
							15.413*	12.657*

* bg 400 3

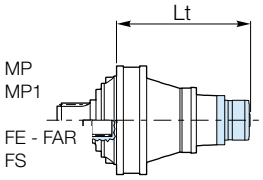
65.105 - 48.82 - 45.70

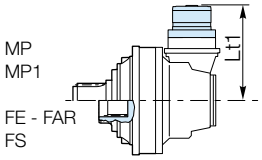


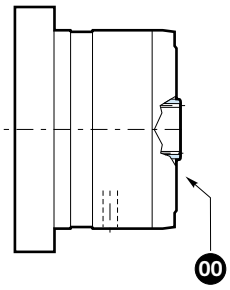


		D k6	E	b	t	d2	Lt1		
							SC4002	SC4003	SC4004
	65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803	-	-
	48.82	1.890	3.228	0.551	2.028	M10x0.866	-	13.779	11.024
	45.70	1.772	2.756	0.551	1.909	M10x0.866	-	13.386	-

FL5” - FL6”



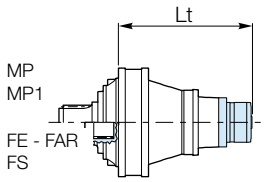


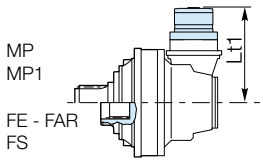


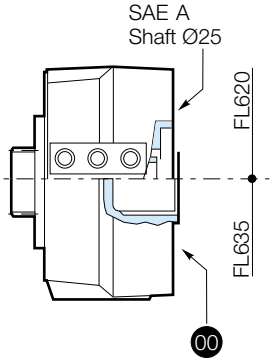
		Lt - Lt1					
		SL4001	SL4002	SL4003	SL4004	SC4003	SC4004
FL5”	FL250.4C FL250.6C	-	19.35	22.736	24.823	16.083 17.382*	11.260 11.024*
	FL350.6C FL350.8C	-	19.35	22.736	24.823	16.083 17.382*	11.260 11.024*
	FL450.6C FL450.8C	-	19.35	22.736	24.823	16.083 17.382*	11.260 11.024*
	FL650.10C FL650.12C FL650.14C	-	19.882	23.268	25.354	16.614 17.913*	11.791 11.555*
	FL750.10C FL750.12C FL750.14C	-	19.882	23.268	25.354	16.614 17.913*	11.791 11.555*
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	15.276	20.433	23.819	-	-	-

* bg ⇨ 400 3

FL620.U - FL635.U



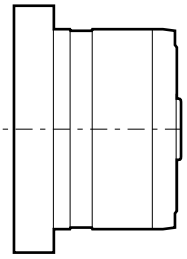


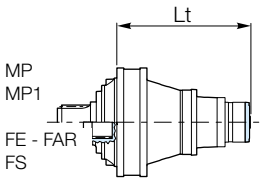


	Lt - Lt1				
	SL4003	SL4004	SC4002	SC4003	SC4004
FL620.U	22.697	25.256	18.996	14.232 15.531*	13.012 12.776*
FL635.U	22.165	24.724	469	13.701 15.000*	12.480 12.244*

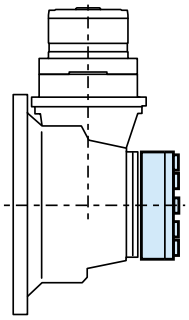
* bg ⇨ 400 3

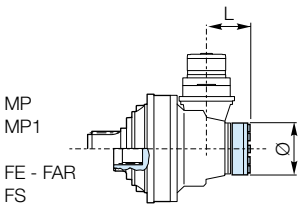
RL



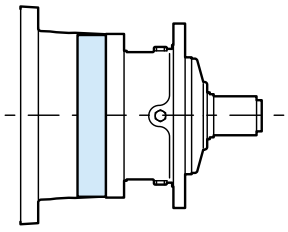


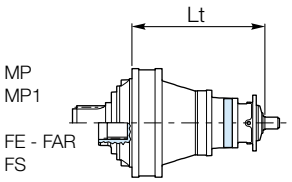
			Lt			
			SL4001	SL4002	SL4003	SL4004
RL	+	FL250 FL350 FL450	-	20.374	23.76	25.846
		FL650 FL750	-	20.905	24.291	26.378
		FL960	16.299	21.457	24.842	-





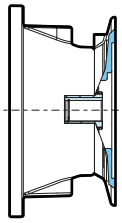
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

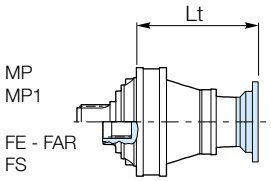


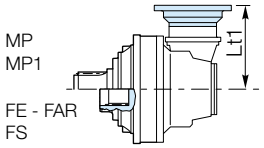


			Lt	
			SL4003	SL4004
RL	+	S46C1	26.024	26.024

IEC Motor







	Lt - Lt1						
	SL4001 S00	SL4002 S00	SL4003 00	SL4004 00	SC4002 00 227	SC4003 00	SC4004 00
IEC 80 -90	-	-	-	22.205	-	-	-
IEC 100 - 112	-	-	-	22.244	-	-	10.000 9.764*
IEC 132	-	-	-	24.882	-	-	12.638 12.402*
IEC 160	-	-	22.795	26.102	-	15.079 16.378*	13.858 13.622*
IEC 180	-	-	22.795	26.102	19.862	15.079 16.378*	13.858 13.622*
IEC 200	12.992	19.193	23.976	26.496	21.280	15.512 16.811*	14.291 14.055*
IEC 225	14.173	20.374	23.976	26.496	21.181	16.693 17.992*	-
IEC 250	14.173	-	-	-	-	-	-
SHAFT_IEC225	14.173	-	-	-	22.047	-	-

* bg ⇨ 400 3

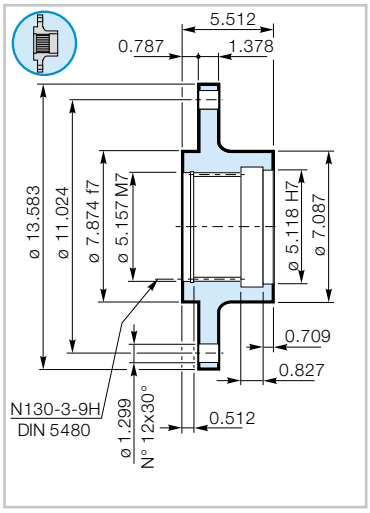
NEMA Motor

Please consult NEMA Motor Flange in page ⇨ B 15

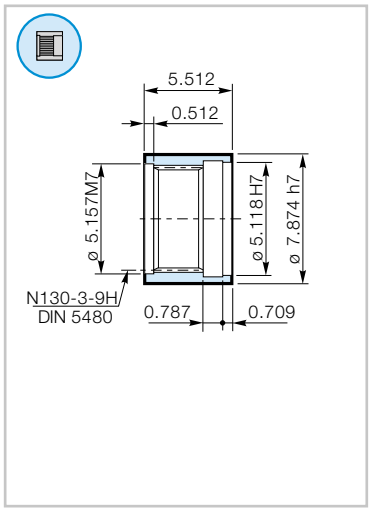
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page ⇨ B 14

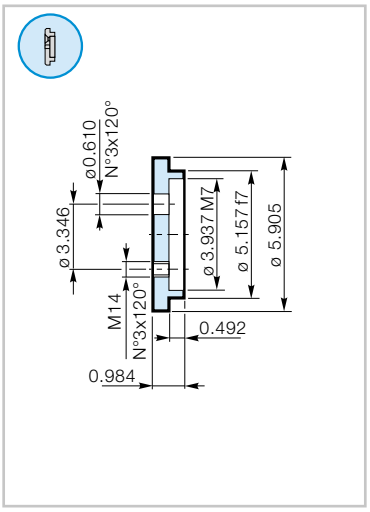
FR S400 Wheel Flange



MS S400 Splined Sleeve



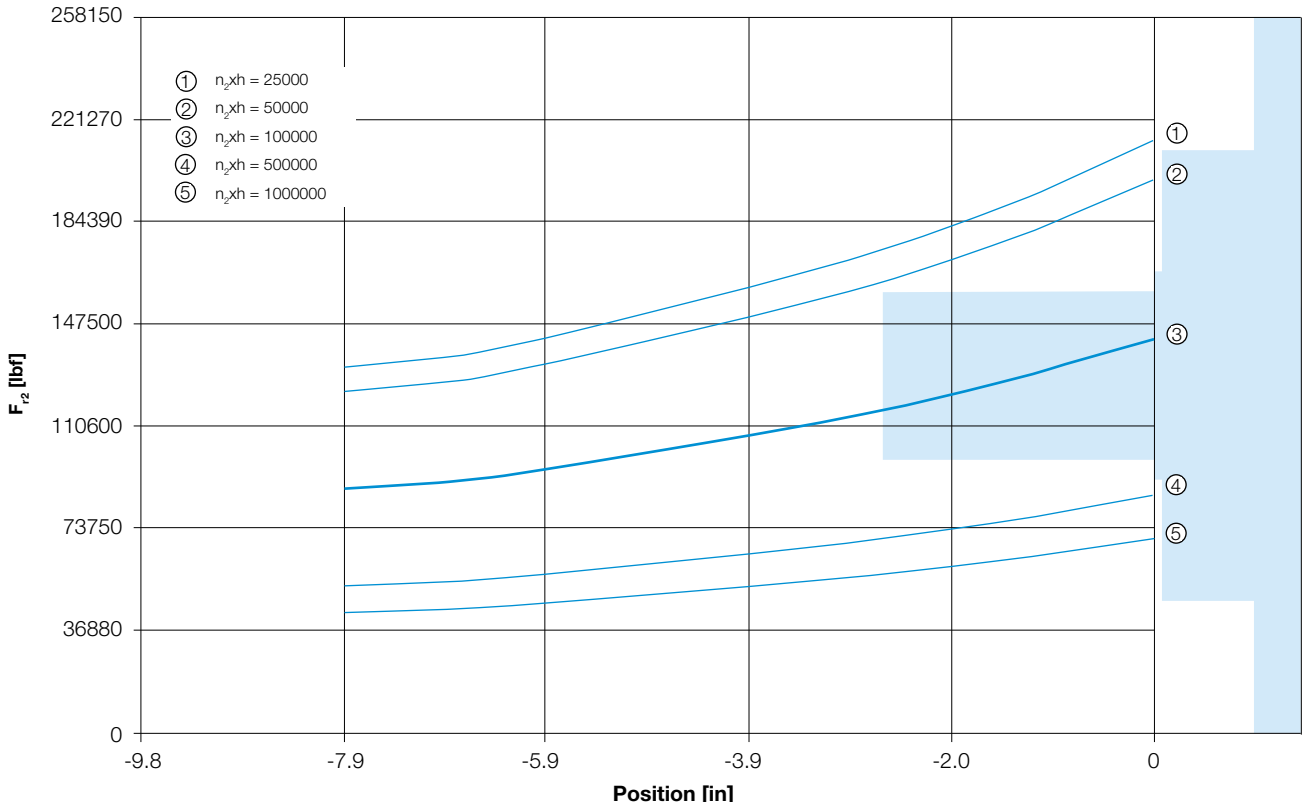
RDF 520 Lock Washer



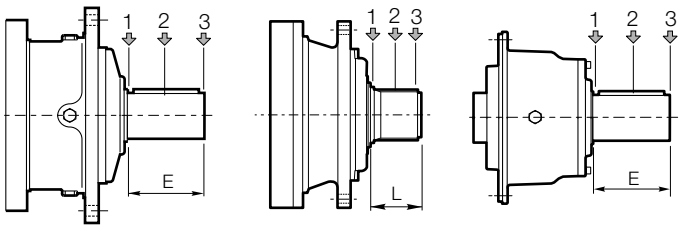
Output Radial Loads

Gearbox output version for:
SL, SC

MP - MP1

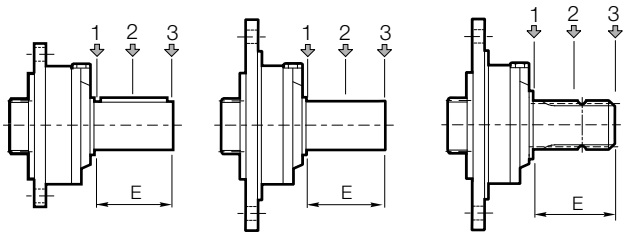


Input Radial Loads



S... IS / ISL

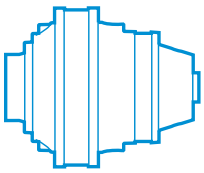
			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**L**	**1**	**2**	**3**	**1**	**2**	**3**
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL150	5.118	-	1716	967	673	860	485	337
ISL300	5.118	-	1716	967	673	860	485	337
IS300	8.268	-	10974	7434	5151	5500	3726	2582



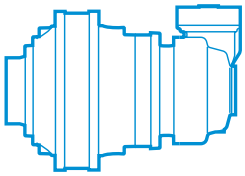
SU SUF SUS

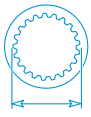
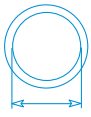
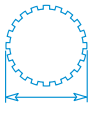
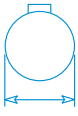
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts	8
Brakes	10
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



600



i_{eff}	4.18 - 2785
T_{2N}	47000 ftlb
	N150x5x30x28x9H DIN5480
	6.496 in
	W150x5x30x28x8f DIN5480
	6.496 in

TECHNICAL DATA

10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL6001												
4.18				239	19657	896	120	24201	551		103250	
4.89	1)			204	20224	787	102	24899	484	2000	88500	98
6.00				167	21023	668	83	25883	410		69325	
SL6002												
18.81	80	24012	365	53	27117	275	27	33385	169		103250	
19.76	76	27224	394	51	30746	296	25	36571	176			
22.01	68	28090	365	45	31724	275	23	36814	160		88500	
25.04	60	28662	327	40	32370	247	20	37107	141			
29.34	51	29675	288	34	33513	217	17	37469	122	2500		63
30.72	49	27445	255	33	28136	174	16	29358	91		69325	
35.99	42	28690	228	28	32401	172	14	34485	91		88500	
44.16	34	28063	181	23	28769	125	11	30019	65		69325	
SL6003												
68.90	22	36058	149	15	40722	113	7.3	46721	65		103250	
80.60	19	37267	131	12	38206	90	6.2	39866	47		88500	
89.78	17	37515	119	11	38460	82	5.6	40130	43			
98.12	15	38889	113	10	43920	86	5.1	48835	47			
109.3	14	40707	106	9.2	45973	80	4.6	49638	43			
130.2	12	42900	94	7.7	46558	68	3.8	50968	37	2500	103250	42
145.7	10	43004	84	6.9	44437	58	3.4	46367	30			
163.6	9.2	45949	80	6.1	47512	55	3.1	51507	30			
186.2	8.1	46423	71	5.4	48449	49	2.7	53804	27			
203.0	7.4	39441	56	4.9	40742	38	2.5	45246	21		88500	
218.2	6.9	44431	58	4.6	45551	40	2.3	47530	21		103250	
SL6004												
241.1	6.2	47384	56	4.1	50382	40	2.1	55950	22			
284.6	5.3	48586	49	3.5	51659	35	1.8	57369	19			
317.0	4.7	49384	45	3.2	52509	32	1.6	58313	18			
360.6	4.2	50358	40	2.8	53543	28	1.4	59462	16			
413.4	3.6	51410	36	2.4	54661	25	1.2	60703	14			
460.5	3.3	52255	32	2.2	55560	23	1.1	61701	13			
523.9	2.9	53285	29	1.9	56655	21	1.0	62918	11			
569.9	2.6	53968	27	1.8	57382	19	0.88	63724	11		103250	
655.7	2.3	55124	24	1.5	58611	17	0.76	65090	9.4			
711.3	2.1	55808	22	1.4	59338	16	0.70	65896	8.9			
792.3	1.9	56726	20	1.3	60313	14	0.63	66980	8.0	3000		42
943.7	1.6	58246	18	1.1	61929	12	0.53	68775	7.0			
962.6	1.6	58421	17	1.0	62116	12	0.52	64818	6.4			
1117	1.3	59752	15	0.90	62690	11	0.45	65413	5.6			
1307	1.1	50785	11	0.77	53997	7.9	0.38	59965	4.4		85000	
1350	1.1	61486	13	0.74	63421	9.0	0.37	66177	4.7		103250	
1579	0.95	52259	9.4	0.63	55565	6.7	0.32	61707	3.8		88500	
1851	0.81	53528	8.3	0.54	56914	5.9	0.27	63205	3.2			
1986	0.76	41329	5.9	0.50	43943	4.2	0.25	48800	2.3		69325	
2270	0.66	42713	5.4	0.44	45415	3.8	0.22	50435	2.1		88500	
2785	0.54	43498	4.4	0.36	46249	3.2	0.18	51361	1.7		69325	

1) Consult the DANA area contact person.

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

Click *i* button to return to main index

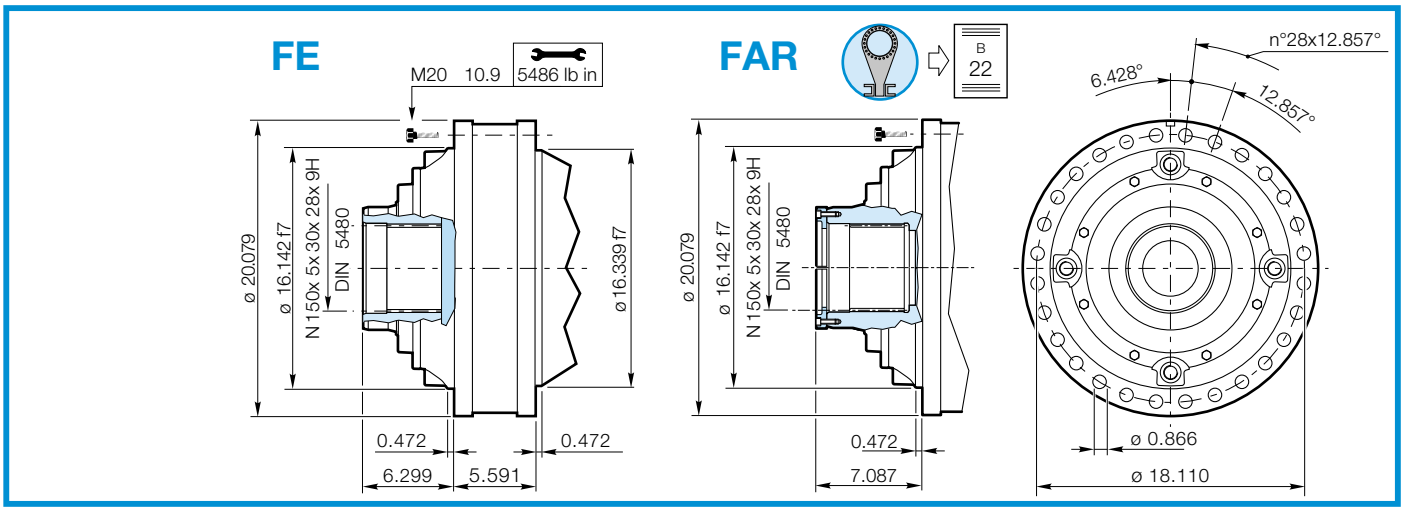
10000 hours life

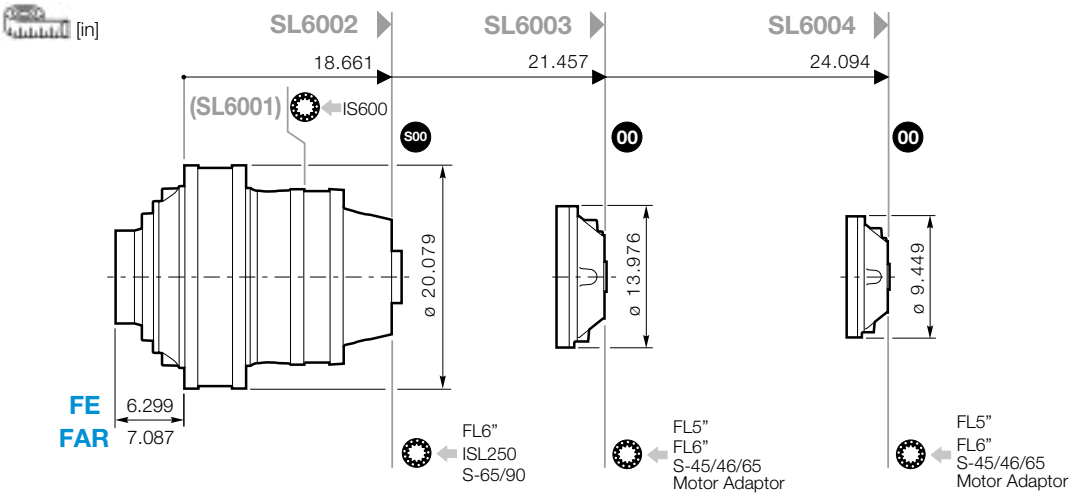
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC6003												
42.89	35	25801	172	23	29138	129	12	35873	79	1800	103250	29
49.31	30	31781	184	20	35892	138	10	44188	86	1500	88500	
57.69	26	36511	181	17	37430	123	8.7	39056	65			
64.26	23	36753	164	16	37679	111	7.8	39315	58	1800		
74.52	20	37089	142	13	38023	97	6.7	39675	51			
74.52	20	37089	142	13	38023	97	6.7	39675	51			
77.01	20	33108	123	13	37391	93	6.5	46033	57	2500	103250	
90.09	17	37523	119	11	38468	82	5.6	40138	42		88500	
97.59	15	38625	113	10	43621	84	5.1	48795	48		103250	
114.4	13	39989	99	8.7	43781	72	4.4	45683	38			
128.9	12	29969	66	7.8	30724	45	3.9	32269	24	1500	69325	
133.8	11	38444	82	7.5	39413	56	3.7	42480	30	2500	88500	
164.1	9.1	35382	62	6.1	36273	42	3.0	37849	22			
201.4	7.4	30800	44	5.0	31576	30	2.5	34519	16		69325	
SC6004												
234.5*	6.4	47185	58	4.3	50169	41	2.1	55715	23	2000	103250	23
261.2*	5.7	47961	52	3.8	50994	37	1.9	56631	21			
269.8*	5.6	48196	51	3.7	51244	36	1.9	56909	20			
321.4*	4.7	49488	44	3.1	52618	31	1.6	58434	17			
358.0*	4.2	50302	40	2.8	53484	28	1.4	59395	16			
409.0	3.7	51326	36	2.4	54573	25	1.2	60606	14	3000		
462.6	3.2	52292	32	2.2	55599	23	1.1	61744	13	3500		
518.3	2.9	53199	29	1.9	56564	21	1.0	62817	12	3000		
569.1	2.6	53956	27	1.8	57369	19	0.88	63710	11	3500		
651.7	2.3	55074	24	1.5	58557	17	0.77	63285	9.3	3000		
721.2	2.1	55925	22	1.4	59462	16	0.69	66034	8.7	3500		
797.0	1.9	53061	19	1.3	54397	13	0.63	56760	6.8			
906.8	1.7	57895	18	1.1	61557	13	0.55	64581	6.8			
988.8	1.5	48686	14	1.0	51766	9.9	0.51	57488	5.5			
1096	1.4	39753	10	0.91	40754	7.1	0.46	45174	3.9	3000	88500	
1243	1.2	50401	12	0.80	53590	8.2	0.40	59513	4.6	3500		
1345	1.1	38961	8.3	0.74	41425	5.9	0.37	46005	3.2	3000	69325	
1525	0.98	40567	7.6	0.66	42762	5.4	0.33	47488	3.0	3500	88500	
1871	0.80	40957	6.3	0.53	43548	4.4	0.27	48361	2.4		69325	

* (bg) All the ratios in light grey (ie.234.5) have particular dimensions of bevel gears in some versions. See dimensional tables.

600

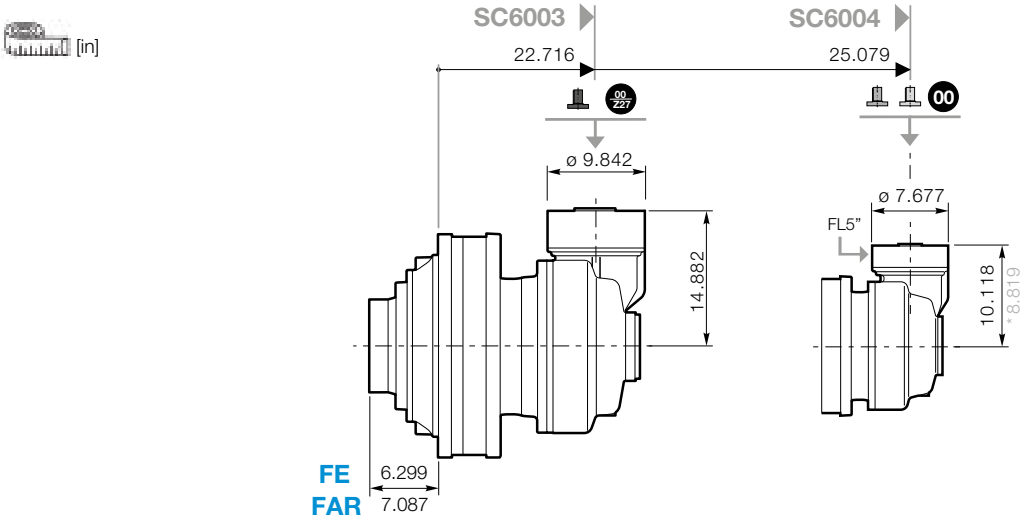
GEARBOX DIMENSIONS WITH OUTPUT





00 FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 Motor Adaptor



00 Z27 UPC
Motor Adaptor

00 FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor

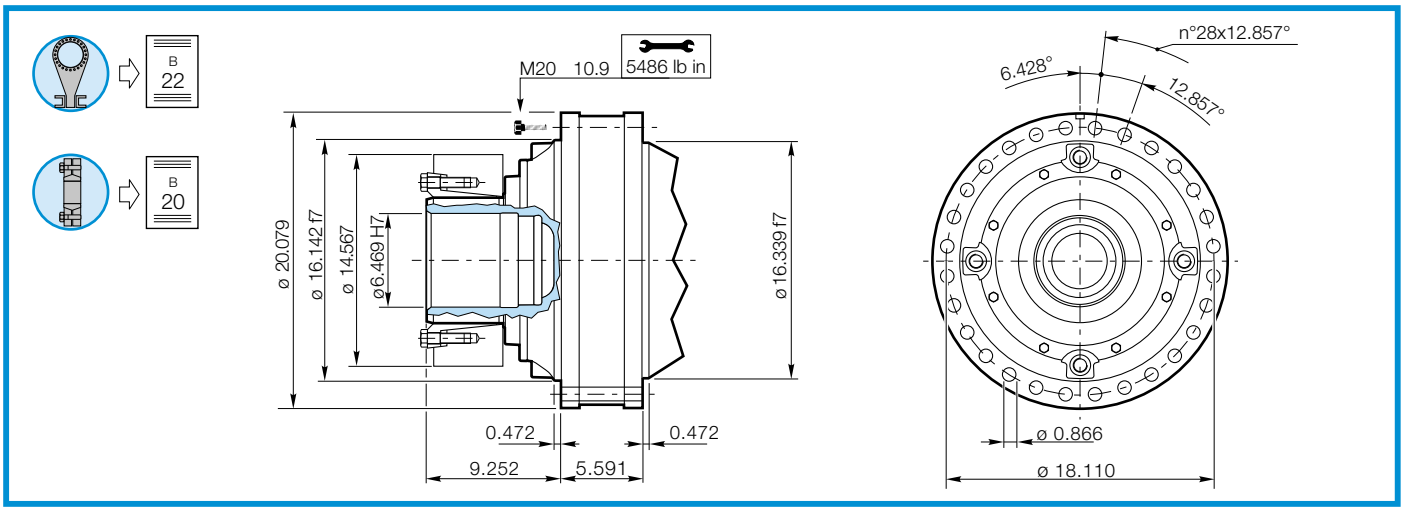
65.105 (VARIANT)
only without FL5"

48.82 (VARIANT)
only without FL5"

45.70 (VARIANT)
only without FL5"

* bg ⇨ 600 3 S-45/46/65/90 IS ISL ⇨ 600 8 SU SUF SUS ⇨ 600 9 65.105 48.82 45.70 ⇨ 600 9 FL5" FL6" FL620/635 ⇨ 600 10 Motor Adaptor ⇨ 600 12
00 ⇨ B 11 00 Z27 ⇨ B 11 S00 ⇨ B 12

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



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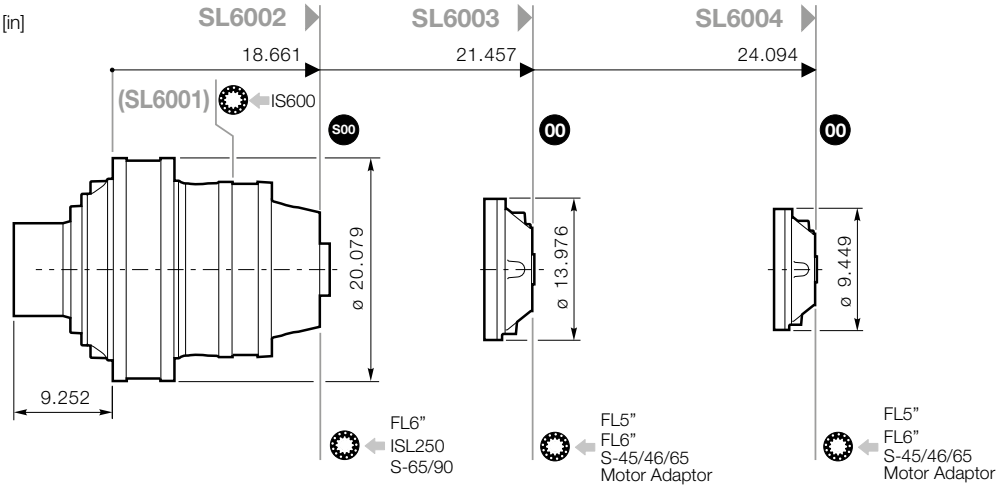
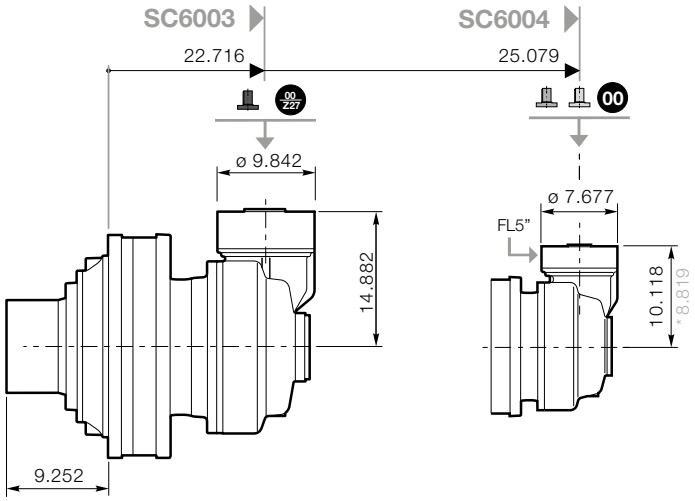


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

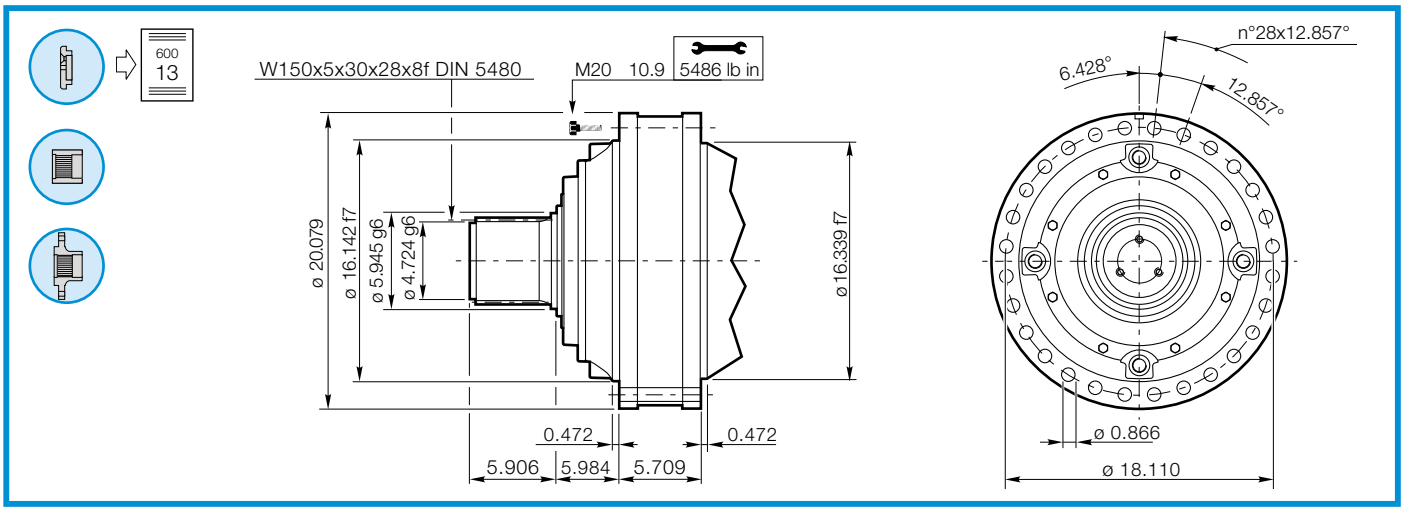
45.70 (VARIANT) only without FL5"

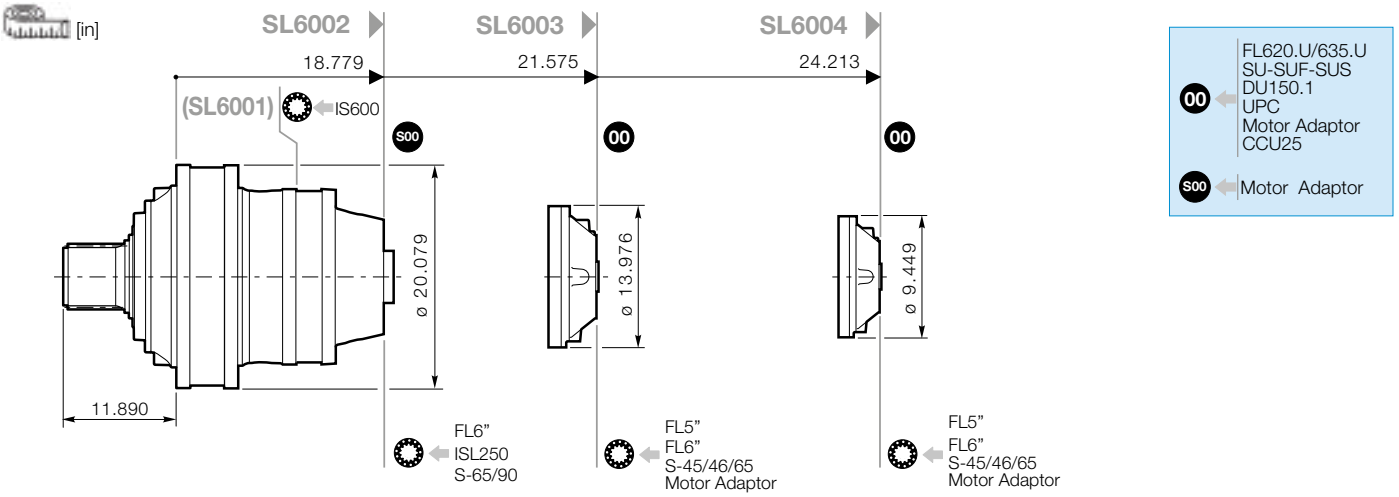
* (bg) → 600 3 S-45/46/65/90 IS ISL → 600 8 SU SUF SUS → 600 9 65.105 48.82 45.70 → 600 9 FL5" FL6" FL620/635 → 600 10 Motor Adaptor → 600 12 00 → B 11 00 Z27 → B 11 S00 → B 12

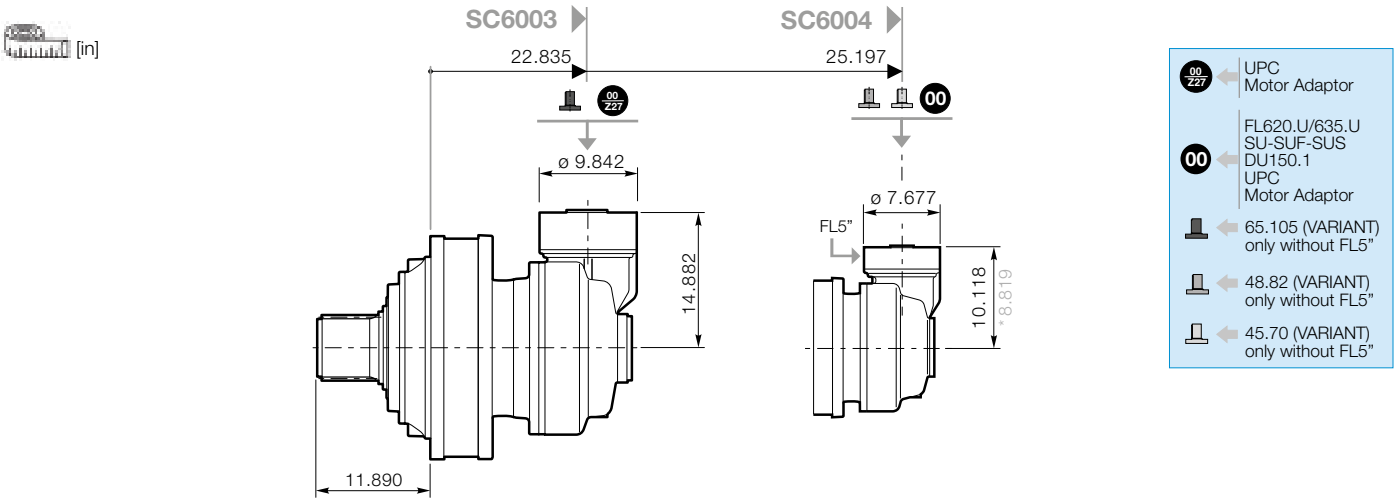
Click *i* button to return to main index

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

GEARBOX DIMENSIONS WITH OUTPUT



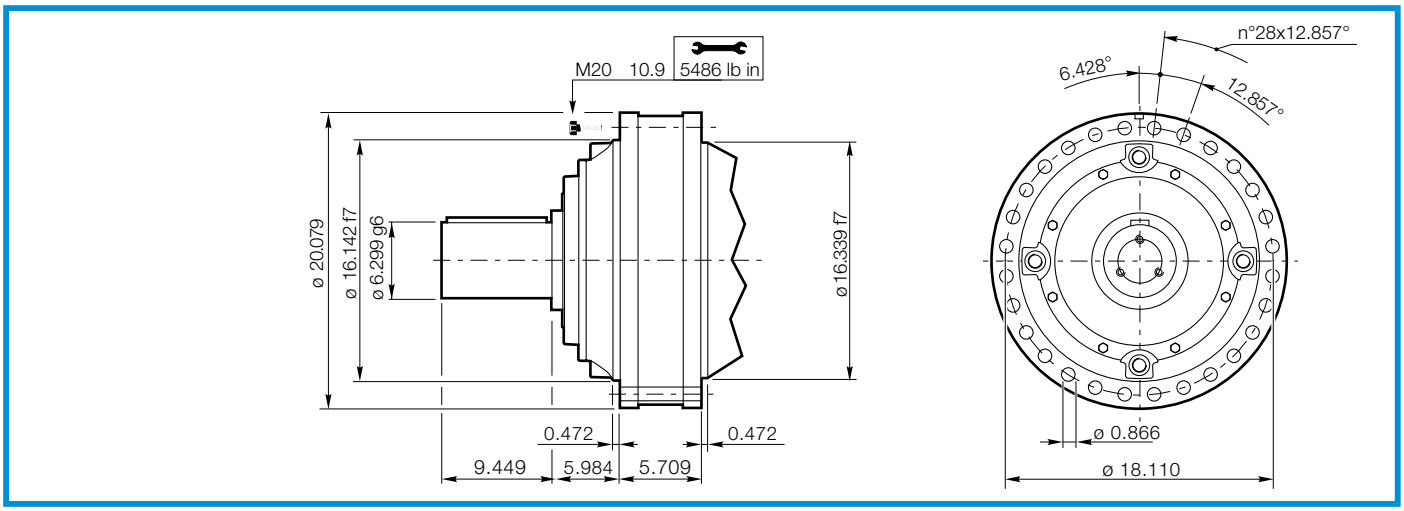




* bg 600 3 S-45/46/65/90 IS ISL 600 8 SU SUF SUS 600 9 65.105 48.82 45.70 600 9 FL5" FL6" FL620/635 600 10 Motor Adaptor 600 12 00 B 11 00 Z27 B 11 S00 B 12

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

Click *i* button to return to main index



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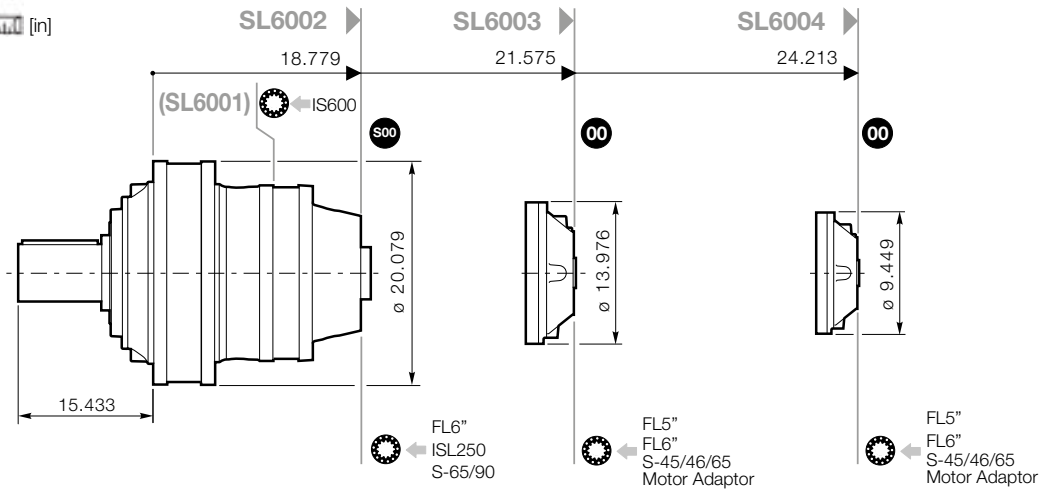
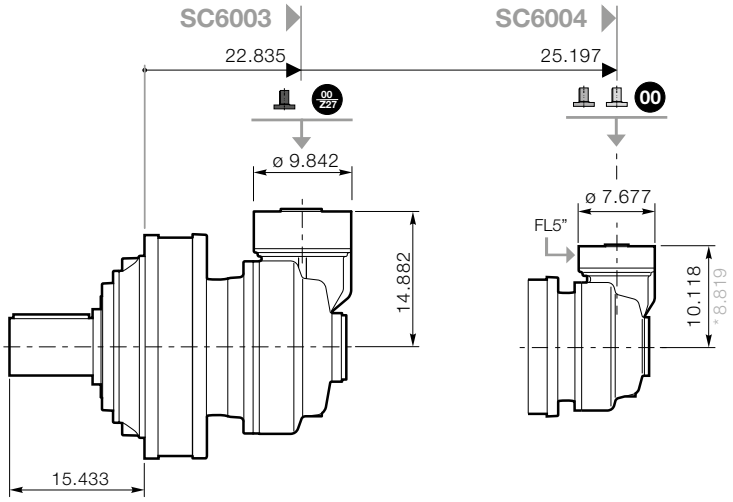


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

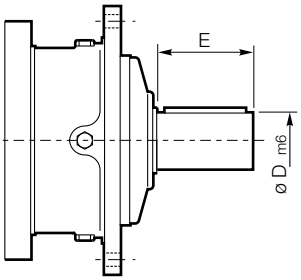
45.70 (VARIANT) only without FL5"

* bg ⇨ 600 3 S-45/46/65/90 IS ISL ⇨ 600 8 SU SUF SUS ⇨ 600 9 65.105 48.82 45.70 ⇨ 600 9 FL5" FL6" FL620/635 ⇨ 600 10 Motor Adaptor ⇨ 600 12 00 ⇨ B 11 00 Z27 ⇨ B 11 S00 ⇨ B 12

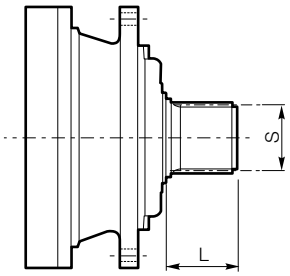
Click *i* button to return to main index

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

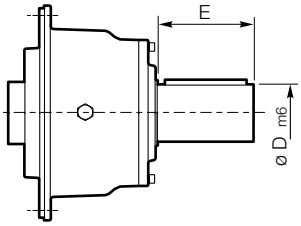
S-45 S-46 S-65 S-90 IS ISL



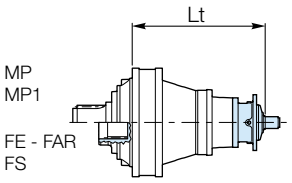
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

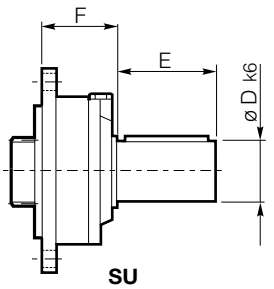


IS / ISL

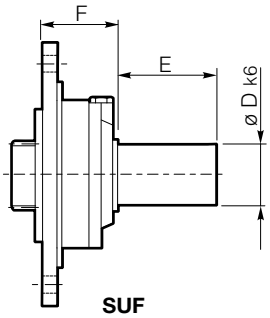


	D m6	E	L	S DIN5482		Lt			
						SL6001	SL6002	SL6003	SL6004
S-45CR1	2.559	4.134	-	-	FE-FAR-FS	-	-	26.535	26.535
					MP-MP1			26.654	26.654
S-45SR	-	-	2.677	B58x53	FE-FAR-FS	-	-	26.535	26.535
					MP-MP1			26.654	26.654
S-46C1	2.559	4.134	-	-	FE-FAR-FS	-	-	28.189	28.189
					MP-MP1			28.307	28.307
S-46C2	2.500	4.250	-	-	FE-FAR-FS	-	-	28.189	28.189
					MP-MP1			28.307	28.307
S-46S	-	-	2.677	B58x53	FE-FAR-FS	-	-	28.189	28.189
					MP-MP1			28.307	28.307
S-65CR1	3.150	5.118	-	-	FE-FAR-FS	-	26.240	28.110	-
					MP-MP1		26.358	28.228	
S-90CR1	3.543	6.693	-	-	FE-FAR-FS	-	26.476	-	-
					MP-MP1		26.594		
IS600	4.331	8.268	-	-	FE-FAR-FS	19.213	-	-	-
					MP-MP1	19.331			
ISL250	3.543	5.118	-	-	FE-FAR-FS	-	21.417	-	-
					MP-MP1		21.535		

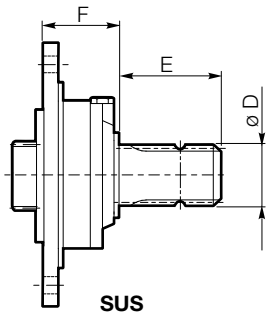
SU - SUF - SUS



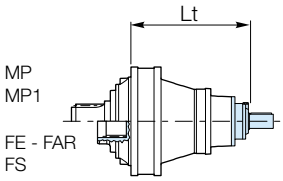
SU

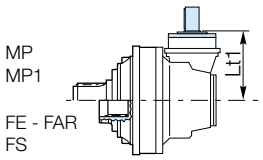


SUF



SUS

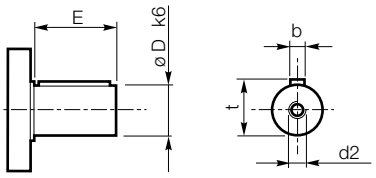


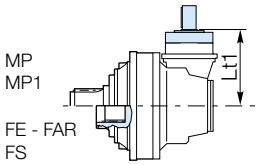


	D k6	E	F		Lt - Lt1 SL6003	Lt - Lt1 SL6004	Lt - Lt1 SC6003	Lt - Lt1 SC6004
SU/SUF.1	1.102	1.969	2.362	FE-FAR-FS	23.819	26.457	17.244	11.181
				MP-MP1	23.937	26.575		12.480*
SU/SUF.2	1.575	2.283	2.362	FE-FAR-FS	23.819	26.457	17.244	11.181
				MP-MP1	23.937	26.575		12.480*
SU/SUF.3	1.890	3.228	2.362	FE-FAR-FS	23.819	26.457	17.244	11.181
				MP-MP1	23.937	26.575		12.480*
SU2 1.5X3.25	1.500	3.250	2.362	FE-FAR-FS	23.819	26.457	17.244	11.181
				MP-MP1	23.937	26.575		12.480*
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	FE-FAR-FS	25.453	28.091	18.878	12.815
				MP-MP1	25.571	28.209		14.114*
SU 42x80	1.890	3.150	3.996	FE-FAR-FS	25.453	28.091	18.878	12.815
				MP-MP1	25.571	28.209		14.114*

* bg ⇨ 600 3

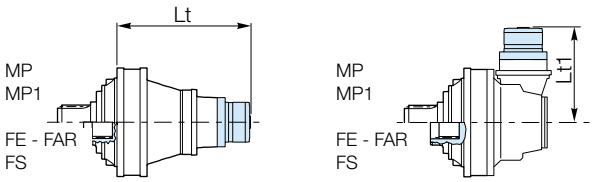
65.105 - 48.82 - 45.70

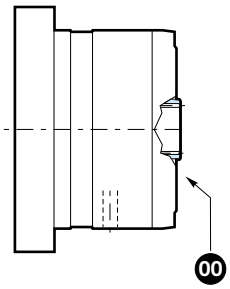




		D k6	E	b	t	d2		Lt1 SC6003	Lt1 SC6004
	65.105	2.559	4.134	0.709	2.717	M20x1.680	FE-FAR-FS	14.803	-
							MP-MP1		
	48.82	1.890	3.228	0.551	2.028	M10x0.866	FE-FAR-FS	-	12.480
							MP-MP1		
	45.70	1.772	2.756	0.551	1.909	M10x0.866	FE-FAR-FS	-	12.087
							MP-MP1		

FL5” - FL6”

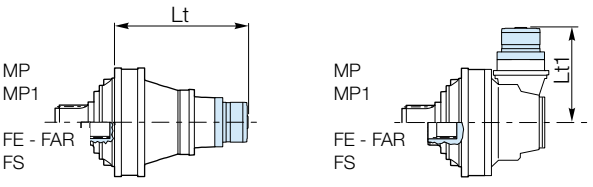


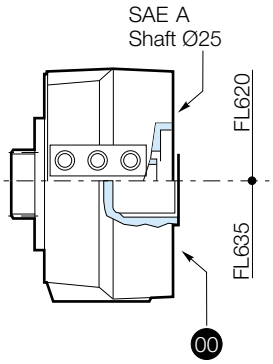


			Lt - Lt1			
			SL6002	SL6003	SL6004	SC6004
FL5”	FL250.4C FL250.6C	FE-FAR-FS	-	25.374	27.776	14.783
		MP-MP1	-	25.492	27.894	16.083*
	FL350.6C FL350.8C	FE-FAR-FS	-	25.374	27.776	14.783
		MP-MP1	-	25.492	27.894	16.083*
	FL450.6C FL450.8C	FE-FAR-FS	-	25.374	27.776	14.783
		MP-MP1	-	25.492	27.894	16.083*
	FL650.10C FL650.12C FL650.14C	FE-FAR-FS	-	25.925	28.307	15.315
		MP-MP1	-	26.043	28.425	16.614*
	FL750.10C FL750.12C FL750.14C	FE-FAR-FS	-	25.925	28.307	15.315
		MP-MP1	-	26.043	28.425	16.614*
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	FE-FAR-FS	23.386	26.476	29.370	-
		MP-MP1	23.504	26.594	29.488	-

* bg ⇨ 600 3

FL620.U - FL635.U

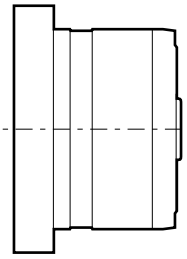


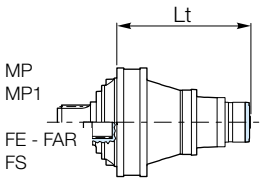


		Lt - Lt1			
		SL6003	SL6004	SC6003	SC6004
FL620.U	FE-FAR-FS	25.571	28.209	18.996	12.933
	MP-MP1	25.689	28.327		14.232*
FL635.U	FE-FAR-FS	25.039	27.677	18.996	12.402
	MP-MP1	25.157	27.795		13.701*

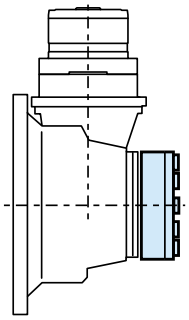
* bg ⇨ 600 3

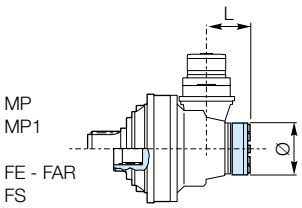
RL



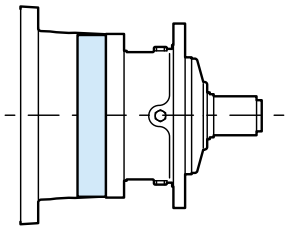


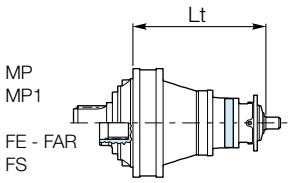
				Lt		
				SL6002	SL6003	SL6004
RL	+	FL250 FL350 FL450	FE-FAR-FS	-	26.398	28.799
			MP-MP1	-	26.516	28.917
		FL650 FL750	FE-FAR-FS	-	26.949	29.331
			MP-MP1	-	27.067	29.449
		FL960	FE-FAR-FS	24.409	27.500	30.394
			MP-MP1	24.528	27.618	30.512





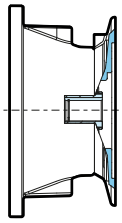
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

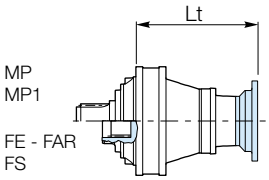


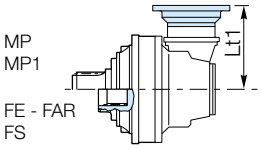


				Lt	
				SL6003	SL6004
RL	+	S46C1	FE-FAR-FS	28.976	28.976
			MP-MP1	29.094	29.094

IEC Motor







		Lt - Lt1				
		SL6002 S00	SL6003 00	SL6004 00	SC6003 00 Z27	SC6004 00
IEC 100 - 112	FE-FAR-FS	-	-	25.197	-	11.220
	MP-MP1	-	-	25.315	-	12.520*
IEC 132	FE-FAR-FS	-	-	27.835	-	13.858
	MP-MP1	-	-	27.953	-	14.370*
IEC 160	FE-FAR-FS	-	25.394	29.055	-	15.079
	MP-MP1	-	25.512	29.173	-	16.378*
IEC 180	FE-FAR-FS	-	25.394	29.055	19.843	15.079
	MP-MP1	-	25.512	29.173		16.378*
IEC 200	FE-FAR-FS	21.614	26.929	29.449	21.260	15.512
	MP-MP1	21.732	27.047	29.567		16.811*
IEC 225	FE-FAR-FS	22.795	28.031	30.630	-	16.693
	MP-MP1	22.913	28.150	30.748	-	17.992*
IEC 250	FE-FAR-FS	22.795	-	-	-	-
	MP-MP1	22.913	-	-	-	-
IEC 280	FE-FAR-FS	22.795	-	-	-	-
	MP-MP1	22.913	-	-	-	-
SHAFT_IEC225	FE-FAR-FS	-	-	-	22.047	-
	MP-MP1	-	-	-		-

* bg ⇨ 600 3

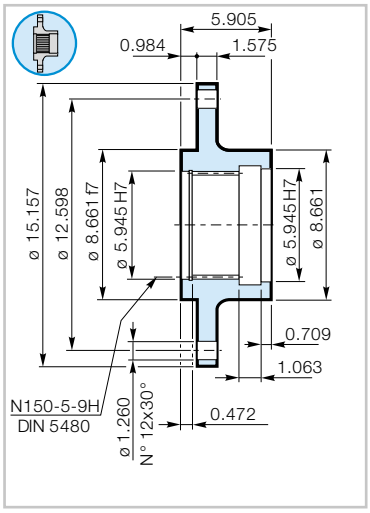
NEMA Motor

Please consult NEMA Motor Flange in page ⇨ B 15

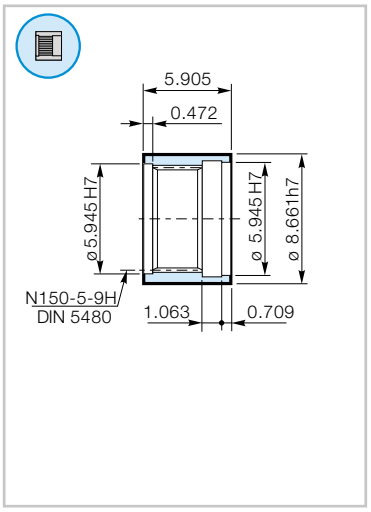
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page ⇨ B 14

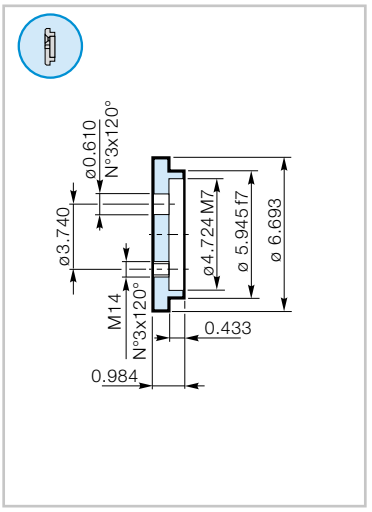
FR 600 Wheel Flange



MS 600 Splined Sleeve



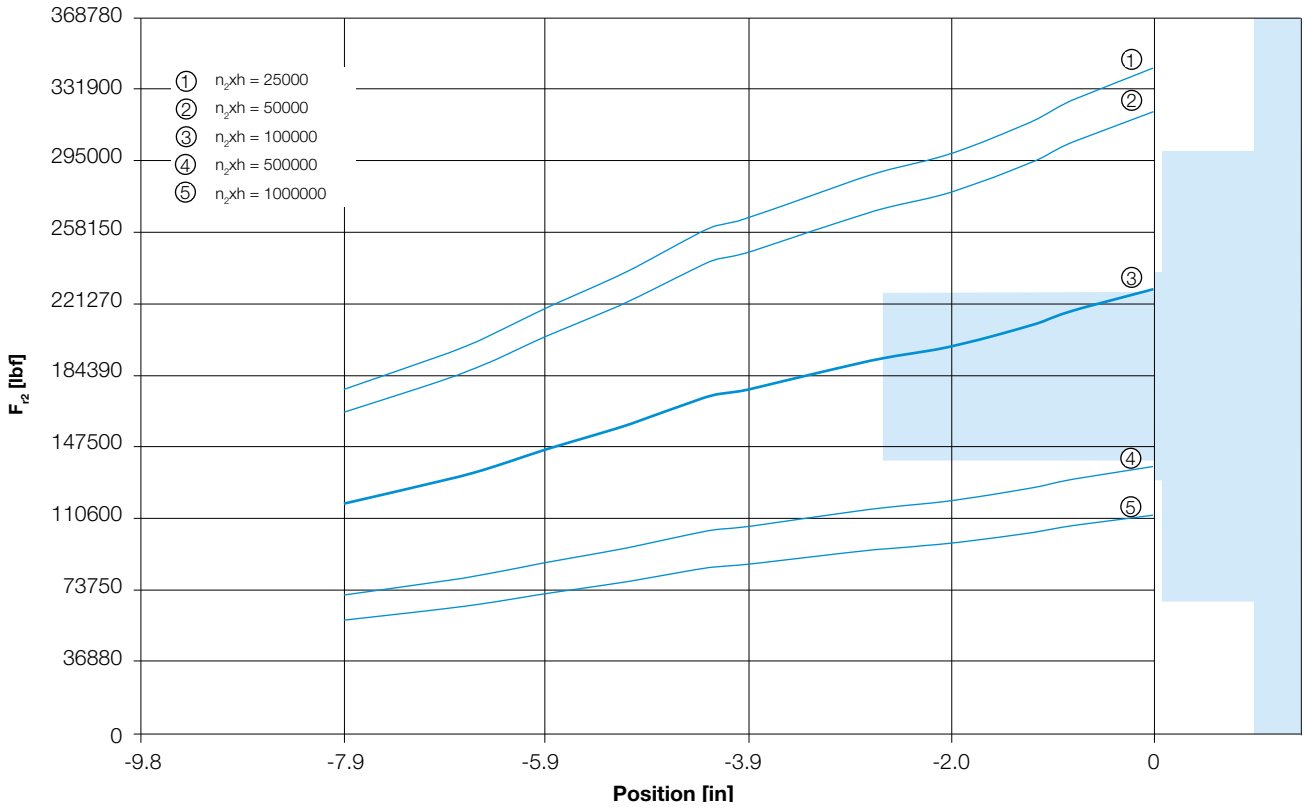
RDF 520 Lock Washer



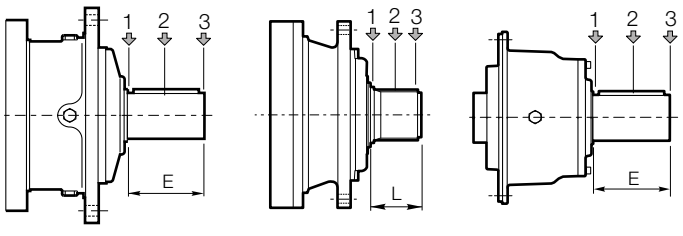
Output Radial Loads

Gearbox output version for:
SL, SC

MP - MP1

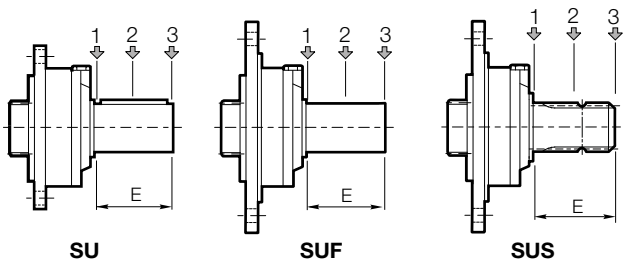


Input Radial Loads



S... IS / ISL

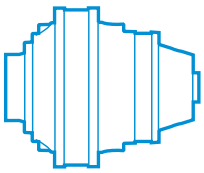
			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**L**	**1**	**2**	**3**	**1**	**2**	**3**
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL250	5.118	-	1716	967	673	860	485	337
IS600	8.268	-	12216	8298	5923	6126	4159	2969



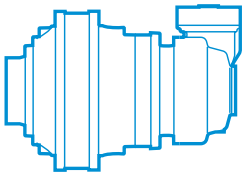
SU SUF SUS

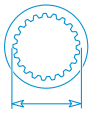
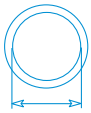
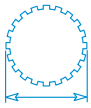
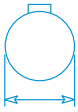
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts	8
Brakes	10
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



850



i_{eff}	4.18 - 1987
T_{2N}	66000 ftlb
	N170x5x30x32x9H DIN5480
	7.087 in
	W170x5x30x32x8f DIN5480
	6.693 in

TECHNICAL DATA

10000
hours life

i_{eff}	1500 n_2 [rpm]	1500 T_2 [ftlb]	1500 P_2 [HP]	1000 n_2 [rpm]	1000 T_2 [ftlb]	1000 P_2 [HP]	500 n_2 [rpm]	500 T_2 [ftlb]	500 P_2 [HP]	n_{1MAX} [rpm]	T_{2MAX} [ftlb]	P_T [HP]
SL8501												
4.18	1)			1)			120	31681	721	1500	143813	113
4.89							102	32595	634		123163	
6.00							83	33884	538		90713	
SL8502												
18.81	1)			53	40407	409	27	49747	252	2000	143813	75
19.76				51	40248	388	25	49552	239		123163	
21.40				47	42002	374	23	51711	231		143813	
25.08				40	44049	334	20	54231	207			
29.34				34	45319	294	17	52304	170		123163	
30.77				33	42222	261	16	44056	137		110979	
35.99				28	48183	255	14	51539	137		123163	
SL8503												
74.30	20	54026	208	14	61015	157	6.7	65731	84	2500	143813	51
83.14	18	55880	192	12	63107	145	6.0	66696	76			
87.32	17	52278	172	12	53595	117	5.7	55923	61		123163	
101.3	15	59296	168	10	64205	121	4.9	68722	65		143813	
112.9	13	61245	156	8.9	64631	109	4.4	69852	59			
128.4	12	63544	141	7.8	65145	97	3.9	71229	53			
141.1	11	63912	129	7.1	65522	89	3.5	72249	49			
160.5	9.3	64421	114	6.2	66341	79	3.1	73674	44			
188.1	8.0	65050	99	5.3	67952	68	2.7	72239	37			
202.5	7.4	43125	60	4.9	44212	42	2.5	48358	23		90713	
SL8504												
233.5	6.4	66033	80	4.3	70209	57	2.1	77970	32	2500	143813	35
261.2	5.7	67165	74	3.8	71413	52	1.9	79307	29			
291.0	5.2	68270	67	3.4	72588	47	1.7	80611	26			
329.8	4.6	69576	60	3.0	73976	43	1.5	82153	24			
371.5	4.0	70839	54	2.7	75319	39	1.4	83645	21			
418.0	3.6	72114	49	2.4	76676	35	1.2	85151	19			
468.9	3.2	73378	45	2.1	78019	32	1.1	86644	18			
512.7	2.9	74376	41	2.0	79080	29	1.0	87822	16			
571.1	2.6	75599	38	1.8	80381	27	0.88	89266	15			
649.8	2.3	77089	34	1.5	81966	24	0.77	91026	13			
705.4	2.1	78053	32	1.4	82990	22	0.71	91991	12			
802.6	1.9	79592	28	1.3	84627	20	0.62	93981	11			
940.5	1.6	74538	23	1.1	77970	16	0.53	86588	8.7			
963.1	1.6	81818	24	1.0	86993	17	0.52	96609	9.5			
1129	1.3	75382	19	0.89	80150	14	0.44	89010	7.5			
1296	1.2	60027	13	0.77	62355	9.1	0.39	69248	5.1			
1350	1.1	60177	13	0.74	62741	8.9	0.37	69676	5.0		123163	
1620	0.93	60854	11	0.62	64495	7.6	0.31	71625	4.2			
1987	0.75	57852	8.3	0.50	61511	5.9	0.25	68310	3.2		90713	

1) Consult the DANA area contact person.

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 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC8503												
42.89	35	25801	172	23	29138	129	12	35873	79	1800	143813	36
49.31	30	31781	184	20	35892	138	10	44188	86	1500	123163	
57.69	26	37180	184	17	41988	138	8.7	51694	86			
64.26	23	41413	184	16	46769	138	7.8	54881	82			
73.23	21	47200	184	14	53305	138	6.8	65626	86	1800	143813	
78.14	19	43608	160	13	44707	109	6.4	46649	57	1500	123163	
85.67	18	52217	174	12	53532	119	5.8	55858	62			
100.3	15	43142	123	10	48722	93	5.0	56773	54	2500	143813	
114.4	13	49171	123	8.7	55530	93	4.4	68366	57			
128.9	12	41948	93	7.8	43004	64	3.9	45167	33	1500	90713	
133.8	11	53665	114	7.5	55017	78	3.7	59298	42	2500	123163	
164.1	9.1	52880	93	6.1	54212	63	3.0	56567	33			
SC8504												
183.4*	8.2	52718	82	5.5	59536	62	2.7	73298	38	2000	143813	27
205.3*	7.3	58990	82	4.9	66621	62	2.4	76466	35			
235.0*	6.4	66098	80	4.3	70278	57	2.1	78047	32			
261.7*	5.7	67184	74	3.8	71434	52	1.9	79330	29			
278.6*	5.4	67823	70	3.6	72113	49	1.8	80084	27			
310.4*	4.8	68939	63	3.2	73299	45	1.6	81401	25			
353.1*	4.2	70298	57	2.8	74744	40	1.4	83006	22			
388.0*	3.9	71305	52	2.6	75815	37	1.3	84195	21			
449.4	3.3	72909	46	2.2	77521	33	1.1	86090	18	3000		
493.8	3.0	73954	43	2.0	78632	30	1.0	87323	17			
561.8	2.7	75412	38	1.8	80182	27	0.9	89045	15			
625.4	2.4	74481	34	1.6	81492	25	0.8	90500	14	3500		
687.0	2.2	77743	32	1.5	82660	23	0.7	91797	13			
781.7	1.9	79275	29	1.3	84290	21	0.6	93607	11			
916.0	1.6	74418	23	1.1	77660	16	0.6	86245	9.0			
986.2	1.5	52034	15	1.00	55326	11	0.51	61441	5.9		90713	
1072	1.4	68795	18	0.93	73146	13	0.47	81231	7.2		123163	
1290	1.2	54194	12	0.77	57622	8.4	0.39	63991	4.7		90713	
1613	0.93	56054	9.9	0.62	59600	7.0	0.31	66188	3.9			

* (bg) All the ratios in light grey (ie.234.5) have particular dimensions of bevel gears in some versions. See dimensional tables.

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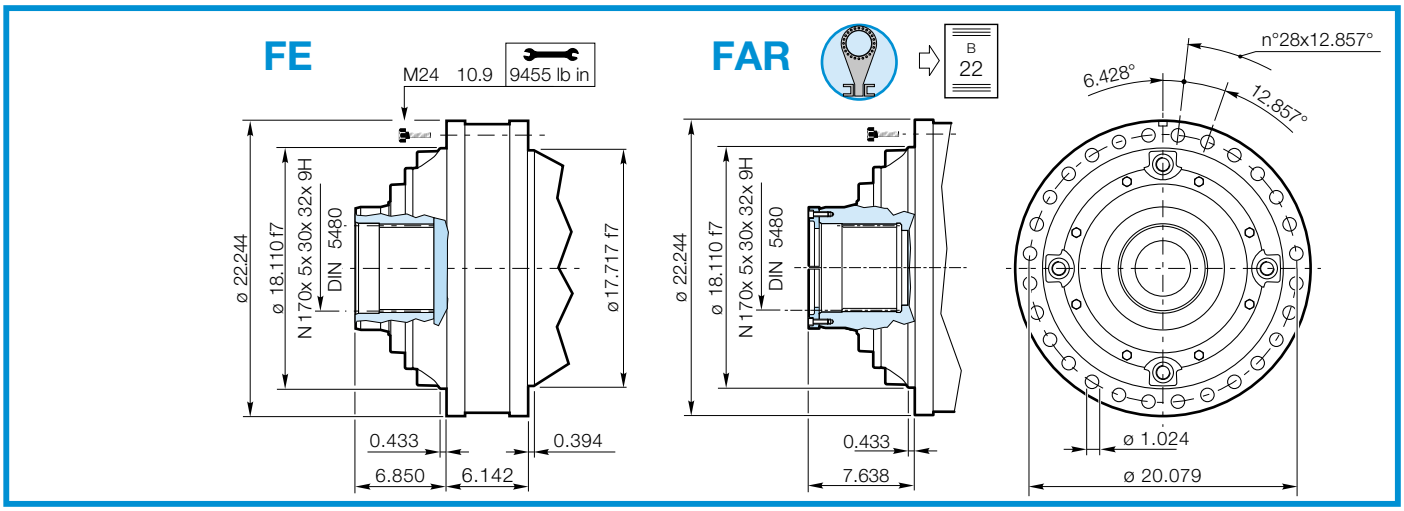
GEARBOX DIMENSIONS WITH OUTPUT



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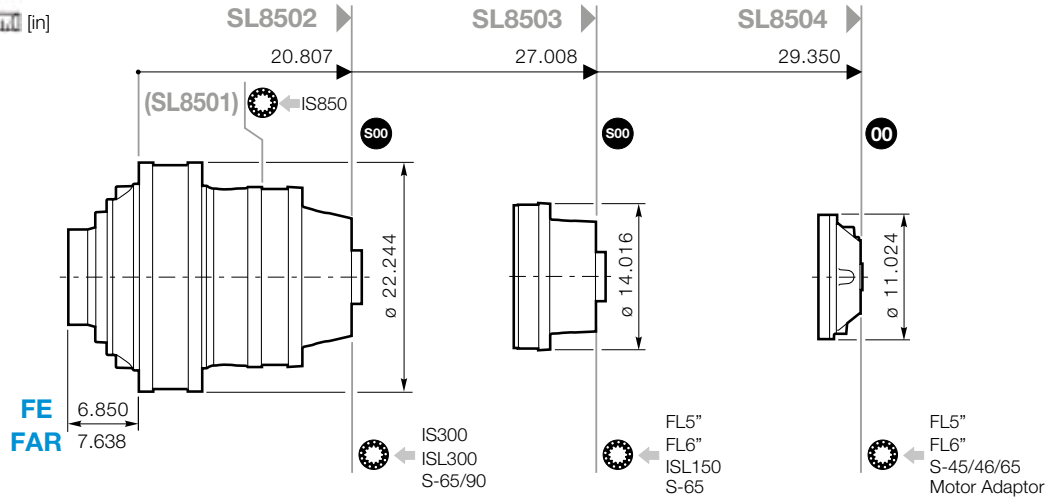
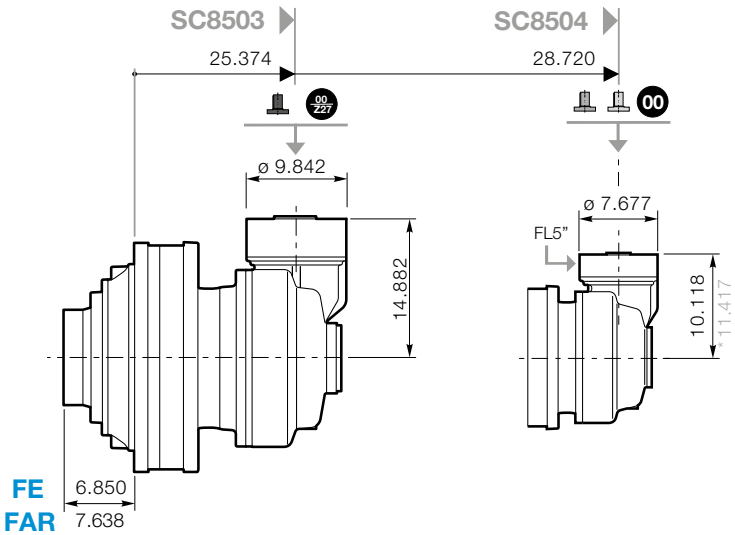


00 FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 Motor Adaptor

[in]



00 227 UPC Motor Adaptor

00 FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

45.70 (VARIANT) only without FL5"

* bg ⇨ 850 3 S-45/46/65/90 IS ISL ⇨ 850 8 SU SUF SUS ⇨ 850 9 65.105 48.82 45.70 ⇨ 850 9 FL5" FL6" FL620/635 ⇨ 850 10 Motor Adaptor ⇨ 850 12
00 ⇨ B 11 00 227 ⇨ B 11 S00 ⇨ B 12

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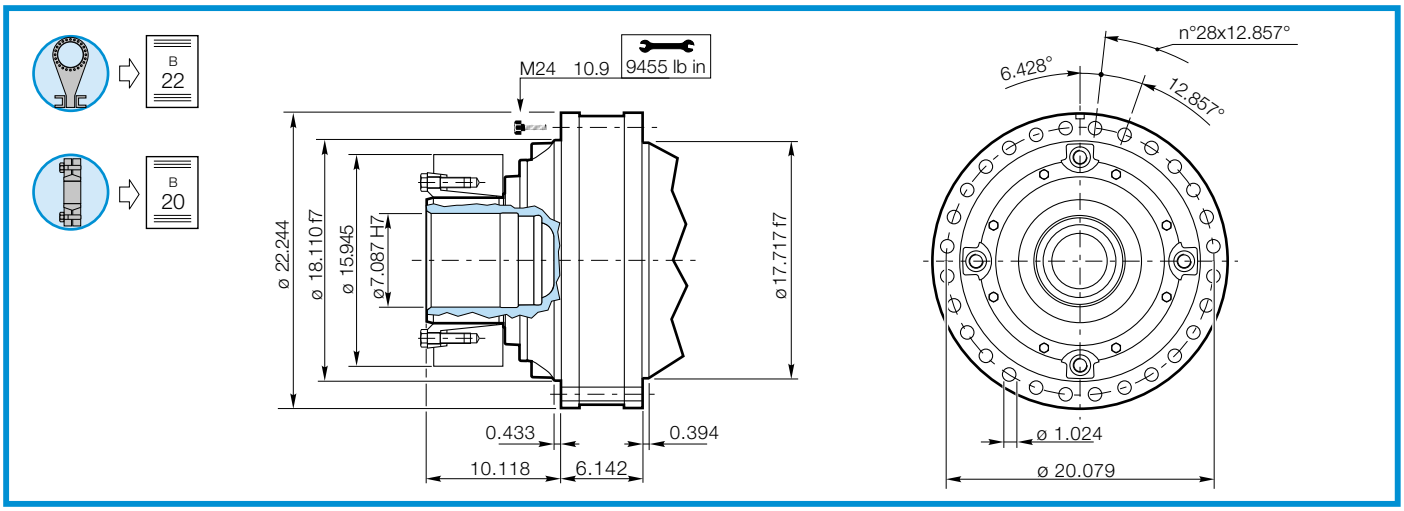

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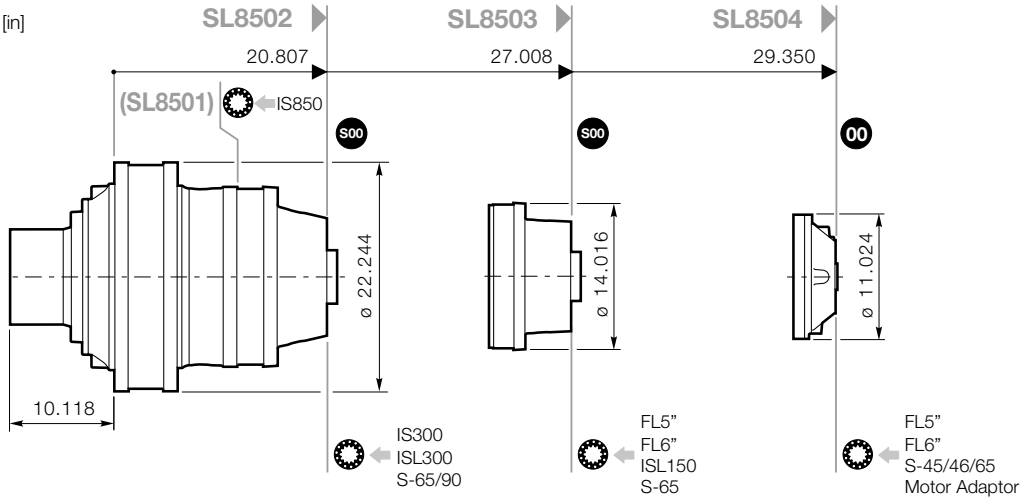
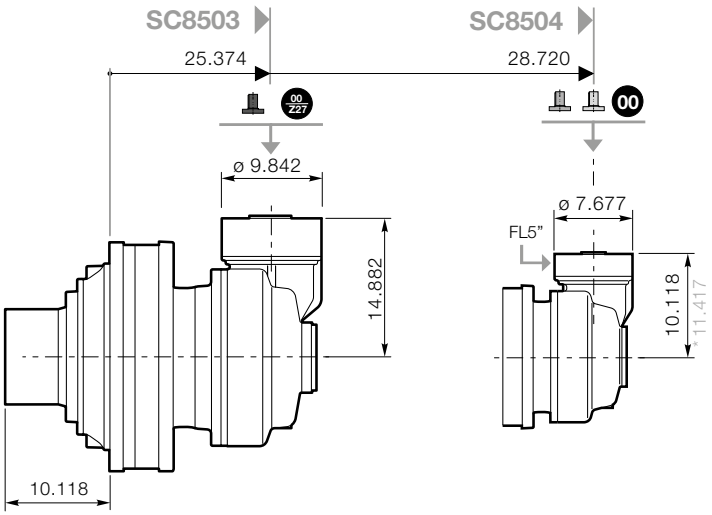


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

45.70 (VARIANT) only without FL5"

* (bg) → 850 3 S-45/46/65/90 IS ISL → 850 8 SU SUF SUS → 850 9 65.105 48.82 45.70 → 850 9 FL5" FL6" FL620/635 → 850 10 Motor Adaptor → 850 12 → 00 → B 11 → 00 Z27 → B 11 → S00 → B 12

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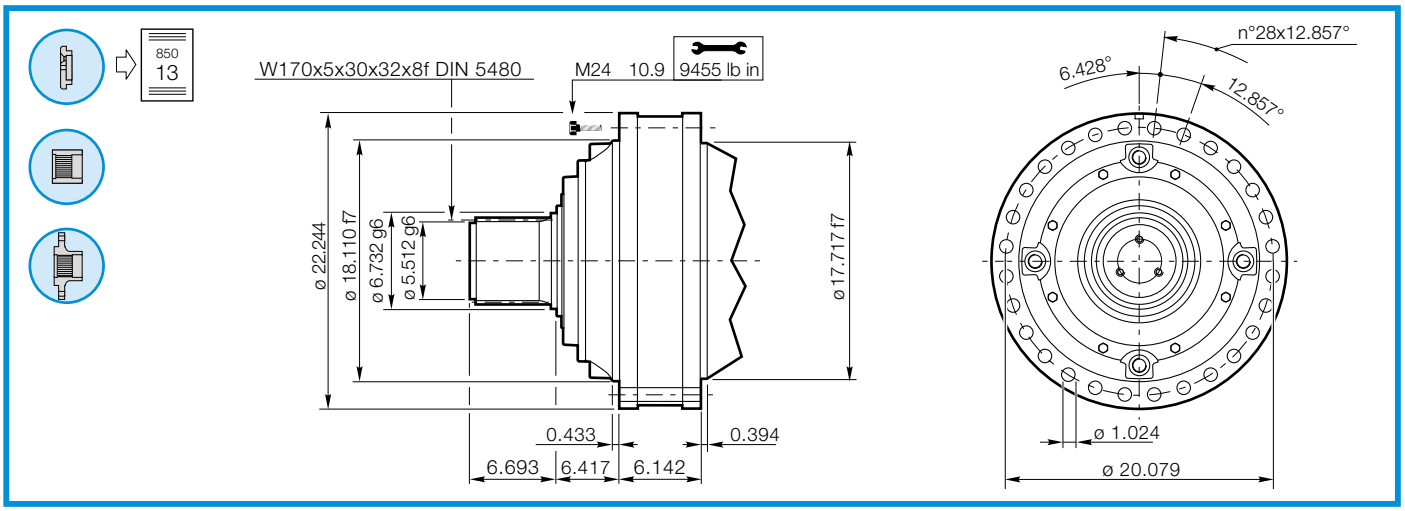
Click **DANA** button to return to section index

GEARBOX DIMENSIONS WITH OUTPUT



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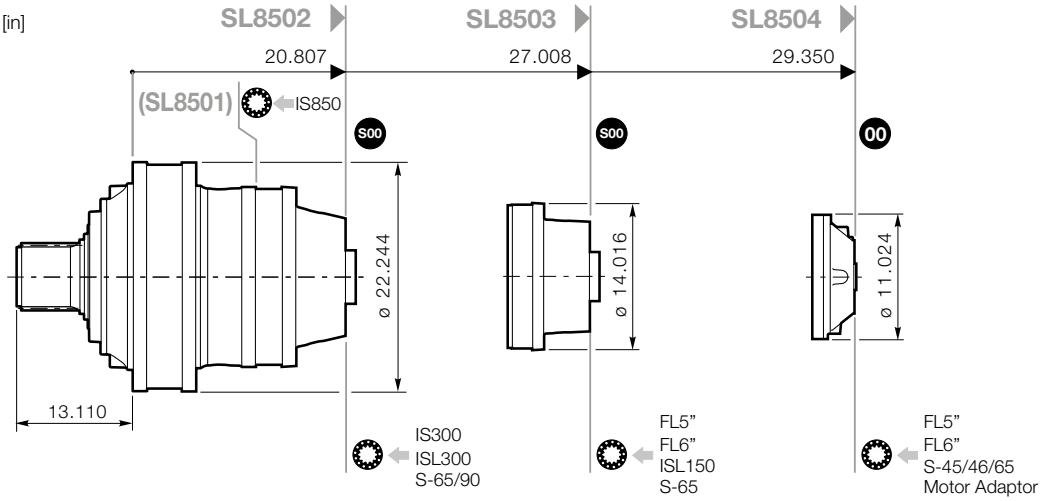
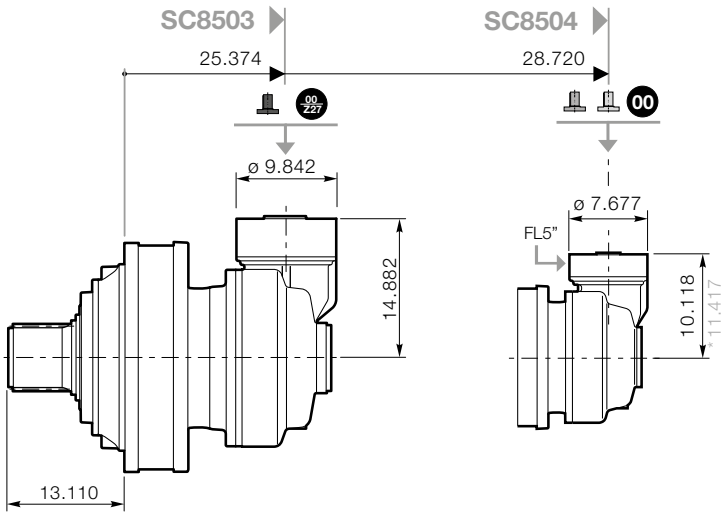


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

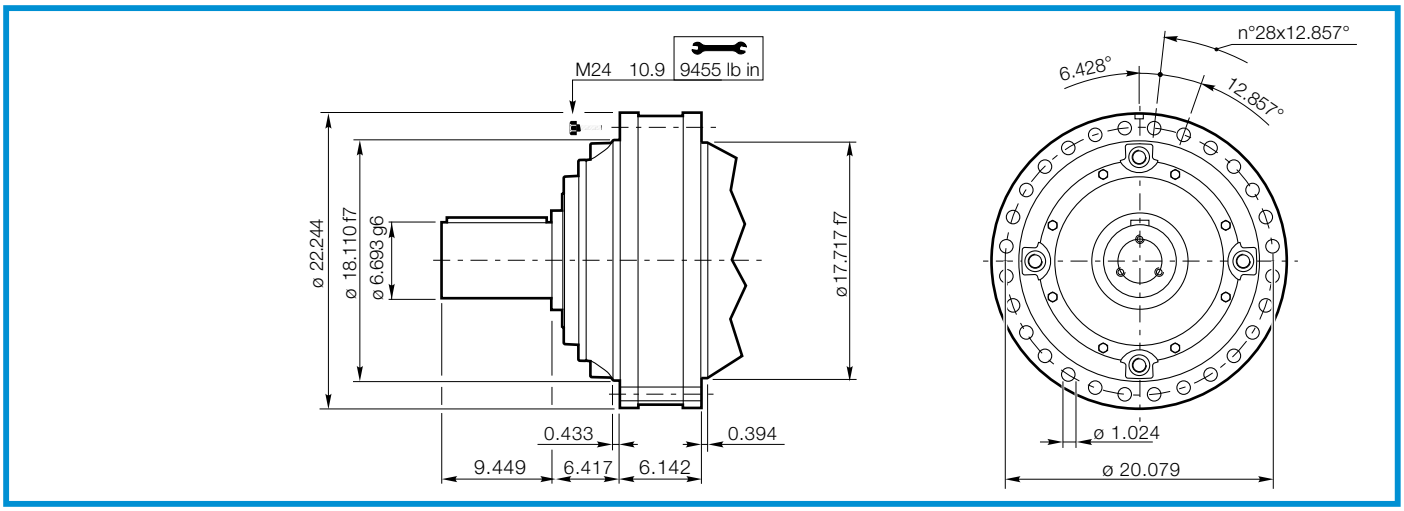
48.82 (VARIANT) only without FL5"

45.70 (VARIANT) only without FL5"

* (bg) → 850 3 S-45/46/65/90 IS ISL → 850 8 SU SUF SUS → 850 9 65.105 48.82 45.70 → 850 9 FL5" FL6" FL620/635 → 850 10 Motor Adaptor → 850 12 → 00 → B 11 → 00 Z27 → B 11 → S00 → B 12

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

Click *i* button to return to main index



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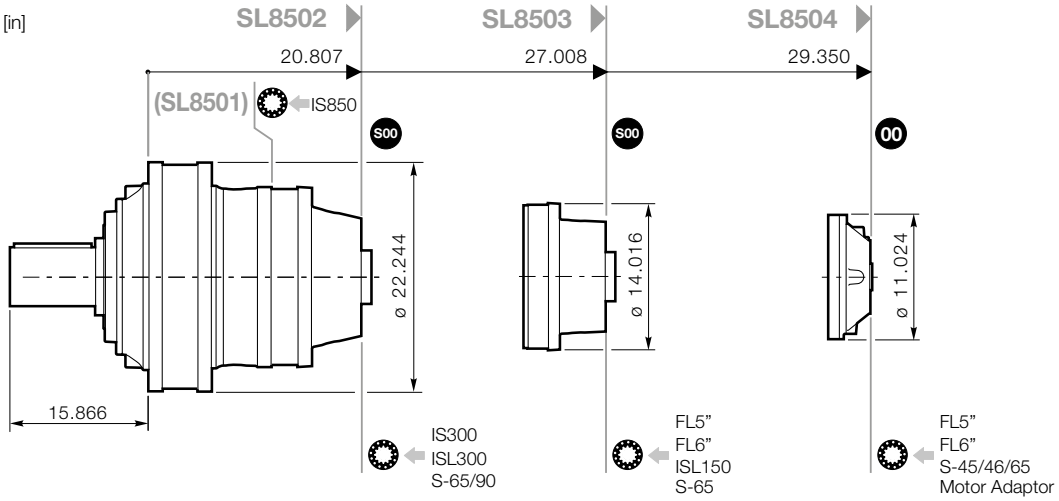
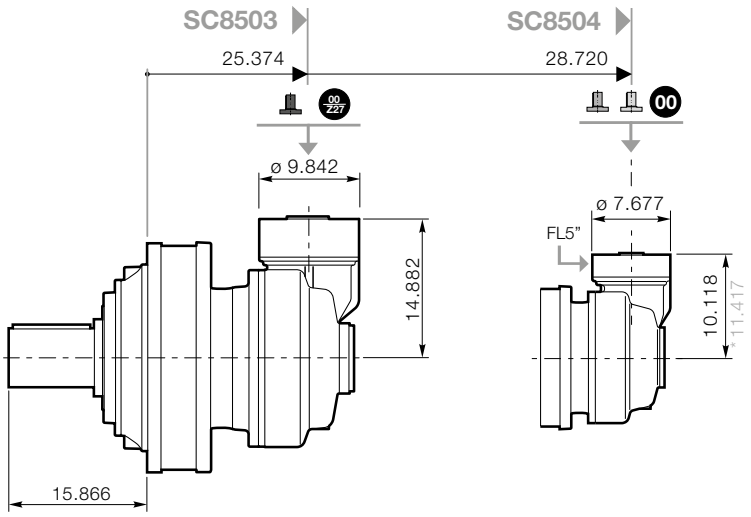


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 227 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

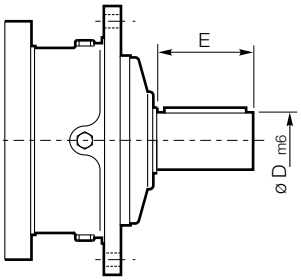
45.70 (VARIANT) only without FL5"

* (bg) → 850 3 S-45/46/65/90 IS ISL → 850 8 SU SUF SUS → 850 9 65.105 48.82 45.70 → 850 9 FL5" FL6" FL620/635 → 850 10 Motor Adaptor → 850 12 → 00 → B 11 → 00 227 → B 11 → S00 → B 12

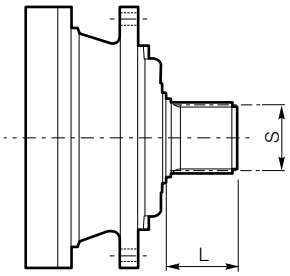
Click *i* button to return to main index

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

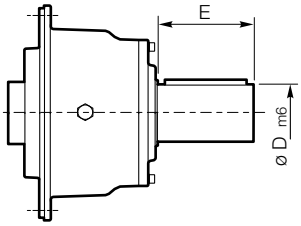
S-45 S-46 S-65 S-90 IS ISL



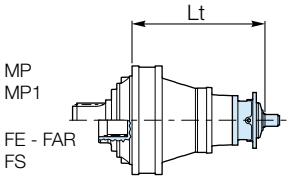
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

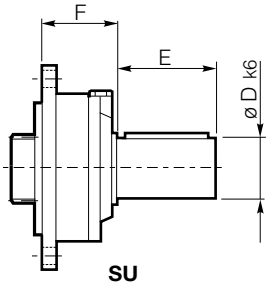


IS / ISL

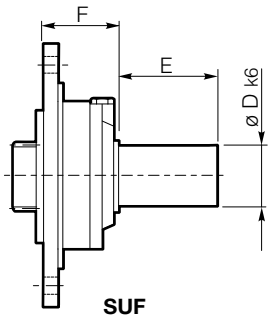


	D m6	E	L	S DIN5482	Lt			
					SL8501	SL8502	SL8503	SL8504
S-45CR1	2.559	4.134	-	-	-	-	-	34.370
S-45SR	-	-	2.677	B58x53	-	-	-	34.370
S-46C1	2.559	4.134	-	-	-	-	-	36.004
S-46C2	2.500	4.250	-	-	-	-	-	36.004
S-46S	-	-	2.677	B58x53	-	-	-	36.004
S-65CR1	3.150	5.118	-	-	-	28.898	34.567	35.906
S-90CR1	3.543	6.693	-	-	-	29.134	-	-
ISL150	3.543	5.118	-	-	-		29.764	-
ISL300	3.543	5.118	-	-	-	23.563	-	-
IS300	3.937	8.268	-	-	-	28.327	-	-
IS850	4.331	8.268	-	-	22.776	-	-	-

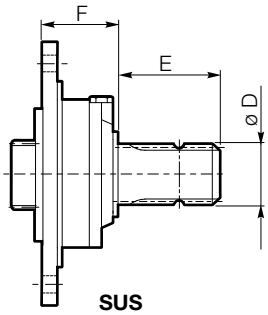
SU - SUF - SUS



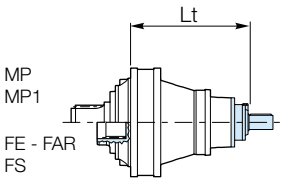
SU

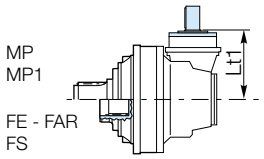


SUF



SUS

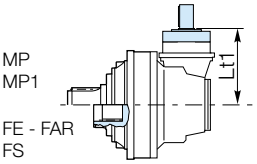


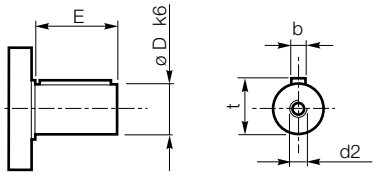


	D k6	E	F	Lt - Lt1 (00)		
				SL8504	SC8503	SC8504
SU/SUF.1	1.102	1.969	2.362	31.712	17.244	12.480 13.779*
SU/SUF.2	1.575	2.283	2.362	31.712	17.244	12.480 13.779*
SU/SUF.3	1.890	3.228	2.362	31.712	17.244	12.480 13.779*
SU2 1.5X3.25	1.500	3.250	2.362	31.712	17.244	12.480 13.779*
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	33.346	18.878	14.114 15.413*
SU 42x80	1.890	3.150	3.996	33.346	18.878	14.114 15.413*

* bg 850 3

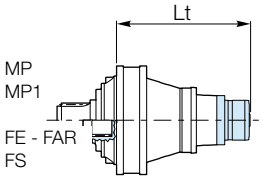
65.105 - 48.82 - 45.70

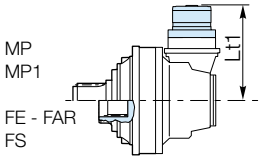


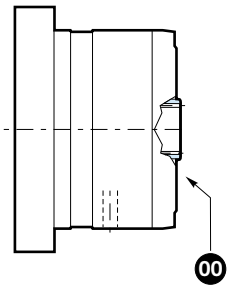


		D k6	E	b	t	d2	Lt1	
							SC8502	SC8504
	65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803	-
	48.82	1.890	3.228	0.551	2.028	M10x0.866	-	13.779
	45.70	1.772	2.756	0.551	1.909	M10x0.866	-	13.386

FL5” - FL6”



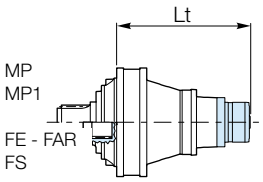


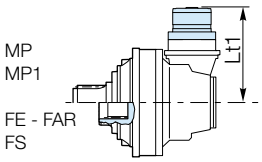


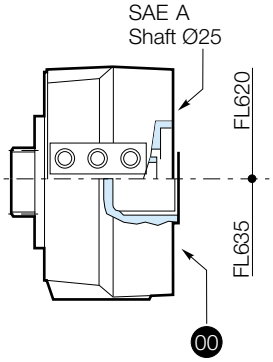
		Lt - Lt1			
		SL8502	SL8503	SL8504	SC8504
FL5”	FL250.4C FL250.6C	-	30.118	33.504	16.083 17.382*
	FL350.6C FL350.8C	-	30.118	33.504	16.083 17.382*
	FL450.6C FL450.8C	-	30.118	33.504	16.083 17.382*
	FL650.10C FL650.12C FL650.14C	-	30.650	34.035	16.614 17.913*
	FL750.10C FL750.12C FL750.14C	-	30.650	34.035	16.614 17.913*
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	26.043	31.201	34.587	-

* bg ⇨ 850 3

FL620.U - FL635.U



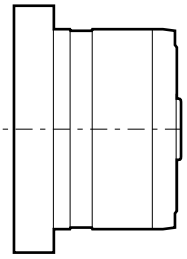


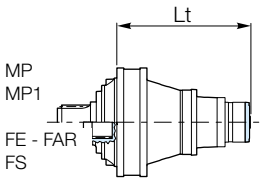


	Lt - Lt1 00		
	SL8504	SC8503	SC8504
FL620.U	33.464	18.996	14.232 15.531*
FL635.U	32.933	18.465	13.701 15.000*

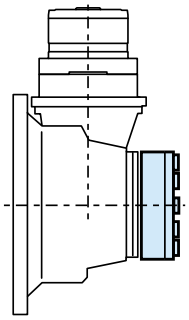
* bg ⇨ 850 3

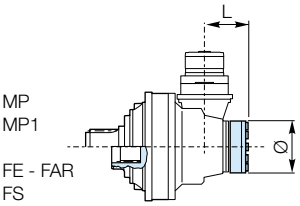
RL



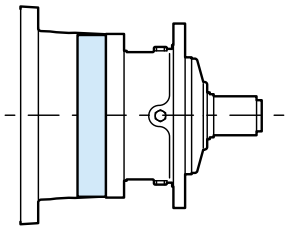


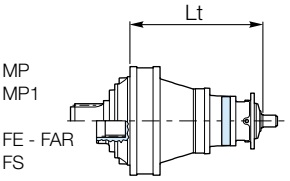
			Lt		
			SL8502	SL8503	SL8504
RL	+	FL250 FL350 FL450	-	31.142	34.527
		FL650 FL750	-	31.673	35.059
		FL960	27.067	32.224	35.61





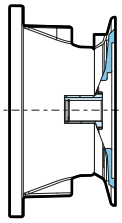
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

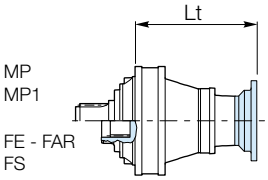


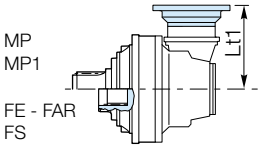


			Lt
			SL8504
RL	+	S46C1	36.791

IEC Motor







	Lt - Lt1				
	SL8502 S00	SL8503 S00	SL8504 00	SC8503 00 Z27	SC8504 00
IEC 100-112	-	-	30.492	-	11.220 12.520*
IEC 132	-	-	33.130	-	13.858 14.370*
IEC 160	-	-	33.563	-	15.079 16.378*
IEC 180	-	-	33.563	19.843	15.079 16378*
IEC 200	24.272	29.961	34.744	21.260	15.512 16.811*
IEC 225	25.453	31.142	35.925	-	16.693 17.992*
IEC 250	25.453	-	-	-	-
IEC 280	25.453	-	-	-	-
SHAFT_IEC225	-	-	-	22.047	-

* bg ⇨ 850 3

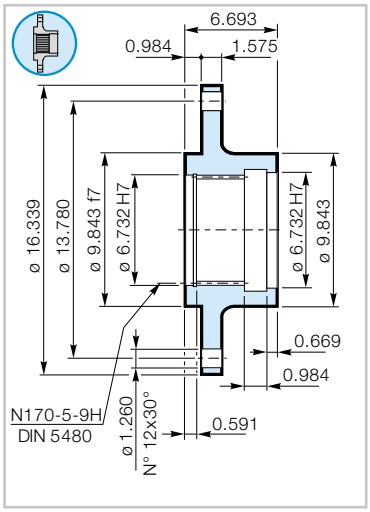
NEMA Motor

Please consult NEMA Motor Flange in page ⇨ B 15

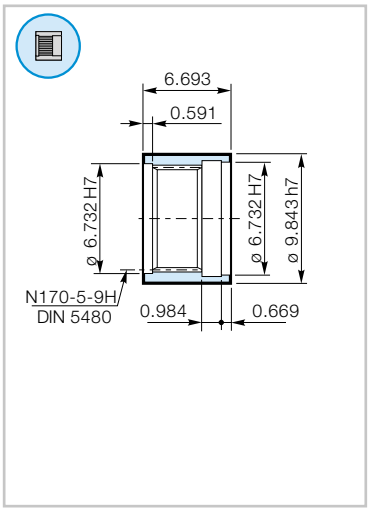
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page ⇨ B 14

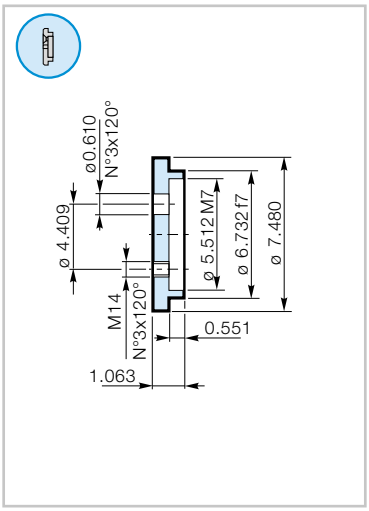
FR 800 Wheel Flange



MS 800 Splined Sleeve



RDF S850 Lock Washer

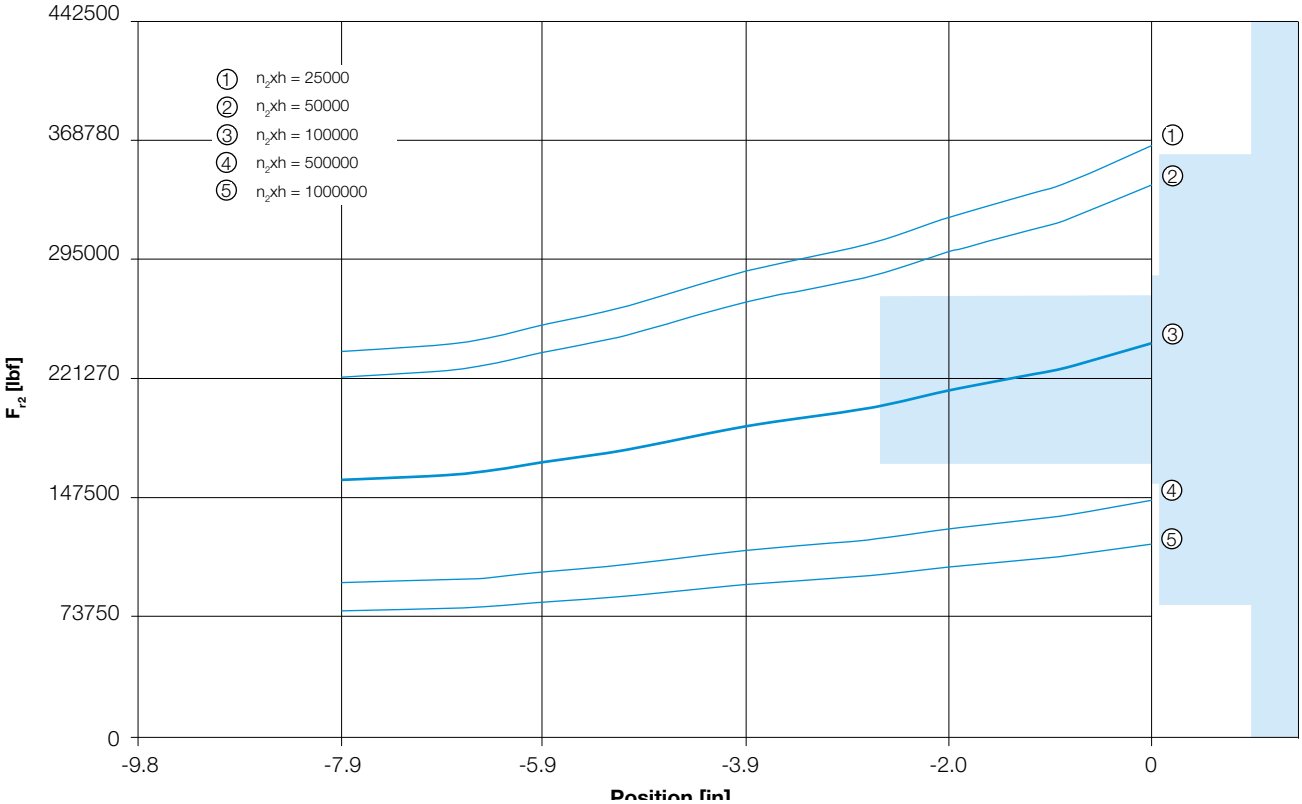


850

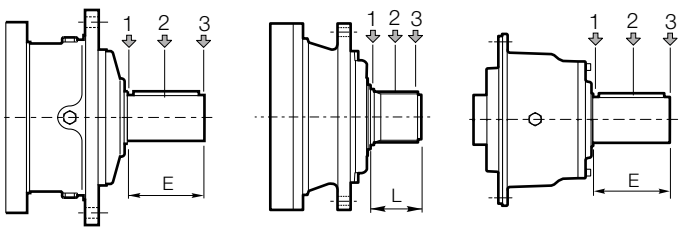
Output Radial Loads

Gearbox output version for:
SL, SC

MP - MP1

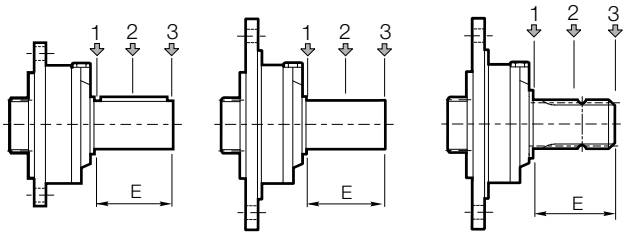


Input Radial Loads



S... IS / ISL

			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**L**	**1**	**2**	**3**	**1**	**2**	**3**
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL150	5.118	-	1716	967	673	860	485	337
ISL300	5.118	-	1716	967	673	860	485	337
IS300	8.268	-	10974	7434	5151	5500	3726	2582
IS850	8.268	-	2746	1866	1332	1377	935	667



SU SUF SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

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

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Gearbox Dimensions with Output	4
Input Shafts	8
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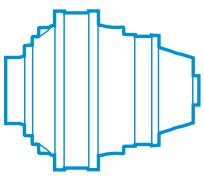
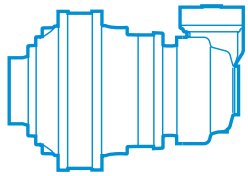
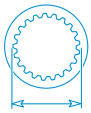
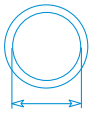
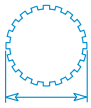
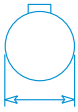
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



1200



i_{eff}	4.18 - 1620
T_{2N}	98000 ftlb
	N200x5x30x38x9H DIN5480
	8.661 in
	W200x5x30x38x8f DIN5480
	7.874 in

TECHNICAL DATA

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL12001												
4.18	1)			1)			120	50962	1161	1500	216088	136
4.89							102	52430	1021		184375	
6.00							83	54504	865		146025	
SL12002												
17.47	1)			57	63575	693	29	78270	426	2000	216088	91
20.44				49	66639	621	25	82042	382			
25.08				40	70858	538	20	84082	319			
29.34				34	72898	473	17	78376	255		184375	
36.00				28	59541	315	14	62128	165		146025	
SL12003												
69.02	22	69405	287	15	78382	216	7.2	96500	133	2500	216088	60
80.74	19	81194	287	12	91696	216	6.2	99130	117			
90.35	17	83848	266	11	94694	200	5.5	100830	106			
99.07	15	85512	247	10	87667	169	5.0	91474	89			
110.9	14	86105	221	9.0	88273	152	4.5	92108	79			
122.6	12	88622	207	8.2	96981	150	4.1	105600	82			
143.5	11	80761	161	7.00	82795	110	3.5	89801	60		184375	
153.3	9.8	84662	158	6.5	86795	107	3.3	90565	56		216088	
188.1	8.0	88943	135	5.3	91184	93	2.7	95144	48			
220.1	6.8	82908	107	4.5	86267	75	2.3	95803	41		184375	
SL12004												
241.6	6.2	99089	117	4.1	105356	83	2.1	117002	46	3000	216088	42
282.6	5.3	101468	102	3.5	107886	72	1.8	119811	40			
316.2	4.7	103209	94	3.2	109736	66	1.6	121866	37			
366.9	4.1	105557	82	2.7	112233	58	1.4	124639	32			
414.1	3.6	107505	74	2.4	114305	53	1.2	126941	29			
463.4	3.2	109349	67	2.2	116265	48	1.1	129118	27			
524.2	2.9	111408	61	1.9	118454	43	1.0	128345	23			
542.1	2.8	111975	59	1.8	119058	42	0.92	132218	23			
629.0	2.4	114523	52	1.6	121766	37	0.79	129788	20			
735.8	2.0	117273	45	1.4	124691	32	0.68	138474	18			
778.1	1.9	98215	36	1.3	104427	26	0.64	115970	14		184375	
896.7	1.7	100345	32	1.1	106692	23	0.56	116943	12			
952.8	1.6	101271	30	1.0	107676	21	0.52	119578	12			
1100	1.4	103499	27	0.91	110045	19	0.45	122209	11			
1296	1.2	81197	18	0.77	86332	13	0.39	95875	7.1		146025	
1350	1.1	81700	17	0.74	86867	12	0.37	96469	6.8			
1620	0.93	83984	15	0.62	89296	10	0.31	99166	5.8			

1) Consult the DANA area contact person.

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 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC12003												
44.38	34	26695	172	23	30148	129	11	37116	79	1800		
51.02	29	32882	184	20	37135	138	9.8	45719	86	1500	216088	
63.70	24	38318	172	16	43274	129	7.8	53276	79	1800		
73.23	21	47200	184	14	53305	138	6.8	64894	84	1500	146025	47
79.67	19	34255	123	13	38686	93	6.3	47628	57	2500	216088	
85.67	18	55217	184	12	62359	138	5.8	76773	86	1500	184375	
114.4	13	49171	123	8.7	55531	93	4.4	66693	56	2500	146025	
133.8	11	57522	123	7.5	64535	91	3.7	68005	48			
SC12004												
222.0*	6.8	63809	82	4.5	72063	62	2.3	88720	38			
259.7*	5.8	74648	82	3.8	84303	62	1.9	98236	36		184375	
290.7*	5.2	83529	82	3.4	89976	59	1.7	99921	33	2000		
304.8*	4.9	87609	82	3.3	93925	59	1.6	98005	31		216088	
337.3*	4.4	96925	82	3.0	109463	62	1.5	123060	35			
413.8*	3.6	93351	64	2.4	95702	44	1.2	99860	23			
458.7	3.3	75987	47	2.2	80120	33	1.1	83600	17	3000		37
517.3	2.9	94638	52	1.9	97022	36	0.97	101524	19	2000		
536.6	2.8	88894	47	1.9	93728	33	0.93	97800	17	3000		
658.4	2.3	96048	42	1.5	98467	28	0.76	105296	15			
732.8	2.0	87282	34	1.4	98572	26	0.68	107016	14	3500		
770.2	1.9	98062	36	1.3	104265	26	0.65	115790	14	3000		
873.4	1.7	99946	33	1.1	106268	23	0.57	116754	13	3500	184375	
1072	1.4	103087	27	0.93	109607	19	0.47	121723	11			

* (bg) All the ratios in light grey (ie.220.0) have particular dimensions of bevel gears in some versions. See dimensional tables.

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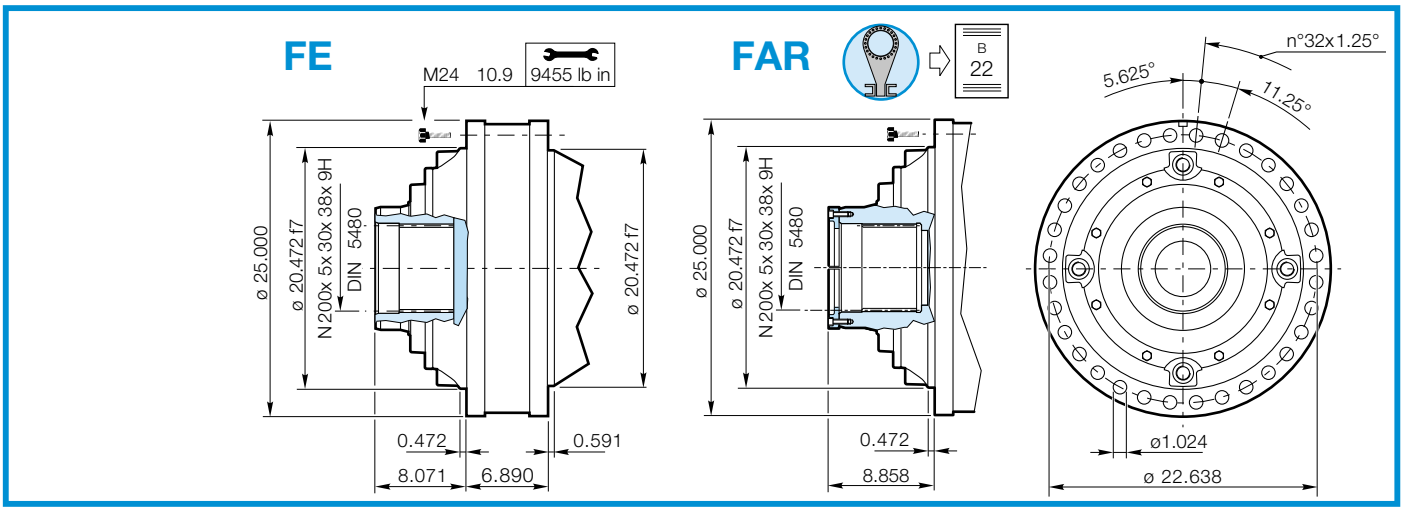
GEARBOX DIMENSIONS WITH OUTPUT



1200

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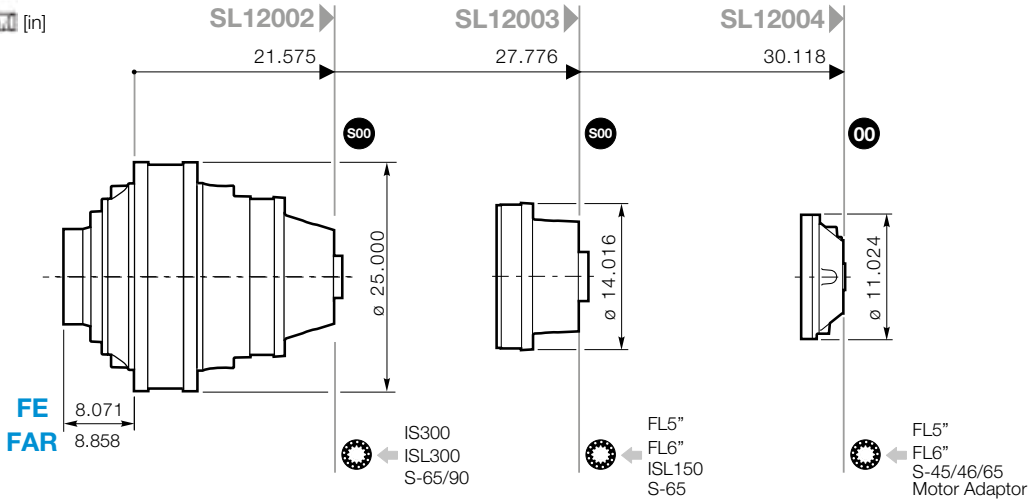
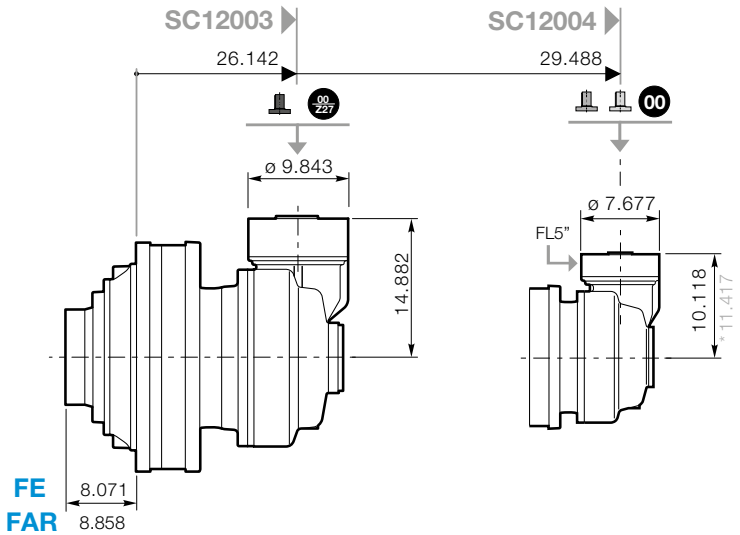


00 FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 Motor Adaptor

[in]



00 227 UPC
Motor Adaptor

00 FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5”

48.82 (VARIANT)
only without FL5”

45.70 (VARIANT)
only without FL5”

* (bg) → 1200 3 S-45/46/65/90 IS ISL → 1200 8 SU SUF SUS → 1200 9 65.105 48.82 45.70 → 1200 9 FL5” FL6” FL620/635 → 1200 10 Motor Adaptor → 1200 12 → 00 B 11 → 00 227 B 11 → S00 B 12

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

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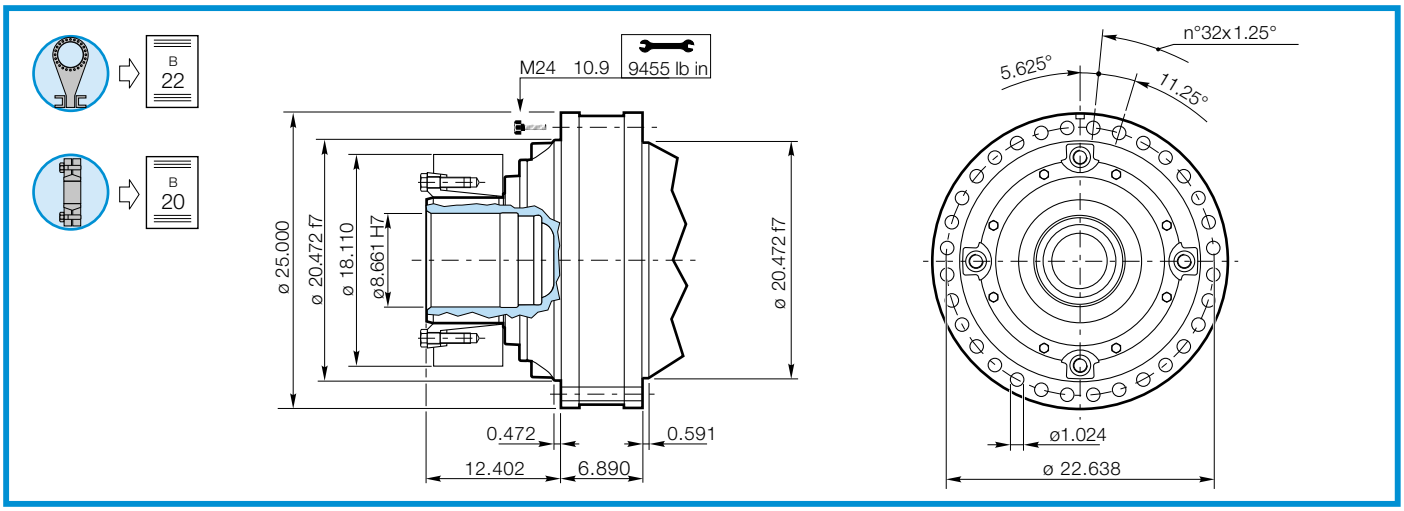

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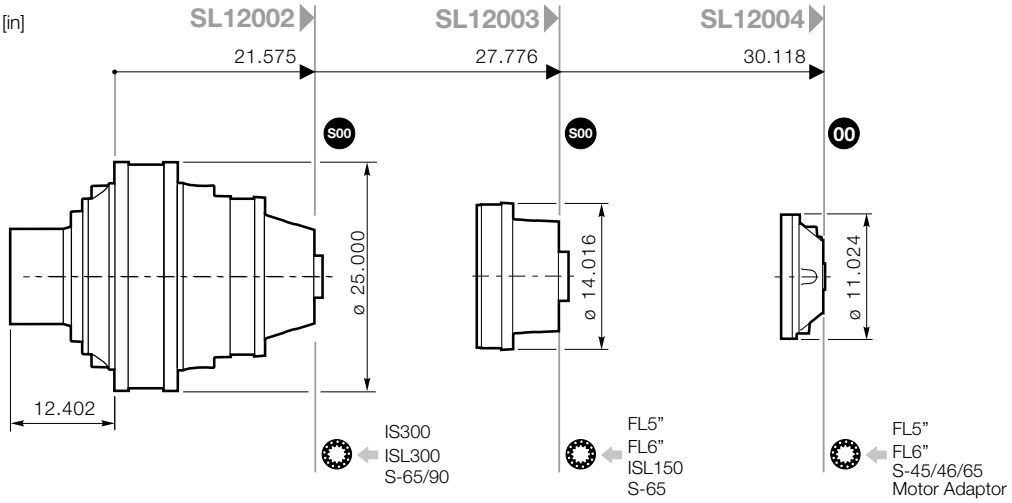
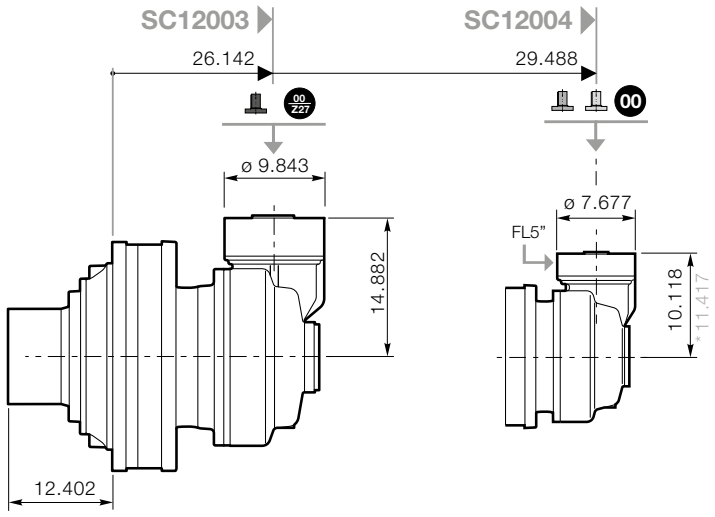


00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC
Motor Adaptor

00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5”

48.82 (VARIANT)
only without FL5”

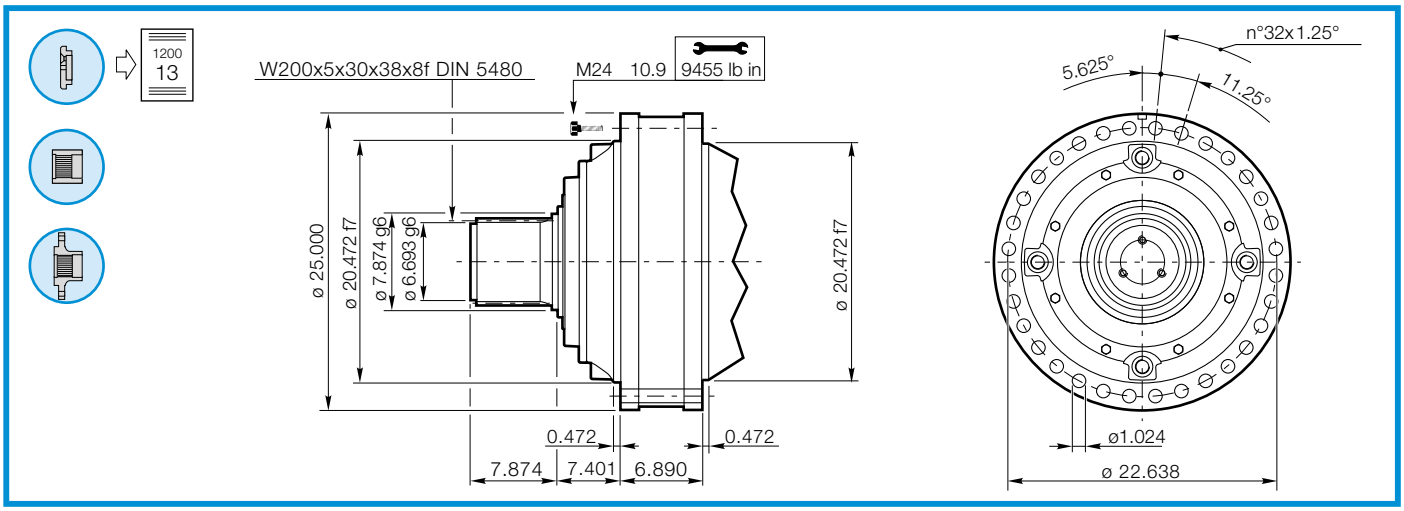
45.70 (VARIANT)
only without FL5”

* bg → 1200 3 S-45/46/65/90 IS ISL → 1200 8 SU SUF SUS → 1200 9 65.105 48.82 45.70 → 1200 9 FL5” FL6” FL620/635 → 1200 10 Motor Adaptor → 1200 12 00 → B 11 00 Z27 → B 11 S00 → B 12

Click *i* button to return to main index

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

GEARBOX DIMENSIONS WITH OUTPUT



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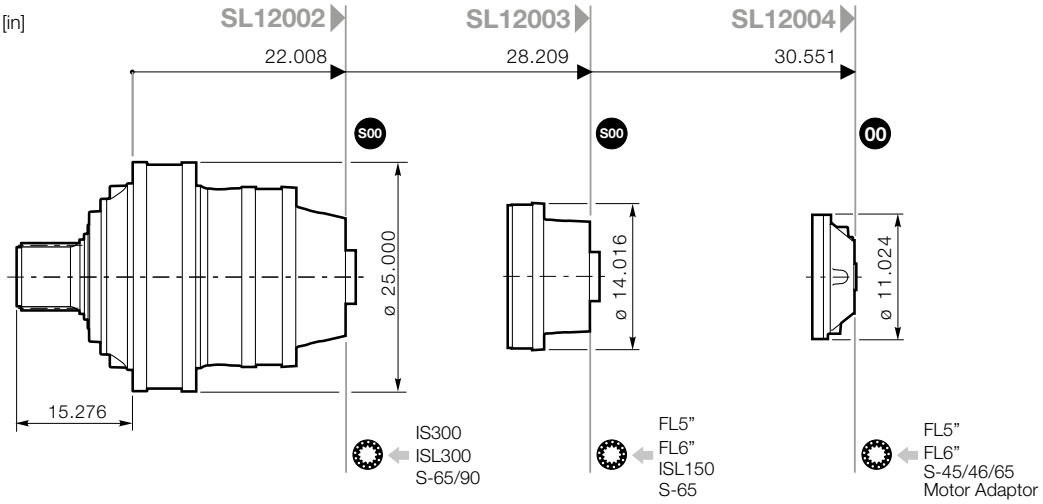
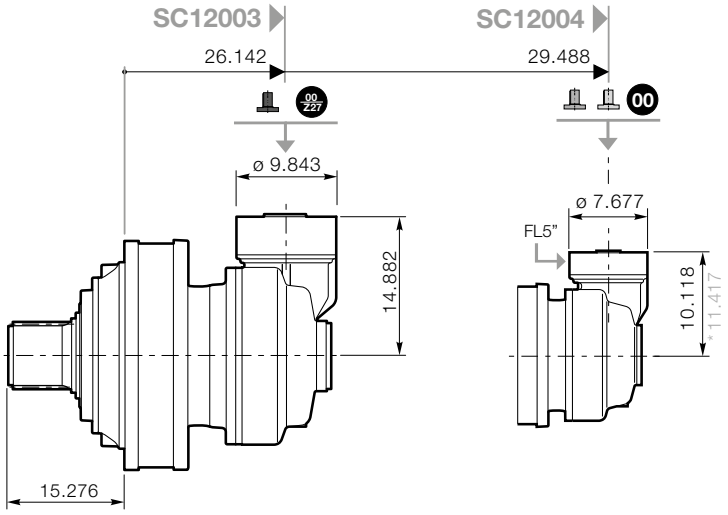


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

[in]



00 Z27 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

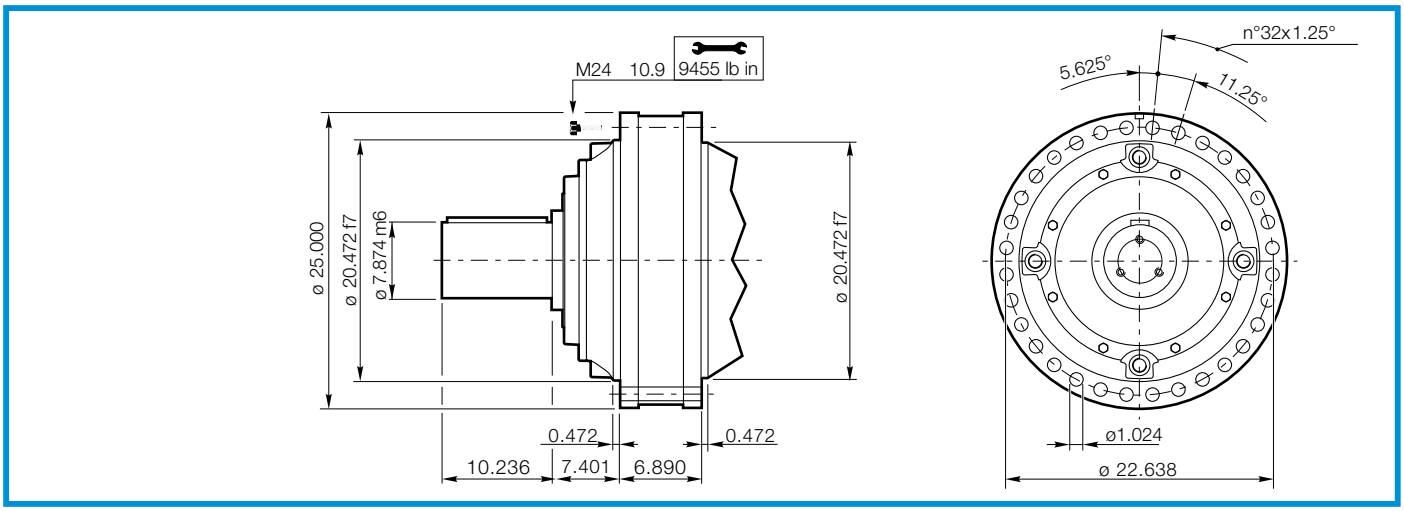
48.82 (VARIANT) only without FL5"

45.70 (VARIANT) only without FL5"

* (bg) → 1200 3 S-45/46/65/90 IS ISL → 1200 8 SU SUF SUS → 1200 9 65.105 48.82 45.70 → 1200 9 FL5" FL6" FL620/635 → 1200 10 Motor Adaptor → 1200 12 → 00 → B 11 → 00 Z27 → B 11 → S00 → B 12

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

Click *i* button to return to main index



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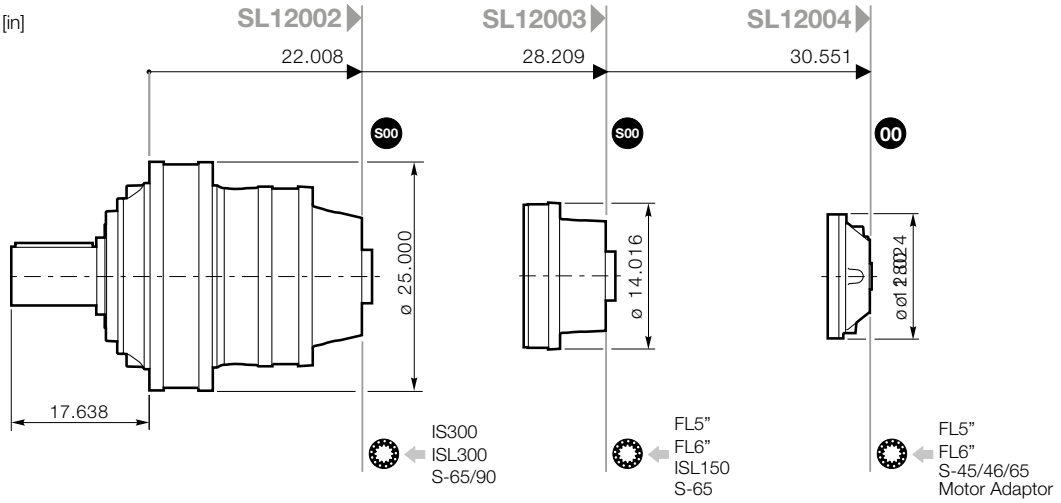
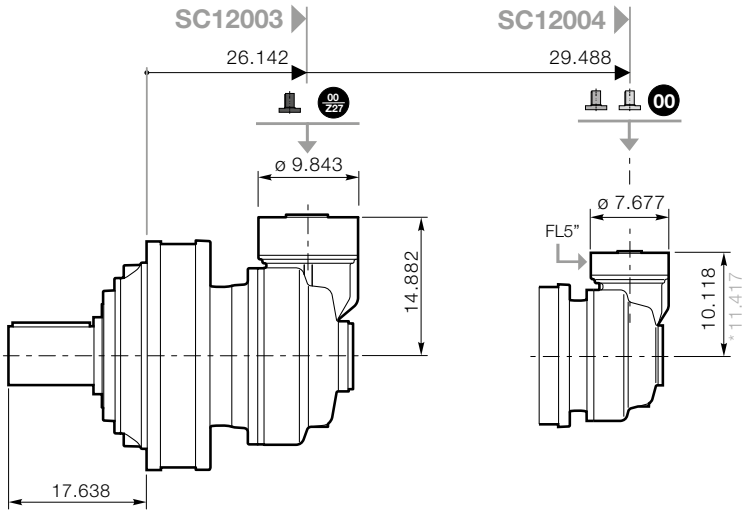


00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor

1200

[in]



00 227 ← UPC Motor Adaptor

00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

48.82 (VARIANT) only without FL5"

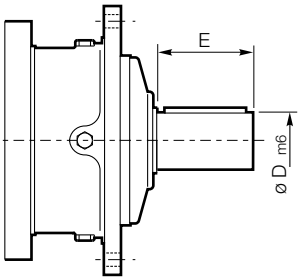
45.70 (VARIANT) only without FL5"

* bg → 1200 3 S-45/46/65/90 IS ISL → 1200 8 SU SUF SUS → 1200 9 65.105 48.82 45.70 → 1200 9 FL5" FL6" FL620/635 → 1200 10 Motor Adaptor → 1200 12 00 → B 11 00 227 → B 11 S00 → B 12

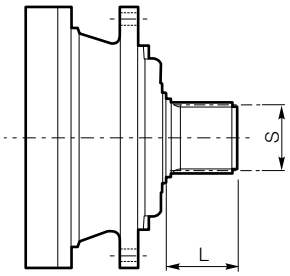
Click *i* button to return to main index

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

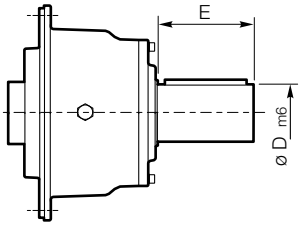
S-45 S-46 S-65 S-90 IS ISL



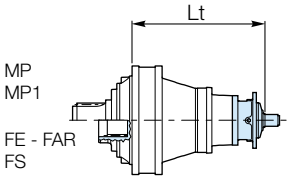
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

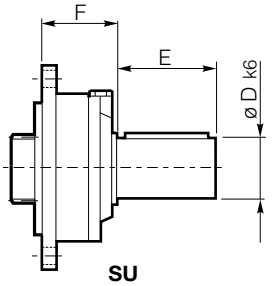


IS / ISL

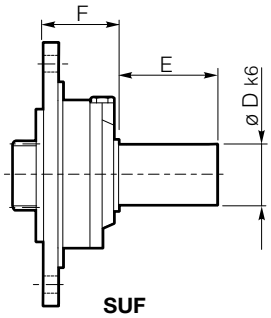


	D m6	E	L	S DIN5482		Lt		
						SL12002	SL12003	SL12004
S-45CR1	2.559	4.134	-	-	FE-FAR-FS	-	-	35.118
					MP-MP1			35.551
S-45SR	-	-	2.677	B58x53	FE-FAR-FS	-	-	35.118
					MP-MP1			35.551
S-46C1	2.559	4.134	-	-	FE-FAR-FS	-	-	36.772
					MP-MP1			37.205
S-46S	-	-	2.677	B58x53	FE-FAR-FS	-	-	36.772
					MP-MP1			37.205
S-65CR1	3.150	5.118	-	-	FE-FAR-FS	29.665	35.335	36.673
					MP-MP1	30.098	35.768	37.106
S-90CR1	3.543	6.693	-	-	FE-FAR-FS	29.902	-	-
					MP-MP1	30.335		
ISL150	3.543	5.118	-	-	FE-FAR-FS	-	30.531	-
					MP-MP1		30.965	
ISL300	3.543	5.118	-	-	FE-FAR-FS	24.331	-	-
					MP-MP1	24.764		
IS300	3.937	8.268	-	-	FE-FAR-FS	29.094	-	-
					MP-MP1	29.528		

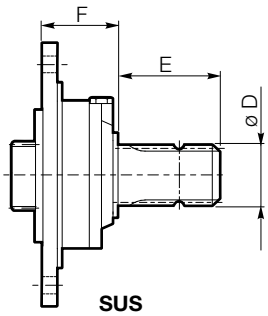
SU - SUF - SUS



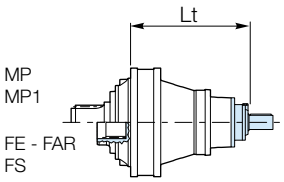
SU

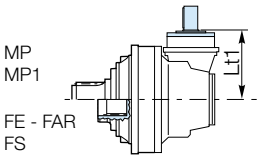


SUF



SUS

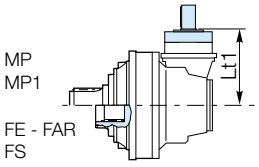


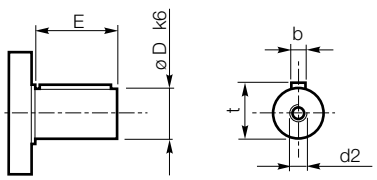


	D k6	E	F		Lt - Lt1 (00) SL12004	SC12003	SC12004
SU/SUF.1	1.102	1.969	2.362	FE-FAR-FS	32.480	17.244	12.480
				MP-MP1	32.913		13.780*
SU/SUF.2	1.575	2.283	2.362	FE-FAR-FS	32.480	17.244	12.480
				MP-MP1	32.913		13.780*
SU/SUF.3	1.890	3.228	2.362	FE-FAR-FS	32.480	17.244	12.480
				MP-MP1	32.913		13.780*
SU2 1.5X3.25	1.500	3.250	2.362	FE-FAR-FS	32.480	17.244	12.480
				MP-MP1	32.913		13.780*
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	FE-FAR-FS	34.114	18.878	14.114
				MP-MP1	34.547		15.413*
SU 42x80	1.890	3.150	3.996	FE-FAR-FS	34.114	18.878	14.114
				MP-MP1	34.547		15.413*

* bg 1200 3

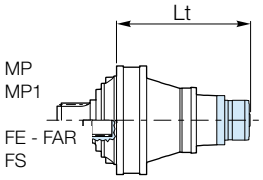
65.105 - 48.82 - 45.70

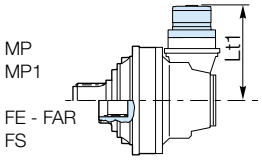


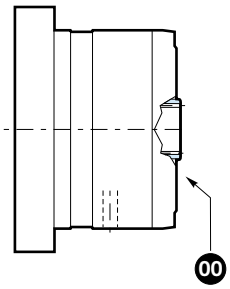


	D k6	E	b	t	d2		Lt1 SC12003	SC12004
65.105	2.559	4.134	0.709	2.717	M20x1.680	FE-FAR-FS	14.803	-
						MP-MP1		
48.82	1.890	3.228	0.551	2.028	M10x0.866	FE-FAR-FS	-	13.780
						MP-MP1		
45.70	1.772	2.756	0.551	1.909	M10x0.866	FE-FAR-FS	-	13.386
						MP-MP1		

FL5” - FL6”



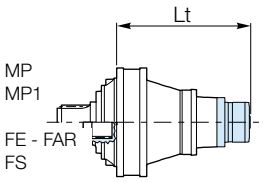


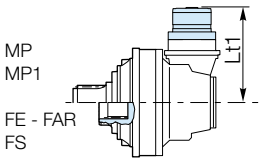


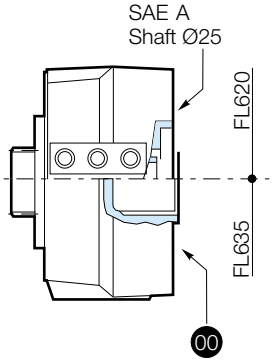
			Lt - Lt1			
			SL12002	SL12003	SL12004	SC12004
FL5”	FL250.4C FL250.6C	FE-FAR-FS	-	30.886	34.272	16.083
		MP-MP1	-	31.319	34.705	17.382*
	FL350.6C FL350.8C	FE-FAR-FS	-	30.886	34.272	16.083
		MP-MP1	-	31.319	34.705	17.382*
	FL450.6C FL450.8C	FE-FAR-FS	-	30.886	34.272	16.083
		MP-MP1	-	31.319	34.705	17.382*
	FL650.10C FL650.12C FL650.14C	FE-FAR-FS	-	31.417	34.803	16.614
		MP-MP1	-	31.850	35.236	17.913*
	FL750.10C FL750.12C FL750.14C	FE-FAR-FS	-	31.417	34.803	16.614
		MP-MP1	-	31.850	35.236	17.913*
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	FE-FAR-FS	26.811	31.968	35.354	-
		MP-MP1	27.244	32.402	35.787	-

* bg 1200 3

FL620.U - FL635.U



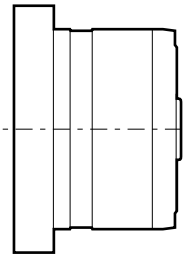


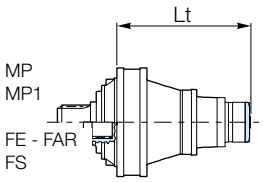


		Lt - Lt1 (00)		
		SL12004	SC12003	SC12004
FL620.U	FE-FAR-FS	34.232	18.996	14.232
	MP-MP1	34.665		15.531*
FL635.U	FE-FAR-FS	33.701	18.465	13.701
	MP-MP1	34.134		15.000*

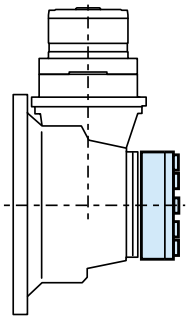
* bg 1200 3

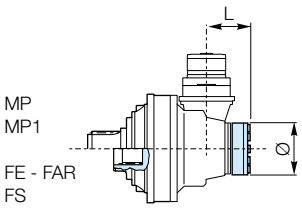
RL



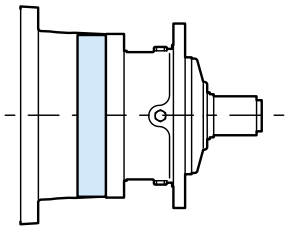


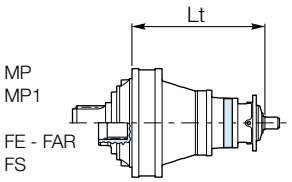
				Lt		
				SL12002	SL12003	SL12004
RL	+	FL250 FL350 FL450	FE-FAR-FS	-	31.909	35.295
			MP-MP1		32.342	35.728
		FL650 FL750	FE-FAR-FS	-	32.441	35.827
			MP-MP1		32.874	36.26
		FL960	FE-FAR-FS	27.835	32.992	36.378
			MP-MP1	28.268	33.425	36.811





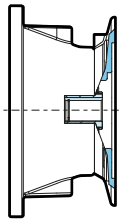
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

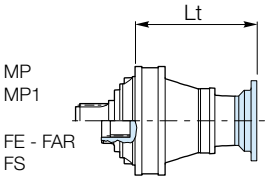


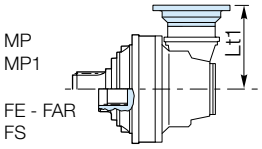


				Lt
				SL12004
RL	+	S46C1	FE-FAR-FS	37.559
			MP-MP1	37.992

IEC Motor







		Lt - Lt1				
		SL12002 S00	SL12003 S00	SL12004 00	SC12003 00 Z27	SC12004 00
IEC 132	FE-FAR-FS	-	-	33.898	-	-
	MP-MP1			34.331		
IEC 160	FE-FAR-FS	24.764	30.728	34.331	-	15.079
	MP-MP1	24.961	31.161	34.764		16.378*
IEC 180	FE-FAR-FS	29.055	35.020	34.331	19.843	15.079
	MP-MP1	29.252	38.996	34.764		16.378*
IEC 200	FE-FAR-FS	24.764	30.728	35.512	21.260	15.512
	MP-MP1	24.961	31.161	35.945		16.811*
IEC 225	FE-FAR-FS	25.945	31.909	36.693	-	16.693
	MP-MP1	26.142	32.343	37.126		17.992*
IEC 250	FE-FAR-FS	25.945	31.909	-	-	-
	MP-MP1	26.142	32.343			
IEC 280	FE-FAR-FS	-	-	-	-	-
	MP-MP1					
SHAFT_IEC225	FE-FAR-FS	-	-	-	22.047	-
	MP-MP1					

* bg ⇨ 1200 3

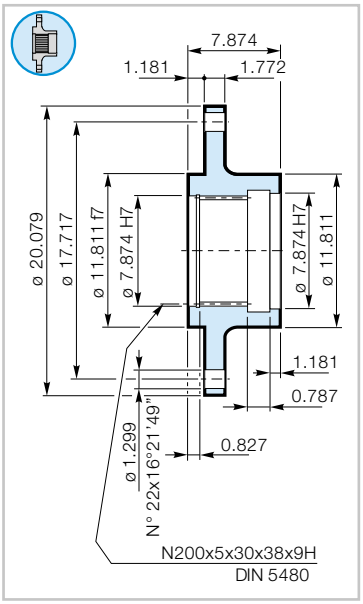
NEMA Motor

Please consult NEMA Motor Flange in page ⇨ B 15

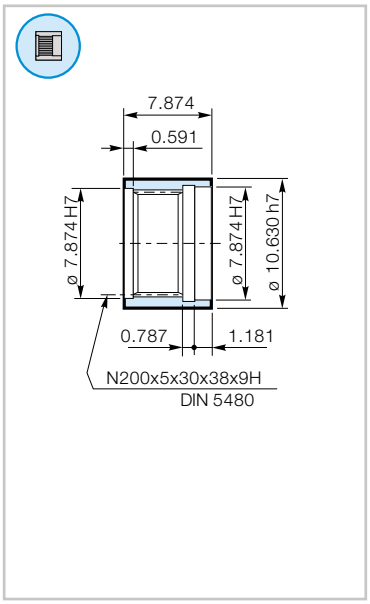
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page ⇨ B 14

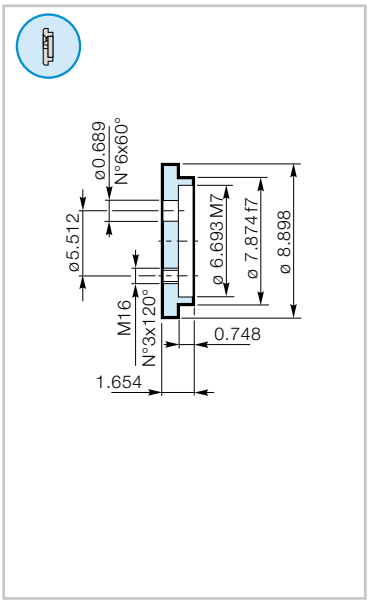
FR 1200 Wheel Flange



MS 1200 Splined Sleeve



RDF S1200 Lock Washer

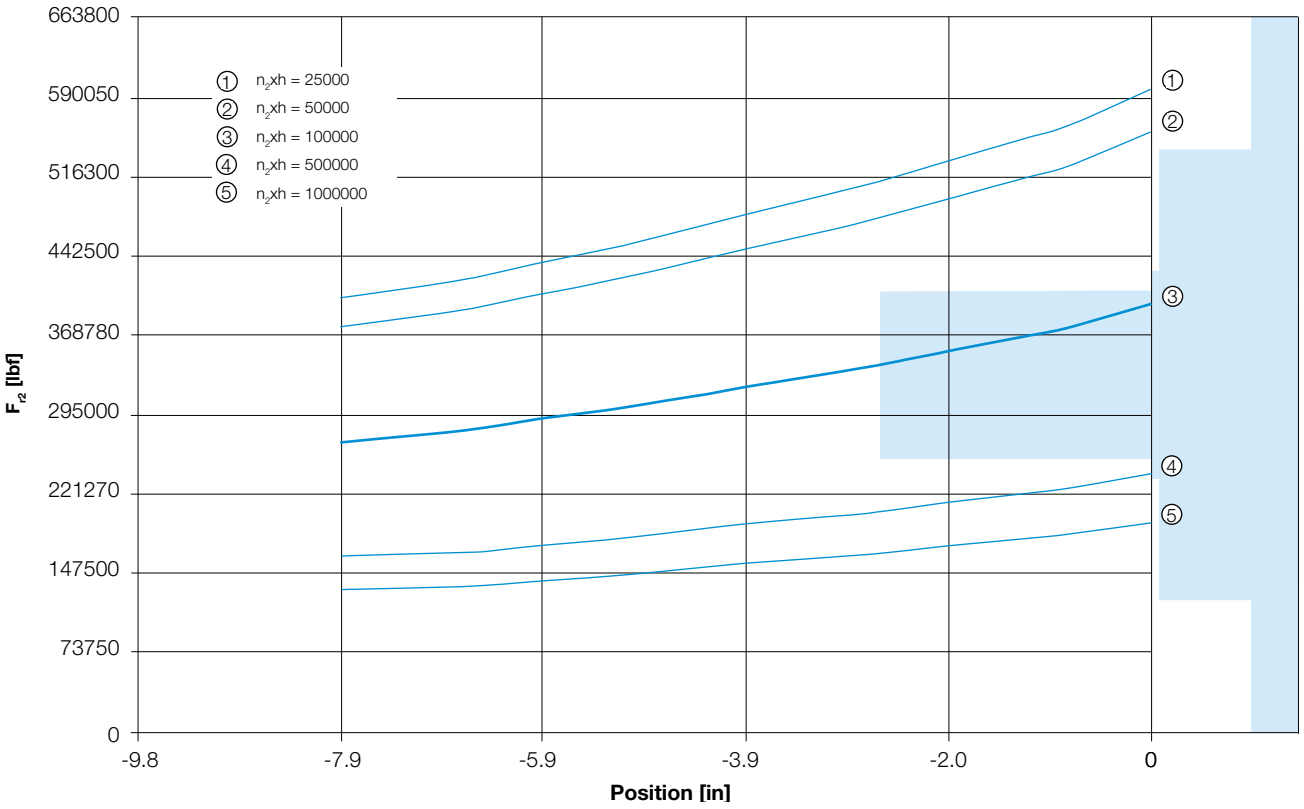


1200

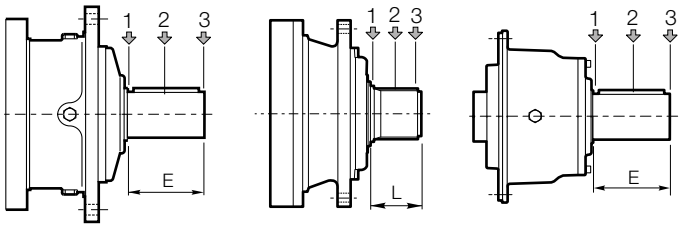
Output Radial Loads

Gearbox output version for:
SL, SC

MP - MP1

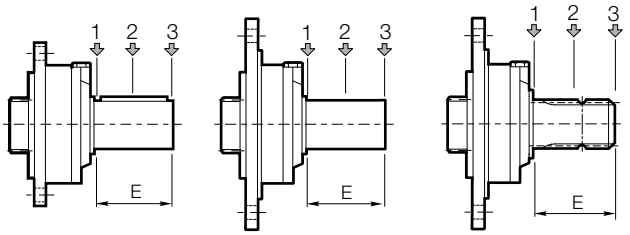


Input Radial Loads



S... IS / ISL

			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	L	1	2	3	1	2	3
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL150	5.118	-	1716	967	673	860	485	337
ISL300	5.118	-	1716	967	673	860	485	337
IS300	8.268	-	10974	7434	5151	5500	3726	2582



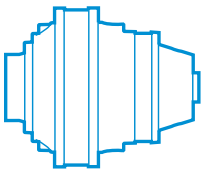
SU SUF SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

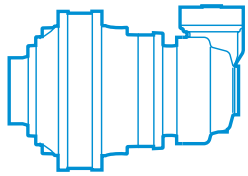
Click **DANA** button to return to section index

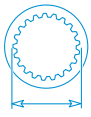
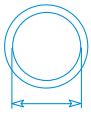
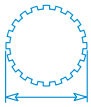
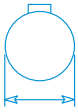
Click *i* button to return to main index

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts	8
Brakes	10
Backstop device	11
Motor Adaptor	12
Accessories	13
Radial Loads	14



1800



i_{eff}	4.18 - 2305
T_{2N}	140000 ftlb
	N210x5x30x40x9H DIN5480
	9.449 in
	W220x5x30x42x8f DIN5480
	9.843 in

TECHNICAL DATA

10000
hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL18001												
4.18	1)			1)			120	70403	1604	1500	287625	143
4.89							102	72431	1411		261075	
6.00							83	75296	1195		209450	
SL18002												
17.47	1)			57	82167	896	29	101159	551	2000	287625	101
20.44				49	90359	842	25	109348	510		261075	
23.91				42	94713	754	21	110405	440			
29.34				34.1	100708	653	17	111799	363			
36.00				27.8	83177	440	14	87695	232		209450	
SL18003												
70.59	21	98850	400	14	111636	302	7.1	137441	185	2500	287625	72
82.58	18	113795	394	12	128515	296	6.1	141523	164			
91.98	16	117416	365	11	132603	275	5.4	143849	149			
104.7	14	119808	327	10	135305	247	4.8	146686	134			
112.9	13	113814	288	8.9	116681	197	4.4	121749	103			
122.6	12	124039	288	8.2	137983	215	4.1	150247	117			
143.5	11	115201	229	7.0	118103	157	3.5	128096	84		261075	
162.0	9.3	90955	161	6.2	93247	110	3.1	99965	59		209450	
184.6	8.1	117302	181	5.4	120255	125	2.7	125480	65		287625	
215.9	6.9	118127	157	4.6	122705	109	2.3	136268	60		261075	
SL18004												
288.0	5.2	144784	143	3.5	153941	102	1.7	170957	56	3000	287625	51
320.8	4.7	147164	131	3.1	156472	93	1.6	173768	52			
365.0	4.1	150066	118	2.7	159557	83	1.4	177195	46			
417.0	3.6	153121	105	2.4	161805	74	1.2	169857	39			
464.5	3.2	155639	95	2.2	162879	67	1.1	172649	35			
519.8	2.9	158308	87	1.9	168320	62	1.0	186927	34			
571.4	2.6	160594	80	1.7	164963	55	0.87	178146	30			
619.1	2.4	162550	75	1.6	172831	53	0.81	191936	30			
725.5	2.1	166497	66	1.4	177028	47	0.69	195902	26			
778.3	1.9	168277	62	1.3	178920	44	0.64	198698	24			
912.1	1.6	172363	54	1.1	183264	38	0.55	198673	21			
1041	1.4	151729	42	1.0	155551	28	0.48	162308	15			
1067	1.4	167193	45	0.94	176304	32	0.47	195792	17			
1309	1.1	153874	34	0.76	157750	23	0.38	164603	12			
1409	1.1	117433	24	0.71	124860	17	0.35	138663	9.4		209450	
1531	1.0	155202	29	0.65	165019	21	0.33	183259	11		261075	
1879	0.80	157632	24	0.53	167601	17	0.27	186128	9.4			
2305	0.65	126506	16	0.43	134507	11	0.22	149375	6.2		209450	

1) Consult the DANA area contact person.

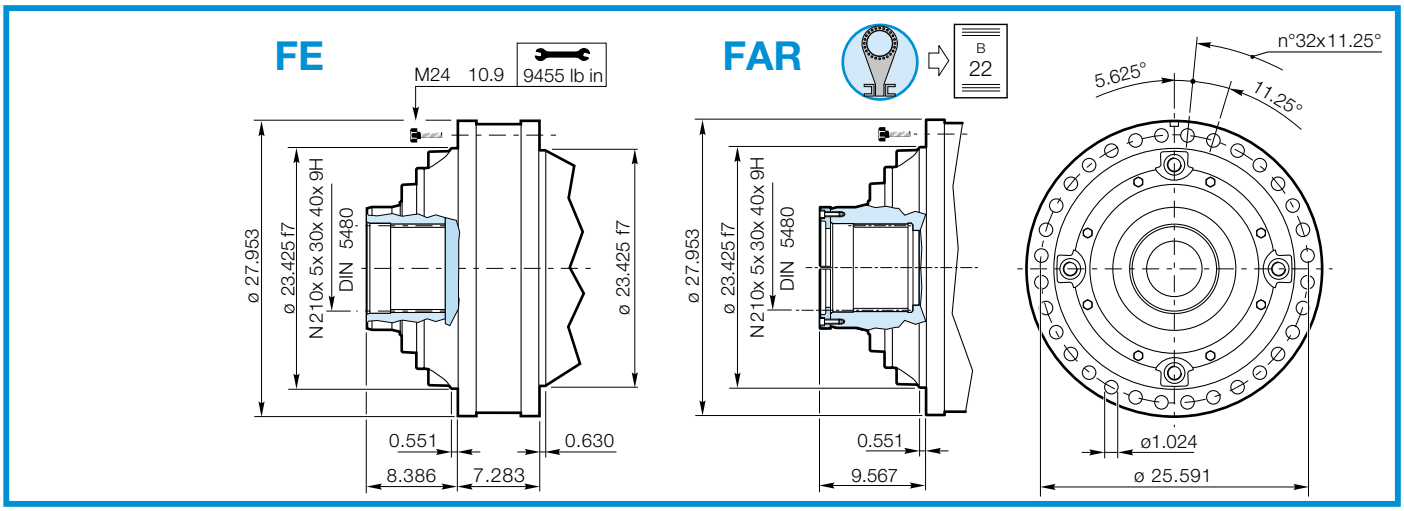
Click **DANA** button to return to section index

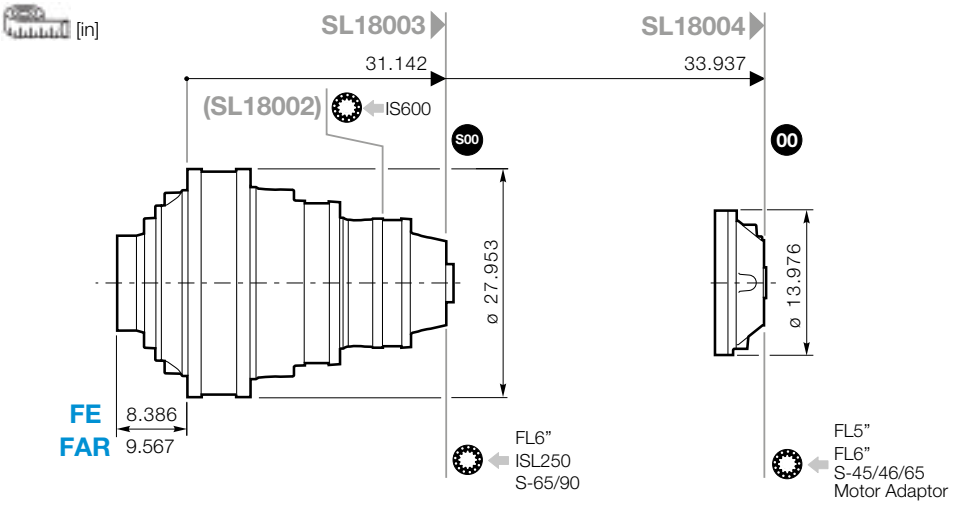
Click *i* button to return to main index

10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC18004												
179.3	8.4	107846	172	6	121795	129	2.8	149949	79	1800		
206.1	7.3	132844	184	5	146346	135	2.4	162522	75	1500		
233.6	6.4	140273	172	4	149145	122	2.1	162938	66	1800		
261.2	5.7	141243	154	4	151685	110	1.9	168452	61	1500		
268.6	5.6	143263	153	4	152324	109	1.9	164338	58			
311.5	4.8	146512	134	3	155779	95	1.6	165839	51	1800		
358.5	4.2	149661	119	3	159127	84	1.4	176716	47		287625	
358.5	4.2	149661	119	3	159127	84	1.4	176716	47	2500		
419.4	3.6	153255	105	2	161862	74	1.2	170005	39			40
439.3	3.4	143906	94	2	147531	64	1.1	153939	33	1500		
478.0	3.1	156318	94	2	166204	66	1.0	184576	37			
559.2	2.7	160071	82	2	164744	56	0.89	177566	30			
654.2	2.3	136471	60	2	145103	42	0.76	161142	23		261075	
686.0	2.2	147895	62	2	151620	42	0.73	158207	22	2500	287625	
802.7	1.9	140760	50	1	149663	36	0.62	163665	19		261075	
984.7	1.5	145178	42	1	154360	30	0.51	168801	16			
1208	1.2	114728	27	1	121985	19	0.41	135469	11		209450	

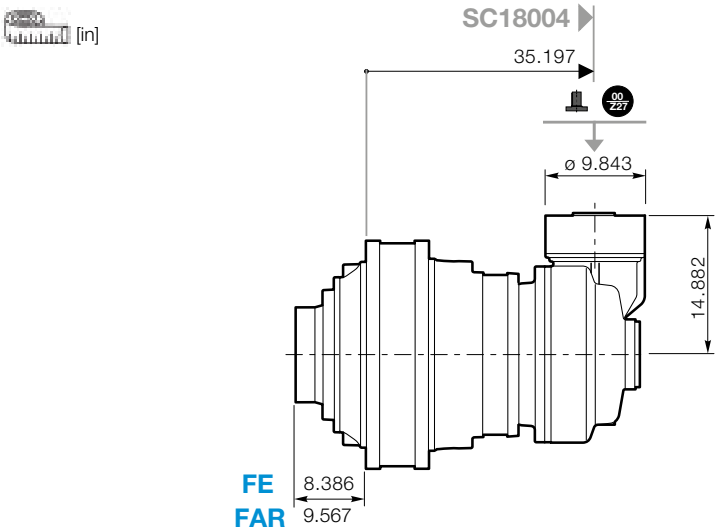
GEARBOX DIMENSIONS WITH OUTPUT





00 ← FL620.U/635.U SU-SUF-SUS DU150.1 UPC Motor Adaptor CCU25

S00 ← Motor Adaptor



00 Z27 ← FL620.U/635.U SU-SUF-SUS UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

S-45/46/65/90 IS ISL ⇨ 1800 8

SU SUF SUS ⇨ 1800 9

65.105 ⇨ 1800 9

FL5" FL6" FL620/635 ⇨ 1800 10

Motor Adaptor ⇨ 1800 12

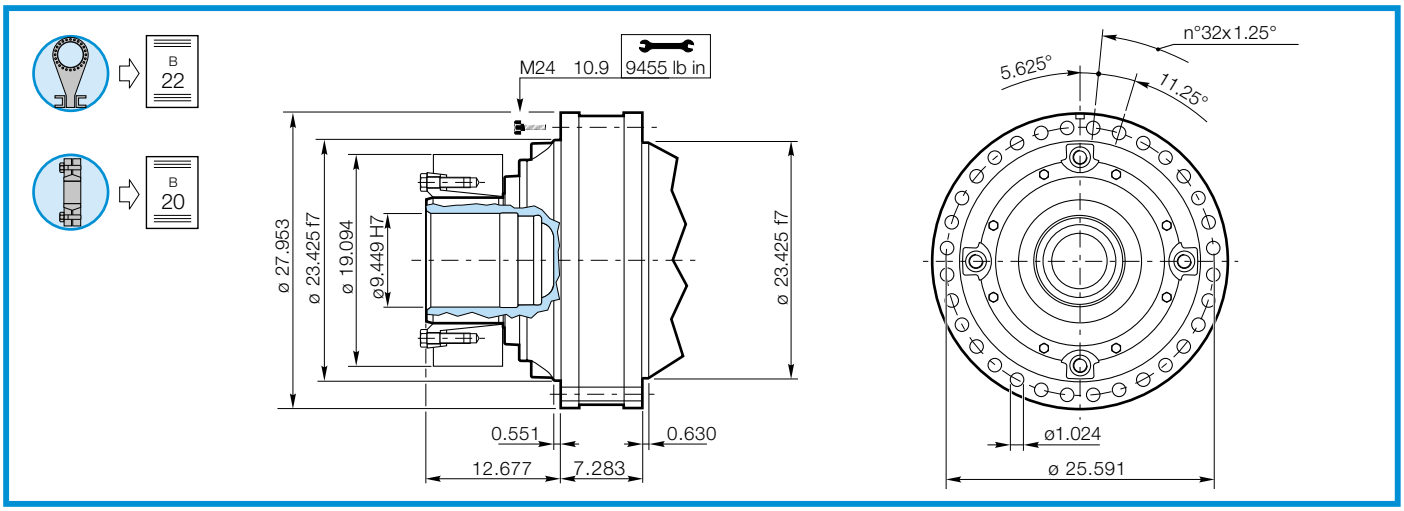
00 ⇨ B 11

00 Z27 ⇨ B 11

S00 ⇨ B 12

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

Click *i* button to return to main index



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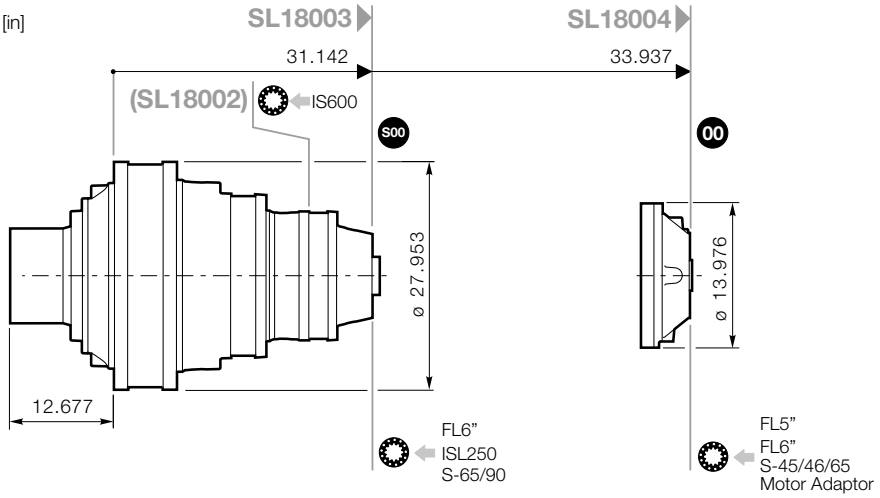
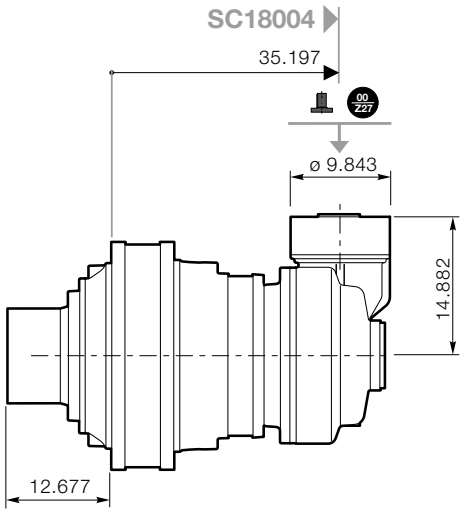


00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 ← Motor Adaptor

[in]



00 227 ← FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

65.105 (VARIANT) only without FL5"

S-45/46/65/90
IS
ISL
→ 1800 8

SU
SUF
SUS
→ 1800 9

65.105 → 1800 9

FL5"
FL6"
FL620/635
→ 1800 10

Motor Adaptor → 1800 12

00 → B 11

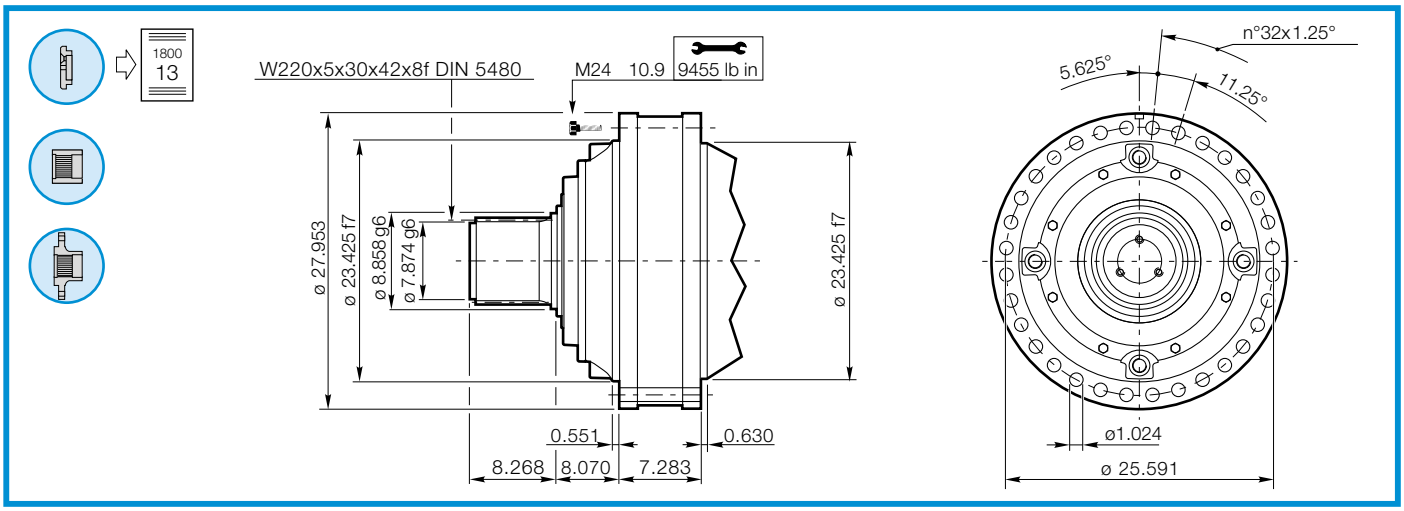
00 227 → B 11

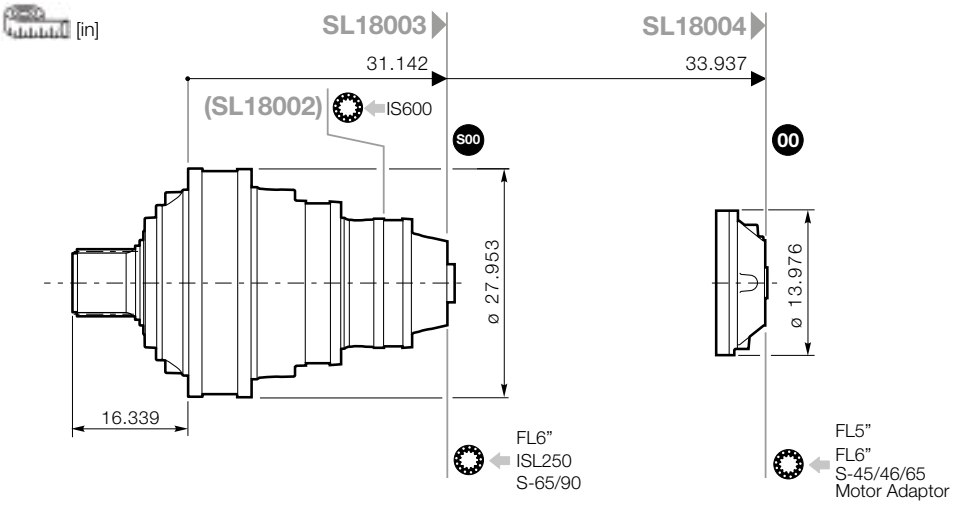
S00 → B 12

Click *i* button to return to main index

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

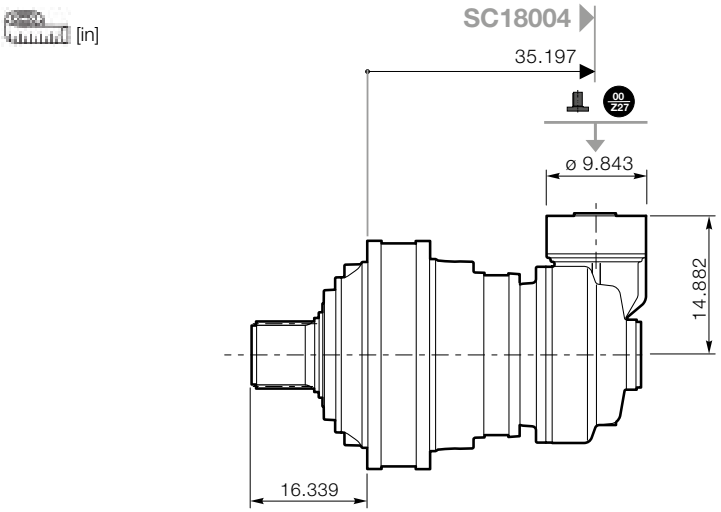
GEARBOX DIMENSIONS WITH OUTPUT





00 FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 Motor Adaptor

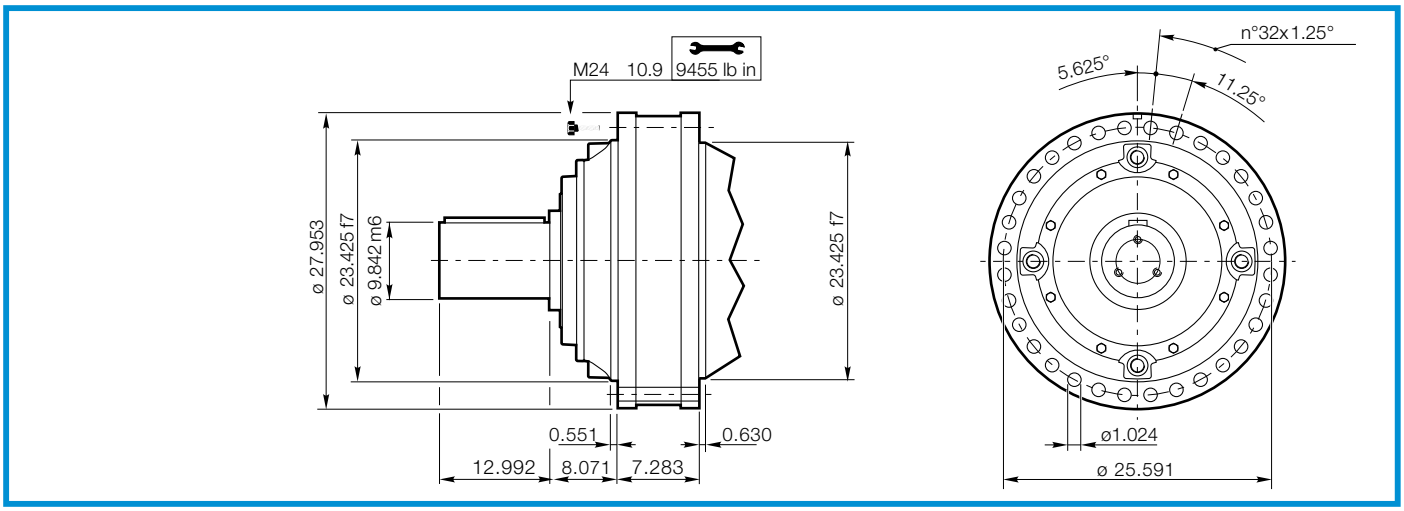


00 Z27 FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5"

S-45/46/65/90 IS ISL ⇨ 1800 8
SU SUF SUS ⇨ 1800 9
65.105 ⇨ 1800 9
FL5" FL6" FL620/635 ⇨ 1800 10
Motor Adaptor ⇨ 1800 12
00 ⇨ B 11
00 Z27 ⇨ B 11
S00 ⇨ B 12

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



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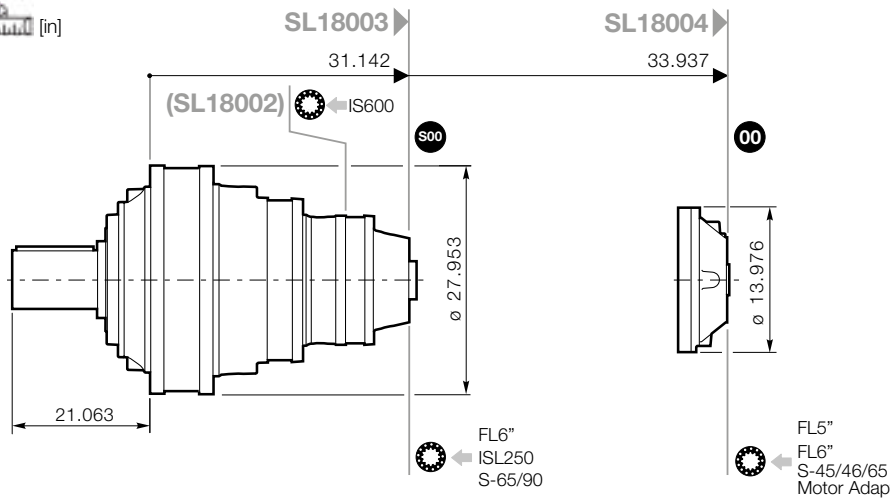
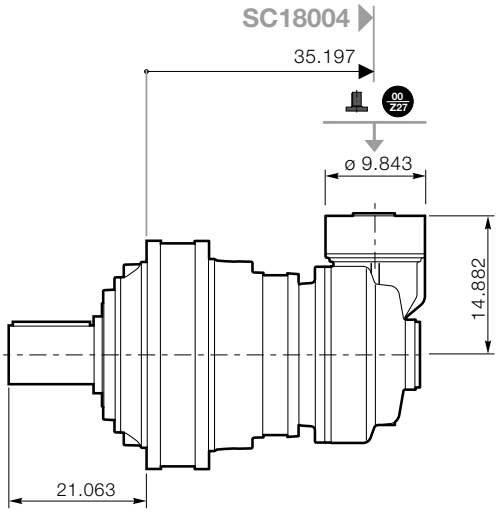


00 ← FL620.U/635.U
SU-SUF-SUS
DU150.1
UPC
Motor Adaptor
CCU25

S00 ← Motor Adaptor

1800

[in]



00 Z27 ← FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

65.105 (VARIANT) only without FL5"

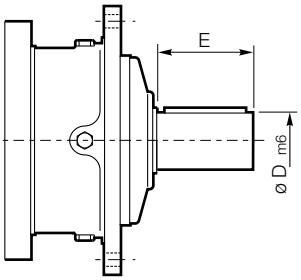
S-45/46/65/90 IS ISL → 1800 8
SU SUF SUS → 1800 9
65.105 → 1800 9
FL5" FL6" FL620/635 → 1800 10
Motor Adaptor → 1800 12
00 → B 11
00 Z27 → B 11
S00 → B 12

Click *i* button to return to main index

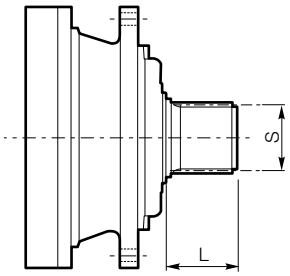
Click **DANA** button to return to section index

INPUT SHAFT

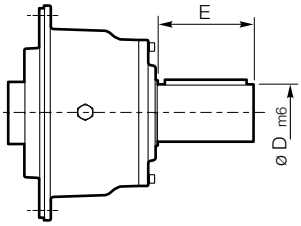
S-45 S-46 S-65 S-90 IS ISL



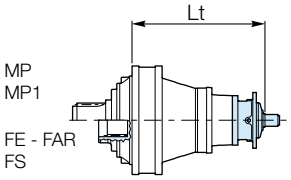
S-45CR1 - S-46C1 - S-46C2
S-65CR1 - S90CR1



S-45SR - S-46S

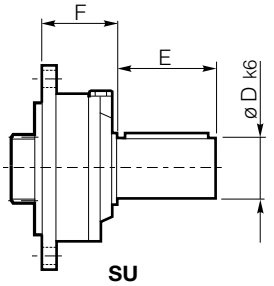


IS / ISL

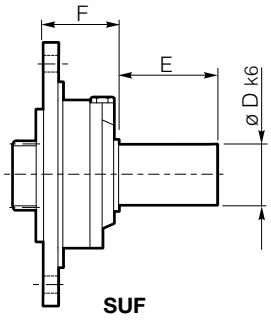


	D m6	E	L	S DIN5482	Lt		
					SL18002	SL18003	SL18004
S-45CR1	2.559	4.134	-	-	-	-	39.016
S-45SR	-	-	2.677	B58x53	-	-	39.016
S-46C1	2.559	4.134	-	-	-	-	40.669
S-46C2	2.500	4.250	-	-	-	-	40.669
S-46S	-	-	2.677	B58x53	-	-	40.669
S-65CR1	3.150	5.118	-	-	-	38.720	40.591
S-90CR1	3.543	6.693	-	-	-	38.957	-
ISL250	3.543	5.118	-	-	-	33.898	-
IS600	4.331	8.268	-	-	31.693	-	-

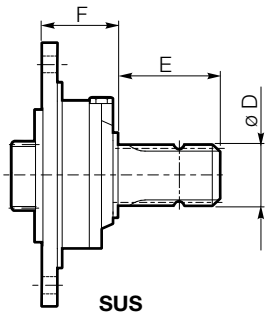
SU - SUF - SUS



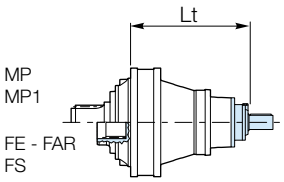
SU

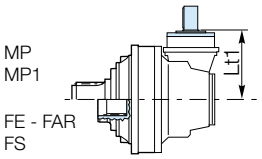


SUF



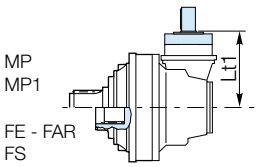
SUS

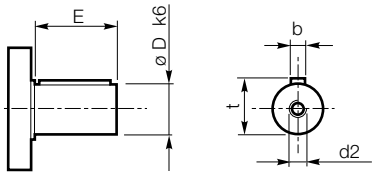




	D k6	E	F	Lt - Lt1 (00)	
				SL18004	SC18004
SU/SUF.1	1.102	1.969	2.362	36.299	17.244
SU/SUF.2	1.575	2.283	2.362		
SU/SUF.3	1.890	3.228	2.362		
SU2 1.5X3.25	1.500	3.250	2.362		
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	37.933	18.878
SU 42x80	1.890	3.150	3.996		

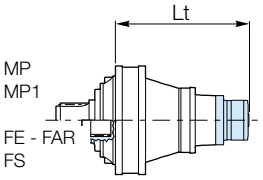
65.105

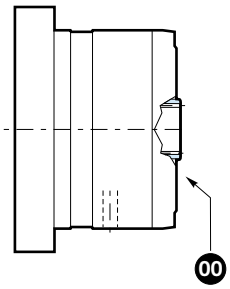




	D k6	E	b	t	d2	Lt1 (00)
						SC18004
65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803

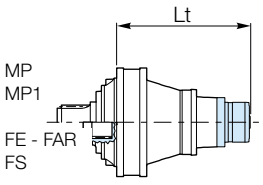
FL5” - FL6”

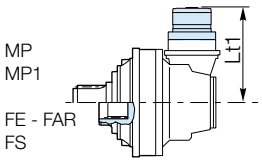


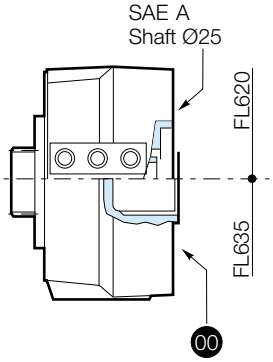


		Lt - Lt1	
		SL18003	SL18004
FL5”	FL250.4C FL250.6C	-	37.854
	FL350.6C FL350.8C	-	37.854
	FL450.6C FL450.8C	-	37.854
	FL650.10C FL650.12C FL650.14C	-	38.406
	FL750.10C FL750.12C FL750.14C	-	38.406
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	35.866	38.957

FL620.U - FL635.U

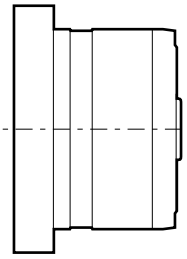


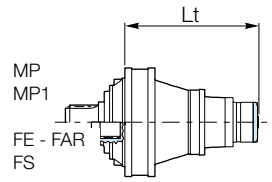




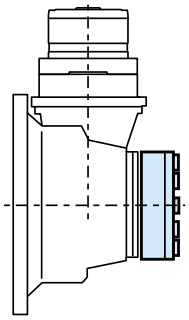
	Lt	
	SL18004	SC18004
FL620.U	38.051	18.996
FL635.U	37.520	18.465

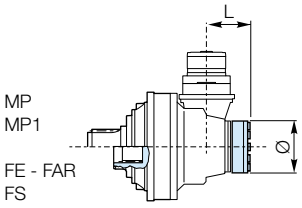
RL



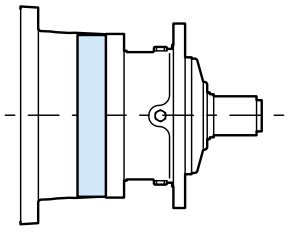


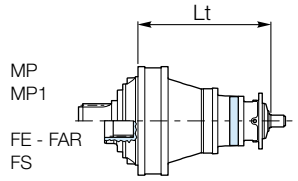
			Lt	
			SL18003	SL18004
RL	+	FL250 FL350 FL450	-	38.878
		FL650 FL750	-	39.429
		FL960	36.890	39.980





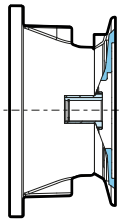
			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

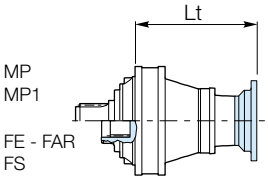


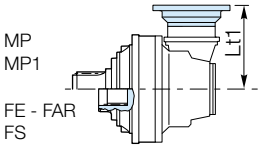


			Lt
			SL18004
RL	+	S46C1	41.457

IEC Motor







	Lt - Lt1		
	SL18003 S00	SL18004 00	SC18004 00 Z27
IEC 132	-	37.677	-
IEC 160	-	37.874	-
IEC 180	-	37.874	19.843
IEC 200	34.094	39.409	21.260
IEC 225	35.276	40.512	-
IEC 250	35.276	-	-
IEC 280	35.276	-	-
SHAFT_IEC225	-	-	22.047

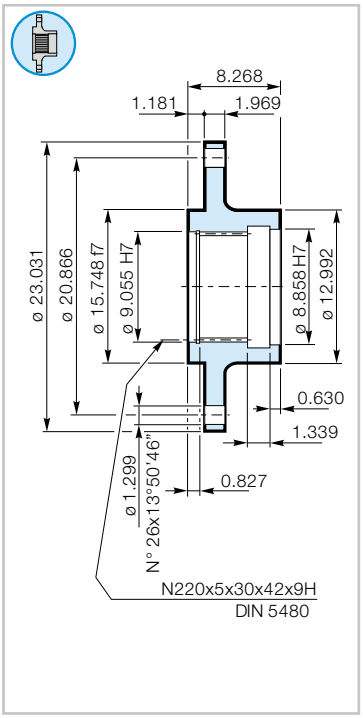
NEMA Motor

Please consult NEMA Motor Flange in page B 15

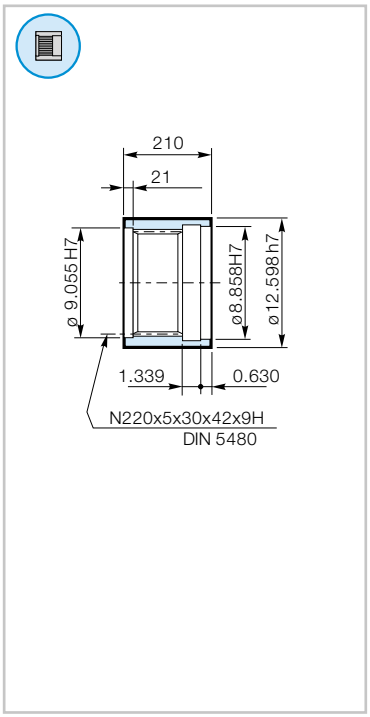
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page B 14

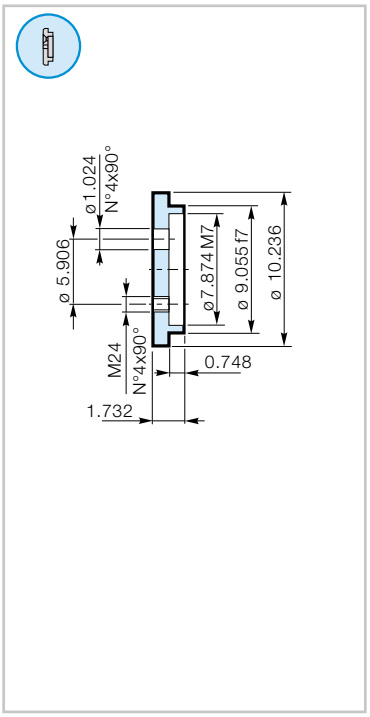
FR 1800 Wheel Flange



MS 1800 Splined Sleeve



RDF S1800 Lock Washer

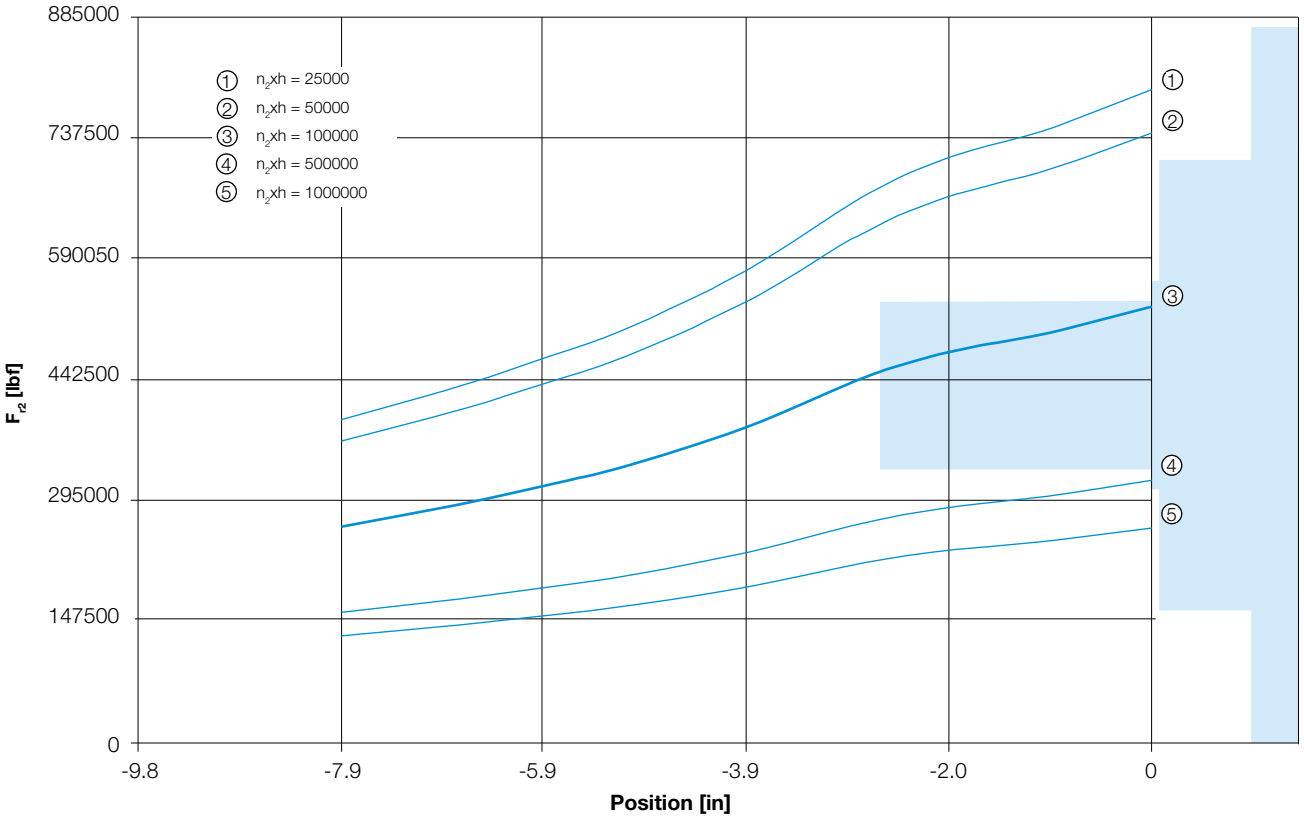


1800

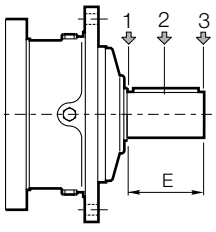
Output Radial Loads

Gearbox output version for:
SL, SC

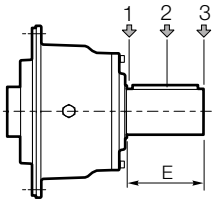
MP - MP1



Input Radial Loads

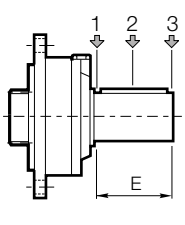


S...

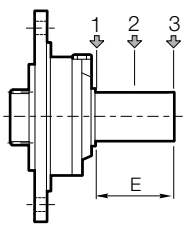


IS / ISL

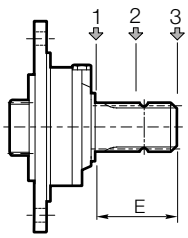
			F_{r1} [lbf]					
			$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**L**	**1**	**2**	**3**	**1**	**2**	**3**
S-45CR1	4.134	-	2248	1349	899	1124	674	450
S-45SR	-	2.677	2248	1349	899	1124	674	450
S-46C1	4.134	-	3147	1978	1439	1574	989	719
S-46C2	4.250	-	3147	1978	1439	1574	989	719
S-46S	-	2.677	3147	1978	1439	1574	989	719
S-65CR1	5.118	-	5350	3485	2158	2675	1754	1079
S-90CR1	6.693	-	6677	3822	2248	3327	1911	1124
ISL250	5.118	-	1716	967	673	860	485	337
IS600	8.268	-	12216	8298	5923	6126	4159	2969



SU



SUF



SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

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

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Technical Data	2
Gearbox Dimensions with Output	4
Input Shaft	6
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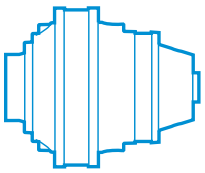
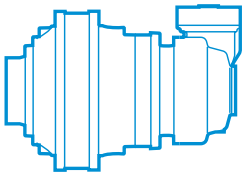
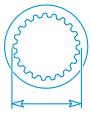
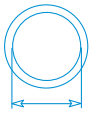
Backstop device	9
Motor Adaptors	10
Radial Loads	11



2500



i_{eff}	4.18 - 1987
T_{2N}	190000 ftlb
	N240x5x30x46x9H DIN5480
	10.236 in

TECHNICAL DATA

10000 hours life

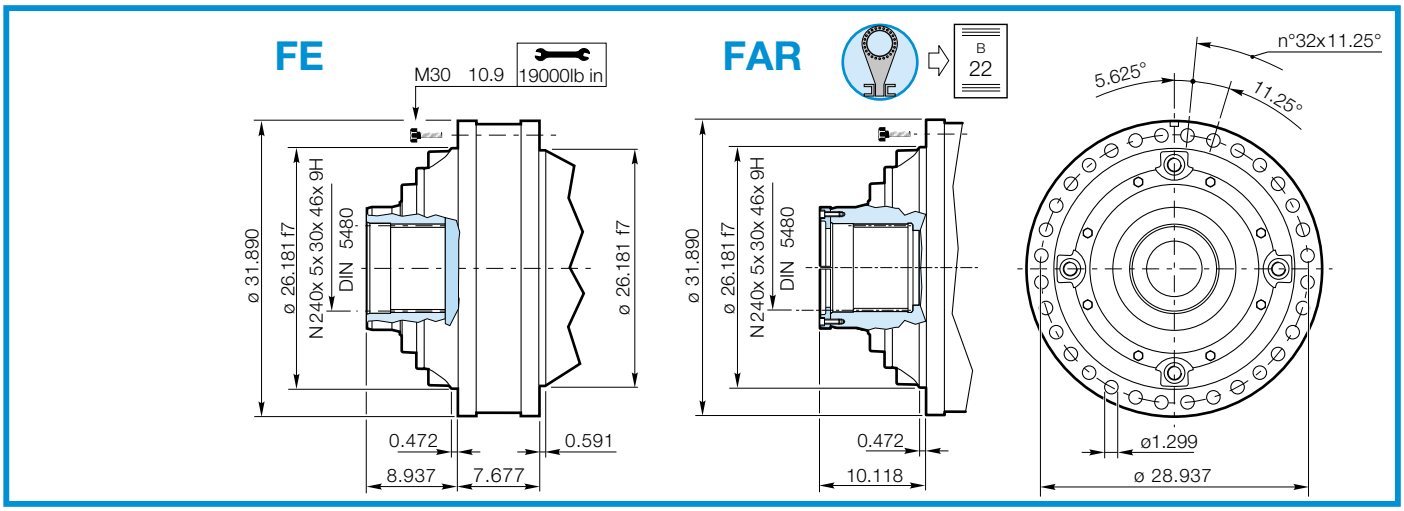
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL25001												
4.18	1)			1)			120	105125	2395	1500	420375	196
4.89							102	108154	2105		359163	
6.00							83	108663	1725		284675	
SL25002												
17.47	1)			1)			29	132426	721	1500	420375	134
20.44							25	149954	699			
23.91							21	151405	603		359163	
29.34							17	153317	498			
36.00							14	121289	320		284675	
SL25003												
70.59	1)			14	163524	441	7.1	191171	257	2000	420375	94
82.58				12	156564	361	6.1	163365	188		359163	
89.46				11	175569	374	5.6	196757	209		420375	
104.8				10	184124	334	4.8	201534	182			
112.9				8.9	163316	275	4.4	170410	143			
128.6				7.8	176487	261	3.9	184154	137			
143.5				7.0	161961	215	3.5	175666	117		359163	
162.0				6.2	127475	150	3.1	136660	80		284675	
184.6				5.4	168320	173	2.7	175633	91		420375	
215.9				4.6	168272	149	2.3	186872	82		359163	
SL25004												
278.8	5.4	197896	202	3.6	210413	143	1.8	233672	79	2500	420375	67
326.2	4.6	202648	177	3.1	215466	126	1.5	232152	68			
365.0	4.1	206124	161	2.7	219161	114	1.4	233759	61			
417.8	3.6	210384	143	2.4	223690	102	1.2	237176	54			
471.8	3.2	214281	130	2.1	227834	93	1.1	253018	51			
495.5	3.00	215876	125	2.0	228267	87	1.00	243368	47			
551.9	2.7	219426	114	1.8	229782	79	0.91	247370	43			
629.0	2.4	223811	102	1.6	237966	72	0.79	264271	40			
735.8	2.00	228128	89	1.4	233874	60	0.68	258372	33			
786.3	1.9	231494	84	1.3	246136	60	0.64	273343	33			
919.8	1.6	231272	72	1.1	240642	50	0.54	267242	28			
990.2	1.5	199260	58	1.0	211862	41	0.50	235281	23		359163	
1128	1.3	227891	58	0.89	233630	39	0.44	243779	21		420375	
1296	1.2	207530	46	0.77	220655	32	0.39	245045	18		359163	
1384	1.1	185788	38	0.72	196078	27	0.36	217751	15		420375	
1620	0.93	214653	38	0.62	228230	27	0.31	253458	15		359163	
1987	0.75	169104	24	0.50	179799	17	0.25	199674	9.5		284675	

1) Consult the DANA area contact person.

10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC25004												
179.3	8.4	107846	172	5.6	121796	129	2.8	149949	79	1800		
206.1	7.3	132845	184	4.9	150028	138	2.4	184706	86			
229.6	6.5	147971	184	4.4	167110	138	2.2	205737	86			
261.2	5.7	168358	184	3.8	190135	138	1.9	231378	84	1500		
268.6	5.6	173105	184	3.7	195496	138	1.9	229402	82			
306.1	4.9	197295	184	3.3	213407	133	1.6	236996	74		420375	
358.1	4.2	205532	164	2.8	218531	117	1.4	233486	62			
382.1	3.9	207558	156	2.6	218616	109	1.3	228113	57	1800		54
439.3	3.4	211982	138	2.3	220494	95	1.1	230072	50	1500		
478.0	3.1	205532	123	2.1	228290	91	1.0	253525	51			
559.2	2.7	219866	113	1.8	229969	78	0.89	247866	42			
654.2	2.3	187151	82	1.5	198989	58	0.76	220984	32		359163	
686.0	2.2	221040	93	1.5	226606	63	0.73	236451	33	2500	420375	
802.7	1.9	193033	68	1.2	205242	49	0.62	227929	27		359163	
984.7	1.5	199091	58	1.0	211683	41	0.51	235082	23			
1208	1.2	156843	37	0.8	166764	26	0.41	185197	15		284675	

GEARBOX DIMENSIONS WITH OUTPUT



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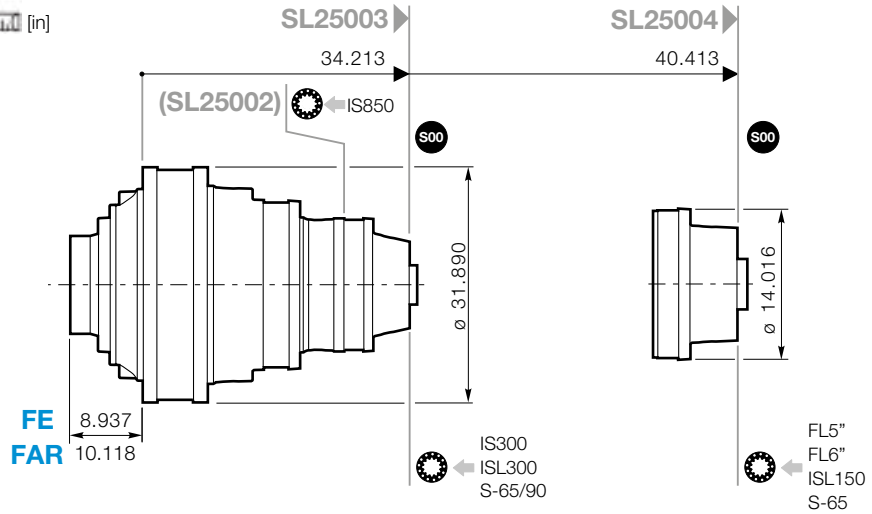

S00 ← Motor Adaptor

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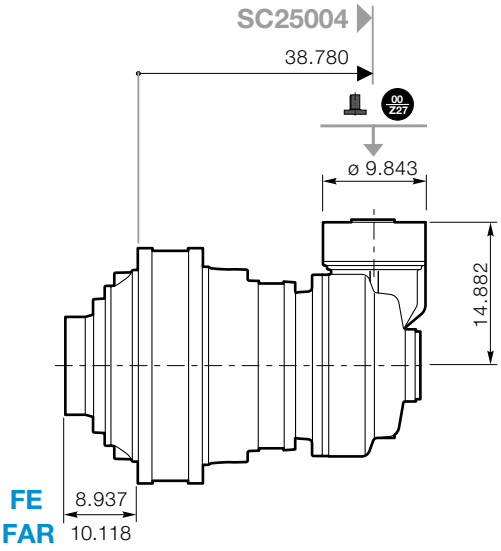

00 227 ← FL620.U/635.U SU-SUF-SUS UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

S-65/90 IS ISL → 2500 6
SU SUF SUS → 2500 6
65.105 → 2500 7
FL5" FL6" FL620/635 → 2500 8
Motor Adaptor → 2500 10
00 227 → B 11
S00 → B 12

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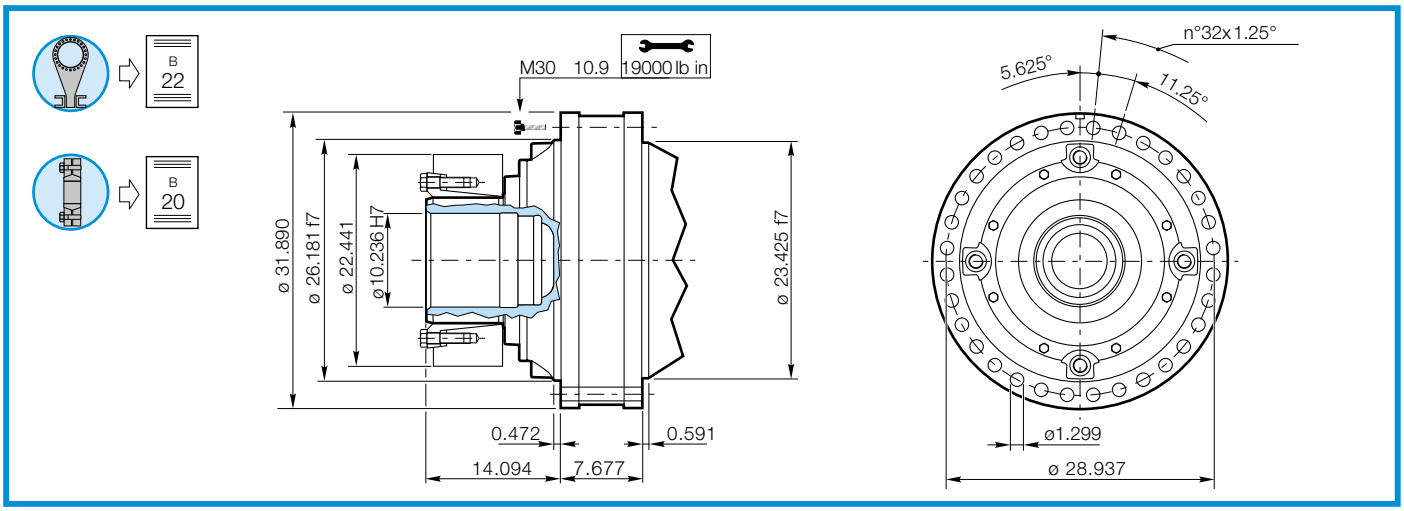

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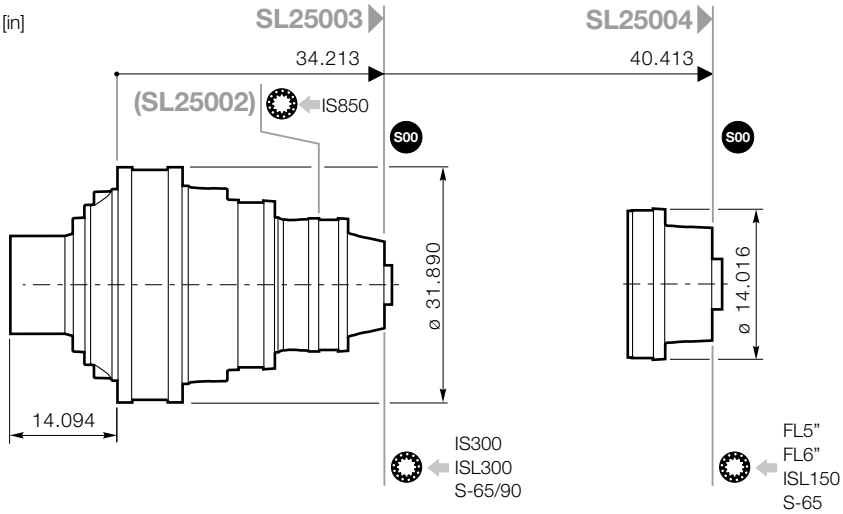

S00 Motor Adaptor

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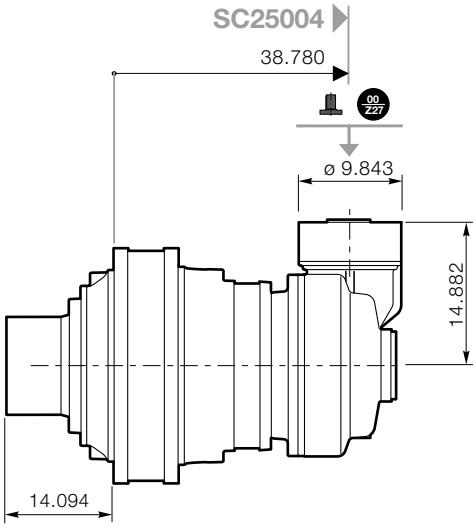

00 227 FL620.U/635.U SU-SUF-SUS UPC Motor Adaptor

65.105 (VARIANT) only without FL5"

S-65/90 IS ISL → 2500 6
SU SUF SUS → 2500 6
65.105 → 2500 7
FL5" FL6" FL620/635 → 2500 8
Motor Adaptor → 2500 10
00 227 → B 11
S00 → B 12

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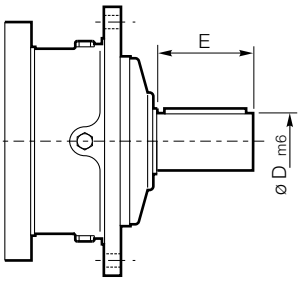
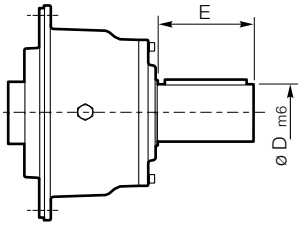
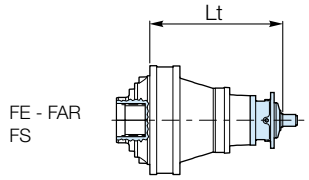
S-65 S-90 IS ISL



S-65CR1 - S-90CR1

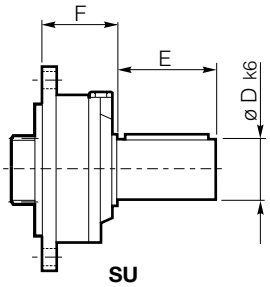


IS / ISL

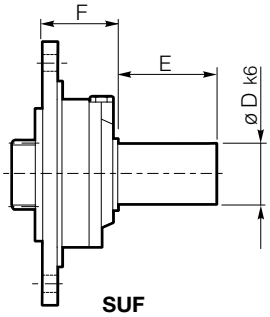


	D m6	E	Lt		
			SL25002	SL25003	SL25004
S-65CR1	3.150	5.118	-	42.303	47.972
S-90CR1	3.543	6.693	-	42.539	-
ISL150	3.543	5.118	-	-	43.169
ISL300	3.543	5.118	-	36.969	-
IS300	3.937	8.268	-	41.732	-
IS850	4.331	8.268	36.181	-	

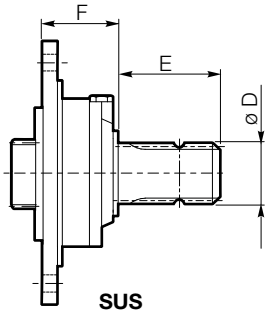
SU - SUF - SUS



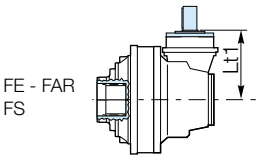
SU



SUF



SUS



	D k6	E	F	Lt1 (00)
				SC25004
SU/SUF.1	1.102	1.969	2.362	17.244
SU/SUF.2	1.575	2.283	2.362	
SU/SUF.3	1.890	3.228	2.362	
SU2 1.5X3.25	1.500	3.250	2.362	
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	18.878
SU 42x80	1.890	3.150	3.996	

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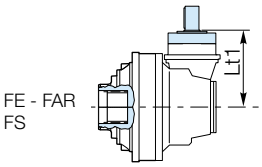
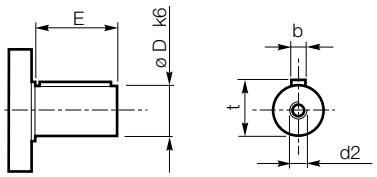
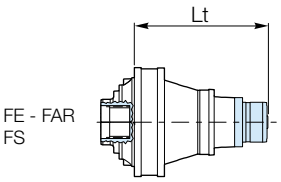
65.105

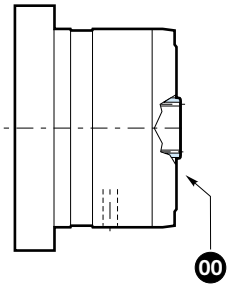




	D k6	E	b	t	d2	Lt1 SC25004
65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803

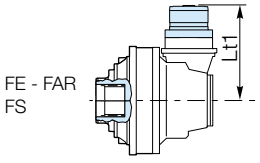
FL5” - FL6”

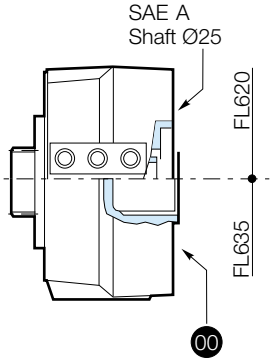




		Lt 00	
		SL25004	SL25004
FL5”	FL250.4C FL250.6C	-	43.524
	FL350.6C FL350.8C	-	43.524
	FL450.6C FL450.8C	-	43.524
	FL650.10C FL650.12C FL650.14C	-	44.055
	FL750.10C FL750.12C FL750.14C	-	44.055
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	39.449	44.606

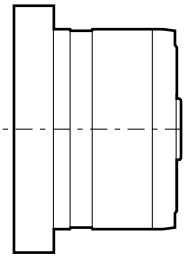
FL620.U - FL635.U

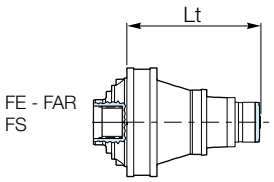




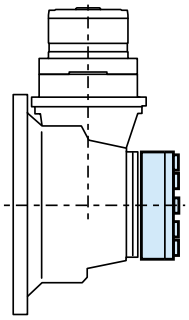
	Lt 00
	SC25004
FL620.U	18.996
FL635.U	18.465

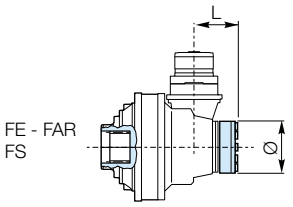
RL





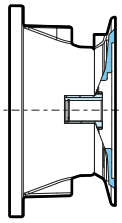
			Lt	
			SL25003	SL25004
RL	+	FL250 FL350 FL450	-	44.547
		FL650 FL750	-	45.079
		FL960	40.472	45.630

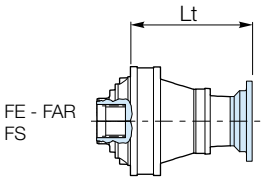


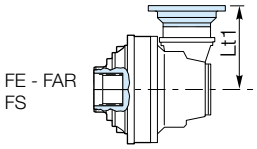


			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

IEC Motor







	Lt - Lt1		
	SL25003 S00	SL25004 S00	SC25004 00 Z27
IEC 160	37.165	43.366	-
IEC 180	41.457	43.366	19.843
IEC 200	37.165	43.366	21.260
IEC 225	38.346	44.547	-
IEC 250	38.346	-	-
IEC 280	-	-	-
SHAFT_IEC225	-	-	22.047

2500

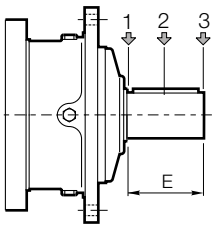
NEMA Motor

Please consult NEMA Motor Flange in page B 15

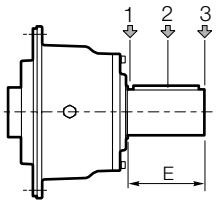
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page B 14

Input Radial Loads

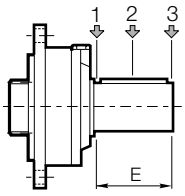


S...

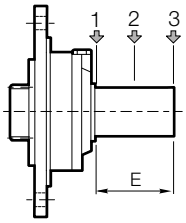


IS / ISL

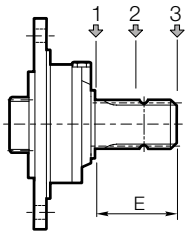
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
S-65CR1	5.118	5351	3485	2158	2675	1754	1079
S-90CR1	6.693	6677	3822	2248	3327	1911	1124
ISL150	5.118	1716	967	673	860	485	337
ISL300	5.118	1716	967	673	860	485	337
IS300	8.268	10974	7434	5152	5500	3726	2582
IS850	8.268	12223	8298	5923	6126	4159	2969



SU



SUF

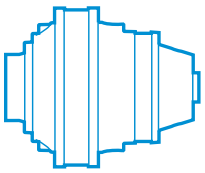


SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	630	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	674	450	337	315	225	157

DANA
BREVINI®
Motion Systems

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shaft	6
Brakes	8
Backstop device	9
Motor Adaptors	10
Radial Loads	11



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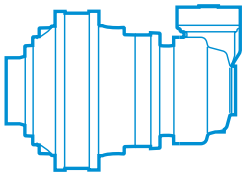
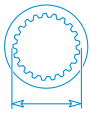
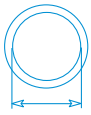


i_{eff}	4.18 - 1620
T_{2N}	273000 ftlb
	N280x8x30x34x9H DIN5480
	11.417 in

TECHNICAL DATA

10000 hours life

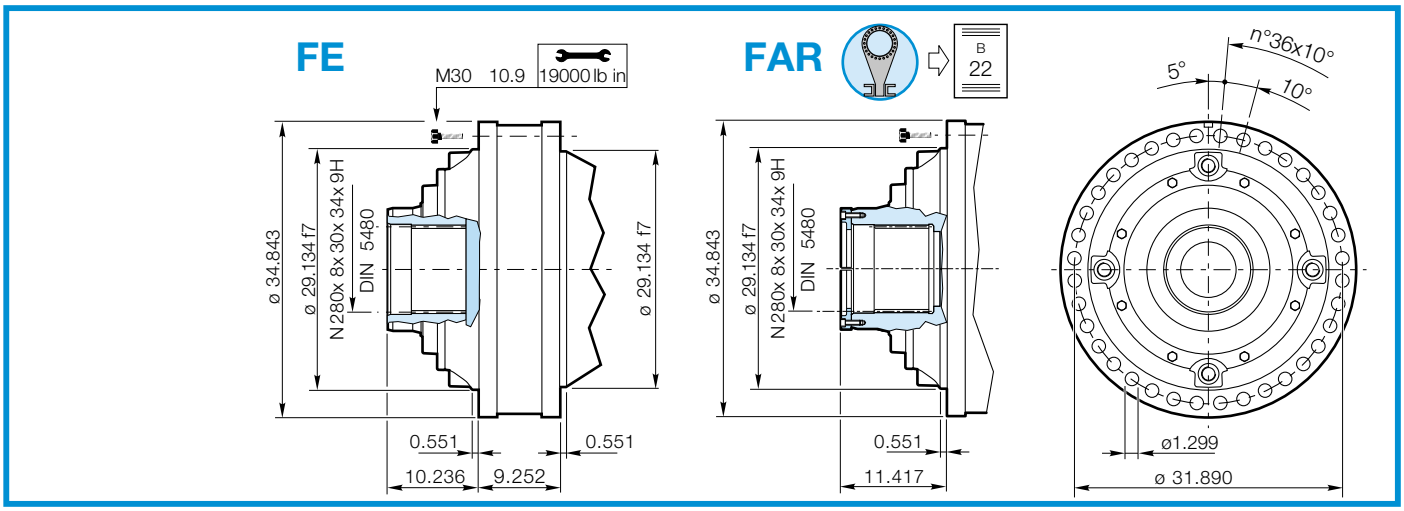
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL35001												
4.18	1)			1)			120	137605	3134	1500	597375	220
4.89							102	141571	2756		511825	
6.00							83	147170	2335		406363	
SL35002												
17.47	1)			1)			29	211341	1152	1500	597375	154
20.44							25	219156	1021			
23.91							21	215871	860		511825	
29.34							17	218597	709			
36.00							14	172937	457		406363	
SL35003												
73.04	1)			14	261312	681	6.8	272663	355	2000	597375	110
104.8				10	267170	485	4.8	286842	260			
116.9				8.6	228042	371	4.3	242831	197		511825	
122.6				8.2	269754	418	4.1	293730	228		597375	
143.5				7.0	230922	307	3.5	250462	166		511825	
176.0				5.7	233838	253	2.8	258333	139			
216.0				4.6	184995	164	2.3	203521	90		406363	
SL35004												
288.5	5.2	283120	280	3.5	301028	198	1.7	334303	110	2500	597375	80
322.8	4.6	287976	255	3.1	306190	181	1.5	340035	101			
369.6	4.1	293927	227	2.7	312518	161	1.4	347062	90			
414.1	3.6	299030	207	2.4	317944	146	1.2	353088	82			
463.4	3.2	304158	188	2.2	323396	133	1.1	359144	74			
512.6	2.9	308844	172	2.0	328377	122	1.0	364675	68			
542.1	2.8	311462	164	1.8	331162	117	0.92	367767	65			
640.8	2.3	319445	142	1.6	339650	101	0.78	377194	56			
735.8	2.0	326198	126	1.4	346830	90	0.68	385168	50			
786.3	1.9	329484	119	1.3	350324	84	0.64	389047	47			
919.8	1.6	337396	105	1.1	358736	74	0.54	398390	41			
954.7	1.6	215807	65	1.0	229456	46	0.52	254820	25		406363	
1076	1.4	287696	76	0.93	305893	54	0.46	339704	30		511825	
1296	1.2	226017	50	0.77	240313	35	0.39	266876	20		406363	
1620	0.93	233776	41	0.62	248562	29	0.31	276038	16			

1) Consult the DANA area contact person.

10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC35004												
185.5	8.1	111584	172	5.4	126016	129	2.7	155145	79	1800		
213.3	7.0	137448	184	4.7	155228	138	2.3	191108	86			
249.5	6.0	160795	184	4.0	181593	138	2.0	223568	86		597375	
291.9	5.1	188108	184	3.4	212438	138	1.7	261543	86			
306.1	4.9	197295	184	3.3	222814	138	1.6	271257	84	1500		
358.1	4.2	230807	184	2.8	258997	138	1.4	287626	76		511825	
418.9	3.6	249440	170	2.4	265217	121	1.2	294533	67			54
439.4	3.4	259263	169	2.3	265793	115	1.1	277339	60		597375	
514.0	2.9	257279	143	1.9	273552	102	0.97	303790	56			
559.2	2.7	240443	123	1.8	271542	93	0.89	307688	52		511825	
654.2	2.3	266838	117	1.5	283715	83	0.76	315075	46			
686.2	2.2	266451	111	1.5	273161	76	0.73	293193	41	2500	597375	
802.7	1.9	275224	98	1.2	292631	70	0.62	324977	38		511825	
985.0	1.5	216827	63	1.0	230541	45	0.51	256025	25		406363	

GEARBOX DIMENSIONS WITH OUTPUT



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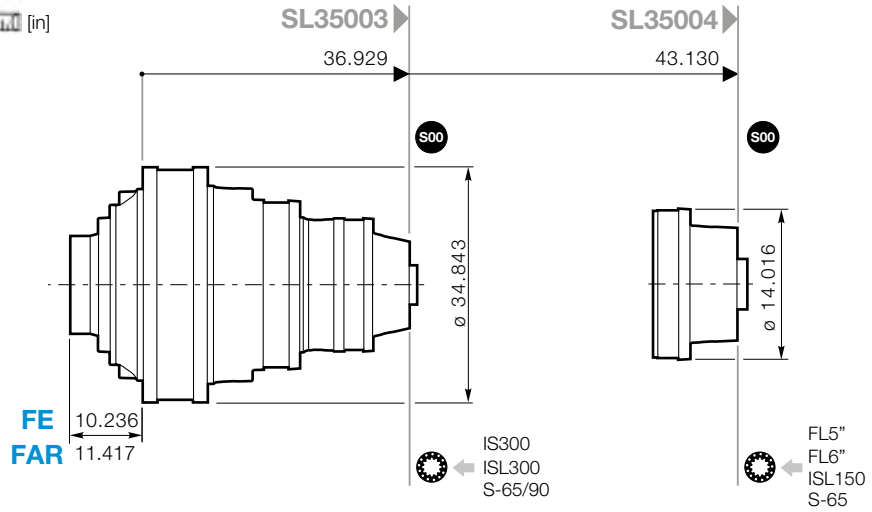

S00 ← Motor Adaptor

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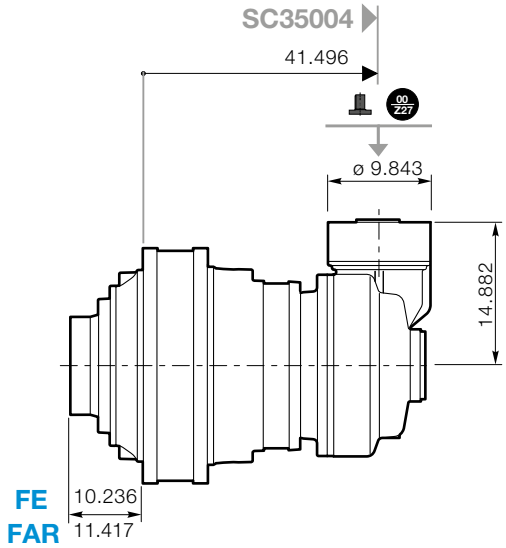
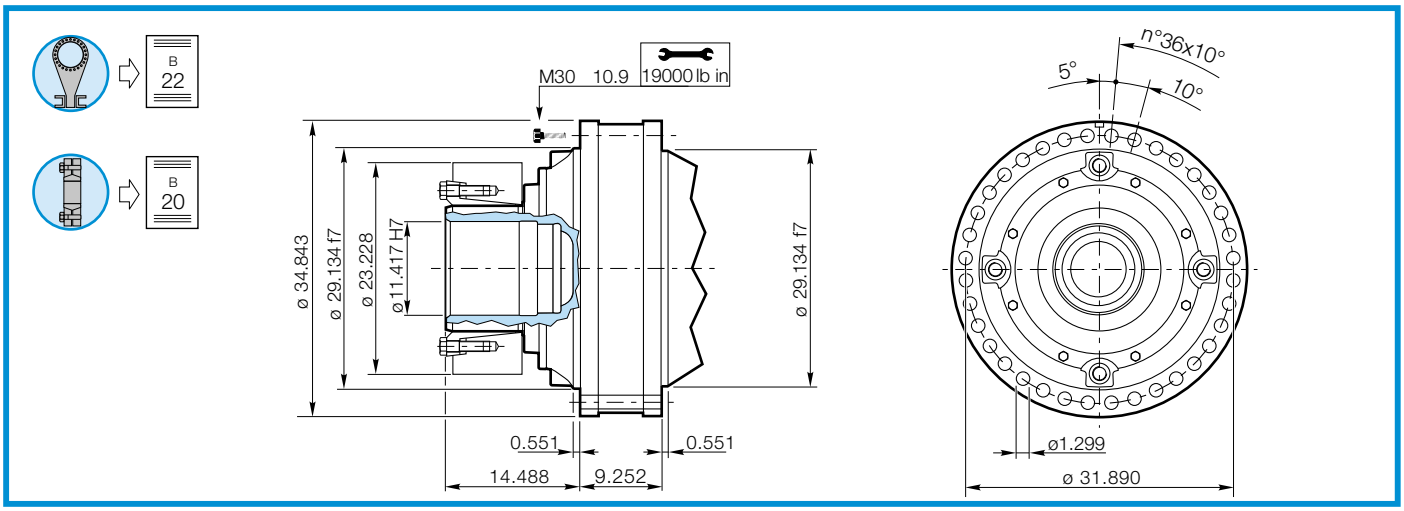


00 227 ← FL620.U/635.U SU-SUF-SUS UPC Motor Adaptor

← 65.105 (VARIANT) only without FL5"

S-65/90 IS ISL ⇨ 3500 6
SU SUF SUS ⇨ 3500 6
65.105 ⇨ 3500 7
FL5" FL6" FL620/635 ⇨ 3500 8
Motor Adaptor ⇨ 3500 10
00 227 ⇨ B 11
S00 ⇨ B 12

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



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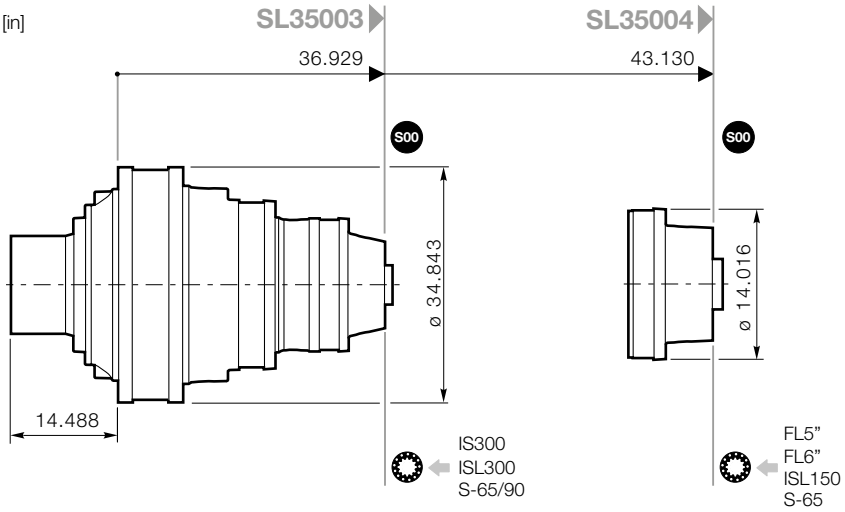
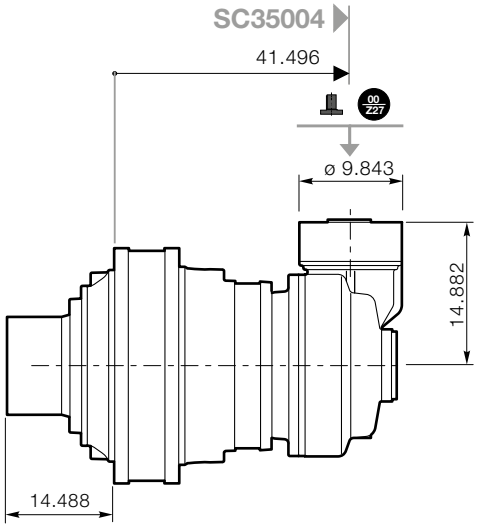


S00 ⇐ Motor Adaptor

[in]



00 Z27 ⇐ FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

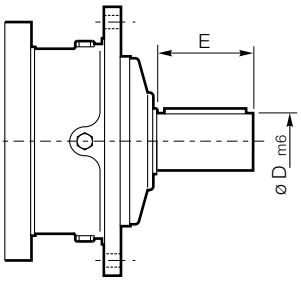
65.105 (VARIANT)
only without FL5"

S-65/90 IS ISL ⇨ 3500 6
SU SUF SUS ⇨ 3500 6
65.105 ⇨ 3500 7
FL5" FL6" FL620/635 ⇨ 3500 8
Motor Adaptor ⇨ 3500 10
00 Z27 ⇨ B 11
S00 ⇨ B 12

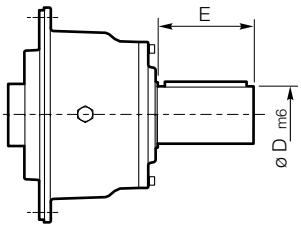
Click *i* button to return to main index

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

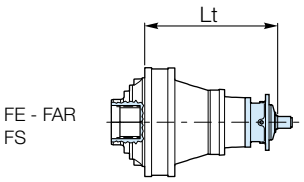
S-65 S-90 IS ISL



S-65CR1 - S-90CR1

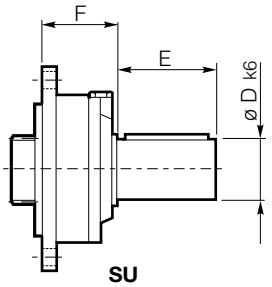


IS / ISL

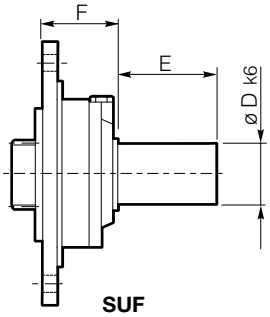


	D m6	E	Lt	
			SL35003	SL35004
S-65CR1	3.150	5.118	45.020	50.689
S-90CR1	3.543	6.693	45.256	-
ISL150	3.543	5.118	-	45.886
ISL300	3.543	5.118	39.685	-
IS300	3.937	8.268	44.449	-

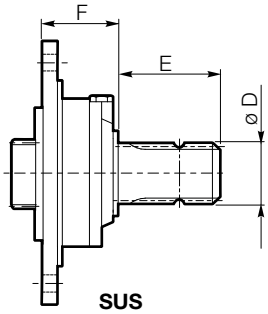
SU - SUF - SUS



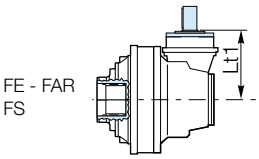
SU



SUF

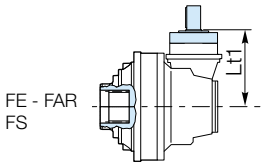


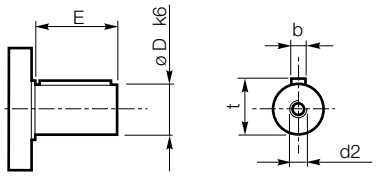
SUS



	D k6	E	F	Lt1 00
				SC35004
SU/SUF.1	1.102	1.969	2.362	17.244
SU/SUF.2	1.575	2.283	2.362	
SU/SUF.3	1.890	3.228	2.362	
SU2 1.5X3.25	1.500	3.250	2.362	
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	18.878
SU 42x80	1.890	3.150	3.996	

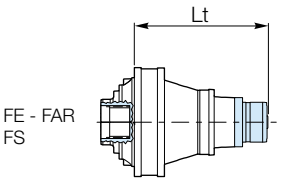
65.105

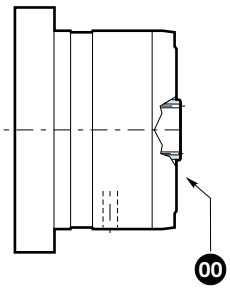




	D k6	E	b	t	d2	Lt1 SC35004
65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803

FL5” - FL6”

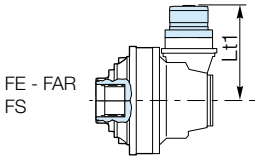


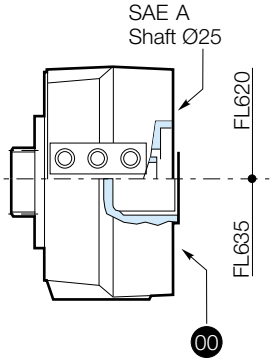


		Lt	
		SL35003	SL35004
FL5”	FL250.4C FL250.6C	-	46.240
	FL350.6C FL350.8C	-	46.240
	FL450.6C FL450.8C	-	46.240
	FL650.10C FL650.12C FL650.14C	-	46.772
	FL750.10C FL750.12C FL750.14C	-	46.772
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	42.165	47.323

3500

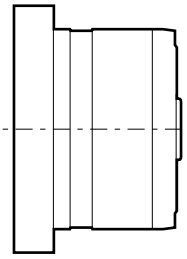
FL620.U - FL635.U

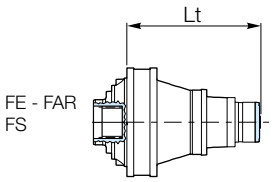




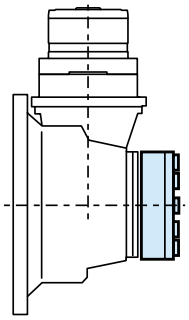
	Lt 00
	SC35004
FL620.U	18.996
FL635.U	18.465

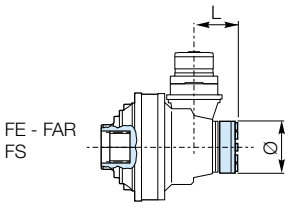
RL





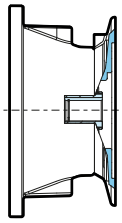
			Lt	
			SL35003	SL35004
RL	+	FL250 FL350 FL450	-	47.264
		FL650 FL750	-	47.795
		FL960	43.189	44.409

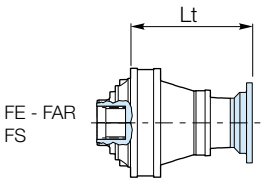


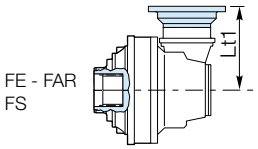


			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

IEC Motor







	Lt - Lt1		
	SL35003 S00	SL35004 S00	SC35004 00 Z27
IEC 180	-	46.083	19.843
IEC 200	40.394	46.083	21.260
IEC 225	41.575	47.264	-
IEC 250	41.575	-	-
IEC 280	41.575	-	-
SHAFT_IEC225	-	-	22.047

NEMA Motor

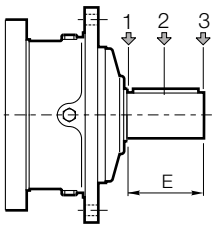
3500

Please consult NEMA Motor Flange in page B 15

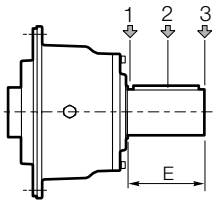
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page B 14

Input Radial Loads

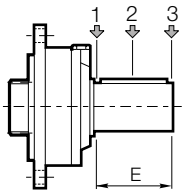


S...



IS / ISL

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
S-65CR1	5.118	5351	3485	2158	2675	1754	1079
S-90CR1	6.693	6677	3822	2248	3327	1911	1124
ISL150	5.118	1716	967	673	860	485	337
ISL300	5.118	1716	967	673	860	485	337
IS300	8.268	10974	7434	5152	5500	3726	2582



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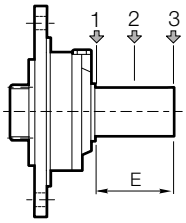
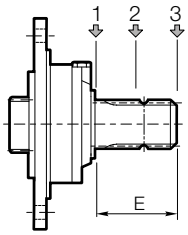


SUF

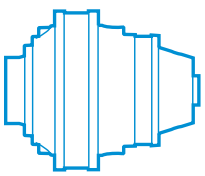


SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	629	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	3000	2000	1500	1400	1000	700

DANA
BREVINI®
Motion Systems

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shaft	6
Brakes	8
Backstop device	9
Motor Adaptors	10
Radial Loads	11



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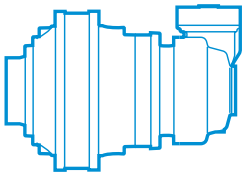
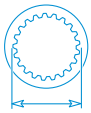
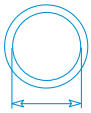


i_{eff}	4.18 - 1338
T_{2N}	390000 ftlb
	N340x8x30x41x9H DIN5480
	13.386 in

TECHNICAL DATA

10000 hours life

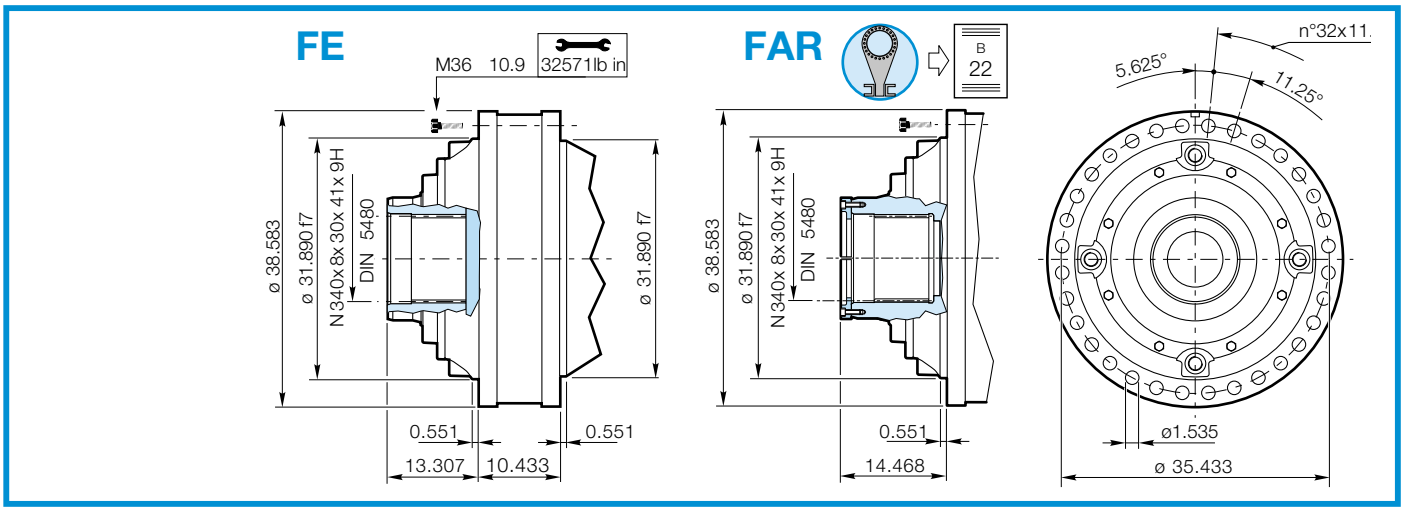
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL50003												
76.01	20	315754	1189	13	357429	896	6.6	377402	472			
88.92	17	348042	1118	11	363329	778	5.6	385454	413			
104.0	14	356863	980	10	367424	673	4.8	395832	362			
109.1	14	338484	886	9.2	368672	644	4.6	399032	349			
120.8	12	305131	721	8.3	314185	495	4.1	337228	266	2000	811250	134
127.6	12	362182	810	7.8	372789	557	3.9	409721	306			
148.2	10	309687	597	6.7	318793	410	3.4	349167	224			
156.6	9.6	350274	638	6.4	361824	440	3.2	381476	232			
181.8	8.3	314267	493	5.5	323437	339	2.8	361470	189			
SL50004												
307.1	4.9	394754	367	3.3	422627	261	1.6	449657	139			
342.0	4.4	402007	335	2.9	430322	240	1.5	455720	127			
389.1	3.9	410840	302	2.6	439695	215	1.3	463073	113			
400.1	3.7	412764	295	2.5	441737	211	1.2	464671	110			
420.2	3.6	416178	283	2.4	444243	201	1.2	467503	106			
468.1	3.2	423770	259	2.1	445311	181	1.1	473782	97			
490.9	3.1	427166	248	2.0	445783	173	1.0	476584	93			
515.6	2.9	430684	239	1.9	446268	165	1.0	479480	89			
558.6	2.7	436478	223	1.8	447060	153	0.90	484242	83	2500	811250	101
598.6	2.5	367190	176	1.7	393055	125	0.84	441060	70			
653.5	2.4	444599	194	1.6	453139	131	0.79	493701	72			
704.7	2.1	393090	160	1.4	404872	110	0.71	438936	59			
803.0	1.9	446639	158	1.2	464868	110	0.62	506382	60			
939.3	1.6	450750	137	1.1	473982	97	0.53	516237	52			
1091	1.4	406017	106	0.92	434302	76	0.46	486828	43			
1153	1.3	407413	101	0.87	423785	70	0.43	477948	39			
1338	1.1	420073	90	0.75	449239	63	0.37	503407	36			

10000 hours life

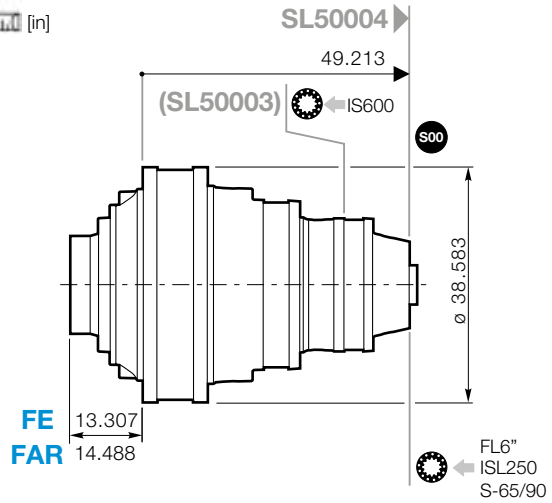
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SC50005												
779.9	1.9	446350	164	1)			1)			1800	811250	67
912.4	1.6	449123	141									
1050	1.4	456967	125									
1156	1.3	462525	114									
1310	1.1	469714	102									
1459	1.0	476020	94									

1) Consult the DANA area contact person.

GEARBOX DIMENSIONS WITH OUTPUT

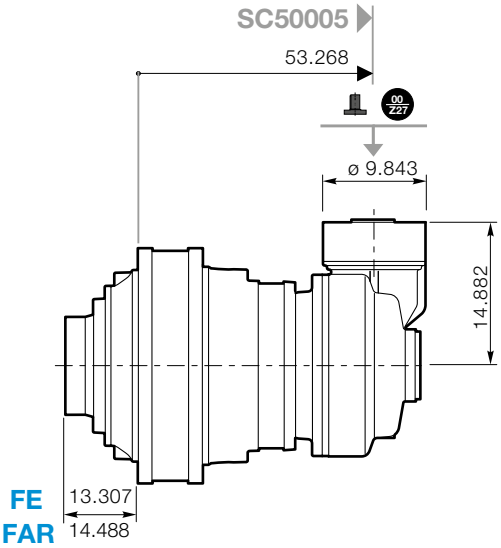


[in]



S00 ← Motor Adaptor

[in]



00 227 ← FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5"

S-65/90
IS
ISL
→ 5000 6

SU
SUF
SUS
→ 5000 6

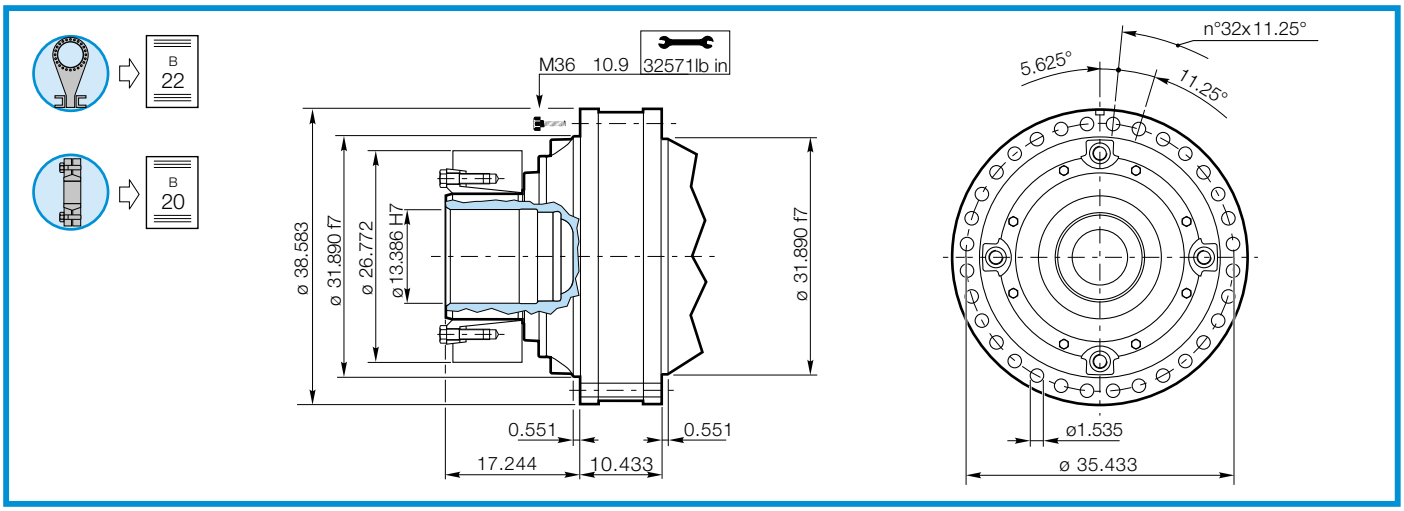
65.105 → 5000 7

FL6"
FL620/635
→ 5000 8

Motor
Adaptor
→ 5000 10

00 227 → B 11

S00 → B 12



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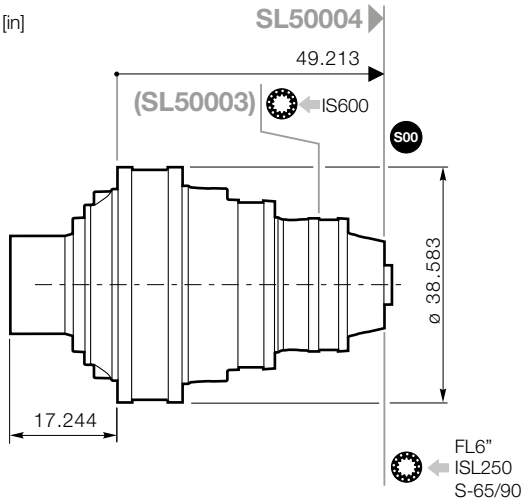

S00 Motor Adaptor

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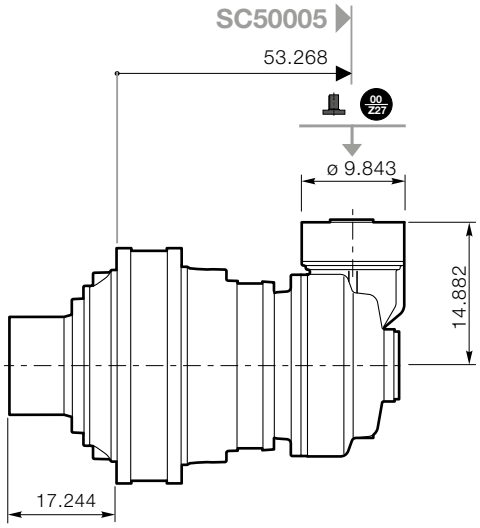


00 227 FL620.U/635.U
SU-SUF-SUS
UPC
Motor Adaptor

65.105 (VARIANT)
only without FL5"

S-65/90
IS
ISL
5000 6

SU
SUF
SUS
5000 6

65.105
5000 7

FL6"
FL620/635
5000 8

Motor
Adaptor
5000 10

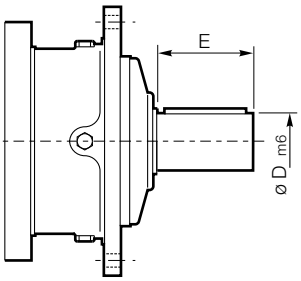
00 227
B 11

S00
B 12

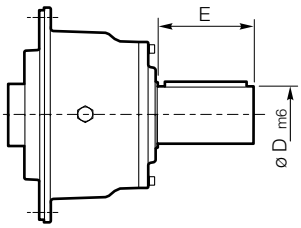
Click *i* button to return to main index

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

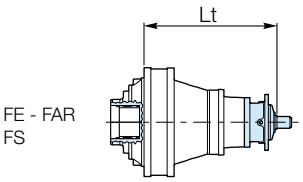
S-65 S-90 IS ISL



S-65CR1 - S-90CR1

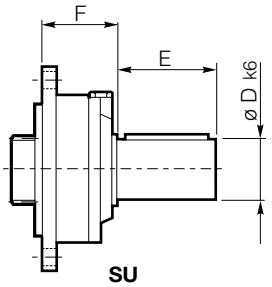


IS / ISL



	D m6	E	L	S DIN5482	Lt	
					SL50003	SL50004
S-65CR1	3.150	5.118	-	-	-	56.791
S-90CR1	3.543	6.693	-	-	-	57.028
ISL250	3.543	5.118	-	-	-	51.969
IS600	4.331	8.268	-	-	49.764	-

SU - SUF - SUS



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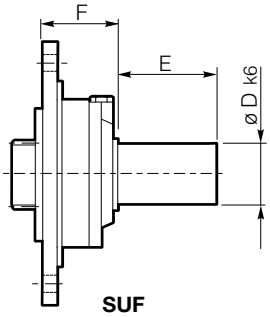

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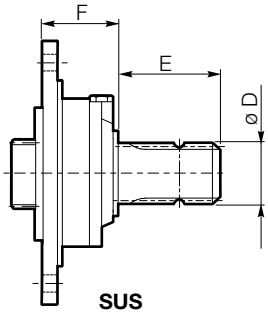
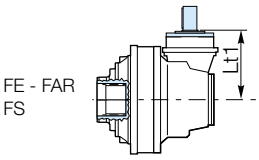


SUS

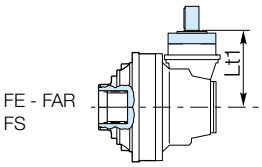


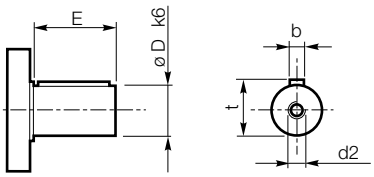
	D k6	E	F	Lt1 00
				SC50005
SU/SUF.1	1.102	1.969	2.362	17.244
SU/SUF.2	1.575	2.283	2.362	
SU/SUF.3	1.890	3.228	2.362	
SU2 1.5X3.25	1.500	3.250	2.362	
SUS 1 3/8"	1 3/8" DIN9611	3.819	3.996	18.878
SU 42x80	1.890	3.150	3.996	

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

Click *i* button to return to main index

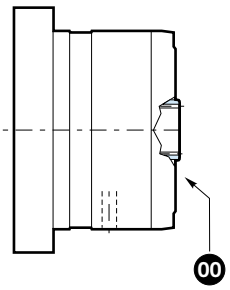
65.105

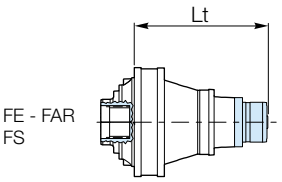




	D k6	E	b	t	d2	Lt1 SC50005
65.105	2.559	4.134	0.709	2.717	M20x1.680	14.803

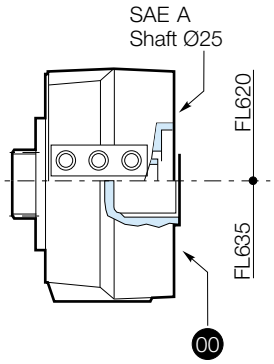
FL5” - FL6”

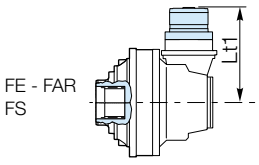




		Lt
		SL50004
FL6”	FL960.12C FL960.14C FL960.16C FL960.18C	53.937

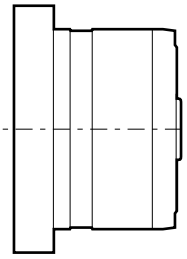
FL620.U - FL635.U

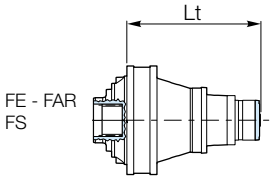




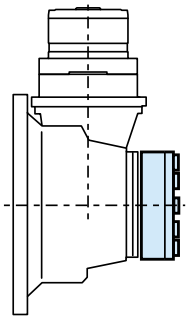
	Lt1 00
	SC50004
FL620.U	18.996
FL635.U	18.465

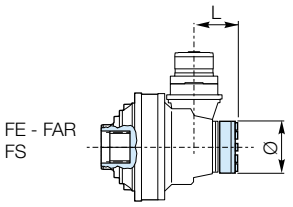
RL





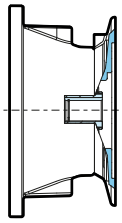
			Lt
			SL50004
RL	+	FL250 FL350 FL450	-
		FL650 FL750	-
		FL960	54.961

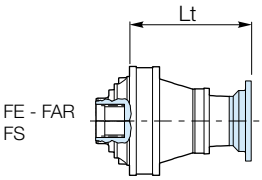


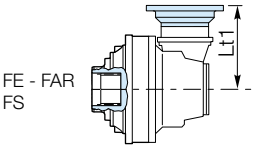


			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

IEC Motor







	Lt - Lt1	
	SL50004 S00	SC50005 00 Z27
IEC 180	-	19.843
IEC 200	-	21.260
IEC 225	-	-
IEC 250	-	-
IEC 280	53.346	-
SHAFT_IEC225	-	22.047

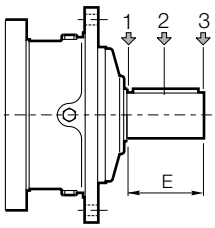
NEMA Motor

Please consult NEMA Motor Flange in page B 15

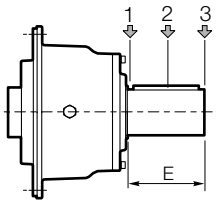
Other flanges available on request for NEMA sizes 254 to 500.
Please contact Sales for further information.

For further flange types, please consult from page B 14

Input Radial Loads

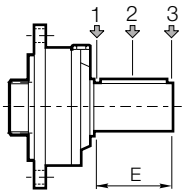


S...

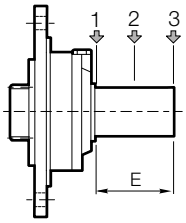


IS / ISL

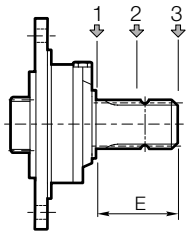
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
S-65CR1	5.118	5351	3485	2158	2675	1754	1079
S-90CR1	6.693	6677	3822	2248	3327	1911	1124
ISL250	5.118	1716	967	673	860	485	337
IS300	8.268	10974	7434	5152	5500	3726	2582



SU



SUF

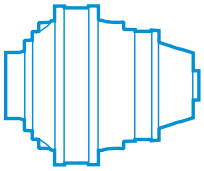


SUS

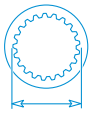
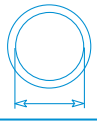
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	E	1	2	3	1	2	3
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	629	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	3000	2000	1500	1400	1000	700

DANA
BREVINI®
Motion Systems

	Page
Technical Data	2
Gearbox Dimensions with Output	4
Input Shafts & Brakes	6
Backstop device	7
Motor Adaptors	8
Radial Loads	9



7500

i_{eff}	85.80 - 11486
T_{2N}	542000 ftlb
	N400x8x30x48x9H DIN5480
	15.748 in

TECHNICAL DATA

10000 hours life

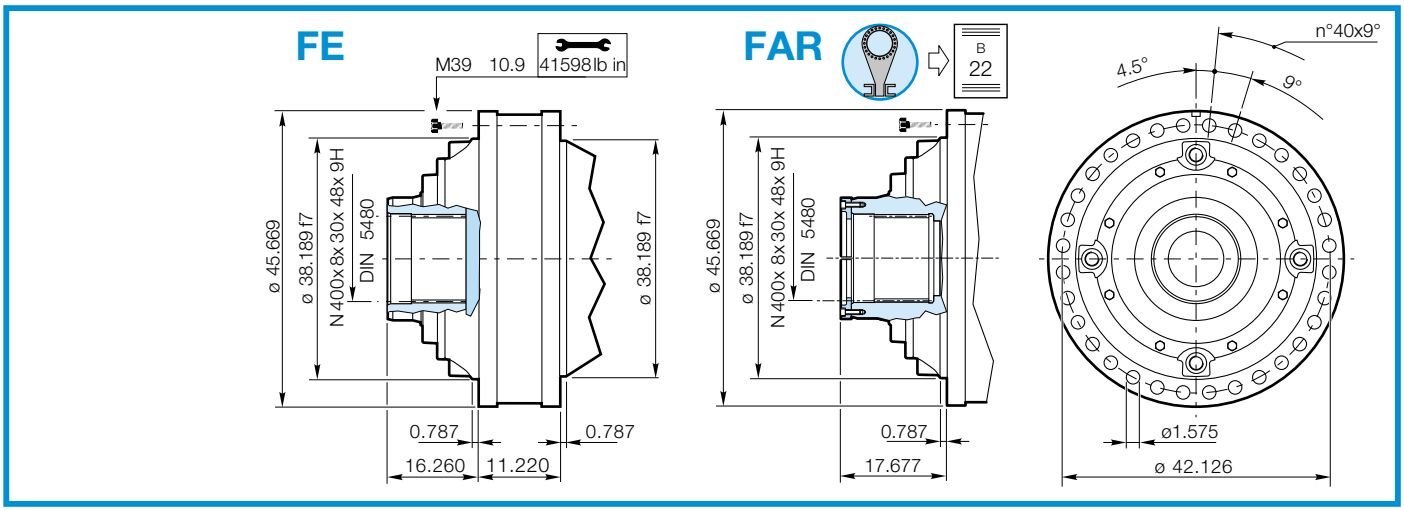
i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL75003												
85.80	18	467554	1557	12	513383	1140	5.8	539298	598	1500	1327500	161
100.4	15	504159	1435	10	519215	986	5.0	548904	520			
117.4	13	509979	1240	8.5	525061	852	4.3	563645	457			
123.1	12	511749	1187	8.1	526842	815	4.1	568193	440			
144.1	10	517577	1026	6.9	532718	704	3.5	583374	386			
176.8	8.5	525198	849	5.7	540422	582	2.8	589308	318			
208.1	7.2	446460	613	4.8	459446	421	2.4	511757	235		1106250	
SL75004												
346.6	4.3	562114	464	2.9	601703	331	-			2000	1327500	121
405.5	3.7	577156	406	2.5	617073	290						
451.6	3.3	587696	371	2.2	618564	261						
497.5	3.0	597292	343	2.0	619901	237						
554.1	2.7	608149	314	1.8	621391	213						
630.5	2.4	617571	280	1.6	631343	190						
704.5	2.1	619105	251	1.4	640090	173						
795.4	1.9	606999	219	1.3	624937	150						
906.3	1.7	628014	198	1.1	660367	138						
1060	1.4	640359	173	0.9	673283	121						
1301	1.2	628804	138	0.8	653713	95						
1532	1.0	594492	111	0.7	635667	79					1500000	

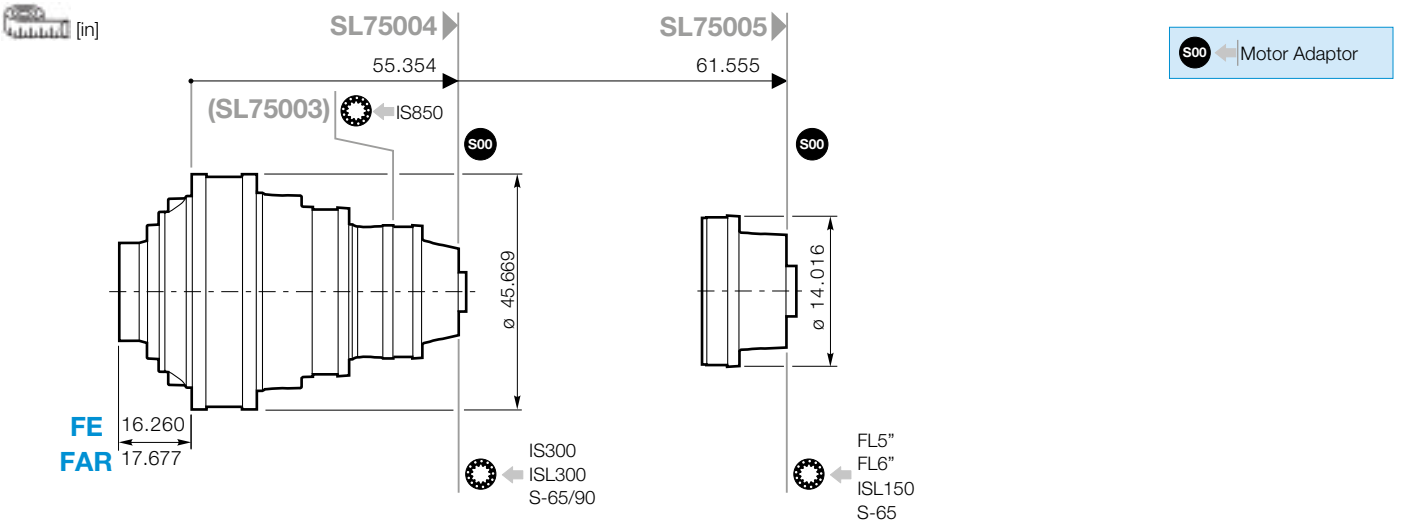
10000 hours life

i_{eff}	1500			1000			500			n_{1MAX}	T_{2MAX}	P_T
	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	n_2 [rpm]	T_2 [ftlb]	P_2 [HP]	[rpm]	[ftlb]	[HP]
SL75005												
1369	1.1	660937	138									
1602	0.90	673863	121									
1784	0.80	682881	110									
1874	0.80	687020	105									
1996	0.80	692401	99									
2223	0.70	701610	90									
2517	0.60	712428	80									
2804	0.50	721918	74									
3170	0.50	732860	66									
3558	0.40	743281	60	-			-			2500	1327500	94
4006	0.40	754156	54									
4433	0.30	763553	50									
5139	0.30	771208	43									
5750	0.30	785982	39									
6362	0.20	797971	36									
6798	0.20	804410	34									
7954	0.20	819938	30									
9757	0.15	840546	24									
11486	0.13	813218	20								1106250	

1) Consult the DANA area contact person.

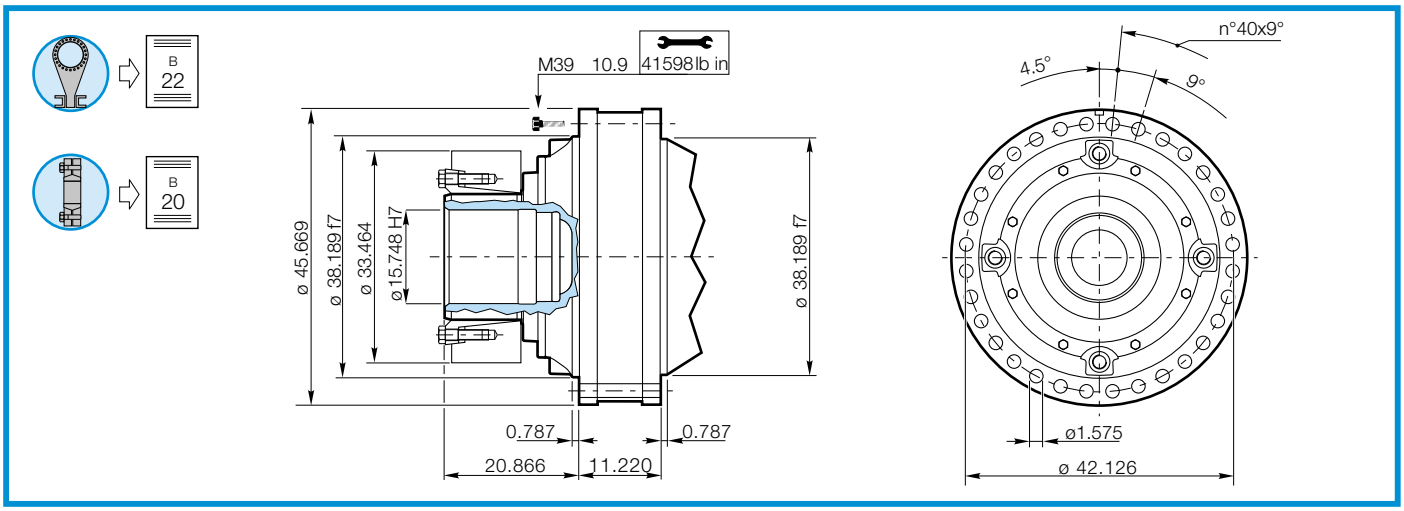
GEARBOX DIMENSIONS WITH OUTPUT





7500

S-65/90
IS
ISL
7500 6
FL5"
FL6"
7500 6
Motor
Adaptor
7500 8
S00
B 12



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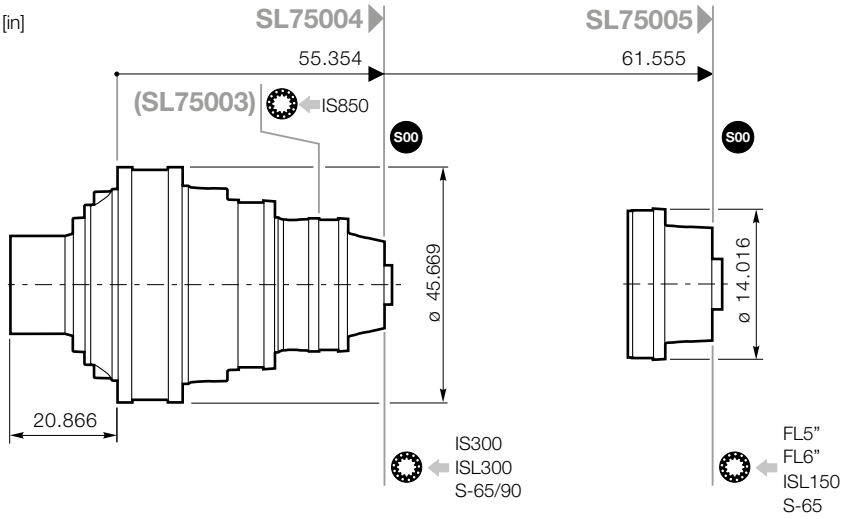


S00 Motor Adaptor

S-65/90 IS ISL → 7500 6

FL5" FL6" → 7500 6

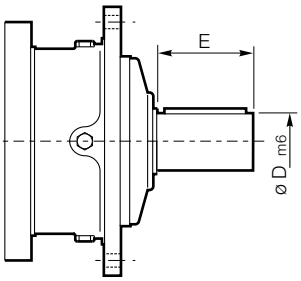
Motor Adaptor → 7500 8

S00 → B 12

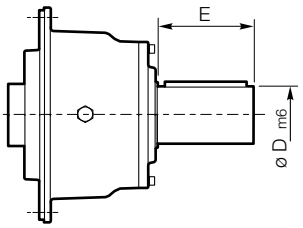
Click *i* button to return to main index

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

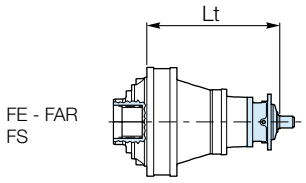
S-65 S-90 IS ISL



S-65CR1 - S-90CR1

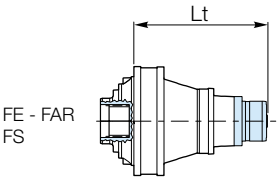


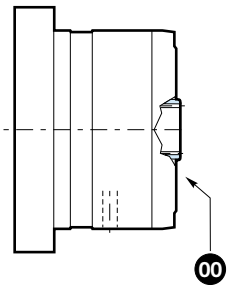
IS / ISL



	D m6	E	Lt		
			SL75003	SL75004	SL75005
S-65CR1	3.150	5.118	-		69.114
S-90CR1	3.543	6.693	-	63.445	-
ISL150	3.543	5.118	-	63.681	64.311
ISL300	3.543	5.118	-	58.110	-
IS300	3.937	8.268	-	62.874	-
IS850	4.331	8.268	57.323	-	-

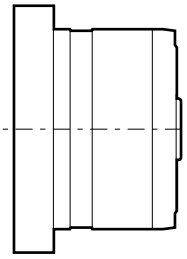
FL5" - FL6"

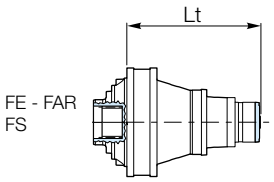




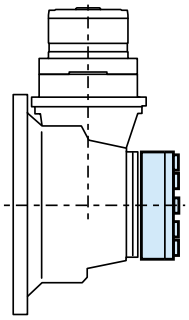
		Lt	
		SL75004	SL75005
FL5"	FL250.4C FL250.6C	-	64.665
	FL350.6C FL350.8C	-	64.665
	FL450.6C FL450.8C	-	64.665
	FL650.10C FL650.12C FL650.14C	-	65.197
	FL750.10C FL750.12C FL750.14C	-	65.197
FL6"	FL960.12C FL960.14C FL960.16C FL960.18C	60.591	65.748

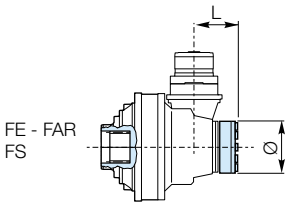
RL





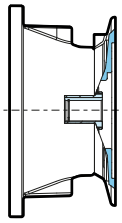
			Lt	
			SL75004	SL75005
RL	+	FL250 FL350 FL450	-	65.689
		FL650 FL750	-	66.220
		FL960	61.614	66.772

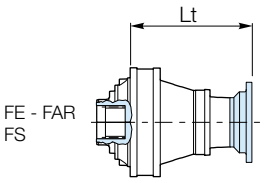




			L	Ø
RL	+	CC40	5.323	5.906
		CC41	5.346	5.906

IEC Motor





	Lt S00	
	SL75004	**SL75005**
IEC200	-	64.764
IEC225	-	65.945
IEC280	59.488	-

NEMA Motor

Please consult NEMA Motor Flange in page B 15

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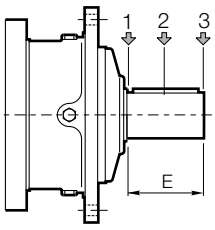
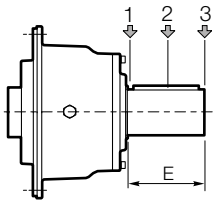
For further flange types, please consult from page B 14

Input Radial Loads

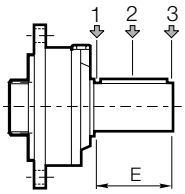


S...

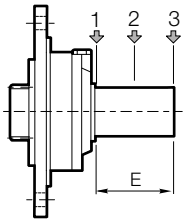


IS / ISL

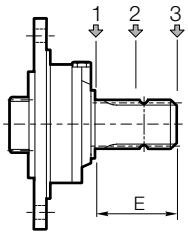
		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
S-65CR1	5.118	5351	3485	2158	2675	1754	1079
S-90CR1	6.693	6677	3822	2248	3327	1911	1124
ISL150	5.118	1716	967	673	860	485	337
ISL300	5.118	1716	967	673	860	485	337
IS300	8.268	10977	7434	5152	5500	3726	2582
IS850	8.268	11749	8788	6599	6339	4404	3307



SU



SUF



SUS

		F_{r1} [lbf]					
		$n_1 . h = 10^7$			$n_1 . h = 10^8$		
Type	**E**	**1**	**2**	**3**	**1**	**2**	**3**
SU 42x80	3.150	674	450	337	315	225	157
SUS 1 3/8”	3.819	629	405	337	292	202	135
SU2 1 1/2”x 3 1/4”	3.250	674	450	337	315	225	157
SUF1 28x50	1.969	674	450	337	315	225	157
SUF2 40x58	2.283	674	450	337	315	225	157
SUF3 48x82	3.228	3000	2000	1500	1400	1000	700

DANA BREVINI®
Motion Systems

B

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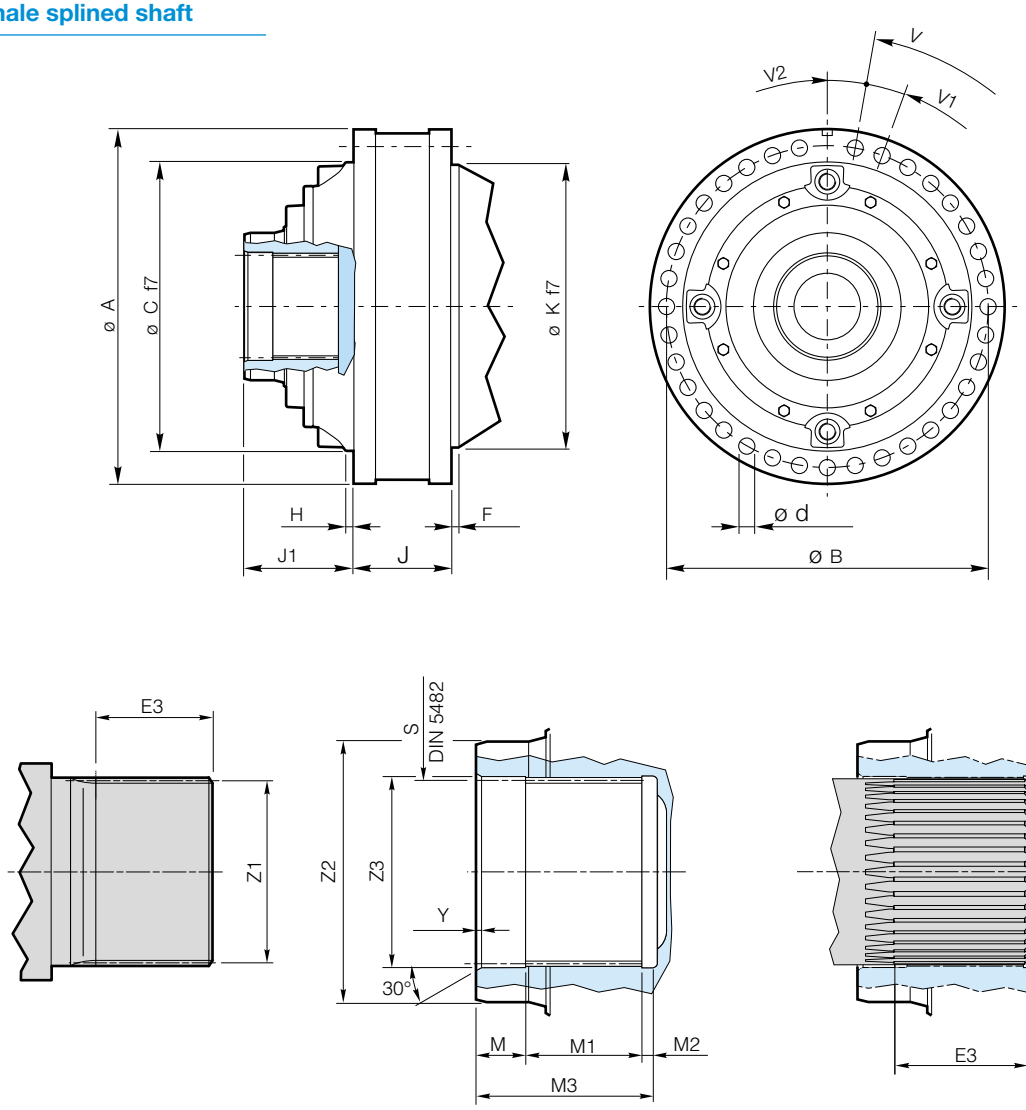
FE Female splined shaft



	A	B	C	d	E2	E3	F	H	J	J1	K	M	M1	M2	M3
S300	17.520	15.748	14.567	0.610	0.079	>3.543	0.472	0.394	4.882	4.606	14.370	0.591	3.543	-	4.134
S400	17.520	15.748	14.567	0.610	0.394	>3.622	0.472	0.394	4.882	5.512	14.370	0.591	3.543	0.394	4.528
S600	20.079	18.110	16.142	0.866	0.394	>3.425	0.472	0.472	5.591	6.299	16.339	1.772	3.346	0.394	5.512
S850	22.244	20.079	18.110	1.024	0.394	>4.213	0.394	0.433	6.142	6.850	17.717	1.772	4.134	0.394	6.299
S1200	25.000	22.638	20.472	1.024	0.591	>4.921	0.591	0.472	6.890	8.071	20.472	1.772	4.724	0.591	7.087
S1800	27.953	25.591	23.425	1.024	0.591	>5.315	0.630	0.551	7.283	8.386	23.425	1.772	5.118	0.591	7.480
S2500	31.890	28.937	26.181	1.299	0.591	>5.709	0.591	0.472	7.677	8.937	26.181	1.969	5.512	0.591	8.071
S3500	34.843	31.890	29.134	1.299	0.669	>7.008	0.551	0.551	9.252	10.236	29.134	1.969	6.693	0.669	9.331
S5000	38.583	35.433	31.890	1.535	0.669	>8.189	0.551	0.551	10.433	13.307	31.890	2.362	7.874	0.669	10.906

	S	V	V1	V2	Y	Z1	Z2	Z3
S300	N120x5x30x22x9H	n°35x10°	10°	10°	1x45°	W120x5x30x22x8g	6.496	4.803
S400	N140x5x30x26x9H	n°35x10°	10°	10°	3x30°	W140x5x30x26x8g	7.283	5.591
S600	N150x5x30x28x9H	n°28x12.857°	12.857°	6.428°	5x30°	W150x5x30x28x8g	8.583	5.984
S850	N170x5x30x32x9H	n°28x12.857°	12.857°	6.428°	5x30°	W170x5x30x32x8g	9.252	6.772
S1200	N200x5x30x38x9H	n°32x11.25°	11.25°	5.625°	5x30°	W200x5x30x38x8g	10.827	7.953
S1800	N210x5x30x40x9H	n°32x11.25°	11.25°	5.625°	5x30°	W210x5x30x40x8g	11.693	8.346
S2500	N240x5x30x46x9H	n°32x11.25°	11.25°	5.625°	5x30°	W240x5x30x46x8g	13.307	9.528
S3500	N280x8x30x34x9H	n°36x10°	10°	5°	5x30°	W280x8x30x34x8g	14.094	11.102
S5000	N340x8x30x41x9H	n°32x11.25°	11.25°	5.625°	5x30°	W340x8x30x41x8g	17.126	13.465

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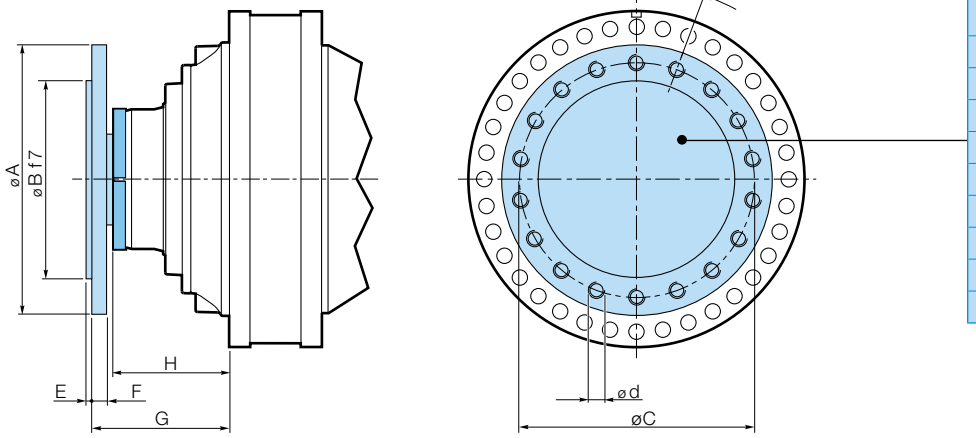
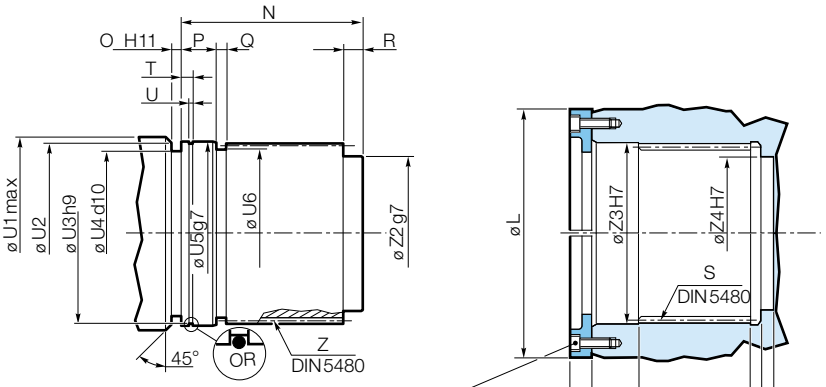
FAR Female splined shaft



Driving flange (on request)	code
S300	9008238
S400	9005880
S600	9005939
S850	9005821
S1200	9006563
S1800	9006601
S2500	9008239
S3500	9007702
S5000	9006094



S300 ÷ S850	23.5 ÷ 25 ftlb
S1200 ÷ S1800	47 ÷ 50 ftlb
S2500 ÷ S5000	81 ÷ 86 ftlb

	A	B	C	d*	D	E	F	G	H	L	M	M1	M2	M3	M4	N	O	OR
S300	14.173	8.661	11.811	M30	12x30°	0.394	1.181	6.969	5.394	6.496	0.591	3.543	-	4.606	0.787	4.528	0.354	113.97x2.62
S400	14.173	8.661	11.811	M30	14x25.71°	0.394	1.181	7.874	6.299	7.283	0.591	3.543	0.394	5.315	0.787	5.236	0.354	133.02x2.62
S600	15.748	10.236	13.386	M30	18x20°	0.394	1.181	8.661	7.087	8.583	1.772	3.346	0.394	6.181	0.787	6.102	0.354	145.72x2.62
S850	17.717	12.205	15.551	M30	22x16.36°	0.394	1.378	10.236	7.638	9.252	1.772	4.134	0.394	6.811	0.787	6.732	0.354	164.77x2.62
S1200	20.079	14.764	17.717	M30	22x16.36°	0.394	1.378	11.024	8.858	10.827	1.772	4.724	0.591	7.795	0.787	7.717	0.354	190.9x3.53
S1800	23.031	17.520	20.866	M30	30x12°	0.394	1.575	11.575	9.173	11.811	1.772	5.118	0.591	8.189	0.787	8.110	0.354	202.79x3.53
S2500	25.787	18.898	22.835	M36	24x15°	0.394	1.575	12.480	10.118	12.756	1.969	5.512	0.591	8.937	1.181	8.858	0.433	234.54x3.53
S3500	28.740	21.457	25.591	M36	30x12°	0.394	1.969	14.173	11.417	14.094	1.969	6.693	0.669	10.197	1.181	10.118	0.472	266.29x3.53
S5000	31.496	24.409	28.740	M36	36x10°	0.394	1.969	16.732	14.488	16.929	2.362	7.874	0.669	12.598	1.181	12.520	0.512	304.39x3.53

	P	Q	R	S	T	U	U1	U2	U3	U4	U5	U6	Z	Z2	Z3	Z4
S300	0.551	0.315	0.453	N120x5x30x22x9H	0.339	0.142	4.724	4.528	4.638	4.016	4.803	4.213	W120x5x30x22x8g	4.134	4.803	4.134
S400	0.551	0.394	1.024	N140x5x30x26x9H	0.339	0.142	5.512	5.118	5.425	4.803	5.591	5.000	W140x5x30x26x8g	4.724	5.591	4.724
S600	1.299	0.394	0.866	N150x5x30x28x9H	0.433	0.142	6.299	5.906	5.819	5.276	5.984	5.394	W150x5x30x28x8g	4.803	5.984	4.803
S850	1.299	0.394	0.709	N170x5x30x32x9H	0.433	0.142	7.087	6.693	6.606	6.063	6.772	6.181	W170x5x30x32x8g	5.709	6.772	5.709
S1200	1.299	0.394	1.102	N200x5x30x38x9H	0.472	0.189	8.661	8.110	7.732	7.441	7.953	7.362	W200x5x30x38x8g	6.693	7.953	6.693
S1800	1.299	0.394	1.102	N210x5x30x40x9H	0.472	0.189	9.449	8.898	8.126	7.835	8.346	7.756	W210x5x30x40x8g	7.087	8.346	7.087
S2500	1.496	0.394	1.417	N240x5x30x46x9H	0.472	0.189	10.236	9.685	9.307	8.976	9.528	8.937	W240x5x30x46x8g	8.661	9.528	8.661
S3500	1.496	0.394	1.339	N280x8x30x34x9H	0.472	0.189	11.811	11.024	10.882	10.394	11.102	10.236	W280x8x30x34x8g	9.252	11.102	9.252
S5000	1.772	0.591	2.283	N340x8x30x41x9H	0.551	0.189	14.173	13.386	13.244	12.598	13.465	12.598	W340x8x30x41x8g	12.598	13.465	12.598

* for screw class 10.9

Details & Installation

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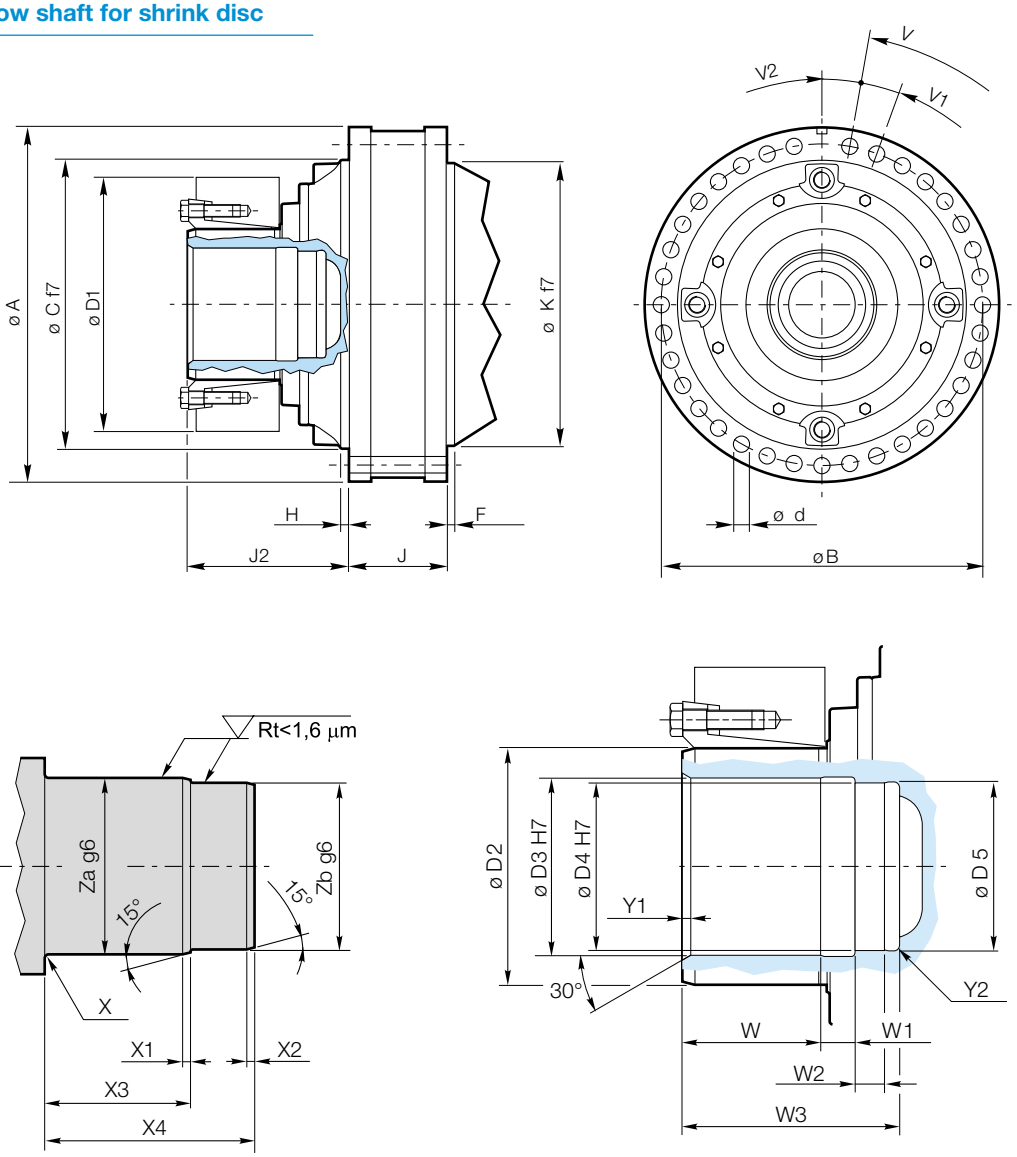
FS Hollow shaft for shrink disc



	A	B	C	d	D1	D2	D3	D4	D5	F	H	J	J2	K
S300	17.520	15.748	14.567	0.610	12.598	7.283	5.512	5.118	5.197	0.472	0.394	4.882	7.008	14.370
S400	17.520	15.748	14.567	0.610	12.598	7.283	5.512	5.118	5.197	0.472	0.394	4.882	8.189	14.370
S600	20.079	18.110	16.142	0.866	14.567	8.661	6.496	6.102	6.181	0.472	0.472	5.591	9.252	16.339
S850	22.244	20.079	18.110	1.024	15.945	9.449	7.087	6.693	6.772	0.394	0.433	6.142	10.118	17.717
S1200	25.000	22.638	20.472	1.024	18.110	11.024	8.661	8.268	8.346	0.591	0.472	6.890	12.402	20.472
S1800	27.953	25.591	23.425	1.024	19.094	11.811	9.449	9.055	9.134	0.630	0.551	7.283	12.677	23.425
S2500	31.890	28.937	26.181	1.299	22.441	13.386	10.236	9.843	9.921	0.591	0.472	7.677	14.094	26.181
S3500	34.843	31.890	29.134	1.299	23.228	14.173	11.417	11.024	11.102	0.551	0.551	9.252	14.488	29.134
S5000	38.583	35.433	31.890	1.535	26.772	16.535	13.386	12.992	13.071	0.551	0.551	10.433	17.244	31.890

	V	V1	V2	W	W1	W2	W3	X	X1	X2	X3	X4	Y1	Y2	Za	Zb
S300	n°35x10°	10°	10°	3.268	1.063	1.181	5.906	R 0.079 max	0.157	0.157	3.425	2.244	0.157	R 3.5	5.512	5.118
S400	n°35x10°	10°	10°	4.331	0.984	0.866	6.575	R 0.098 max	0.157	0.157	4.488	1.850	0.197	R 3.5	5.512	5.118
S600	n°28x12.857°	12.857°	6.428°	5.197	1.102	0.984	7.874	R 0.157 max	0.197	0.197	5.394	2.087	0.236	R 5	6.496	6.102
S850	n°28x12.857°	12.857°	6.428°	5.512	1.378	1.181	8.661	R 0.157 max	0.197	0.197	5.709	2.559	0.197	R 6	7.087	6.693
S1200	n°32x11.25°	11.25°	5.625°	7.047	1.575	1.260	10.591	R 0.157 max	0.197	0.197	7.244	2.835	0.315	R 10	8.661	8.268
S1800	n°32x11.25°	11.25°	5.625°	7.126	1.575	1.260	10.669	R 0.157 max	0.197	0.197	7.323	2.835	0.315	R 10	9.449	9.055
S2500	n°32x11.25°	11.25°	5.625°	8.307	1.772	1.457	12.244	R 0.157 max	0.197	0.197	8.504	3.228	0.315	R 10	10.236	9.843
S3500	n°36x10°	10°	5°	8.583	1.772	1.575	12.717	R 0.157 max	0.197	0.197	8.780	3.346	0.315	R 12	11.417	11.024
S5000	n°32x11.25°	11.25°	5.625°	10.236	1.772	1.575	14.370	R 0.157 max	0.197	0.197	10.433	3.346	0.315	R 12	13.386	12.992

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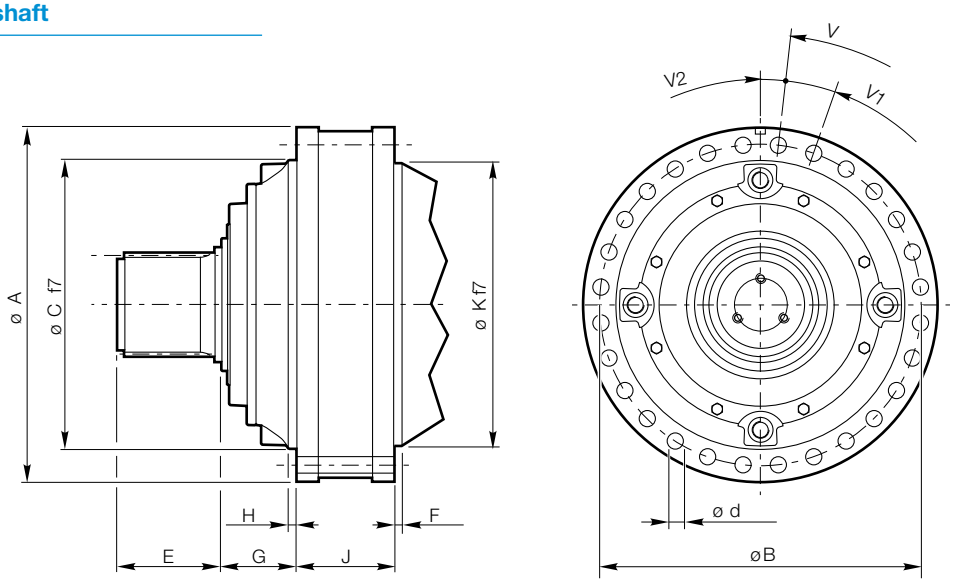
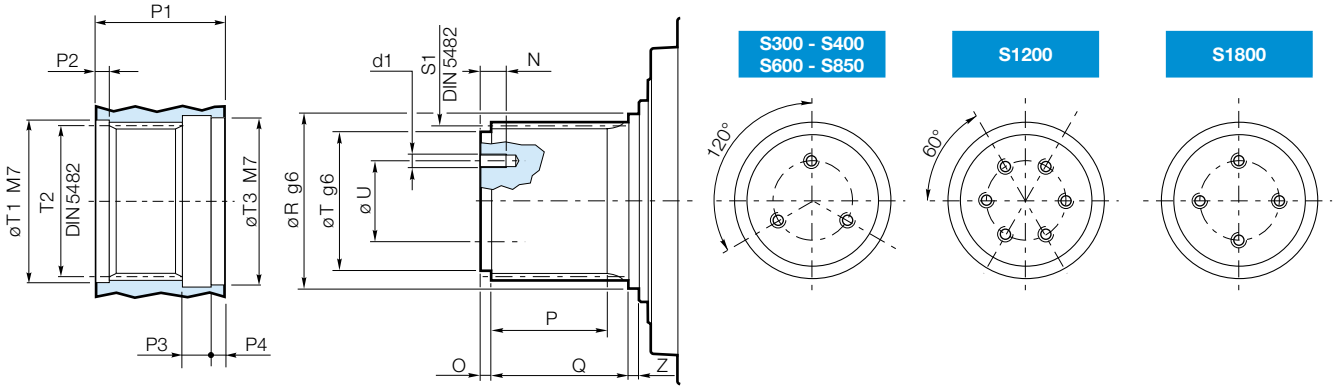
MP Splined shaft

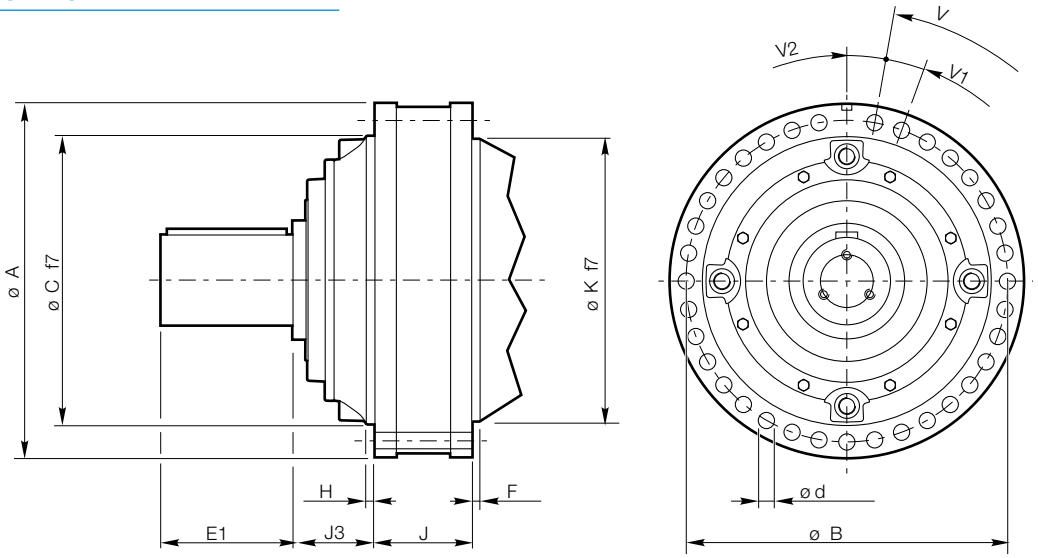


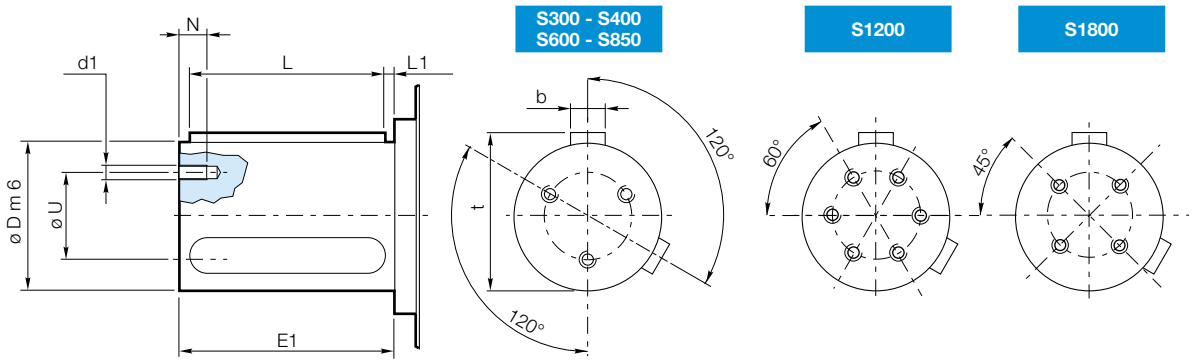


	A	B	C	d	d1	E	F	G	H	J	K	N	O	P
S300	445	400	370	15.5	M14	130	12	117	10	132	365	27	10	85
S400	445	400	370	15.5	M14	140	12	145	10	124	365	27	13	90
S600	510	460	410	22	M14	150	12	152	12	145	415	27	12	95
S850	565	510	460	26	M14	170	10	163	11	156	450	27	15	115
S1200	635	575	520	26	M16	200	12	188	12	175	520	30	20	130
S1800	710	650	595	26	M24	210	16	205	15	185	595	45	20	140

	P1	P2	P3	P4	Q	R	S1	T	T1	T2	T3	U	V	V1	V2	Z
S300	5.118	0.394	0.591	0.827	4.134	4.724	W120x3x30x38x8f	3.937	4.764	N120x3x9H	4.724	2.953	n°35x10°	10°	10°	0.591
S400	5.512	0.512	0.787	0.709	4.291	5.118	W130x3x30x42x8f	4.331	5.157	N130x3x9H	5.118	3.346	n°35x10°	10°	10°	0.709
S600	5.906	0.472	0.709	1.063	4.843	5.945	W150x5x30x28x8f	4.724	5.945	N150x5x9H	5.945	3.740	n°28x12.857°	12.857°	6.428°	0.591
S850	6.693	0.591	0.669	0.984	5.512	6.732	W170x5x30x32x8f	5.512	6.732	N170x5x9H	6.732	4.409	n°28x12.857°	12.857°	6.428°	0.591
S1200	7.874	0.827	0.787	1.181	7.087	7.874	W200x5x30x38x8f	6.693	7.874	N200x5x38x9H	7.874	5.512	n°32x11.25°	11.25°	5.625°	1.181
S1800	8.268	0.827	1.339	0.630	7.480	8.268	W220x5x30x42x8f	7.874	9.055	N220x5x30X42 9H	8.858	5.906	n°32x11.25°	11.25°	5.625°	0.591

MP1 Keyed cylindrical shaft



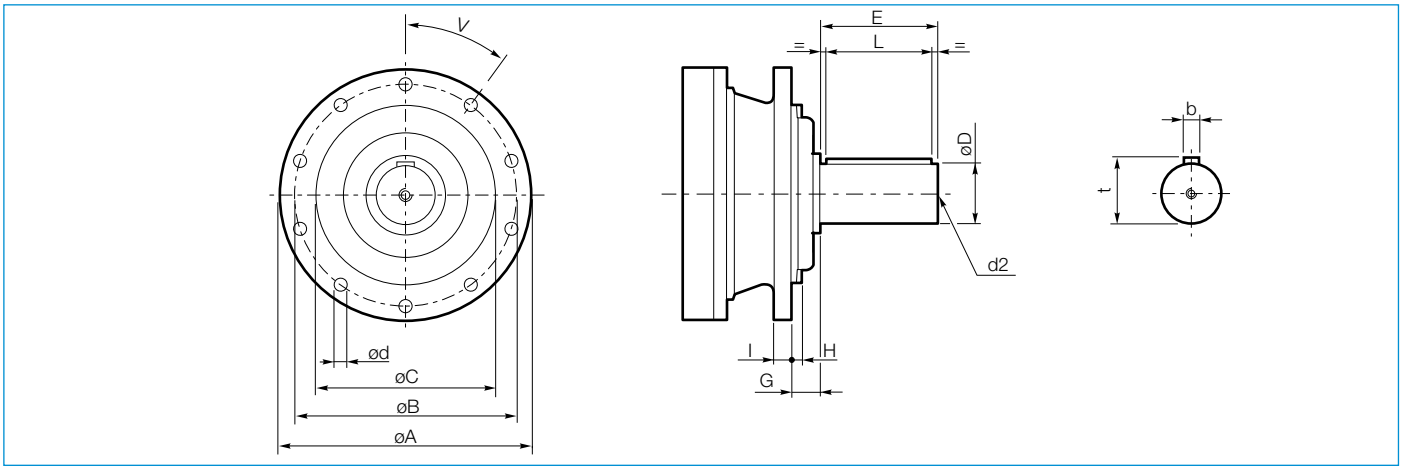


	A	B	b	C	D	d	d1	E1	F	H
S300	17.520	15.748	1.260	14.567	4.724	0.610	M14	8.268	0.472	0.394
S400	17.520	15.748	1.260	14.567	5.118	0.610	M14	8.661	0.472	0.394
S600	20.079	18.110	1.575	16.142	6.299	0.866	M14	9.449	0.472	0.472
S850	22.244	20.079	1.575	18.110	6.693	1.024	M14	9.449	0.394	0.433
S1200	25.000	22.638	1.772	20.472	7.874	1.024	M16	10.236	0.472	0.472
S1800	27.953	25.591	2.205	23.425	9.843	1.024	M24	12.992	0.630	0.591

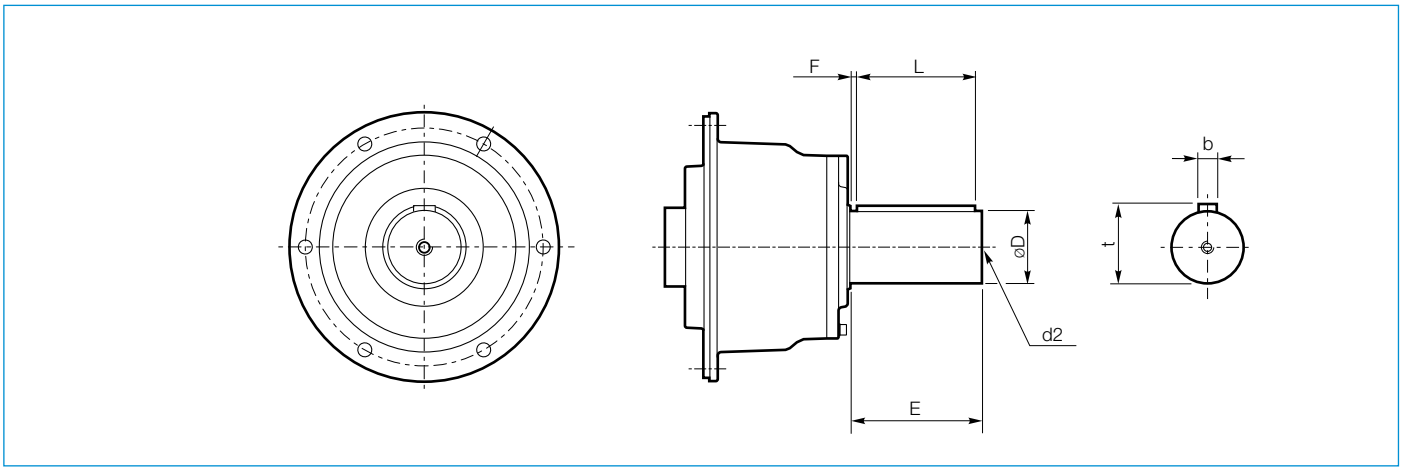
	J	J3	K	L	L1	N	t	U	V	V1	V2
S300	5.197	4.606	14.370	7.874	0.197	1.063	5.000	2.953	n°35x10°	10°	10°
S400	4.882	5.709	14.370	7.874	0.394	1.063	5.394	3.346	n°35x10°	10°	10°
S600	5.709	5.984	16.339	8.661	0.394	1.063	6.654	4.724	n°28x12.857°	12.857°	6.428°
S850	6.142	6.417	17.717	8.661	0.394	1.063	7.047	4.921	n°28x12.857°	12.857°	6.428°
S1200	6.890	7.402	20.472	9.843	0.197	1.181	8.268	5.512	n°32x11.25°	11.25°	5.625°
S1800	7.283	8.071	23.425	12.205	0.394	1.772	10.315	5.906	n°32x11.25°	11.25°	5.625°

Integral input version - inline version

Input shafts described below are used when the driving motor, which is usually electric, is connected to the input shaft by flexible coupling or belts and pulleys.
Normal mounting position is with horizontal axis; for different positions the lubrication solution must be adjusted: please consult the Dana area contact person.
Max working speed is generally 1800 min^{-1}.
The input shafts ISL are suitable for connection with elastic coupling.These types are suitable for using on specific gears types, as shown in the dimensional table of each gear size.



	A	B	C f7	D m6	E	G	H	I	L	b	d	d2 DIN332	t	V
S-45CR1	8.661	7.677	5.906	2.559	4.134	0.591	0.197	0.630	3.543	0.709	0.551	M20x42	2.717	n°10x36°
S-46C1	10.709	9.646	6.890	2.559	4.134	1.535	0.394	0.709	3.543	0.709	0.551	M20x42	2.717	n°10x36°
S-46C2	10.709	9.646	6.890	2.500	4.252	1.535	0.394	0.709	4.000	0.625	0.551	3/4 unc x 42	2.773	n°10x36°
S-65CR1	11.024	9.843	7.874	3.150	5.118	1.575	0.571	0.787	4.331	0.866	0.630	M20x42	3.346	n°10x36°
S-90CR1	12.795	11.614	9.055	3.543	6.693	1.417	0.197	0.984	6.299	0.984	0.709	M24x50	3.740	n°12x30°

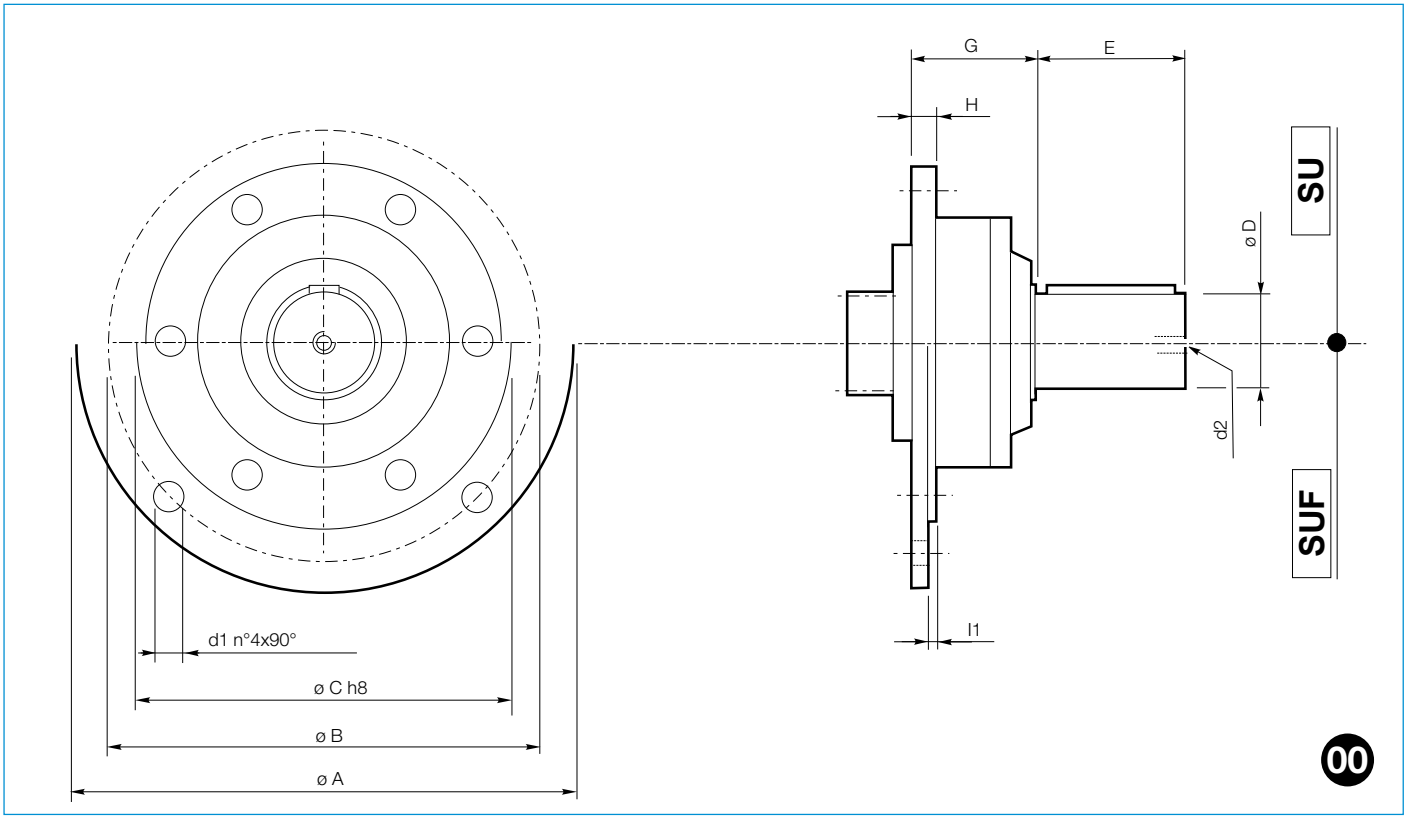


	D m6	E	t	b	F	L	d2 DIN332
ISL150	3.543	5.118	3.740	0.984	0.394	4.331	M24x1.969
ISL250							
ISL300							

	D m6	E	t	b	F	L	d2 DIN332
IS300	3.937	8.268	4.173	1.102	0.394	7.087	M24x1.969
IS600	4.331	8.268	4.567	1.102	0.394	7.087	M24x1.969
IS850	4.331	8.268	4.567	1.102	0.394	7.087	M24x1.969

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.



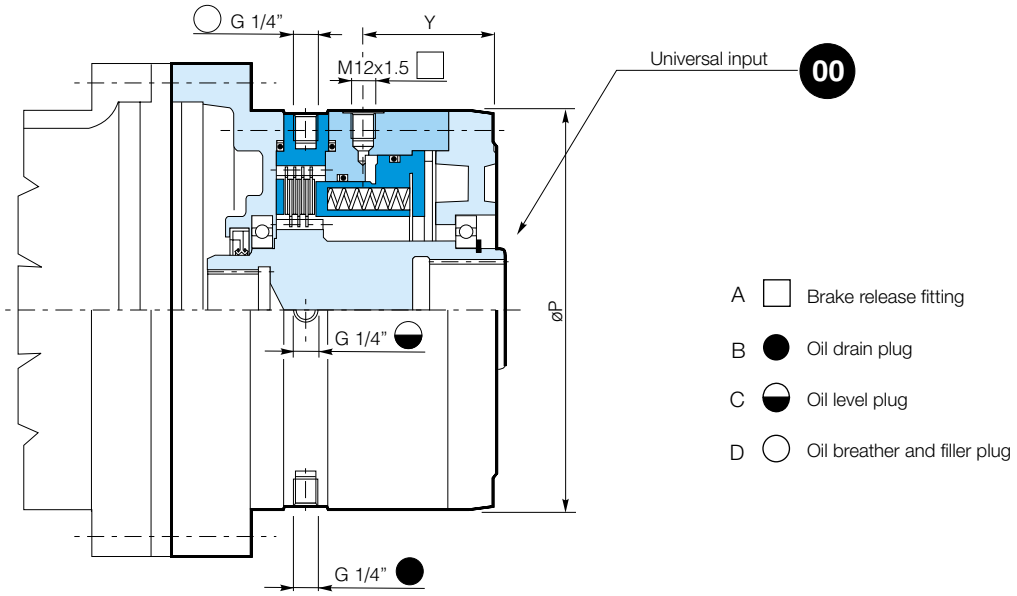
	A	B	C	D	d1	d2	E	G	H	l1	Code
SU1	–	–	–	1.102	–	M10x0.866	1.969	2.362	0.472	–	C1129800420
SU2	–	–	–	1.575	–	M10x0.866	2.283	2.362	0.472	–	C1129800380
SU3	–	–	–	1.890	–	M10x0.984	3.228	2.362	0.472	–	C1129800910
SUF1	9.843	8.465	7.087	1.102	0.512	M10x0.866	1.969	2.362	0.472	0.118	C1131900420
SUF2	9.843	8.465	7.087	1.575	0.512	M10x0.866	2.283	2.362	0.472	0.118	C1131900380
SUF3	9.843	8.465	7.087	1.890	0.512	M10x0.984	3.228	2.362	0.472	0.118	C1131900910

Oil-bath multi-disc brakes

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

	T_B [ftlb]	P [psi]	P_{max} [psi]	Vo [US Gal] Mounting position horizontal	Vo [US Gal] Mounting position vertical	Va [US Gal]
FL250.4C	133	203	4568	0.0792	0.1584	3.96
FL250.6C	205	203	4568	0.0792	0.1584	3.96
FL350.6C	308	290	4568	0.0792	0.1584	3.96
FL350.8C	421	290	4568	0.0792	0.1584	3.96
FL450.6C	398	377	4568	0.0792	0.1584	3.96
FL450.8C	544	377	4568	0.0792	0.1584	3.96
FL620.14C	201	377	3046	0.0528	0.1056	3.96
FL635.4C	92	218	4351	0.0528	0.1056	3.96
FL.635.6C	139	218	4351	0.0528	0.1056	3.96
FL635.10C	232	218	4351	0.0528	0.1056	3.96
FL635.12C	278	218	4351	0.0528	0.1056	3.96
FL650.10C	473	290	4568	0.132	0.264	3.96
FL650.12C	584	290	4568	0.132	0.264	3.96
FL650.14C	700	290	4568	0.132	0.264	3.96
FL750.10C	615	377	4568	0.132	0.264	3.96
FL750.12C	757	377	4568	0	0.264	3.96
FL750.14C	906	377	4568	0.132	0.264	3.96
FL960.12C	1127	319	4568	0.3168	0.6336	5.808
FL960.14C	1315	319	4568	0.3168	0.6336	5.808
FL960.16C	1503	319	4568	0.3168	0.6336	5.808
FL960.18C	1691	319	4568	0.3168	0.6336	5.808

T_B: Average static brake torque
P: Brake release pressure
Pmax: Max. pressure
Vo: Oil volume
Va: Oil volume for brake release control. It refers with new discs.



	P [in]	Y [in]	PLUGS A	PLUGS B	PLUGS C	PLUGS D	Weight [lb]
FL250	7.677	2.638	M12x1.5	R 1/4"	R 1/4"	R 1/4"	53
FL350	7.677	2.638					53
FL450	7.677	2.638					57
FL650	7.677	2.638					79
FL750	7.677	2.638					82
FL960	8.858	2.854					93

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

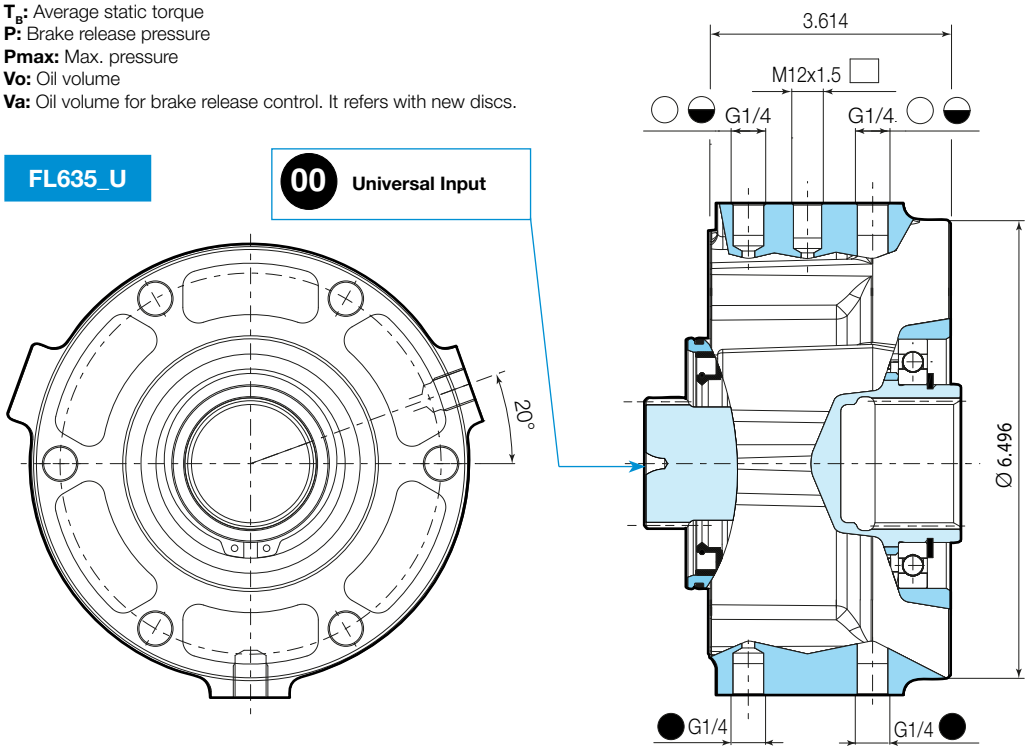
Universal multi-disc brakes

	T_B [ftlb]	P [psi]	P_{max} [psi]	Vo [US Gal] Mounting position horizontal	Vo [US Gal] Mounting position vertical	Va [US Gal]	Weight [lb]	Code
FL635.U	278	197	4568	0.0264	0.0528	2.64	20	C1109200160
FL620.U	200	361	3046	0.0264	0.0528	2.64	18	C1103704120 (shaft FE ϕ 0.984)

T_B: Average static torque
P: Brake release pressure
Pmax: Max. pressure
Vo: Oil volume
Va: Oil volume for brake release control. It refers with new discs.

FL635_U

00 Universal Input

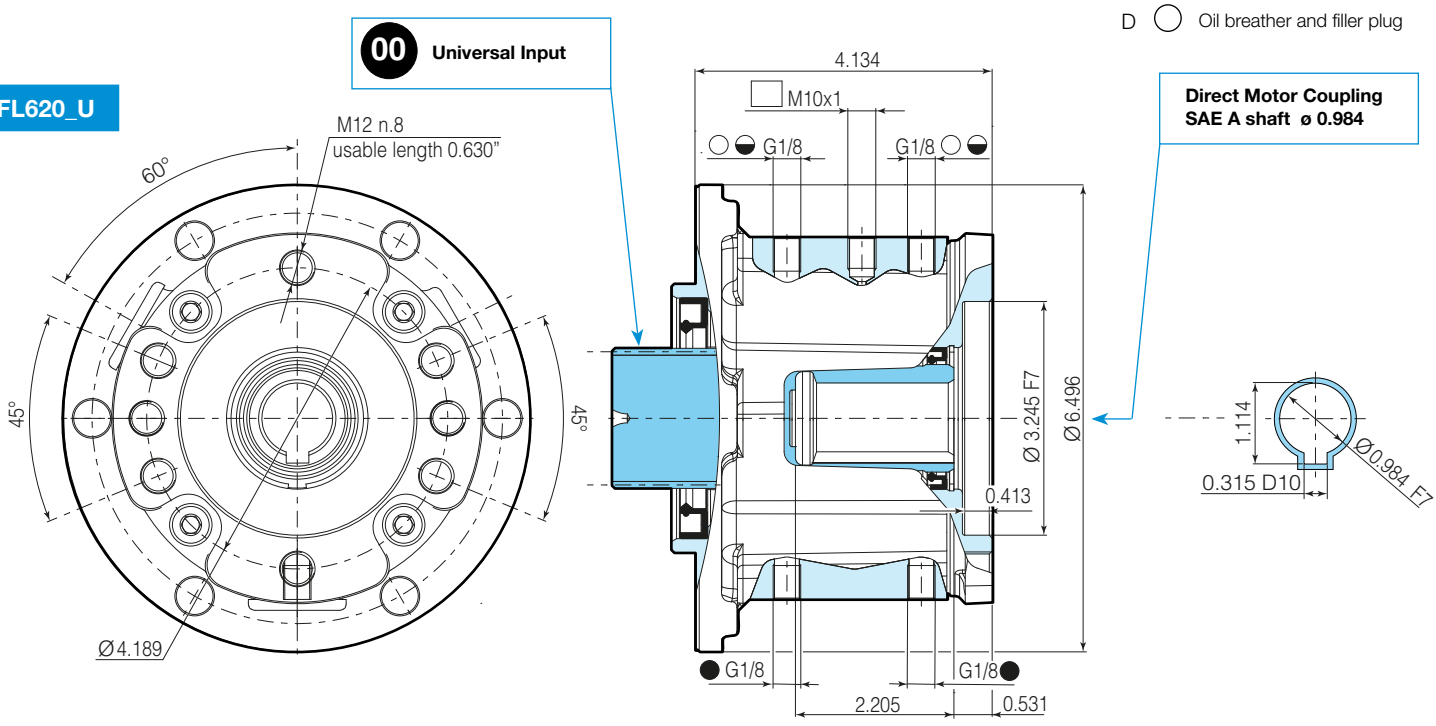


00 Universal Input

A Brake release fitting
B Oil drain plug
C Oil level plug
D Oil breather and filler plug

FL620_U

00 Universal Input

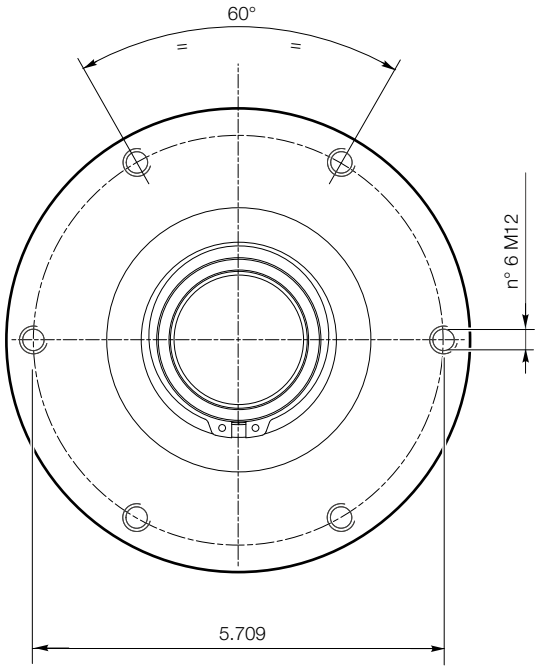


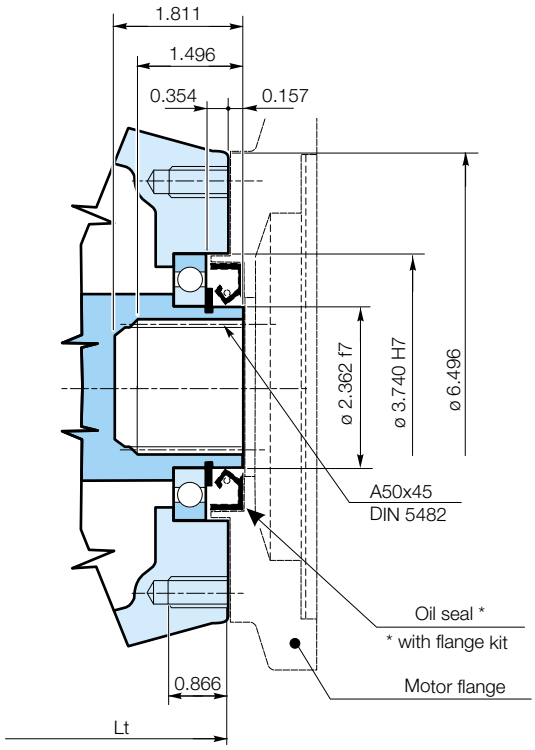
Direct Motor Coupling
SAE A shaft ø 0.984

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.

00





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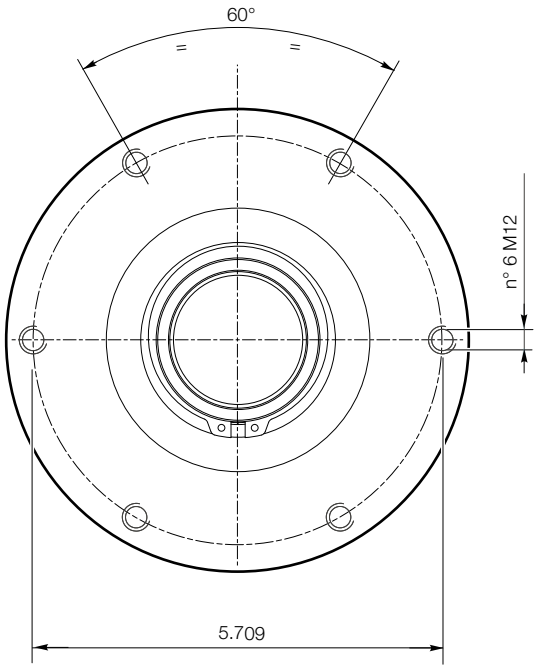
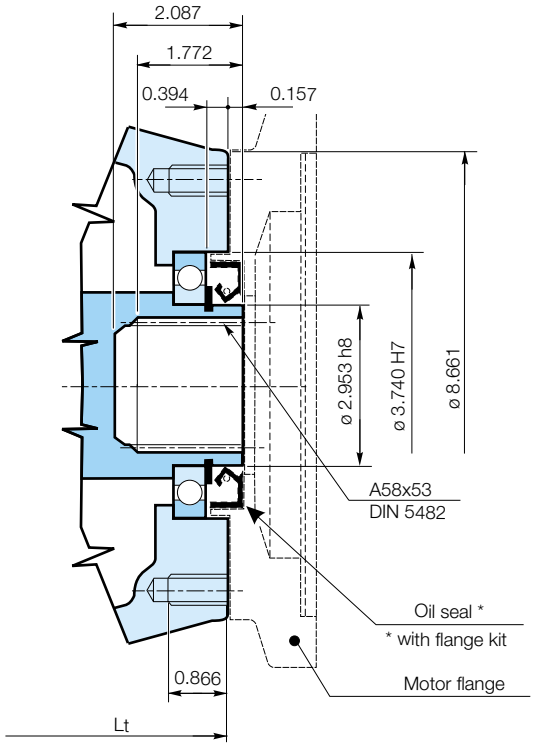
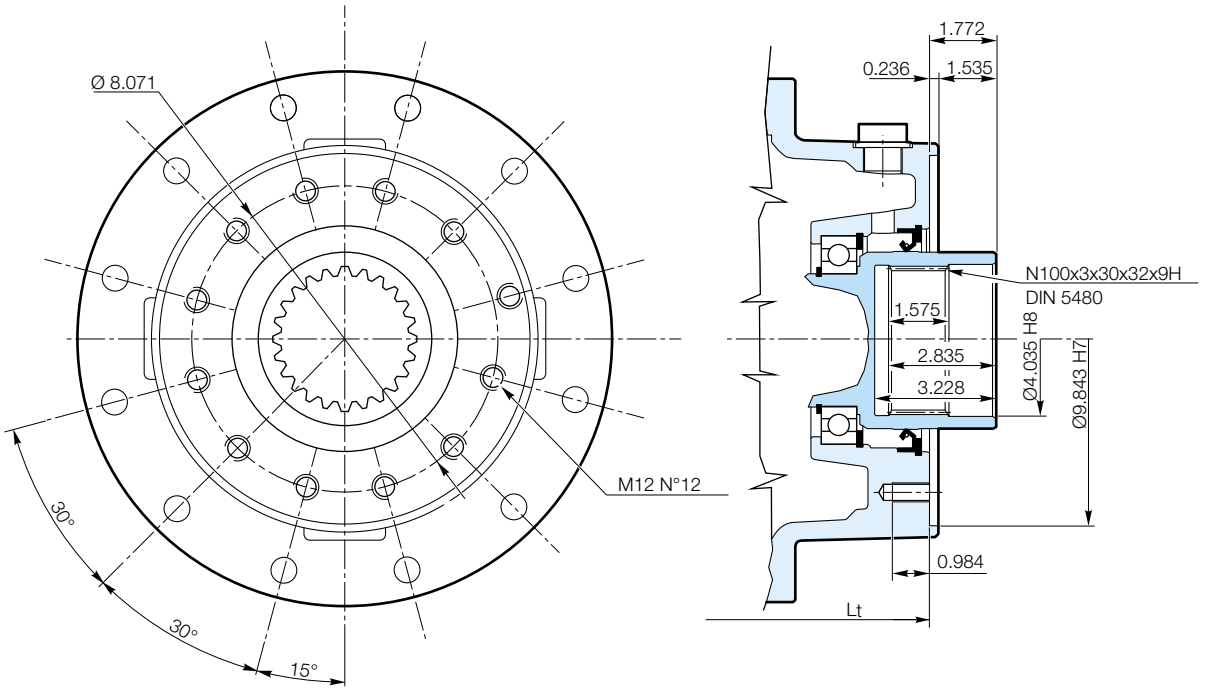




Universal inputs

S00



Universal protection cover

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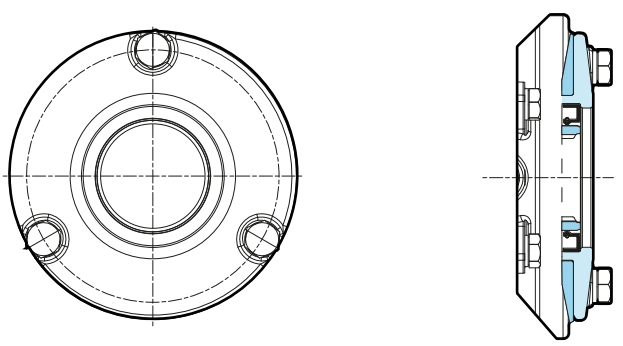
00 Z27



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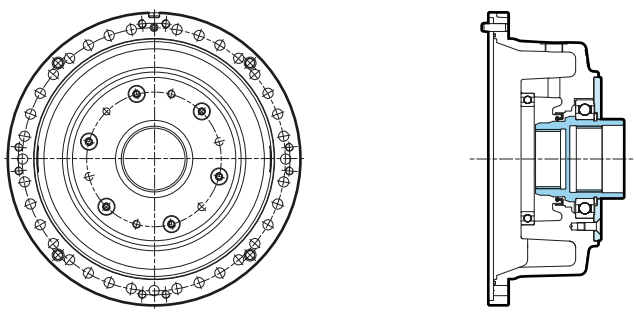
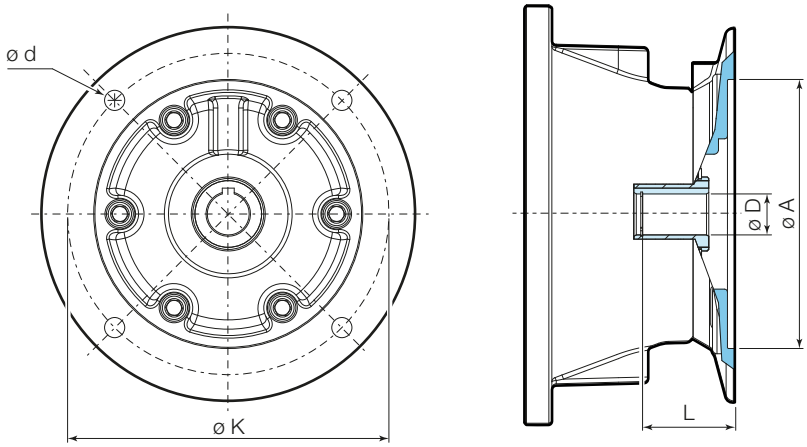


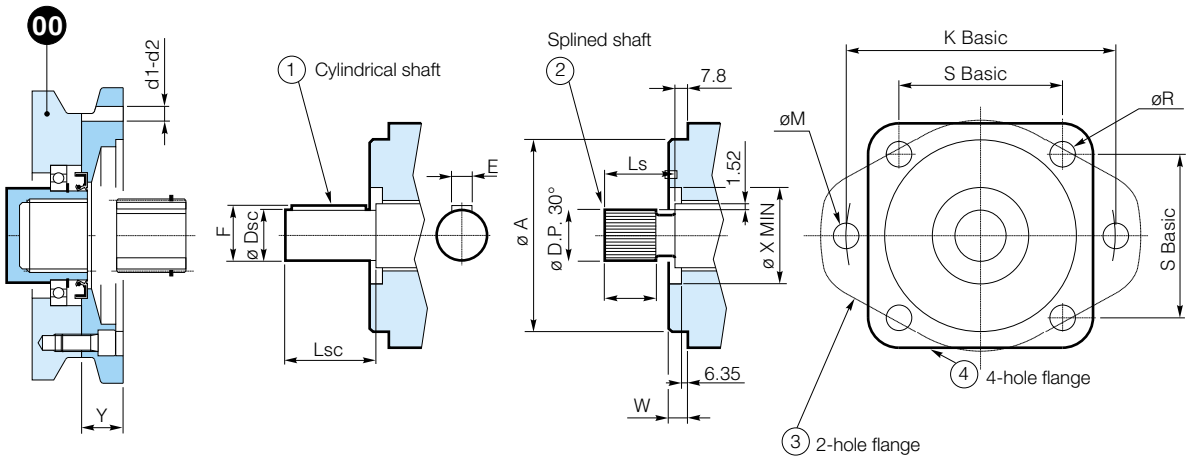
Details & Installation

Motor adaptors



IEC B5 Motor size	ØD [in]	L [in]	ØA [in]	ØK [in]	nr. holes x Ød [in]
63	0.433	0.906	3.740	4.528	4 x 0.354
71	0.551	1.181	4.331	5.118	4 x M8
80	0.748	1.575	5.118	6.496	4 x M10
90	0.945	1.969	5.118	6.496	4 x 0.433
100-112	1.102	2.362	7.087	8.465	4 x 0.551
132	1.496	3.150	9.055	10.433	4 x 0.531
160	1.654	4.331	9.843	11.811	4 x 0.709
180	1.890	4.331	9.843	11.811	4 x 0.709
200	2.165	4.331	11.811	13.780	12 x 0.709
225	2.362	5.512	13.780	15.748	12 x 0.709
250	2.559	5.512	17.717	19.685	4 x 0.709
280	2.953	5.512	17.717	19.685	4 x 0.709

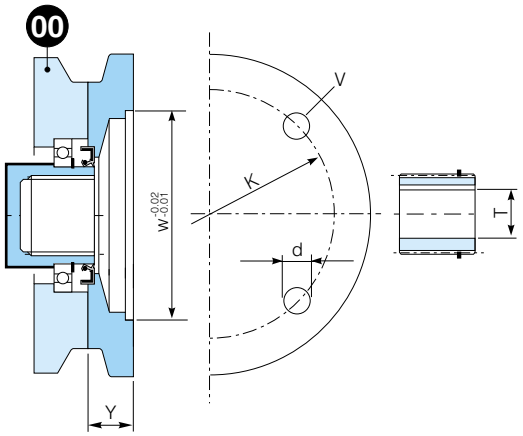
SAE J 744C motor flanges



SAE	Ø A [in]	W [in]	Ø X MIN. [in]	K basic [in]	Ø M [in]	S basic [in]	Ø R [in]	Splined shaft				Cylindrical shaft			
								No. of teeth	30° D.P.	LS [in]	LA MIN. [in]	Ø DSC [in]	LSC [in]	F [in]	E [in]
A	3.250	0.250	-	4.189	0.512	2.961	-	9	16/32	0.945	0.299	0.625	0.945	0.693	0.157
B	4.000	0.380	2.000	5.748	0.563	3.535	0.563	13	16/32	1.311	0.402	0.875	1.311	0.982	0.250
B-B	4.000	0.380	2.000	5.748	0.563	3.535	0.563	15	16/32	1.500	0.500	1.000	1.500	1.106	0.250
C	5.000	0.500	2.500	7.126	0.689	4.508	0.563	14	12/24	1.874	0.598	1.250	1.874	1.386	0.307
C-C	5.000	0.500	2.500	7.126	0.689	4.508	0.563	17	12/24	2.126	0.701	1.500	2.126	1.663	0.375
D	6.000	0.500	2.756	9.000	0.811	6.362	0.811	13	8/16	2.625	0.799	1.750	2.625	1.941	0.437
E	6.500	0.625	2.756	12.500	1.063	8.839	0.811	13	8/16	2.625	0.799	1.750	2.625	1.941	0.437

SAE	Y [in]	No. of Bolts	Order code					
			Flange with d1			Flange with d2		
			d1 Metric	Splined shaft	Cylindrical shaft	d2 [in]	Splined shaft	Cylindrical shaft
A	0.984	2 – 4	M10 T.U. 15	61125502680	61125500900	3/8 0.59 Min	61147702680	61147700900
B	0.984	2 – 4	M12 T.U. 25	61125700580	61125700460	1/2 - 13 1.00 Min	61143900580	61143900460
B-B	0.984	2 – 4	M12 T.U. 25	61125701940	61125700500	1/2 - 13 1.00 Min	61143901940	61143900460
C	1.102	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	3.110	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	3.661	2 – 4	M18 T.U. 20	61103501930	61103501720	3/4 - 10 1.00 Min	61147801930	61147801720
E	3.661	2 – 4	M 22 T.U. 30	61118201930	61118201720	Ø 0.875 1.11 Min	61118201930	61118201720

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	8.500	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	8.500	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 AND STORAGE

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 °F to +30 °F
- 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 ftlb 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 recoinend 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 recoinend:

- 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.

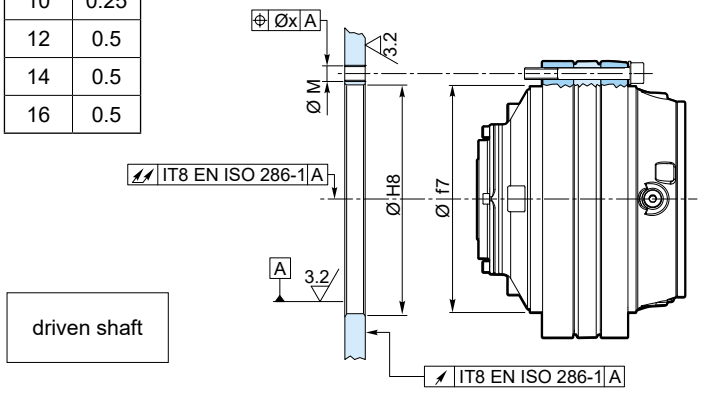
Shaft mounting

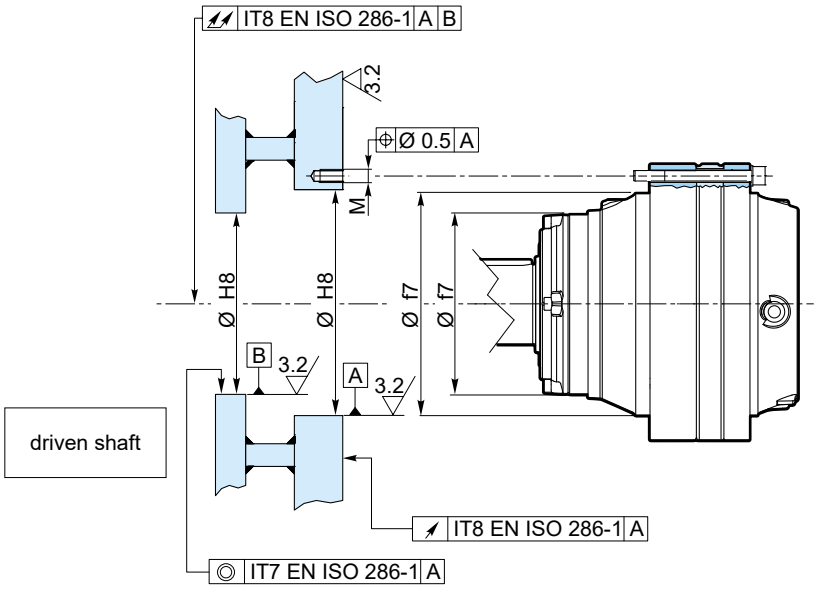
Before mounting, carefully clean the mating surfaces and lubricate them with suitable anti-seizure products (except for versions with FS hollow shafts - see the "Shrink disc" section).
Installation and removal must be carried out with suitable equipment, such as pullers and puller screws, using the threaded 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 support mounting

The mating surfaces must be machined with a degree of finish that ensures the required coefficient of friction (approx. Ra 3.2 in). 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 $0.7xT_{2MAX}$, 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.

M	x
10	0.25
12	0.5
14	0.5
16	0.5





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.

Shrink discs are not supplied pre-installed on gearboxes and must be ordered separately. They are designed to be mounted on FS output.
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

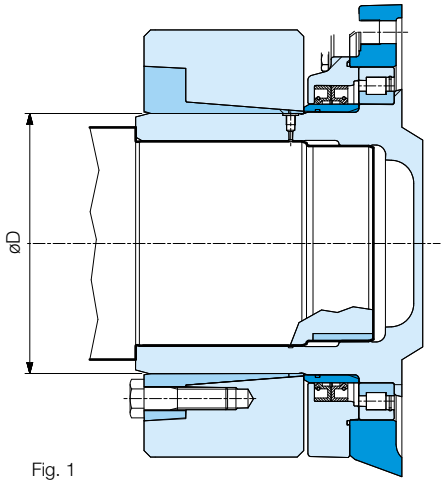


Fig. 1

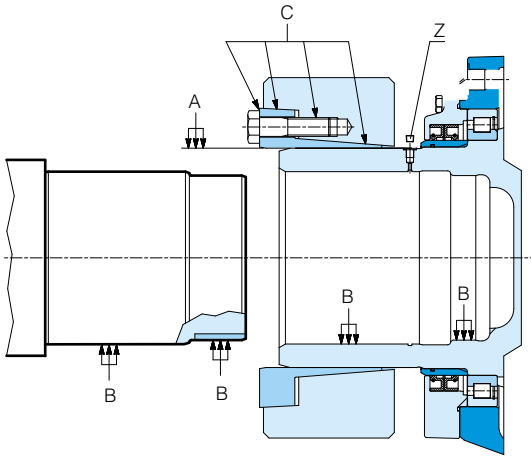


Fig. 2

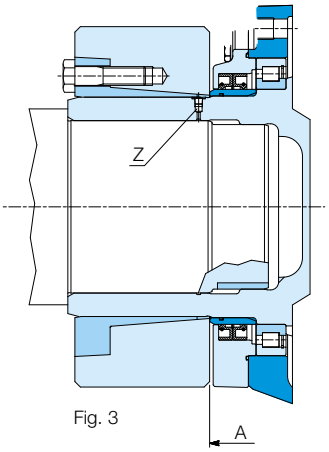


Fig. 3

	T_N [ftlb]	D [in]	T_{GN} [ftlb]	Coupling Type	Order code
S300	7644	7.283	16232	3009-185X320	448J43GT800
S400	10791	7.283	21583	3208-185X320	448J43GT900
S600	14388	8.661	31250	3208-220X370	448J43GU000
S850	20234	9.449	42041	3208-240X405	448J43GU100
S1200	29901	11.024	79811	3208-280X460	448J43GU200
S1800	42716	11.811	89254	3208-300X485	448J43GU300
S2500	58453	13.386	135791	3208-340X570	448J43GU400
S3500	83183	14.173	172212	3208-360X590	448J43GU500
S5000	114658	16.535	261466	3208-420X680	448J43G0011

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.

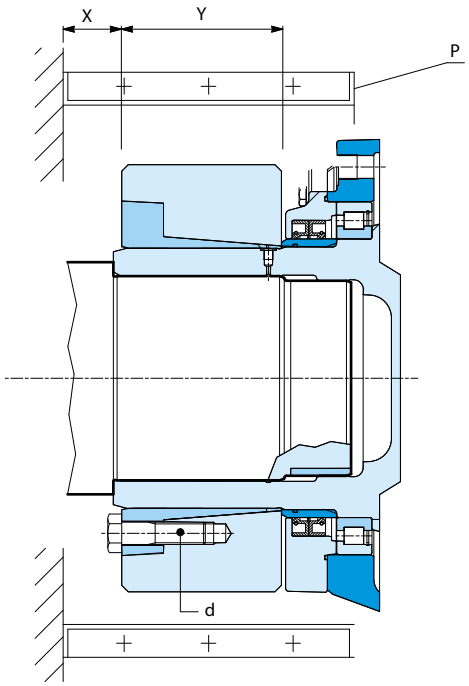
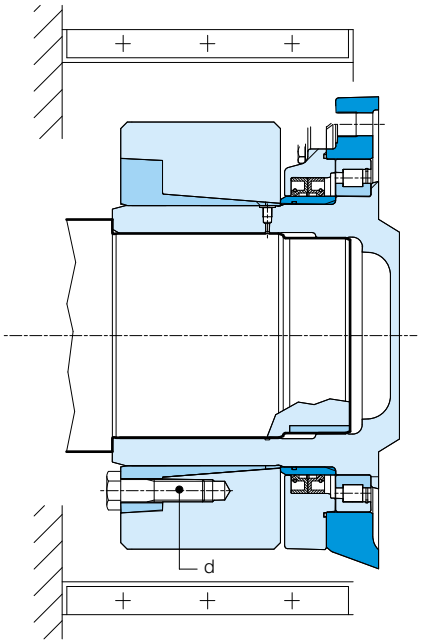


Fig. 4

	Coupling Type	Y			X [in] for type of wrench		
			d	T [ftlb]			
S300	3009-185x320	3.346	M16	65	1.969	3.937	2.283
S400	3208-185x320	4.409	M20	110	2.165	4.528	2.283
S600	3208-220x370	5.276	M20	110	2.165	4.528	2.283
S850	3208-240x405	5.669	M20	110	2.165	4.528	2.283
S1200	3208-280x460	6.772	M24	189	2.559	4.724	2.756
S1800	3208-300x485	6.929	M24	189	2.559	4.724	2.756
S2500	3208-340x570	8.110	M27	281	–	4.921	3.346
S3500	3208-360x590	8.268	M27	281	–	4.921	3.346
S5000	3208-420x680	9.685	M27	281	–	4.921	3.346

Disassembly



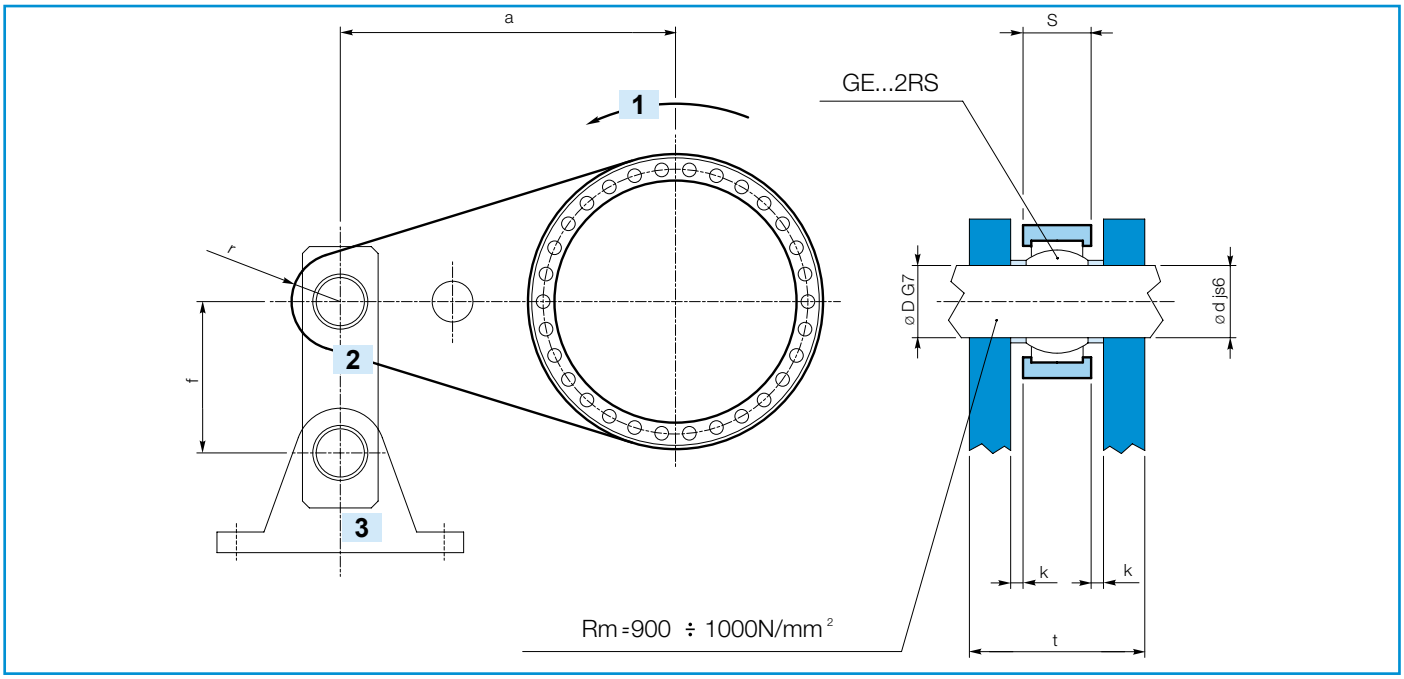
1) Loosen the screws “d” in several passes and in sequence so that the coupling can move on the hub.

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 [in]	s [in]	r min [in]	f min [in]	GE...2RS	D / d [in]	k [in]	t min [in]
S300	23.622	1.181	1.772	5.906	1.378	1.378	0.157	2.756
S400	27.559	1.260	1.969	6.299	1.575	1.575	0.157	2.835
S600	31.496	1.260	1.969	7.087	1.575	1.575	0.157	2.835
S850	39.370	1.378	2.165	7.874	1.772	1.772	0.157	3.189
S1200	39.370	1.575	2.559	9.055	1.969	1.969	0.197	3.543
S1800	47.244	1.969	2.953	9.843	2.362	2.362	0.197	4.094
S2500	55.118	2.165	3.346	11.811	2.756	2.756	0.197	4.528
S3500	62.992	2.362	3.740	13.780	3.150	3.150	0.197	4.724
S5000	78.740	2.756	4.134	14.961	3.543	3.543	0.295	5.315

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.
7. The drawing is only by way of example, since the correct configuration depends on the gear unit rotation direction. In fact, during work it is advisable for the connecting rod to be in traction and not compression. Therefore mounting on the opposite side with respect to that represented may be convenient. If necessary, due to specific encumbrance the connecting rod can be assembled upwards.
8. When carrying out an assembly by means of friction coupling and torque arm, remember that the weights of the gear unit, the torque arm and all the elements connected to them, bring about loads and tipping moments that are supported by the output stage planetary carrier bearings. Therefore the relative position of all the masses involved in transmitting power must be appraised in the design phase, in order to minimize the resultant value on the bearings. Likewise, the weight of the components connected to the gear unit must be limited, carefully appraising the hicknesses of the structures actually necessary for supporting the stresses, and decentralizing all the elements not involved in power transmission. An incorrect design can shorten the life of the bearing and gears due to possible excessive elastic deformation of the stages and determine the possibility of slipping and seizing of the friction coupling.

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 °F, but decreases rapidly as the temperature increases. If the gearbox operating temperature is from 50 °F to 70 °F, 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**	
	122° F	**158° F**
$n_2 \geq 20$	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

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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 CIbus 68	Mobil SHC Cibus 150	Mobil SHC CIbus 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

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 ($n_2 \leq 5$ rpm), it is advisable to fix the level at a value above 50–100 in. 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 ($n_2 \leq 1$ 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.

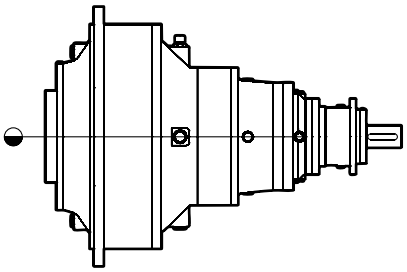


Fig. A

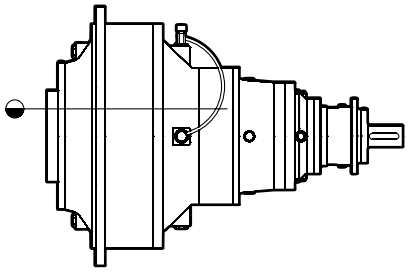


Fig. B

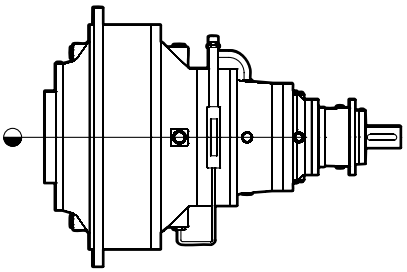
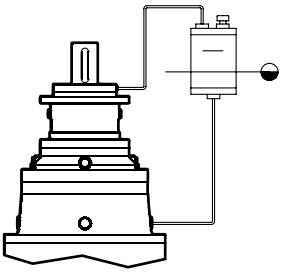


Fig. C

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:

$$V_e = V_t \times \Delta T / 1800 \quad [in^3]$$

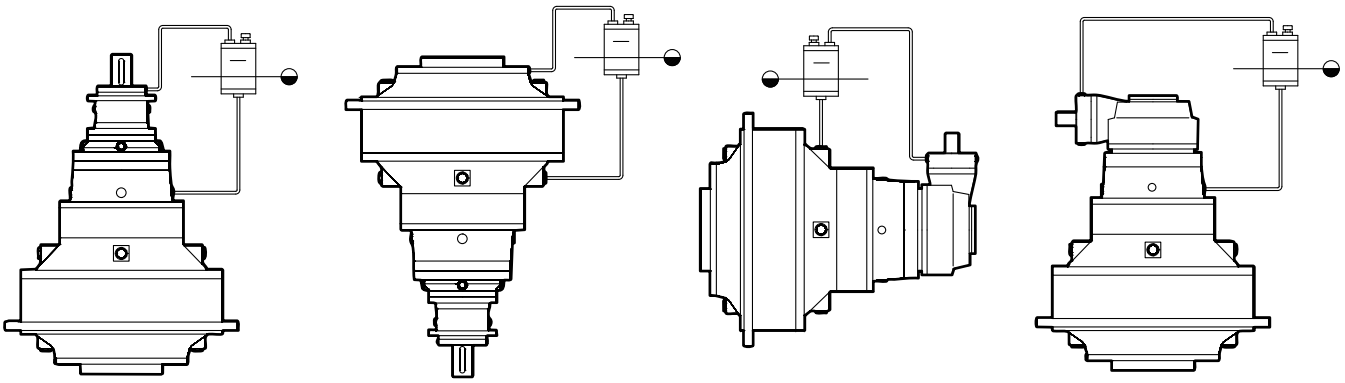
V_t = total oil volume
ΔT = difference between operating temperature and ambient temperature

The capacity (Vs) of the expansion vessel is:

$$V_S = 2 \times V_e \quad [in^3]$$

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 recoinend 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 4.30 ft/s with just one hole;

Delivery:

- deliver to several holes when the oil velocity v_o is higher than 6.89 ft/s with just one hole.

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

$$v = (Q \times 0.405) / d^2 \quad [ft/s]$$

where:

v = oil speed in [ft/s]
Q = flow rate in [US gal/min]
d = inside diameter of the union in [in]

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

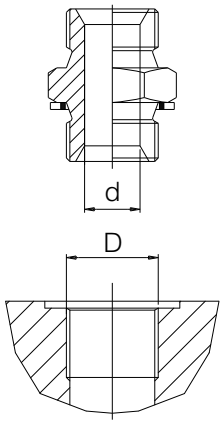


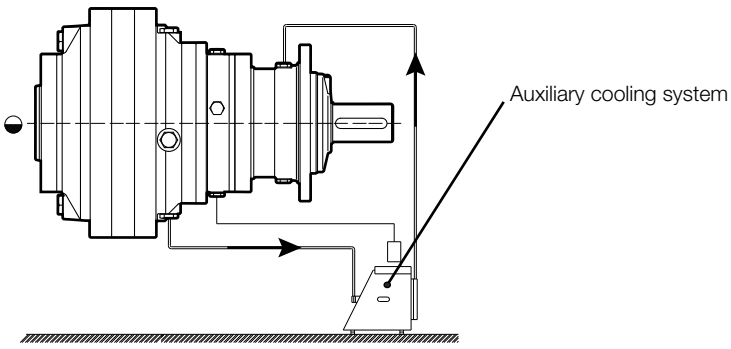
Fig. 15

Oil speed table v [m/s]				
Hole diameter [in]		Pump flow Q [US Gal/min]		
D (nom.)	**d**	**6**	**12**	**20**
G 1/4”	0.276	8.495	17.023	28.208
G 3/8”	0.394	4.166	8.331	13.907
G 1/2”	0.472	2.952	5.773	9.643
G 3/4”	0.630	1.640	3.280	5.412
G 1”	0.866	0.853	1.706	2.854
G 1 1/4”	1.181	0.459	0.918	1.542

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.

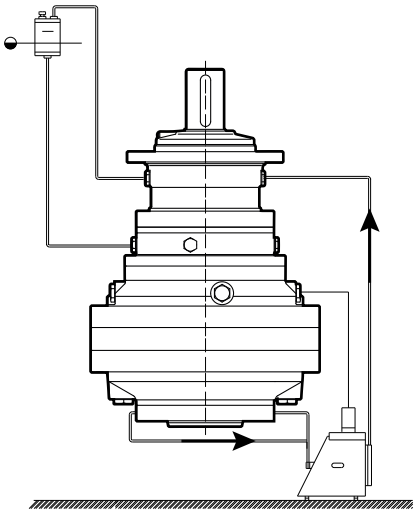


Fig. D

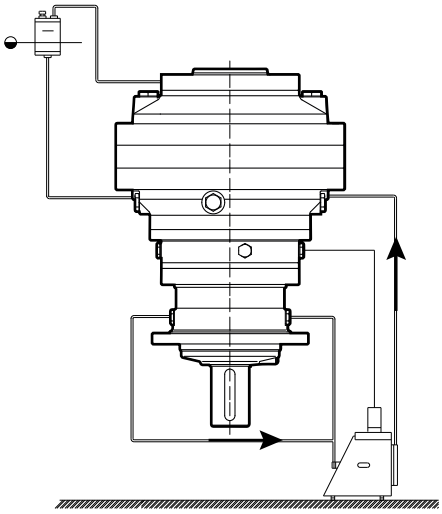


Fig. E

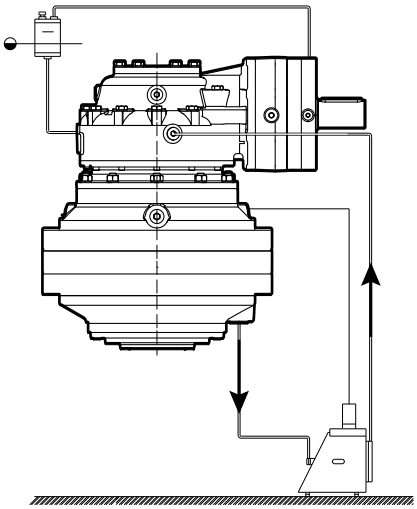


Fig. F

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 recoinended:

Oil temperature [°F]	**Oil change interval** [h]	
	Synthetic Oil	**Mineral Oil**
≤ 149	10'000	4'000
149 ÷ 176	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°F) 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.

Lubricant quantity [US Gal]

The quantities of oil indicated are approximate and to be used for supply purposes.
The exact quantity of oil to be introduced into the reducer is defined by its level.

		B3 [US Gal]	V5 V6 [US Gal]	B3A B3C [US Gal]	B3B [US Gal]	B3D [US Gal]	V5B V6B [US Gal]	Weight [lb]
SL 3001	FE	1.5	3.0					
	MP	1.6	3.2					468.6
SL 3002	FE	1.9	3.8					
	MP	2.1	4.2					611.6
SL 3003	FE	2.0	4.0					
	MP	2.1	4.2					633.6
SL 3004	FE	2.2	4.4					
	MP	2.3	4.6					662.2
SC 3002	FE							
	MP							765.6
SC 3003	FE			2.4	2.4	2.4	4.7	
	MP			2.6	2.6	2.6	5.2	721.6
SC 3004	FS			2.4	2.4	2.4	4.8	
	MP			2.6	2.6	2.6	5.3	737.0
SL 4001	FE	1.5	3.1					
	MP	1.6	3.3					499.4
SL 4002	FE	2.0	4.0					
	MP	2.1	4.2					638.0
SL 4003	FE	2.1	4.2					
	MP	2.3	4.5					671.0
SL 4004	FE	2.3	4.6					
	MP	2.4	4.8					697.4
SC 4002	FE							
	MP							805.2
SC 4003	FE			2.8	2.8	2.8	5.6	
	MP			3.0	3.0	3.0	5.9	730.4
SC 4004	FE			3.0	3.0	3.0	6.0	
	MP			3.2	3.2	3.2	6.3	752.4
SL 6001	FE							
	MP							
SL 6002	FS							
	MP							930.6
SL 6003	FE	3.1	6.2					
	MP	2.9	5.8					959.2
SL 6004	FS	3.3	6.6					
	MP	3.1	6.2					976.8
SC 6003	FS			5.0	5.0	5.0	1	
	MP							1240.8
SC 6004	FE			3.8	3.8	3.8	7.7	
	MP			4.1	4.1	4.1	8.2	1091.2
SL 8501	FE							
	MP							
SL 8502	FS	4.2	8.3					
	MP	4.5	8.9					1163.8
SL 8503	FE	4.3	8.6					
	MP	4.6	9.1					1357.4
SL 8504	FE	4.5	9.0					
	MP	5.0	1					1357.4
SC 8503	FS			6.3	6.3	6.3	12.7	
	MP			6.6	6.6	6.6	13.2	1474.0
SC 8504	FE							
	MP			5.8	5.8	5.8	11.6	1456.4

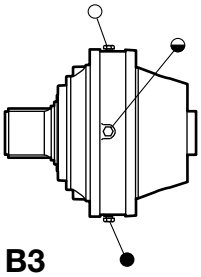
		B3 [US Gal]	V5 V6 [US Gal]	B3A B3C [US Gal]	B3B [US Gal]	B3D [US Gal]	V5B V6B [US Gal]	Weight [lb]
SL 12001								
SL 12002	FE	5.3	10.6					1465.2
SL 12003	FE	5.8	11.6					1599.4
SL 12004	FE	6.1	12.2					1645.6
SC 12003	FE			7.1	7.1	7.1	14.3	1819.4
SC 12004	FE			4.8	4.8	4.8	9.5	1841.4
SL 18001								
SL 18002								
SL 18003	FE	7.7	15.3					2017.4
SL 18004	FE	7.9	15.9					2079.0
SC 18004	FS			10.3	10.3	10.3	20.6	231
SL 25001								
SL 25002								
SL 25003	FE	10.3	20.6					3115.2
SL 25004	FE	10.8	21.7					3209.8
SC 25004	FS			12.9	12.9	12.9	25.9	3511.2
SL 35001								
SL 35002								
SL 35003	FS	13.5	26.9					4171.2
SL 35004	FE	14.0	28.0					4419.8
SC 35004	FE			14.3	14.3	14.3	28.5	4642.0
SL 50003	FE	16.1	32.1					5029.2
SL 50004	FE	18.8	37.5					5112.8
SC 50005	FE			21.4	21.4	21.4	43.1	5425.2
SL 75003	FE	29.1	58.1					9790
	FS	29.1	58.1					9790
SL 75004	FE	30.4	60.8					10010
	FS	30.4	60.8					10010
SC 75005	FE	31.2	62.3					10230
	FS	31.2	62.3					10230

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

Click *i* button to return to main index

Mounting positions and plugs

SL



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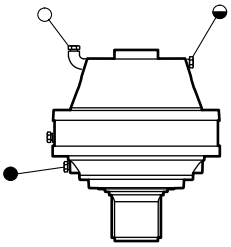

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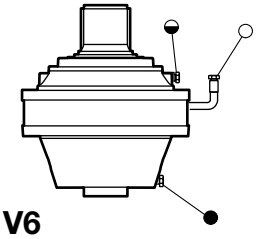
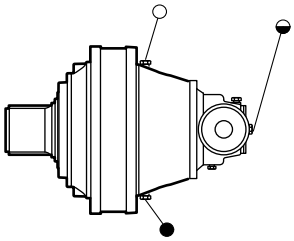


V6

SC



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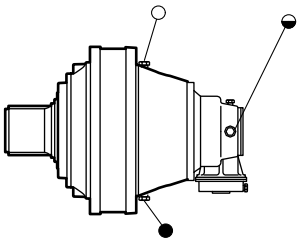

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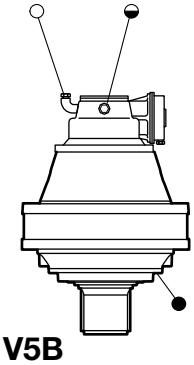

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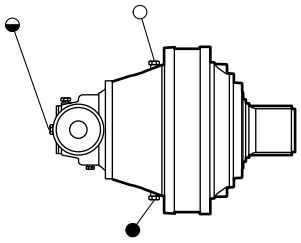

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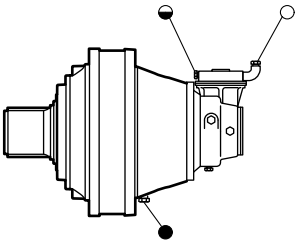

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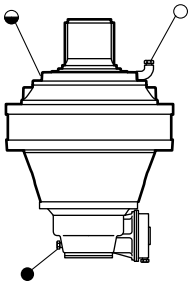


V6B

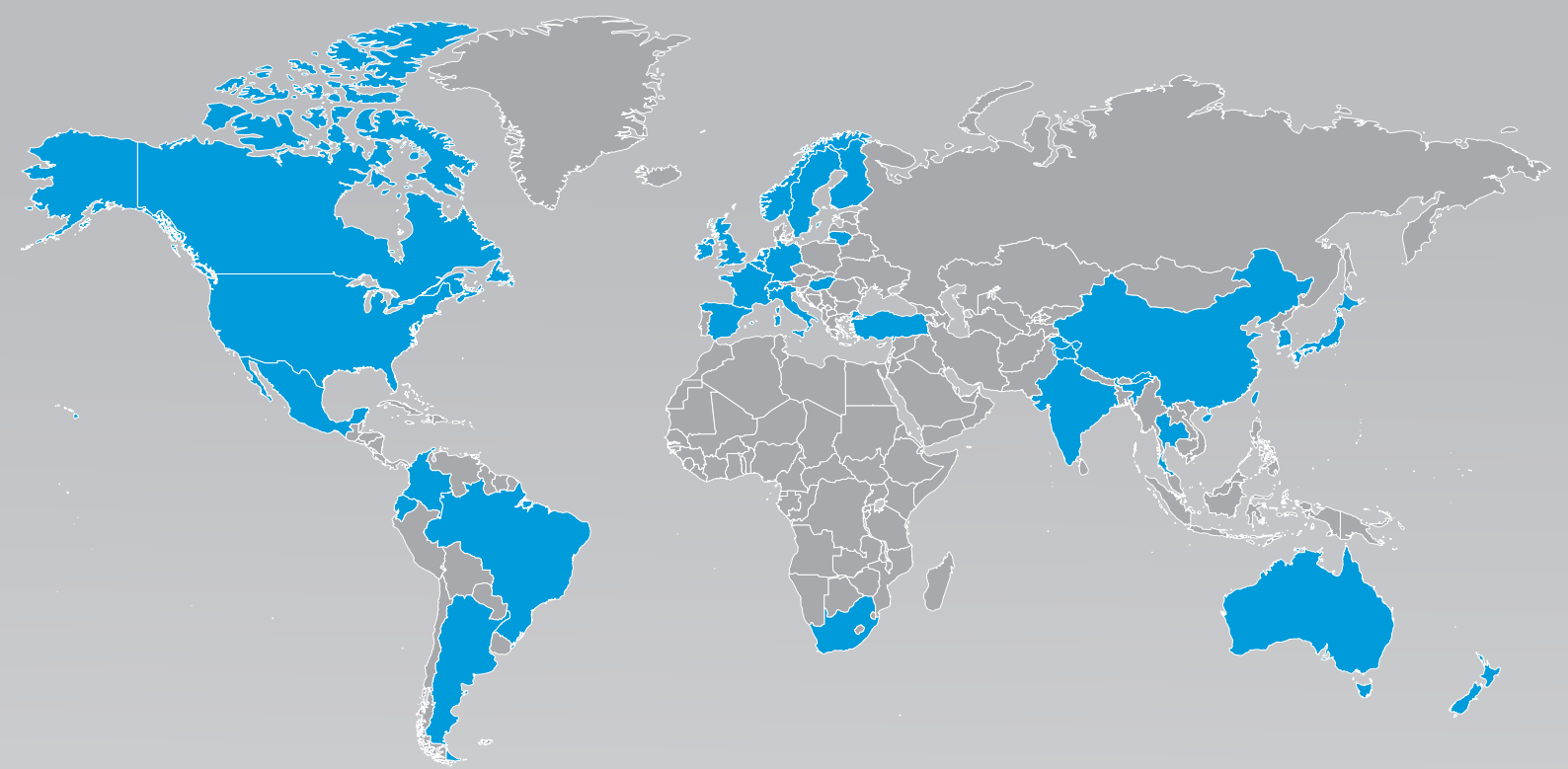
Oil drain plug

Oil level plug

Oil breather and filler plug

Details & Installation

NOTE



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