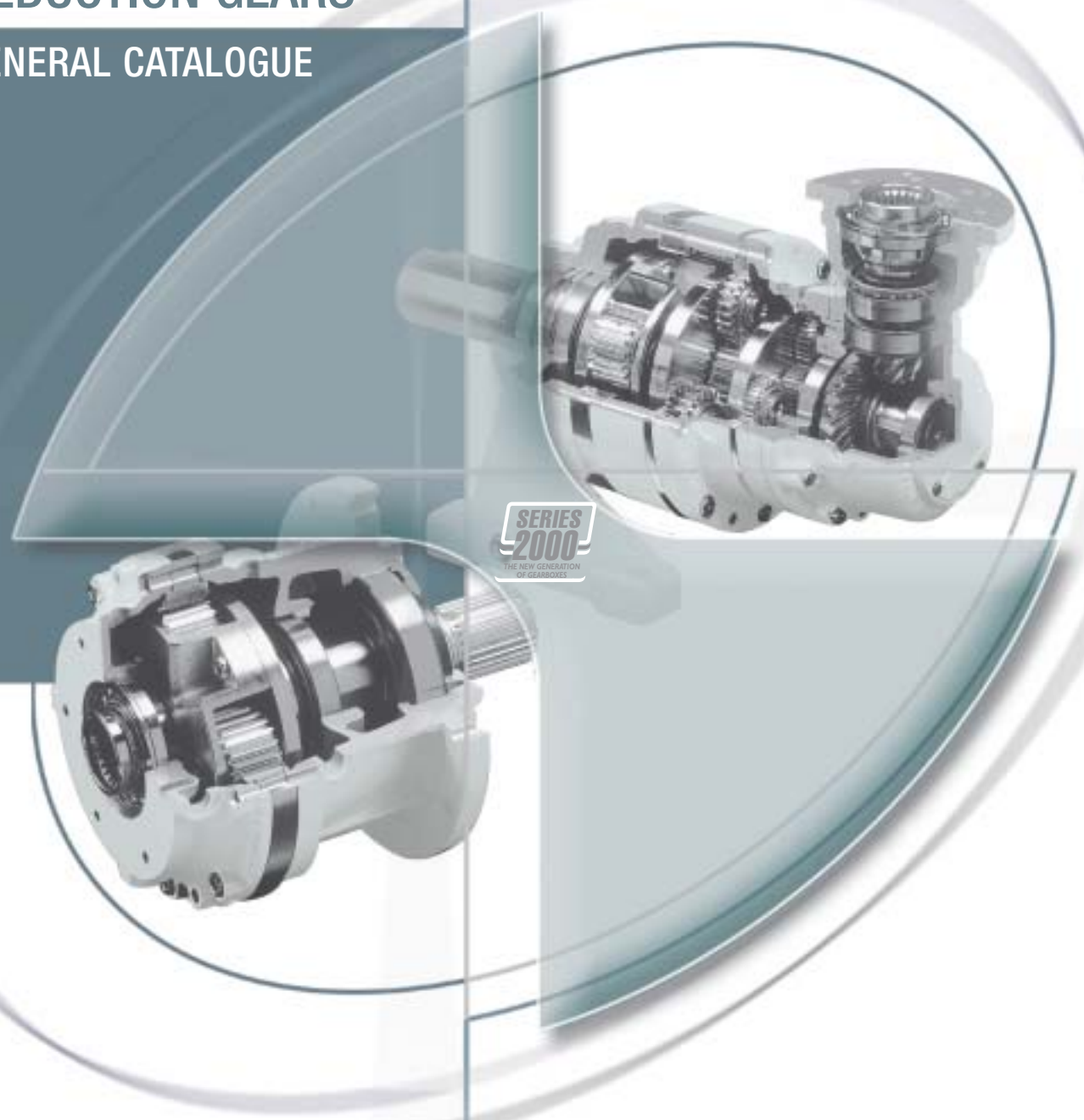
REGGIANA RIDUTTORI

Quality and Technology

PLANETARY REDUCTION GEARS

GENERAL CATALOGUE



from 65 to 50000 daNm

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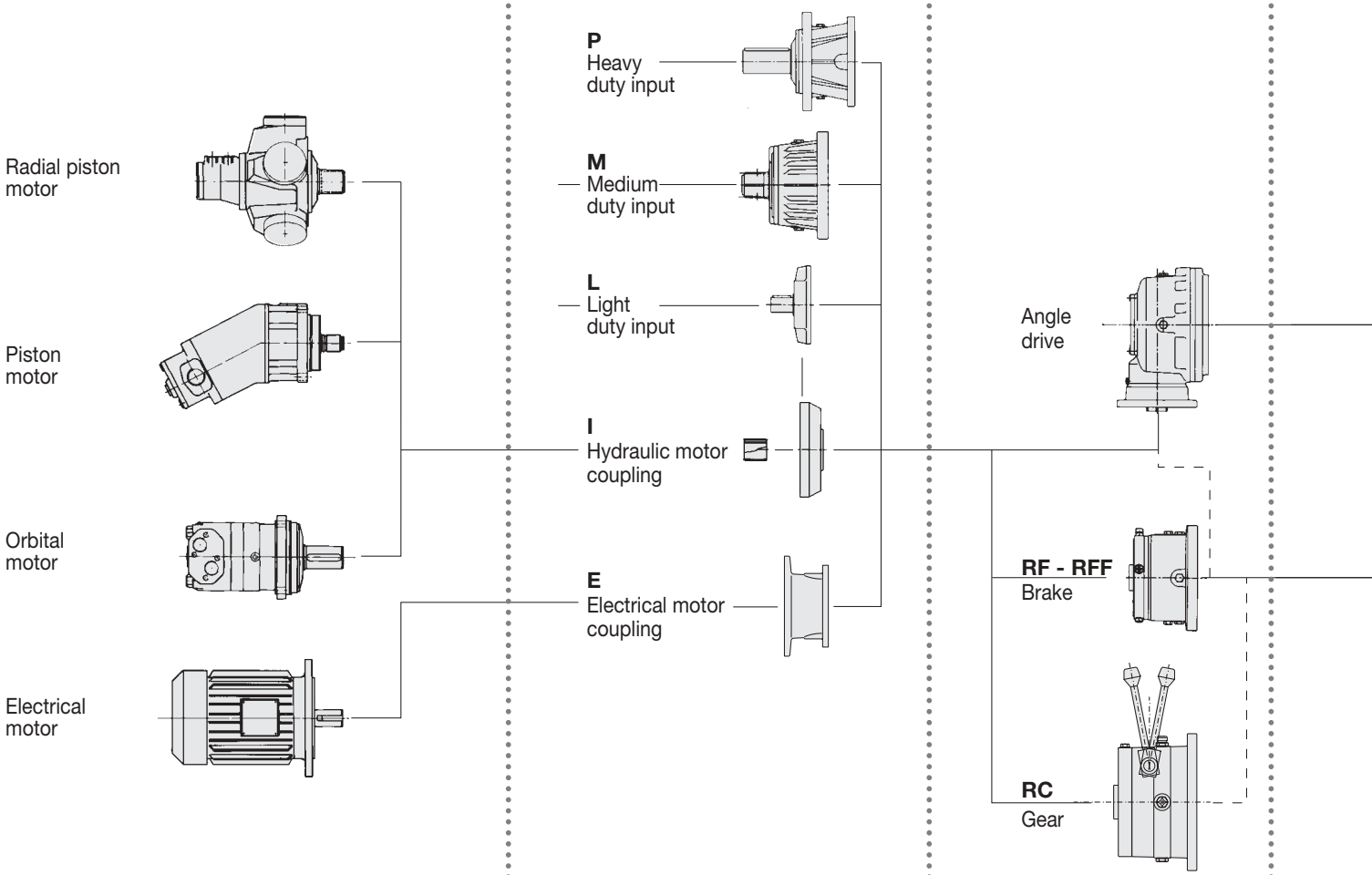
MOTOR TYPE	INPUT	OPTIONAL GROUPS

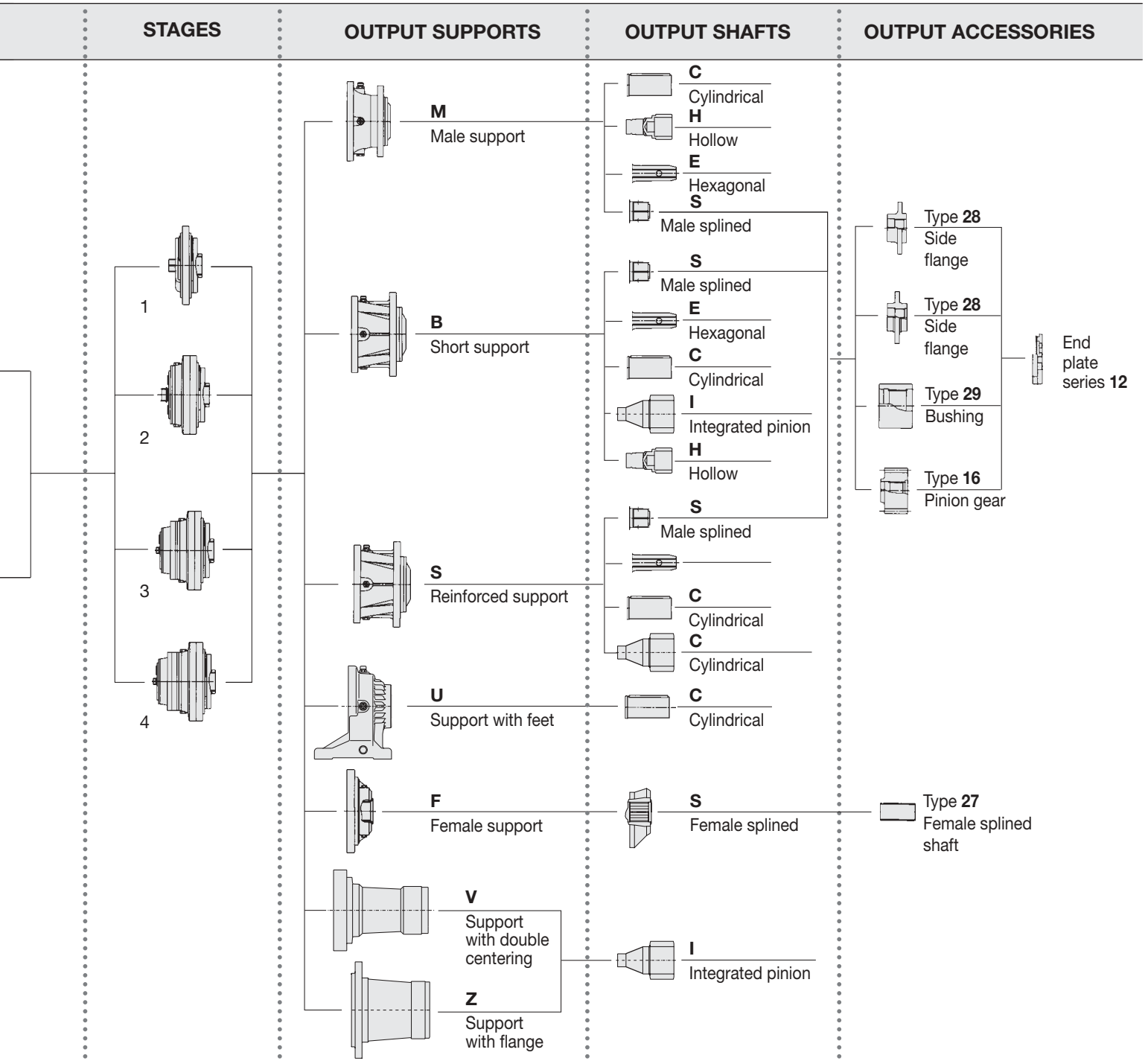


PRODUCT IDENTIFICATION SCHEME

Consulting the above diagram and this catalogue the client can find all the elements necessary to facilitate the choice of reduction gear for his needs. Reggiana Riduttori reduction gears are identified with the letters and numbers given on the right. All our reduction gears have a metal identification plaque giving the basic information regarding the product. The following plaque is an example:

REDUCTION GEAR TYPE	SIZE	No. STAGES
RR = Linear **RA** = Angular	**65... 50.0000**	**–** = Single **D** = Double **T** = Triple **Q** = Quadruple

The **first box** contains the **denomination of the reduction gear** identified by its torque, No. of stages and type of output support (e.g. **RR510 FS**).
The **second box** contains the **reduction ratio** which can be found in the specific tables for each group of reduction gears listed in the catalogue (e.g. **7,0 on page 51**).
The **third box** contains the **ordering code number** which is available to the **RR sales network.**



REDUCTION RATIO	OUTPUT SUPPORTS	OUTPUT SHAFTS	OUTPUT SIDE ACCESSORIES	INPUTS	OPTIONS
3,00.....8000,00	**M** = Male **F** = Female **C** = Short **S** = Reinforced **U** = With feet **V** = Rotation with double centering **Z** = Rotation with flange	**C** = Cylindrical shaft **E** = Hexagonal shaft **H** = Hollow shaft **S** = Splined shaft **S** = Female splined shaft **I** = Integral pinion	**28** = Side flange **28** = Central flange **29** = Bushing **16** = Pinion gear **12** = End plate **27** = Splined shaft	**L** = Light **M** = Medium **P** = Heavy **I** = Hydraulic motor coupling **E** = Electrical motor coupling	**RF** = brake for reduction gear **RFF** = brake for angular reduction gear **RC** = Gear

The **4th box** contains the **braking torque** of the brake which is given only if the reduction gear is provided with negative hydraulic brake (e.g. **RFF ... page 53**)
The **5th box** contains the **order number.**
The **6th box** contains the progressive **serial number** which is extremely useful for production and the quality department for identifying the exact product. This number is also available to the **RR sales network.**

Symbol	Unit of measure	Description
C_{rt}	-	Coefficient that correlates the thermal power to the conformation of the reduction gear
F_a	daN	Axial load allowed on the output shafts
F_{a0}	daN	Maximum axial load on the output shafts
F_d	-	Corrective coefficient of the radial load F_r relating to the number of cycles
F_r	daN	Radial load allowed on the output and input shafts
F_{rsc}	daN	Load required or applicable
f_s	-	Service factor
h	h	Length in hours
η	-	Dynamic efficiency
i	-	Reduction ratio
K	-	Corrective coefficient of the thermal power P_t relating to the input speed
K_1	-	Corrective coefficient of the thermal power P_t relating to the use percentage
Kg	Kg	Mass of the reduction gear
l	Litres	Quantity of oil to fill reduction gear
n_1	min^{-1}	Angular input speed
n_{1MAX}	min^{-1}	Maximum angular input speed
n_2	min^{-1}	Angular output speed
n_2xh	-	Number of working cycles
P’	kW	Installed mechanical power
P_s	kW	Thermal power to dissipate
P_t	kW	Thermal power
P_{t1}	kW	Corrected thermal power
q	$Litres/min^{-1}$	Oil capacity of the cooling system
T_2	daNm	Theoretical torque transmitted by the reduction gear in output
T_{2a}	daNm	Torque required in output
T_{2am}	daNm	Average torque required in output
T_{2c}	daNm	Theoretical corrected torque in output
T_{2eff}	daNm	Actual torque required in output
T_{2MAX}	daNm	Maximum torque transmitted in output
t_c	°C	Operating temperature
t_a	°C	Ambient temperature
T_f	-	Corrective coefficient of the theoretical torque transmitted T_2
t_s	°C	Oil temperature in output from the heat exchanger

Warranty regulations:

Reggiana Riduttori s.r.l. guarantees its products for 12 months from the date of shipment.
The warranty shall lose its validity should the defect or anomaly result from the incorrect or inadequate application of the product.

General instructions:

- Upon delivery of the reduction gear check that it has not suffered damage during transport and that all prescribed accessories are present.
- The reduction gear is intended for use in environments and for applications that are in line with the provisions of the project.
- All improper use of the reduction gear is prohibited.
- Replacement or alteration of parts of the machine, that have not been authorized by REGGIANA RIDUTTORI, can give rise to accident risk, and therefore relieve the constructor from any civil or penal responsibility, and cause the warranty to lose its effect.

General functions, range of applications and expected use

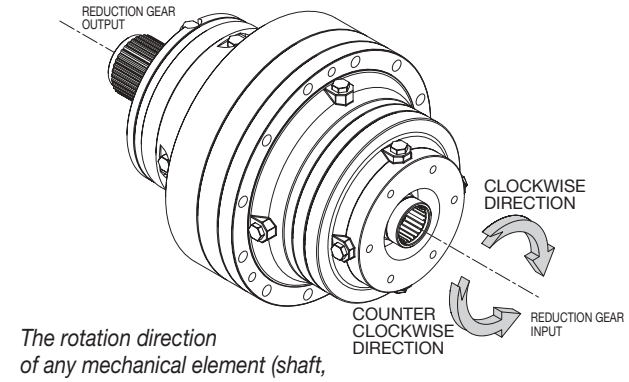
Reggiana Riduttori planetary reduction gears are designed to implement power transmission inside operator machines. They can be connected directly or indirectly to an electric or hydraulic motor.
Planetary reduction gears are used for many different applications, both industrial and mobile, for example the mechanical industry, the chemical and plastics industry, the food industry, building and construction, mining/ extraction, agriculture and forestry, transport and hoisting, the naval sector and wind energy generators.

Use the reduction gear only for the purposes it has been designed for. If it is used improperly it could be dangerous for the safety and health of people. The purposes for which these reduction gears have been created and made are industrial and mobile.

Maximum input speed n_{1MAX}

This indicates the maximum speed allowed in input for brief periods or in intermittent operation; the value is given in **tab.A** for each size of reduction gear, both in linear and angular conformation. The input speed of the reduction gear is limited by the peripheral speed of the gears, the bearings and the seals. For an angular reduction gear we advise not exceeding 1500 min^{-1} in continuous operation, otherwise the noise level rises considerably and the temperature increases due to the oil shaking. For this type of application we recommend contacting the *"REGGIANA RIDUTTORI Technical Service"*. In the L,M,P (Light, Medium and Heavy) type inputs, we advise not exceeding 1500 min^{-1} in continuous operating conditions, so as not to cause significant increase in the temperature of the oil. In the case of negative brakes we advise not exceeding the following speeds: RF2 : 1500 min^{-1}; RF5 : 1000 min^{-1}; RF170 ÷ 290 : 750 min^{-1}.
In general when the loading conditions provide for long periods with speed near n_{1MAX} or with a peak speed exceeding that given in **table A**, contact the technical commercial service.

Rotation direction



The rotation direction of any mechanical element (shaft, cogged wheel, pulley, etc.) is defined as being clockwise or counter clockwise simply by looking at the moving element from the front with the reduction gear behind it.

Output torque T_2

This is the value of the torque transmitted in continuous operation with service factor f_s =1, equaling a theoretical life of 30000 $n_2$xh corresponding to 1.8 million revolutions of the output shaft. This value is given in **tab.B** for each size of reduction gear.
Torque T_2 is limited by the surface resistance and by the resistance to flexure of the teeth of the gears in compliance with the standard ISO6336. For the right choice of the reduction gear, when the life requested is far from 30000 $n_2$xh, multiply the value of the torque T_2 by the corrective coefficient T_f given in **graph 2** on page 9.

Maximum torque T_{2MAX}

This represents the value of the maximum torque allowed in output for brief periods or for occasional peaks, without permanent damage being made to the most stressed elements. In general it equals T_2x 1.5, making sure that this value does not exceed that given in **tab.1**. When the loading conditions foresee frequent start-ups, frequent inversions or long times at the maximum torque, limit the value of the torque installed or select a greater size of reduction gear.

Tab 1 T_{2MAX} TORQUE TABLE

Type **RR**	65	105	110	210	210S	310	310S	510	510S	710	710S	810	810S	1010
T_{2MAX} (daNm)	120	180	200	250	330	550	650	700	750	850	930	1450	1450	1750

Type **RR**	1700	1700 B	2700	3500	5000	6300	8000	12500	16000	22000	32000	40000	50000
T_{2MAX} (daNm)	2650	2650	3600	4500	6200	10500	15500	30000	33000	42000	46000	72000	90000

Transmission ratio i

This indicates the actual ratio between the input n_1 and output n_2 speed of the reduction gear.

Service factor fs

For correct sizing of the reduction gear, insert a corrective coefficient f_s that multiplies the torque requested T_{2a}.
The purpose is to assess approximately the type of the load and its intervention frequency.
Some of the most frequent applications for planetary reduction gears are given on page 13.

Efficiency η

The efficiency is a nondimensional number, defined as the ratio between the output power and the input power of the reduction gear. The value of the efficiency limited to only the planetary reduction gear, single stage in conditions of average speed and torque T_2, equals 0.97-0.98. This value decreases in the following cases:

- Decrease in the torque applies • Increase in rotation speed • Reduction gears in multistage configuration

The value of the efficiency of angular reduction gears is usually lower than that of the linear reduction gears.

Operating temperature T_c

The recommended operating temperature for linear or angular reduction gears is between –20°C and +90°C.
Different conditions of use are however possible, using particular design devices (specific lubricating oil, use of suitable materials and seals) specifically assessed by the technical-commercial service.

Radial load F_r

OUTPUT SHAFTS
Beside each support in the version:

- Splined male
- Cylindrical male
- Support for rotation

the curve of the radial loads allowed for the life of the bearing ISO L10 of 100000 $n_2$xh is given. This value is mainly limited by the fatigue resistance of the bearings in compliance with the standard ISO 281.
In the output supports: splined male and cylindrical male, the radial load allowed is combined with an axial load (positioned on the rotation axis) shown beside the curve. For the lengths of time requested which are different from 100000 $n_2$xh a corrective coefficient F_d is introduced as illustrated in the example shown on page 11.
The technical data sheets of the reduction gears in the female version purposely do not give the curves of the radial loads, as generally they are not suitable for supporting such loads, nevertheless for the applications that take into consideration radial loads on female supports the suitability can be assessed by contacting the technical-commercial service.

INPUT SHAFTS
Beside each support in the version:

- Cylindrical male

the curve of the radial loads allowed for the life of the bearing ISO L10 of 100000 $n_2$xh is given. This value is mainly limited by the fatigue resistance of the bearings in compliance with the standard ISO 281.
In the cylindrical male input supports the radial load acts singularly without being combined with an axial load.
For the lengths of time requested which are different from 100000 $n_2$xh a corrective coefficient F_d is introduced as illustrated in the example shown on page 11.

Axial load F_a

Tab. 2 shows for each size of reduction gear the axial load allowed acting singularly on the output supports, for life of the bearings ISO L10 of 100000 $n_2$xh.
The axial load shown in the table is positioned on the rotation axis of the output shaft and is valid for both directions (entering and coming out of the support).

Tab 2 **TABLE OF DYNAMIC AXIAL LOADS - F_a**

Type **RR**	65	105	110	210	210 S	310	310 S	510	510 S	710	710 S	810	810S
Fa (daN)	1800	1000	1000	1000	3500	3500	3800	3500	3800	3800	4500	5800	6700
Type **RR**	**1010**	**1700**	**1700 B**	**2700**	**3500**	**5000**	**6300**	**8000**	**12500**	**16000**	**22000**	**32000**	
Fa (daN)	6000	7300	7300	1850	2500	3200	3800	4350	7100	7100	12000	12000	

Maximum axial load F_{a0}

Tab. 3 gives the maximum axial load for each size reduction gear applied for brief lengths of time or for occasional peaks acting singularly on the support, without permanent damage occurring.
The maximum axial load given in the table is positioned on the rotation axis of the output shaft and is valid for both directions (entering and coming out of the support).

Tab 3 **TABLE OF DYNAMIC AXIAL LOADS - F_{a0}**

Type **RR**	65	105	110	210	210 S	310	310 S	510	510 S	710	710 S	810	810S
Fa0 (daN)	1800	1800	1800	1800	1800	4000	4000	4000	4000	4000	9000	9000	9000
Type **RR**	**1010**	**1700**	**1700 B**	**2700**	**3500**	**5000**	**6300**	**8000**	**12500**	**16000**	**22000**	**32000**	
Fa0 (daN)	10000	10000	10000	1850	2500	3200	3800	4350	7100	7100	16000	16000	

Thermal power P_t

This is the value of power which when applied in input to the reduction gear in continued prolonged operation stabilizes the oil temperature inside the reduction gear at 90°C; in the following testing conditions:

- Lubrication by shaking
- Reduction gear mounted in a horizontal position, not subject to air flows.
- Revs in input 1000 min^{-1}.
- Quantity of oil corresponding to half-full.
- Mineral oil ISO VG150.
- Ambient temperature 20°C.

To select the suitable type of reduction gear for the type of application it is necessary to know the torque T_{2a} (daNm) and the output speed n_2 (min^{-1}), where the latter, based on the input speed n_1 (min^{-1}) shall define the ratio of transmission **i** with the following relation:

$$i = \frac{n_1}{n_2}$$

Otherwise, if the installed power P'(kW) and the input revs n_1 (min^{-1}), is known, the torque T_{2a} (daNm) is calculated using the following relation:

$$T_{2a} = \frac{955 \times P'}{n_2}$$

In which for simplification we do not consider the efficiency of the reduction gear.

Successively it is necessary to define the service factor f_s which indicatively is calculated depending on the following parameters:

- Operating machine *(Consult **table 10** in relation to the classification of the applications).*
- Daily use
- Start-up frequency

It identifies a multiplicative coefficient of the torque applied T_{2a}. See **table 9** below.
The actual torque requested in output T_{2eff} becomes:

$$T_{2eff} = T_{2a} \times f_s$$

Tab 9

Service factor f_s

		Uniform		
U		Hours of operation per day		
		less than 1	*from 1 to 8*	*from 8 to 24*
no. start-ups / hour	*less than 6*	**0,7**	**0,9**	**1,1**
	from 6 to 60	**0,9**	**1,2**	**1,4**
	more than 60	**1,2**	**1,5**	**1,7**
		Moderate		
M		Hours of operation per day		
		less than 1	*from 1 to 8*	*from 8 to 24*
no. start-ups / hour	*less than 6*	**0,9**	**1,1**	**1,3**
	from 6 to 60	**1,1**	**1,4**	**1,6**
	more than 60	**1,4**	**1,7**	**2**
		Heavy		
H		Hours of operation per day		
		less than 1	*from 1 to 8*	*from 8 to 24*
no. start-ups / hour	*less than 6*	**1**	**1,3**	**1,7**
	from 6 to 60	**1,4**	**1,7**	**2**
	more than 60	**1,7**	**2,1**	**2,5**

Tab 10

CLASSIFICATION OF THE APPLICATIONS

Compressors, fans	U	M	H
Axial and radial compressors	U		
Cooling tower fans		M	
Induced draft fans		M	
Rotating piston compressors		M	
Turbo compressors	U		

Chemical Industry	U	M	H
Stirrers (liquid materials)	U		
Agitators (semi-liquid materials)		M	
Centrifugal machines (heavy)		M	
Centrifugal machines (light)	U		
Cooling drums		M	
Drying drums		M	
Mixers		M	

Compressors			
Piston compressors			H
Turbo compressors		M	

Conveyors			
Slat conveyor		M	
Ballast hoister		M	
Pocket conveyor belt		M	
Conveyor belt (voluminous material)		M	
Conveyors (goods in pieces)			H
Bucket conveyor for flours	U		
Chain conveyor		M	
Circular conveyor		M	
Hoists			H
Inclined hoist			H
Steel conveyor belt		M	
Lifts for people		M	
Screw conveyors		M	
Concave belt conveyor		M	
Winch conveyor		M	

Cranes			
Mechanism of the drilling arm		M	
Hoist mechanism	U		
Rotating mechanism		M	
Translation mechanism			H

Dredges			
Bucket conveyors			H
Bucket wheels			H
Tool-holding heads			H
Winches for maneuvers		M	
Pumps		M	
Rotating mechanism		M	
Translation mechanism (tracked vehicle)			H
Translation mechanism (rails)		M	

Machinery for the food industry	U	M	H
Machines for filling bottles and containers	U		
Cane crushers		M	
Knives for cane			H
Cane mill			H
Kneading machine			H
Tanks for macerating (crystallizers)			H
Packing machinery	U		
Cutters for sugar beet		M	
Machines for washing sugar beet		M	

Building machinery			
Concrete mixers		M	
Hoists		M	
Machinery for road construction		M	

Generators and transformers			
Frequency transformers			H
Generators			H
Generators for welding machine			H

Laundries			
Inverters		M	
Washing machines		M	
Ironing machines		M	

Metal rollers			
Shears for rolling mills			H
Chain drives		M	
Cold rolling mills			H
Plants for continuous melting			H
Cooling blocks		M	
Shears for discarding			H
Rolling mills for medium and heavy plates			H
Roughing mills and ingots			H
Mechanical hands			H
Sheet shears			H
Roller rectifier		M	
Roller tables (heavy)			H
Roller tables (light)			H
Tube-welding machines		M	
Winding machines (wire washer)		M	
Flush drawing boards		M	

Machines for working metal	U	M	H
Counter shafts, shafts in line	U		
Press for hot-pressing			H
Hammers			H
Auxiliary guides, machine tools	U		
Main guides, machine tools		M	
Machines for metal planing			H
Rectifier for metal sheet			H
Presses			H
Presses for forging			H
Shears		M	
Machine for folding metals		M	

Petrol industry		M	H
Conveying pumps		M	
Rotating drill equipment			H

Machines for paper			
Rolling presses			H
Coupling			H
Drying drum			H
Drying cylinder			H
Beater			H
Grinder for pulp			H
Suction rollers			H
Suction presses			H
Wet presses			H
Willows			H

Machines for plastic			
Rolling presses		M	
Grinders		M	
Extruders		M	
Mixers		M	

Pumps	U		H
Centrifugal pump (light liquids)	U		
Centrifugal pump (viscose liquids)			H
Piston pumps			H
Pushbutton pump			H
Pressure pump			H

Machinery for rubber		M	H
Rolling presses		M	
Extruders			H
Mixers		M	
Kneading machines			H
Rolling mills			H

Machines for working stone and clay			
Hammer mills			H
Rolling mills for refining			H
Switch			H
Presses for bricks			H
Rotating kiln			H
Tube rolling mills			H

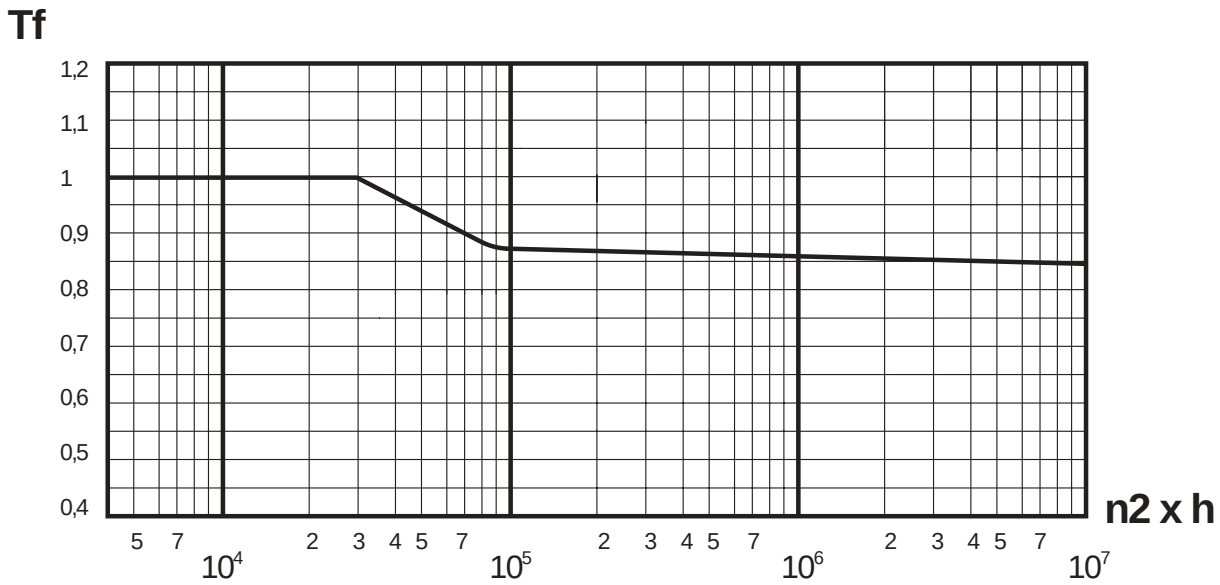
Textile machines		M	
Batchers		M	
Looms for weaving		M	
Machine for printing and dyeing		M	
Tank for tanning		M	
Willows		M	

Water treatments		M	
Aerators		M	
Screw pump		M	

Machines for working wood			H
Bark-peeling machine			H
Planing machines		M	
Frame for saws			H
Machines for working wood	U		

If the life requested differs from n2xh=30000, use **graph 2** to calculate the corrective coefficient T_f.

Graph 2



The corrected output torque T_{2c} becomes:

$$T_{2c} = T_2 \times T_f$$

The following relation will always have to be verified :

$$T_{2c} > T_{2eff} \quad \text{or} \quad T_2 > T_{2eff}$$

Selection criteria for variable operating

In certain cases there are variable operating conditions with different output twisting moments, at different intervals of time, therefore a torque can be calculated approximately as in the following example:

Example:

a) Torque 820 daNm for 65% of the time
b) Torque 1100 daNm for 25% of the time
c) Torque 1300 daNm for 10% of the time

$$T2a_m = \sqrt[6,6]{820^{6,6} \times 0,65 + 1100^{6,6} \times 0,25 + 1300^{6,6} \times 0,10} = 1029 \text{ daNm}$$

Then considering the service factor f_s we obtain:

$$T_{2eff} = T_{2am} \times f_s$$

Always verifying the following expression.

$$T_2 > T_{2eff}$$

REGGIANA RIDUTTORI

Title: **Data application sheet for the selection of the reduction gear** TR-434

Reserved for technical commercial service: **Checked:** **Date:**

Request no: .....

REFERENCES

Name of client : Address :

Project ref.: e-mail Contact:

OPERATING CONDITIONS

? Application description:

? Configuration required (**RR**-Linear **RA**-Angular): | Size and stages required (**D**-Double **T**-Triple **Q**-Quadruple): | ? Type of output required (**MS**-male splined shaft **FS**-female splined shaft, **ZI - VI** by rotation....)

? Ratio reduction required Min/Max (Ratio between input revs and output revs of reduction gear)

? Motorization (**E**-electric **O**-hydraulic **I**-indirect)

Type and/or size (Specify type and size of motor)

Duration required (Overall operating time of reduction gear in hours)

? Service factor **Fs** (Corrective coefficient that multiplies torque required)

Operating hours per day (Actual daily operating time in hours)

Number of start-ups per hour (Number of start-ups or phases repeated in one hour)

Ambient temperature (Minimum and maximum temperature reached during the day °C)

Reduction gear assembly type (With reference to Fig.3 indicate the position of the reduction gear)

Type of lubricant envisaged (Indicate brand and code of oil)

Duration in continuous operation (Average time of a working phase in minutes)

Average pause duration (Average stop phase time)

Possible negative static brake (Static braking torque required in input to the reduction gear in daNm.)

Brake release pressure (Min and max pressure available for opening the brake in bar.)

Number of reduction gears planned per year (-)

WORKING CYCLES

? WORK CYCLES	Time percent.	OUTPUT (FIG. 1)					INPUT (FIG. 2)		
		° Torque	Speed	Radial load	Distance	# Axial load	Radial load	Distance	# Axial load
[-]	[-]	T2 [daNm]	n2 [min-1]	Fr 2 [daN]	x 2 [mm]	Fa 2 [daN]	Fr 1 [daN]	x 1 [mm]	Fa 1 [daN]
1									
2									
3									
4									
5									

DIAGRAMS

° Indicate the value of the torque without application factor

Enter the positive value (+) when directed towards the inside of the reduction gear.

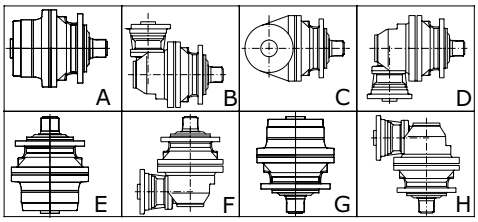


Fig.3

Fig. 1

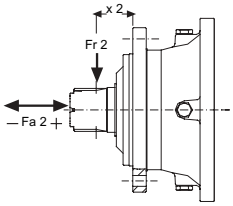
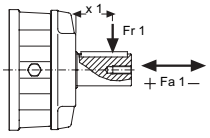


Fig. 2



MOTORIZATION

E - ELECTRICAL

Nominal power: ..... kW
Power used: ..... kW
Nominal speed: G/1
Working speed: G/1
Size IEC: ..... -
Shape (**B3 - B5 - B14**): ..... -
Weight: ..... Kg

O - HYDRAULIC

Type (**Orbital - Pistons**): ..... -
Diagram (**Axial - Radial**): ..... -
Displacement: ..... CC/Rev
Max pressure: ..... bar
Operating pressure: ..... bar
Operating speed: G/1
Coupling: ..... -

I - INDIRECT

Installed power: ..... kW
Diam. driving pulley: ..... mm
Diam. driven pulley: ..... mm
Input speed n1: G/1
Type of connection: ..... -
Diam. driven shaft: ..... mm

Distance in mm. between flange connection and motor centre of gravity: ..... mm

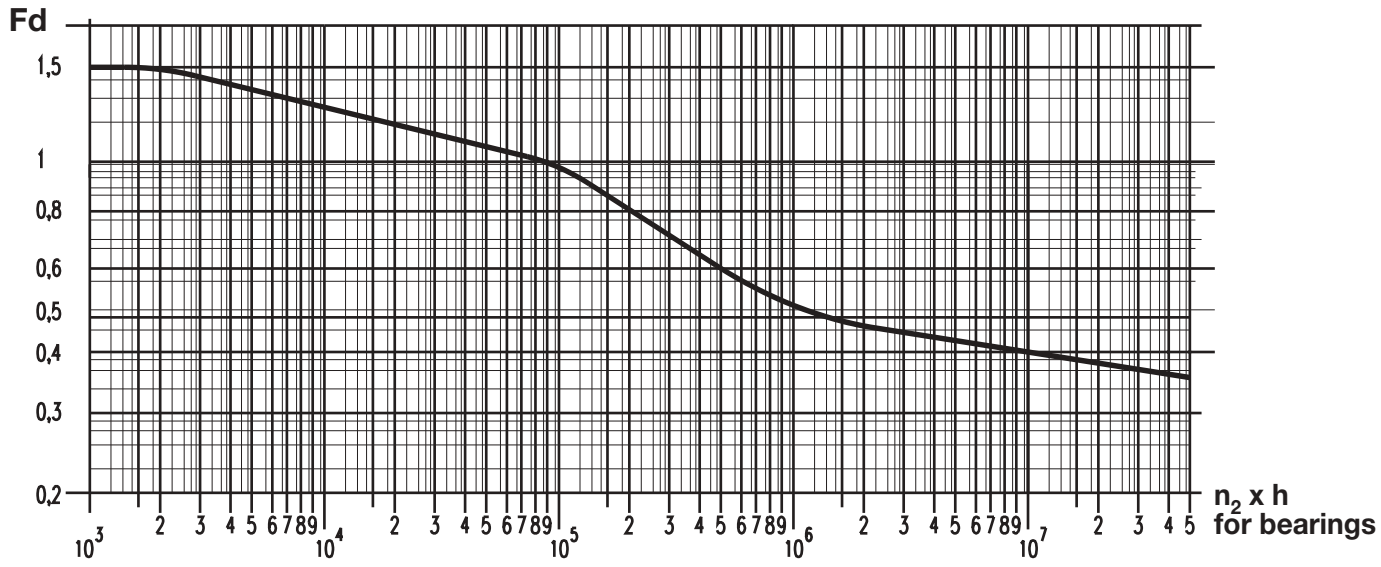
NOTES

Supplementary accessories required, indicate the presence of further accessories on output side such as: **drive intake flanges, splined bushings, pinions for slewing, end plates, splined shafts; or kit for oil expansion.**

Indicate technical documentation requested: **(duration verification - dimensional drawings – exploded drawings – tests certificates – manuals)**

? ***Information needed for selecting the reduction gear***

Graph 3



N.B. - For shaft fatigue verification and life of bearings with combined loads, contact Reggiana Riduttori technical service

Example 1:
knowing the position of the load and the life n_2 **x h** of the reduction gear, we want to know the applicable load **FRsc** on the output shaft.
On the page relating to the reduction gear concerned, we can obtain the load
Fr corresponding to n_2 **x h =** 10^5 in the known position: from graph 3 we can obtain the coefficient **Fd** which multiplied by the load **Fr** gives the applicable load **FRsc**.

KNOWING:

Type of reduction gear	RR65
Position of the load	60 mm
Radial load **Fr**:	800 daN
n_2 **x h**:	500000

From the graph we obtain:

Fd:	0,6

Of which:

Applicable load **FRsc**:	0,6x800 = 480 daN

Example 2:
Knowing the position of the load requested **FRsc** and its value we want to know the life n_2 **x h** at the output shaft.
On the page relating to the reduction gear concerned, we can obtain the load
Fr corresponding to n_2 **x h =** 10^5 in the known position. From the calculation of the ratio between the load requested **FRsc** and the load **Fr** the coefficient **Fd** is obtained. Finally the correct life n_2 **x h** is obtained from graph 3.

KNOWING:

Type of reduction gear	RR65
Position of the load	60 mm
Load requested **FRsc**:	320 daN

From the catalogue we obtain:

Radial load **Fr**:	800 daN

Of which:

Fd:	320:800 = 0,4

From the graph we obtain:

n_2 **x h**:	$1x10^7$ = 10.000.000

Table 6 gives the values of thermal power allowed, under the following testing conditions:

- Lubrication by shaking
- Reduction gear mounted in a horizontal position not subject to air flows.
- Input revs 1000 min^{-1}
- Quantity of oil corresponding to half-full
- Mineral oil ISO VG150
- Ambient temperature 20°C.

both in linear and angular configuration.

With installed power greater than the thermal P_t, a cooling system has to be provided. For intermittent services, with installed power greater than P_t, where the time of permanence is greater than the pause period, the temperature inside the reduction gear is subject to increasing elevation.

Tab 6

THERMAL POWER Pt (kW)

Crt / TYPE	17	34	34	50	50	66	66	82
	RR	RA	RR	RA	RR	RA	RR	RA
	1 STAGE		2 STAGES		3 STAGES		4 STAGES	
65	9	-	5	-	4	-	-	-
105	12	13	6	9	5	-	-	-
110	12	13	6	9	5	-	-	-
210	15	14	8	10	6	-	5	-
310	20	18	12	13	8	10	7	-
510	21	23	13	14	10	11	8	-
710	21	23	13	14	10	11	8	-
810	35	33	21	19	16	15	13	-
1010	39	33	23	24	17	17	14	-
1700	48	38	28	27	21	19	16	-
1700 B	43	34	24	23	19	17	15	-
2700	38	47	23	26	17	17	14	-
3500	48	45	29	29	22	23	18	-
5000	62	51	38	35	28	22	22	-
6300	63	-	42	47	31	31	24	-
8000	77	-	46	40	33	32	27	-
12500	101	-	62	50	44	38	35	-
16000	101	-	62	-	46	45	36	34
22000	137	-	90	-	66	57	52	46
32000	137	-	90	-	66	57	52	46
40000	247	-	152	-	109	90	85	72
50000	247	-	152	-	109	90	85	72

In the versions with feet support increase the Pt by 20%

The following example shows the procedure for determining whether the reduction gear needs a cooling system or not.

- Ambient temperature: t_a = **30°C**
- Time in continuous operating: **24 minutes**.
- Reduction gear input speed: n_1 = **1500 min^{-1}**
- Reduction gear used: **RR1010T** (3 stages)
- Installed power: P' = **30 kW**

Use the following expression to determine the correct thermal power:

$$P_{t1} = \frac{P_t K}{K_1}$$

Tab 7

K_1		AMBIENT TEMPERATURE T_a				
Work cycle **minutes**	Work cycle **% hour**	10°C	20°C	30°C	40°C	50°C
60 (continuous service)	100%	0,90	1	1,15	1,45	1,75
48	80%	0,80	0,90	1	1,25	1,55
36	60%	0,70	0,75	0,90	1,10	1,40
24	40%	0,60	0,65	0,80	0,95	1,20
12	20%	0,50	0,60	0,70	0,85	1

Tab 8

Input speed n_1 (revs/min)	K
500	1,08
750	1,04
1000	1,00
1250	0,95
1500	**0,89**
1750	0,82
2000	0,75
2250	0,66
2500	0,59
2750	0,54
3000	0,48

Table 6 gives the thermal power P_t of the RR1010T: **17 kW**.
The corrective coefficients K and K_1 correlate the real operating conditions with the testing conditions.
By increasing the input speed inside the reduction gear more heat is generated, to keep the oil temperature unchanged the power transmitted has to be decreased; in the specific case to 1500 min^{-1} **K =: 0.89** as shown in **table 8**.
The coefficient K_1 correlates the variation in thermal power P_t with the percentage of time in an hour of continuous operating and the ambient temperature. With a duration of 24 minutes at 30°C **K_1= 0.80** as shown in **table 7**.

$$P_{t1} = \frac{17 \times 0.89}{0.80} = 18.9 \text{ kW}$$

As the installed thermal power P' **30 kW** is greater than the thermal power that can be transmitted P_{t1} **18.9 kW**, the reduction gear needs a cooling system.
The thermal power to dissipate equals:

$$P_s = \frac{(P' - P_{t1}) \times C_{rt}}{860}$$

C_{rt} indicates the coefficient that correlates the thermal power P_t with the conformation of the reduction gear.
In **table 6** the C_{rt} of the reduction gear **RR1010** in a three-stage linear version equals **50**.

$$P_s = \frac{(30 - 18.9) \times 50}{860} = 0.64 \text{ kW}$$

In the hypothesis that we use a cooling system with oil recirculation, the capacity needed for dissipating the heat is given by the following relation:

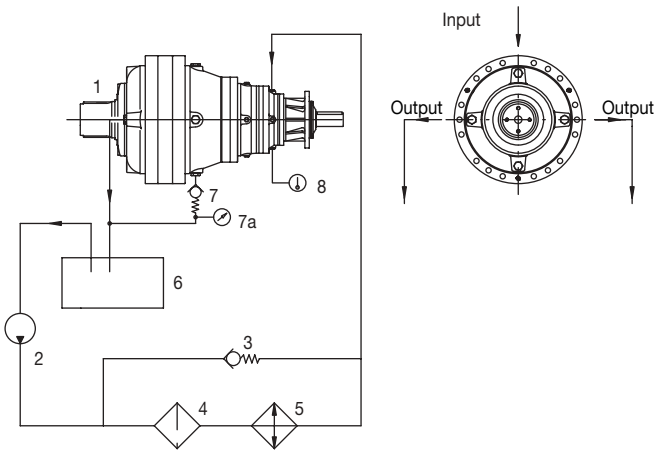
$$q = \frac{(P' - P_{t1}) \times C_{rt}}{(t_c - t_s)} \times 0.07$$

The difference of oil temperature in the heat exchanger is shown with **$(t_c - t_s)$**
In the hypothesis that the operating temperature t_c is **90°C** (oil entering the exchanger) and a temperature in output from the exchanger t_s is **65°C**, the capacity of oil needed for the exchanger will be:

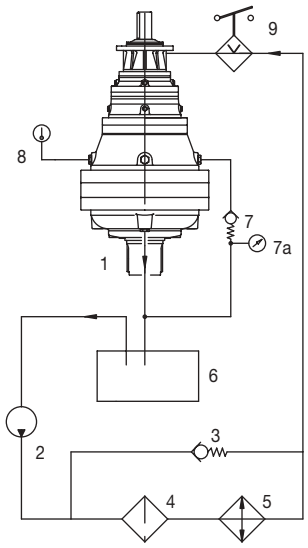
$$q = \frac{(30 - 18.9) \times 50}{(90 - 65)} \times 0.07 \cong 1.6 \text{ litres/min.}$$

Example of oil recirculation cooling system

HORIZONTAL VERSION



VERTICAL VERSION



1 - REDUCTION GEAR
2 - PUMP
3 - SAFETY VALVE
4 - FILTER
5 - HEAT EXCHANGER
6 - AUXILIARY TANK
7 - SAFETY VALVE
(Pmax=0.3-0.4 bar)
7a - (Possible control gauge)
8 - TEMPERATURE BULB
(Max. Temp. 90°C)
9 - FLOWMETER
(Recommended for
vertical mounting).

NOTES :

- suction of the motion output side of the reduction gear
- oil suction speed less than 1 m/s: take the diameter of the plugs into account
- We advise using 2 outputs for horizontal mounting

The reduction gears are supplied without lubricant, which has to be added by the user before start-up.
The purely indicative quantities of oil necessary for the various types of mounting are given on pages 18-19-20-21-22-23.
It is advisable to carefully check the level of the oil after filling. Monitor the level during the first hours of service and top up if necessary.

- **In horizontal mounting,** the oil must reach halfway along the axis of the reduction gear.
- **In vertical mounting** (upwards or downwards), the reduction gear has to be filled completely making the air escape by loosening at least one plug in the higher part, as shown in the figures on page 17.

  The operation can be made easier by using the special tank kit.

  With this kit, which is supplied separately, all the parts of the reduction gear can be oil-bath lubricated during motion.

Use **tab. 5** to check the correct position of the plugs, in accordance with the type of mounting specified in the order request.

Correct lubrication leads to good operation and long life of the reduction gear.

We advise using oil for gearings with EP additive with viscosity ISO VG (expressed according to ISO 34488) depending on the operating temperature, as shown in **table 4.**

We advise lowering the viscosity of the oil, in concurrence with the high rotation speed and vertical mounting of the reduction gear.

For brakes in configuration RF 5/ - RF170 and RFF5/, we advise a hydraulic mineral oil ISO VG32, as given in the technical data sheets of the reduction gears.

The quantity of oil necessary for correct filling is shown according to the mounting position.

If there are large variations in the ambient temperature, we advise using synthetic lubricants, with EP additives, with a minimum viscosity index 165.

The maximum operating temperature, measured inside the reduction gear must not exceed 90°C.

Contamination

In addition to being provided without lubricant the reduction gears are not run in. During the first hours of operation the contact between the metallic surfaces causes diffusion of metallic particles in the oil. The contaminated oil reduces the life of the bearings and accentuates the wear of the gears. As indicated in chapter "13. MAINTENANCE" the first oil change must be made within the first 100 hours of operation. If an oil re-circulation plant is available, special filters will have to guarantee the integrity of the reduction gear, reducing the contaminated particles.

Reduction gears in the versions:

- **VI**
- **ZI**
- **SI** (where the greaser is present)

are without grease, and we recommend using lithium soap grease for bearings (mineral base oil).

Tab 4 LUBRICANTS FOR REDUCTION GEARS

MINERAL

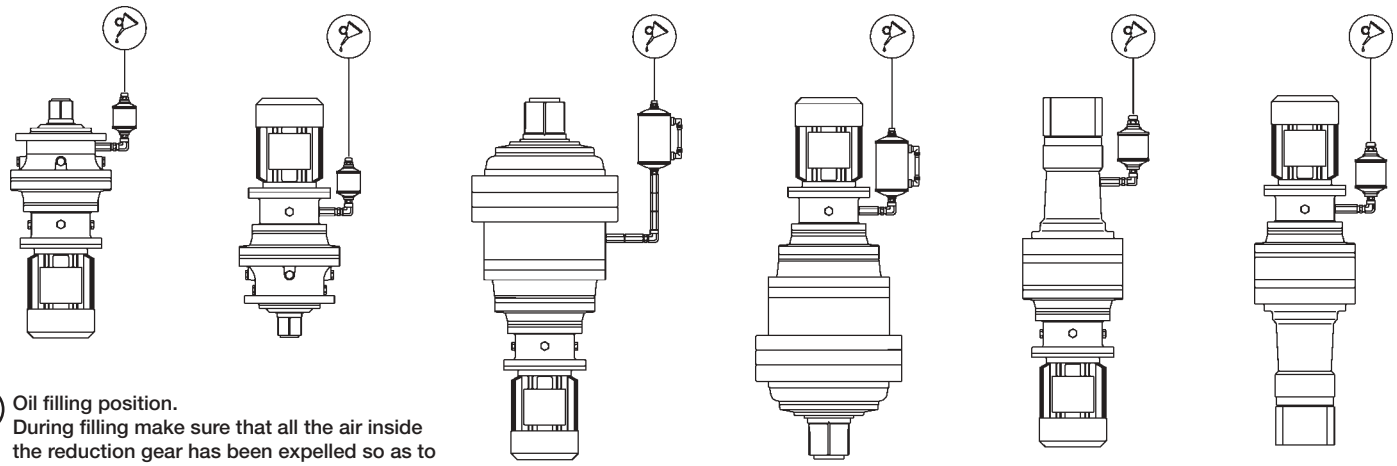
AMBIENT TEMPERATURE		-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C
VISCOSITY	ISO VG	100	150	220	320
	°E/50°C	7,3	10,8 ÷ 12,5	15 ÷ 18	22 ÷ 26
AGIP - IP		MELLANA - BLASIA 100	MELLANA - BLASIA 150	MELLANA - BLASIA 220	MELLANA - BLASIA 320
BP-MACH		ENERGOL GR-HP100	ENERGOL GR-HP150	ENERGOL GR-HP220	ENERGOL GR-HP320
CASTROL		ALPHA SP 100	ALPHA SP 150	ALPHA SP 220	ALPHA SP 320
CHEVRON		NL GEAR COMPOUND 100	NL GEAR COMPOUND 150	NL GEAR COMPOUND 220	NL GEAR COMPOUND 320
ELF		REDUCTELF SP 100	REDUCTELF SP 150	REDUCTELF SP 220	REDUCTELF SP 320
ESSO		SPARTAN EP 100	SPARTAN EP 150	SPARTAN EP 220	SPARTAN EP 320
FINA		GIRAN 100	GIRAN 150	GIRAN 220	GIRAN 320
IP		MELLANA 100	MELLANA 150	MELLANA 220	MELLANA 320
MOBIL		—	MOBILGEAR 629	MOBILGEAR 630	MOBILGEAR 632
SHELL		OMALA EP 100	OMALA EP 150	OMALA EP 220	OMALA EP 320
TOTAL		CARTER EP 100	CARTER EP 150	CARTER EP 220	CARTER EP 320
KLUBER		KLUBER OIL GEM 1-100	KLUBER OIL GEM 1-150	KLUBER OIL GEM 1-220	KLUBER OIL GEM 1-320

SYNTHETIC

AMBIENT TEMPERATURE	0°C ÷ +20°C	+20°C ÷ +40°C
SHELL	TIVELA S150	TIVELA S220
AGIP	BLASIA S150	BLASIA S220
ESSO	GLYCOLUBE 150	GLYCOLUBE 220
IP	PONTIAX HDS	PONTIAX HDS
KLUBER	SYNTHESO D150 EP	SYNTHESO D220 EP
MOBIL	SHC 629	SHC 630
BP-MACH		ERNESYN HTX 220

N.B.: Do not mix synthetic oils of a different nature.

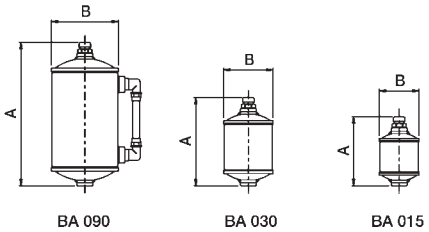
Assembly representation of the complete Kit



Oil filling position.
During filling make sure that all the air inside the reduction gear has been expelled so as to guarantee correct lubrication.

Oil tank identification table

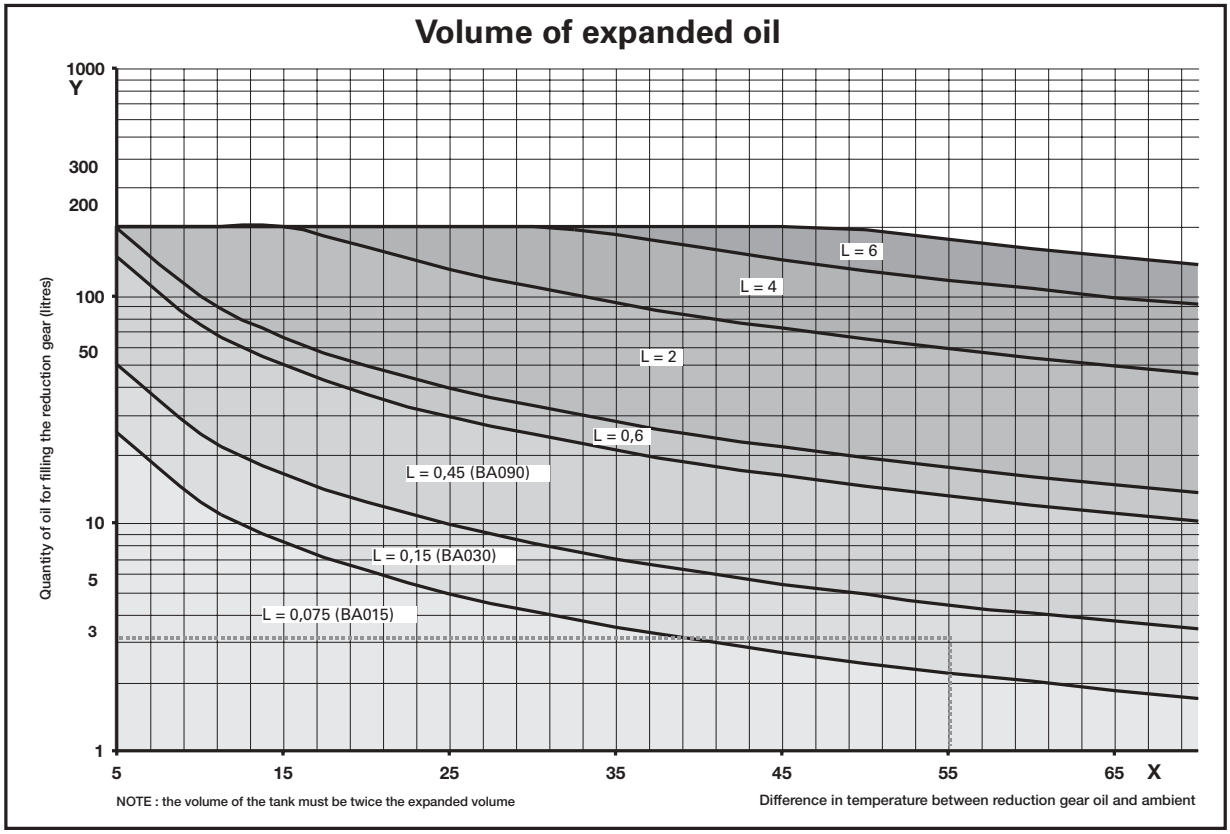
TYPE	A	B	Oil capacity lt.	Code of the complete kit	Code of the tank
BA 015	110	Ø 65	~ 0,15	154 - 5764	154F1562
BA 030	140	Ø 80	~ 0,30	154 - 5749	154F1563
BA 090	225	Ø 104	~ 0,90	154 - 5733	154F1561



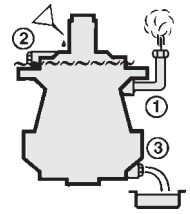
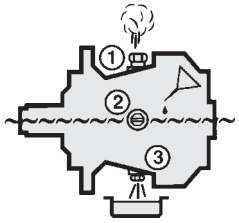
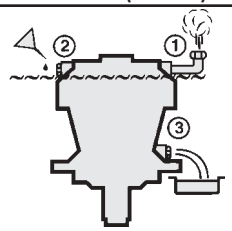
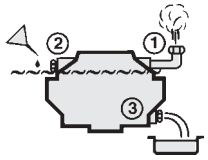
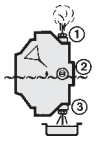
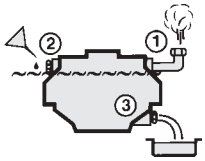
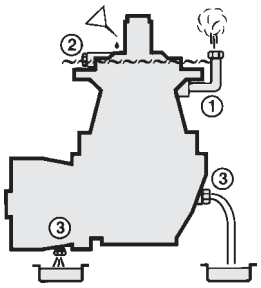
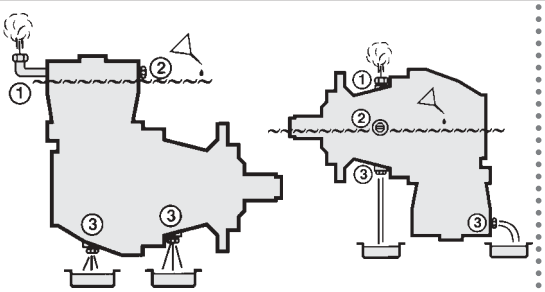
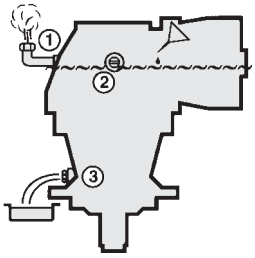
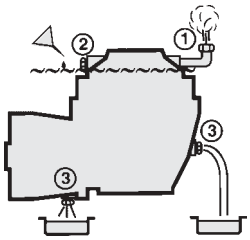
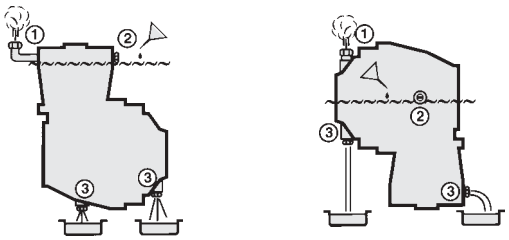
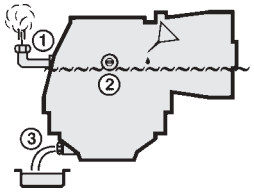
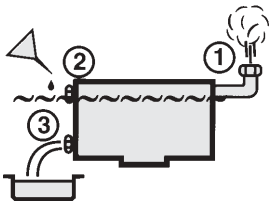
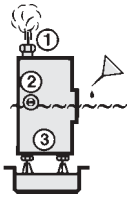
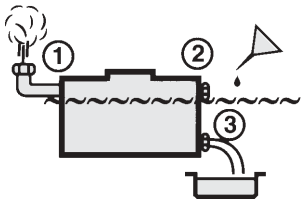
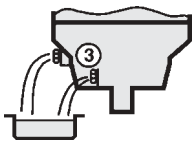
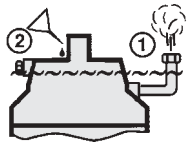
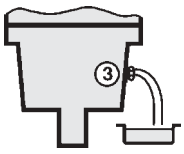
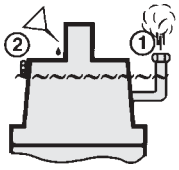
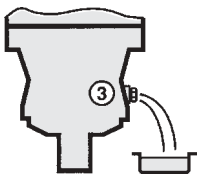
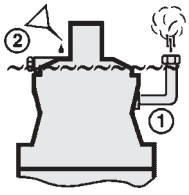
SELECTING THE OIL TANK

The following example explains how to use **graph 1**, by the means of which the volume of the expanded oil and the relative tank are determined.

Graph 1

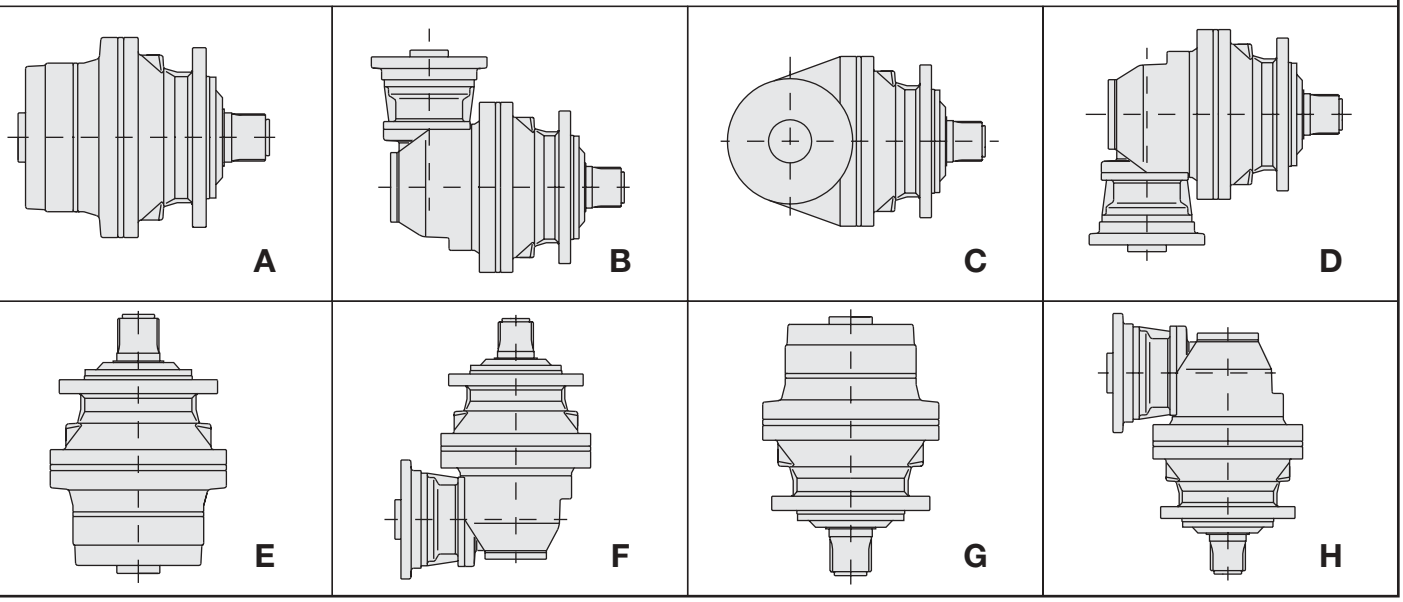


Example: A reduction gear with oil capacity of **3** litres at the operating temperature of 80°C and at the ambient temperature of 25°C. On the graph crossing over the value of (80-25=) **55**°C of the X-axis with the value **3** of the Y-axis find a point belonging to the area with expanded volume 0.15 litres. The tank recommended must have double the volume of that found: 0.15x2=0.3 from which **BA030.**

Tab 5	PLUG POSITION		
TYPE	VERTICAL (upw.)	HORIZONTAL	VERTICAL (downw.)
RR			
RR-F			
RA			
RA-F			
BRAKE TYPE RF			
INPUT TYPE L			
INPUT TYPE M			
INPUT TYPE P			

① AIR BLEEDING PLUG ② LEVEL PLUG ③ DRAIN PLUG

MALE VERSION REDUCTION GEARS from 65 to 510



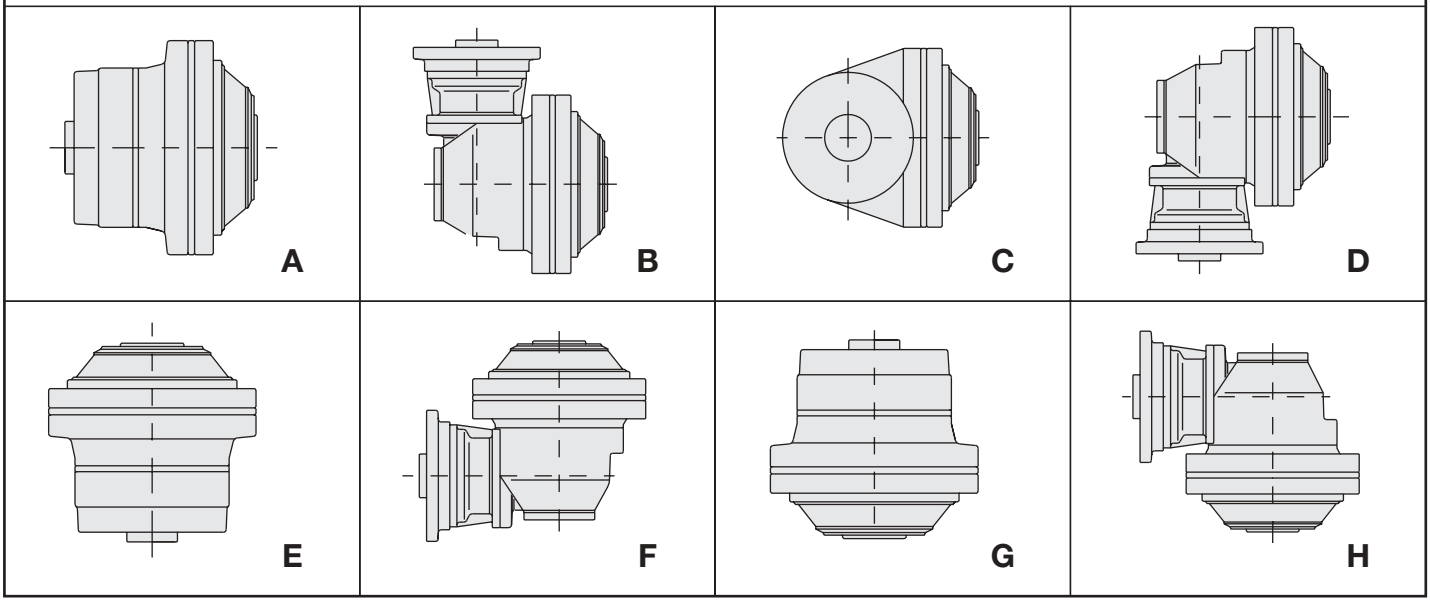
TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 65 M...	0,21	0,35	0,35	7
RR 65D M...	0,26	0,44	0,44	10
RR 65T M...	–	–	–	12
RR 105 M...	0,5	1	1	14
RR 105D M...	0,7	1,5	1,5	20
RR 105T M...	0,5	1,5	1,5	21
RR 110 M...	0,5	1	1	11
RR 110D M...	0,7	1,5	1,5	15
RR 110T M...	0,9	2	2	18
RR 210 M...	0,6	1,2	1,3	24
RR 210D M...	0,7	1,7	1,7	25
RR 210T M...	1	2,2	2,2	27
RR 210Q M...	–	–	–	28
RR 210 S...	0,8	1,4	1,4	23
RR 210D S...	1,1	1,9	1,9	28
RR 210T S...	1,2	2,4	2,4	32
RR 310 M...	1,2	1,9	1,9	21
RR 310D M...	1,4	2,6	2,6	36
RR 310T M...	1,5	2,7	2,6	38
RR 310Q M...	4,0	–	–	41
RR 310 S...	1,2	2,2	2,2	43
RR 310D S...	1,7	3,2	3,5	47
RR 310T S...	2,3	4,4	4,4	49
RR 310Q S...	–	–	–	53
RR 510 M...	1,1	2,0	1,8	35
RR 510D M...	1,8	3,1	3,1	52
RR 510T M...	2,1	3,8	3,8	55
RR 510Q M...	–	–	–	59
RR 510 S...	1,2	2,2	2,2	44
RR 510D S...	2	3,7	3,7	60
RR 510T S...	2,3	4,4	4,4	61
RR 510Q S...	–	–	–	–

TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 105 M...	2,1	0,85	0,95	2,1	1,1	33
RA 105D M...	–	–	–	–	–	37
RA 110 M...	2,1	0,85	0,95	2,1	1,1	33
RA 110D M...	–	–	–	–	–	–
RA 210 M...	2,3	1	1,2	2,2	2	35
RA 210D M...	–	–	–	–	–	22
RA 210T M...	–	–	–	–	–	43
RA 210 S...	2,6	1,3	1,4	2,5	2,2	38
RA 210D S...	–	–	–	–	–	33
RA 310 M...	3,6	1,6	1,7	3,6	1,9	46,5
RA 310D M...	4	1,8	1,9	4	2,1	52
RA 310T M...	–	–	–	–	–	56
RA 310 S...	4,8	2,2	2,3	4,8	2,5	57,6
RA 310D S...	5,2	2,4	2,5	5,2	2,7	61
RA 310T S...	–	–	–	–	–	–
RA 510 M...	4,5	1,9	2,1	4,5	2,5	81
RA 510D M...	4,8	2,2	2,3	4,8	2,6	67
RA 510T M...	5,4	2,5	2,6	5,4	2,9	67
RA 510 S...	4,9	2,1	2,3	4,9	2,7	92
RA 510D S...	5,2	2,4	2,5	5,2	2,8	77
RA 510T S...	5,8	2,7	2,8	5,8	3	78

* Oil quantity changes according to the type of motor flange

Address Reggiana Riduttori commercial network for further technical data.

FEMALE VERSION REDUCTION GEARS from 65 to 510



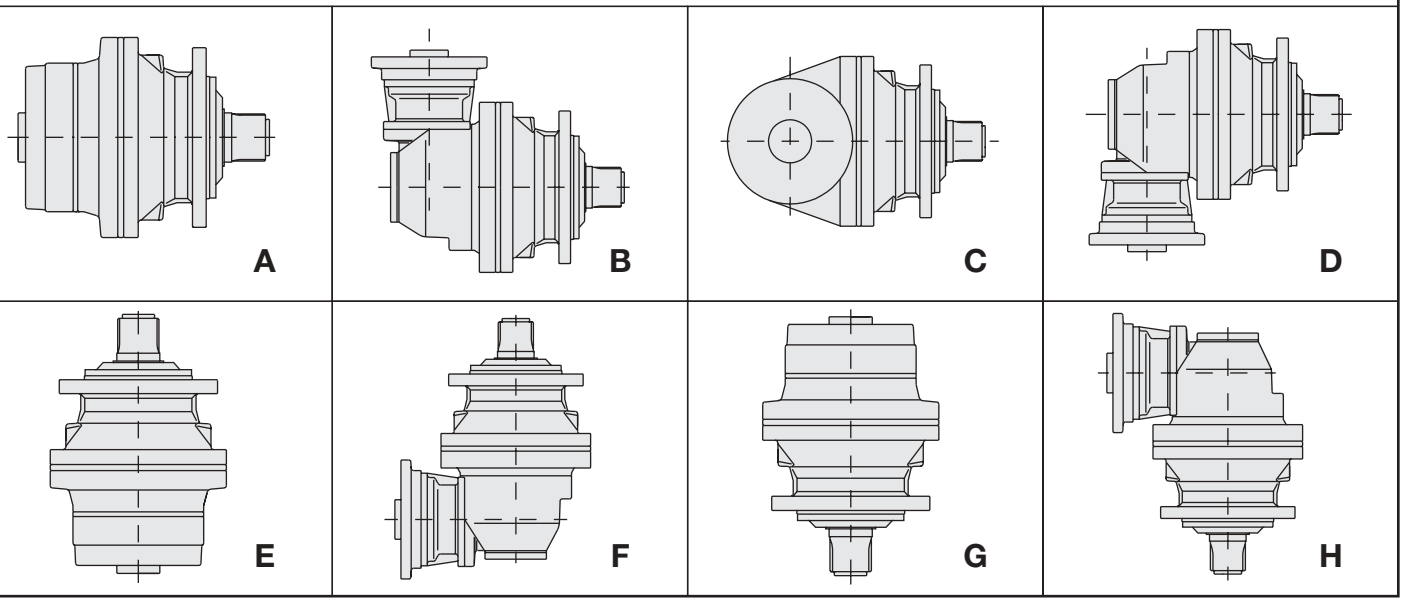
TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 65 FS	0,2	0,3	0,3	3,5
RR 65D FS	0,28	0,4	0,4	5,5
RR 65T FS	–	–	–	6,8
RR 105 FS	0,55	1,1	1,1	8
RR 105D FS	0,8	1,6	1,6	9
RR 105T FS	1	2,1	2,1	14
RR 110 FS	0,55	1,1	1,1	7,5
RR 110D FS	0,8	1,6	1,6	9
RR 110T FS	1	2,1	2,1	15
RR 210 FS	0,7	1,2	1,2	9
RR 210D FS	0,9	1,7	1,7	14
RR 210T FS	1	2,2	2,2	22
RR 210Q FS	–	–	–	–
RR 310 FS	0,9	1,7	1,5	20
RR 310D FS	1,2	2,1	2,1	23
RR 310T FS	1,5	2,7	2,7	26,5
RR 310Q FS	–	–	–	–
RR 510 FS	0,9	1,3	1,3	28
RR 510D FS	1,6	2,9	2,9	39
RR 510T FS	1,9	3,6	3,6	28,5
RR 510Q FS	–	–	–	49

TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 105 FS	1,8	1,0	1,1	1,7	1,1	30
RA 105D FS	2,0	1,2	1,4	2,2	2,0	32
RA 110 FS	2,2	0,9	1	2,2	1,2	31
RA 110D FS	–	–	–	–	–	–
RA 210 FS	2,3	1	1,2	2,2	2	33
RA 210D FS	–	–	–	–	–	34
RA 310 FS	2,4	1,4	1,5	2,6	2,1	40
RA 310D FS	3,4	1,5	1,6	3,4	1,8	42,5
RA 310T FS	4	1,8	1,9	4	2,1	45
RA 510 FS	4,1	2,8	1,9	4,1	2,3	70
RA 510D FS	4,4	2	2,1	4,4	2,3	58
RA 510T FS	5	1,7	2,4	5	2,6	57

* Oil quantity changes according to the type of motor flange

Address Reggiana Riduttori commercial network for further technical data.

MALE VERSION REDUCTION GEARS from 710 to 1700B



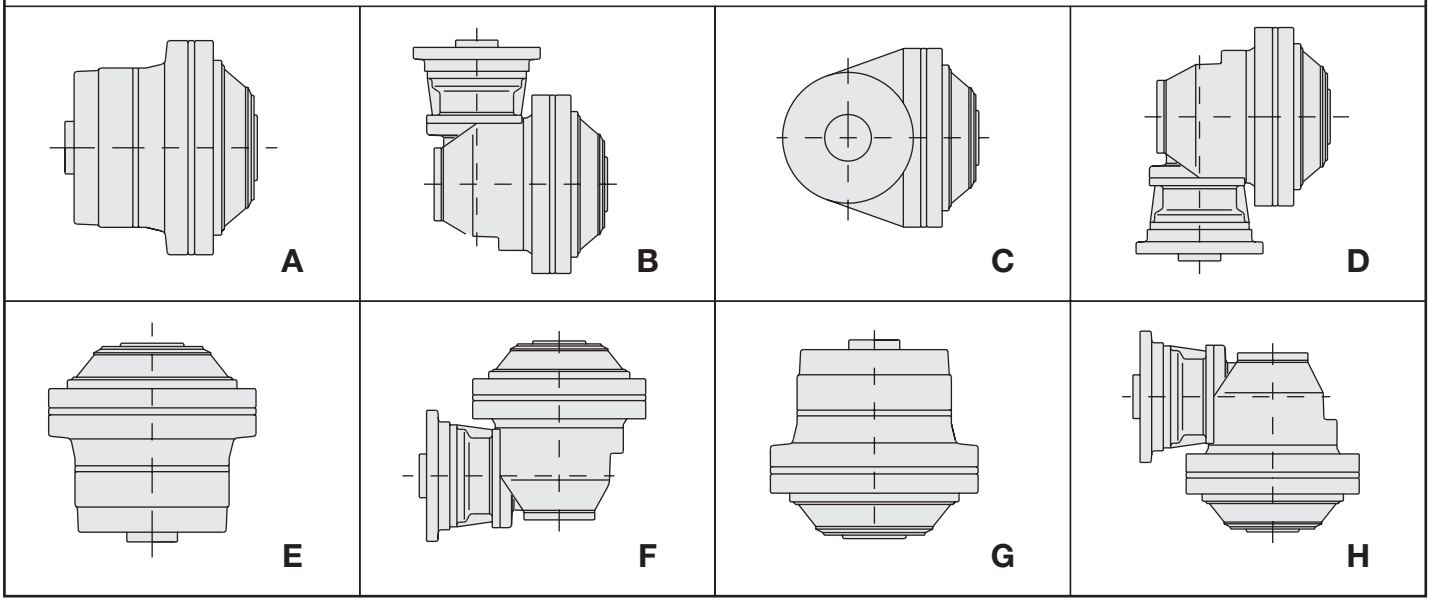
TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 710 M...	1,1	1,6	1,6	34
RR 710D M...	1,8	3,1	3,1	54
RR 710T M	2,1	3,8	3,8	56
RR 710Q M...	5,0	–	–	57
RR 710 S...	1,2	2,2	2,2	50
RR 710D S...	2	3,7	3,7	60
RR 710T S...	2,3	4,4	4,4	67
RR 710Q S...	–	–	–	75
RR 810 M...	* 1,8	* 3,2	* 3,2	64
RR 810D M...	2,6	4,8	4,8	77
RR 810T M...	2,9	5,4	5,4	83
RR 810Q M...	–	–	–	87
RR 810 S...	* 2	* 3,9	* 3,9	70
RR 810D S...	2,8	5,4	5,4	81
RR 810T S...	3,1	6	6	86
RR 810Q S...	–	–	–	94
RR 1010 M...	* 2,5	* 4,5	* 4,5	82
RR 1010D M...	3,2	6,0	6,5	100
RR 1010T M...	3,8	7,1	7,1	121
RR 1010Q M...	–	–	–	–
RR 1700 B...	* 3,2	* 6,8	* 6,8	112
RR 1700D B...	3,8/–	8/–	8/–	136/–
RR 1700T B...	5,5	9,7	9,7	147
RR 1700Q B...	–	–	–	–

TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 710 M...	4,5	1,9	2,1	4,5	2,5	74
RA 710D M...	4,8	2,2	2,3	4,8	2,6	77
RA 710T M...	5,4	2,5	2,6	5,4	2,9	78
RA 710 S...	4,9	2,1	2,3	4,9	2,7	92
RA 710D S...	5,2	2,4	2,5	5,2	2,8	73
RA 710T S...	5,8	2,7	2,8	5,8	3	85
RA 810 M...	8,0	4,0	4,5	8,5	6,0	111
RA 810D M...	8,5	4,5	5	9	6,5	114
RA 810T M...	7,1	3,2	3,4	7,1	3,6	97
RA 810 S...	6,6	2,8	3	6,6	3,4	117
RA 810D S...	7	3,1	3,3	7	3,5	98
RA 810T S...	7,5	3,4	3,8	7,5	3,7	103
RA 1010 M...	8,0	3,5	4,5	7,0	6,8	124
RA 1010D M...	9,8	5,5	6,0	10,0	8,5	143
RA 1010T M...	8,8	4,2	4,3	8,8	8,9	148
RA 1700 B...	17,5/	8,5/	10/	17,5/	14/	227/
RA 1700D B...	10,3	4,8	5	10,3	5,8	179
RA 1700T B...	12,2	7,5	9	13,5	13,5	155

* Oil quantity changes according to the type of motor flange

Address Reggiana Riduttori commercial network for further technical data.

FEMALE VERSION REDUCTION GEARS from 710 to 6300



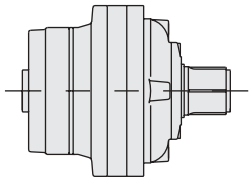
TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 710 FS	0,9	1,3	1,3	27
RR 710D FS	1,6	2,9	2,9	25,5
RR 710T FS	1,9	3,6	3,6	28,5
RR 710Q FS	–	–	–	–
RR 810 FS	* 1,7	* 2,7	* 2,2	41
RR 810D FS	2,2	4	4	61
RR 810T FS	2,7	5	5	63
RR 810Q FS	–	–	–	66
RR 1010 FS	* 2,1	* 3,7	* 3,7	53
RR 1010D FS	2,6	4,7	4,7	77
RR 1010T FS	3,3	6,1	6,1	99
RR 1010Q FS	–	–	–	102
RR 1700 FS	* 2,4	* 5	* 5	70
RR 1700D FS	2,9	5,9	5,7	89
RR 1700T FS	3,5	7,1	6,8	105
RR 1700Q FS	–	–	–	106
RR 2700 FS	* 3,8	* 7,2	* 7,2	112
RR 2700D FS	4,6	8,8	8,8	118
RR 2700T FS	5,4	10,2	10,2	137
RR 2700Q FS	–	–	–	158
RR 3500 FS	4,4	8,2	8,2	120
RR 3500D FS	5,4	10,2	10,2	185
RR 3500T FS	6	11,4	11,4	175
RR 3500Q FS	–	–	–	–
RR 5000 FS	* 5,2	* 9,6	* 9,6	230
RR 5000D FS	* 8	14,2	14,2	270
RR 5000T FS	10	17,7	17,7	288
RR 5000Q FS	–	–	–	–
RR 6300 FS	* 5	* 9,2	* 9,2	240
RR 6300D FS	* 7,8	* 13,8	* 13,8	280
RR 6300T FS	9,8	17,2	17,2	340
RR 6300Q FS	–	–	–	–

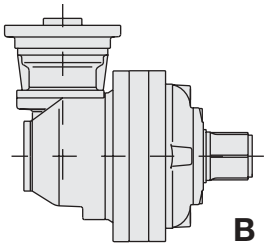
TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 710 FS	4,1	2,3	1,9	4,1	2,3	72
RA 710D FS	4,4	2	2,1	4,4	2,3	52
RA 710T FS	5	2,3	2,4	5	2,6	57
RA 810 FS	5,8	2,4	2,6	5,8	3	82
RA 810D FS	6,1	2,7	2,9	6,1	3,1	57
RA 810T FS	6,7	3	3,2	6,7	3,6	67
RA 1010 FS	6,9	3,1	3,3	6,9	3,6	90
RA 1010D FS	7,9	3,6	3,8	7,9	4,2	109
RA 1010T FS	7,8	3,7	3,8	7,8	4	94
RA 1700 FS	8,1	3,7	3,9	8,1	4,2	100
RA 1700D FS	8,7	4	4,2	8,7	4,5	119
RA 1700T FS	10,4	5	5,1	10,4	5,3	104
RA 2700 FS	16,9	7,9	8,2	16,9	8,7	212
RA 2700D FS	12,9	6,1	6,3	12,9	6,7	164
RA 2700T FS	13,5	6,5	6,6	13,5	6,9	175
RA 3500 FS	18,3	8,6	8,9	18,3	9,4	230
RA 3500D FS	14,1	6,7	6,9	14,1	7,3	200
RA 3500T FS	14,7	7	7,2	14,7	7,9	218
RA 5000 FS	20	9,4	9,7	20	10,3	330
RA 5000D FS	19,3	9,3	9,5	19,3	9,8	313
RA 5000T FS	23,1	11,2	11,4	23,1	11,7	320
RA 6300D FS	19,4	9,2	9,3	9,2	9,5	323
RA 6300T FS	23,1	11	11	11	11,2	341

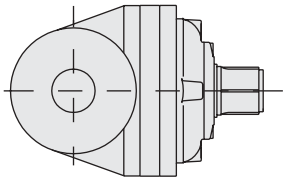
* Oil quantity changes according to the type of motor flange

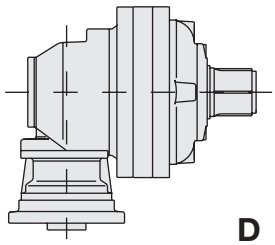
Address Reggiana Riduttori commercial network for further technical data.

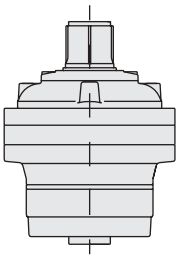
MALE VERSION REDUCTION GEARS from 1700 to 32000

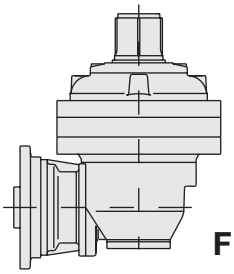

A

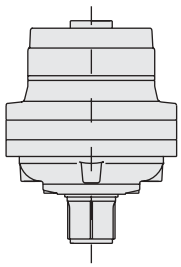

B

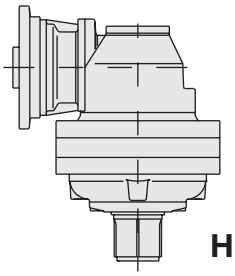

C


D


E


F


G


H

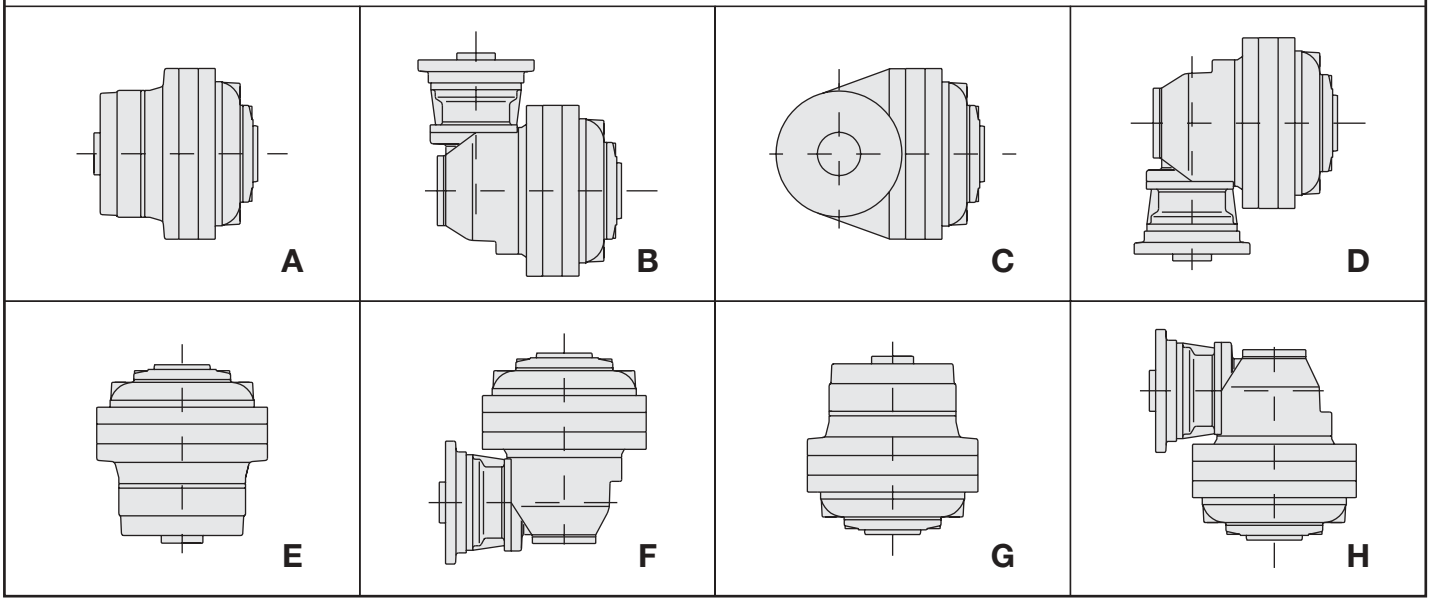
TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 1700 M...	3,2	6,8	6,8	117
RR 1700D M...	3,8	8	8	112
RR 1700T M...	5,5	9,7	9,7	130
RR 1700Q M...	–	–	–	–
RR 2700 M...	* 3,6	* 6,8	* 6,8	126
RR 2700D M...	5,5	9,8	8,0	155
RR 2700T M...	5,2	9,8	9,8	175
RR 2700Q M...	–	–	–	–
RR 3500 M...	* 4,2	* 7,8	* 7,8	148
RR 3500D M...	* 5,2	* 9,8	* 9,8	185
RR 3500T M...	* 5,8	* 11	11	230
RR 3500Q M...	–	–	–	233
RR 5000 M...	* 5	* 9,2	* 9,2	175
RR 5000D M...	* 7,8	* 13,88	* 13,88	315
RR 5000T M...	9,8	17,2	17,2	290
RR 5000Q M...	11,0	20,0		320
RR 6300 M...	* 4,8	* 9	* 9	270
RR 6300D M...	* 7,6	13,6	13,6	325
RR 6300T M...	9,6	17	17	343
RR 6300Q M...	–	–	–	370
RR 8000 M...	* 18,2	* 21,8	* 21,8	606
RR 8000D M...	* 19,2	* 23,8	* 23,8	702
RR 8000T M...	* 19,8	* 25	* 25	739
RR 8000Q M...	–	–	–	–
RR 12500 M...	* 21,2	* 24,8	* 24,8	1014
RR 12500D M...	* 22,2	* 26,8	* 26,8	1216
RR 12500T M...	* 22,8	* 28	* 28	1267
RR 12500Q M...	24,0		50,0	1100
RR 16000 M...	* 21,2	* 24,8	* 24,8	1090
RR 16000D M...	* 23,5	* 28	* 28	1298
RR 16000T M...	* 24	* 30	* 30	1317
RR 16000Q M...	–	–	–	–
RR 22000 M...	* 32,3	* 37,5	* 37,5	1630
RR 22000D M...	* 34,6	* 40,1	* 40,1	1750
RR 22000T M...	* 35,2	* 43,3	* 43,3	1867
RR 22000Q M...	–	–	–	–
RR 32000 M...	* 32	* 37	* 37	1750
RR 32000D M...	* 34,3	* 40,5	* 40,5	1820
RR 32000T M...	* 34,9	* 42,8	* 42,8	2010
RR 32000Q M...	–	–	–	–

TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 1700 M...	9,7	4,5	4,7	9,7	5,1	160
RA 1700D M...	10,3	4,8	5	10,3	5,8	179
RA 1700T M...	12,5	7,5	9,0	13,5	13,5	157
RA 2700 M...	16,5	7,7	8	16,5	8,5	236
RA 2700D M...	12,5	5,9	6,1	12,5	6,5	200
RA 2700T M...	13	6,2	6,4	13	6,7	173
RA 3500 M...	17,9	8,4	8,7	17,9	9,2	155
RA 3500D M...	13,7	6,5	6,7	13,7	7	228
RA 3500T M...	14,3	6,8	7	14,3	7,4	246
RA 5000 M...	19,5	9,2	9,5	19,5	10	285
RA 5000D M...	19	9,1	9,3	19	8,7	358
RA 5000T M...	22,7	11	1,2	22,7	11,6	376
RA 6300D M...	18,8	9	9,1	18,8	9,3	368
RA 6300T M...	22,5	11	10,8	22,5	11	386
RA 8000D M...	39	21	25	39	32	780
RA 8000T M...	35,3	16,9	22	35,3	22,2	786
RA 12500D M...	36,7	17,4	26,2	36,7	26,4	1326
RA 12500T M...	39,9	19	24,3	39,9	24,5	1314
RA 16000T M...	41	21	26	41	25,5	1370
RA 16000Q M...	43	23,5	27	42,3	26,3	1411
RA 22000T M...	50,3	23,9	39,7	50,3	39,9	1917
RA 22000Q M...	51,5	25	41	51,5	41,3	1972
RA 32000T M...	49,1	23,4	39,4	49,1	39,6	2060
RA 32000Q M...	51	26	40,7	51,3	41	2115

* Oil quantity changes according to the type of motor flange

Address Reggiana Riduttori commercial network for further technical data.

FEMALE VERSION REDUCTION GEARS from 8000 to 50000



TYPE	OIL QUANTITY l. POSITION A	E	G	MASS Kg
RR 8000 FS	* 18,8	* 22,2	* 22,2	549
RR 8000D FS	* 19,4	* 24,2	* 24,2	645
RR 8000T FS	* 20	* 25,4	* 25,4	682
RR 8000Q FS	–	–	–	–
RR 12500 FS	* 21,4	* 25,2	* 25,2	935
RR 12500D FS	* 22,4	* 27,2	* 27,2	1137
RR 12500T FS	* 23	* 28,4	* 28,4	1015
RR 12500Q FS	45,0	–	75,0	1100
RR 16000 FS	* 21,4	* 25,2	* 25,2	1011
RR 16000D FS	* 24,5	* 30	* 30	1350
RR 16000T FS	* 24,7	* 31,2	* 31,2	1240
RR 16000Q FS	–	–	–	–
RR 22000 FS	* 32,5	* 37,9	* 37,9	1540
RR 22000D FS	* 34,8	* 40,5	* 40,5	1660
RR 22000T FS	* 35,4	* 43,8	108,0	1777
RR 22000Q FS	65	–	115,0	2063
RR 32000 FS	* 32,2	* 37,4	* 37,4	1660
RR 32000D FS	* 34,5	* 40,9	* 40,9	1730
RR 32000T FS	* 35	* 43,2	* 43,2	1920
RR 32000Q FS	65,0	115,0	115,0	2063
RR 40000 FS	–	–	–	2280
RR 40000D FS	–	–	–	3280
RR 40000T FS	–	–	–	3630
RR 40000Q FS	95	165,0	165,0	4095
RR 50000 FS	–	–	–	2500
RR 50000D FS	–	–	–	3500
RR 50000T FS	–	–	–	3850
RR 50000Q FS	–	–	–	–

TYPE	OIL QUANTITY l. POSITION B	C	D	F	H	MASS Kg
RA 8000D FS	32,8	15,7	23,4	15,7	23,6	755
RA 8000T FS	50	17,2	22,2	17,2	22,4	729
RA 12500D FS	37,3	17,9	26,4	17,9	26,6	1247
RA 12500T FS	40,5	19,4	24,5	19,4	24,7	1235
RA 16000T FS	42	21,3	25,7	21	25,7	1340
RA 16000Q FS	43,2	22,5	27	22,3	28	1345
RA 22000T FS	51	24,4	39,9	24,4	40,1	1827
RA 22000Q FS	52,3	25,7	41,2	25,7	41,7	1899
RA 32000T FS	49,7	23,7	39,6	23,7	39,8	1970
RA 32000Q FS	50	24	39,5	24,3	40	2040
RA 40000T FS	–	–	–	–	–	3740
RA 40000Q FS	–	–	–	–	–	3770
RA 50000T FS	–	–	–	–	–	3960
RA 50000Q FS	–	–	–	–	–	3987

* Oil quantity changes according to the type of motor flange

Address Reggiana Riduttori commercial network for further technical data.

During the installation phase make sure that the housings and the splining are carried out correctly and that the reduction gear is mounted correctly.
Note: We advise using screws in class 10.9 or 12.9, where the application is submitted to heavy knocks, frequent stops, start-ups, inversions or when 70% of the maximum torque allowed is exceeded.
(Reference table of preloading and tightening moment for screws with ISO coarse thread – page 25)

It is very important to prevent the support flanges of the reduction gears from being powered during the mounting phase, and to do this make sure that the counter-flange for fastening adheres perfectly to the reduction gear flange.
Check both in the male and the female versions that the alignment between the reduction gear shaft and the splined countershaft is correct (sleeve, joint, splined shaft, etc.), so that the splined profiles do not deteriorate (Fig.1).

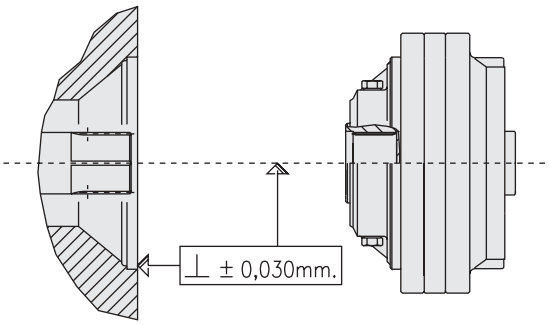


Fig. 1

When mounting the female reduction gears place the splined shaft in coupling with the reduction gear with tolerance (**e9**). In addition it is important to provide holes to house the pins. The overhang advised from the support surface is shown in Fig. 2a, 2b.
Before mounting, the oil plugs, exhausts, curves, etc., have to be provided, taking into account the mounting position of the reduction gear.
The tightening of the screws has to be controlled after 50 hours of operation.

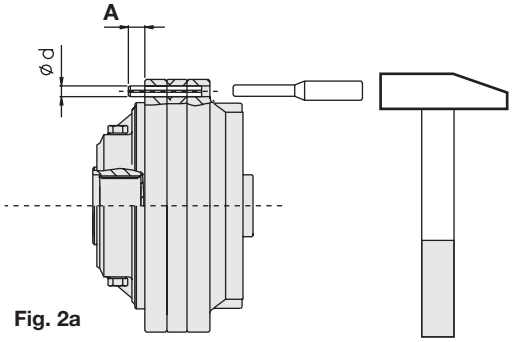


Fig. 2a

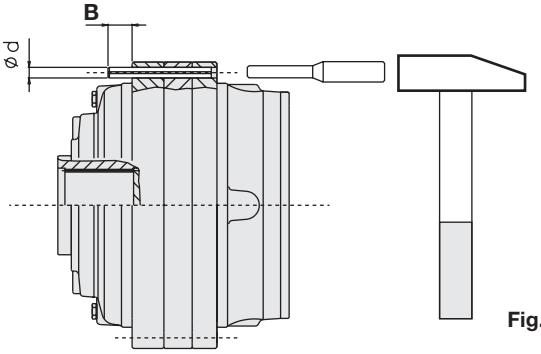


Fig. 2b

TYPE	Ød	A
RR 310 FS **RR 310D FS** **RR 310T FS** **RR 310Q FS**	10	14
RR 510 FS **RR 510D FS** **RR 510T FS** **RR 510Q FS**	10	14
RR 710 FS **RR 710D FS** **RR 710T FS** **RR 710Q FS**	10	14
RR 810 FS **RR 810D FS** **RR 810T FS** **RR 810Q FS**	12	14
RR 1010 FS **RR 1010D FS** **RR 1010T FS** **RR 1010Q FS**	12	13
RR 1700 FS **RR 1700D FS** **RR 1700T FS** **RR 1700Q FS**	12	13

TYPE	Ød	B
RR 2700 M... **RR 2700 FS** **RR 2700D M...** **RR 2700D FS** **RR 2700T M...** **RR 2700T FS** **RR 2700Q M...** **RR 2700Q FS**	14	25
RR 3500 M... **RR 3500 FS** **RR 3500D M...** **RR 3500D FS** **RR 3500T M...** **RR 3500T FS** **RR 3500Q M...** **RR 3500Q FS**	14	18
RR 5000 M... **RR 5000 FS** **RR 5000D M...** **RR 5000D FS** **RR 5000T M...** **RR 5000T FS** **RR 5000Q M...** **RR 5000Q FS**	16	22
RR 6300 M... **RR 6300 FS** **RR 6300D M...** **RR 6300D FS** **RR 6300T M...** **RR 6300T FS** **RR 6300Q M...** **RR 6300Q FS**	16	22

TYPE	Ød	B
RR 8000 M... **RR 8000 FS** **RR 8000D M...** **RR 8000D FS** **RR 8000T M...** **RR 8000T FS** **RR 8000Q M...** **RR 8000Q FS**	20	10
RR 12500 M... **RR 12500 FS** **RR 12500D M...** **RR 12500D FS** **RR 12500T M...** **RR 12500T FS** **RR 12500Q M...** **RR 12500Q FS**	20	10
RR 16000 M... **RR 16000 FS** **RR 16000D M...** **RR 16000D FS** **RR 16000T M...** **RR 16000T FS** **RR 16000Q M...** **RR 16000Q FS**	20	10

- Before starting up the machine the first time check that all the levels are correct.
- Check that, on the reduction gears that have disk brake mounted, the operating pressure of the hydraulic circuit is sufficient to completely open the disk brake to prevent the brake disks from over-heating and consuming too rapidly.
- In consideration of the type of brake, the operating pressure must not go below the minimum opening pressure of the brake so as to avoid the braking action.
- Check that all the screws with ISO metric threading are correctly tightened (see table “Torque wrench settings”)

PRELOAD AND TIGHTENING MOMENT TABLE FOR SCREWS WITH ISO COARSE THREAD

The preload has been calculated at 70% of the minimum yield strength and giving the average value of 0.14 to the friction coefficient.

Screw dimension	Max. preload V (Kg)			Max. tightening moment Ma (daNm)		
	8.8 8 G	**10.9 10 K**	**12.9 12 K**	**8.8 8 G**	**10.9 10 K**	**12.9 12 K**
M 4x0.7	394	554	665	0.31	0.43	0.52
M 5x0.8	635	895	1070	0.60	0.84	1.01
M 6x1	902	1270	1520	1.03	1.46	1.75
M 7x1	1300	1820	2180	1.69	2.36	2.83
M 8x1.25	1640	2310	2770	2.48	3.49	4.19
M 9x1.25	2160	3050	3630	3.67	5.18	6.17
M 10x1.5	2600	3660	4380	4.97	7.00	8.37
M 12x1.75	3780	5320	6380	8.46	11.90	14.30
M 14x2	5160	7250	8700	13.46	18.92	22.70
M16x2	7020	9900	11900	20.40	28.80	34.60
M 18x2.5	8600	12100	14500	28.40	40.00	48.00
M20x2.5	11000	15540	18500	39.60	55.60	66.60
M 22x2.5	13600	19100	22900	53.00	74.50	90.00
M 24x3	15900	22300	26700	70.00	98.00	117.00
M 27x3	20600	28900	34700	101.00	142.00	170.00
M 30x3.5	28000	39900	46700	150.00	213.00	250.00

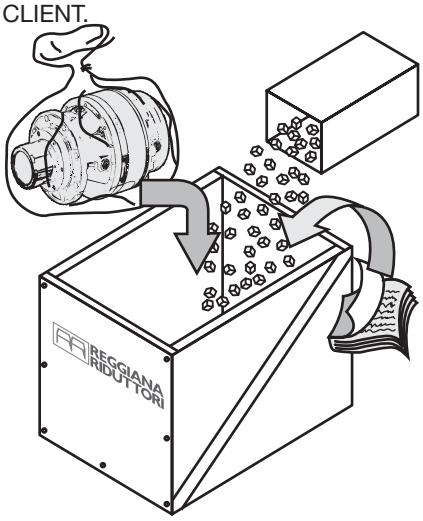
11. SUPPLY CONDITIONS

The reduction gears are delivered in the following conditions:

- Ready for being installed in the mounting position as defined with the client.
- Without lubricating oil and/or grease unless otherwise specified in the contract
- Painted with red synthetic anti-oxidation paint which can be painted over
- The coupling surfaces are not painted but covered with a film of protective oil.
- The final painting is at the discretion of the client.
- Tested
- Accurately packed in crates or on pallets.

Packing

All REGGIANA RIDUTTORI products are packed and shipped, according to each separate case, in crates or on pallets. In addition, all the products are packed with packaging which can withstand normal industrial environments, unless otherwise agreed upon between REGGIANA RIDUTTORI and the CLIENT.



Preparation for shipping

The reduction gear will be prepared for shipping:

- wound in a plastic sack
- placed in a wooden crate
- protected with polystyrene or other material
- accompanied by use, maintenance and storing handbook

Transport

We recommend handling the reduction gears with extreme care during transport to prevent them from being damaged.

12. RECEIVING – HANDLING AND STORING

- All handling must be done with suitable hoisting means, avoiding knocks that could cause damage.
- Check that the article received is intact immediately upon receiving it and in the presence of the forwarder.
- The forwarder must be notified immediately of the presence of any anomalies found and he shall sign the complaint form.
- Store the material in a closed place, placed on benches made of wood or other material and protected against humidity.
- For storing periods of over 60 days, protect the coupling surfaces (centrings, motor connection flanges, input joints, etc.) with a special antioxidant (of the type TEXIL, PRS, etc.).
- For storing periods of over 6 months, the reduction gears have to be placed with the exhaust plug in the highest position and they have to be filled with oil. The external machined parts (centrings, couplings, spot-facing, etc.) should be covered with grease.

13. MAINTENANCE

Ordinary maintenance:

- The first oil change must be made after 100 hours of operation, and then every 12 months or 2000 hours of operation.
- Make the oil change when the reduction gear is still hot to facilitate emptying and to prevent the formation of sludge.
- Check the level of the oil at least once a month and when needed top up with oil of the same type as that present inside the reduction gear.
- Avoid mixing mineral oil with synthetic oil.
- The lubricating oil for type RF2/ brakes is the same as that used for lubricating the gears of the reduction gear, therefore if the oil inside the reduction gear is replaced, the oil in the brake is also automatically replaced except for the RF5/ and RF170 brakes where the oil inside is different from that of the reduction gear.

ATTENTION: ***if upon checking the oil levels on the reduction gears with disk brake and hydraulic motor, an increase of the levels is discovered, probably there has been an oil leakage from the brake seals or from the rotating seal of the motor. In this case, contact "REGGIANA RIDUTTORI assistance centre"***

Extraordinary maintenance:

- Extraordinary maintenance is the competence of the "REGGIANA RIDUTTORI Assistance Service", therefore it is prohibited to open the reduction gear for any type of operation that does not fall within the category of those defined as "ordinary maintenance".
- REGGIANA RIDUTTORI shall not assume any responsibility for any operation carried out that does not fall within the category of ordinary maintenance, and which has caused damage to people and/or objects.

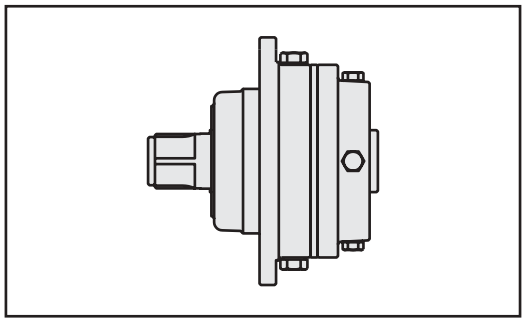
ATTENTION: ***dispose of all reject materials in accordance with the current laws***

14. TROUBLESHOOTING

Should an anomaly occur during operation consult the following table. If the problem persists, contact the closest "REGGIANA RIDUTTORI assistance centre"

ANOMALY	POSSIBLE CAUSE	SOLUTION
Oil leakage from the seals	1) Hardening of the seals due to prolonged storing	1) Clean the area and check for leakage after a few days
	2) Seals damaged or worn	2) Contact an Assistance Centre
Vibrations and/or excessive noise	1) Reduction gear not installed correctly	1) Check the fixing
	2) Internal anomaly	2) Contact an Assistance Centre
The stationing disk brake fails to disengage	1) Lack of pressure in the brake	1) Check the brake connection
	2) Disks stuck due to period of stationing	2) Apply pressure + brake rotation
	3) Brake seals faulty	3) Contact an Assistance Centre
Over-heating	1) Lack of oil	1) Add oil
	2) Disk brake does not completely open	2) Check brake opening pressure
	3) High thermal power	3) Contact an Assistance Centre
With motor activated the reduction gear does not rotate	1) Incorrect mounting of motor	1) Check coupling between motor and reduction gear
	2) Brakes blocked	2) Check the braking system
	3) Internal anomaly	3) Contact an Assistance Centre
Stationing disk brake does not block	1) Residual pressure in the circuit	1) Check hydraulic circuit
	2) Disks worn	2) Contact an Assistance Centre

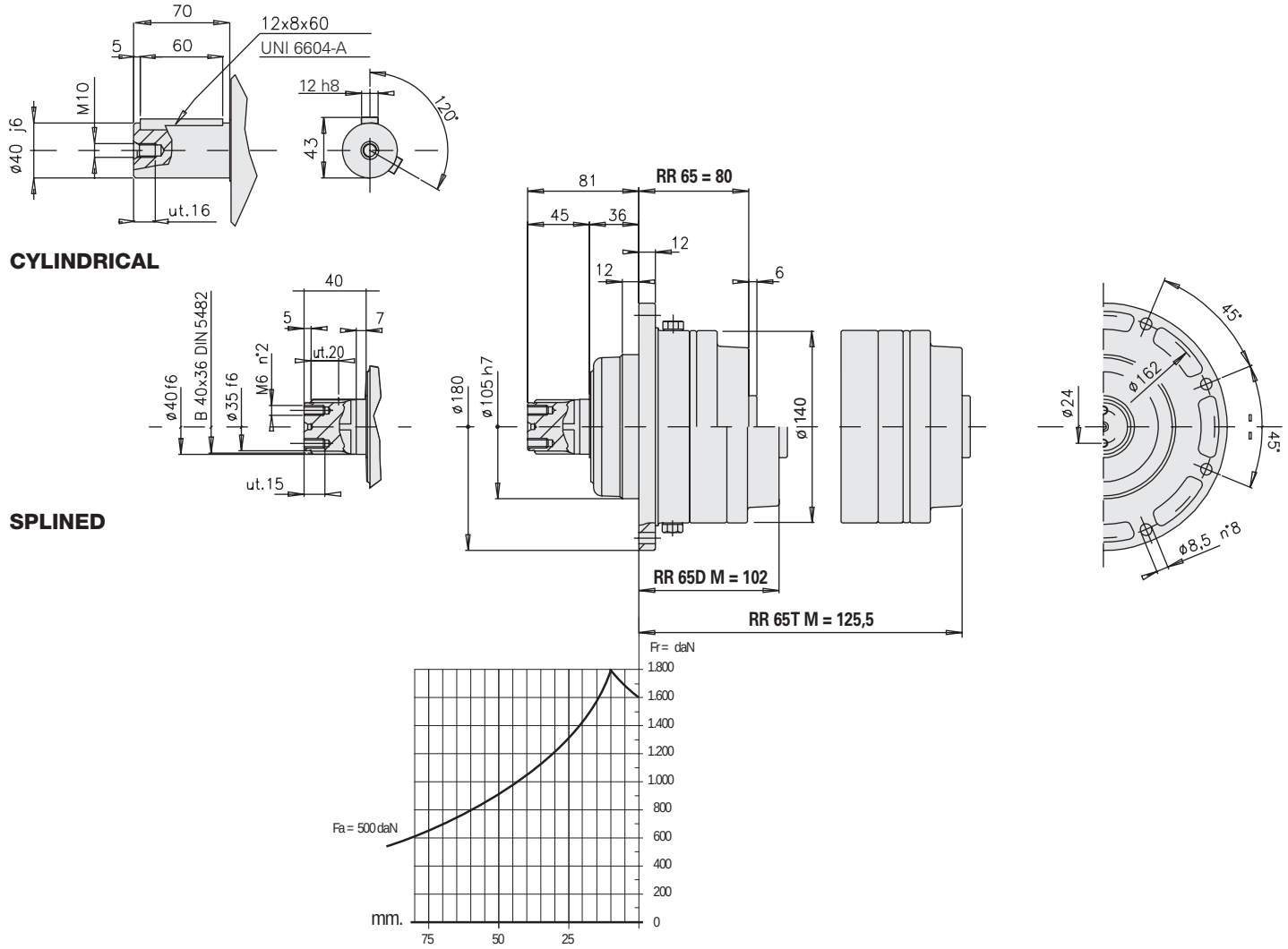
SIZE 65 REDUCTION GEAR



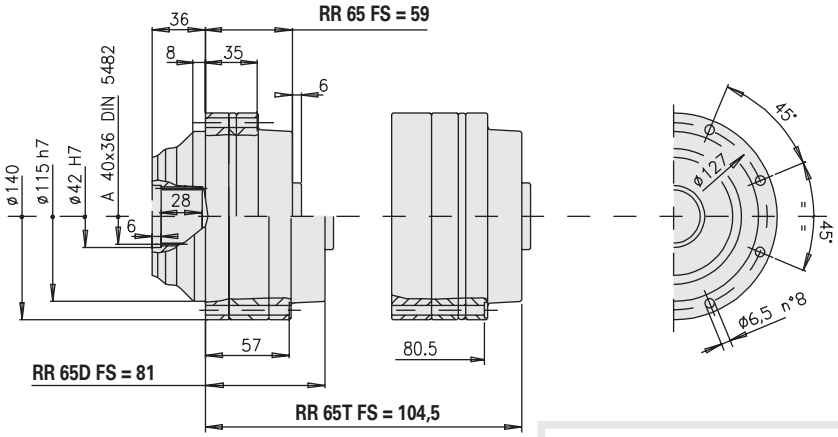
Tab. A

TYPE	RR 65 M... RR 65 FS	RR 65D M... RR 65D FS	RR 65T M... RR 65T FS
Number of stages	1	2	3
Type of input	A	A	A
Max. input revs n1 (min^{-1})	3500	3500	3500

MALE LINEAR VERSION RR 65 M... - RR 65D M... - RR 65T M...



FEMALE LINEAR VERSION RR 65 FS - RR 65D FS - RR 65T FS



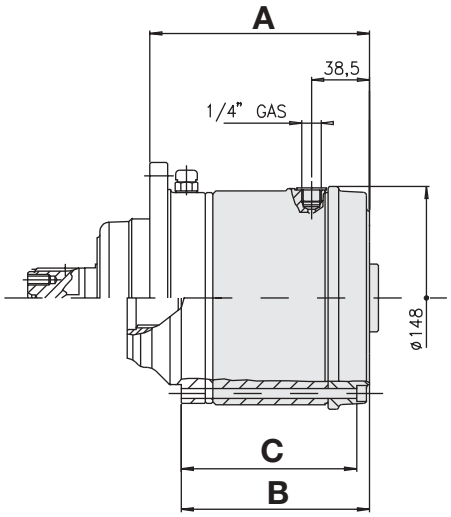
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

PART No. – RATIOS – TORQUES (ISO standards)								
RR 65 M... RR 65 FS			RR 65D M... RR 65D FS			RR 65T M... RR 65T FS		
PART No. 65/...	...../1	T2 da Nm	PART No. 65/...	...../1	T2 da Nm	PART No. 65/...	...../1	T2 da Nm
35	3,51	80	123	12,3	80	432	43,2	80
46	4,65	62	163	16,3	80	573	57,2	80
62	6,21	43	216	21,6	62	758	75,8	80
			288	28,8	62	1013	101,3	80
			385	38,5	43	1342	134,2	62
						1793	179,3	62
						2394	239,4	43

Note: To mount the RR 65 F reduction gear, use screws with resistance class (UNI 3740/3) 12.9.

BRAKE SERIES RF 2/7 ÷ 2/60



TYPE	A
RR 65 M...	146
RR 65D M...	168
RR 65T M...	191,5

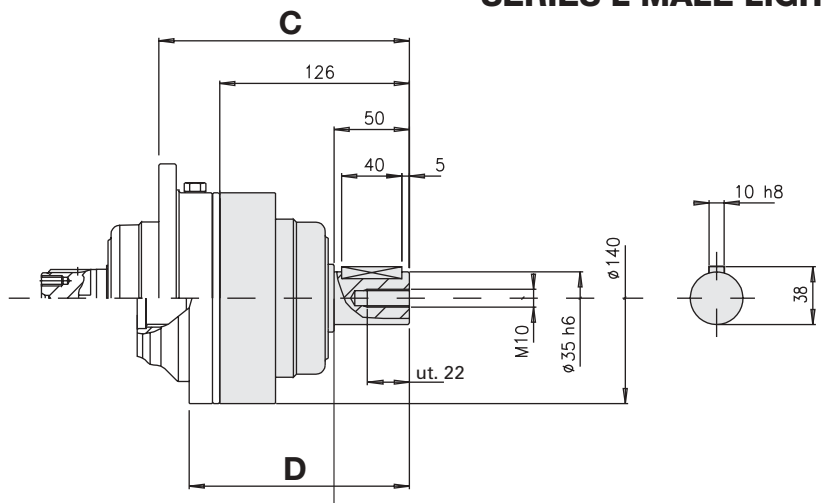
TYPE	B	C
RR 65 FS	125	116,5
RR 65D FS	147	138,5
RR 65T FS	170,5	162

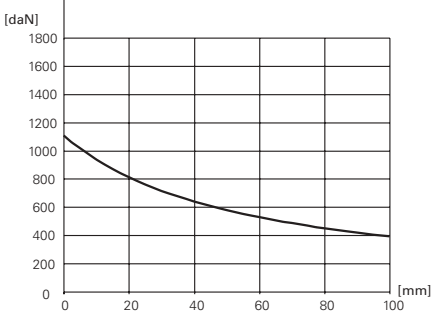
		Mass
Ambient temperature	-20°C ÷ +60°C	Kg 10,5
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT

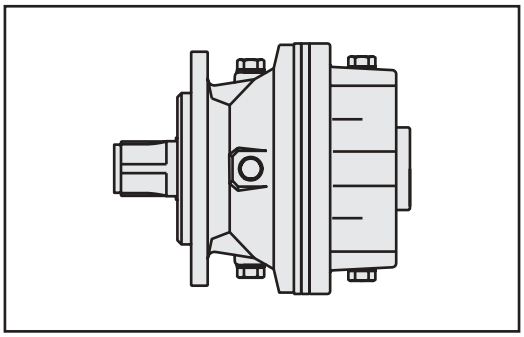




TYPE	C	D
RR 65 M...	168	–
RR 65D M...	190	–
RR 65T M...	213,5	–
RR 65 FS	–	147
RR 65D FS	–	169
RR 65T FS	–	192,5

SIZE 105 REDUCTION GEAR

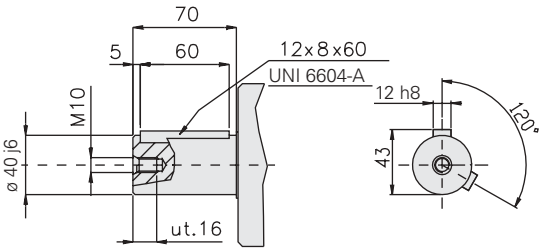
Tab. A



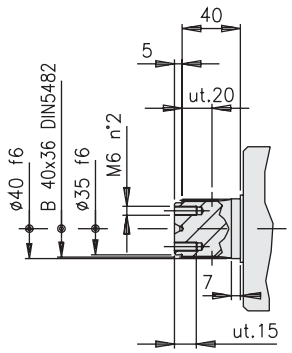
TYPE	RR 105 M... RR 105 FS	RR 105D M... RR 105D FS	RR 105T M... RR 105T FS
Number of stages	1	2	3
Type of input	B	A	A
Max. input revs n1 (min^{-1})	3500	3500	3500

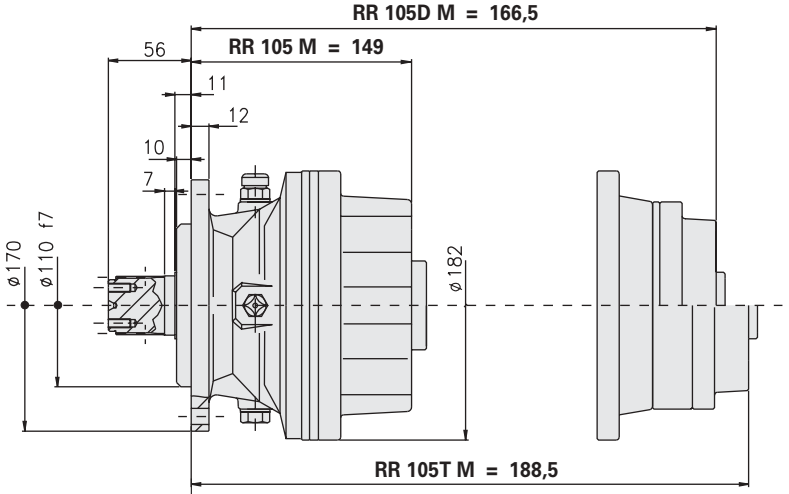
TYPE	RA 105 M... RA 105 FS	RA 105D M... RA 105D FS	
Number of stages	1	2	-
Type of input	B	B	-
Max. input revs n1 (min^{-1})	3500	3500	-

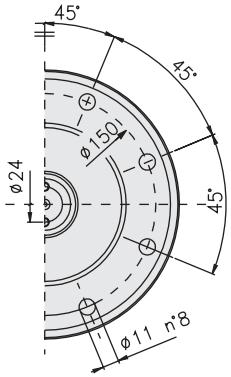
MALE LINEAR VERSION RR 105 M... - RR 105D M... - RR 105T M...



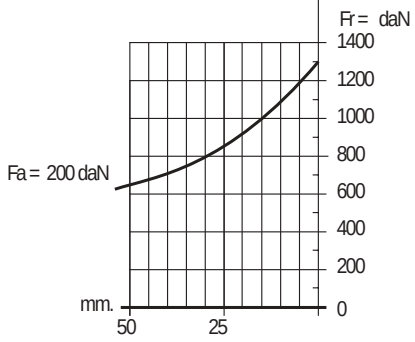
CYLINDRICAL



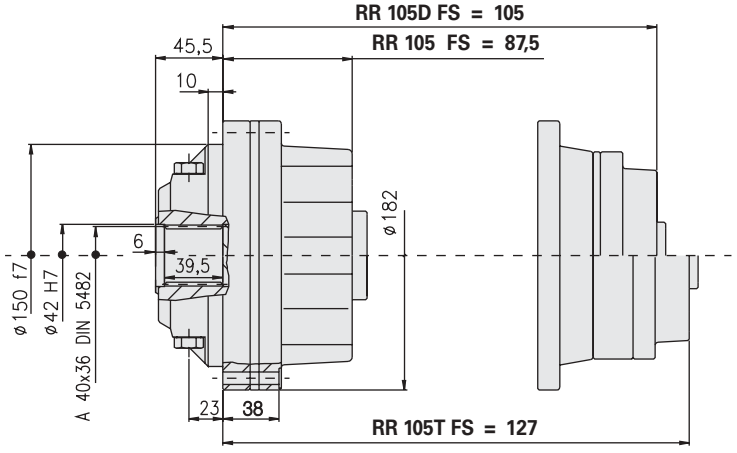


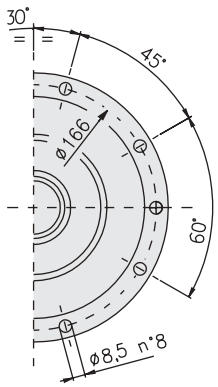


SPLINED



FEMALE LINEAR VERSION RR 105 FS - RR 105D FS - RR 105T FS





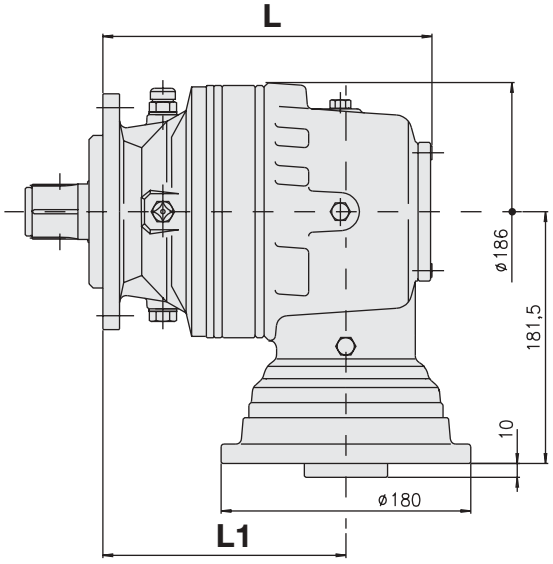
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

PART No. – RATIOS – TORQUES (ISO Standards)											
RR 105 M... RR 105 FS			RR 105D M... RR 105D FS			RR 105T M... RR 105T FS					
PART No. 105/...	...../1	T2 daNm	PART No. 105/...	...../1	T2 daNm	PART No. 105/...	...../1	T2 daNm			
32	3,21	110	112	11,27	110	505	50,51	100			
41	4,10	100	143	14,39	100	669	66,92	100			
54	5,42	90	190	19,07	100	893	89,37	100			
72	7,20	65	254	25,46	100	1183	118,39	100			
			336	33,66	90	1581	158,11	100			
			447	44,71	65	2090	209,02	90			
						2776	277,66	65			

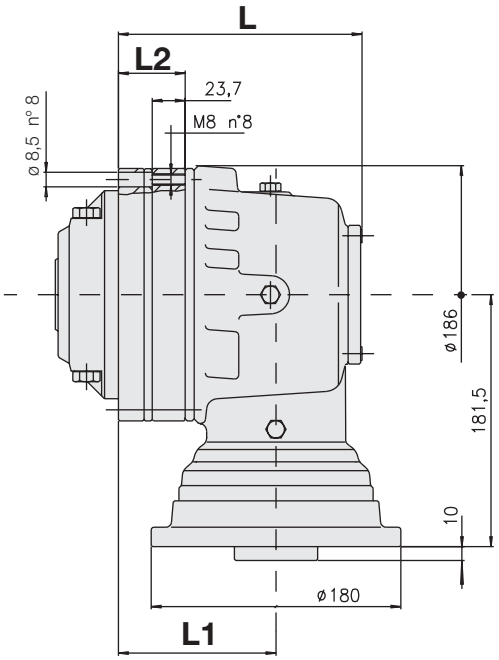
PART No. – RATIOS – TORQUES (ISO Standards)								
RA 105 M... RA 105 FS			RA 105D M... RA 105D FS					
PART No. 105/...	...../1	T2 da Nm	PART No. 105/...	...../1	T2 da Nm			
103	10,34	110	331	33,18	110			
132	13,20	100	423	42,38	110			
174	17,49	90	541	54,13	100			
231	23,18	65	715	71,55	100			
319	31,91	90	950	95,05	100			
423	42,39	65	1256	125,66	90			
			1669	166,92	65			
			1738	173,81	100			
			2297	229,77	90			
			3052	305,23	65			

MALE ANGULAR VERSION RA 105 M... - RA 105D M...



TYPE	L	L1
RA 105 M...	238	175
RA 105D M...	282	220

FEMALE ANGULAR VERSION RA 105 FS - RA 105D FS

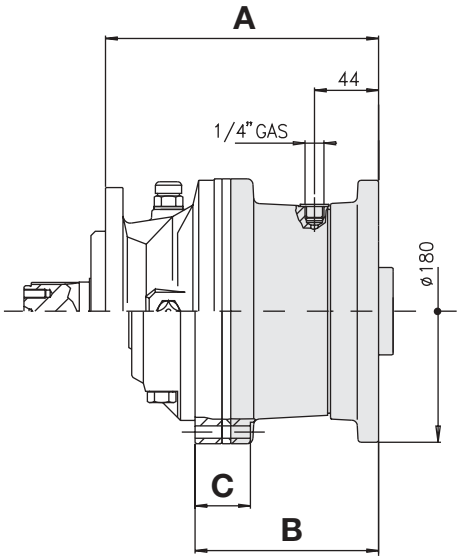


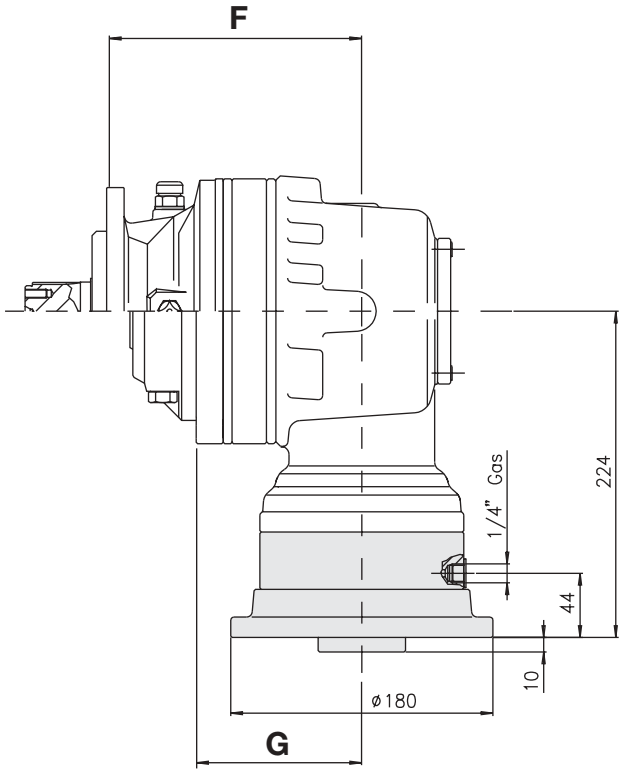
TYPE	L	L1	L2
RA 105 FS	176	114	48,2
RA 105D FS	220	158	92,7

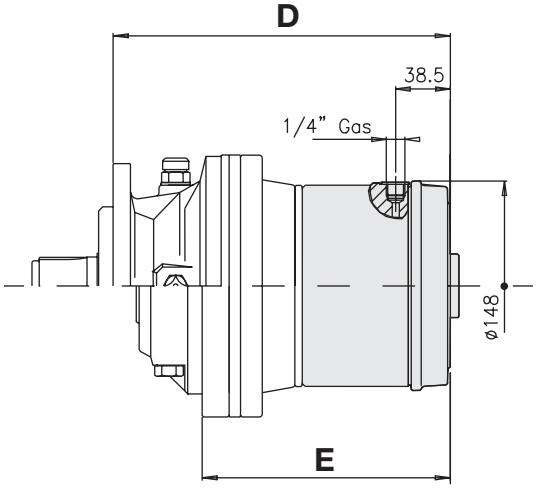
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 105 REDUCTION GEAR

BRAKES SERIES RF 2/7 ÷ 2/60







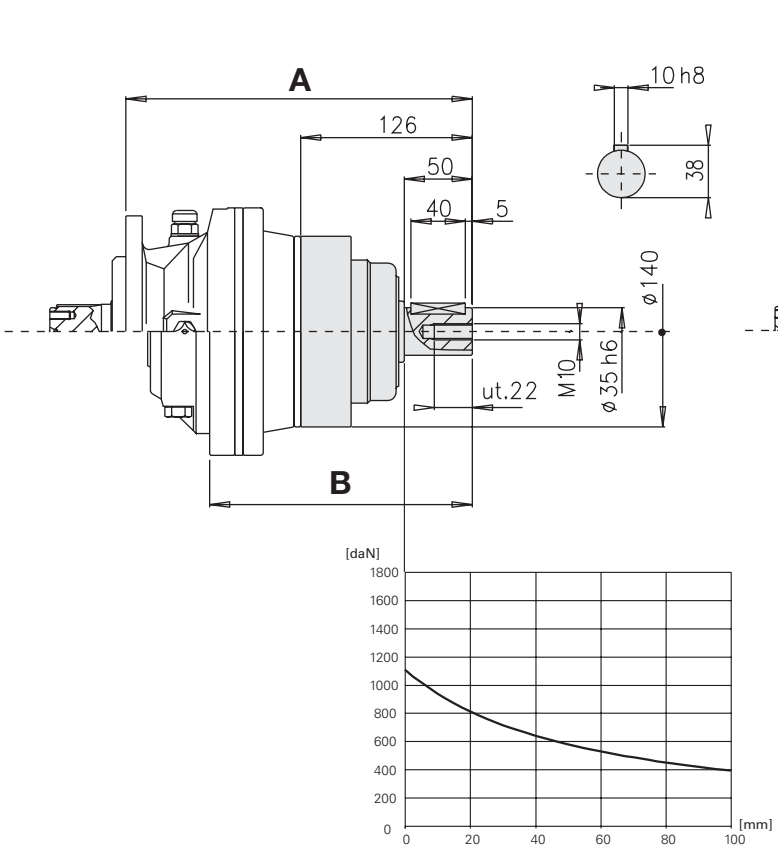
TYPE	A	B	C	D	E	F	G
RR 105 M...	187,5	-	-	-	-	-	-
RA 105 M...	-	-	-	-	-	175	-
RR 105D M...	-	-	-	232,5	-	-	-
RA 105D M...	-	-	-	-	-	220	-
RR 105T M...	-	-	-	254,5	-	-	-
RR 105 FS	-	126	38	-	-	-	-
RA 105 FS	-	-	-	-	-	-	114
RR 105D FS	-	-	-	-	171	-	-
RA 105D FS	-	-	-		-	-	158
RR 105T FS	-	-	-		193	-	-

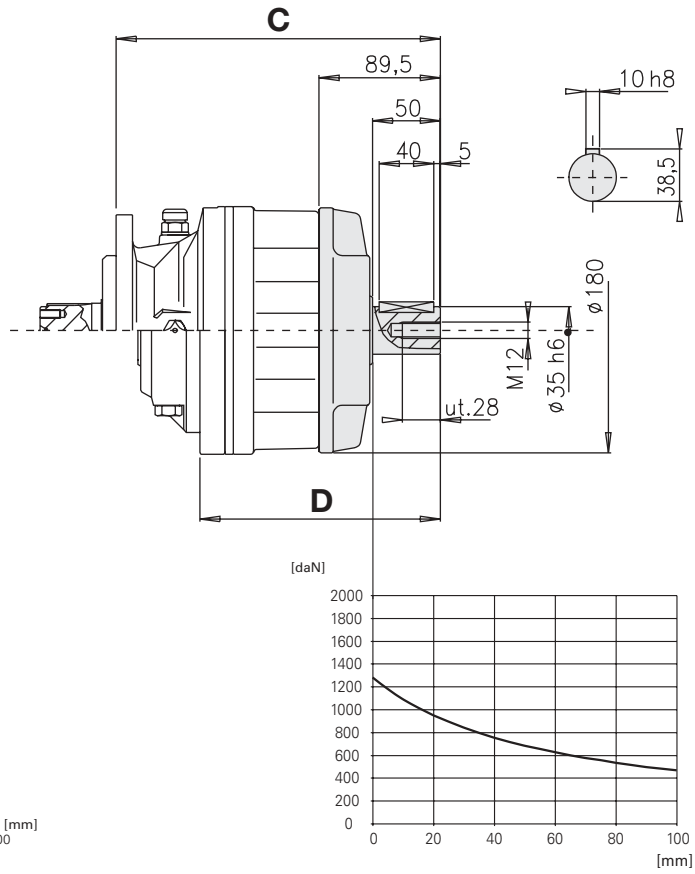
Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

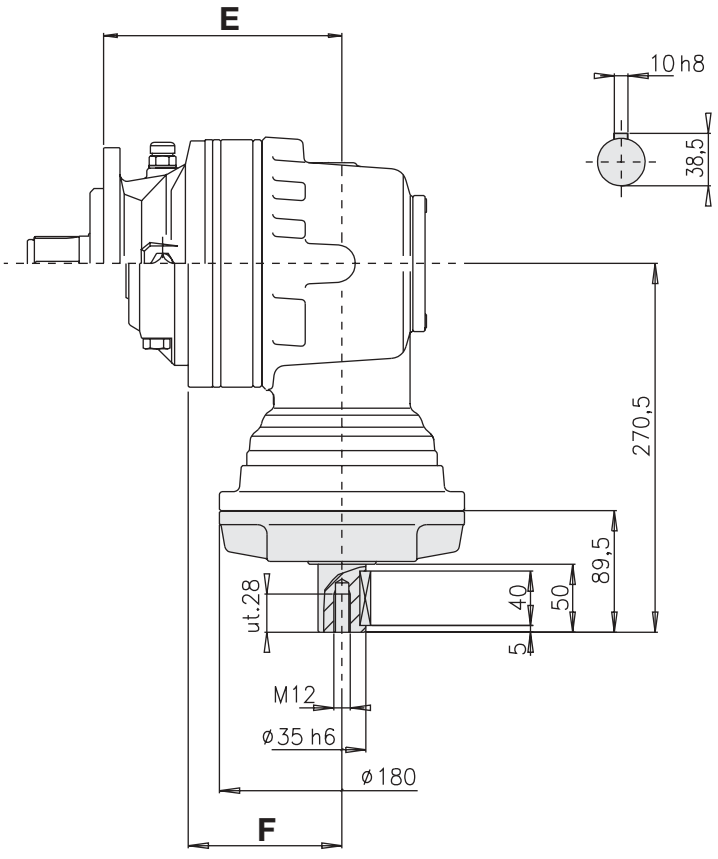
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT



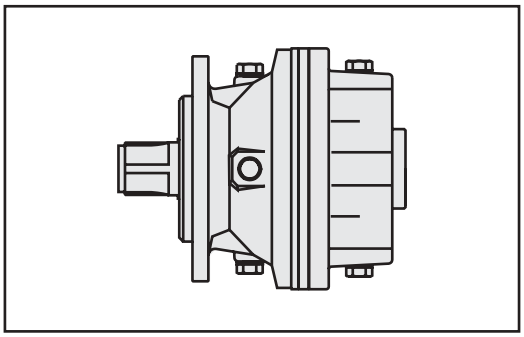




TYPE	A	B	C	D	E	F
RR 105 M...	-	-	238,5	-	-	-
RR 105 FS	-	-	-	177	-	-
RR 105D M...	254,5	-	-	-	-	-
RR 105D FS	-	193	-	-	-	-
RR 105T M...	276,5	-	-	-	-	-
RR 105T FS	-	215	-	-	-	-
RA 105 M...	-	-	-	-	175	-
RA 105 FS	-	-	-	-	-	114
RA 105D M...	-	-	-	-	220	-
RA 105D FS	-	-	-	-	-	158

SIZE 110 REDUCTION GEAR

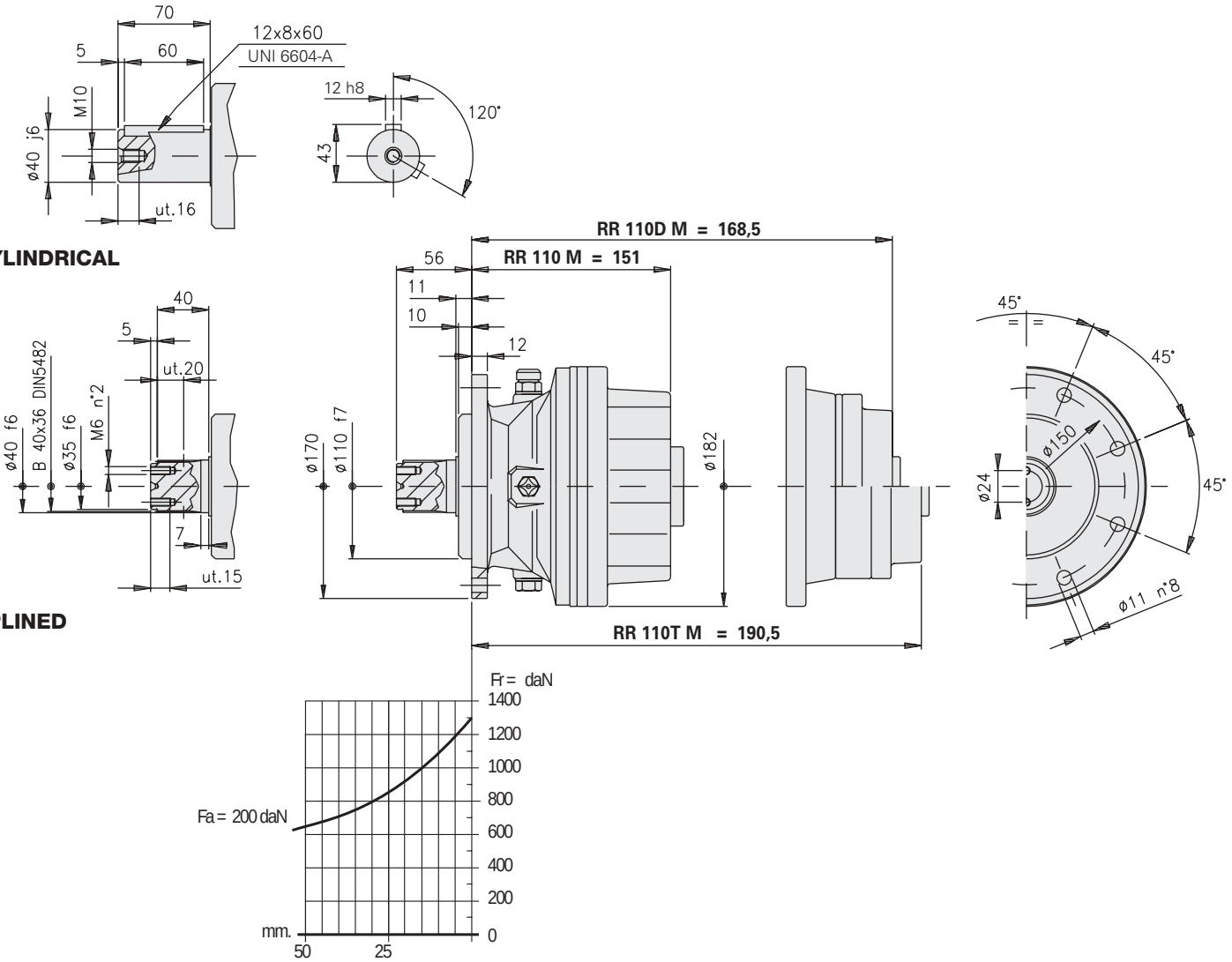
Tab. A



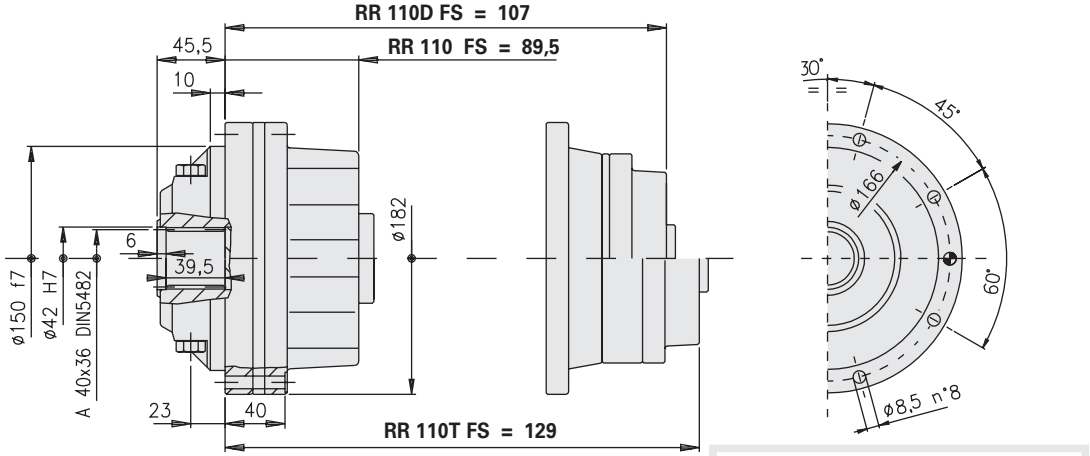
TYPE	RR 110 M... RR 110 FS	RR 110D M... RR 110D FS	RR 110T M... RR 110T FS
Number of stages	1	2	3
Type of input	B	A	A
Max. input revs n1 (min^{-1})	3500	3500	3500

TYPE	RA 110 M... RA 110 FS	RA 110D M... RA 110D FS	
Number of stages	1	2	-
Type of input	B	B	-
Max. input revs n1 (min^{-1})	3500	3500	-

MALE LINEAR VERSION RR 110 M... - RR 110D M... - RR 110T M...



FEMALE LINEAR VERSION RR 110 FS - RR 110D FS - RR 110T FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

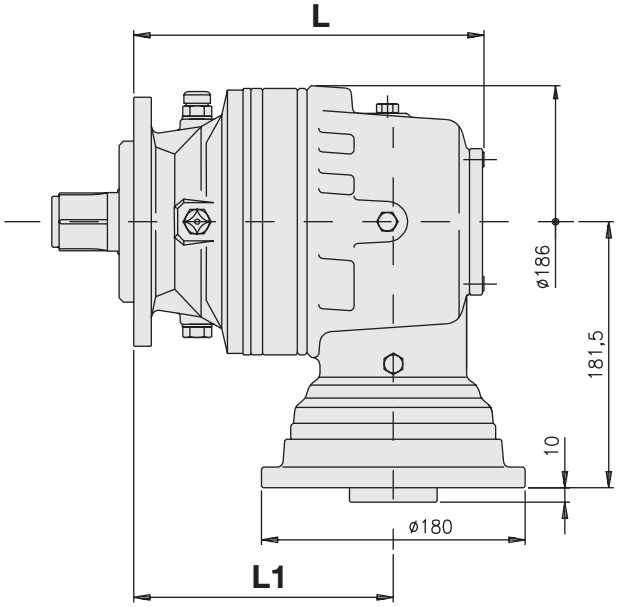
SIZE 110 REDUCTION GEAR

Tab. B

PART No. – RATIOS – TORQUES (ISO Standards)											
RR 110 M... RR 110 FS			RR 110D M... RR 110D FS			RR 110T M... RR 110T FS					
PART No. 110/...	...../1	T2 daNm	PART No. 110/...	...../1	T2 daNm	PART No. 110/...	...../1	T2 daNm			
33	3,31	145	116	11,62	145	481	48,17	130			
39	3,91	130	137	13,72	130	638	63,82	130			
49	4,94	100	181	18,18	130	845	84,54	130			
57	5,78	95	229	22,97	100	1068	106,82	100			
70	7,09	68	268	26,88	95	1249	124,98	95			
			306	30,68	100	1426	142,65	100			
			358	35,89	95	1669	166,91	95			
			440	44,03	68	2229	222,90	95			
						2734	273,42	68			

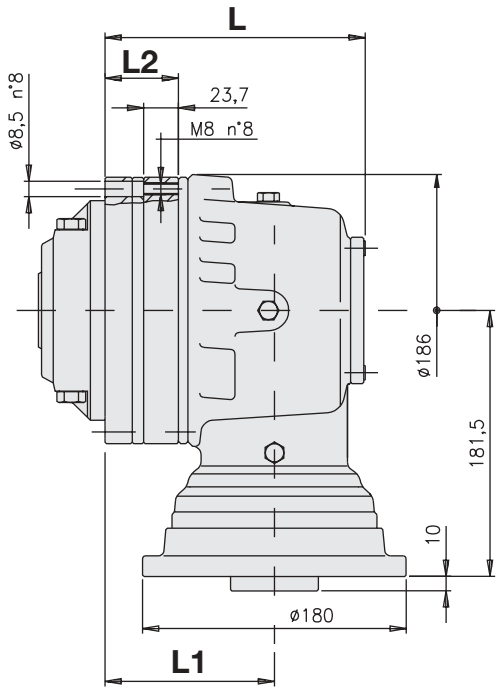
PART No. – RATIOS – TORQUES (ISO Standards)								
RA 110 M... RA 110 FS			RA 110D M... RA 110D FS					
PART No. 110/...	...../1	T2 da Nm	PART No. 110/...	...../1	T2 da Nm			
106	10,66	145	352	35,28	145			
125	12,59	130	416	41,67	145			
159	15,91	100	526	52,65	145			
186	18,61	95	727	72,77	130			
228	22,83	68	892	89,26	130			
290	29,09	100	1127	112,78	100			
340	34,03	95	1319	131,96	95			
417	41,75	68	1618	161,86	68			
			1967	196,71	95			
			2062	206,22	100			
			2412	241,29	95			
			2959	295,98	68			

MALE ANGULAR VERSION RA 110 M... - RA 110D M...



TYPE	L	L1
RA 110 M...	239,5	177
RA 110D M...	286	224

FEMALE ANGULAR VERSION RA 110 FS - RA 110D FS

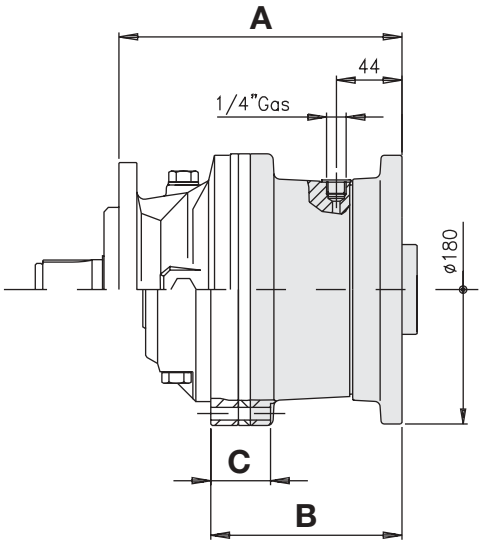


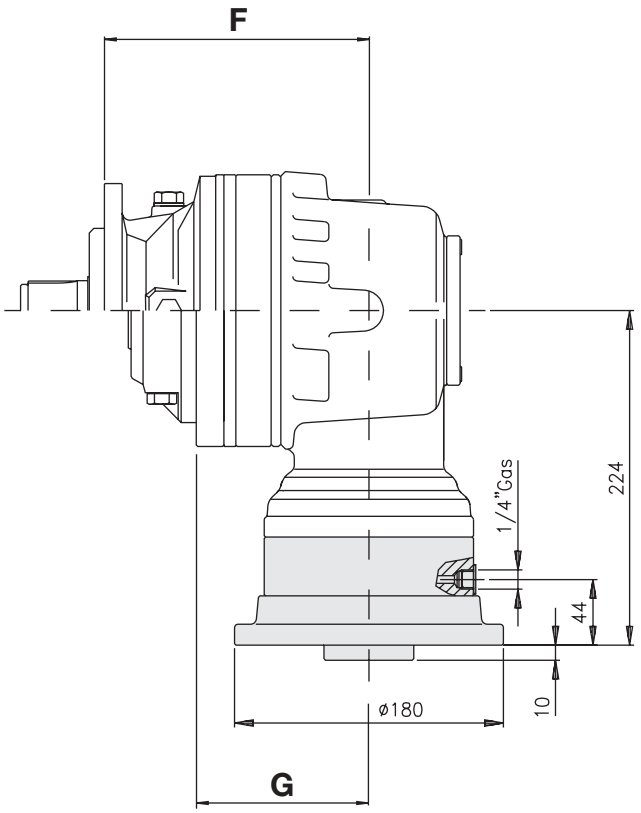
TYPE	L	L1	L2
RA 110 FS	178,5	116	50,2
RA 110D FS	224,5	162	96,7

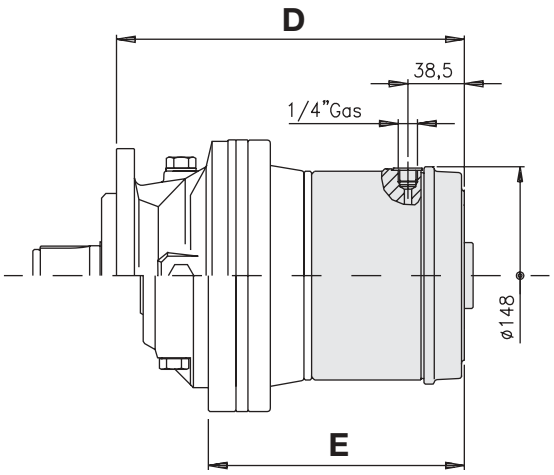
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 110 REDUCTION GEAR

BRAKES SERIES RF 2/7 ÷ 2/60







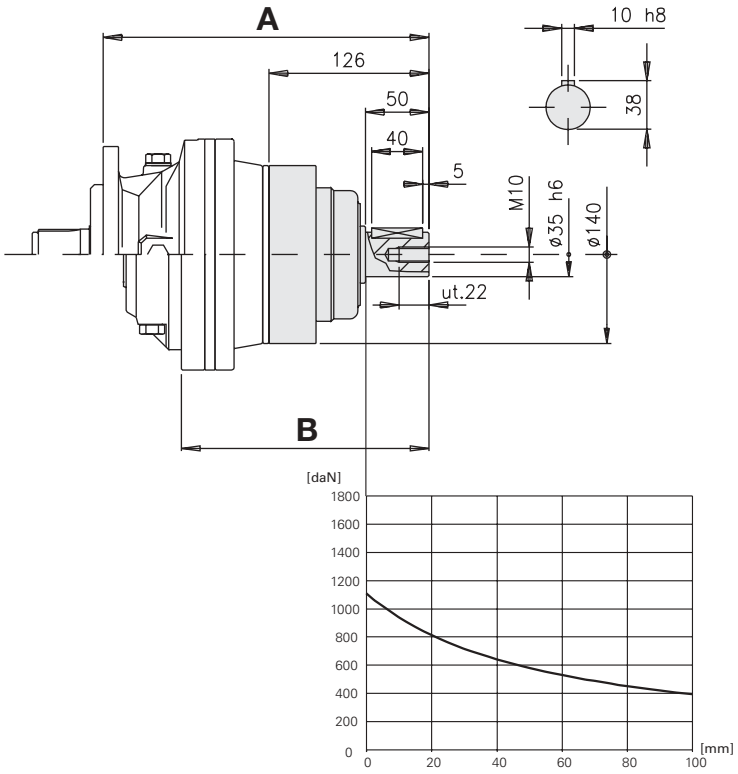
TYPE	A	B	C	D	E	F	G
RR 110 M...	189,5	-	-	-	-	-	-
RA 110 M...	-	-	-	-	-	177	-
RR 110D M...	-	-	-	234,5	-	-	-
RA 110D M...	-	-	-	-	-	224	-
RR 110T M...	-	-	-	256,5	-	-	-
RR 110 FS	-	128	40	-	-	-	-
RA 110 FS	-	-	-	-	-	-	116
RR 110D FS	-	-	-	-	173	-	-
RA 110D FS	-	-	-		-	-	162
RR 110T FS	-	-	-		195	-	-

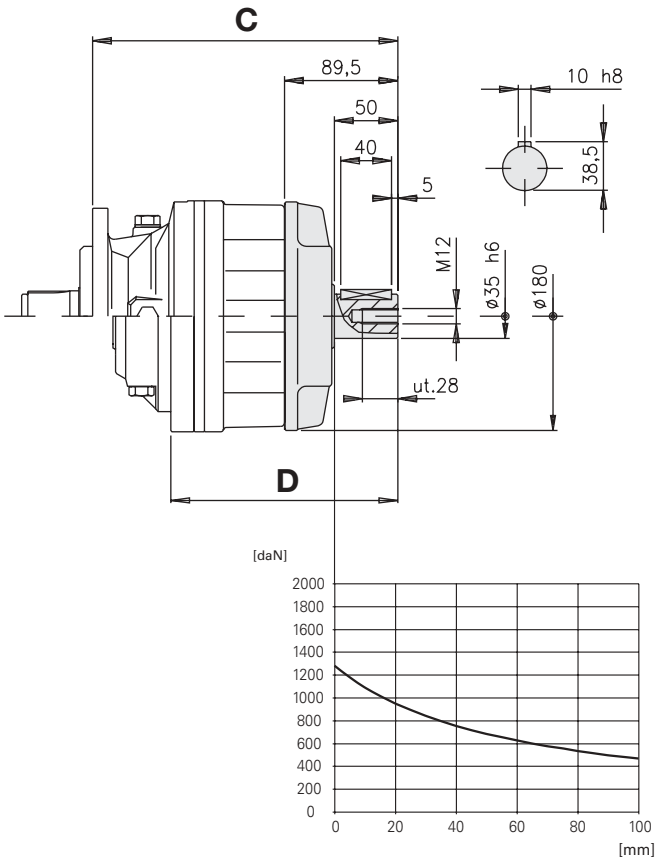
Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

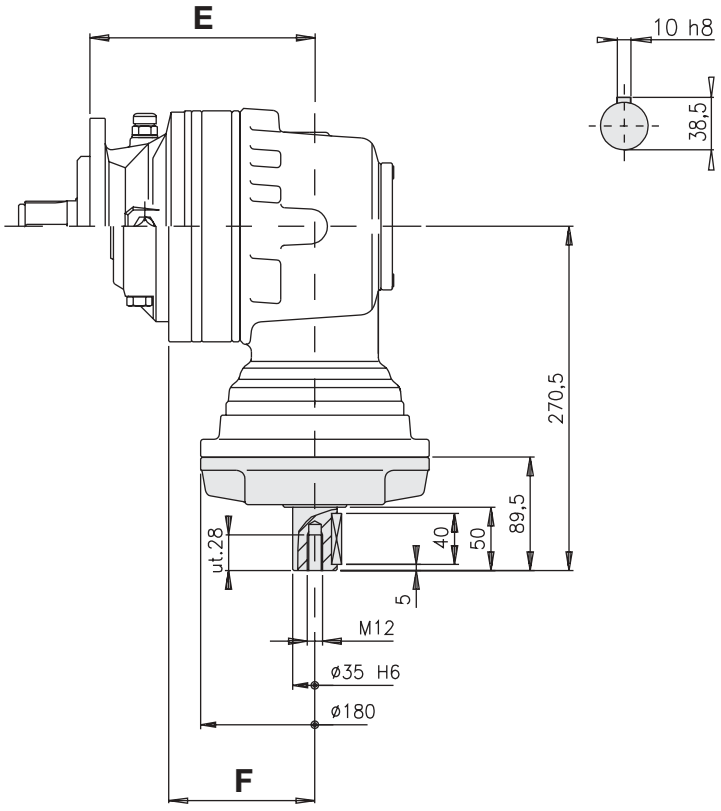
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT

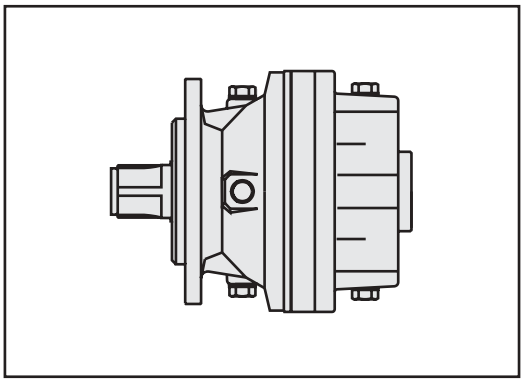






TYPE	A	B	C	D	E	F
RR 110 M...	-	-	240,5	-	-	-
RR 110 FS	-	-	-	179	-	-
RR 110D M...	256,5	-	-	-	-	-
RR 110D FS	-	195	-	-	-	-
RR 110T M...	278,5	-	-	-	-	-
RR 110T FS	-	217	-	-	-	-
RA 110 M...	-	-	-	-	177	-
RA 110 FS	-	-	-	-	-	116

SIZE 210 REDUCTION GEAR

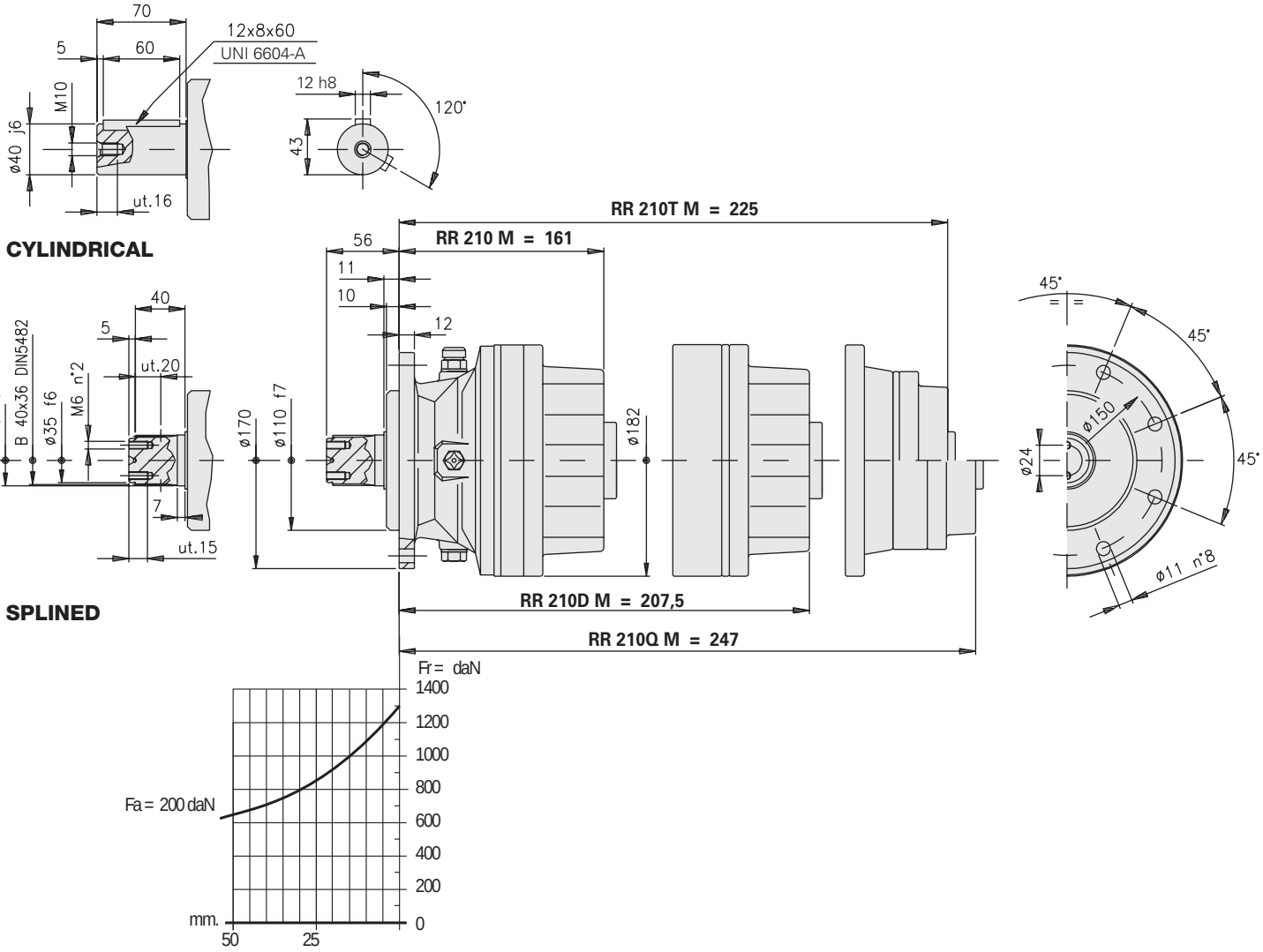


Tab. A

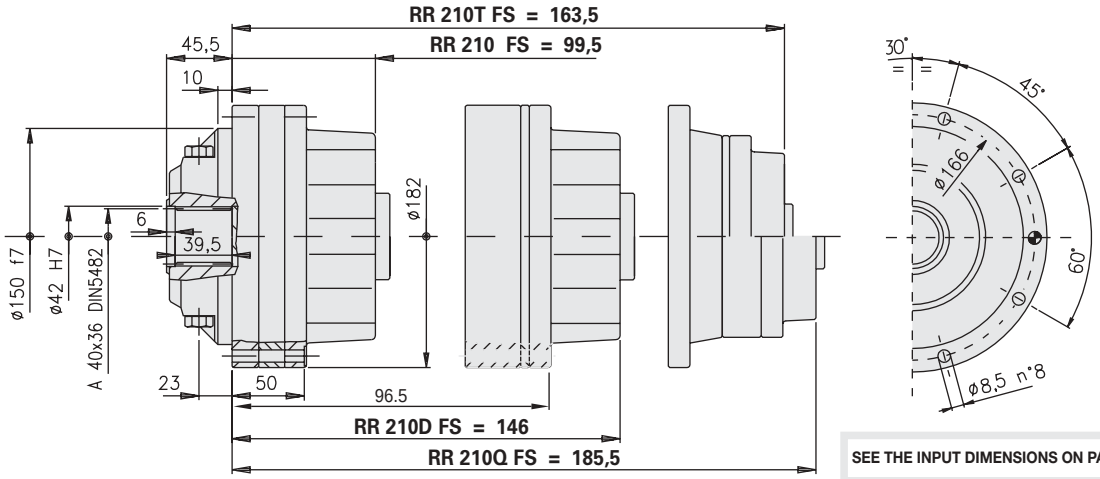
TYPE	RR 210 M... RR 210 FS RR 210 S...	RR 210D M... RR 210D FS RR 210D S...	RR 210T M... RR 210T FS RR 210T S...	RR 210Q M... RR 210Q FS RR 210Q S...
Number of stages	1	2	3	4
Type of input	B	B	A	A
Max. input revs n1 (min^{-1})	3500	3500	3500	3500

TYPE	RA 210 M... RA 210 FS RA 210 S...	RA 210D M... RA 210D FS RA 210D S...		
Number of stages	1	2	-	-
Type of input	B	B	-	-
Max. input revs n1 (min^{-1})	3500	3500	-	-

MALE LINEAR VERSION RR 210 M... - RR 210D M... - RR 210T M... - RR 210Q M...



FEMALE LINEAR VERSION RR 210 FS - RR 210D FS - RR 210T FS - RR 210Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

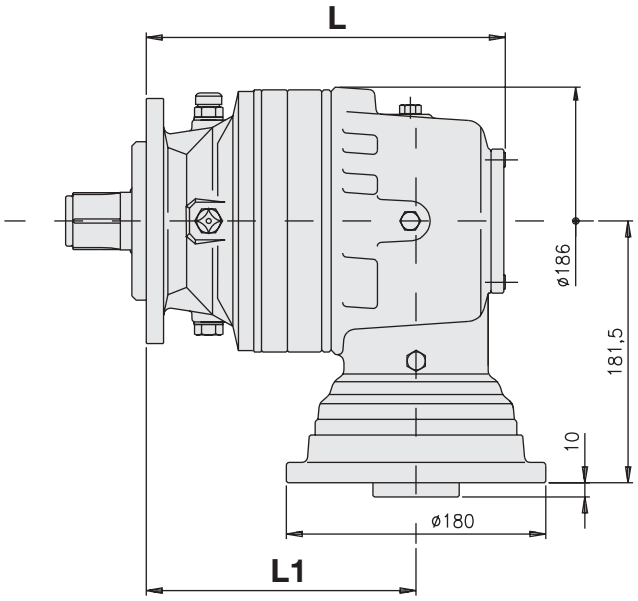
Tab. B

PART No. – RATIOS – TORQUES (ISO Standards)											
RR 210 M... RR 210 FS RR 210 S...			RR 210D M... RR 210D FS RR 210D S...			RR 210T M... RR 210T FS RR 210T S...			RR 210Q M... RR 210Q FS RR 210Q S...		
PART No. 210/...	...../1	T2 daNm	PART No. 210/...	...../1	T2 daNm	PART No. 210/...	...../1	T2 daNm	PART No. 210/...	...../1	T2 daNm
33	3,31	225	109	10,96	225	601	60,18	225	2798	279,84	225
39	3,91	200	129	12,94	225	710	71,09	200	3305	330,57	200
49	4,94	165	152	15,29	200	803	80,37	225	4176	417,65	200
57	5,78	150	193	19,32	200	898	89,82	200	4886	488,66	200
70	7,09	110	226	22,60	200	1050	105,09	200	5577	557,76	200
			285	28,55	165	1199	119,95	200	5626	652,60	200
			350	35,02	165	1403	140,34	200	8245	824,52	165
			409	40,98	150	1773	177,32	165	8715	871,54	200
			502	50,27	110	2175	217,50	165	10113	1011,39	165
						2544	254,49	150	11833	1183,36	165
						3121	312,16	110	13506	1350,69	165
									15803	1580,36	150
									19385	1938,54	110

PART No. – RATIOS – TORQUES (ISO Standards)								
RA 210 M... RA 210 FS RA 210 S...			RA 210D M... RA 210D FS RA 210D S...					
PART No. 210/...	...../1	T2 daNm	PART No. 210/...	...../1	T2 daNm			
106	10,66	150	352	35,28	225			
125	12,59	175	416	41,67	225			
159	15,91	165	492	49,23	200			
186	18,61	150	622	62,20	200			
228	22,83	110	727	72,77	200			
290	29,09	140	919	91,94	165			
340	34,03	150	1127	112,78	165			
417	41,75	110	1319	131,96	150			
			1618	161,86	110			
			1967	196,71	150			
			2062	206,22	165			
			2412	241,29	150			
			2959	295,98	110			

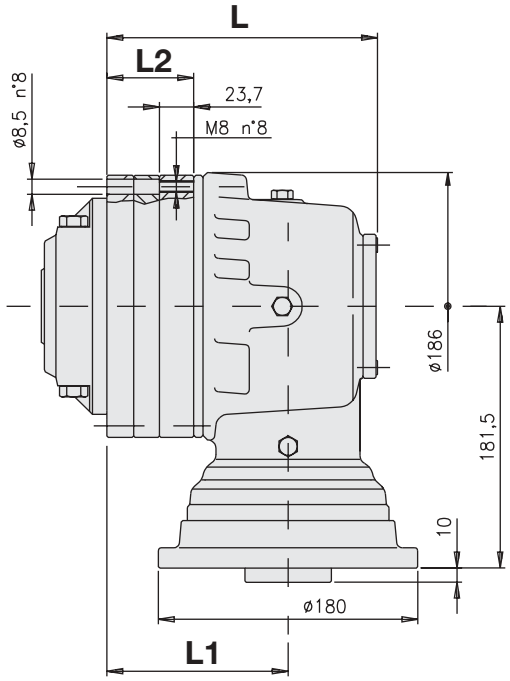
Note: To mount the RR 210/210 F reduction gear, use screws with resistance class (UNI 3740/3)12.9.

MALE ANGULAR VERSION RA 210 M... - RA 210D M...



TYPE	L	L1
RA 210 M...	249,5	187
RA 210D M...	296,5	234

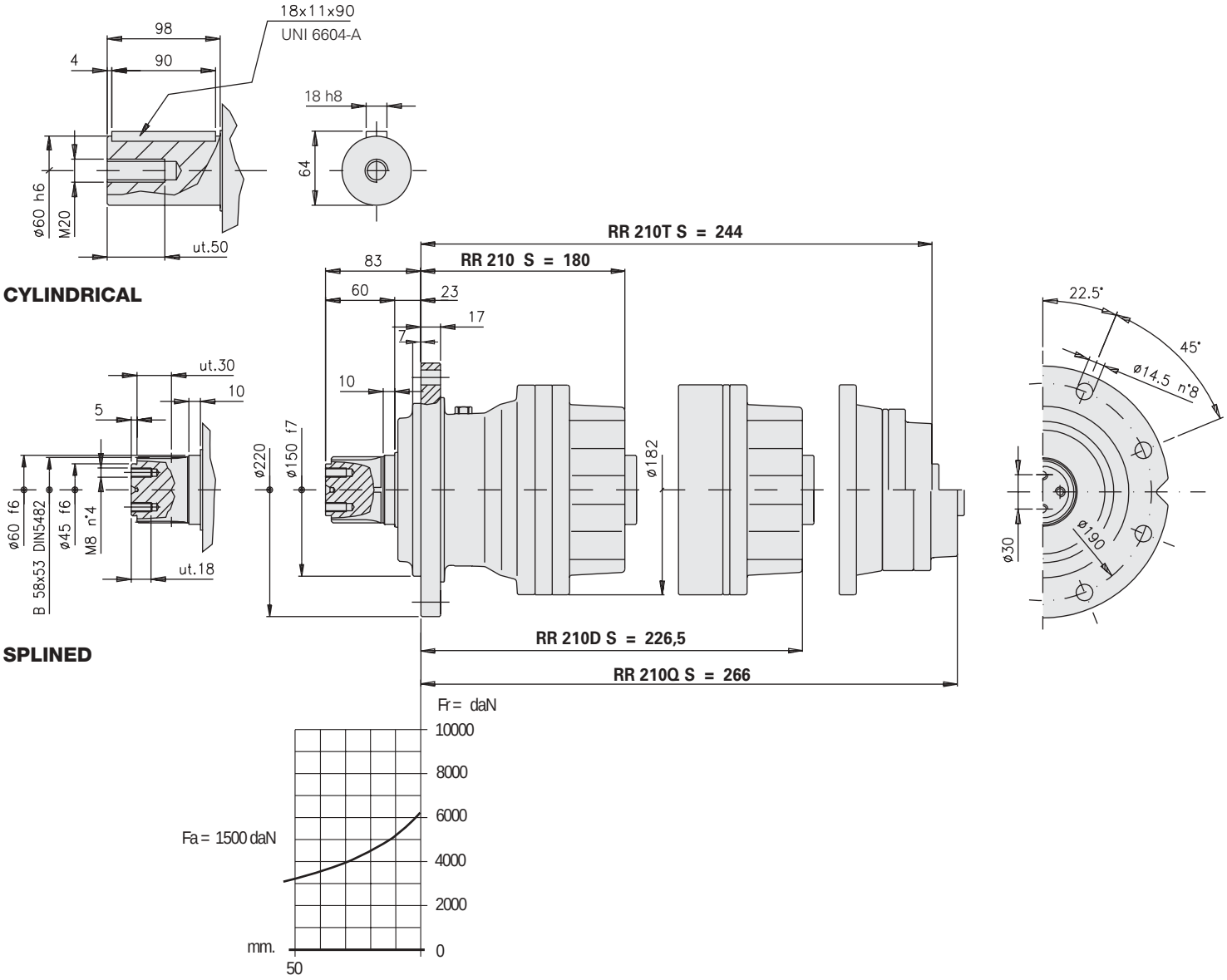
FEMALE ANGULAR VERSION RA 210 FS - RA 210D FS



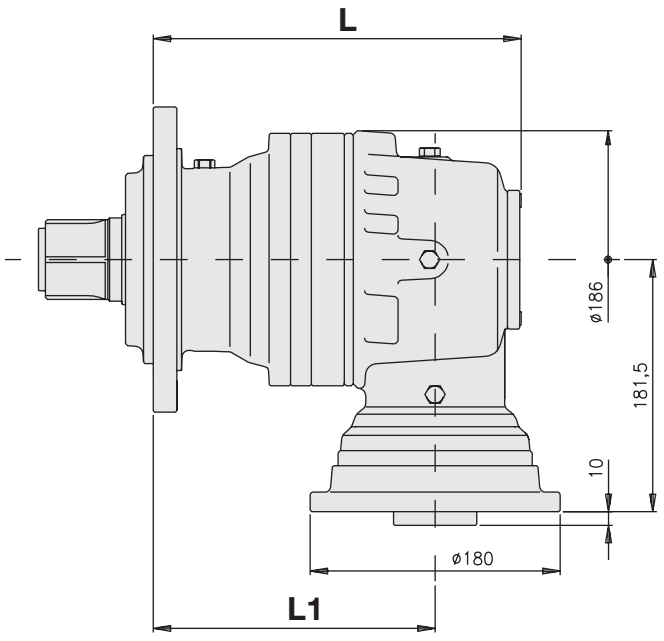
TYPE	L	L1	L2
RA 210 FS	188,5	126	60,2
RA 210D FS	234,5	172	106,7

SEE THE INPUT DIMENSIONS ON PAGE 148

LINEAR REINFORCED VERSION RR 210 S... - RR 210D S... - RR 210T S... - RR 210Q S...



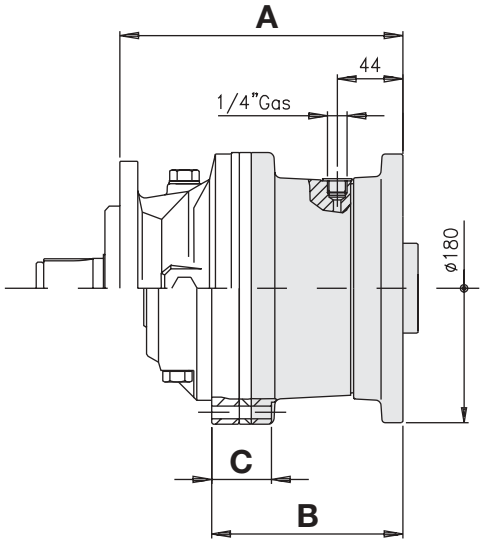
ANGULAR REINFORCED VERSION RA 210 S... - RA 210D S...

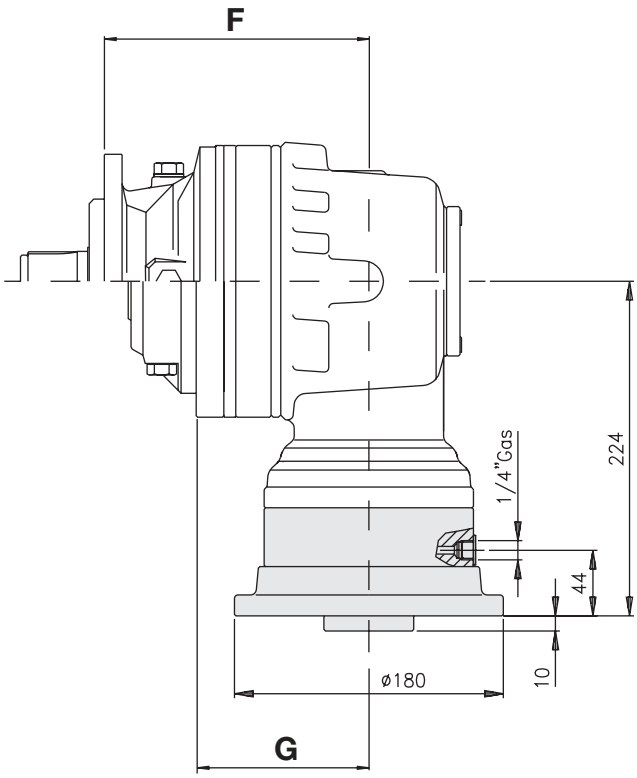


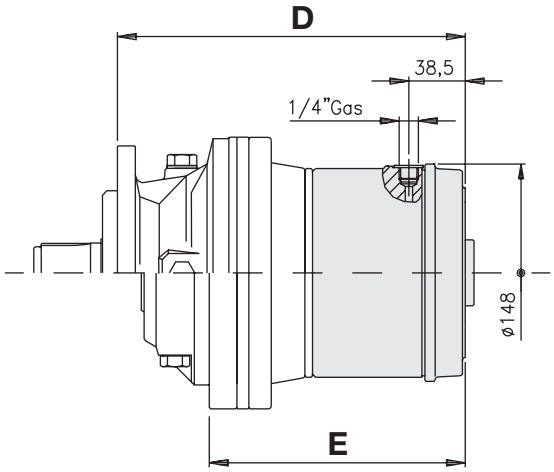
TYPE	L	L1
RA 210 S...	268,5	206
RA 210D S...	315,5	253

SEE THE INPUT DIMENSIONS ON PAGES 144-148

BRAKES SERIES RF 2/7 ÷ 2/60







TYPE	A	B	C	D	E	F	G
RR 210 M...	199,5	-	-	-	-	-	-
RA 210 M...	-	-	-	-	-	187	-
RR 210D M...	246	-	-	-	-	-	-
RA 210D M...	-	-	-	-	-	234	-
RR 210 S...	218,5	-	-	-	-	-	-
RA 210 S...	-	-	-	-	-	206	-
RR 210D S...	265	-	-	-	-	-	-
RA 210D S...	-	-	-	-	-	253	-
RR 210 FS	-	138	50	-	-	-	-
RA 210 FS	-	-	-	-	-	-	126
RR 210D FS	-	184,5	-	-	-	-	-
RA 210D FS	-	-	-	-	-	-	172
RR 210T M...	-	-	-	291	-	-	-
RR 210Q M...	-	-	-	313	-	-	-
RR 210T S...	-	-	-	310	-	-	-
RR 210Q S...	-	-	-	332	-	-	-
RR 210T FS	-	-	-	-	229,5	-	-
RR 210Q FS	-	-	-	-	251,5	-	-

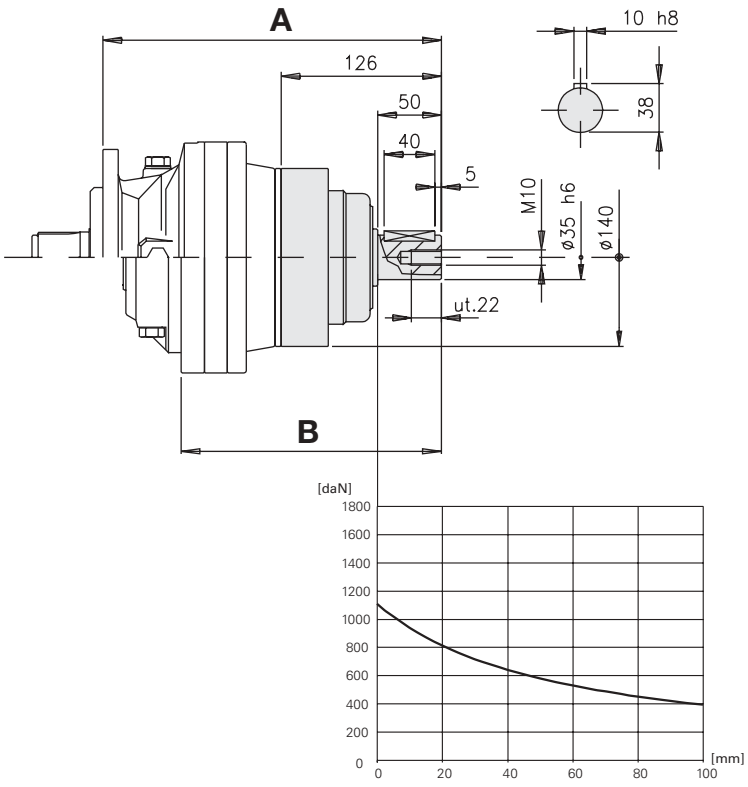
Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

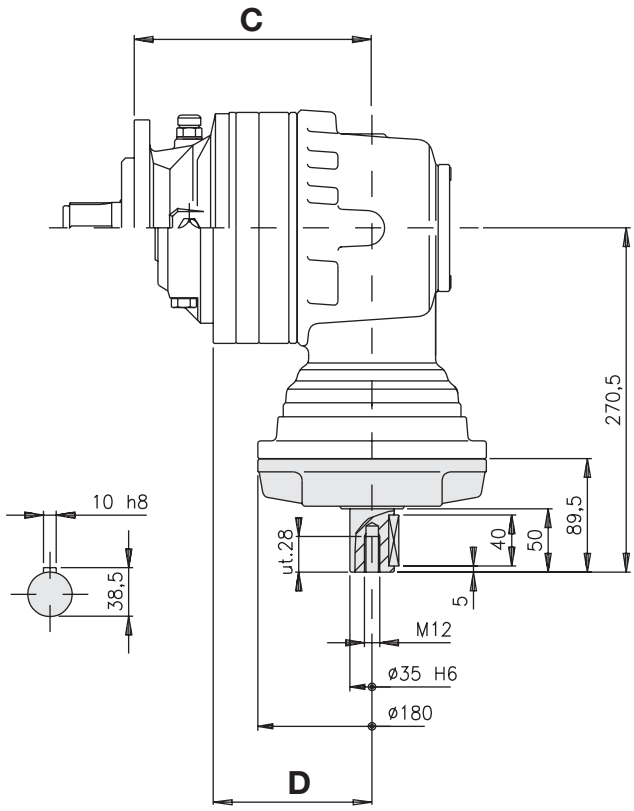
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

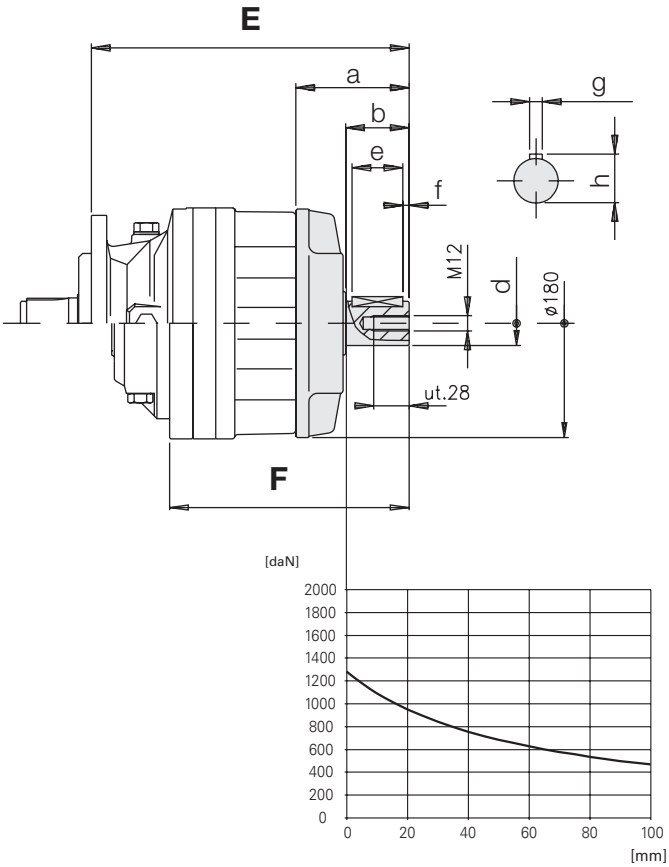
SIZE 210/210S REDUCTION GEAR

SERIES L MALE LIGHT INPUT





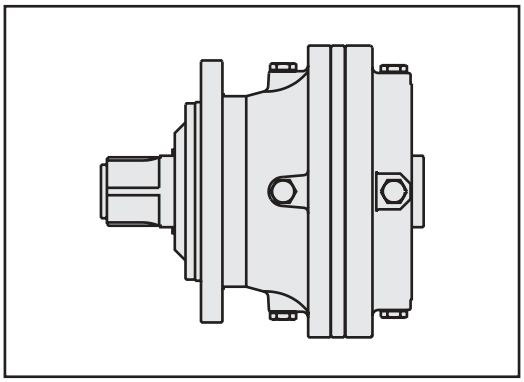
TYPE	A	B	C	D
RR 210T M...	313	-	-	-
RR 210Q M...	335	-	-	-
RR 210T S...	332	-	-	-
RR 210Q S...	354	-	-	-
RR 210T FS	-	251,5	-	-
RR 210Q FS	-	273,5	-	-
RA 210 M...			187	-
RA 210D M...			234	-
RA 210 S...			206	-
RA 210D S...			253	-
RA 210 FS			-	126
RA 210D FS			-	172



TYPE	E	F	a	b	d	e	f	g	h
RR 210 M...	282,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 210D M...	297	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 210 S...	301,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 210D S...	316	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 210 FS	–	221	121,5	82	48 k6	70	6	14 h8	51,5
RR 210D FS	–	235,5	89,5	50	35 h6	40	5	10 h8	38,5

Notes

SIZE 310 REDUCTION GEARS



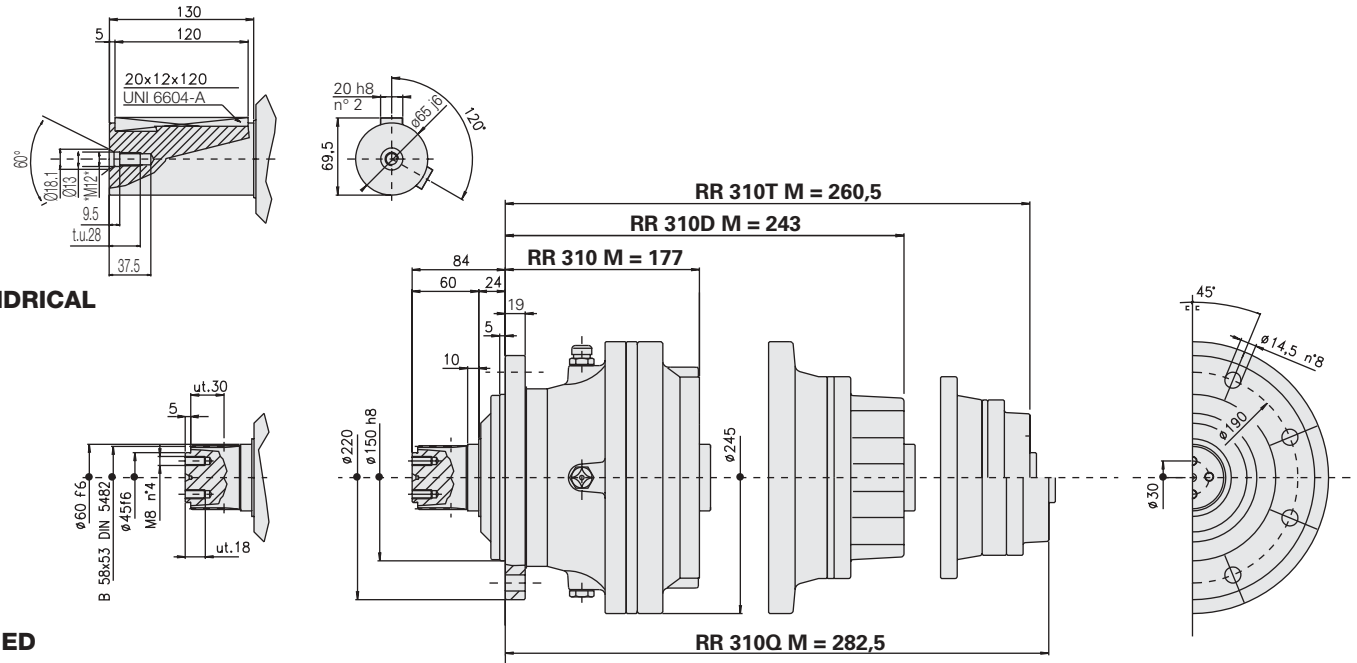
Tab. A

TYPE	RR 310 M... RR 310 FS RR 310 S...	RR 310D M... RR 310D FS RR 310D S...	RR 310T M... RR 310T FS RR 310T S...	RR 310Q M... RR 310Q FS RR 310Q S...
Number of stages	1	2	3	4
Type of input	B	B	A	A
Max. input revs n1 (min^{-1})	3500	3500	3500	3500

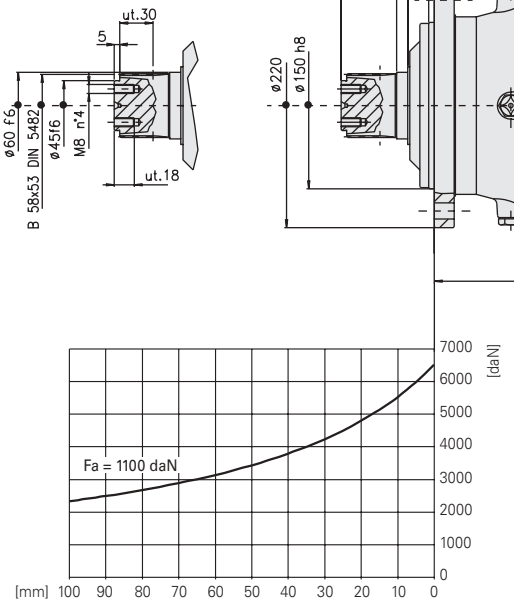
TYPE	RA 310 M... RA 310 FS RA 310 S...	RA 310D M... RA 310D FS RA 310D S...	RA 310T M... RA 310T FS RA 310T S...	
Number of stages	1	2	3	-
Type of input	B	B	B	-
Max. input revs n1 (min^{-1})	3500	3500	3500	-

MALE LINEAR VERSION RR 310 M... - RR 310D M... - RR 310T M... - RR 310Q M...

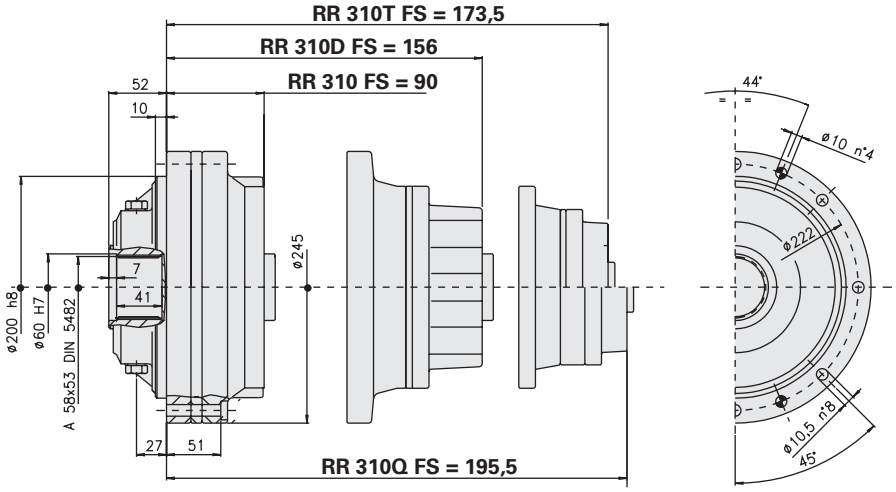
CYLINDRICAL



SPLINED



FEMALE LINEAR VERSION RR 310 FS - RR 310D FS - RR 310T FS - RR 310Q FS



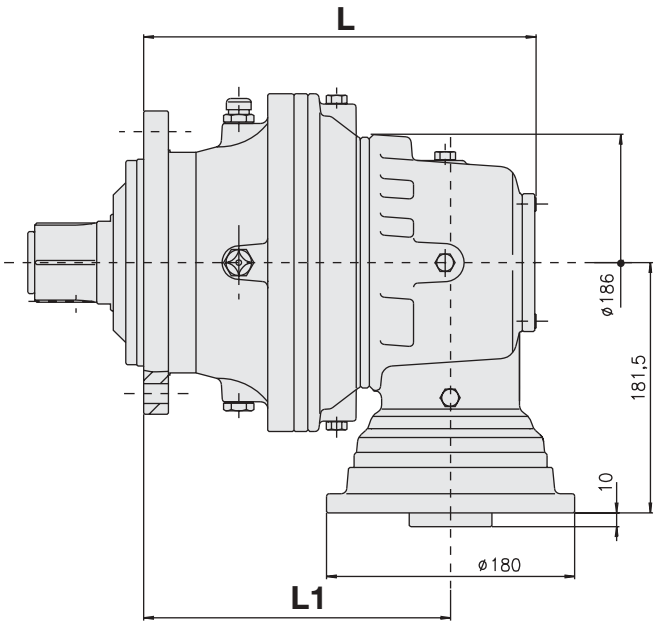
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

PART No. - RATIOS - TORQUES (ISO Standards)											
R 310 M... RR 310 FS RR 310 S...			RR 310D M... RR 310D FS RR 310D S...			RR 310T M... RR 310T FS RR 310T S...			RR 310Q M... RR 310Q FS RR 310Q S...		
PART No. 310/...	...../1	T2 daNm	PART No. 310/...	...../1	T2 daNm	PART No. 310/...	...../1	T2 daNm	PART No. 310/...	...../1	T2 daNm
34	3,4	315	128	12,84	315	575	57,56	315	3574	357,47	315
40	4,0	315	164	16,40	315	762	76,26	315	4735	473,57	315
50	5,0	240	216	21,68	315	1008	100,81	315	5130	513,08	210
58	5,8	210	288	28,80	260	1346	134,63	315	6260	626,04	315
70	7,0	155	314	31,44	210	1461	146,18	210	8360	836,07	315
			417	41,76	210	1788	178,85	260	9077	907,76	210
			504	50,40	155	1952	195,22	210	11106	1110,65	260
						2235	223,56	240	12123	1212,30	210
						2593	259,33	210	13883	1388,31	240
						3129	312,98	155	16104	1610,44	210
									19436	1943,63	155

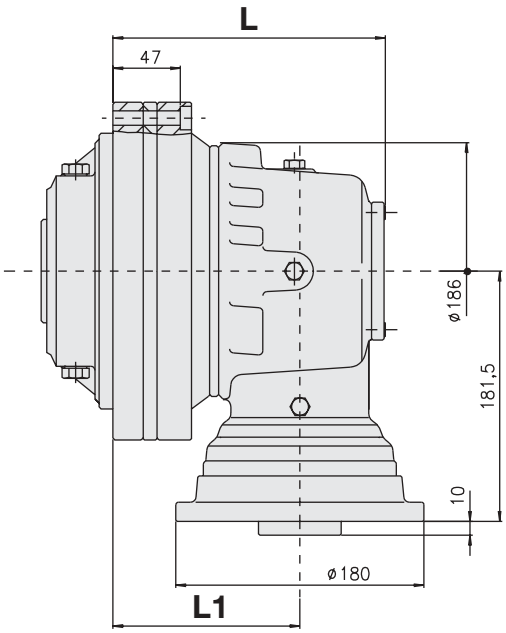
PART No. - RATIOS - TORQUES (ISO Standards)								
RA 310 M... RA 310 FS RA 310 S...			RA 310D M... RA 310D FS RA 310D S...			RA 310T M... RA 310T FS RA 310T S...		
PART No. 310/...	...../1	T2 daNm	PART No. 310/...	...../1	T2 daNm	PART No. 310/...	...../1	T2 daNm
109	10,95	155	413	41,34	315	2165	216,51	315
128	12,88	180	528	52,81	315	2862	286,22	315
186	18,68	210	698	69,81	315	3577	357,77	240
225	22,54	155	927	92,74	260	3721	372,10	240
294	29,44	140	1012	101,22	210	4316	431,64	210
341	34,15	160	1344	134,47	210	4752	475,27	240
412	41,22	155	1622	162,29	155	5513	551,32	210
			1695	169,57	260	6282	628,29	240
			1851	185,10	210	8346	834,62	240
			2119	211,97	240	9681	968,16	210
			2233	223,39	155	11684	1168,47	155
			2458	245,88	210	12209	1220,94	260
			2967	296,76	155	13326	1332,69	210
						15261	1526,17	240
						16084	1608,41	155
						17703	1770,36	210
						21366	2136,64	155

MALE ANGULAR VERSION RA 310 M... - RA 310D M... - 310T M...



TYPE	L	L1
RA 310 M...	287,5	225
RA 310D M...	332	269
RA 310T M...	374	314

FEMALE ANGULAR VERSION RA 310 FS - RA 310D FS - RA 310T FS

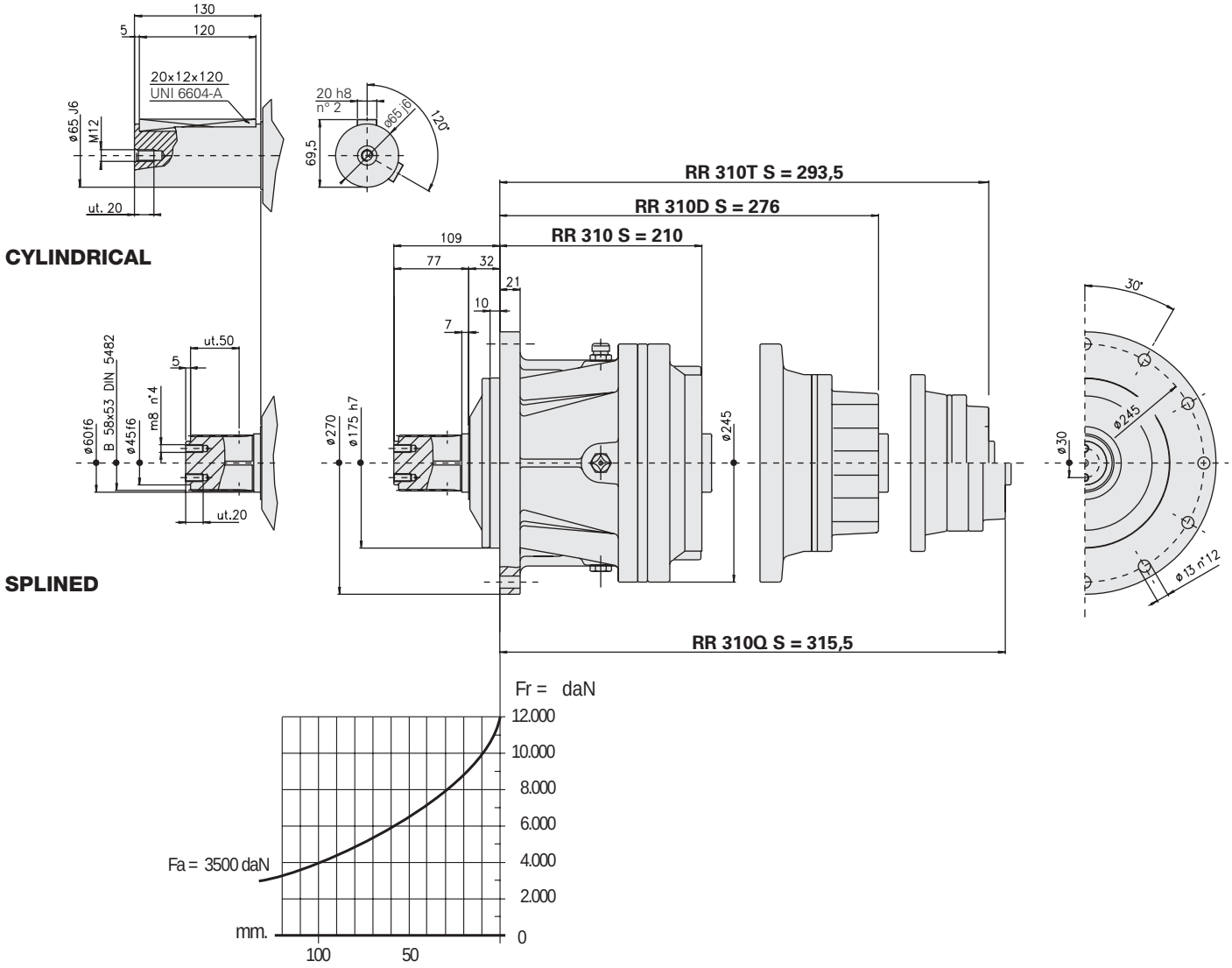


TYPE	L	L1
RA 310 FS	200,5	138
RA 310D FS	245	182
RA 310T FS	289	227

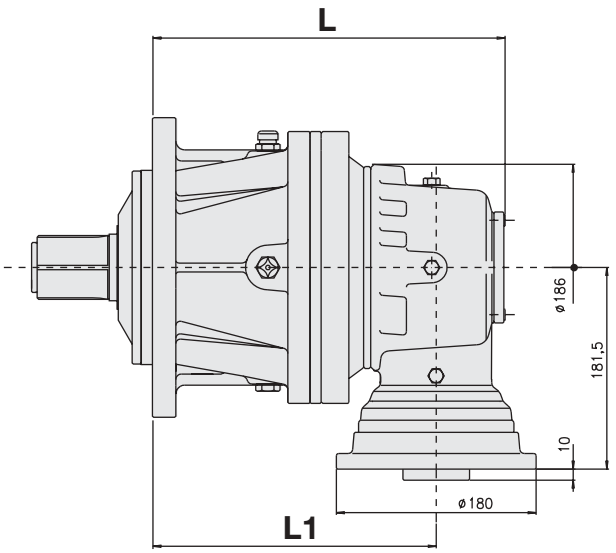
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 310S REDUCTION GEARS

LINEAR REINFORCED VERSION RR 310 S... - RR 310D S... - RR 310T S... - RR 310Q S...



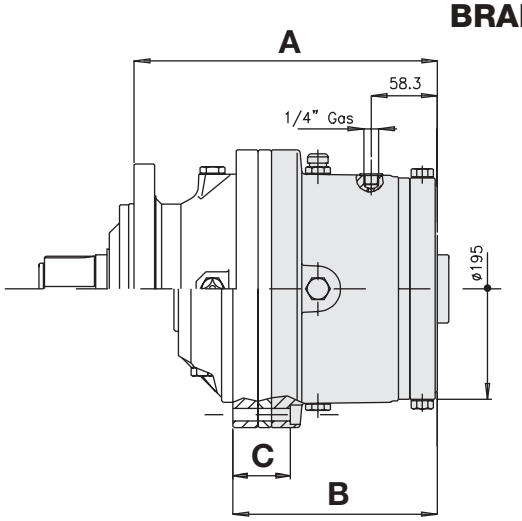
ANGULAR REINFORCED VERSION RA 310 S... - RA 310D S... - 310T S...



TYPE	L	L1
RA 310 S...	320,5	258
RA 310D S...	364,5	302
RA 310T S...	409	347

SEE THE INPUT DIMENSIONS ON PAGES 144-148

BRAKES SERIES RF 5/21 ÷ 5/130

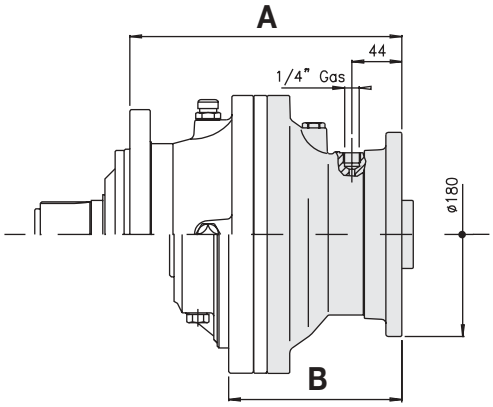


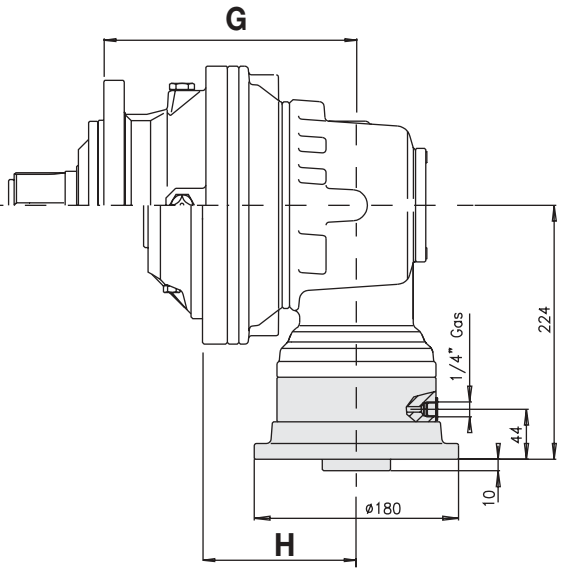
TYPE	A	B	C
RR 310 M...	267,5	-	-
RR 310 S...	300,5	-	-
RR 310 FS	-	180,5	50,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C					0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

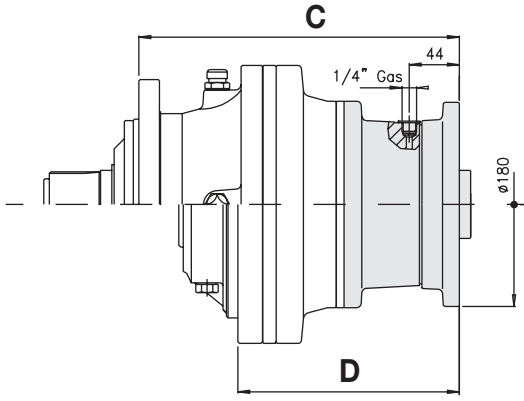
BRAKES SERIES RF 2/7 ÷ 2/60

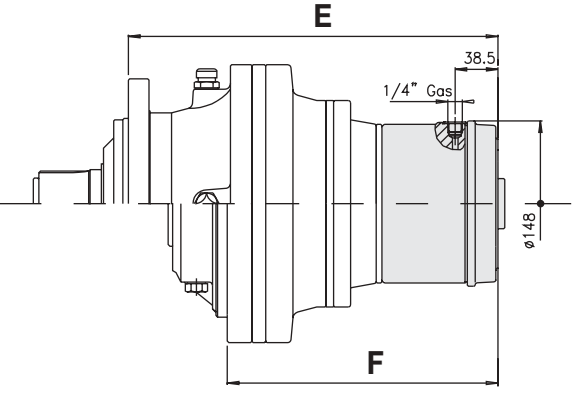




TYPE	A	B
RR 310 M...	240	–
RR 310 S...	273	–
RR 310 FS	–	153

TYPE	H	G
RA 310 M...	–	225
RA 310 S...	–	258
RA 310 FS	138	–
RA 310D M...	–	269
RA 310D S...	–	302
RA 310D FS	182	–
RA 310T M...	–	314
RA 310T S...	–	347
RA 310T FS	225	–





TYPE	C	D	E	F
RR 310D M...	281,5	–	–	–
RR 310T M...	–	–	326,5	–
RR 310Q M...	–	–	348,5	–
RR 310 S...	–	–	–	–
RR 310D S...	314,5	–	–	–
RR 310T S...	–	–	359,5	–
RR 310Q S...	–	–	381,5	–
RR 310D FS	–	194,5	–	–
RR 310T FS	–	–	–	240
RR 310Q FS	–	–	–	262

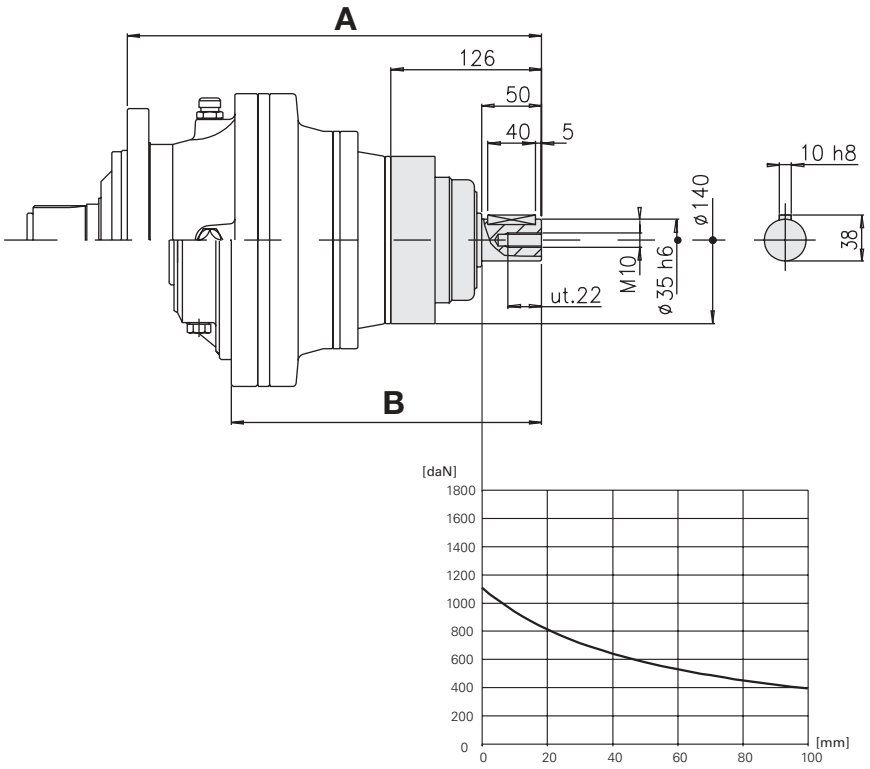
Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

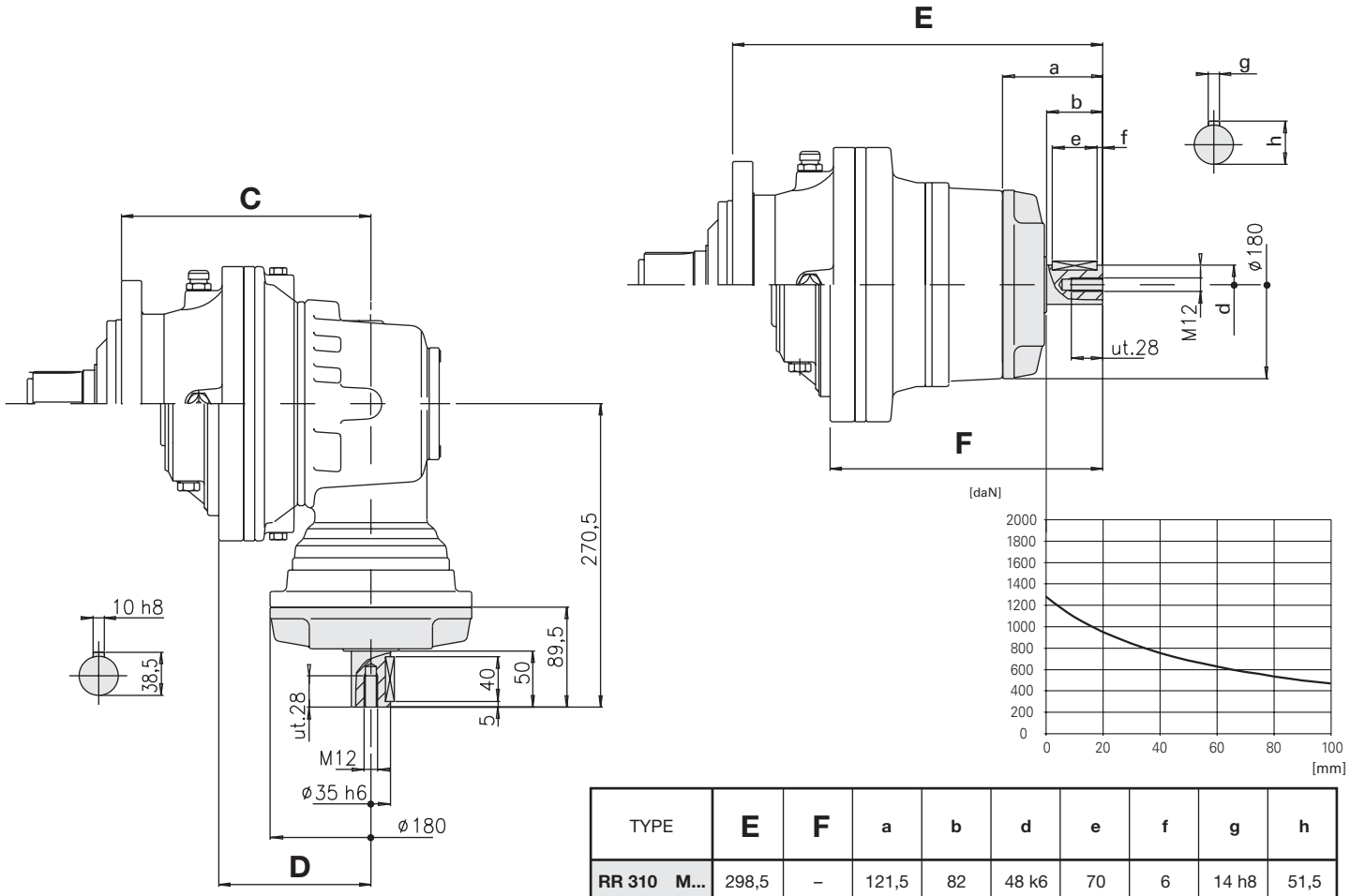
SEE THE INPUT DIMENSIONS ON PAGE 149

SIZE 310/310S REDUCTION GEARS

SERIES L MALE LIGHT INPUT



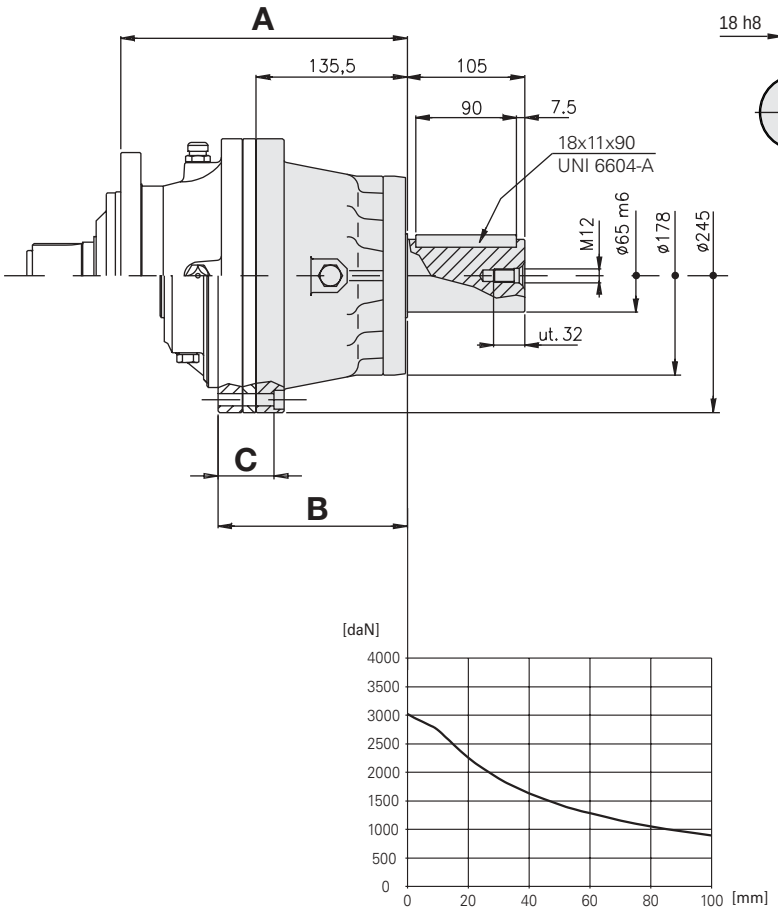
TYPE	A	B	C	D
RR 310T M...	348,5	-	-	-
RR 310Q M...	370,5	-	-	-
RR 310T S...	381,5	-	-	-
RR 310Q S...	403,5	-	-	-
RR 310T FS	-	261,5	-	-
RR 310Q FS	-	283,5	-	-
RA 310 M...	-		225	-
RA 310D M...	-		269	-
RA 310 S...	-		258	-
RA 310D S...	-		302	-
RA 310 FS	-		-	138
RA 310D FS	-		-	182



TYPE	E	F	a	b	d	e	f	g	h
RR 310 M...	298,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 310D M...	332,5	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 310 S...	331,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 310D S...	365,5	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 310 FS	–	211,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 310D FS	–	245,5	89,5	50	35 h6	40	5	10 h8	38,5

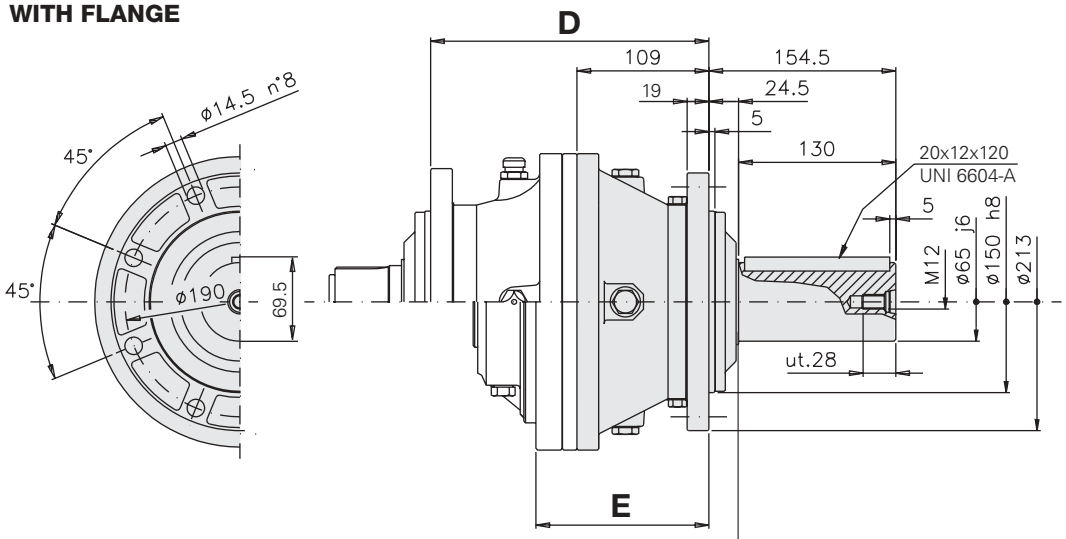
SERIES M MALE MEDIUM INPUT

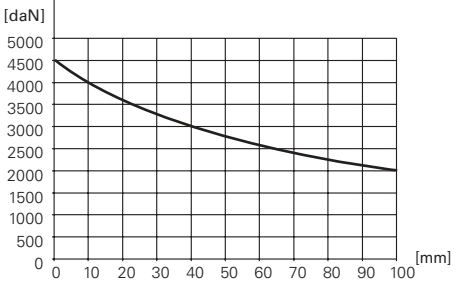
WITHOUT FLANGE



TYPE	A	B	C
RR 310 M...	256,5	-	-
RR 310 S...	289,5	-	-
RR 310 FS	-	169,5	55

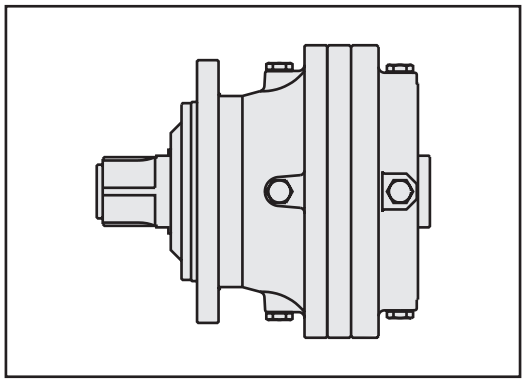
WITH FLANGE





TYPE	D	E
RR 310 M...	230	-
RR 310 S...	263	-
RR 310 FS	-	143

SIZE 510 REDUCTION GEARS

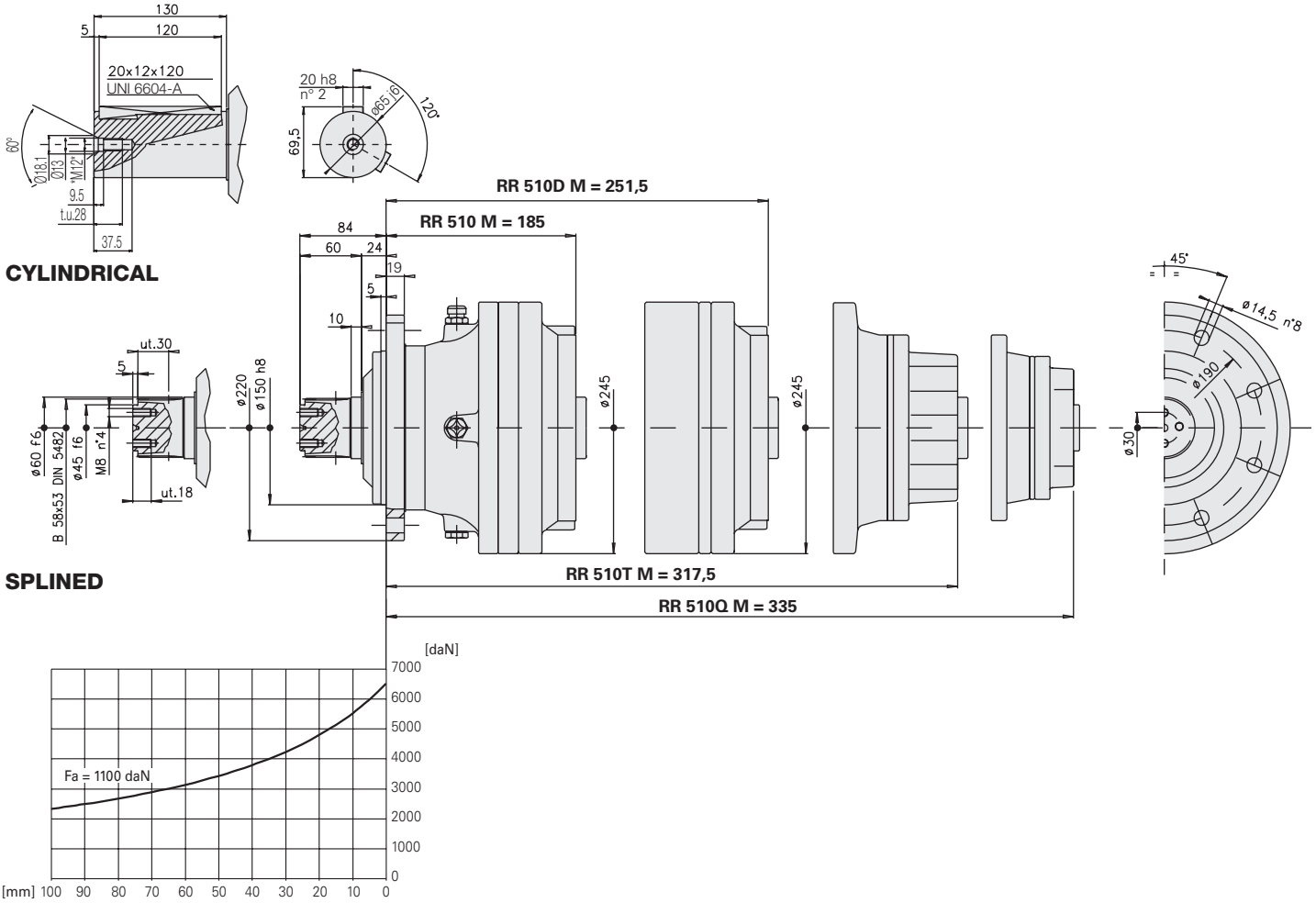


Tab. A

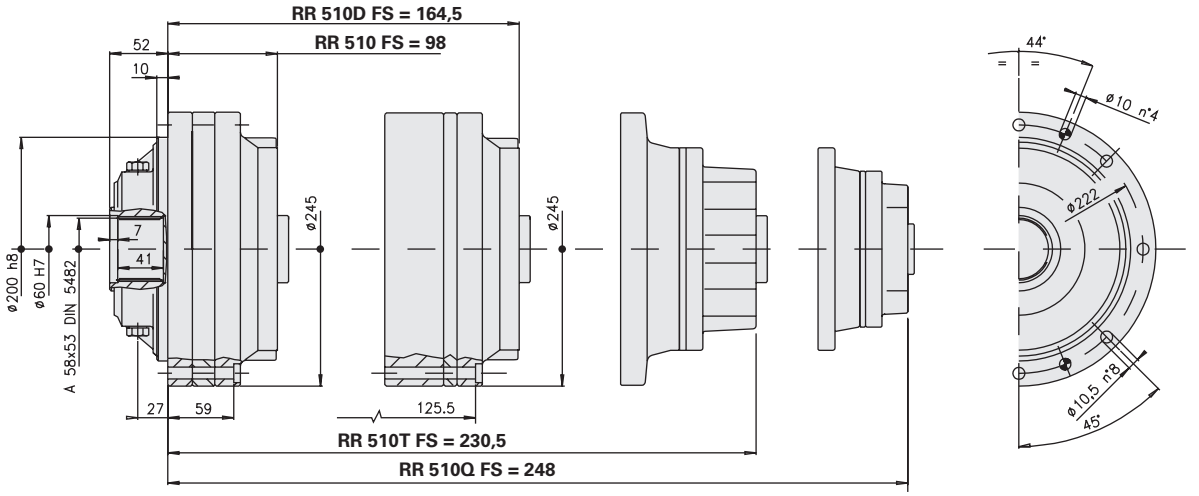
TYPE	RR 510 M... RR 510 FS RR 510 S...	RR 510D M... RR 510D FS RR 510D S...	RR 510T M... RR 510T FS RR 510T S...	RR 510Q M... RR 510Q FS RR 510Q S...
Number of stages	1	2	3	4
Type of input	B	B	B	A
Max. input revs n1 (min^{-1})	3500	3500	3500	3500

TYPE	RA 510 M... RA 510 FS RA 510 S...	RA 510D M... RA 510D FS RA 510D S...	RA 510T M... RA 510T FS RA 510T S...	
Number of stages	1	2	3	-
Type of input	B	B	B	-
Max. input revs n1 (min^{-1})	3500	3500	3500	-

MALE LINEAR VERSION RR 510 M... - RR 510D M... - RR 510T M... - RR 510Q M...



FEMALE LINEAR VERSION RR 510 FS - RR 510D FS - RR 510T FS - RR 510Q FS



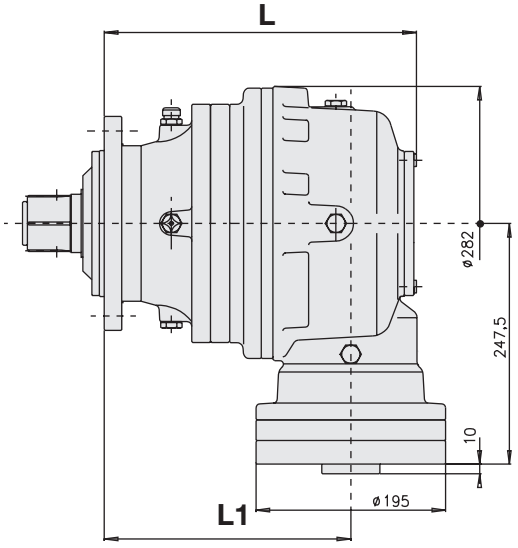
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

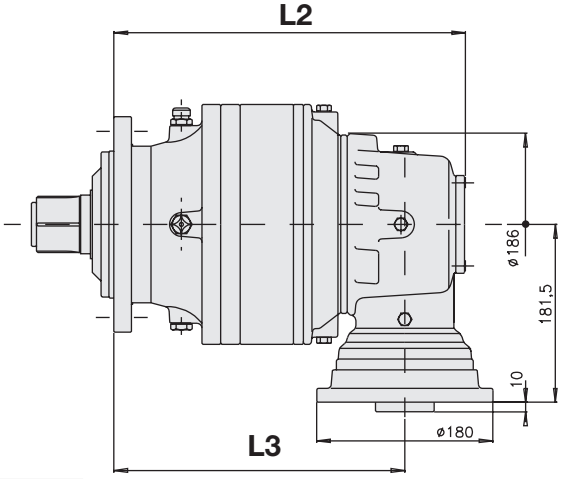
PART No. - RATIOS - TORQUES (ISO Standards)											
R 510 M... RR 510 FS RR 510 S...			RR 510D M... RR 510D FS RR 510D S...			RR 510T M... RR 510T FS RR 510T S...			RR 510Q M... RR 510Q FS RR 510Q S...		
PART No. 510/...	...../1	T2 daNm	PART No. 510/...	...../1	T2 daNm	PART No. 510/...	...../1	T2 daNm	PART No. 510/...	...../1	T2 daNm
34	3,4	590	136	13,6	590	656	65,60	580	3813	381,30	580
40	4,0	580	160	16,0	580	820	82,00	580	4423	442,31	580
50	5,0	445	200	20,0	580	951	95,12	580	5092	509,22	580
58	5,8	395	232	23,2	580	1152	115,20	580	5847	584,71	580
70	7,0	290	290	29,0	445	1440	144,00	580	6696	669,60	580
			350	35,0	445	1670	167,04	580	7153	715,39	580
			406	40,6	395	2088	208,80	445	7767	776,74	580
			490	49,0	290	2520	252,00	445	8942	894,24	580
						2923	292,32	395	10373	1037,32	580
						3528	352,80	290	12966	1296,65	445
									15649	1564,92	445
									18153	1815,31	395
									21908	2190,89	290

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 510 M... RA 510 FS RA 510 S...			RA 510D M... RA 510D FS RA 510D S...			RA 510T M... RA 510TFS RA 510T S...		
PART No. 510/...	...../1	T2 daNm	PART No. 510/...	...../1	T2 daNm	PART No. 510/...	...../1	T2 daNm
136	13,60	590	437	43,79	590	2112	211,23	580
160	16,00	580	515	51,52	580	2640	264,04	580
200	20,00	445	644	64,40	580	3062	306,29	580
232	23,20	395	747	74,70	580	3709	370,94	580
280	28,00	290	933	93,38	445	4636	463,68	580
			1127	112,70	445	5378	537,87	580
			1307	130,73	395	6723	672,34	445
			1577	157,78	290	8114	811,44	445
			1648	164,86	580	9412	941,27	395
			1707	170,75	445	11360	1136,02	290
			1980	198,07	395	11870	1187,02	580
			2060	206,08	445	12294	1229,41	445
			2390	239,05	395	14837	1483,78	445
			2885	288,51	290	15637	1563,74	290
						17211	1721,18	395
						20772	2077,29	290

MALE ANGULAR VERSION
RA 510 M...

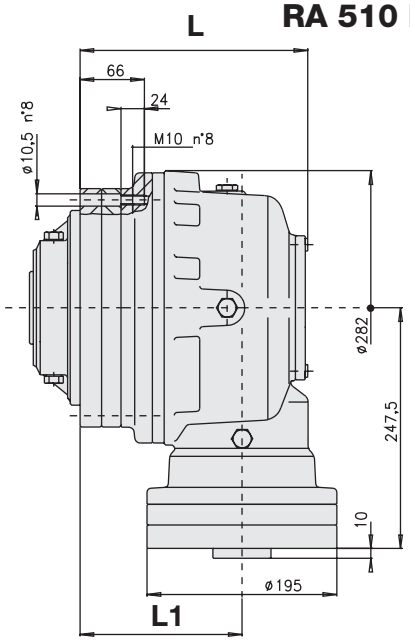


MALE ANGULAR VERSION
RA 510D M... - RA 510T M...

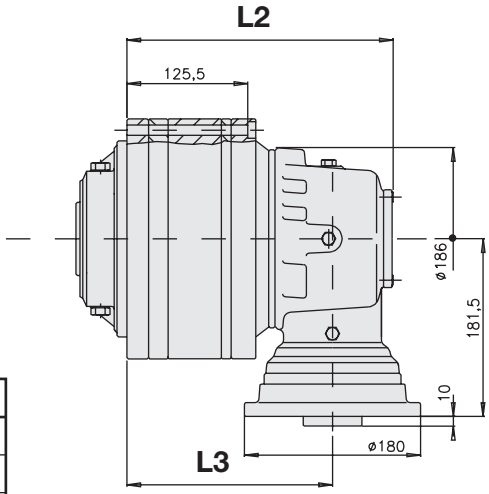


TYPE	L	L1	L2	L3
RA 510 M...	321	253,5	–	–
RA 510D M...	–	–	361,5	299
RA 510T M...	–	–	406	344

FEMALE ANGULAR VERSION
RA 510 FS



FEMALE ANGULAR VERSION
RA 510D FS - RA 510T FS

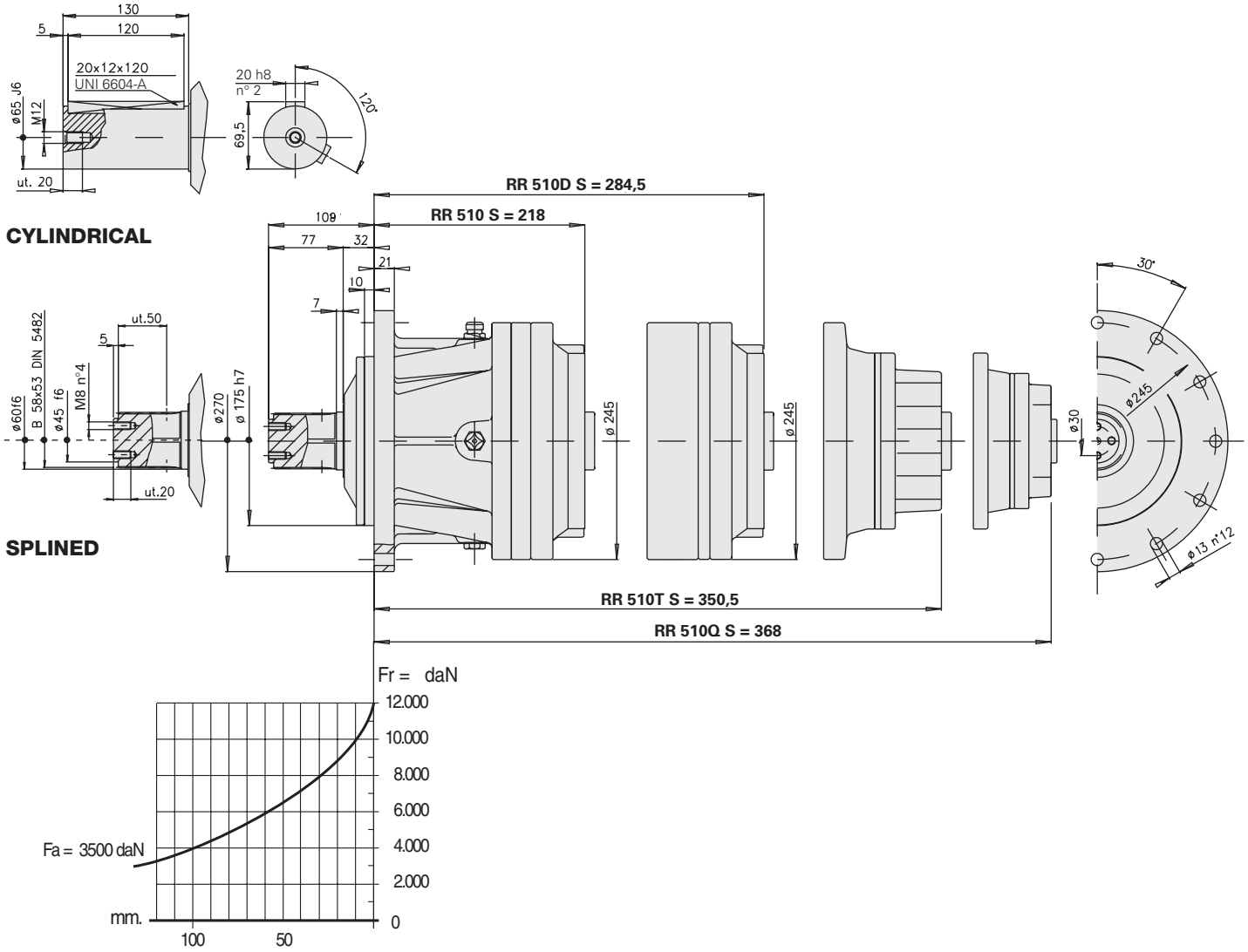


TYPE	L	L1	L2	L3
RA 510 FS	234	166,5	–	–
RA 510D FS	–	–	274	212
RA 510T FS	–	–	319	257

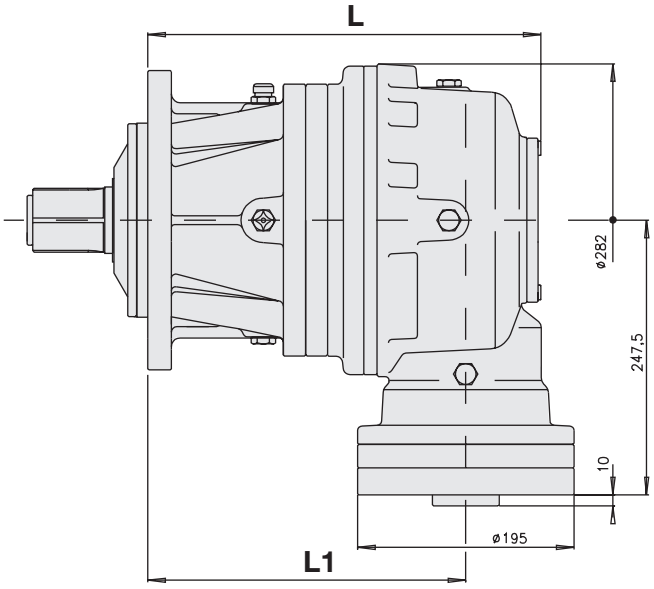
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 510 S REDUCTION GEARS

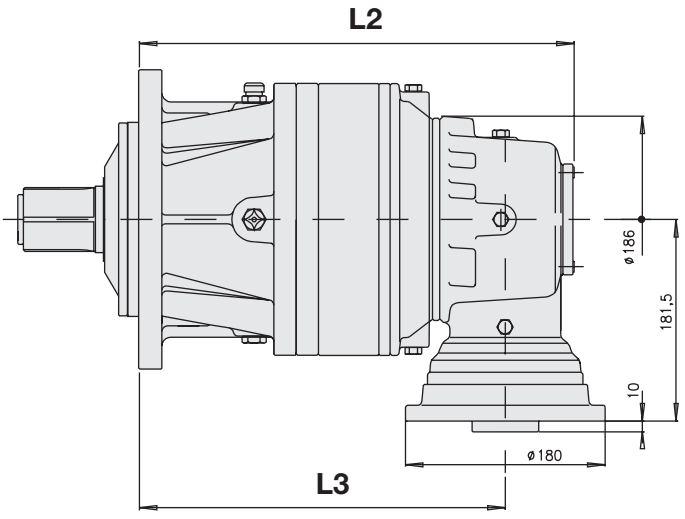
LINEAR REINFORCED VERSION RR 510 S... - RR 510D S... - RR 510T S... - RR 510Q S...



ANGULAR REINFORCED VERSION RA 510 S...



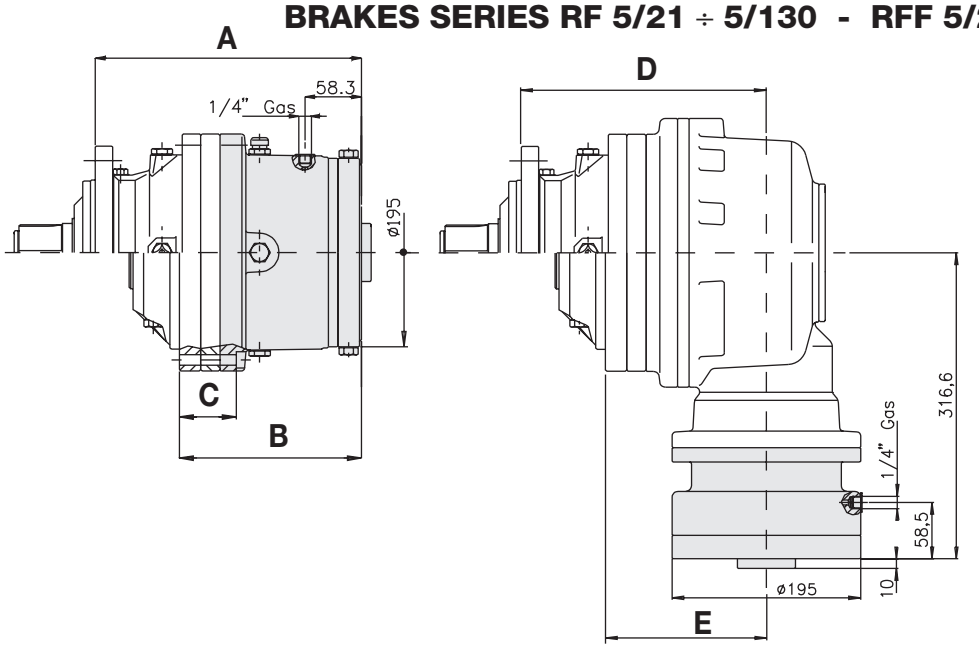
ANGULAR REINFORCED VERSION RA 510D S... - RA 510T S...



TYPE	L	L1	L2	L3
RA 510 S...	354	286,5	–	–
RA 510D S...	–	–	394,5	332
RA 510T S...	–	–	439	377

SEE THE INPUT DIMENSIONS ON PAGES 144-148

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130

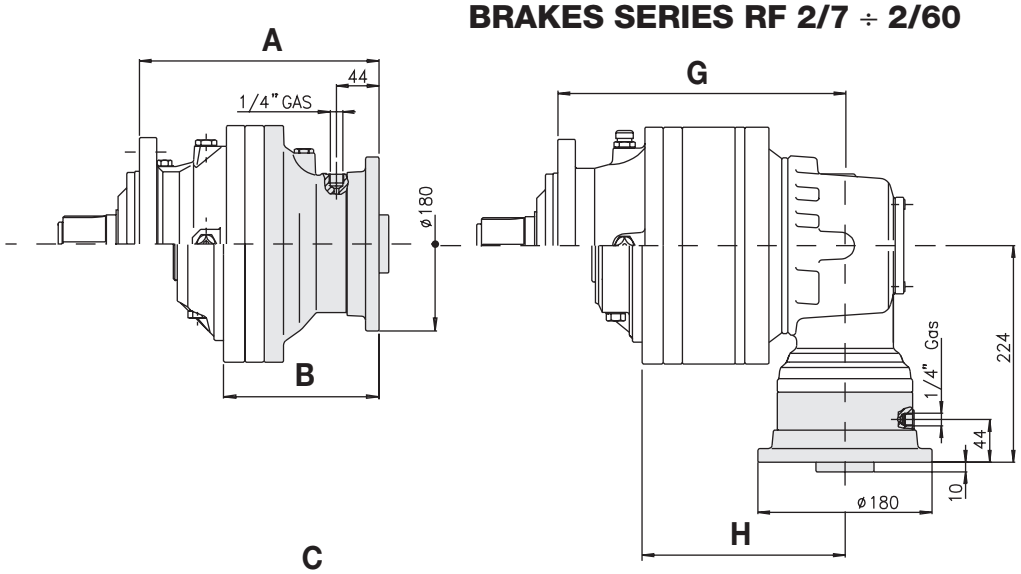


TYPE	A	B	C	D	E
RR 510 M...	275,5	-	-	-	-
RA 510 M...	-	-	-	253,5	-
RR 510D M...	342	-	-	-	-
RR 510 S...	308,5	-	-	-	-
RA 510 S...	-	-	-	286,5	-
RR 510D S...	375	-	-	-	-
RR 510 FS	-	188,5	58,5	-	-
RA 510 FS	-	-	-	-	166,5
RR 510D FS	-	255	125	-	-

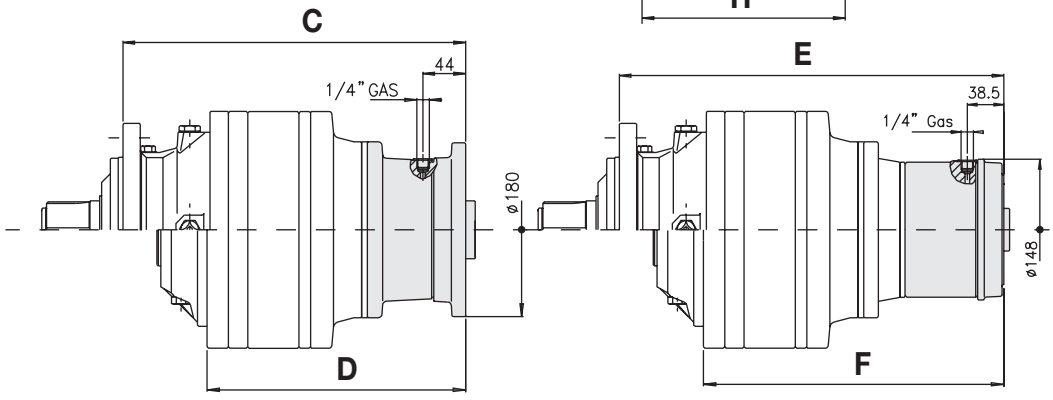
Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	Kg 21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



TYPE	A	B	G	H
RR 510 M...	248	-	-	-
RR 510D M...	314,5	-	-	-
RA 510D M...	-	-	299	-
RA 510T M...	-	-	344	-
RR 510 S...	281	-	-	-
RR 510D S...	347,5	-	-	-
RA 510D S...	-	-	332	-
RA 510T S...	-	-	377	-
RR 510 FS	-	161	-	-
RR 510D FS	-	227,5	-	-
RA 510D FS	-	-	-	212
RA 510T FS	-	-	-	257



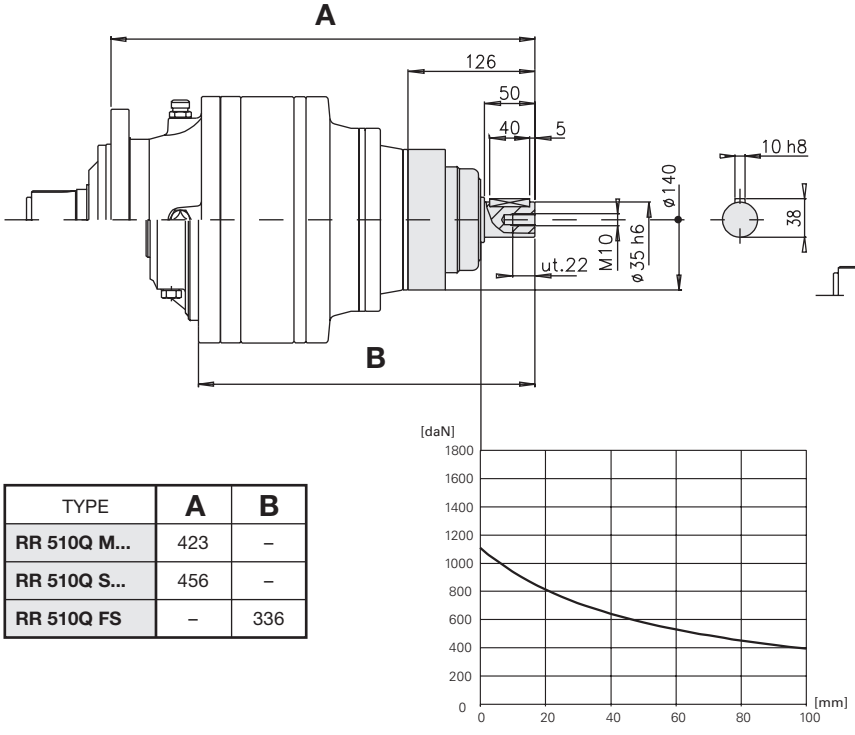
TYPE	C	D	E	F
RR 510T M...	356	-	-	-
RR 510Q M...	-	-	401	-
RR 510T S...	389	-	-	-
RR 510Q S...	-	-	434	-
RR 510T FS	-	269	-	-
RR 510Q FS	-	-	-	314

Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

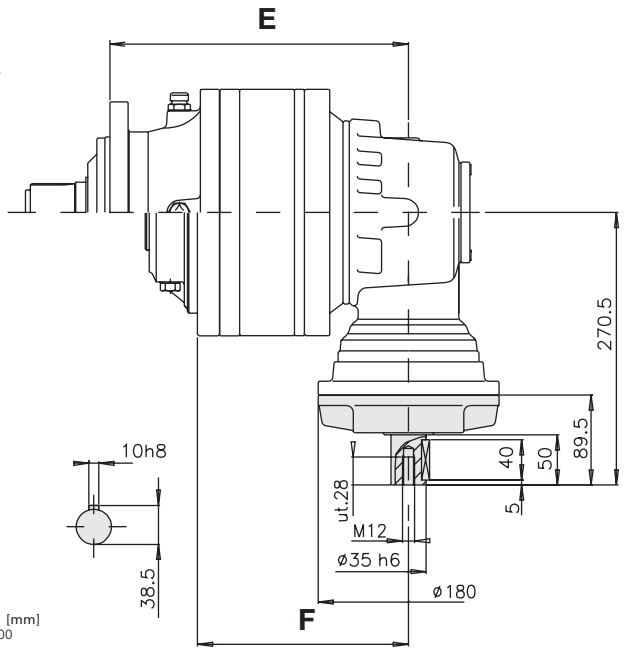
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

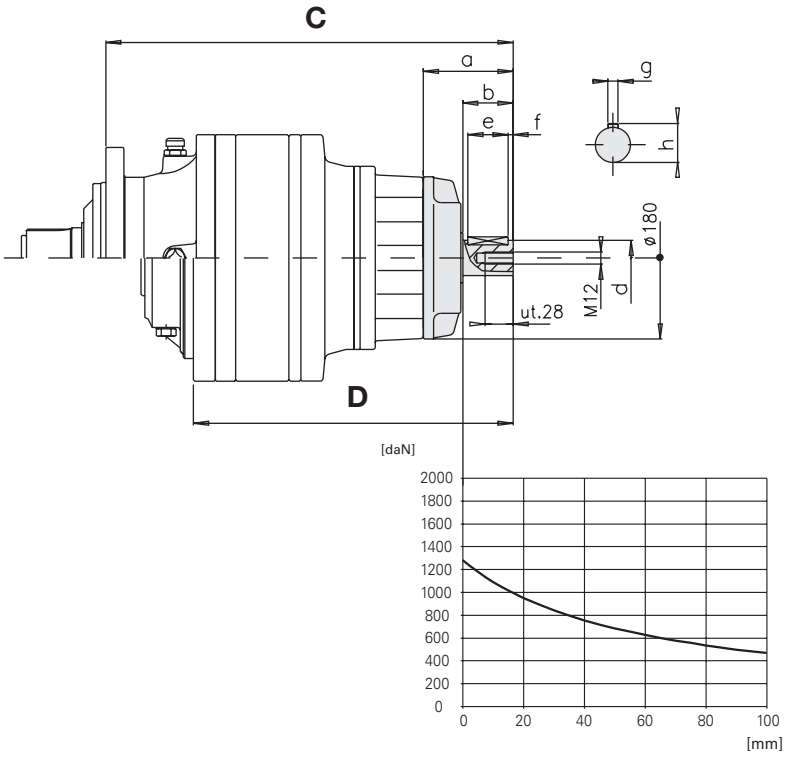
SEE THE INPUT DIMENSIONS ON PAGE 149

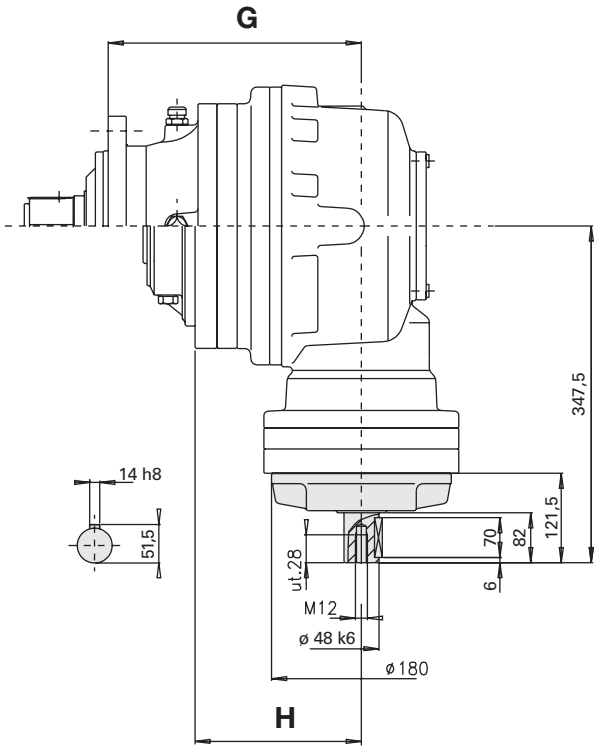
SERIES L MALE LIGHT INPUT



TYPE	A	B
RR 510Q M...	423	–
RR 510Q S...	456	–
RR 510Q FS	–	336





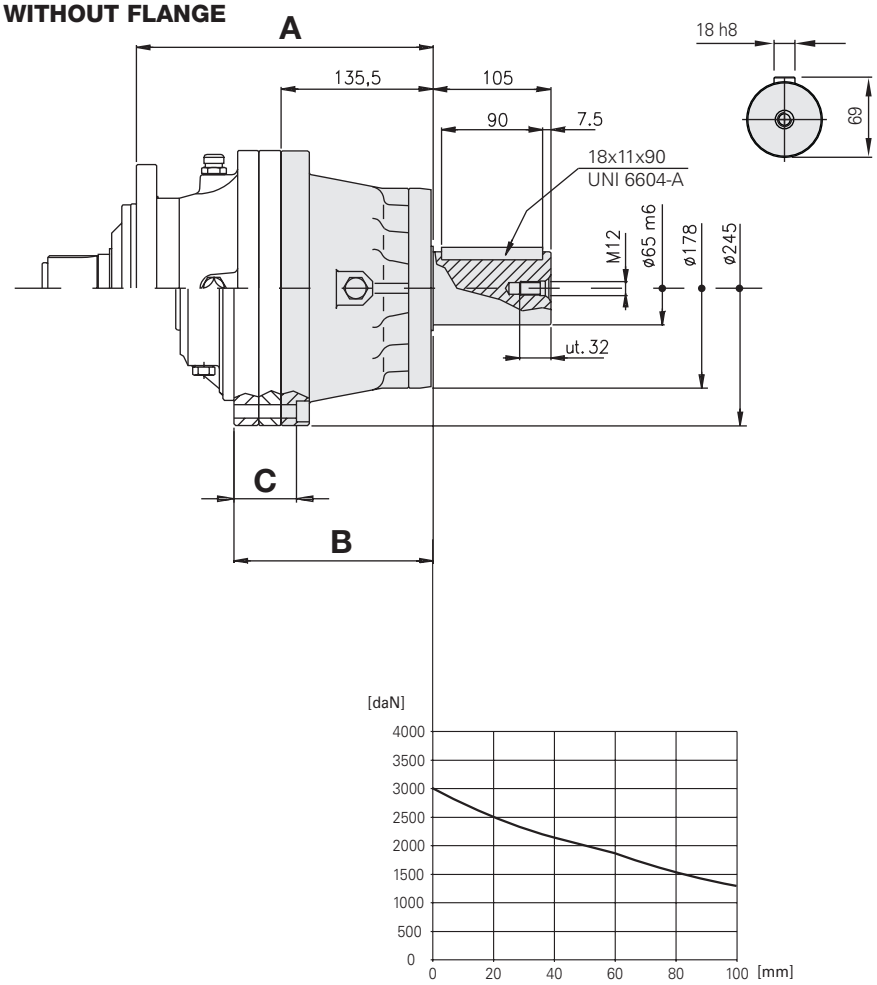


TYPE	C	D	a	b	d	e	f	g	h
RR 510 M...	306,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 510D M...	373	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 510T M...	407	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 510 S...	339,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 510D S...	406	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 510T S...	440	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 510 FS	–	219,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 510D FS	–	286	121,5	82	48 k6	70	6	14 h8	51,5
RR 510T FS	–	320	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	E	F	G	H
RA 510 M...	–	–	253,5	–
RA 510D M...	299	–	–	–
RA 510T M...	344	–	–	–
RA 510 S...	–	–	286,5	–
RA 510D S...	332	–	–	–
RA 510T S...	377	–	–	–
RA 510 FS	–	–	–	166,5
RA 510D FS	–	212	–	–
RA 510T FS	–	257	–	–

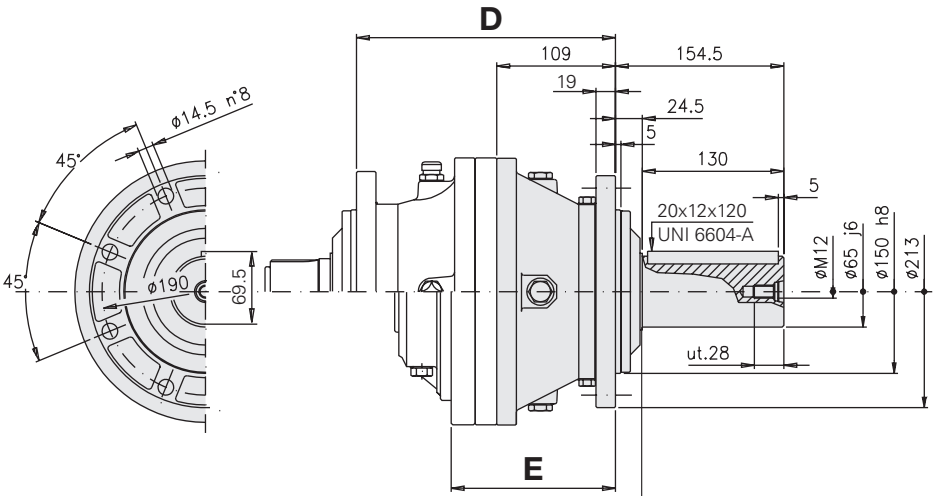
SERIES M MALE MEDIUM INPUT

WITHOUT FLANGE

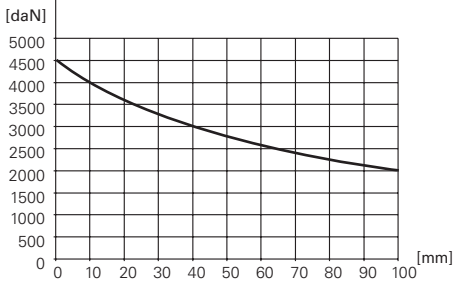


TYPE	A	B	C
RR 510 M...	264,5	–	–
RR 510 S...	297,5	–	–
RR 510 FS	–	177,5	63
RR 510D M...	331	–	–
RR 510D S...	364	–	–
RR 510D FS	–	244	129,5

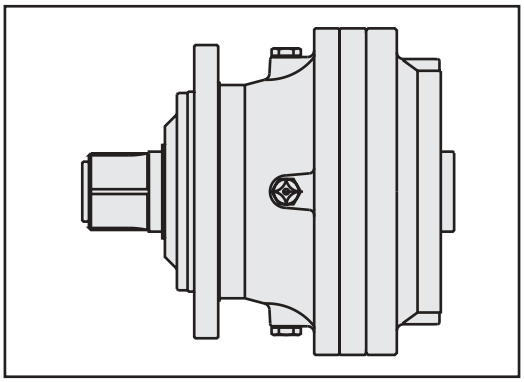
WITH FLANGE



TYPE	D	E
RR 510 M...	238	–
RR 510 S...	271	–
RR 510 FS	–	151
RR 510D M...	304,5	–
RR 510D S...	337,5	–
RR 510D FS	–	217,5



SIZE 710 REDUCTION GEARS

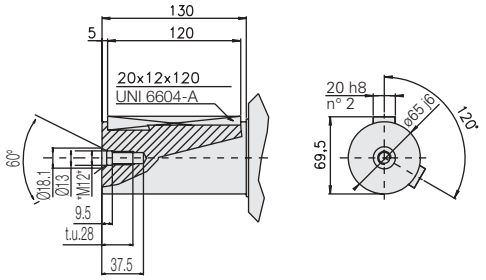


Tab. A

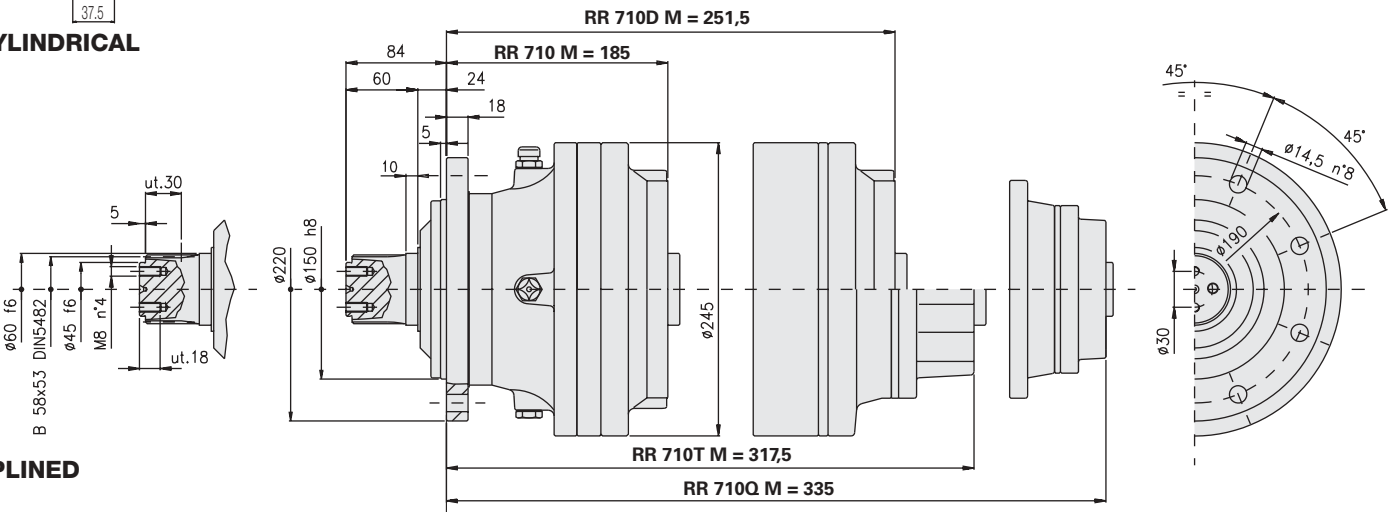
TYPE	RR 710 M... RR 710 FS RR 710 S...	RR 710D M RR 710D FS RR 710D S	RR 710T M... RR 710T FS RR 710T S...	RR 710Q M... RR 710Q FS RR 710Q S...
Number of stages	1	2	3	4
Type of input	B	B	B	A
Max. input revs n1 (min^{-1})	3500	3500	3500	3500

TYPE	RA 710 M... RA 710 F... RA 710 S...	RA 710D M... RA 710D FS RA 710D S...	RA 710T M... RA 710T FS RA 710T S...	
Number of stages	1	2	3	-
Type of input	B	B	B	-
Max. input revs n1 (min^{-1})	3500	3500	3500	-

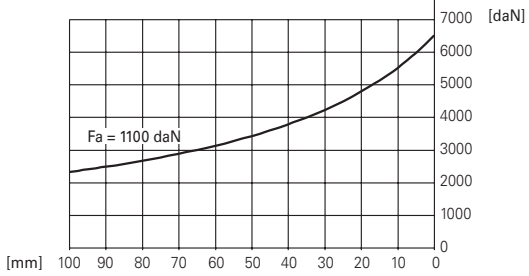
MALE LINEAR VERSION RR 710 M... - RR 710D M... - RR 710T M... - RR 710Q M...



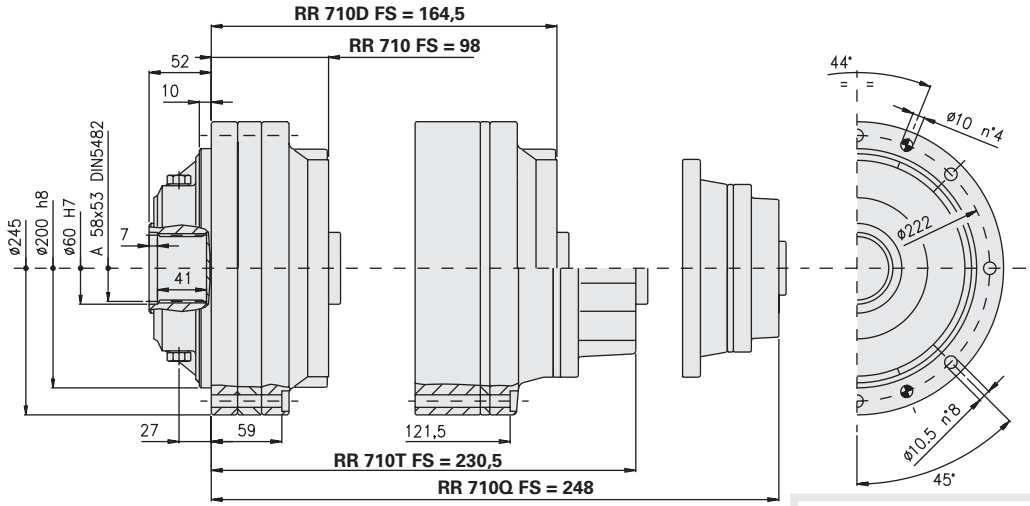
CYLINDRICAL



SPLINED



FEMALE LINEAR VERSION RR 710 FS - RR 710D FS - RR 710T FS - RR 710Q FS



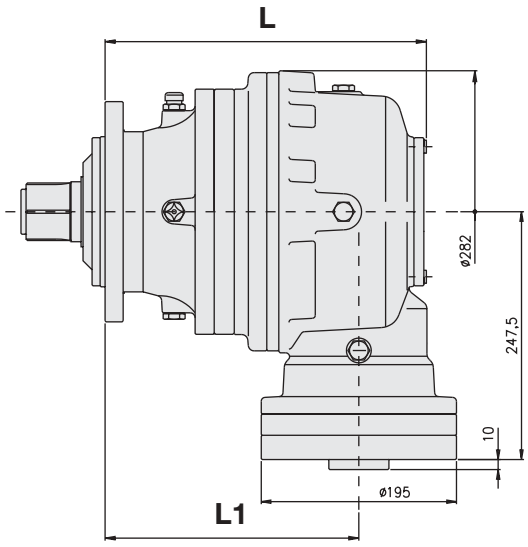
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

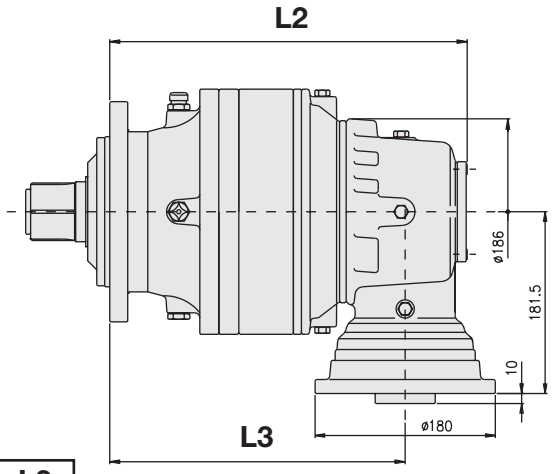
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 710 M... RR 710 FS RR 710 S...			RR 710D M... RR 710D FS RR 710D S...			RR 710T M... RR 710T FS RR 710T S...			RR 710Q M... RR 710Q FS RR 710Q S...		
PART. No. 710/...	...../1	T2 daNm	PART. No. 710/...	...../1	T2 daNm	PART. No. 710/...	...../1	T2 daNm	PART. No. 710/...	...../1	T2 daNm
40	4,00	620	160	16,00	620	513	51,36	620	3462	346,29	620
52	5,20	460	232	23,20	620	656	65,60	620	4073	407,38	620
62	6,25	390	280	28,00	620	744	74,47	620	4423	442,31	620
			362	36,25	390	951	95,12	620	5356	535,68	620
			437	43,75	390	1152	115,20	620	5907	590,70	620
						1517	151,76	620	7153	715,39	620
						2016	201,60	620	9374	937,44	620
						2610	261,00	390	12519	1251,94	620
						3150	315,00	390	14647	1464,75	390
									16208	1620,81	390
									19561	1956,15	390

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 710 M... RA 710 FS RA 710 S...			RA 710D M... RA 710D FS RA 710D S...			RA 710T M... RA 710T FS RA 710T S...		
PART. No. 710/...	...../1	T2 daNm	PART. No. 710/...	...../1	T2 daNm	PART. No. 710/...	...../1	T2 daNm
160	16,00	620	515	51,52	620	1653	165,38	620
208	20,80	460	747	74,70	620	2112	211,23	620
250	25,00	390	901	90,16	620	2398	239,80	620
			1167	116,73	390	3062	306,29	620
			1408	140,88	390	3709	370,94	620
			1648	164,86	620	4886	488,67	620
			1775	177,58	460	6491	649,15	620
			1840	184,00	390	8404	840,42	390
			2143	214,32	460	10143	1014,30	390
			2576	257,60	390	11870	1187,02	620
						12785	1278,59	460
						13961	1396,19	390
						15431	1543,13	460
						18547	1854,72	390

MALE ANGULAR VERSION RA 710 M...

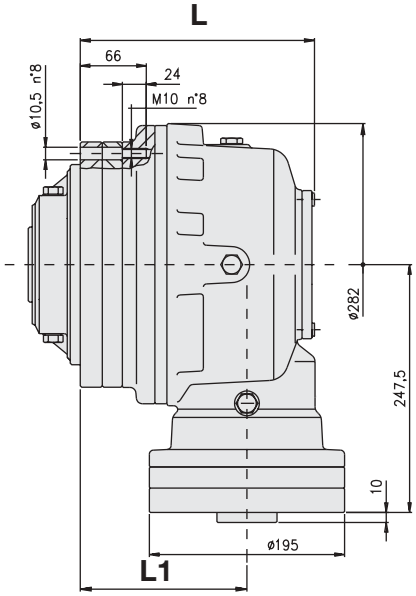


MALE ANGULAR VERSION RA 710D M... - RA 710T M...

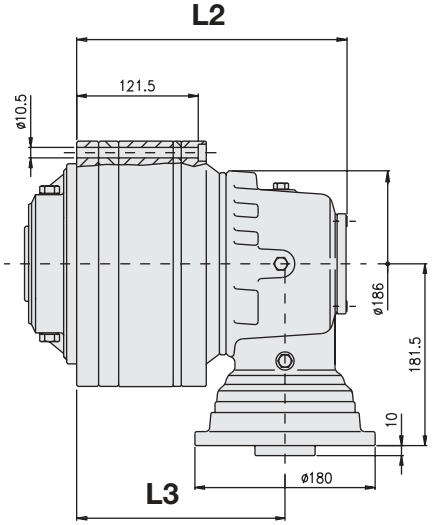


TYPE	L	L1	L2	L3
RA 710 M...	321	253,5	–	–
RA 710D M...	–	–	361,5	299
RA 710T M...	–	–	406	344

FEMALE ANGULAR VERSION RA 710 FS



FEMALE ANGULAR VERSION RA 710D FS - RA 710T FS

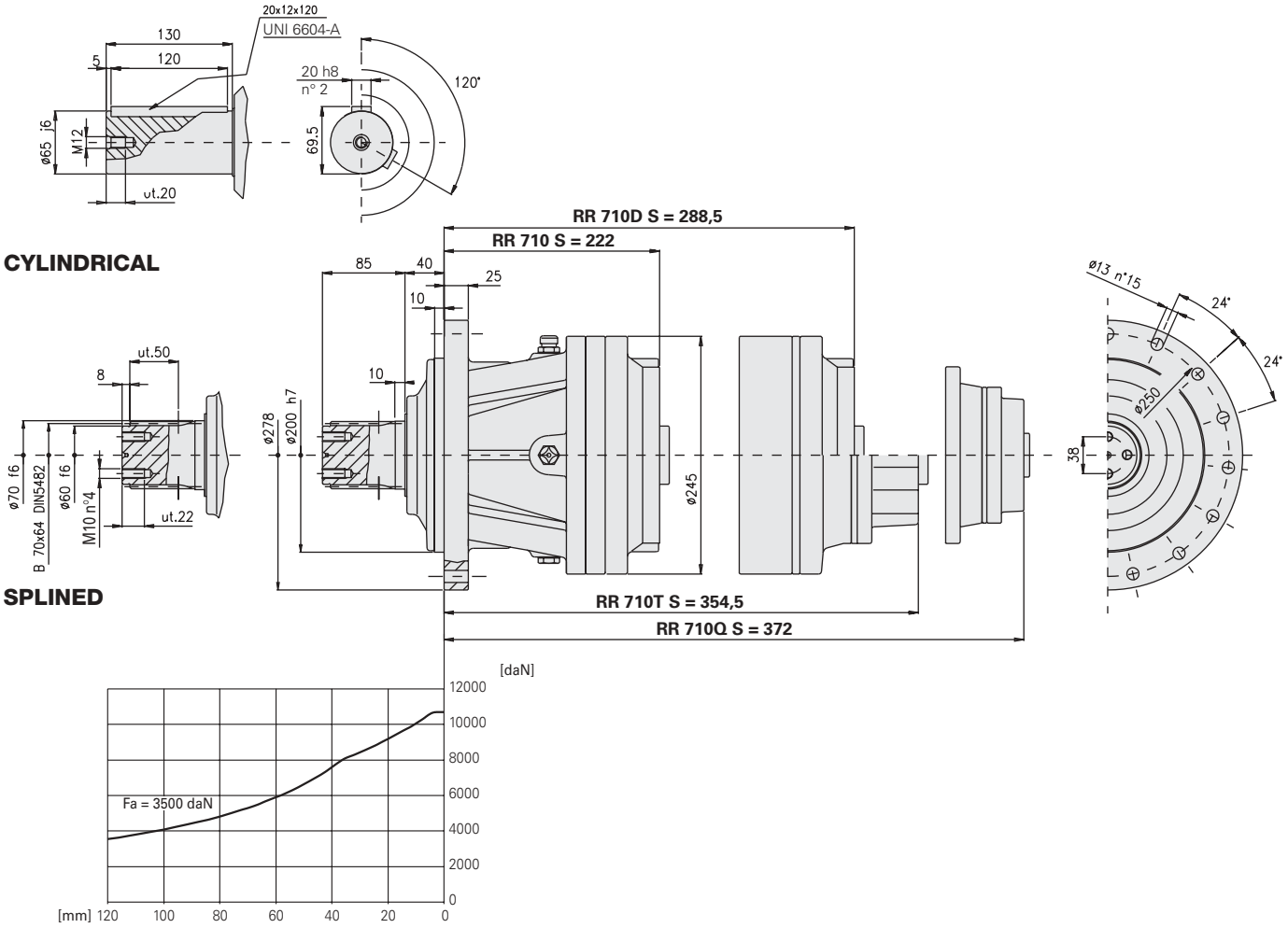


TYPE	L	L1	L2	L3
RA 710 FS	234	166,5	–	–
RA 710D FS	–	–	274,5	212
RA 710T FS	–	–	319	257

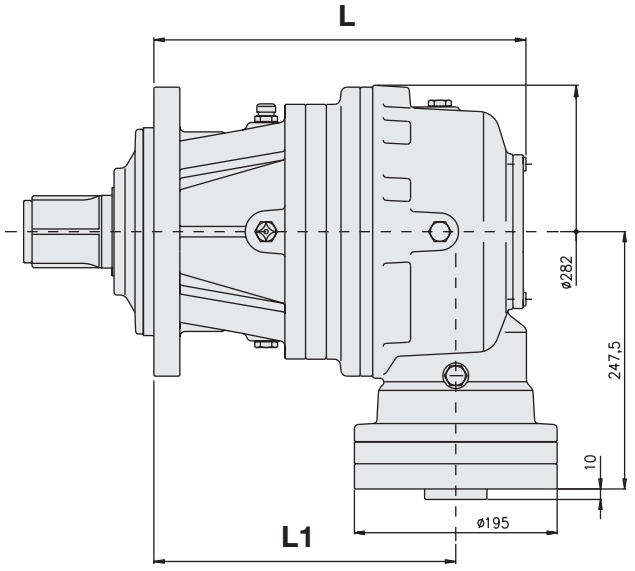
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 710 S REDUCTION GEARS

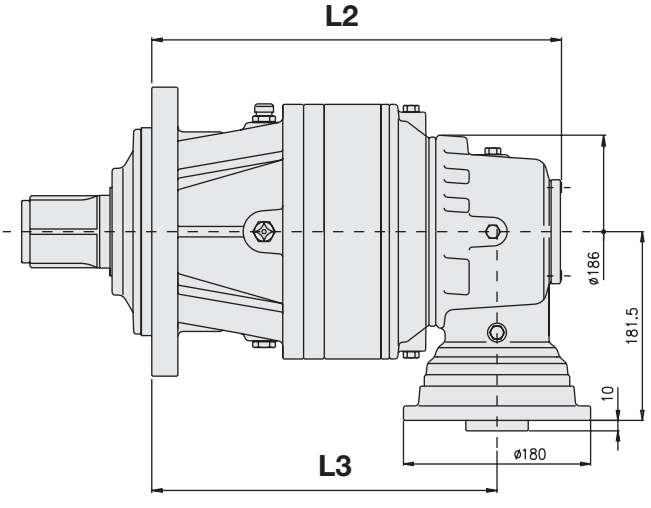
LINEAR REINFORCED VERSION RR 710 S... - RR 710D S... - RR 710T S... - RR 710Q S...



ANGULAR REINFORCED VERSION RA 710 S...



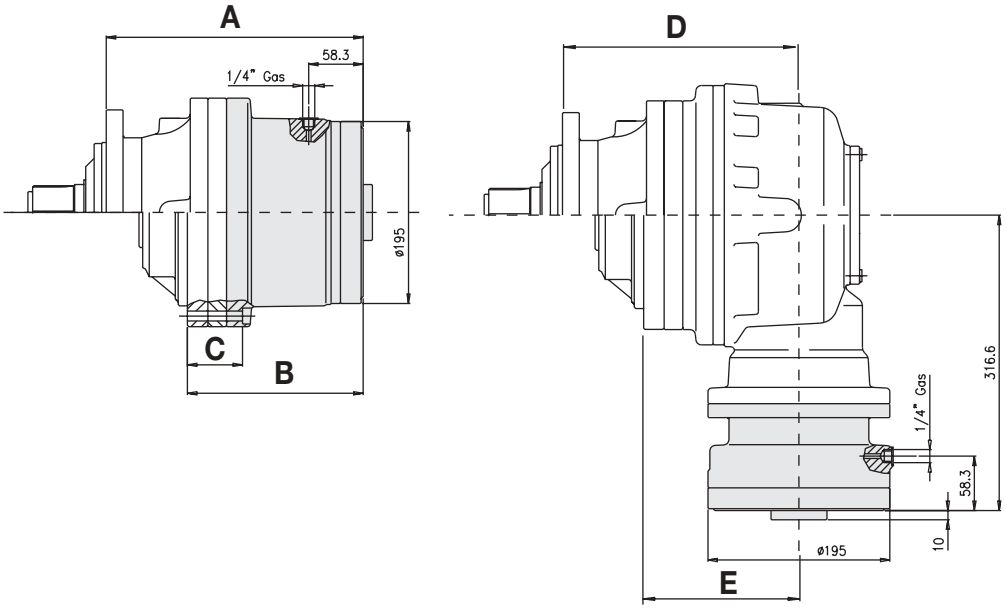
ANGULAR REINFORCED VERSION RA 710D S... - RA 710T S...



TYPE	L	L1	L2	L3
RA 710 S...	358	290,5	–	–
RA 710D S...	–	–	398,5	336,5
RA 710T S...	–	–	443	381

SEE THE INPUT DIMENSIONS ON PAGES 144-148

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130

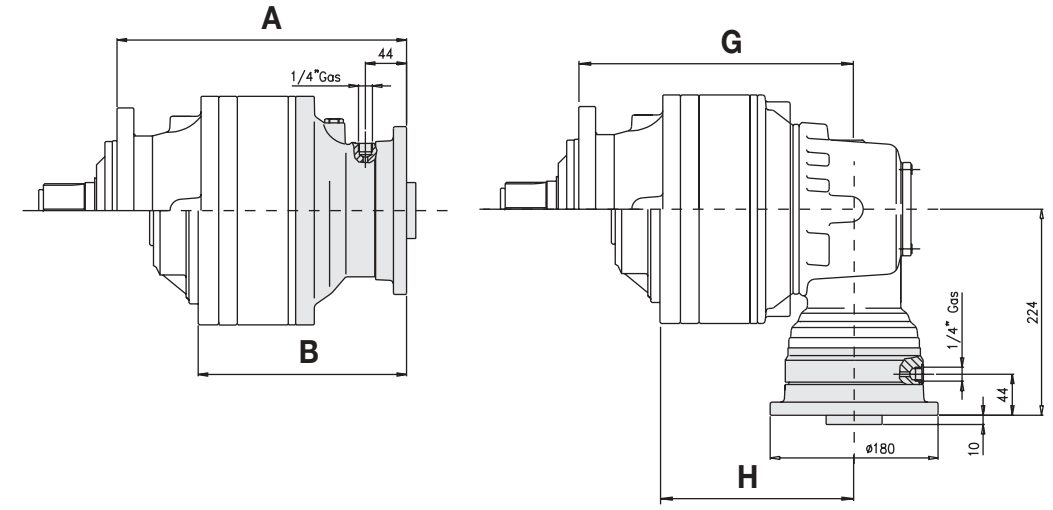


TYPE	A	B	C	D	E
RR 710 M...	275,5	-	-	-	-
RA 710 M...	-	-	-	253,5	-
RR 710D M...	342	-	-	-	-
RR 710 S...	312,5	-	-	-	-
RA 710 S...	-	-	-	290,5	-
RR 710D S...	379	-	-	-	-
RR 710 FS	-	188,5	58,5	-	-
RA 710 FS	-	-	-	-	166,5
RR 710D FS	-	255	-	-	-

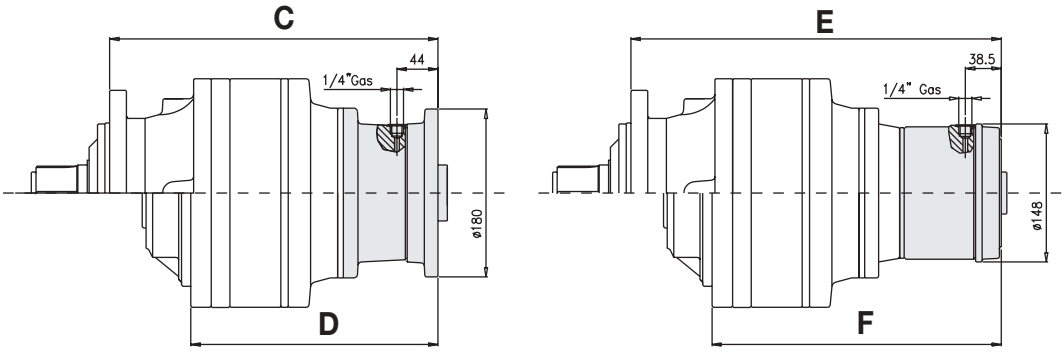
Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



TYPE	A	B	G	H
RR 710D M...	314,5	-	-	-
RA 710D M...	-	-	299	-
RA 710T M...	-	-	344	-
RR 710D S...	351,5	-	-	-
RA 710D S...	-	-	336,5	-
RA 710T S...	-	-	381	-
RR 710D FS	-	227,5	-	-
RA 710D FS	-	-	-	212
RA 710T FS	-	-	-	257



TYPE	C	D	E	F
RR 710T M...	356	-	-	-
RR 710T S...	393	-	-	-
RR 710T FS	-	269	-	-
RR 710Q M...	-	-	401	-
RR 710Q S...	-	-	438	-
RR 710Q FS	-	-	-	314

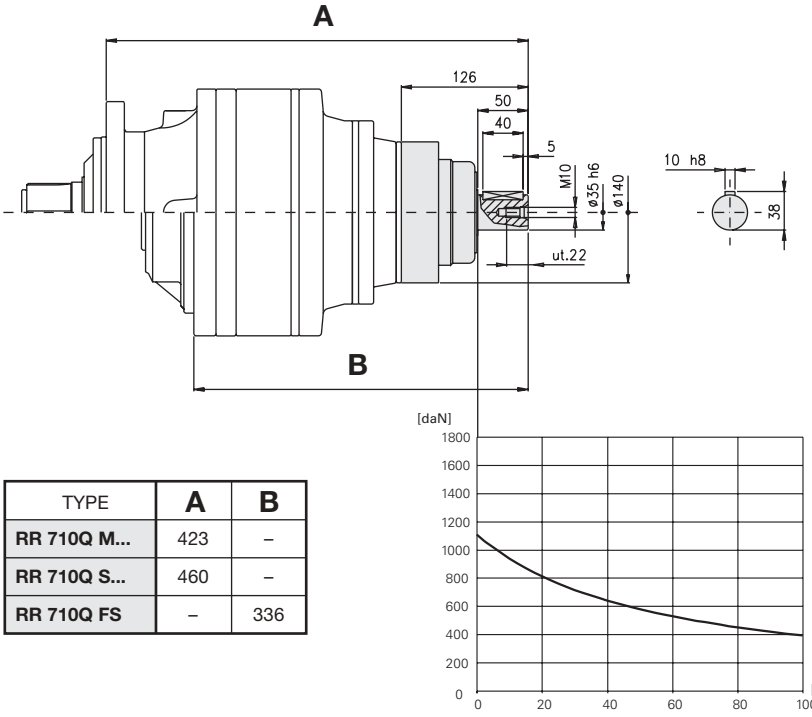
Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

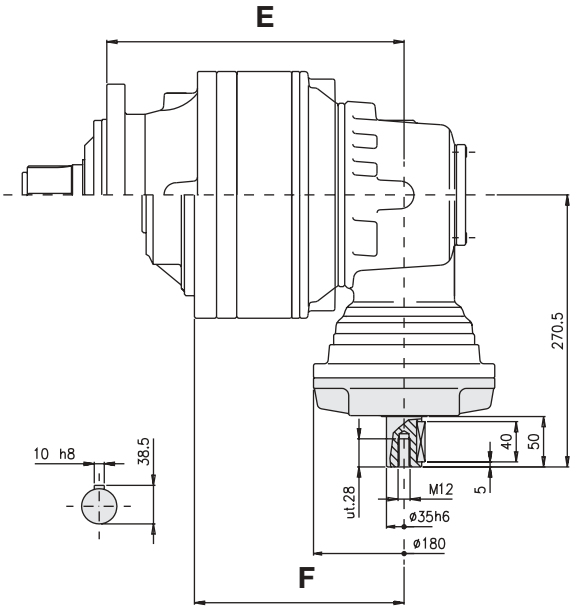
SEE THE INPUT DIMENSIONS ON PAGE 149

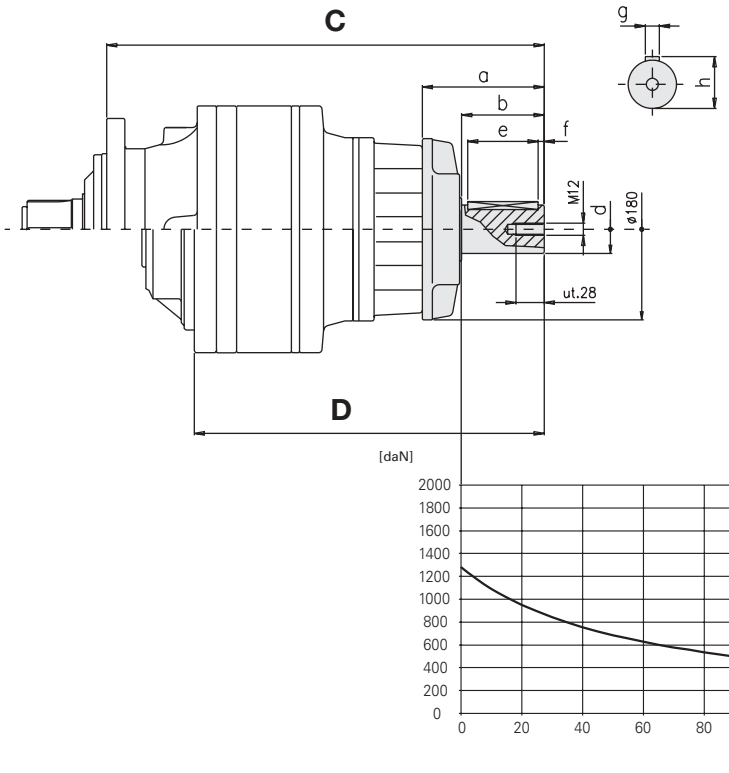
SIZE 710/710S REDUCTION GEARS

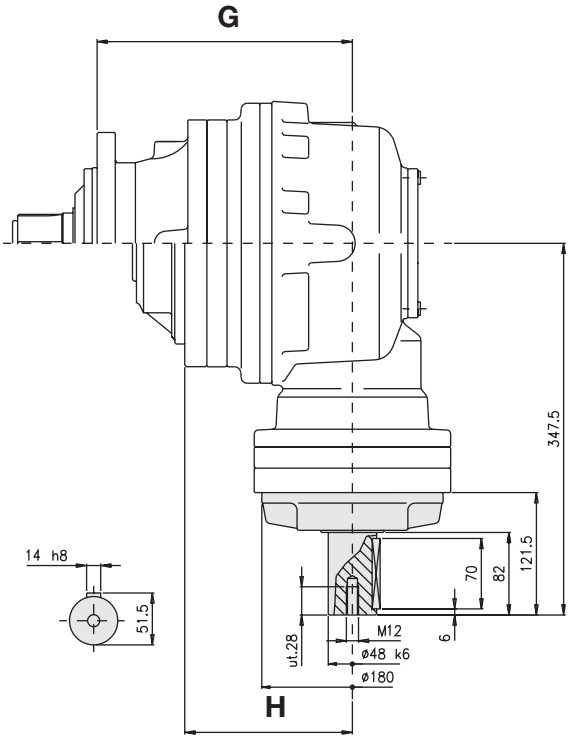
SERIES L MALE LIGHT INPUT



TYPE	A	B
RR 710Q M...	423	–
RR 710Q S...	460	–
RR 710Q FS	–	336





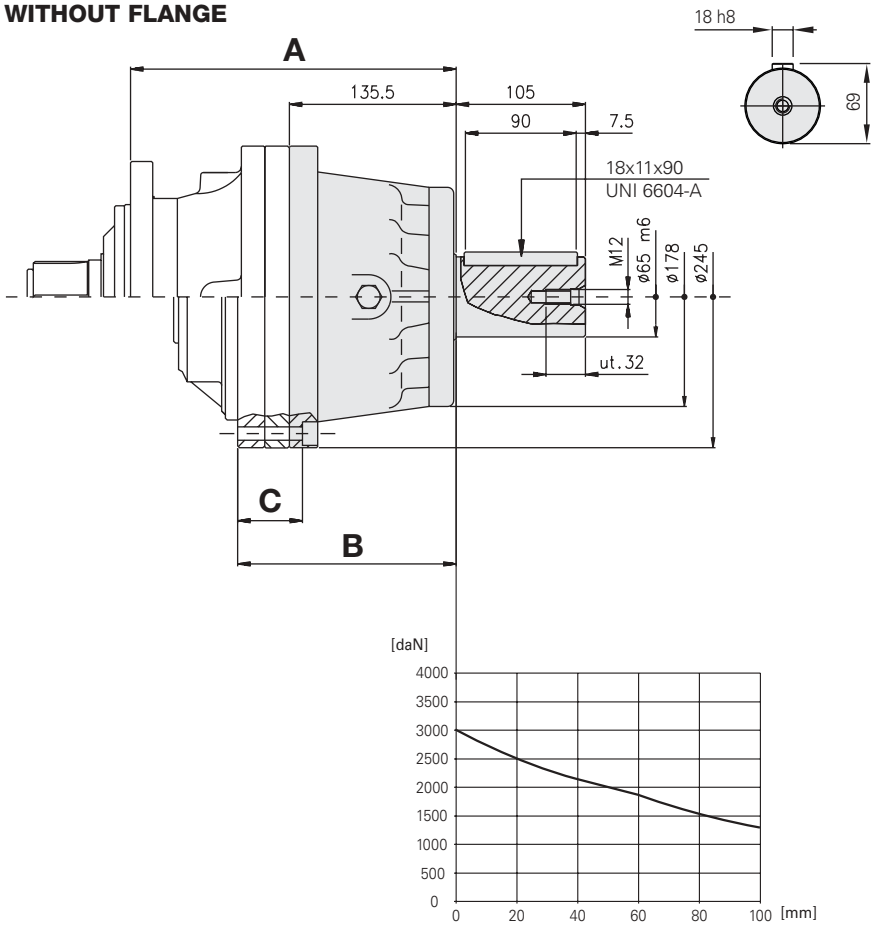


TYPE	C	D	a	b	d	e	f	g	h
RR 710 M...	306,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 710D M...	373	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 710T M...	407	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 710 S...	343,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 710D S...	410	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 710T S...	444	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 710 FS	–	219,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 710D FS	–	286	121,5	82	48 k6	70	6	14 h8	51,5
RR 710T FS	–	320	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	E	F	G	H
RA 710 M...	–	–	253,5	–
RA 710D M...	299	–	–	–
RA 710T M...	344	–	–	–
RA 710 S...	–	–	290,5	–
RA 710D S...	336,5	–	–	–
RA 710T S...	381	–	–	–
RA 710 FS	–	–	–	166,5
RA 710D FS	–	212	–	–
RA 710T FS	–	257	–	–

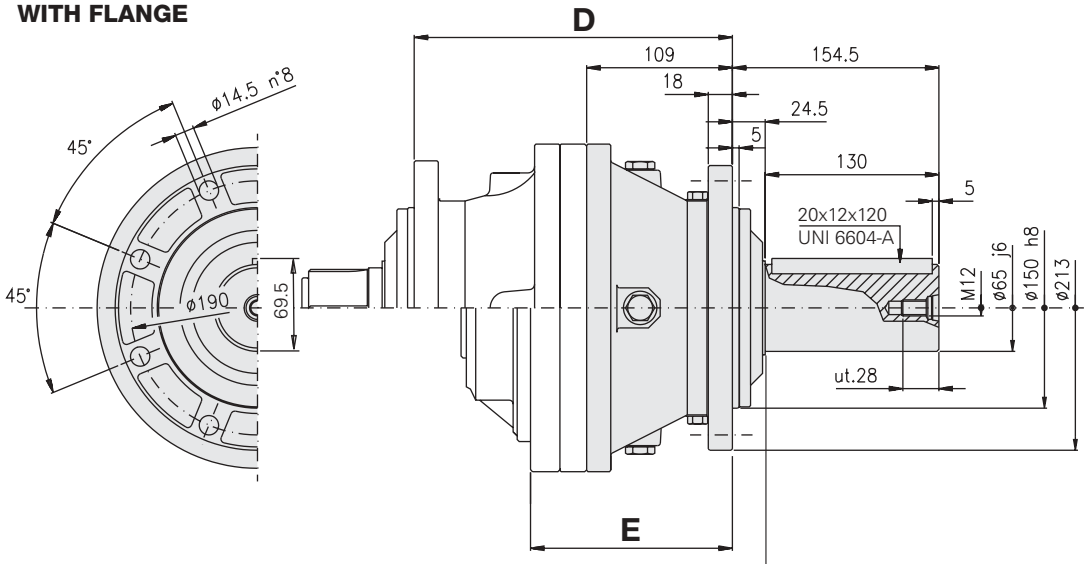
SERIES M MALE MEDIUM INPUT

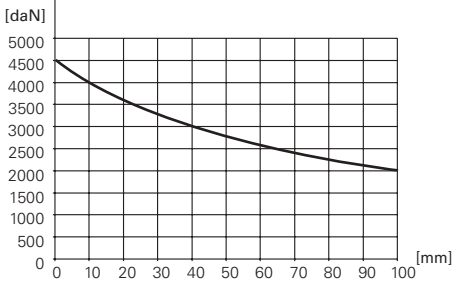
WITHOUT FLANGE



TYPE	A	B	C
RR 710 M...	264,5	–	–
RR 710 S...	301,5	–	–
RR 710 FS	–	177,5	63
RR 710D M...	331	–	–
RR 710D S...	368	–	–
RR 710D FS	–	244,0	129,5

WITH FLANGE

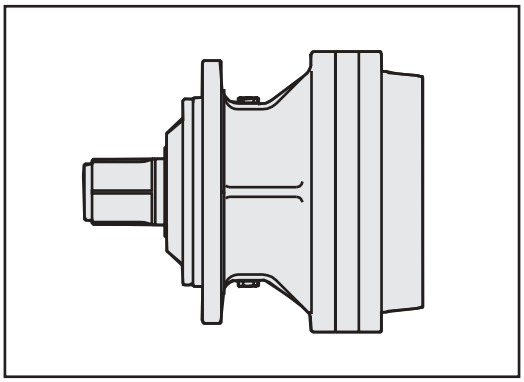




TYPE	D	E
RR 710 M...	238	–
RR 710 S...	275	–
RR 710 FS	–	151
RR 710D M...	304,5	–
RR 710D S...	341,5	–
RR 710D FS	–	217,5

SIZE 810 REDUCTION GEARS

Tab. A

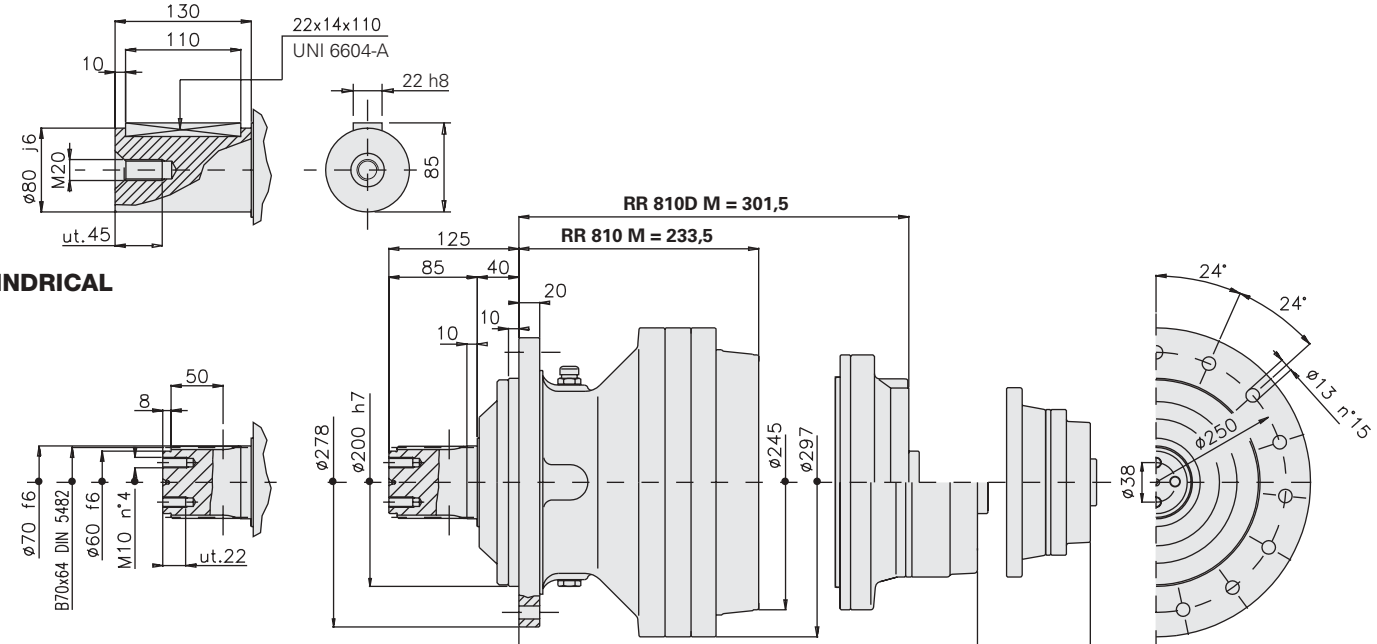


TYPE	RR 810 M... RR 810 FS RR 810 S...	RR 810D M... RR 810D FS RR 810D S...	RR 810T M... RR 810T FS RR 810T S...	RR 810Q M... RR 810Q FS RR 810Q S...
Number of stages	1	2	3	4
Type of input	C	B	B	A
Max. input revs n1 (min^{-1})	3000	3500	3500	3500

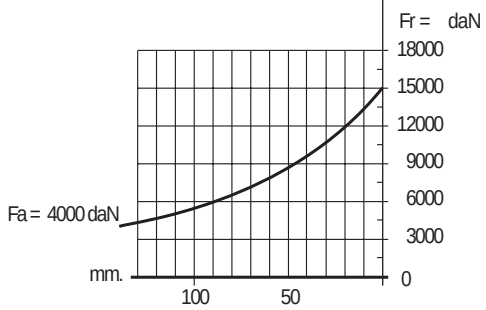
TYPE	RA 810 M... RA 810 FS RA 810 S...	RA 810D M... RA 810DFS RA 810D S...	RA 810T M... RA 810T FS RA 810T S...	
Number of stages	1	2	3	-
Type of input	B	B	B	-
Max. input revs n1 (min^{-1})	3000	3500	3500	-

MALE LINEAR VERSION RR 810 M... - RR 810D M... - RR 810T M... - RR 810Q M...

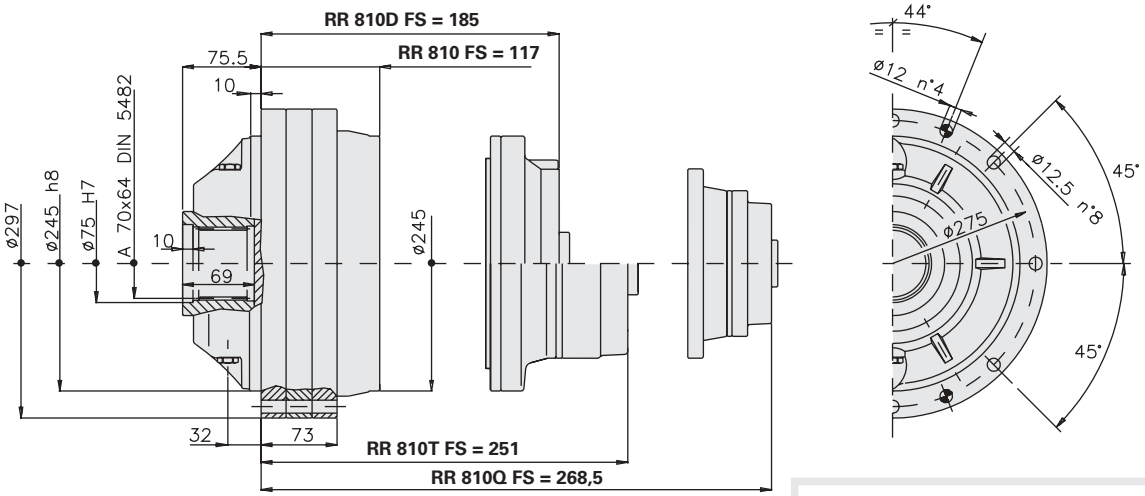
CYLINDRICAL



SPLINED



FEMALE LINEAR VERSION RR 810 FS - RR 810D FS - RR 810T FS - RR 810Q FS



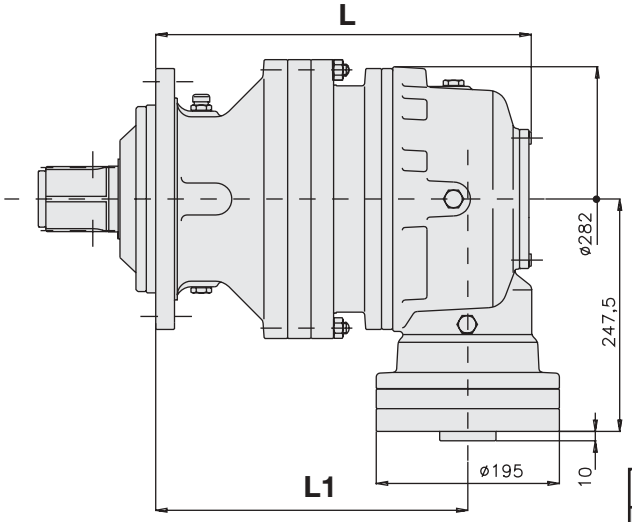
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

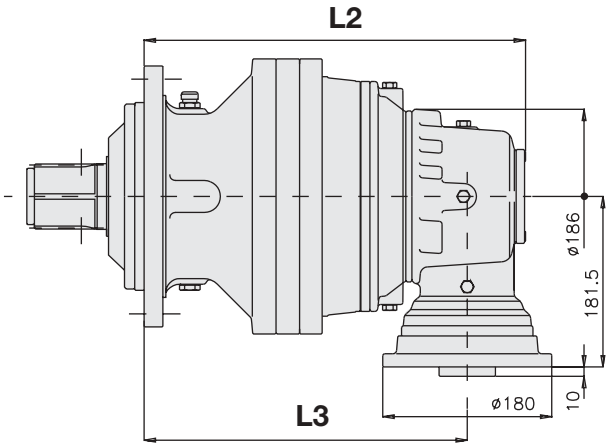
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 810 M... RR 810 FS RR 810 S...			RR 810D M... RR 810D FS RR 810D S...			RR 810T M... RR 810T FS RR 810T S...			RR 810Q M... RR 810Q FS RR 810Q S...		
PART. No. 810/...	...../1	T2 daNm	PART. No. 810/...	...../1	T2 daNm	PART. No. 810/...	...../1	T2 daNm	PART. No. 810/...	...../1	T2 daNm
43	4,30	970	146	14,62	970	552	55,21	970	2475	247,53	970
54	5,47	790	172	17,20	970	705	70,52	970	3279	327,92	970
64	6,43	700	215	21,50	970	881	88,15	970	4099	409,90	970
79	7,90	465	273	27,35	790	1165	116,53	970	5474	547,41	970
86	8,60	415	317	31,73	790	1548	154,80	970	7236	723,65	970
			382	38,29	790	1719	171,95	790	9205	920,55	790
			450	45,01	700	2284	228,43	790	10678	1067,84	790
			553	55,30	465	2756	275,69	790	14185	1418,53	790
			602	60,20	415	3239	323,97	700	17120	1712,02	790
						3981	398,16	465	20118	2011,86	700
						4334	433,44	415	24725	2472,57	465
									26916	2691,66	415

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 810 M... RA 810 FS RA 810 S...			RA 810D M... RA 810D FS RA 810D S...			RA 810T M... RA 810T FS RA 810T S...		
PART. No. 810/...	...../1	T2 daNm	PART. No. 810/...	...../1	T2 daNm	PART. No. 810/...	...../1	T2 daNm
172	17,20	900	470	47,08	660	1777	177,78	970
218	21,88	790	553	55,38	775	2270	227,07	970
257	25,71	700	692	69,23	970	2838	283,84	970
316	31,60	465	880	88,07	790	3752	375,23	970
344	34,40	415	1021	102,16	790	4984	498,46	970
			1233	123,29	790	5536	553,69	790
			1449	144,89	700	7355	735,54	790
			1780	178,07	465	8877	887,72	790
			1938	193,84	415	10431	1043,19	700
			2025	202,55	415	12820	1282,08	465
			2195	219,52	700	13956	1395,68	415
			2254	225,45	790	14359	1435,96	700
			2325	232,58	465	15805	1580,54	700
			2331	253,18	415	16232	1623,25	790
			2649	264,94	700	17647	1764,79	465
			2936	293,69	415	18229	1822,92	415
			3256	325,61	465	21145	2114,59	415
			3544	354,46	415	23443	2344,37	465
						25520	2552,09	415

MALE ANGULAR VERSION
RA 810 M...

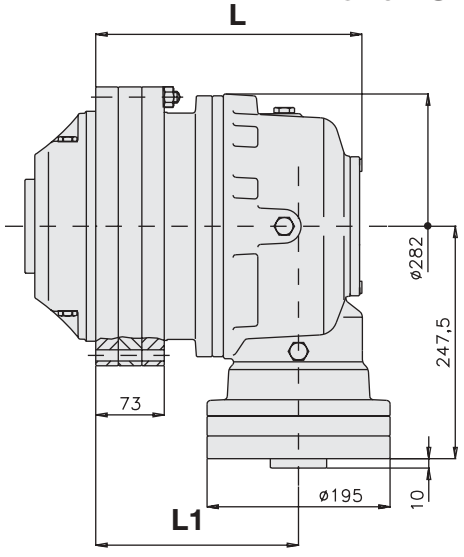


MALE ANGULAR VERSION
RA 810D M... - RA 810T M...

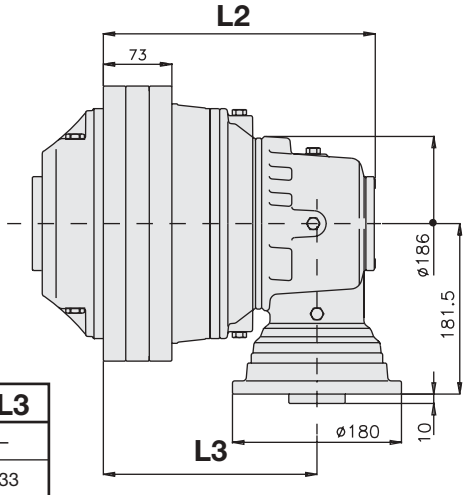


TYPE	L	L1	L2	L3
RA 810 M...	400	332,5	–	–
RA 810D M...	–	–	411,5	349
RA 810T M...	–	–	456	394

FEMALE ANGULAR VERSION
RA 810 FS



FEMALE ANGULAR VERSION
RA 810D FS - RA 810T FS

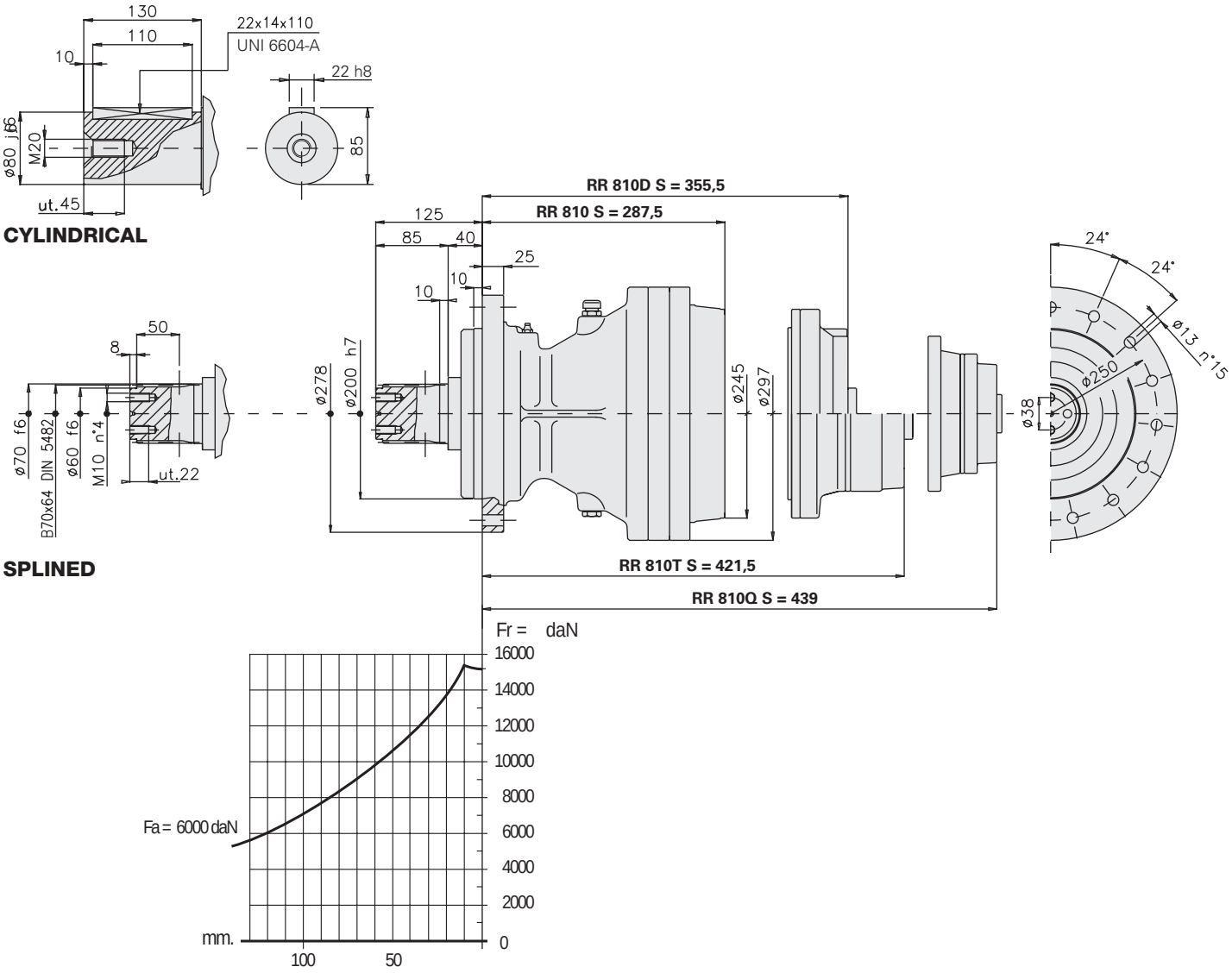


TYPE	L	L1	L2	L3
RA 810 FS	283,5	216	–	–
RA 810D FS	–	–	295,5	233
RA 810T FS	–	–	339,5	277

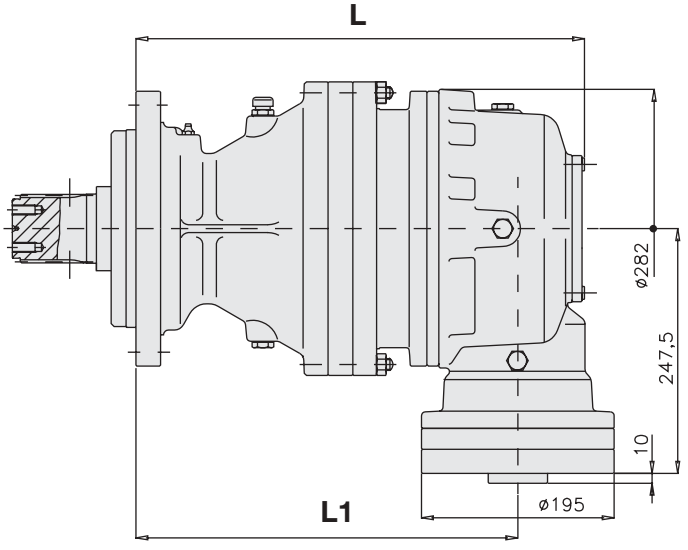
SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 810 S REDUCTION GEARS

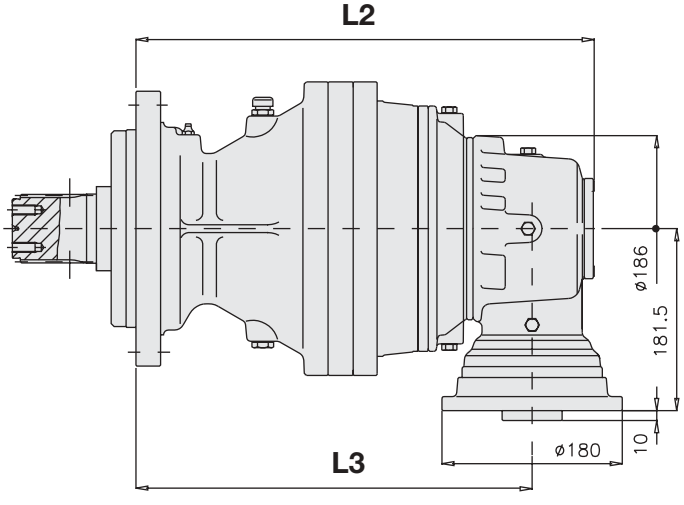
LINEAR REINFORCED VERSION RR 810 S... - RR 810D S... - RR 810T S... - RR 810Q S...



ANGULAR REINFORCED VERSION RA 810 S...



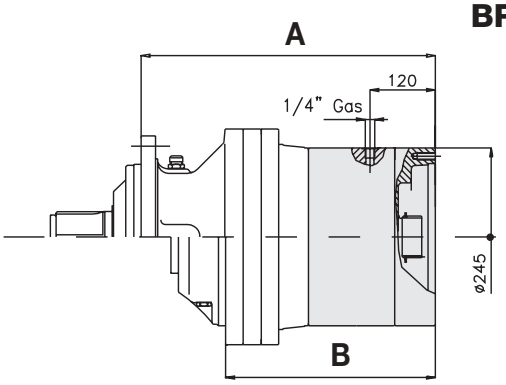
ANGULAR REINFORCED VERSION RA 810D S... - RA 810T S...



TYPE	L	L1	L2	L3
RA 810 S...	454	386,5	–	–
RA 810D S...	–	–	465,5	403
RA 810T S...	–	–	510	448

SEE THE INPUT DIMENSIONS ON PAGES 144-148

BRAKES SERIES RF 170 ÷ 290

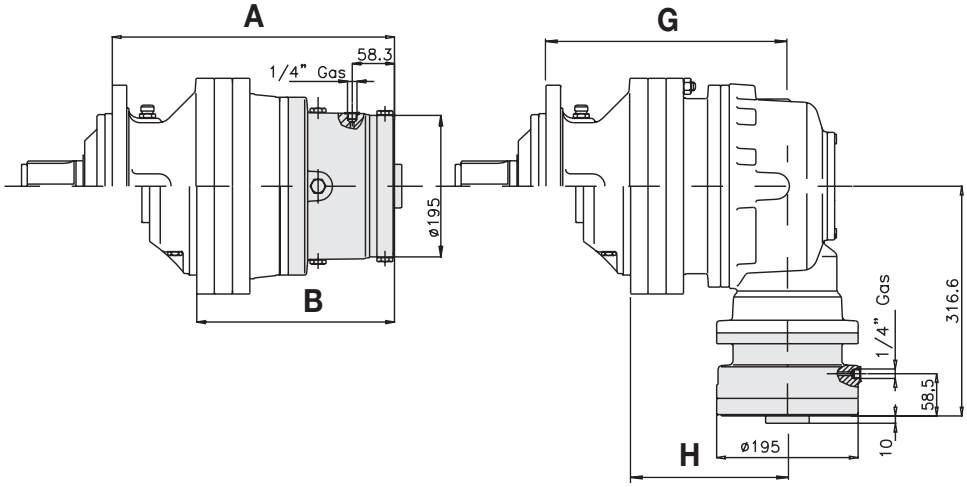


Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

TYPE	A	B
RR 810 M...	431	-
RR 810 S...	485	-
RR 810 FS	-	314

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



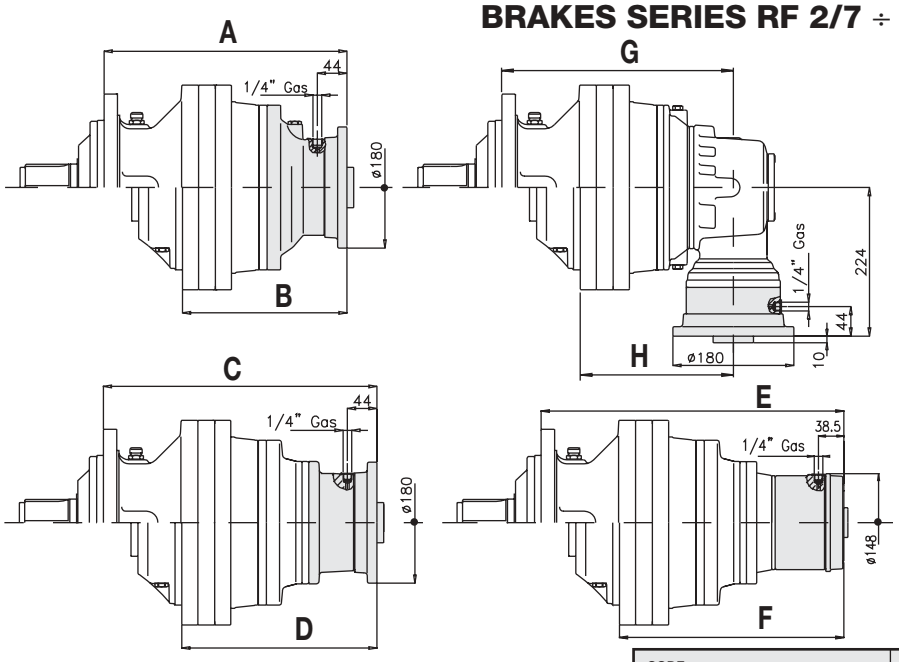
TYPE	A	B
RR 810D M...	392	-
RR 810D S...	446	-
RR 810D FS	-	275,5

TYPE	G	H
RA 810 M...	332,5	-
RA 810 S...	386,5	-
RA 810 FS	-	216

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



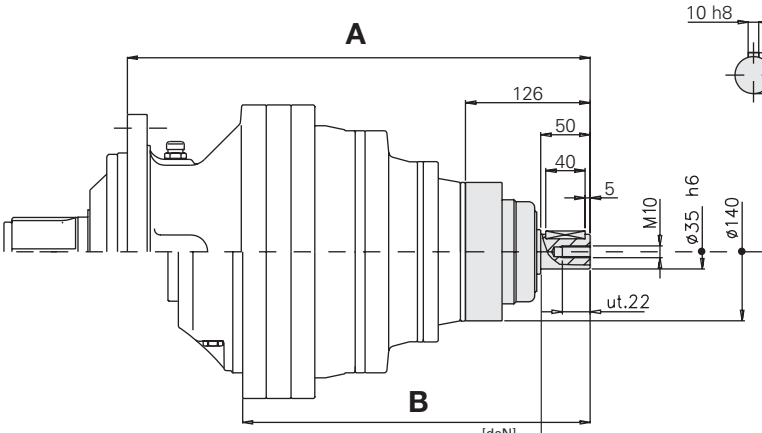
TYPE	A	B	C	D	E	F	G	H
RR 810D M...	364,5	–	–	–	–	–	–	–
RA 810D M...	–	–	–	–	–	–	349	–
RR 810T M...	–	–	406	–	–	–	–	–
RA 810T M...	–	–	–	–	–	–	394	–
RR 810Q M...	–	–	–	–	451	–	–	–
RR 810D S...	418,5	–	–	–	–	–	–	–
RA 810D S...	–	–	–	–	–	–	403	–
RR 810T S...	–	–	460	–	–	–	–	–
RA 810T S...	–	–	–	–	–	–	448	–
RR 810Q S...	–	–	–	–	505	–	–	–
RR 810D FS	–	248	–	–	–	–	–	–
RA 810D FS	–	–	–	–	–	–	–	233
RR 810T FS	–	–	–	289,5	–	–	–	–
RA 810T FS	–	–	–	–	–	–	–	277
RR 810Q FS	–	–	–	–	–	334,5	–	–

Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

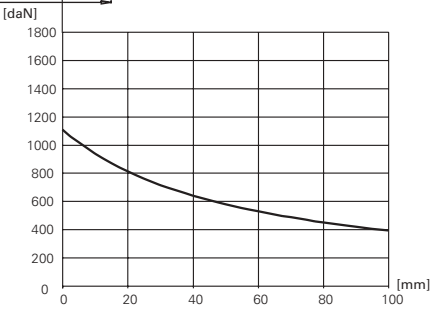
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

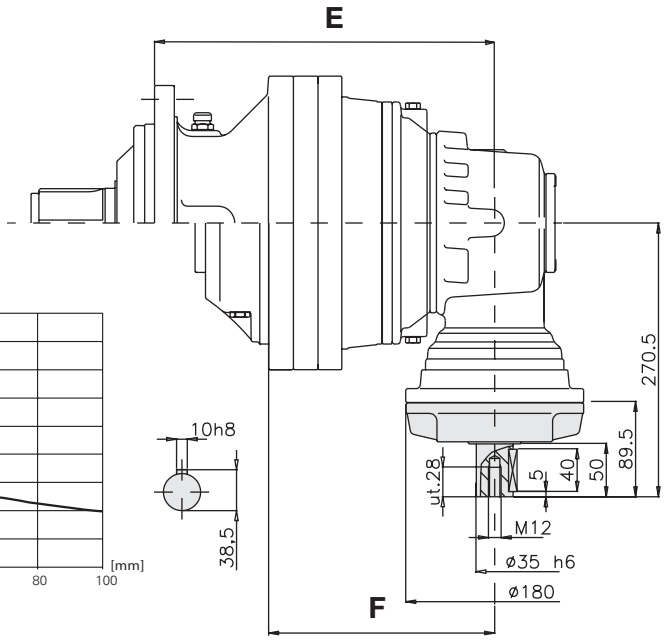
SEE THE INPUT DIMENSIONS ON PAGE 149

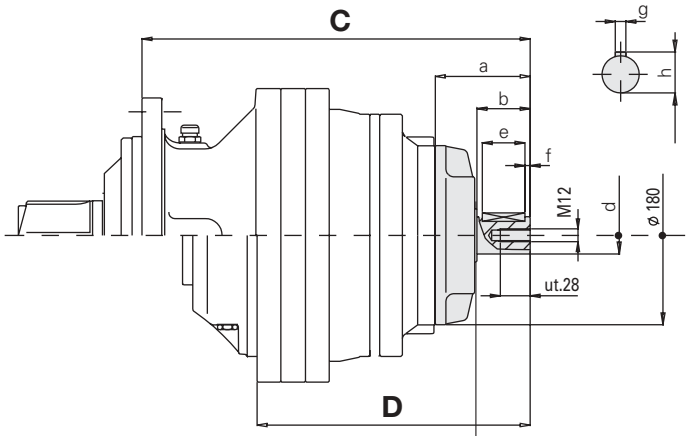
SERIES L MALE LIGHT INPUT

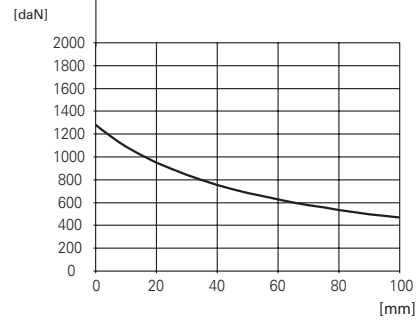


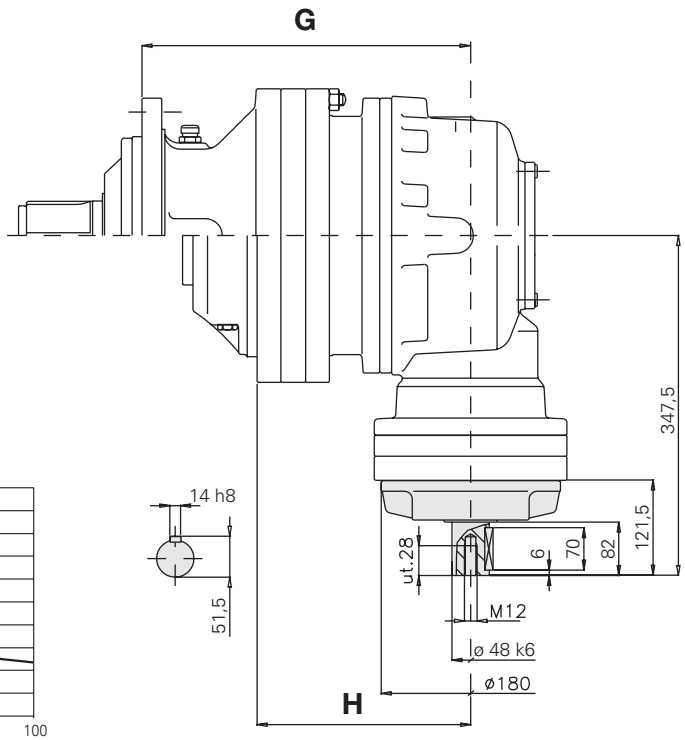
TYPE	A	B
RR 810Q M...	473	–
RR 810Q S...	527	–
RR 810Q FS	–	356,5







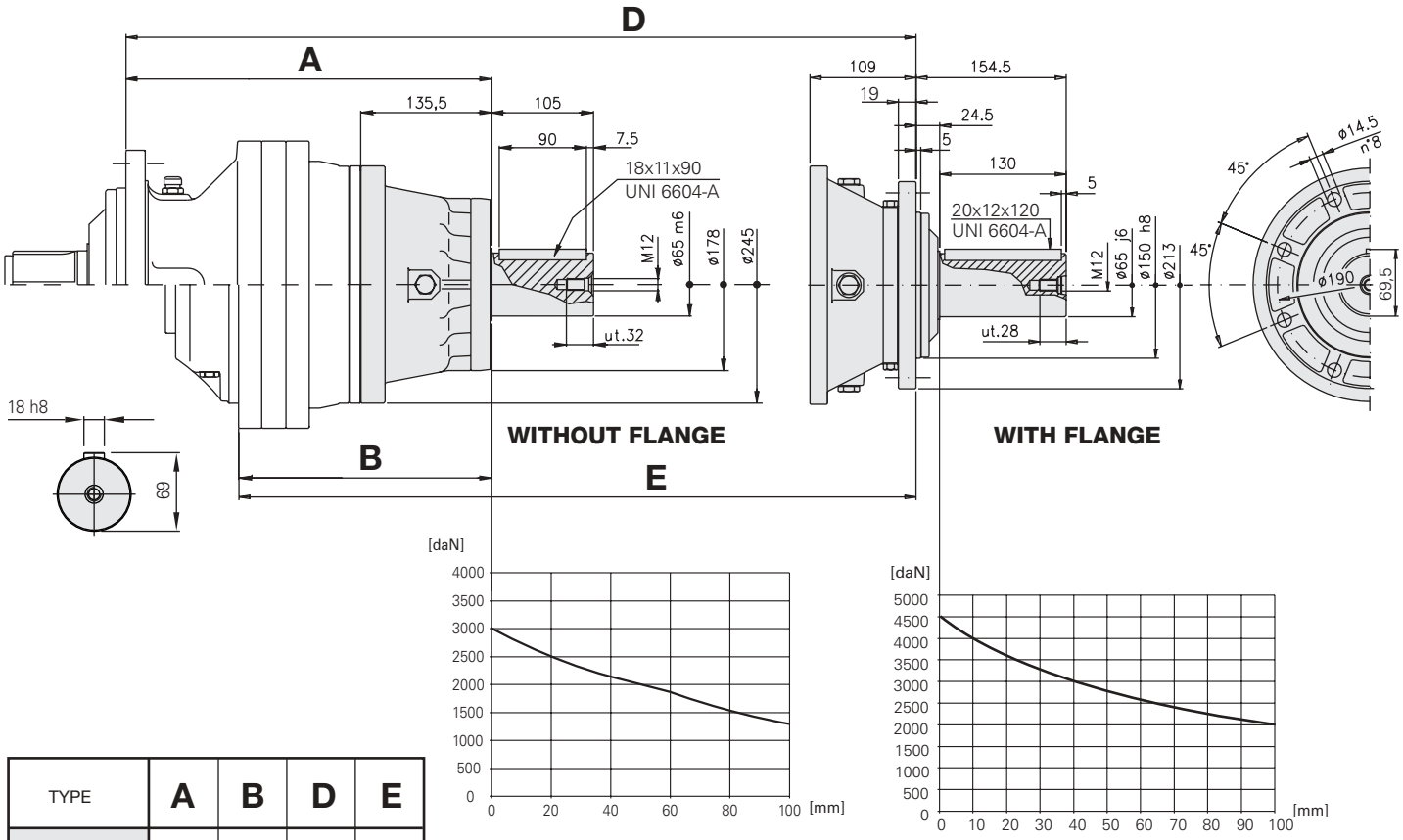




TYPE	C	D	a	b	d	e	f	g	h
RR 810D M...	423	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 810T M...	457	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 810D S...	477	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 810T S...	511	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 810D FS	–	306,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 810T FS	–	340,5	89,5	50	35 h6	40	5	10 h8	38,5

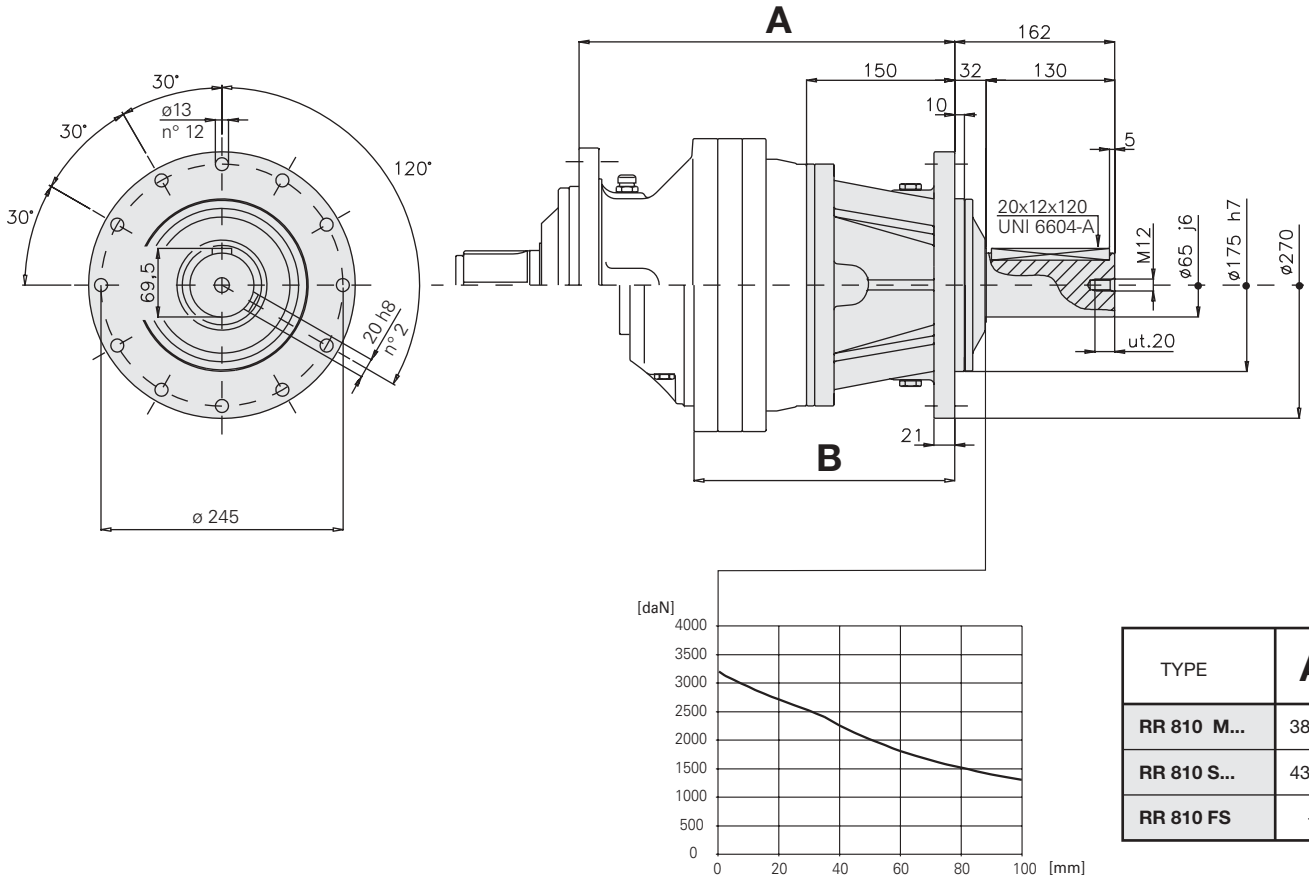
TYPE	E	F	G	H
RA 810 M...	–	–	332,5	–
RA 810D M...	349	–	–	–
RA 810T M...	394	–	–	–
RA 810 S...	–	–	386,5	–
RA 810D S...	403	–	–	–
RA 810T S...	448	–	–	–
RA 810 FS	–	–	–	216
RA 810D FS	–	233	–	–
RA 810T FS	–	277	–	–

SERIES M MALE MEDIUM INPUT



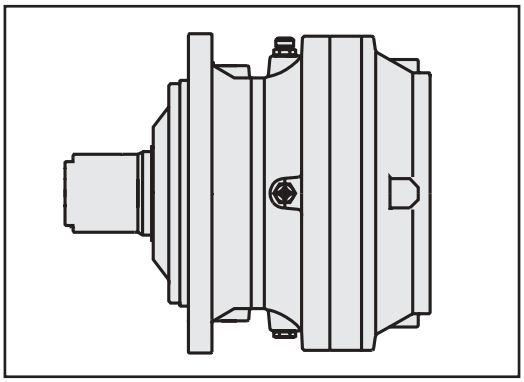
TYPE	A	B	D	E
RR 810D M...	381	–	354,5	–
RR 810D S...	435	–	408,5	–
RR 810D FS	–	264,5	–	238

SERIES P MALE HEAVY INPUT



TYPE	A	B
RR 810 M...	383,5	–
RR 810 S...	437,5	–
RR 810 FS	–	267

SIZE 1010 REDUCTION GEARS

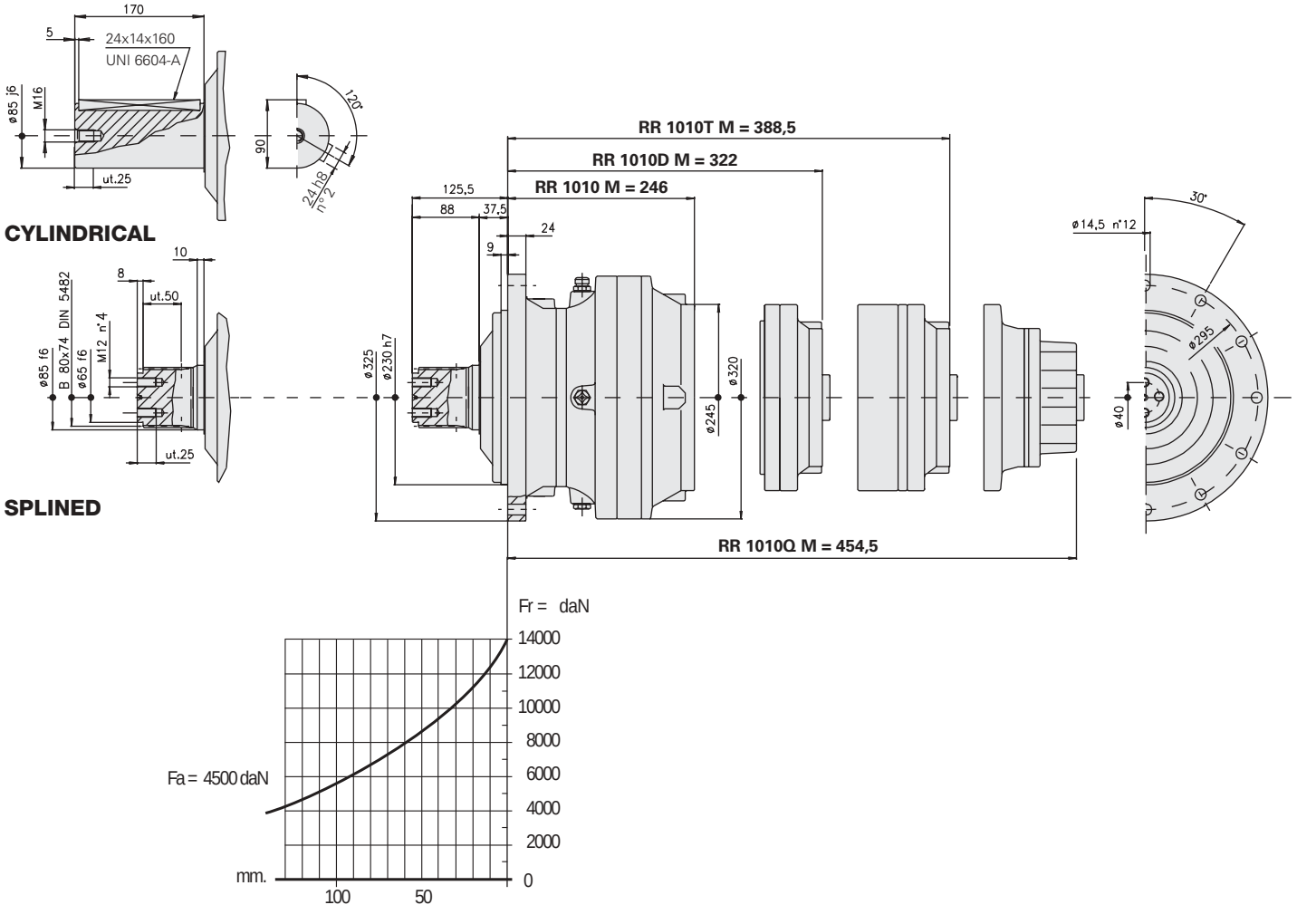


Tab. A

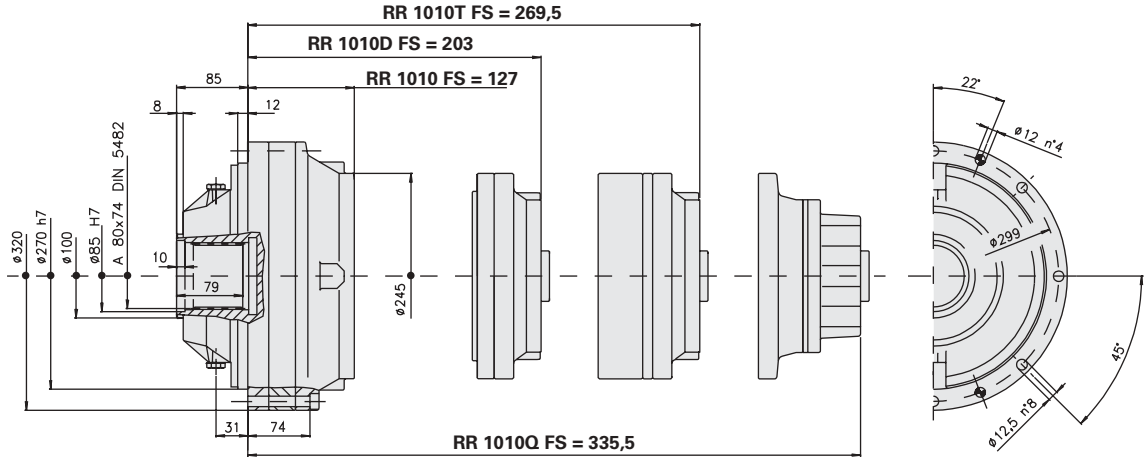
TYPE	RR 1010 M... RR 1010 FS	RR 1010D M... RR 1010D FS	RR 1010T M... RR 1010T FS	RR 1010Q M... RR 1010Q FS
Number of stages	1	2	3	4
Type of input	C	B	B	B
Max. input revs n1 (min^{-1})	2500	3500	3500	3500

TYPE	RA 1010 M... RA 1010 FS	RA 1010D M... RA 1010D FS	RA 1010T M... RA 1010T FS	
Number of stages	1	2	3	-
Type of input	C / B	B	B	-
Max. input revs n1 (min^{-1})	2500	3500	3500	-

MALE LINEAR VERSION RR 1010 M... - RR 1010D M... - RR 1010T M... - RR 1010Q M...



FEMALE LINEAR VERSION RR 1010 FS - RR 1010D FS - RR 1010T FS - RR 1010Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

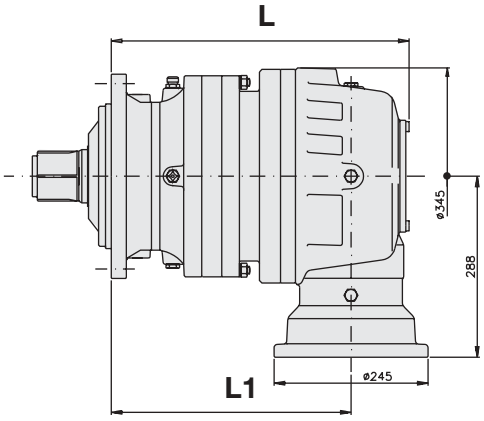
Tab. B

PART No. - RATIOS - TORQUES (ISO Standards)											
RR 1010 M... RR 1010 FS			RR 1010D M... RR 1010D FS			RR 1010T M... RR 1010T FS			RR 1010Q M... RR 1010Q FS		
PART. No. 1010/...	...../1	T2 daNm	PART. No. 1010/...	...../1	T2 daNm	PART. No. 1010/...	...../1	T2 daNm	PART. No. 1010/...	...../1	T2 daNm
40	4,0	1600	136	13,60	1600	640	64,00	1600	3804	380,48	1600
50	5,0	1250	160	16,00	1600	800	80,00	1600	4756	475,60	1600
58	5,8	1130	200	20,00	1600	928	92,80	1600	5760	576,00	1600
70	7,0	800	232	23,20	1600	1160	116,00	1600	6681	668,16	1600
			290	29,00	1250	1400	140,00	1600	8352	835,20	1600
			350	35,00	1250	1682	168,20	1250	10080	1008,00	1600
			406	40,60	1130	2030	203,00	1250	12110	1211,04	1250
			490	49,00	800	2354	235,48	1130	14616	1461,60	1250
						2842	284,20	1130	16954	1695,46	1130
						3430	343,00	800	20462	2046,24	1130
									24696	2469,60	800

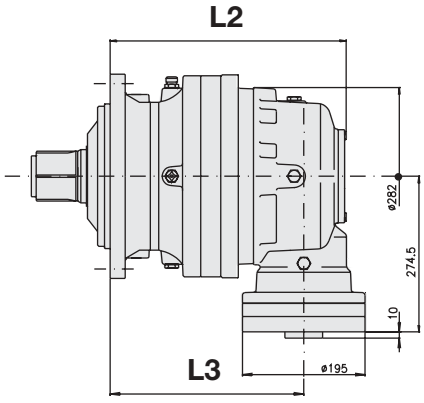
PART No. - RATIOS - TORQUES (ISO Standards)								
RA 1010 M... RA 1010 FS			RA 1010D M... RA 1010D FS			RA 1010T M... RA 1010T FS		
PART. No. 1010/...	...../1	T2 daNm	PART. No. 1010/...	...../1	T2 daNm	PART. No. 1010/...	...../1	T2 daNm
160	16,00	840	544	54,40	1600	2060	206,08	1600
200	20,00	1050	640	64,00	1600	2576	257,60	1600
232	23,20	1130	800	80,00	1600	2988	298,82	1600
280	28,00	800	928	92,80	1600	3735	373,52	1600
			1160	116,00	1250	4508	450,80	1600
			1400	140,00	1250	5416	541,60	1250
			1624	162,40	1130	6536	653,66	1250
			1960	196,00	800	7582	758,25	1130
						9151	915,12	1130
						11044	1104,46	800
						11952	1195,26	1250
						13865	1386,51	1130
✶ 109	10,91	1600				14425	1442,56	1250
✶ 136	13,64	1250				16733	1673,37	1130
✶ 158	15,82	1130				20195	2019,58	800
✶ 190	19,09	800						

MALE ANGULAR VERSION

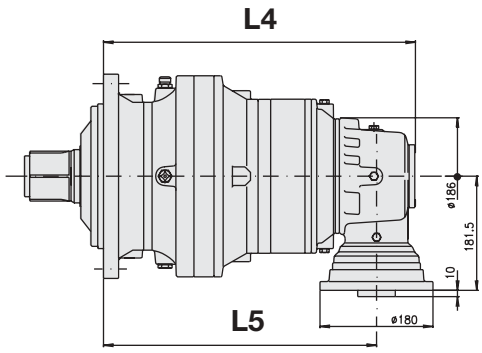
RA 1010 M... ✶



RA 1010 M... - RA 1010D M...



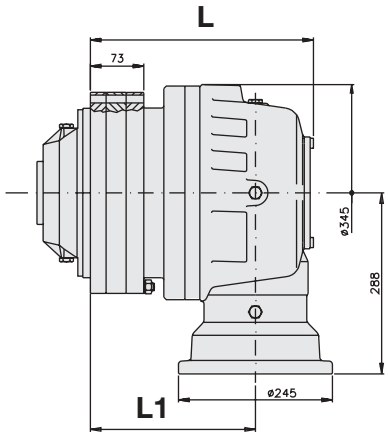
RA 1010T M...



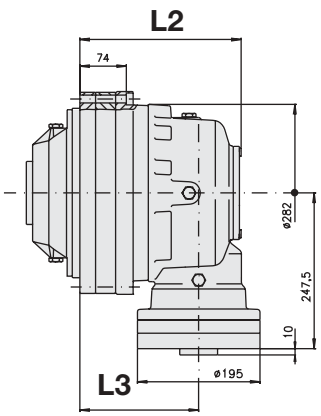
TYPE	L	L1	L2	L3	L4	L5
RA 1010 M...	474,5	382	375,5	308	–	–
RA 1010D M...	–	–	458	390,5	–	–
RA 1010T M...	–	–	–	–	498	436

FEMALE ANGULAR VERSION

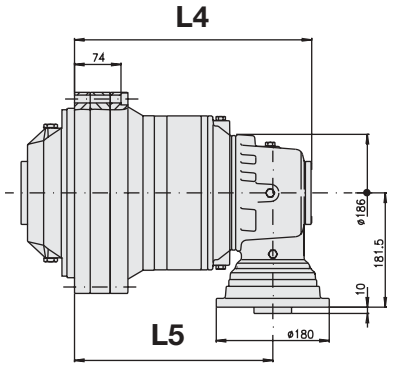
RA 1010 FS ✶



RA 1010 FS - RA 1010D FS



RA 1010T FS

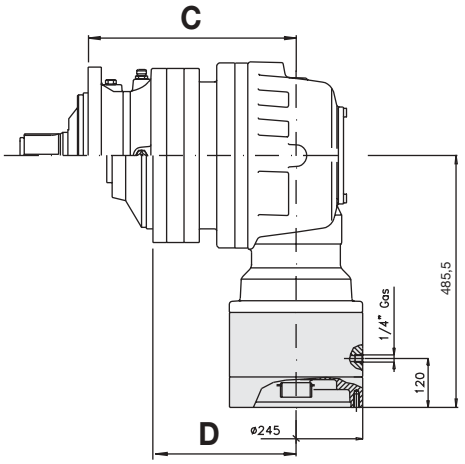


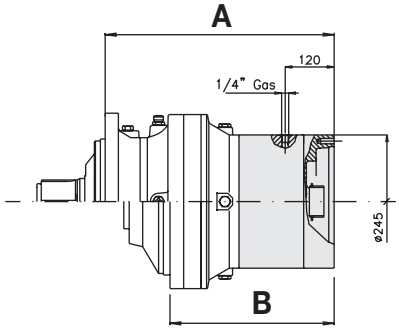
TYPE	L	L1	L2	L3	L4	L5
RA 1010 FS	353,5	263	256,5	189	–	–
RA 1010D FS	–	–	339	271,5	–	–
RA 1010T FS	–	–	–	–	379	317

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 1010 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290



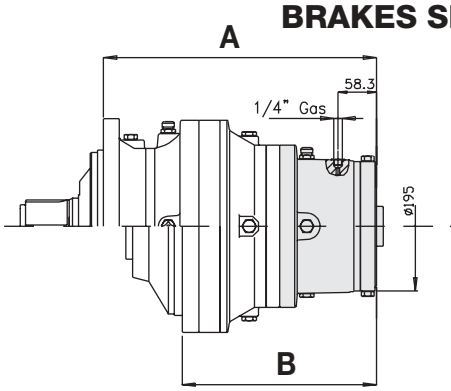


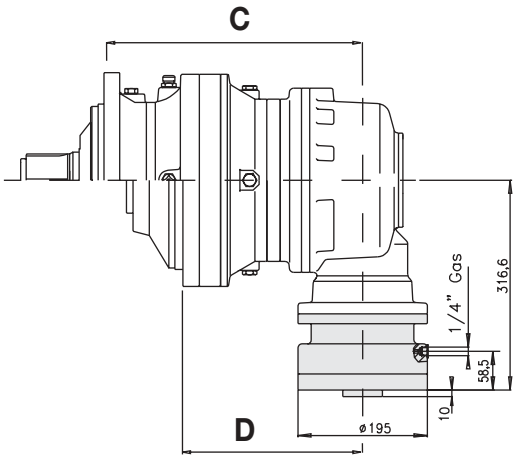
TYPE	A	B	C	D
RR 1010 M...	443	-	-	-
RA 1010 M...	-	-	382	-
RR 1010 FS	-	324	-	-
RA 1010 FS	-	-	-	263

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



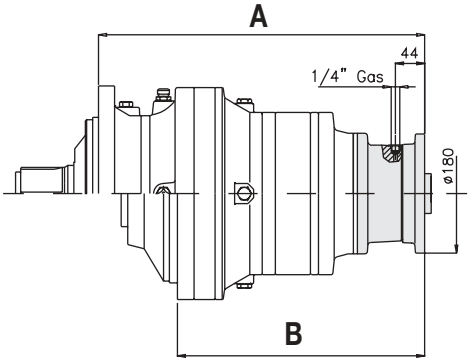


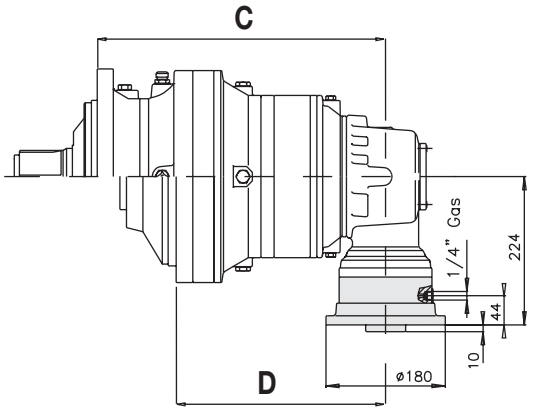
TYPE	A	B	C	D
RA 1010 M...	-	-	308	-
RR 1010D M...	412,5	-	-	-
RA 1010D M...	-	-	390,5	-
RR 1010T M...	479	-	-	-
RA 1010 FS	-	-	-	189
RR 1010D FS	-	293,5	-	-
RA 1010D FS	-	-	-	271,5
RR 1010T FS	-	360	-	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60





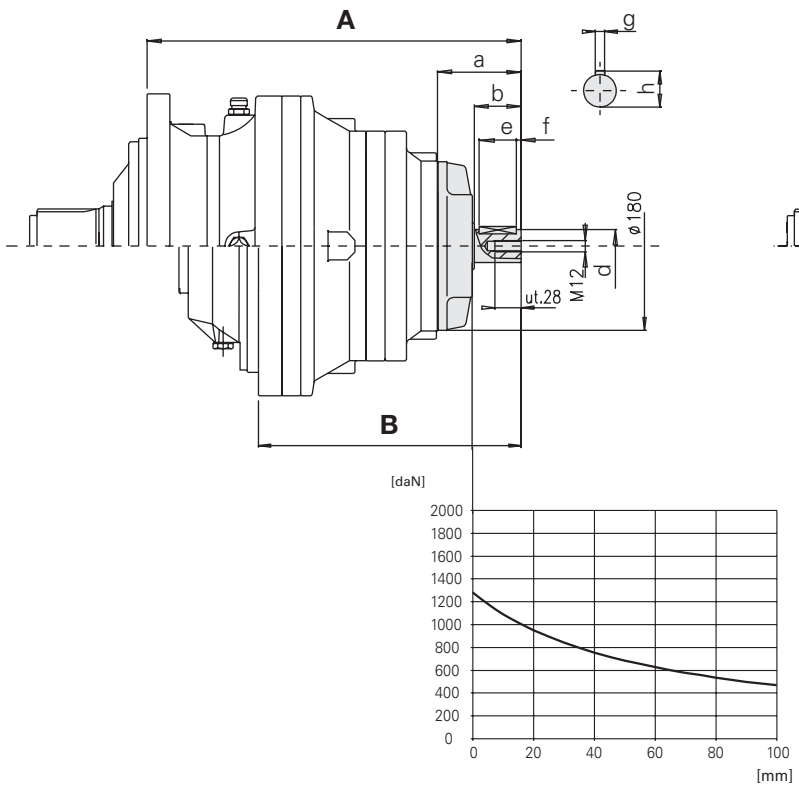
TYPE	A	B	C	D
RR 1010D M...	385	-	-	-
RR 1010T M...	451,5	-	-	-
RA 1010T M...	-	-	436	-
RR 1010Q M...	493	-	-	-
RR 1010D FS	-	266	-	-
RR 1010T FS	-	332,5	-	-
RA 1010T FS	-	-	-	317
RR 1010Q FS	-	374	-	-

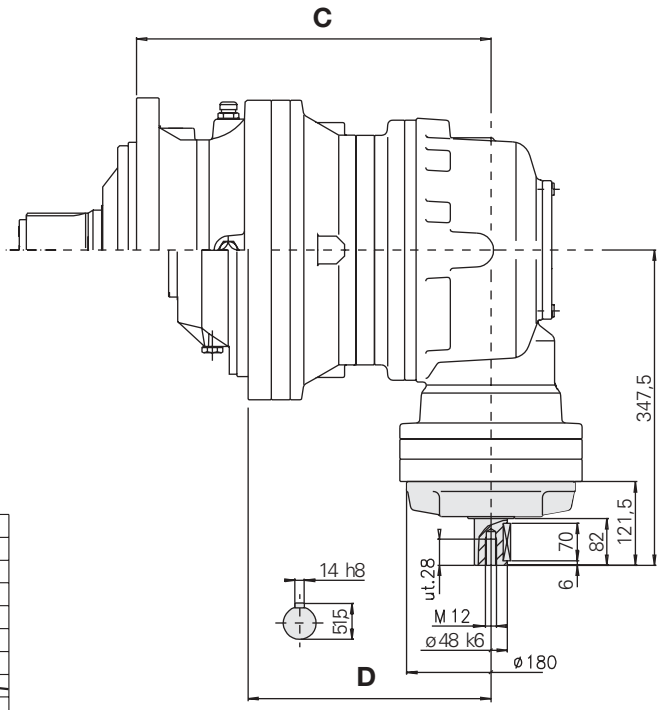
Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

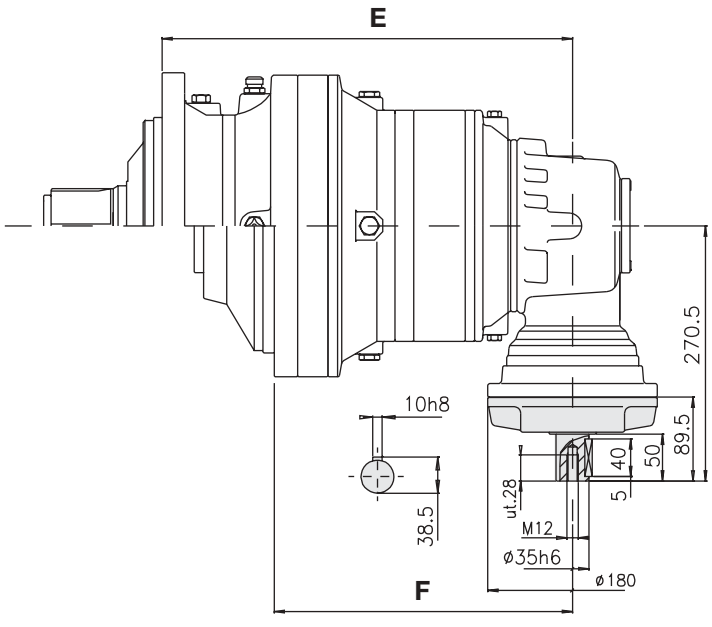
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT





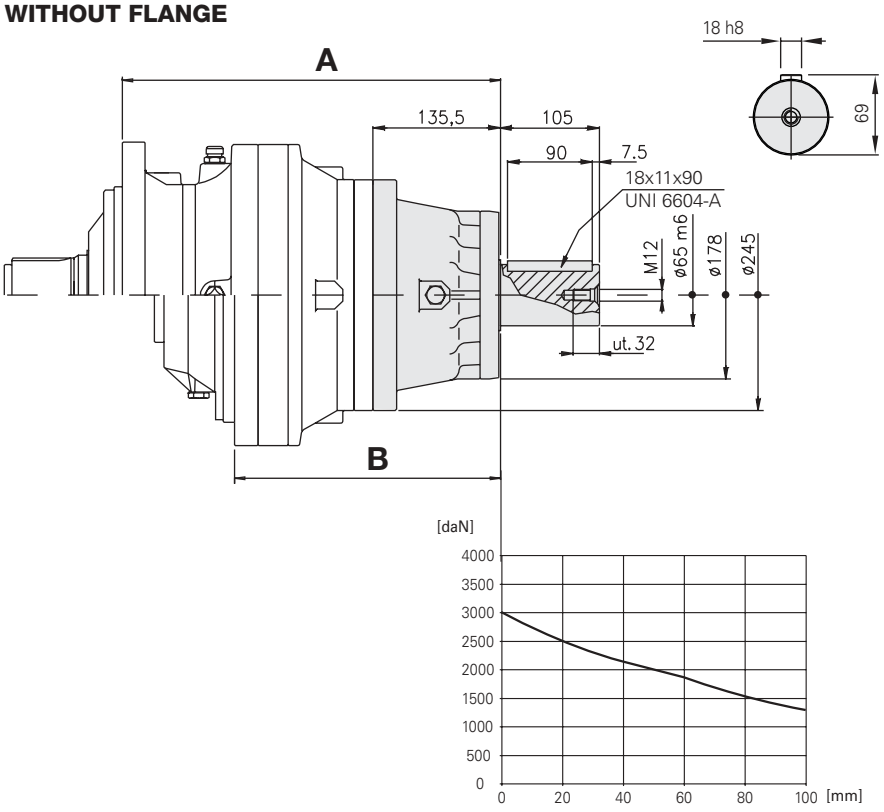


TYPE	A	B	a	b	d	e	f	g	h
RR 1010D M...	443,5	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 1010T M...	510	–	121,5	82	48 k6	70	6	14 h8	51,5
RR 1010Q M...	544	–	89,5	50	35 h6	40	5	10 h8	38,5
RR 1010D FS	–	324,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 1010T FS	–	391	121,5	82	48 k6	70	6	14 h8	51,5
RR 1010Q FS	–	425	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	C	D	E	F
RA 1010 M...	308	–	–	–
RA 1010D M...	390,5	–	–	–
RA 1010T M...	–	–	436	–
RA 1010 FS	–	189	–	–
RA 1010D FS	–	271,5	–	–
RA 1010T FS	–	–	–	317

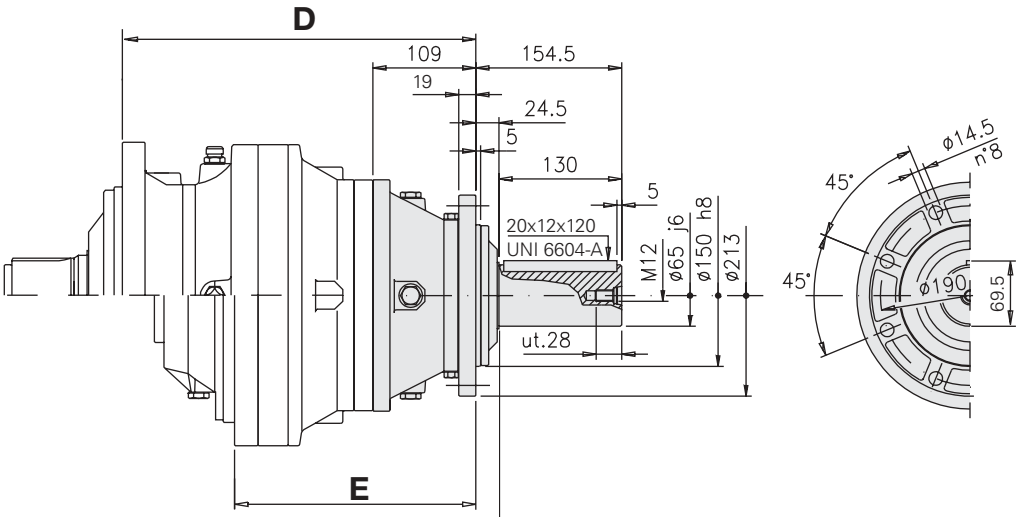
SERIES M MALE MEDIUM INPUT

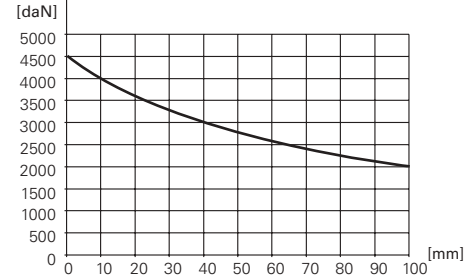
WITHOUT FLANGE



TYPE	A	B
RR 1010D M...	401,5	–
RR 1010T M...	468	–
RR 1010D FS	–	282,5
RR 1010T FS	–	349

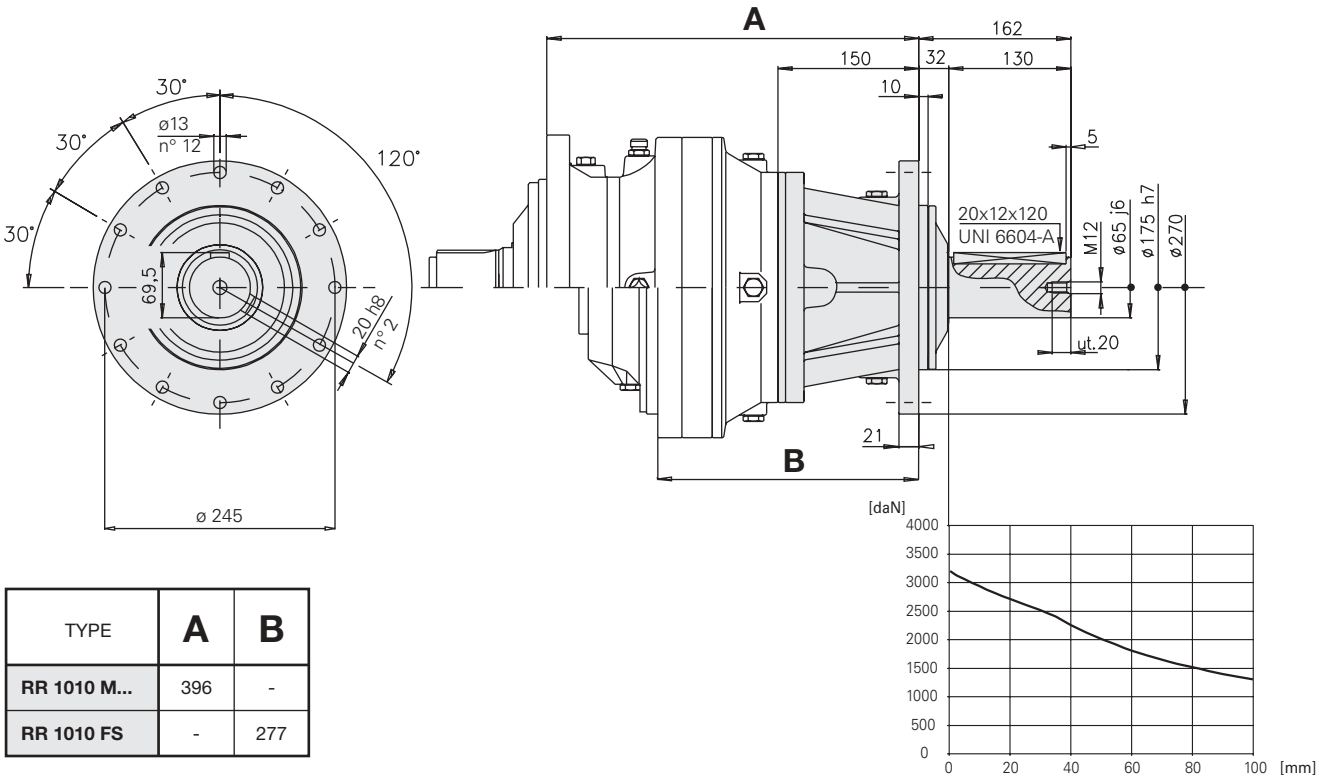
WITH FLANGE





TYPE	D	E
RR 1010D M...	375	–
RR 1010T M...	441,5	–
RR 1010D FS	–	256
RR 1010T FS	–	322,5

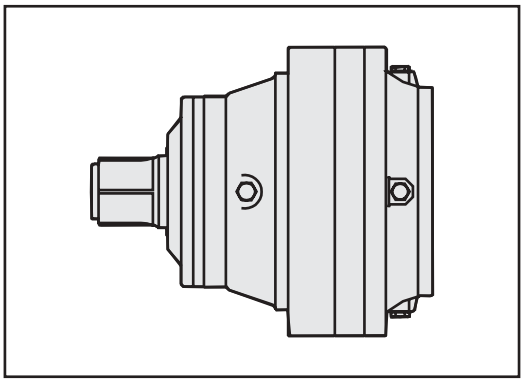
SERIES P MALE HEAVY INPUT



TYPE	A	B
RR 1010 M...	396	-
RR 1010 FS	-	277

SIZE 1700 REDUCTION GEARS

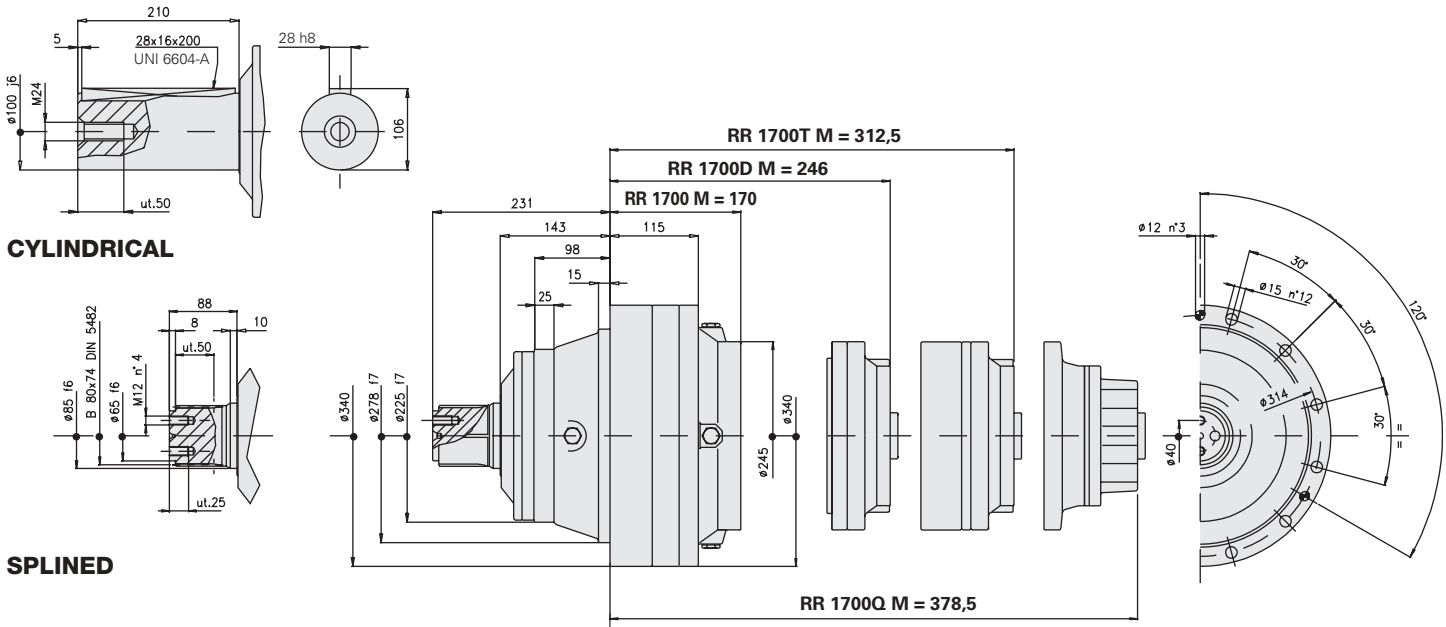
Tab. A



TYPE	RR 1700 M... RR 1700 FS	RR 1700D M... RR 1700D FS	RR 1700T M... RR 1700T FS	RR 1700Q M... RR 1700Q FS
Number of stages	1	2	3	4
Type of input	C	B	B	B
Max. input revs n1 (min^{-1})	2000	3500	3500	3500

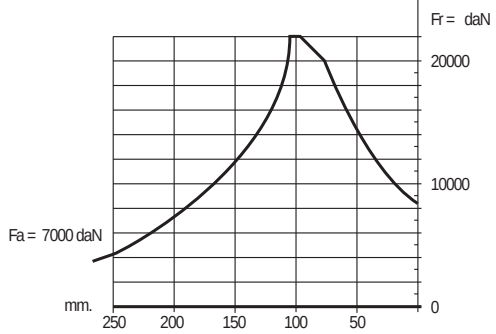
TYPE	RA 1700 M... RA 1700 FS	RA 1700D M... RA 1700D FS	RA 1700T M... RA 1700T FS	
Number of stages	1	2	3	-
Type of input	C / B	B	B	-
Max. input revs n1 (min^{-1})	2000	3500	3500	-

MALE LINEAR VERSION RR 1700 M... - RR 1700D M... - RR 1700T M... - RR 1700Q M...

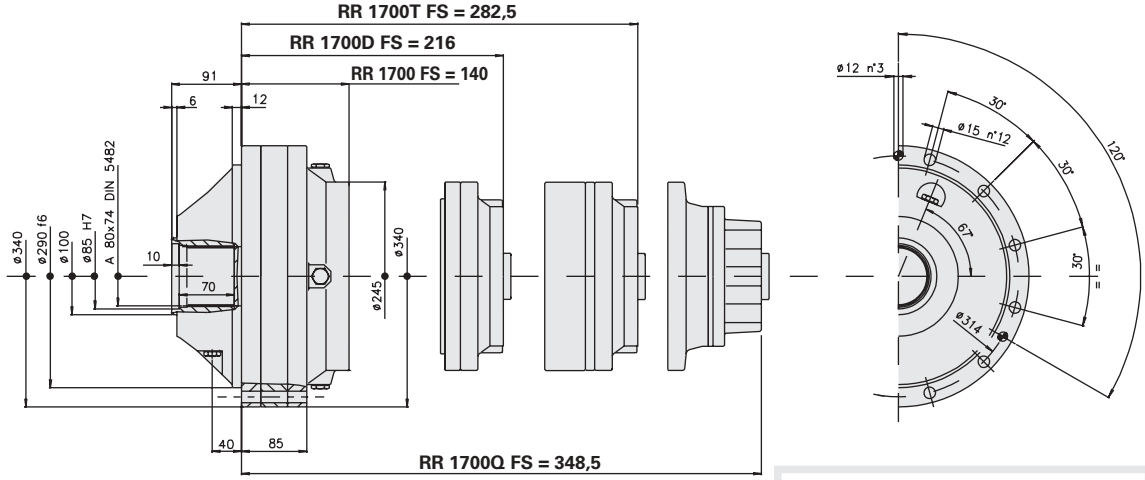


CYLINDRICAL

SPLINED



FEMALE LINEAR VERSION RR 1700 FS - RR 1700D FS - RR 1700T FS - RR 1700Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

SIZE 1700 REDUCTION GEARS

Tab. B

PART No. - RATIOS - TORQUES (ISO Standards)

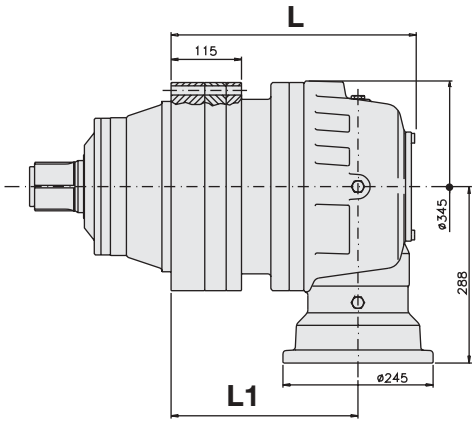
RR 1700 M... RR 1700 FS			RR 1700D M... RR 1700D FS			RR 1700T M... RR 1700T FS			RR 1700Q M... RR 1700Q FS		
PART. No. 1700/...	...../1	T2 daNm	PART. No. 1700/...	...../1	T2 daNm	PART. No. 1700/...	...../1	T2 daNm	PART. No. 1700/...	...../1	T2 daNm
39	3,90	2130	132	13,26	2130	530	53,04	2130	3709	370,97	2130
44	4,41	2100	156	15,60	2130	624	62,40	2130	4492	449,28	2130
51	5,14	1470	176	17,64	2100	780	78,00	2130	5616	561,60	2130
62	6,27	1200	220	22,05	1960	904	90,48	2130	6514	651,46	2130
			250	25,08	1200	1092	109,20	2130	7862	786,24	2130
			313	31,35	1200	1365	136,50	1735	8143	814,32	1735
			438	43,89	1200	1755	175,56	1200	8890	889,06	2100
						2194	219,45	1200	9828	982,80	1735
						2545	254,56	1200	12640	1264,03	1200
						3072	307,23	1200	15800	1580,04	1200
									18328	1832,85	1200
									22120	2212,06	1200

PART No. - RATIOS - TORQUES (ISO Standards)

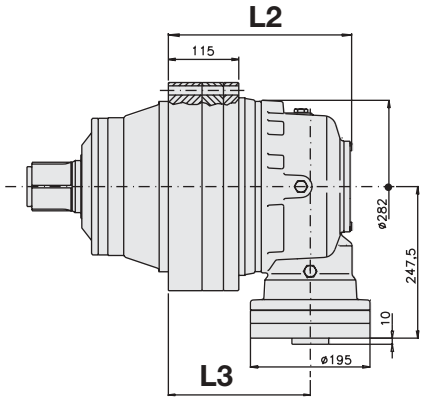
RA 1700 M... RA 1700 FS			RA 1700D M... RA 1700D FS			RA 1700T M... RA 1700T FS		
PART. No. 1700/...	...../1	T2 daNm	PART. No. 1700/...	...../1	T2 daNm	PART. No. 1700/...	...../1	T2 daNm
156	15,60	820	530	53,04	2130	2009	200,93	2130
176	17,64	925	624	62,40	2130	2511	251,16	2130
205	20,56	1080	705	70,56	2100	2913	291,35	2130
250	25,08	1200	882	88,20	1960	3516	351,62	2130
			1003	100,32	1200	4395	439,53	1735
			1254	125,40	1200	5653	565,30	1200
			1755	175,56	1200	7066	706,63	1200
						8196	819,69	1200
						9892	989,28	1200
						10542	1054,22	1740
✶ 106	10,64	2130				11252	1125,20	1130
✶ 120	12,03	2100				12723	1272,34	1280
✶ 140	14,02	1470				14829	1482,95	1470
✶ 171	17,10	1200				18089	1808,97	1200

MALE ANGULAR VERSION

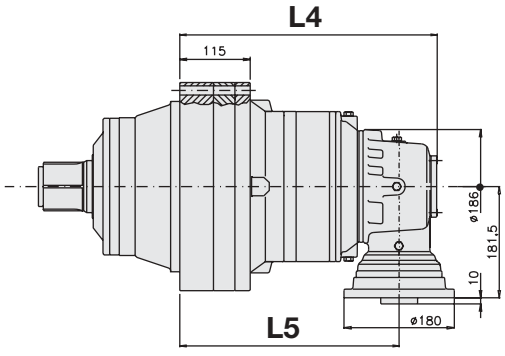
RA 1700 M... ✶



RA 1700 M...- RA 1700D M...



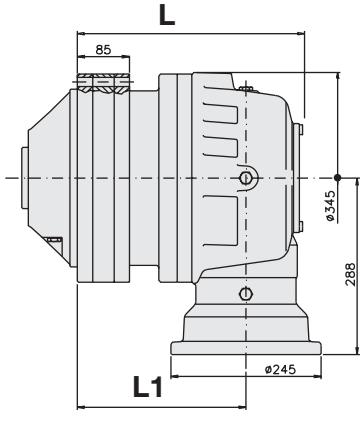
RA 1700T M...



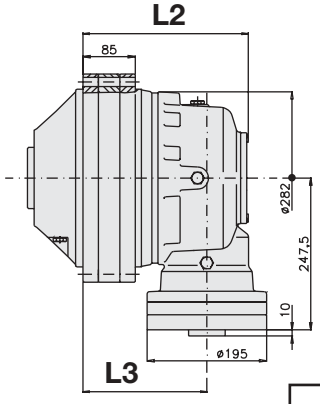
TYPE	L	L1	L2	L3	L4	L5
RA 1700 M...	398	305,5	299,5	232	–	–
RA 1700D M...	–	–	382	314,5	–	–
RA 1700T M...	–	–	–	–	422	360

FEMALE ANGULAR VERSION

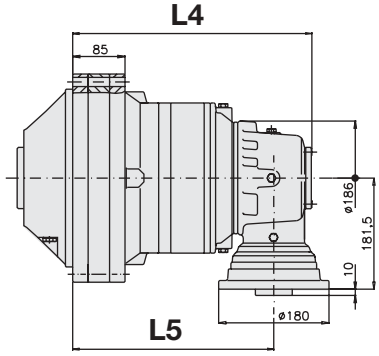
RA 1700 FS ✶



RA 1700 FS - RA 1700D FS



RA 1700T FS

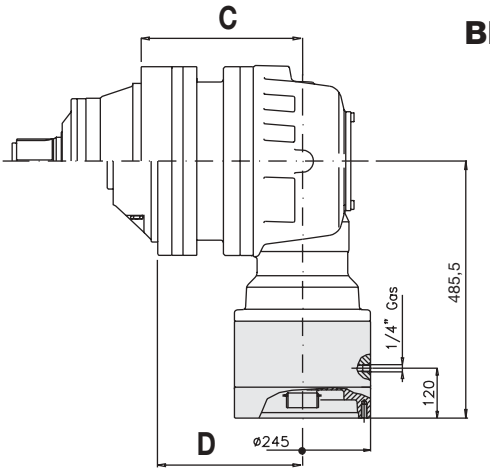


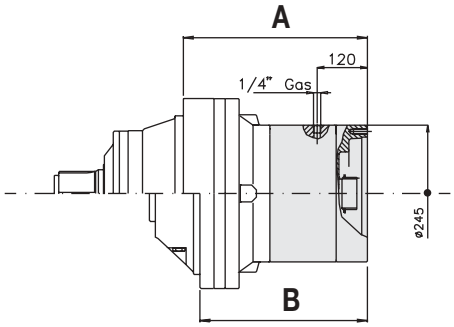
TYPE	L	L1	L2	L3	L4	L5
RA 1700 FS	368	275,5	269,5	202	–	–
RA 1700D FS	–	–	352	284,5	–	–
RA 1700T FS	–	–	–	–	392	330

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 1700 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290



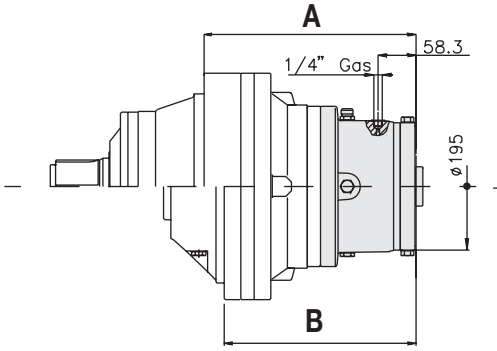


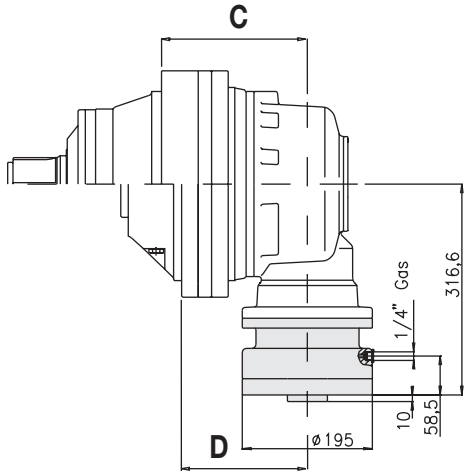
TYPE	A	B	C	D
RR 1700 M...	367	-	-	-
RA 1700 M...	-	-	305,5	-
RR 1700 FS	-	337	-	-
RA 1700 FS	-	-	-	275,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



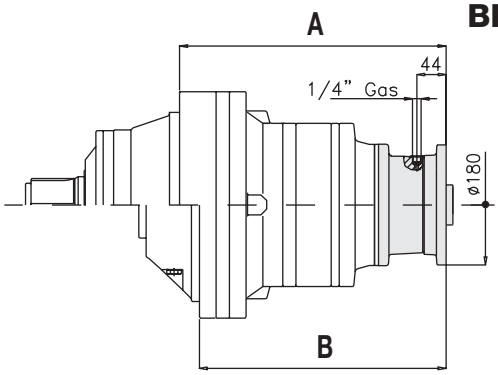


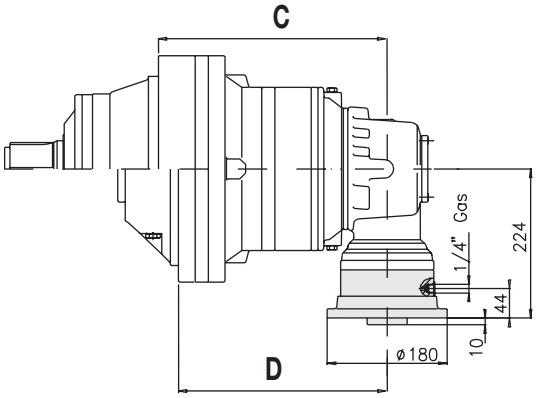
TYPE	A	B	C	D
RA 1700 M...	-	-	232	-
RR 1700D M...	336,5	-	-	-
RA 1700D M...	-	-	314,5	-
RR 1700T M...	403	-	-	-
RA 1700 FS	-	-	-	202
RR 1700D FS	-	306,5	-	-
RA 1700D FS	-	-	-	284,5
RR 1700T FS	-	373	-	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60





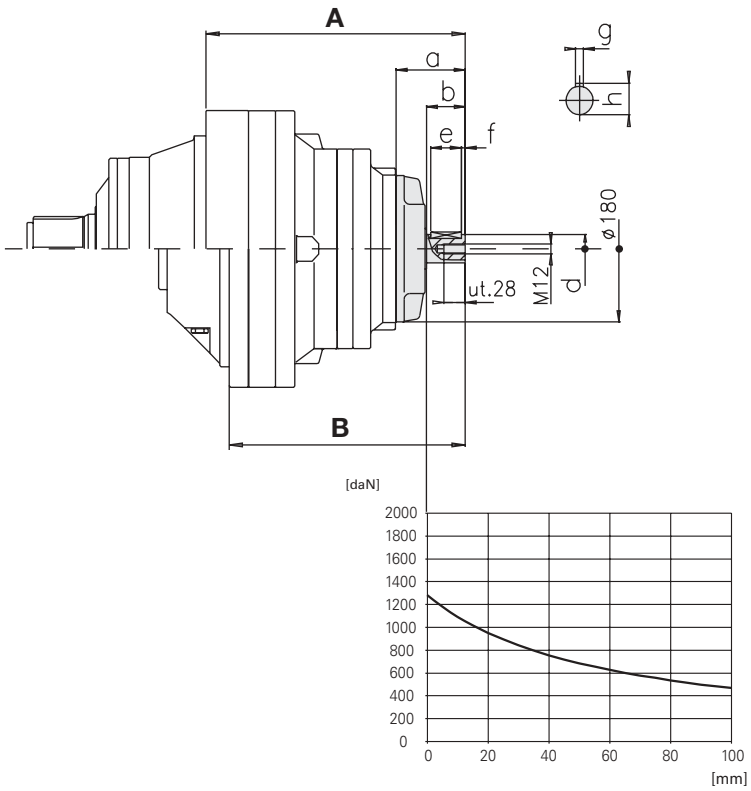
TYPE	A	B	C	D
RR 1700D M...	309	-	-	-
RR 1700T M...	375,5	-	-	-
RA 1700T M...	-	-	360	-
RR 1700Q M...	417	-	-	-
RR 1700D FS	-	279	-	-
RR 1700T FS	-	345,5	-	-
RA 1700T FS	-	-	-	330
RR 1700Q FS	-	387	-	-

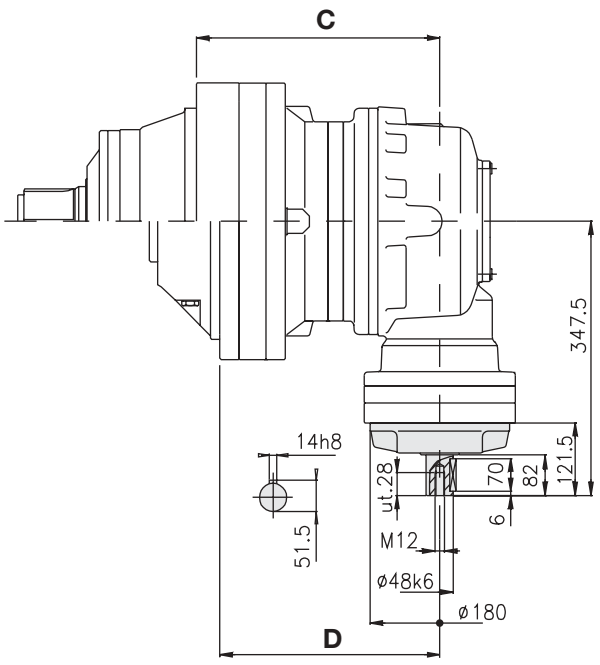
Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

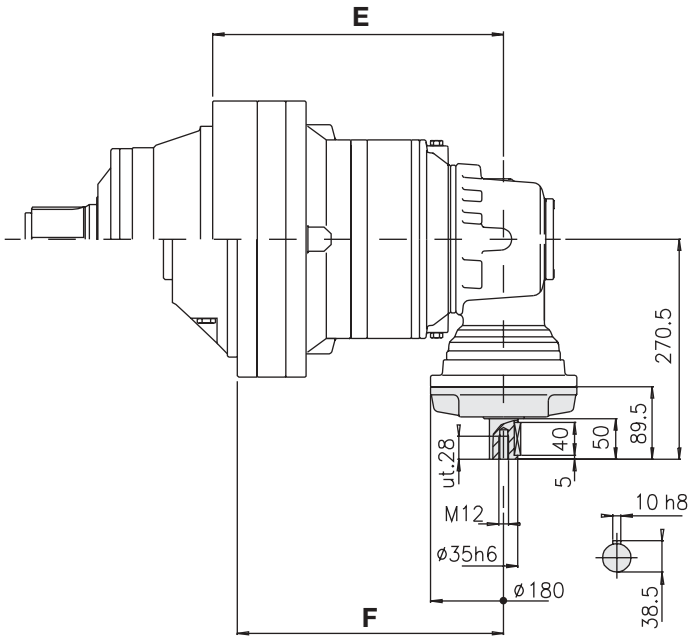
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT





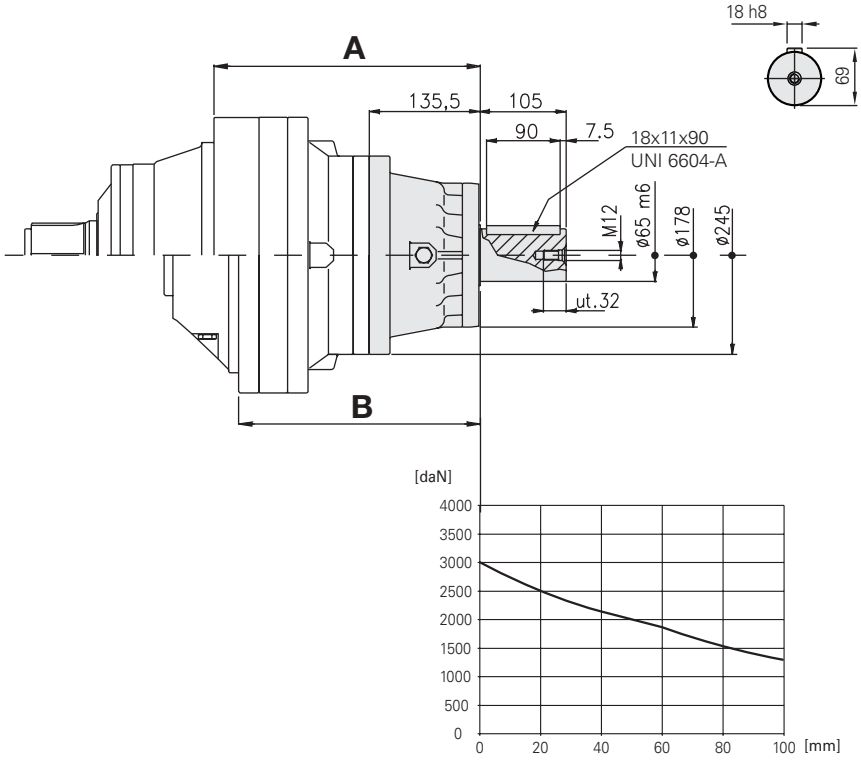


TYPE	A	B	a	b	d	e	f	g	h
RR 1700D M...	367,5	-	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700T M...	434	-	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700Q M...	468	-	89,5	50	35 h6	40	5	10 h8	38,5
RR 1700D FS	-	337,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700T FS	-	404	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700Q FS	-	438	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	C	D	E	F
RA 1700 M...	232	–	–	–
RA 1700D M...	314,5	–	–	–
RA 1700T M...	–	–	360	–
RA 1700 FS	–	202	–	–
RA 1700D FS	–	284,5	–	–
RA 1700T FS	–	–	–	330

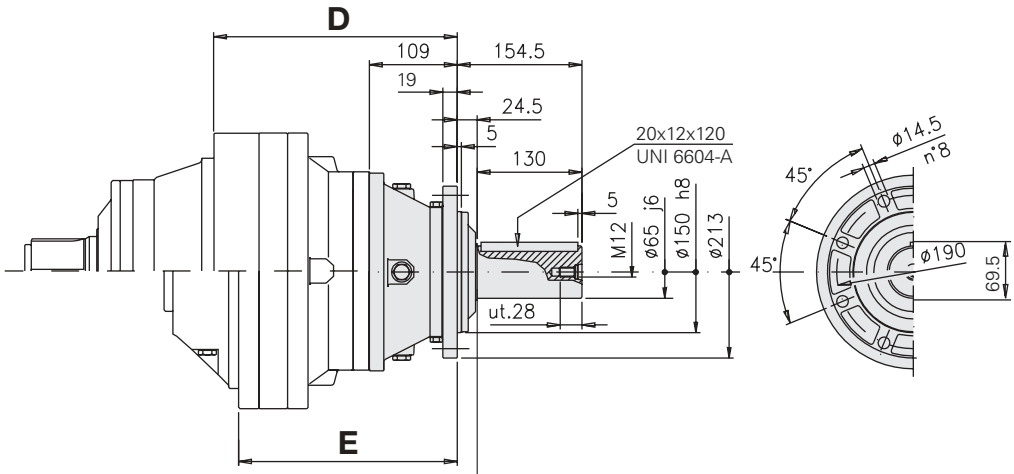
SERIES M MALE MEDIUM INPUT

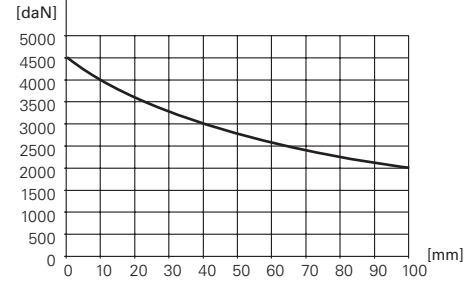
WITHOUT FLANGE



TYPE	A	B
RR 1700D M...	325,5	–
RR 1700T M...	392	–
RR 1700D FS	–	295,5
RR 1700T FS	–	362

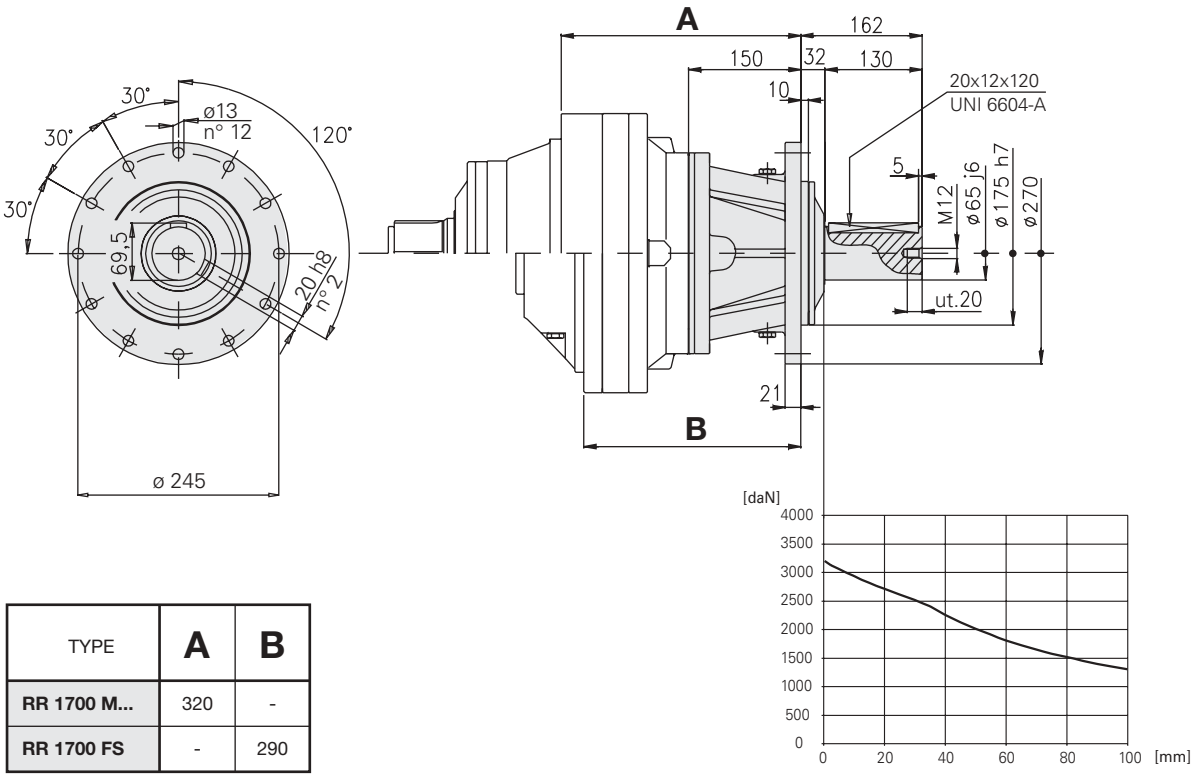
WITH FLANGE





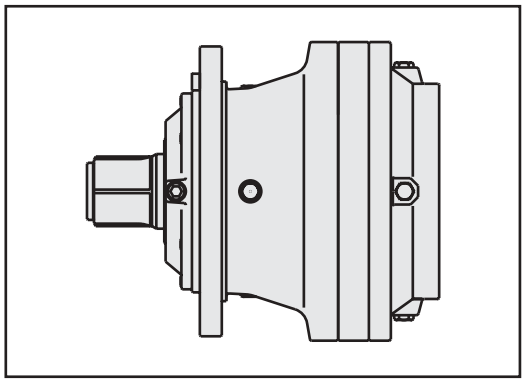
TYPE	D	E
RR 1700D M...	299	–
RR 1700T M...	365,5	–
RR 1700D FS	–	269
RR 1700T FS	–	335,5

SERIES P MALE HEAVY INPUT



TYPE	A	B
RR 1700 M...	320	-
RR 1700 FS	-	290

SIZE 1700 B REDUCTION GEARS

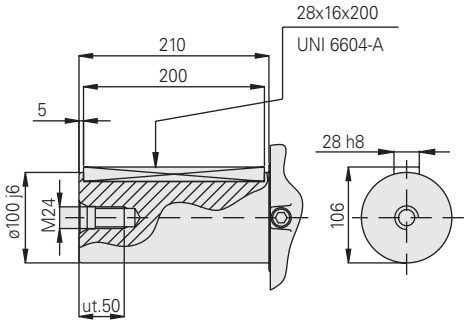


Tab. A

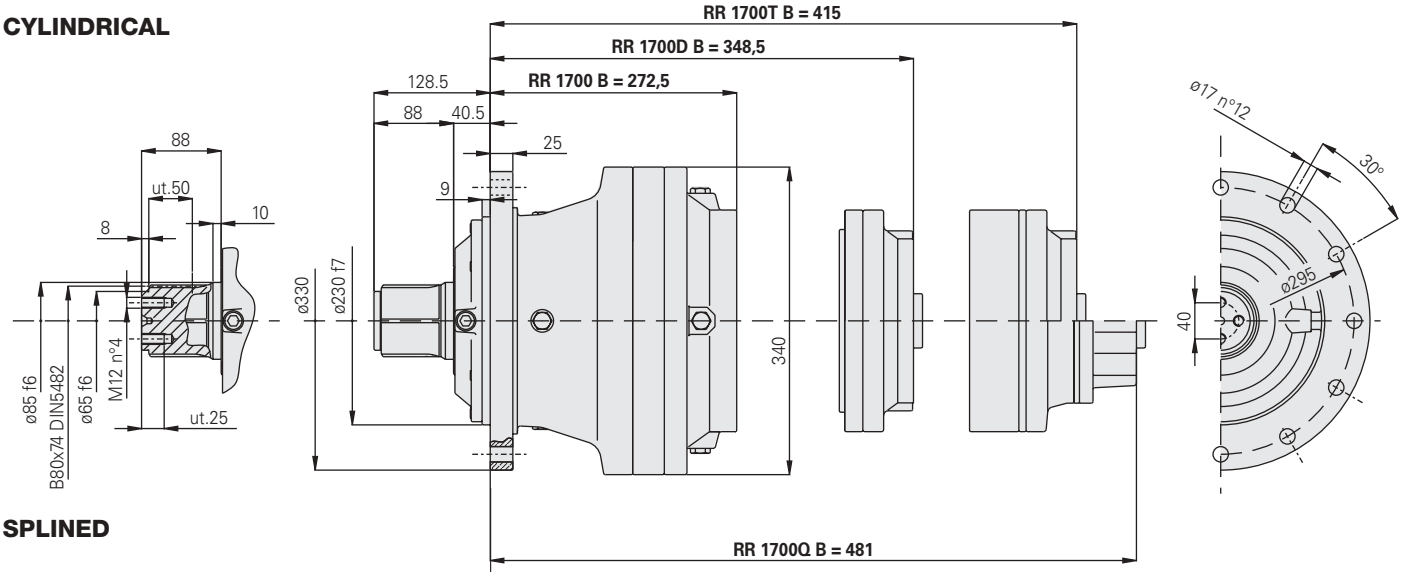
TYPE	RR 1700 B...	RR 1700D B...	RR 1700T B...	RR 1700Q B...
Number of stages	1	2	3	4
Type of input	C	B	B	B
Max. input revs n1 (min^{-1})	2000	3500	3500	3500

TYPE	RA 1700 B...	RA 1700D B...	RA 1700T B...	
Number of stages	1	2	3	-
Type of input	C / B	B	B	-
Max. input revs n1 (min^{-1})	2000	3500	3500	-

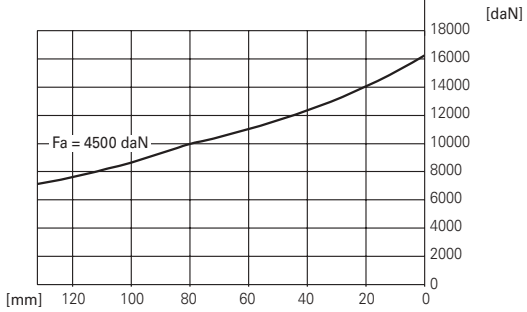
FLANGED LINEAR VERSION RR 1700 B... - RR 1700D B... - RR 1700T B... - RR 1700Q B...



CYLINDRICAL



SPLINED



SEE THE INPUT DIMENSIONS ON PAGES 144-147

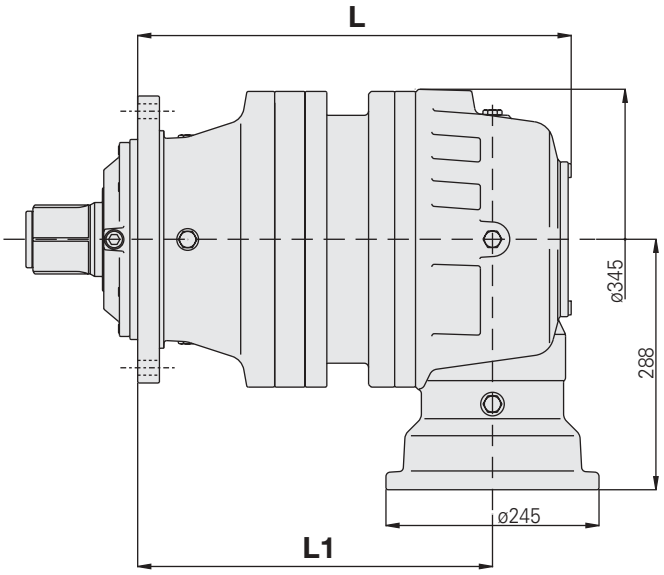
SIZE 1700 B REDUCTION GEARS

Tab. B

PART No. - RATIOS - TORQUES (ISO Standards)											
RR 1700 B...			RR 1700D B...			RR 1700T B...			RR 1700Q B...		
PART. No. 1700 B /...	...../1	T2 daNm	PART. No. 1700 B /...	...../1	T2 daNm	PART. No. 1700 B /...	...../1	T2 daNm	PART. No. 1700 B /...	...../1	T2 daNm
39	3,90	2130	132	13,26	2130	530	53,04	2130	3709	370,97	2130
44	4,41	2100	156	15,60	2130	624	62,40	2130	4492	449,28	2130
51	5,14	1470	176	17,64	2100	780	78,00	2130	5616	561,60	2130
62	6,27	1200	220	22,05	1960	904	90,48	2130	6514	651,46	2130
			250	25,08	1200	1092	109,20	2130	7862	786,24	2130
			313	31,35	1200	1365	136,50	1735	8143	814,32	1735
			438	43,89	1200	1755	175,56	1200	8890	889,06	2100
						2194	219,45	1200	9828	982,80	1735
						2545	254,56	1200	12640	1264,03	1200
						3072	307,23	1200	15800	1580,04	1200
									18328	1832,85	1200
									22120	2212,06	1200

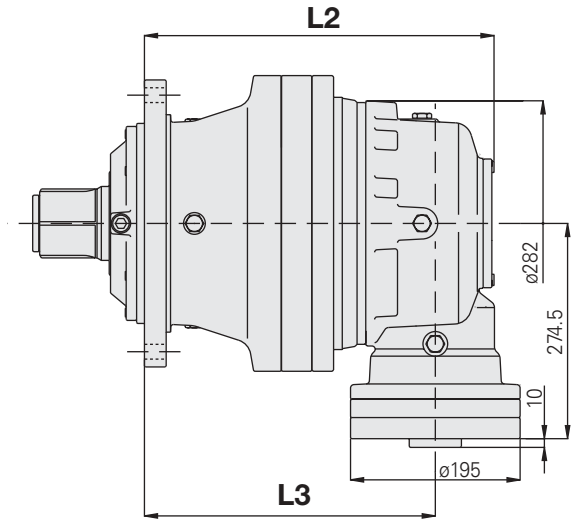
PART No. - RATIOS - TORQUES (ISO Standards)								
RA 1700 B...			RA 1700D B...			RA 1700T B...		
PART. No. 1700 B /...	...../1	T2 daNm	PART. No. 1700 B /...	...../1	T2 daNm	PART. No. 1700 B /...	...../1	T2 daNm
156	15,60	820	530	53,04	2135	2009	200,93	2130
176	17,64	930	624	62,40	2130	2511	251,16	2130
205	20,56	1100	705	70,56	2100	2913	291,35	2130
250	25,08	1200	882	88,20	1950	3516	351,62	2130
			1003	100,32	1200	4395	439,53	1730
			1254	125,40	1200	5653	565,30	1200
			1755	175,56	1200	7066	706,63	1200
						8196	819,69	1200
						9892	989,28	1200
						10542	1054,22	1740
✶ 106	10,64	2130				11252	1125,20	1130
✶ 120	12,03	2100				12723	1272,34	1280
✶ 140	14,02	1470				14829	1482,95	1470
✶ 171	17,10	1200				18089	1808,97	1200

FLANGED ANGULAR VERSION RA 1700 B... ✶

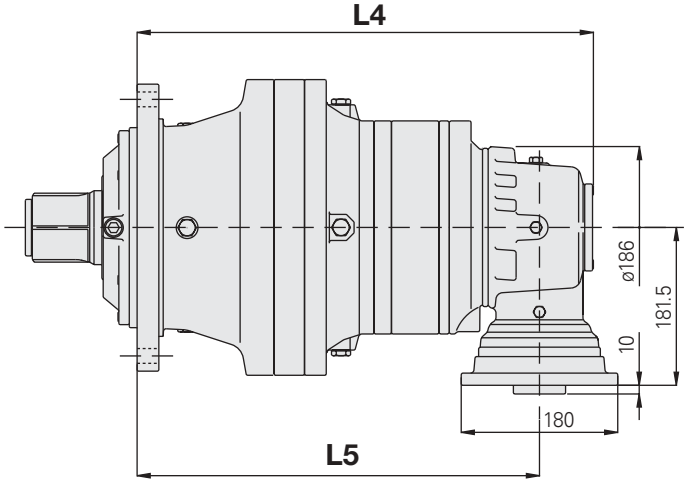


TYPE	L	L1
RA 1700 B...	498,5	408

FLANGED ANGULAR VERSION RA 1700 B... - RA 1700D B...



FLANGED ANGULAR VERSION RA 1700T B...

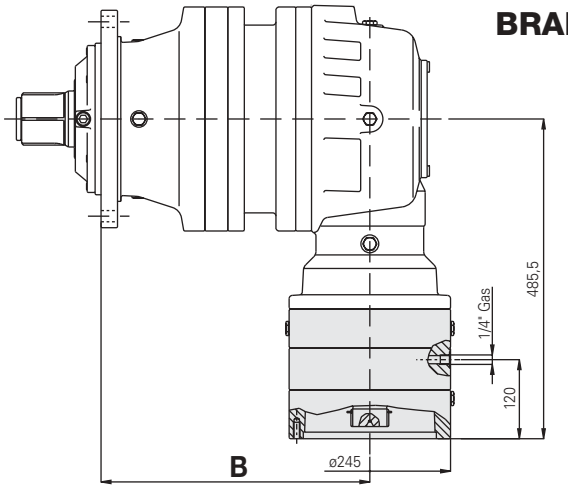


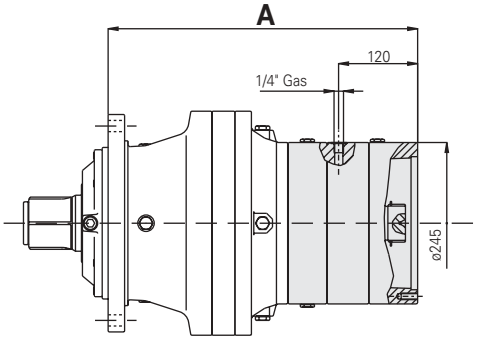
TYPE	L2	L3	L4	L5
RA 1700 B...	402	334,5	–	–
RA 1700D B...	484,5	417	–	–
RA 1700T B...	–	–	525	462,5

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 1700 B REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290



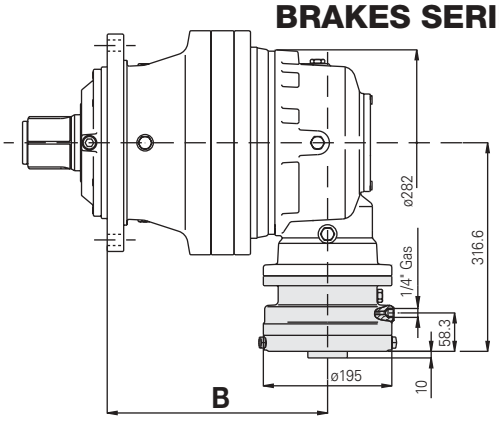


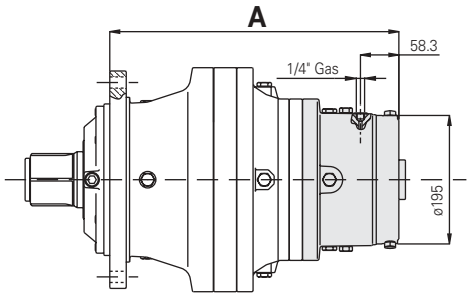
TYPE	A	B
RR 1700 B...	470	-
RA 1700 B...	-	408

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



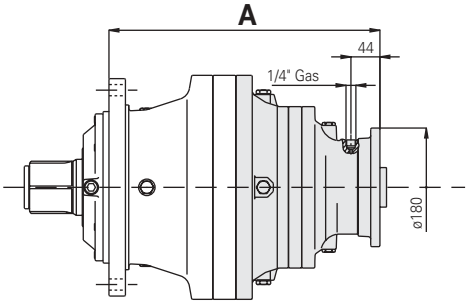


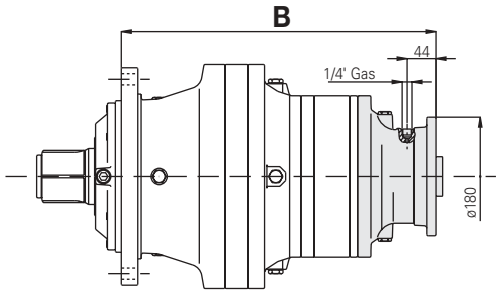
TYPE	A	B
RA 1700 B...	-	334,5
RR 1700D B...	438,5	-
RA 1700D B...	-	417
RR 1700T B...	505,5	-

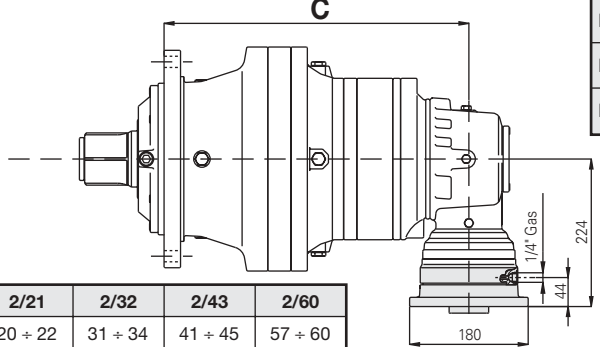
Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60







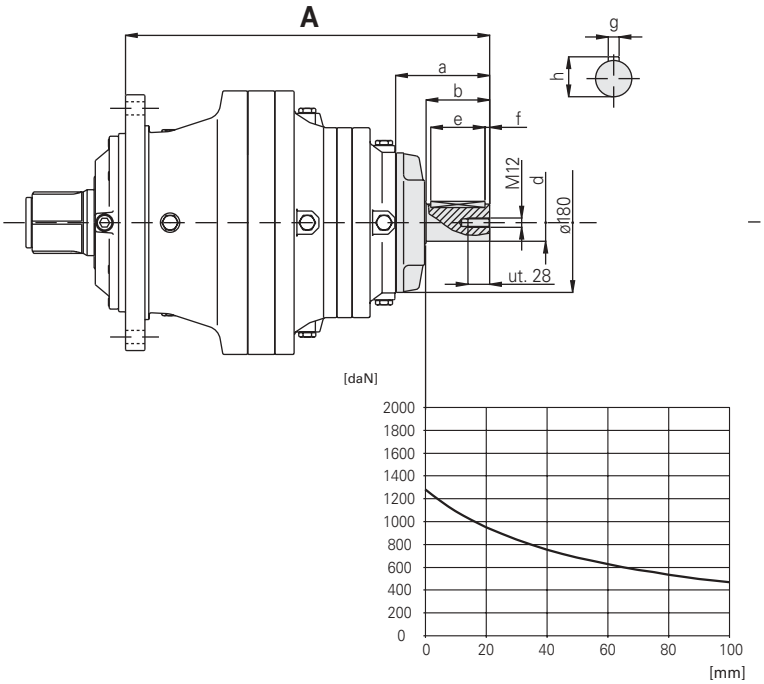
TYPE	A	B	C
RR 1700D B...	411,5	–	–
RR 1700T B...	478	–	–
RA 1700T B...	–	–	462,5
RR 1700Q B...	–	519,5	–

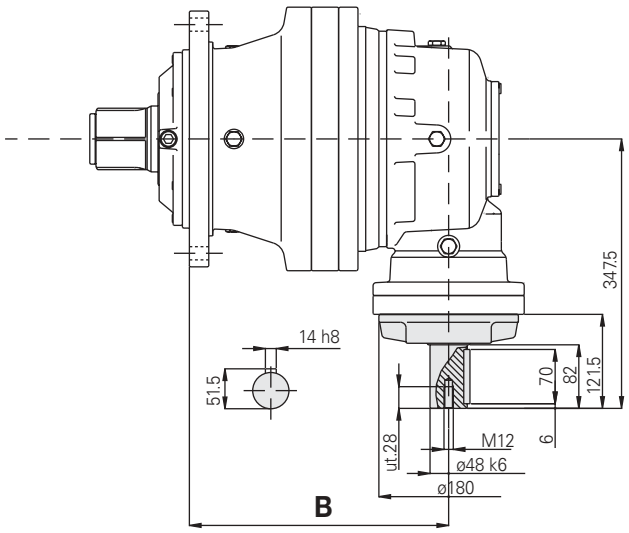
Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

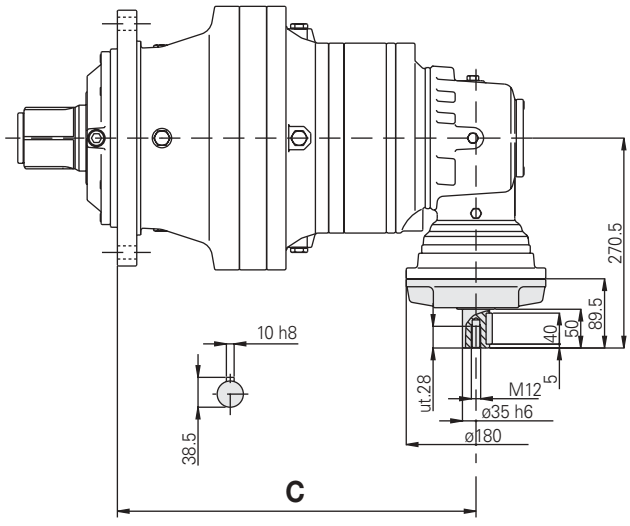
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT







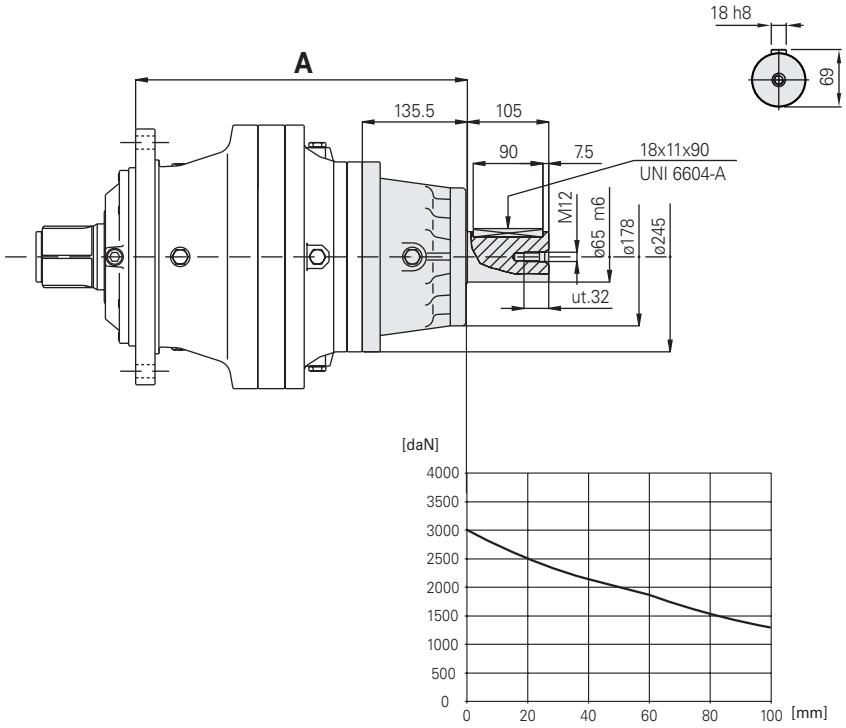
TYPE	A	a	b	d	e	f	g	h
RR 1700D B...	470	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700T B...	536,5	121,5	82	48 k6	70	6	14 h8	51,5
RR 1700Q B...	570,5	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	B	C
RA 1700 B...	334,5	–
RA 1700D B...	417	–
RA 1700T B...	–	462

SIZE 1700 B REDUCTION GEARS

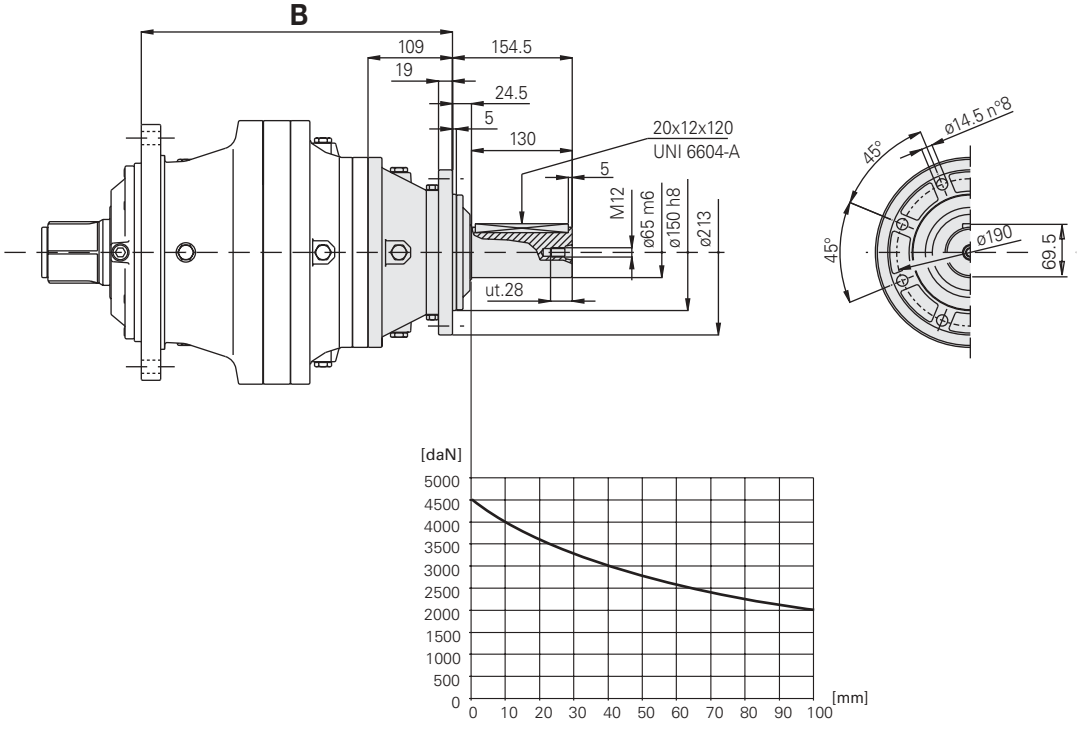
SERIES M MALE MEDIUM INPUT

WITHOUT FLANGE



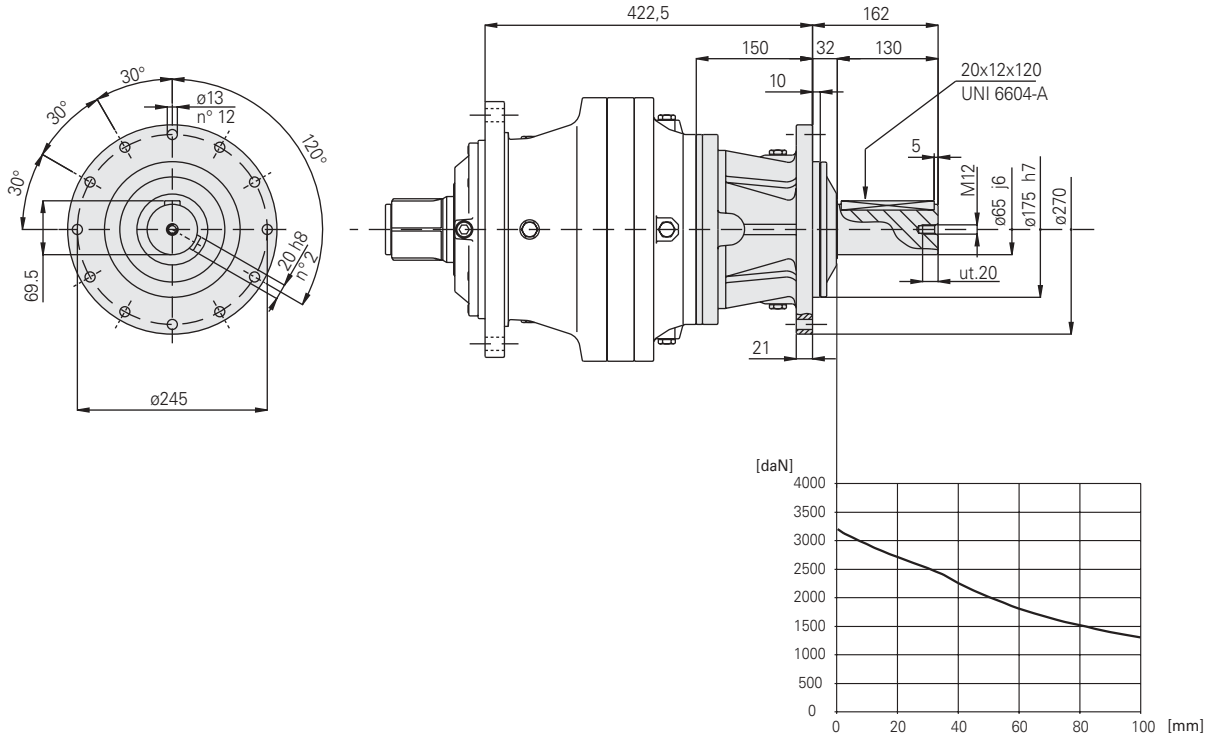
TYPE	A
RR 1700D B...	428
RR 1700T B...	494,5

WITH FLANGE

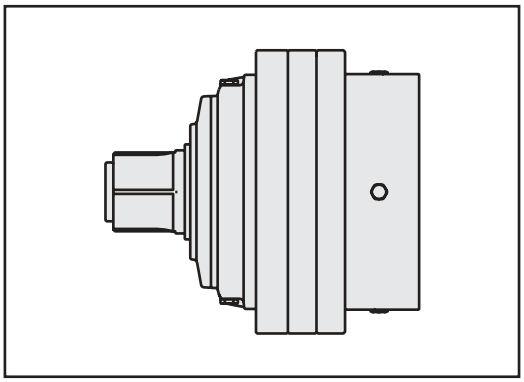


TYPE	B
RR 1700D B...	401,5
RR 1700T B...	468

SERIES P MALE HEAVY INPUT



SIZE 2700 REDUCTION GEARS

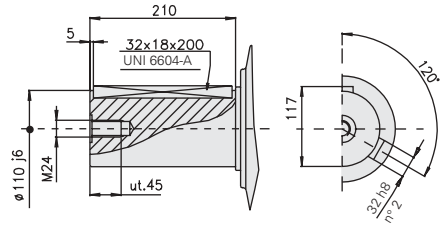


Tab. A

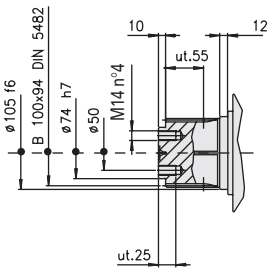
TYPE	RR 2700 M... RR 2700 FS	RR 2700D M... RR 2700D FS	RR 2700T M... RR 2700T FS	RR 2700Q M... RR 2700Q FS
Number of stages	1	2	3	4
Type of input	D	C	B	B
Max. input revs n1 (min^{-1})	2000	3000	3500	3500

TYPE	RA 2700 M... RA 2700 FS	RA 2700D M... RA 2700D FS	RA 2700T M... RA 2700T FS	
Number of stages	1	2	3	-
Type of input	C	B	B	-
Max. input revs n1 (min^{-1})	2000	3000	3500	-

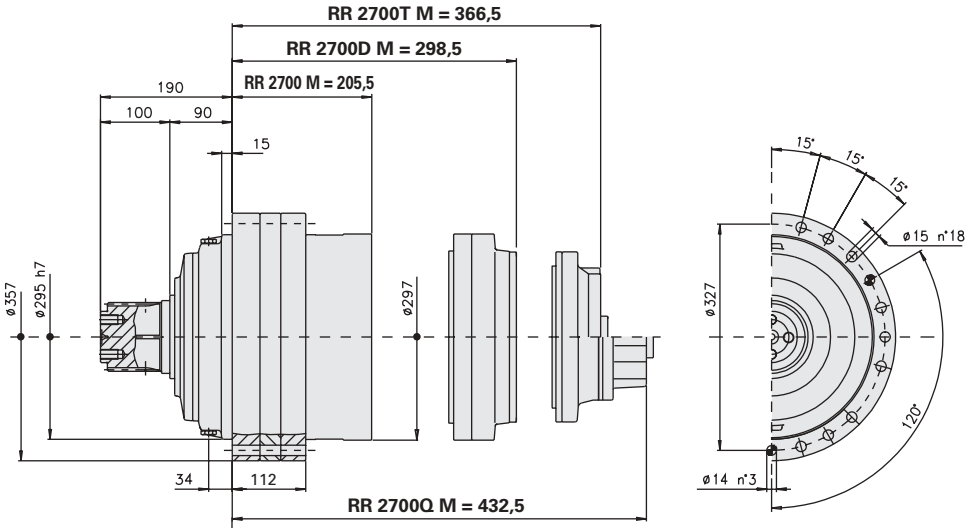
MALE LINEAR VERSION RR 2700 M... - RR 2700D M... - RR 2700T M... - RR 2700Q M...

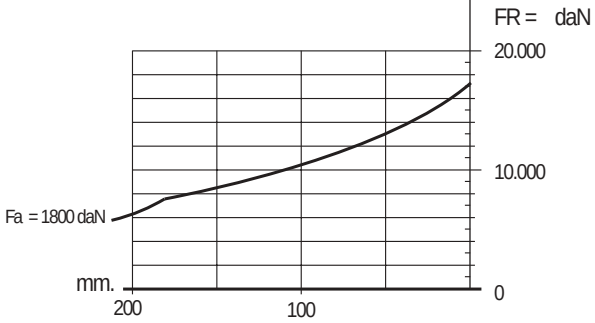


CYLINDRICAL

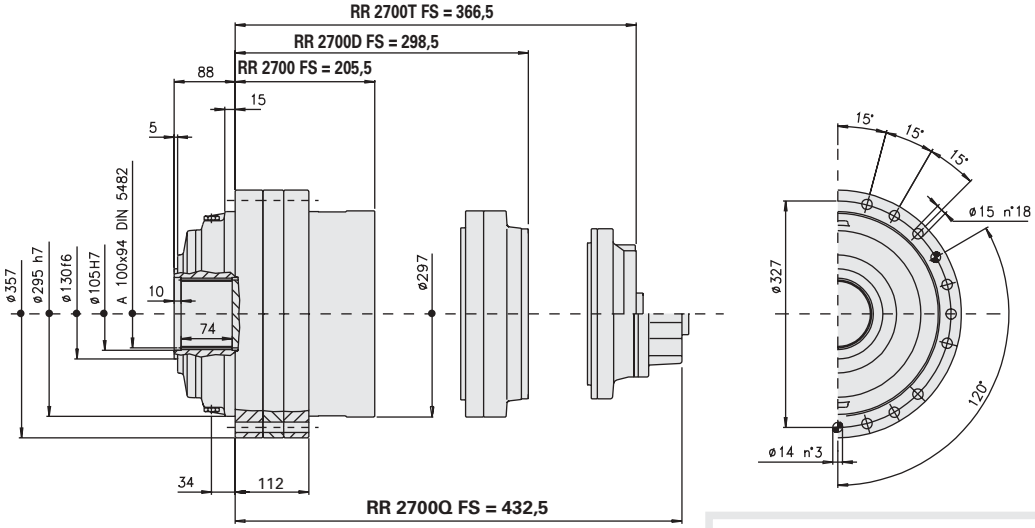


SPLINED





FEMALE LINEAR VERSION RR 2700 FS - RR 2700D FS - RR 2700T FS - RR 2700Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

PART No. - RATIOS - TORQUES (ISO Standards)

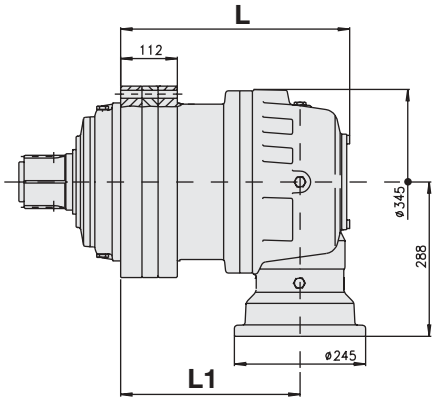
RR 2700 M... RR 2700 FS			RR 2700D M... RR 2700D FS			RR 2700T M... RR 2700T FS			RR 2700Q M... RR 2700Q FS		
PART. No. 2700/...	...../1	T2 daNm	PART. No. 2700/...	...../1	T2 daNm	PART. No. 2700/...	...../1	T2 daNm	PART. No. 2700/...	...../1	T2 daNm
40	4,05	2400	174	17,42	2400	696	69,66	2400	2856	285,61	2400
53	5,35	1650	221	22,15	2400	870	87,08	2400	3775	377,56	2400
65	6,54	1330	260	26,03	2400	1010	101,01	2400	4141	414,13	2400
			343	34,39	1650	1284	128,49	2400	5774	547,46	2400
			422	42,27	1650	1509	150,99	2400	6964	696,42	2400
			516	51,67	1330	1719	171,95	1650	8183	818,39	2400
			562	56,24	1330	1994	199,46	1650	10871	1087,15	2400
						2451	245,14	1650	12380	1238,03	1650
						2958	295,86	1650	13286	1328,64	1650
						3616	361,66	1330	17649	1764,99	1650
						3937	393,71	1330	21301	2130,16	1650
									26039	2603,97	1330
									28347	2834,70	1330

PART No. - RATIOS - TORQUES (ISO Standards)

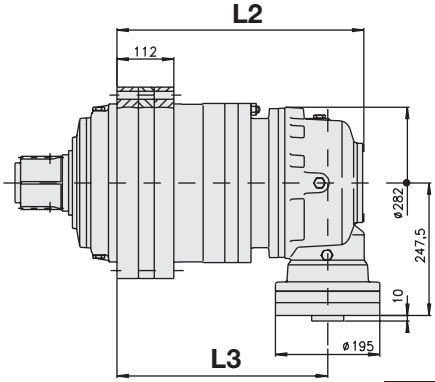
RA 2700 M... RA 2700 FS			RA 2700D M... RA 2700D FS			RA 2700T M... RA 2700T FS		
PART. No. 2700/...	...../1	T2 daNm	PART. No. 2700/...	...../1	T2 daNm	PART. No. 2700/...	...../1	T2 daNm
110	11,04	2400	696	69,66	2400	2243	224,31	2400
145	14,59	1650	886	88,61	2400	2803	280,38	2400
178	17,83	1330	1041	104,13	2400	3252	325,24	2400
			1375	137,56	1650	4137	413,74	2400
			1690	169,06	1650	4862	486,20	2400
			2066	206,66	1330	5536	553,68	1650
			2249	224,98	1330	6422	642,26	1650
						7893	789,34	1650
						9526	952,65	1650
						11645	1164,55	1330
						12677	1267,74	1330
						13187	1318,71	1880
						14355	1435,55	1680
						15712	1571,26	1650
						16558	1655,82	1330
						17419	1741,99	1650
						18963	1896,35	1650
						19207	1920,76	1330
						21294	2129,47	1330
						23181	2318,15	1330

MALE ANGULAR VERSION

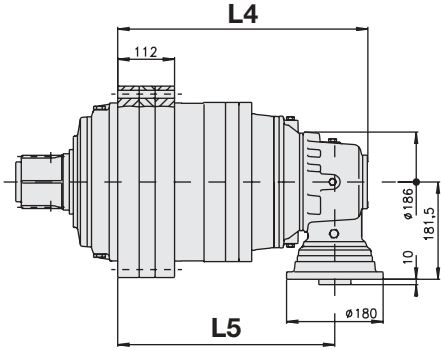
RA 2700 M...



RA 2700D M...



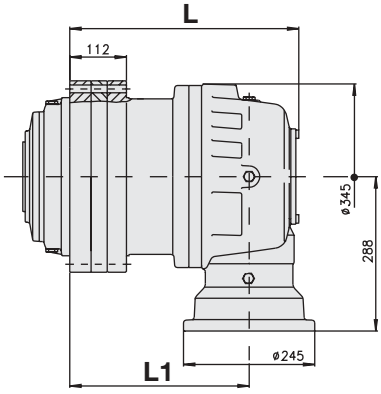
RA 2700T M...



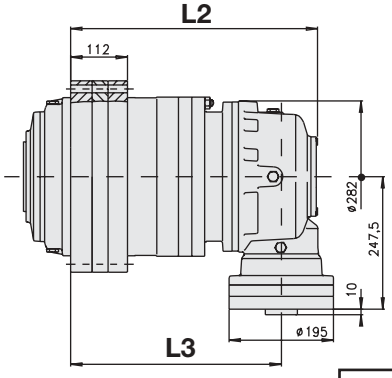
TYPE	L	L1	L2	L3	L4	L5
RA 2700 M...	431	340,5	–	–	–	–
RA 2700D M...	–	–	465	397,5	–	–
RA 2700T M...	–	–	–	–	476,5	414

FEMALE ANGULAR VERSION

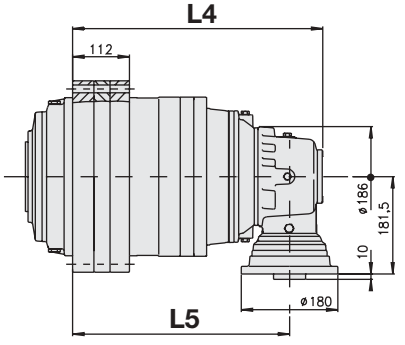
RA 2700 FS



RA 2700D FS



RA 2700T FS

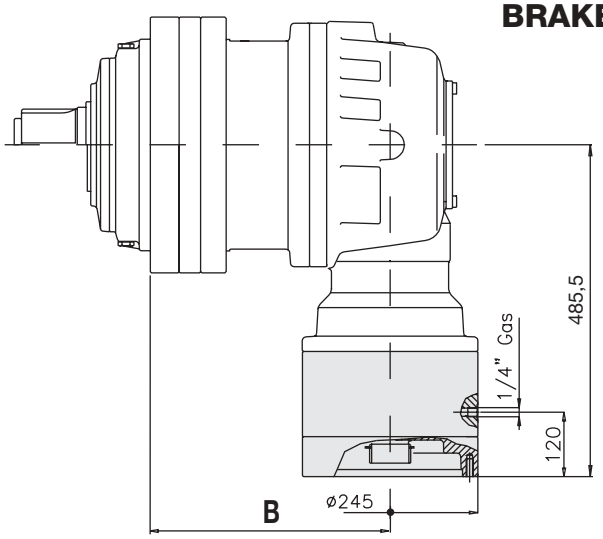


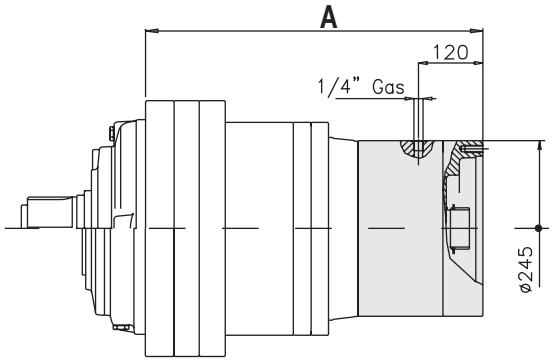
TYPE	L	L1	L2	L3	L4	L5
RA 2700 FS	432	340,5	–	–	–	–
RA 2700D FS	–	–	465	397,5	–	–
RA 2700T FS	–	–	–	–	476,5	414

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 2700 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290



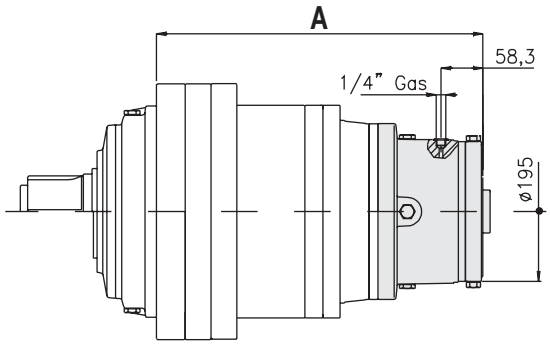


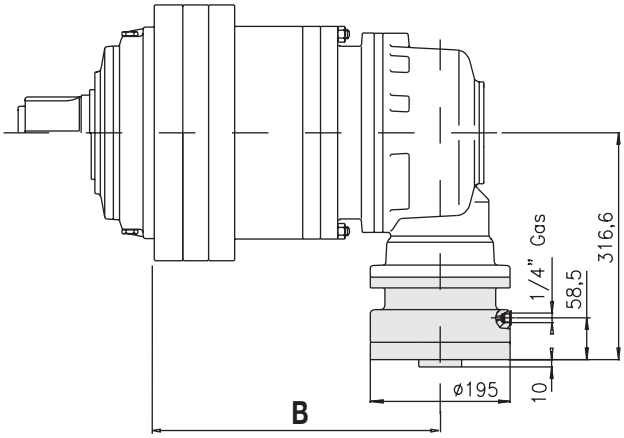
TYPE	A	B
RA 2700 M...	-	340,5
RR 2700D M...	496	-
RA 2700 FS	-	340,5
RR 2700D FS	496	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



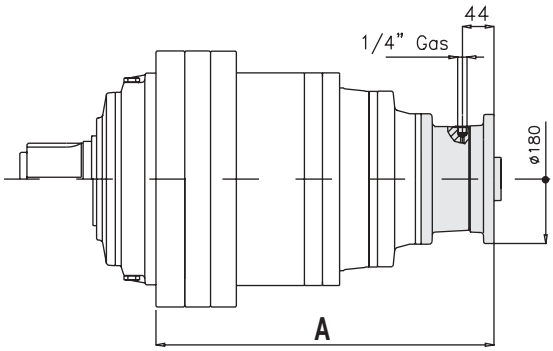


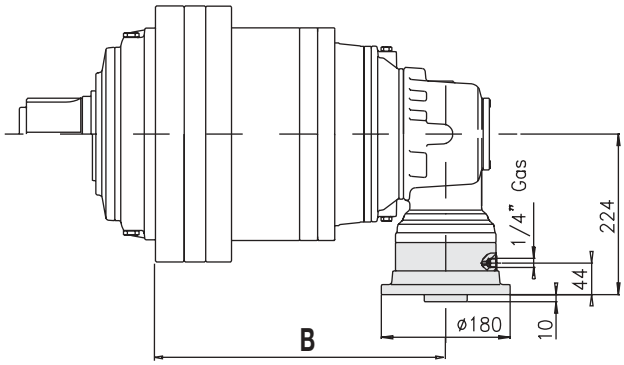
TYPE	A	B
RA 2700D M...	-	397,5
RR 2700T M...	457	-
RA 2700D FS	-	397,5
RR 2700T FS	457	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60





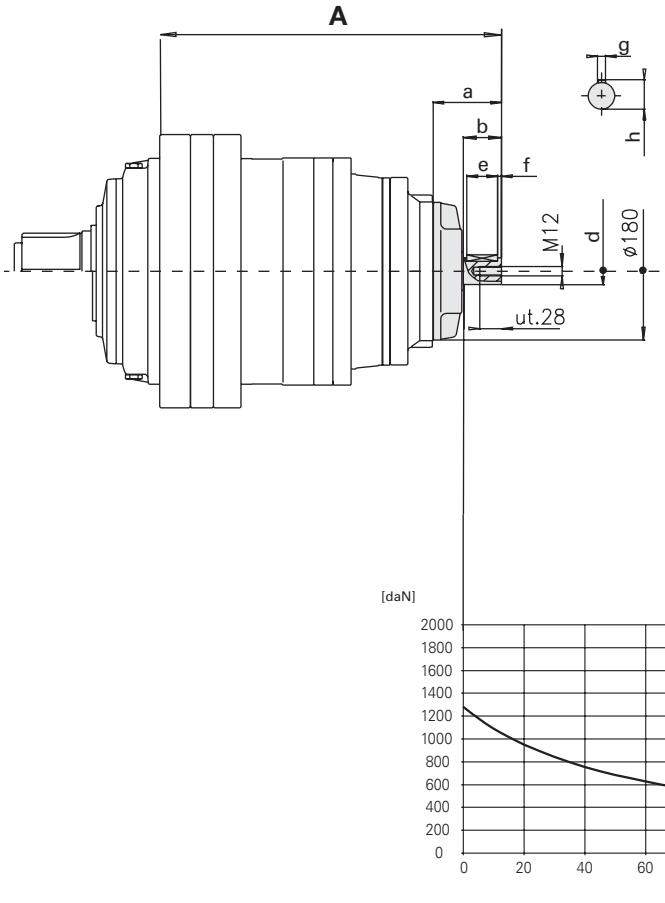
TYPE	A	B
RR 2700T M...	429,5	-
RA 2700T M...	-	414
RR 2700T FS	429,5	-
RA 2700T FS	-	414
RR 2700Q M...	471	-
RR 2700Q FS	471	-

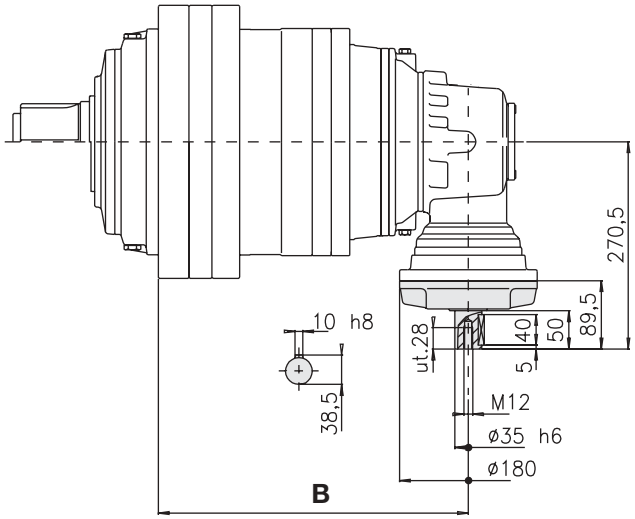
Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

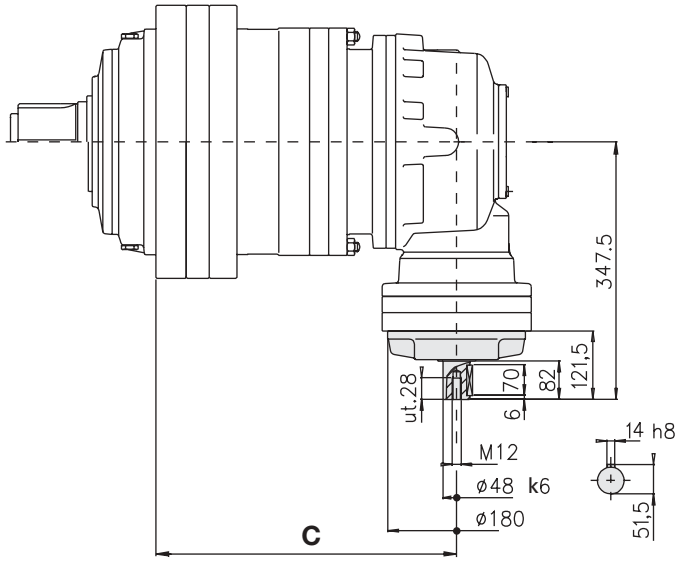
CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT





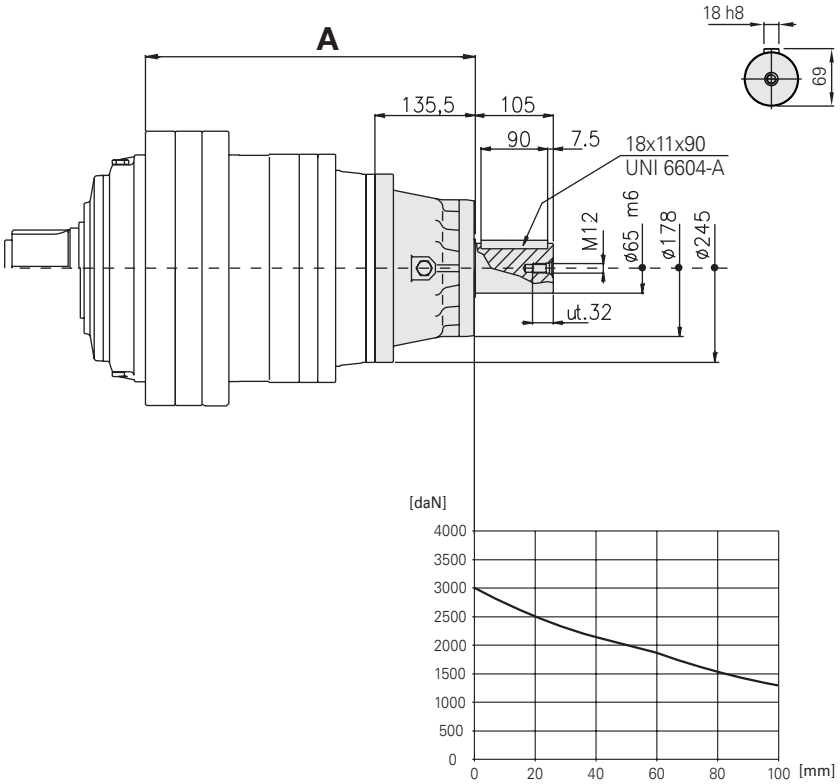


TYPE	A	a	b	d	e	f	g	h
RR 2700T M...	488	121,5	82	48 k6	70	6	14 h8	51,5
RR 2700Q M...	522	89,5	50	35 h6	40	5	10 h8	38,5
RR 2700T FS	488	121,5	82	48 k6	70	6	14 h8	51,5
RR 2700Q FS	522	89,5	50	35 h6	40	5	10 h8	38,5

TYPE	B	C
RA 2700D M...	–	397,5
RA 2700T M...	414	–
RA 2700D FS	–	397,5
RA 2700T FS	414	–

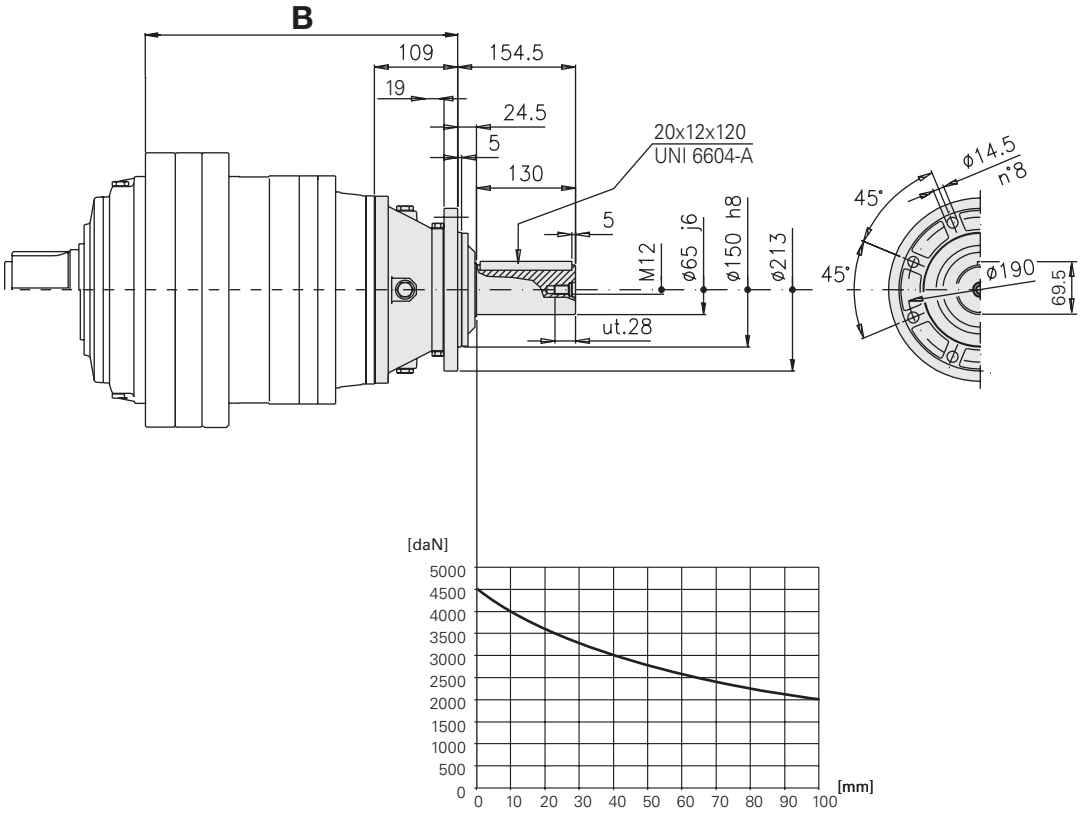
SERIES M MALE MEDIUM INPUT

WITHOUT FLANGE



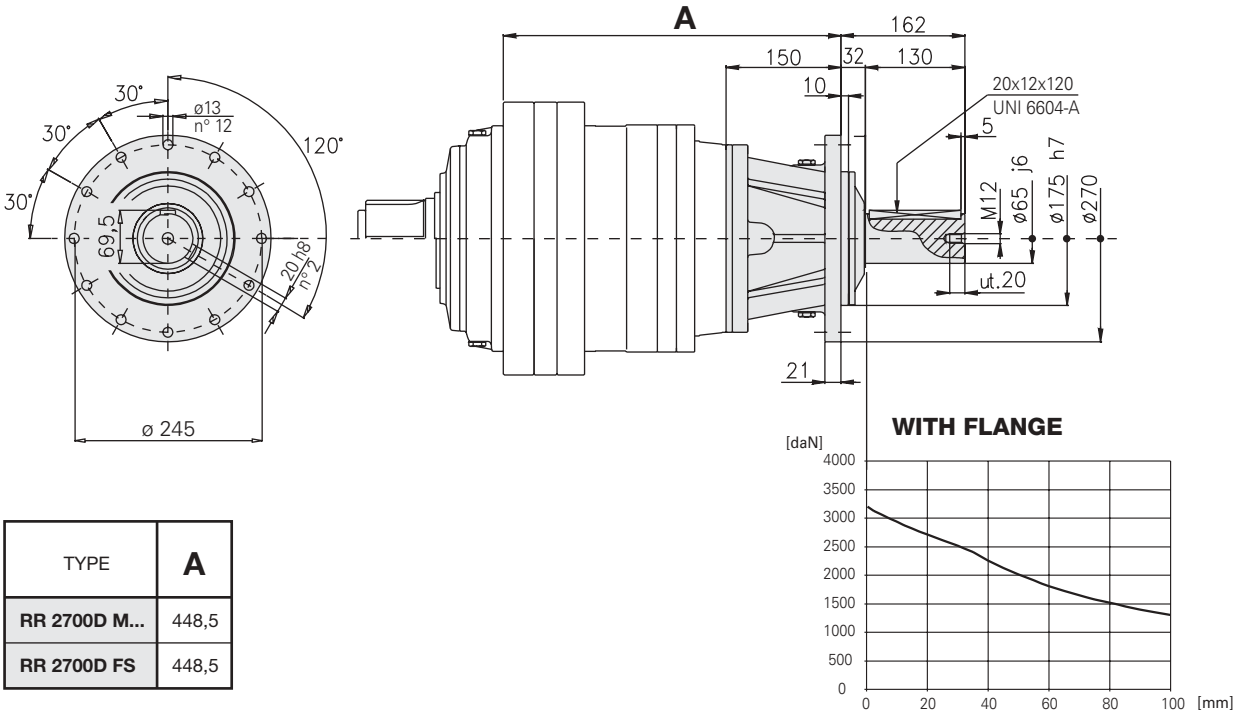
TYPE	A
RR 2700T M...	446
RR 2700T FS	446

WITH FLANGE



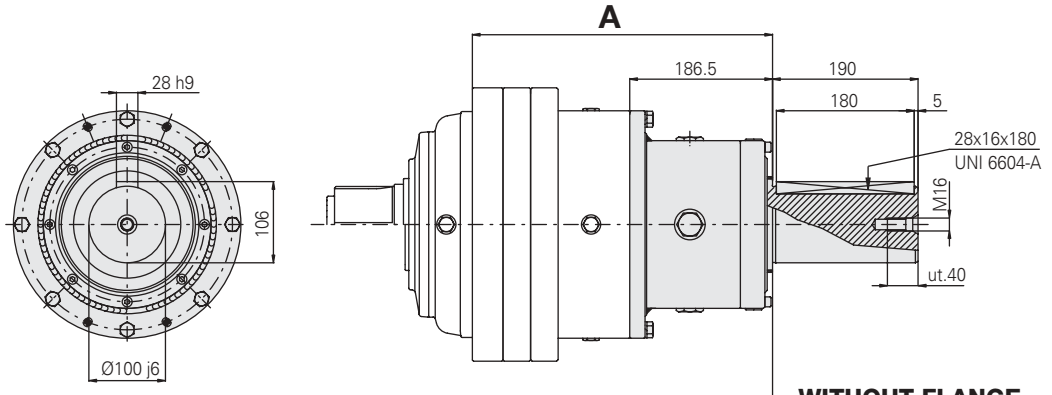
TYPE	B
RR 2700T M...	419,5
RR 2700T FS	419,5

SERIES P MALE HEAVY INPUT



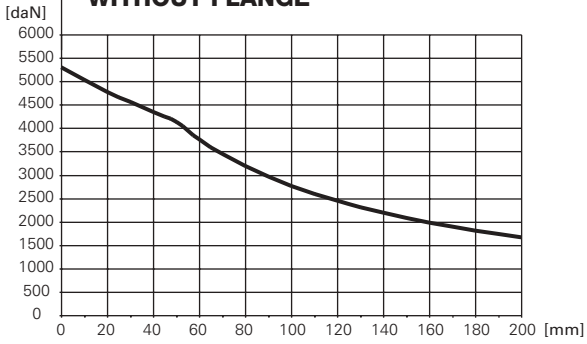
TYPE	A
RR 2700D M...	448,5
RR 2700D FS	448,5

WITH FLANGE



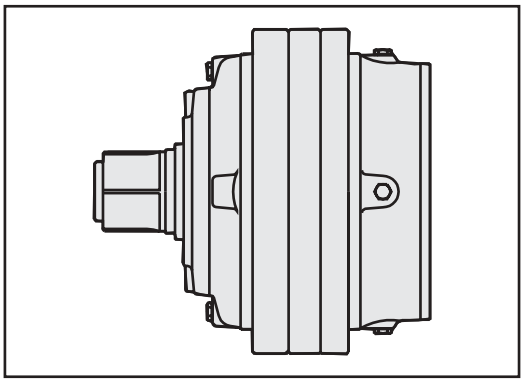
TYPE	A
RR 2700 M...	392
RR 2700 FS	392

WITHOUT FLANGE



SIZE 3500 REDUCTION GEARS

Tab. A

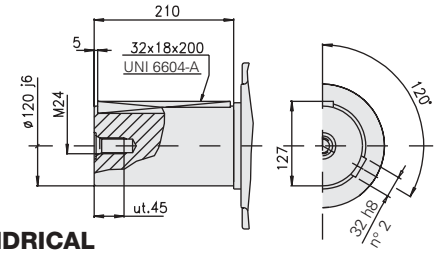


TYPE	RR 3500 M... RR 3500 FS	RR 3500D M RR 3500D FS	RR 3500T M... RR 3500T FS	RR 3500Q M... RR 3500Q FS
Number of stages	1	2	3	4
Type of input	E	C	B	B
Max. input revs n1 (min^{-1})	1000	2500	3500	3500

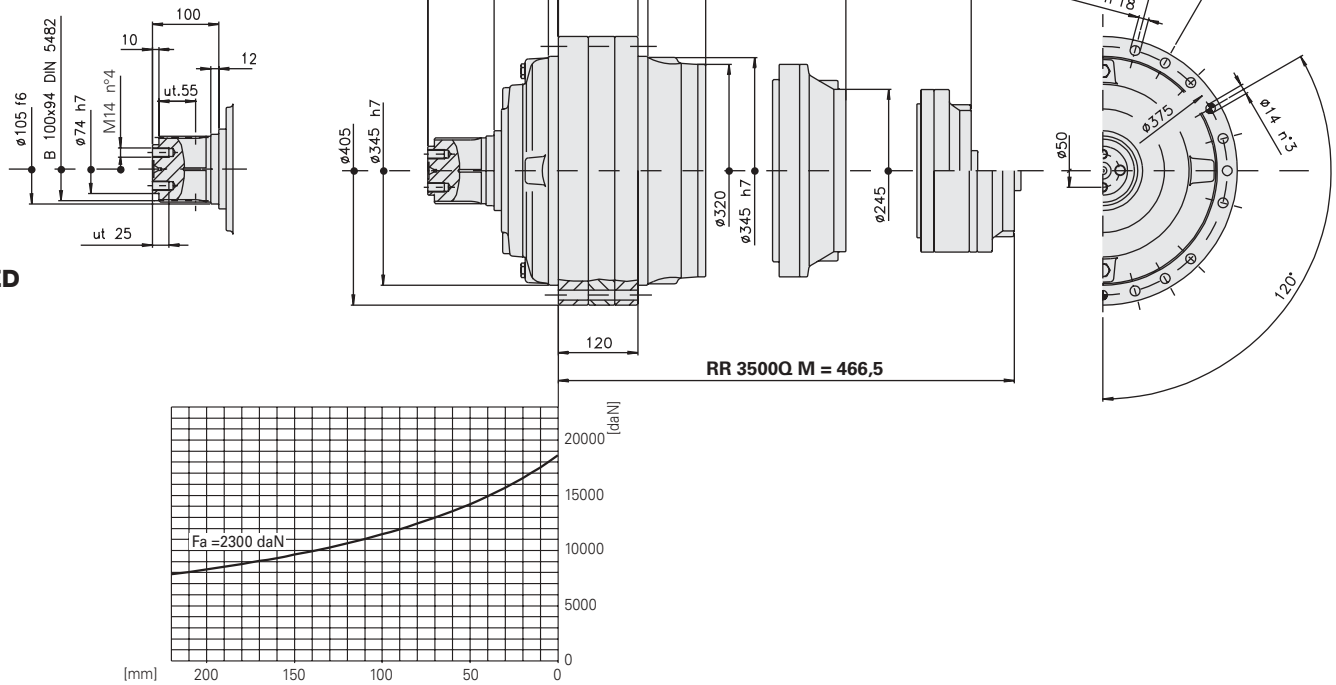
TYPE	RA 3500 M... RA 3500 FS	RA 3500D M... RA 3500D FS	RA 3500T M... RA 3500T FS	
Number of stages	1	2	3	-
Type of input	C	B	B	-
Max. input revs n1 (min^{-1})	1000	2500	3500	-

MALE LINEAR VERSION RR 3500 M... - RR 3500D M... - RR 3500T M... - RR 3500Q M...

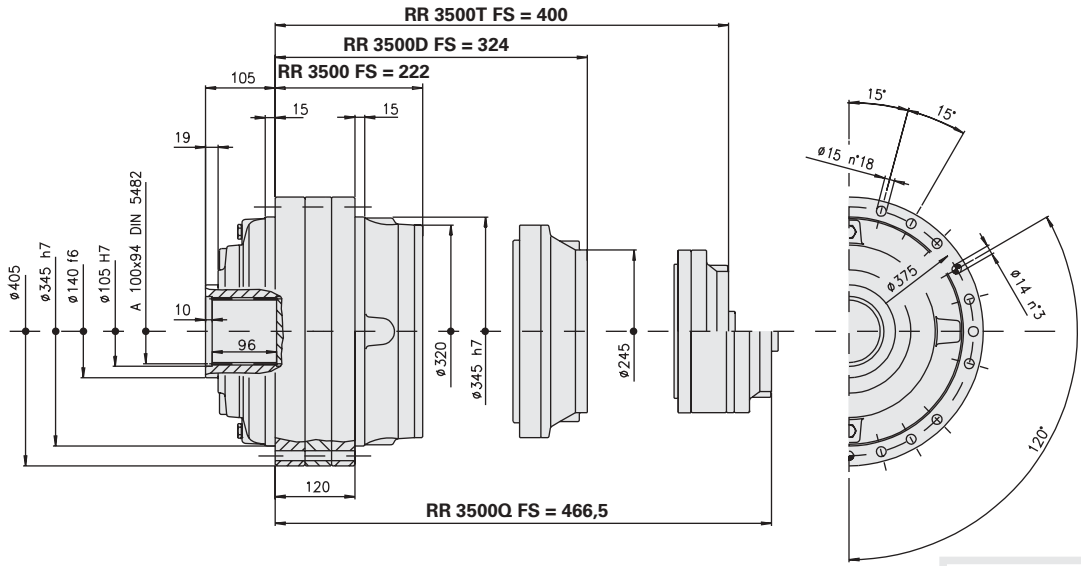
CYLINDRICAL



SPLINED



FEMALE LINEAR VERSION RR 3500 FS - RR 3500D FS - RR 3500T FS - RR 3500Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

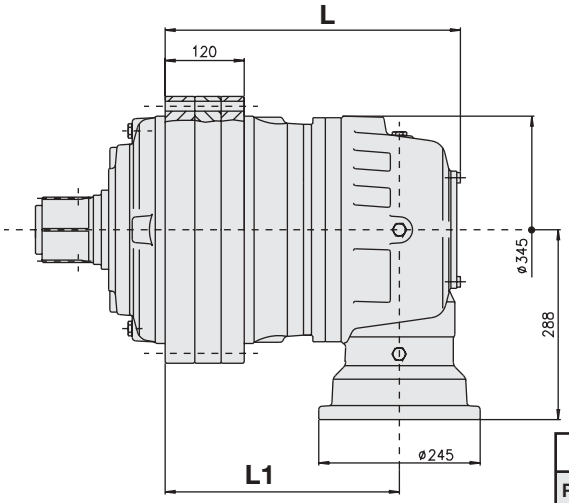
SIZE 3500 REDUCTION GEARS

Tab. B

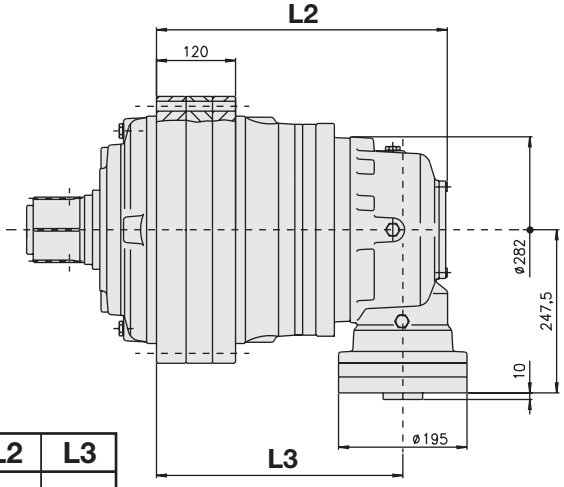
PART No. - RATIOS - TORQUES (ISO Standards)												
R 3500 M... RR 3500 FS			RR 3500D M... RR 3500D FS			RR 3500T M... RR 3500T FS			RR 3500Q M... RR 3500Q FS		
PART. No. 3500/...	...../1	T2 daNm	PART. No. 3500/...	...../1	T2 daNm	PART. No. 3500/...	...../1	T2 daNm	PART. No. 3500/...	...../1	T2 daNm
40	4,00	3250	160	16,00	3250	544	54,40	3250	3200	320,00	3250
52	5,20	2300	200	20,00	3250	640	64,00	3250	3808	380,80	3250
62	6,25	2000	232	23,20	3250	800	80,00	3250	4480	448,00	3250
			280	28,00	3200	1160	116,00	3250	5600	560,00	3250
			364	36,40	2300	1400	140,00	3250	6728	672,80	3250
			437	43,75	2000	1960	196,00	3200	8120	812,00	3250
						2537	253,75	2000	9800	980,00	3250
						3062	306,25	2000	11368	1136,80	3250
									13720	1372,00	3200
									17762	1776,25	2000
									21432	2143,75	2000

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 3500 M... RA 3500 FS			RA 3500D M... RA 3500D FS			RA 3500T M... RA 3500T FS		
PART. No. 3500/...	...../1	T2 daNm	PART. No. 3500/...	...../1	T2 daNm	PART. No. 3500/...	...../1	T2 daNm
109	10,91	2440	640	64,00	3250	2176	217,60	3250
141	14,18	2300	928	92,80	3250	2560	256,00	3250
170	17,04	2000	1120	112,00	3200	3200	320,00	3250
			1456	145,60	2000	4640	464,00	3250
			1750	175,00	2000	5600	560,00	3250
						7840	784,00	3200
						10150	1015,00	2000
						12250	1225,00	2000

MALE ANGULAR VERSION RA 3500 M...

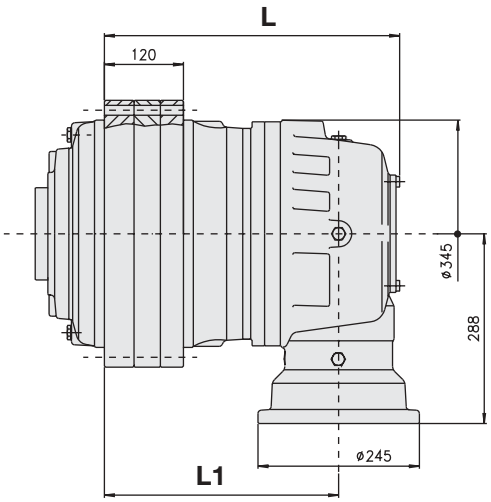


MALE ANGULAR VERSION RA 3500D M... - RA 3500T M...

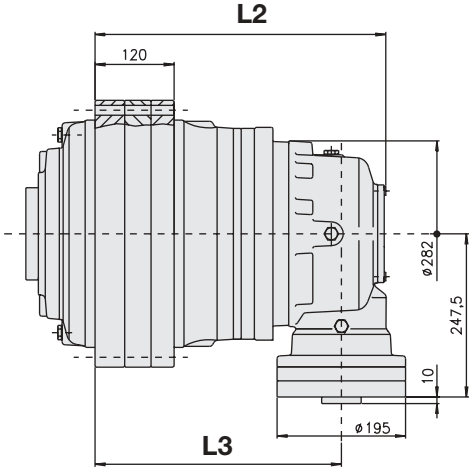


TYPE	L	L1	L2	L3
RA 3500 M...	448	355,5	–	–
RA 3500D M...	–	–	453,5	386
RA 3500T M...	–	–	536	468,5

FEMALE ANGULAR VERSION RA 3500 FS



FEMALE ANGULAR VERSION RA 3500D FS - RA 3500T FS

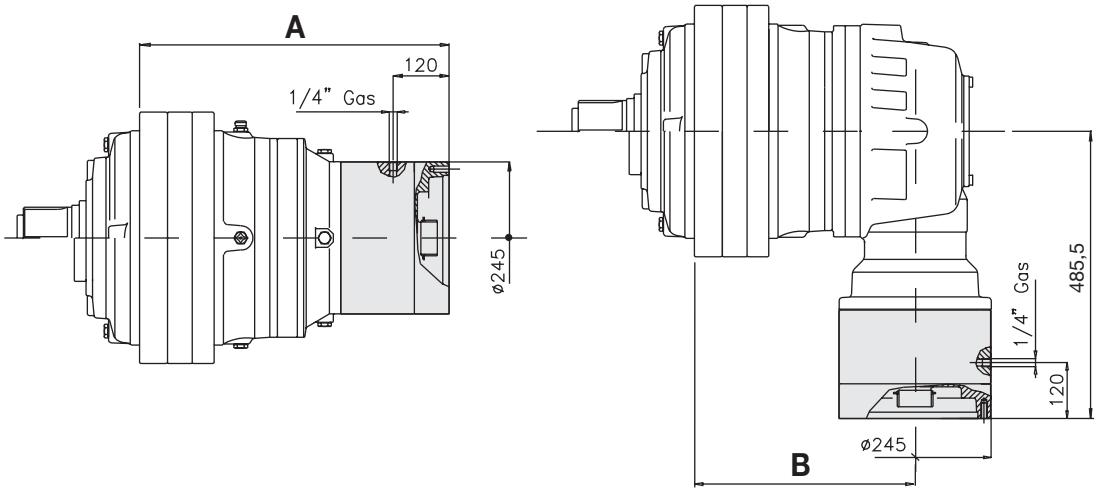


TYPE	L	L1	L2	L3
RA 3500 FS	448	355,5	–	–
RA 3500D FS	–	–	453,5	386
RA 3500T FS	–	–	536	468,5

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 3500 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290

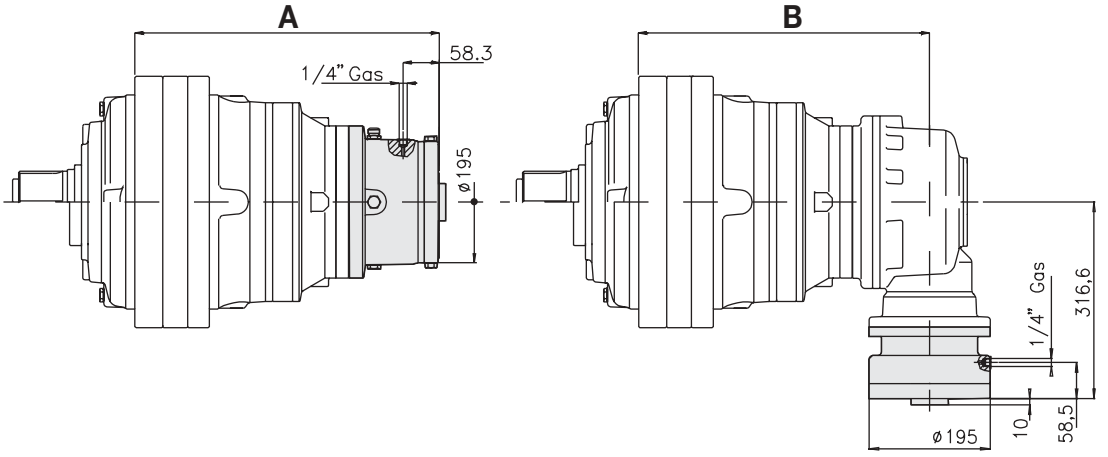


TYPE	A	B
RA 3500 M...	-	355,5
RR 3500D M...	521	-
RA 3500 FS	-	355,5
RR 3500D FS	521	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130

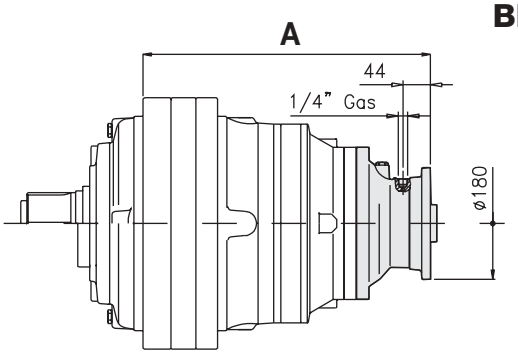


TYPE	A	B
RA 3500D M...	-	386
RR 3500T M...	490,5	-
RA 3500T M...	-	468,5
RR 3500Q M...	557	-
RA 3500D FS	-	386
RR 3500T FS	490,5	-
RA 3500T FS	-	468,5
RR 3500Q FS	557	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



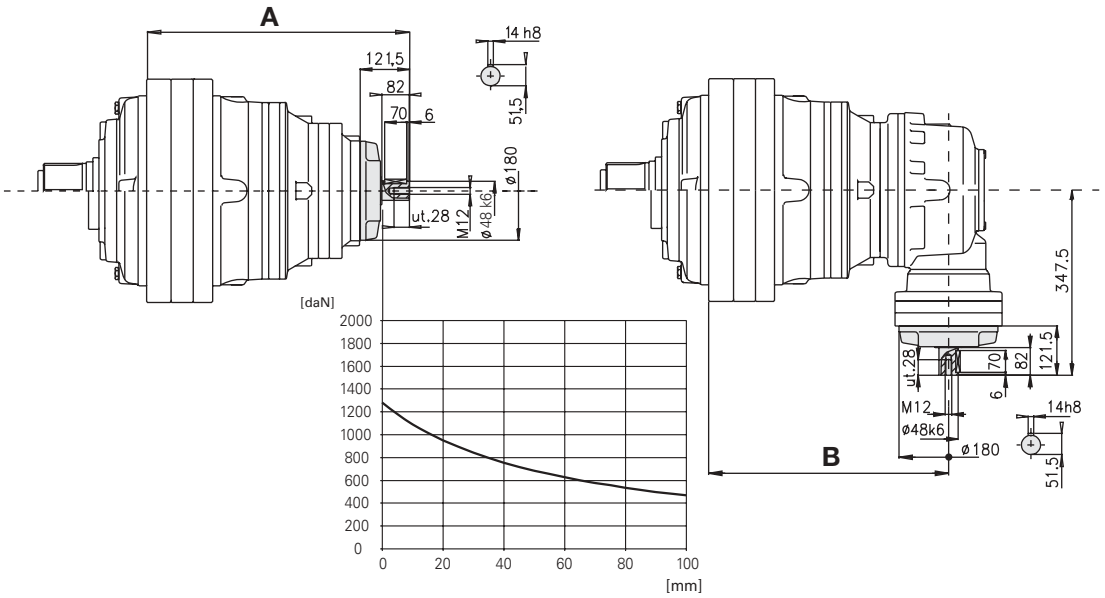
TYPE	A
RR 3500T M...	463
RR 3500Q M...	529,5
RR 3500T FS	463
RR 3500Q FS	529,5

Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

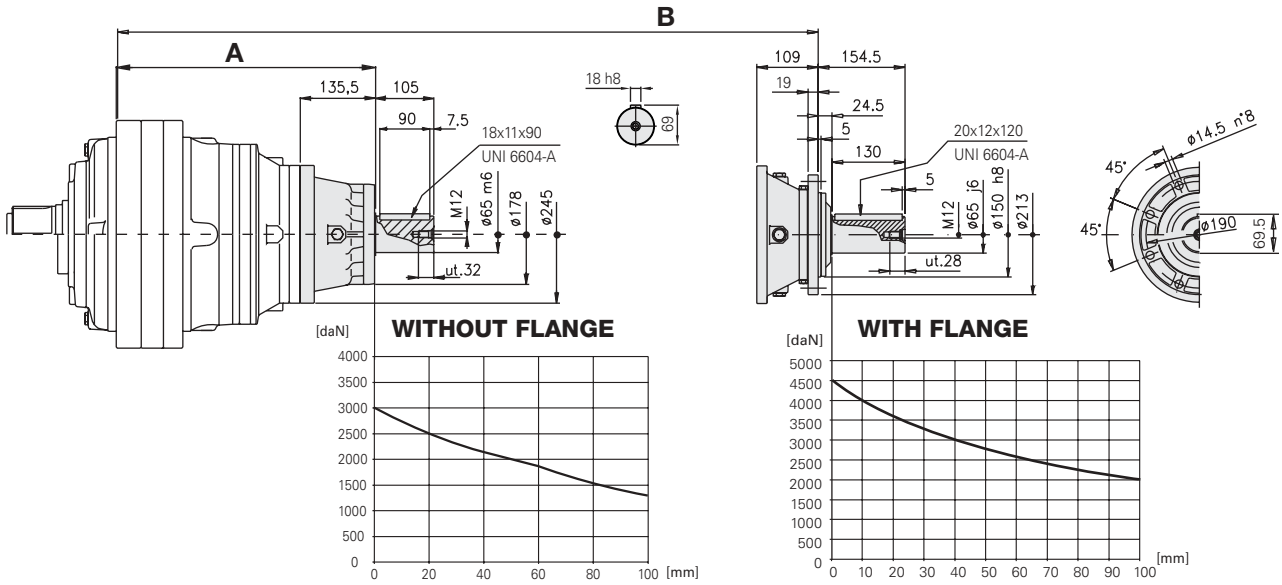
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT



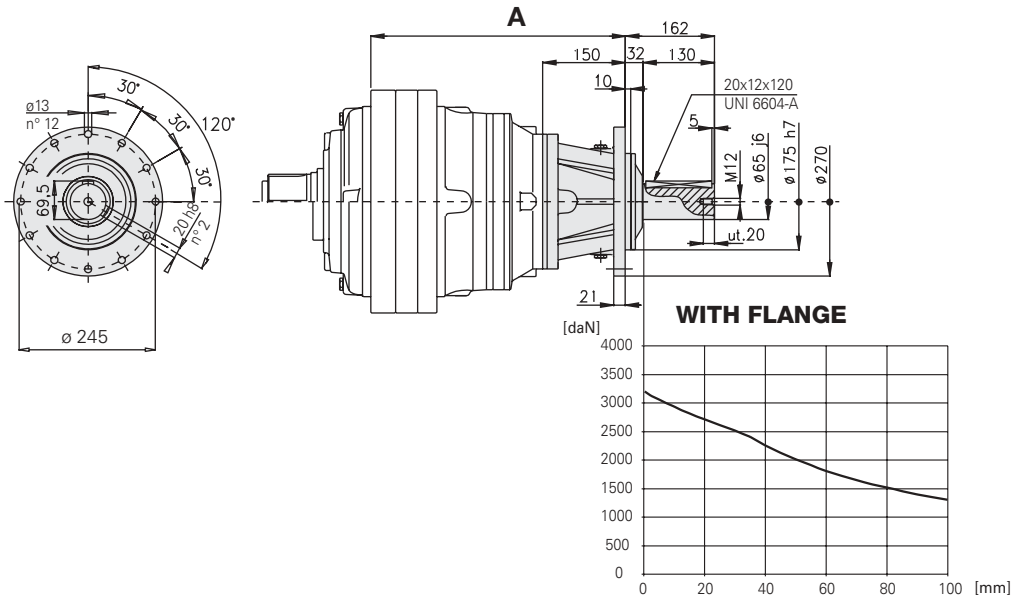
TYPE	A	B
RR 3500T M...	521,5	–
RR 3500Q M...	588	–
RR 3500T FS	521,5	–
RR 3500Q FS	588	–
RA 3500D M...	–	386
RA 3500T M...	–	468,5
RA 3500D FS	–	386
RA 3500T FS	–	468,5

SERIES M MALE MEDIUM INPUT



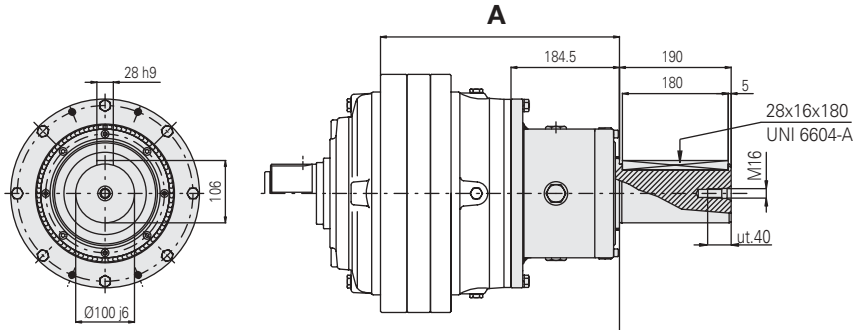
TYPE	A	B
RR 3500T M...	479,5	453
RR 3500Q M...	546	519,5
RR 3500T FS	479,5	453
RR 3500Q FS	546	519,5

SERIES P MALE HEAVY INPUT

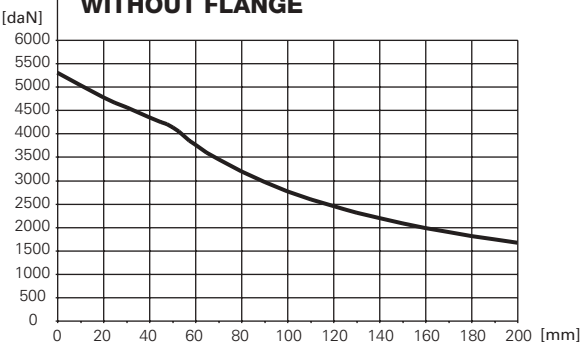


WITH FLANGE

TYPE	A
RR 3500D M...	474
RR 3500D FS	474



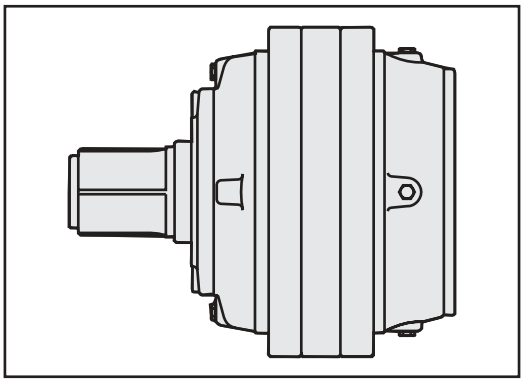
WITHOUT FLANGE



TYPE	A
RR 3500 M...	406,5
RR 3500 FS	406,5

Notes

SIZE 5000 REDUCTION GEARS



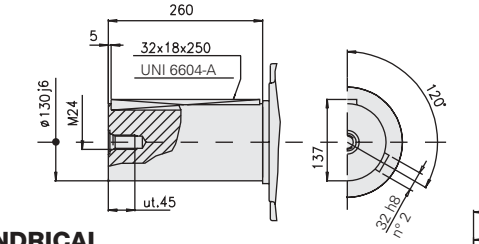
Tab. A

TYPE	RR 5000 M... RR 5000 FS	RR 5000D M... RR 5000D FS	RR 5000T M... RR 5000T FS	RR 5000Q M... RR 5000Q FS
Number of stages	1	2	3	4
Type of input	F	C	B	B
Max. input revs n1 (min^{-1})	800	2000	3500	3500

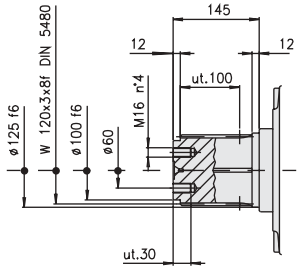
TYPE	RA 5000 M... RA 5000 FS	RA 5000D M... RA 5000D FS	RA 5000T M... RA 5000T FS	
Number of stages	1	2	3	-
Type of input	C	B	B	-
Max. input revs n1 (min^{-1})	800	2000	3500	-

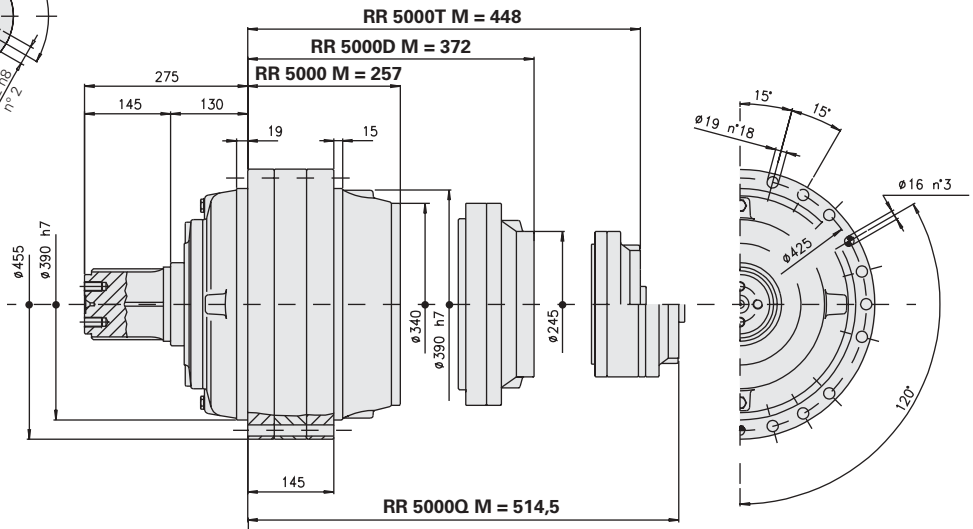
MALE LINEAR VERSION RR 5000 M... - RR 5000D M... - RR 5000T M... - RR 5000Q M...

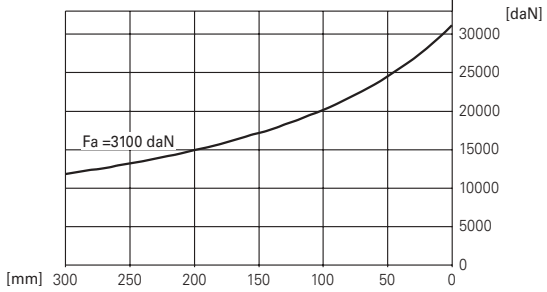
CYLINDRICAL



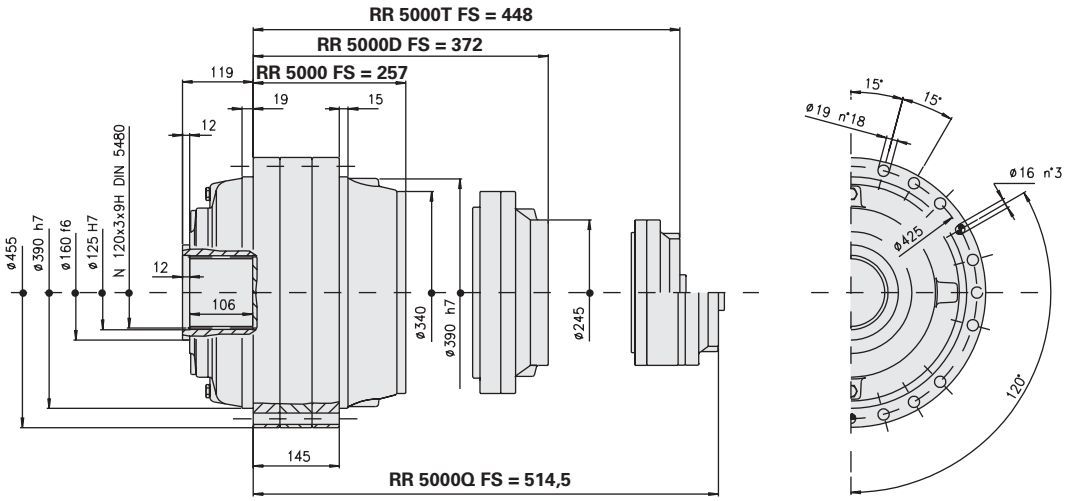
SPLINED







FEMALE LINEAR VERSION RR 5000 FS - RR 5000D FS - RR 5000T FS - RR 5000Q FS



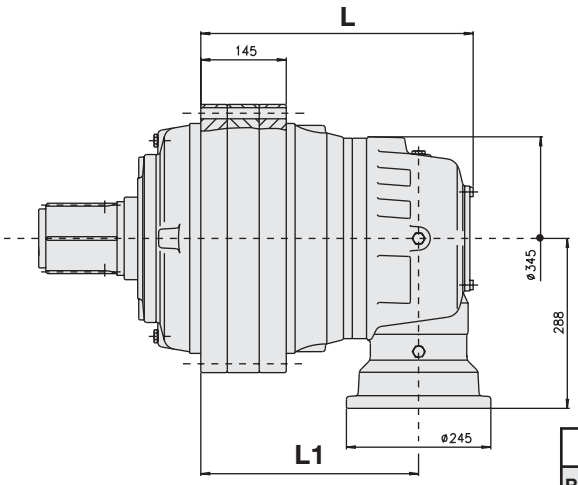
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

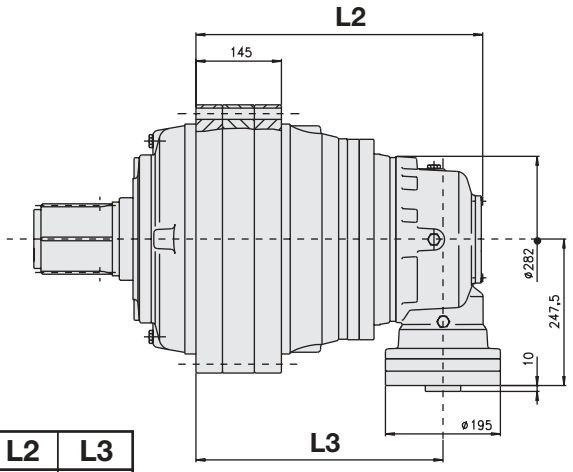
PART No. - RATIOS - TORQUES (ISO Standards)												
RR 5000 M... RR 5000 FS			RR 5000D M... RR 5000D FS			RR 5000T M... RR 5000T FS			RR 5000Q M... RR 5000Q FS		
PART. No. 5000/...	...../1	T2 daNm	PART. No. 5000/...	...../1	T2 daNm	PART. No. 5000/...	...../1	T2 daNm	PART. No. 5000/...	...../1	T2 daNm
38	3,85	5500	150	15,02	5500	510	51,05	5500	3003	300,30	5500
50	5,00	4500	197	19,79	5500	600	60,06	5500	3573	357,36	5500
60	6,00	3200	241	24,14	4600	750	75,08	5500	4204	420,42	5500
			313	31,35	4500	984	98,48	5500	5255	525,53	5500
			376	37,62	3200	1254	125,40	4500	6893	689,33	5500
						1567	156,75	4500	7837	783,75	4500
						1818	181,83	4500	9091	909,15	4500
						2194	219,45	4500	10972	1097,25	4500
						2633	263,34	3200	12593	1259,30	4500
									15361	1536,15	4500
									18433	1843,38	3200

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 5000 M... RA 5000 FS			RA 5000D M... RA 5000D FS			RA 5000T M... RA 5000T FS		
PART. No. 5000/...	...../1	T2 daNm	PART. No. 5000/...	...../1	T2 daNm	PART. No. 5000/...	...../1	T2 daNm
105	10,50	2350	600	60,06	3150	2042	204,20	5500
136	13,64	3050	791	79,16	4150	2402	240,24	5500
163	16,36	3200	965	96,56	4600	3003	300,30	5500
			1254	125,40	4500	3939	393,90	5500
			1504	150,48	3200	5016	501,60	4500
						6270	627,00	4500
						7273	727,32	4500
						8778	877,80	4500
						10533	1053,36	3200

MALE ANGULAR VERSION RA 5000 M...

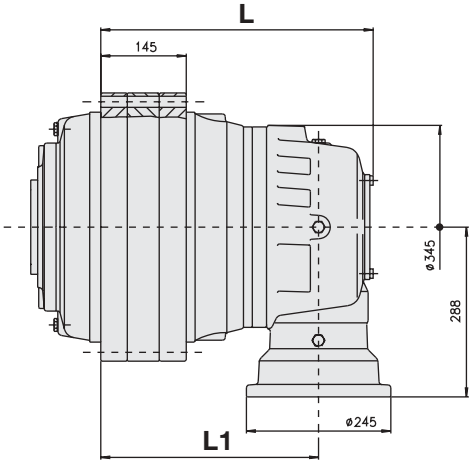


MALE ANGULAR VERSION RA 5000D M... - RA 5000T M...

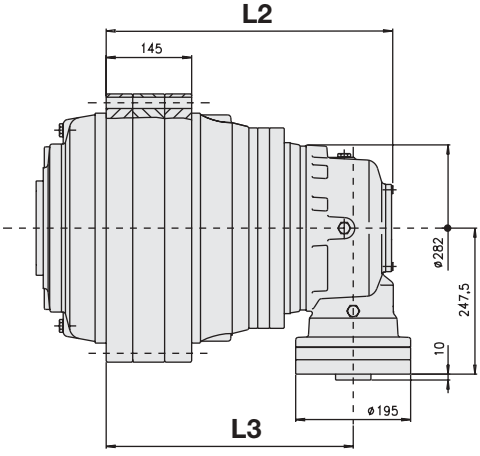


TYPE	L	L1	L2	L3
RA 5000 M...	462	369,5	–	–
RA 5000D M...	–	–	501,5	434
RA 5000T M...	–	–	584	516,5

FEMALE ANGULAR VERSION RA 5000 FS



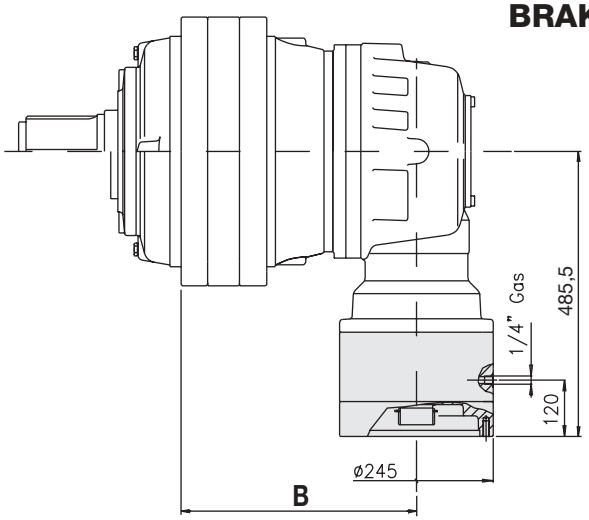
FEMALE ANGULAR VERSION RA 5000D FS - RA 5000T FS

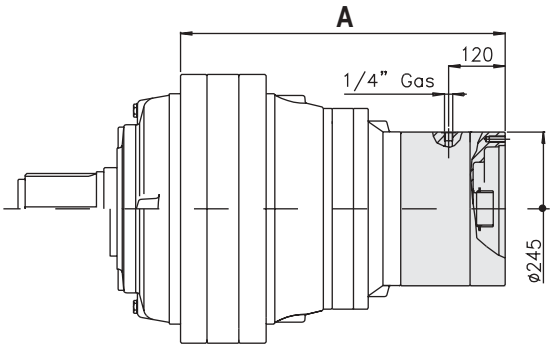


TYPE	L	L1	L2	L3
RA 5000 FS	462	369,5	–	–
RA 5000D FS	–	–	501,5	434
RA 5000T FS	–	–	584	516,5

SEE THE INPUT DIMENSIONS ON PAGE 148

BRAKES SERIES RF 170 ÷ 290



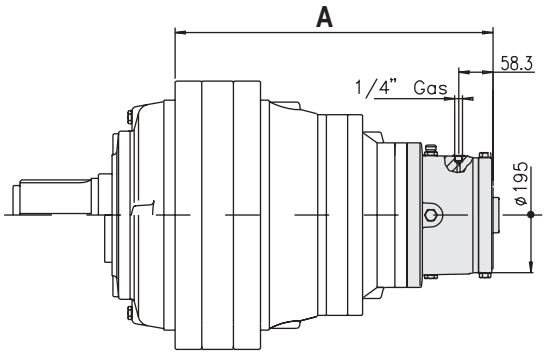


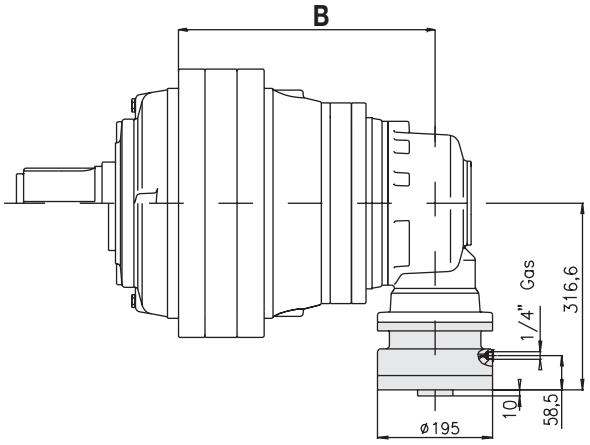
TYPE	A	B
RA 5000 M...	-	369,5
RR 5000D M...	569	-
RA 5000 FS	-	369,5
RR 5000D FS	569	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



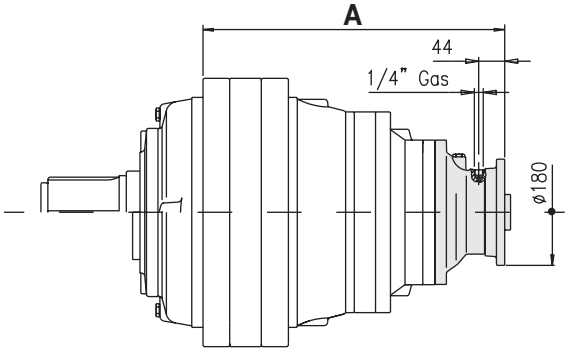


TYPE	A	B
RA 5000D M...	-	434
RR 5000T M...	538,5	-
RA 5000T M...	-	516,5
RR 5000Q M...	605	-
RA 5000D FS	-	434
RR 5000T FS	538,5	-
RA 5000T FS	-	516,5
RR 5000Q FS	605	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



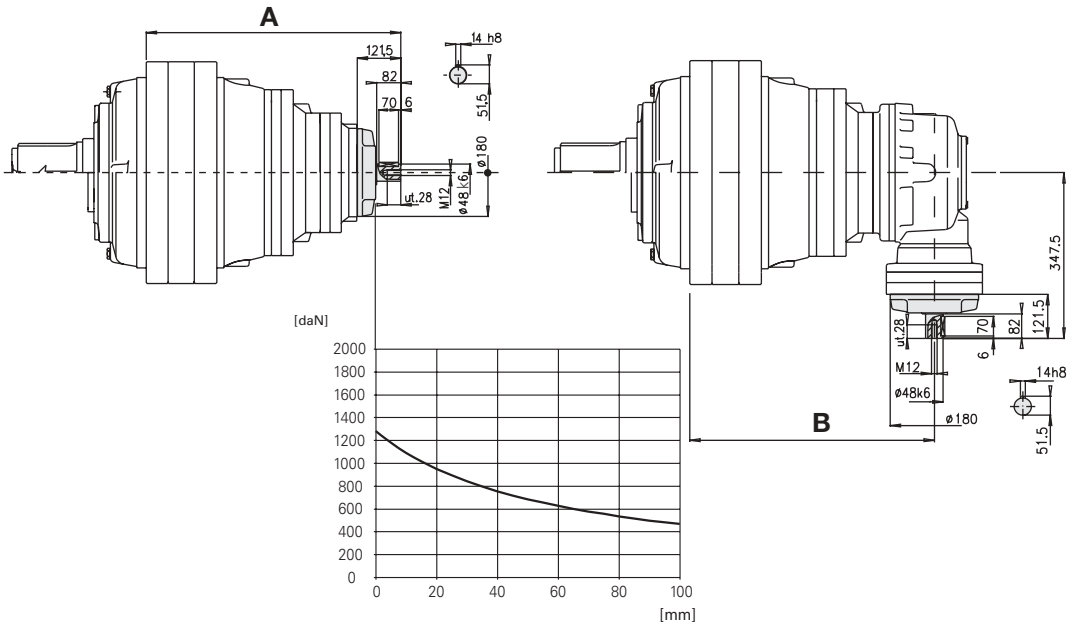
TYPE	A
RR 5000T M...	511
RR 5000Q M...	577,5
RR 5000T FS	511
RR 5000Q FS	577,5

Ambient temperature	-20°C ÷ +60°C	Mass Kg
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	10,5

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

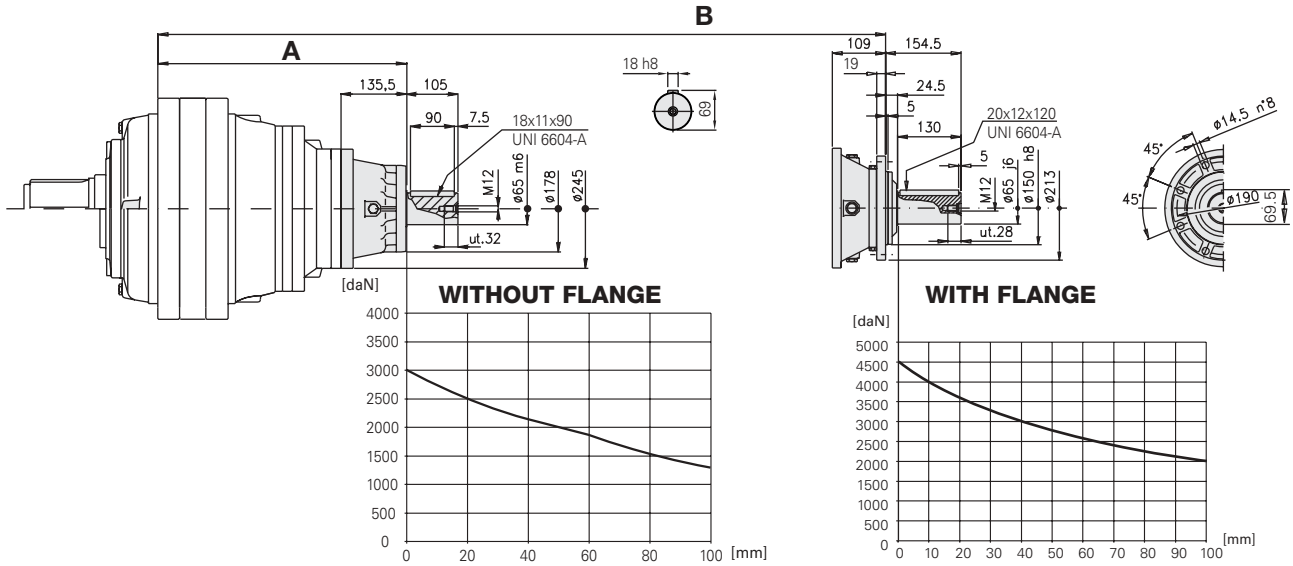
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT



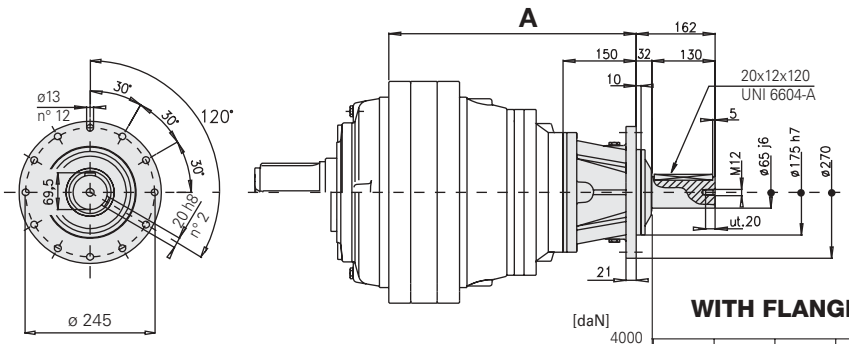
TYPE	A	B
RR 5000T M...	569,5	–
RR 5000Q M...	636	–
RR 5000T FS	569,5	–
RR 5000Q FS	636	–
RA 5000D M...	–	434
RA 5000T M...	–	516,5
RA 5000D FS	–	434
RA 5000T FS	–	516,5

SERIES M MALE MEDIUM INPUT

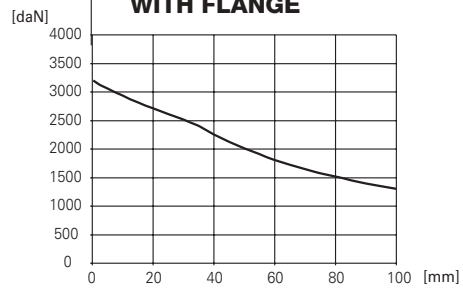


TYPE	A	B
RR 5000T M...	527,5	501
RR 5000Q M...	594	567,5
RR 5000T FS	527,5	501
RR 5000Q FS	594	567,5

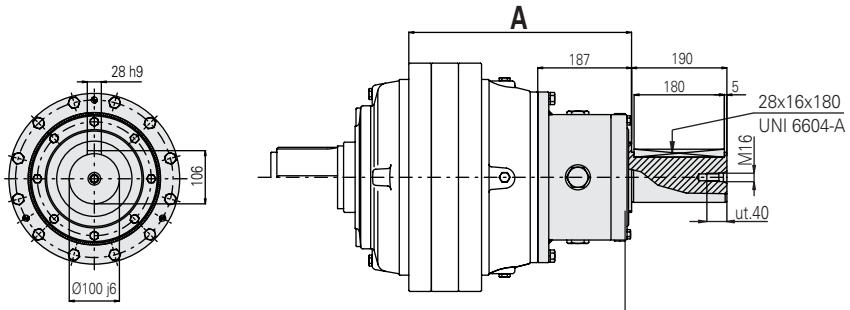
SERIES P MALE HEAVY INPUT



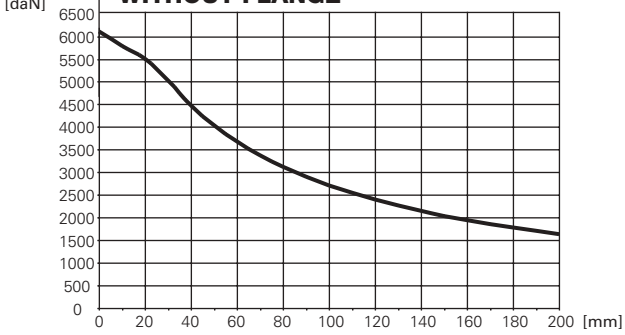
WITH FLANGE



TYPE	A
RR 5000D M...	522
RR 5000D FS	522



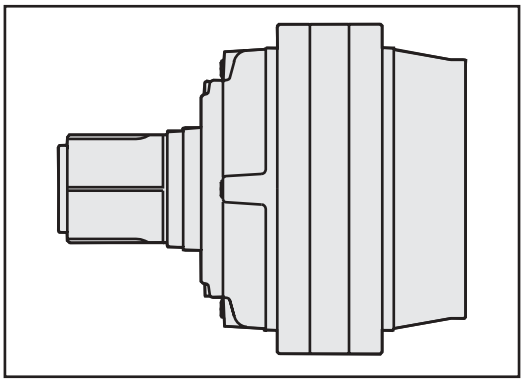
WITHOUT FLANGE



TYPE	A
RR 5000 M...	444
RR 5000 FS	444

Notes

SIZE 6300 REDUCTION GEARS



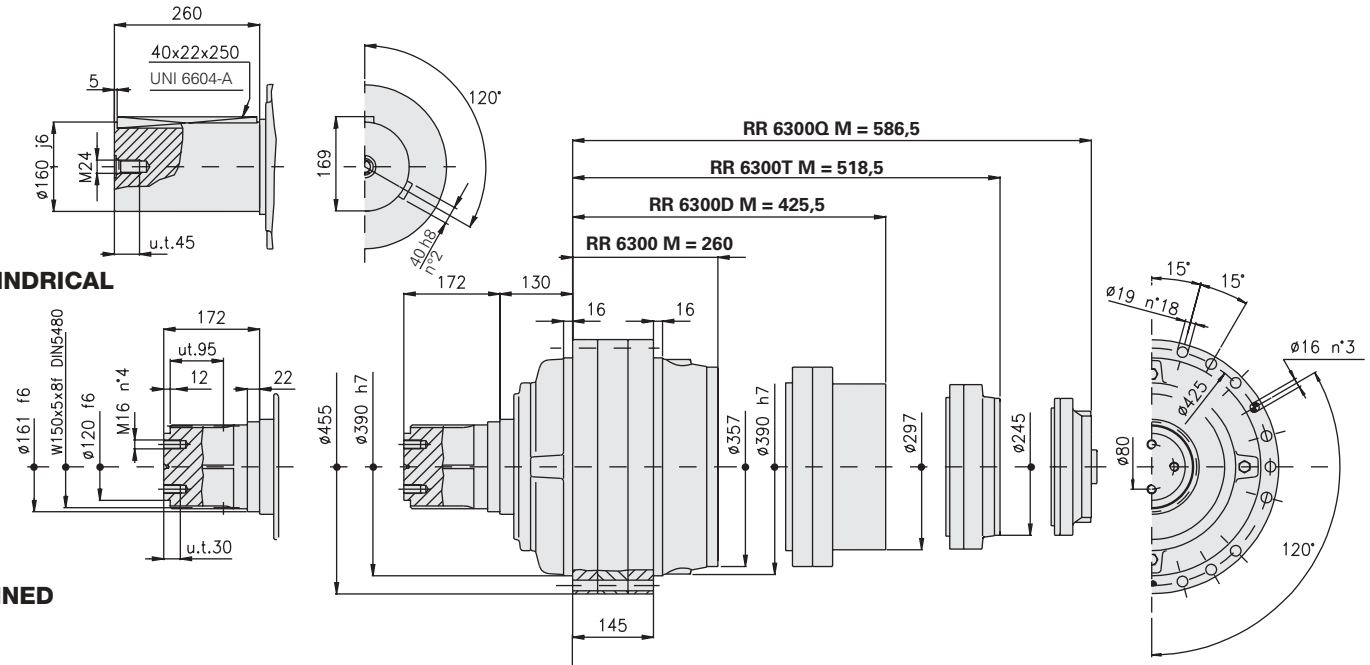
Tab. A

TYPE	RR 6300 M... RR 6300 FS	RR 6300D M... RR 6300D FS	RR 6300T M... RR 6300T FS	RR 6300Q M... RR 6300Q FS
Number of stages	1	2	3	4
Type of input	G	D	C	B
Max. input revs n1 (min^{-1})	800	2000	3000	3500

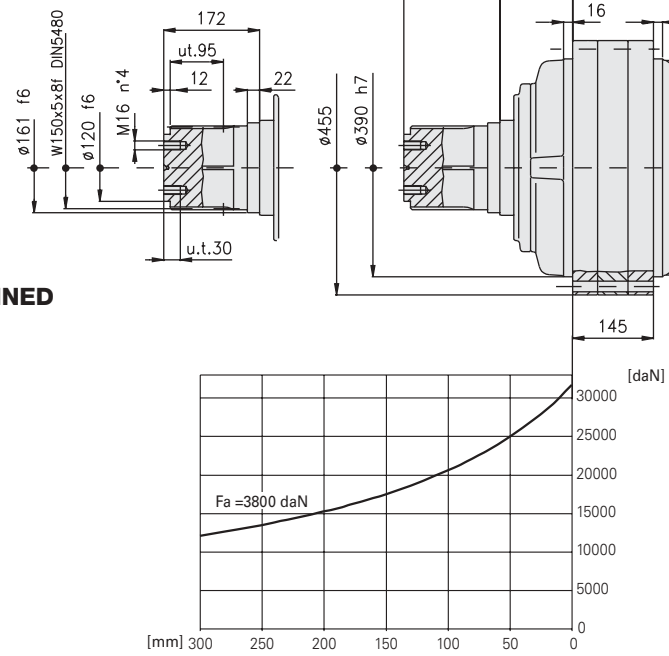
TYPE		RA 6300D M... RA 6300D FS	RA 6300T M... RA 6300T FS	
Number of stages	-	2	3	-
Type of input	-	B	B	-
Max. input revs n1 (min^{-1})	-	2000	3000	-

MALE LINEAR VERSION RR 6300 M... - RR 6300D M... - RR 6300T M... - RR 6300Q M...

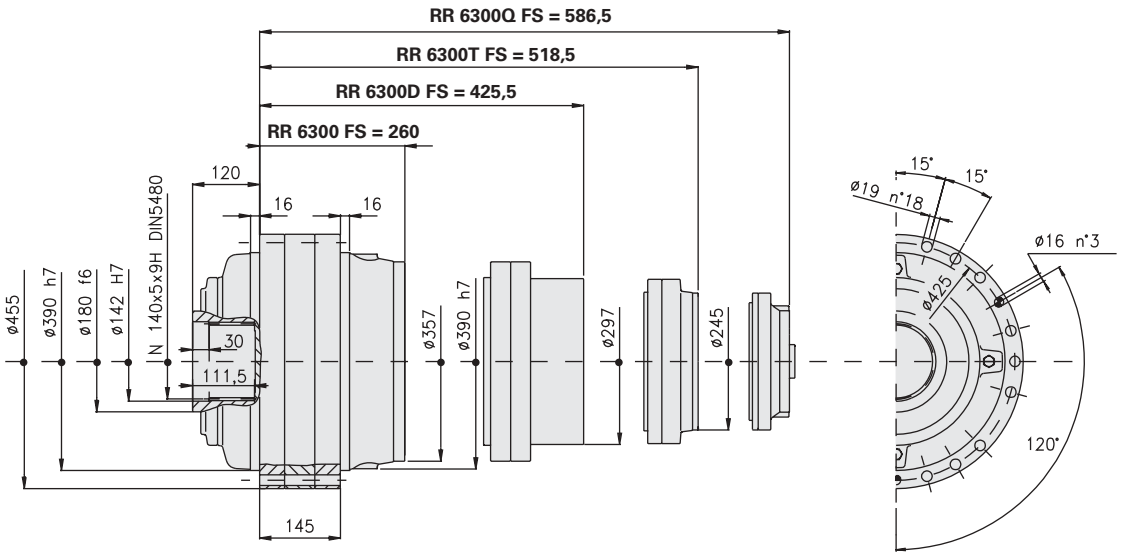
CYLINDRICAL



SPLINED



FEMALE LINEAR VERSION RR 6300 FS - RR 6300D FS - RR 6300T FS - RR 6300Q FS



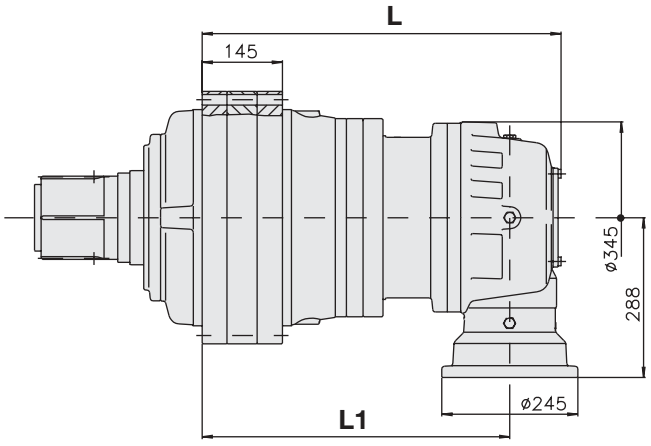
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

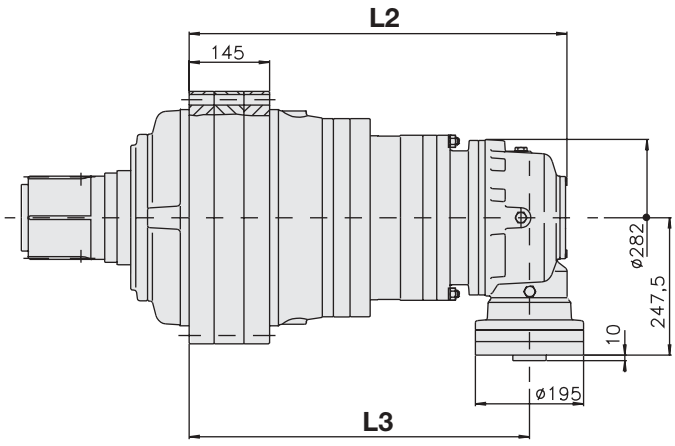
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 6300 M... RR 6300 FS			RR 6300D M... RR 6300D FS			RR 6300T M... RR 6300T FS			RR 6300Q M... RR 6300Q FS		
PART. No. 6300/...	...../1	T2 daNm	PART. No. 6300/...	...../1	T2 daNm	PART. No. 6300/...	...../1	T2 daNm	PART. No. 6300/...	...../1	T2 daNm
38	3,81	8500	154	15,43	8500	663	66,35	8500	2255	225,59	8500
			203	20,38	6300	844	84,40	8500	2654	265,40	8500
			249	24,92	5100	991	99,19	8500	3317	331,76	8500
						1327	132,70	6400	4220	422,02	8500
						1610	161,03	6300	4895	489,55	8500
						1968	196,85	5100	5908	590,83	8500
						2142	214,29	5100	7696	769,67	6400
									9289	928,92	6400
									11272	1127,21	6300
									15000	1500,03	5100

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 6300D M RA 6300D FS			RA 6300T M... RA 6300T FS					
PART. No. 6300/...	...../1	T2 daNm	PART. No. 6300/...	...../1	T2 daNm			
420	42,08	8500	2654	265,40	8500			
555	55,59	6300	3376	337,62	8500			
679	67,95	5100	3967	396,75	8500			
			5308	530,81	6400			
			6441	644,12	6300			
			7873	787,39	5100			
			8571	857,16	5100			

MALE ANGULAR VERSION RA 6300D M...

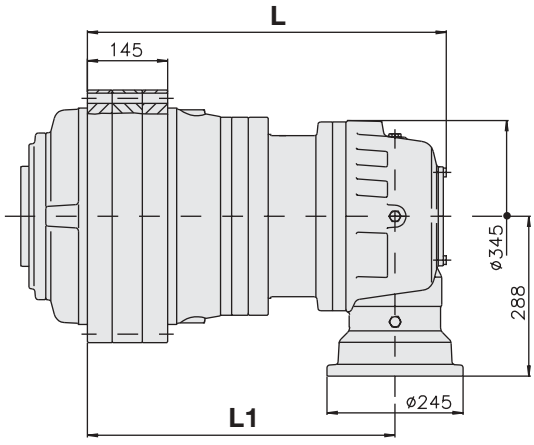


MALE ANGULAR VERSION RA 6300T M...

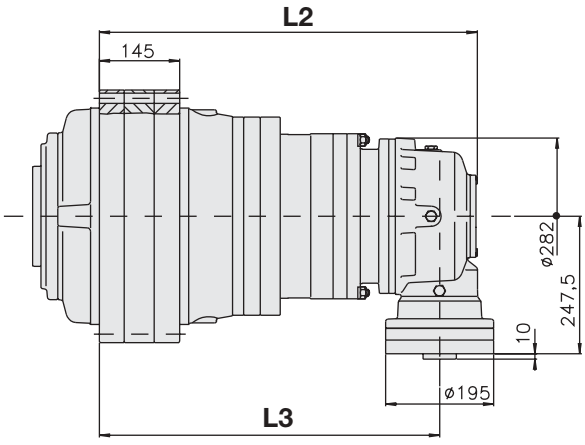


TYPE	L	L1	L2	L3
RA 6300D M...	653	560,5	–	–
RA 6300T M...	–	–	685	617,5

FEMALE ANGULAR VERSION RA 6300D FS



FEMALE ANGULAR VERSION RA 6300T FS

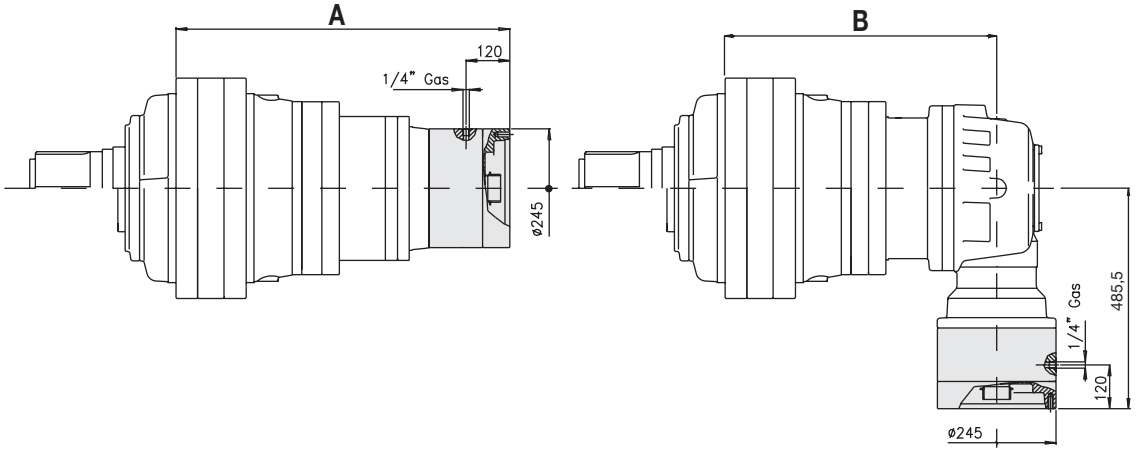


TYPE	L	L1	L2	L3
RA 6300D FS	653	560,5	–	–
RA 6300T FS	–	–	685	617,5

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 6300 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290

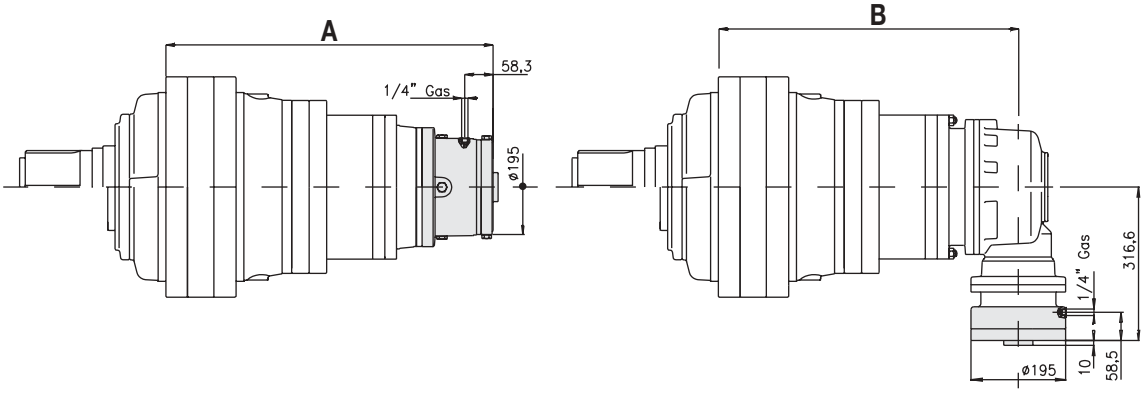


TYPE	A	B
RA 6300D M...	-	560,5
RR 6300T M...	716	-
RA 6300D FS	-	560,5
RR 6300T FS	716	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	OIL QUANTITY lt. Vert.	Mass
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	Kg 43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130

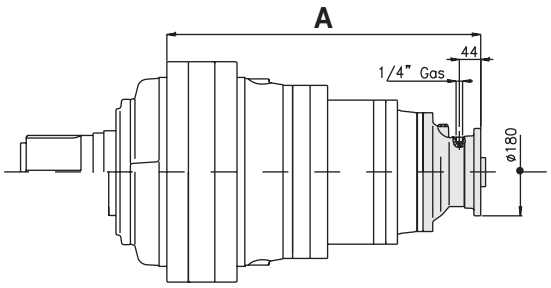


TYPE	A	B
RA 6300T M...	-	617,5
RR 6300Q M...	677	-
RA 6300T FS	-	617,5
RR 6300Q FS	677	-

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	OIL QUANTITY lt. Vert.	Mass
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	Kg 21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

BRAKES SERIES RF 2/7 ÷ 2/60



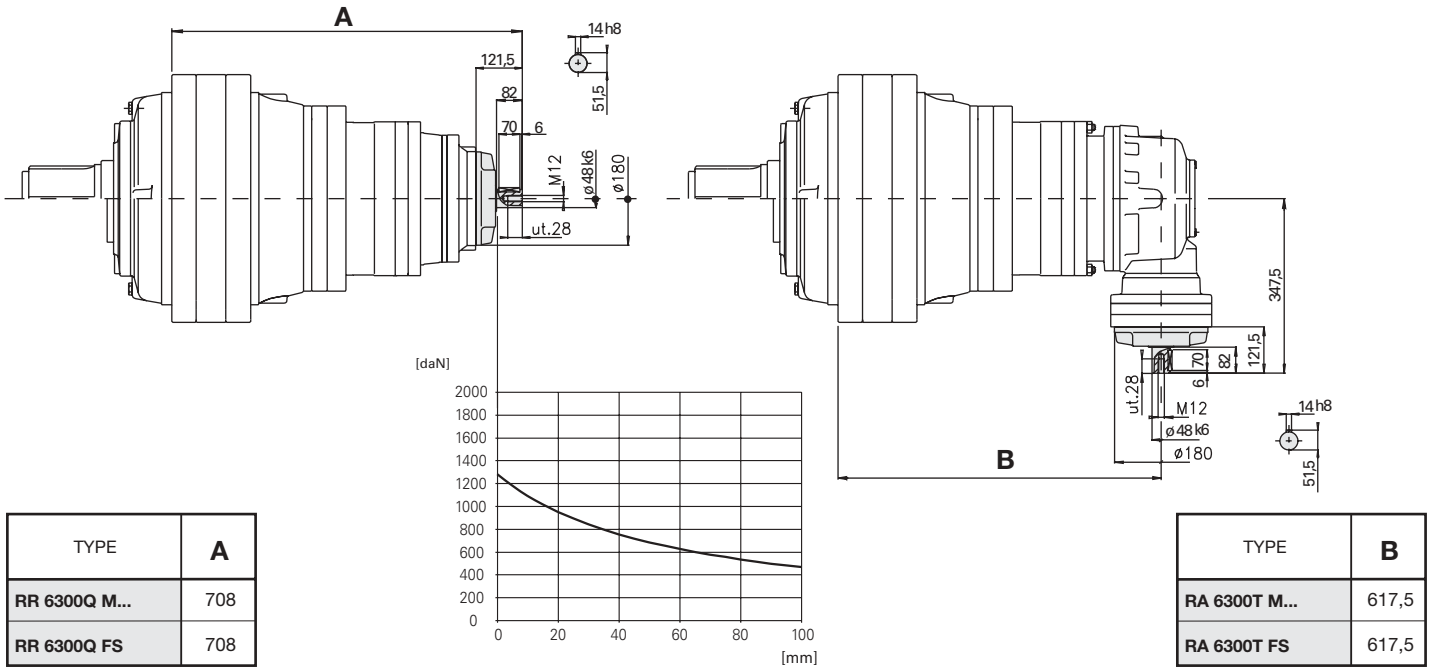
TYPE	A
RR 6300Q M...	649,5
RR 6300Q FS	649,5

Ambient temperature	-20°C ÷ +60°C	Mass
VISCOSITY	VG 150 10,8.. 12,5°E/50°C	Kg 10,5

CODE		2/7	2/14	2/21	2/32	2/43	2/60
Static torque	da Nm	6 ÷ 8	13 ÷ 15	20 ÷ 22	31 ÷ 34	41 ÷ 45	57 ÷ 60
Min. opening pressure	bar	4 ÷ 5	8 ÷ 9	12 ÷ 13	18 ÷ 20	24 ÷ 26	27 ÷ 32
Max. opening pressure	bar	300					
Minimum oil capacity for brake opening	cm^3	7 ÷ 8					

SEE THE INPUT DIMENSIONS ON PAGE 149

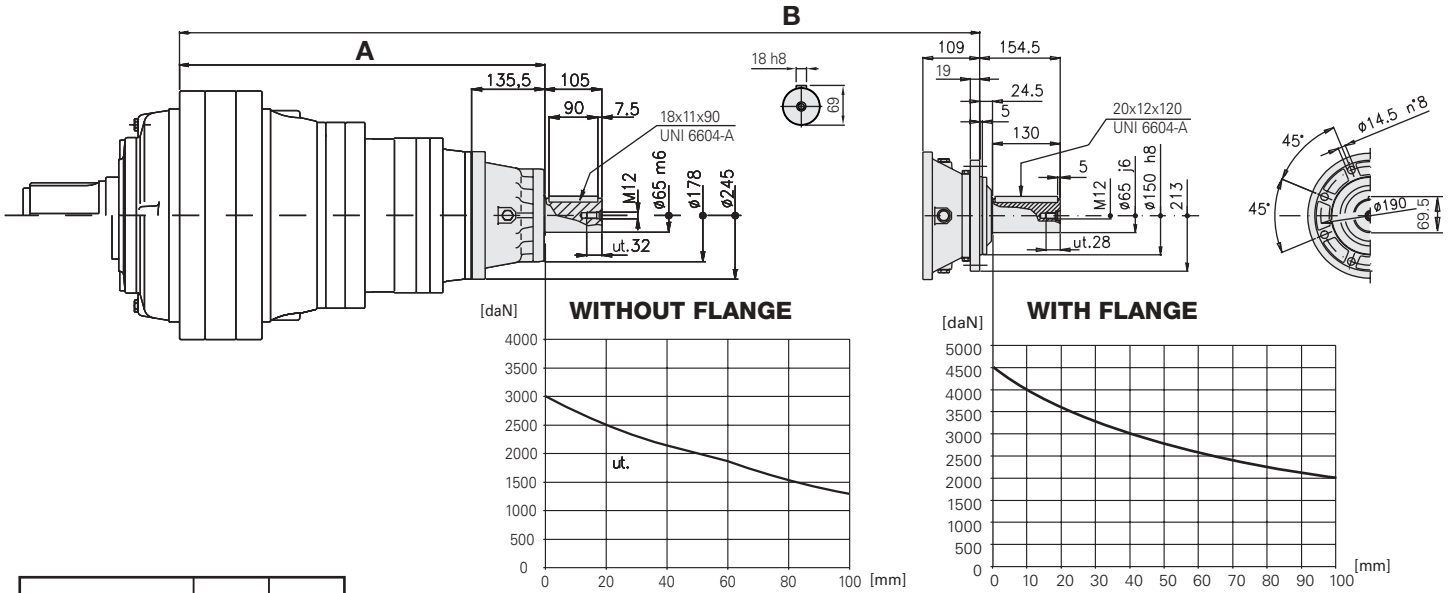
SERIES L MALE LIGHT INPUT



TYPE	A
RR 6300Q M...	708
RR 6300Q FS	708

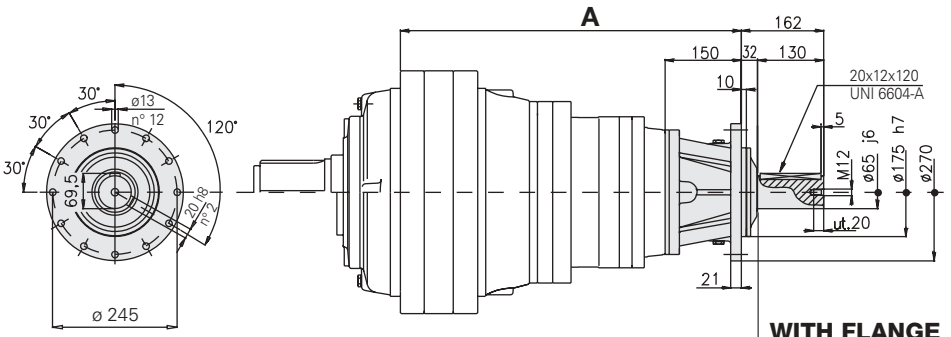
TYPE	B
RA 6300T M...	617,5
RA 6300T FS	617,5

SERIES M MALE MEDIUM INPUT

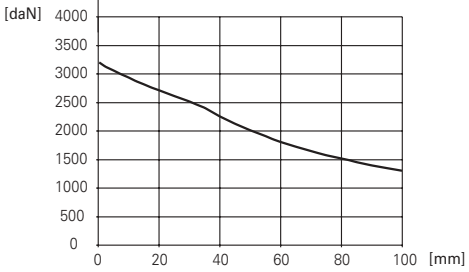


TYPE	A	B
RR 6300Q M...	666	639,5
RR 6300Q FS	666	639,5

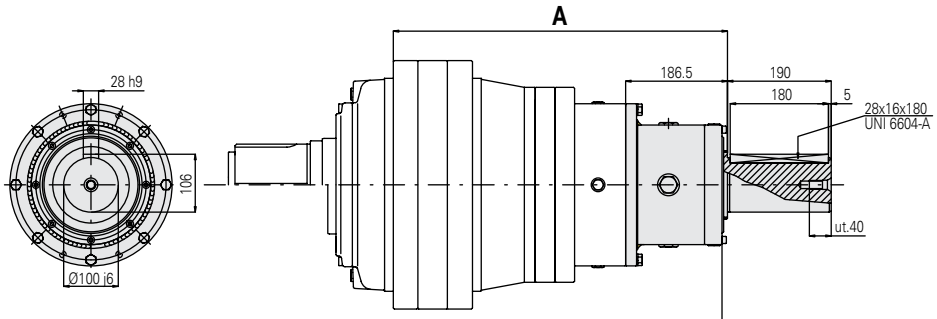
SERIES P MALE HEAVY INPUT



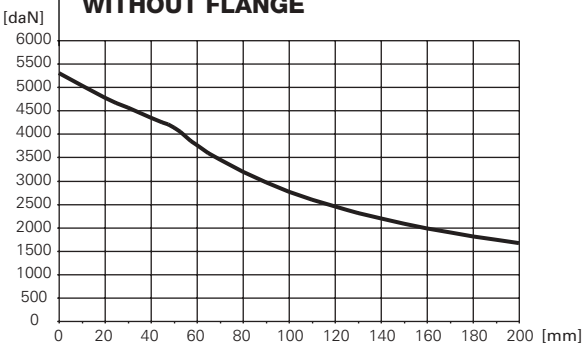
WITH FLANGE



TYPE	A
RR 6300T M...	668,5
RR 6300T FS	668,5



WITHOUT FLANGE

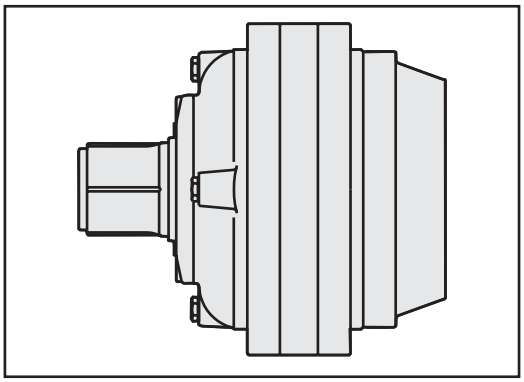


TYPE	A
RR 6300 M...	612
RR 6300 FS	612

Notes

SIZE 8000 REDUCTION GEARS

Tab. A

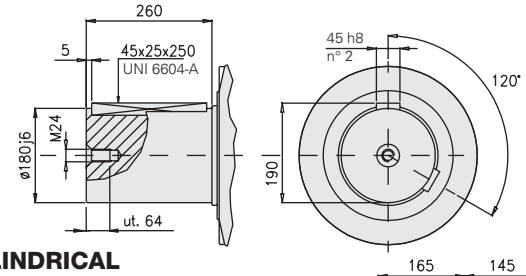


TYPE	RR 8000 M... RR 8000 FS	RR 8000D M... RR 8000D FS	RR 8000T M... RR 8000T FS	RR 8000Q M... RR 8000Q FS
Number of stages	1	2	3	4
Type of input	H	E	C	B
Max. input revs n1 (min^{-1})	250	1000	2500	3500

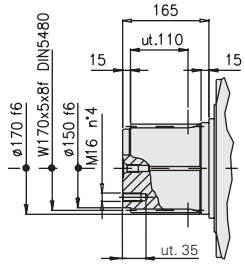
TYPE		RA 8000D M... RA 8000D FS	RA 8000T M... RA 8000T FS	
Number of stages	-	2	3	-
Type of input	-	C	B	-
Max. input revs n1 (min^{-1})	-	1000	2500	-

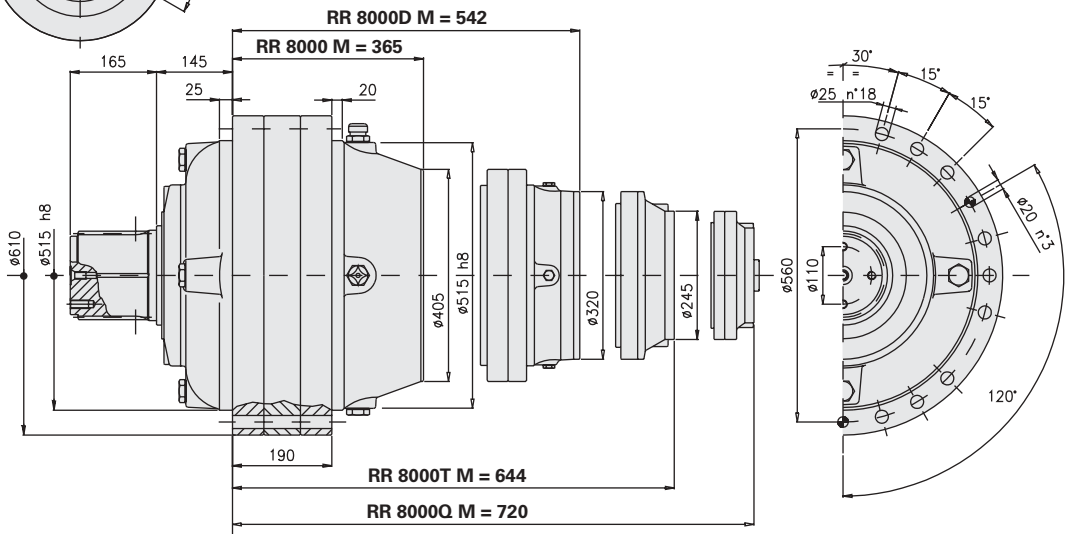
MALE LINEAR VERSION RR 8000 M... - RR 8000D M... - RR 8000T M... - RR 8000Q M...

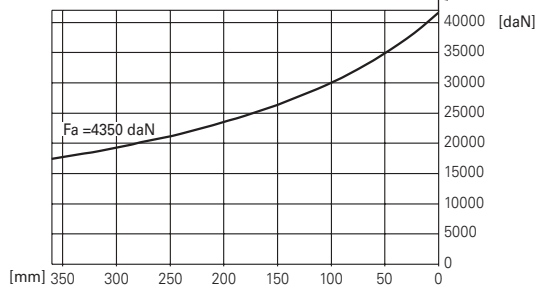
CYLINDRICAL



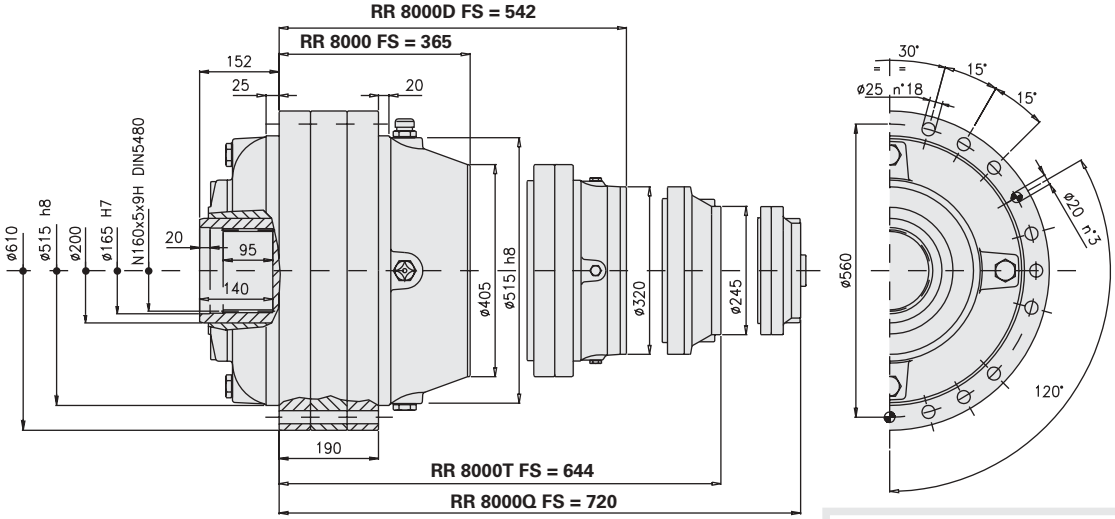
SPLINED







FEMALE LINEAR VERSION RR 8000 FS - RR 8000D FS - RR 8000T FS - RR 8000Q FS



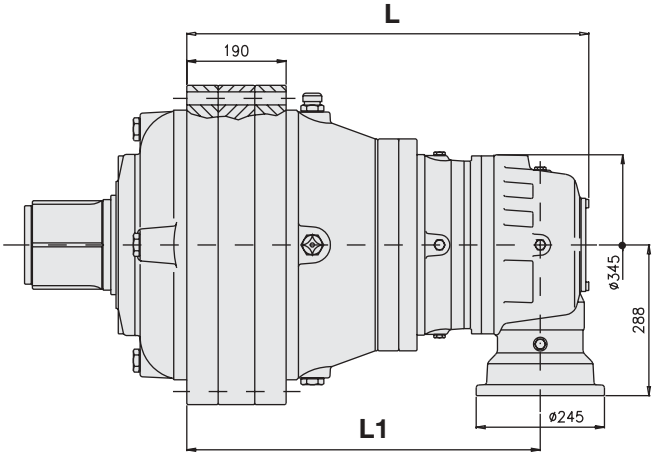
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

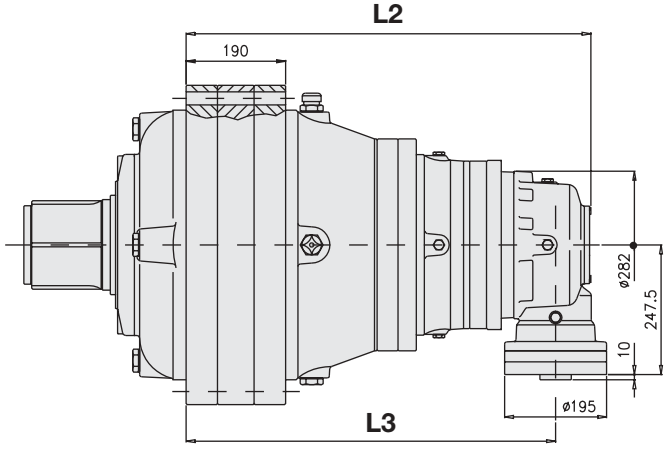
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 8000 M... RR 8000 FS			RR 8000D M... RR 8000D FS			RR 8000T M... RR 8000T FS			RR 8000Q M... RR 8000Q FS		
PART. No. 8000/...	...../1	T2 daNm	PART. No. 8000/...	...../1	T2 daNm	PART. No. 8000/...	...../1	T2 daNm	PART. No. 8000/...	...../1	T2 daNm
37	3,72	9000	163	16,36	9000	654	65,44	9000	3272	327,20	9000
40	4,09	9000	273	27,30	9000	948	94,89	9000	3795	379,55	9000
52	5,25	9000	328	32,81	9000	1145	114,52	9000	4580	458,08	9000
62	6,23	7800	389	38,94	7800	1488	148,88	9000	5726	572,60	9000
						1789	178,94	8200	6642	664,22	9000
						2296	229,69	9000	7443	744,38	9000
						2725	272,56	7800	8016	801,64	9000
									8634	863,48	9000
									10421	1042,93	9000
									12525	1252,56	8200
									13377	1337,70	9000
									16078	1607,81	9000
									19079	1907,94	7800

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 8000D M... RA 8000D FS			RA 8000T M... RA 8000T FS					
PART. No. 8000/...	...../1	T2 daNm	PART. No. 8000/...	...../1	T2 daNm			
446	44,61	9000	2617	261,76	9000			
744	74,45	9000	3795	379,55	9000			
894	89,48	9000	4580	458,08	9000			
1061	106,18	7800	5955	595,5	9000			
			7157	715,75	8200			
			9187	918,75	9000			
			10902	1090,25	7800			

MALE ANGULAR VERSION RA 8000D M...

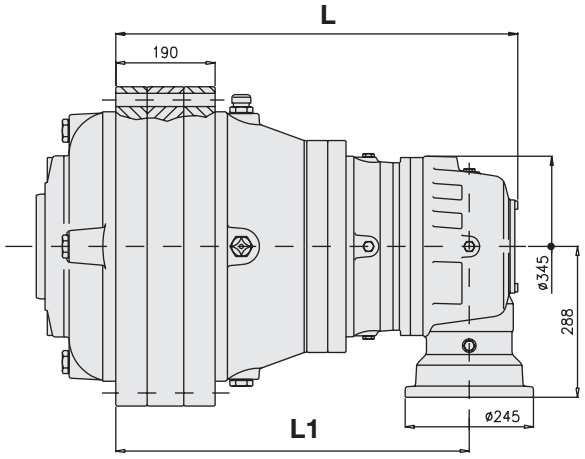


MALE ANGULAR VERSION RA 8000T M...

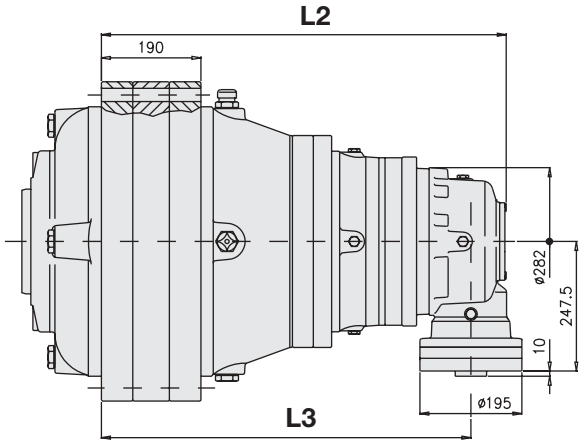


TYPE	L	L1	L2	L3
RA 8000D M...	768	675,5	–	–
RA 8000T M...	–	–	773,5	706

FEMALE ANGULAR VERSION RA 8000D FS



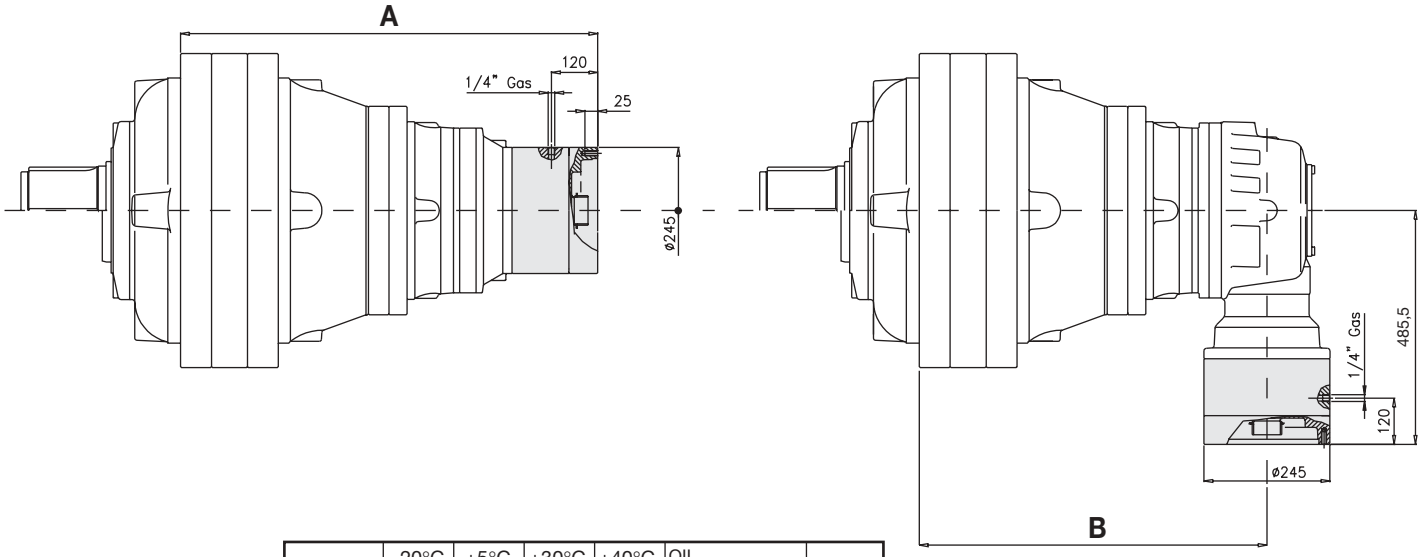
FEMALE ANGULAR VERSION RA 8000T FS



TYPE	L	L1	L2	L3
RA 8000D FS	768	675,5	–	–
RA 8000T FS	–	–	773,5	706

SEE THE INPUT DIMENSIONS ON PAGE 148

BRAKES SERIES RF 170 ÷ 290

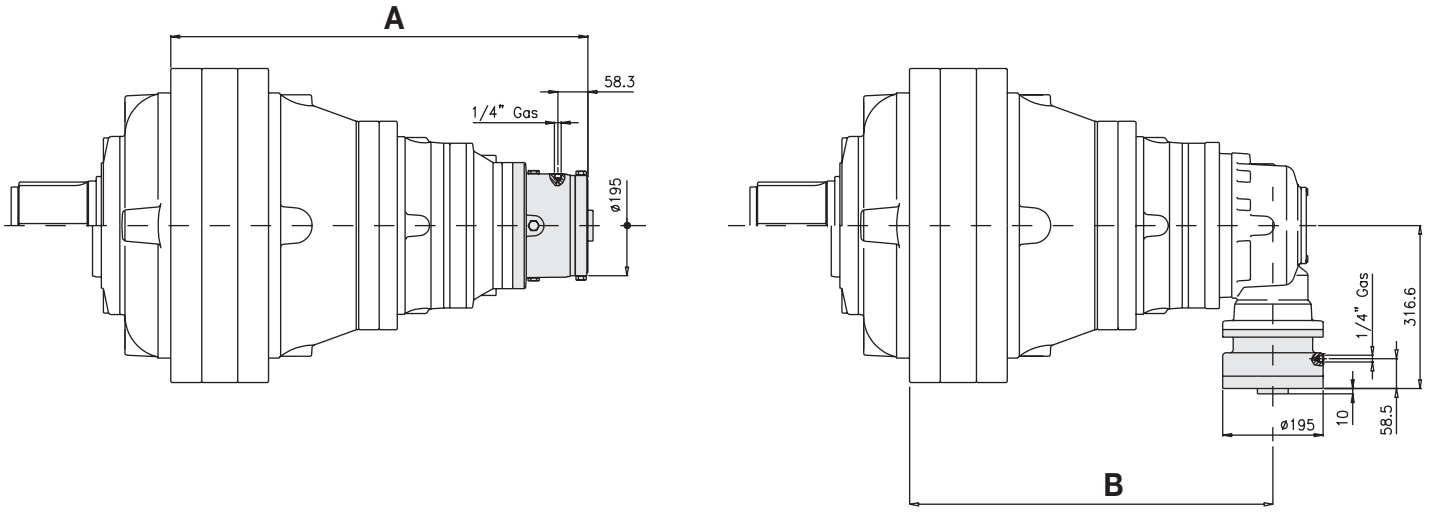


Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	Kg 43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

TYPE	A	B
RR 8000T M...	841	–
RA 8000D M...	–	675,5
RR 8000T FS	841	–
RA 8000D FS	–	675,5

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



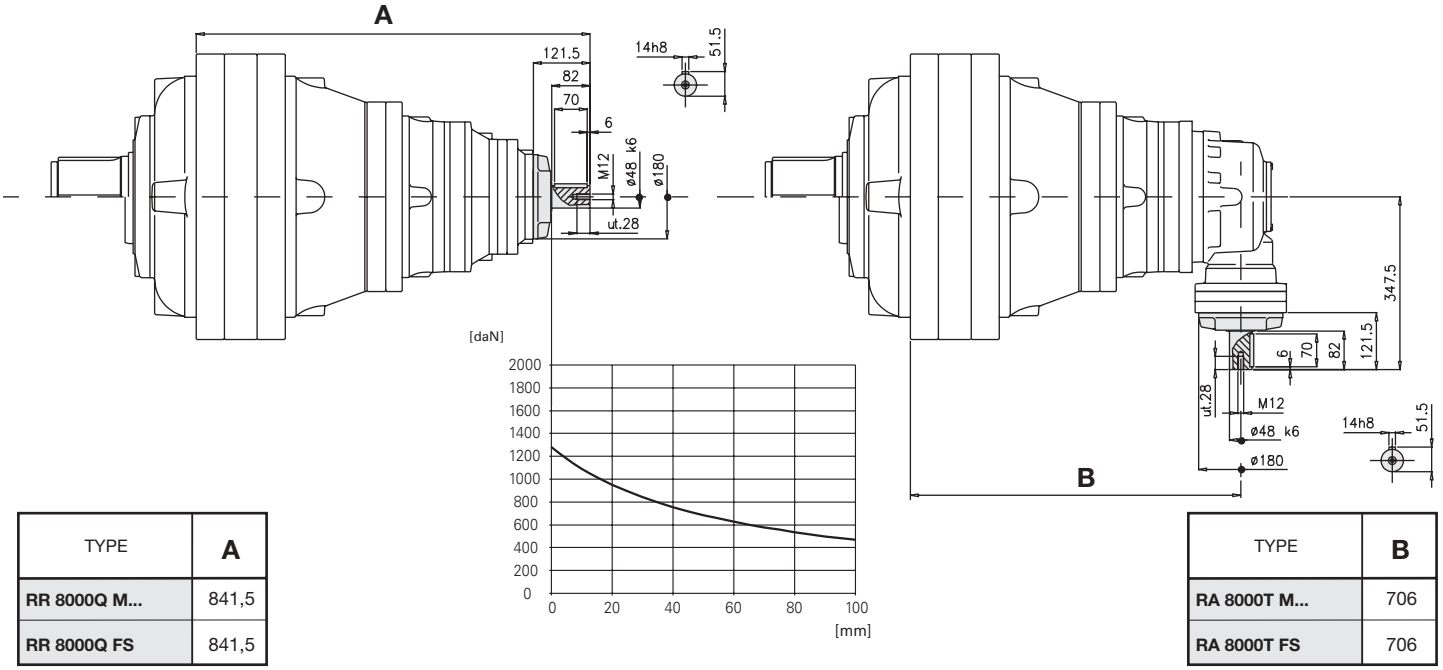
Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	Kg 21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

TYPE	A	B
RR 8000Q M...	810,5	–
RA 8000T M...	–	706
RR 8000Q FS	810,5	–
RA 8000T FS	–	706

SEE THE INPUT DIMENSIONS ON PAGE 149

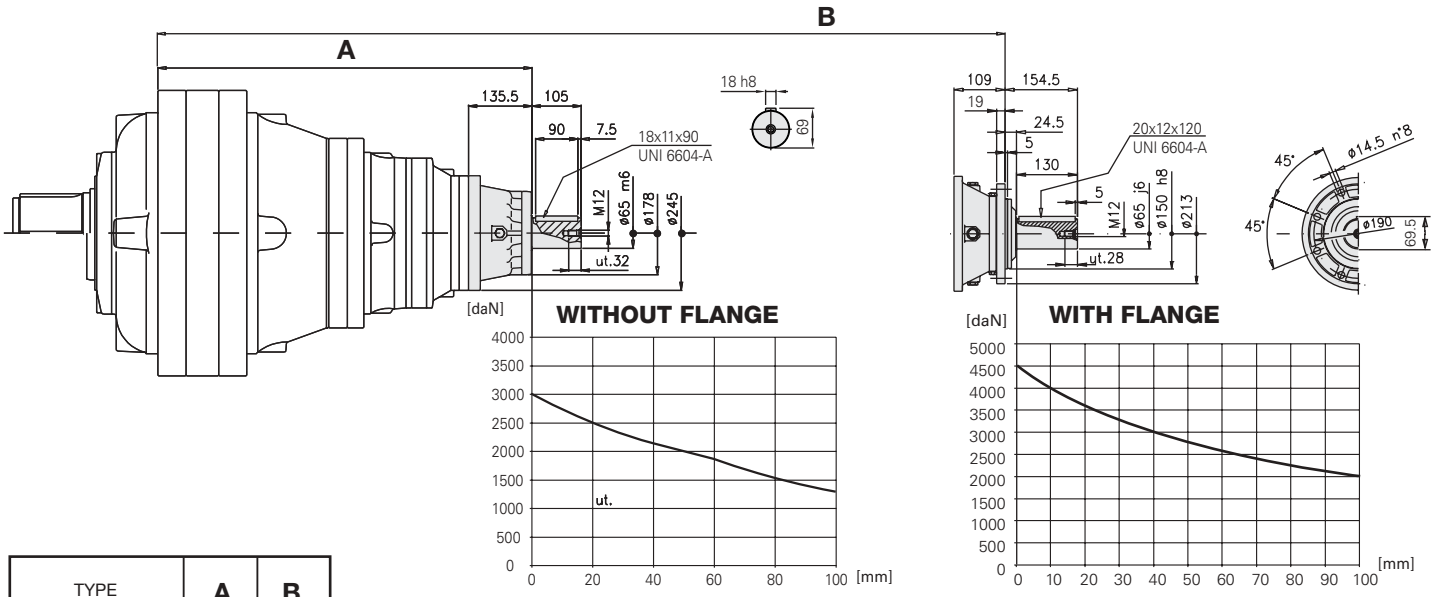
SERIES L MALE LIGHT INPUT



TYPE	A
RR 8000Q M...	841,5
RR 8000Q FS	841,5

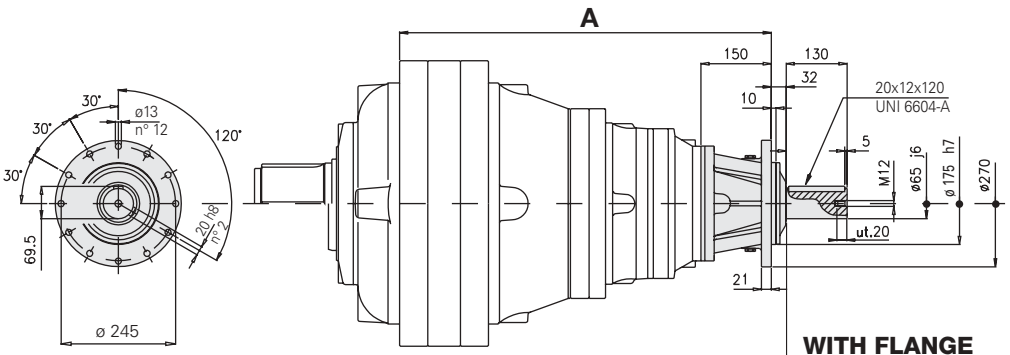
TYPE	B
RA 8000T M...	706
RA 8000T FS	706

SERIES M MALE MEDIUM INPUT

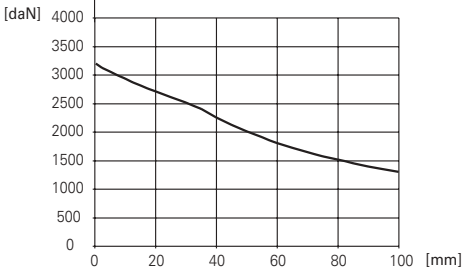


TYPE	A	B
RR 8000Q M...	799,5	773
RR 8000Q FS	799,5	773

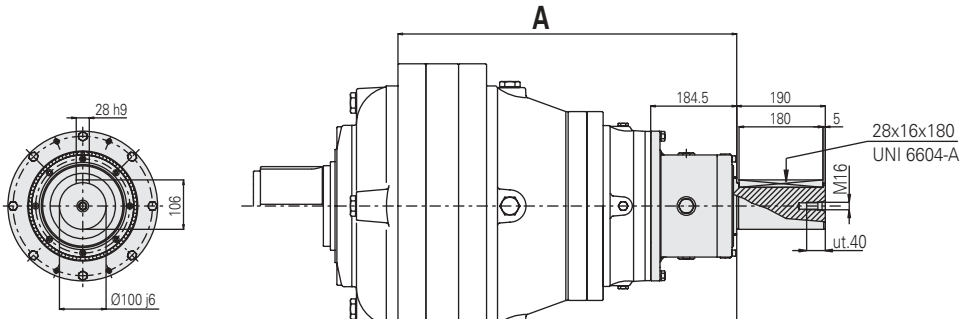
SERIES P MALE HEAVY INPUT



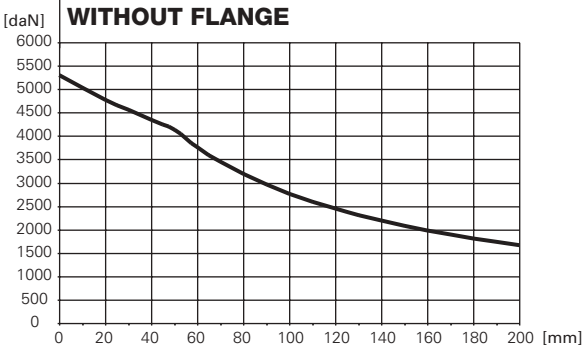
WITH FLANGE



TYPE	A
RR 8000T M...	794
RR 8000T FS	794



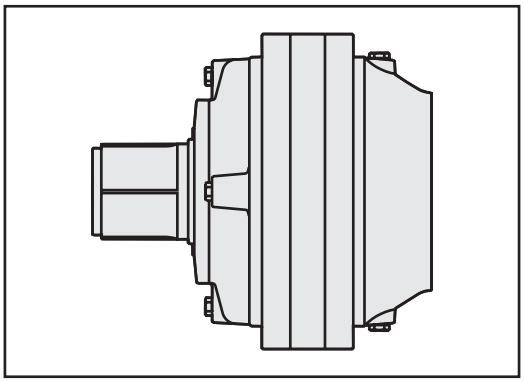
WITHOUT FLANGE



TYPE	A
RR 8000D M...	726,5
RR 8000D FS	726,5

Notes

SIZE 12500 REDUCTION GEARS

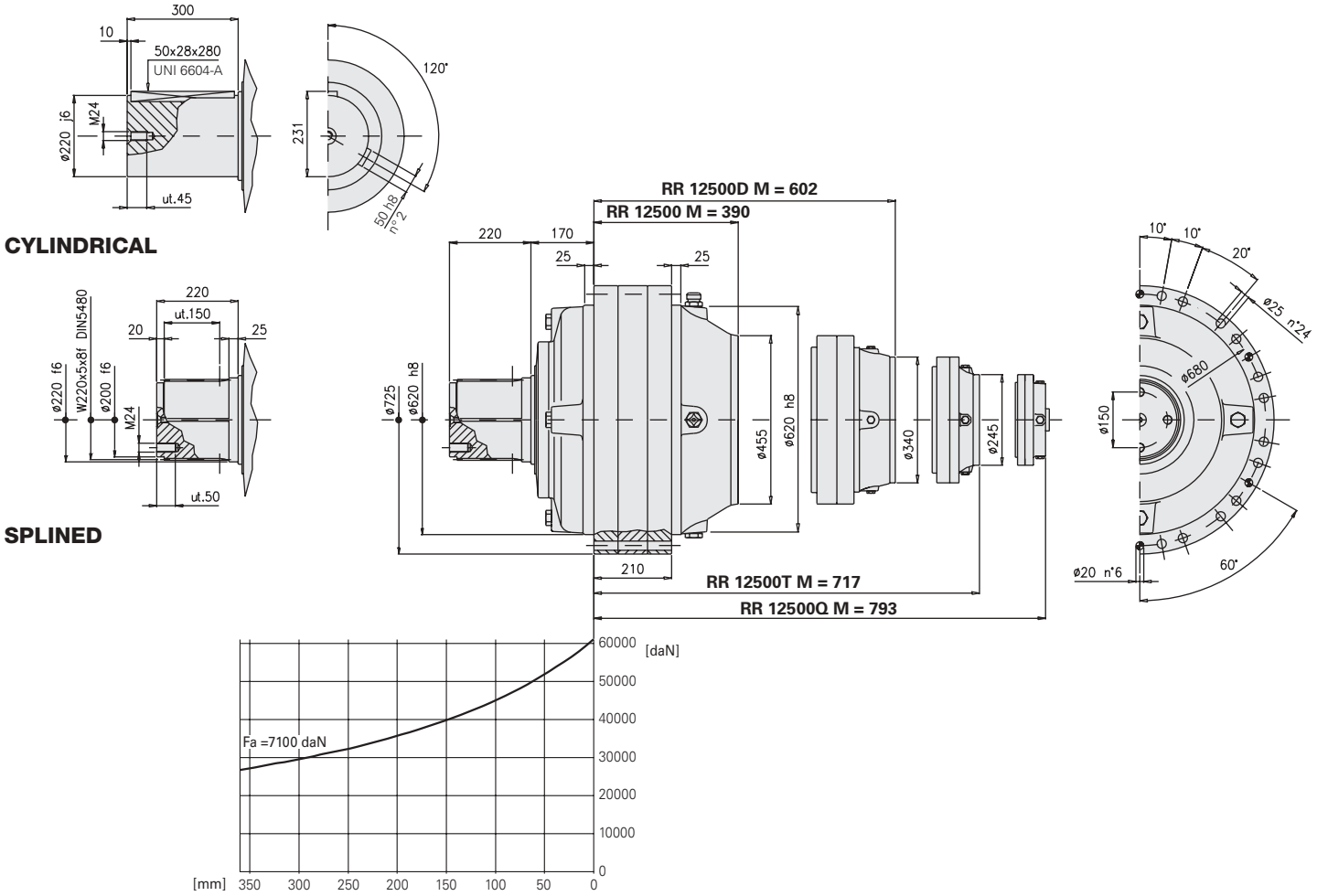


Tab. A

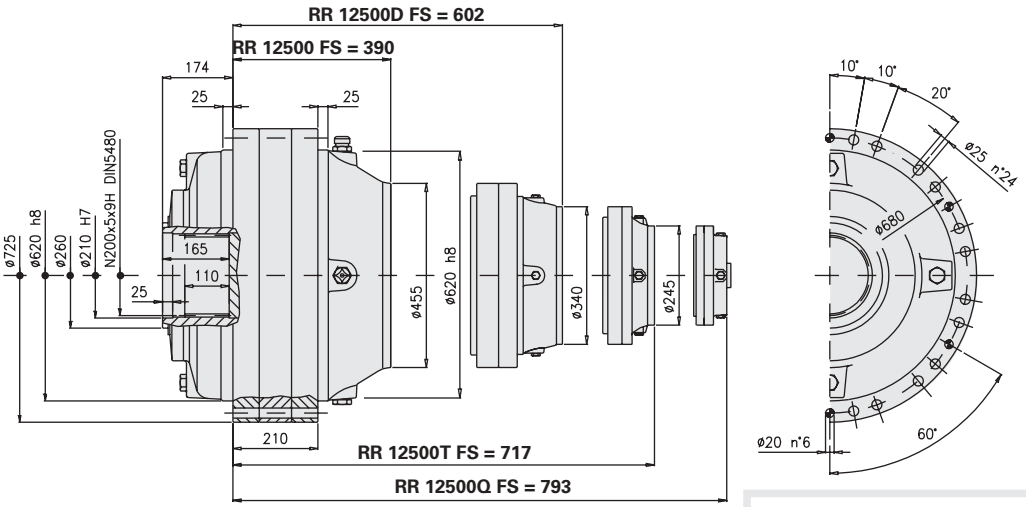
TYPE	RR 12500 M... RR 12500 FS	RR 12500D M... RR 12500D FS	RR 12500T M... RR 12500T FS	RR 12500Q M... RR 12500Q FS
Number of stages	1	2	3	4
Type of input	I	F	C	B
Max. input revs n1 (min^{-1})	210	800	2000	3500

TYPE		RA 12500D M... RA 12500D FS	RA 12500T M... RA 12500T FS	
Number of stages	-	2	3	-
Type of input	-	C	B	-
Max. input revs n1 (min^{-1})	-	800	2000	-

MALE LINEAR VERSION RR 12500 M... - RR 12500D M... - RR 12500T M... - RR 12500Q M...



FEMALE LINEAR VERSION RR 12500 FS - RR 12500D FS - RR 12500T FS - RR 12500Q FS



SEE THE INPUT DIMENSIONS ON PAGES 144-147

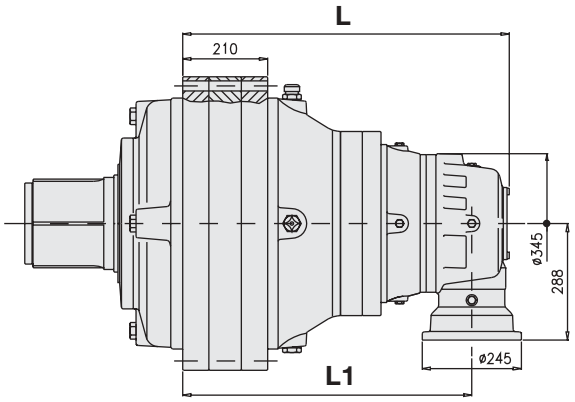
SIZE 12500 REDUCTION GEARS

Tab. B

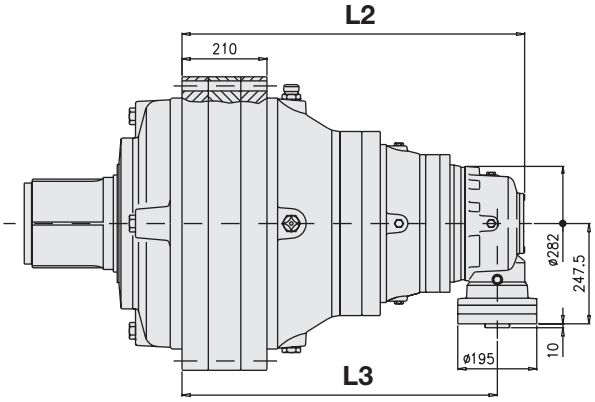
PART No. - RATIOS - TORQUES (ISO Standards)												
R 12500 M... RR 12500 FS			RR 12500D M... RR 12500D FS			RR 12500T M... RR 12500T FS			RR 12500Q M... RR 12500Q FS			
PART. No. 12500/...	...../1	T2 daNm	PART. No. 12500/...	...../1	T2 daNm	PART. No. 12500/...	...../1	T2 daNm	PART. No. 12500/...	...../1	T2 daNm	
35	3,51	20000	160	16,05	20000	626	62,61	20000	2504	250,45	20000	
41	4,17	20000	264	26,45	17000	1006	100,66	19250	3130	313,06	20000	
52	5,29	17000	317	31,74	17000	1237	123,79	17000	4026	402,65	19250	
62	6,21	12700	372	37,26	12700	1631	163,14	17000	5033	503,31	19250	
						1990	199,01	17000	6189	618,93	17000	
						2336	233,62	12700	7885	788,53	17000	
									8665	866,50	17000	
									8938	893,89	17000	
									11420	1142,01	17000	
									11542	1154,26	17000	
									13930	1393,07	17000	

PART No. - RATIOS - TORQUES (ISO Standards)								
RA 12500D M... RA 12500D FS			RA 12500T M... RA 12500T FS					
PART. No. 12500/...	...../1	T2 daNm	PART. No. 12500/...	...../1	T2 daNm			
437	43,78	9800	2504	250,45	13150			
721	72,13	16150	4026	402,65	19300			
865	86,55	17000	4951	495,14	17000			
1016	101,61	12700	6525	652,57	17000			
			7960	796,04	17000			
			9344	934,48	12700			

MALE ANGULAR VERSION RA 12500D M...

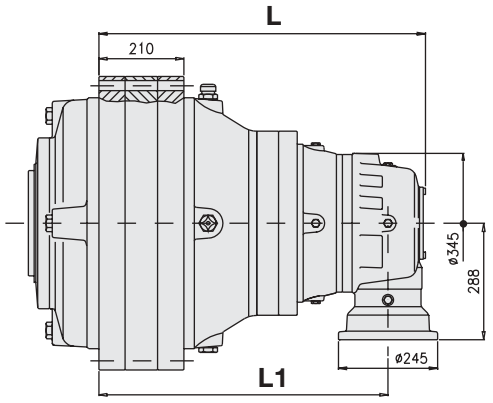


MALE ANGULAR VERSION RA 12500T M...

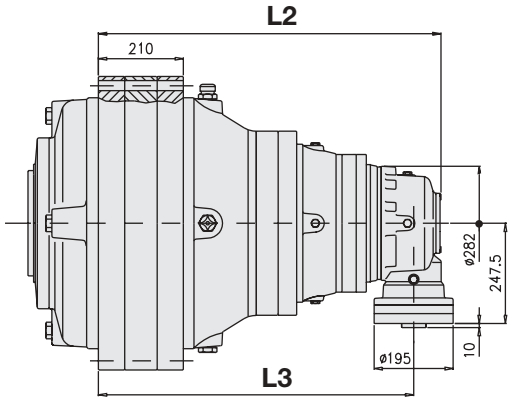


TYPE	L	L1	L2	L3
RA 12500D M...	807	714,5	–	–
RA 12500T M...	–	–	846,5	779

FEMALE ANGULAR VERSION RA 12500D FS



FEMALE ANGULAR VERSION RA 12500T FS

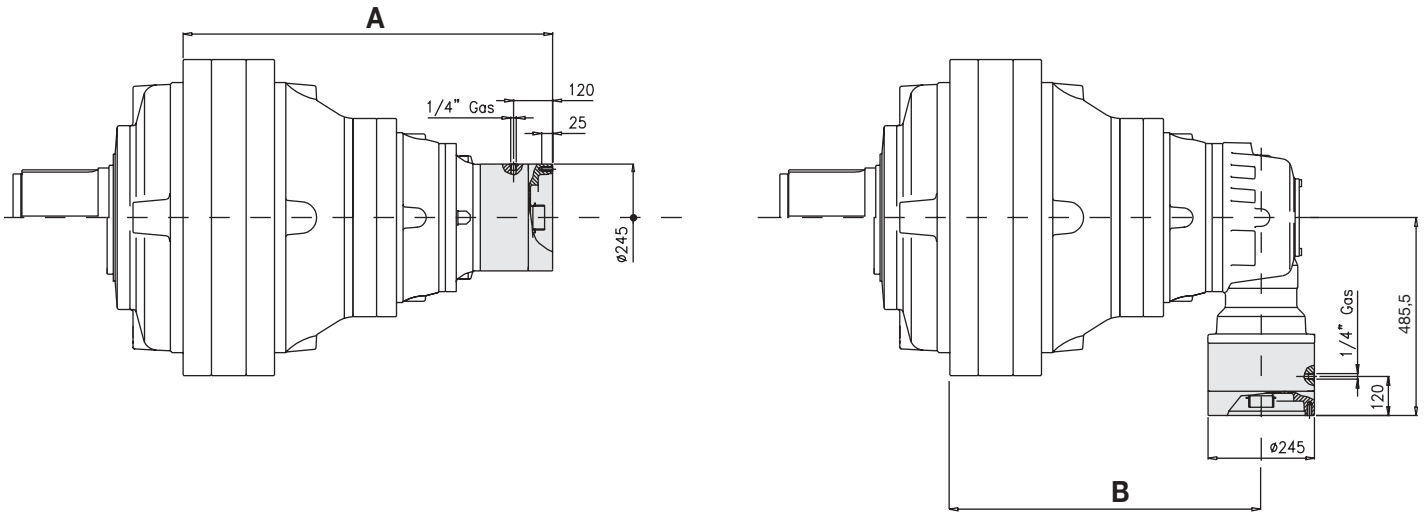


TYPE	L	L1	L2	L3
RA 12500D FS	807	714,5	–	–
RA 12500T FS	–	–	846,5	779

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 12500 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290

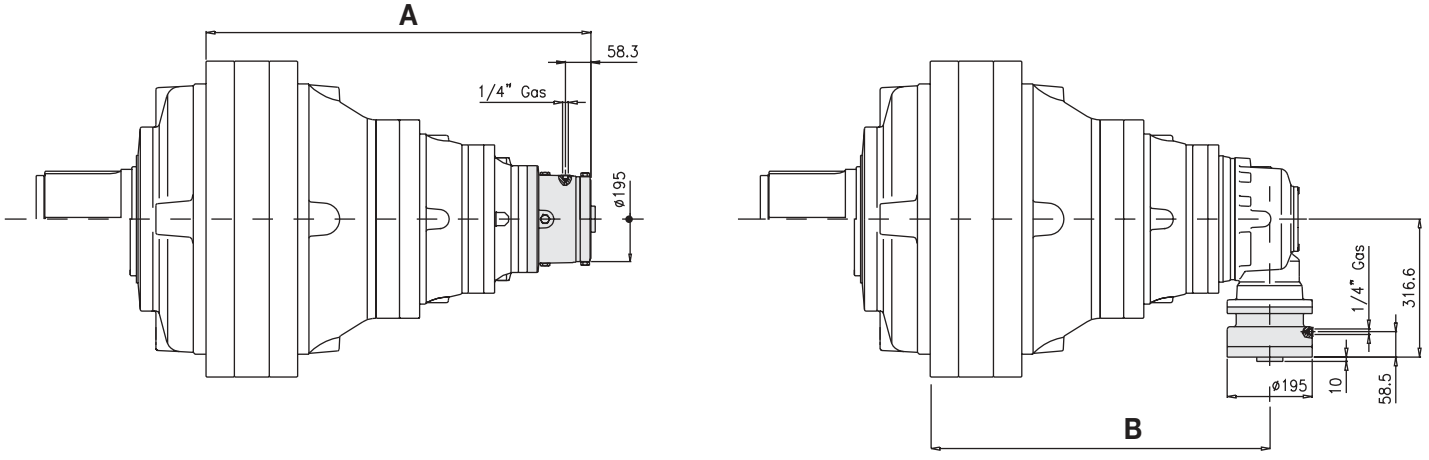


Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

TYPE	A	B
RR 12500T M...	914	–
RA 12500D M...	–	714,5
RR 12500T FS	914	–
RA 12500D FS	–	714,5

BRAKES SERIES RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130



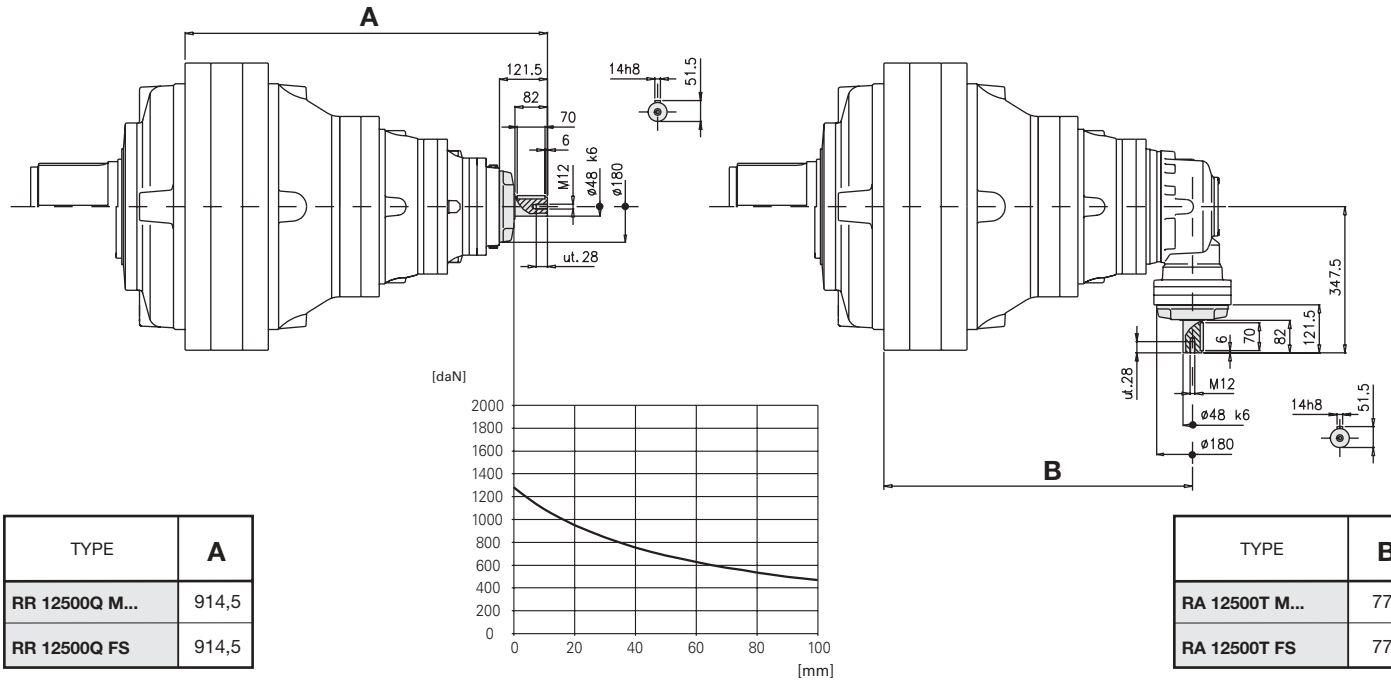
Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

TYPE	A	B
RR 12500Q M...	883,5	–
RA 12500T M...	–	779
RR 12500Q FS	883,5	–
RA 12500T FS	–	779

SEE THE INPUT DIMENSIONS ON PAGE 149

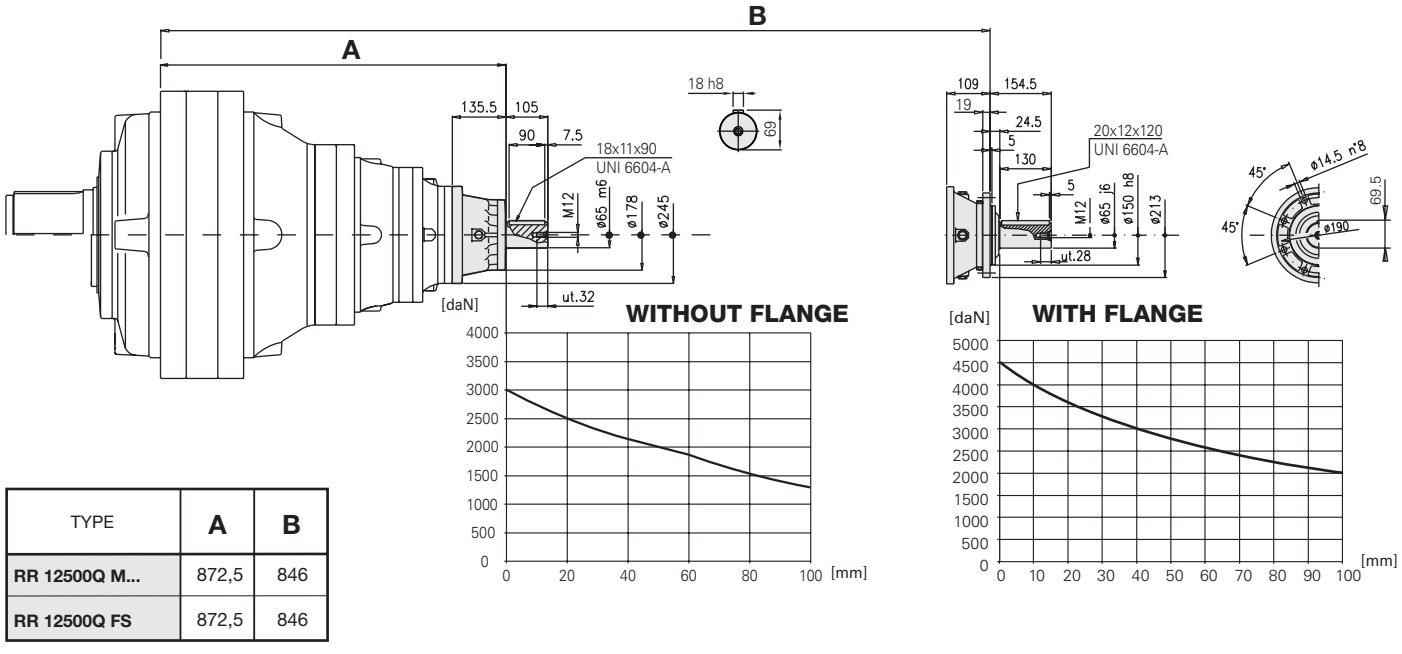
SERIES L MALE LIGHT INPUT



TYPE	A
RR 12500Q M...	914,5
RR 12500Q FS	914,5

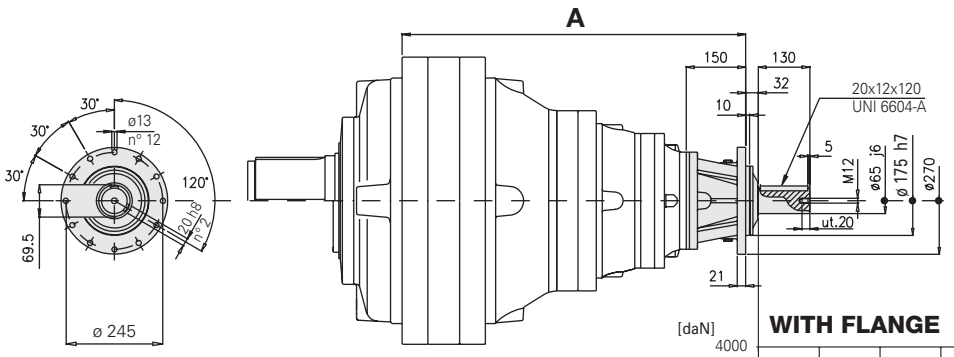
TYPE	B
RA 12500T M...	779
RA 12500T FS	779

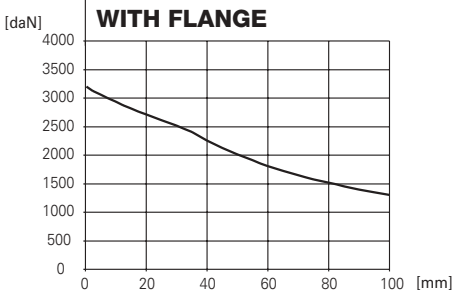
SERIES M MALE MEDIUM INPUT



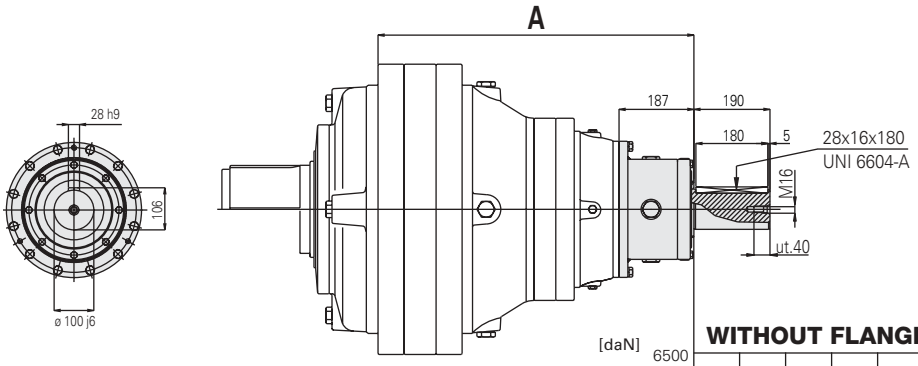
TYPE	A	B
RR 12500Q M...	872,5	846
RR 12500Q FS	872,5	846

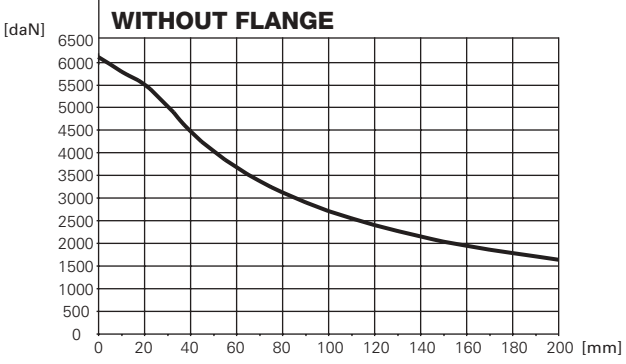
SERIES P MALE HEAVY INPUT





TYPE	A
RR 12500T M...	867
RR 12500T FS	867



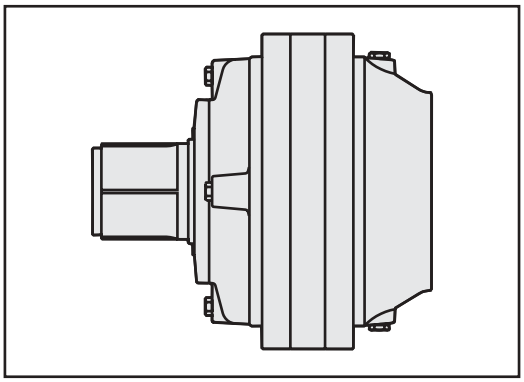


TYPE	A
RR 12500D M...	789
RR 12500D FS	789

Notes

SIZE 16000 REDUCTION GEARS

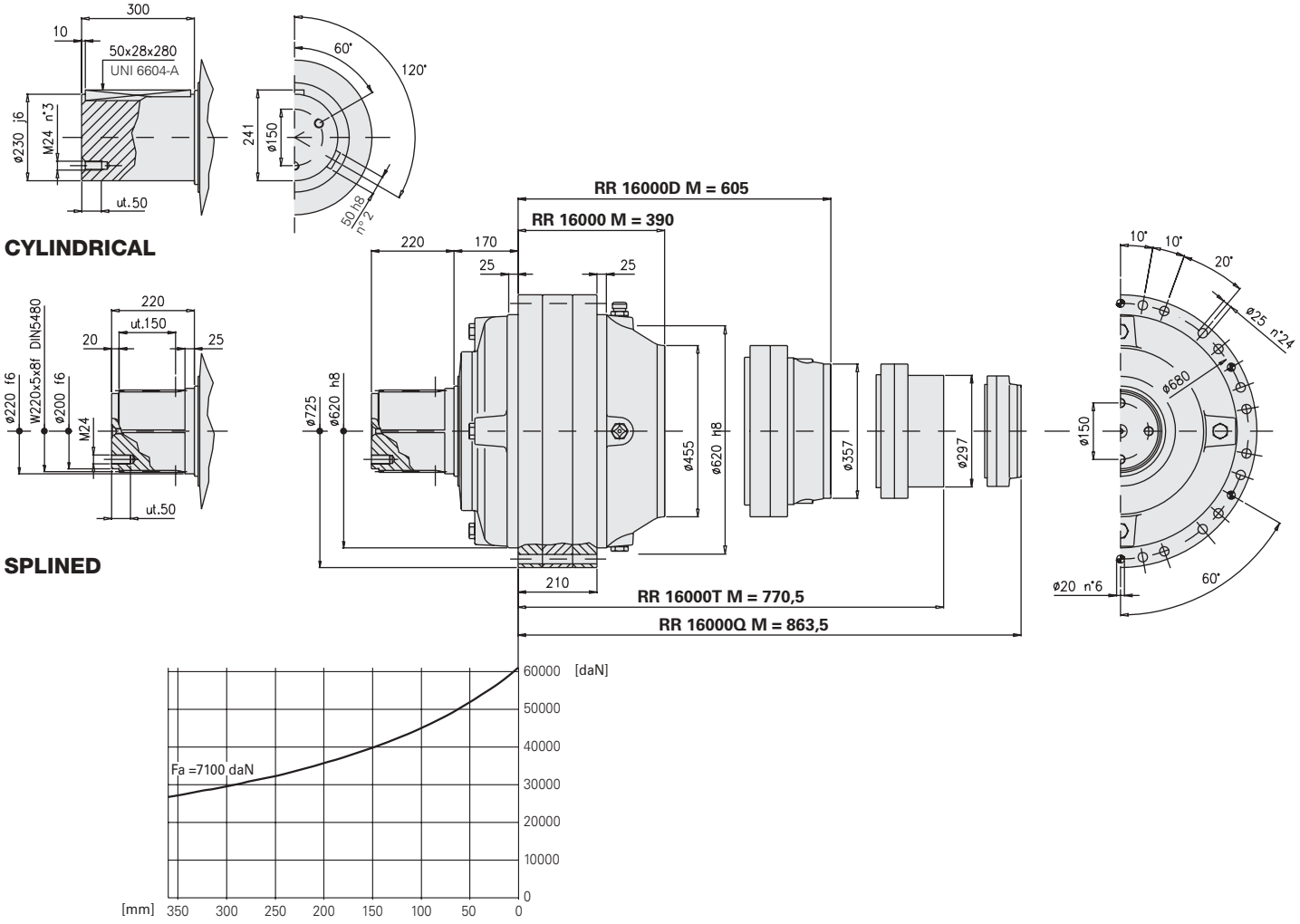
Tab. A



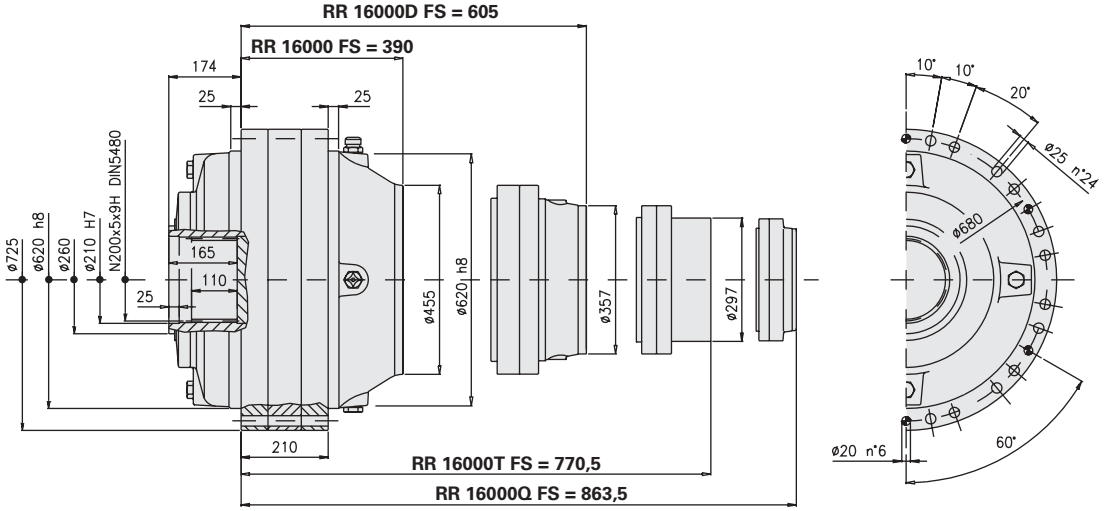
TYPE	RR 16000 M... RR 16000 FS	RR 16000D M... RR 16000D FS	RR 16000T M... RR 16000T FS	RR 16000Q M... RR 16000Q FS
Number of stages	1	2	3	4
Type of input	I	G	D	C
Max. input revs n1 (min^{-1})	210	800	2000	3000

TYPE			RA 16000T M... RA 16000T FS	RA 16000Q M... RA 16000Q FS
Number of stages	-	-	3	4
Type of input	-	-	C	B
Max. input revs n1 (min^{-1})	-	-	2000	3000

MALE LINEAR VERSION RR 16000 M... - RR 16000D M... - RR 16000T M... - RR 16000Q M...



FEMALE LINEAR VERSION RR 16000 FS - RR 16000D FS - RR 16000T FS - RR 16000Q FS



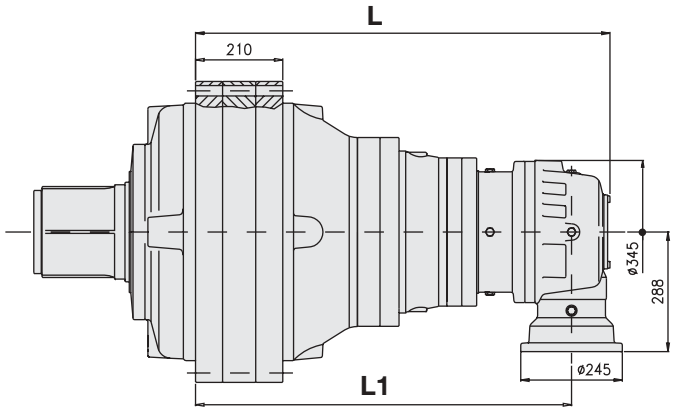
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

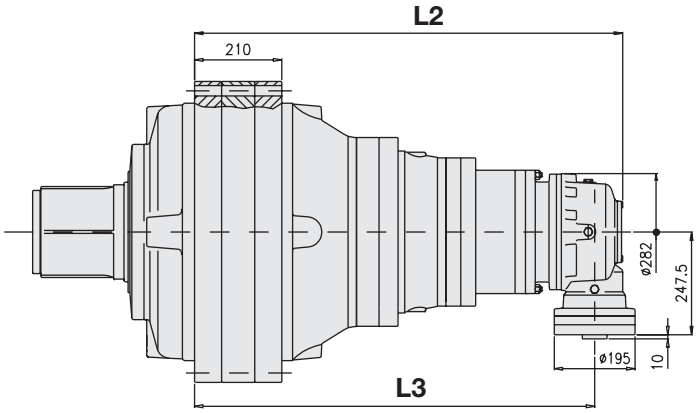
PART No. - RATIOS - TORQUES (ISO Standards)												
R 16000 M... RR 16000 FS			RR 16000D M... RR 16000D FS			RR 16000T M... RR 16000T FS			RR 16000Q M... RR 16000Q FS		
PART. No. 16000/...	...../1	T2 daNm	PART. No. 16000/...	...../1	T2 daNm	PART. No. 16000/...	...../1	T2 daNm	PART. No. 16000/...	...../1	T2 daNm
41	4,17	22000	158	15,89	22000	643	64,35	22000	2766	276,68	22000
						850	85,00	22000	3519	351,97	22000
						1039	103,91	21100	4136	413,61	22000
									5463	546,37	22000
									6714	671,49	22000
									8935	893,59	21100

PART No. - RATIOS - TORQUES (ISO Standards)								
			RA 16000T M... RA 16000T FS			RA 16000Q M... RA 16000Q FS		
			PART. No. 16000/...	...../1	T2 daNm	PART. No. 16000/...	...../1	T2 daNm
			1754	175,47	22000	11067	1106,74	22000
			2317	231,79	22000	14078	1407,87	22000
			2833	283,35	21100	16544	1654,44	22000
						21855	2185,50	22000
						26859	2685,97	22000
						35743	3574,35	21100

MALE ANGULAR VERSION RA 16000T M...

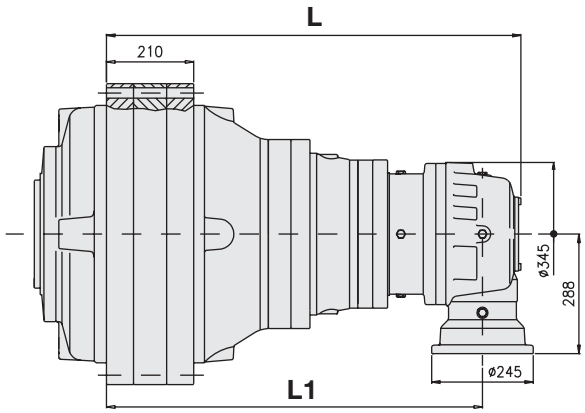


MALE ANGULAR VERSION RA 16000Q M...

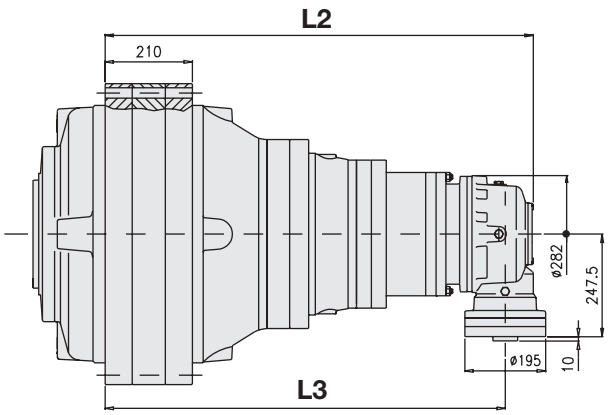


TYPE	L	L1	L2	L3
RA 16000T M...	998	905,5	–	–
RA 16000Q M...	–	–	1030	962,5

FEMALE ANGULAR VERSION RA 16000T F...



FEMALE ANGULAR VERSION RA 16000Q FS

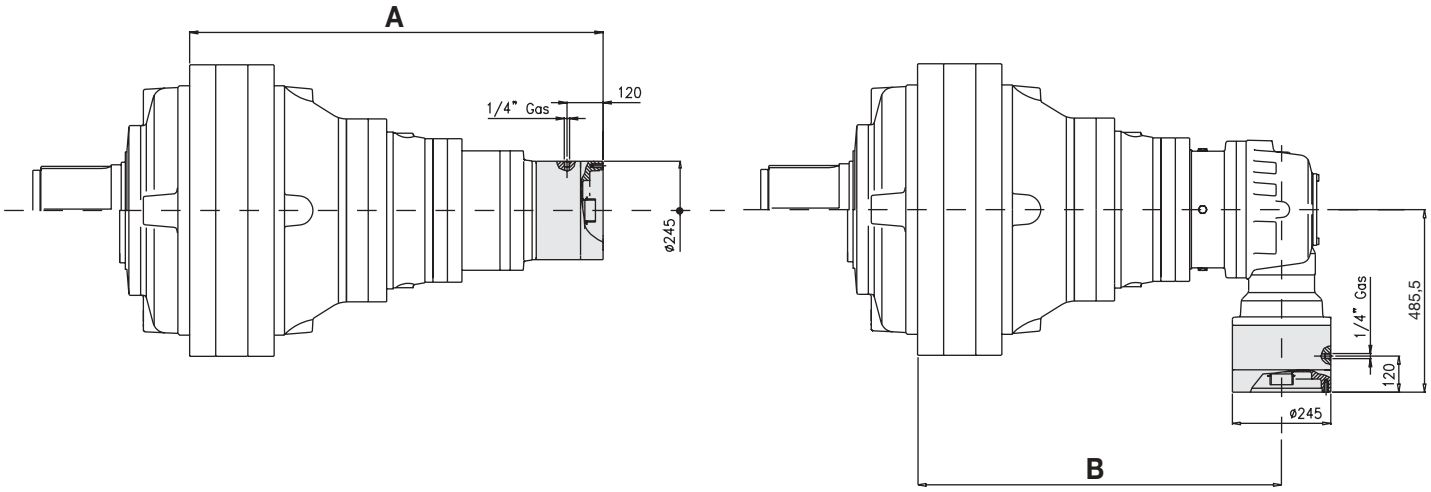


TYPE	L	L1	L2	L3
RA 16000T FS	998	905,5	–	–
RA 16000Q FS	–	–	1030	962,5

SEE THE INPUT DIMENSIONS ON PAGE 148

SIZE 16000 REDUCTION GEARS

BRAKES SERIES RF 170 ÷ 290

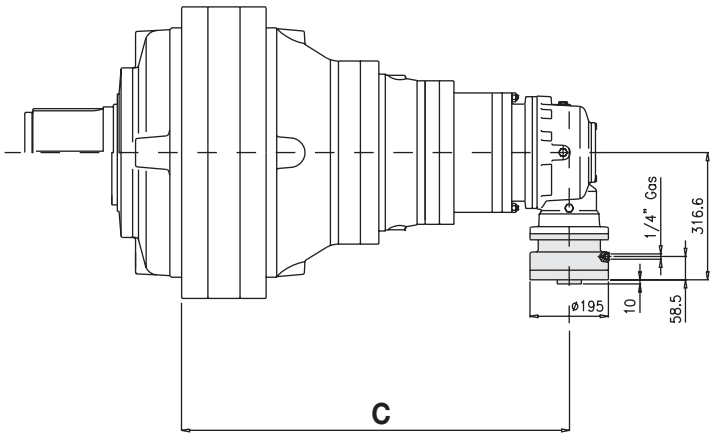


TYPE	A	B
RR 16000Q M...	1061	–
RR 16000Q FS	1061	–
RA 16000T M...	–	905,5
RA 16000T FS	–	905,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RFF 5/21 ÷ 5/130



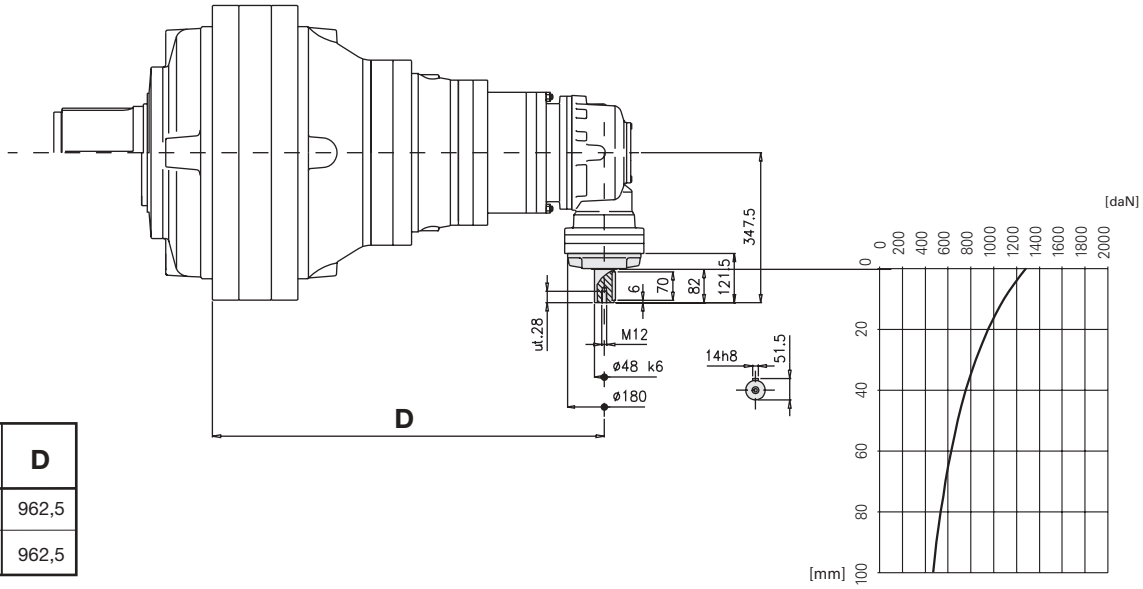
TYPE	C
RA 16000Q M...	962,5
RA 16000Q FS	962,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

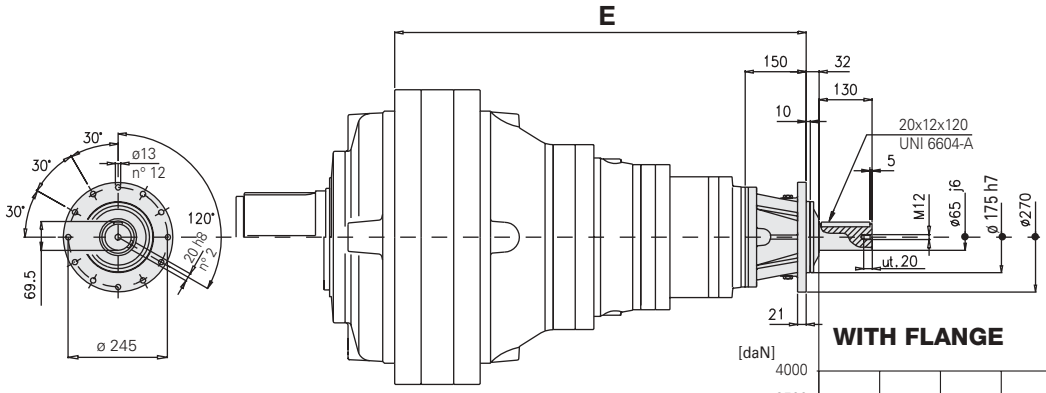
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT

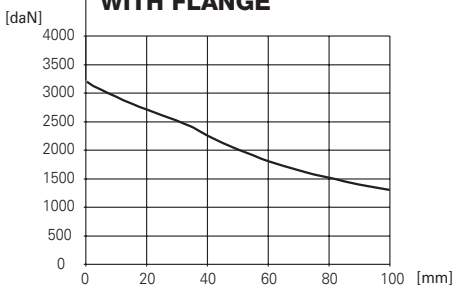


TYPE	D
RA 16000Q M...	962,5
RA 16000Q FS	962,5

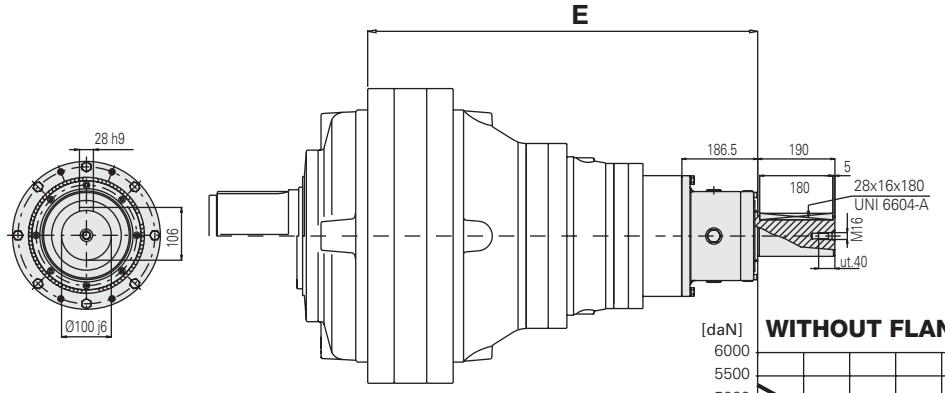
SERIES P MALE HEAVY INPUT



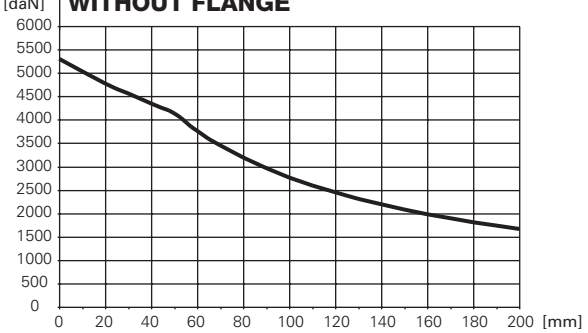
WITH FLANGE



TYPE	E
RR 16000Q M...	1013,5
RR 16000Q FS	1013,5



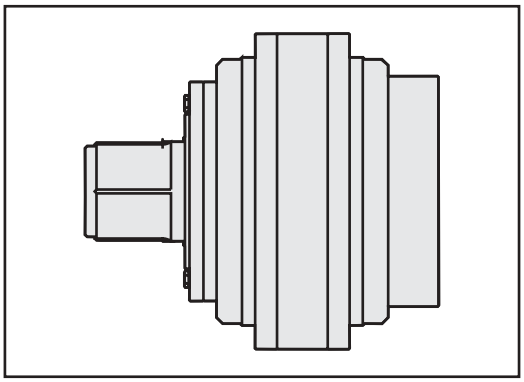
WITHOUT FLANGE



TYPE	E
RR 16000T M...	957
RR 16000T FS	957

SIZE 22000 REDUCTION GEARS

Tab. A

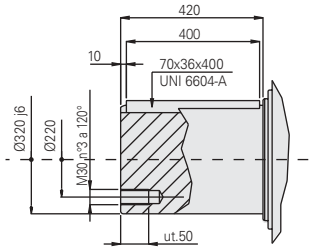


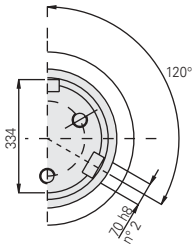
TYPE	RR 22000 M... RR 22000 FS	RR 22000D M... RR 22000D FS	RR 22000T M... RR 22000T FS	RR 22000Q M... RR 22000Q FS
Number of stages	1	2	3	4
Type of input	L	H	E	C
Max. input revs n1 (min^{-1})	150	250	1000	2000

TYPE			RA 22000T M... RA 22000T FS	RA 22000Q M... RA 22000Q FS
Number of stages	-	-	3	4
Type of input	-	-	C	B
Max. input revs n1 (min^{-1})	-	-	1000	2000

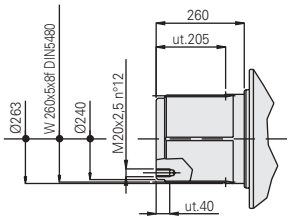
MALE LINEAR VERSION RR 22000 M... - RR 22000D M... - RR 22000T M... - RR 22000Q M...

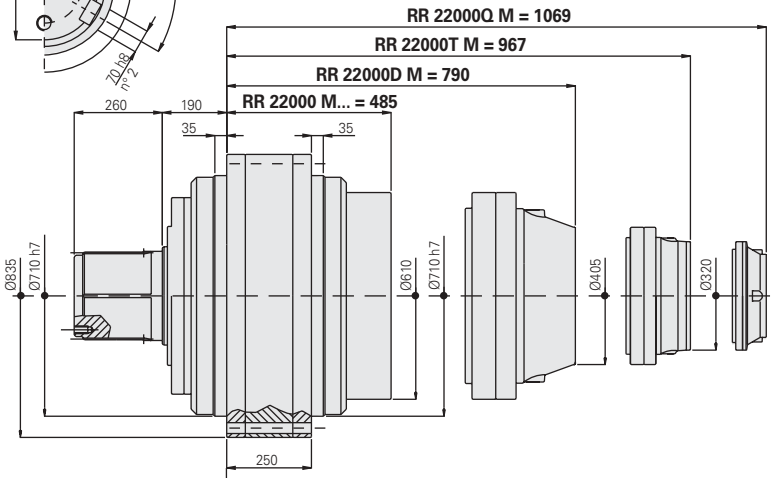
CYLINDRICAL

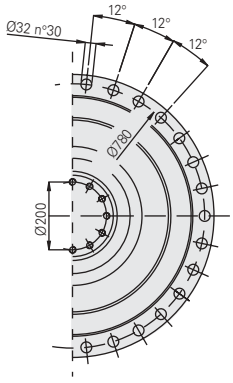


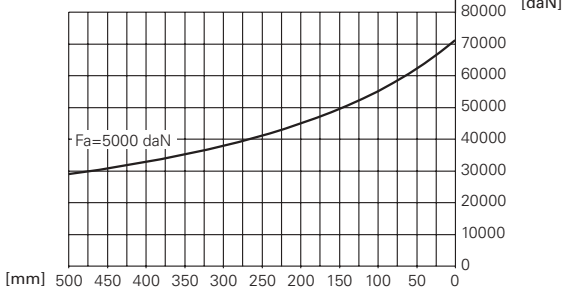


SPLINED

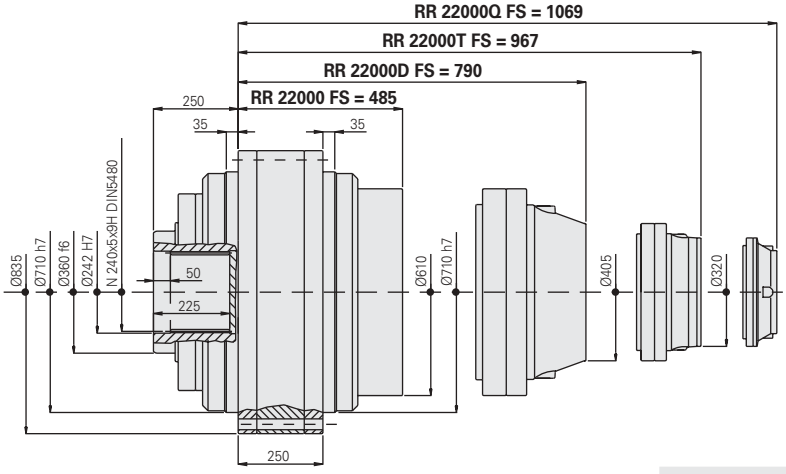


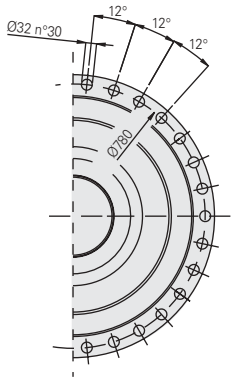






FEMALE LINEAR VERSION RR 22000 FS - RR 22000D FS - RR 22000T FS - RR 22000Q FS





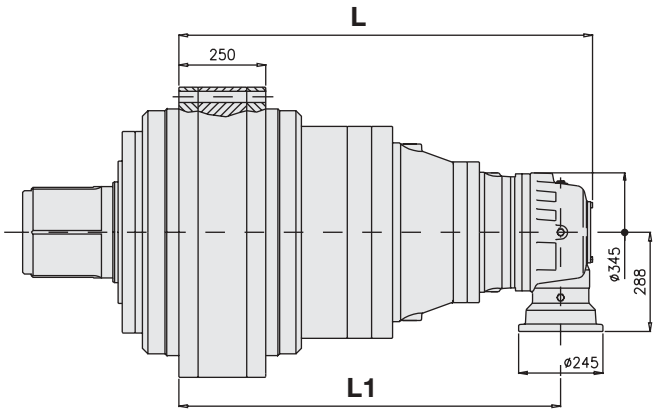
SEE THE INPUT DIMENSIONS ON PAGES 134-137

Tab. B

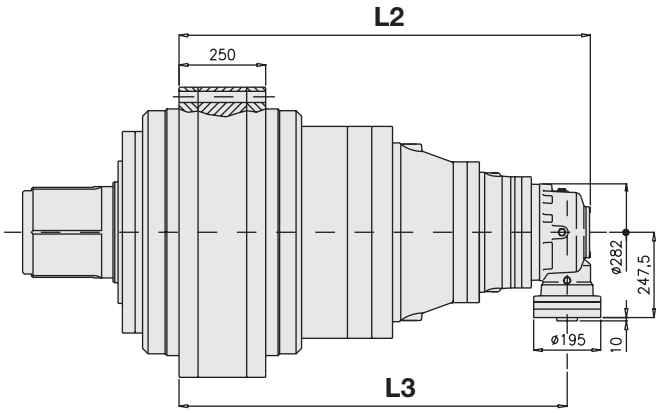
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 22000 M... RR 22000 FS			RR 22000D M... RR 22000D FS			RR 22000T M... RR 22000T FS			RR 22000Q M... RR 22000Q FS		
PART. No. 22000/...	...../1	T2 daNm	PART. No. 22000/...	...../1	T2 daNm	PART. No. 22000/...	...../1	T2 daNm	PART. No. 22000/...	...../1	T2 daNm
39	3,91	27000	159	15,99	27000	639	63,97	27000	3198	319,84	27000
49	4,94	27000	205	20,53	27000	831	83,16	27000	4072	407,27	27000
57	5,78	19000	243	24,36	27000	999	99,95	27000	4997	499,75	27000
70	7,09	16000	307	30,78	27000	1283	128,30	27000	6363	636,35	27000
			372	37,22	16000	1923	192,35	27000	8830	883,02	27000
			441	44,17	16000	2326	232,64	16000	10657	1065,72	27000
						2760	276,07	16000	16011	1601,19	16000
									19324	1932,47	16000

PART No. - RATIOS - TORQUES (ISO Standards)								
			RA 22000T M... RA 22000T FS			RA 22000Q M... RA 22000Q FS		
			PART. No. 22000/...	...../1	T2 daNm	PART. No. 22000/...	...../1	T2 daNm
			1744	174,44	27000	12793	1279,35	27000
			2267	226,77	27000	16290	1629,06	27000
			2725	272,56	27000	19989	1998,99	27000
			3498	349,87	27000	25454	2545,41	27000
			5245	524,54	27000	35321	3532,10	27000
			6344	634,41	16000	46628	4262,88	27000
			7528	752,83	16000	64047	6404,75	16000
						77298	7729,87	16000

MALE ANGULAR VERSION RA 22000T M...

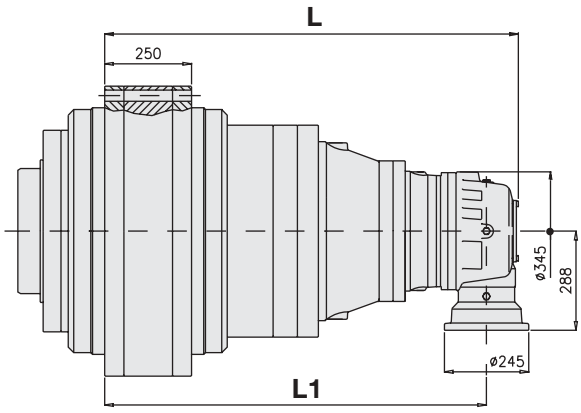


MALE ANGULAR VERSION RA 22000Q M...

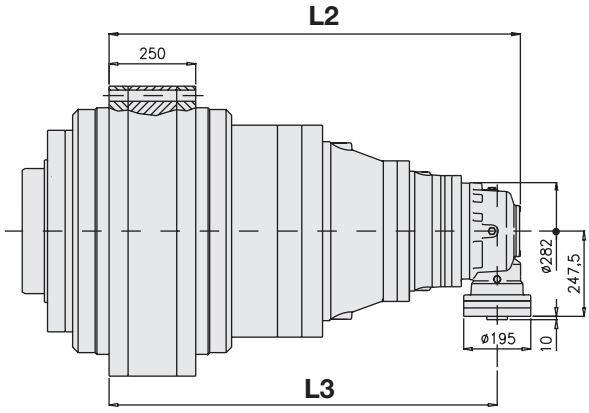


TYPE	L	L1	L2	L3
RA 22000T M...	1193	1100,5	–	–
RA 22000Q M...	–	–	1198,5	1131

FEMALE ANGULAR VERSION RA 22000T FS



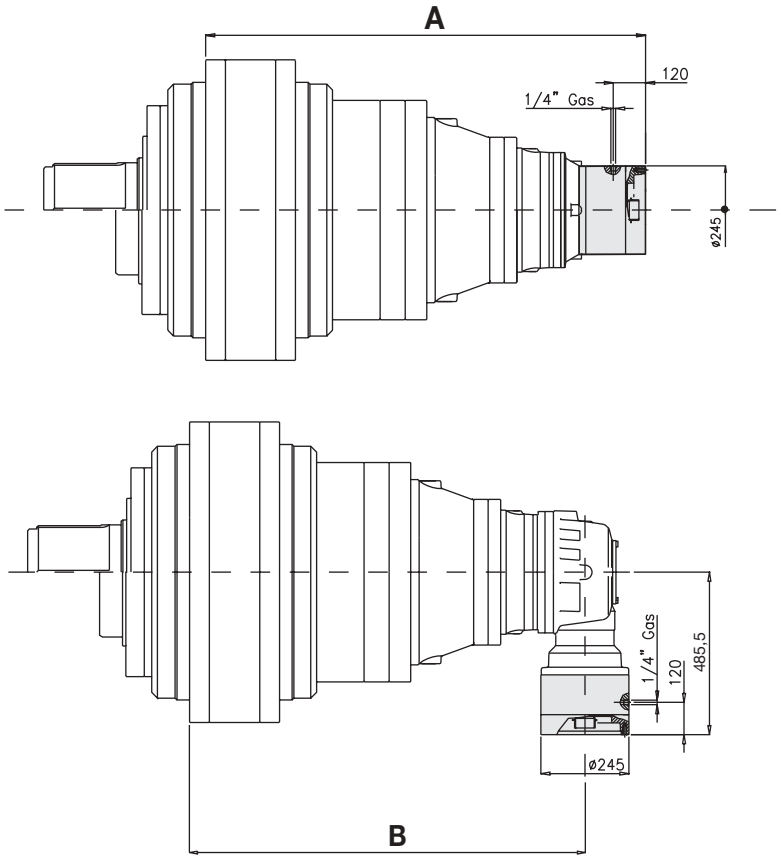
FEMALE ANGULAR VERSION RA 22000Q FS



TYPE	L	L1	L2	L3
RA 22000T FS	1193	1100,5	–	–
RA 22000Q FS	–	–	1198,5	1131

SEE THE INPUT DIMENSIONS ON PAGE 148

BRAKES SERIES RF 170 ÷ 290

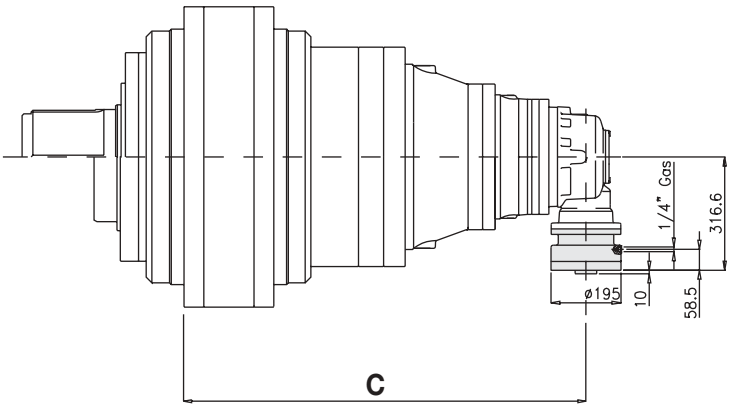


TYPE	A	B
RR 22000Q M...	1266	–
RR 22000Q FS	1266	–
RA 22000T M...	–	1100,5
RA 22000T FS	–	1100,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RFF 5/21 ÷ 5/130



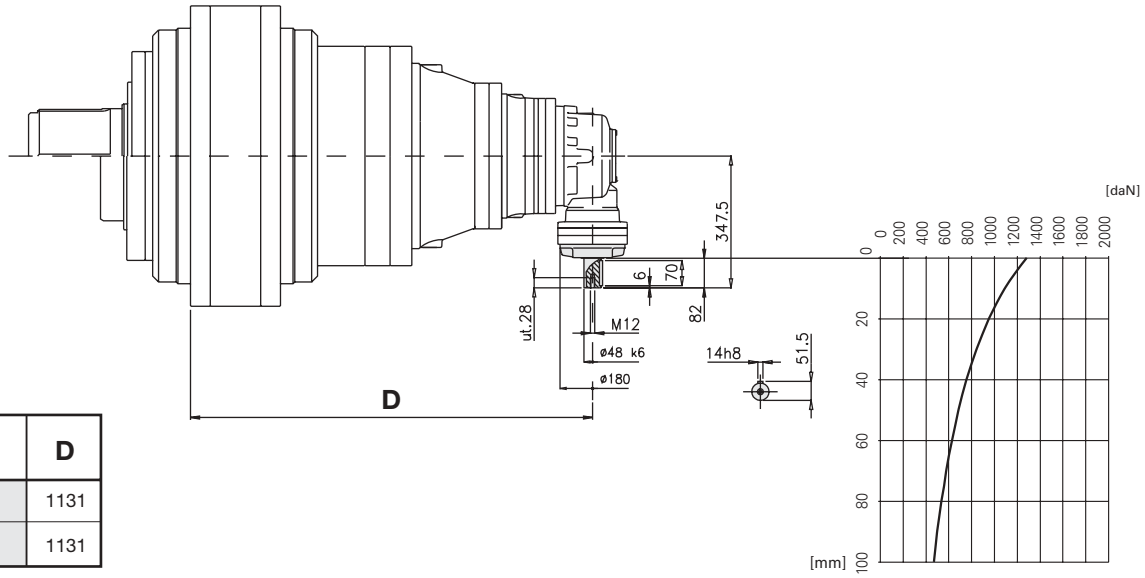
TYPE	C
RA 22000Q M...	1131
RA 22000Q FS	1131

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

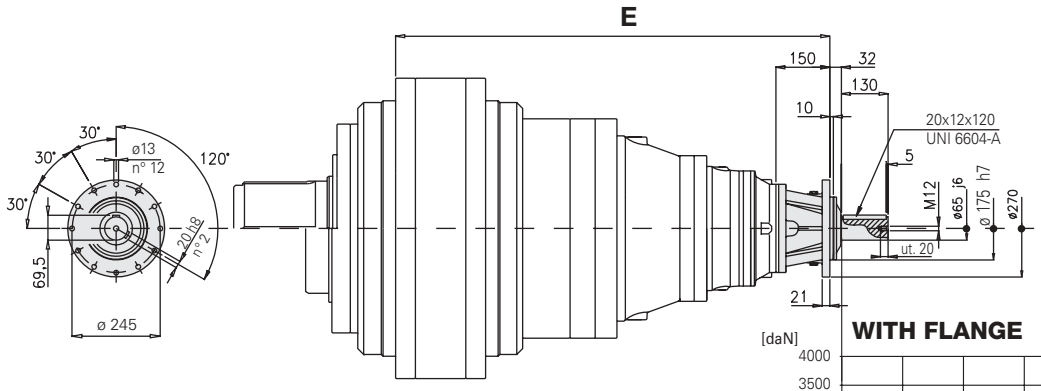
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT

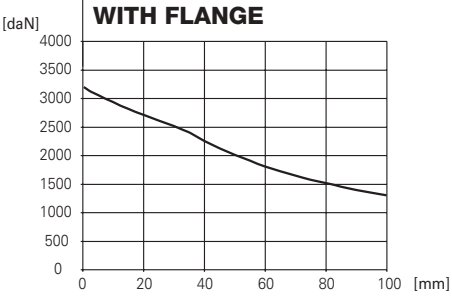


TYPE	D
RA 22000Q M...	1131
RA 22000Q FS	1131

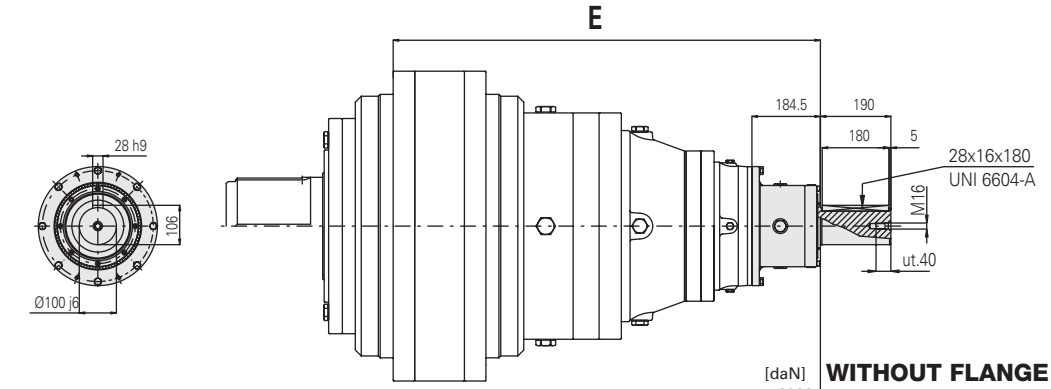
SERIES P MALE HEAVY INPUT



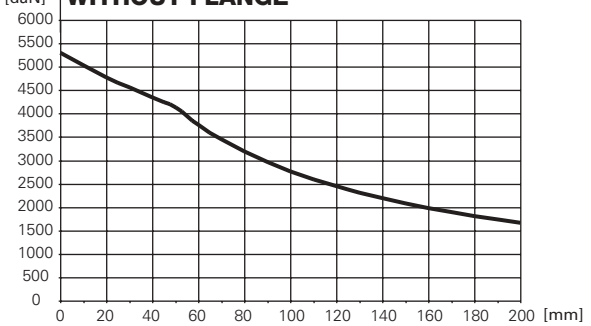
WITH FLANGE



TYPE	E
RR 22000Q M ...	1219
RR 22000Q FS	1219



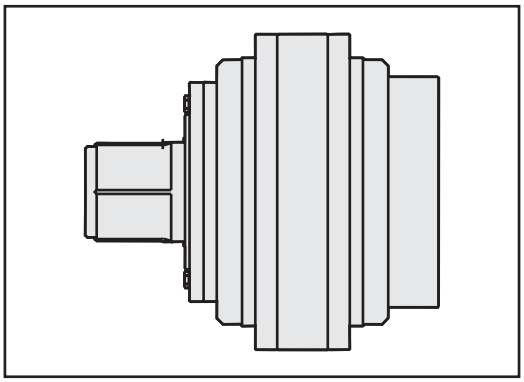
WITHOUT FLANGE



TYPE	E
RR 22000T M ...	1151,5
RR 22000T FS	1151,5

SIZE 32000 REDUCTION GEARS

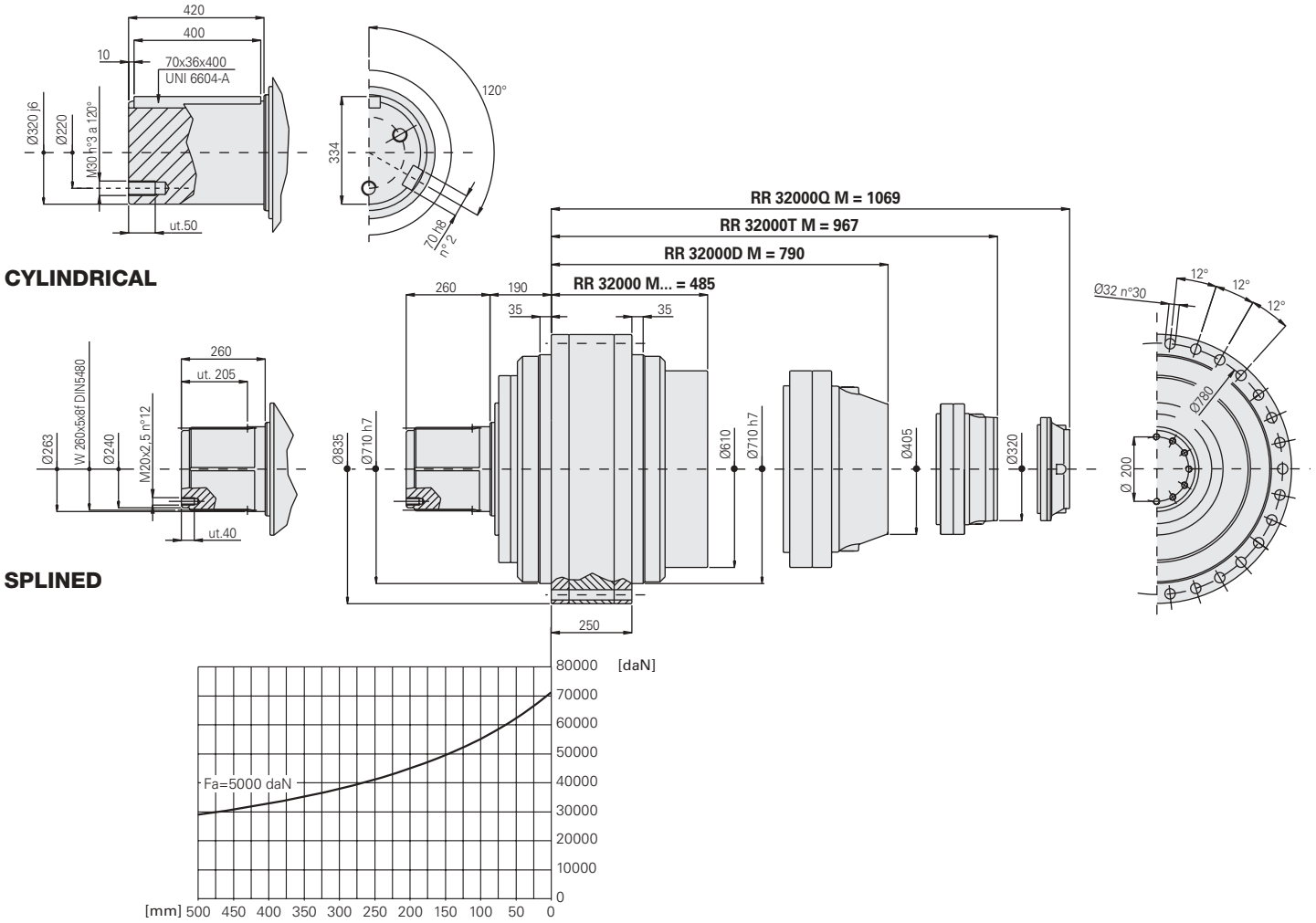
Tab. A



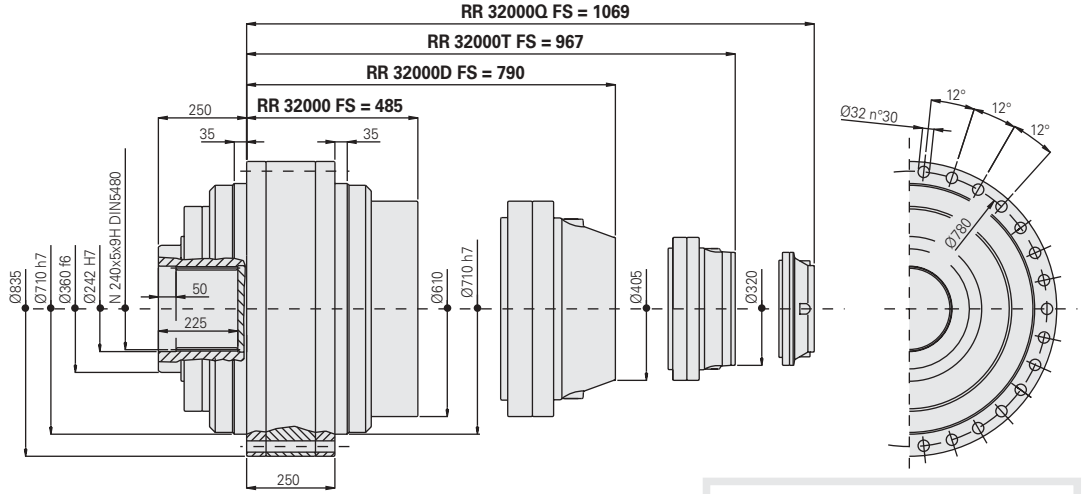
TYPE	RR 32000 M... RR 32000 FS	RR 32000D M... RR 32000D FS	RR 32000T M... RR 32000T FS	RR 32000Q M... RR 32000Q FS
Number of stages	1	2	3	4
Type of input	L	H	E	C
Max. input revs n1 (min^{-1})	100	250	1000	2000

TYPE			RA 32000T M... RA 32000T FS	RA 32000Q M... RA 32000Q FS
Number of stages	-	-	3	4
Type of input	-	-	C	B
Max. input revs n1 (min^{-1})	-	-	1000	2000

MALE LINEAR VERSION RR 32000 M... - RR 32000D M... - RR 32000T M... - RR 32000Q M...



FEMALE LINEAR VERSION RR 32000 FS - RR 32000D FS - RR 32000T FS - RR 32000Q FS



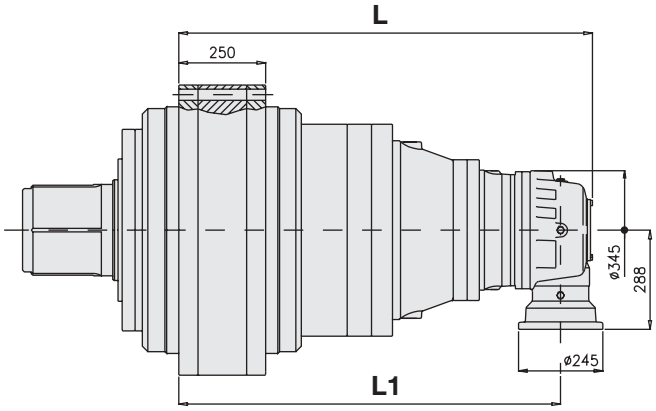
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

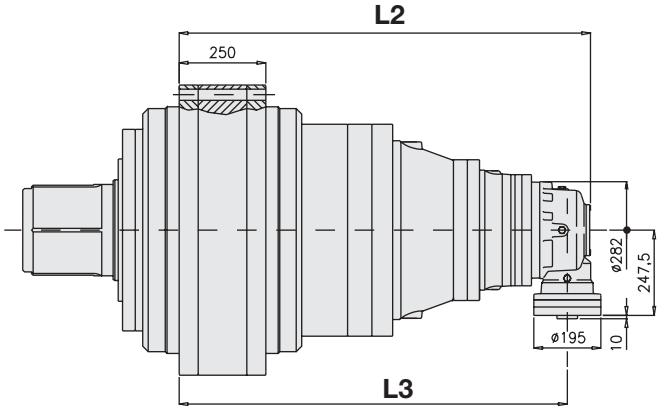
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 32000 M... RR 32000 FS			RR 32000D M... RR 32000D FS			RR 32000T M... RR 32000T FS			RR 32000Q M... RR 32000Q FS		
PART. No. 32000/...	...../1	T2 daNm	PART. No. 32000/...	...../1	T2 daNm	PART. No. 32000/...	...../1	T2 daNm	PART. No. 32000/...	...../1	T2 daNm
39	3,91	35000	159	15,99	35000	581	58,18	35000	2327	232,72	35000
			243	24,36	30500	639	63,97	35000	3198	319,84	35000
						831	83,16	35000	4105	410,55	35000
						999	99,95	32000	5294	529,45	35000
						1283	128,30	35000	6191	619,11	35000
						1522	152,25	30500	7472	747,20	35000
									8980	898,08	35000
									10657	1065,72	30500

PART No. - RATIOS - TORQUES (ISO Standards)								
			RA 32000T M... RA 32000T FS			RA 32000Q M... RA 32000Q FS		
			PART. No. 32000/...	...../1	T2 daNm	PART. No. 32000/...	...../1	T2 daNm
			1586	158,66	35000	9308	930,89	35000
			1744	174,44	35000	12793	1279,35	35000
			2267	226,77	35000	16422	1642,20	35000
			2725	272,56	32000	21177	2117,78	33500
			3498	349,87	35000	24764	2476,44	35000
			4151	415,17	30500	29888	2988,80	35000
						35923	3592,31	35000
						42628	4262,88	30500

MALE ANGULAR VERSION RA 32000T M...

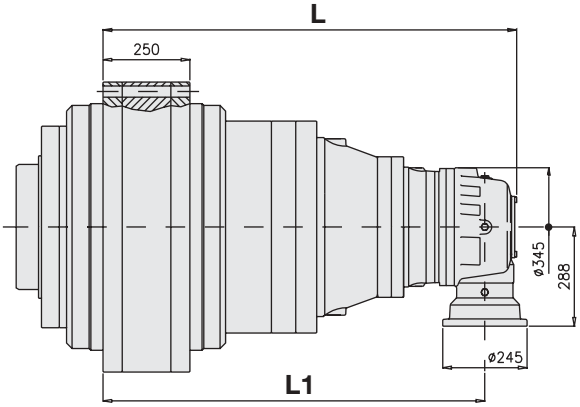


MALE ANGULAR VERSION RA 32000Q M...

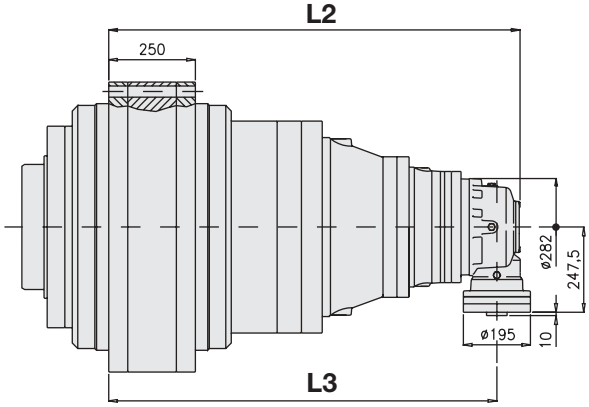


TYPE	L	L1	L2	L3
RA 32000T M...	1193	1100,5	–	–
RA 32000Q M...	–	–	1198,5	1131

FEMALE ANGULAR VERSION RA 32000T FS



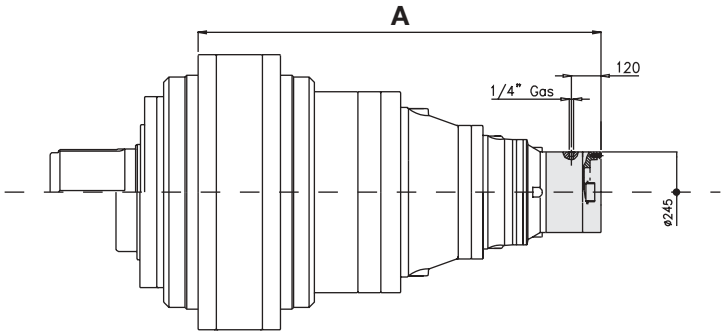
FEMALE ANGULAR VERSION RA 32000Q FS

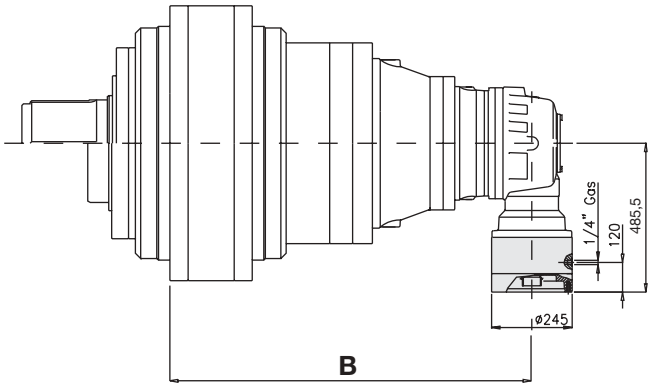


TYPE	L	L1	L2	L3
RA 32000T FS	1193	1100,5	–	–
RA 32000Q FS	–	–	1198,5	1131

SEE THE INPUT DIMENSIONS ON PAGE 148

BRAKES SERIES RF 170 ÷ 290



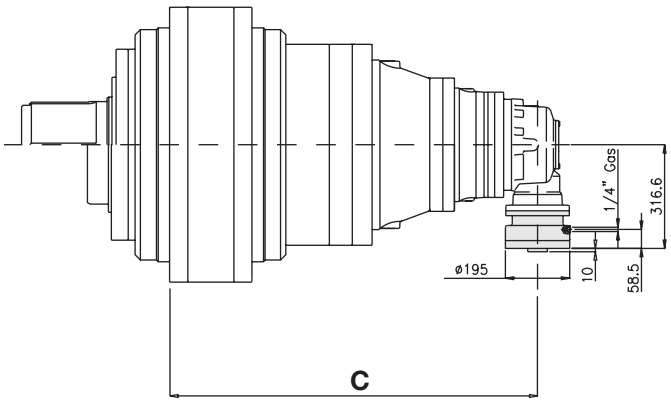


TYPE	A	B
RR 32000Q M...	1266	–
RR 32000Q FS	1266	–
RA 32000T M...	–	1100,5
RA 32000T FS	–	1100,5

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RFF 5/21 ÷ 5/130



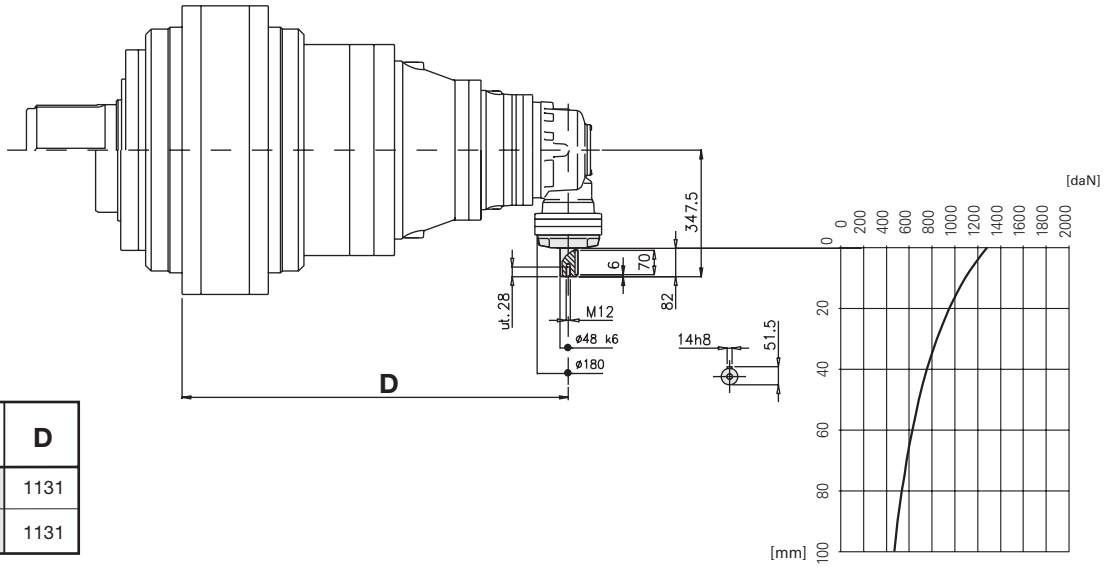
TYPE	C
RA 32000Q M...	1131
RA 32000Q FS	1131

Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

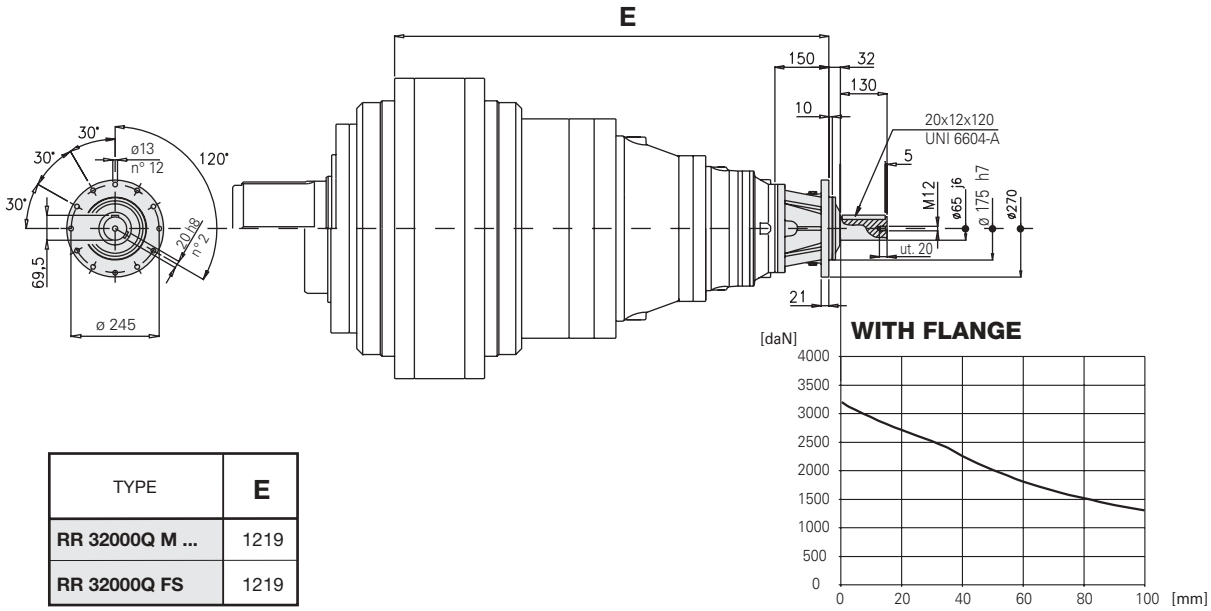
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT



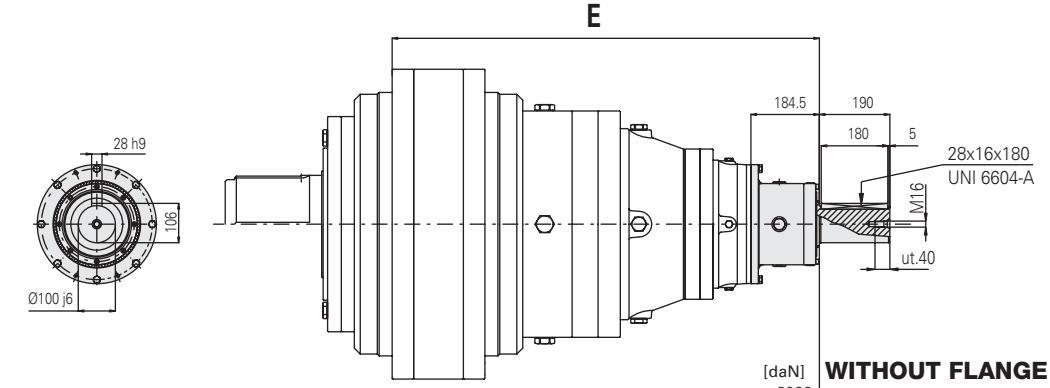
TYPE	D
RA 32000Q M...	1131
RA 32000Q FS	1131

SERIES P MALE HEAVY INPUT

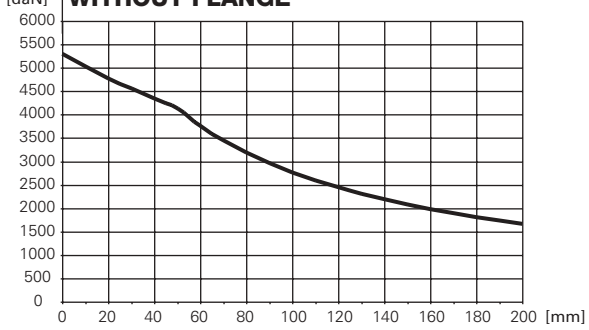


WITH FLANGE

TYPE	E
RR 32000Q M ...	1219
RR 32000Q FS	1219

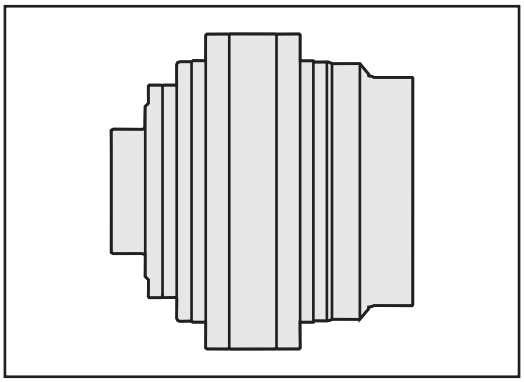


WITHOUT FLANGE



TYPE	E
RR 32000T M ...	1151,5
RR 32000T FS	1151,5

SIZE 40000 REDUCTION GEARS

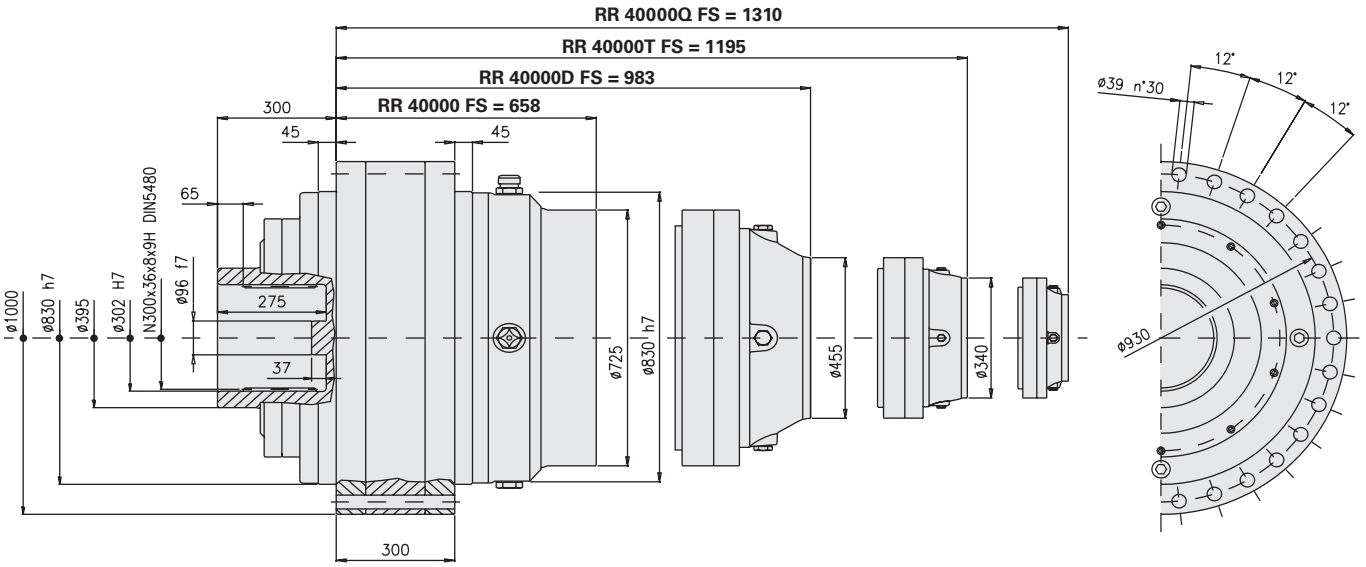


Tab. A

TYPE	RR 40000 FS	RR 40000D FS	RR 40000T FS	RR 40000Q FS
Number of stages	1	2	3	4
Type of input	M	I	F	C
Max. input revs n1 (min^{-1})	100	210	800	2000

TYPE			RA 40000T FS	RA 40000Q FS
Number of stages	-	-	3	4
Type of input	-	-	C	C
Max. input revs n1 (min^{-1})	-	-	800	2000

FEMALE LINEAR VERSION RR 40000 FS - RR 40000D FS - RR 40000T FS - RR 40000Q FS



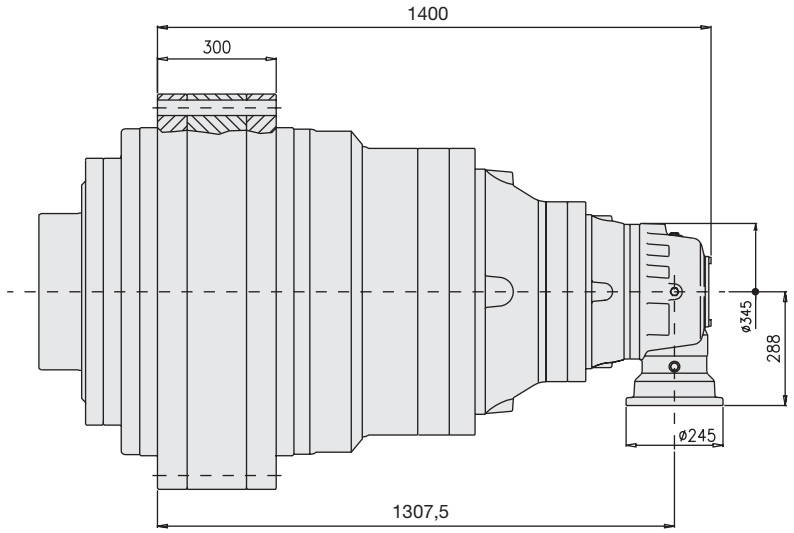
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

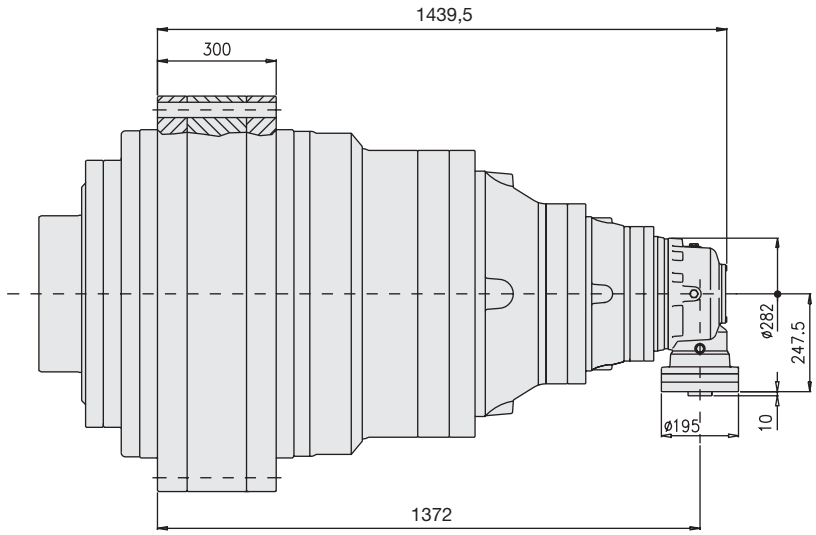
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 40000 FS			RR 40000D FS			RR 40000T FS			RR 40000Q FS		
PART. No. 40000/...	...../1	T2 daNm	PART. No. 40000/...	...../1	T2 daNm	PART. No. 40000/...	...../1	T2 daNm	PART. No. 40000/...	...../1	T2 daNm
39	3,91	48000	137	13,72	48000	528	52,84	48000	2060	206,07	48000
			163	16,30	48000	627	62,77	48000	2448	244,82	48000
			206	20,68	48000	815	81,52	48000	3226	322,65	48000
			242	24,28	48000	1034	103,42	48000	4190	419,03	48000
						1241	124,10	48000	5315	531,58	48000
						1456	145,69	48000	6484	648,44	48000
									7781	778,13	48000
									9134	913,45	48000

PART No. - RATIOS - TORQUES (ISO Standards)								
			RA 40000T FS			RA 40000Q FS		
			PART. No. 40000/...	...../1	T2 daNm	PART. No. 40000/...	...../1	T2 daNm
			1440	144,09	32250	8242	824,27	43250
			1711	171,18	38300	9792	979,26	48000
			2223	222,31	48000	12906	1290,61	48000
			2820	282,02	48000	16761	1676,12	48000
			3384	338,43	48000	21263	2126,30	48000
			3972	397,29	48000	25937	2593,76	48000
						31125	3112,51	48000
						36538	3653,82	48000

FEMALE ANGULAR VERSION RA 40000T FS

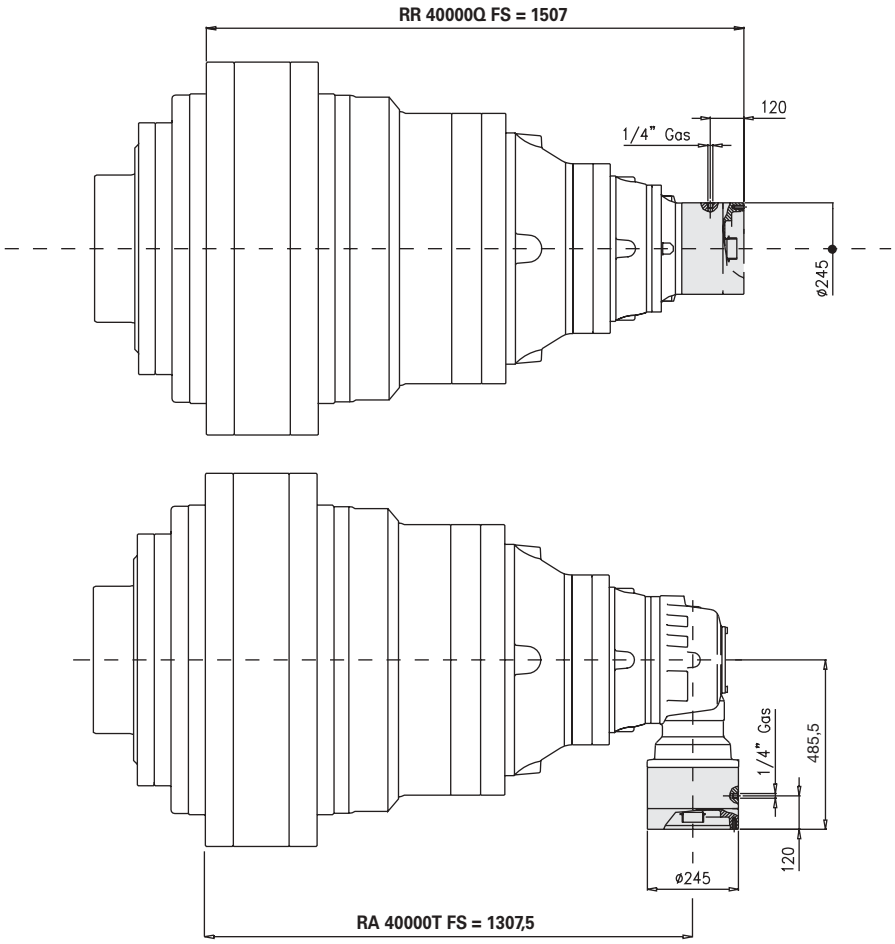


FEMALE ANGULAR VERSION RA 40000Q FS



SEE THE INPUT DIMENSIONS ON PAGE 148

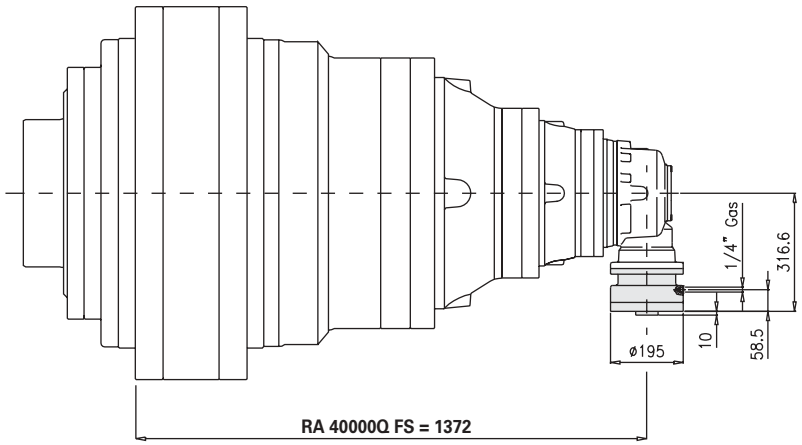
BRAKES SERIES RF 170 ÷ 290



Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RFF 5/21 ÷ 5/130

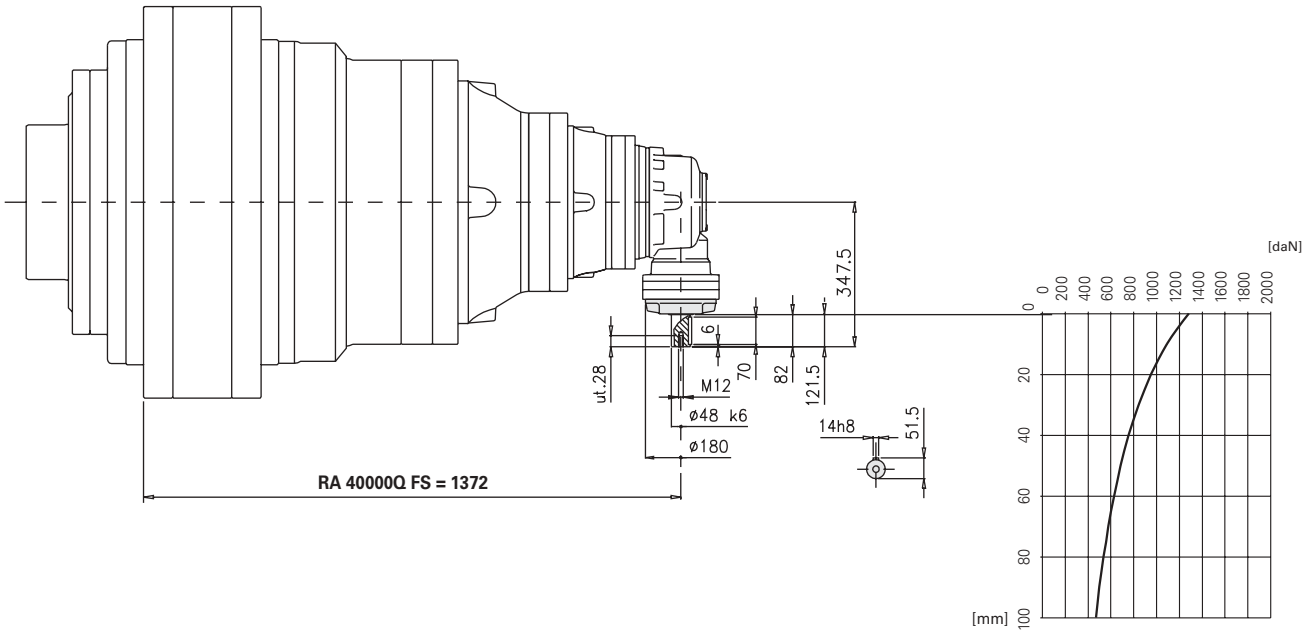


Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt.		Mass
					Horiz.	Vert.	Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

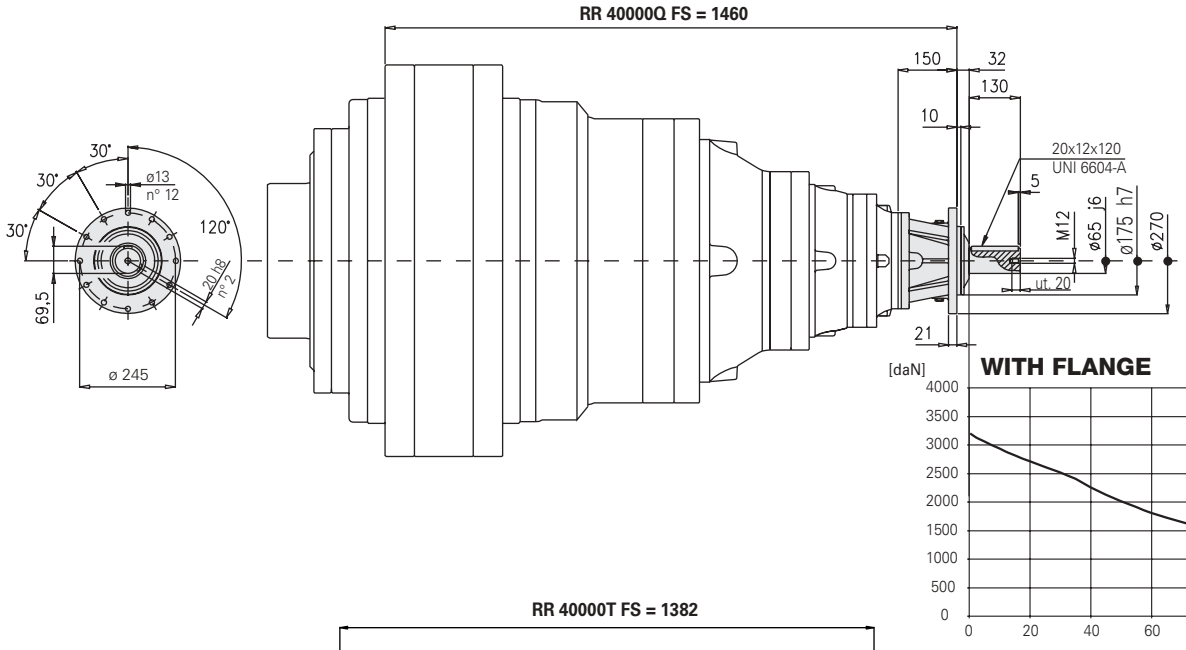
CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

SEE THE INPUT DIMENSIONS ON PAGE 149

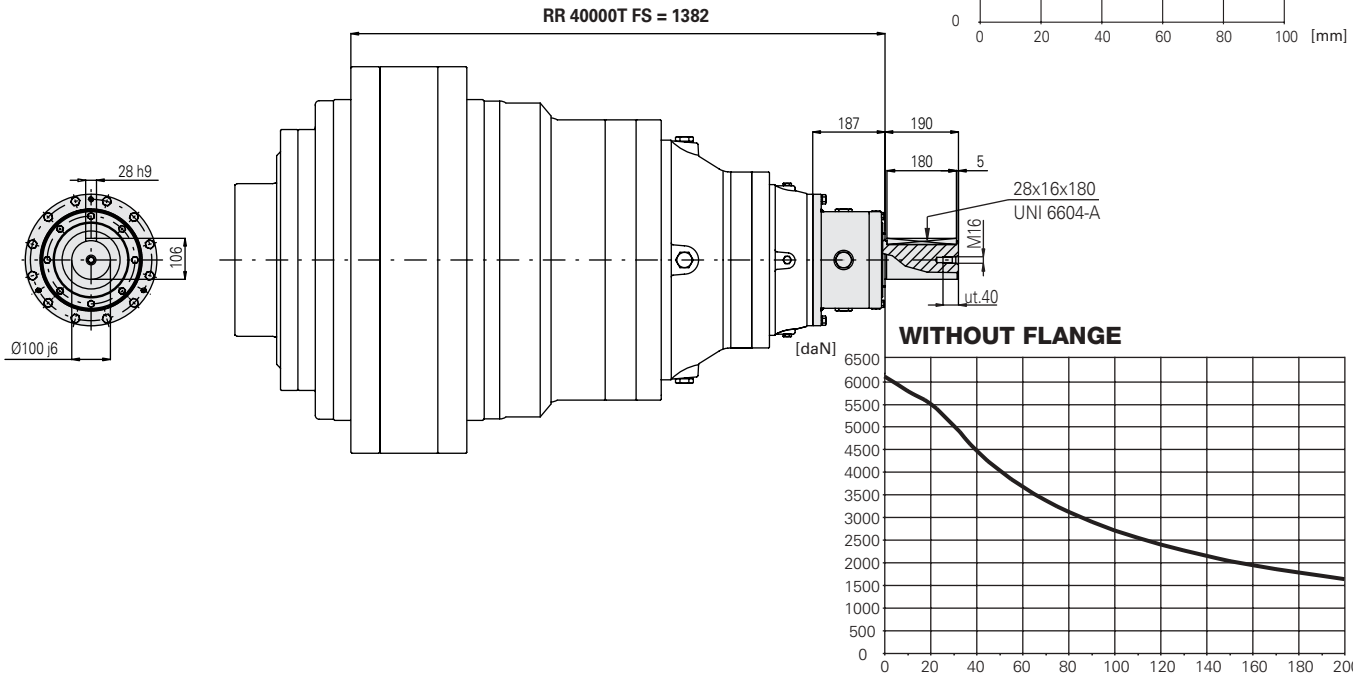
SERIES L MALE LIGHT INPUT



SERIES P MALE HEAVY INPUT

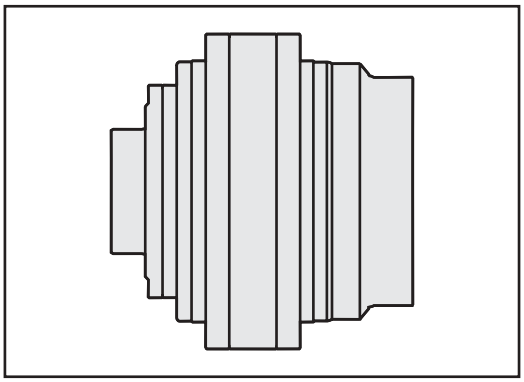


WITH FLANGE



WITHOUT FLANGE

SIZE 50000 REDUCTION GEARS

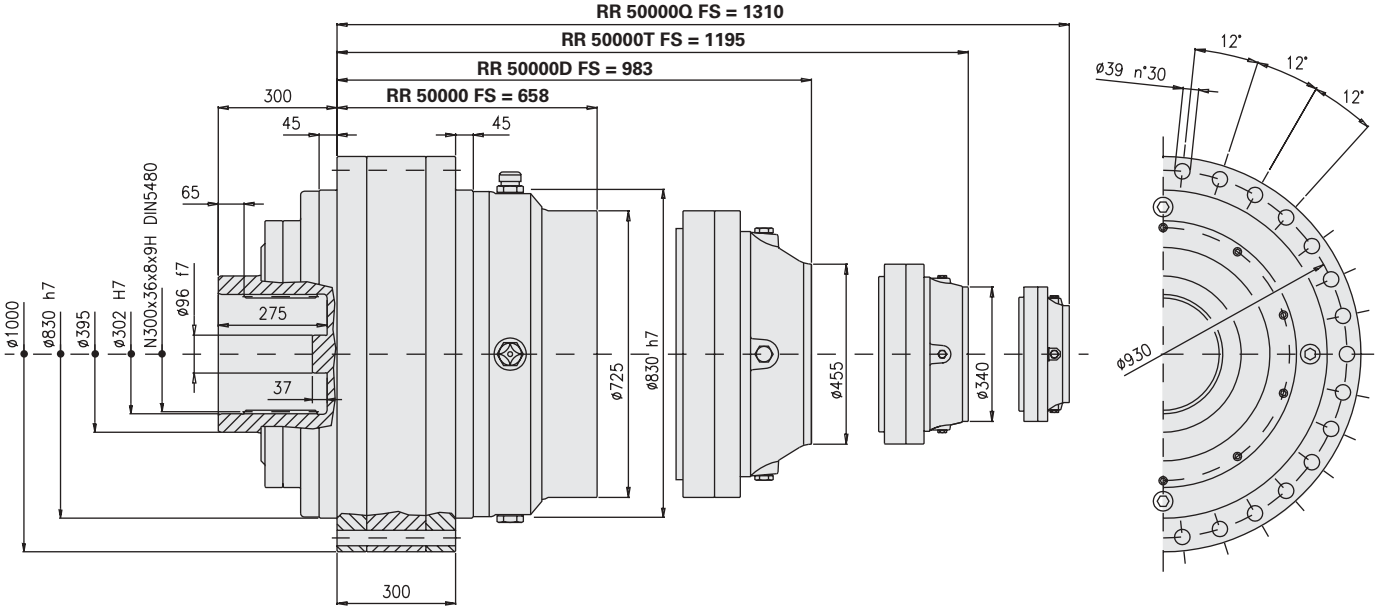


Tab. A

TYPE	RR 50000 FS	RR 50000D FS	RR 50000T FS	RR 50000Q FS
Number of stages	1	2	3	4
Type of input	M	I	F	C
Max. input revs n1 (min^{-1})	80	120	800	2000

TYPE			RA 50000T FS	RA 50000Q FS
Number of stages	-	-	3	4
Type of input	-	-	C	B
Max. input revs n1 (min^{-1})	-	-	800	2000

FEMALE LINEAR VERSION RR 50000 FS - RR 50000D FS - RR 50000T FS - RR 50000Q FS



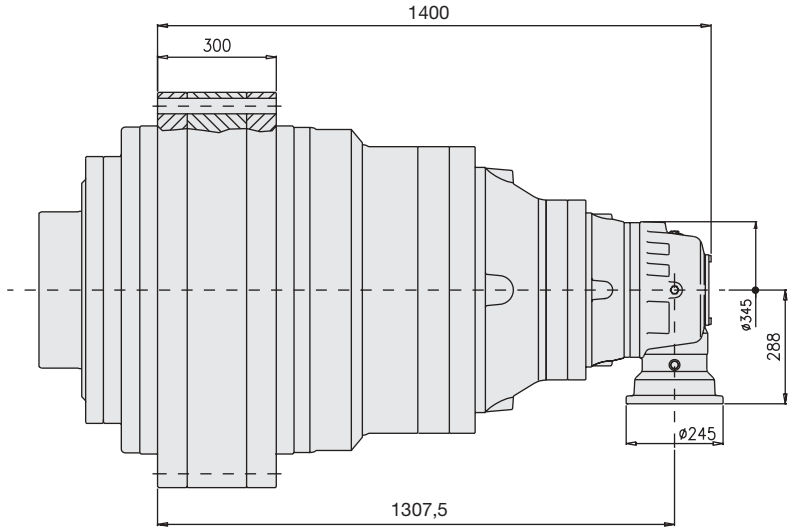
SEE THE INPUT DIMENSIONS ON PAGES 144-147

Tab. B

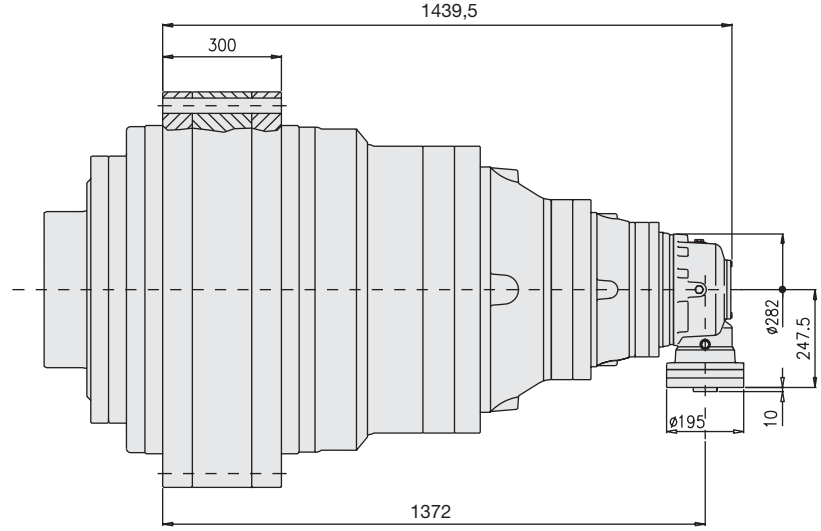
PART No. - RATIOS - TORQUES (ISO Standards)											
RR 50000 FS			RR 50000D FS			RR 50000T FS			RR 50000Q FS		
PART. No.. 50000/...	...../1	T2 daNm	PART. No.. 50000/...	...../1	T2 daNm	PART. No.. 50000/...	...../1	T2 daNm	PART. No.. 50000/...	...../1	T2 daNm
39	3,91	60000	137	13,72	60000	528	52,84	60000	2060	206,07	60000
			163	16,30	60000	627	62,77	60000	2448	244,82	60000
			206	20,68	60000	815	81,52	60000	3226	322,65	60000
			242	24,28	49650	1034	103,42	60000	4190	419,03	60000
						1241	124,10	60000	5315	531,58	60000
						1456	145,69	49650	6484	648,44	60000
									7781	778,13	60000
									9134	913,45	49650

PART No. - RATIOS - TORQUES (ISO Standards)								
			RA 50000T FS			RA 50000Q FS		
			PART. No.. 50000/...	...../1	T2 daNm	PART. No.. 50000/...	...../1	T2 daNm
			1440	144,09	32250	8242	824,27	43300
			1711	171,18	38300	9792	979,26	51500
			2223	222,31	49700	12906	1290,61	60000
			2820	282,02	60000	16761	1676,12	60000
			3384	338,43	60000	21263	2126,30	60000
			3972	397,29	49700	25937	2593,76	60000
						31125	3112,51	60000
						36338	3653,82	49700

FEMALE ANGULAR VERSION RA 50000T FS

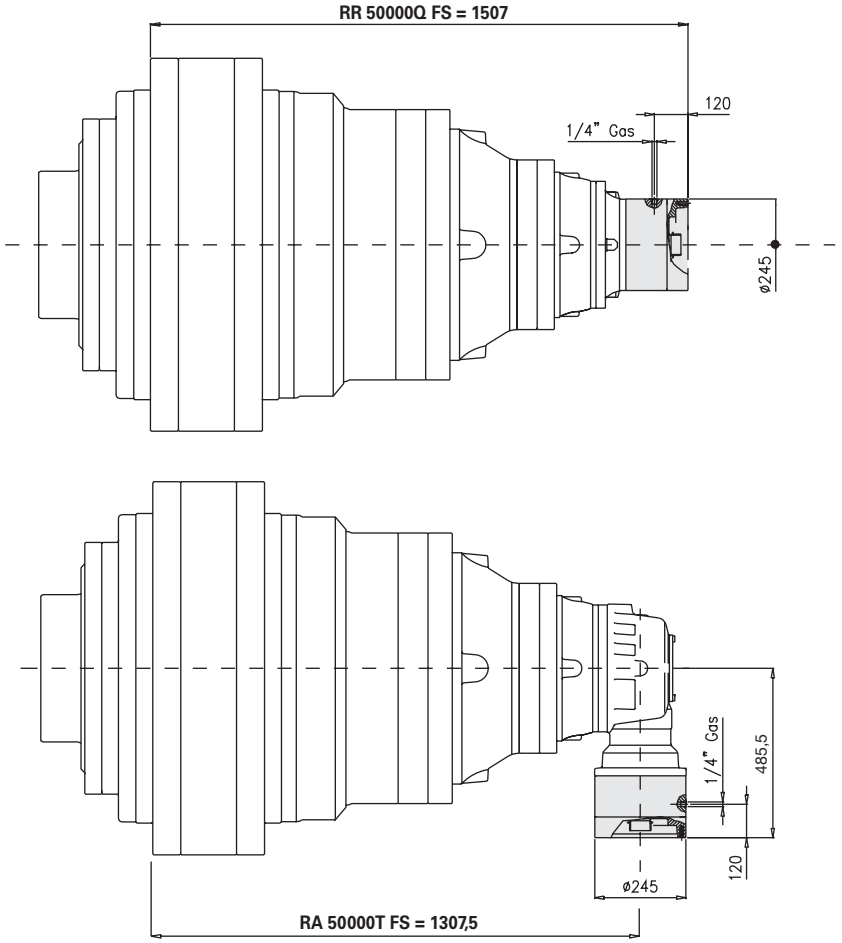


FEMALE ANGULAR VERSION RA 50000Q FS



SEE THE INPUT DIMENSIONS ON PAGE 148

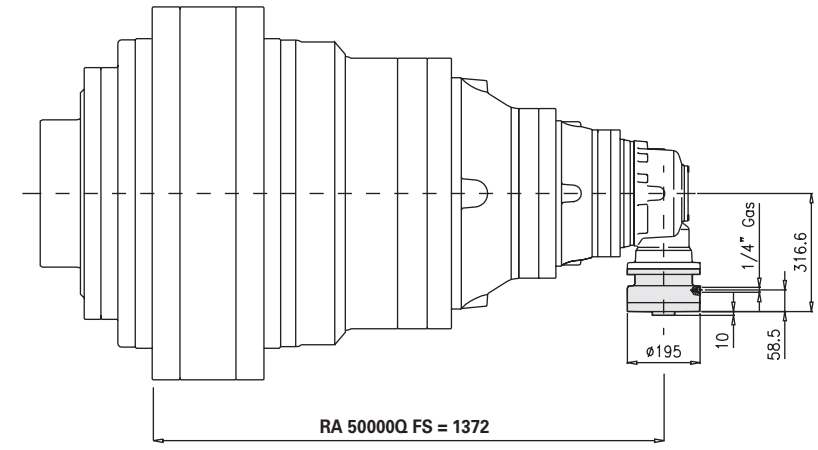
BRAKES SERIES RF 170 ÷ 290



Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,45	0,90	43

CODE		170	200	230	290
Static torque	da Nm	170	198	226	283
Min. opening pressure	bar	25 ÷ 27	22 ÷ 24	25 ÷ 27	25 ÷ 27
Max. opening pressure	bar	300			
Minimum oil capacity for brake opening	cm^3	27 ÷ 30			

BRAKES SERIES RFF 5/21 ÷ 5/130

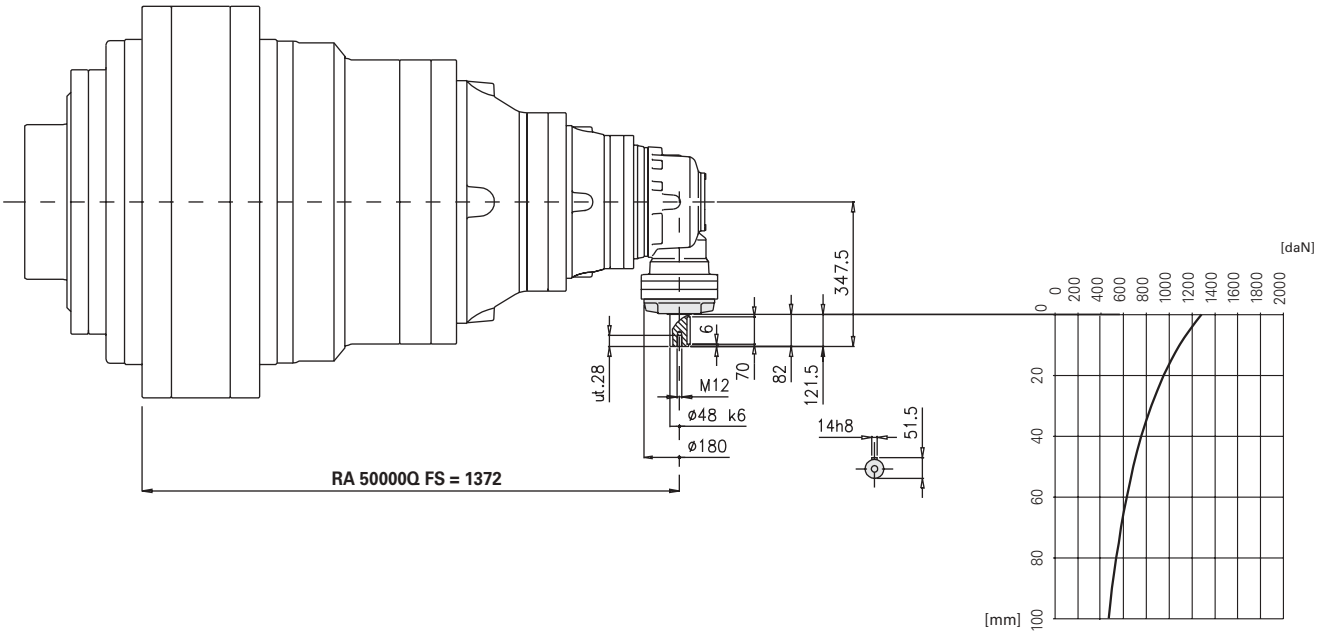


Ambient temperature	-20°C ÷ +5°C	+5°C ÷ +40°C	+30°C ÷ +65°C	+40°C ÷ +65°C	OIL QUANTITY lt. Horiz.	Vert.	Mass Kg
VISCOSITY	VG 32 2,8.. 3,2°E/50°C				0,30	0,60	21

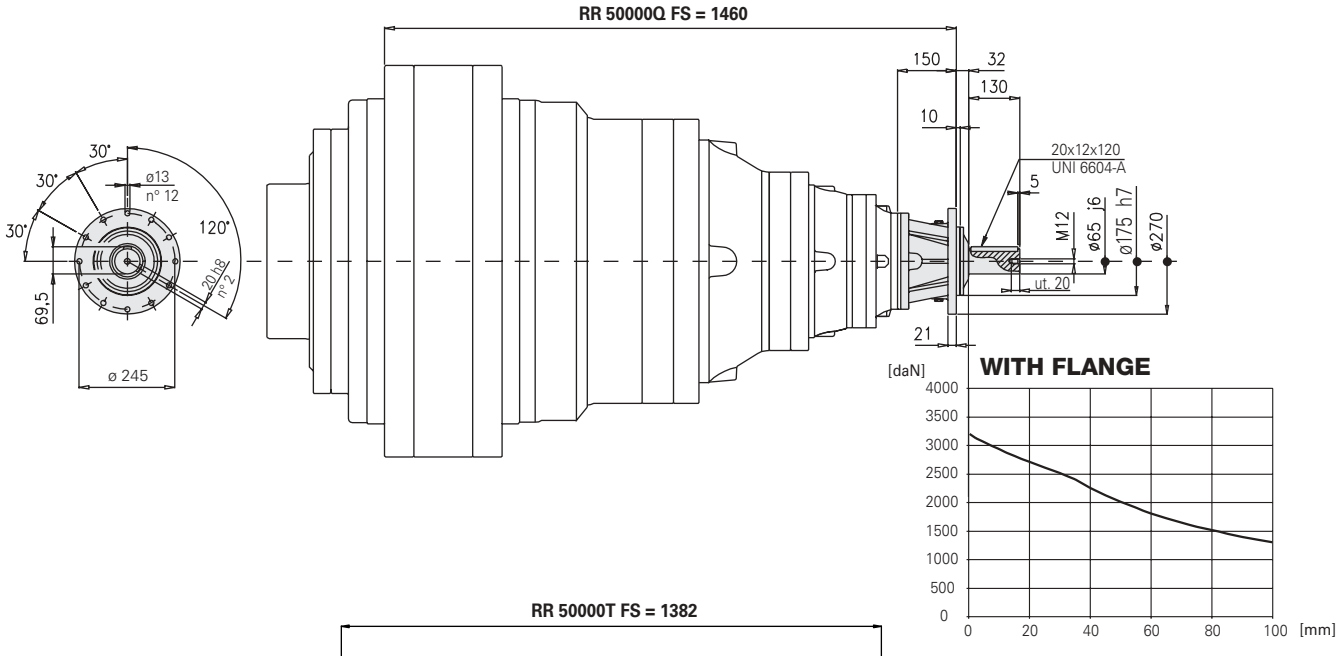
CODE		21	29	43	65	85	110	130
Static torque	da Nm	18 ÷ 23	28 ÷ 33	42 ÷ 46	61 ÷ 70	83 ÷ 92	108 ÷ 118	126 ÷ 136
Min. opening pressure	bar	4 ÷ 5	6 ÷ 7	9 ÷ 10	13 ÷ 15	18 ÷ 20	23 ÷ 25	27 ÷ 29
Max. opening pressure	bar	300						
Minimum oil capacity for brake opening	cm^3	8 ÷ 9						

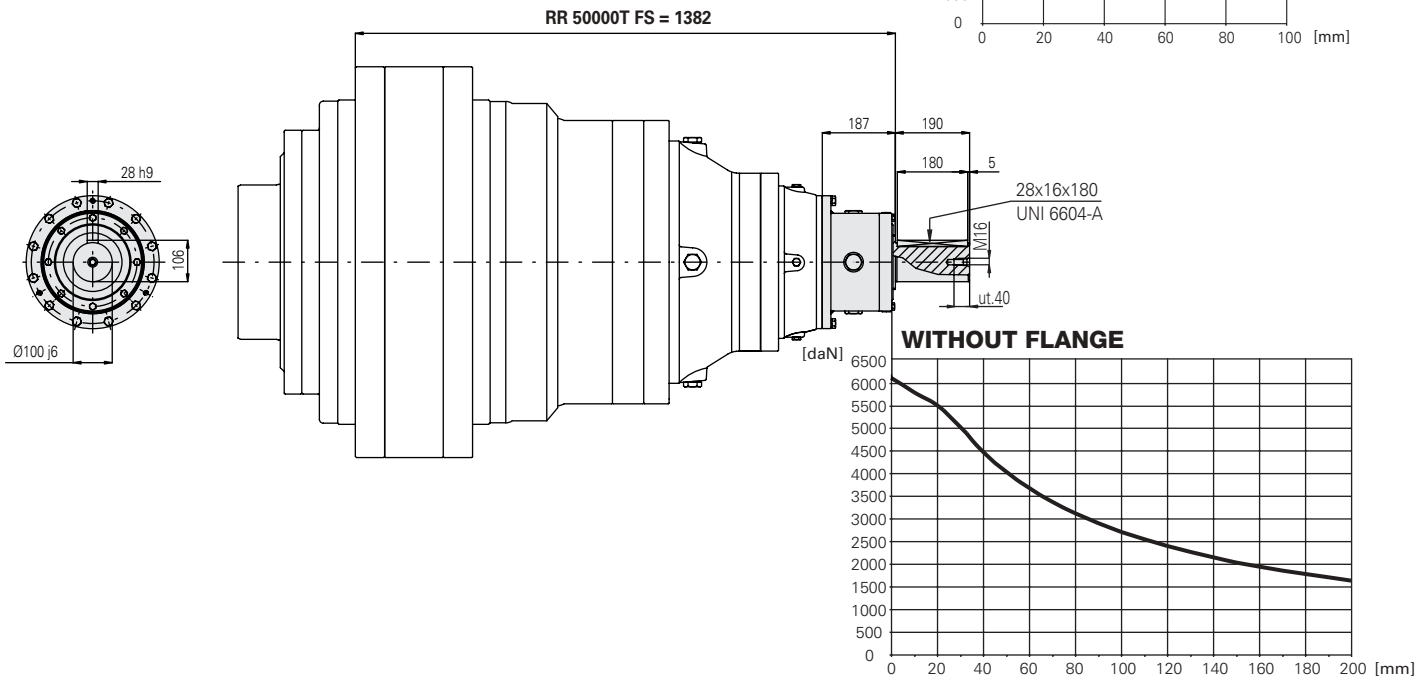
SEE THE INPUT DIMENSIONS ON PAGE 149

SERIES L MALE LIGHT INPUT



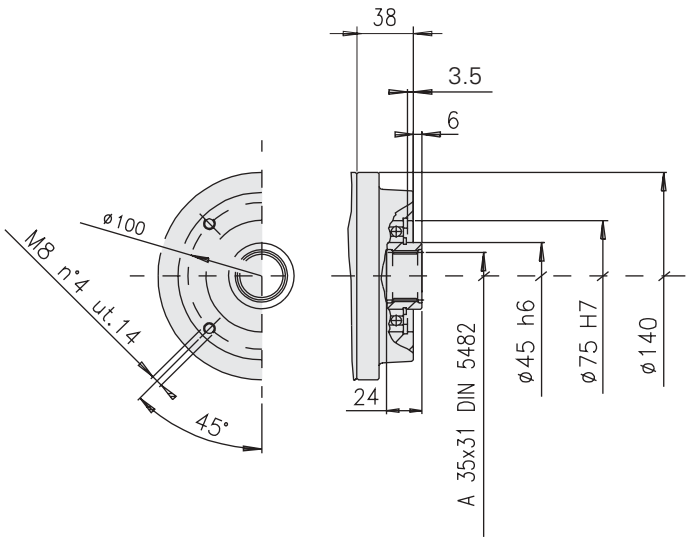
SERIES P MALE HEAVY INPUT



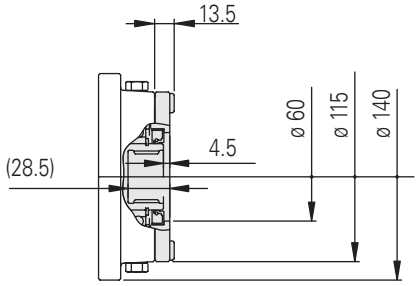


INPUT DIMENSIONS AND COUPLING FLANGES:

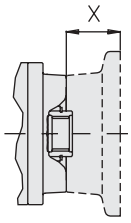
Type A



Kit - lid on type "A" input, complete with oil seal.

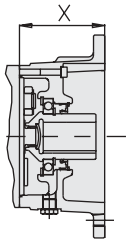


Code: **154-2300M325**



Flange type : **AF**

Series	Number of stages			
	1	2	3	4
65	RR 65	RR 65D	RR 65T	
105		RR 105D	RR 105T	
110		RR 110D	RR 110T	
210			RR 210T	
310			RR 310T	RR 310Q
510				RR 510Q
710				RR 710Q
810				RR 810Q
1010				
1700 B				

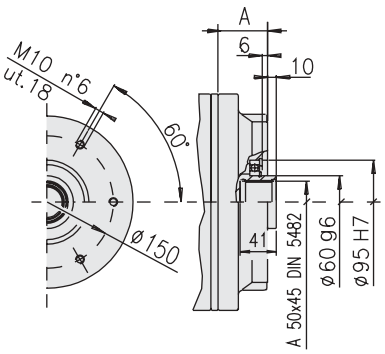


Flange type : **AD**

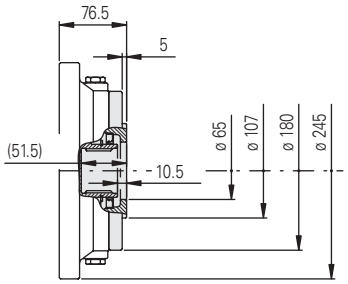
Series	Number of stages			
	1	2	3	4
65	RR 65	RR 65D	RR 65T	
105		RR 105D	RR 105T	
110		RR 110D	RR 110T	
310			RR 310T	RR 310Q
510				RR 510Q
710				RR 710Q
810				RR 810Q
1010				
1700 B				

INPUT DIMENSIONS AND COUPLING FLANGES:

Type B



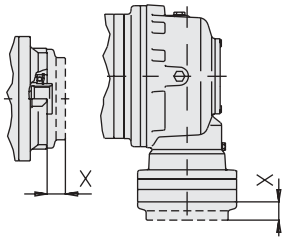
Kit - lid on type "B" input, complete with oil seal.



Code: **154-2300M324**

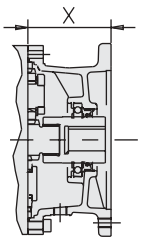
	A
RR 105	63
RR 110	63
RR 210	63
RR 210D	63
RR 310	56
RR 310D	63
RR 510	56
RR 510D	56
RR 510T	63
RR 710	56
RR 710D	56
RR 710T	63
RR 810D	56
RR 810T	63
RR 1010D	56

	A
RR 1010T	56
RR 1010Q	63
RR 1700D	56
RR 1700T	56
RR 1700Q	63
RR 1700D B	56
RR 1700T B	56
RR 1700Q B	63
RR 2700T	56
RR 2700Q	63
RR 3500T	56
RR 3500Q	56
RR 5000T	56
RR 5000Q	56
RR 6300Q	56



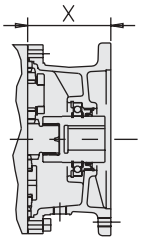
Flange type : **BF**

Series	Number of stages			
	1	2	3	4
105	RR 105 RA 105			
110	RR 110 RA 110			
210	RR 210 RA 210	RR 210D RA 210D		
310	RR 310 RA 310	RR 310D RA 310D		
510	RR 510 RA 510	RR 510D RA 510D	RR 510T RA 510T	
710	RR 710 RA 710	RR 710D RA 710D	RR 710T RA 710T	
810	RA 810	RR 810D RA 810D	RR 810T RA 810T	
1010		RR 1010D RA 1010D	RR 1010T RA 1010T	RR 1010Q
1700		RR 1700D RA 1700D	RR 1700T RA 1700T	RR 1700Q
1700 B		RR 1700D B RA 1700D B	RR 1700T B RA 1700T B	RR 1700Q B
2700		RA 2700D	RR 2700T RA 2700T	RR 2700Q
3500			RR 3500T RA 3500T	RR 3500Q
5000			RR 5000T RA 5000T	RR 5000Q
6300			RA 6300T	RR 6300Q



Flange type : **B1D**

Series	Number of stages			
	1	2	3	4
105	RR 105			
110	RR 110			
210	RR 210	RR 210D		
310		RR 310D		
510			RR 510T	
710			RR 710T	
810			RR 810T	
1010				RR 1010Q
1700				RR 1700Q
1700 B				RR 1700Q B
2700				RR 2700Q
3500				
5000				

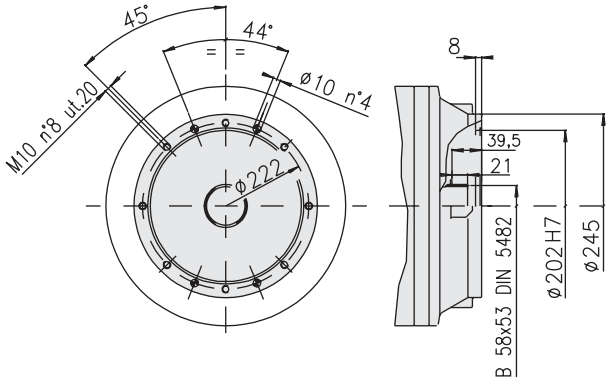


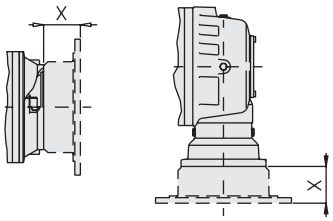
Flange type : **B5D**

Series	Number of stages			
	1	2	3	4
310	RR 310			
510	RR 510	RR 510D		
710	RR 710	RR 710D		
810		RR 810D		
1010		RR 1010 D	RR 1010T	
1700		RR 1700D	RR 1700T	
1700 B		RR 1700D B	RR 1700T B	
2700			RR 2700T	
3500				RR 3500Q
5000				RR 5000Q
6300				

INPUT DIMENSIONS AND COUPLING FLANGES:

Type C

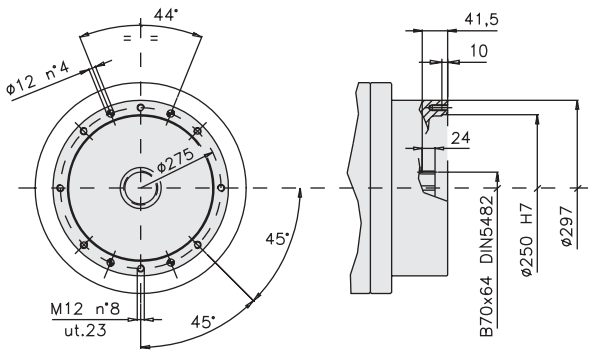




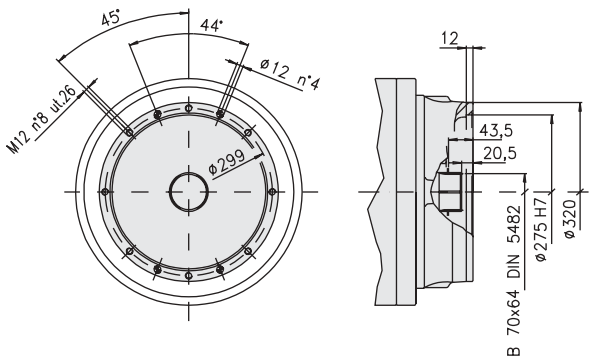
Flange type : **CF**

Series	Number of stages				Series	Number of stages			
	1	2	3	4		1	2	3	4
810	RR 810				8000		RA 8000D	RR 8000T	
1010	RR 1010				12500		RA 12500D	RR 12500T	
1700	RR 1700				16000			RR 16000T RA 16000T	RR 16000Q
1700 B	RR 1700 B				22000			RR 22000T RA 22000T	RR 22000Q
2700		RR 2700D			32000			RR 32000T RA 32000T	RR 32000Q
3500		RR 3500D			40000			RR 40000T RA 40000T	RR 40000Q
5000		RR 5000D			50000			RR 50000T RA 50000T	RR 50000Q
6300			RR 6300T						

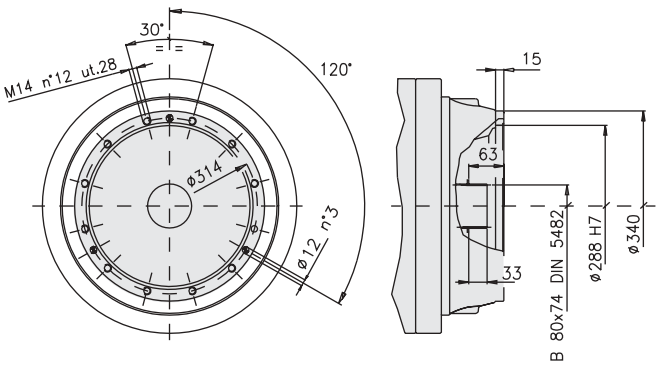
Type D



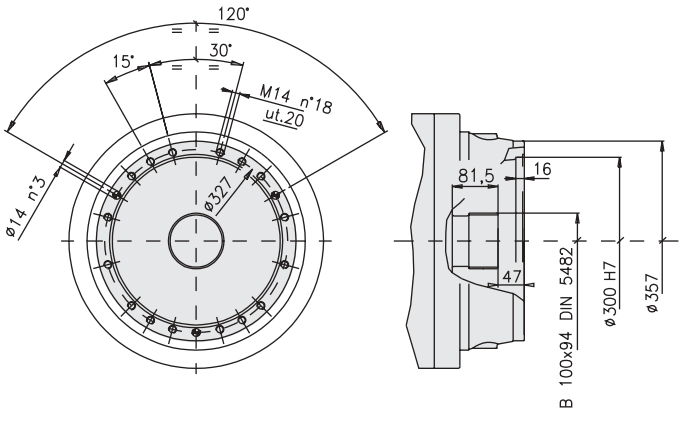
Type E



Type F

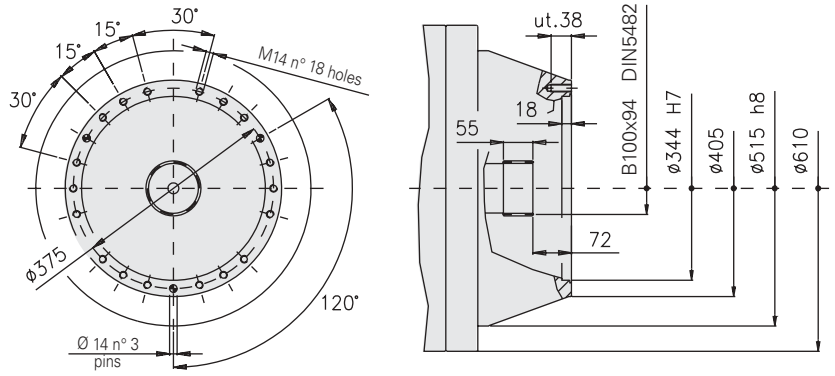


Type G



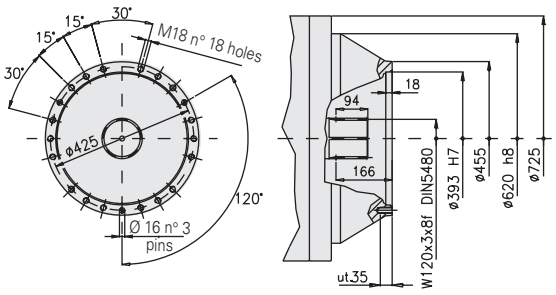
INPUT DIMENSIONS AND COUPLING FLANGES:

Type H

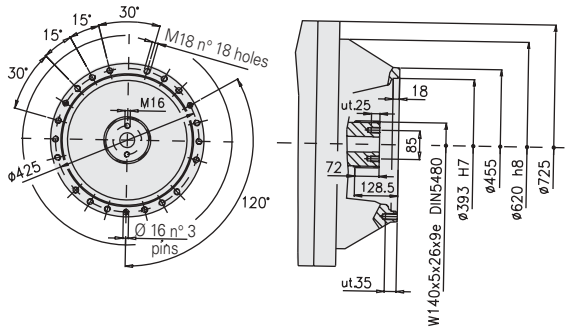


Type I

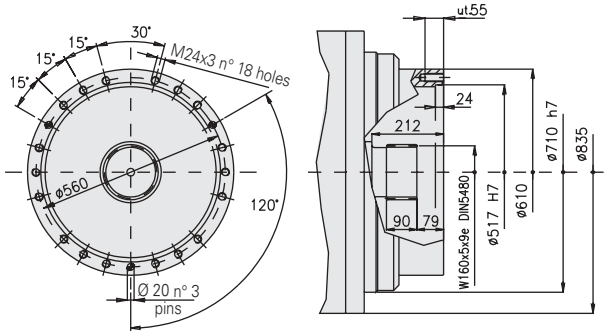
12500



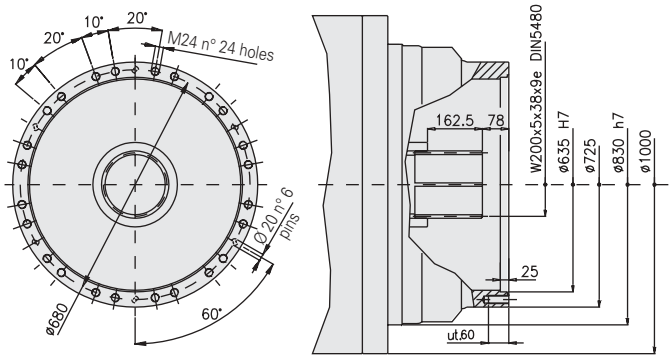
16000



Type L

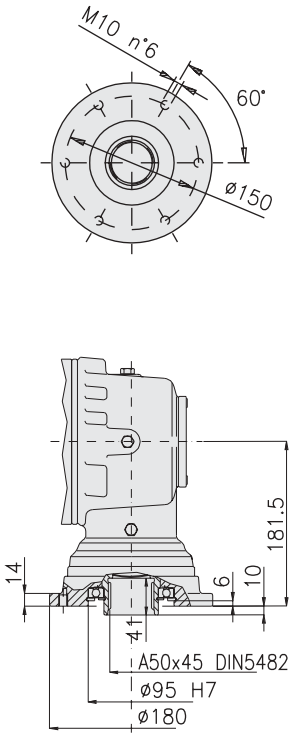


Type M



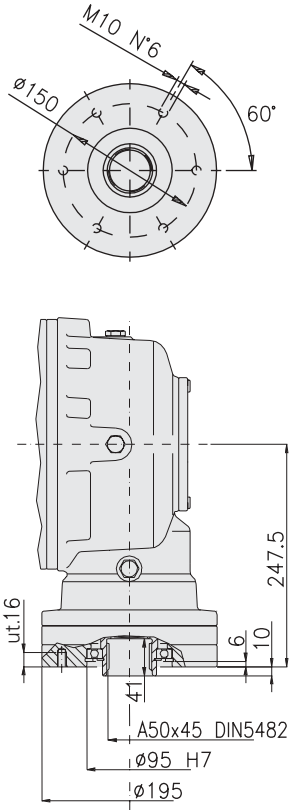
ANGULAR REDUCTION GEAR INPUT DIMENSIONS

Type B



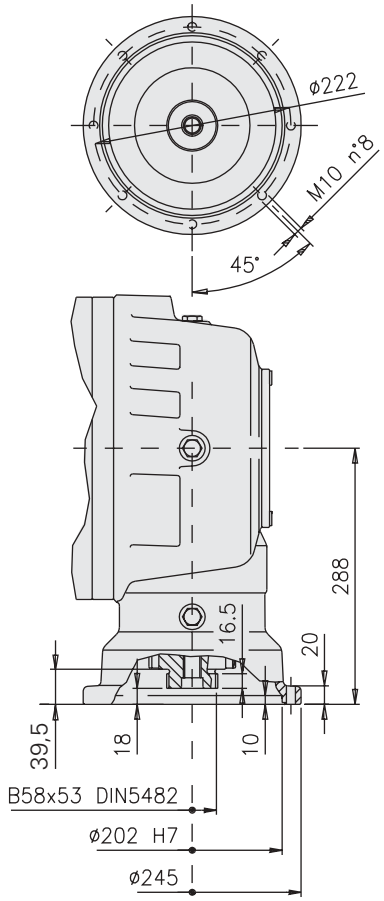
RA 105 M...	RA 105 FS
RA 105D M...	RA 105D FS
RA 110D M...	RA 110D FS
RA 210 M...	RA 210 FS
RA 210D M...	RA 210D FS
RA 310 M...	RA 310 FS
RA 310D M...	RA 310D FS
RA 310T M...	RA 310T FS
RA 510D M...	RA 510D FS
RA 510T M...	RA 510T FS
RA 710D M...	RA 710D FS
RA 710T M...	RA 710T FS
RA 810D M...	RA 810D FS
RA 810T M...	RA 810T FS
RA 1010T M...	RA 1010T FS
RA 1700T M...	RA 1700T FS
RA 1700T B...	RA 2700T FS
RA 2700T M...	

Type B



RA 510 M...	RA 510 FS
RA 710 M...	RA 710 FS
RA 810 M...	RA 810 FS
RA 1010 M...	RA 1010 FS
RA 1010D M...	RA 1010D FS
RA 1700 M...	RA 1700 FS
RA 1700D M...	RA 1700D FS
RA 1700 B...	RA 2700D FS
RA 2700D M...	RA 3500D FS
RA 3500D M...	RA 3500T FS
RA 3500T M...	RA 5000D FS
RA 5000D M...	RA 5000T FS
RA 5000T M...	RA 6300T FS
RA 6300T M...	RA 8000T FS
RA 8000T M...	RA 12500T FS
RA 12500T M...	RA 16000Q FS
RA 16000Q M...	RA 22000Q FS
RA 22000Q M...	RA 32000Q FS
RA 32000Q M...	RA 40000Q FS
	RA 50000Q FS

Type C

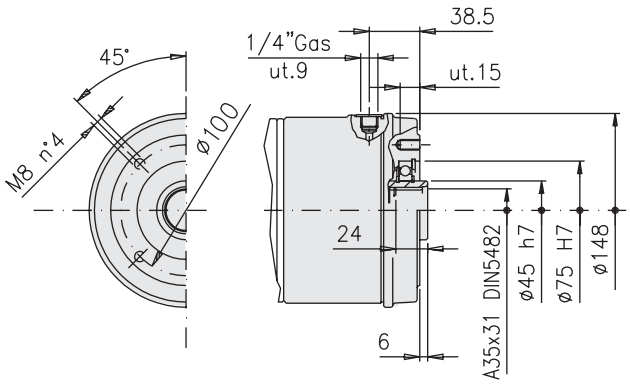


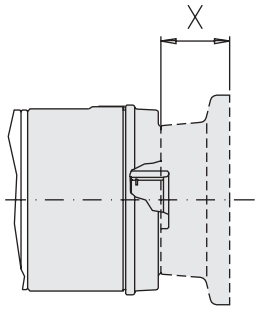
RA 1010 M...	RA 1010 FS
RA 1700 M...	RA 1700 FS
RA 1700 B...	RA 2700 FS
RA 2700 M...	RA 3500 FS
RA 3500 M...	RA 5000 FS
RA 5000 M...	RA 6300D FS
RA 6300D M...	RA 8000D FS
RA 8000D M...	RA 12500D FS
RA 12500D M...	RA 16000T FS
RA 16000T M...	RA 22000T FS
RA 22000T M...	RA 32000T FS
RA 32000T M...	RA 40000T FS
	RA 40000Q FS
	RA 50000T FS
	RA 50000Q FS

BRAKE INPUT DIMENSIONS AND COUPLING FLANGES:

RF 2/7 ÷ 2/60

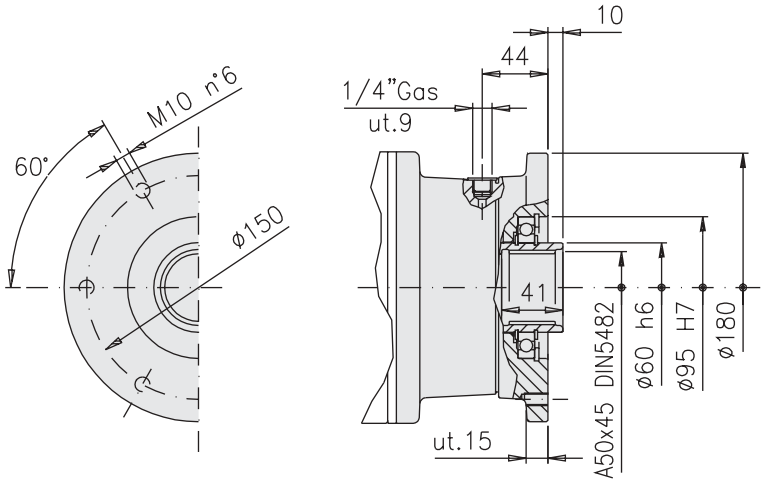
Type A

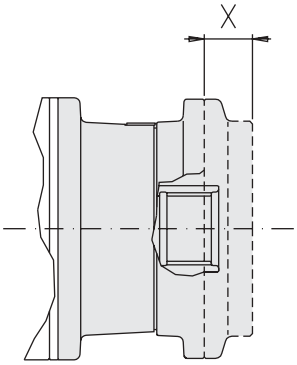




Flange type: **AF**

Type B

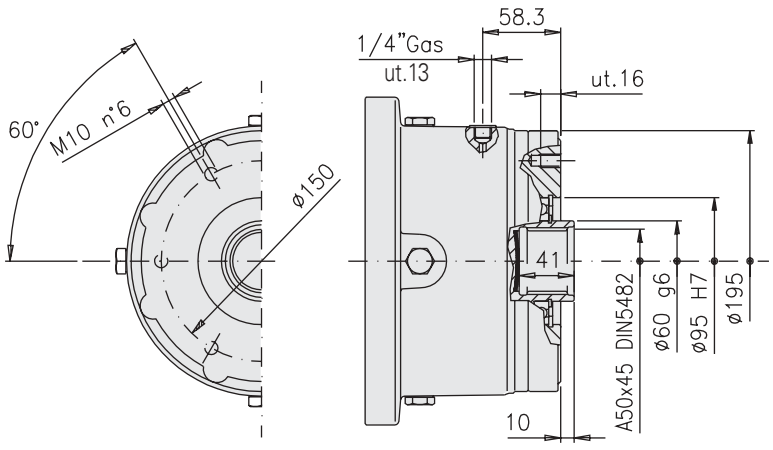


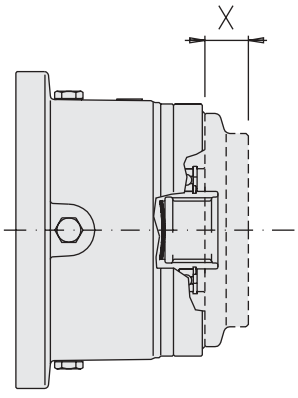


Flange type: **BF**

RF 5/21 ÷ 5/130 - RFF 5/21 ÷ 5/130

Type B

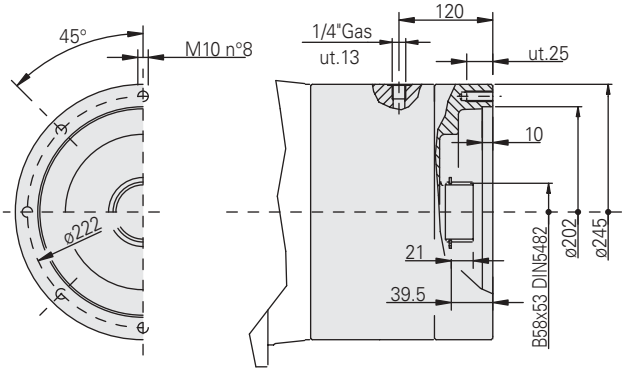




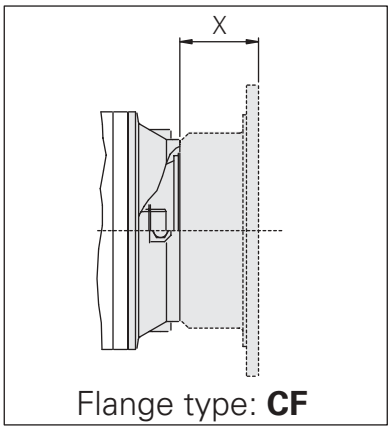
Flange type: **BF**

BRAKE INPUT DIMENSIONS AND COUPLING FLANGES:

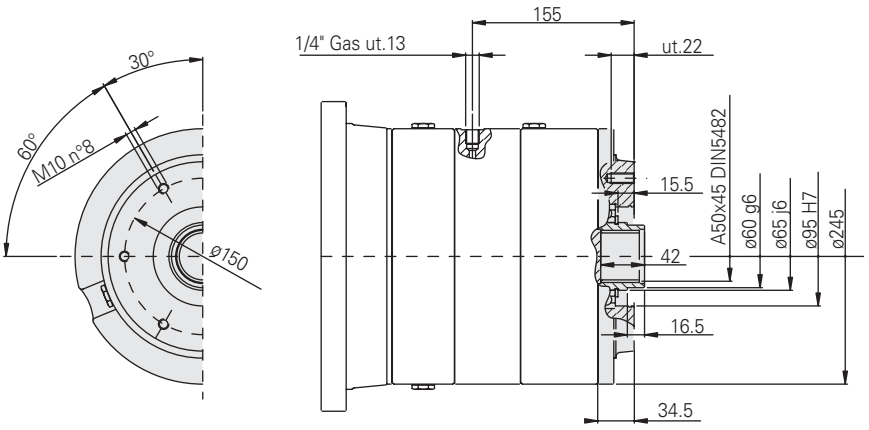
RF 170÷290



Type C

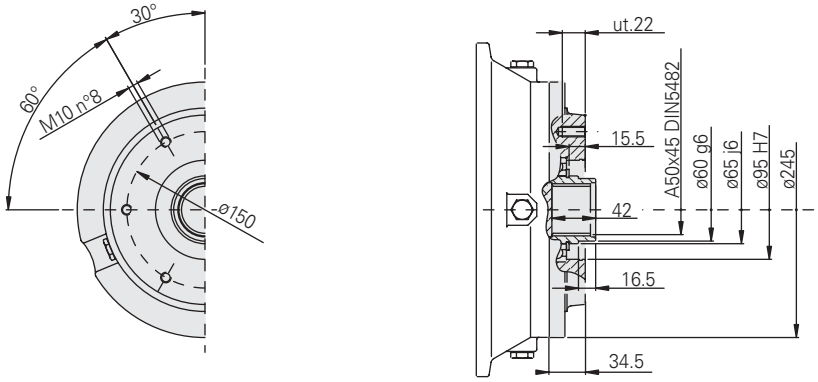


Kit - series RF170-290 brake input transformation in type “B” input



CODE:
154F3334

Kit - type “C” input transformation in type “B” input



CODE:
154-2357

Using this kit, both in the version for transformation of type “C” inputs and in the version for series RF170-290 brakes, it will then be possible to mount any motor coupling with type “BF” flanges.

BIGNOZZI Model	Flange type	Code	Height "X"
BM 65 ÷ 150	BF	154-2300M117	33
BM 200 ÷ 300	BF	154-2300M118	50
BM 400 ÷ 600	BF	✶	58
	CF	154-2300M202	75

CALZONI Model	Flange type	Code	Height "X"
MR 190 N	BF	154-2300M109	50
MR 300 N	BF △	154-2300M156	70
	CF	154-2300M206	67,5
MR 450 N	BF △	154-2300M157	91
	CF	154-2300M204	85,5
MR 700 N	CF	154-2300M205	90
MR 1100 N	CF	154-2300M207	104
MRV 450	BF △	154-2300M415	98
	CF	154-2300M373	30
MRV 700	CF	154-2300M374	33

LINDE Model	Flange type	Code	Height "X"
BMF 35	BF	154-2300M89	42
BMF 50	BF	154-2300M87	46
BMF 75	BF	154-2300M88	47,5
BMF 105	BF	154-2300M90	57
BMF 140	BF	✶	74
BMF 186	BF	154-2300M147	92
MMF 43	BF	154-2300M283	24
MMF 63	BF	154-2300M298	34

✶ : Reduction gear ratio must be indicated
✶✶ : Only for angle gear A 210
△ : Version with input sun pinion ("prearranged for bushing")

NB= We recommend using standard couplings marked AD, B1D, B5D.

DANFOSS Model		Flange type	Code	Height "X"
OMM	ø 16 cyl.	BF	154-5975	22
	B 17x14 splined	BF	154-5976	22
OMP-OMR	Flange	AF	154-3284	37
	Coupling SAE 6B		154-3285	
	Flange	BF	154-2908	25,5
	Coupling ø 25		154-2251	
	Coupling ø 1"		154-2277	
	Coupling SAE 6B		154-2252	
	Coupling ø 1 1/4"		154-2909	
	Cyl. ø 1"	B1D	154B2705	86
	Cyl. ø 25	B1D	154B2704	86
	SAE 6B	B1D	154B2702	86
	Cyl. ø 1 1/4"	B1D	154B2711	99
	Cyl. ø 32	B1D	154B2709	99
	Cyl. ø1"	B5D	154B2707	100
	Cyl. ø 25	B5D	154B2706	100
	SAE 6B	B5D	154B2700	100
	Cyl. ø 1 1/4"	B5D	154B2710	113
	Cyl. ø 32	B5D	154B2708	113
OMS	Flange	BF	154-2253	38
	Coupling cyl. ø 32		154-2254	
	Coupling 12/24 Z 14		154-2255	
OMSS		BF	154-2256	37
		B1D	154B2691	87
		B5D	154B2688	93
		✶✶	154B2692	62
OMT	Flange	BF △	154-2257	105
	Coupling cyl. ø 40	△	154-2276	
	Flange	CF	154-2268	102
	Coupling cyl. ø 40		154-2269	
OMTS		BF △	154-2258	48
		B5D	154 B 2690	104
		CF	154-2267	51
	Flange	✶✶	154B2693	73
OMV	Coupling cyl. ø 50	BF △	154-2259	113
	Flange	△	154-2275	
	Coupling cyl. ø 50	CF	154-2260	110
			154-2261	
OMVS		BF △	154-2262	55
		B5D	154B2689	111
		CF	154-2263	58
		✶✶	154B2694	80

ELECTRICAL motors Model	Flange type	Code	Height "X"
Gr. 63	AF	154-2300M497	24
	BF	154-2300M367	18,5
Gr. 71	AF	154-2300M341	18
	BF	154-2300M228	18
Gr. 80	AD		84
	B1D	154-2300M532	95,5
	BF	154-2300M229	24
Gr. 90	AD		84
	B1D	154-2300M520	95,5
	BF	154-2300M230	24
Gr. 100-112	AD		84
	B1D	154-2300M518	95,5
	B5D	154-2300M584	108
	BF	154-2300M231	30
Gr. 132	BF	154-2300M232	97
	B1D	154-2300M582	125,5
	B5D	154-2300M585	131,5
Gr. 160	B5D	154-2300M586	160,8
	BF	154-2300M456	128
Gr. 180	B5D	154-2300M595	161
	BF	154-2300M235	128

REXROTH - HYDROMATIK Model		Flange type	Code	Height "X"
A2FM10-12-16	W25x1,25x18	AF	154-2300M371	44
	W25x1,25x18	BF	154-2300M73	39
	cyl. ø 20	BF	154-2300M68	55
A2FM23-28-32	W30x2x14	BF	154-2300M417	46
	W25x1,25x18	BF	154-2300M77	46
	cyl. ø 25	BF	154-2300M66	71
	cyl. ø 30	BF	154-2300M216	62
A2FM45	W32x2x14	BF	154-2300M312	62
	W30x2x14	BF	154-2300M76	62
	cyl. ø 30	BF	154-2300M63	62
A2FM56	W35x2x16	BF	154-2300M75	62
	W30x2x14	BF	154-2300M76	62
A2FM63	W35x2x16	BF	154-2300M75	62
A2FM80	W40x2x18	BF	154-2300M48	56
	W35x2x16	BF	154-2300M67	56
	cyl. ø 35	BF	154-2300M445	72
	W40x2x18	CF	154-2300M191	65
	W35x2x16	CF	154-2300M194	65
A2FM90	W40x2x18	BF	154-2300M48	56
	cyl. ø 40	BF △	154-2300M422	104
A2FM107	W45x2x21	BF	154-2300M397	113
	W40x2x18	BF	154-2300M426	65
	cyl. ø 40	BF △	154-2300M369	113
A2FM160	W45x2x21	BF	154-2300M49	110
	W50x2x24	BF △	154-2300M215	110
A2FM180	W50x2x24	BF △	154-2300M215	110
A6VM28	W25x1,25x18	BF	154-2300M77	46
A6VM55	W30x2x14	BF	154-2300M76	62
	W35x2x16	BF	154-2300M75	62
A6VM80	W35x2x16	BF	154-2300M67	56
A6VM107	W40x2x18	BF △	154-2300M362	74
A6VM160	W45x2x21	BF	154-2300M49	110
	W45x2x21	CF	154-2300M414	78
A6VM200	W50x2x24	CF	154-2300M448	117
A6VM250	W50x2x24	BF	∗	66

SAE Model		Flange type	Code	Height "X"
SAE "A"	Splined SAE 6 B	AF	154-2300M377	37
	cyl. ø 1"	B1D	154-2300M571	86
	cyl. ø 7/8"	B1D	154-2300M573	86
	Splined SAE 6 B	B1D	154B2702	86
	Splined 16/32 Z=13	B1D	154-2300M574	86
	Splined 16/32 Z=15	B1D	154-2300M575	86
	cyl. ø 1"	B5D	154-2300M560	100
	cyl. 7/8"	B5D	154-2300M562	100
	Splined SAE 6 B	B5D	154B2700	100
	Splined 16/32 Z=13	B5D	154-2300M563	100
	Splined 16/32 Z=15	B5D	154-2300M564	100
	cyl. ø 1"	BF	154-2300M315	24
	cyl. ø 25	BF	154-2300M317	24
	Splined 16//32 Z=13	BF	154-2300M267	24
	Splined SAE 6 B	BF	154-2300M272	24
SAE "B"	Splined 16/32 Z=13	AF	154-2300M358	30
	Splined 16/32 Z=15	AF	154-2300M295	30
	cyl. ø 1"	B1D	154-2300M576	86
	cyl. ø 7/8"	B1D	154-2300M578	86
	Splined SAE 6 B	B1D	154B2703	86
	Splined 16/32 Z=13	B1D	154-2300M579	86
	Splined 16/32 Z=15	B1D	154-2300M580	86
	cyl. ø 1"	B5D	154-2300M565	100
	cyl. ø 7/8"	B5D	154-2300M567	100
	Splined SAE 6B	B5D	154B2701	100
	Splined 16/32 Z=13	B5D	154-2300M568	100
	Splined 16/32 Z=15	B5D	154-2300M569	100
	cyl. ø 1"	BF	154-2300M285	24
	cyl. ø 7/8"	BF	154-2300M290	24
	Splined 16/32 Z=13	BF	154-2300M284	24
	Splined 16/32 Z=15	BF	154-2300M283	24
SAE "C"	Splined 12/24 Z=14	B5D	154-2300M570	102
	cyl. ø 1" 1/4"	BF	154-2300M303	31,5
	Splined 12/24 Z=14	BF	154-2300M302	31,5
	Splined 12/24 Z=14	CF	154-2300M408	46,5
SAE "D"	Splined 16/32 Z=27	BF △	154-2300M308	70
	Splined 8/16 Z=13	BF △	154-2300M309	70
	Splined 16/32 Z=27	CF	154-2300M306	70
	Splined 8/16 Z=13	CF	154-2300M396	70
SAE "E"	Splined 8/16 Z=13	BF △	154-2300M310	74

SAI Model		Flange type	Code	Height "X"
GM05		BF	154-2300M455	37
GM5A		CF	154-2300M742	84
GM2		BF	154-2300M549	61
GM1	**male**	BF	154-2300M43	20
	female	BF	154-2300M44	20

VOLVO Model	Flange type	Code	Height "X"
F 11 -5 cyl.	BF	154-2300M11	24
F 11 -10 cyl.	BF	154-2300M10	30
splined	AF	154-2300M338	22
11 -19 cyl.	BF	154-2300M13	38
F 11 -28 cyl.	BF	154-2300M14	24
F 11 -39 ÷ 58 cyl.	BF	154-2300M12	62
F 11 -78 cyl.	BF △	154-2300M129	110
F 11 -110 cyl.	BF △	154-2300M131	110
splined	BF	154-2300M363	64
F 11 -150 cyl.	BF △	154-2300M130	120
cyl.	CF	154-2300M132	117

△ : Version with input sun pinion ("prearranged for bushing")
∗ : Reduction gear ratio must be indicated.

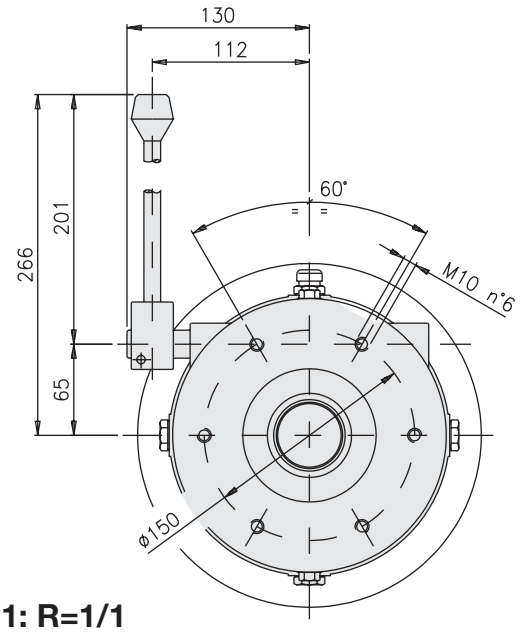
NB= We recommend using standard couplings marked AD, B1D, B5D.

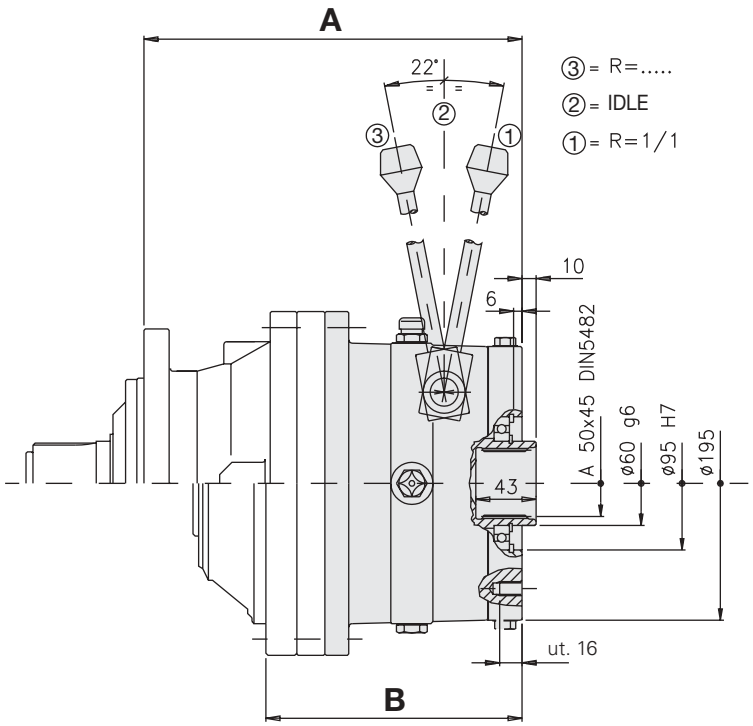
EXAMPLE OF COUPLING CHOICE

COUPLING CHOICE FOR DANFOSS OMSS MOTOR ON RR510 T

From page 151 on check the flange type available for OMSS motor. From page 145 on, for reduction gear size RR 105÷510, choose the flange type for RR510 T; see B1D. Go back to page 151 to read the coupling code for OMSS motor in the DANFOSS motor box: see 154B2691, with the corresponding coupling height "X".

MECHANICAL GEAR - RC





Position 1: R=1/1

MAX. INPUT SPEED	1750 min^{-1} R = 1/3,4 1500 min^{-1} R = 1/4 1200 min^{-1} R = 1/5 1000 min^{-1} R = 1/5,8 850 min^{-1} R = 1/7

Output torque T_{2max}=450 daNm

Position 2: IDLE

MAX. INPUT SPEED	6000 min^{-1} R = 1/3,4 6000 min^{-1} R = 1/4 6000 min^{-1} R = 1/5 6000 min^{-1} R = 1/5,8 6000 min^{-1} R = 1/7

Position 3: R=.../1 (drive with reduced motion)

MAX. INPUT SPEED	3500 min^{-1} R = 1/3,4 3500 min^{-1} R = 1/4 3500 min^{-1} R = 1/5 3500 min^{-1} R = 1/5,8 3500 min^{-1} R = 1/7

TYPE	A
RR 510 M...	269,5
RR 510 S...	302,5
RR 510D M...*	357,5
RR 510D S...*	390,5
RR 1010D M..	406,5
RR 1010T M...*	494,5
RR 1700D B...	482,5
RR 1700T B...*	570,5
RR 1700D M...	330,5
RR 1700T M...*	418,5

TYPE	B
RR 510 FS	182,5
RR 510D FS*	270,5
RR 1010D FS	287,5
RR 1010T FS*	375,5
RR 1700D FS	300,5
RR 1700T FS*	388,5

* Special version

Output torque:

see torque **T_2** table of the reduction gears **RR510**.

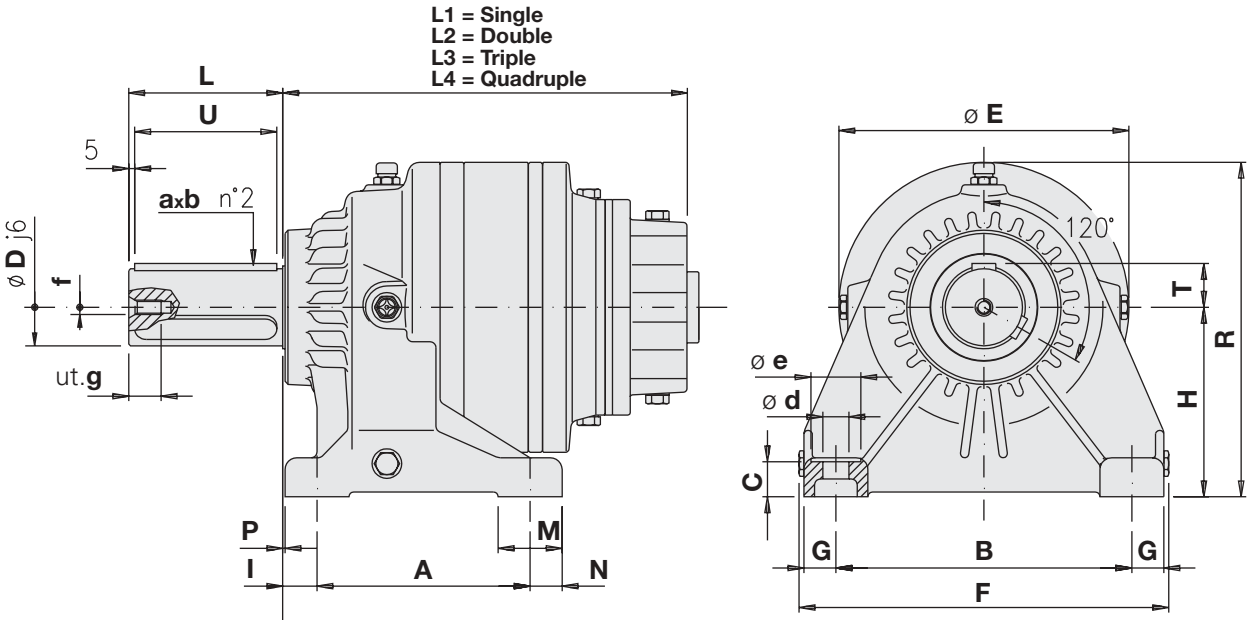
Thermal power allowable in the following conditions of use:
Lubrication by shaking. Horizontal working position.
Quantity of oil corresponding to half full. Mineral oil ISO VG150.
Room temperature 20°C. Input revs 1000 min^{-1}.
Pt = 15 kW

Relative speed between input and output during insertion : 0,1 : 15 min^{-1}
Max. insertion stress on the lever provided : 150 daN
The insertion manoeuvre requires zero resisting torque.

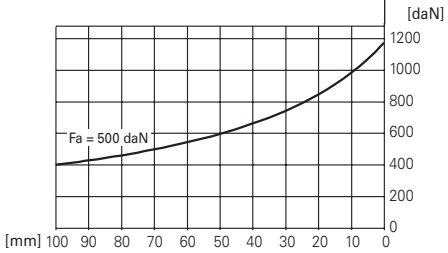
OUTPUT SIDE SUPPORTS AND ACCESSORIES

N.B. see series RR-RA for technical features

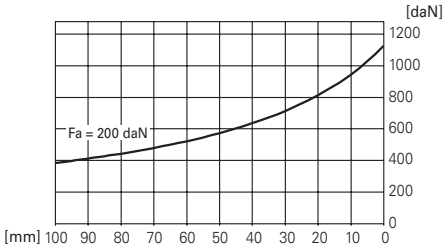
SUPPORTS WITH FEET



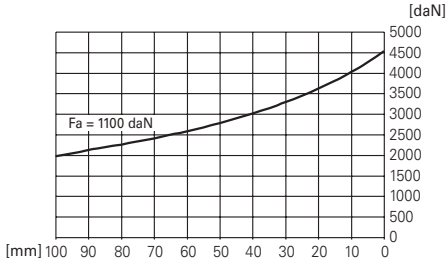
RR 65 UC



RR 105 UC - RR 110 UC - RR 210 UC



RR 310 UC - RR 510 UC - RR 710 UC

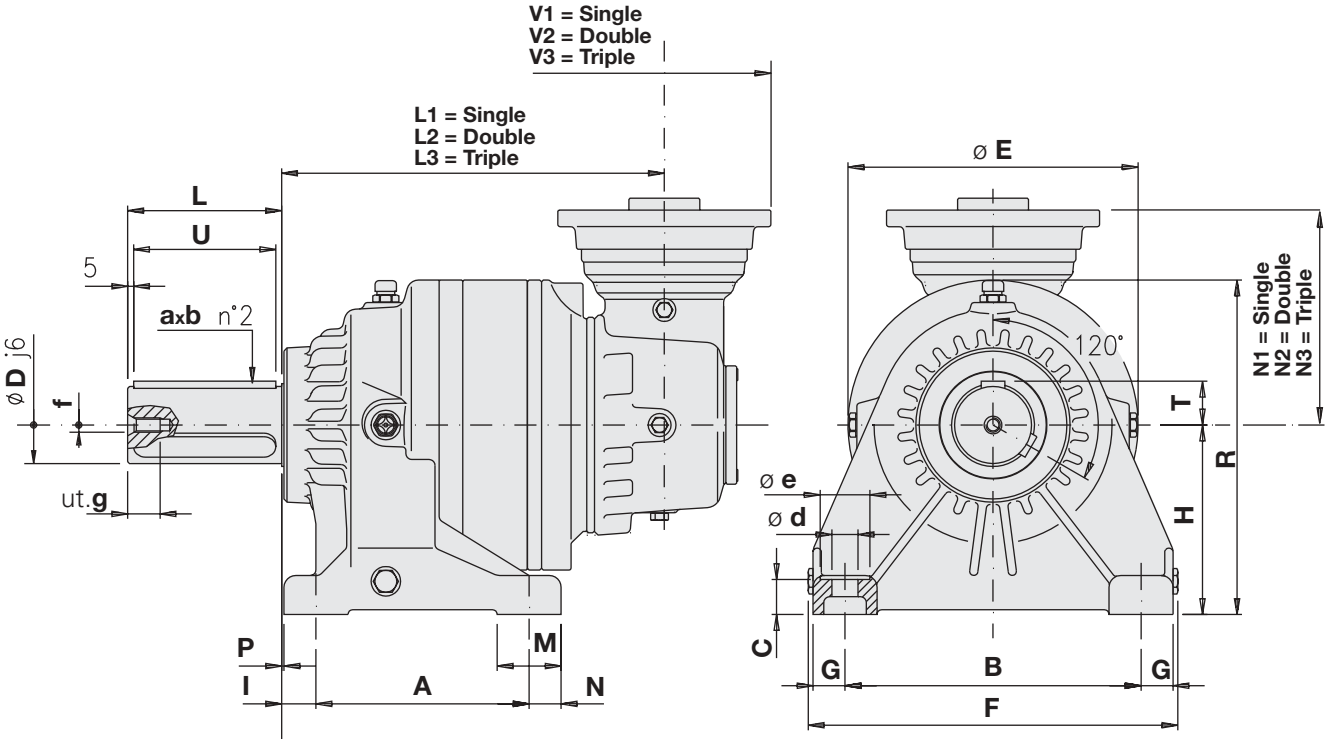


	RR 65 UC	RR 105 UC	RR 110 UC	RR 210 UC	RR 310 UC	RR 510 UC RR 710 UC
A	105	132	132	132	180	180
B	145	190	190	190	250	250
C	16,5	18	18	18	29,5	29,5
D	40	40	40	40	65	65
E	140	182	182	182	245	245
F	195	242	242	242	319	319
G	18	19	19	19	27	27
H	100	125	125	125	160	160
I	15	20	20	20	29	29
L	70	70	70	70	130	130
L1	116	160	162	172	201	209
L2	138	177,5	179,5	218,5	267	275,5
L3	161,5	199,5	201,5	236	284,5	341,5
L4				258	306,5	359

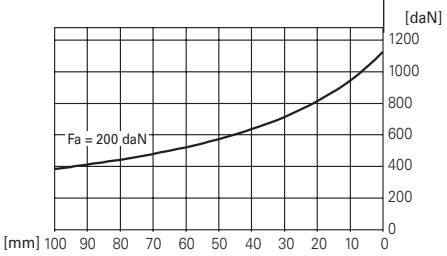
	RR 65 UC	RR 105 UC RR 110 UC RR 210 UC	RR 310 UC	RR 510 UC RR 710 UC
M	36	38	54	54
N	18	19	27	27
P	0	1	2	2
R	191	227	286	286
T	23	23	37	37
U	60	60	120	120
axb	12x8	12x8	20x12	20x12
d	13	15	22	22
e	25	27	42	42
f	M10	M10	M12	M12
g	16	16	20	20

SEE THE INPUT DIMENSIONS ON PAGES 144-147

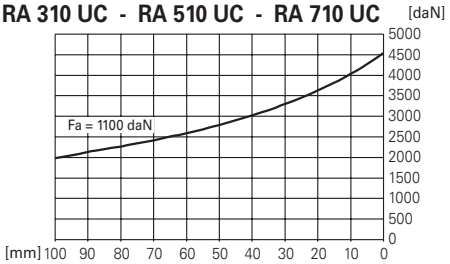
SUPPORTS WITH FEET



RA 105 UC - RA 110 UC - RA 210 UC



RA 310 UC - RA 510 UC - RA 710 UC

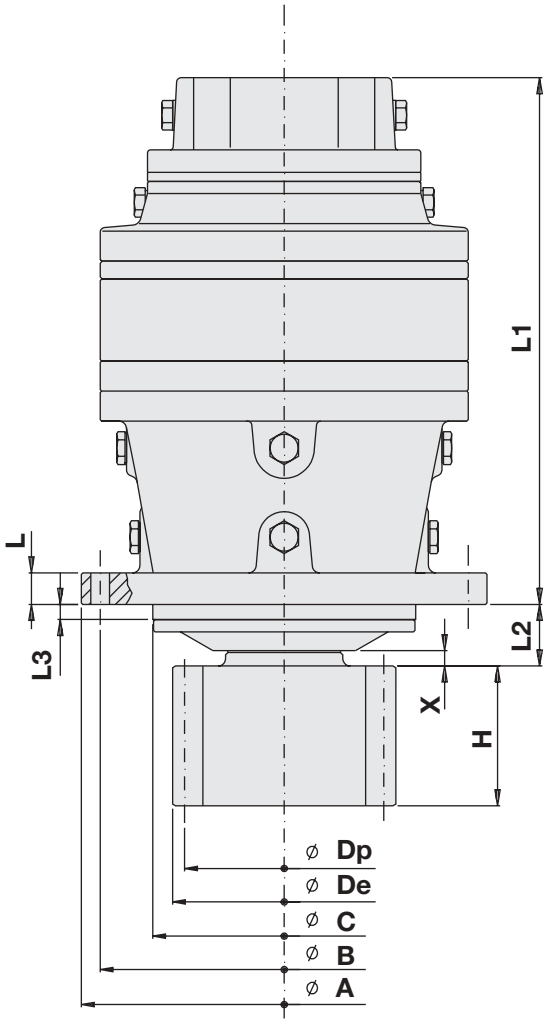


	RA 105 UC	RA 110 UC	RA 210 UC	RA 310 UC	RA 510 U RA 710 UC
A	132	132	132	180	180
B	190	190	190	250	250
C	18	18	18	29,5	29,5
D	40	40	40	65	65
E	182	182	182	245	245
F	242	242	242	319	319
G	19	19	19	27	27
H	125	125	125	160	160
I	20	20	20	29	29
L	70	70	70	130	130
L1	186	188	198	249	277,5
L2	231	235	245	293	323
L3	–	–	–	–	368
M	38	38	38	54	54

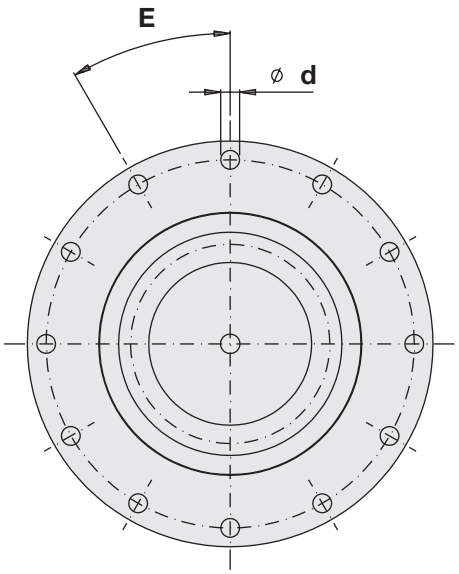
	RA 105 UC RA 110 UC RA 210 UC	RA 310 UC	RA 510 UC RA 710 UC
N1	181,5	181,5	247,5
N2	181,5	181,5	181,5
N3	–	181,5	181,5
P	1	2	2
R	227	286	286
T	23	37	37
U	60	120	120
V1	180	180	195
V2	180	180	180
V3	–	–	180
axb	12x8	20x12	20x12
d	15	22	22
e	27	42	42
f	M10	M12	M12
g	16	20	20

SEE THE INPUT DIMENSIONS ON PAGE 148

ROTATION SUPPORTS -SI-



DIMENSIONS (mm)					
TYPE	RR 210 SI	RR 310 SI	RR 510 SI	RR 710 SI	RR 810 SI
A	220	270	270	278	278
B	190	245	245	250	250
C	150 f7	175 h7	175 h7	200 h7	200 h7
E	45°	30°	30°	24°	24°
L 2/3/4 Stages	17	21	21	25	25
L1 2 Stages	226,5	276	284,5	288,5	355,5
L1 3 Stages	244	293,5	350,5	354,5	421,5
L1 4 Stages	266	315,5	368	372	439
L3	7	10	10	10	10
d	14,5 n°8	13 n°12	13 n°12	13 n°15	13 n°15



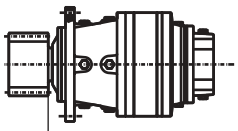
INTEGRAL PINION SHAFTS FOR REDUCTION GEAR SI										
Reduction gear type	Code	Part. No.	Module	N. teeth	Dimensions x.m	H	De	Dp	L2	X
RR 210 SI										
RR 310 SI	154F2898	03325	8	18	0	60	160	144	59	28,5
	154F2899	03500	8	15	0	80	136	120	36	5,5
RR 510 SI										
RR 710 SI	154F3333	03095	8	12	+4	70	118	96	45	7
	154B3948	03236	10	12	+6,4	80	149	120	44	6
RR 810 SI	154B4175	03366	8	15	+4	73,5	144	120	40	15

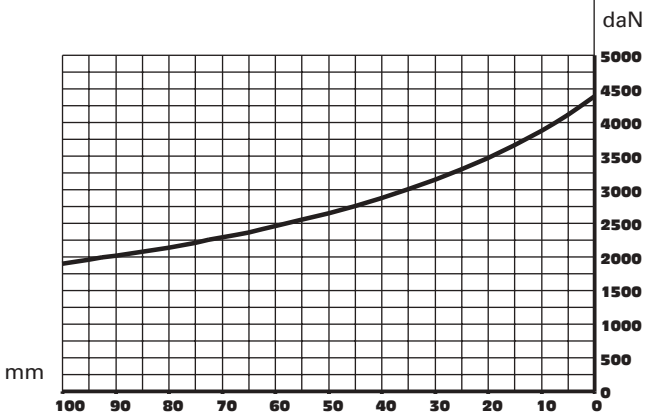
SEE THE INPUT DIMENSIONS ON PAGES 144-147

ROTATION SUPPORTS -SI-

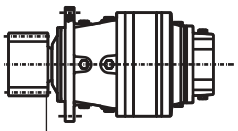
RADIAL LOAD DIAGRAMS

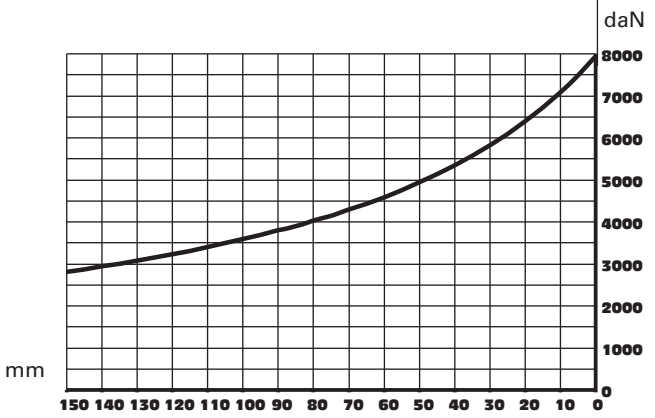
RR 210 SI



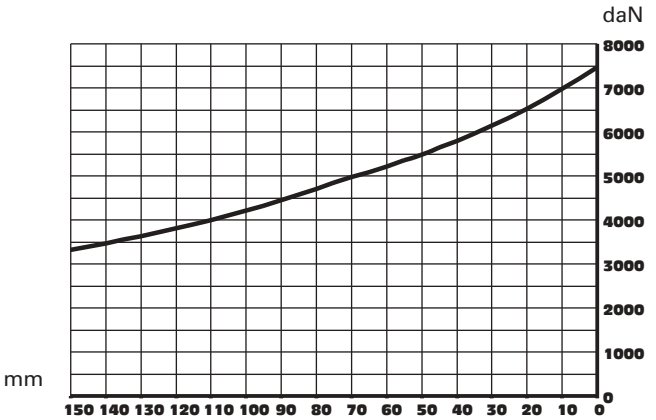


RR 310-510 SI

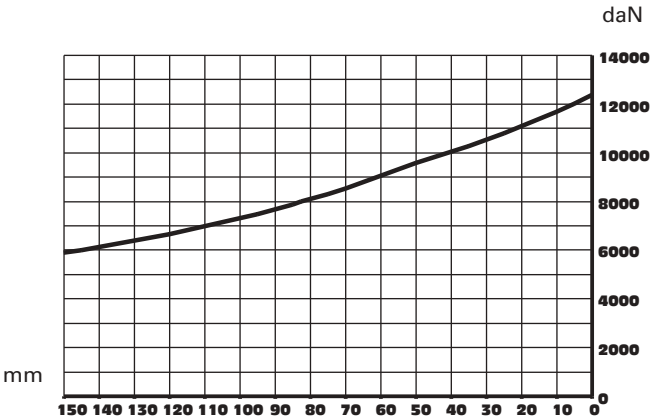




RR 710 SI

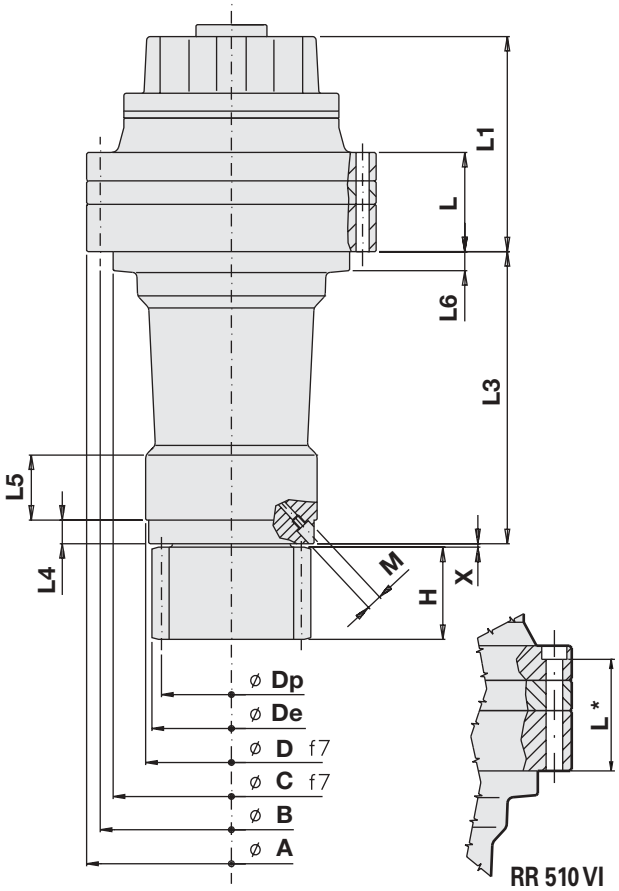


RR 810 SI

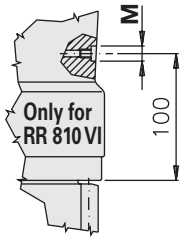


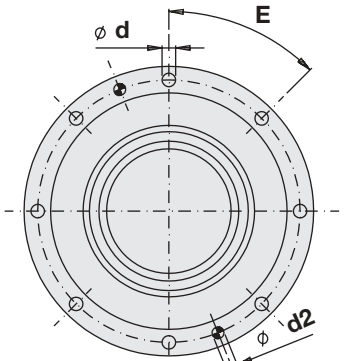
ROTATION SUPPORTS -VI-

DOUBLE CENTERING VERSIONS

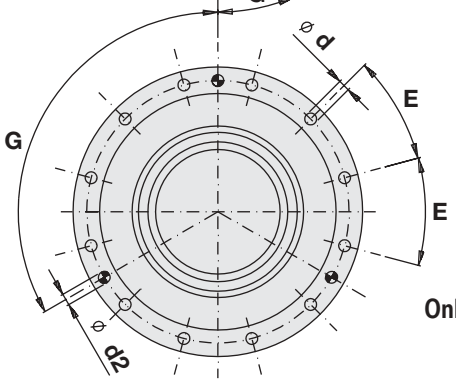


RR 510 VI
Only for: RR 710 VI
RR 1010 VI





RR 510 VI
Only for: RR 810 VI
RR 1010 VI



RR 1700 VI
Only for: RR 2700 VI
RR 3500 VI

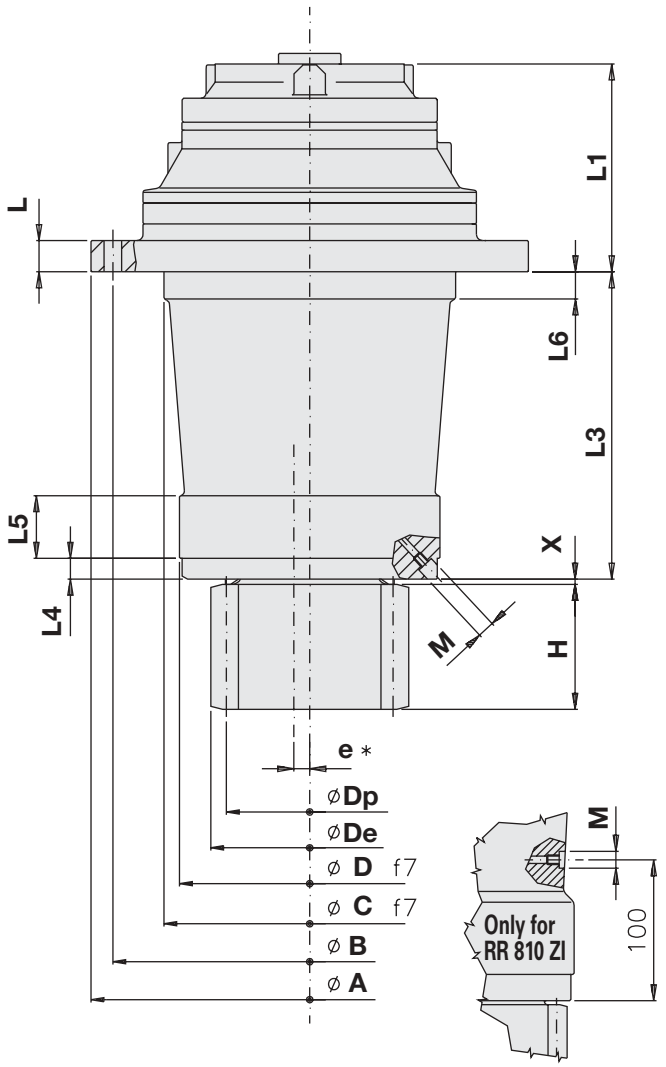
DIMENSIONS (mm)							
TYPE	RR 510 VI	RR 710 VI	RR 810 VI	RR 1010 VI	RR 1700 VI	RR 2700 VI	RR 3500 VI
A	245	245	297	320	340	357	405
B	222	222	275	299	314	327	375
C	200	200	250	280	280	295	345
D	145	145	200	250	250	280	300
E	45°	45°	45°	45°	30°	15°	15°
G	22°	22°	22°	22°	120°	120°	120°
L 2/3/4 Stages	* 143,5	* 143,5	95	* 95	111	112	115
2 Stages	182,5	186,5	207	224	242	298,5	319
L1 3 Stages	248,5	252,5	273	290,5	308,5	366,5	395
4 Stages	266	270	290,5	356,5	374,5	432,5	461,5
L3	247	247	225	295	295	345	345
L4	20	20	23	20	20	20	20
L5	55	55	47	60	60	60	60
L6	15	15	15	25	25	20	20
M	–	–	M8x1,25	M8x1,25	M8x1,25	M8x1,25	M8x1,25
d	10,5 n°8	10,5 n°8	12,5 n°8	12,5 n°8	15 n°12	15 n°18	15 n°18
d2	10 n°2	10 n°2	12 n°4	12 n°2	12 n°3	14 n°3	14 n°3

INTEGRAL PINION SHAFTS FOR REDUCTION GEAR VI									
Reduction gear type	Code	Part. No.	Module	N. teeth	Dimensions x.m	H	De	Dp	X
RR 510 VI RR 710 VI	154F1663	03472	6	18	+4,2	70	126	108	3
	154B2443	03310	8	15	+4	95	144	120	3
	154B4171	03365	8	15	+5	85	144,5	120	3
	154-5637	03284	8	11	+3	73	110	88	3
	154F3597	03402	10	11	+5	80	135	110	3
	154B1799	03292	10	11	+3,75	77	135	110	3
	154-5629	03237	10	12	+3,2	78	143,8	120	3
RR 810 VI	154F1861	03476	10	11	+5	95	136	110	5
	154F1977	03487	10	14	+4,8	80	168	140	5
	154F0804	03462	12	13	+6	90	189	156	5
RR 1010 VI	154B3079	03333	8	16	0	80	144	128	5
	154F3001	03513	10	14	+6	110	170	140	5
	154B2591	03316	10	15	+5	95	180	150	5
	154-5636	03274	10	16	+5	120	190	160	5
	154B7749	03401	12	11	+6	95	166	132	5
	154-5756	03296	12	11	+6	117	168	132	5
	154-5635	03283	12	14	0	90	192	168	5
RR 1700 VI	154B6334	03397	10	12	+8	90	153	120	5
	154B8638	03403	10	14	+5	90	170	140	5
	154-5632	03281	10	15	+5	120	178	150	5
	154B3506	03334	10	18	+8	120	215	180	5
	154B3578	03339	10	18	+7,5	120	214	180	5
	154F0578	03451	12	12	+6	130	178	144	5
	154-5633	03279	12	16	+6	120	228	192	5
	154F3698	03531	12	14	+3,78	137	199	168	5
	154B6995	03396	14	12	+7	120	205	168	5
	154B2442	03309	14	14	+7	75	238	196	5
RR 2700 VI RR 3500 VI	154F1676	03473	10	17	+2	130	192	170	3
	154B8877	03412	12	13	+6	110	190	156	3
	154B2590	03317	14	14	+7	85	238	196	23
	154F1662	03471	14	14	+7	150	235	196	3
	154B3589	03340	16	13	+8,16	125	254	208	3
	154F2962	03512	16	13	+10	160	256	208	3
	154F1925	03481	18	12	+9	140	265	216	3
	154F1466	03467	18	13	+7,2	140	279	234	3
	154-5634	03280	14	14	+7	105	238	196	3
	154B9988	03436	14	14	+7	105	238	196	3
RR 3500 VI	154F3289	03518	16	15	+5	160	282	240	3
	154B6883	03395	18	13	+9	140	285	234	3

SEE THE INPUT DIMENSIONS ON PAGES 144-147

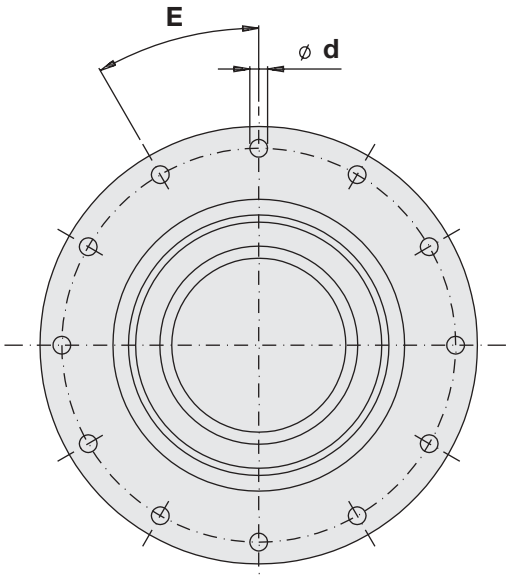
ROTATION SUPPORTS -ZI-

DOUBLE CENTERING VERSIONS WITH FLANGE



DIMENSIONS (mm)							
TYPE	RR 810 ZI	RR 1010 ZI	RR 1700 ZI	RR 2700 ZI	RR 3500 ZI	RR 5000 ZI	RR 6300 ZI
A	360	420	420	500	500	560	640
B	325	380	380	460	460	510	600
C	250	280	280	425	425	400	470
D	200	250	250	280	300	340	370
E	36°	30°	30°	30°	30°	15°	7,5°
L 2/3/4 Stages	25	30	30	35	35	30	36
L1 2 Stages	207	224	242	298,5	319	402	461,5
L1 3 Stages	273	290,5	308,5	366,5	395	478	554,5
L1 4 Stages	290,5	356,5	374,5	432,5	461,5	544,5	622,5
L3	225	295	295	345	345	420	519
L4	23	20	20	20	20	20	38,5
L5	47	60	60	60	60	70	104,5
L6	15	25	25	20	20	20	30
M	M8x1,25	M8x1,25	M8x1,25	M8x1,25	M8x1,25	M8x1,25	–
d	17 n°10	17 n°12	17 n°12	22 n°12	22 n°12	22 n°24	18 n°48
e*	–	–	2	–	–	–	3

* OPTION: The values refer to the dimensions A-B-C-D



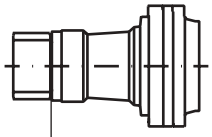
INTEGRAL PINION SHAFTS FOR REDUCTION GEAR ZI									
Reduction gear type	Code	Part. No.	Module	N. teeth	Dimensions x.m	H	De	Dp	X
RR 810 ZI	154F1861	03476	10	11	+5	95	136	110	5
	154F1977	03487	10	14	+4,8	80	168	140	5
	154F0804	03462	12	13	+6	90	189	156	5
RR 1010 ZI	154B3079	03333	8	16	0	80	144	128	5
	154F3001	03513	10	14	+6	110	170	140	5
	154B2591	03316	10	15	+5	95	180	150	5
	154-5636	03274	10	16	+5	120	190	160	5
	154B7749	03401	12	11	+6	95	166	132	5
	154-5756	03296	12	11	+6	117	168	132	5
	154-5635	03283	12	14	0	90	192	168	5
RR 1700 ZI	154B6334	03397	10	12	+8	90	153	120	5
	154B8638	03403	10	14	+5	90	170	140	5
	154-5632	03281	10	15	+5	120	178	150	5
	154B3506	03334	10	18	+8	120	215	180	5
	154B3578	03339	10	18	+7,5	120	214	180	5
	154F0578	03451	12	12	+6	130	178	144	5
	154-5633	03279	12	16	+6	120	228	192	5
	154F3698	03531	12	14	+3,78	137	199	168	5
	154B6995	03396	14	12	+7	120	205	168	5
	154B2442	03309	14	14	+7	75	238	196	5
RR 2700 ZI RR 3500 ZI	154F1676	03473	10	17	+2	130	192	170	3
	154B8877	03412	12	13	+6	110	190	156	3
	154B2590	03317	14	14	+7	85	238	196	23
	154F1662	03471	14	14	+7	150	235	196	3
	154B3589	03340	16	13	+8,16	125	254	208	3
	154F2962	03512	16	13	+10	160	256	208	3
	154F1925	03481	18	12	+9	140	265	216	3
	154F1466	03467	18	13	+7,2	140	279	234	3
	154-5634	03280	14	14	+7	105	238	196	3
	154B9988	03436	14	14	+7	105	238	196	3
RR 3500 ZI	154F3289	03518	16	15	+5	160	282	240	3
	154B6883	03395	18	13	+9	140	285	234	3
RR 5000 ZI	154B2531	03315	18	14	+9	115	306	252	5
	154B4479	03383	18	14	+9	125	302	252	5
	154B4213	03367	18	16	+9	150	338	288	5
RR 6300 ZI	154B9741	03428	20	15	+9	145	354	300	6

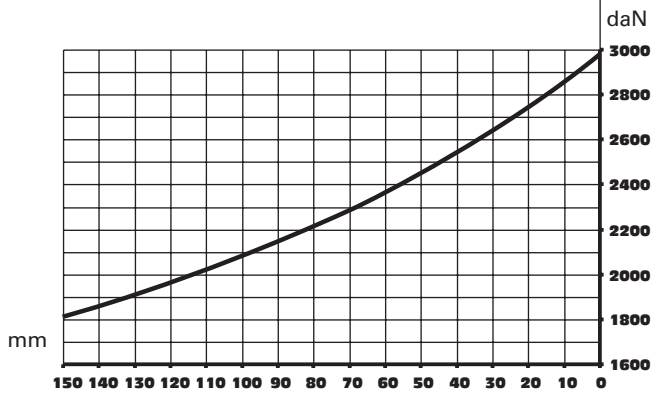
SEE THE INPUT DIMENSIONS ON PAGES 144-147

ROTATION SUPPORTS

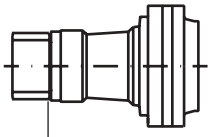
RADIAL LOAD DIAGRAMS

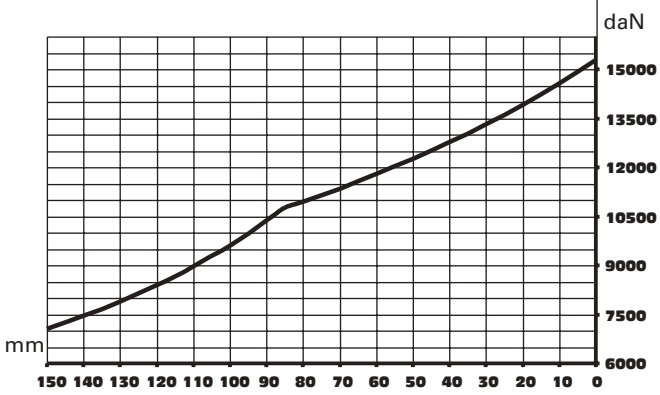
RR 510-710 VI



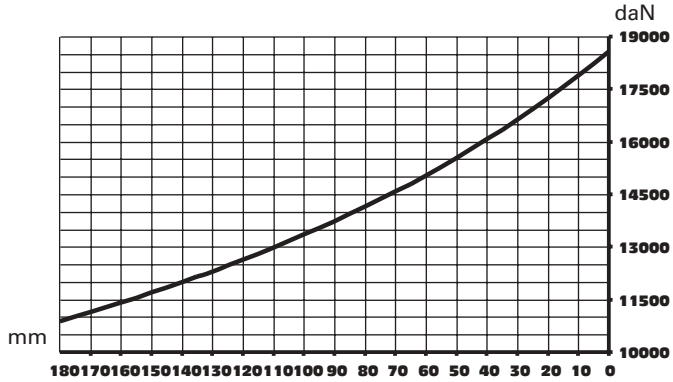


RR 810 VI-ZI

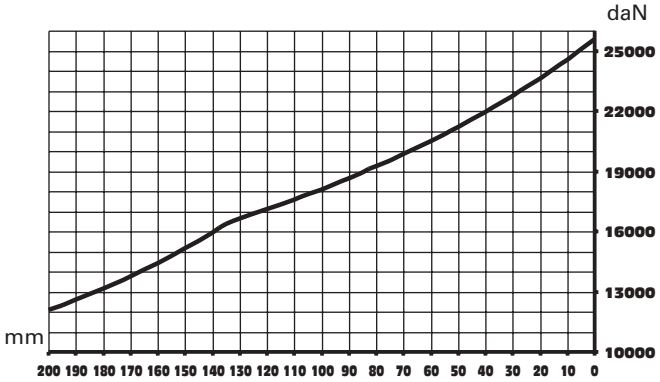




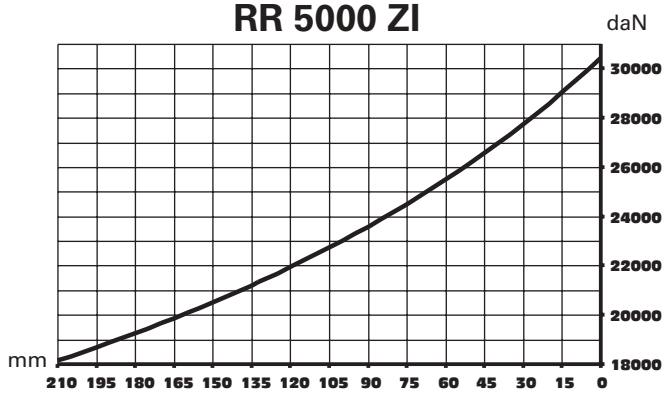
RR 1010-1700 VI-ZI



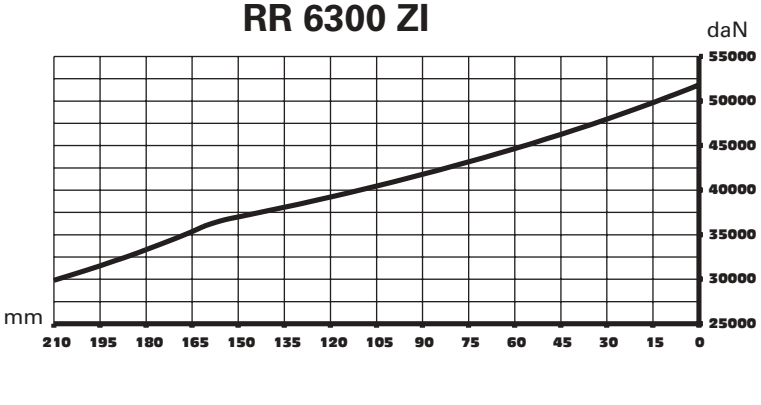
RR 2700-3500 VI-ZI



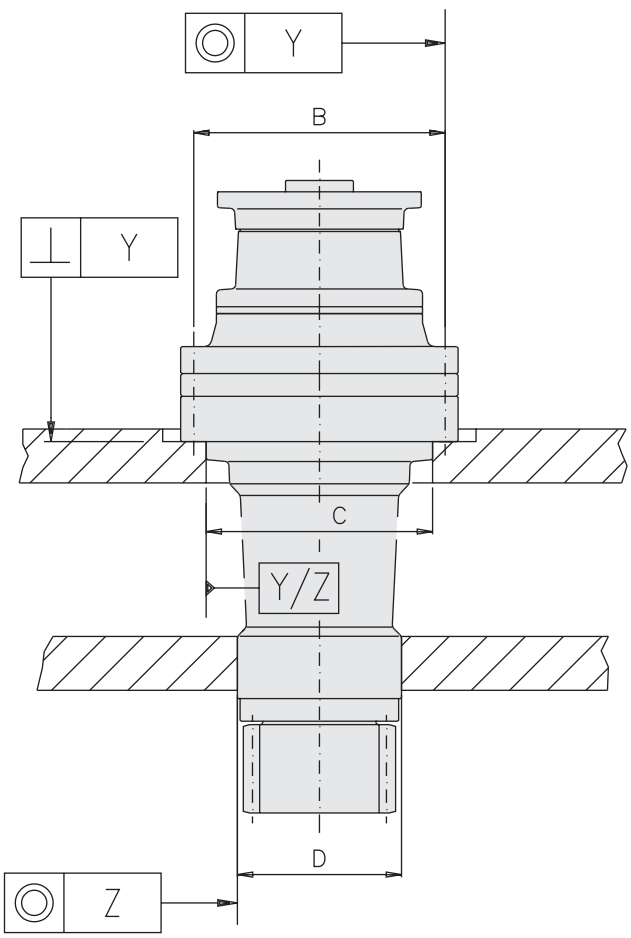
RR 5000 ZI



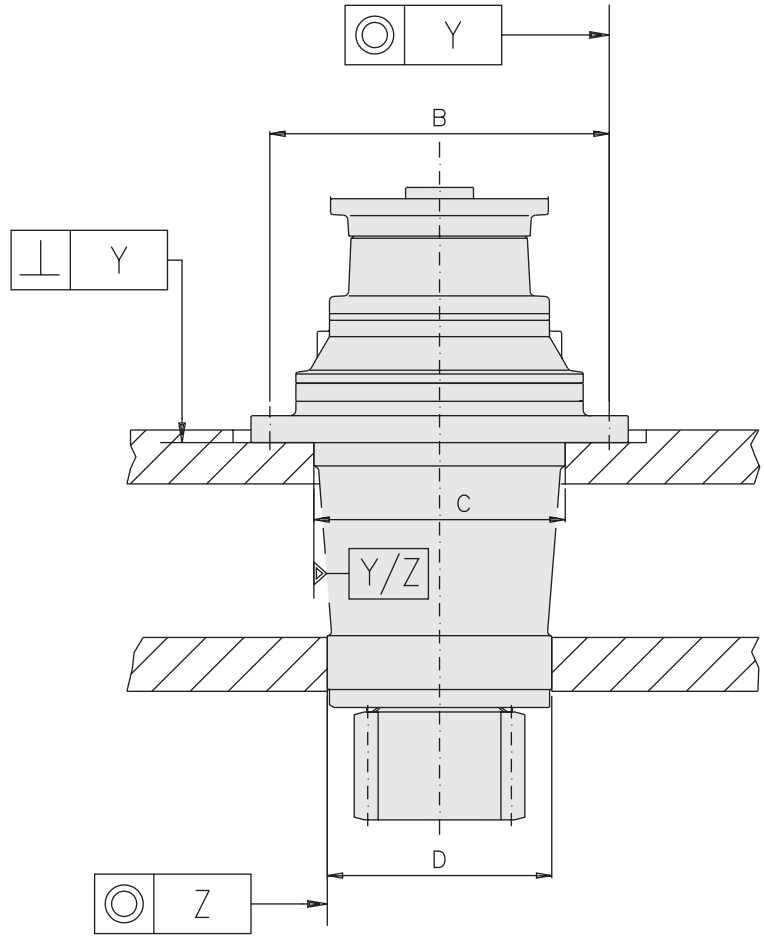
RR 6300 ZI



ROTATION SUPPORTS



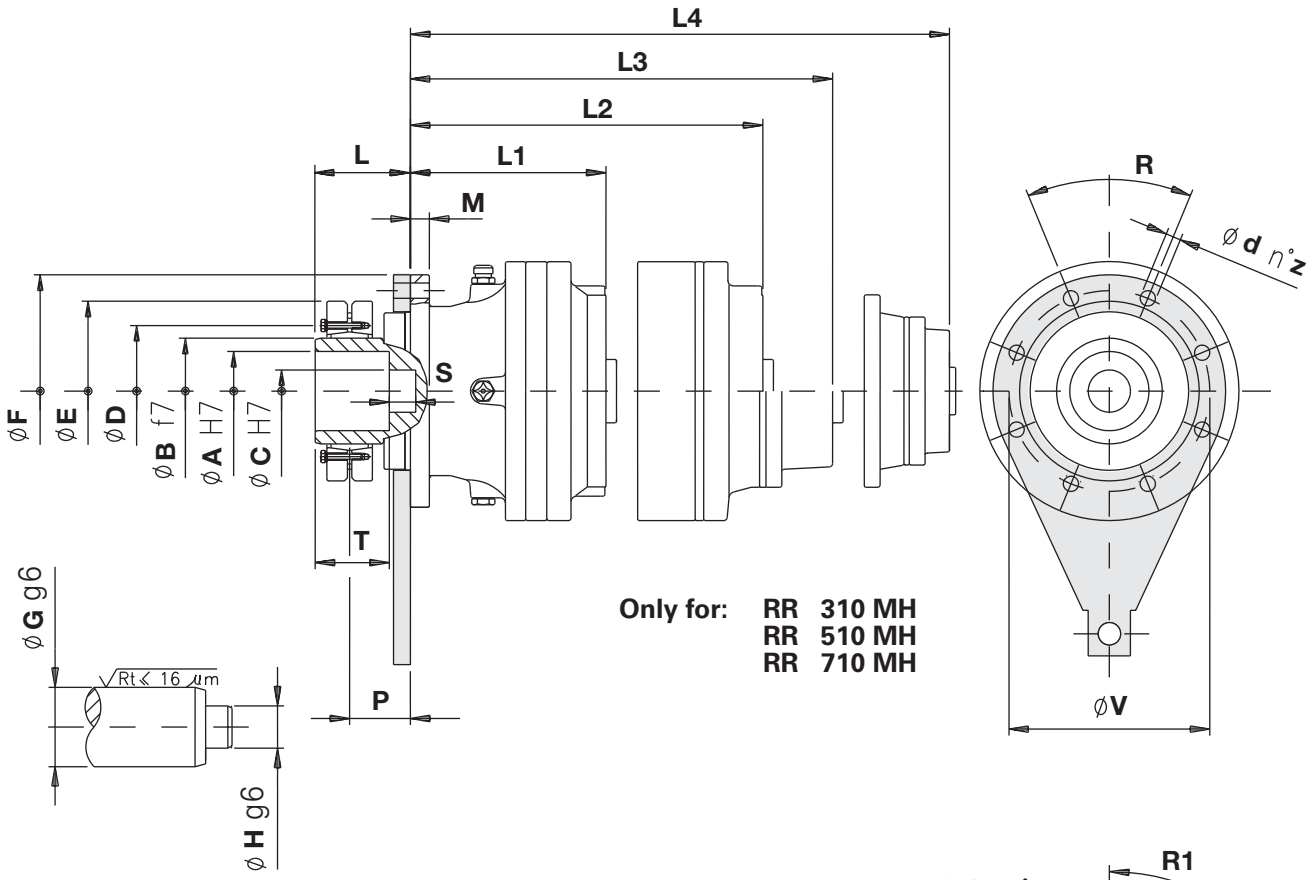
RR 510 VI - RR 3500 VI



RR 810 ZI - RR 6300 ZI

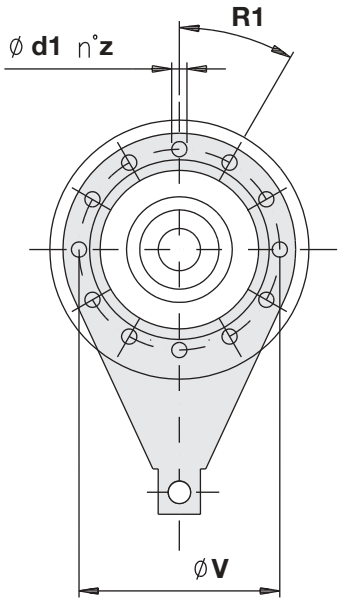
	CENTERING DIAMETER **C**										
	200	**250**	**250**	**280**	**280**	**280**	**295**	**345**	**400**	**425**	**470**
REDUCTION GEAR TYPE	**RR 510 VI RR 710 VI**	**RR 810 VI**	**RR 810 ZI**	**RR 1010 VI**	**RR 1700 VI**	**RR 1010 ZI RR 1700 ZI**	**RR 2700 VI**	**RR 3500 VI**	**RR 5000 ZI**	**RR 2700 ZI RR 3500 ZI**	**RR 6300 ZI**
DRILLING DIAMETER B	**222 ± 0,2**	**275 ± 0,2**	**325 ± 0,2**	**299 ± 0,2**	**314 ± 0,2**	**380 ± 0,2**	**327 ± 0,2**	**375 ± 0,2**	**510 ± 0,3**	**460 ± 0,3**	**600 ± 0,3**
◎ Y	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,5	0,5	0,5
⊥ Y	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,07
◎ Z	0,05	0,05	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
ANGULAR TOLERANCE ON E	10′	10′	10′	10′	8′	8′	8′	8′	8′	8′	8′

HOLLOW SHAFT



Only for: **RR 310 MH**
RR 510 MH
RR 710 MH

Reaction arm and shrink disc on request

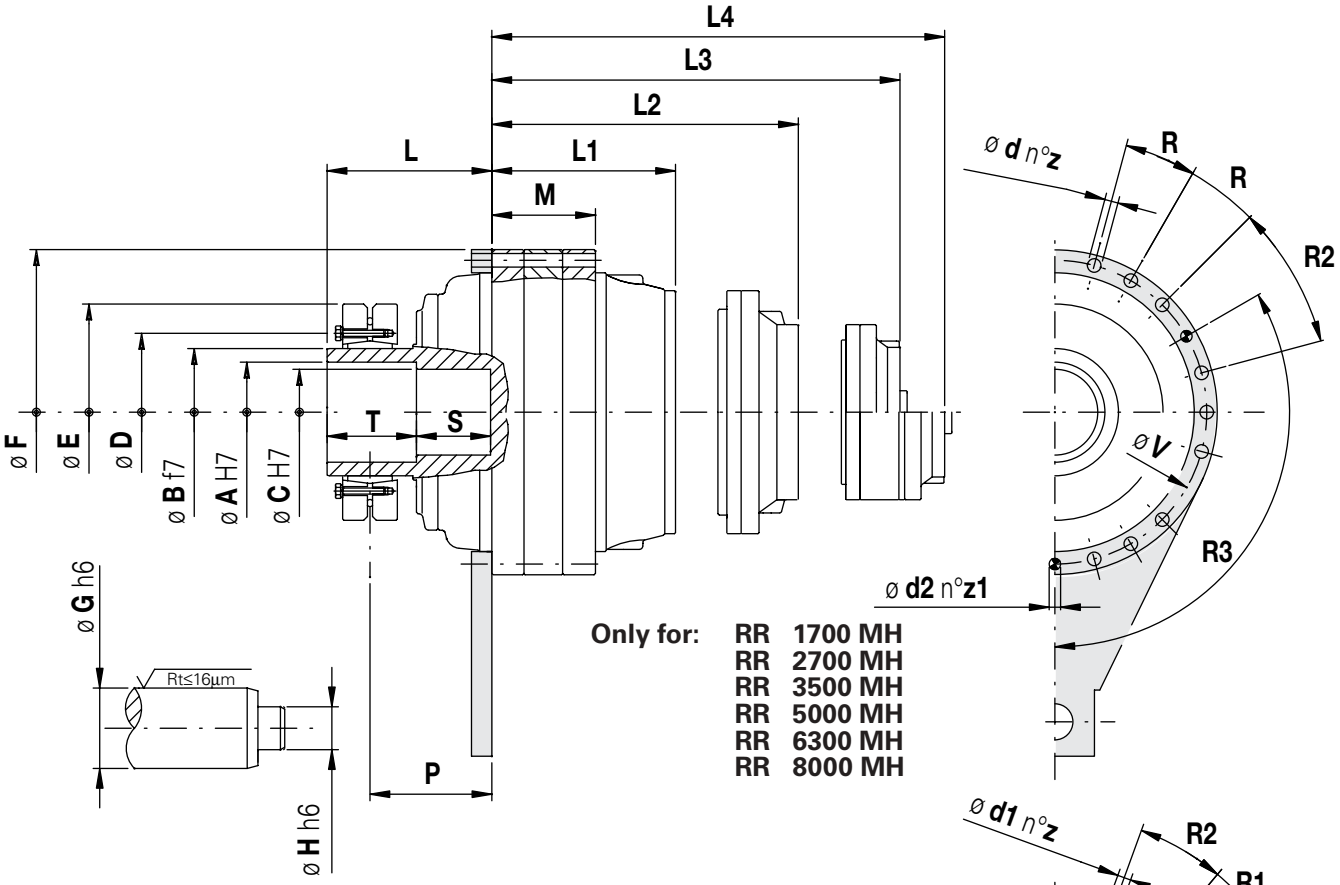


Only for: **RR 810 MH**
RR 1010 MH
RR 1700 BH

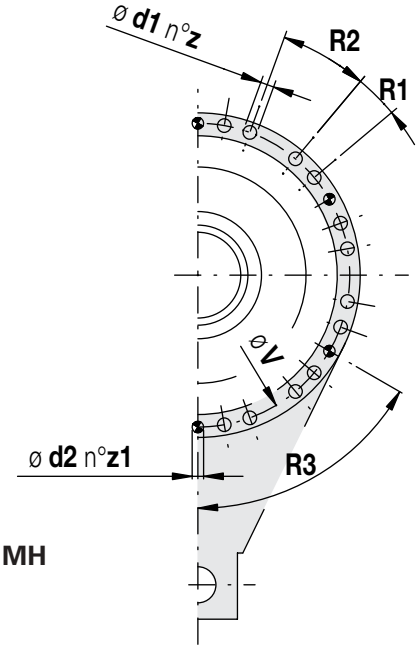
TYPE	DIMENSIONS																						TYPE SHRINK DISC
	A	B	C	D	E	F	G	H	L	L1	L2	L3	L4	M	P	R	R1	S	T	V	d	d1	z	
RR 310 MH	75	100	40	124	170	220	75	40	90	177	243	260,5	282,5	18	58	45°	–	25	70	190	14,5	–	8	**100 - 72**
RR 510 MH	75	100	40	124	170	220	75	40	90	185	251,5	317,5	335	18	58	45°	–	25	70	190	14,5	–	8	**100 - 72**
RR 710 MH	75	100	40	124	170	220	75	40	90	185	251,5	317,5	335	18	58	45°	–	25	70	190	14,5	–	8	**100 - 72**
RR 810 MH	90	125	50	160	215	278	90	50	133	233,5	301,5	367,5	385	20	76	–	24°	35	100	250	–	13	15	**125 - 72**
RR 1010 MH	100	140	60	175	230	325	100	60	140	246	322	388,5	454,5	24	90	–	30°	45	100	295	–	14,5	12	**140 - 71**
RR 1700 BH	120	165	80	210	290	330	120	80	142,5	272,5	348,5	415	481	25	90	–	30°	50	85	295	–	17	12	**165 - 71**

SEE THE INPUT DIMENSIONS ON PAGES 144-147

HOLLOW SHAFT



Only for: **RR 1700 MH**
RR 2700 MH
RR 3500 MH
RR 5000 MH
RR 6300 MH
RR 8000 MH



Only for: **RR 12500 MH**

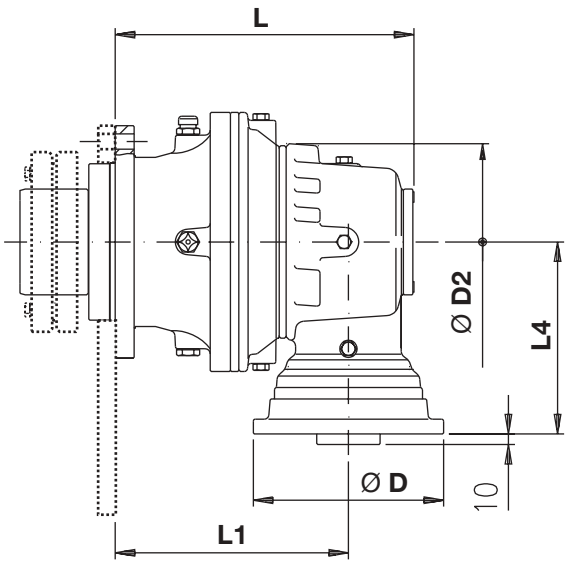
Reaction arm and shrink disc on request

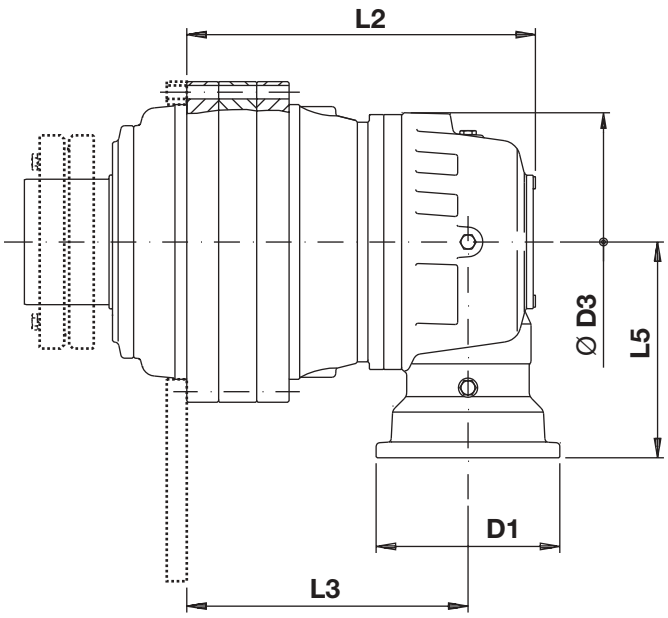
TYPE	DIMENSIONS																									TYPE SHRINK DISC
	A	B	C	D	E	F	G	H	L	L1	L2	L3	L4	M	P	R	R1	R2	R3	S	T	V	d	d1	d2	z	z1	
RR 1700 MH	120	165	80	210	290	340	120	80	245	170	246	312,5	378,5	115	195	30°	–	–	120°	50	85	314	15	–	12	12	3	**165 - 71**
RR 2700 MH	115	155	90	192	263	357	115	90	200	205,5	298,5	366,5	432,5	112	145	15°	–	–	120°	65	130	327	15	–	14	18	3	**155 - 91**
RR 3500 MH	120	165	95	206	290	405	120	95	217	222	324	400	466,5	120	157	15°	–	–	120°	78	140	375	15	–	14	18	3	**165 - 91**
RR 5000 MH	140	185	120	236	330	455	140	120	260	257	372	448	514,5	145	195	15°	–	–	120°	60	140	425	19	–	16	18	3	**185 - 91**
RR 6300 MH	150	200	130	246	350	455	150	130	260	260	425,5	518,5	586,5	145	195	15°	–	–	120°	60	140	425	19	–	16	18	3	**200 - 91**
RR 8000 MH	180	240	165	295	405	610	180	165	280	365	542	644	720	190	210	–	15°	30°	120°	110	150	560	25	–	20	18	3	**240 - 91**
RR 12500 MH	200	260	180	321	430	725	200	180	350	390	602	717	793	210	255	–	10°	20°	60°	161	180	680	–	25	20	24	3	**260 - 91**
RR 22000 MH	250	340	220	408	570	835	250	220	420	485	790	967	1069	250	307	12°	–	–	–	155	240	780	32	–	–	30	–	**340 - 91**

SEE THE INPUT DIMENSIONS ON PAGES 144-147

OUTPUT SIDE SUPPORTS

HOLLOW SHAFT





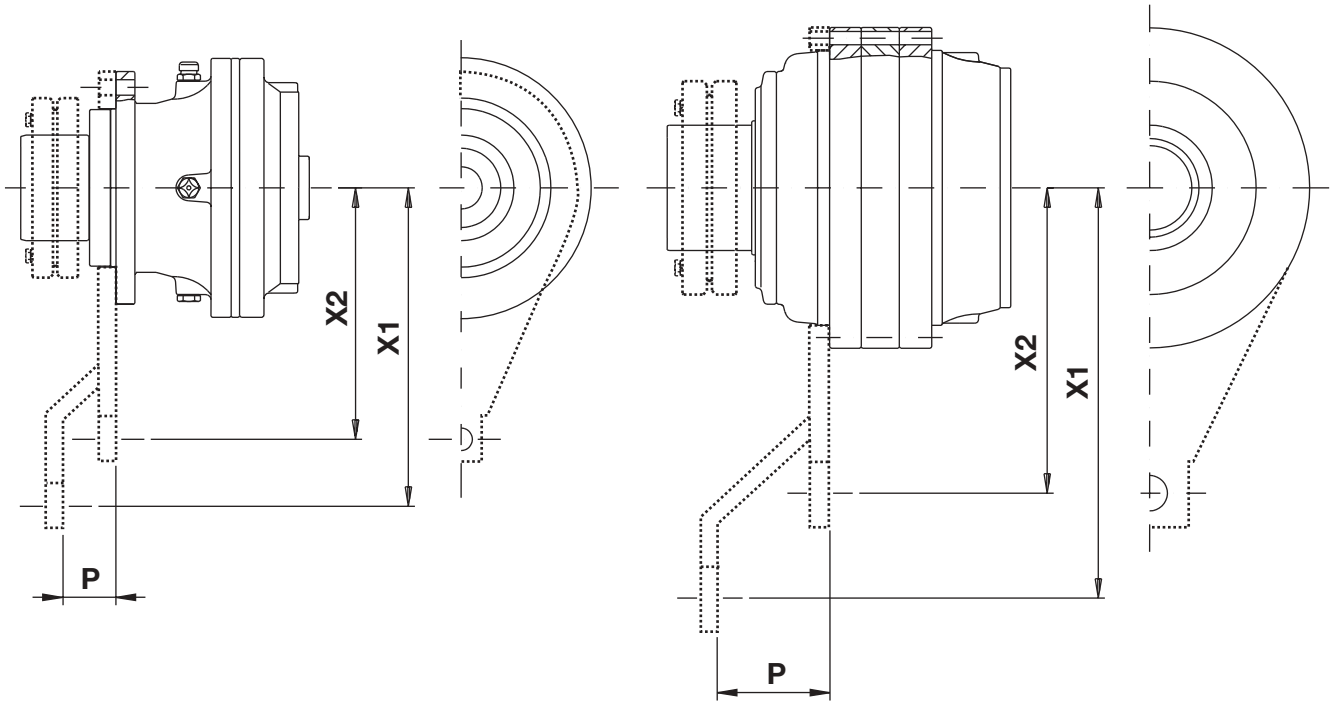
TYPE	DIMENSIONS									
	L	L1	L2	L3	L4	L5	D	D1	D2	D3
RA 310 MH	287,5	225	–	–	181,5	–	180	–	186	–
RA 310D MH	332	269	–	–	181,5	–	180	–	186	–
RA 310T MH	374	314	–	–	181,5	–	180	–	186	–
RA 510 MH	321	253,5	–	–	247,5	–	195	–	282	–
RA 510D MH	361,5	299	–	–	181,5	–	180	–	186	–
RA 510T MH	406	344	–	–	181,5	–	180	–	186	–
RA 710 MH	321	253,5	–	–	247,5	–	195	–	282	–
RA 710D MH	361,5	299	–	–	181,5	–	180	–	186	–
RA 710T MH	406	344	–	–	247,5	–	195	–	186	–
RA 810 MH	400	332,5	–	–	247,5	–	195	–	282	–
RA 810D MH	411,5	349	–	–	181,5	–	180	–	186	–
RA 810T MH	456	394	–	–	181,5	–	180	–	186	–
RA 1010 MH*	474,5	382	–	–	–	288	–	245	–	345
RA 1010 MH	375,5	308	–	–	247,5	–	195	–	282	–
RA 1010D MH	458	390,5	–	–	247,5	–	195	–	282	–
RA 1010T MH	498	436	–	–	181,5	–	180	–	186	–
RA 1700 BH*	498,5	408	–	–	–	288	–	245	–	345
RA 1700 BH	402	334,5	–	–	247,5	–	195	–	282	–
RA 1700D BH	484,5	417	–	–	247,5	–	195	–	282	–
RA 1700T BH	525	462,5	–	–	247,5	–	195	–	282	–
RA 1700 MH*	398	305,5	–	–	–	288	–	245	–	345

TYPE	DIMENSIONS									
	L	L1	L2	L3	L4	L5	D	D1	D2	D3
RA 1700 MH	299,5	232	–	–	247,5	–	195	–	282	–
RA 1700D MH	382	314,5	–	–	247,5	–	198	–	282	–
RA 1700T MH	422	360	–	–	181,5	–	180	–	186	–
RA 2700 MH	–	–	433	340,5	–	288	–	245	–	345
RA 2700D MH	–	–	465	397,5	247,5	–	195	–	282	–
RA 2700T MH	–	–	476,5	414	181,5	–	180	–	186	–
RA 3500 MH	–	–	448	355,5	–	288	–	245	–	345
RA 3500D MH	–	–	453,5	386	247,5	–	195	–	282	–
RA 3500T MH	–	–	536	468,5	–	–	195	–	282	–
RA 5000 MH	–	–	462	369,5	–	288	–	245	–	345
RA 5000D MH	–	–	501,5	434	247,5	–	195	–	282	–
RA 5000T MH	–	–	584	516,5	247,5	–	195	–	282	–
RA 6300D MH	–	–	653	560,5	–	288	–	245	–	345
RA 6300T MH	–	–	685	617,5	247,5	–	195	–	282	–
RA 8000D MH	–	–	768	675,5	–	288	–	245	–	345
RA 8000T MH	–	–	773,5	706	247,5	–	195	–	282	–
RA 12500D MH	–	–	807	714,5	–	288	–	245	–	345
RA 12500T MH	–	–	846,5	779	247,5	–	195	–	282	–
RA 22000T MH	–	–	1193	1100,5	–	288	–	245	–	345
RA 22000Q MH	–	–	1198,5	1131	247,5	–	195	–	282	–

** See Size 1010 Reduction gears on page 68; size 1700 on pages 74 and 80*

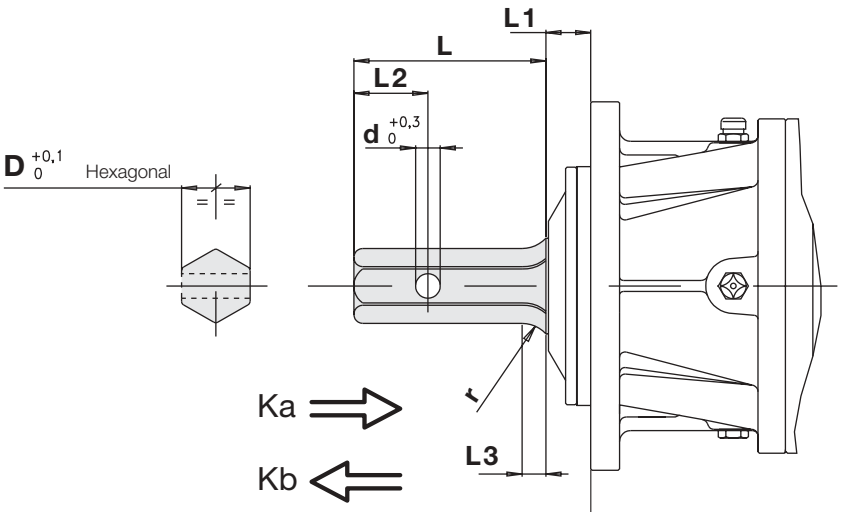
SEE THE INPUT DIMENSIONS ON PAGE 148

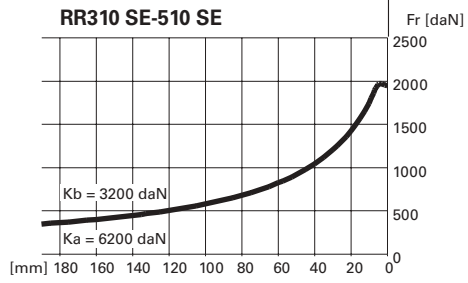
HOLLOW SHAFT

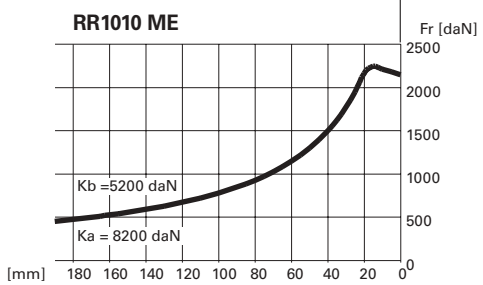


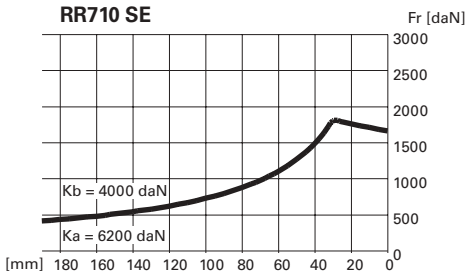
MINIMUM DISTANCES FOR REACTION ARMS														
Distance mm.	REDUCTION GEAR TYPE – SERIES: …													
	…310	…510	…710	…810	…1010	…1700	…1700 B	…2700	…3500	…5000	…6300	…8000	…12500	…22000
X1	150	260	–	260	330	340	–	400	500	800	800	800	800	1200
X2	95	125	–	125	147,5	320	–	200	250	300	300	350	400	600
P	58	58	58	76	90	195	90	145	157	195	195	210	255	307

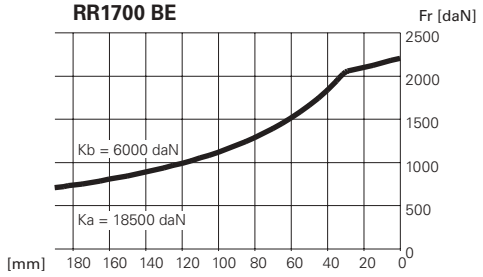
HEXAGONAL OUTPUT SHAFTS

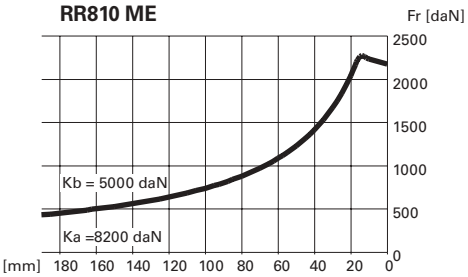












The above diagrams are obtained by applying an axial load (**Ka-Kb**) on the rotation axis.

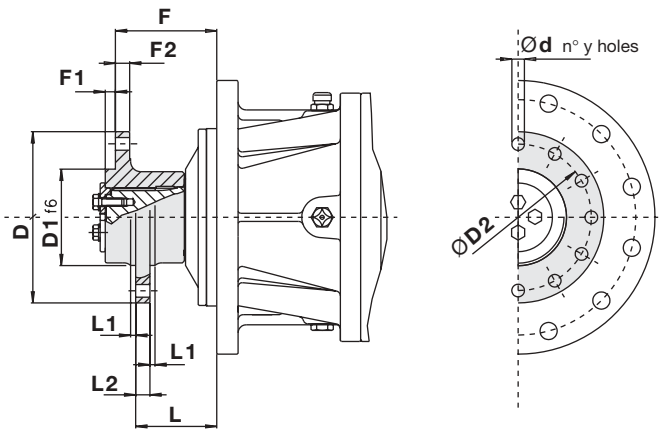
Radial load ($n_2 \times h = 100000$)

TYPE	DIMENSIONS						
	L	L1	L2	L3	D	d	r
RR 310 SE	140	36,5	54	24	50	18	24
RR 510 SE	140	36,5	54	24	50	18	24
RR 710 SE	140	46,5	65	24	70	22	30
RR 810 ME	140	49	65	16	70	22	60
RR 1010 ME	140	46	65	25	70	22	35
RR 1700 BE	140	48	65	25	70	22	35

DRIVE INTAKE FLANGES - series: 28

Induction hardening is carried out on internal broaching.

- **Mat.: UNI C 40**
- **DIN W.N. CK40 - 1.1186**
- **SAE 1042**



SIDE FLANGE

Reduction gear type	Code	DIMENSIONS								Mass Kg
		D	D1	D2	F	F1	F2	d	y	
RR 65 MS	–	–	–	–	–	–	–	–	–	–
RR 105 MS	–	–	–	–	–	–	–	–	–	–
RA 105 MS	–	–	–	–	–	–	–	–	–	–
RR 110 MS	–	–	–	–	–	–	–	–	–	–
RA 110 MS	–	–	–	–	–	–	–	–	–	–
RR 210 MS	–	–	–	–	–	–	–	–	–	–
RA 210 MS	–	–	–	–	–	–	–	–	–	–
RR 210 SS	28006	169	95	145	74	10	14	12,5	12	3,5
RA 210 SS	28006	169	95	145	74	10	14	12,5	12	3,5
RR 310 MS	28006	169	95	145	74	10	14	12,5	12	3,5
RA 310 MS	28006	169	95	145	74	10	14	12,5	12	3,5
RR 310 SS	28008	169	95	145	100	10	14	12,5	12	3,9
RA 310 SS	28008	169	95	145	100	10	14	12,5	12	3,9
RR 510 MS	28006	169	95	145	74	10	14	12,5	12	3,5
RA 510 MS	28006	169	95	145	74	10	14	12,5	12	3,5
RR 510 SS	28008	169	95	145	100	10	14	12,5	12	3,9
RA 510 SS	28008	169	95	145	100	10	14	12,5	12	3,9
RR 710 MS	28006	169	95	145	75,5	10	14	12,5	12	3,5
RA 710 MS	28006	169	95	145	75,5	10	14	12,5	12	3,5
RR 710 SS	–	–	–	–	–	–	–	–	–	–
RA 710 SS	–	–	–	–	–	–	–	–	–	–
RR 810 MS	–	–	–	–	–	–	–	–	–	–
RA 810 MS	–	–	–	–	–	–	–	–	–	–
RR 810 SS	–	–	–	–	–	–	–	–	–	–
RA 810 SS	–	–	–	–	–	–	–	–	–	–
RR 1010 MS	28019	229	130	190	112,5	15	24	19	12	9,8
RA 1010 MS	28019	229	130	190	112,5	15	24	19	12	9,8
RR 1700 MS	28019	229	130	190	218	15	24	19	12	9,8
RA 1700 MS	28019	229	130	190	218	15	24	19	12	9,8
RR 1700 BS	28019	229	130	190	115,5	15	24	19	12	9,8
RA 1700 BS	28019	229	130	190	115,5	15	24	19	12	9,8
RR 2700 MS	28018	294	160	250	180	20	30	21	12	20,2
RA 2700 MS	28018	294	160	250	180	20	30	21	12	20,2
RR 3500 MS	28018	294	160	250	187	20	30	21	12	20,2
RA 3500 MS	28018	294	160	250	187	20	30	21	12	20,2

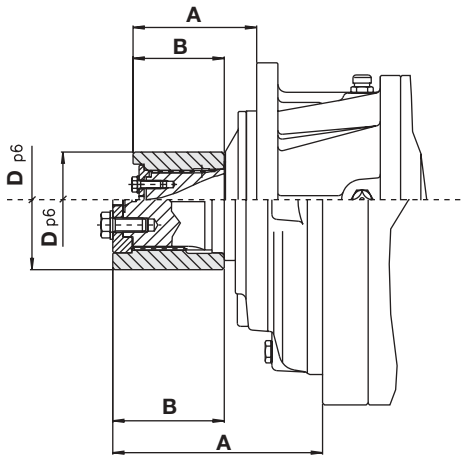
CENTRAL FLANGE

Reduction gear type	Code	DIMENSIONS									Mass Kg
		D	D1	D2	L	L1	L2	F1	d	y	
RR 65 MS	28013	145	60	125	64	5	10,5	17,5	8,5	8	1,6
RR 105 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RA 105 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RR 110 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RA 110 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RR 210 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RA 210 MS	28013	145	60	125	39	5	10,5	17,5	8,5	8	1,6
RR 210 SS	28007	169	95	145	61	5	14	23	12,5	12	3,5
RA 210 SS	28007	169	95	145	61	5	14	23	12,5	12	3,5
RR 310 MS	28007	169	95	145	62,5	5	14	23	12,5	12	3,5
RA 310 MS	28007	169	95	145	62,5	5	14	23	12,5	12	3,5
RR 310 SS	28009	169	95	145	80	5	14	30	12,5	12	3,9
RA 310 SS	28009	169	95	145	80	5	14	30	12,5	12	3,9
RR 510 MS	28007	169	95	145	62,2	5	14	23	12,5	12	3,5
RA 510 MS	28007	169	95	145	62,2	5	14	23	12,5	12	3,5
RR 510 SS	28009	169	95	145	80	5	14	30	12,5	12	3,9
RA 510 SS	28009	169	95	145	80	5	14	30	12,5	12	3,9
RR 710 MS	28007	169	95	145	62,5	5	14	23	12,5	12	3,5
RA 710 MS	28007	169	95	145	62,5	5	14	23	12,5	12	3,5
RR 710 SS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RA 710 SS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RR 810 MS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RA 810 MS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RR 810 SS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RA 810 SS	28014	190	105	160	91,5	8	16	35	14,5	12	5,1
RR 1010 MS	28012	229	130	190	94,5	10	24	33	19	12	9,8
RA 1010 MS	28012	229	130	190	94,5	10	24	33	19	12	9,8
RR 1700 MS	28012	229	130	190	200	10	24	33	19	12	9,8
RA 1700 MS	28012	229	130	190	200	10	24	33	19	12	9,8
RR 1700 BS	28012	229	130	190	97,5	10	24	33	19	12	9,8
RA 1700 BS	28012	229	130	190	97,5	10	24	33	19	12	9,8
RR 2700 MS	28011	294	160	250	160	15	30	40	21	12	20,2
RA 2700 MS	28011	294	160	250	160	15	30	40	21	12	20,2
RR 3500 MS	28011	294	160	250	167	15	30	40	21	12	20,2
RA 3500 MS	28011	294	160	250	167	15	30	40	21	12	20,2
RR 5000 MS	28010	330	185	280	225	15	35	60	25	12	31,6
RA 5000 MS	28010	330	185	280	225	15	35	60	25	12	31,6
RR 6300 MS	28026	370	230	320	244	15	38	76	25	18	49
RA 6300 MS	28026	370	230	320	244	15	38	76	25	18	49
RR 8000 MS	28016	450	255	400	260	15	42	73	25	18	76
RA 8000 MS	28016	450	255	400	260	15	42	73	25	18	76
RR 12500 MS	28017	500	320	450	315	20	47	98	32	18	120
RA 12500 MS	28017	500	320	450	315	20	47	98	32	18	120
RR 16000 MS	28017	500	320	450	315	20	47	98	32	18	120
RA 16000 MS	28017	500	320	450	315	20	47	98	32	18	120

SPLINED BUSHINGS - series: 29

Induction hardening is carried out on internal broaching.

- **Mat.: UNI 39 Ni Cr Mo 3**
- **DIN W.N. 36 CrNiM04 - 1.6511**
- **SAE (9840)**



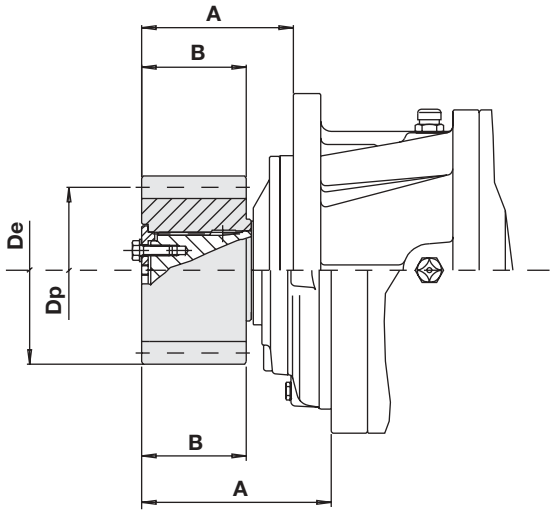
Reduction Gear type	Code	DIMENSIONS			Mass Kg
		A	B	D	
RR 65 MS	29005	81,5	45,5	58	0,5
RR 105 MS	29005	56,5	45,5	58	0,5
RA 105 MS	29005	56,5	45,5	58	0,5
RR 210 MS	29005	56,5	45,5	58	0,5
RA 210 MS	29005	56,5	45,5	58	0,5
RR 210 SS	29001	93	70	94	2,2
RA 210 SS	29001	93	70	94	2,2
RR 310 MS	29001	94,5	70	94	2,2
RA 310 MS	29001	94,5	70	94	2,2
RR 310 SS	29002	122	90	94	2,9
RA 310 SS	29002	122	90	94	2,9
RR 510 MS	29001	94,5	70	94	2,2
RA 510 MS	29001	94,5	70	94	2,2
RR 510 SS	29002	122	90	94	2,9
RA 510 SS	29002	122	90	94	2,9
RR 710 MS	29001	94,5	70	94	2,2
RA 710 MS	29001	94,5	70	94	2,2
RR 710 SS	29013	140,5	100	105	3,4
RA 710 SS	29013	140,5	100	105	3,4
RR 810 MS	29013	140	100	105	3,4
RA 810 MS	29013	140	100	105	3,4
RR 810 SS	29013	140	100	105	3,4
RA 810 SS	29013	140	100	105	3,4
RR 1010 MS	29003	143,5	106	128	5,9
RA 1010 MS	29003	143,5	106	128	5,9
RR 1700 MS	29003	249	106	128	5,9
RA 1700 MS	29003	249	106	128	5,9
RR 1700 BS	29003	143,5	106	128	5,9
RA 1700 BS	29003	146,5	106	128	5,9
RR 2700 MS	29006	200	110	138	6,1
RA 2700 MS	29006	200	110	138	6,1
RR 3500 MS	29006	207	110	138	6,1
RA 3500 MS	29006	207	110	138	6,1
RR 5000 MS	29007	285	155	178	15,2
RA 5000 MS	29007	285	155	178	15,2
RR 6300 MS	29048	320	190	224	28
RA 6300 MS	29048	320	190	224	28
RR 8000 MS	29027	333	188	265	52
RA 8000 MS	29027	333	188	265	52
RR 12500 MS	29026	413	243	335	95
RA 12500 MS	29026	413	243	335	95
RR 16000 MS	29026	413	243	335	95
RA 16000 MS	29026	413	243	335	95
RR 22000 MS	–	–	–	–	–
RA 22000 MS	–	–	–	–	–
RR 32000 MS	–	–	–	–	–
RA 32000 MS	–	–	–	–	–
RR 40000 MS	29055	550	235	500	228
RA 40000 MS	29055	550	235	500	228
RR 50000 MS	29055	550	235	500	228
RA 50000 MS	29055	550	235	500	228

To be used with series "27" splined shaft

PINIONS FOR SLEWING – series: 16

Induction hardening is carried out on internal broaching.

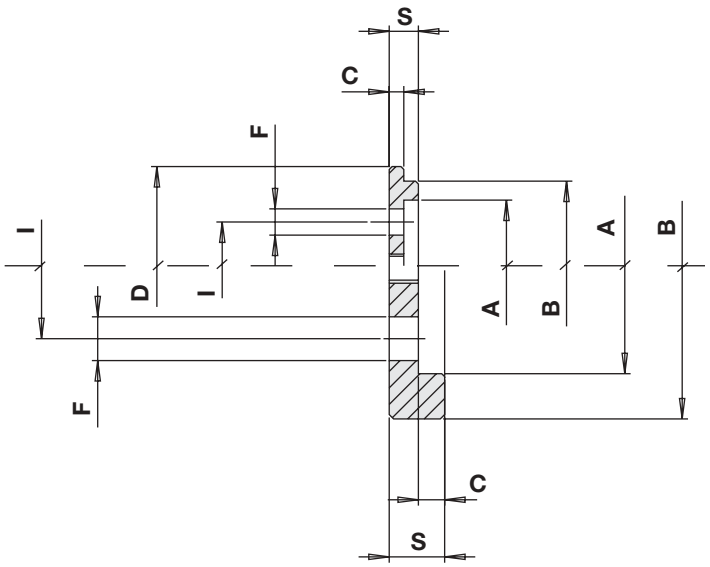
- **Mat.: UNI 39 Ni Cr Mo 3**
- **DIN W.N. 36CrNiM04-1.6511**
- **SAE 9840**



Reduction Gear type	Code	Part. No.	Module	N. teeth	Dimensions x.m	A	B	De	Dp
RR 65 MS	154-3072	16016	4	15	+2	83,5	44,5	69,8	60
	154-3104	16047	4	32	0	83,5	44,5	135	128
	154-3073	16017	6	12	+1,5	83,5	44,5	84,8	72
	154-2709	16104	5	14	+2,5	83,5	44,5	84	70
	154-2285	16074	6	24	0	83,5	44,5	154	144
	154-2707	16098	8	16	+2	83,5	44,5	145	128
RR 105 MS RA 105 MS RR 110 MS RA 110 MS RR 210 MS RA 210 MS	154-3072	16016	4	15	+2	58,5	44,5	69,8	60
	154-3104	16047	4	32	0	58,5	44,5	135	128
	154-3073	16017	6	12	+1,5	58,5	44,5	84,8	72
	154-2709	16104	5	14	+2,5	58,5	44,5	84	70
	154-2285	16074	6	24	0	58,5	44,5	154	144
	154-2707	16098	8	16	+2	58,5	44,5	145	128
RR 210 SS RA 210 SS	154-3106	16049	4,5	18	+2	91	65	93	81
	154-2287	16090	5	17	+2	91	65	98	85
	154-2286	16082	5	19	0	91	65	104	95
	154-3082	16026	6	14	+3	91	65	101,5	84
	154-3107	16050	6	15	+1,5	91	65	103	90
	154-3245	16055	6	16	+1,5	91	65	109	96
	154-3074	16018	8	12	+4	91	65	118	96
	154-3250	16067	8	14	0	91	65	126	112
	154-3246	16056	8	15	0	91	65	136	120
	154-3235	16076	8	15	+2	91	65	138	120
	154-3103	16039	8	18	0	91	65	158	144
	154-3075	16019	10	10	+2,5	91	65	124,5	100
	154-3105	16043	10	12	+4,75	91	65	149,5	120
	154-3248	16062	10	15	0	91	65	167	150
RR 310 MS RA 310 MS RR 510 MS RA 510 MS RR 710 MS RA 710 MS	154-3106	16049	4,5	18	+2	92	65	93	81
	154-2287	16090	5	17	+2	92	65	98	85
	154-2286	16082	5	19	0	92	65	104	95
	154-3082	16026	6	14	+3	92	65	101,5	84
	154-3107	16050	6	15	+1,5	92	65	103	90
	154-3245	16055	6	16	+1,5	92	65	109	96
	154-3074	16018	8	12	+4	92	65	118	96
	154-3250	16067	8	14	0	92	65	126	112
	154-3246	16056	8	15	0	92	65	136	120
	154-3235	16076	8	15	+2	92	65	138	120
	154-3103	16039	8	18	0	92	65	158	144
	154-3075	16019	10	10	+2,5	92	65	124,5	100
	154-3105	16043	10	12	+4,75	92	65	149,5	120
	154-3248	16062	10	15	0	92	65	167	150
RR 310 SS RA 310 SS RR 510 SS RA 510 SS	154-3238	16032	6	14	+3	116	80	101,5	84
	154-3234	16077	6	16	+2,5	116	80	111	96
	154-2706	16094	6	19	0	116	80	126	114
	154-3101	16034	6	24	0	116	80	154	144
	154-3038	16144	7	13	+3,5	116	80	109	91
	154-3076	16020	8	12	+4	116	80	118	96
	154-3236	16075	8	13	+2,8	116	80	125,6	104
	154-2288	16080	8	15	+2	116	80	138	120
	154-2716	16130	8	18	0	116	80	158	144
	154-3067	16001	10	10	+2,5	116	80	124,5	100
	154-3077	16021	10	12	+4,75	116	80	149,5	120
	154-3070	16011	10	13	0	116	80	148	130
	154-2289	16085	10	14	+4	116	80	164	140
	154-3078	16022	10	15	0	116	80	169	150
	154-3108	16052	10	16	0	116	80	178	160

Reduction Gear type	Code	Part. No.	Module	N. teeth	Dimensions x.m	A	B	De	Dp
RR 710 SS RA 710 SS RR 810 MS RA 810 MS RR 810 SS RA 810 SS	154-2290	16089	8	17	0	133	85	149,5	136
	154-3249	16064	10	13	+4	133	85	157	130
	154-3247	16058	10	14	0	133	85	156	140
	154-2291	16087	10	15	+7	133	85	179	150
RR 1010 MS RA 1010 MS	154-3071	16009	8	17	+4	142,5	90	159	136
	154-3081	16025	10	12	+4,25	142,5	90	146	120
	154B3834	16187	10	12	+5	142,5	90	148	120
	154-3069	16008	10	15	0	142,5	90	169	150
	154-3044	16141	10	18	0	142,5	90	198,5	180
	154-3080	16024	12	14	+3	142,5	90	194,5	168
RR 1700 MS RA 1700 MS	154-3071	16009	8	17	+4	248	90	159	136
	154-3081	16025	10	12	+4,25	248	90	146	120
	154B3834	16187	10	12	+5	248	90	148	120
	154-3069	16008	10	15	0	248	90	169	150
	154-3044	16141	10	18	0	248	90	198,5	180
	154-3080	16024	12	14	+3	248	90	194,5	168
RR 1700 BS RA 1700 BS	154-3071	16009	8	17	+4	145,5	90	159	136
	154-3081	16025	10	12	+4,25	145,5	90	146	120
	154B3834	16187	10	12	+5	145,5	90	148	120
	154-3069	16008	10	15	0	145,5	90	169	150
	154-3044	16141	10	18	0	145,5	90	198,5	180
	154-3080	16024	12	14	+3	145,5	90	194,5	168

END PLATES – series: 12

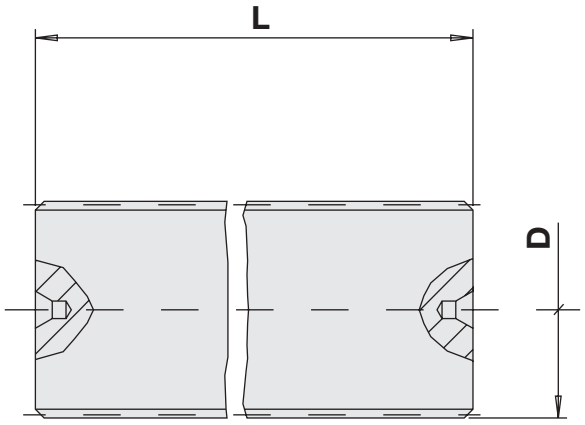


- **Mat.: UNI C40**
- **DIN W.N. CK40 - 1.1186**
- **SAE 1042**

Reduction Gear type	Code	DIMENSIONS							Mass Kg
		A	B	C	D	F	I	S	
RR 65 MS **RR 105 MS - RA 105 MS** **RR 110 MS - RA 110 MS** **RR 210 MS - RA 210 MS**	12003	35 H7	46 f7	5	52	7 n. 2	24	10	0,1
RR 210 SS - RA 210 SS **RR 310 MS - RA 310 MS** **RR 310 SS - RA 310 SS** **RR 510 MS - RA 510 MS** **RR 710 MS - RA 710 MS**	12001	45 H7	58 f7	5	68	9 n. 4	30	10	0,2
RR 710 SS - RA 710 SS **RR 810 MS - RA 810 MS** **RR 810 SS - RA 810 SS**	12012	60 H7	72 f7	8	83	11 n. 4	38	15,5	0,4
RR 1010 MS - RA 1010 MS **RR 1700 MS - RA 1700 MS** **RR 1700 BS - RA 1700 BS**	12002	65 H7	80 f7	8	94	13 n. 4	40	16	0,5
RR 2700 MS - RA 2700 MS **RR 3500 MS - RA 3500 MS**	12009	74 H7	105 f6	9,5	–	15 n. 4	50	19	1
RR 5000 MS - RA 5000 MS	12010	100 H7	125 f6	12,5	–	17 n. 4	60	21	1,2
RR 6300 MS - RA 6300 MS	12025	120 H7	161 f6	12	–	17 n. 4	80	29	2,8
RR 8000 MS - RA 8000 MS	12017	150 H7	175 f6	15	–	17 n. 4	110	35	4,5
RR 12500 MS - RA 12500 MS **RR 16000 MS - RA 16000 MS**	12016	200 H7	225 f6	20,5	–	25 n. 4	150	40	7
RR 22000 MS - RA 22000 MS **RR 32000 MS - RA 32000 MS**	–	–	–	–	–	– –	–	–	–
RR 40000 MS - RA 40000 MS **RR 50000 MS - RA 50000 MS**	12028	250 H8	330 f7	20	–	26 n. 4	160	45	21,5

To be used with series "27" splined shaft

SPLINED SHAFTS – series: 27



- **Mat.: UNI 39 Ni Cr Mo 3**
- **DIN W.N. 36 Cr Ni Mo 4 - 1.6511**
- **SAE 9840**

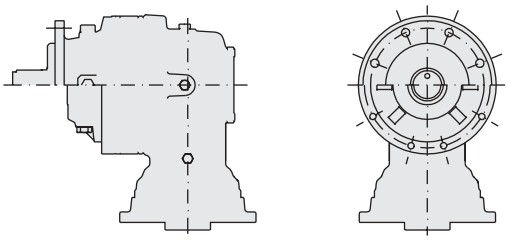
— The shafts are supplied without prior heat treatment

N.B. - Splined shafts for reduction gear input and output

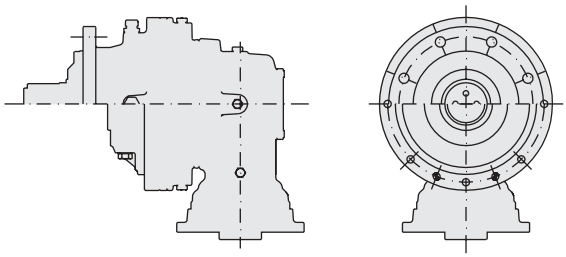
Code	N. Teeth	m Module	Profile	DIMENSIONS							Mass Kg
				D	D1	D2	L	L1	U1	U2	
27001	20	1,9	DIN 5482	B 40x36			100				0,9
27002	24	2	DIN 5482	B 50x45			180				2,5
27003	27	2	DIN 5482	B 58x53			180				1,8
27004	32	2,1	DIN 5482	B 70x64			180				5
27005	36	2,1	DIN 5482	B 80x74			180				6,5
27006	44	2,25	DIN 5482	B 100x94			200				11,3
27007	38	3	DIN 5480	W 120x3x8f			250				20,3
27038	26	5	DIN 5480	W 140x5x9e			280				31
27008	30	5	DIN 5480		W 160x5x9e	W 160x5x9e		300	100	100	45
27009	38	5	DIN 5480		W 200x5x9e	W 200x5x9e		340	115	115	82
27044	36	8	DIN 5480		W 300x8x9e	W 300x8x9e		500	158	194	272

ANGULAR REDUCTION GEAR ORIENTATION

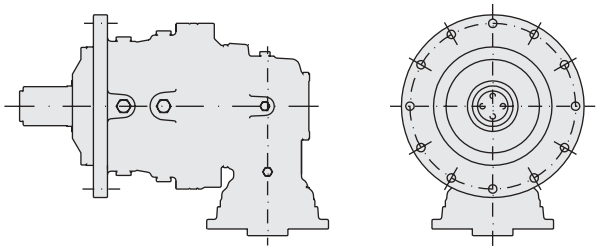
RA 105 - 110 - 210 M... / FS



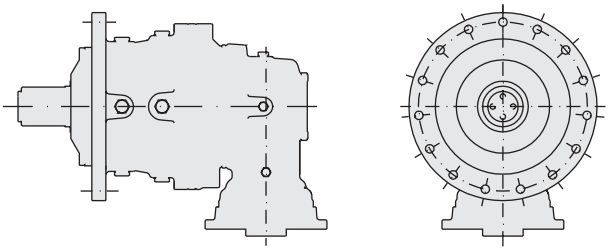
RA 210 S... - 310 - 510 - 710 M... / FS



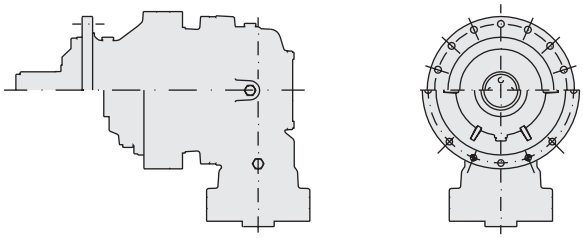
RA 310 - 510 S...



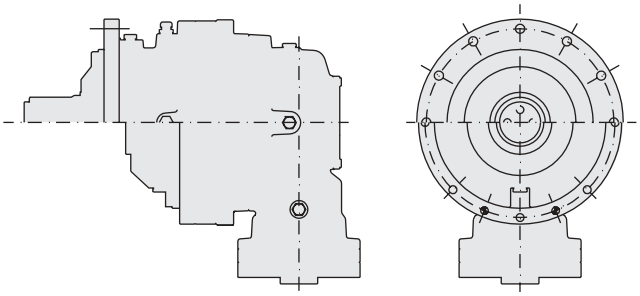
RA 710 S...



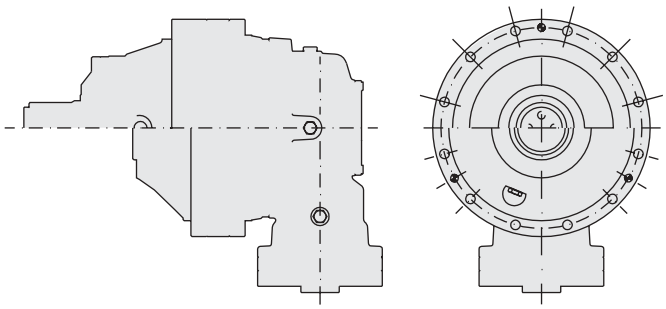
RA 810 M... / FS



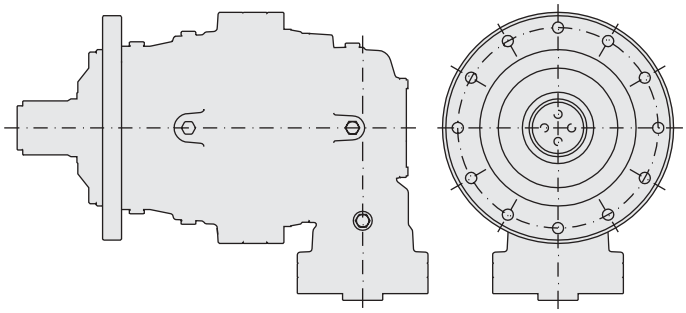
RA 1010 M... / FS



RA 1700 M... / FS

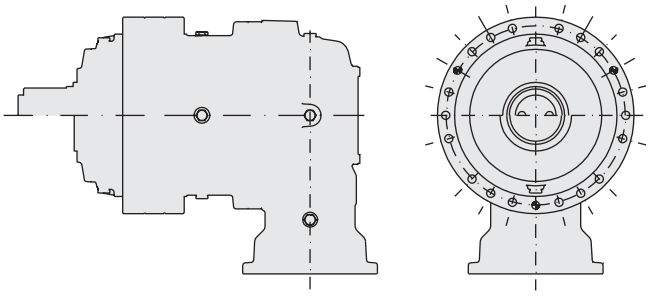


RA 1700 BS...

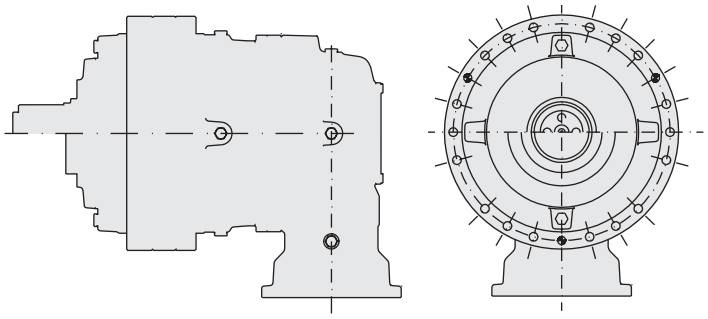


ANGULAR REDUCTION GEAR ORIENTATION

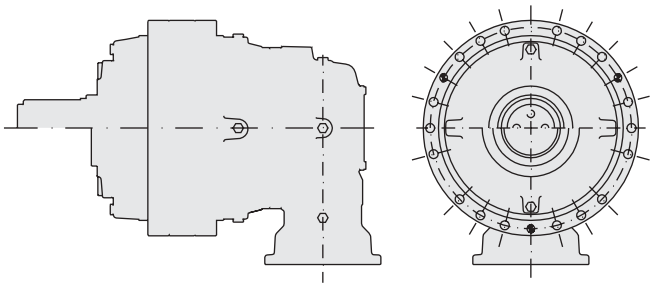
RA 2700 M... / FS



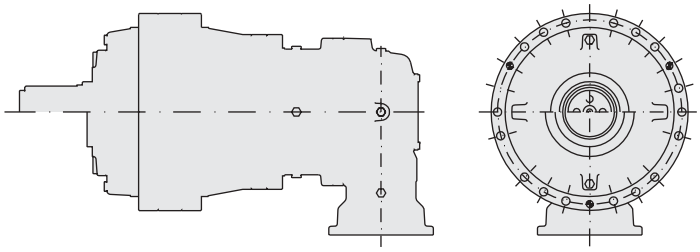
RA 3500 M... / FS



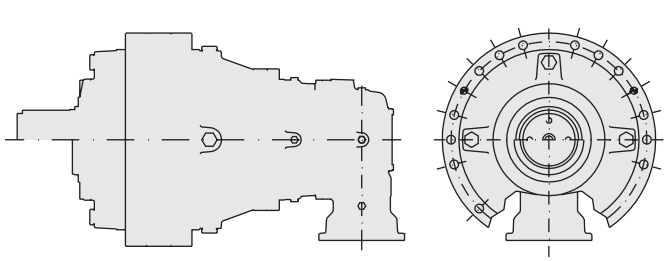
RA 5000 M... / FS



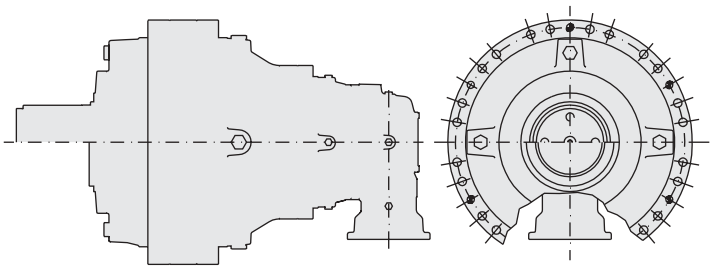
RA 6300 M... / FS



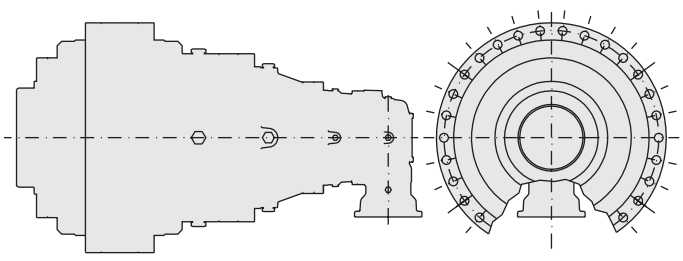
RA 8000 M... / FS



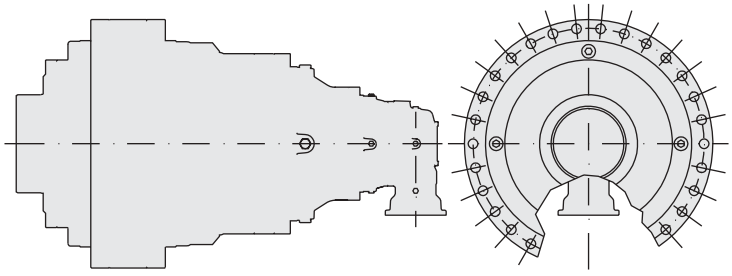
RA 12500 - 16000 M... / FS



RA 22000 - 32000 M... / FS



RA 40000 - 50000 FS



Notes

The technical information contained in this catalogue is approximate for the choice of the reduction gear which must be made by the system engineer for the specific application.
The Reggiana Riduttori technical service is available for any necessary checking.
Reggiana Riduttori reserves the right to make any technical and dimensional modifications that it will deem convenient to the product improvement without having to give prior notice thereof.

C200-0500-20-300

How to read the catalogue code

C200 = Catalogue code
0400 = Printing year and release
20 = Language
300 = No. of printed catalogues

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