

GR Series Hydraulic Motors

Options

- Flange connection
- Motor with needle bearing
- Side and rear ports
- Straight, splined and tapered shafts
- Shaft seal for high and low pressure
- Metric and BSPP ports
- Speed sensing
- Other special features

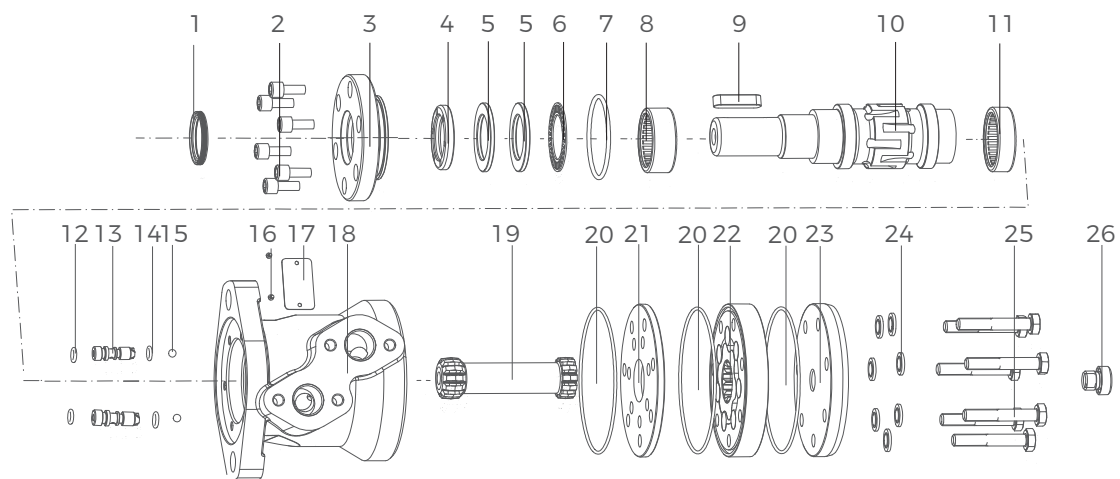
Applications

- Conveyors
- Feeding mechanism of robots and manipulators
- Metal working machines
- Textile machines
- Agricultural machines
- Food industries
- Lawn mower



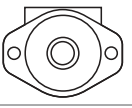

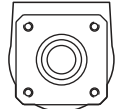
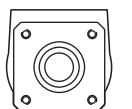
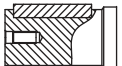
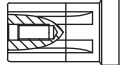





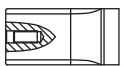
General

Max. Displacement	cm ³ /rev [in ³ /rev]	397 [24.4]
Max. Speed	RPM	970
Max. Torque	daNm [lb-in]	cont.:61 [5400] int.:69 [6100]
Max. Output	kW [HP]	15 [20.1]
Max. Pressure Drop	bar [PSI]	cont.:175 [2540] int.:200 [2900]
Max. Oil Flow	lpm [GPM]	75 [20]
Min. Speed	RPM	10
Pressure fluid		Mineral based- HLP (DIN 51524) or HM (ISO 6743/4)
Temperature Range	°C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range	mm ² /s [SUS]	20÷75 [98÷347]
Filtration		ISO code: 20/16 (Min. recommended fluid filtration of 25 microns)



- | | | | | |
|---------------------------|-------------------------|--------------------------|-----------------------|------------------------|
| 1 Anti-dust ring | 6 Needle roller bearing | 11 Needle roller bearing | 16 Nameplate rivet | 21 Spacer |
| 2 Bolt | 7 O-ring seal | 12 O-ring seal | 17 Nameplate | 22 Rotor and stator |
| 3 Front cover | 8 Needle roller bearing | 13 Check valve | 18 Housing | 23 Rear cover |
| 4 Pressure resistant seal | 9 Parallel Key | 14 O-ring seal | 19 Transmission shaft | 24 Washer |
| 5 Retainer | 10 Output shaft | 15 Steel ball | 20 O-ring seal | 25 Bolt |
| | | | | 26 External drain plug |

Ordering Code

GR SERIES	DISP	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNCTION
CODE	DISP	CODE	FLANGE	CODE	PORTS	CODE	PAINT
50	51.5cm ³ /rev [3.14in ³ /rev]	A2	2-Ø13.5 SAE A pilot Ø82.5×2.8 	G1	G1/2, G1/4 manifold 4×M8	A	No Paint
80	80.3cm ³ /rev [4.90in ³ /rev]			A4	4-Ø13.5 SAE A, pilot Ø82.5×2.8 	M1	M22×1.5, M14×1.5 manifold 4×M8
100	99.8cm ³ /rev [6.09in ³ /rev]	H4	4-3/8-16 square, pilot Ø44.4×2.8 			U2	7/8-14UNF O-ring, 7/16-20UNF manifold 4×5/16-18UNC
125	125.7cm ³ /rev [7.67in ³ /rev]			H5	4-M10 square, pilot Ø44.4×2.8 	U1	1/2-14NPTF, 7/16-20UNF manifold 4×5/16-18UNC
160	159.6cm ³ /rev [9.74in ³ /rev]	CODE	SHAFT			G2	PT(Rc)1/2, PT(Rc)1/4 manifold 4×M8
200	199.8cm ³ /rev [12.19in ³ /rev]	S1	Ø25, parallel key 8×7×32 	R1	Ø25.4, splined tooth SAE 6B 	A	Standard
250	250.1cm ³ /rev [15.26in ³ /rev]	S2	Ø25.4, parallel key 6.35×6.35×31.75 			S3	Short: Ø25.4, parallel key 6.35×6.35×31.75 
315	315.7cm ³ /rev [19.26in ³ /rev]	S4	Ø32, parallel key 10×8×45 	S5	Ø31.75, parallel key 7.96×7.96×31.75 	D	No case drain
400	397cm ³ /rev [24.4in ³ /rev]	T1	Tapered Ø28.56, parallel key B5×5×14 	R2	Ø31.75, splined tooth 14-DP 12/24 	F	Free running
						L	Low speed
						V	High temp.
						S	Low temp.
						CODE	ROTATION
						A	Standard
						R	Opposite

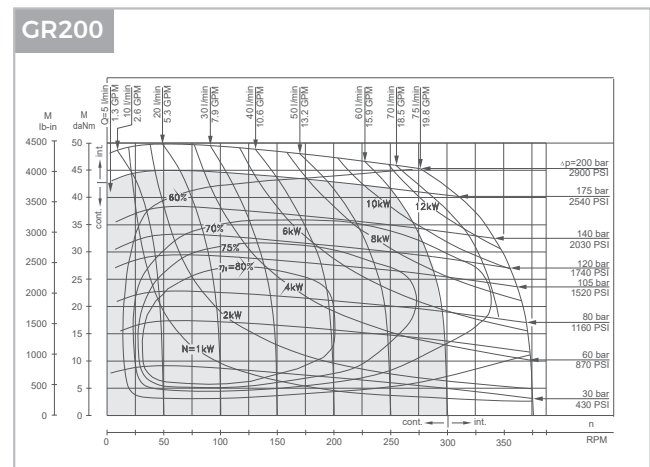
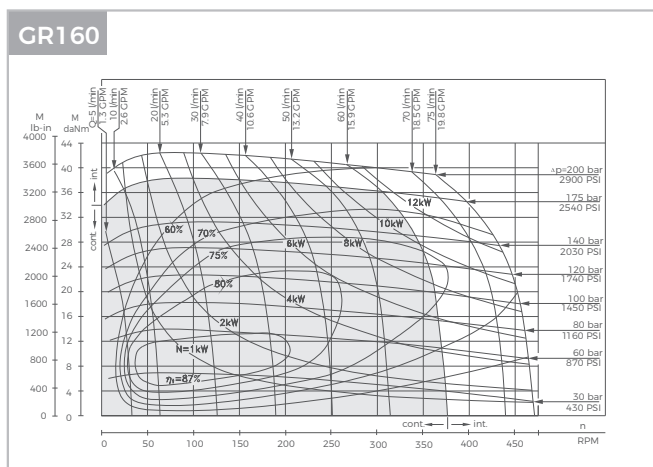
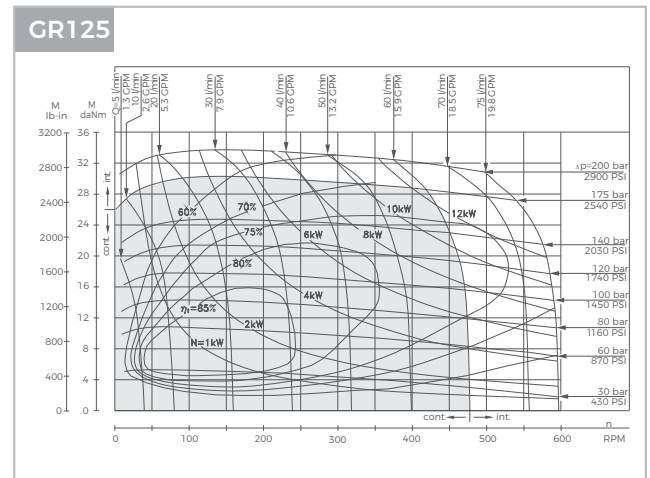
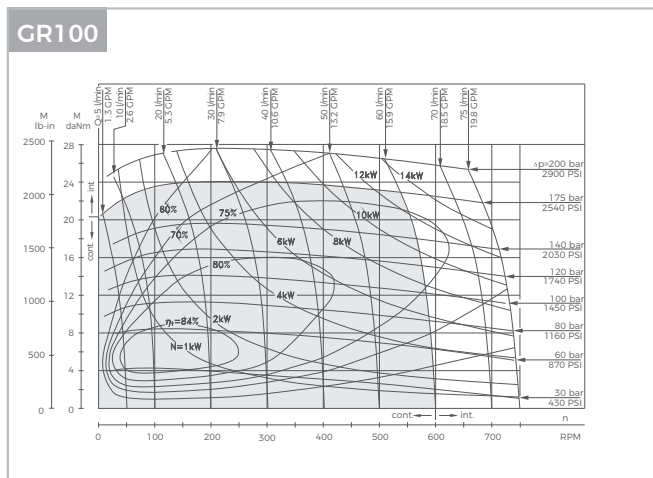
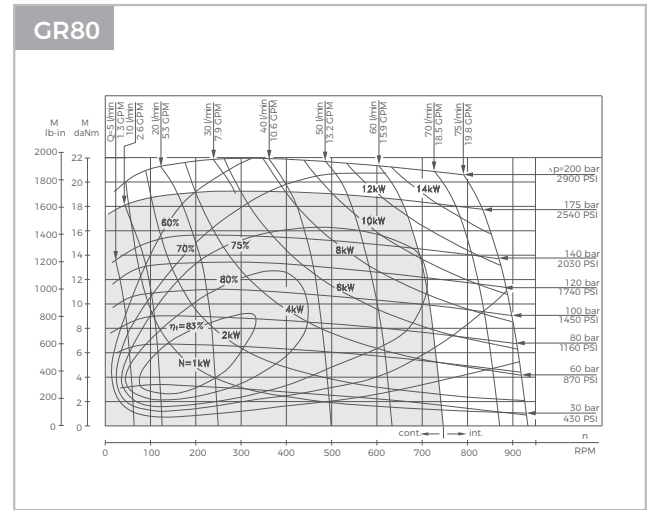
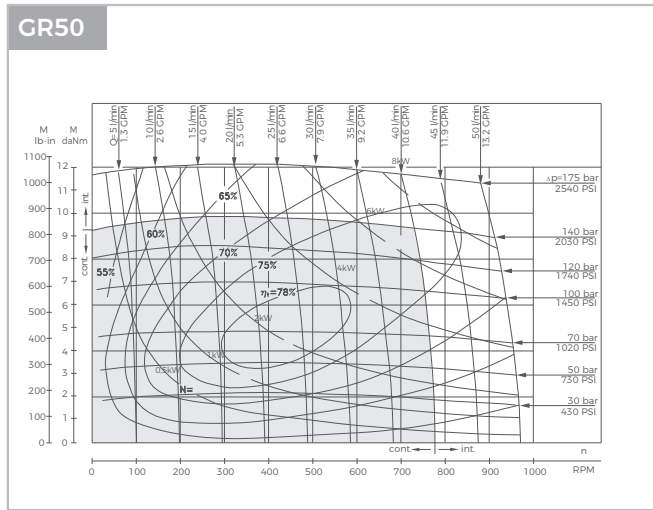
Specifications

Type		GR50	GR80	GR100	GR125	GR160
Displacement, cm ³ /rev [in ³ /rev]		51,5[3.14]	80,3[4.90]	99,8[6.09]	125,7[7.67]	159,6[9.74]
Max. Speed,	Cont.	775	750	600	457	375
RPM	Int.*	970	940	750	600	470
Max. Torque	Cont.	10[900]	20[1770]	24[2125]	30[2655]	39[3450]
daNm [lb-in]	Int.*	13[1150]	22[1947]	28[2480]	34[3010]	43[3805]
	Peak**	17[1505]	27[2390]	32[2832]	37[3275]	46[4070]
Max. Output	Cont.	7[9.5]	12,5[17]	13[17.4]	12,5[16.8]	11,5[15.4]
kW [HP]	Int.*	8,5[11.9]	15[20.1]	15[20.1]	14,5[19.5]	14[18.8]
Max. Pressure Drop	Cont.	140[2030]	175[2540]	175[2540]	175[2540]	175[2540]
bar [PSI]	Int.*	175[2540]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Oil Flow	Cont.	40[10.5]	60[15.8]	60[15.8]	60[15.8]	60[15.8]
lpm [GPM]	Int.*	50[13.2]	75[19.8]	75[19.8]	75[19.8]	75[19.8]
Max. Inlet Pressure	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
bar [PSI]	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Return Pressure	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
without Drain Line	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
bar [PSI]	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Starting Pressure		10[145]	10[145]	10[145]	9[130]	7[102]
with Unloaded Shaft, bar [PSI]						
Min. Starting Torque	At max. press. drop Cont.	8[710]	15[1330]	20[1770]	25[2215]	32[2832]
daNm [lb-in]	At max. press. drop Int.*	10[85]	17[1505]	23[2035]	28[2480]	37[3275]
Min. Speed***, RPM		10	10	10	10	10
Weight, kg [lb] For						
rear port + 0,650 [1.433]	GR	6,8[15]	6,9[15.2]	7,2[15.9]	7,3[16.1]	7,5[15.2]

Specifications

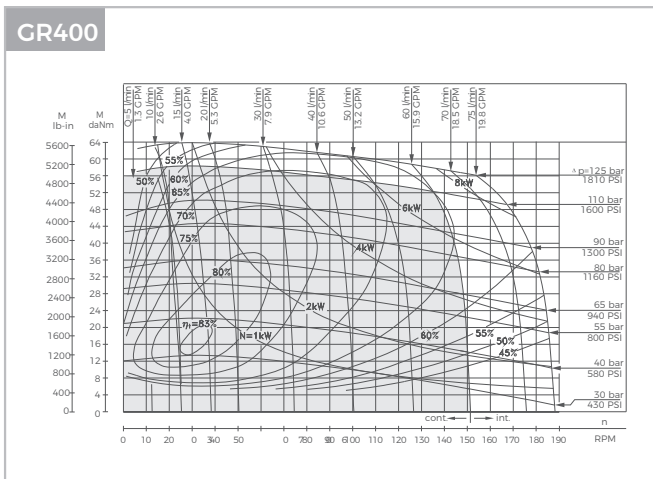
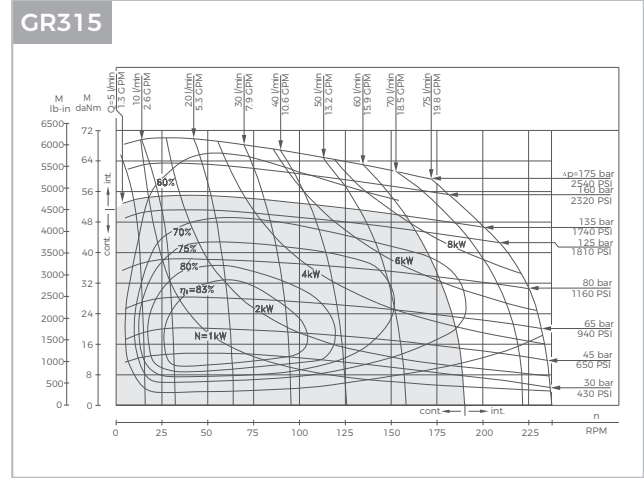
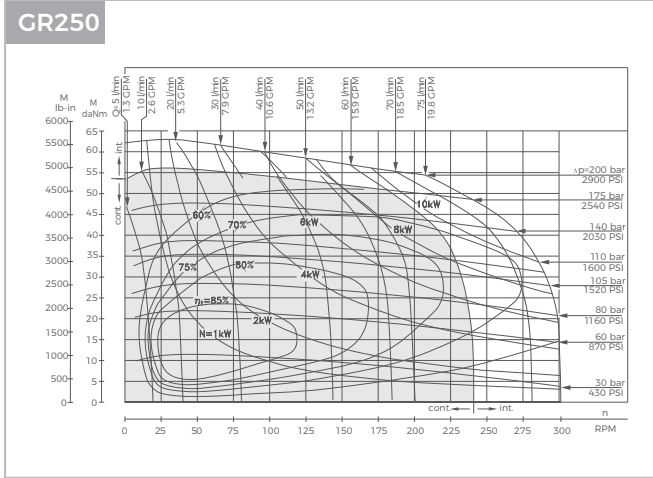
Type		GR200	GR250	GR315	GR400
Displacement, cm ³ /rev [in ³ /rev]		199,8[12.19]	250,13[15.26]	315,7[19.26]	397[24.4]
Max. Speed,	Cont.	300	240	194	150
RPM	Int.*	375	300	240	190
Max. Torque	Cont.	45[4000]	54[4780]	55[4870]	61[5400]
daNm [lb-in]	Int.*	50[4425]	61[5400]	69[6110]	69[6110]
	Peak**	56[4960]	71[6280]	84[7435]	87[7770]
Max. Output	Cont.	11[4.8]	10[20.13.4]	9[12]	7,8[10.5]
kW [HP]	Int.*	13[17.4]	12[16.1]	10[13.4]	10,6[14.2]
Max. Pressure Drop	Cont.	175[2540]	175[2540]	135[1960]	110[1600]
bar [PSI]	Int.*	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]
Max. Oil Flow	Cont.	60[15.8]	60[15.8]	60[15.8]	60[15.8]
lpm [GPM]	Int.*	75[19.8]	75[19.8]	75[19.8]	75[19.8]
Max. Inlet Pressure	Cont.	175[2540]	175[2540]	175[2540]	175[2540]
bar [PSI]	Int.*	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]
Max. Return Pressure	Cont.	175[2540]	175[2540]	175[2540]	175[2540]
without Drain Line	Int.*	200[2900]	200[2900]	200[2900]	200[2900]
bar [PSI]	Peak**	225[3260]	225[3260]	225[3260]	225[3260]
Max. Starting Pressure		5[73]	4[58]	3[44]	3[44]
with Unloaded Shaft, bar [PSI]					
Min. Starting Torque	At max. press. drop Cont.	41[3630]	50[4425]	50[4425]	50[4425]
daNm [lb-in]	At max. press. drop Int.*	46[4070]	55[4870]	66[5840]	61[5400]
Min. Speed***, RPM		10	10	10	10
Weight, kg [lb] For					
rear port + 0,650 [1.433]	GR	8,1[18.9]	8,5[18.7]	9,2[20.3]	9,9[21.8]

Function Diagrams



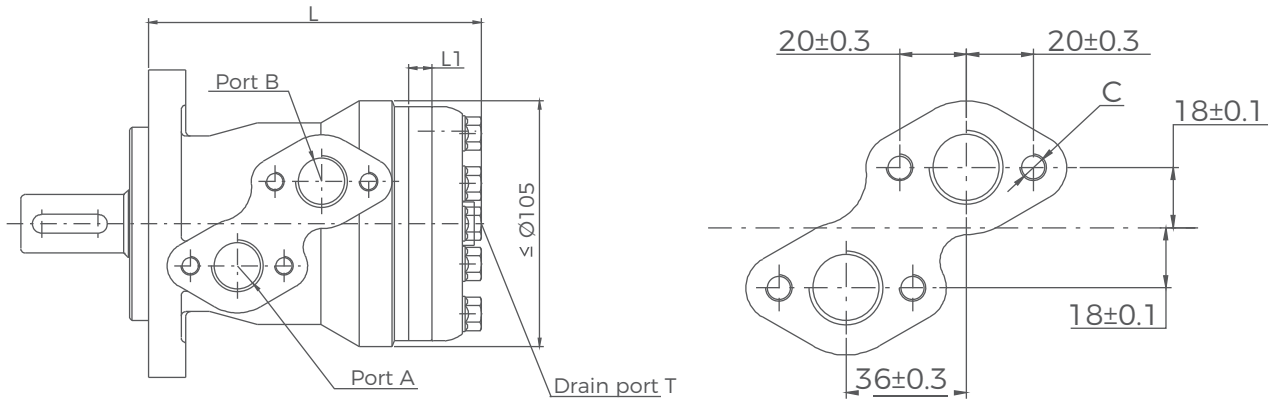
The function diagrams data is for average performance of randomly selected motors at backpressure. 5±10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

Function Diagrams



The function diagrams data is for average performance of randomly selected motors at backpressure. 5÷10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

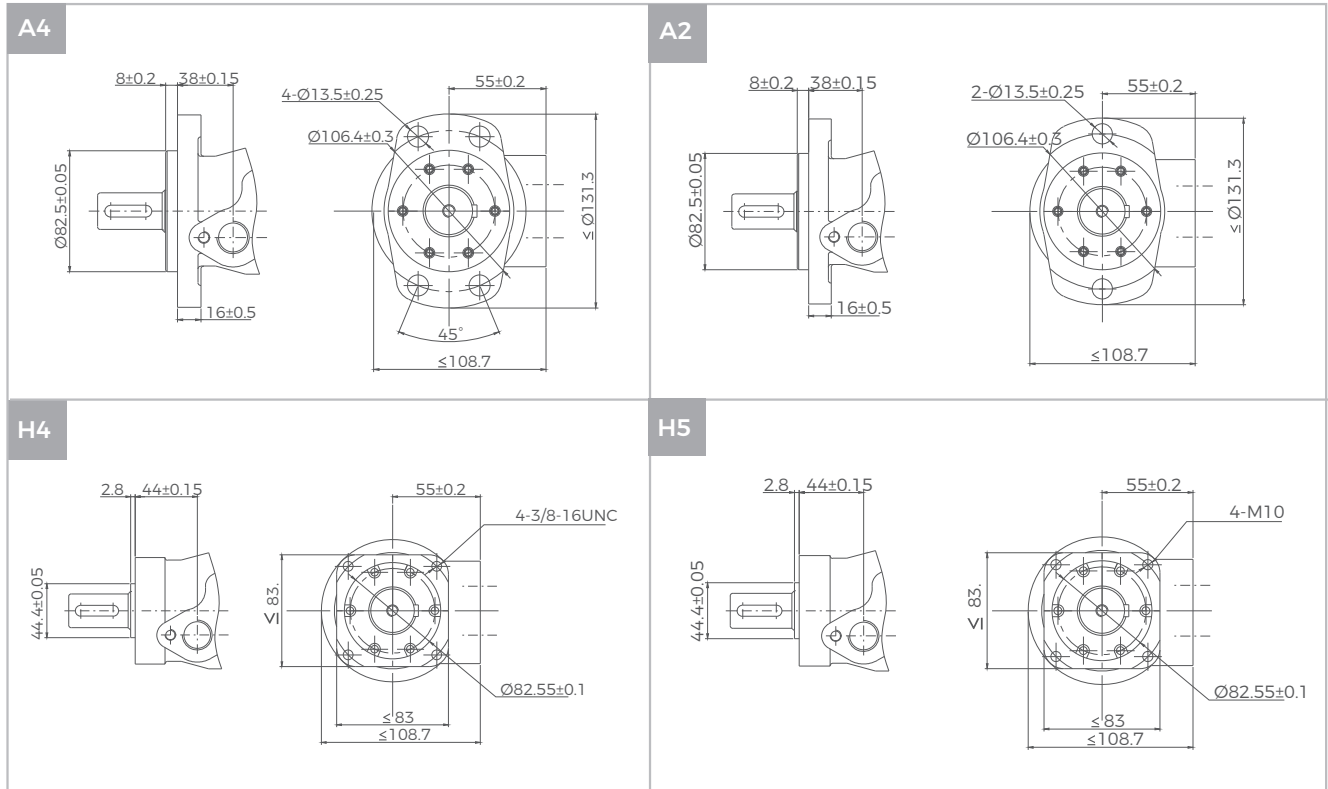
GR Dimensions and Mountings



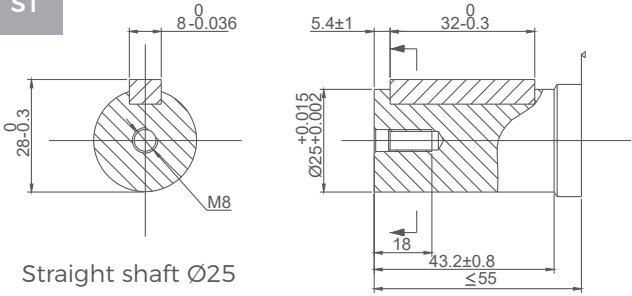
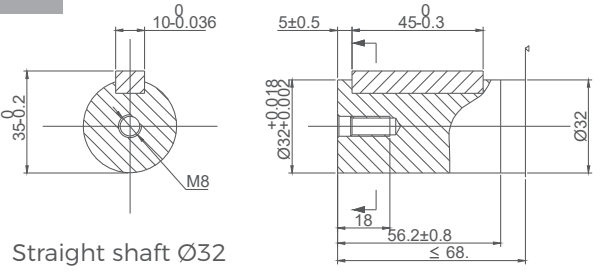
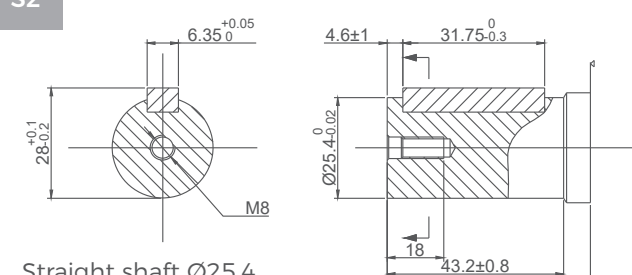
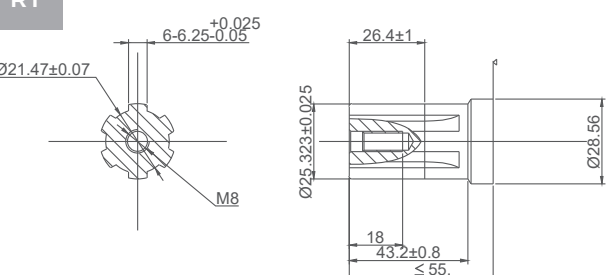
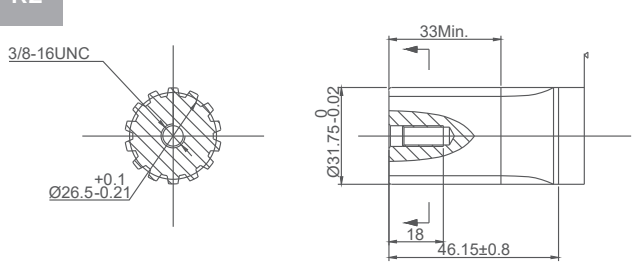
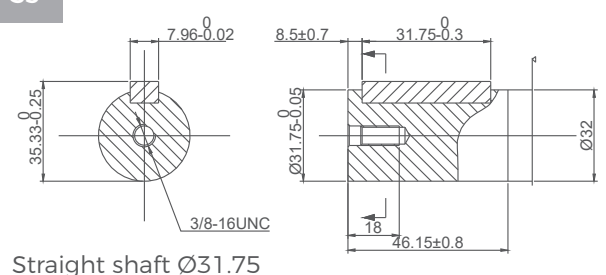
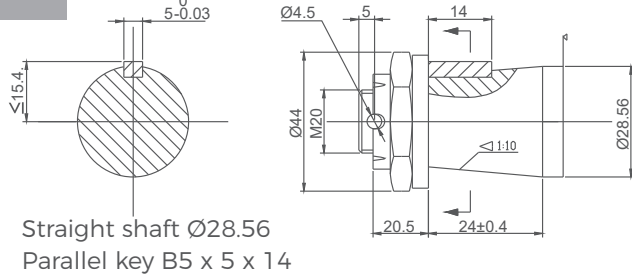
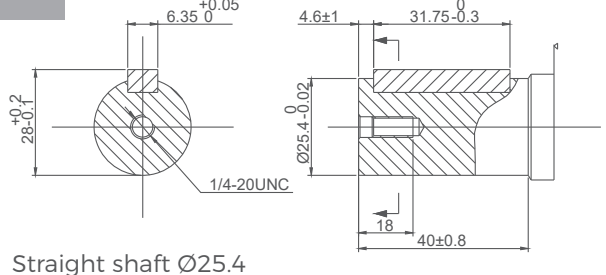
Model	L	L1
GR50	140	10
GR80	146	16
GR100	150	20
GR125	155	25
GR160	161.5	30.5
GR200	170	38.1
GR250	180	50
GR315	192	62
GR400	207	76

Mounting	G1 (depth)	M1 (depth)	U2 (depth)	U1 (depth)	G2 (depth)
P(A, B)	G1/2(15)	M22x1.5(15)	7/8-14 O-ring(17)	1/2-14NPTF(15)	PT(RC)1/2(15)
T	G1/4(12)	M14x1.5(12)	7/16-20UNF(12)	7/16-20UNF(12)	PT(RC)1/4(9.7)
C	4-M8(13)	4-M8(13)	4-5/16-18UNC(13)	4-5/16-18UNC(13)	4-M8(13)

GR Flange Covers Dimensions

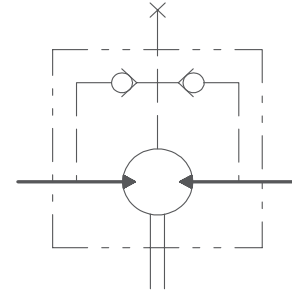
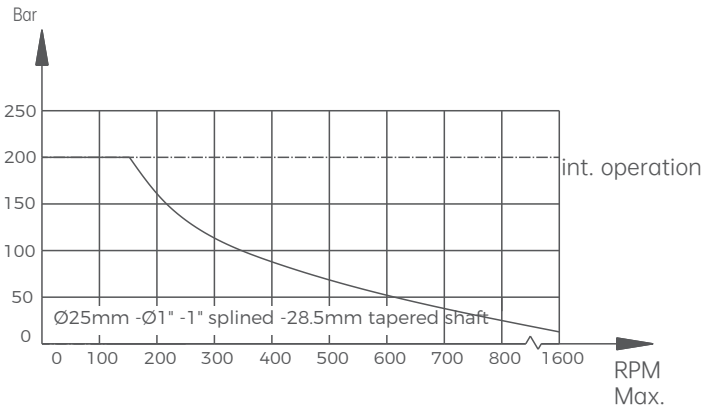


GR Shafts Dimensions

<p>S1</p>  <p>Straight shaft Ø25 Parallel key 8 x 7 x 32</p>	<p>S4</p>  <p>Straight shaft Ø32 Parallel key 10 x 8 x 45</p>
<p>S2</p>  <p>Straight shaft Ø25.4 Parallel key 6.35 x 6.35 x 31.75</p>	<p>R1</p>  <p>Splined shaft SAE 6B</p>
<p>R2</p>  <p>Splined shaft 14-DP 12/24</p>	<p>S5</p>  <p>Straight shaft Ø31.75 Parallel key 7.96 x 7.96 x 31.75</p>
<p>T1</p>  <p>Straight shaft Ø28.56 Parallel key B5 x 5 x 14 Tightening torque 100 ± 10Nm</p>	<p>S3</p>  <p>Straight shaft Ø25.4 Parallel key 6.35 x 6.35 x 31.75</p>

GR Series Hydraulic Motors

Permissible shaft seal pressure



GR with standard shaft seal check valves and without use of drain connection: The pressure on the shaft seal never exceeds the pressure in the return line.

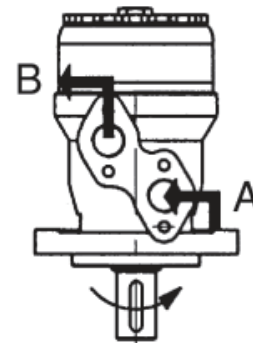
GR with standard shaft seal, check valves and with drain connection: The shaft seal pressure equals the pressure on the drain line.

Drain Port

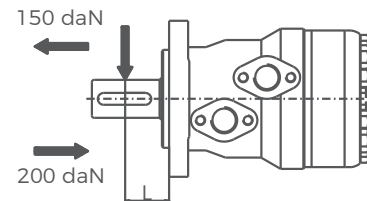
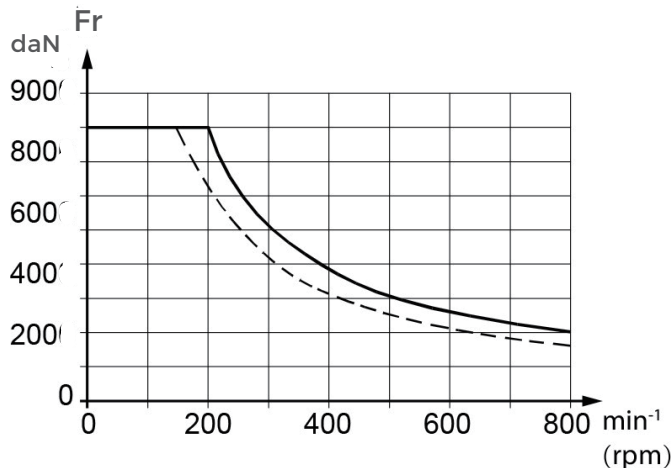
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. In applications using the drain line, the pressure of output shaft seal equals the pressure in drain line.

Standard direction of shaft rotation: Standard

When facing shaft end of motor, shaft to rotate: Clockwise. When port "A" is pressurized. Counter-clockwise port "B" is pressurized.



Output shaft stand radial force



$$Fr = \frac{800}{n} * \frac{25000}{95 + L} \text{ (daN)}$$

Fr = Radial Force (daN)

L = Distance (mm)

n = Speed (rpm)

Rhomb-flange L = 30mm

Square-flange L = 24mm