



## ORBITAL MOTORS

GP / GR / GH / GS / GT / GV / GGM





**RYAN HYDRAULICS**

Keep the concept seeking excellence, Ryan try our best to create more value for you with products and service.



## Ryan Hydraulics

### Supplier of the Whole Hydraulic System

Ryan Hydraulics manufacture was established in 1986, focusing on R&D, manufacture and sales of hydraulic products. Ryan Hydraulics owns world top level R&D team, as well as invention patents, sales covers global market. Targeting at vision of Excellence, Ryan Hydraulics keeps creating more value for customers by quality products, professional technology and experienced service.

### 645,835 sq.ft Modern Manufacture

Since the opening of 3rd generation modern manufacture in 2015, the total area covers 1,291,669 sq.ft, while the construction area covers 645,835 sq.ft, there are IT machining equipment, test and inspection equipment, meets various requirement of global customers.

### Customer First

With leading technology, quality product, and professional service, Ryan Hydraulics has covered the global market with more than 60 countries and regions, become the strategic partner of many international famous OEM enterprises.

### Instant Efficient Service

Technical Team offers accurate solutions to the service, including the product model selection, product test, installation and commissioning, debugging etc., so as to keep in touch with right department of each customer in time and respond to the customer's requirement.



### 9 Series Products

#### Covers the Whole Hydraulic Business

As a supplier of hydraulics, our business covers: hydraulic motors, hydraulic control valves, hydraulic gear pumps, power units and hydraulic systems, etc. Products are widely used in construction machinery, agricultural machinery, industry equipment.



# Contents

Orbital Motors	
<b>GP</b>	GP Series Orbital Motors — 5-21 GPH Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code
<b>GR</b>	GR Series Orbital Motors — 22-34 GRS Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code
<b>GH</b>	GH Series Orbital Motors — 35-41 Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code
<b>GS</b>	GS Series Orbital Motors — 42-53 GSS Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code
<b>GT</b>	GT Series Orbital Motors — 54-64 GTS Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code

Orbital Motors	
<b>GV</b>	GV Series Orbital Motors — 65-73 GVS Specifications Function Diagrams Dimensions and Mounting Shaft Extension Dimensions Ordering Code
<b>GGM</b>	GGM Series High Speed Orbital Motors — 74-79 Specifications Dimensions Design, Shafts and Mounting Flange Torque and Speed Selection Charts Ordering Code

## GP Series Orbital Motors

### Application

- Conveyors
- Feeding mechanism of robots and manipulators
- Metal working machines
- Textile machines
- Agricultural machines
- Food industries
- Grass cutting machinery etc.

### Options

- Model - Spool valve, gerotor
- Flange and wheel mount
- Motor with needle bearing
- Side and rear ports
- Shafts - straight, splined and tapered
- Shaft seal for high and low pressure
- Metric and BSPP ports
- Other special features

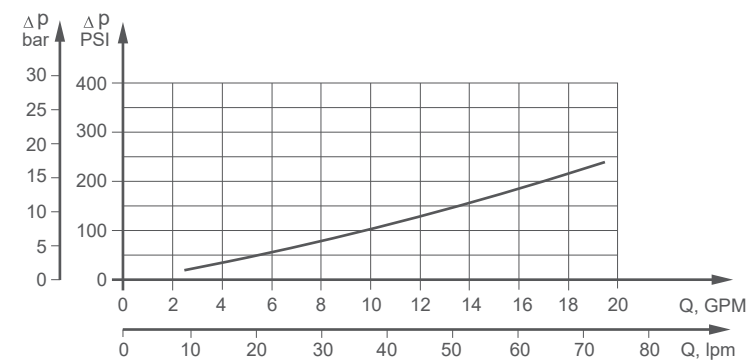
### General

Max. Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	623,6 [38.05]
Max. Speed, [RPM]	1815
Max. Torque, daNm [lb-in]	cont.:50[5144] int.:64[5565]
Max. Output, kW [HP]	12,8 [17.1]
Max. Pressure Drop, bar [PSI]	cont.:140[2030] int.:175 [2540]
Max. Oil Flow, lpm [GPM]	75 [19.8]
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 <sup>2</sup> /s [SUS]	20÷75[98÷347]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s [SUS]	Oil flow in drain line lpm [GPM]
100 [1450]	20 [98]	2,5 [.660]
	35 [164]	1,8 [.476]
140 [2030]	20 [98]	3,5 [.925]
	35 [164]	2,8 [.740]

### Pressure Loss



## Specifications

Technical data for GP with 25 and 1 in and 1 in splined and 28.56 tapered shaft

Type		GP 25	GP 32	GP 40	GP 50	GP 80	GP 100	GP 125
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]		25 [1.52]	32 [1.95]	40 [2.44]	49,5 [3.02]	79,2 [4.83]	99 [6.04]	123,8 [7.55]
Max. Speed, [RPM]	Cont.	1600	1560	1500	1210	755	605	486
	Int.*	1815	1720	1750	1515	945	755	605
Max. Torque daNm [lb-in]	Cont.	3,3 [290]	4,3 [380]	6,2 [550]	9,4 [835]	15,1 [1340]	19,3 [1710]	23,7 [2100]
	Int.*	4,7 [415]	6,1 [540]	8,2 [730]	11,9 [1050]	19,5 [1725]	23,7 [2100]	29,8 [2640]
Max. Output kW [HP]	Peak**	6,7 [595]	8,6 [760]	10,7 [950]	14,3 [1285]	22,4 [1985]	27,5 [2435]	36,5 [3235]
	Cont.	4,5 [6.0]	5,8 [7.8]	8,4 [11.5]	10,1 [13.5]	10,2 [13.7]	10,5 [14.1]	10,2 [13.7]
Max. Pressure Drop bar [PSI]	Int.*	6,1 [8.2]	7,8 [10.5]	11,6 [15.5]	12,2 [16.1]	12,5 [16.8]	12,8 [17.1]	12 [16.1]
	Cont.	100 [1450]	100 [1450]	120 [1750]	140 [2030]	140 [2030]	140 [2030]	140 [2030]
Max. Oil Flow lpm [GPM]	Int.*	140 [2030]	140 [2030]	155 [2250]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Cont.	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Inlet Pressure bar [PSI]	Int.*	40 [10.5]	50 [13.2]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
	Cont.	45 [11.9]	55 [14.5]	70 [18.5]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Return Pressure with Drain Line bar [PSI]	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Cont.	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
	Cont.	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	9 [131]
Min. Starting Torque daNm [lb-in]	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	At max.press. drop Cont.	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Min. Speed***, [RPM]	At max.press. drop Int.*	3,0 [265]	4,0 [355]	5,4 [480]	7,8 [690]	13,2 [1170]	16,6 [1470]	20,7 [1830]
	Cont.	4,2 [370]	5,6 [500]	6,8 [600]	10 [885]	16,8 [1490]	21 [1860]	26,6 [2360]
Weight, kg [lb]		20	15	10	10	10	10	10
For rear ports +0,450 [.992]	GP(H)	5,6 [12.3]	5,6 [12.3]	5,7 [12.6]	5,8 [12.8]	5,9 [13.2]	6,1 [13.5]	6,2 [13.7]

\*Intermittent operation: the permissible values may occur for max. 10% of every minute  
 \*\*Peak load: the permissible values may occur for max. 1% of every minute  
 \*\*\*For speeds lower than given, consult factory or your regional manager

GP  
GR  
GH  
GS  
GT  
GV  
GGM



## Specifications

Technical data for GP with 25 and 1 in and 1 in splined and 28.56 tapered shaft

Type		GP 160	GP 200	GP 250	GP 315	GP 400	GP 500	GP 630
Displacement, cm <sup>3</sup> /rev[ in <sup>3</sup> /rev]		158,4 [9.66]	198 [12.1]	247,5 [15.1]	316,8 [19.3]	396 [24.16]	495 [30.2]	623,6 [38.05]
Max. Speed, [RPM]	Cont.	378	303	242	190	150	120	95
	Int.*	472	378	303	236	189	150	120
Max. Torque daNm [lb-in ]	Cont.	31,3 [2770]	36,6 [3240]	38 [3360]	38 [3360]	36 [3190]	39 [3452]	44 [3895]
	Int.*	37,8 [3345]	45,6 [4035]	58,3 [5160]	56 [4960]	59 [5240]	57 [5045]	64 [5665]
	Peak**	43,8 [3880]	55 [4870]	68,5 [6060]	85 [7505]	85,4 [7560]	78 [6903]	82 [7257]
Max. Output kW [HP]	Cont.	10,1 [13.5]	10 [13.5]	7,5 [10]	5,8 [7.9]	4,6 [6.2]	3,5 [4.7]	3,3 [4.4]
	Int.*	12,1 [16.2]	12 [16.1]	12 [16.1]	9 [12.1]	7,8 [10.5]	7,2 [9.7]	5,6 [7.5]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	140 [2030]	110 [1600]	90 [1300]	70 [1015]	60 [870]	55 [800]
	Int.*	175 [2540]	175 [2540]	175 [2540]	140 [2030]	115 [1665]	90 [1305]	80 [1160]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	180 [2610]	130 [1885]	110 [1740]
Max. Oil Flow lpm [GPM]	Cont.	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
	Int.*	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	140 [2030]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	175 [2540]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pressure with Drain Line bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	140 [2030]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	175 [2540]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		8 [116]	7 [100]	6 [87]	5 [73]	5 [73]	5 [73]	5 [73]
Min. Starting Torque daNm [lb-in]	At max.press. drop Cont.	28,2 [2500]	33,5 [2950]	33,6 [2970]	34,4 [3045]	34,5 [3050]	36 [3180]	41,5 [3670]
	At max.press. drop Int.*	35,5 [3140]	42,6 [3770]	54,2 [4795]	61,9 [5480]	60,8 [5390]	54 [4780]	62 [5480]
Min. Speed***, [RPM]		10	10	10	10	10	10	10
Weight, kg [lb] For rear ports +0,450 [.992]	GP(H)	6,4 [14.1]	6,6 [14.6]	6,8 [15]	7,1 [15.6]	7,6 [16.8]	8,9 [20]	9,5 [21.4]

\*Intermittent operation:the permissible values may occur for max. 10% of every minute

\*\*Peak load:the permissible values may occur for max. 1% of every minute

\*\*\*For speeds lower than given, consult factory or your regional manager.

## Specifications

Technical data for GP with 31.75 and 32 shaft

Type		GP 25	GP 32	GP 40	GP 50	GP 80	GP 100	GP 125
Displacement, cm <sup>3</sup> /rev[ in <sup>3</sup> /rev]		25 [1.52]	32 [1.95]	40 [2.44]	49,5 [3.02]	79,2 [4.83]	99 [6.04]	123,8 [7.55]
Max. Speed, [RPM]	Cont.	1600	1560	1500	1210	755	605	486
	Int.*	1815	1720	1750	1515	945	755	605
Max. Torque daNm [lb-in ]	Cont.	3,3 [290]	4,3 [380]	6,2 [550]	9,4 [835]	15,1 [1340]	19,3 [1710]	23,7 [2100]
	Int.*	4,7 [415]	6,1 [540]	8,2 [730]	11,9 [1050]	19,5 [1725]	23,7 [2100]	29,8 [2640]
	Peak**	6,7 [595]	8,6 [760]	10,7 [950]	14,3 [1285]	22,4 [1985]	27,5 [2435]	36,5 [3235]
Max. Output kW [HP]	Cont.	4,5 [6.0]	5,8 [7.8]	8,4 [11.5]	10,1 [13.5]	10,2 [13.7]	10,5 [14.1]	10,2 [13.7]
	Int.*	6,1 [8.2]	7,8 [10.5]	11,6 [15.5]	12,2 [16.1]	12,5 [16.8]	12,8 [17.1]	12 [16.1]
Max. Pressure Drop bar [PSI]	Cont.	100 [1450]	100 [1450]	120 [1750]	140 [2030]	140 [2030]	140 [2030]	140 [2030]
	Int.*	140 [2030]	140 [2030]	155 [2250]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	50 [13.2]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
	Int.*	45 [11.9]	55 [14.5]	70 [18.5]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pressure with Drain Line bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft,bar [PSI]		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	9 [131]
Min. Starting Torque daNm [lb-in ]	At max.press. drop Cont.	3,0 [265]	4,0 [355]	5,4 [480]	7,8 [690]	13,2 [1170]	16,6 [1470]	20,7 [1830]
	At max.press. drop Int.*	4,2 [370]	5,6 [500]	6,8 [600]	10 [885]	16,8 [1490]	21 [1860]	26,6 [2360]
Min. Speed***, [RPM]		20	15	10	10	10	10	10
Weight, kg [lb] For rear ports +0,450 [.992]	GP(H)	5,6 [12.3]	5,6 [12.3]	5,7 [12.6]	5,9 [13]	6 [13.2]	6,2 [13.7]	6,3 [13.9]

\*Intermittent operation:the permissible values may occur for max. 10% of every minute

\*\*Peak load:the permissible values may occur for max. 1% of every minute

\*\*\* For speeds lower than given, consult factory or your regional manager.

## Specifications

Technical data for GP with 31.75 and 32 shaft

Type		GP 160	GP 200	GP 250	GP 315	GP 400	GP 500	GP 630
Displacement, cm <sup>3</sup> /rev[ in <sup>3</sup> /rev]		158,4 [9.66]	198 [12.1]	247,5 [15.1]	316,8 [19.3]	396 [24.16]	495 [30.2]	623,6 [38.05]
Max. Speed, [RPM]	Cont.	378	303	242	190	150	120	95
	Int.*	472	378	303	236	189	150	120
Max. Torque daNm [lb-in ]	Cont.	31,3 [2770]	36,6 [3240]	47 [4160]	48 [4360]	50 [4415]	39 [3452]	44 [3895]
	Int.*	37,8 [3345]	45,6 [4035]	58,3 [5160]	56 [4960]	59 [5240]	57 [5045]	64 [5665]
	Peak**	43,8 [3880]	55 [4870]	68,5 [6060]	85 [7505]	85,4 [7560]	78 [6903]	82 [7257]
Max. Output kW [HP]	Cont.	10,1 [13.5]	10 [13.5]	9 [12.1]	7,6 [10.2]	6,2 [8.3]	3,5 [4.7]	3,3 [4.4]
	Int.*	12,1 [16.2]	12 [16.1]	12 [16.1]	9 [12.1]	7,8 [10.5]	7,2 [9.7]	5,6 [7.5]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	140 [2030]	140 [2030]	120 [1740]	95 [1400]	60 [870]	55 [800]
	Int.*	175 [2540]	175 [2540]	175 [2540]	140 [2030]	115 [1670]	90 [1305]	80 [1160]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	180 [2610]	130 [1885]	110 [1740]
Max. Oil Flow lpm [GPM]	Cont.	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	140 [2030]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	175 [2540]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pressure with Drain Line bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	140 [2030]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	175 [2540]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft, bar [PS]		8 [116]	7 [100]	6 [87]	5 [73]	5 [73]	5 [73]	5 [73]
Min. Starting Torque daNm [lb-in ]	At max.press. drop Cont.	28,2 [2500]	33,5 [2950]	42,8 [3790]	4050 [45,8]	46,8 [4140]	36 [3180]	41,5 [3670]
	At max.press. drop Int.*	35,5 [3140]	42,6 [3770]	54,2 [4795]	5480 [61,9]	60,8 [5390]	54 [4780]	62 [5480]
Min. Speed***, [RPM]		10	10	10	10	10	10	10
Weight, kg [lb] For rear ports +0,450 [.992]		6,5 [14.3]	6,7 [14.8]	6,9 [15.2]	7,2 [15.9]	7,7 [17]	9,0 [19.9]	9,6 [21.2]
	GP(H)							

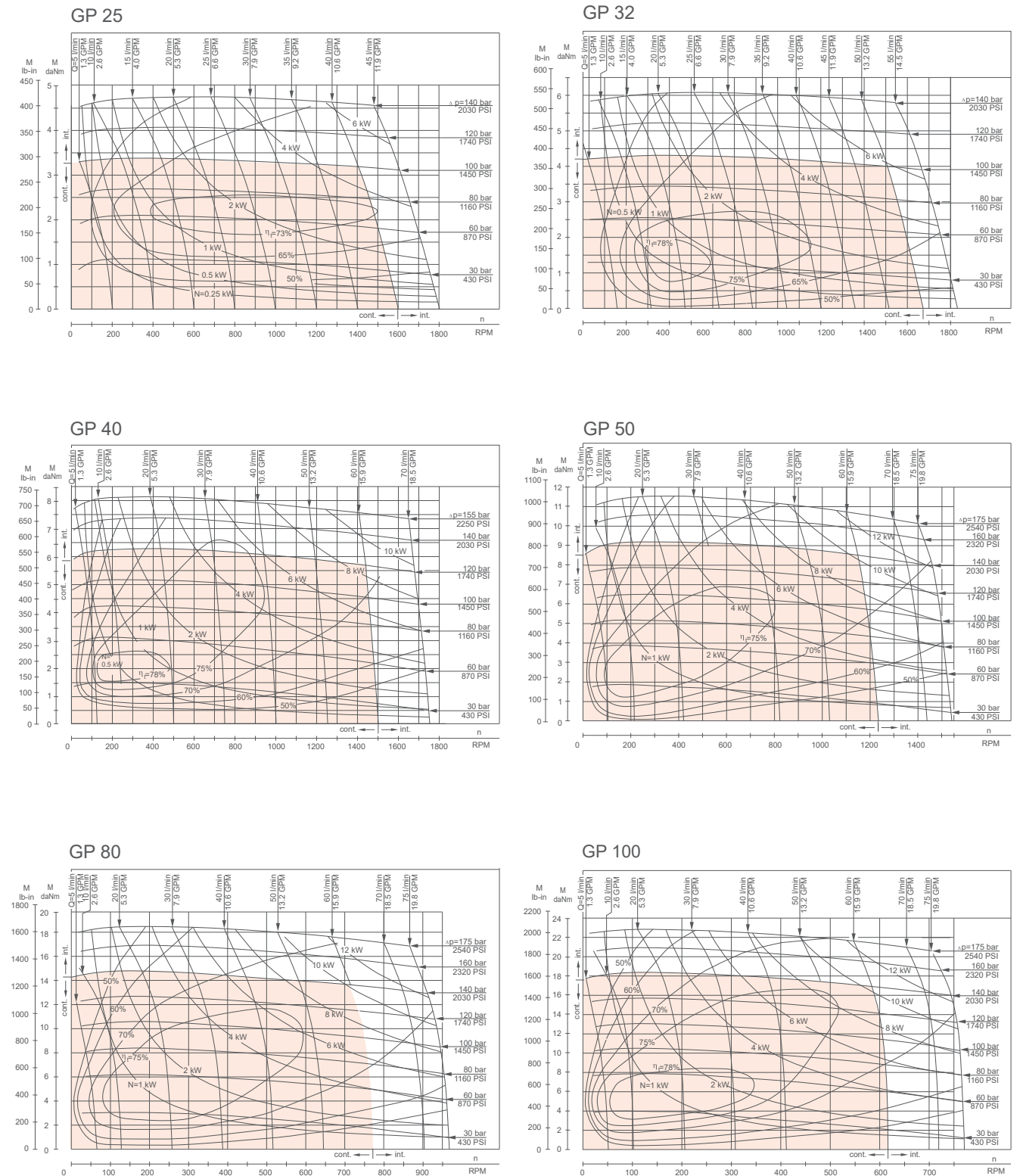
\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

\* \*Peak load: the permissible values may occur for max. 1% of every minute.

\* \* \*For speeds lower than given, consult factory or your regional manager.

1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM ( ISO 6743/4).  
If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

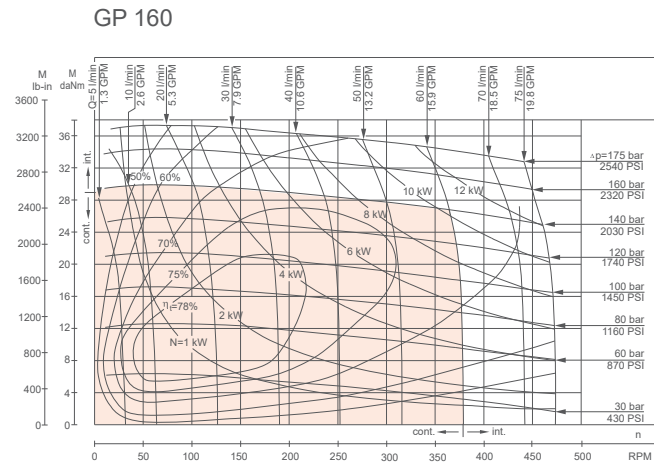
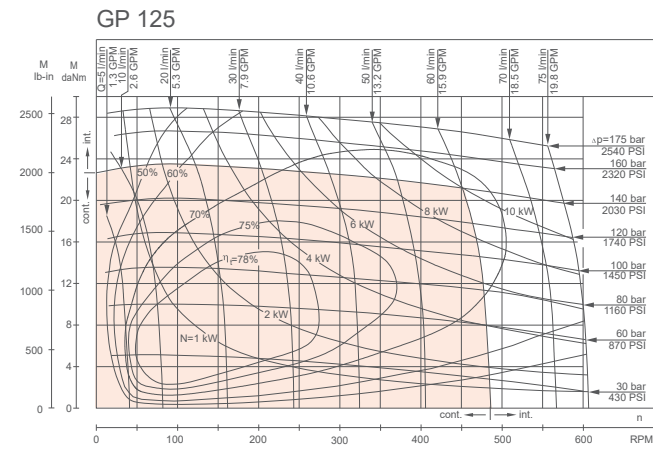
## Function Diagrams



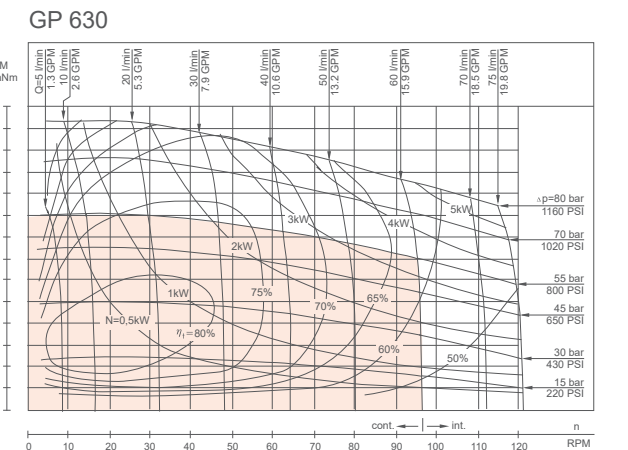
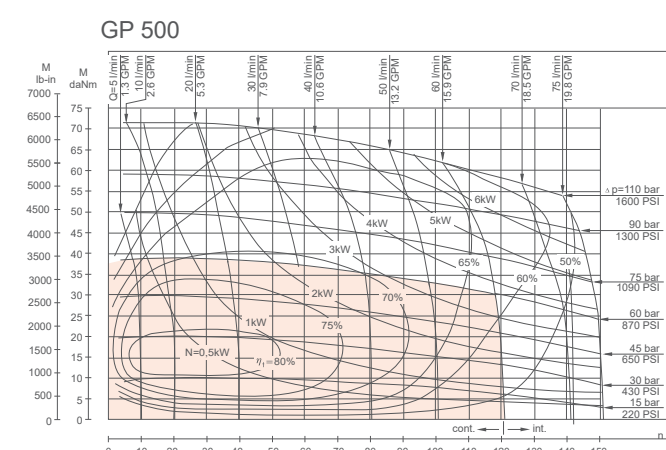
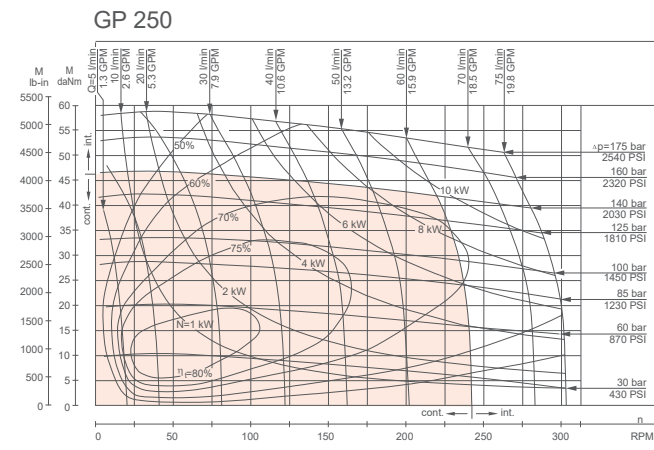
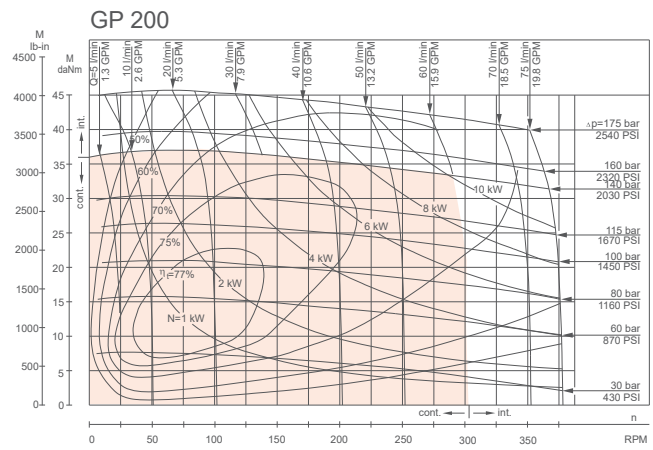
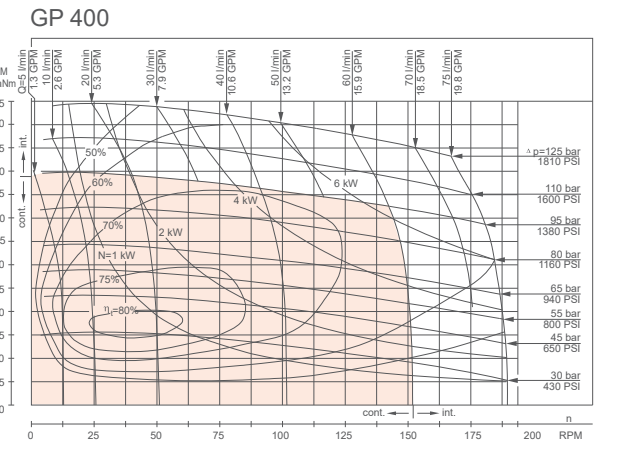
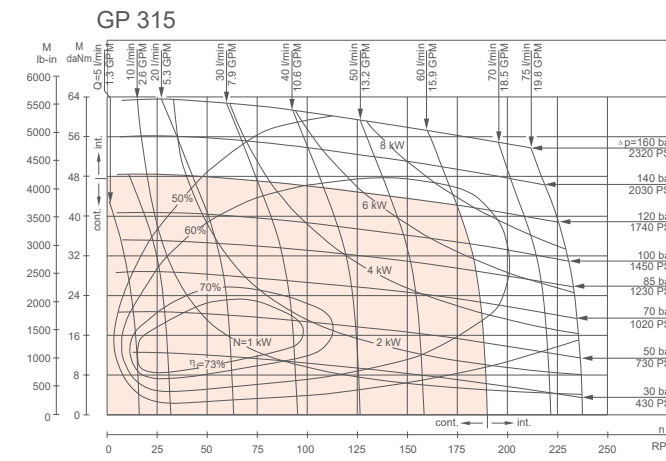
The function diagrams data is for average performance of randomly selected motors at back pressure  $\Delta p=10$  bar

[72.5÷145 PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C [122°F].

## Function Diagrams



## Function Diagrams



The function diagrams data is for average performance of randomly selected motors at back pressure 5±10 bar [72.5±145 PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C [122°F].

The function diagrams data is for average performance of randomly selected motors at back pressure 5±10 bar [72.5±145 PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C [122°F].

GP

GR

GH

GS

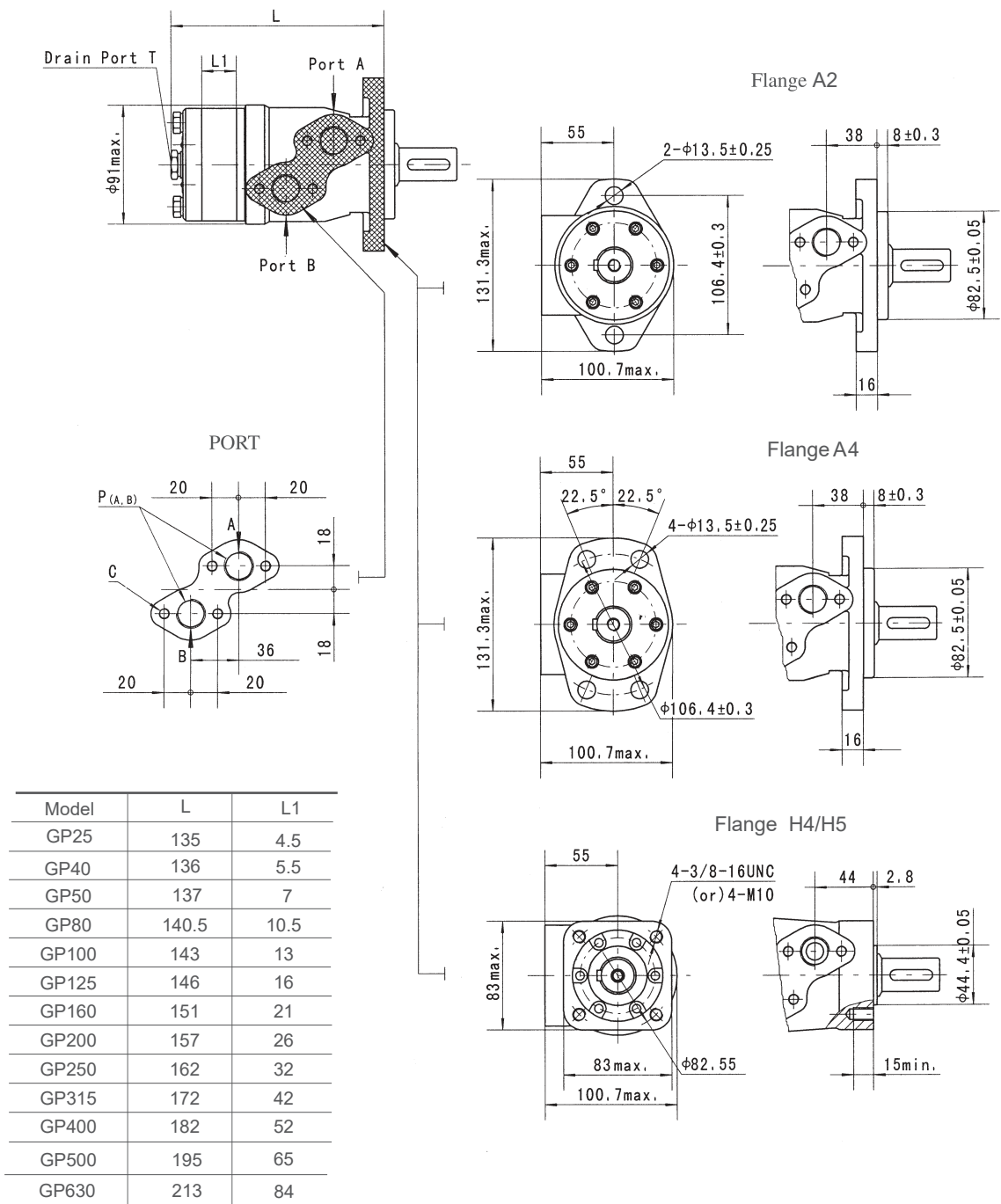
GT

GV

GGM

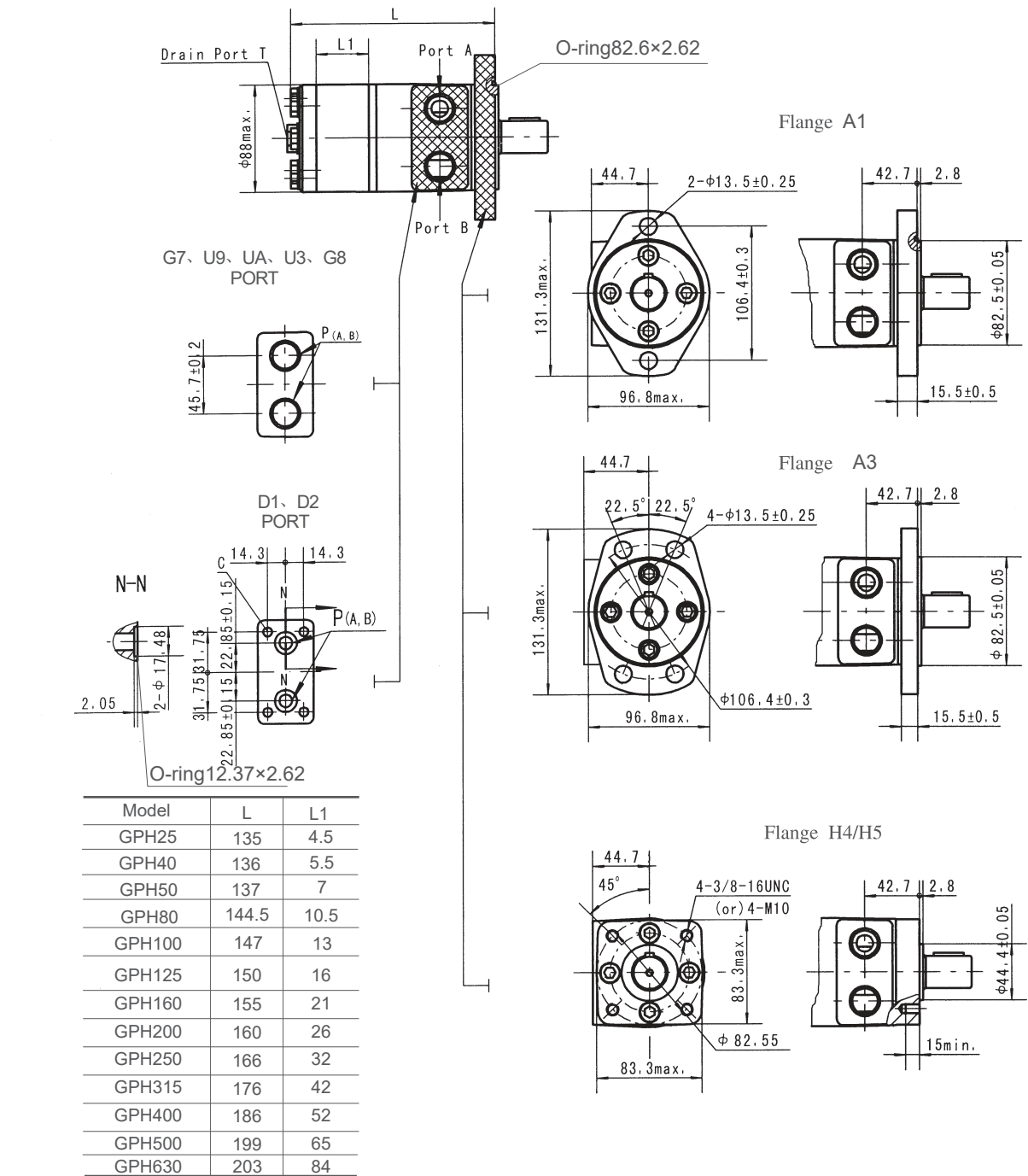


## GP Dimensions and Mounting



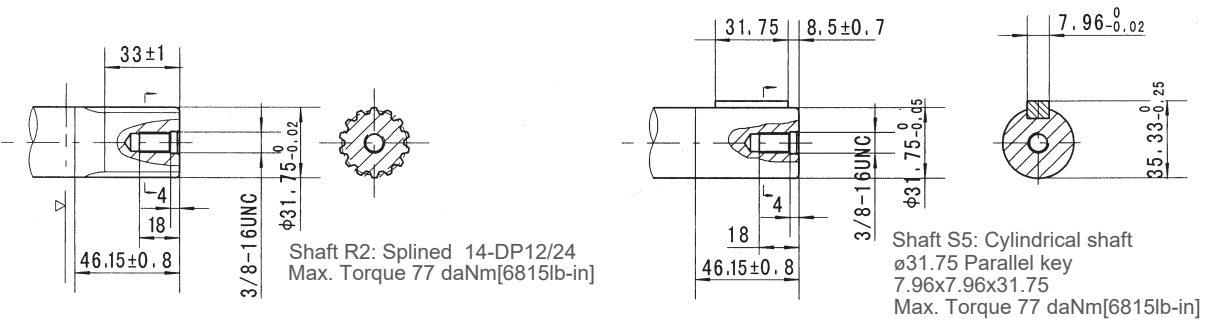
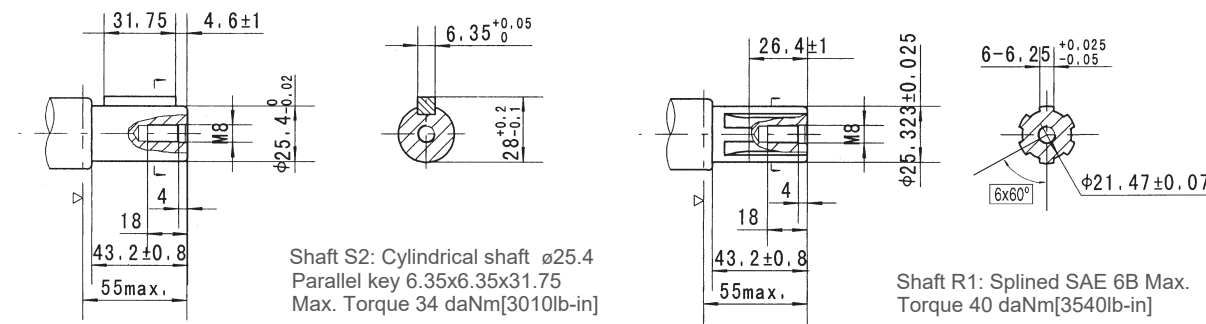
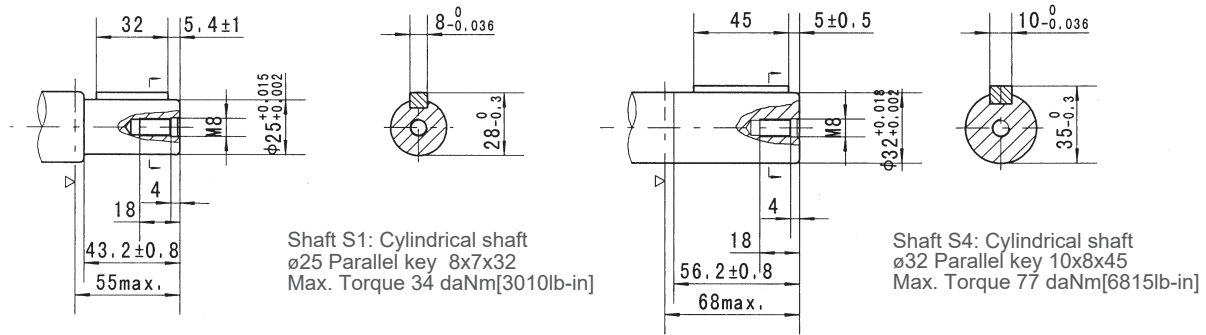
Mounting	Code	G 1 (depth)	M 1 (depth)	U 2 (depth)	U 1 (depth)	G 2 (depth)
	P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	PT(RC)1/2 (15)
	C	4-M8 (13)	4-M8 (13)	4-5/16-18UNC (13)	4-5/16-18UNC (13)	4-M8 (13)
	T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)	7/16-20UNF (12)	PT(RC)1/4 (9.7)

## GPH Dimensions and Mounting

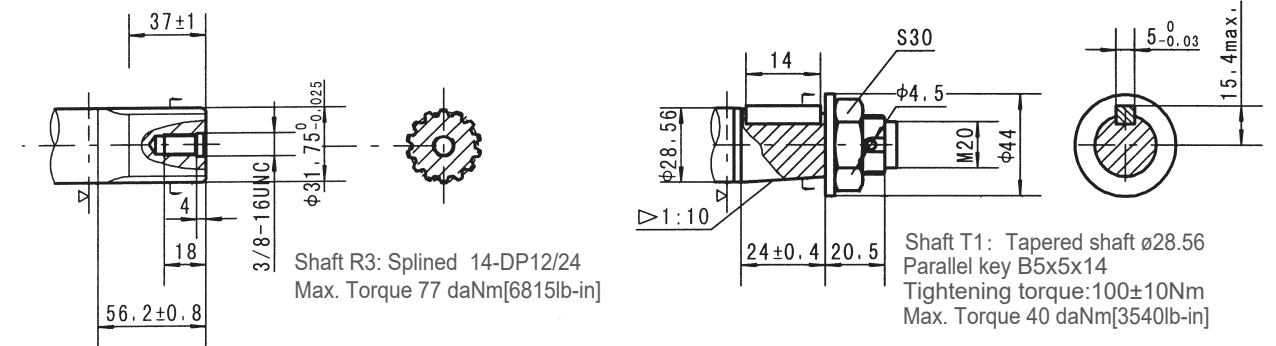
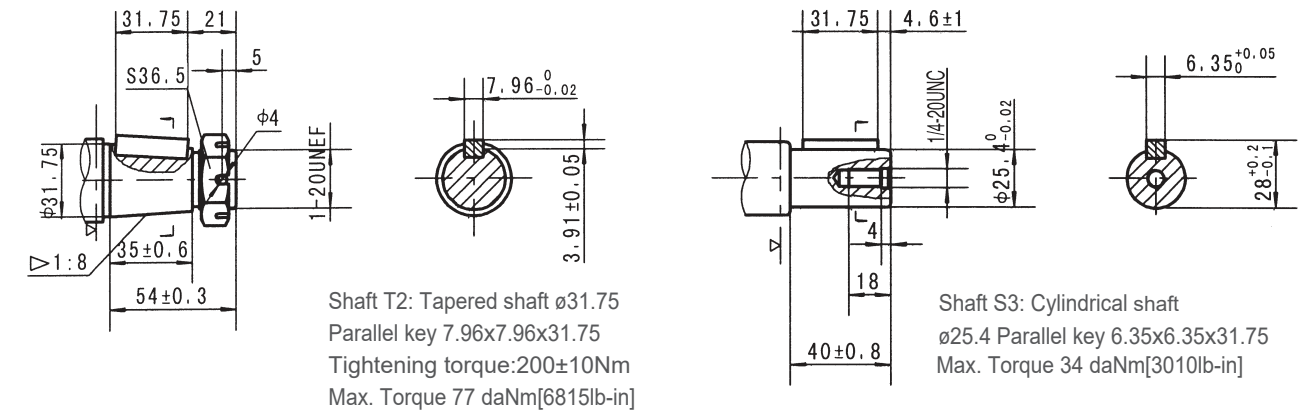


Mounting	Code	G 7 (depth)	U 9 (depth)	U A (depth)	U 3 (depth)	G 8 (depth)	D 1 (depth)	D 2 (depth)
	P(A,B)	G1/2 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	3/4-16 O-ring (15)	PT(RC)1/2 (15)	ø10	ø10
	T	G1/4 (12)	7/16-20UNF (12)	7/16-20UNF (12)	7/16-20UNF(12)	PT(RC)1/4 (9.7)	7/16-20UNF(12)	G1/4(12)
	C	-	-	-	-	-	4-5/16-18UNC(13)	4-M8(13)

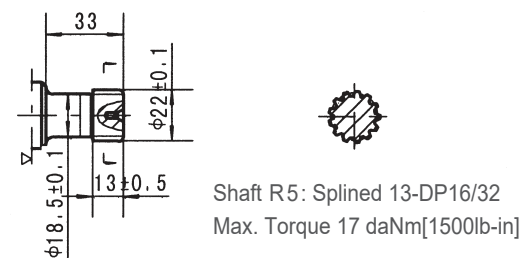
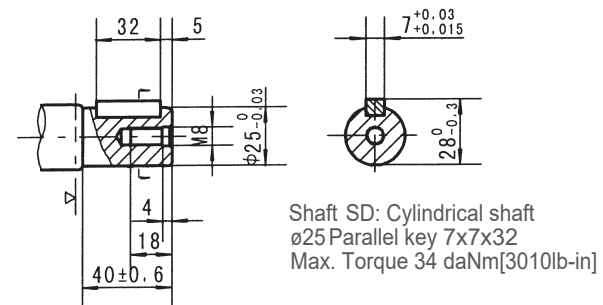
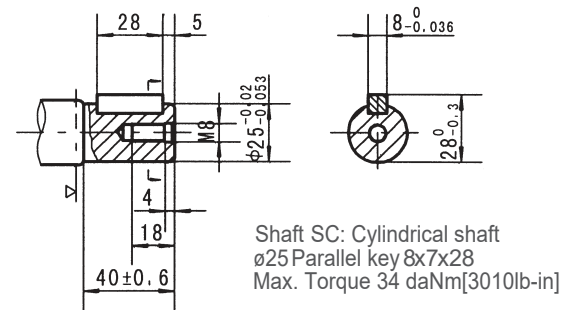
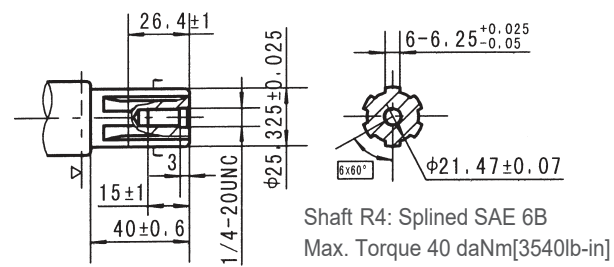
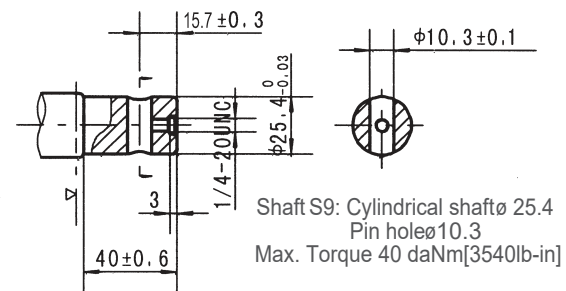
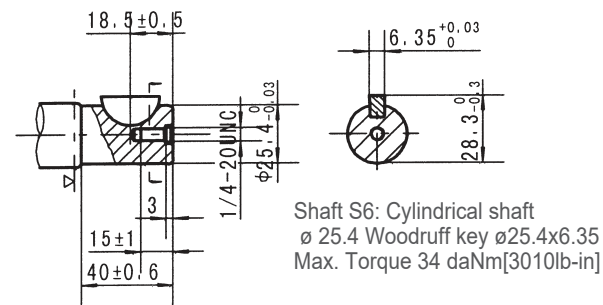
## GP Shafts Extension Dimensions



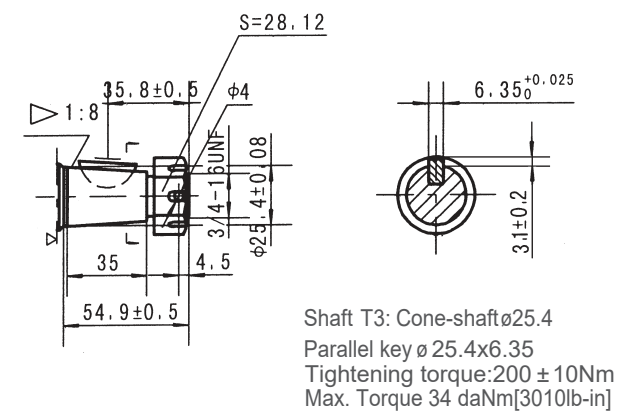
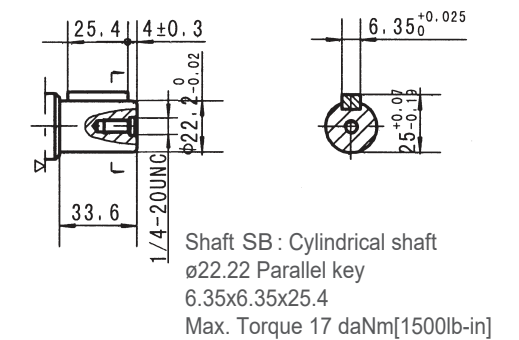
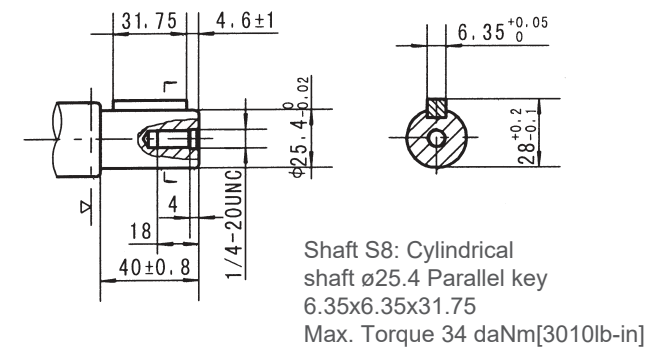
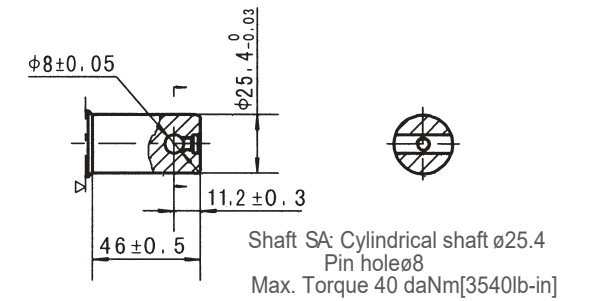
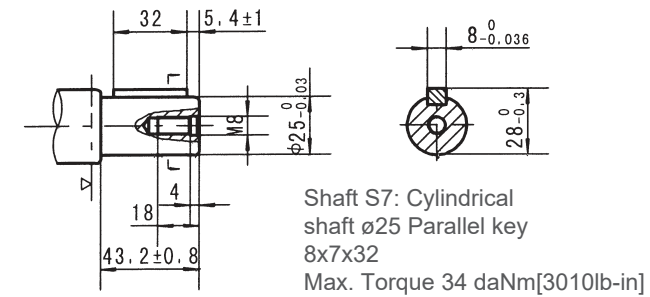
## GP Shafts Extension Dimensions



## GPH Shafts Extension Dimensions

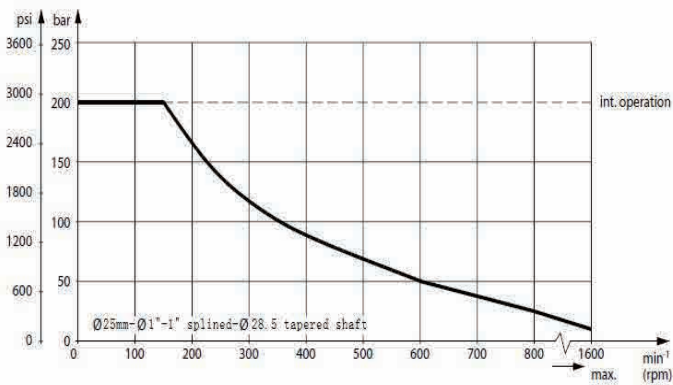
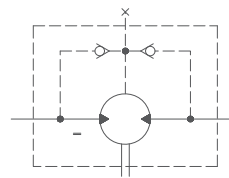


## GPH Shafts Extension Dimensions

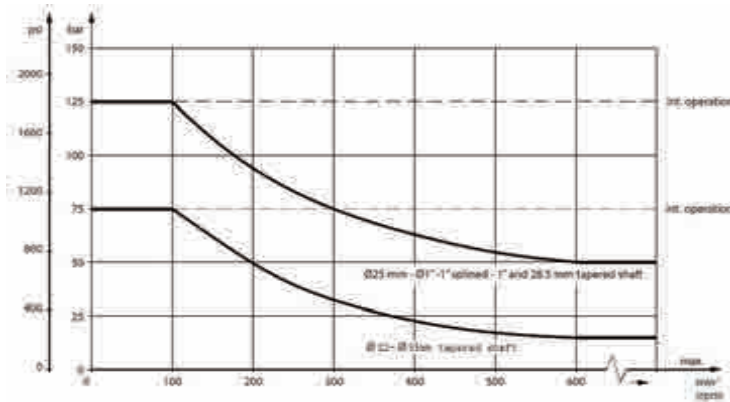




## GP GPH Series Hydraulic Motors



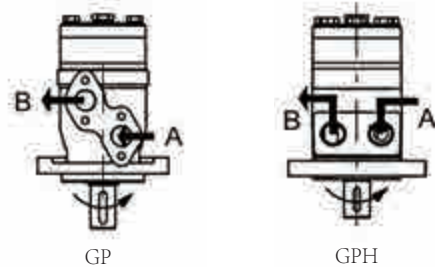
High pressure shaft seal



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

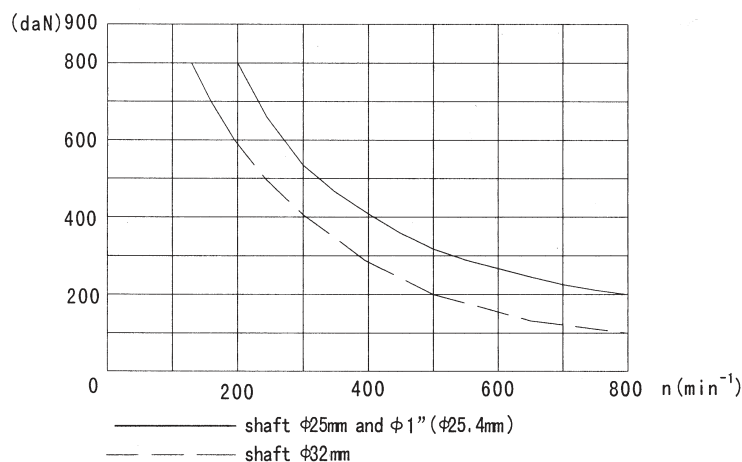
## Direction of Shafts Rotation: Standard

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

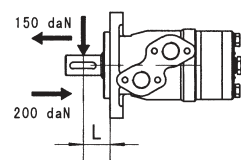


## Status of the Shafts Radial Force

(Standard motor with journal bearing)



$$F_r = \frac{800 \cdot 25000}{n \cdot 95 + L} \text{ daN}$$



$F_r$  =Radial Force (daN)  
 $L$  =Distance (mm)  
 $n$  =Speed (rpm)  
Rhomb-flange  $L=30\text{mm}$   
Square-flange  $L=24\text{mm}$

## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

GP	Orbital motor
----	---------------

### 2 - DISPLACEMENT

025	25 cm <sup>3</sup> /rev [1.52 in <sup>3</sup> /rev]
032	32 cm <sup>3</sup> /rev [1.95 in <sup>3</sup> /rev]
040	40 cm <sup>3</sup> /rev [2.44 in <sup>3</sup> /rev]
050	49.5 cm <sup>3</sup> /rev [3.02 in <sup>3</sup> /rev]
080	79.2 cm <sup>3</sup> /rev [4.83 in <sup>3</sup> /rev]
100	99 cm <sup>3</sup> /rev [6.04 in <sup>3</sup> /rev]
125	123.8 cm <sup>3</sup> /rev [7.55 in <sup>3</sup> /rev]
160	158.4 cm <sup>3</sup> /rev [9.66 in <sup>3</sup> /rev]
200	198 cm <sup>3</sup> /rev [12.1 in <sup>3</sup> /rev]
250	247.5 cm <sup>3</sup> /rev [15.1 in <sup>3</sup> /rev]
315	316.8 cm <sup>3</sup> /rev [19.3 in <sup>3</sup> /rev]
400	396 cm <sup>3</sup> /rev [24.16 in <sup>3</sup> /rev]
500	495 cm <sup>3</sup> /rev [30.2 in <sup>3</sup> /rev]
630	623.6 cm <sup>3</sup> /rev [38.05 in <sup>3</sup> /rev]

### 3 - FLANGE

A2	2-Hole SAE A flange, pilot $\phi 82.5 \times 8$
A4	4-Hole SAE A flange, pilot $\phi 82.5 \times 8$
H4	4-3/8-16 UNC square flange, pilot $\phi 44.4 \times 2.8$
H5	4-M10 square flange, pilot $\phi 44.4 \times 2.8$

### 4 - OUTPUT SHAFT

S1	Shaft $\phi 25$ , parallel key $8 \times 7 \times 32$
S2	Shaft $\phi 25.4$ , parallel key $6.35 \times 6.35 \times 31.75$
R1	Shaft $\phi 25.4$ , splined tooth SAE 6B
S3	Short shaft $\phi 25.4$ , parallel key $6.35 \times 6.35 \times 31.75$
S4	Shaft $\phi 32$ , parallel key $10 \times 8 \times 45$
R2	Shaft $\phi 31.75$ , splined tooth 14-DP12/24
R3	Long shaft $\phi 31.75$ , splined tooth 14-DP12/24
S5	Shaft $\phi 31.75$ , parallel key $7.96 \times 7.96 \times 31.75$
T1	Tapered shaft $\phi 28.56$ , parallel key $B5 \times 5 \times 14$
T2	Tapered shaft $\phi 31.75$ , parallel key $7.96 \times 7.96 \times 25.4$

### 5 - PORTS AND DRAIN PORT

G1	G1/2 manifold mount 4xM8, G1/4
M1	M22x1.5 manifold mount 4xM8, M14x1.5
U2	7/8-14 UNF O-ring manifold 4x5/16-18 UNC, 7/16-20 UNF
U1	1/2-14 NPTF manifold 4x5/16-18 UNC, 7/16-20 UNF
G2	PT(Rc)1/2 manifold 4xM8, PT(Rc)1/4

### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

### 8 - Unusually function

A	Standard
N	Big radial force
D	No case drain
F	Free running
L	Low speed
V	High temperature
S	Low temperature

Note:

- 1) The shafts of S4\R2\R3\S5\T1\T2 are only suitable for flanges of A2 and A4.
- 2) When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.



## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

<b>GPH</b>	Orbital motor
------------	---------------

### 2 - DISPLACEMENT

<b>025</b>	25 cm <sup>3</sup> /rev [1.52 in <sup>3</sup> /rev]
<b>032</b>	32 cm <sup>3</sup> /rev [1.95 in <sup>3</sup> /rev]
<b>040</b>	40 cm <sup>3</sup> /rev [2.44 in <sup>3</sup> /rev]
<b>050</b>	49.5 cm <sup>3</sup> /rev [3.02 in <sup>3</sup> /rev]
<b>080</b>	79.2 cm <sup>3</sup> /rev [4.83 in <sup>3</sup> /rev]
<b>100</b>	99 cm <sup>3</sup> /rev [6.04 in <sup>3</sup> /rev]
<b>125</b>	123.8 cm <sup>3</sup> /rev [7.55 in <sup>3</sup> /rev]
<b>160</b>	158.4 cm <sup>3</sup> /rev [9.66 in <sup>3</sup> /rev]
<b>200</b>	198 cm <sup>3</sup> /rev [12.1 in <sup>3</sup> /rev]
<b>250</b>	247.5 cm <sup>3</sup> /rev [15.1 in <sup>3</sup> /rev]
<b>315</b>	316.8 cm <sup>3</sup> /rev [19.3 in <sup>3</sup> /rev]
<b>400</b>	396 cm <sup>3</sup> /rev [24.16 in <sup>3</sup> /rev]
<b>500</b>	495 cm <sup>3</sup> /rev [30.2 in <sup>3</sup> /rev]
<b>630</b>	623.6 cm <sup>3</sup> /rev [38.05 in <sup>3</sup> /rev]

### 3 - FLANGE

<b>A1</b>	2-Hole SAE A flange, pilot $\Phi$ 82.5x2.8
<b>A3</b>	4-Hole SAE A flange, pilot $\Phi$ 82.5x2.8
<b>H4</b>	4- 3/8-16 UNC square flange, pilot $\Phi$ 44.4x2.8
<b>H5</b>	4-M10 square flange, pilot $\Phi$ 44.4x2.8

### 4 - OUTPUT SHAFT

<b>S6</b>	Shaft $\Phi$ 25.4, woodruff key $\Phi$ 25.4x6.35
<b>R4</b>	Shaft $\Phi$ 25.4, splined tooth SAE 6B
<b>S7</b>	Shaft $\Phi$ 25, parallel key 8x7x32
<b>S8</b>	Shaft $\Phi$ 25.4, parallel key 6.35x6.35x31.75
<b>S9</b>	Shaft $\Phi$ 25.4, pin hole $\Phi$ 10.3
<b>SA</b>	Shaft $\Phi$ 25.4, pin hole $\Phi$ 8
<b>SB</b>	Shaft $\Phi$ 22.22, parallel key 6.35x6.35x25.4
<b>R5</b>	Shaft $\Phi$ 22.22, splined tooth 13-DP16/32
<b>T3</b>	Tapered shaft $\Phi$ 25.4, woodruff key $\Phi$ 25.4x6.35
<b>SC</b>	Shaft $\Phi$ 25, parallel key 8x7x28
<b>SD</b>	Shaft $\Phi$ 25, parallel key 7x7x32

### 5 - PORTS AND DRAIN PORT

<b>G7</b>	G1/2, G1/4
<b>U9</b>	7/8-14 UNF O-ring, 7/16-20 UNF
<b>UA</b>	1/2-14 NPTF, 7/16-20 UNF
<b>U3</b>	3/4-16 O-ring, 7/16-20 UNF
<b>G8</b>	PT(Rc)1/2, PT(Rc)1/4
<b>D1</b>	$\Phi$ 10 O-ring manifold 4x5/16-18 UNC, 7/16-20 UNF
<b>D2</b>	$\Phi$ 10 O-ring manifold 4xM8, G1/4

### 6 - ROTATION DIRECTION

<b>A</b>	Standard
<b>R</b>	Opposite

### 7 - PAINT

<b>A</b>	No paint
<b>B</b>	Blue
<b>C</b>	Black
<b>S</b>	Silver grey

### 8 - Unusually function

<b>A</b>	Standard
<b>N</b>	Big radial force
<b>D</b>	No case drain
<b>F</b>	Free running
<b>L</b>	Low speed
<b>V</b>	High temperature
<b>S</b>	Low temperature

Note: When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

## GR Series Orbital Motors

### Application

- Conveyors
- Feeding mechanism of robots and manipulators
- Metal working machines
- Textile machines Food industries
- Agricultural machines
- Food industries
- Grass cutting machinery etc.

### Options

- Model - Spool valve, roll-gerotor
- Flange mount
- Motor with needle bearing
- Side and rear ports
- Shafts - straight, splined and tapered
- Shaft seal for high and low pressure
- Metric and BSPP ports
- Other special features

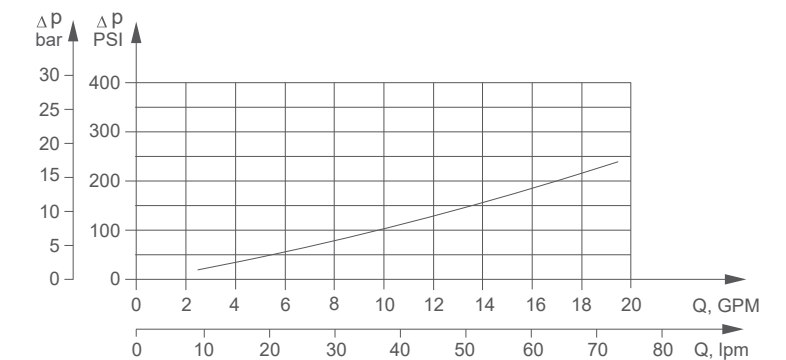
### General

Max. Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /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 <sup>2</sup> /s [SUS]	20÷75 [98÷347]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s [SUS]	Oil flow in drain line lpm [GPM]
100 [1450]	20 [98]	2,5 [.660]
	35 [164]	1,8 [.476]
140 [2030]	20 [98]	3,5 [.925]
	35 [164]	2,8 [.740]

### Pressure Loss



## Specifications

Technical data for GR with 25 and 1 in and 1 in splined and 28.56 tapered shaft

Type		GR 50	GR 80	GR 100	GR 125	GR 160	GR 200	GR 250	GR 315	GR 400
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev ]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [in-lb ]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	38,5[3410]	39 [3450]	36 [3185]	38 [3360]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	46 [4070]	47 [4160]	47 [4160]	47 [4160]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	60 [5310]	61 [5400]	61 [5400]
Max. Output kW [HP]	Cont.	7 [9.5]	12,5 [17]	13 [17.4]	12,5[16.8]	11,5[15.4]	9 [12]	8 [10.7]	5 [6.7]	4,8 [6.4]
	Int.*	8,5 [11.9]	15 [20.1]	15 [20.1]	14,5[19.5]	14 [18.8]	12 [16.1]	9,5 [12.7]	8 [10.7]	6,8 [9.1]
Max. Pressure Drop bar [PSI]	Cont.	140[2030]	175[2540]	175[2540]	175[2540]	175[2540]	140[2030]	110[1600]	85 [1230]	65 [940]
	Int.*	175[2540]	200[2900]	200[2900]	200[2900]	200[2900]	175[2540]	140[2030]	115[1670]	90 [1300]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	200[2900]	150[2175]	115[1670]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Return Pres- sure with Drain Line bar [PSI]	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Starting Pressure with Unloaded Shaft, bar[PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [44]	3 [44]
Min. Starting Torque daNm [in-lb ]	At max.press. drop Cont.	8 [710]	15 [1330]	20 [1770]	25 [2215]	32 [2832]	33 [2920]	31 [2740]	31,5[2875]	31,5[2875]
	At max.press. drop Int.*	10 [85]	17 [1505]	23 [2035]	28 [2480]	37 [3275]	40 [3540]	48 [4250]	58 [5220]	50 [4425]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, kg [lb]										
For rear ports : +0,650 [1.433]	GR(S)	6,8 [15]	6,9 [15.2]	7,2 [15.9]	7,3 [16.1]	7,5 [15.2]	8 [17.6]	8,4 [18.5]	9,1 [20]	9,8 [21.6]

\* Intermittent operation:the permissible values may occur for max. 10% of every  
 \*\* minute Peak load:the permissible values may occur for max. 1% of every minute  
 \*\*\* For speeds lowe:than given,consult factory or your regional manage

## Specifications

Technical data for GR with 31.75 and 32 shaft

Type		GR 50	GR 80	GR 100	GR 125	GR 160	GR 200	GR 250	GR 315	GR 400
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev ]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [in-lb ]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	38,5[3410]	39 [3450]	36 [3185]	38 [3360]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	46 [4070]	47 [4160]	47 [4160]	47 [4160]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	60 [5310]	61 [5400]	61 [5400]
Max. Output kW [HP]	Cont.	7 [9.5]	12,5 [17]	13 [17.4]	12,5[16.8]	11,5[15.4]	9 [12]	8 [10.7]	5 [6.7]	4,8 [6.4]
	Int.*	8,5 [11.9]	15 [20.1]	15 [20.1]	14,5[19.5]	14 [18.8]	12 [16.1]	9,5 [12.7]	8 [10.7]	6,8 [9.1]
Max. Pressure Drop bar [PSI]	Cont.	140[2030]	175[2540]	175[2540]	175[2540]	175[2540]	140[2030]	110[1600]	85 [1230]	65 [940]
	Int.*	175[2540]	200[2900]	200[2900]	200[2900]	200[2900]	175[2540]	140[2030]	115[1670]	90 [1300]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	200[2900]	150[2175]	115[1670]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Return Pres- sure with Drain Line bar [PSI]	Cont.	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]	175[2540]
	Int.*	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]	200[2900]
	Peak**	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]	225[3260]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [44]	3 [44]
Min. Starting Torque daNm [in-lb ]	At max.press. drop Cont.	8 [710]	15 [1330]	20 [1770]	25 [2215]	32 [2832]	33 [2920]	31 [2740]	31,5[2875]	31,5[2875]
	At max.press. drop Int.*	10 [885]	17 [1505]	23 [2035]	28 [2480]	37 [3275]	40 [3540]	48 [4250]	58 [5220]	50 [4425]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, kg [lb]										
For rear ports : +0,650 [1.433]	GR(S)	6,9 [15.2]	7 [15.4]	7,3 [16.1]	7,4 [16.3]	7,6 [15.4]	8,1 [18.9]	8,5 [18.7]	9,2 [20.3]	9,9 [21.8]

\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

\*\* Peak load: the permissible values may occur for max. 1% of every minute.

\*\*\* For speeds lower than given, consult factory or your regional manager.

- 1. Intermittent speed and intermittent pressure must not occur simultaneously.
- 2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM ( ISO 6743/4).  
If using synthetic fluids consult the factory for alternative seal materials.
- 4. Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
- 5. Recommended maximum system operating temperature is 82°C [180°F].
- 6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

GP

GR

GH

GS

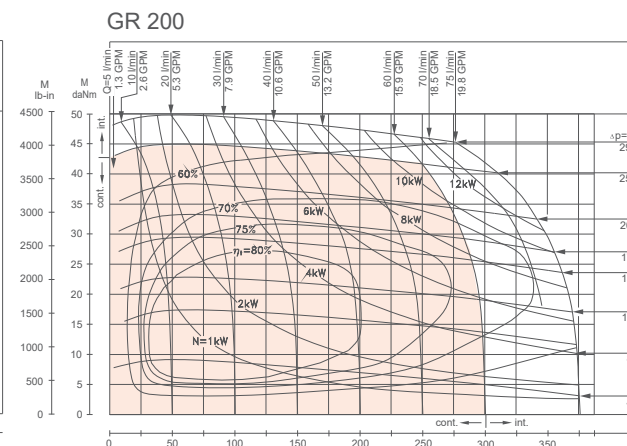
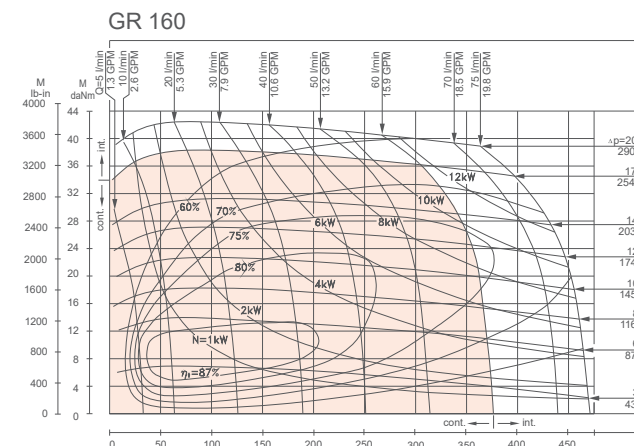
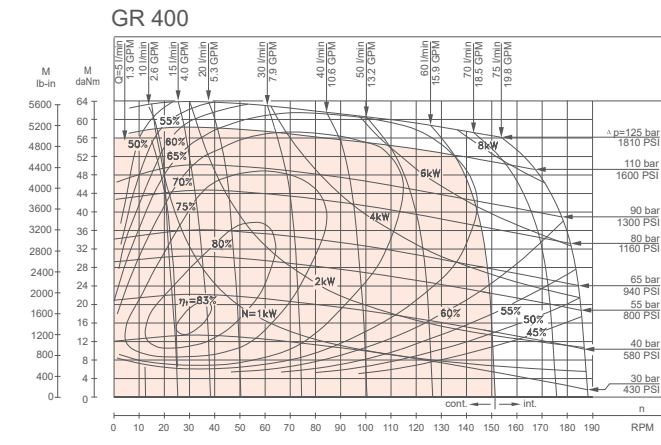
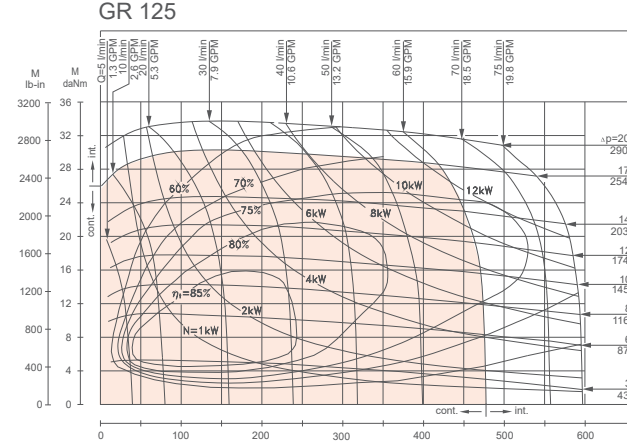
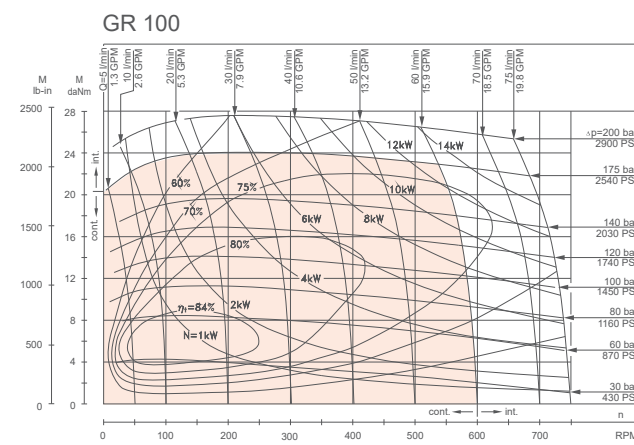
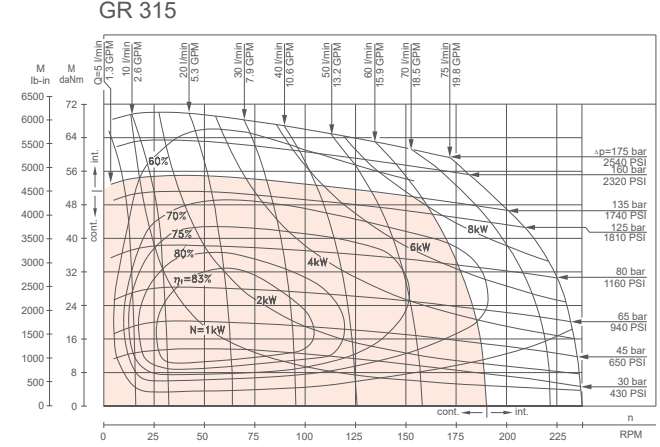
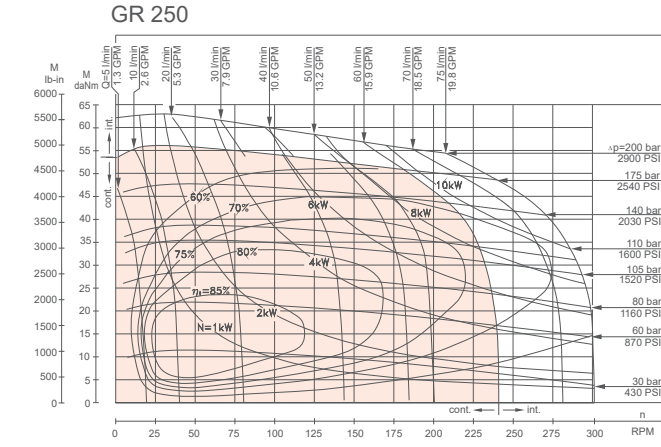
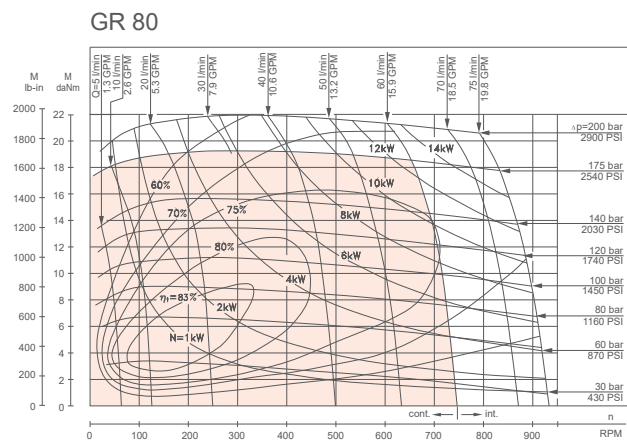
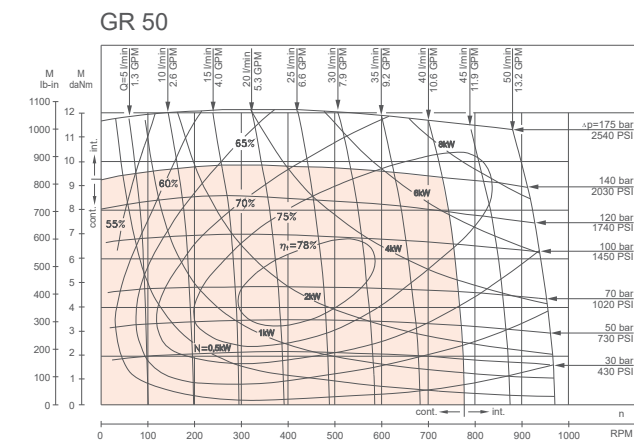
GT

GV

GGM



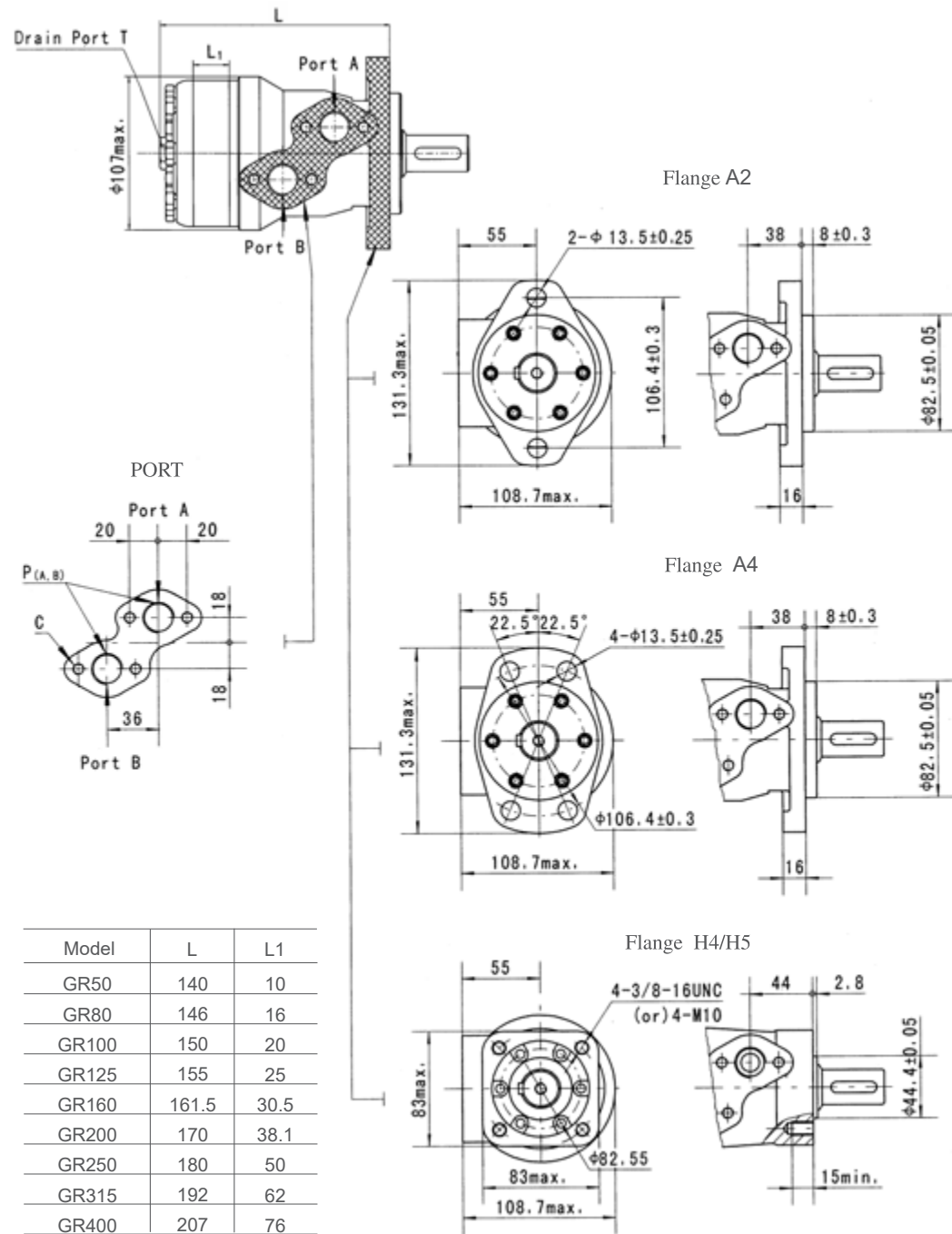
## Function Diagrams



The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C [122°F]

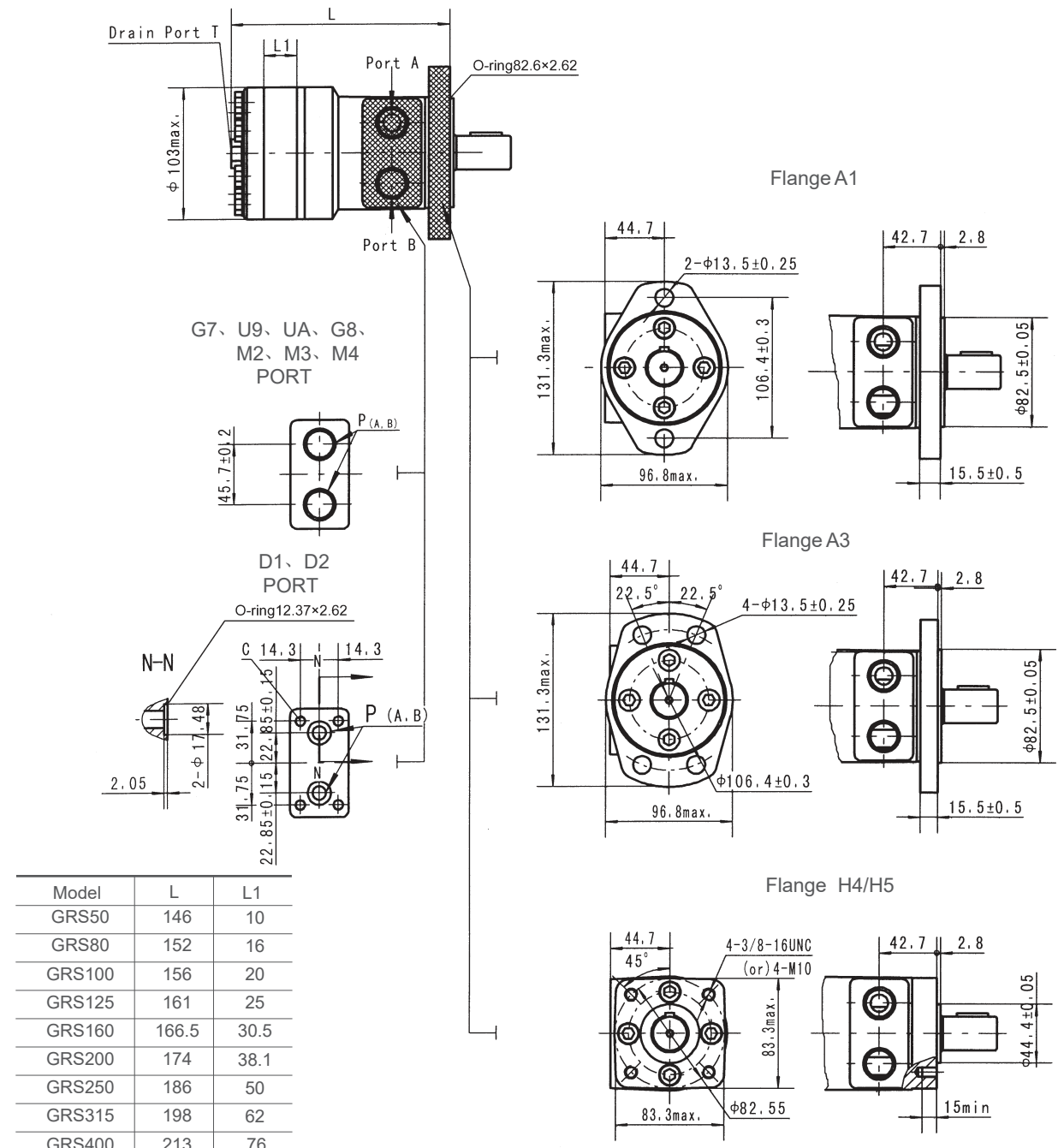
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C [122°F].

## GR Dimensions and Mounting



Code	G1 (depth)	M1 (depth)	U2 (depth)	U1 (depth)	G2 (depth)
P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	PT(RC)1/2 (15)
C	4-M8 (13)	4-M8 (13)	4-5/16-18UNC(13)	4-5/16-18UNC(13)	4-M8 (13)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)	7/16-20UNF (12)	PT(RC)1/4 (9.7)

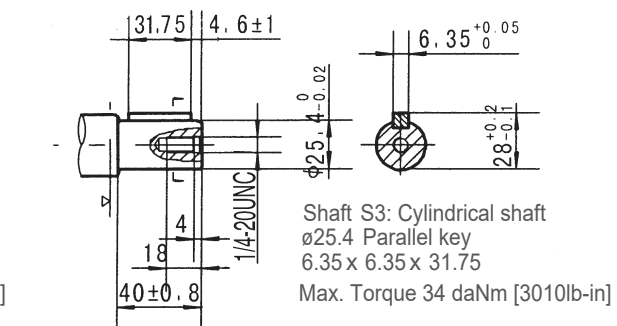
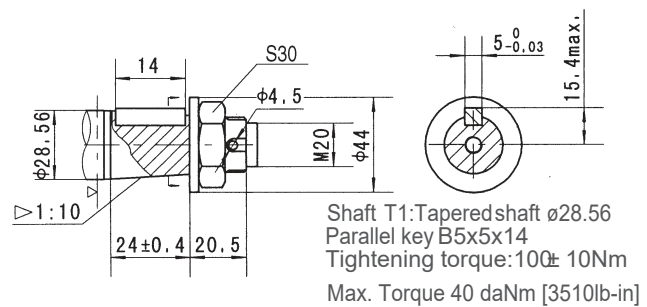
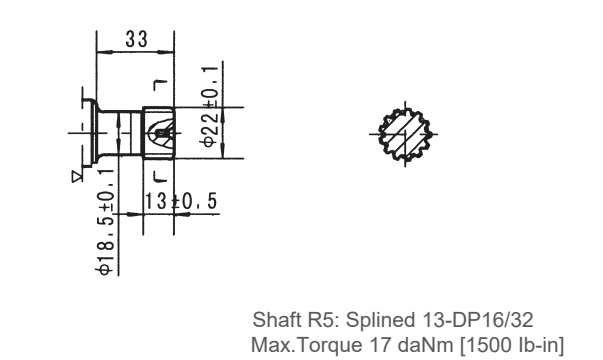
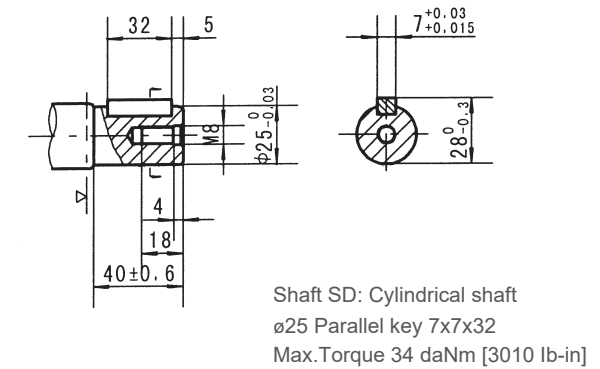
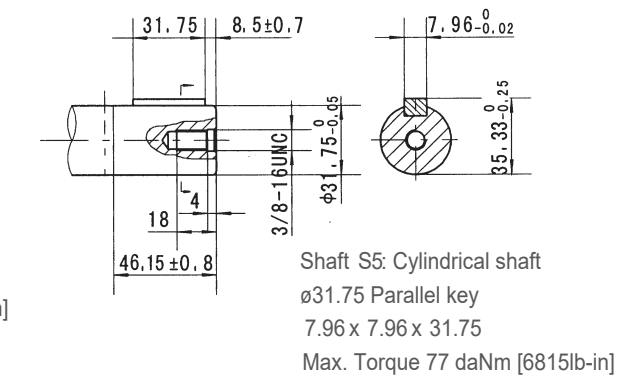
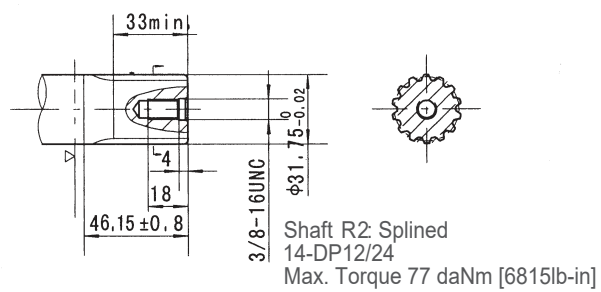
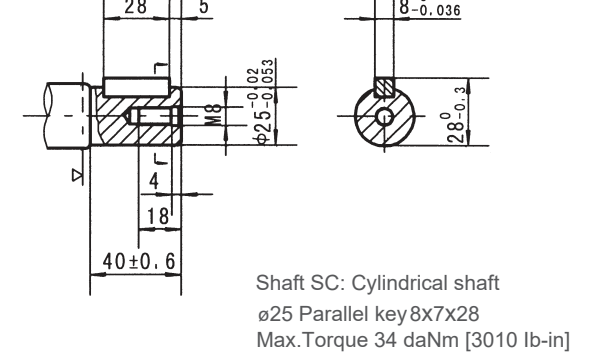
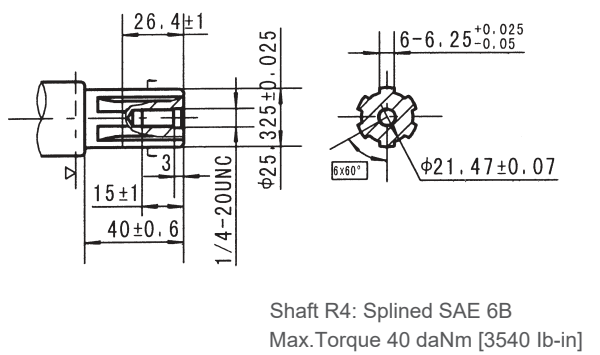
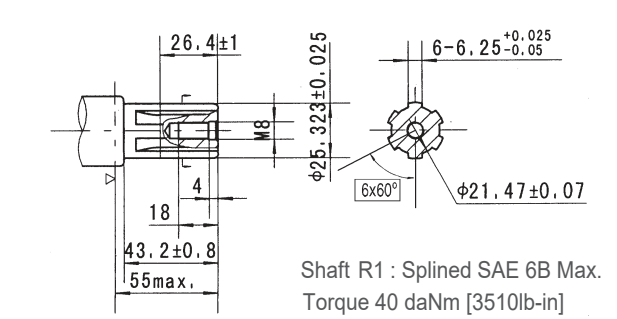
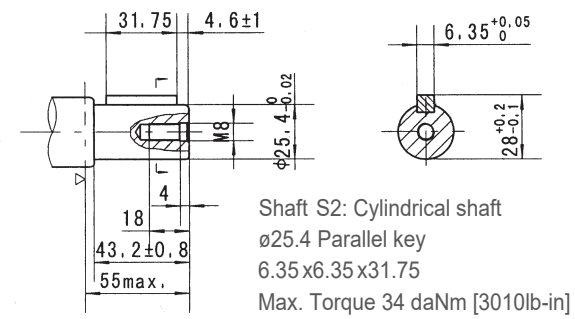
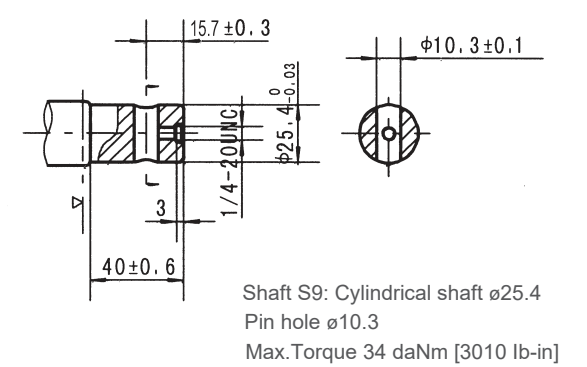
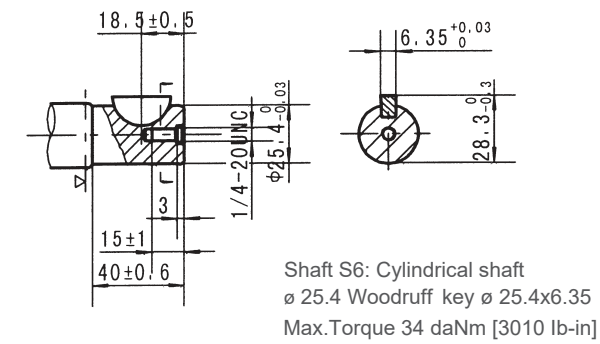
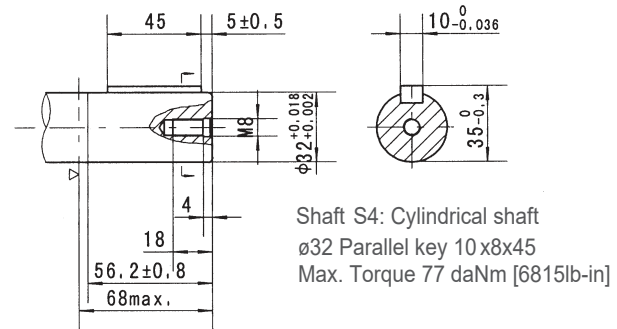
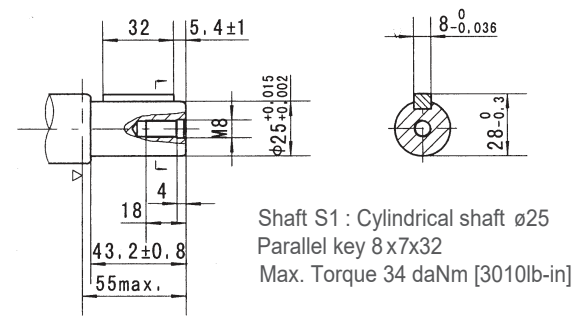
## GRS Dimensions and Mounting



Code	G7 (depth)	U9 (depth)	UA (depth)	G8 (depth)	M2 (depth)	M3 (depth)	M4 (depth)	D1 (depth)	D2 (depth)
P(A,B)	G1/2 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	PT(RC)1/2 (15)	M18 x 1.5 (15)	M20 x 1.5 (15)	M22 x 1.5 (15)	ø10	ø10
T	G1/4 (12)	7/16-20UNF (12)	7/16-20UNF (12)	PT(RC)1/4 (9.7)	M10 x 1 (12)	M10 x 1 (12)	M10 x 1 (12)	7/16-20UNF(12)	G1/4(12)
C	-	-	-	-	-	-	-	4-5/16-18UNC(13)	4-M8(13)

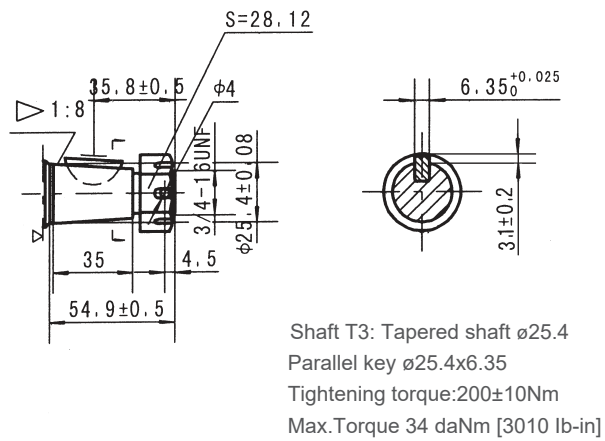
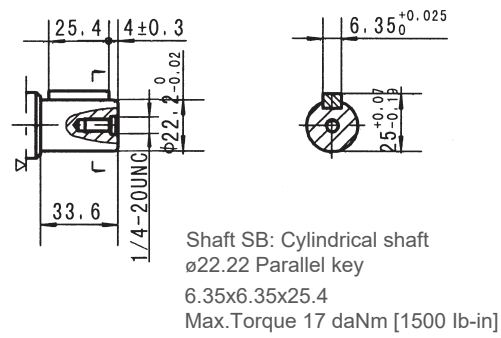
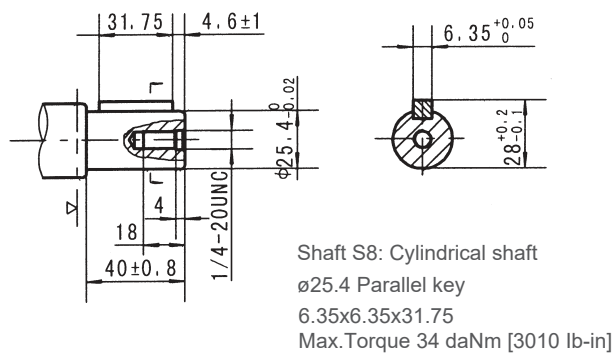
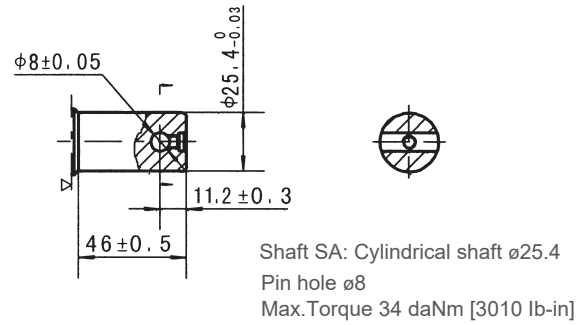
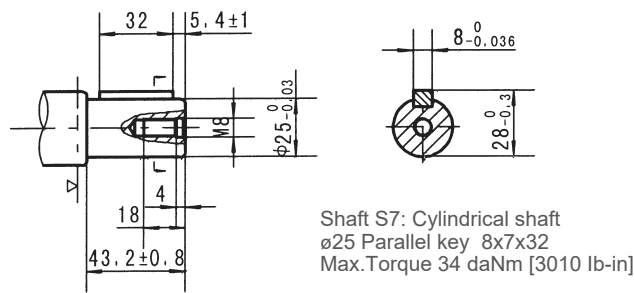
## GR Shafts Extension Dimensions

## GRS Shafts Extension Dimensions

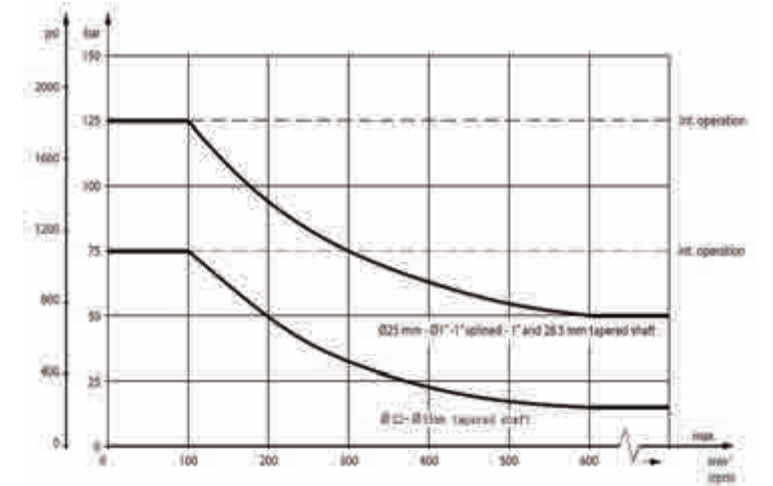
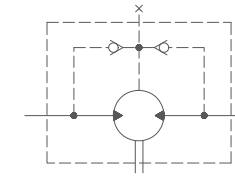
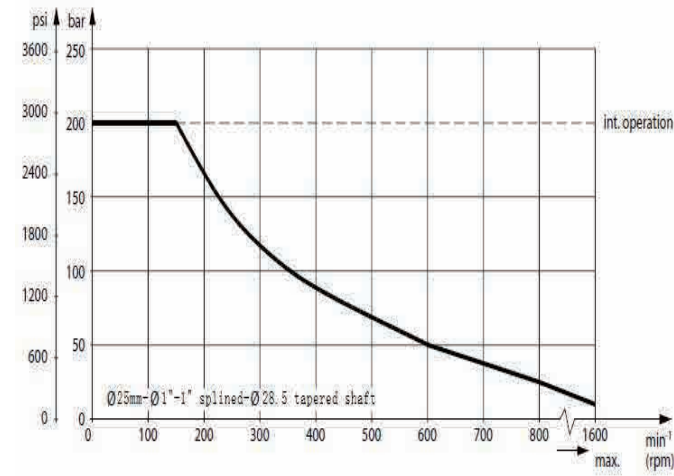




### GRS Shafts Extension Dimensions



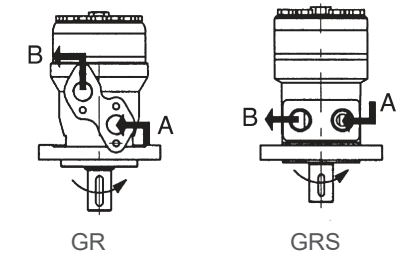
### GR GRS Series Hydraulic Motors



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

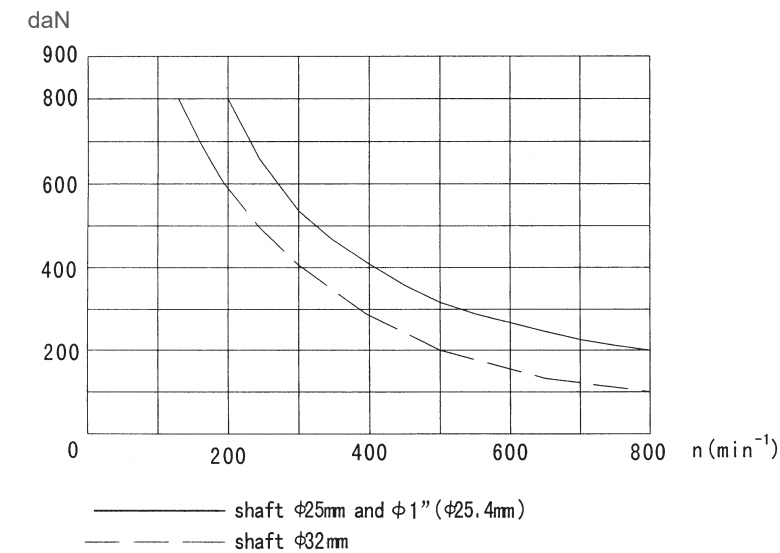
### Direction of Shafts Ration : Standard

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

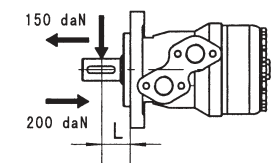


### Status of the Shafts Radial Force

(Standard motor with journal bearing)



$$F_r = \frac{800 \cdot 25000}{n \cdot 95 + L} \text{ daN}$$



$F_r$  = Radial Force (daN)  
 $L$  = Distance (mm)  
 $n$  = Speed (rpm)  
Rhomb-flange  $L=30\text{mm}$   
Square-flange  $L=24\text{mm}$

### Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

#### 1 - SERIES

GR	Orbital motor
----	---------------

#### 2 - DISPLACEMENT

50	51.5 cm <sup>3</sup> /rev [3.14 in <sup>3</sup> /rev]
80	80.3 cm <sup>3</sup> /rev [4.90 in <sup>3</sup> /rev]
100	99.8 cm <sup>3</sup> /rev [6.09 in <sup>3</sup> /rev]
125	125.7 cm <sup>3</sup> /rev [7.67 in <sup>3</sup> /rev]
160	159.6 cm <sup>3</sup> /rev [9.74 in <sup>3</sup> /rev]
200	199.8 cm <sup>3</sup> /rev [12.19 in <sup>3</sup> /rev]
250	250.1 cm <sup>3</sup> /rev [15.26 in <sup>3</sup> /rev]
315	315.7 cm <sup>3</sup> /rev [19.26 in <sup>3</sup> /rev]
400	397 cm <sup>3</sup> /rev [24.4 in <sup>3</sup> /rev]

#### 3 - FLANGE

A2	2-Φ13.5 SAE A flange, pilot Φ82.5×8
A4	4-Φ13.5 SAE A flange, pilot Φ82.5×8
H4	4-3/8-16 square flange, pilot Φ44.4×2.8
H5	4-M10 square flange, pilot Φ44.4×2.8

#### 4 - OUTPUT SHAFT

S1	Shaft Φ25, parallel key 8×7×32
S2	Shaft Φ25.4, parallel key 6.35×6.35×31.75
R1	Shaft Φ25.4, splined tooth SAE 6B
S3	Short shaft Φ25.4, parallel key 6.35×6.35×31.75
S4	Shaft Φ32, parallel key 10×8×45
R2	Shaft Φ31.75, splined tooth 14-DP12/24
S5	Shaft Φ31.75, parallel key 7.96×7.96×31.75
T1	Tapered shaft Φ28.56, parallel key B5×5×14

#### 5 - PORTS AND DRAIN PORT

G1	G1/2 manifold mount 4×M8, G1/4
M1	M22×1.5 manifold mount 4×M8, M14×1.5
U2	7/8-14 UNF O-ring manifold 4×5/16-18 UNC, 7/16-20 UNF
U1	1/2-14 NPTF manifold 4×5/16-18 UNC, 7/16-20 UNF
G2	PT(Rc)1/2 manifold 4×M8, PT(Rc)1/4

#### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

#### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

#### 8 - Unusually function

A	Standard
N	Big radial force
D	No case drain
F	Free running
L	Low speed
V	High temperature
S	Low temperature

### Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

#### 1 - SERIES

GRS	Orbital motor
-----	---------------

#### 2 - DISPLACEMENT

50	51.5 cm <sup>3</sup> /rev [3.14 in <sup>3</sup> /rev]
80	80.3 cm <sup>3</sup> /rev [4.90 in <sup>3</sup> /rev]
100	99.8 cm <sup>3</sup> /rev [6.09 in <sup>3</sup> /rev]
125	125.7 cm <sup>3</sup> /rev [7.67 in <sup>3</sup> /rev]
160	159.6 cm <sup>3</sup> /rev [9.74 in <sup>3</sup> /rev]
200	199.8 cm <sup>3</sup> /rev [12.19 in <sup>3</sup> /rev]
250	250.1 cm <sup>3</sup> /rev [15.26 in <sup>3</sup> /rev]
315	315.7 cm <sup>3</sup> /rev [19.26 in <sup>3</sup> /rev]
400	397 cm <sup>3</sup> /rev [24.4 in <sup>3</sup> /rev]

#### 3 - FLANGE

A1	2-Hole SAE A flange, pilot Φ82.5×2.8
A3	4-Hole SAE A flange, pilot Φ82.5×2.8
H4	4-Hole square flange, pilot Φ44.4×2.8
H5	4-Hole square flange, pilot Φ44.4×2.8

#### 4 - OUTPUT SHAFT

S6	Shaft Φ25.4, woodruff key Φ25.4×6.35
R4	Shaft Φ25.4, splined tooth SAE 6B
S7	Shaft Φ25.4, parallel key 8×7×32
S8	Shaft Φ25.4, parallel key 6.35×6.35×31.75
S9	Shaft Φ25.4, pin hole Φ10.3
SA	Shaft Φ25.4, pin hole Φ8
SB	Shaft Φ22.22, parallel key 6.35×6.35×25.4
R5	Shaft Φ22.22, splined tooth 13-DP16/32
T3	Tapered shaft Φ25.4, woodruff key Φ25.4×6.35
SC	Shaft Φ25, parallel key 8×7×28
SD	Shaft Φ25, parallel key 7×7×32

#### 5 - PORTS AND DRAIN PORT

G7	G1/2, G1/4
U9	7/8-14 UNF O-ring, 7/16-20 UNF
UA	1/2-14 NPTF, 7/16-20 UNF
G8	PT(Rc)1/2, PT(Rc)1/4
D1	Φ10 O-ring manifold 4×5/16-18 UNC, 7/16-20 UNF
D2	Φ10 O-ring manifold 4×M8, G1/4
M2	M18×1.5, M10×1
M3	M20×1.5, M10×1
M4	M22×1.5, M10×1

#### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

#### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

#### 8 - Unusually function

A	Standard
N	Big radial force
D	No case drain
F	Free running
L	Low speed
V	High temperature
S	Low temperature

#### Note:

- 1)The shafts of S4\R2\S5\T1 are only suitable for flanges of A2 and A4.
- 2)When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

- Note: When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.



## GH Series Orbital Motors

### Application

- Conveyors
- Feeding mechanism of robots and manipulators
- Metal working machines
- Textile machines
- Food industries
- Agricultural machines
- Mining machinery etc.

### Options

- Model - Spool valve, roll-gerotor
- Flange mount
- Shafts - straight, splined and tapered
- Metric and BSPP ports
- Other special features

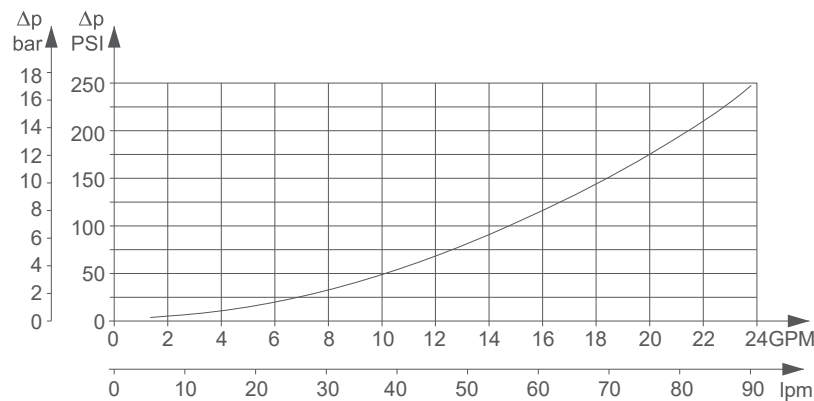
### General

Max. Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	502,4 [30.7]
Max. Speed, [RPM]	445
Max. Torque, daNm [lb-in]	cont.: 84 [7434] int.: 104 [9204]
Max. Output, kW [HP]	18,5 [24.8]
Max. Pressure Drop, bar [PSI]	cont.: 175 [2540] int.: 200 [2900]
Max. Oil Flow, lpm [GPM]	90 [23.78]
Min. Speed, [RPM]	5
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, °C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range, mm <sup>2</sup> /s [SUS]	20÷75 [98÷347]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s[SUS]	Oil flow in drain line lpm [GPM]
100 [1450]	20 [98]	2,5 [.660]
	35 [164]	1,8 [.476]
140 [2030]	20 [98]	3,5 [.925]
	35 [164]	2,8 [.740]

### Pressure Loss



### Specifications

Type		GH 200	GH 250	GH 315	GH 400	GH 500
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]		201,3 [12.3]	252 [15.4]	314,9 [19.2]	396,8 [24.2]	502,4 [30.7]
Max. Speed, [RPM]	Cont.	370	295	235	185	150
	Int.*	445	350	285	225	180
Max. Torque daNm [lb-in ]	Cont.	51 [4510]	61 [5398]	74 [6548]	84 [7434]	82 [7257]
	Int.*	58 [5130]	70 [6195]	82 [7257]	98 [8673]	104 [9204]
	Peak**	64 [5064]	79 [6992]	98 [8673]	109 [9647]	117 [10350]
Max. Output kW [HP]	Cont.	16 [21]	16 [21]	14 [18.7]	12,5 [16.7]	11 [14.7]
	Int.*	18,5 [24.8]	18,5 [24.8]	15,5 [20.7]	15 [20.1]	14 [18.7]
Max. Pressure Drop bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	155 [2240]	125 [1810]
	Int.*	200 [2900]	200 [2900]	200 [2900]	190 [2750]	160 [2320]
Max. Oil Flow lpm [GPM]	Cont.	75 [19.81]	75 [19.81]	75 [19.81]	75 [19.81]	75 [19.81]
	Int.*	90 [23.78]	90 [23.78]	90 [23.78]	90 [23.78]	90 [23.78]
Max. Inlet Pressure bar [PSI]	Cont.	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Int.*	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
	Peak**	250 [3626]	250 [3626]	250 [3626]	250 [3626]	250 [3626]
Max. Starting Pressure with Unloaded Shaft, bar[PSI]		5 [72]	5 [72]	5 [72]	5 [72]	5 [72]
Min. Starting Torque, daNm [lb-in ]	At max.press.dropCont	39 [3450]	52 [4600]	66 [5840]	72 [6370]	72 [6370]
	At max.press.drop Int.*	45 [3980]	59 [5221]	73 [6460]	88 [7788]	88 [7788]
Min. Speed***, [RPM]		10	10	8	5	5
Weight, kg [lb]		10,5 [23.2]	11 [24.3]	11,5 [25.4]	12,3 [27.1]	13 [28.7]

\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

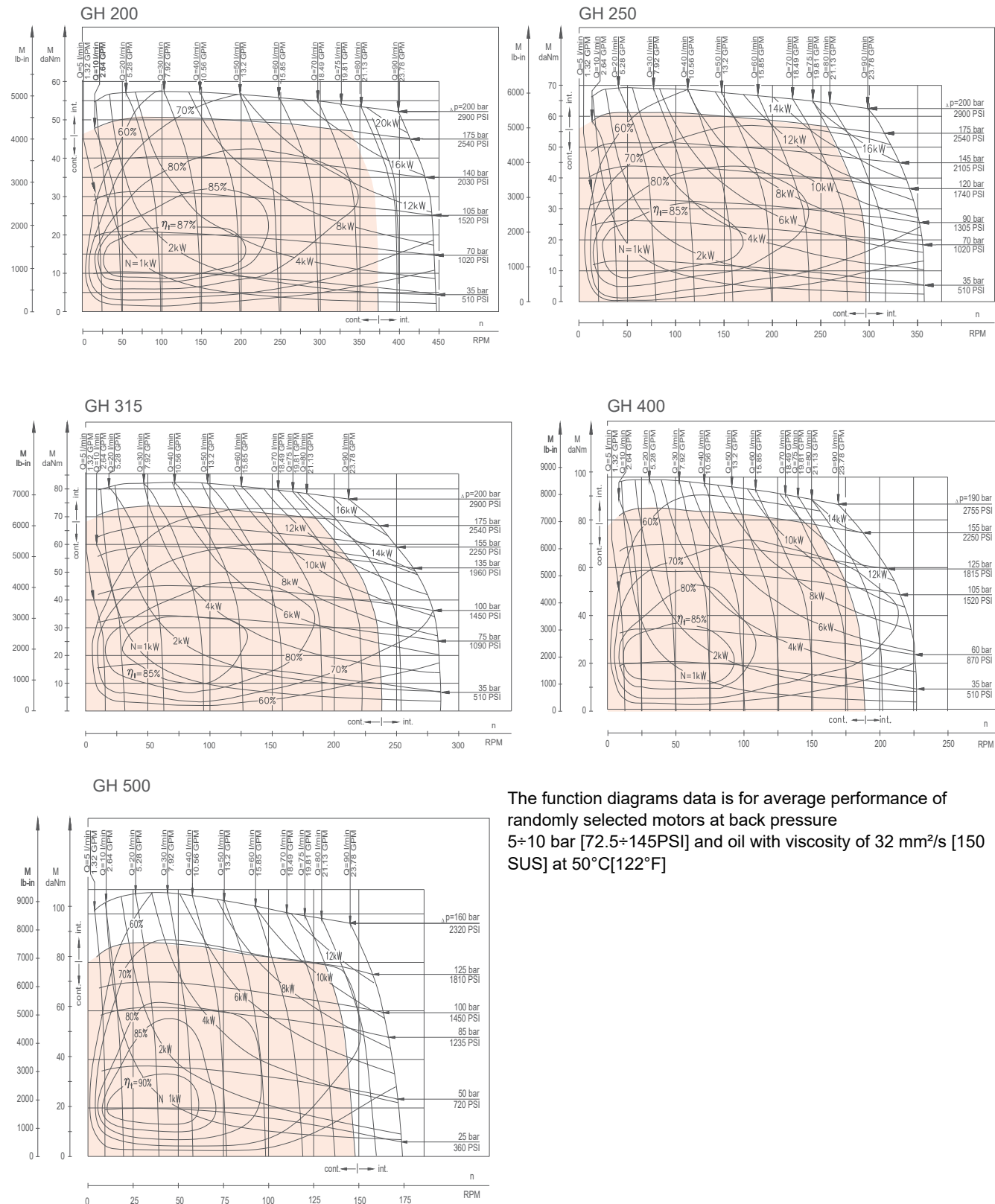
\*\* Peak load: the permissible values may occur for max. 1% of every minute.

\*\*\* For speeds lower than given, consult factory or your regional manager.

1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM ( ISO 6743/4).  
If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

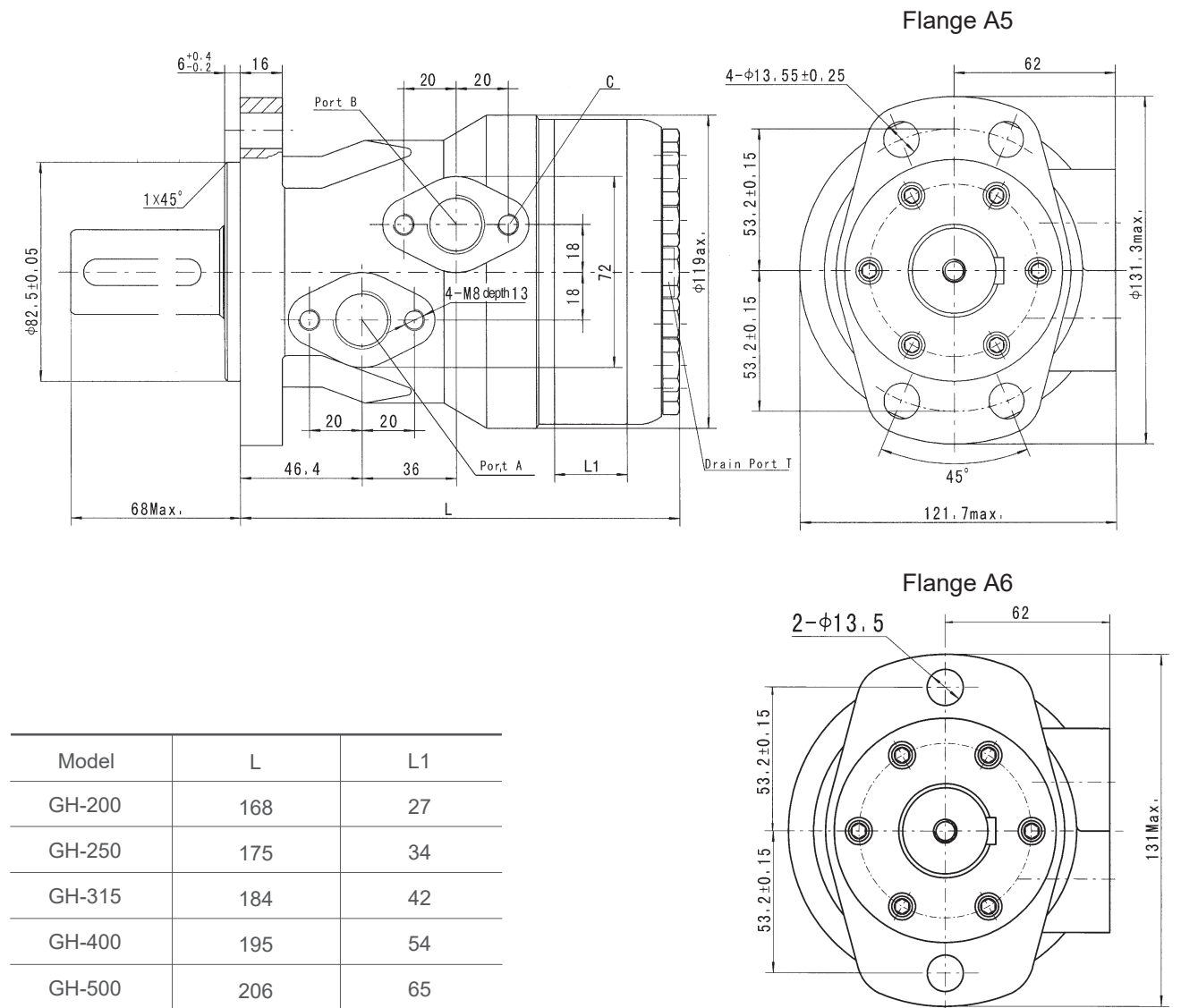


## Function Diagrams



The function diagrams data is for average performance of randomly selected motors at back pressure 5±10 bar [72.5±145PSI] and oil with viscosity of 32 mm<sup>2</sup>/s [150 SUS] at 50°C[122°F]

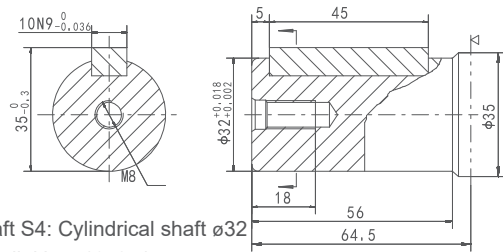
## GH Dimensions and Mounting



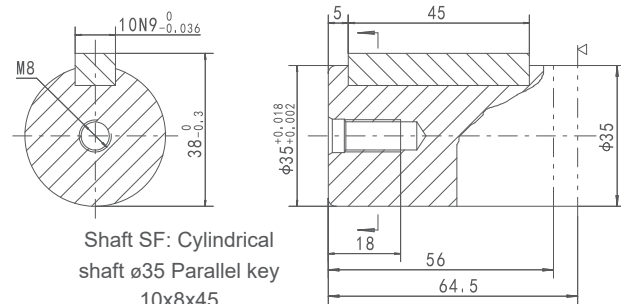
Model	L	L1
GH-200	168	27
GH-250	175	34
GH-315	184	42
GH-400	195	54
GH-500	206	65

Code	G1 (depth)	M1 (depth)	U2 (depth)	U1 (depth)	G2 (depth)
P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (15)	1/2-14NPTF (15)	PT(RC)1/2 (15)
C	4-M8 (13)	4-M8 (13)	4-5/16-18UNC(13)	4-5/16-18UNC(13)	4-M8 (13)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF(12)	7/16-20UNF (12)	PT(RC)1/4 1/4

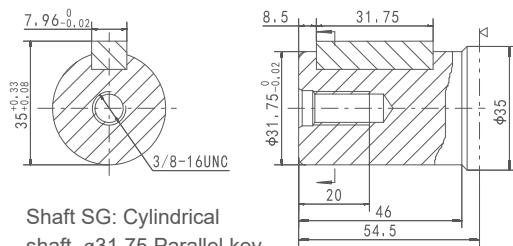
## Shafts Extension Dimensions



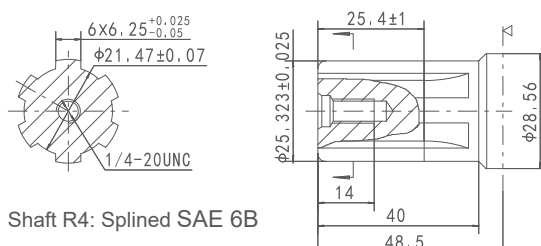
Shaft S4: Cylindrical shaft ø32  
Parallel key 10x8x45  
Max. Torque 77 daNm[6815 lb-in]



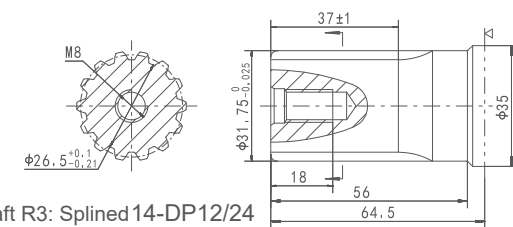
Shaft SF: Cylindrical shaft ø35 Parallel key 10x8x45  
Max. Torque 95 daNm[8400 lb-in]



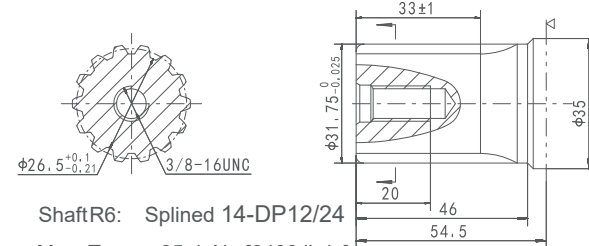
Shaft SG: Cylindrical shaft ø31.75 Parallel key 7.96x7.96x31.75  
Max. Torque 77 daNm[6815 lb-in]



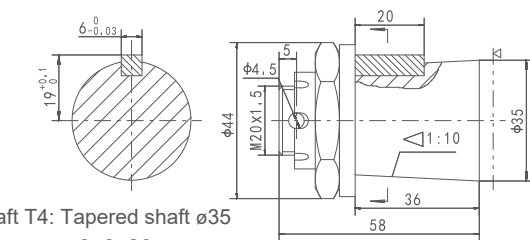
Shaft R4: Splined SAE 6B  
Max. Torque 40 daNm[3540 lb-in]



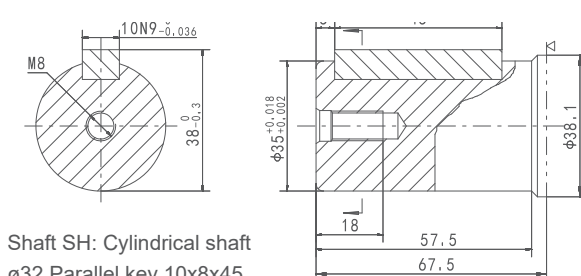
Shaft R3: Splined 14-DP12/24  
Max. Torque 95 daNm[8400 lb-in]



Shaft R6: Splined 14-DP12/24  
Max. Torque 95 daNm[8400 lb-in]



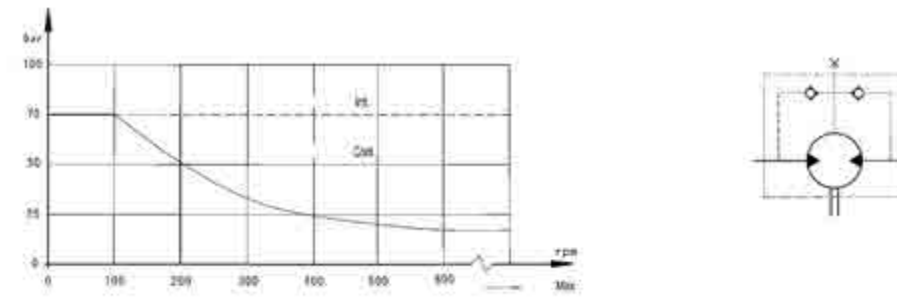
Shaft T4: Tapered shaft ø35 Parallel key 6x6x20  
Tightening torque: 200±10Nm  
Max. Torque 95 daNm[8400 lb-in]



Shaft SH: Cylindrical shaft ø32 Parallel key 10x8x45  
Max. Torque 95 daNm[8400 lb-in]

## GH series Hydraulic Motor

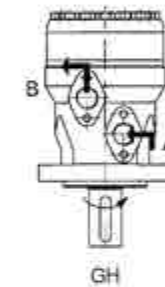
### Permissible shaft seal pressure



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

### Direction of shaft rotation: Standard

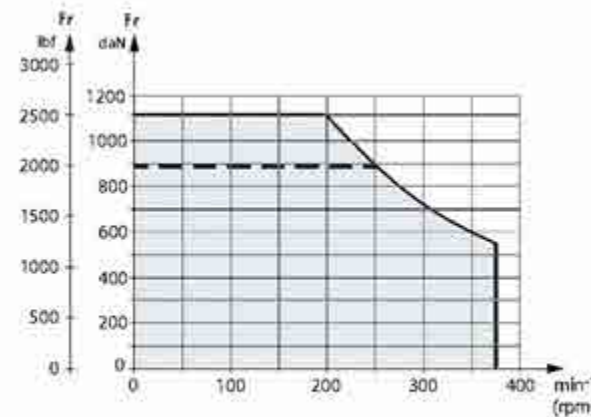
When facing shaft end of motor, shaft to rotate:  
Clockwise when port "A" is pressurized.  
Counter-clockwise port "B" is pressurized.



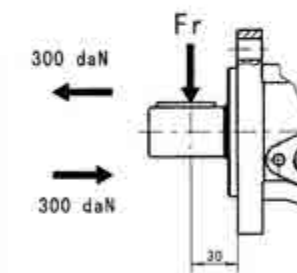
### Status of the shaft's radial force

$$F_r = \frac{1100}{n} \times \frac{35000}{103.5 \times L} \text{ daN}$$

$L < 60\text{mm}, n > 200\text{rpm}$



--- 1 in SAE 6B splined shaft  
The drawing shows the permissible radial load when  $L = 30\text{ mm}$  [1.18 in].



$F_r$  = Radial Force (daN)  
 $L$  = Distance (mm)  
 $n$  = Speed (rpm)

## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

GH	Orbital motor
----	---------------

### 2 - DISPLACEMENT

200	201.3 cm <sup>3</sup> /rev [12.9 in <sup>3</sup> /rev]
250	252 cm <sup>3</sup> /rev [15.4 in <sup>3</sup> /rev]
315	314.9 cm <sup>3</sup> /rev [19.2 in <sup>3</sup> /rev]
400	396.8 cm <sup>3</sup> /rev [24.2 in <sup>3</sup> /rev]
500	502.4 cm <sup>3</sup> /rev [30.7 in <sup>3</sup> /rev]

### 3 - FLANGE

A5	2-Φ13.5 SAE A flange, pilot Φ82.5×6
A6	4-Φ13.5 SAE A flange, pilot Φ82.5×6

### 4 - OUTPUT SHAFT

S4	Shaft Φ32,parallel key 10×8×45
SF	Shaft Φ35,parallel key 10×8×45
R3	Shaft Φ31.75,splined tooth 14-DP12/24
R6	Long shaft Φ31.75,splined tooth 14-DP12/24
SG	Shaft Φ31.75,parallel key 7.96×7.96×31.75
T4	Tapered shaft Φ35,parallel key B6×6×20
R4	Shaft Φ25.4,parallel key SAE 6B
SH	Shaft Φ35,parallel key 10×8×45

### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

### 8 - Unusually function

A	Standard
N	Big radial force
D	No drain
F	Free running
L	Low speed
V	High temperature
S	Low temperature

Note: When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

## GS Series Orbital Motors

### Application

- Conveyors
- Metal working machines
- Road building machines
- Mining machinery
- Food industries
- Agricultural machines
- Special vehicles etc.

### Options

- Model - Disc valve, roll-gerotor
- Flange and wheel mount
- Short motor
- Tacho connection
- Side and rear ports
- Shafts - straight, splined and tapered
- SAE, Metric and BSPP ports
- Other special features

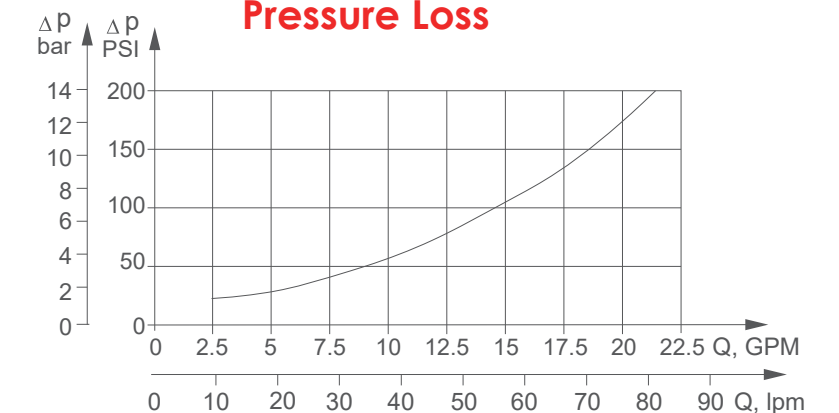
### General

Max. Displacement,	cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	564,9 [34.47]
Max. Speed,	[RPM]	1000
Max. Torque,	daNm [lb-in]	cont.: 85 [7520] int.: 99 [8760]
Max. Output,	kW [HP]	23 [30.8]
Max. Pressure Drop,	bar [PSI]	cont.: 210 [3050] int.: 275 [3990]
Max. Oil Flow,	lpm [GPM]	90 [24]
Min. Speed,	[RPM]	5
Permissible Shaft Loads	daN [lbs]	P <sub>a</sub> =500 [1125]
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	°C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range,	mm <sup>2</sup> /s [SUS]	20÷75 [98÷347]
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s [SUS]	Oil flow in drain line lpm [GPM]
140 [2030]	20 [98]	1,5 [.396]
	35 [164]	1 [.264]
210 [3045]	20 [98]	3 [.793]
	35 [164]	2 [.528]

### Pressure Loss





## Specifications

Type		GS80	GS100	GS125	GS160	GS200
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev ]		80,5 [4.91]	100 [6.1]	125,7 [7.67]	159,7 [9.74]	200 [12.2]
Max. Speed, [RPM]	cont.	810	750	600	470	375
	Int.*	1000	900	720	560	450
Max. Torque daNm [lb-in ]	cont.	24 [2120]	30,5 [2700]	37,5 [3320]	49 [4340]	61 [5400]
	Int.*	31 [2740]	39 [3450]	49 [4340]	60 [5310]	72 [6370]
Max. Output kW [HP]	cont.	15,5 [20.8]	18 [24.1]	18 [24.1]	16,5 [22.1]	16,5 [22.1]
	int.*	19,5 [26.2]	22,8 [30.2]	22,5 [30.2]	23 [30.8]	22 [29.52]
Max. Pressure Drop bar [PSI]	cont.	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
	Int.*	275 [3990]	275 [3990]	275 [3990]	275 [3990]	275 [3990]
	peak**	295 [4280]	295 [4280]	295 [4280]	295 [4280]	295 [4280]
Max. Oil Flow lpm [GPM]	cont.	65 [17]	75 [20]	75 [20]	75 [20]	75 [20]
	Int.*	80 [21]	90 [24]	90 [24]	90 [24]	90 [24]
Max. Inlet Pressure bar [PSI]	cont.	230 [3340]	230 [3340]	230 [3340]	230 [3340]	230 [3340]
	Int.*	295 [4280]	295 [4280]	295 [4280]	295 [4280]	295 [4280]
	peak**	300 [4350]	300 [4350]	300 [4350]	300 [4350]	300 [4350]
Max. Return Pressure with Drain Line bar [PSI]	cont.	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]
	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	peak**	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Max. Starting Pressure with Unloaded Shaft,bar[PSI]		12 [175]	10 [145]	10 [145]	8 [115]	8 [115]
Min. Starting Torque daNm [lb-in ]	at max. press. drop cont.	18 [1590]	23 [2040]	29 [2570]	37 [3270]	47 [4160]
	at max. press. drop Int.*	23,5 [2080]	30 [2660]	38 [3360]	46 [4070]	56 [4960]
Min. Speed***, [RPM]		10	10	8	8	6
Weight, kg [lb] For Rear Ports + 0,40 [.88]	GS	9,9 [21.8]	10,1 [22.2]	10,4 [22.9]	10,8 [23.8]	11,2 [24.7]
	GSS	7,9 [17.4]	8,1 [17.8]	8,4 [18.5]	8,8 [19.4]	9,2 [20.2]

- \* Intermittent operation: the permissible values may occur for max. 10% of every minute.  
 \*\* Peak load: the permissible values may occur for max. 1 % of every minute.  
 \*\*\* For speeds lower than given, consult factory or your regional manager.

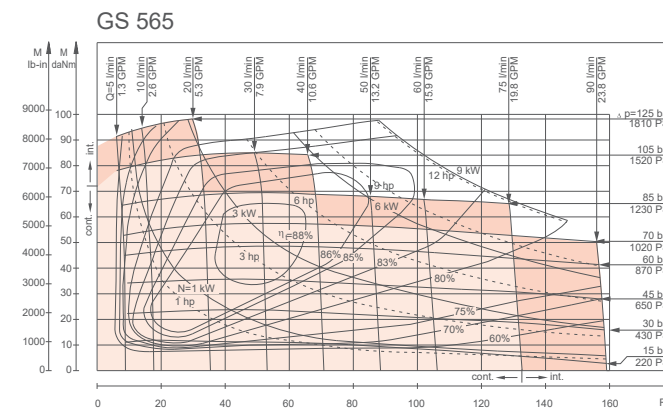
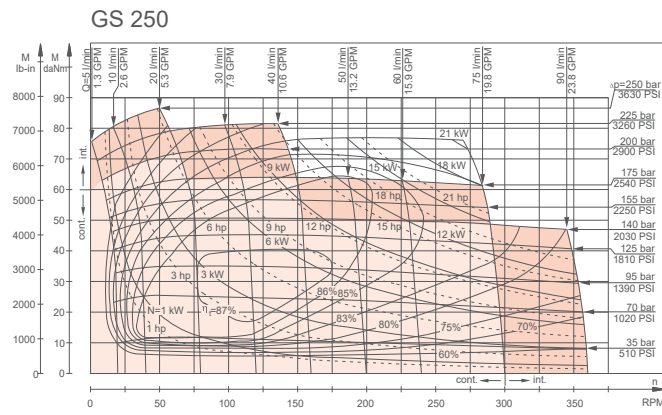
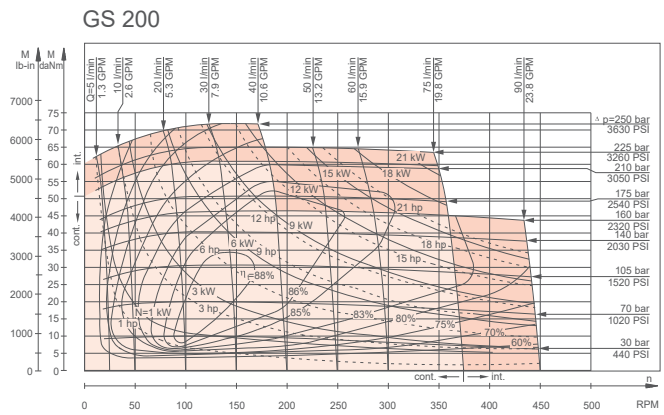
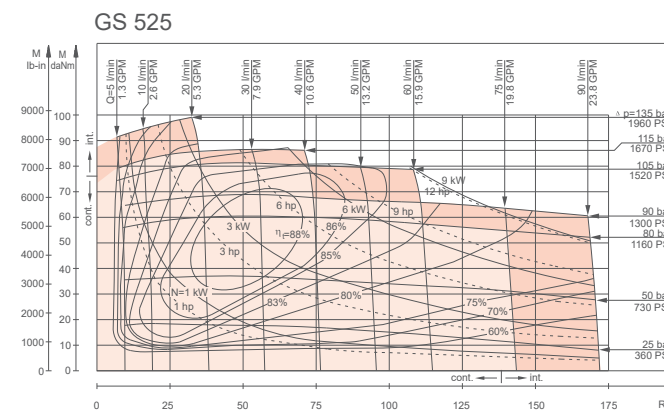
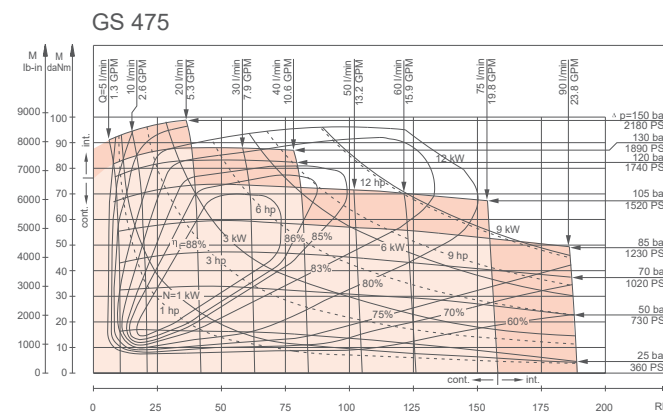
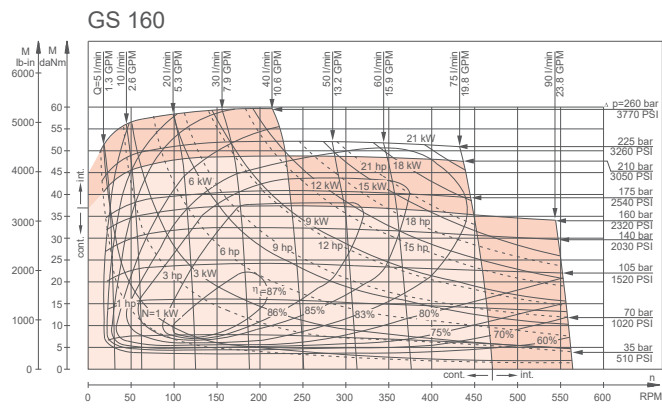
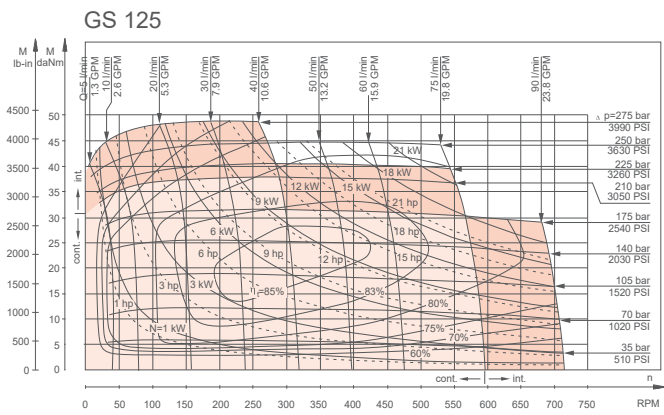
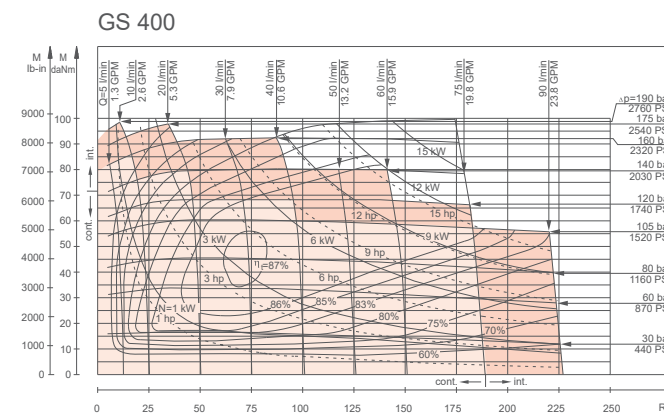
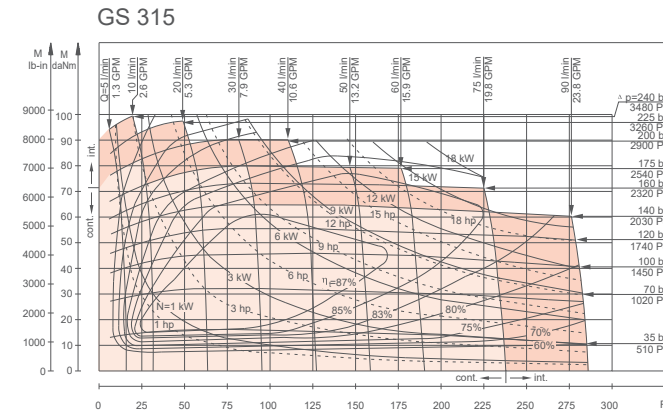
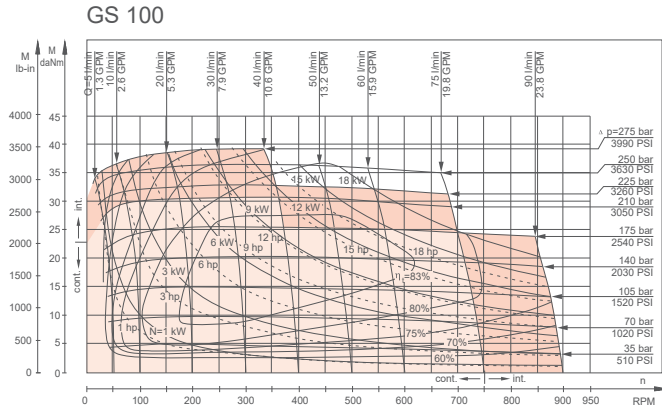
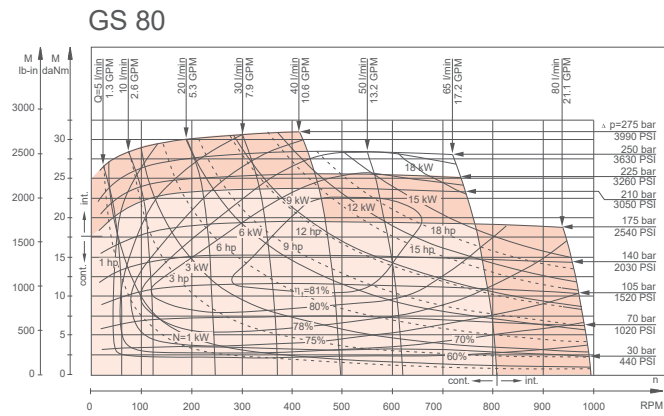
## Specifications

Type		GS 250	GS 315	GS 400	GS 475	GS 525	GS 565
Displacement, cm <sup>3</sup> /rev[ in <sup>3</sup> /rev]		250 [15.3]	314,9 [19.2]	397 [24.2]	474,6[28.96]	522,7 [31.88]	564,9[34.4]
Max. Speed, [RPM]	cont.	300	240	190	160	145	130
	Int.*	360	290	230	190	175	160
Max. Torque daNm [lb-in ]	cont.	72 [6370]	82,5 [7300]	86,5 [7660]	85 [7520]	85 [7520]	85 [7520]
	Int.*	87 [7700]	100 [8850]	99 [8760]	99 [8760]	99 [8760]	99 [8760]
Max. Output kW [HP]	cont.	14,5 [19.4]	15 [20.1]	11 [14.8]	8,4 [11]	7,6 [10.2]	6,9 [9]
	int.*	18 [24.1]	17 [22.8]	12,5 [16.8]	11,3 [15]	10,4 [13.9]	9,6 [13]
Max. Pressure Drop bar [PSI]	cont.	200 [2900]	200 [2900]	160 [2320]	130 [1880]	115 [1670]	105 [1520]
	Int.*	250 [3630]	240 [3480]	190 [2760]	150 [2180]	135 [1960]	125 [1810]
	peak**	270 [3920]	260 [3770]	210 [3050]	170 [2470]	155 [2250]	145 [2100]
Max. Oil Flow lpm [GPM]	cont.	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Int.*	90 [24]	90 [24]	90 [24]	90 [24]	90 [24]	90 [24]
Max. Inlet Pressure bar [PSI]	cont.	230 [3340]	230 [3340]	230 [3340]	230 [3340]	230 [3340]	230 [3340]
	Int.*	295 [4280]	295 [4280]	295 [4280]	295 [4280]	295 [4280]	295 [4280]
	peak**	300 [4350]	300 [4350]	300 [4350]	300 [4350]	300 [4350]	300 [4350]
Max. Return Pressure with Drain Line bar [PSI]	cont.	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]
	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	peak**	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Max. Starting Pressure with Unloaded Shaft,bar[PSI]		8 [115]	8 [115]	8 [115]	8 [115]	8 [115]	8 [115]
Min. Starting Torque daNm [lb-in ]	at max. press. drop cont.	56 [4960]	71 [6280]	71 [6280]	71 [6280]	71 [6280]	71 [6280]
	at max. press. drop Int.*	70 [6200]	85 [7520]	84 [7430]	84 [7430]	84 [7430]	84 [7430]
Min. Speed***, [RPM]		6	5	5	5	5	5
Weight, kg [lb] For Rear Ports + 0,40 [.88]	GS	11,7 [25.8]	12,4 [27.3]	13,1 [29.3]	14,1 [31]	14,6 [32.2]	15 [33.1]
	GSS	9,7 [21.4]	10,4 [22.9]	11,3 [24.9]	12.1 [26.7]	12,6 [27.8]	13 [28.6]

- \* Intermittent operation: the permissible values may occur for max. 10% of every minute.  
 \*\* Peak load: the permissible values may occur for max. 1% of every minute.  
 \*\*\* For speeds lower than given, consult factory or your regional manager.

- 1. Intermittent speed and intermittent pressure must not occur simultaneously.
- 2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM ( ISO 6743/4).  
If using synthetic fluids consult the factory for alternative seal materials.
- 4. Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
- 5. Recommended maximum system operating temperature is 82°C [180°F].
- 6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

## Function Diagrams

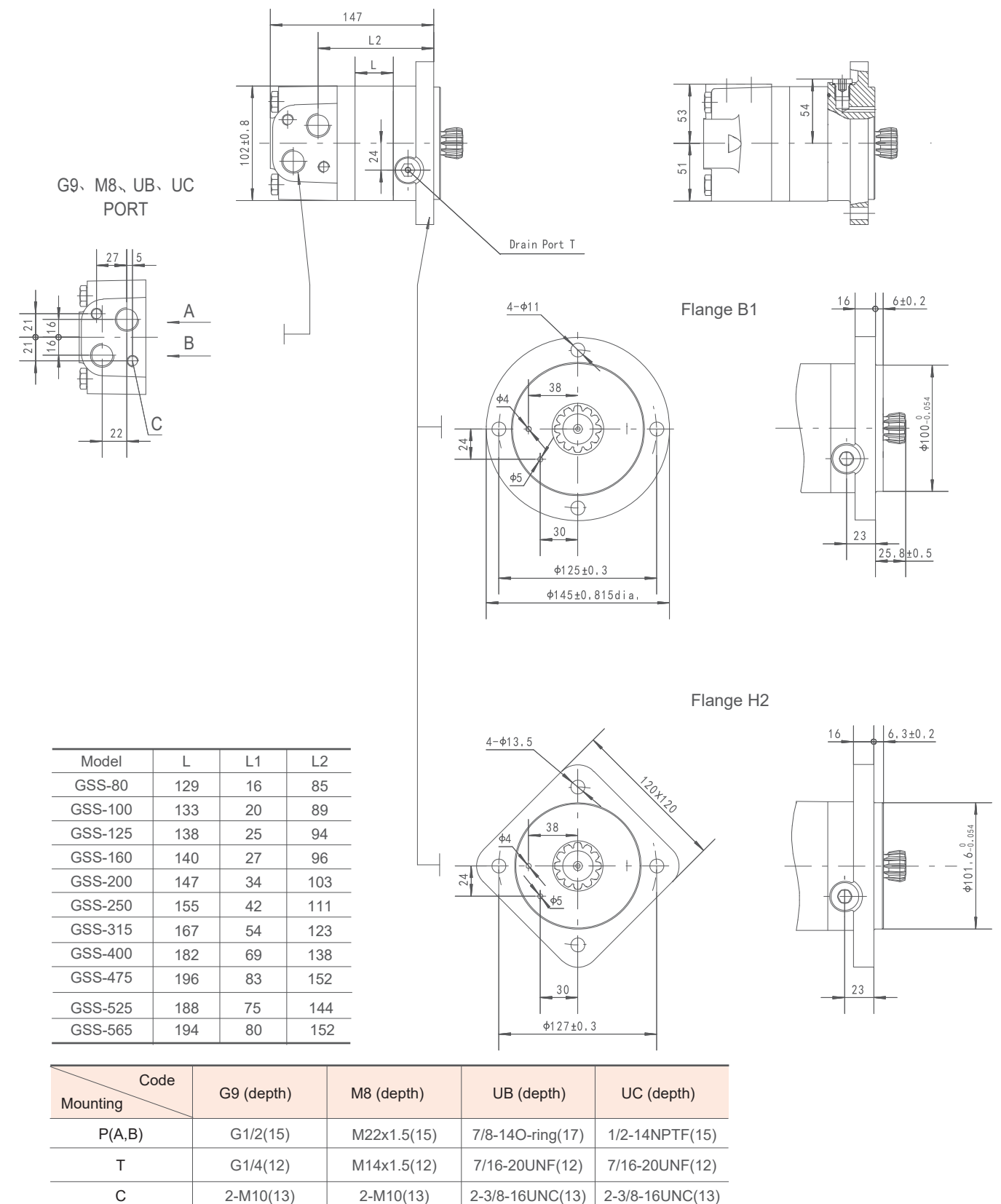
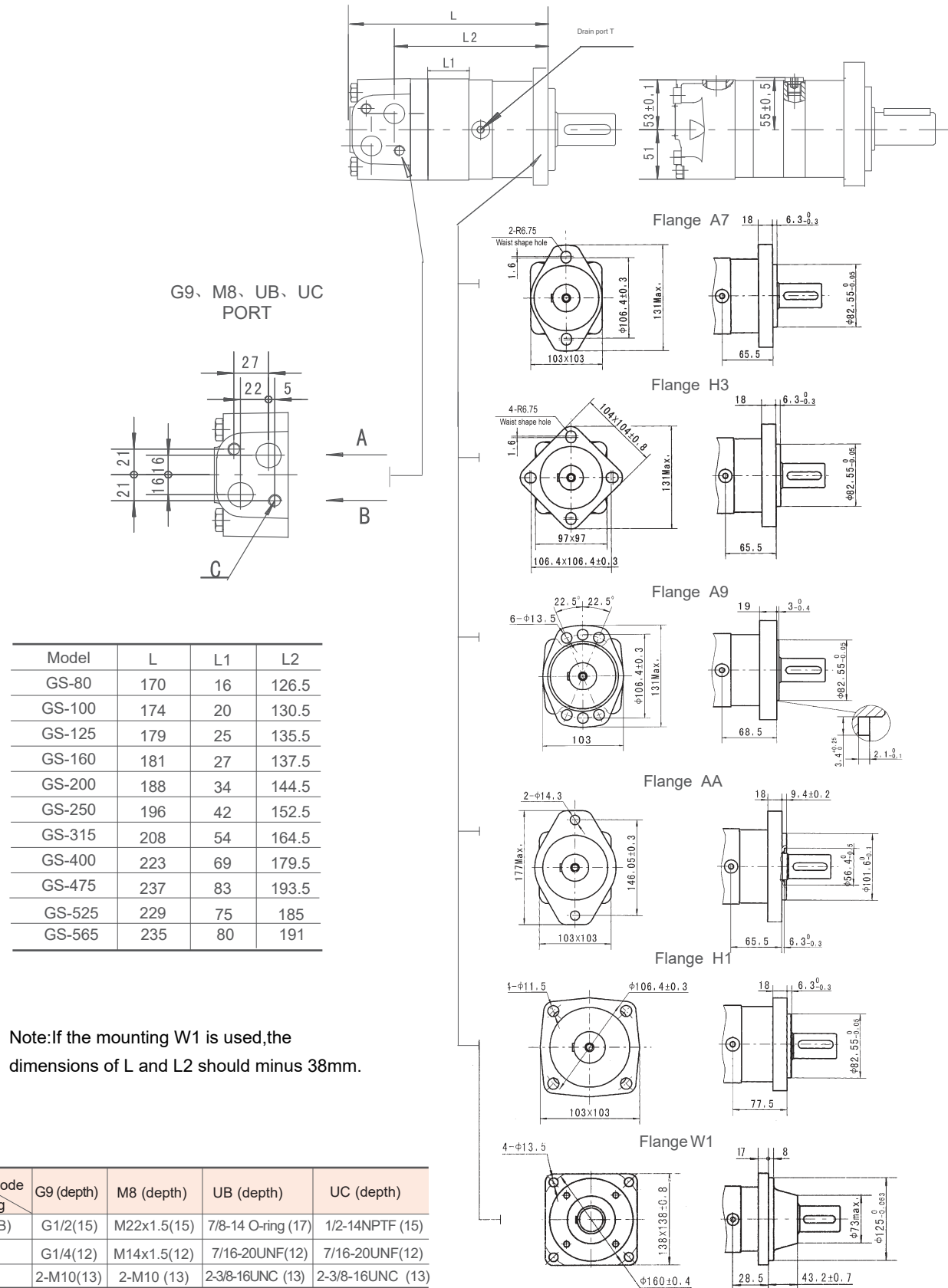


The function diagrams data is for average performance of randomly selected motors at back pressure 5+10 bar [72.5+145 PSI] and oil with viscosity of 32mm<sup>2</sup>/s[150 SUS] at 50°C[ 122°F]

The function diagrams data is for average performance of randomly selected motors at back pressure 5+10 bar [72.5+145 PSI] and oil with viscosity of 32mm<sup>2</sup>/s[150 SUS] at 50°C[ 122°F]

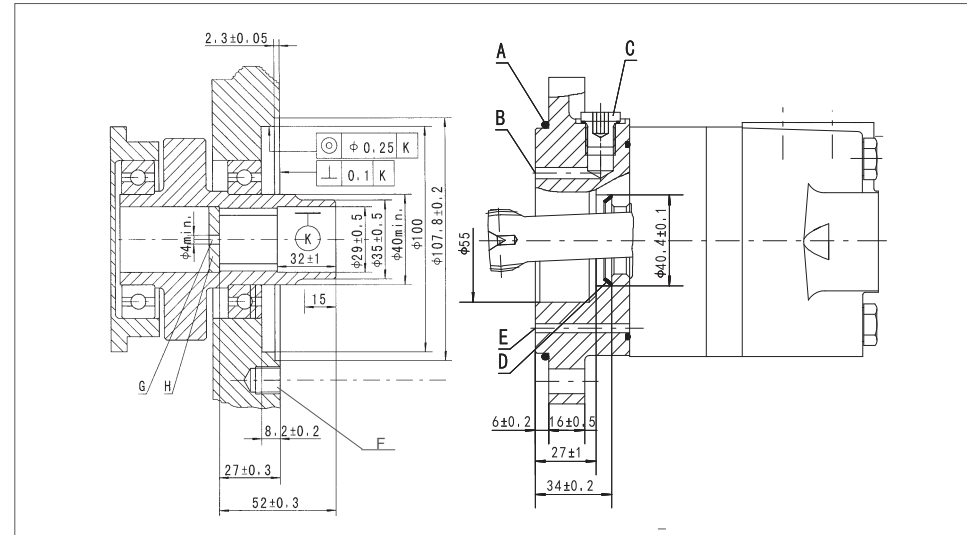
## GS Dimensions and Mounting

## GS Dimensions and Mounting





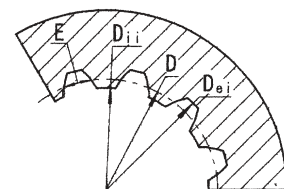
## GS Dimensions and Mounting



- A: O-ring:100x3
- B: External drain channel
- C: Drain connection G 1/4;12 mm deep
- D: Conical seal ring
- E: Internal drain channel
- F: M10;min. 15mm deep
- G: Oil circulation hole
- H: Hardened stop plate

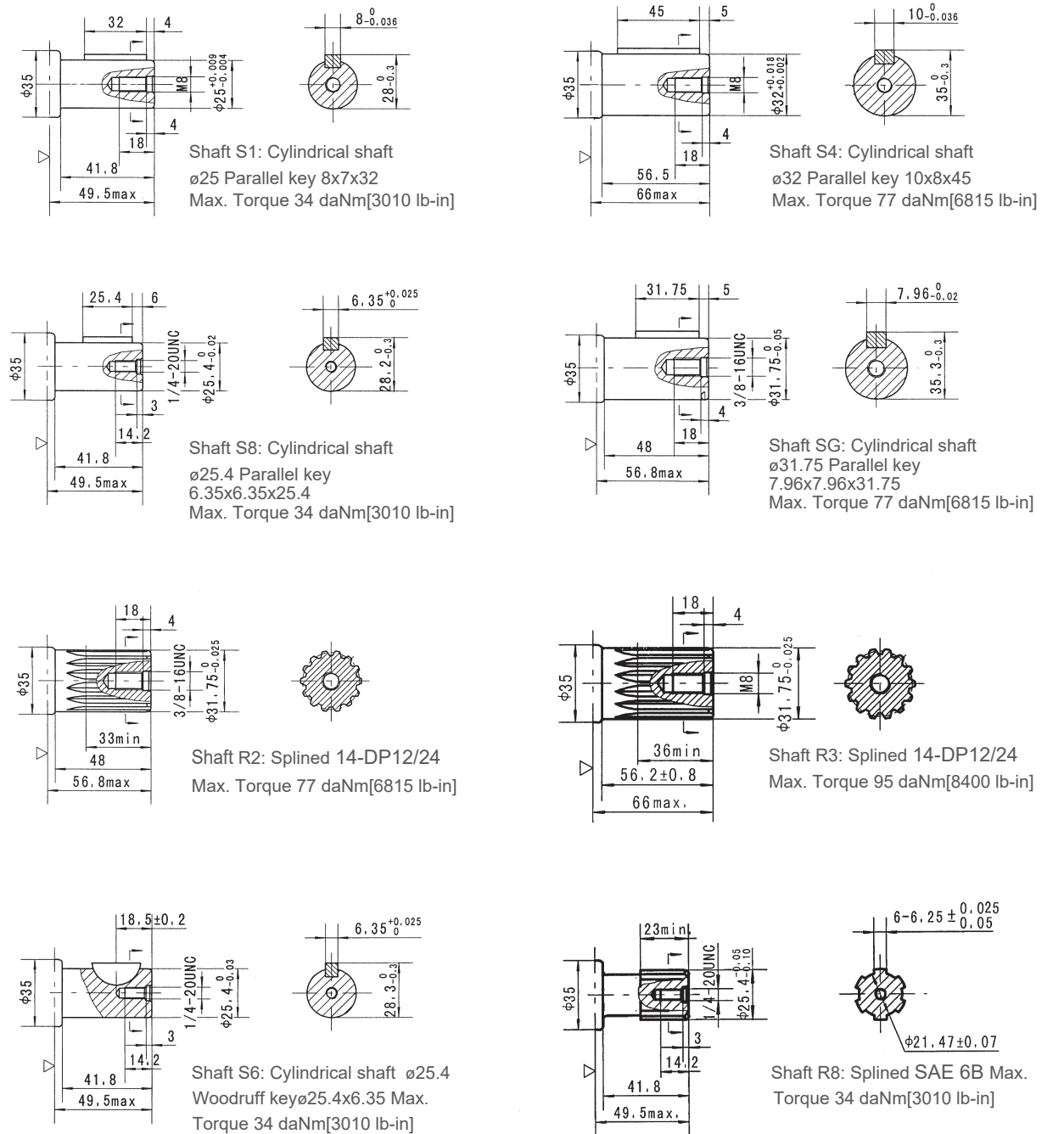
### INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Fillet Root Side Fit		mm
Number of Teeth	Z	12
Diametral Pitch	DP	12/24
Pressure Angle	$\alpha_D$	30°
Pitch Dia.	D	$\phi 25.4$
Major Dia.	$D_{ei}$	$\phi 28^{+0.01}_0$
Minor Dia.	$D_{ii}$	$\phi 23^{+0.033}_0$
Space Width [Circular]	E	4.308 ± 0.02

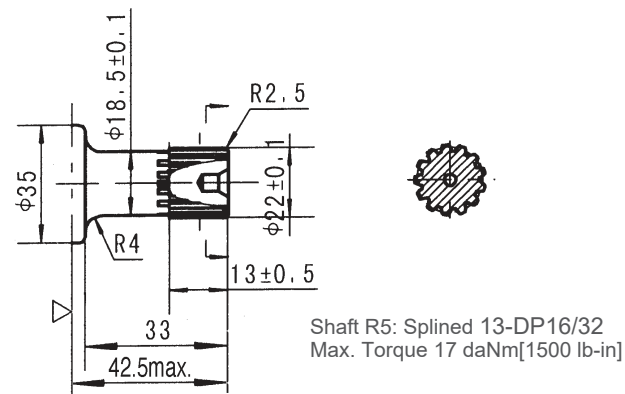
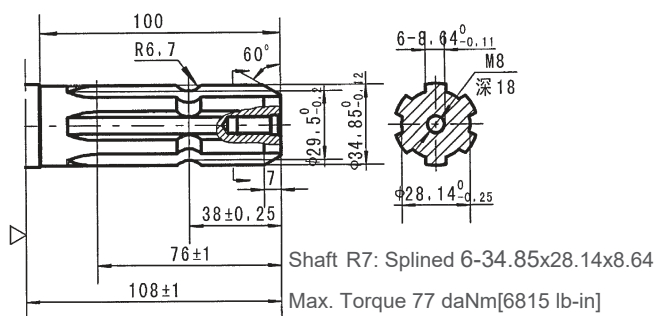
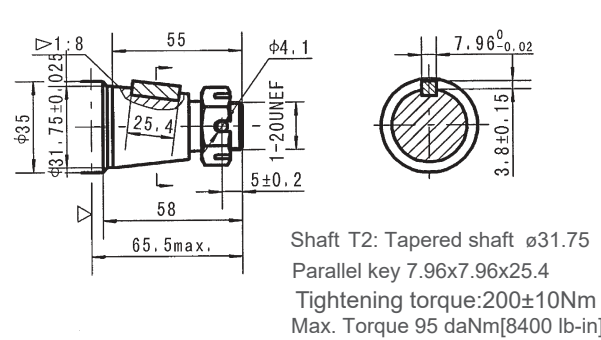
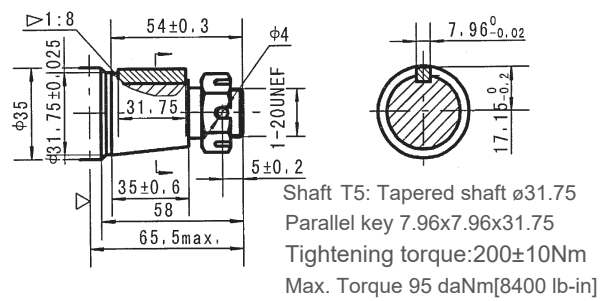
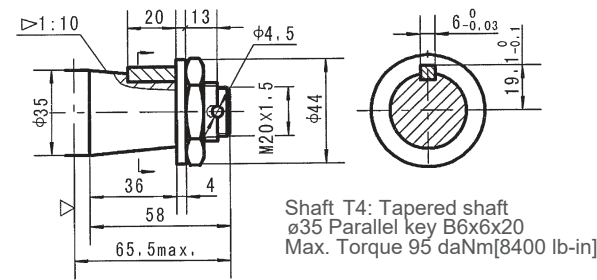


Hardening Specification: HRC 62 ± 2  
Effective case depth 0.7 ± 0.2

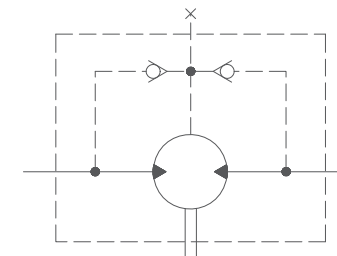
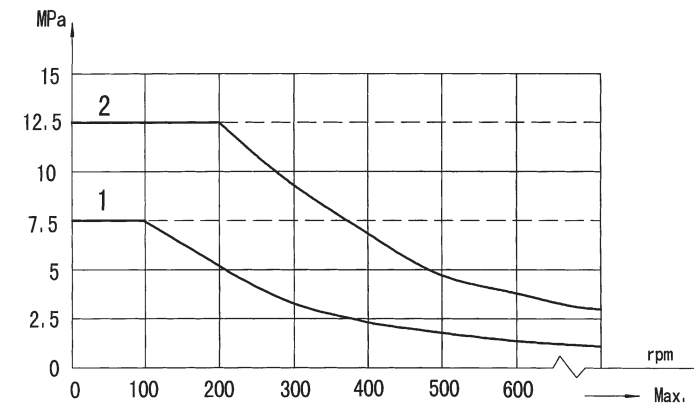
## Shaft Extensions for GS Motors



## Shaft Extensions for GS Motors



## GS Series Hydraulic Motors Permissible Shaft Seal Pressure



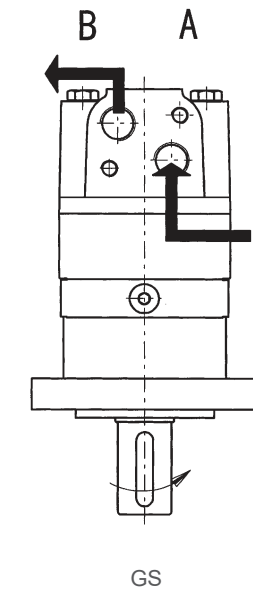
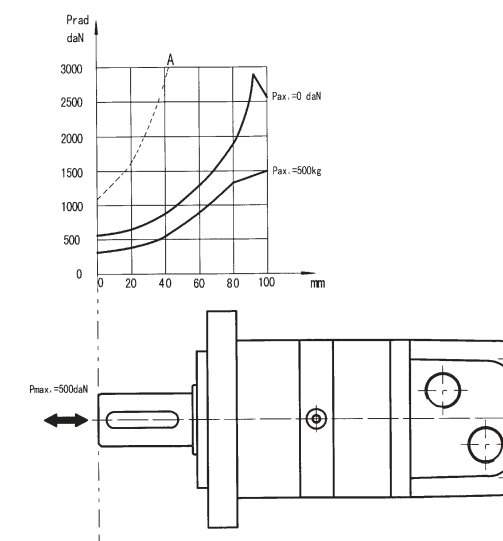
Note: 1. Chart for standard shaft seal;  
2. Chart for high pressure shaft seal.

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

## Standard Direction of Shafts Rotation: Standard

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

## Axial and Radial Force



The output shaft runs in tapered bearings that permit high axial and radial forces, Curve "A" shows max radial shaft load, Any shaft loads exceeding the values quoted in the curve will involve a risk of breakage, The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.

## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

<b>GS</b>	Orbital motor
<b>GSS</b>	Short motor

### 2 - DISPLACEMENT

<b>80</b>	80.5 cm <sup>3</sup> /rev[4.91 in <sup>3</sup> /rev]
<b>100</b>	100 cm <sup>3</sup> /rev[6.1 in <sup>3</sup> /rev]
<b>125</b>	125.7 cm <sup>3</sup> /rev[7.67 in <sup>3</sup> /rev]
<b>160</b>	159.7 cm <sup>3</sup> /rev[9.74 in <sup>3</sup> /rev]
<b>200</b>	200 cm <sup>3</sup> /rev[12.2 in <sup>3</sup> /rev]
<b>250</b>	250 cm <sup>3</sup> /rev[15.3 in <sup>3</sup> /rev]
<b>315</b>	314.9 cm <sup>3</sup> /rev[19.2 in <sup>3</sup> /rev]
<b>400</b>	397 cm <sup>3</sup> /rev[24.2 in <sup>3</sup> /rev]
<b>475</b>	474.6 cm <sup>3</sup> /rev[28.96 in <sup>3</sup> /rev]
<b>525</b>	522.7 cm <sup>3</sup> /rev[31.88 in <sup>3</sup> /rev]
<b>565</b>	564.9 cm <sup>3</sup> /rev[34.47 in <sup>3</sup> /rev]

### 3 - FLANGE

<b>A7</b>	2-Φ13.5 rhomb flange Φ106.4, pilot Φ82.5×6.3
<b>H3</b>	4-Φ13.5 square flange Φ106.4, pilot Φ82.5×6.3
<b>A9</b>	6-Φ13.5 rhomb flange Φ106.4, pilot Φ82.5×2.6
<b>W1</b>	4-Φ13.5 wheel flange Φ160, pilot Φ125×8
<b>AA</b>	2-Φ14.3 rhomb flange Φ146.05, pilot Φ101.6×9.4
<b>H1</b>	4-Φ11.5 square flange Φ106.4, pilot Φ82.5×6.3
<b>B1</b>	4-Φ11 circle flange Φ125, pilot Φ100×6
<b>H2</b>	4-Φ13.5 square flange Φ127, pilot Φ101.6×6.3

### 4 - OUTPUT SHAFT

<b>C1</b>	Cardan shaft 12-DP12/24
<b>S4</b>	Shaft Φ32,parallel key 10×8×45
<b>S8</b>	Shaft Φ25.4,parallel key 6.35×6.35×25.4
<b>SG</b>	Shaft Φ31.75,parallel key 7.96×7.96×31.75
<b>R2</b>	Shaft Φ31.75, splined tooth 14-DP12/24
<b>R3</b>	Long shaft Φ31.75,splined tooth 14-DP12/24
<b>R7</b>	Shaft Φ34.85,splined tooth 6-34.85×28.14×8.64
<b>T4</b>	Tapered shaft Φ35,parallel key B6×6×20
<b>T5</b>	Tapered shaft Φ31.75, parallel key 7.96×7.96×31.75
<b>R8</b>	Shaft Φ25.4,parallel key SAE 6B
<b>R5</b>	Shaft Φ22,splined tooth 13-DP16/32
<b>S1</b>	Shaft Φ25,parallel key 8×7×32
<b>S6</b>	Shaft Φ25.4,woodruff key Φ25.4×6.35
<b>T2</b>	Tapered shaft Φ35,parallel key 7.96×7.96×25.4

### 5 - PORTS AND DRAIN PORT

<b>G9</b>	G1/2 manifold mount 2×M10,G1/4
<b>M8</b>	M22×1.5 manifold mount 2×M10,M14×1.5
<b>UB</b>	7/8-14 UNF O-ring manifold 2×3/8-16 UNC,7/16-20 UNF
<b>UC</b>	1/2-14 NPTF manifold 2×3/8-16 UNC,7/16-20 UNF

### 6 - ROTATION DIRECTION

<b>A</b>	Standard
<b>R</b>	Opposite

### 7 - PAINT

<b>A</b>	No paint
<b>B</b>	Blue
<b>C</b>	Black
<b>S</b>	Silver grey

### 8 - Unusually function

<b>A</b>	Standard
<b>F</b>	Free running
<b>L</b>	Low speed
<b>V</b>	High temperature
<b>S</b>	Low temperature

#### Note:

1)The GSS series are only available with the C1 cardan shaft and the B1, H2 Flanges.  
2)When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

## GT Series Orbital Motors

### Application

- Conveyors
- Metal working machines
- Road building machines
- Agricultural machines
- Mining machinery
- Food industries
- Special vehicles
- Plastic and rubber machinery etc.

### Options

- Model - Disc valve, roll-gerotor
- Flange with wheel mount
- Short motor
- Side and rear ports
- Shafts - straight, splined and tapered
- Metric and BSPP ports
- Other special features

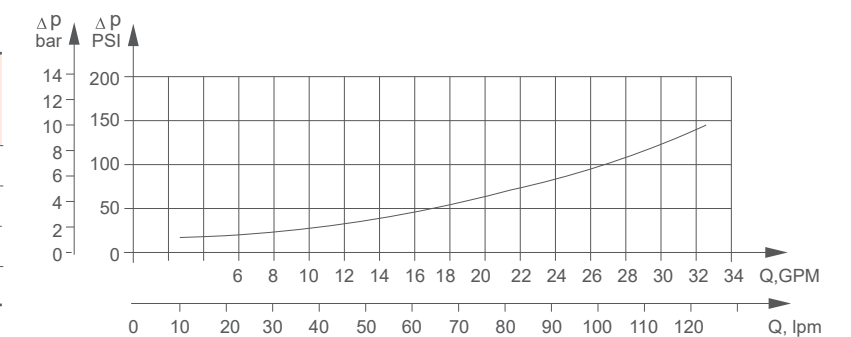
### General

Max. Displacement,	cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	724,3 [44.2]
Max. Speed,	[RPM]	775
Max. Torque,	daNm [lb-in]	cont.: 130 [11500] int.: 148 [13100]
Max. Output,	kW [HP]	40 [54]
	bar [PSI]	cont.: 200 [2900] int. 240 [3480]
Max. Oil Flow,	lpm [GPM]	150 [39.6]
Min. Speed,	[RPM]	5
Permissible Shaft Loads	daN [lbs]	P <sub>a</sub> =1000 [2250]
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	°C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range,	mm <sup>2</sup> /s [SUS]	20 ÷ 75 [98 ÷ 347]
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 micrø)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s[SUS]	Oil flow in drain line lpm [GPM]
140[2030]	20[98]	2,5[.660]
	35[164]	1,5[.396]
210[3045]	20[98]	5[1.321]
	35 [164]	3[.793]

### Pressure Loss





## Specifications

Type		GT 160	GT 200	GT 250	GT 315
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]		161,1 [9.83]	201,4 [12.29]	251,8 [15.36]	326,3 [19.90]
Max. Speed, [RPM]	Cont.	622	620	496	382
	Int.*	775	752	601	461
Max. Torque daNm [lb-in]	Cont.	47 [4160]	59 [5220]	73 [6460]	95 [8410]
	Int.*	56 [4960]	71 [6285]	88 [7790]	114 [10090]
	Peak**	66 [5840]	82 [7260]	102 [9030]	133 [11770]
Max. Output kW [HP]	Cont.	26,5 [36]	33,5 [45]	33,5 [45]	33,5 [45]
	Int.*	32 [43]	40 [54]	40 [54]	40 [54]
Max. Pressure Drop bar [PSI]	Cont.	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Int.*	240 [3480]	240 [3480]	240 [3480]	240 [3480]
	Peak**	280 [4050]	280 [4050]	280 [4050]	280 [4050]
Max. Oil Flow lpm [GPM]	Cont.	100 [26]	125 [33]	125 [33]	125 [33]
	Int.*	125 [33]	150 [39.6]	150 [39.6]	150 [39.6]
Max. Inlet Pressure bar [PSI]	Cont.	210 [3050]	210 [3050]	210 [3050]	210 [3050]
	Int.*	250 [3600]	250 [3600]	250 [3600]	250 [3600]
	Peak**	300 [4350]	300 [4350]	300 [4350]	300 [4350]
Max. Return Pressure with Drain Line bar [PSI]	Cont.	140 [2030]	140 [2030]	140 [2030]	140 [2000]
	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2500]
	Peak**	210 [3050]	210 [3050]	210 [3050]	210 [3000]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [150]	10 [150]	10 [150]	10 [150]
Min. Starting Torque daNm [lb-in]	At max. press. drop Cont.	34 [3010]	43 [3800]	53 [4690]	74 [6550]
	At max. press. drop Int.*	41 [3630]	52 [4600]	63 [5580]	89 [7880]
Min. Speed***, [RPM]		10	9	8	7
Weight, kg [lb]	GT	20 [44.1]	21,5 [47.4]	21 [46.3]	22 [48.5]
	GTS	15 [33.1]	15,5 [34.2]	16 [35.3]	17 [37.5]

\*Intermittent operation: the permissible values may occur for max. 10% of every minute.

\*\*Peak load: the permissible values may occur for max. 1 % of every minute.

\*\*\*For speeds lower than given, consult factory or your regional manager.

## Specifications

Type		GT 400	GT 500	GT 630	GT 725
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]		410,9 [25.06]	523,6 [31.95]	631,2 [38.52]	724,3 [44.2]
Max. Speed, [RPM]	Cont.	304	238	197	172
	Int.*	368	289	234	209
Max. Torque daNm [lb-in]	Cont.	108 [9560]	122 [10800]	130 [11500]	127 [11240]
	Int.*	126 [11150]	137 [12125]	148 [13100]	147 [13010]
	Peak**	144 [12745]	160 [14160]	176 [15580]	175 [15490]
Max. Output kW [HP]	Cont.	30 [40]	26,5 [36]	24,3 [33]	20,2 [27]
	Int.*	35 [47]	30 [40]	27,5 [37]	26,8 [36]
Max. Pressure Drop bar [PSI]	Cont.	180 [2610]	160 [2320]	140 [2010]	120 [1740]
	Int.*	210 [3050]	180 [2610]	160 [2320]	140 [2010]
	Peak**	240 [3480]	210 [3050]	190 [2760]	165 [2395]
Max. Oil Flow lpm [GPM]	Cont.	125 [33]	125 [33]	125 [33]	125 [33]
	Int.*	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
Max. Inlet Pressure bar [PSI]	Cont.	210 [3050]	210 [3050]	210 [3600]	210 [3050]
	Int.*	250 [3600]	250 [3600]	250 [4350]	250 [3600]
	Peak**	300 [4350]	300 [4350]	300 [2000]	300 [4350]
Max. Return Pressure with Drain Line bar [PSI]	Cont.	140 [2000]	140 [2000]	140 [2500]	140 [2000]
	Int.*	175 [2500]	175 [2500]	175 [3000]	175 [2500]
	Peak**	210 [3000]	210 [3000]	210 [3000]	210 [3000]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [150]	10 [150]	10 [150]	10 [150]
Min. Starting Torque daNm [lb-in]	At max. press. drop Cont.	84 [7435]	95 [8410]	95 [8410]	95 [8410]
	At max. press. drop Int.*	97 [8585]	106 [9380]	110 [9740]	115 [10180]
Min. Speed***, [RPM]		6	5	5	5
Weight, kg [lb]	GT	23 [50.7]	24 [52.9]	23,5 [51.8]	24,5 [54.0]
	GTS	18 [39.7]	19 [41.9]	18,5 [40.8]	19,5 [43.0]

\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

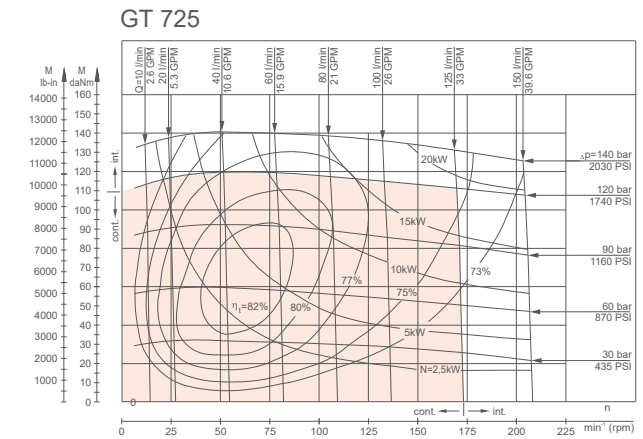
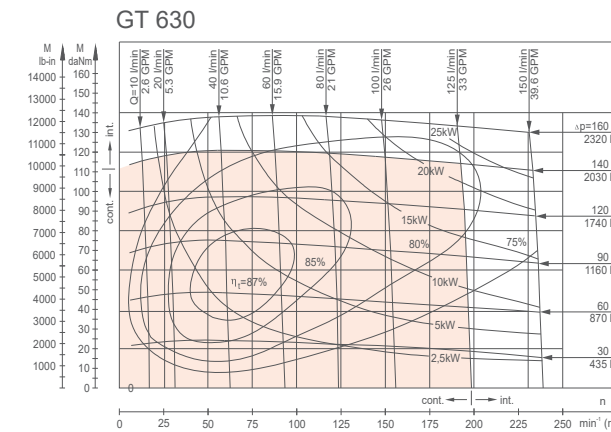
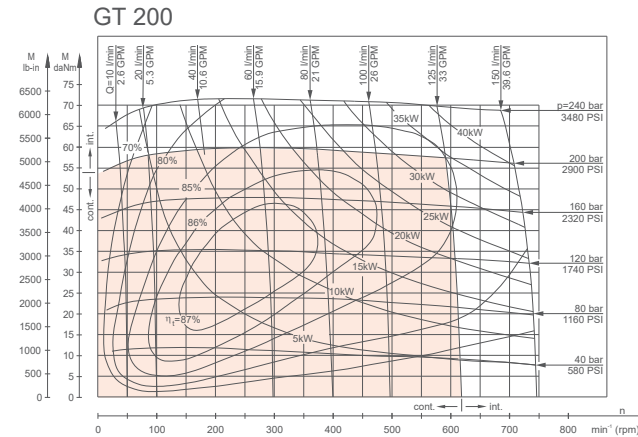
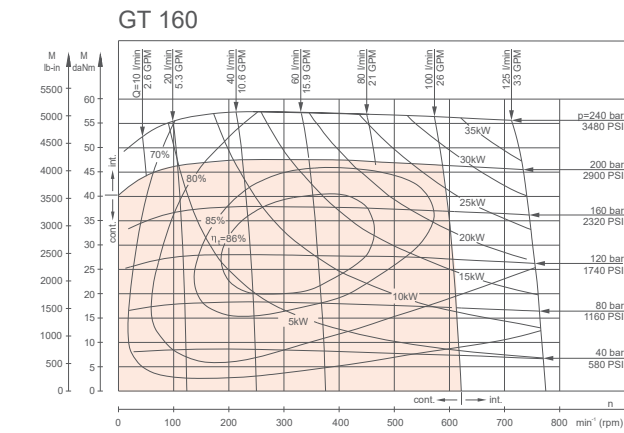
\*\* Peak load: the permissible values may occur for max. 1% of every minute.

\*\*\* For speeds lower than given, consult factory or your regional manager.

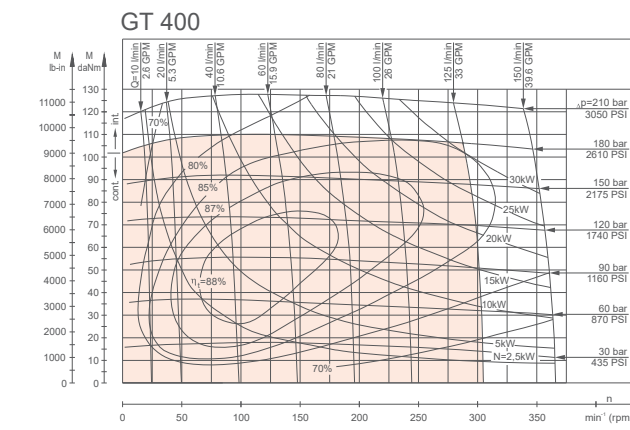
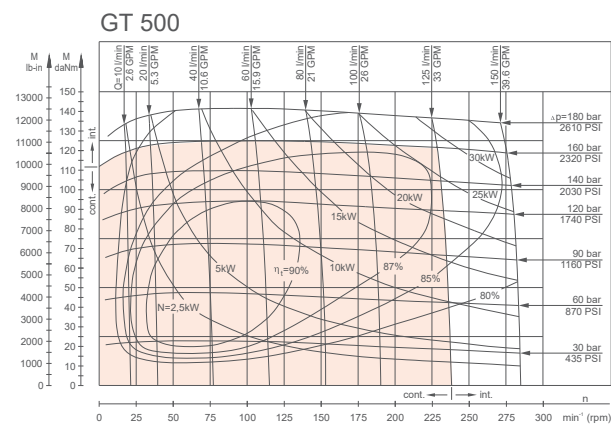
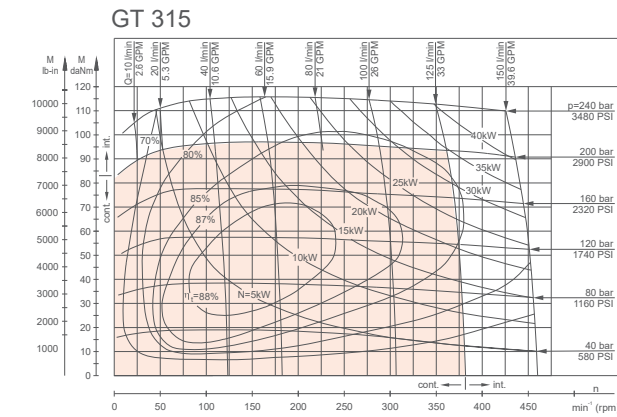
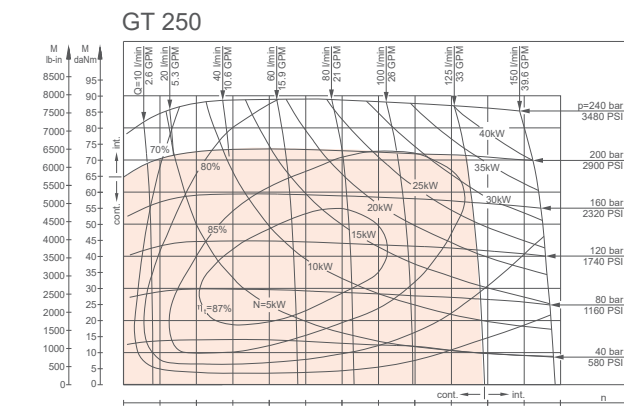
- 1. Intermittent speed and intermittent pressure must not occur simultaneously.
- 2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP (DIN51524) or HM (ISO 6743/4).  
If using synthetic fluids consult the factory for alternative seal materials.
- 4. Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
- 5. Recommended maximum system operating temperature is 82°C [180°F].
- 6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

## Function Diagrams

## Function Diagrams



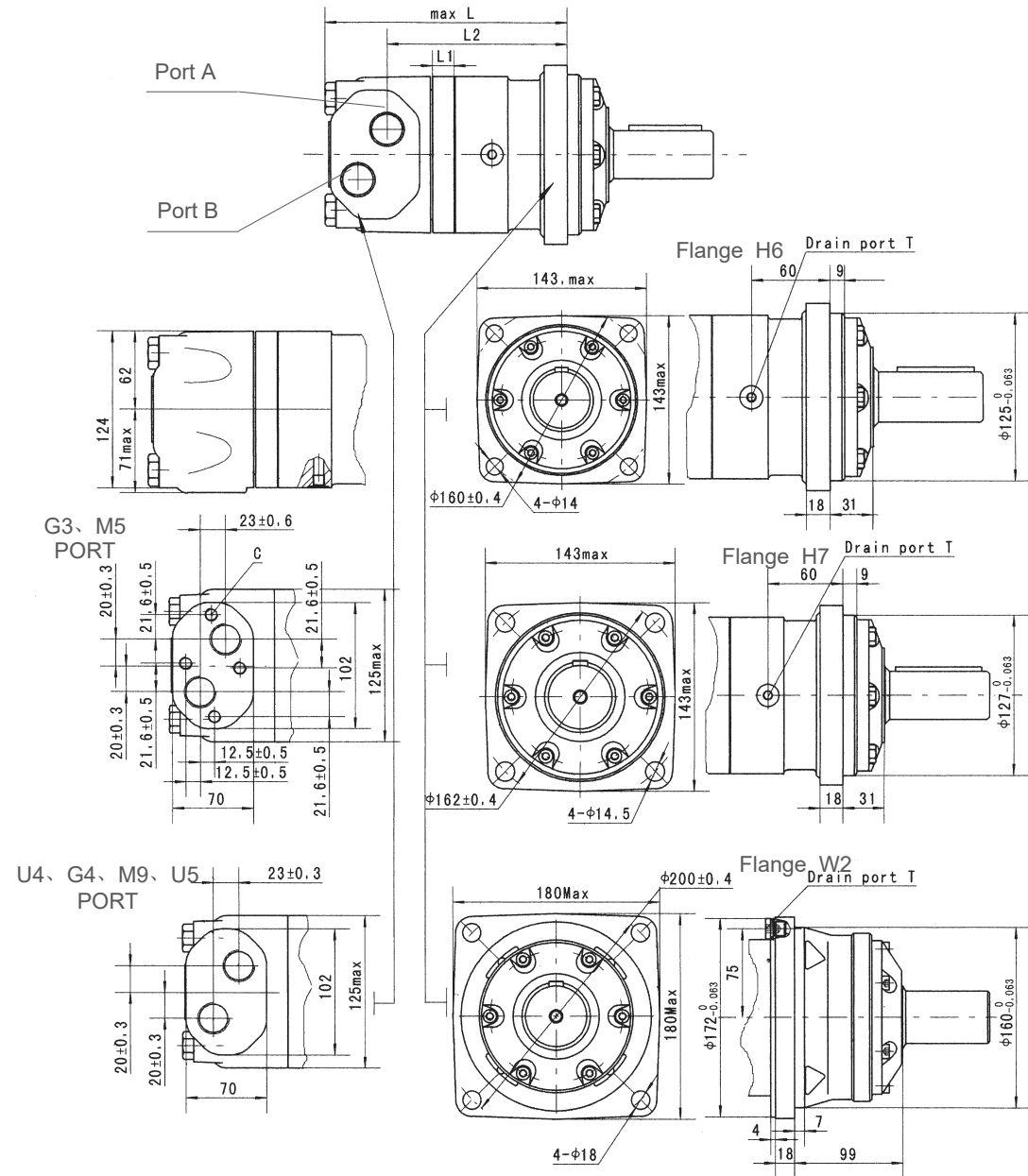
The function diagrams data is for average performance of randomly selected motors at back pressure 5+10 bar [72.5+145 PSI] and oil with viscosity of 32mm²/s[150 SUS] at 50°C[ 122°F]



The function diagrams data is for average performance of randomly selected motors at back

pressure 5+10 bar [72.5+145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

## GT Dimensions and Mounting

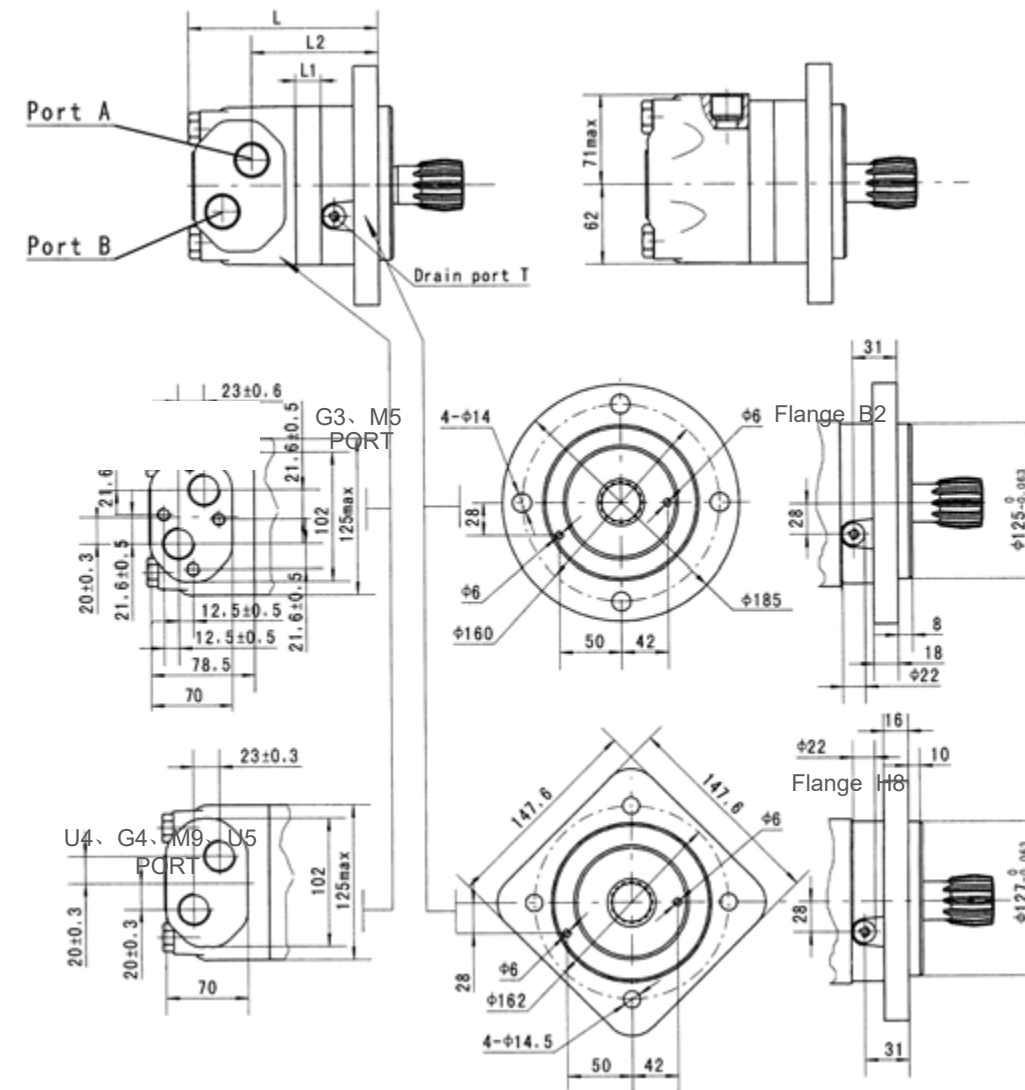


Model	L	L1	L2
GT160	193	17	142.5
GT200	197	21	146.5
GT250	204	14	152.5
GT315	210	20	158.5
GT400	217	27	165.5
GT500	225	35	173.5
GT630	237	47	185.5
GT725	248	58	196.5

Content	Code					
	G3 (depth)	M5 (depth)	U4 (depth)	G4(depth)	M9(depth)	U5(depth)
P(A,B)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)
T	G1/4 (12)	M14 x 1.5 (12)	9/16-18UNF (12)	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)
C	4-M10(10)	4-M10(10)	--	--	--	--

- Note:1)The thickness of the stator and rotor for disp. from 160 to 200 is the dimension of L1 adding on 3mm.  
2)The thickness of the stator and rotor for disp. from 250 to 800 is the dimension of L1 adding on 7mm.  
3)If the mounting W2 is used,the dimensions of L and L2 should minus 66 mm.

## GTS Dimensions and Mounting



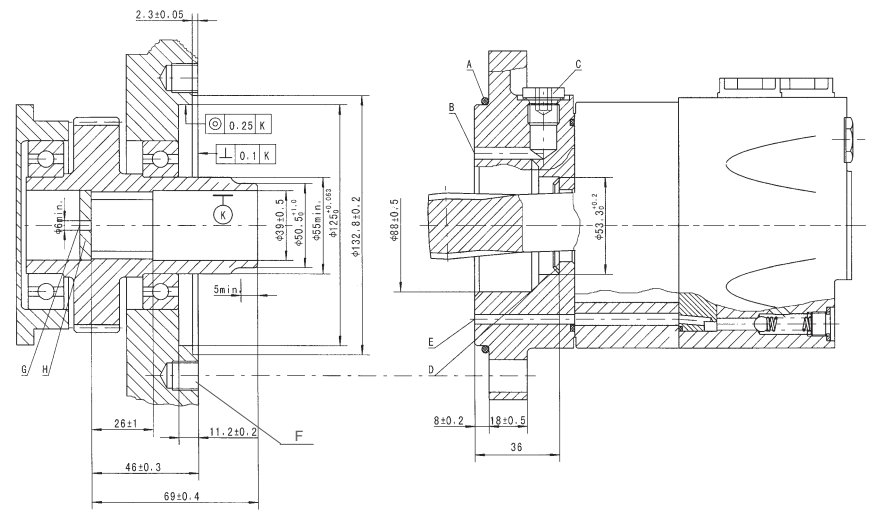
Model	L	L1	L2
GTS 160	148	17	96.5
GTS 200	152	21	100.5
GTS 250	157	14	109
GTS 315	163	20	115
GTS 400	170	27	122
GTS 500	178	35	130
GTS 630	190	47	142
GTS 725	201	58	153

Content	Code					
	G3 (depth)	M5 (depth)	U4 (depth)	G4 (depth)	M9 (depth)	U5 (depth)
P(A,B)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)
T	G1/4 (12)	M14 x 1.5 (12)	9/16-18UNF (12)	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)
C	4-M10(10)	4-M10(10)	--	--	--	--

- Note:1)The thickness of the stator and rotor for disp.from 160 to 200 is the dimension of L1 adding on 3mm.  
2)The thickness of the stator and rotor for disp.from 250 to 800 is the dimension of L1 adding on 7mm.



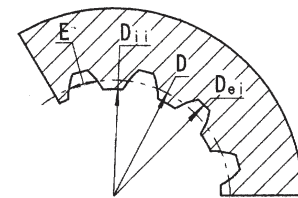
### GTS Mounting



- A: O-ring:125x3
- B: External drain channel
- C: Drain connection G 1/4;12 mm deep
- D: Conical seal ring
- E: Internal drain channel
- F: M12;min. 18mm deep
- G: Oil circulation hole
- H: Hardened stop plate

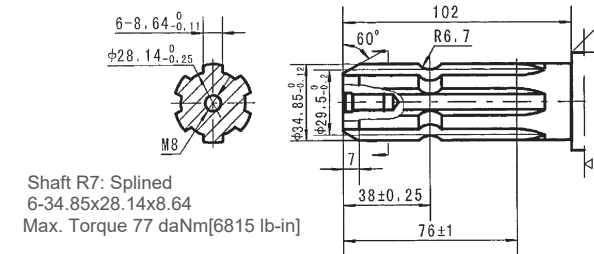
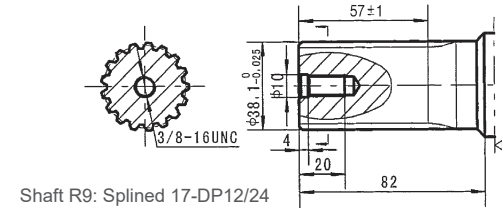
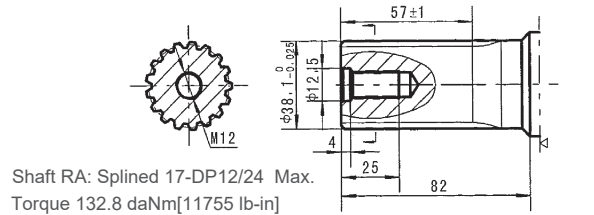
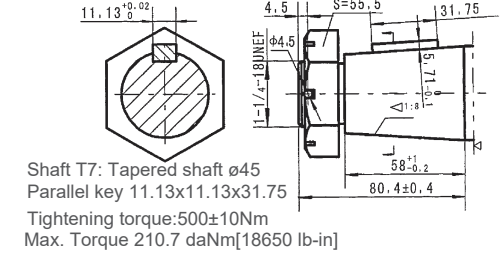
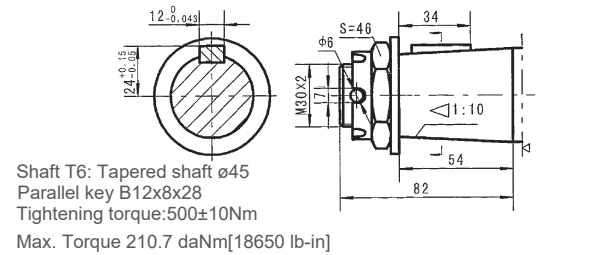
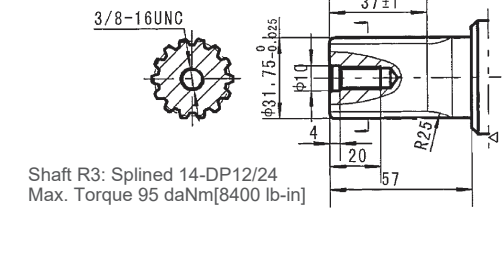
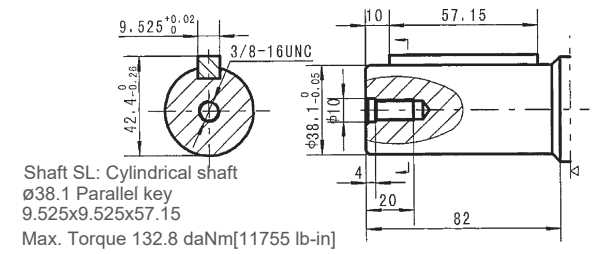
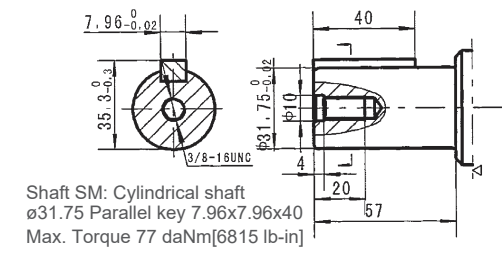
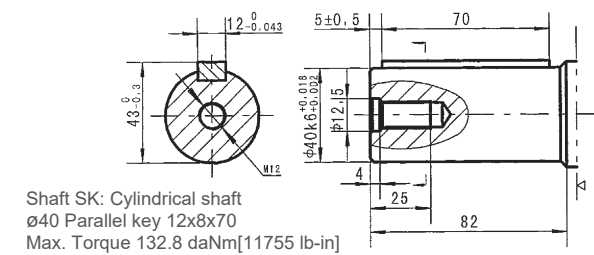
### Internal Spline for the Attached Components

Fillet Root Side Fit		mm
Number of Teeth	Z	16
Diametral Pitch	DP	12/24
Pressure Angle	$\alpha_D$	30°
Pitch Dia.	D	$\phi 33.8656$
Major Dia.	$D_{ei}$	$\phi 38.4^{+0.25}_0$
Minor Dia.	$D_i$	$\phi 32.15^{+0.04}_0$
Space Width [Circular]	E	4.516±0.037



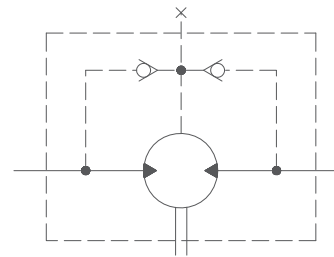
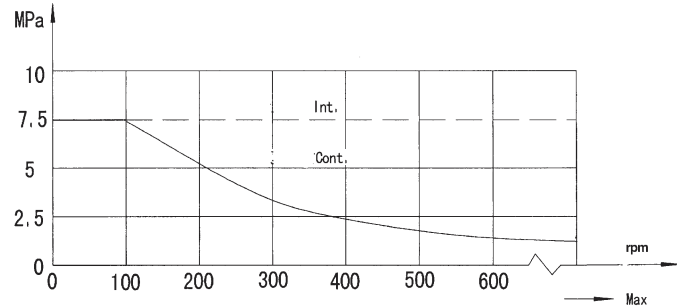
Hardening Specification: HRC 62±2  
Effective case depth 0.7±0.2

### Shaft Extensions for GT Motors



## GT Series Hydraulic Motors

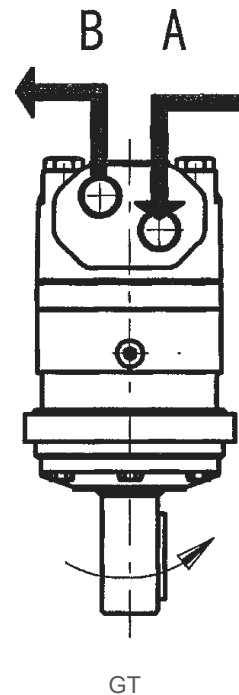
### Permissible shaft seal pressure



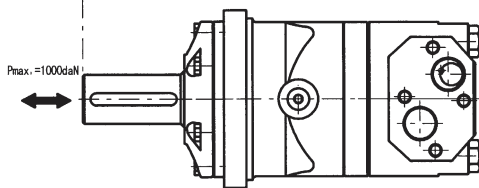
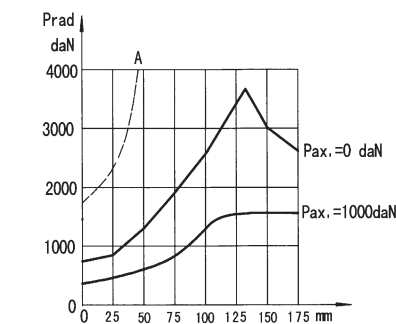
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

### Standard Direction of Shafts Rotation: Standard

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



### Axial and Radial Force



The output shaft runs in tapered bearings that permit high axial and radial forces, Curve "A" shows max radial shaft load, Any shaft loads exceeding the values quoted in the curve will involve a risk of breakage, The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.

### Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

#### 1 - SERIES

GT	Orbital motor
GTS	Short motor

#### 2 - DISPLACEMENT

160	161.1 cm <sup>3</sup> /rev[9.83 in <sup>3</sup> /rev]
200	201.4 cm <sup>3</sup> /rev[12.29 in <sup>3</sup> /rev]
250	251.8 cm <sup>3</sup> /rev[15.36 in <sup>3</sup> /rev]
315	326.3 cm <sup>3</sup> /rev[19.90 in <sup>3</sup> /rev]
400	410.9 cm <sup>3</sup> /rev[25.06 in <sup>3</sup> /rev]
500	523.6 cm <sup>3</sup> /rev[31.95 in <sup>3</sup> /rev]
630	631.2 cm <sup>3</sup> /rev[38.52 in <sup>3</sup> /rev]
725	724.3 cm <sup>3</sup> /rev[44.2 in <sup>3</sup> /rev]

#### 3 - FLANGE

H6	4-Φ14 square flange Φ160, pilot Φ125×9
H7	4-Φ14.5 square flange Φ162, pilot Φ127×9
W2	4-Φ18 wheel flange Φ200, pilot Φ160×7
B2	4-Φ14 circle flange Φ160, pilot Φ125×8
H8	4-Φ14.5 square flange Φ162, pilot Φ127×10

#### 4 - OUTPUT SHAFT

C2	Cardan shaft 16-DP12/24
SK	Shaft Φ40, parallel key 12×8×70
SL	Shaft Φ38.1, parallel key 9.53×9.53×57.15
R9	Shaft Φ38.1, splined tooth 17-DP12/24
RA	Shaft Φ38.1, splined tooth 17-DP12/24
T6	Tapered shaft 1:10 Φ45, parallel key B12×8×28
T7	Tapered shaft 1:8 Φ45, parallel key 11.13×11.13×31.75
R7	Shaft Φ34.85, splined tooth 6-34.85×28.14×8.64
SM	Shaft Φ31.75, parallel key 7.96×7.96×40
R3	Shaft Φ31.75, splined tooth 14-DP12/24

#### 5 - PORTS AND DRAIN PORT

G3	G3/4 manifold mount 4×M10, G1/4
M5	M27×2 manifold mount 4×M10, M14×1.5
U4	1-1/16-12 UN O-ring, 9/16-18 UNF
U5	1-1/16-12 UN O-ring, 7/16-20 UNF
G4	G3/4, G1/4
M9	M27×2, M14×1.5

#### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

#### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

#### 8 - Unusually function

A	Standard
F	Free running
L	Low speed
V	High temperature
S	Low temperature

#### Note:

1) The GTS series are only available with the C2 cardan shaft and the B2, H8 Flanges.  
2) When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

## GV Series Orbital Motors

### Application

- Conveyors
- Metal working machines
- Road building machines
- Mining machinery
- Food industries
- Agricultural machines
- Special vehicles
- Plastic and rubber machinery etc.

### Options

- Model - Disc valve, roll-gerotor
- Flange mount
- Short motor
- Side ports
- Shafts - straight, splined and tapered
- BSPP ports
- Other special features

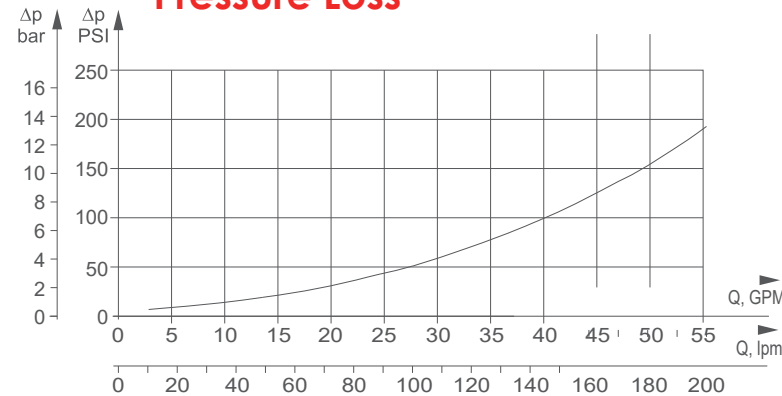
### General

Max. Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	801,8 [48.91]
Max. Speed, [RPM]	630
Max. Torque daNm [lb-in]	cont.: 188 [16650] int.: 211 [18650]
Max. Output, kW [HP]	64 [85,8]
Max. Pressure Drop, bar [PSI]	cont.: 200 [2900] int.: 240 [3480]
Max. Oil Flow, lpm [GPM]	240 [63.4]
Min. Speed, [RPM]	5
Permissible Shaft Loads daN [lbs]	P <sub>a</sub> =1500 [3300]
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, °C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range, mm <sup>2</sup> /s [SUS]	20÷75 [98÷347]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil Flow in Drain Line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /s [SUS]	Oil flow in drain line lpm [GPM]
140 [2030]	20 [98]	3 [.793]
	35 [164]	2 [.528]
210 [3045]	20 [98]	6 [1.585]
	35 [164]	4 [1.057]

### Pressure Loss



## Specifications

Type		GV 315	GV 400	GV 500	GV 630	GV 800
Displacement, cm <sup>3</sup> /rev [In <sup>3</sup> /rev]		314,5 [19.18]	400,9 [24.45]	499,6 [30.48]	629,1 [38.38]	801,8 [48.91]
Max. Speed, [RPM]	Cont.	510	500	400	320	250
	Int.*	630	600	480	380	300
Max. Torque daNm[lb-in]	Cont.	92 [8150]	118 [10450]	146 [12950]	166 [14700]	188 [16650]
	Int.*	111 [9800]	141 [12500]	176 [15550]	194 [17150]	211 [18650]
	Peak**	129 [11400]	164 [14500]	205 [18150]	221 [19550]	247 [21850]
Max Output kW [HP]	Cont.	42,5 [57]	53,5 [71.7]	53,5 [71.7]	48 [64.4]	42,5 [57]
	Int.*	51 [68.4]	64 [85.8]	64 [85.8]	56 [75]	48 [64.4]
Max.Pressure Drop bav [PSI]	Cont.	200 [2900]	200 [2900]	200 [2900]	180 [2610]	160 [2320]
	Int.*	240 [3480]	240 [3480]	240 [3480]	210 [3050]	180 [2610]
	Peak**	280 [4060]	280 [4060]	280 [4060]	240 [3480]	210 [3050]
Max Oil Flow lpm [GPM]	Cont.	160 [42.3]	200 [52.8]	200 [52.8]	200 [52.8]	200 [52.8]
	Int.*	200 [52.8]	240 [63.4]	240 [63.4]	240 [63.4]	240 [63.4]
Max. Inlet Pressure bar [PSI]	Cont.	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
	Int.*	250 [3620]	250 [3620]	250 [3620]	250 [3620]	250 [3620]
	Peak**	300 [4350]	300 [4350]	300 [4350]	300 [4350]	300 [4350]
Max Return Pressure with Drain Line bar [PSI]	Cont.	140 [2040]	140 [2040]	140 [2040]	140 [2040]	140 [2040]
	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Peak**	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Max. Starting Pressure with Unloaded Shaft,bar[PSI]		8 [120]	8 [120]	8 [120]	8 [120]	8 [120]
Min. Starting Torque daNm [lb-in]	At max. press. drop Cont.	71 [6300]	91 [8100]	113 [10000]	133 [11800]	151 [13400]
	At max. press. drop Int.*	85 [7500]	109 [9600]	136 [12000]	155 [13700]	170 [15000]
Min. Speed***, [RPM]		10	9	8	6	5
Weight,kg[lb]	GV	31,8 [70.1]	32,6 [71.9]	33,5 [73.8]	34,9 [76.9]	36,5 [80.5]
	GVS	22,7 [50]	23,5 [51.8]	24,4 [53.8]	25,6 [56.4]	27,7 [61.1]

\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

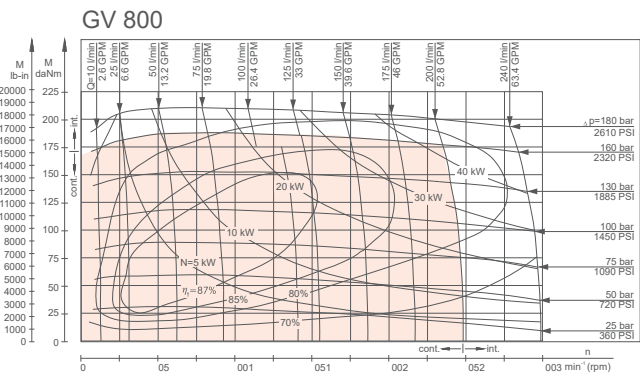
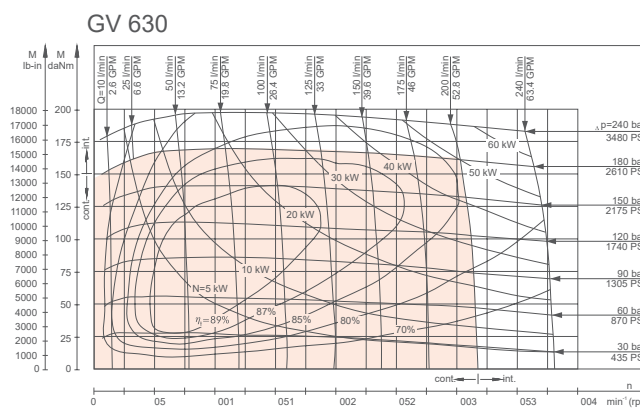
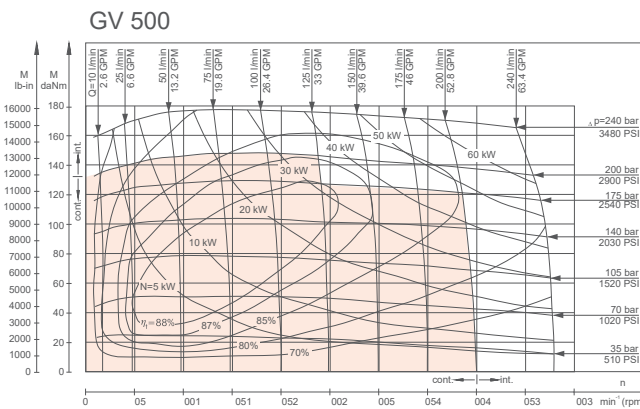
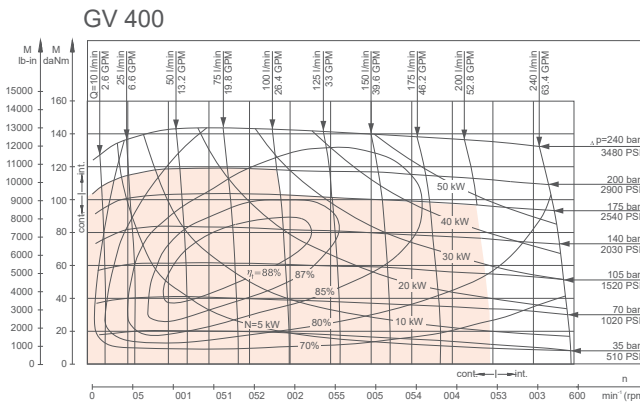
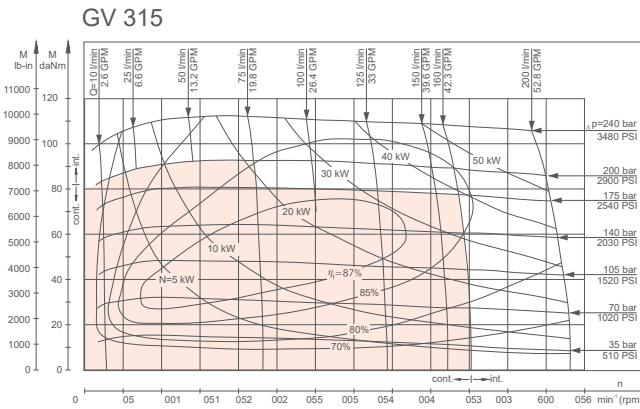
\*\* Peak load: the permissible values may occur for max. 1% of every minute.

\*\*\* For speeds lower than given, consult factory or your regional manager.

- Intermittent speed and intermittent pressure must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM ( ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
- Recommended minimum oil viscosity 13 mm<sup>2</sup>/s [70 SUS] at 50°C [122°F].
- Recommended maximum system operating temperature is 82°C [180°F].
- To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

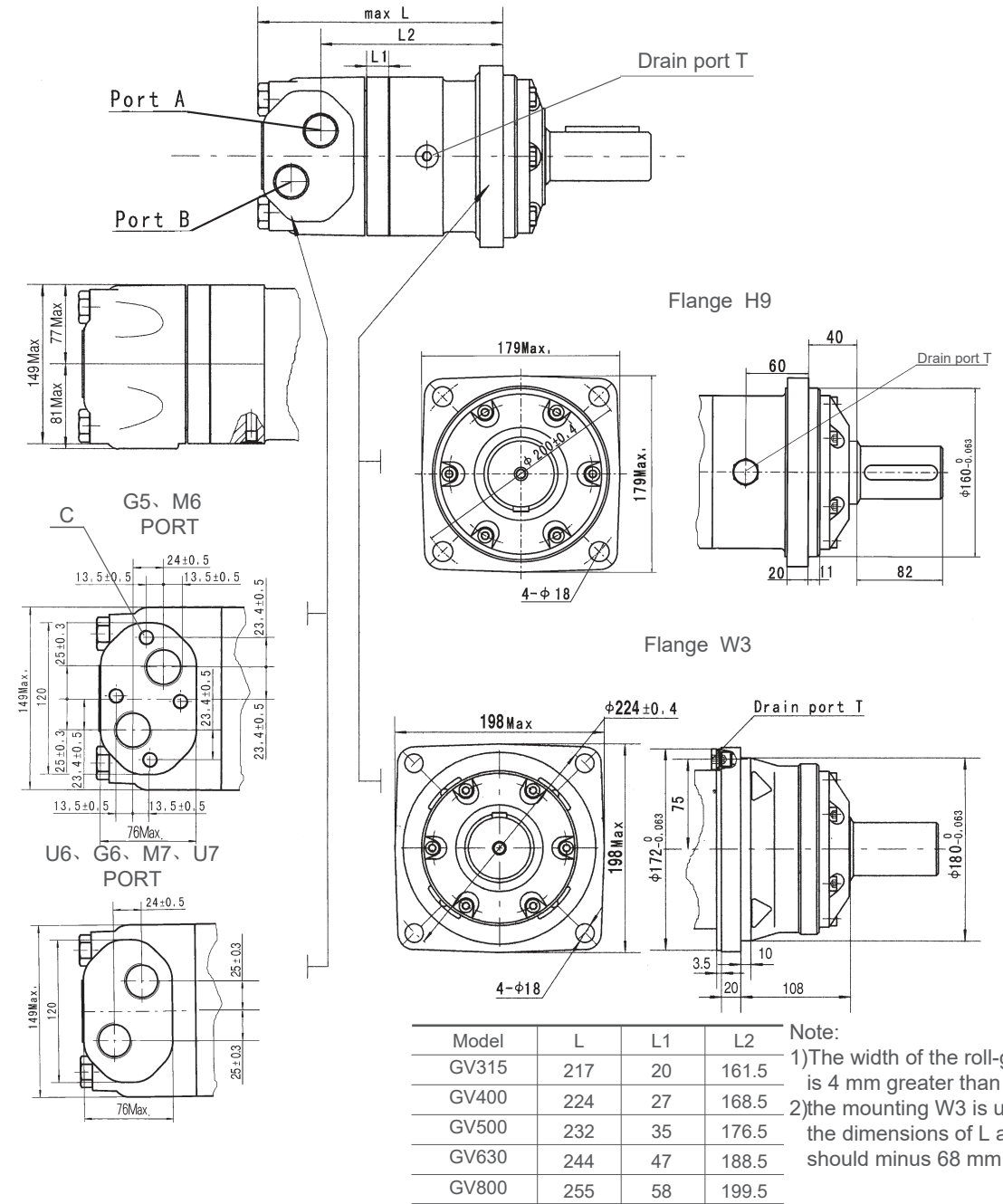


## Function Diagrams



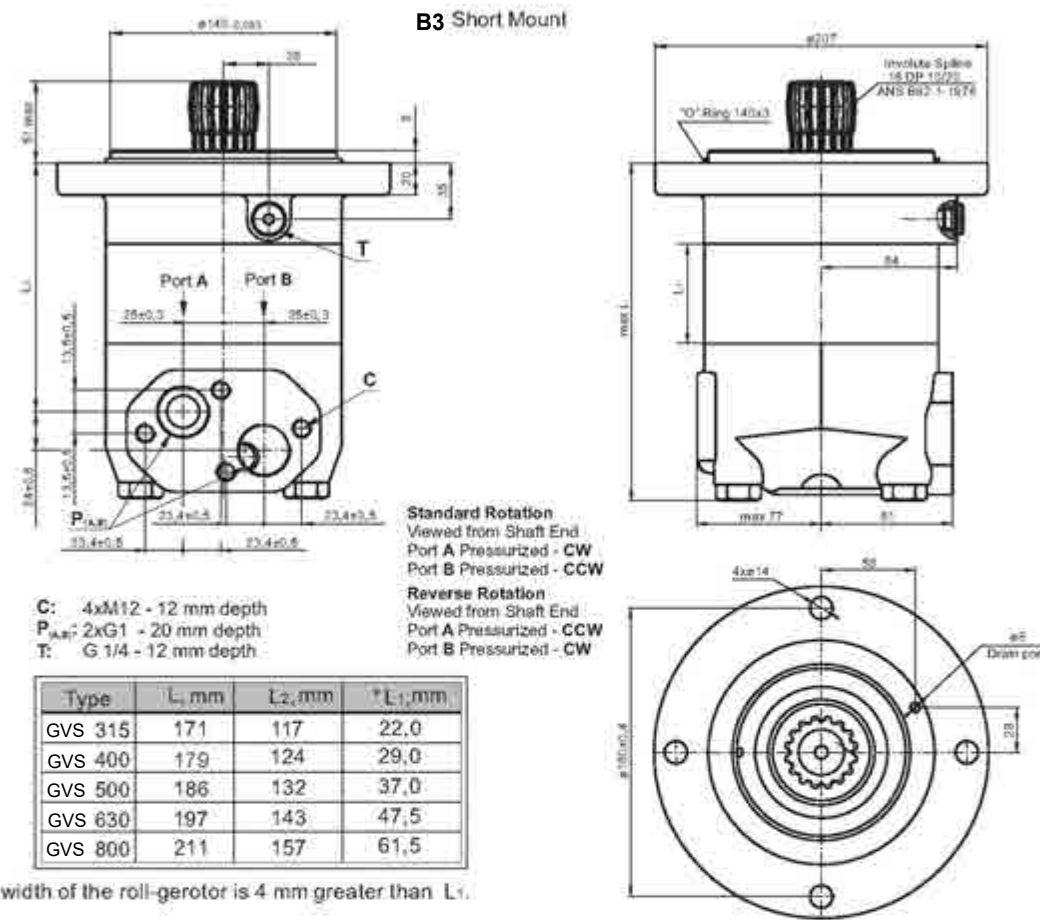
The function diagrams data is for average performance of randomly selected motors at back pressure 5+10 bar [72.5+145 PSI] and oil with viscosity of 32mm<sup>2</sup>/s[150 SUS] at 50°C[122°F]

## GV Dimensions and Mounting

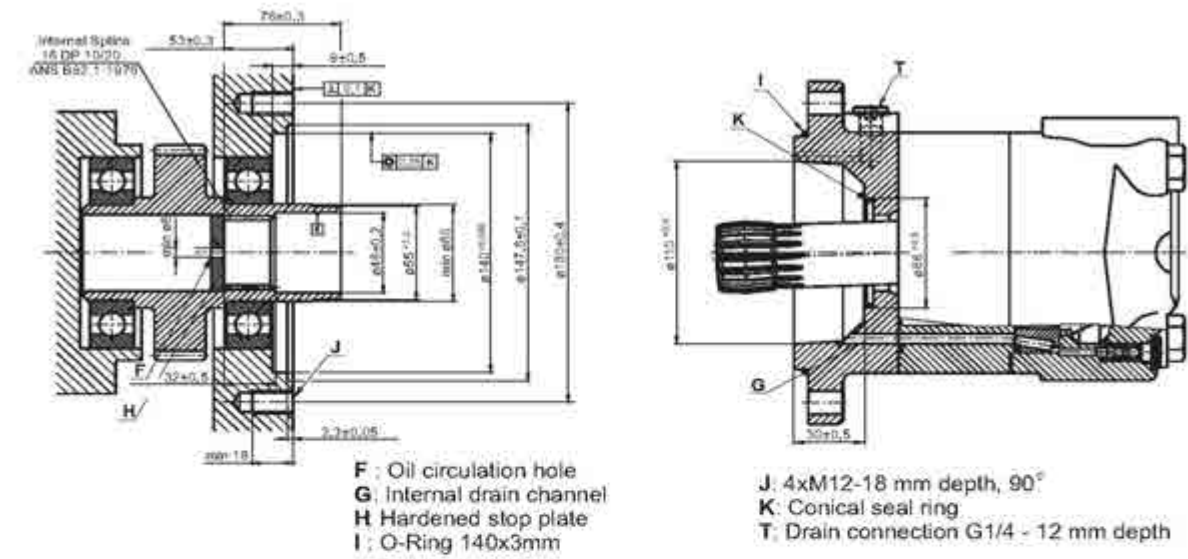


Content	Code					
	G5 (depth)	M6(depth)	U6(depth)	G6 (depth)	M7(depth)	U7(depth)
P(A,B)	G1 (18)	M33 x 2 (18)	1-5/16-12UN(18)	G1 (18)	M33 x 2 (18)	1-5/16-12UN(18)
T	G1/4 (12)	M14 x 1.5 (12)	9/16-18UNF(12)	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF(12)
C	4-M12 (10)	4-M12 (10)	--	--	--	--

## Dimensions and Mounting



## Dimensions of the Attached Components



## Drain Connection

A drain line has to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

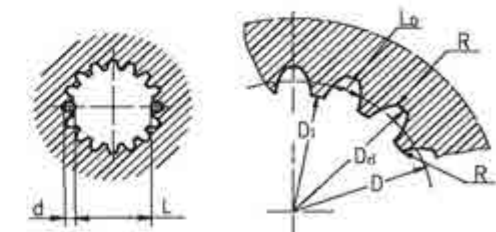
- For GV to the drain port of the motor;

The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

## Internal Spline for the Attached Component

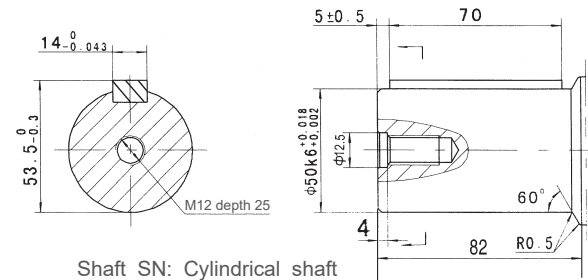
Standard ANS B92.1-1976, class 5  
[m=2.54; corrected x.m=+1,0]

Fillet Root Side Fit		mm
Number of Teeth	z	16
Diametral Pitch	DP	10/20
Pressure Angle		30°
Pitch Dia.	D	40,640
Major Dia.	D <sub>ri</sub>	45,2 <sup>+0,4</sup>
Minor Dia.	D <sub>i</sub>	38,5 <sup>+0,038</sup>
Space Width [Circular]	L <sub>o</sub>	5,18±0,037
Fillet Radius	R	0,4
Max. Measurement between Pins	L	32,47 <sup>+0,15</sup>
Pin Dia.	d	5,6±0,001

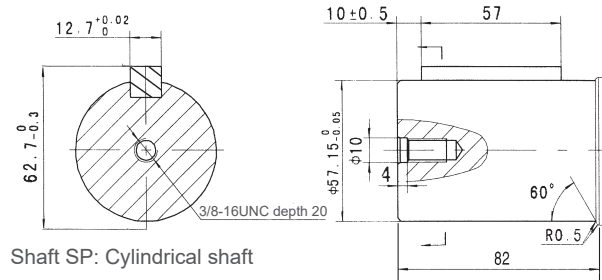


Hardening Specification:  
HV=750±60 on the surface.  
HV=560 at 0,7±0,2 mm case depth  
Material: 20 MoCr4 EN 10084 or better.

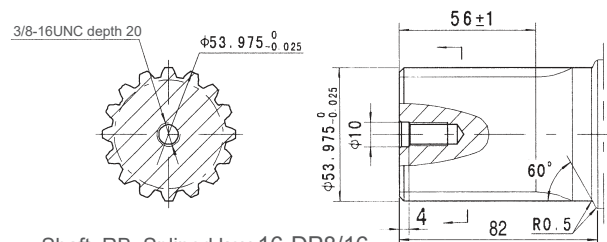
## GV Shaft Extensions Dimensions



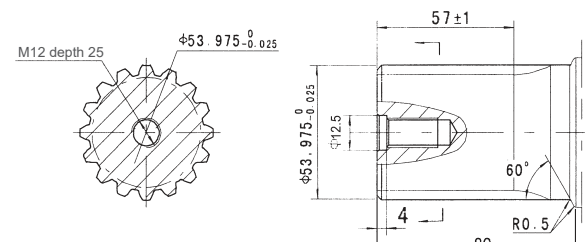
Shaft SN: Cylindrical shaft  
Ø50 Parallel key 14x9x70  
Max. Torque 210.7 daNm[18650 lb-in]



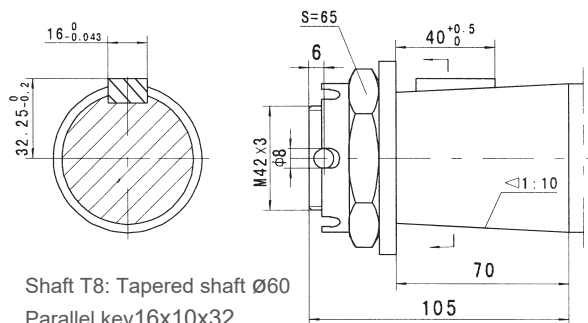
Shaft SP: Cylindrical shaft  
Ø 57.15 Parallel key 12.7x12.7x57  
Max. Torque 271.2 daNm[24000 lb-in]



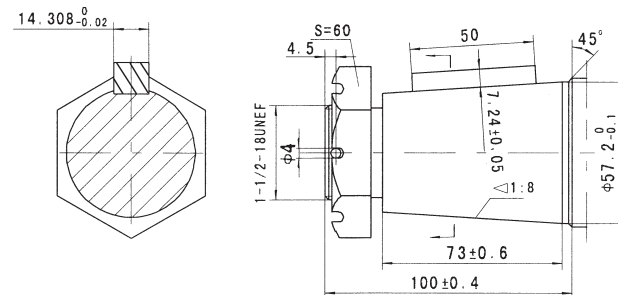
Shaft RB: Splined key 16-DP8/16  
Max. Torque 271.2 daNm[24000 lb-in]



Shaft RC: Splined key 16-DP8/16  
Max. Torque 271.2 daNm[24000 lb-in]



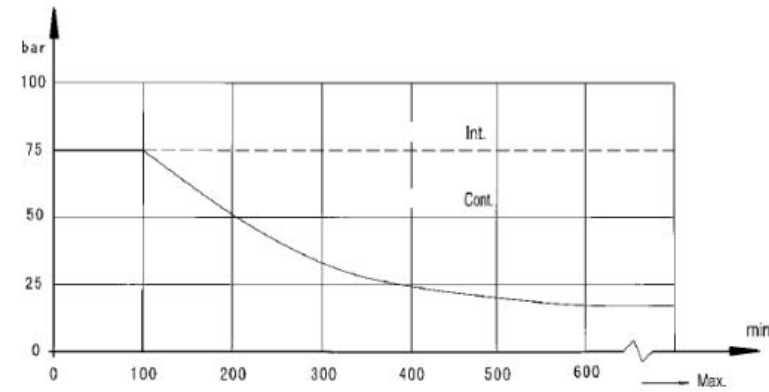
Shaft T8: Tapered shaft Ø60  
Parallel key 16x10x32  
Tightening torque: 75±50Nm  
Max. Torque 271.2 daNm[24000 lb-in]



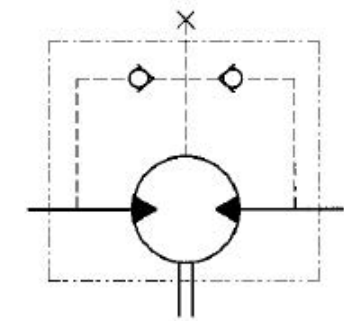
Shaft T9: Tapered shaft Ø57.2 Parallel  
key 14.308x14.308x50  
Tightening torque: 750±50Nm  
Max. Torque 271.2 daNm[24000 lb-in]

### Permissible shaft seal pressure

Standard direction of shaft rotation: Standard

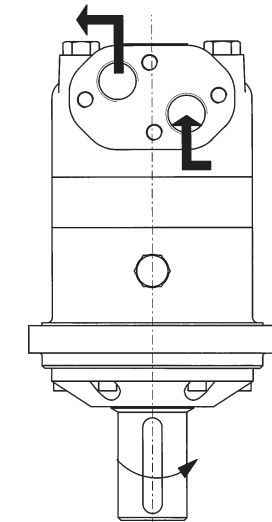
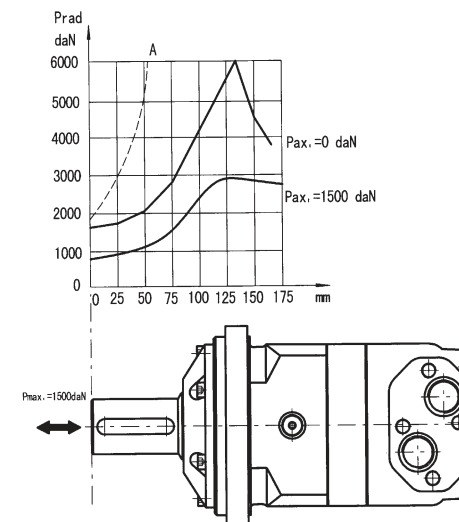


When facing shaft end of motor, shaft to rotate: Clockwise when port "A" is pressurized. Counter-clockwise port "B" is pressurized.



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

### Axial and Radial forces



The output shaft runs in tapered bearings that permit high axial and radial forces, Curve "A" shows max radial shaft load, Any shaft loads exceeding the values quoted in the curve will involve a risk of breakage, The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

GV	Orbital motor
GVS	Short motor

### 2 - DISPLACEMENT

315	314.5 cm <sup>3</sup> /rev[19.18 in <sup>3</sup> /rev]
400	400.9 cm <sup>3</sup> /rev[24.45 in <sup>3</sup> /rev]
500	499.6 cm <sup>3</sup> /rev[30.48 in <sup>3</sup> /rev]
630	629.1 cm <sup>3</sup> /rev[38.38 in <sup>3</sup> /rev]
800	801.8 cm <sup>3</sup> /rev[48.91 in <sup>3</sup> /rev]

### 3 - FLANGE

H9	4-Φ18 square flange Φ200, pilot Φ160×11
W3	4-Φ18 wheel flange Φ224, pilot Φ180×10
B3	4-Φ14 circle flange Φ180, pilot Φ140×8

### 4 - OUTPUT SHAFT

C3	Cardan shaft 16-DP10/20
SN	Shaft Φ50, parallel key 14×9×70
RB	Shaft Φ53.975, splined tooth 16-DP8/16
RC	Shaft Φ53.975, splined tooth 16-DP8/16
SP	Shaft Φ57.15, parallel key 12.7×12.7×57.15
T8	Tapered shaft Φ60, parallel key 16×10×32
T9	Tapered shaft Φ60, parallel key 14.308×14.308×50.8

### 5 - PORTS AND DRAIN PORT

G5	G1 manifold 4×M12,G1/4
M6	M33×2 manifold 4×M12,M14×1.5
U6	1-5/16-12 UN O-ring,9/16-18 UNF
G6	G1,G1/4
M7	M33×2,M14×1.5
U7	1-5/16-12 UN O-ring,7/16-20 UNF

### 6 - ROTATION DIRECTION

A	Standard
R	Opposite

### 7 - PAINT

A	No paint
B	Blue
C	Black
S	Silver grey

### 8 - Unusually function

A	Standard
V	High temperature
S	Low temperature

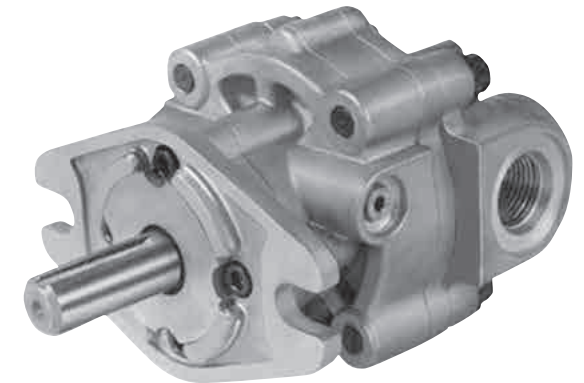
#### Note:

- The GVS series are only available with the C3 cardan shaft and B3 Flange.
- When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.

## GGM Specifications

### Specifications for GGM Series

Description .....Hydraulic Motors  
Flow Range.....To 15 GPM (56.7 LTR)  
Displacements..... To.700 C.I.R.(11.47 CC's/REV.)  
Maximum Pressure to .....2000 PSI (137 BAR)  
Maximum Speed to .....5000 RPM  
Rotation ..... Bi-Directional  
Bearings .....Roller  
Construction .....Aluminum



### Performance

Motor Model	Displacement/Revolution (Theoretical)					Maximum Continuous Pressure		Maximum Speed
	US Gallons	Cubic Inches	Liters	Cubic Centimeters	Imperial Gallons	PSI	BAR	RPM
GGM3.6	.0010	.218	.0039	3.572	.0008	2000	138	5000
GGM6.1	.0016	.372	.0062	6.096	.0013	2000	138	5000
GGM7.4	.0020	.450	.0078	7.374	.0016	2000	138	5000
GGM9.5	.0025	.580	.0097	9.505	.0021	2000	138	5000
GGM11.5	.0030	.700	.0116	11.471	.0025	1500	104	5000

When used in series circuits, back pressure is not to exceed 1000 (69.0 BAR) PSI.

### GGM Displacement

MODEL NO.	GGM3.6	GGM6.1	GGM7.4	GGM9.5	GGM11.5
DISPLACEMENT PER REVOLUTION	.218 in. <sup>3</sup> (3.57 cm <sup>3</sup> )	.372 in. <sup>3</sup> (6.094 cm <sup>3</sup> )	.450 in. <sup>3</sup> (7.374 cm <sup>3</sup> )	.580 in. <sup>3</sup> (9.50 cm <sup>3</sup> )	.700 in. <sup>3</sup> (11.471 cm <sup>3</sup> )
MAXIMUM RATED RPM	5000	5000	5000	5000	5000
RATED FLOW PER 1000 RPM (NOMINAL)	.95 GPM (3.6 liters/min)	1.61 GPM (6.1 liters/min)	1.95 GPM (7.4 liters/min)	2.51 GPM (9.5 liters/min)	3.03 GPM (11.5 liters/min)
MAXIMUM CONTINUOUS RATED PRESSURE	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	2000 PSI (138.0 bar)	1500 PSI (103.5 bar)
INTERMITTENT PRESSURE	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2500 PSI (172.5 bar)	2000 PSI (138.0 bar)
OUTPUT TORQUE PER 1000 PSI* (69.0 bar)	35 in.-lbs. (40 kg-cm)	59 in.-lbs. (68 kg-cm)	72 in.-lbs. (83 kg-cm)	92 in.-lbs. (107 kg-cm)	111 in.-lbs. (128 kg-cm)
WEIGHT	2.8 pounds (1.25 kg)	3.0 pounds (1.36 kg)	3.1 pounds (1.41 kg)	3.3 pounds (1.50 kg)	3.5 pounds (1.59 kg)
SHAFT SIDE LOAD**	170 lbs. (77.0 kg)	130 lbs. (59.0 kg)	110 lbs. (50.0 kg)	70 lbs. (31.7 kg)	30 lbs. (13.5 kg)

\* THEORETICAL

\*\* SIDE LOAD: Maximum Permissible Shaft Side Load at 2500 RPM and 1000 PSI (69.0 bar) (B-10 Bearing Life of 1000 Hrs.)

OIL TEMPERATURE:Maximum recommended oil temperature

180° F (82.2° C)

OIL VISCOSITY Recommended viscosity 150 SUS (3.65 engler). (32 centistokes) Minimum recommended viscosity 60 SUS (2.1 engler) (13 centistokes)

FILTRATION: Minimum recommended filtration 10 Micron.

END THRUST: 80 LBS. (36.3 kg.) maximum.

#### ⚠WARNING

Never exceed the INTERMITTENT pressure rating or 5000 RPM

## GGM Dimensions

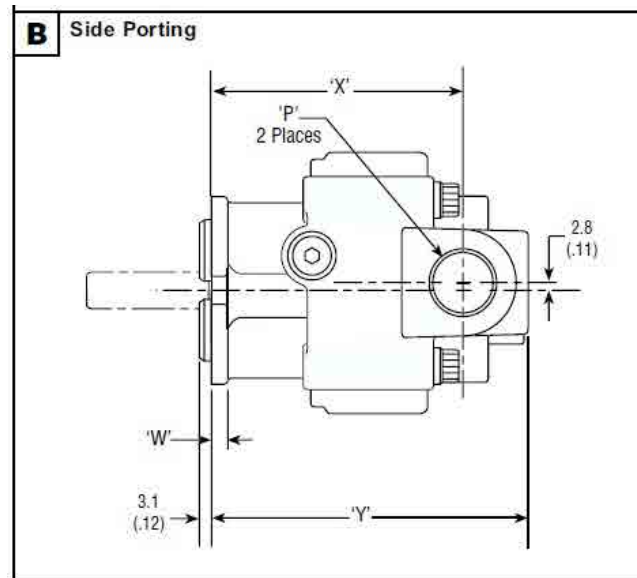
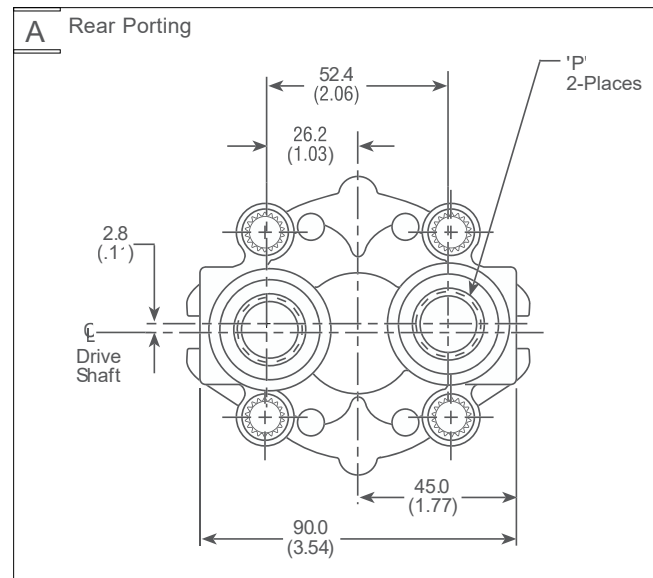
### Mounting Dimensions

MODEL NO.	DIMENSIONS	
	'X'	'Y'
GGM3.6	73.1 (2.88)	93.1 (3.67)
GGM6.1	77.3 (3.04)	97.3 (3.83)
GGM7.4	79.4 (3.13)	99.4 (3.91)
GGM9.5	83.0 (3.27)	103.0 (4.06)
GGM11.5	86.3 (3.40)	106.3 (4.19)

FLANGE	'W'
2-BOLT 'A-A'	6.3 (.25)
4-BOLT	6.3 (.25)
2-BOLT 'A'	9.5 (.38)

MODEL NO.	'P' STRAIGHT TH'D O-RING PORT PER SAE SPEC. 514d
GGM3.6	SAE 8(3/4-16UNF)
GGM6.1	SAE 8(3/4-16UNF)
GGM7.4	SAE 8(3/4-16UNF)
GGM9.5	SAE 10(7/8-14UNF)
GGM11.5	SAE 10(7/8-14UNF)

### Cover Plate Available

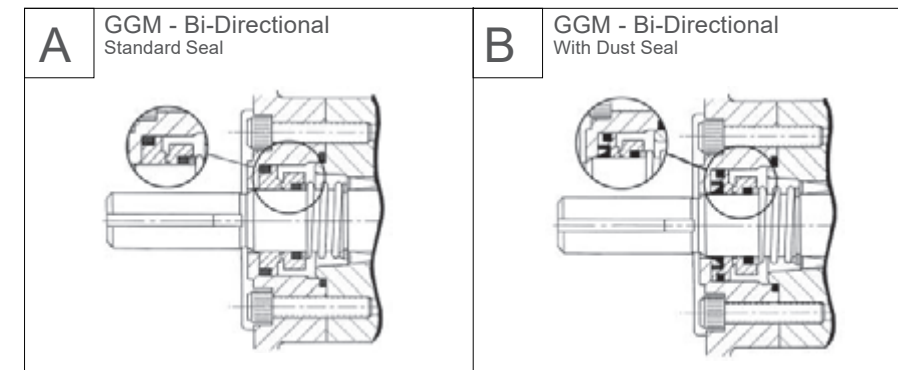


### Rotation

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

## Design, Shafts and Mounting Flange

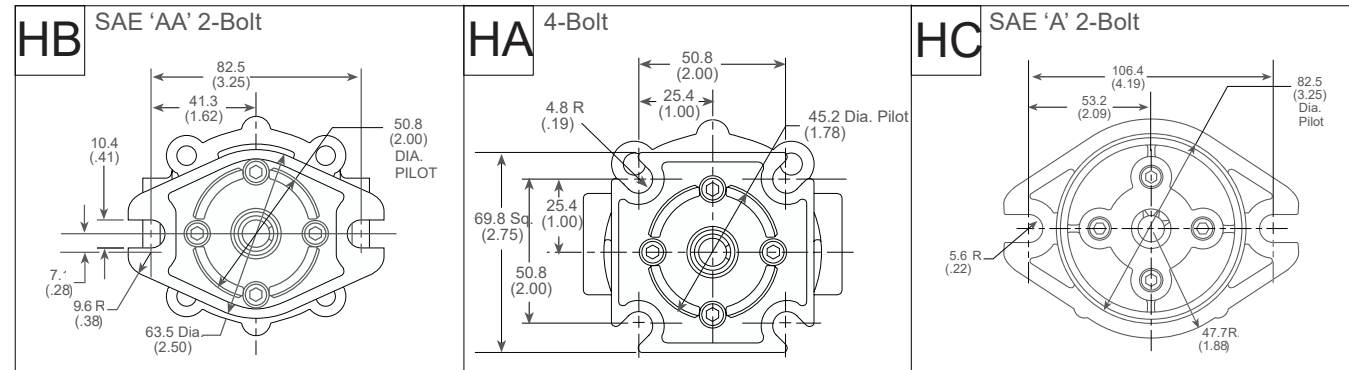
### Design Available



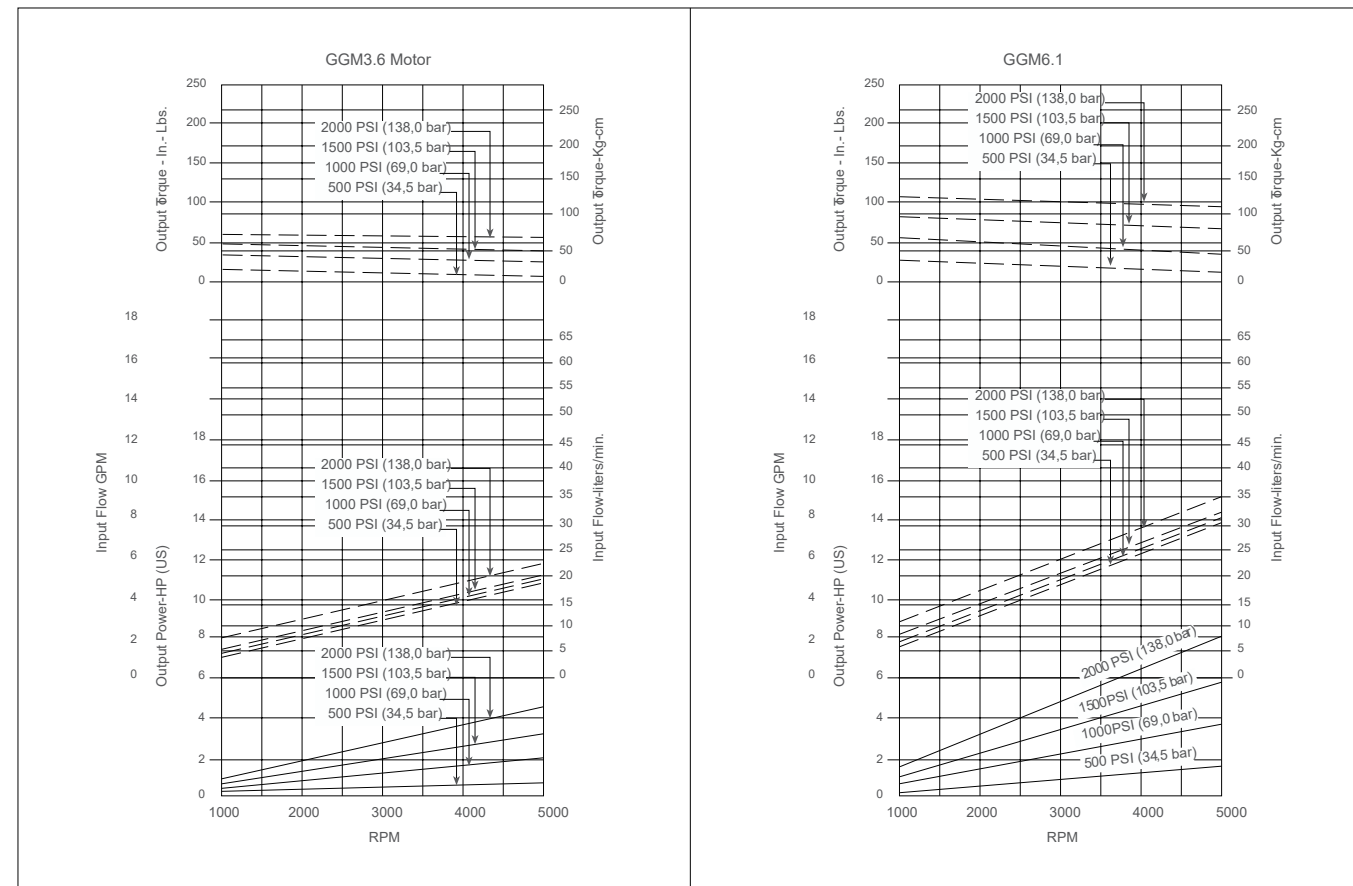
### Shafts Available

<b>SQ</b> 9/16 Dia. Keyed Shaft Torque Limit 39 Lbs. Ft. (52.9 Nm)	<b>RD</b> 9/16 Dia. 8 Tooth Spline Shaft Flat Root Side Fit-Class 2 Fit Torque Limit 39 Lbs. Ft. (52.9 Nm)	<b>RF</b> 5/8 Dia. 9 Tooth Spline Shaft Flat Root Side Fit - Class 1 Fit Torque Limit 52 Lbs. Ft. (70.5 Nm) Available as Standard in Models
	<p><b>Spline Data</b>            Pitch Diameter .... 16/32            Pressure Angle ..... 30°            No. of Teeth ..... 8</p>	<p><b>Spline Data</b>            Pitch Diameter .... 16/32            Pressure Angle ..... 30°            No. of Teeth ..... 9</p>
<b>SR</b> 7/16 Dia. Keyed Shaft Torque Limit 19 Lbs. Ft. (25.8 Nm) Available as Standard in Models	<b>RG</b> 9/16 Dia. 8 Tooth Spline Shaft Flat-Root Side Fit-Class 2 Fit Torque Limit 39 Lbs. Ft. (52.9 Nm) Available as Standard in Models	
	<p><b>Spline Data</b>            Pitch Diameter .... 16/32            Pressure Angle ..... 30°            No. of Teeth ..... 8</p>	

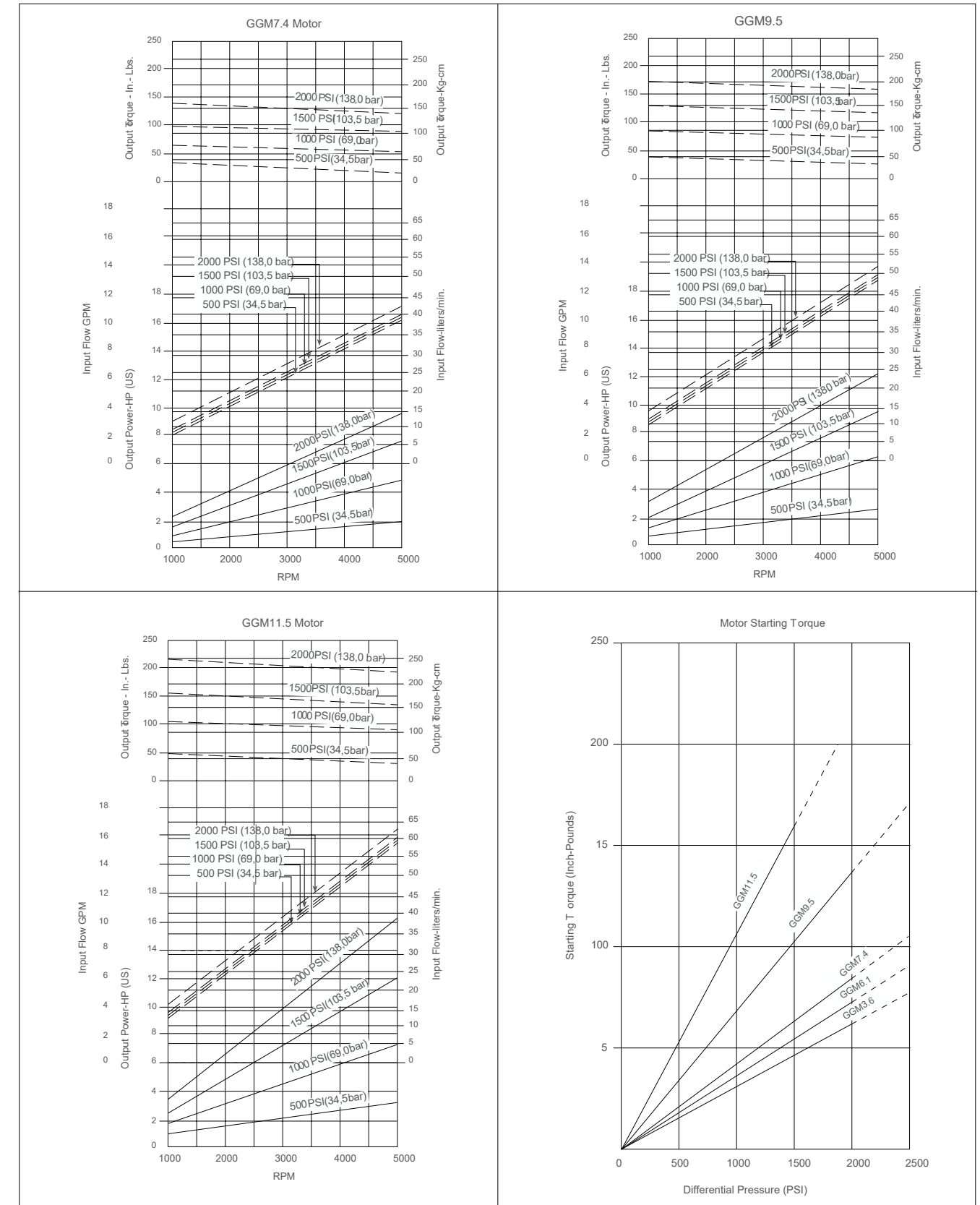
## Mounting Flange Available



## GGM Torque and Speed Selection Charts



## GGM Torque and Speed Selection Charts





## Ordering Code

1	2	3	4	5	6	7	8
SERIES	DISP.	FLANGE	SHAFT	PORTS	ROTATION	PAINT	FUNTION

### 1 - SERIES

<b>GGM</b>	High speed orbital motor
------------	--------------------------

### 2 - DISPLACEMENT

<b>3.6</b>	3.9 cm <sup>3</sup> /rev[.218 in <sup>3</sup> /rev]
<b>6.1</b>	6.2 cm <sup>3</sup> /rev[.372 in <sup>3</sup> /rev]
<b>7.4</b>	7.8 cm <sup>3</sup> /rev[.450 in <sup>3</sup> /rev]
<b>9.5</b>	9.7 cm <sup>3</sup> /rev[.580 in <sup>3</sup> /rev]
<b>11.5</b>	11.6 cm <sup>3</sup> /rev[.700 in <sup>3</sup> /rev]

### 3 - FLANGE

<b>AB</b>	2-Φ10.4 rhomb flange Φ82.55, pilot Φ50.8×3.1
<b>HA</b>	4-Φ10 square flange 50.8×50.8, pilot Φ45.2×3.1
<b>AC</b>	2-Φ11.2 rhomb flange Φ106.4, pilot

### 4 - OUTPUT SHAFT

<b>SQ</b>	9/16 Dia. keyed shaft
<b>RD</b>	9/16 Dia. 8 tooth spline long shaft
<b>RF</b>	5/8 Dia. 9 tooth spline shaft
<b>SR</b>	7/16 Dia. Keyed shaft
<b>RG</b>	9/16 Dia. 8 tooth spline shaft

### 5 - PORTS

<b>A</b>	Rear
<b>B</b>	Side

### 6 - ROTATION DIRECTION

<b>A</b>	Standard
<b>R</b>	Opposite

### 7 - PAINT

<b>A</b>	No paint
----------	----------

### 8 - Unusually function

<b>A</b>	Standard seal
<b>B</b>	Standard seal w/dust seal
<b>V</b>	High temperature
<b>S</b>	Low temperature

Note: When the table is used, please fill the code and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.