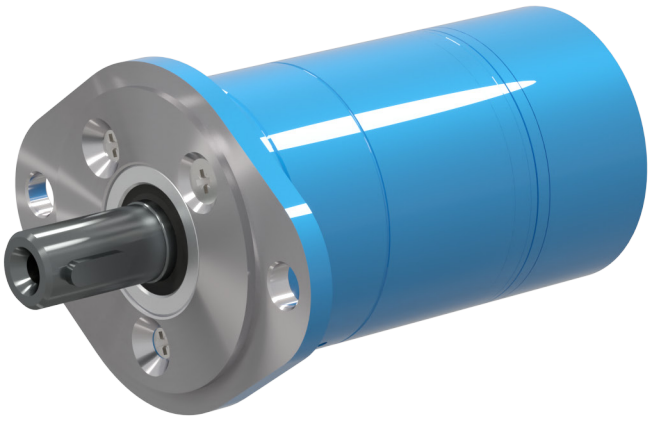
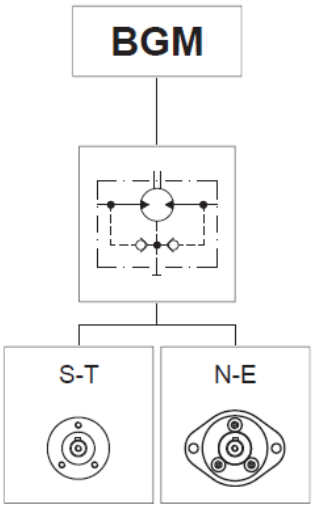
DANA SAMHYDRAULIK™

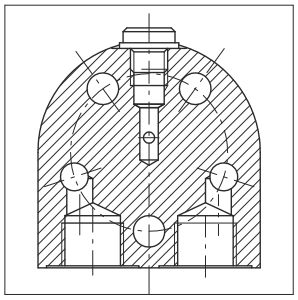


BGM
Orbital Motors

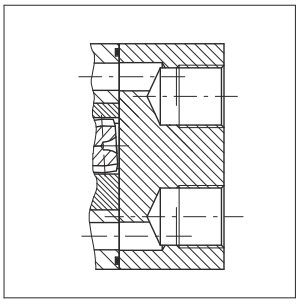
	Page
Motor Features	B2
Motor Technical Specifications	B3
Performance Curves	B4
Pressure Data	B7
Max. Permissible Shaft Seal Pressure	B7
Pressure Loss	B7
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Dimensions and Weight	B11
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The product images and drawings shown are for illustration purposes only and may not be an exact representation of the product.
We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.
Each product configuration listed below is subject to availability: please contact Sales Dpt. for more commercial detailed info.

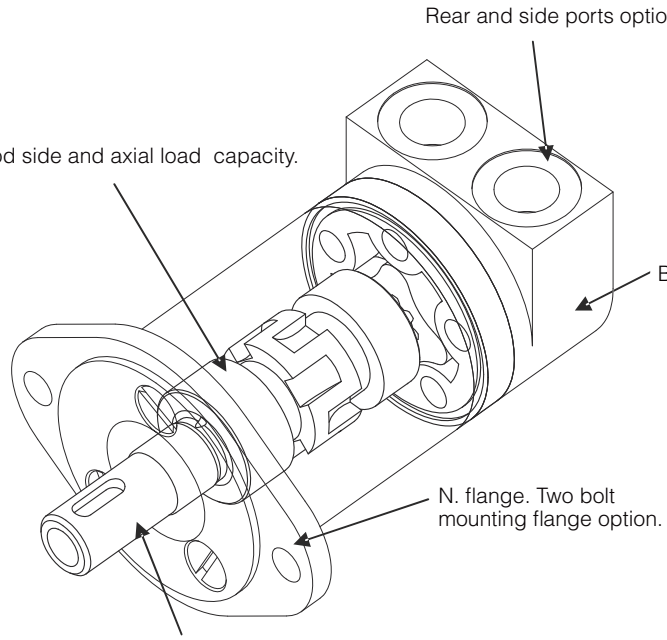


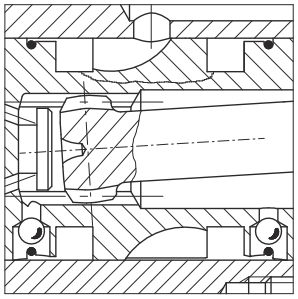


Side ports configuration.

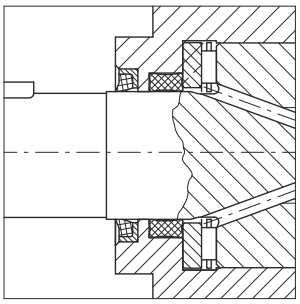


Rear ports configuration.





Optimized spool valve design to minimize the leakage - built-in check valves.

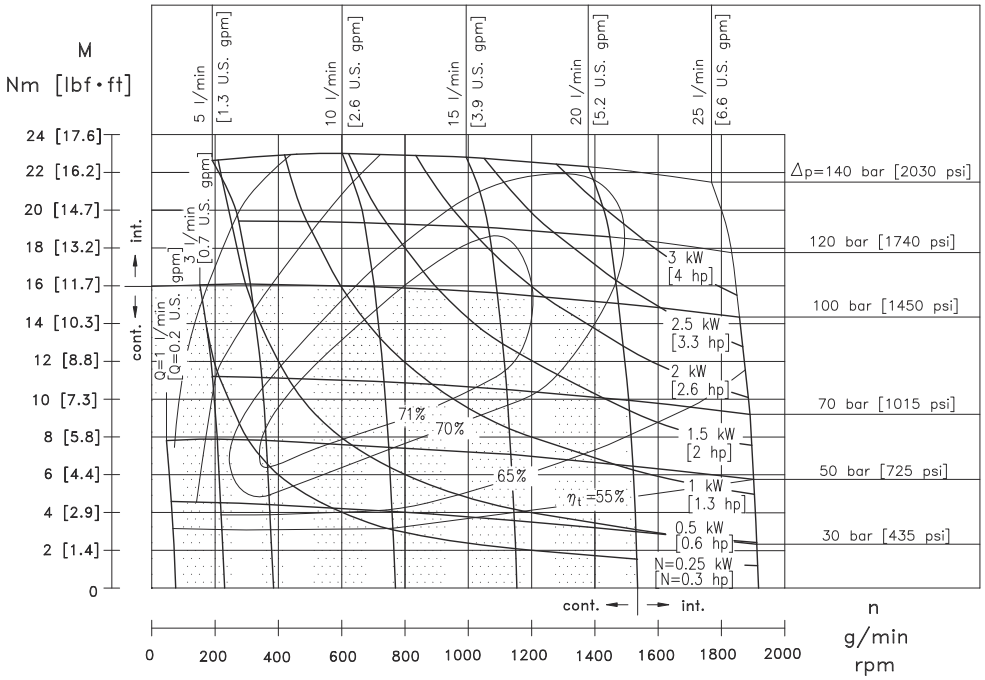


Dust seal to protect the high pressure shaft seal.

Motor	Displacement cm^3/giro [in^3/rev]	Max. input pressure bar [psi]	Max. differential pressure bar [psi]	Max. torque* Nm [lbf·ft]	Max. flow l/min [U.S. gpm]	Max. speed rpm	Max. power kW [hp]
BGM 013	12.9 [0.78]	Cont 140 [2030] Int[1] 175 [2537] Peak[2] 225 [3265]	Cont 100 [1450] Int[1] 140 [2030] Peak[2] 200 [2900]	Cont 16 [11.7] Int[1] 23 [16.9] Peak[2] 33 [24.3]	Cont 20 [5.28] Int[1] 25 [6.60]	Cont 1550 Int[1] 1935	Cont 2.3 [3.08] Int[1] 3.2 [4.28]
BGM 020	20 [1.22]	Cont 140 [2030] Int[1] 175 [2537] Peak[2] 225 [3265]	Cont 100 [1450] Int[1] 140 [2030] Peak[2] 200 [2900]	Cont 25 [18.4] Int[1] 35 [25.7] Peak[2] 51 [37.5]	Cont 20 [5.28] Int[1] 25 [6.60]	Cont 1000 Int[1] 1250	Cont 2.3 [3.08] Int[1] 3.3 [4.42]
BGM 032	31.8 [1.93]	Cont 140 [2030] Int[1] 175 [2537] Peak[2] 225 [3265]	Cont 100 [1450] Int[1] 140 [2030] Peak[2] 160 [2320]	Cont 39 [28.7] Int[1] 54 [39.7] Peak[2] 60 [44.2]	Cont 20 [5.28] Int[1] 25 [6.60]	Cont 625 Int[1] 785	Cont 2.3 [3.08] Int[1] 2.8 [3.75]
BGM 040	40.1 [2.44]	Cont 140 [2030] Int[1] 175 [2537] Peak[2] 225 [3265]	Cont 100 [1450] Int[1] 140 [2030] Peak[2] 160 [2320]	Cont 50 [36.8] Int[1] 67 [49.3] Peak[2] 76 [56.0]	Cont 20 [5.28] Int[1] 25 [6.60]	Cont 495 Int[1] 620	Cont 1.8 [2.41] Int[1] 2.5 [3.35]
BGM 050	50 [3.05]	Cont 140 [2030] Int[1] 175 [2537] Peak[2] 225 [3265]	Cont 80 [1160] Int[1] 140 [2030] Peak[2] 160 [2320]	Cont 49 [36.1] Int[1] 83 [61.1] Peak[2] 94 [69.2]	Cont 20 [5.28] Int[1] 25 [6.60]	Cont 400 Int[1] 500	Cont 1.8 [2.41] Int[1] 2.4 [3.21]

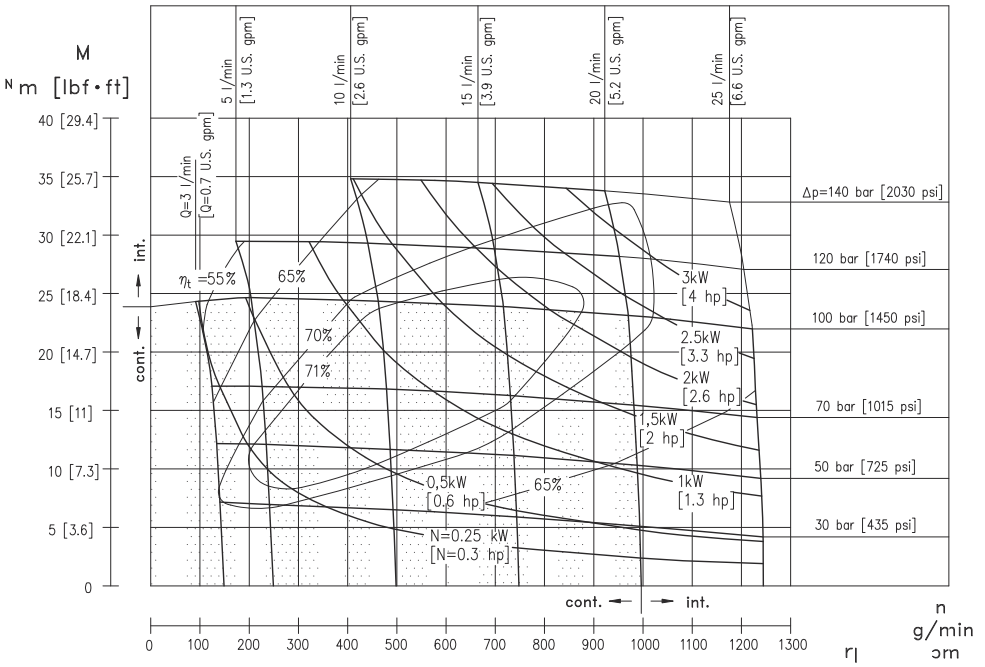
[1] Intermittent duty must not exceed 10% each minute.
[2] Peak duty must not exceed 1% each minute.

BGM 013



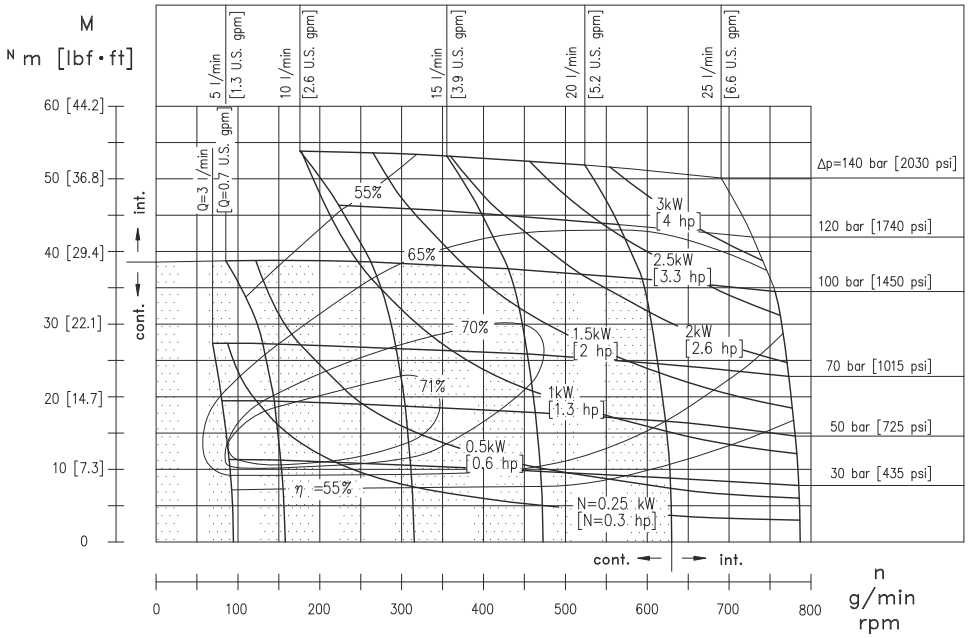
Exceeding continuous pressure values or exceeding flow values indicated, must not occur simultaneously.

BGM 020



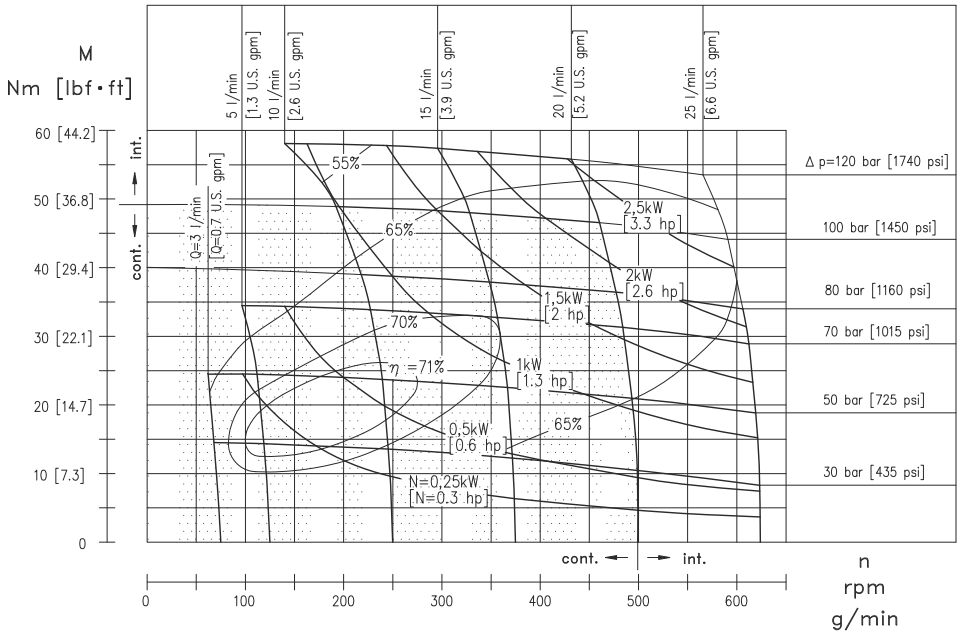
Exceeding continuous pressure values or exceeding flow values indicated, must not occur simultaneously.

BGM 032



Exceeding continuous pressure values or exceeding flow values indicated, must not occur simultaneously.

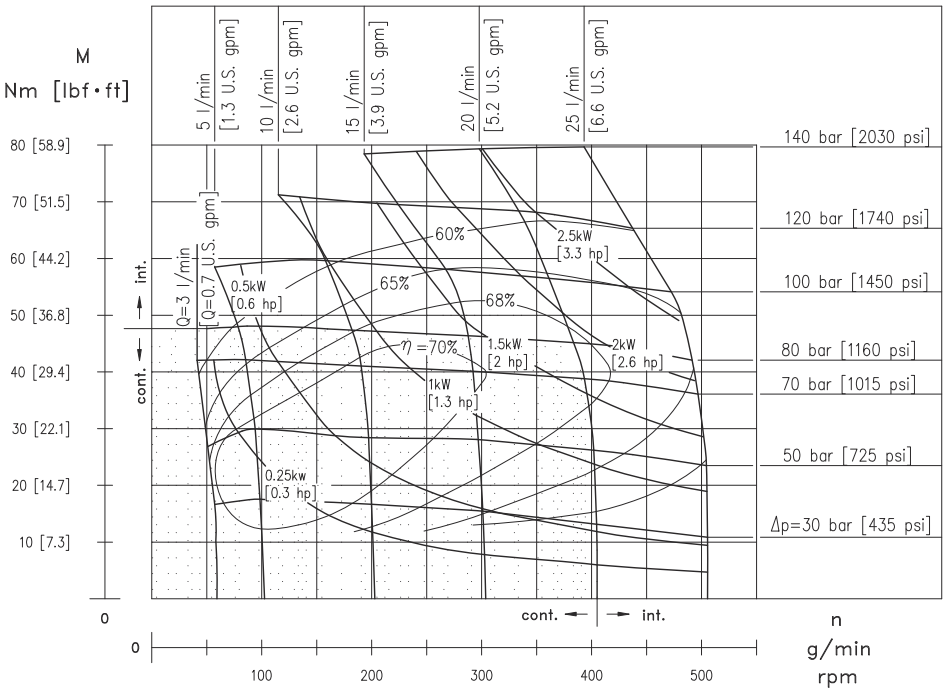
BGM 040



Exceeding continuous pressure values or exceeding flow values indicated, must not occur simultaneously.

Performance Curves

BGM 050



Exceeding continuous pressure values or exceeding flow values indicated, must not occur simultaneously.

Max. Pressure

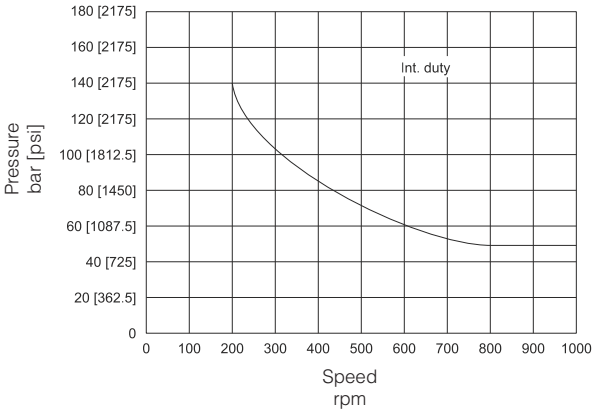
Motor	Max return pressure with drain line bar [psi]	Max starting pressure with no load bar [psi]	Min starting torque Nm [lbf·ft]	
BGM 013	140 [2030]	4 [58]	At max Δp	Cont 12 [8.8] Int[1)] 17 [12.5]
BGM 020	140 [2030]	4 [58]	At max Δp	Cont 21 [15.4] Int[1)] 30 [22.1]
BGM 032	140 [2030]	4 [58]	At max Δp	Cont 35 [25.7] Int[1)] 51 [37.5]
BGM 040	140 [2030]	4 [58]	At max Δp	Cont 34 [25] Int[1)] 48 [35.3]
BGM 050	140 [2030]	4 [58]	At max Δp	Cont 40 [29.4] Int[1)] 70 [51.5]

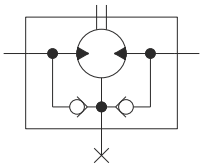
Max. Permissible Shaft Seal Pressure

Max. return pressure without drain line or max. pressure in the drain line. Motor are supplied in standard seal version (Standard chart) or in HPS seal version (HPS chart).

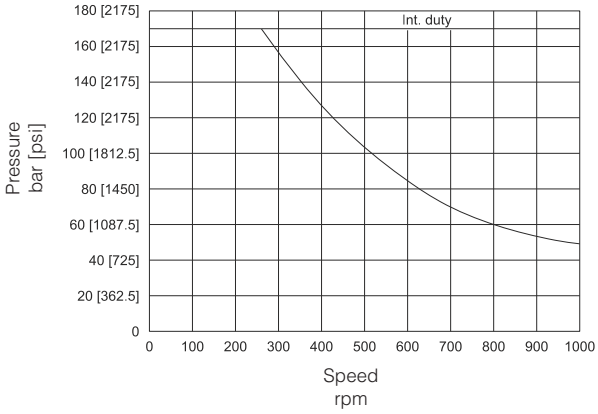
For pressure and speeds not showed in the curve below, please contact Dana SamHydraulik.

STANDARD





HPS



Pressure Loss

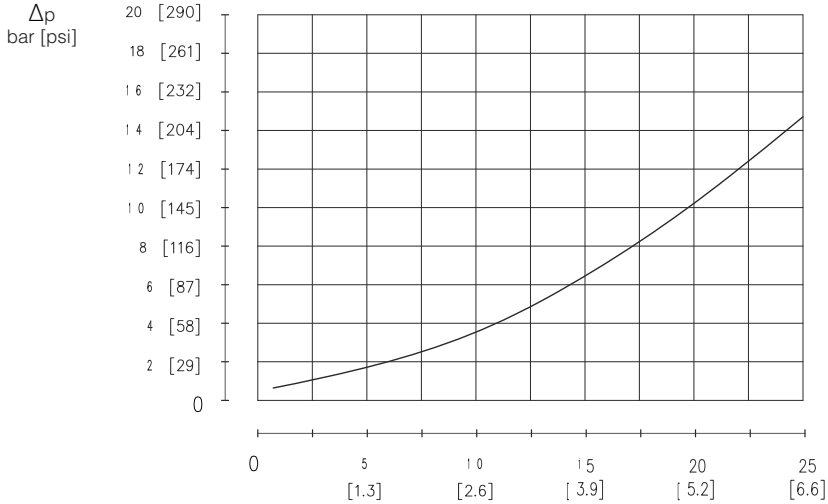


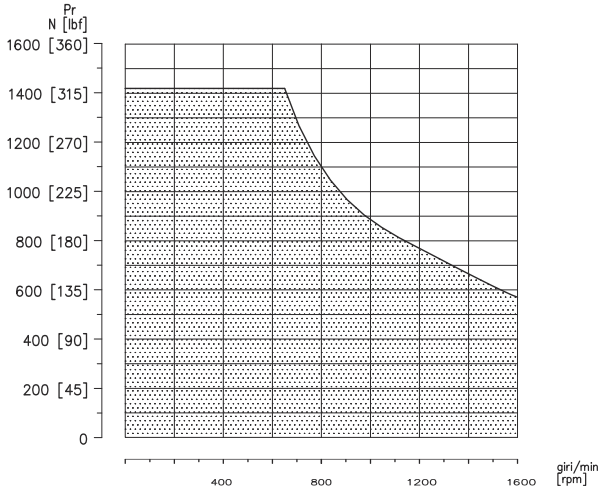
Diagram according tests done with a relevant number of motors and using hydraulic oil with kinematic viscosity of 37 cSt at 45° C temperature.

Shaft Load

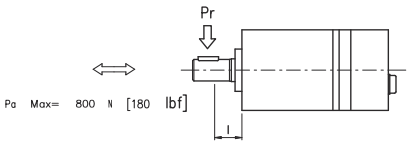
The permissible radial shaft load depends on:

- Speed (n)
- Distance (L) from the point of load to the mounting flange

Radial load capacity (Pr) curve according to speed (n) and distance (L) from flange



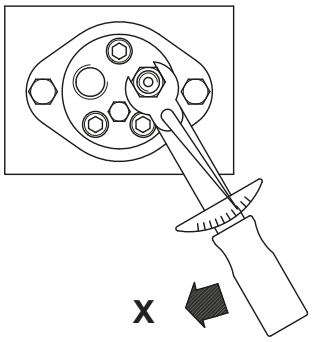
$$Pr = \frac{1500}{n} \cdot \frac{52300}{55.5 - L} \quad [N]$$

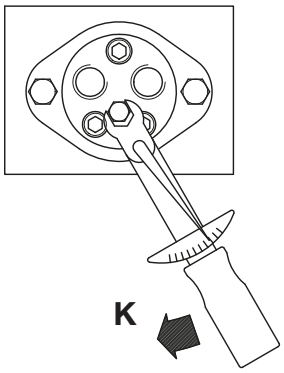


This formula being valid for n>= 650 rpm
For n< 650 rpm Pr_{max} = 1450 N [326.25 lbf]

The curve show the relation between (Pr) and (n) L= 20 mm [0.78 in]

Tightening Torque





	X	K
Nipples	3/8 G (BSPP)	1/8 G (BSPP)
with steel washer	60 Nm 44.2 [lbf·ft]	20 Nm 14.7 [lbf·ft]
with aluminium washer	40 Nm 29.4 [lbf·ft]	10 Nm 7.3 [lbf·ft]
with copper washer	60 Nm 44.2 [lbf·ft]	20 Nm 14.7 [lbf·ft]

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

Ordering Code

The following alphanumeric digits system has been developed to identify all of the configuration options for the BGM motors. Use the model code below to specify the desired features. All alphanumeric digits system of the code must be present when ordering.
We recommend to carefully read the catalogue before filling the ordering code.

1	2	3	4	5	6	7	8	9	10	11	12
Series	Displacement	Version	Mount flange	Shaft end	Main port	Seal	Valve	Valve feature	Option	Version feature	Painting
BGM	020	FR0	S	SC160	M06	N	xxxx	000	xxx	QDG	xx

1

Series	
BGM	Orbital motor

2

Displacement	
013	13 cm³/giro [0.793 in³/rev]
020	20 cm³/giro [1.22 in³/rev]
032	32 cm³/giro [1.952 in³/rev]
040	40 cm³/giro [2.44 in³/rev]
050	50 cm³/giro [3.05 in³/rev]

3

Version	
FR0	Standard Version
FRQ	Q Version
SP1	SP1 Version

4

Mount flange	
S	3 bolts M6 - Ø31.5mm [Ø 1.240 in] (standard)
T	3 bolts 1/4 - 28 UNF - Ø31.5mm [Ø 1.240 in]
Z	5 bolts 1/4 - 28 UNF - Ø31.5mm [Ø 1.240 in]
N	2 bolts - Ø63mm [Ø 2.480 in] - (combination with S flange)
E	2 bolts - Ø63mm [Ø 2.480 in] - (combination with T flange)

5

Shaft end	
CL160	Cylindrical keyed Ø16 mm [0.629 in]
SC160	B17x14 DIN5482 Splined
CL158	Cylindrical keyed Ø15.88 mm [Ø0.625 in]
CS158	Cylindrical crosshole Ø15.88 mm [Ø0.625 in]

Click *i* button to return to main index

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Ordering Code

6

	Main port	Version FR0	Version SP1	Version FRQ
M06	3/8 G (BSPP) Main Ports (standard)	●	●	●
S06	9/16 - 18 UNF Main Ports	●	●	-

7

	Seal
N	NBR

8

	Valve	Main port M06	Main port S06
xxxx	Not required	●	●
M061	Pressure relief valve VAF 06 - D (available only with SP1 Version)	●	-



9

	Valve feature	Valve xxxx	Valve M061
000	Feature not necessary	●	-
030	Not Set 50÷150 bar [725 to 2175 psi]	-	●

10

	Option
xx	None

11

	Version feature	Flange S	Flange T	Flange N	Flange E
QDG	QUAD-RING version with Rear drain 1/8 G (BSPP)	●	●	●	●
HPS	High Pressure Seal	●	●	●	●
TES	TAC-E Tachometer (with sensor arrangement) - CCW suitable direction of rotation (Standard)	●	-	●	-
TED	TAC-E Tachometer (with sensor arrangement) - CW suitable direction of rotation (Optional)	●	-	●	-

12

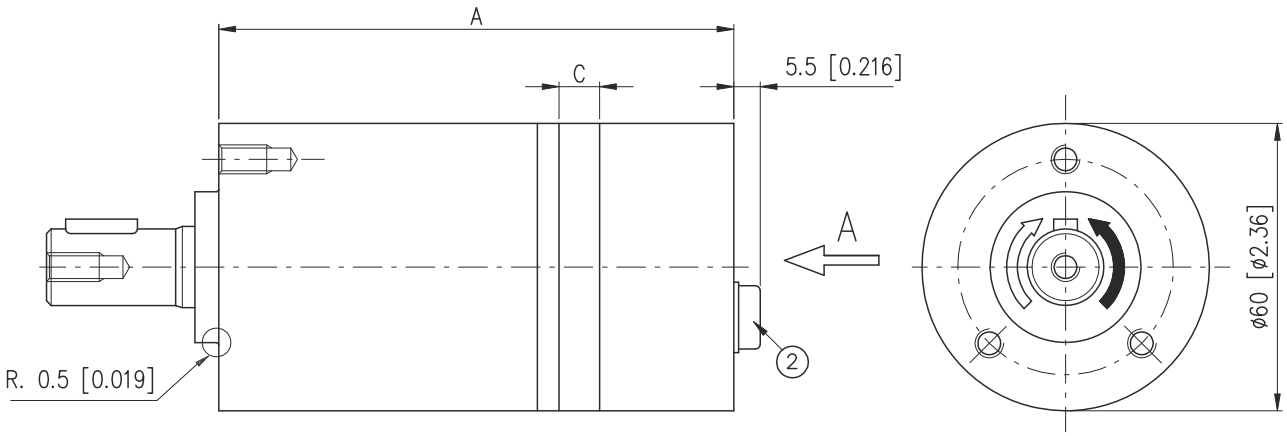
	Painting
xx	Not Painted
01	Black Painted RAL 9005
22	Grey Painted RAL 7035

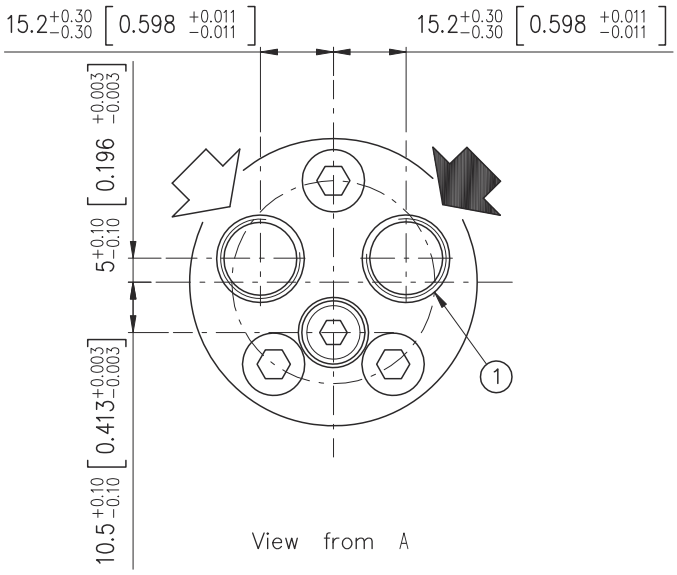
● Available
- Not Available

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FR0





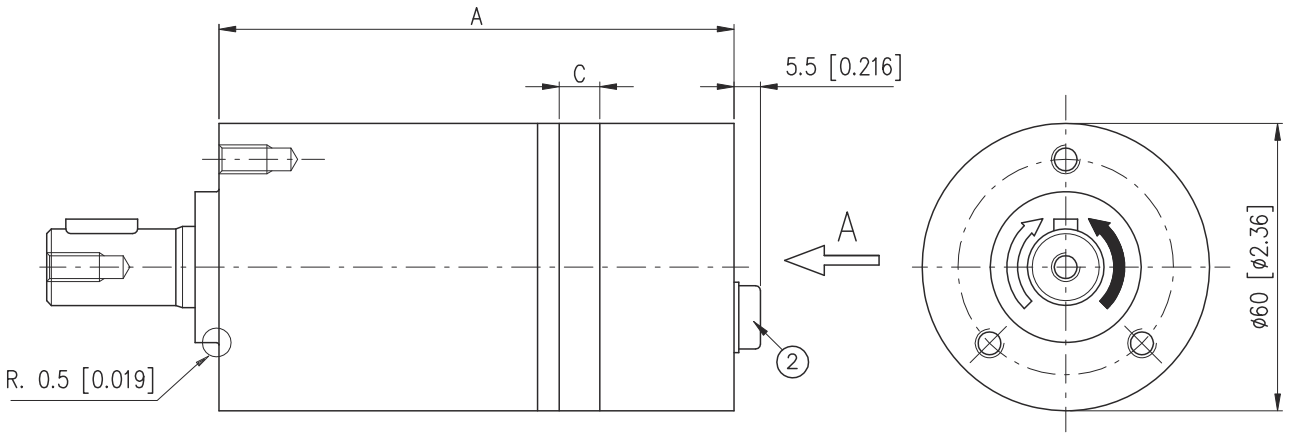
M06 MAIN PORTS

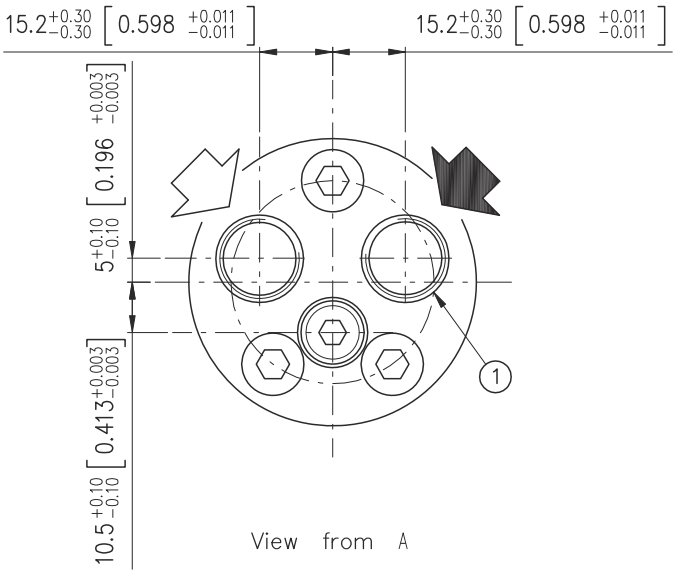
① N.2 3/8 G (BSPP) main ports thread depth 12 mm [0.472 in]
② 1/8 G (BSPP) drain port thread depth 9 mm [0.354 in]

S06 MAIN PORTS

① N.2 9/16"-18 UNF main ports thread depth 13 mm [0.511 in]
② 7/16"-20 UNF drain port thread depth 12 mm [0.472 in]

		BGM 013	BGM 020	BGM 032	BGM 040	BGM 050
A	mm [in]	104.5 [4.11]	107.5 [4.23]	112.5 [4.42]	116 [4.56]	120 [4.72]
B	mm [in]	-	-	-	-	-
C	mm [in]	5.5 [0.216]	8.5 [0.334]	13.5 [0.531]	17 [0.66]	21 [0.82]
Weight	kg [lb]	2 [4.4]	2.06 [4.5]	2.15 [4.7]	2.2 [4.8]	2.25 [4.9]





M06 MAIN PORTS

① N.2 3/8 G (BSPP) main ports thread depth 12 mm [0.472 in]
② 1/8 G (BSPP) drain port thread depth 9 mm [0.354 in]

S06 MAIN PORTS

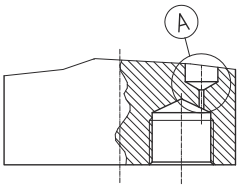
① N.2 9/16”-18 UNF main ports thread depth 13 mm [0.511 in]
② 7/16”-20 UNF drain port thread depth 12 mm [0.472 in]

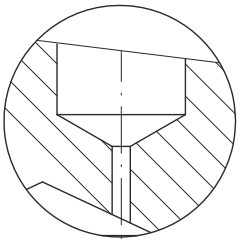
		BGM 013	BGM 020	BGM 032	BGM 040	BGM 050
A	mm [in]	104.5 [4.11]	107.5 [4.23]	112.5 [4.42]	116 [4.56]	120 [4.72]
B	mm [in]	-	-	-	-	-
C	mm [in]	5.5 [0.216]	8.5 [0.334]	13.5 [0.531]	17 [0.66]	21 [0.82]
Weight	kg [lb]	2 [4.4]	2.06 [4.5]	2.15 [4.7]	2.2 [4.8]	2.25 [4.9]

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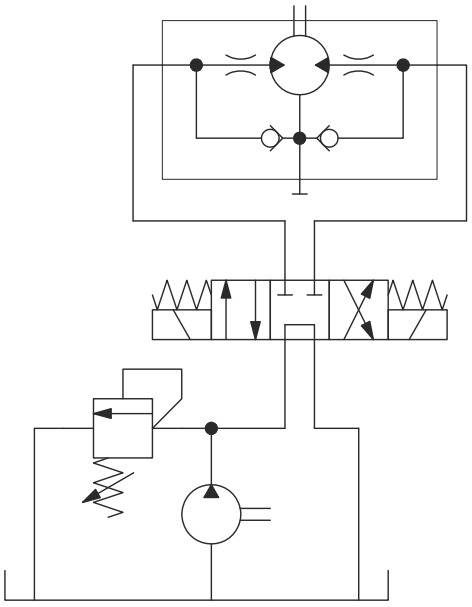
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Fixed flow restrictor option





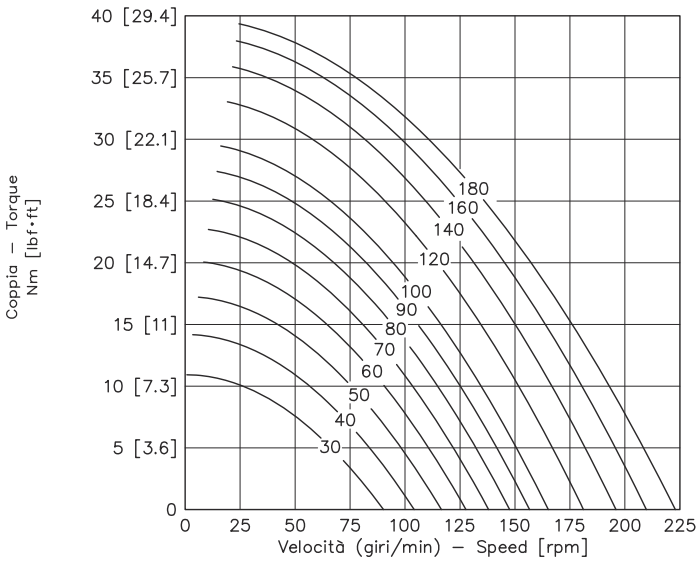
PART. A
Flow restrictor



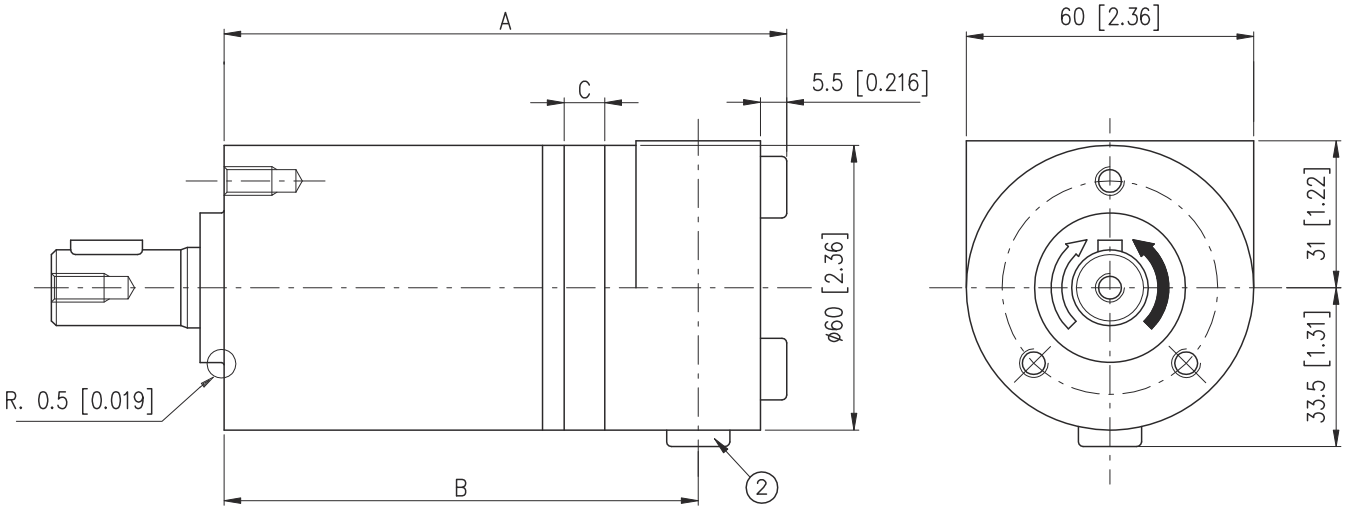
BGM/FRQ motors feature a restrictor at the back of the motor meant to ensure very low shaft speed though in presence of high flow. Typical applications are truck or tractor mounted snow blowers.

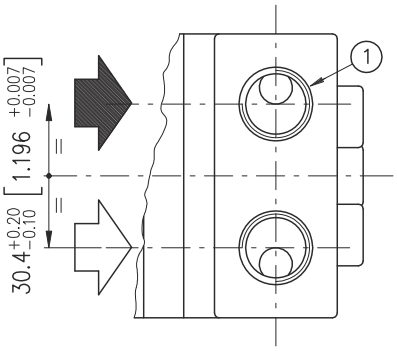
Performance curves

Performance curves (torque/speed) according to pressure relief valve setting and 1.2 mm [0.047 in] diameter (for BGM32) of flow restrictor.



SP1





M06 MAIN PORTS

① N.2 3/8 G (BSPP) main ports thread depth 12mm [0.472 in]
② 1/8 G (BSPP) drain port thread depth 10 mm [0.393 in]

S06 MAIN PORTS

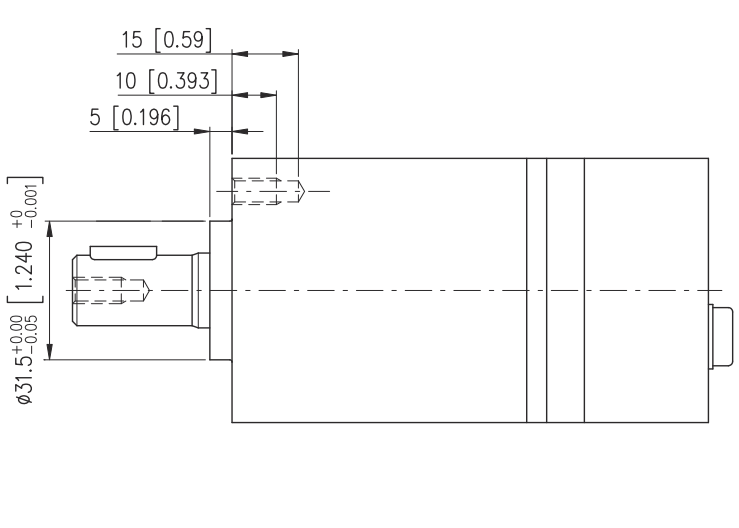
① N.2 9/16”-18 UNF main ports thread depth 13mm [0.511 in]
② 7/16”-20 UNF drain port thread depth 12mm [0.472 in]

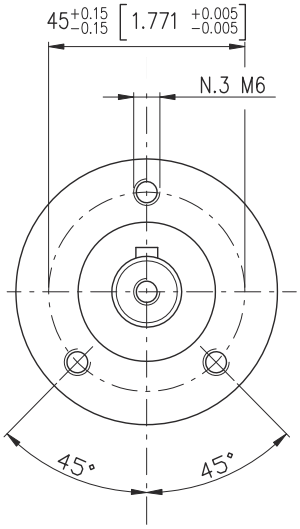
		BGM 013	BGM 020	BGM 032	BGM 040	BGM 050
A	mm [in]	113.8 [4.48]	116.8 [4.59]	121.8 [4.79]	125.3 [4.93]	129.3 [5.09]
B	mm [in]	95.3 [3.75]	98.3 [3.87]	103.3 [4.06]	106.8 [4.20]	110.8 [4.36]
C	mm [in]	5.5 [0.216]	8.5 [0.334]	13.5 [0.531]	17 [0.66]	21 [0.82]
Weight	kg [lb]	2.1 [4.6]	2.16 [4.7]	2.25 [4.9]	2.3 [5]	2.35 [5.1]

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

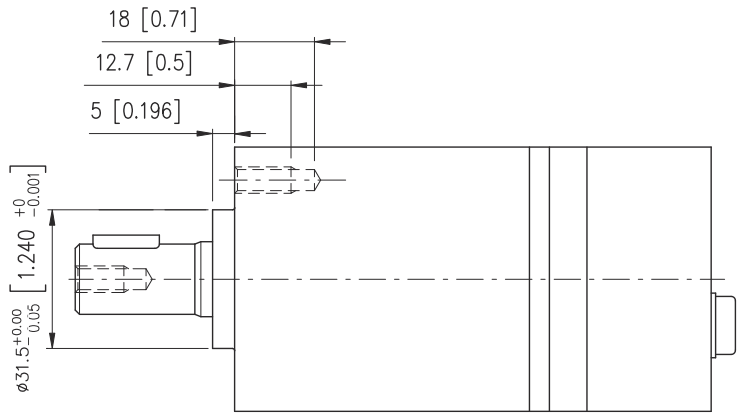
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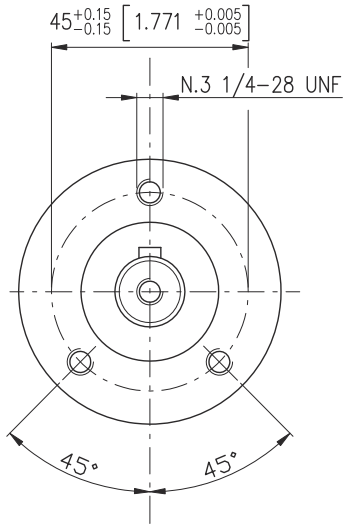
S 3 bolts M6



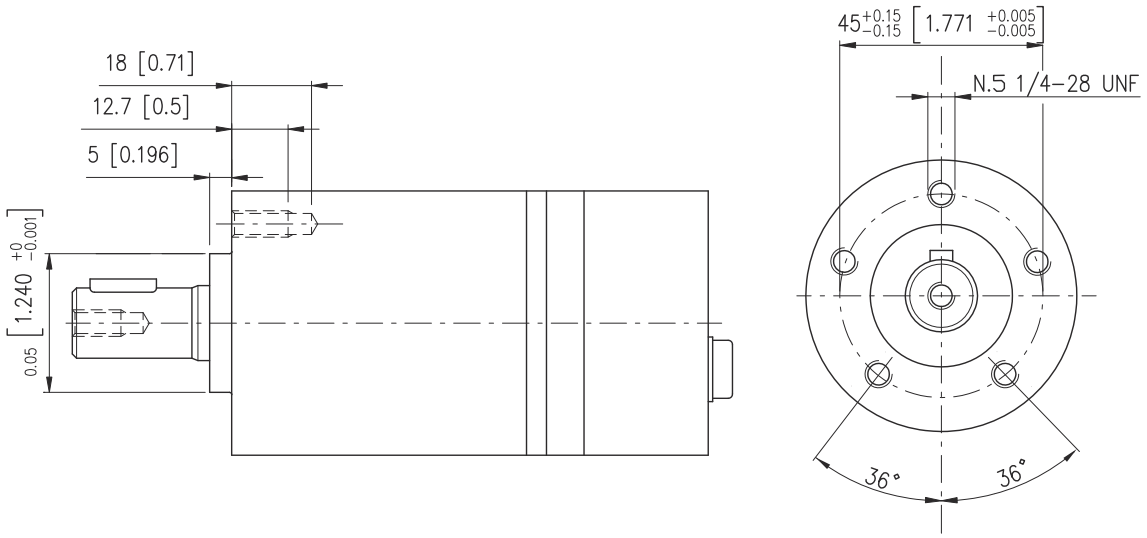


T 3 bolts 1/4 - 28 UNF

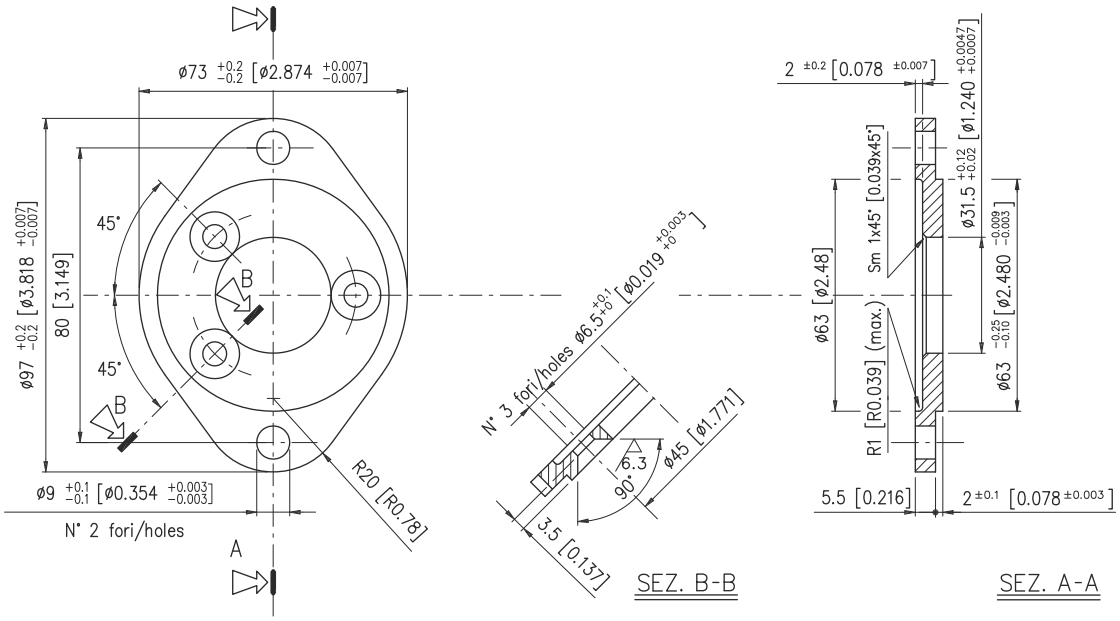




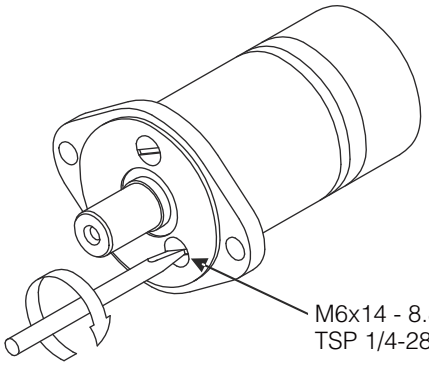
Z 5 bolts 1/4 - 28 UNF



N / E 2 bolts



Flange - Assembling

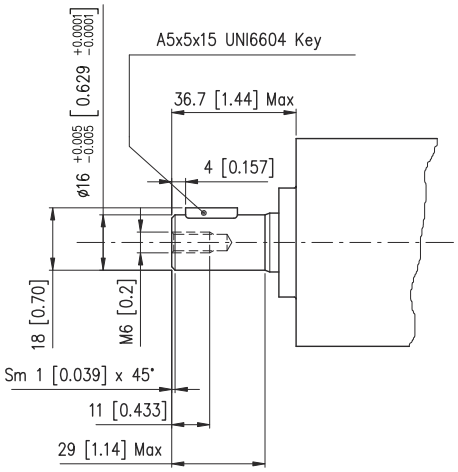


M6x14 - 8.8 UNI 7688 flathead screw (with S flange).
TSP 1/4-28 UNF 1/2" - 8.8 DIN 965 screw (with T flange)

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

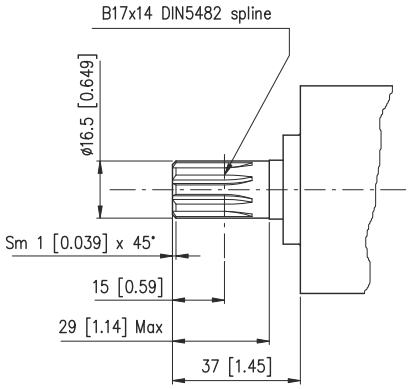
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CL160 Cylindrical Shaft



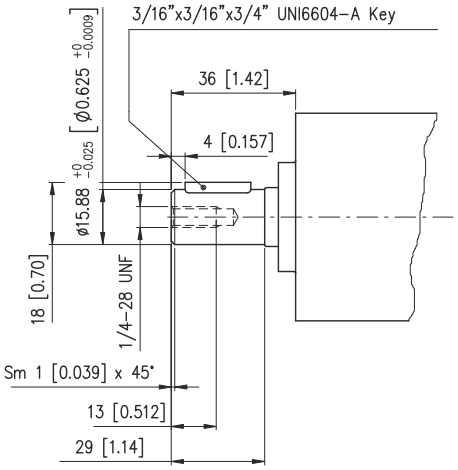
Max Torque Continuous 39Nm [28.743 lbf·ft]

SC160 Splined Shaft



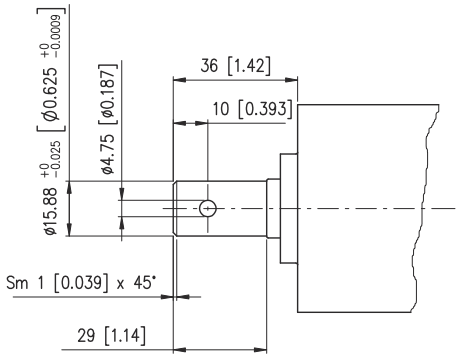
Max Torque Continuous 44Nm [32.428 lbf·ft]

CL158 Cylindrical Shaft



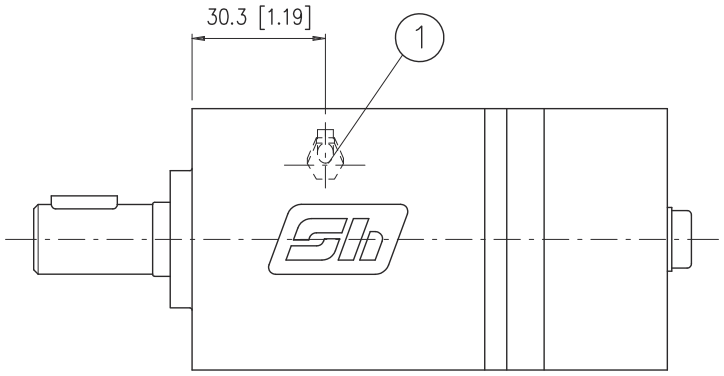
Max Torque Continuous
39Nm [28.743 lbf·ft]

CS158 Cylindrical Crosshole Shaft

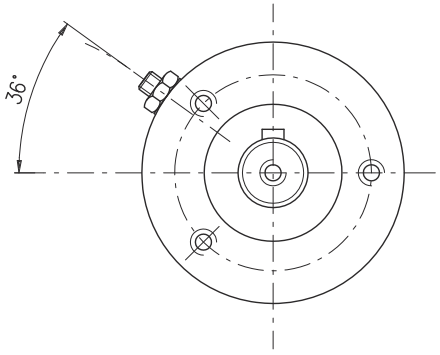


Max Torque Continuous
39Nm [28.743 lbf·ft]

TES Tachometer - CCW



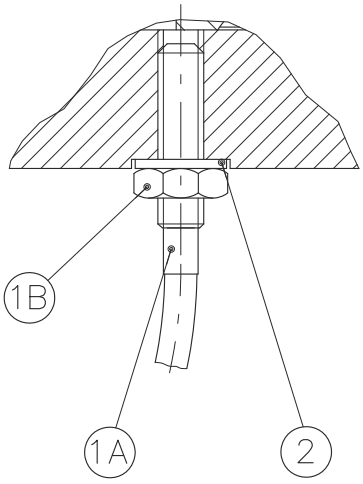
TED Tachometer - CW



① Sensor connection M5x0.5

Sensor Kit

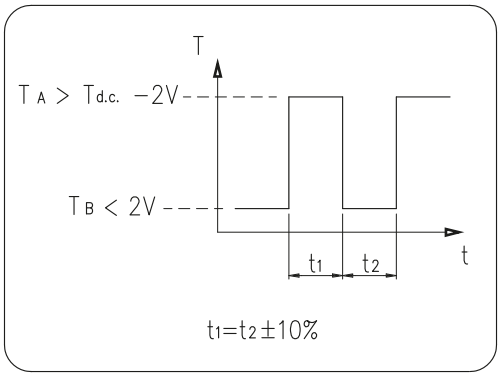
① Cod. 42400900000 inductive sensor (1A) + M5x0.5 locking nut (1B)
② Cod. 40607300000 Sealing washer GM2000 M5

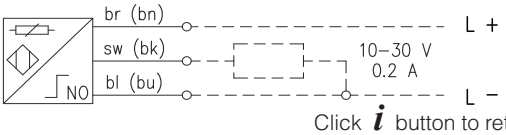


Electronic sensor technical features

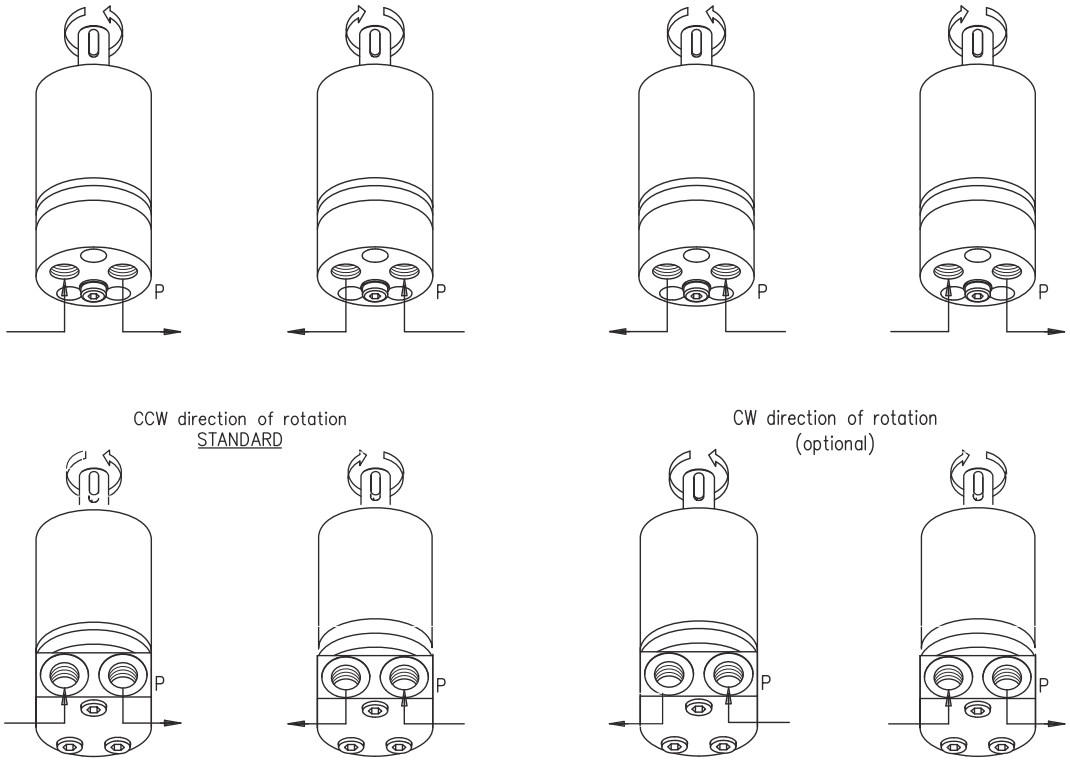
Number of pulses for revolution = 4
Inductive principle
Output current PNP
Voltage 10-30 V d.c.
Max load 200 mA
Max frequency 3000 Hz
Temperature range -25°C +85°C
Enclosure IP 67
Cable length 2 m

Output signal electronic tacho





Preferential Direction of Rotation



The selection of the version CW or CCW depends on the prevailing direction of rotation of the motor, in order to use the sensor at the lower working pressure.


DANA
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