5.2 MEDIUM HEAVY DUTY SERIES SIZE 3

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ORDERING CODE

5.2.1 Medium Heavy Duty Series

PGI101 – 3 – 020 – R K 2 3 – 10 – XXXX

Medium Heavy Duty Series

Size

Displacement

020	20.0	cm³/rev
025	24.8	cm³/rev
032	32.1	cm³/rev
040	40.1	cm³/rev
050	50.3	cm³/rev
064	64.4	cm³/rev

Shaft rotation (viewed from shaft end)

R	Clockwise
L	Anti-clockwise

Shaft

A	Parallel shaft with key (only PGI102-3-064)
B	Splined shaft SAE BB (PGI101-3-064 only)
K	Keyed shaft with through drive (not PGI101-3-064)
L	Splined shaft SAE BB with through drive (not PGI101-3-064)
P	Splined shaft with through drive (only on multiple pumps)

Mounting flange

2	SAE J744 101-2 B - Ø 101.6 mm
3	Direct mounting (only on multiple pumps)

Ports

3	SAE flange
0	Suction port sealed (only on multiple pumps)

Series

Modification number

XXXX	Determined by manufacturer

TECHNICAL INFORMATION

5.2.2 Specifications

Pump size			020	025	032	040	050	064
Geometric displacement		[cm³/rev]	20.0	24.8	32.1	40.1	50.3	64.4
Pressure	Rated	[bar]	250					
	Intermittent		280				220	190
	Peak		320			300	280	
Drive speed	Min.	[rpm]	200			100		
	Max.		3600	3200	3000	2500	1800	
Approx. weight		[kg]	8.3	8.6	9.2	9.8	10.5	16.7

5.2.3 Hydraulic fluids

The pump series is designed for use with

HLP	Hydraulic oil

Before using synthetic fluids, please contact HYDAC:

HEES, HETG	Environmentally-friendly operating fluids
HFC	Water glycol
HFD-U	Fire-resistant fluids based on polyolester
HFD-R	Fire-resistant fluids based on phosphate ester

5.2.4 Viscosity range

	cSt (mm²/s)
Minimum viscosity:	10
Normal operating viscosity:	10 - 300
Maximum viscosity:	2,000

5.2.5 Temperature range

Temperature range
-20 to 100 °C
Maximum ambient temperature
-40 to 80 °C
Maximum fluid temperature
-40 to 120 °C

5.2.6 Seals

The pump series is equipped with FPM (Viton) seals.
Before using synthetic fluids, please contact HYDAC.

5.2.7 Filtration

For maximum service life of the pump and system components, the system should be protected from contamination by effective filtration.

Cleanliness class:
20/ 18/ 15 to ISO 4406:1999
or
Class 9 to NAS 1638 or cleaner.

To ensure a longer service life, cleanliness class:
18/16/13 to ISO 4406:1999
or
Class 9 to NAS 1638.

5.2.8 Installation notes

A. Mounting

The pump can be installed horizontally or vertically with the shaft at the top. If the pump is installed on the tank or above the oil level, the distance between the pump inlet and the oil level should not exceed 1 metre.

When installing a HYDAC pump always ensure that the fluid remains in the pump during stoppages.

B. Suction pipe

If the pump is installed above the oil level, particular attention must be paid to the suction pressure. The cross-section of the suction pipe must be equal to or larger than the cross-section of the pump port. The suction pressure must be kept within the values specified.

Minimum suction pressure: 0.8 bar abs.

Maximum suction pressure: 2.0 bar abs.

- When installing a HYDAC pump always ensure that the fluid remains in the pump during stoppages.

C. Drive

Use a flexible coupling whenever possible. There must not be any radial or axial forces on the pump shaft. The maximum misalignment of the shafts is 0.2 mm and the angular deviation must be less than 0.2°.

5.2.9 Multiple pumps

Internal gear pumps in the PGI101 series can be combined to form double or triple gear pumps (for larger units please contact HYDAC). The performance characteristics for single pumps generally apply but the following points must be taken into consideration:

- It is recommended that the pump with the largest load be placed on the drive side.
- The maximum drive speed of the multiple pump is limited to the lowest speed of the single pumps.
- The maximum drive and through drive torques must be checked for each stage.
- The torques generated by the pump unit can be calculated using the following formula:

$$M_{max} = \frac{\Delta p_1 \bullet V_1}{20 \bullet \pi \bullet \eta_{mh}} + \frac{\Delta p_2 \bullet V_2}{20 \bullet \pi \bullet \eta_{mh}} + \frac{\Delta p_3 \bullet V_3}{20 \bullet \pi \bullet \eta_{mh}}$$

Maximum drive and through drive torques

Displacement	Drive torque		Though drive torque	
	Rated	Max.	Rated	Max.
020 – 050	325 Nm	400 Nm	230 Nm	240 Nm

- Common suction port, separate drain ports
- There is no sealing between the individual pump stages
- PGI101 and PGI102 can be combined to form multiple units.

If a double internal gear pump combination is installed vertically in V1 arrangement and there is no guarantee that the primary stage is completely submerged in the oil in the tank under all operating conditions, we recommend that only the suction port of the primary stage is used to supply the oil to the double internal gear pump combination.

In this case the common suction port of the double internal gear pump combination and the suction port of the secondary stage must be plugged.

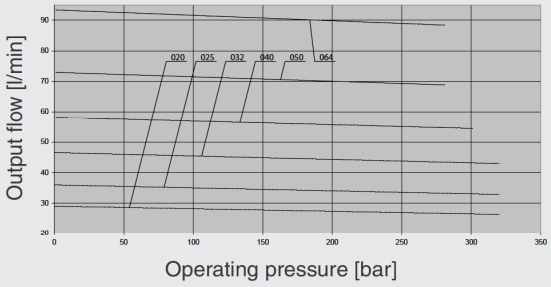
In addition, the suction port of the primary stage must be fitted with an anti-siphon to ensure the fluid remains in the double internal gear pump combination after a lengthy stoppage.

For triple and multiple internal gear pump combinations, please contact HYDAC.

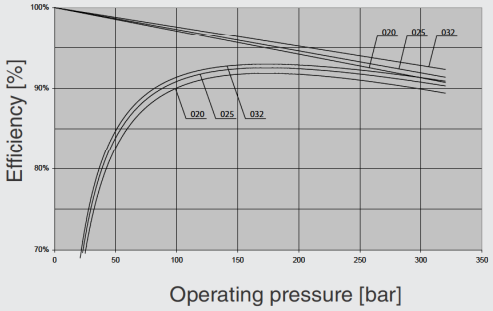
PERFORMANCE DATA

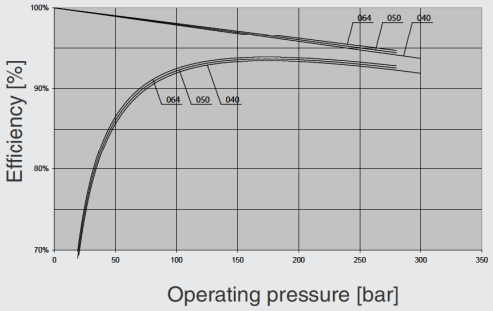
5.2.10 PGI101

Output flow

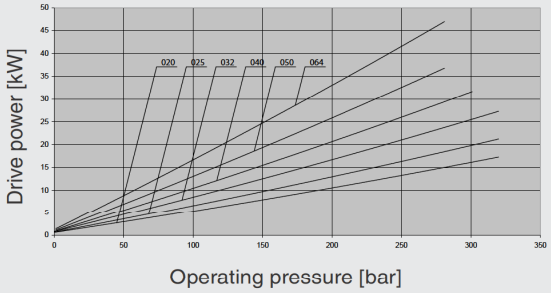


Efficiency

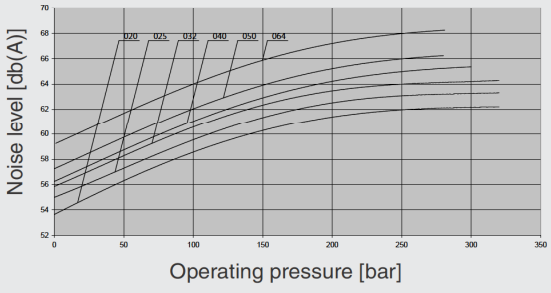




Drive power



Noise level

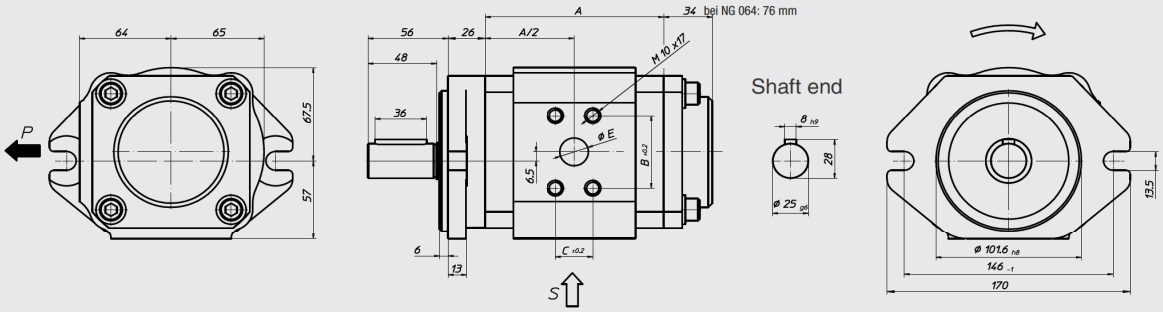


Measurement conditions:
Drive speed 1450 rpm, viscosity 46 mm²/sec, operating temperature 40 °C
Acoustic pressure measured in an anechoic room to DIN 45 635 Sheet 26;
Microphone distance 1.0 m axial.

DIMENSIONS

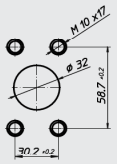
5.2.11 PGI101 with SAE B – 2-hole flange and parallel shaft with key

Ordering example: PGI101-3-...RK23-1x



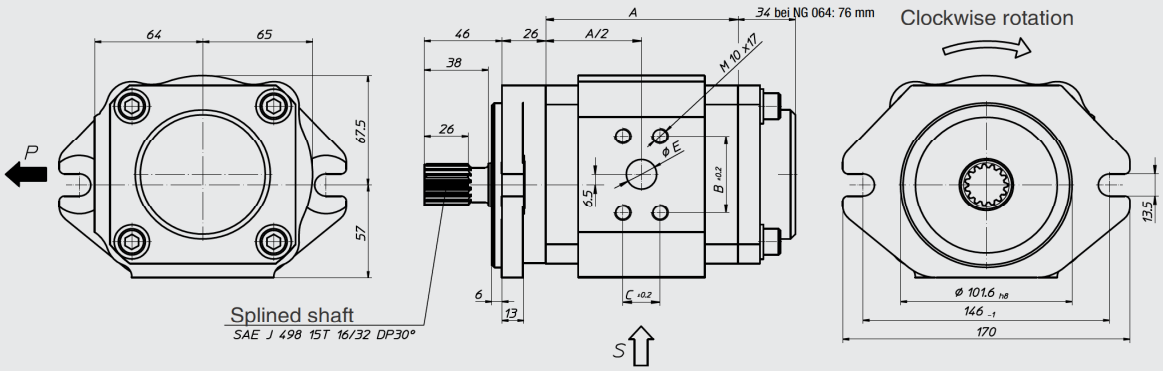
Size	A	B	C	E
020	97.9	47.5	22	18
025	104.4	47.5	22	18
032	114.4	47.5	22	18
040	125.4	52.4	26.2	20
050	139.4	52.4	26.2	20
064	139.4	52.4	26.2	20

Suction port



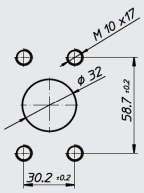
5.2.12 PGI101 with SAE B – 2-hole flange and splined shaft

Ordering example: PGI101-3-...RK23-1x



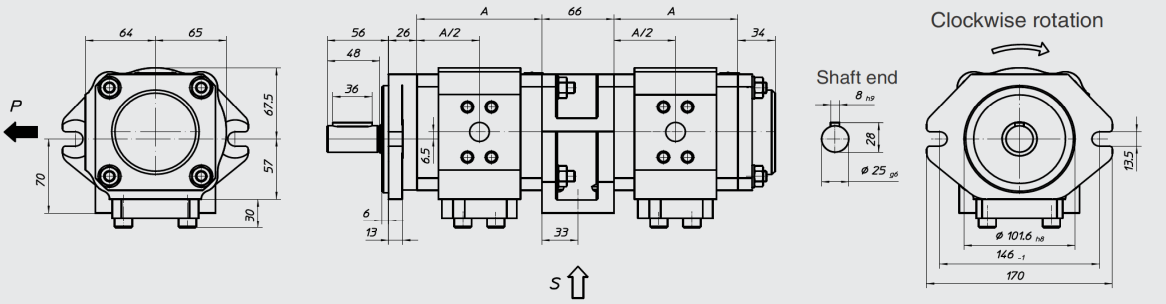
Size	A	B	C	E
020	97.9	47.5	22	18
025	104.4	47.5	22	18
032	114.4	47.5	22	18
040	125.4	52.4	26.2	20
050	139.4	52.4	26.2	20
064	139.4	52.4	26.2	20

Suction port



5.2.13 PGI101-3 Double pump with SAE B – 2-hole flange and parallel shaft with key

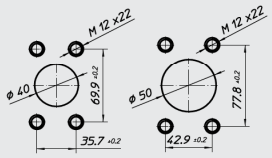
Ordering example: PGI101-3-...RK20-1x +
PGI101-3-...RP30-1x



Size	A
020	97.9
025	104.4
032	114.4
040	125.4
050	139.4
060	139.4

For discharge ports see individual pump

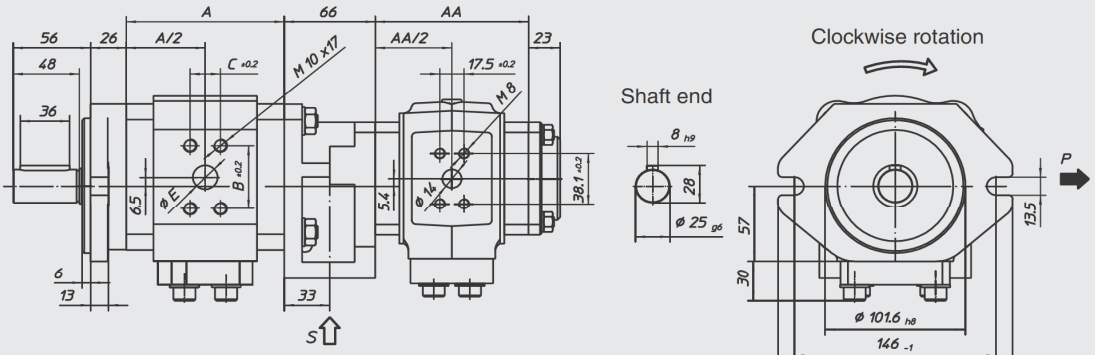
Suction port



NG 020-032 NG 040-050

5.2.14 PGI101-3 + PGI102-2 with SAE B – 2-hole flange and parallel shaft with key

Ordering example: PGI101-3-...RK20-1x +
PGI102-2-...RP30-1x



PGI101-3	
Size	A
020	97.9
025	104.4
032	114.4
040	125.4
050	139.4
060	139.4

PGI102-2	
Size	AA
004	71
005	71
006	73
008	76
011	82
013	87
016	92
019	99
022	105
025	111

Suction port