

5.2 MEDIUM HEAVY DUTY SERIES SIZE 3 CONTENTS

PGI101

| | |
|------------------------------|---|
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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 | cm ³ /rev |
| 025 | 24.8 | cm ³ /rev |
| 032 | 32.1 | cm ³ /rev |
| 040 | 40.1 | cm ³ /rev |
| 050 | 50.3 | cm ³ /rev |
| 064 | 64.4 | cm ³ /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 | [cm ³ /rev] | 20.0 | 24.8 | 32.1 | 40.1 | 50.3 | 64.4 |
| Pressure | Rated | 250 | | | | | |
| | Intermittent | 280 | | | | 220 | 190 |
| | Peak | 320 | | | 300 | 280 | |
| Drive speed | Min. | 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 (mm ² /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:

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

Maximum drive and through drive torques

| Displacement | Drive torque | | Through 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.

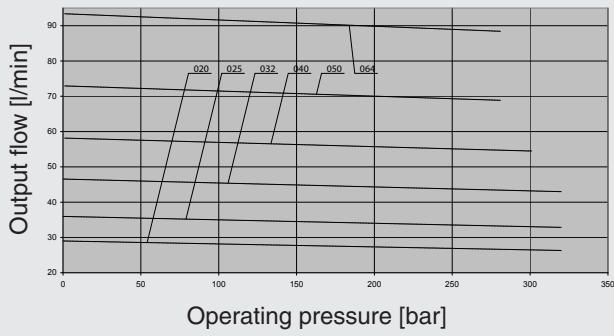
In addition, the suction port of the primary stage must be fitted with an anti-siphon to ensure the fluid remains in the double internal gear pump combination after a lengthy stoppage.

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

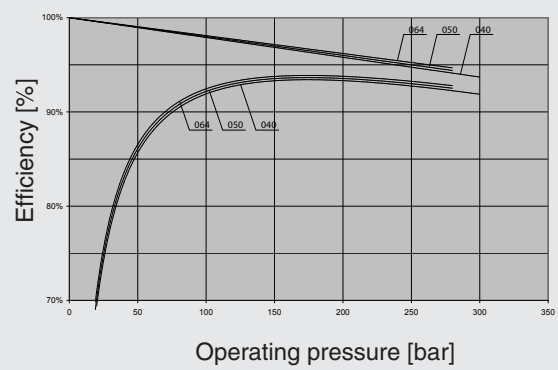
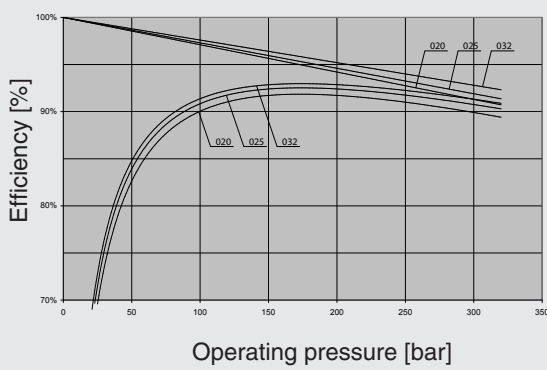
PERFORMANCE DATA

5.2.10 PG1101

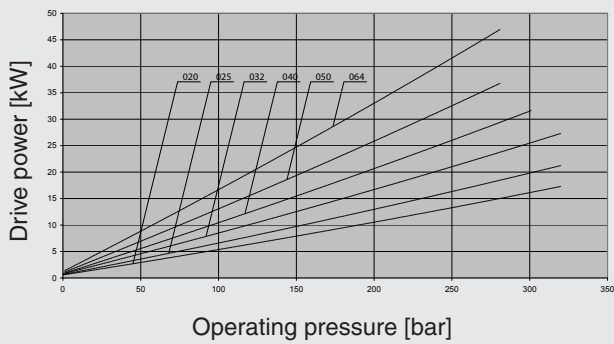
Output flow



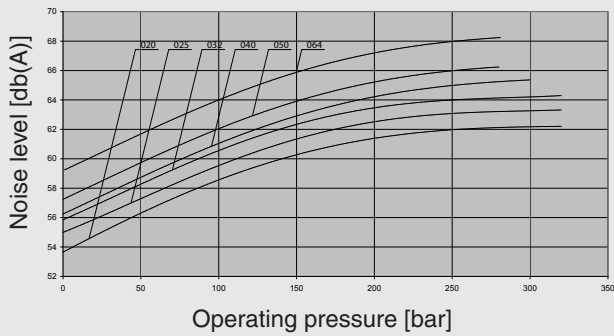
Efficiency



Drive power



Noise level



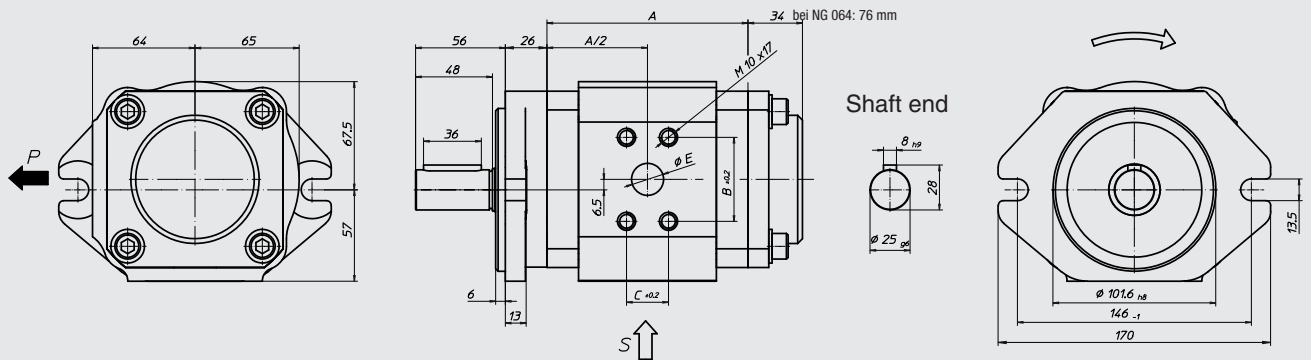
Measurement conditions:

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

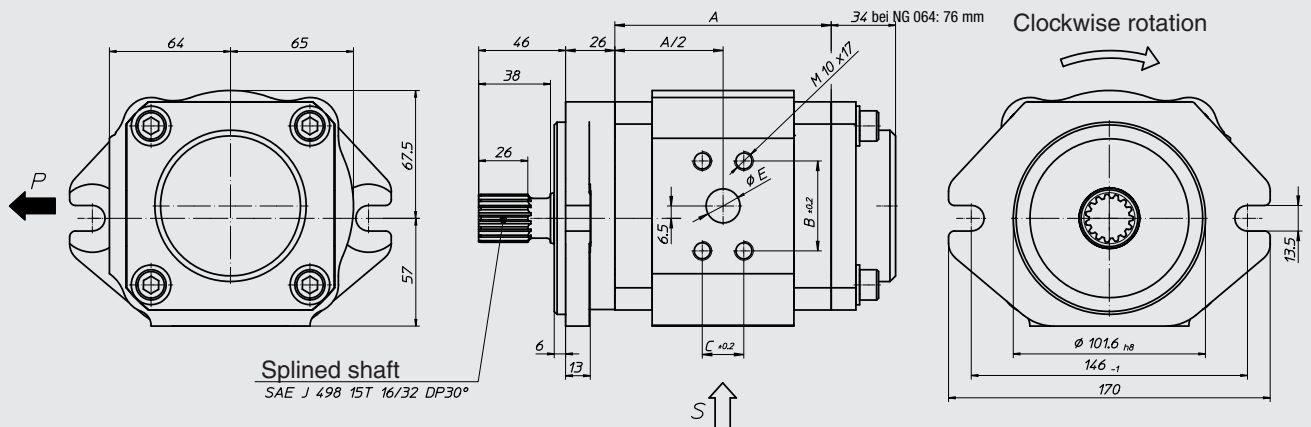
Ordering example: PGI101-3-...RK23-1x



| 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 |

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

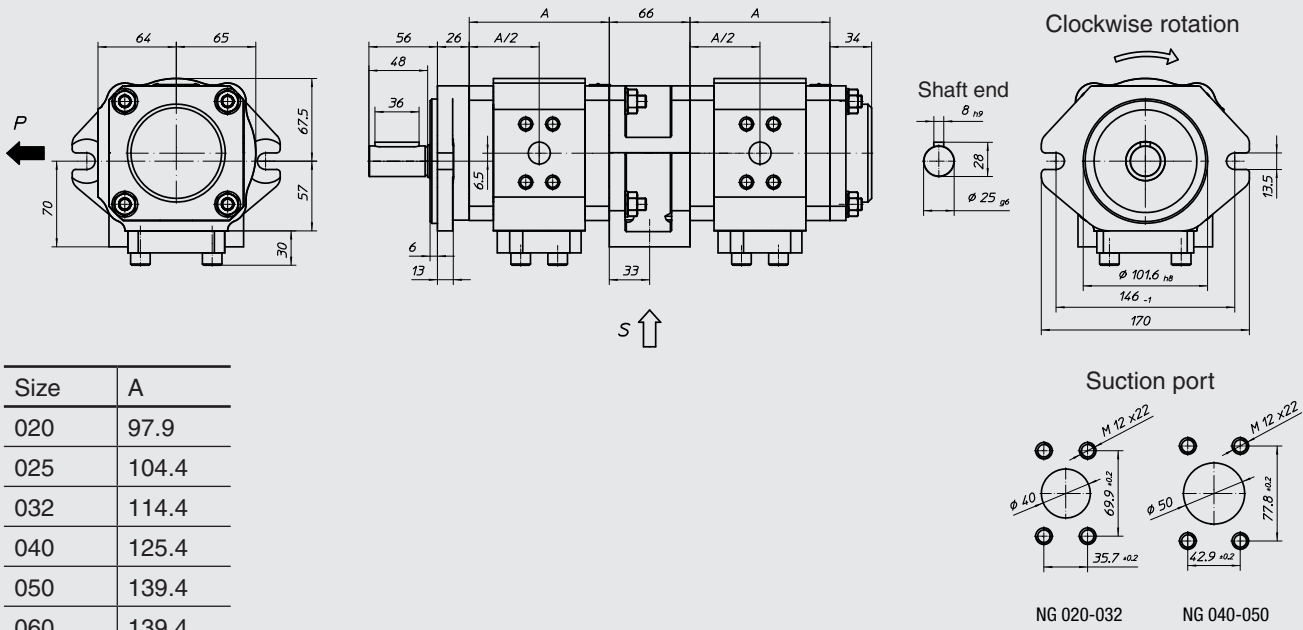
Ordering example: PGI101-3-...RK23-1x



| 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 |

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

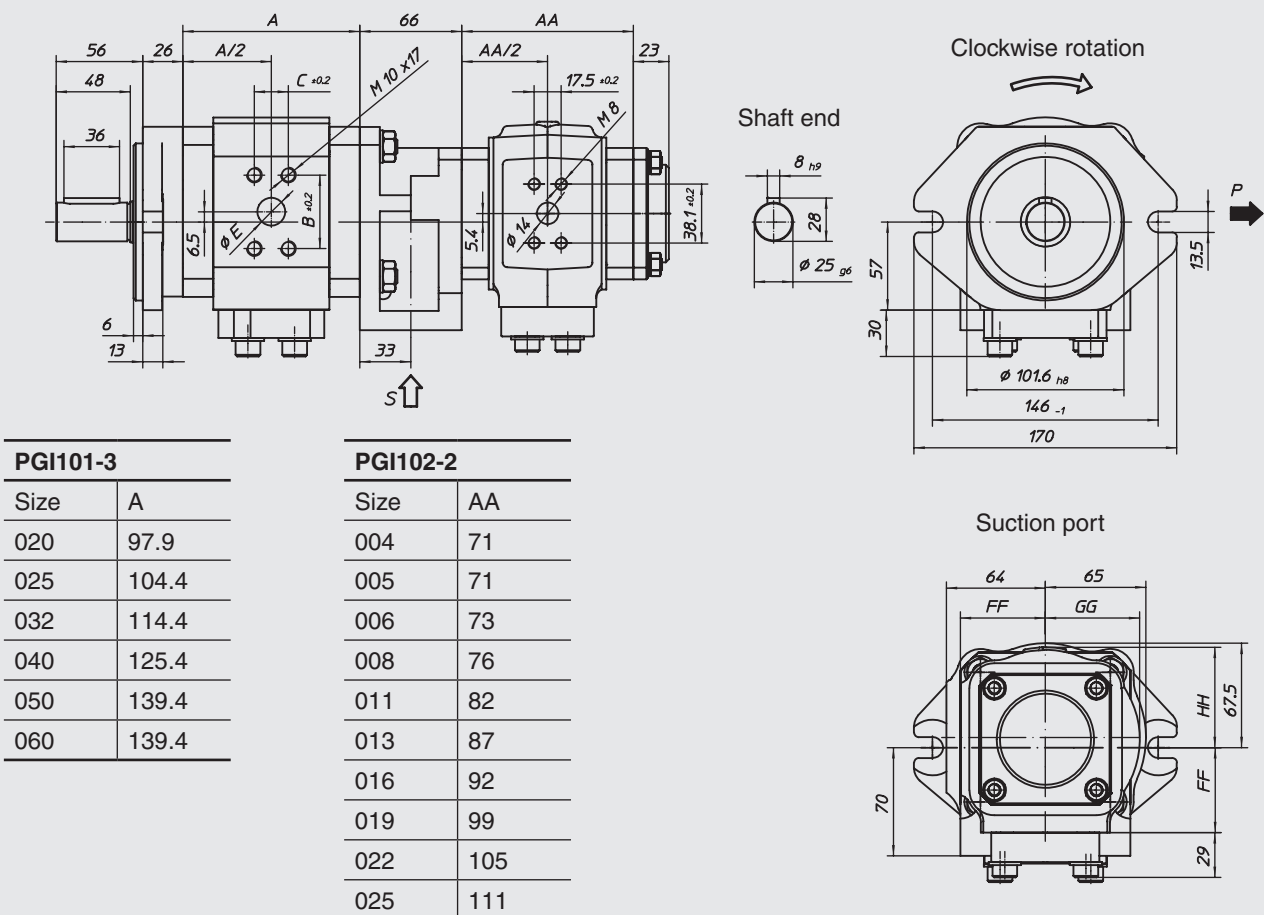


| Size | A |
|------|-------|
| 020 | 97.9 |
| 025 | 104.4 |
| 032 | 114.4 |
| 040 | 125.4 |
| 050 | 139.4 |
| 060 | 139.4 |

For discharge ports see individual pump

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 |

