

5.1 MEDIUM HEAVY DUTY SERIES SIZE 2 CONTENTS

PGI100

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ORDERING CODE

5.1.1 Medium Heavy Duty Series

PGI100 - 2 - 005 - R A 0 4 - 11 - XXXX

Medium Heavy Duty Series

Size

Displacement

005	5.4	cm ³ /rev
006	6.4	cm ³ /rev
008	7.9	cm ³ /rev
011	10.9	cm ³ /rev
013	13.3	cm ³ /rev
016	15.8	cm ³ /rev
019	19.3	cm ³ /rev
022	22.2	cm ³ /rev
025	25.2	cm ³ /rev

Shaft rotation (viewed from shaft end)

R	Clockwise
L	Anti-clockwise

Shaft

A	Parallel shaft with key
B	Splined shaft SAE A - J744 16-4 9T
D	Tang drive
K	Parallel keyed shaft with through drive (only for multiple pumps)

Mounting flange

0	SAE J744 82-2 A - Ø 82.55 mm
2	SAE J744 101-2 B - Ø 101.6 mm
3	2-hole mounting, centering Ø 52 mm with O-ring

Ports

4	Square flange DIN 3901 / ISO 8435
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Series

Modification number

XXXX	Determined by manufacturer
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TECHNICAL INFORMATION

5.1.2 Specifications

Pump size		005	006	008	011	013	016	019	022	025	
Geometric displacement	[cm ³ /rev]	5.4	6.4	7.9	10.9	13.3	15.8	19.3	22.2	25.2	
Pressure	Rated	250									
	Intermittent	320						300		280	
	Peak	320						300		280	
Drive speed	min.	200						100			
	max.	4200			4000			3600			
Approx. weight	[kg]	2.9	3.0	3.1	3.3	3.5	3.6	3.8	4.0	4.2	

5.1.3 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

5.1.4 Viscosity range

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

5.1.5 Temperature range

Temperature range

-20 to 100 °C

Maximum ambient temperature

-40 to 80 °C

Maximum fluid temperature

-40 to 120 °C

5.1.6 Seals

The pump series is equipped with FPM (Viton) seals as standard.

Before using synthetic fluids, please contact HYDAC.

5.1.7 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 7 to NAS 1638.

5.1.8 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 is 0.2 mm and the angular deviation must be less than 0.2°.

Drive shafts with tang are for direct mounting onto to an electric motor or a gearbox. The driver for the tang is included.

5.1.9 Multiple pumps

Internal gear pumps in the PGI100 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 is positioned on the drive side.
- The maximum drive speed of the multiple pump is limited to the lowest speed of the individual 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
005 – 025	100 Nm	100 Nm

- A common suction port is not possible
- There is no sealing between the individual pump stages.

If a double internal gear pump combination is installed vertically in V1 arrangement and there is no guarantee that the primary stage will be 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.

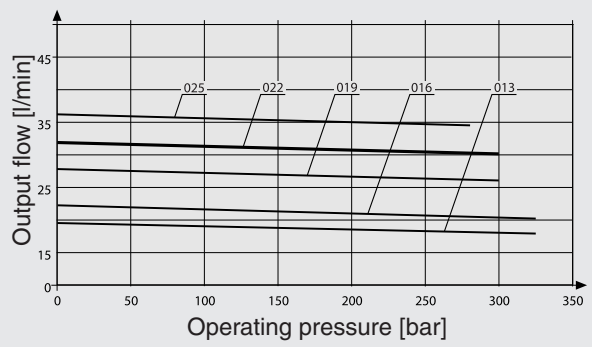
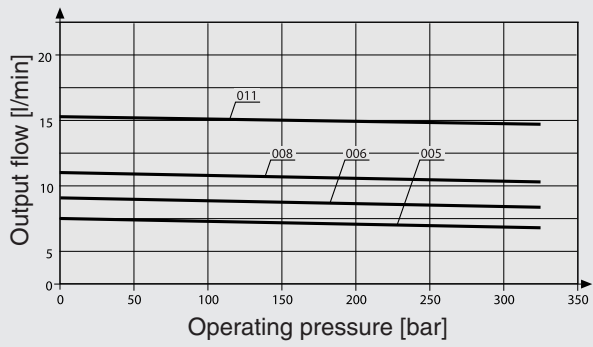
In addition, the suction port of the primary stage must be fitted with an anti-siphon to ensure the fluid remains in the double internal gear pump combination after a lengthy stoppage.

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

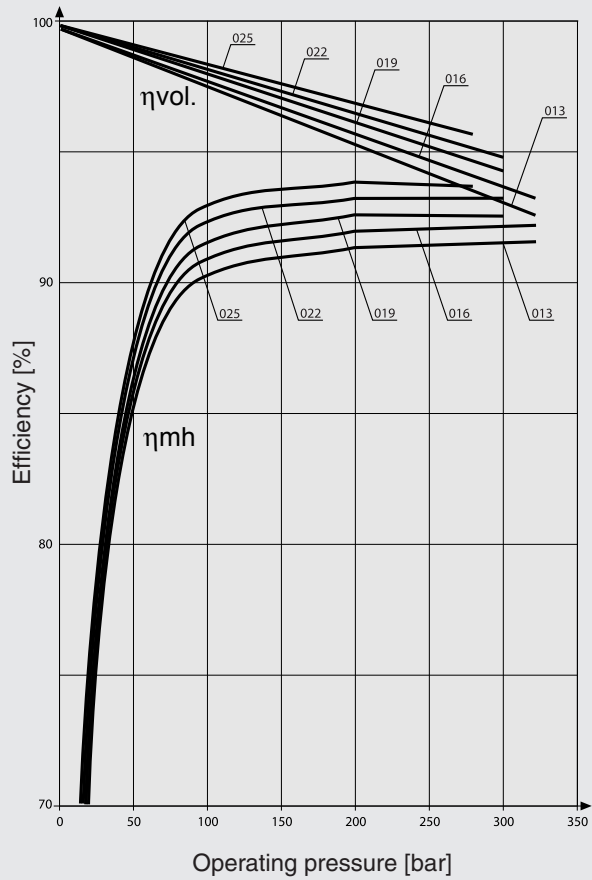
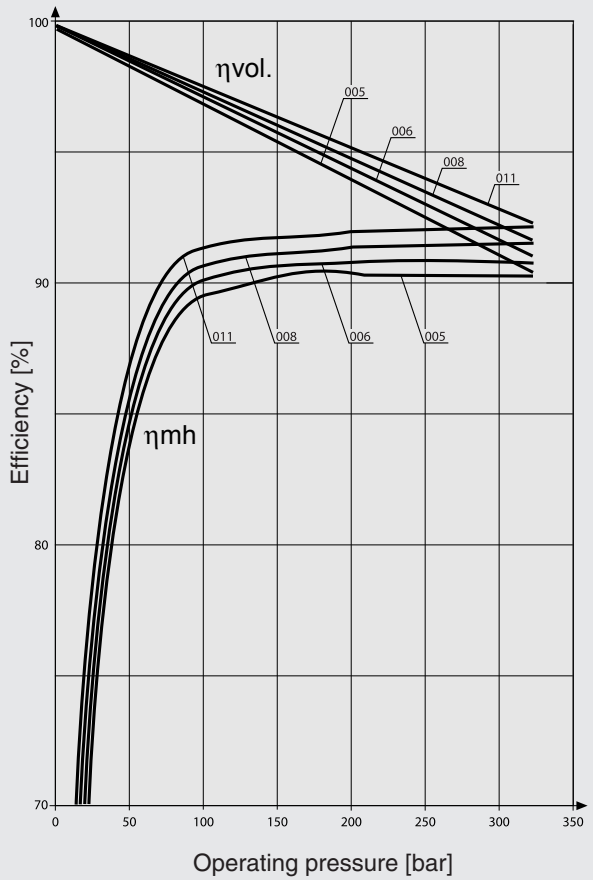
PERFORMANCE DATA

5.1.10 PG1100

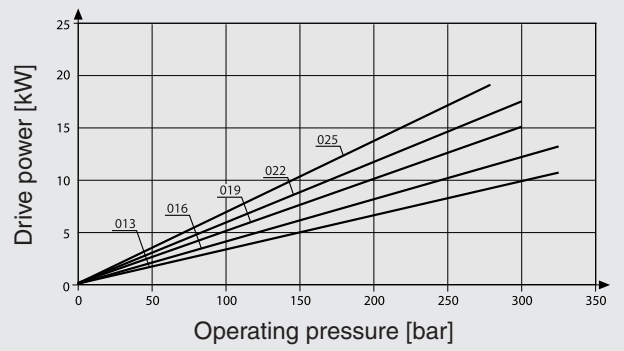
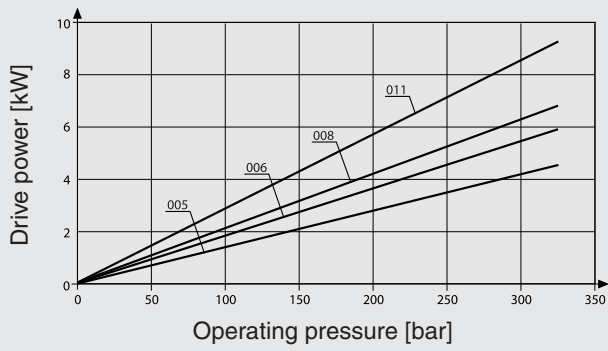
Output flow



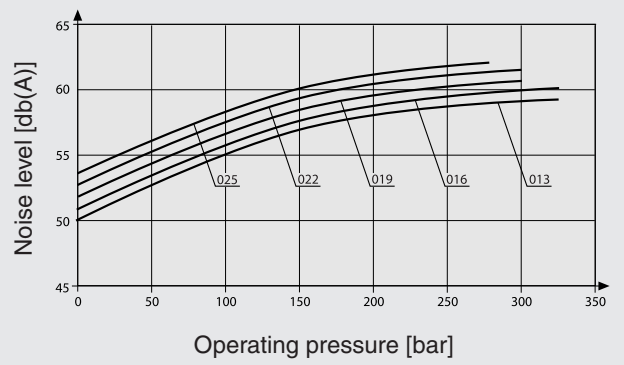
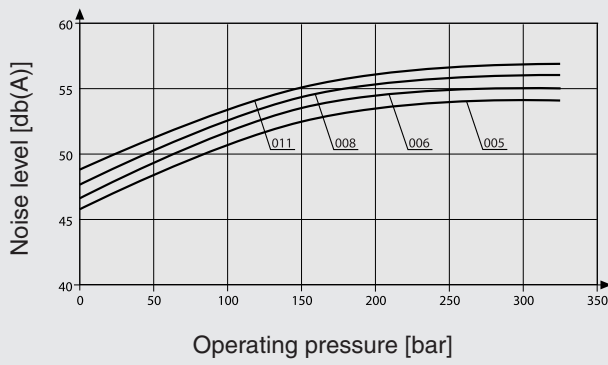
Efficiency



Drive power



Noise level

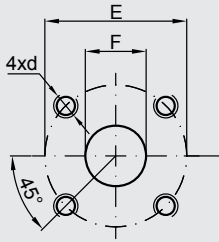


Measurement conditions:

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

5.1.11 Ports

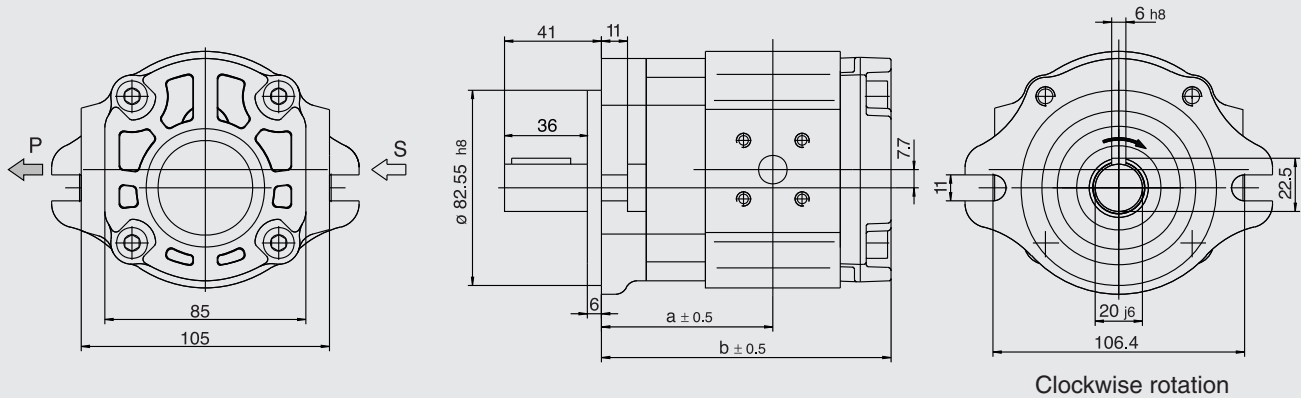


4 Square flange
DIN 3901/ ISO 8435

Displacement	Pressure side			Suction side		
	E	F	d	E	F	d
005 - 006	35	5	M6	40	20	M6
008	35	7	M6	40	20	M6
011 - 013	35	10	M6	40	20	M6
016	35	12	M6	40	20	M6
019 - 025	35	12	M6	55	26	M8

5.1.12 PGI100 with SAE A – flange with parallel shaft with key

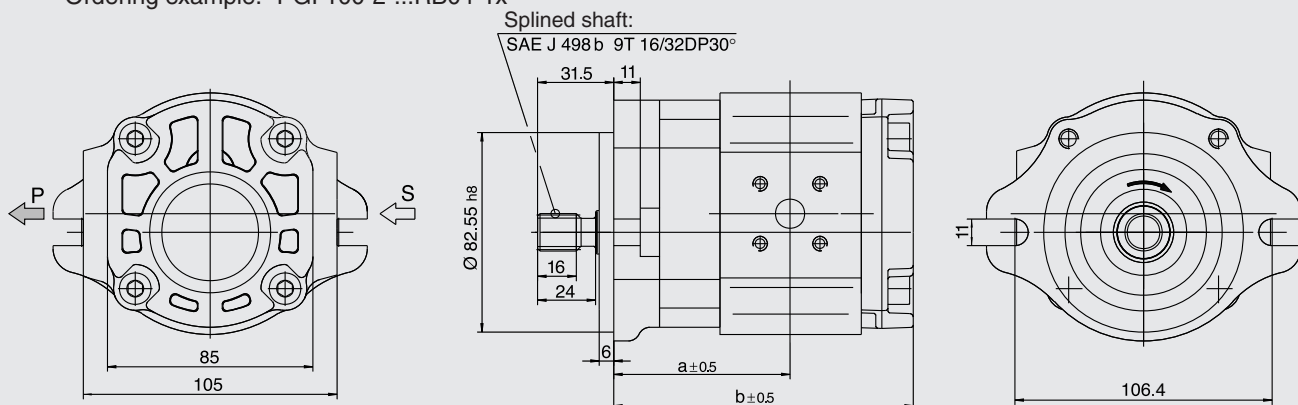
Ordering example: PGI 100-2-...RA04-1x



Size	a	b
005	62	101.5
006	63	103.5
008	64.5	106.5
011	67.5	112.5
013	70	117.5
016	72.5	112.5
019	76	129.5
022	79	135.5
025	82	141.5

5.1.13 PGI100 with SAE A – flange and SAE splined shaft

Ordering example: PGI 100-2-...RB04-1x

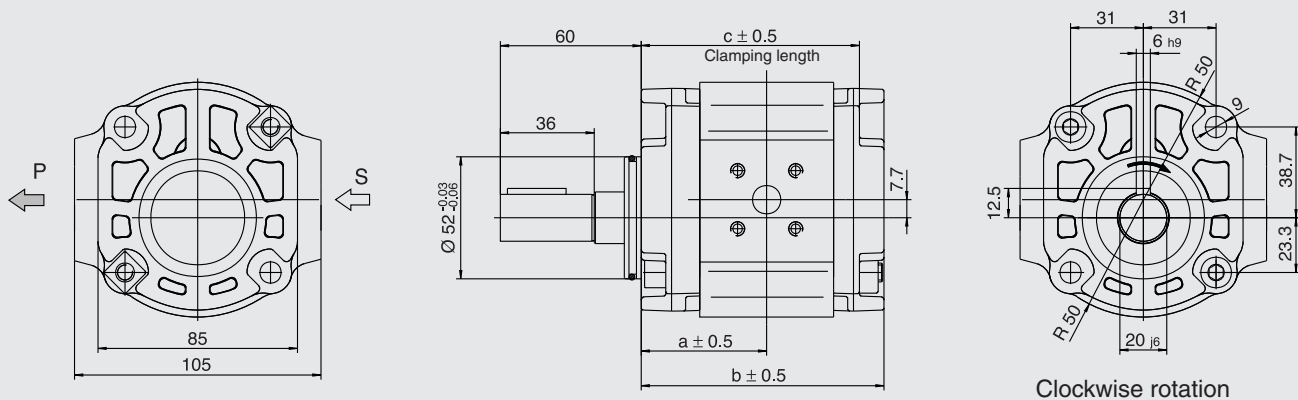


Size	a	b
005	62	101.5
006	63	103.5
008	64.5	106.5
011	67.5	112.5
013	70	117.5
016	72.5	112.5
019	76	129.5
022*	79	135.5
025*	82	141.5

* on request

5.1.14 PGI100 with parallel shaft with key

Ordering example: PGI 100-2-...RA34-1x



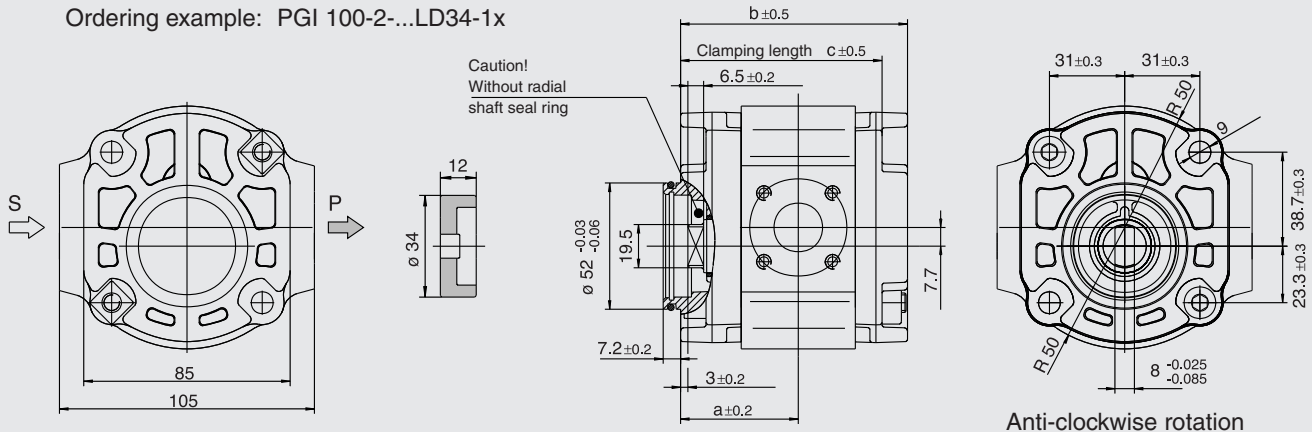
Size	a	b	c
005	43	82.5	72
006	44	84.5	74
008	45.5	87.5	77
011	48.5	93.5	83
013	51	98.5	88
016	53.5	103.5	93
019	57	110.5	100
022	60	116.5	106
025	63	122.5	112

Fixing screws:

2x M8 - ISO 4762 - 10.9 with flat washer ISO 7092
Torque: M = 25 +5 Nm

5.1.15 PGI100 with tang

Ordering example: PGI 100-2-...LD34-1x



Anti-clockwise rotation

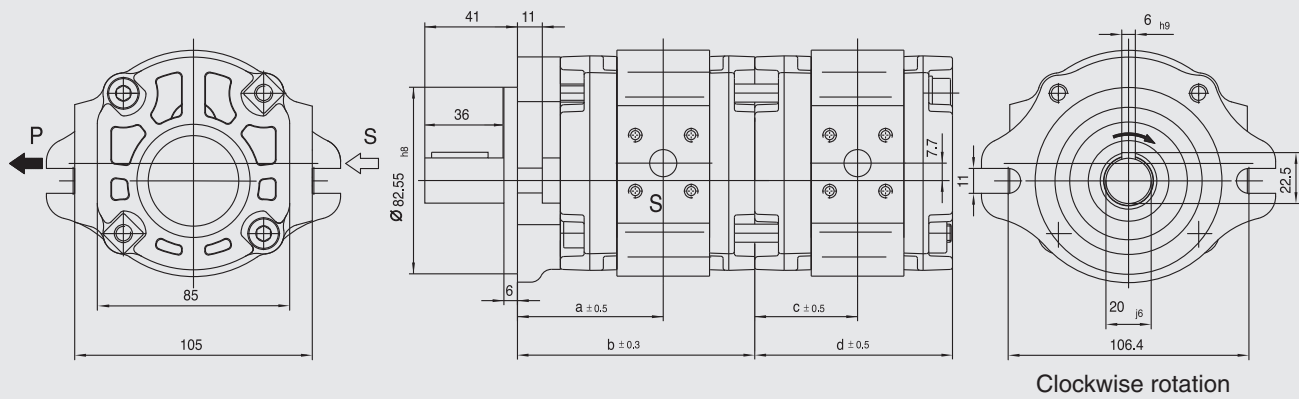
Size	a	b	c
005	43	82.5	72
006	44	84.5	74
008	45.5	87.5	77
011	48.5	93.5	83
013	51	98.5	88
016	53.5	103.5	93
019	57	110.5	100
022	60	116.5	106
025	63	122.5	112

Driver is supplied
Fixing screws:

2x M8 - ISO 4762 - 10.9 with flat washer ISO 7092
Torque: M = 25 +5 Nm

5.1.16 Double pump PGI100 with SAE A – flange and keyed shaft

Ordering example: PGI 100-2-...RK04-1x+
PGI 100-2-...RD34-1x



Clockwise rotation

Size	a	b	c	d
005	62	100	43	82.5
006	63	102	44	84.5
008	64.5	105	45.5	87.5
011	67.5	111	48.5	93.5
013	70	116	51	98.5
016	72.5	121	53.5	103.5
019	76	128	57	110.5
022	79	134	60	116.5
025	82	140	63	122.5