

## External Gear Pump Preferences for Open Loop Hydraulic Systems

### 5. EXTERNAL GEAR PUMPS

#### 5.1 SIZE 1



Series	Geometric Displacement [cm <sup>3</sup> /rev]	Operating Pressure		Maximum Shaft Speed [min <sup>-1</sup> ]
		Rated [bar]	Peak [bar]	
PGE101-100	1	220	250	3500
PGE101-125	1.25			
PGE101-160	1.6			
PGE101-200	2			
PGE101-250	2.5			
PGE101-315	3.15			
PGE101-365	3.65			
PGE101-420	4.2			
PGE101-500	5	170	200	3000
PGE101-610	6.1			
PGE101-740	7.4			150

#### 5.2 SIZE 2



Series	Geometric Displacement [cm <sup>3</sup> /rev]	Operating Pressure		Maximum Shaft Speed [min <sup>-1</sup> ]
		Rated [bar]	Peak [bar]	
PGE102-450	4.5	220	250	3500
PGE102-630	6.3			
PGE102-820	8.2			
PGE102-1000	10			
PGE102-1130	11.3			
PGE102-1200	12			
PGE102-1400	14			
PGE102-1500	15			
PGE102-1600	16	200	230	3000
PGE102-1730	17.3			
PGE102-1900	19			170
PGE102-2200	22	150	180	2500
PGE102-2500	25	130	160	
PGE102-2800	28	100	130	

### 5.3 SIZE 3



Series	Geometric Displacement [cm <sup>3</sup> /rev]	Operating Pressure		Maximum Shaft Speed [min <sup>-1</sup> ]
		Rated [bar]	Peak [bar]	
PGE103-2000	20	220	250	3000
PGE103-2250	22.5			
PGE103-2500	25			
PGE103-2800	28			
PGE103-3200	32			200
PGE103-3600	36	2800		
PGE103-4200	42	170	200	2500
PGE103-4600	46			2300
PGE103-5000	50	150	180	2100
PGE103-5500	55			1750
PGE103-6000	60			



## 5.1 SIZE 1 CONTENT

**Ordering Code** 5.1.1 External Gear Pump

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**Technical Information** 5.1.2 Specifications  
5.1.3 Hydraulic Fluids  
5.1.4 Viscosity Range  
5.1.5 Temperature Range  
5.1.6 Seals  
5.1.7 Filtration  
5.1.8 Installation Notes

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**Dimensions** 5.1.9 Drive Shafts  
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5.1.11 Ports  
5.1.12 Preference Types

## ORDERING CODE

### 5.1.1 External Gear Pump

**PGE101 – 100 – R B Q 1 – N – XXXX**

**External Gear Pump**  
**Size 1**

**Displacement**

100	1 cm <sup>3</sup> /rev
125	1.25 cm <sup>3</sup> /rev
160	1.6 cm <sup>3</sup> /rev
200	2 cm <sup>3</sup> /rev
250	2.5 cm <sup>3</sup> /rev
315	3.15 cm <sup>3</sup> /rev
365	3.65 cm <sup>3</sup> /rev
420	4.2 cm <sup>3</sup> /rev
500	5 cm <sup>3</sup> /rev
610	6.1 cm <sup>3</sup> /rev
740	7.4 cm <sup>3</sup> /rev

**Shaft Rotation (viewed from shaft end)**

R	clockwise
L	anti-clockwise

**Shaft**

A	tapered key shaft 1:5
B	tapered key shaft 1:8
C	two-surface claw
E	spline shaft SAE A - J 744 16-4 9T

**Mounting Flange**

L	2-bolt mounting centering Ø 32 mm
M	2-bolt mounting centering Ø 32 mm w. O-Ring
Q	Square flange centering Ø 25.4 mm
W	SAE J 744 82-2A - Ø 82.55 mm

**Ports**

1	Pipe thread ISO 228-1
2	Metric thread DIN 3852-1
3	Thread UN 2B SAE O-Ring-boss
5	Square flange DIN 3901/ ISO 8435

**Seals**

N	NBR
V	FPM

**Modification Number**

XXXX Determined by Manufacturer

**Not all variants from the ordering code are possible!**

**Please refer to 5.1.12 preference types or consult HYDAC!**

Special options are possible upon request

# TECHNICAL INFORMATION

## 5.1.2 Specifications

<b>Pump Size</b>		100	125	160	200	250	315	365	420	500	610	740	
<b>Geometric Displacement</b>		[cm <sup>3</sup> /rev]	1	1.25	1.6	2	2.5	3.15	3.65	4.2	5	6.1	7.4
<b>Pressure</b>	Rated	[bar]	220								170	150	
	Peak		250								200	180	
<b>Shaft Speed</b>	Min.	[rpm]	750										
	Max.		3500							3000	2500	2500	
<b>Approx. Mass</b>		[kg]	1	1.02	1.04	1.05	1.07	1.11	1.14	1.18	1.25	1.3	1.37

## 5.1.3 Hydraulic Fluids

The Pump series is prepared for

**HL** Petroleum Base Oil  
(Normal Mineral Oil)  
and

**HLP** R&O type hydraulic oils  
(Rust and Oxidation inhibitor).

## 5.1.4 Viscosity Range

**Normal** operating viscosity:  
16 - 200 cSt (mm<sup>2</sup>/s)

## 5.1.5 Temperature Range

Ambient temperature range  
**-22 up to 55 °C**

Fluid temperature range  
**-25 up to 80 °C**

### 5.1.6 Seals

The pump series is equipped with NBR seals.

For special seals for the use with synthetic fluids consult HYDAC.

### 5.1.7 Filtration

For maximum pump and system component life time, the system should be protected from contamination by effective filtration. Maintain the degree of contamination within

**21/18/15 per ISO 4406:1999**

or

**Grade 9 per NAS 1638**

At system pressures above 160 bar cleanliness level

**19/17/14 per ISO 4406:1999**

or

**Grade 8 per NAS 1638** is required.

### 5.1.8 Installation Notes

#### A. Mounting

The pump can be mounted in horizontal direction or vertical with the shaft upwards. If the pump is installed on the tank or at the position higher than the tank top cover, the height of the suction port of the pump should be less than 1 metre from the oil level.

#### B. Suction Line

When the pump is installed over the tank oil level, it is recommended to pay attention to the inlet pressure. The minimum section of the inlet pipe must be equal or larger to the section of the inlet port of the pump. The suction pressure must be within the specified values.

Minimum suction pressure:  
0.8 bar abs.

Maximum suction pressure:  
2.2 bar abs.

#### C. Drive

Employ a flexible coupling whenever possible. Radial or axial loads on the pump shaft are not allowed. The maximum radial runout of the shafts is less than 0.2 mm and the angular displacement has to be within 0.2°.

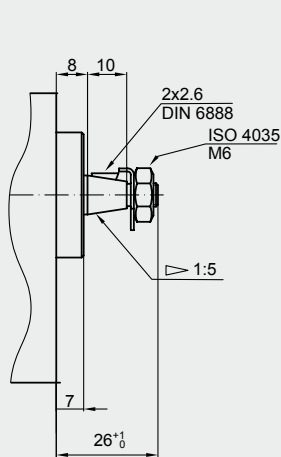
Drive shafts with tang are for the close-coupling to an electrical motor or a gear. The driver for the tang is not included.

For indirect drives (by gear, chains or belt transmissions) please consult Hydac.

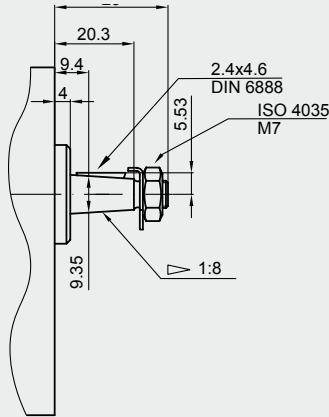
# DIMENSIONS

## 5.1.9 Drive Shafts

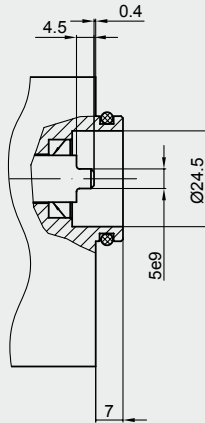
**A** Tapered key shaft 1:5



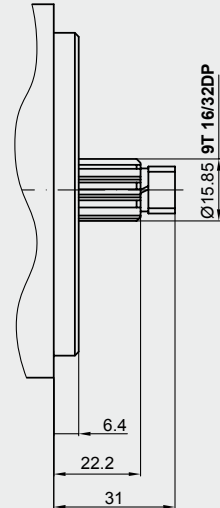
**B** Tapered key shaft 1:8



**C** Two-surface claw

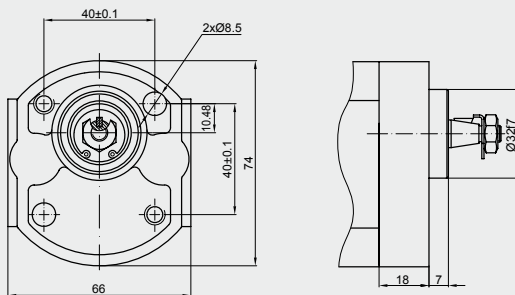


**E** Spline shaft SAE A-J 744 16-4 9T

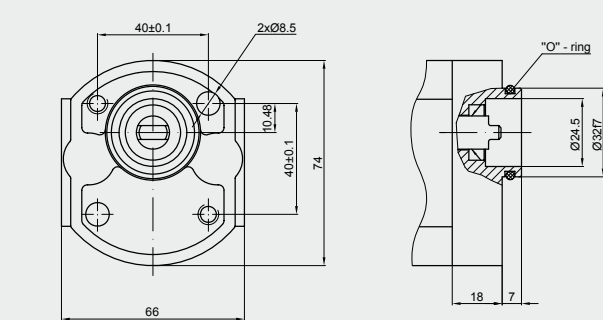


## 5.1.10 Front Cover

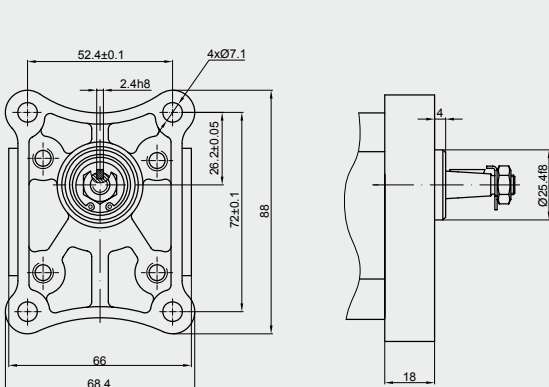
**L** 2-Bolt Mounting centering Ø 32 mm



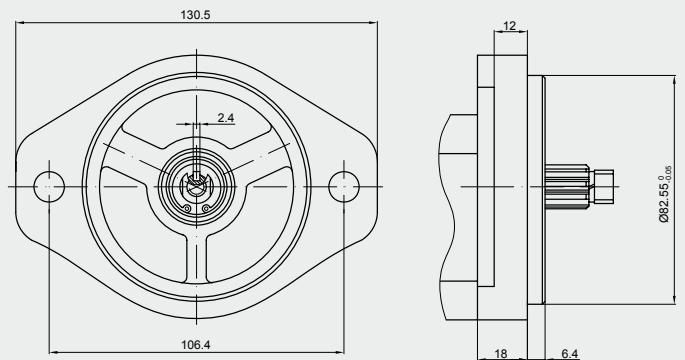
**M** 2-Bolt Mounting centering Ø 32 mm



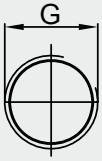
**Q** Square flange centering Ø 25.4 mm



**W** SAE J744-82-2A

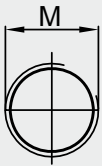


## 5.1.11 Ports



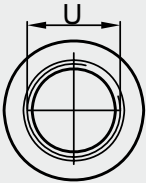
### 1 Pipe thread ISO 228/1

Ordering code	Displacement	Outlet G	Inlet G
1	2.5 cm <sup>3</sup>	G 3/8	G 3/8
	3.15 ... 7.4 cm <sup>3</sup>	G 3/8	G 1/2



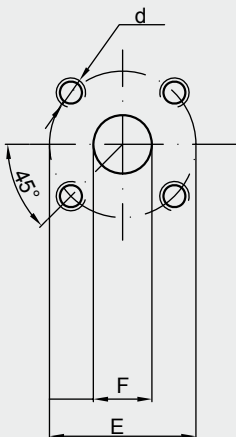
### 2 Metric thread DIN 3852-1

Ordering code	Displacement	Outlet M	Inlet M
2	2.5 cm <sup>3</sup>	M16x1.5	M16x1.5
	3.15 ... 6.1 cm <sup>3</sup>	M16x1.5	M20x1.5
	7.4 cm <sup>3</sup>	M18x1.5	M22x1.5



### 3 Pipe thread UN 2B SAE O-Ring-boss

Ordering code	Displacement	Outlet U	Inlet U
3	1 ... 6.1 cm <sup>3</sup>	9/16-18 UNF-2B	3/4-16 UNF-2B
	7.4 cm <sup>3</sup>	3/4 16 UNF-2B	7/8-14 UNF-2B



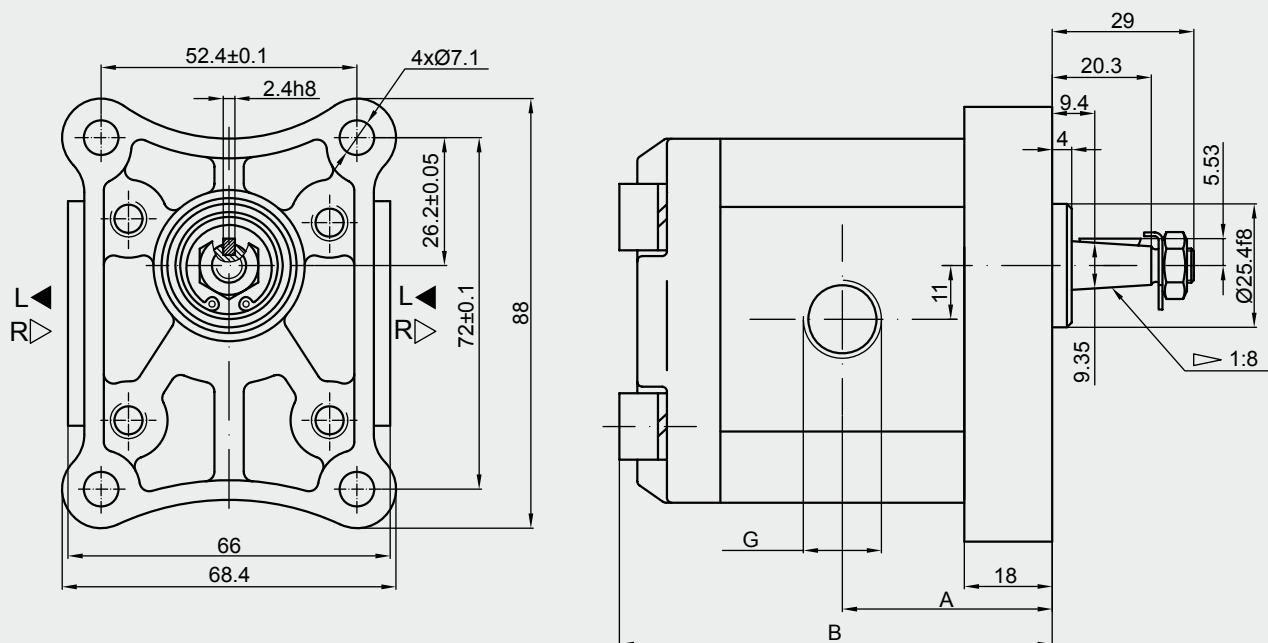
### 5 Square flange DIN 3901/ ISO 8435

Ordering code	Displacement	Outlet			Inlet		
		F	E	d	F	E	d
5	1 ... 7.4 cm <sup>3</sup>	12	30	M6	12	30	M6



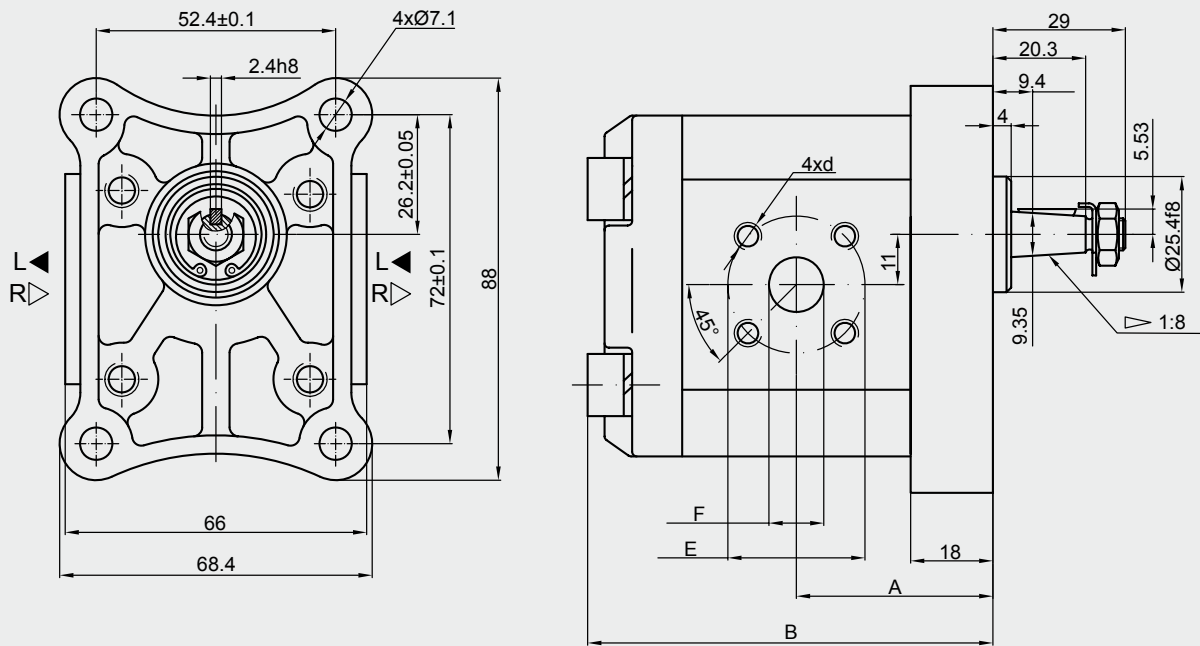
## 5.1.12 Preference Types

### PGE101-....BQ1-N



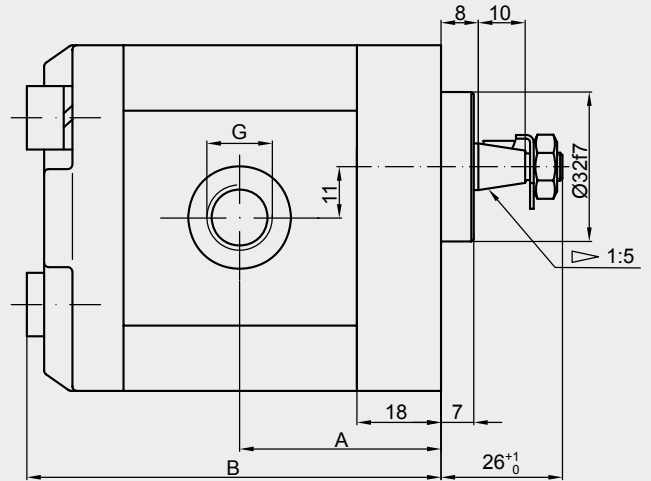
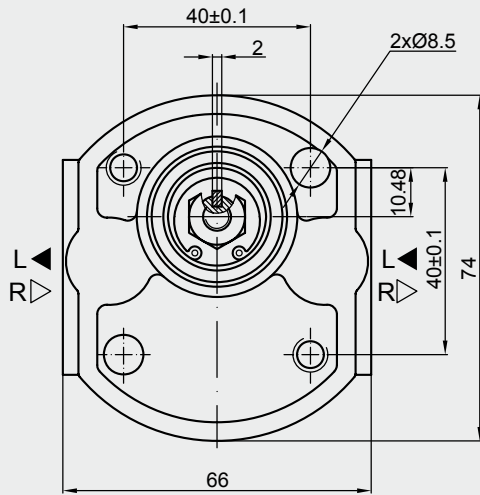
Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension			
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet G	Outlet G
PGE101-100-. BQ1-N	1	1.40	3.26	220	3500	39.1	81	G 3/8" - A	G 3/8" - A
PGE101-125-. BQ1-N	1.25	1.74	4.07			39.5	82		
PGE101-160-. BQ1-N	1.6	2.23	5.21			40.3	83.6		
PGE101-200-. BQ1-N	2	2.82	6.58			41.1	85.2		
PGE101-250-. BQ1-N	2.5	3.53	8.23			42.1	87.2		
PGE101-315-. BQ1-N	3.15	4.44	10.36			43.5	89.8		
PGE101-365-. BQ1-N	3.65	5.15	12.01			44.4	91.9		
PGE101-420-. BQ1-N	4.2	5.92	13.82			45.5	94.1		
PGE101-500-. BQ1-N	5	7.05	14.10			47.1	97.2		
PGE101-610-. BQ1-N	6.1	8.69	14.49			170	3000		
PGE101-740-. BQ1-N	7.4	10.55	17.58	150	2500	52.1	107.2		

PGE101-...-BQ5-N



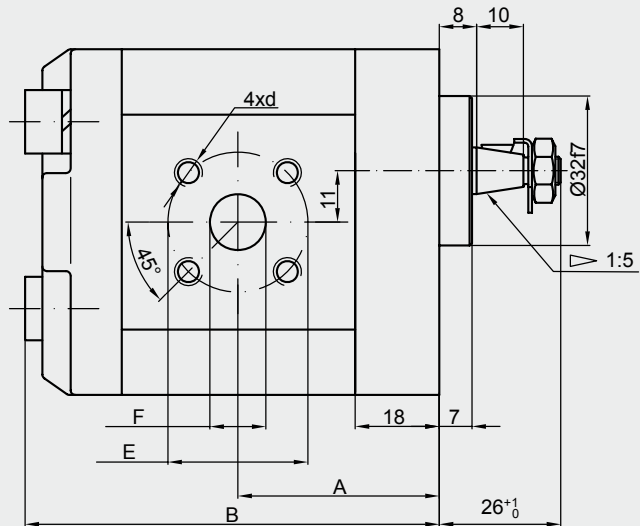
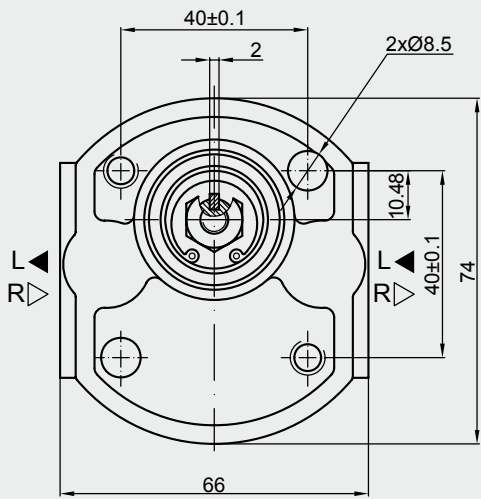
Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension							
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet			Outlet		
								E	F	d	E	F	d
PGE101-100-. BQ5-N	1	1.40	3.26	220	3500	39.1	81	Ø 30	Ø 12	M6	Ø 30	Ø 12	M6
PGE101-125-. BQ5-N	1.25	1.74	4.07			39.5	82						
PGE101-160-. BQ5-N	1.6	2.23	5.21			40.3	83.6						
PGE101-200-. BQ5-N	2	2.82	6.58			41.1	85.2						
PGE101-250-. BQ5-N	2.5	3.53	8.23			42.1	87.2						
PGE101-315-. BQ5-N	3.15	4.44	10.36			43.5	89.8						
PGE101-365-. BQ5-N	3.65	5.15	12.01			44.4	91.9						
PGE101-420-. BQ5-N	4.2	5.92	13.82			45.5	94.1						
PGE101-500-. BQ5-N	5	7.05	14.10			47.1	97.2						
PGE101-610-. BQ5-N	6.1	8.69	14.49	170	3000	49.4	101.8						
PGE101-740-. BQ5-N	7.4	10.55	17.58	150	2500	52.1	107.2						

PGE101-....AL1-N



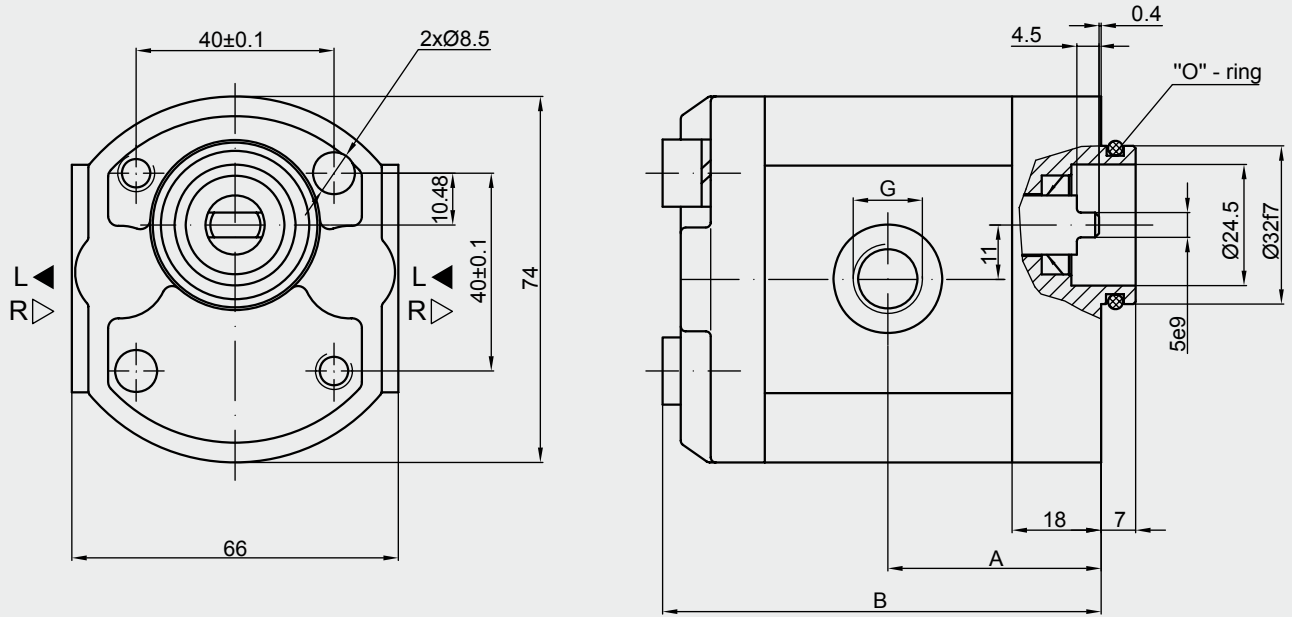
Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension			
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet G	Outlet G
PGE101-100-. AL1-N	1	1.40	3.26	220	3500	39.1	81	G 3/8" - A	G 3/8" - A
PGE101-125-. AL1-N	1.25	1.74	4.07			39.5	82		
PGE101-160-. AL1-N	1.6	2.23	5.21			40.3	83.6		
PGE101-200-. AL1-N	2	2.82	6.58			41.1	85.2		
PGE101-250-. AL1-N	2.5	3.53	8.23			42.1	87.2		
PGE101-315-. AL1-N	3.15	4.44	10.36			43.5	89.8		
PGE101-365-. AL1-N	3.65	5.15	12.01			44.4	91.9		
PGE101-420-. AL1-N	4.2	5.92	13.82			45.5	94.1		
PGE101-500-. AL1-N	5	7.05	14.10			47.1	97.2		
PGE101-610-. AL1-N	6.1	8.69	14.49			170	3000		
PGE101-740-. AL1-N	7.4	10.55	17.58	150	2500	52.1	107.2		

PGE101-...-AL5-N



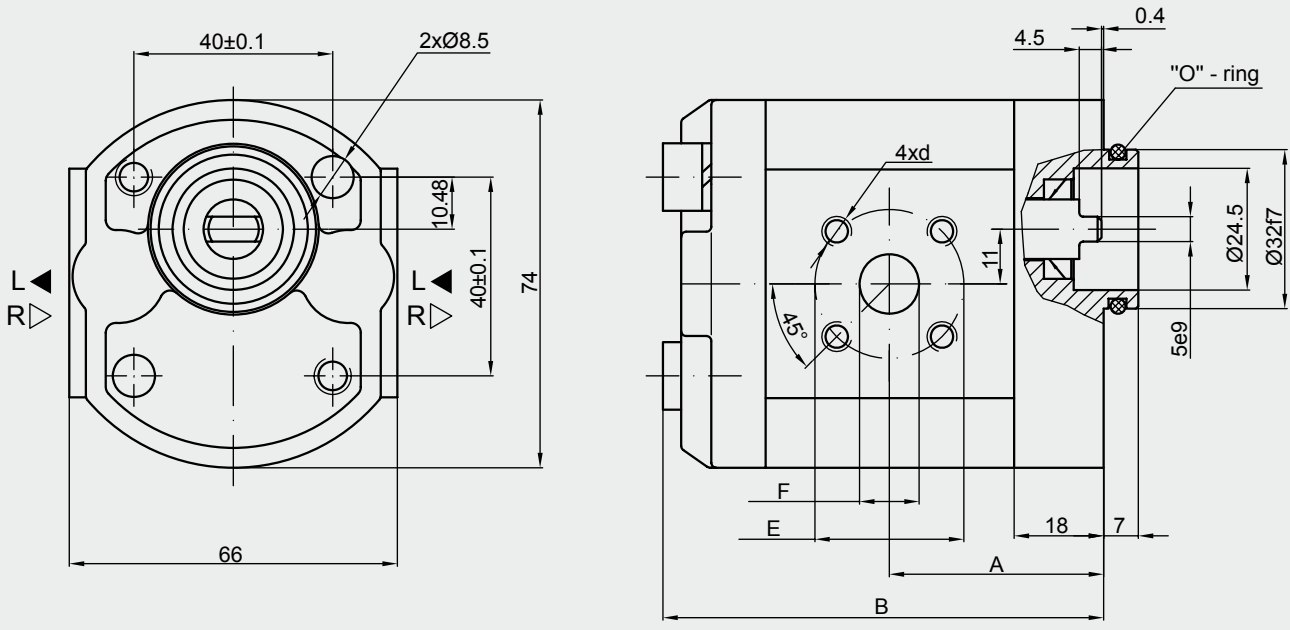
Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension							
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet			Outlet		
								E	F	d	E	F	d
PGE101-100-.AL5-N	1	1.40	3.26	220	3500	39.1	81	Ø 30	Ø 12	M6	Ø 30	Ø 12	M6
PGE101-125-.AL5-N	1.25	1.74	4.07			39.5	82						
PGE101-160-.AL5-N	1.6	2.23	5.21			40.3	83.6						
PGE101-200-.AL5-N	2	2.82	6.58			41.1	85.2						
PGE101-250-.AL5-N	2.5	3.53	8.23			42.1	87.2						
PGE101-315-.AL5-N	3.15	4.44	10.36			43.5	89.8						
PGE101-365-.AL5-N	3.65	5.15	12.01			44.4	91.9						
PGE101-420-.AL5-N	4.2	5.92	13.82			45.5	94.1						
PGE101-500-.AL5-N	5	7.05	14.10			47.1	97.2						
PGE101-610-.AL5-N	6.1	8.69	14.49	170	3000	49.4	101.8						
PGE101-740-.AL5-N	7.4	10.55	17.58	150	2500	52.1	107.2						

PGE101-....CM1-N



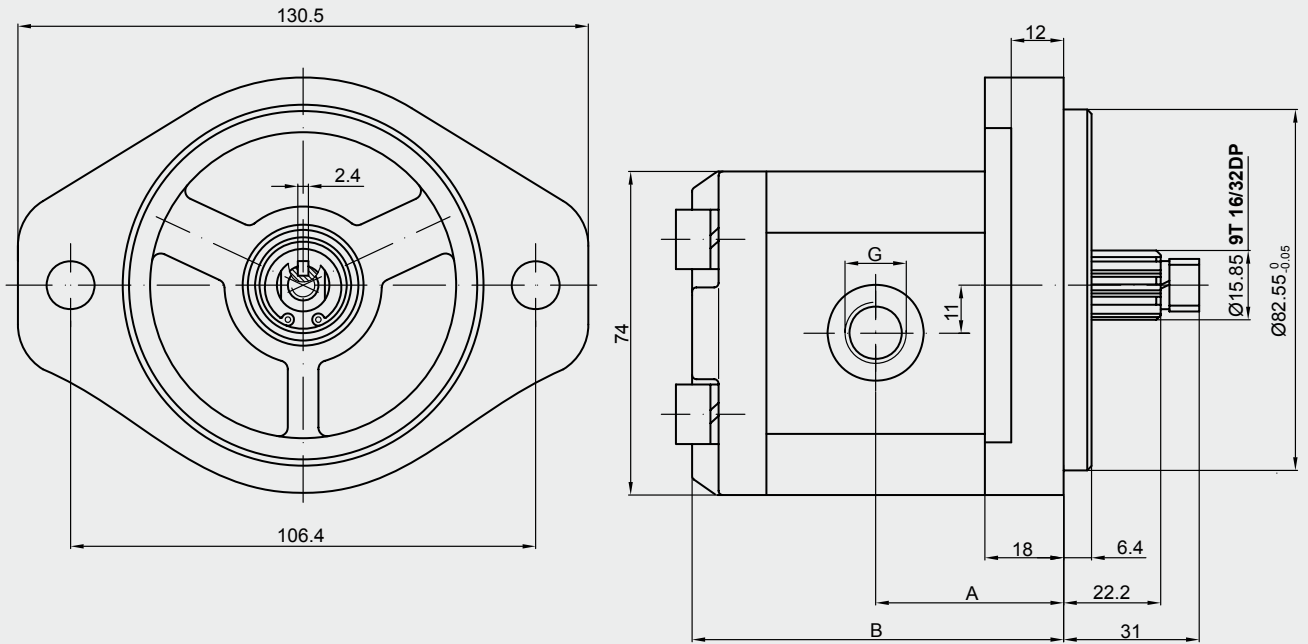
Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension			
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet G	Outlet G
PGE101-100-. CM1-N	1	1.40	3.26	220	3500	39.1	81	G 3/8" - A	G 3/8" - A
PGE101-125-. CM1-N	1.25	1.74	4.07			39.5	82		
PGE101-160-. CM1-N	1.6	2.23	5.21			40.3	83.6		
PGE101-200-. CM1-N	2	2.82	6.58			41.1	85.2		
PGE101-250-. CM1-N	2.5	3.53	8.23			42.1	87.2		
PGE101-315-. CM1-N	3.15	4.44	10.36			43.5	89.8	G 1/2" - A	
PGE101-365-. CM1-N	3.65	5.15	12.01			44.4	91.9		
PGE101-420-. CM1-N	4.2	5.92	13.82			45.5	94.1		
PGE101-500-. CM1-N	5	7.05	14.10			47.1	97.2		
PGE101-610-. CM1-N	6.1	8.69	14.49			170	3000		
PGE101-740-. CM1-N	7.4	10.55	17.58	150	2500	52.1	107.2		

PGE101-...-CM5-N



Type	Displacement [cm³/rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension							
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet			Outlet		
								E	F	d	E	F	d
PGE101-100-. CM5-N	1	1.40	3.26	220	3500	39.1	81	Ø 30	Ø 12	M6	Ø 30	Ø 12	M6
PGE101-125-. CM5-N	1.25	1.74	4.07			39.5	82						
PGE101-160-. CM5-N	1.6	2.23	5.21			40.3	83.6						
PGE101-200-. CM5-N	2	2.82	6.58			41.1	85.2						
PGE101-250-. CM5-N	2.5	3.53	8.23			42.1	87.2						
PGE101-315-. CM5-N	3.15	4.44	10.36			43.5	89.8						
PGE101-365-. CM5-N	3.65	5.15	12.01			44.4	91.9						
PGE101-420-. CM5-N	4.2	5.92	13.82			45.5	94.1						
PGE101-500-. CM5-N	5	7.05	14.10			47.1	97.2						
PGE101-610-. CM5-N	6.1	8.69	14.49			170	3000						
PGE101-740-. CM5-N	7.4	10.55	17.58	150	2500	52.1	107.2						

PGE101-....-EW1-N



Type	Displacement [cm <sup>3</sup> /rev]	Flow		Pressure Rated [bar]	max Speed n [rpm]	Dimension			
		at 1500 rpm [l/min]	at max. rpm [l/min]			A [mm]	B [mm]	Inlet G	Outlet G
PGE101-100-. EW1-N	1	1.40	3.26	220	3500	39.1	81	G 3/8" - A	G 3/8" - A
PGE101-125-. EW1-N	1.25	1.74	4.07			39.5	82		
PGE101-160-. EW1-N	1.6	2.23	5.21			40.3	83.6		
PGE101-200-. EW1-N	2	2.82	6.58			41.1	85.2		
PGE101-250-. EW1-N	2.5	3.53	8.23			42.1	87.2		
PGE101-315-. EW1-N	3.15	4.44	10.36			43.5	89.8	G 1/2" - A	
PGE101-365-. EW1-N	3.65	5.15	12.01			44.4	91.9		
PGE101-420-. EW1-N	4.2	5.92	13.82			45.5	94.1		
PGE101-500-. EW1-N	5	7.05	14.10			47.1	97.2		
PGE101-610-. EW1-N	6.1	8.69	14.49			170	3000		
PGE101-740-. EW1-N	7.4	10.55	17.58	150	2500	52.1	107.2		