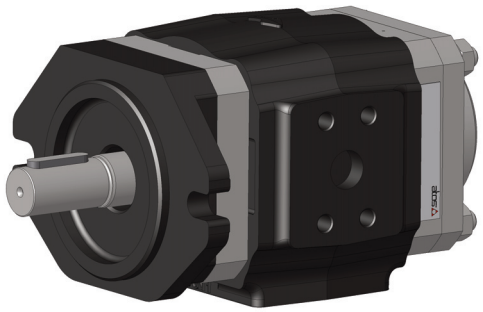
Cast iron internal gear pumps

fixed displacement, high pressure



PGI-2032/1D* /PE

PGI are fixed displacement cast iron internal gear pumps designed for high pressure application in fixed speed systems and variable speed systems with asynchronous or synchronous servomotor.

Their particular design allows outstanding efficiencies due to radial and axial gap compensation, low pressure pulsation and very low noise level.

The internal gear is supported by a hydrodynamic/hydrostatic lubrication film, which allows operation at low viscosities and low/high speeds.

Max displacement: up to **250 cm³/rev**
Max working pressure: up to **330 bar**
Max peak pressure: up to **350 bar**

1 MODEL CODE

PGI	2	020	/	1	D	*	/	PE

PGI: Internal gear pump

2: **Size,** see section 2 :
1, **2**, **3**, **4**

020: **Displacement (cm³/rev),** see section 2 :
PGI-1: **004, 006, 008, 011, 013, 016, 019**
PGI-2: **020**, **025**, **032**, **040**, **050**
PGI-3: **040**, **050**, **064**, **080**, **100**
PGI-4: **040**, **050**, **064**, **080**, **100, 160, 200, 250**

1: **Shaft,** SAE Standard:
1 = keyed

D: **Direction of rotation,** viewed at the shaft end:
D = clockwise

*****: Series number

PE: **Seals material**:
PE = FKM

2 HYDRAULIC CHARACTERISTICS - based on mineral oil ISO VG 46 at 50 °C

Size code		1							2				
Displacement code		**004**	**006**	**008**	**011**	**013**	**016**	**019**	**020**	**025**	**032**	**040**	**050**
Displacement	(cm^3/rev)	4,2	6,4	7,8	10,8	13,3	15,6	18,9	20	24,5	31,6	39,5	49,5
Continuous pressure	(bar)	330	330	330	330	330	330	300	330	330	330	280	280
Peak pressure **(1)**	(bar)	350	350	350	350	350	350	300	350	350	350	300	300
Recommended pressure on inlet port	(bar)	From 0,8 to 2 (absolute pressure)											
Max speed **(2)**	(rpm)	4200	4200	4000	4000	4000	4000	3000	3400	3200	3000	2500	1800
Volumetric efficiency **(3)**		88	92	93	93	94	95	95	93	93	94	95	95
Hydromechanical efficiency **(3)**		85	90	91	92	92	93	93	91	92	92	93	93
Noise **(3)**	(dBA)	53	55	57	58	59	60	61	62	63	64	65	66

Size code		3					4							
Displacement code		**040**	**050**	**064**	**080**	**100**	**040**	**050**	**064**	**080**	**100**	**160**	**200**	**250**
Displacement	(cm^3/rev)	40,2	50,3	65,3	80,4	100,5	40,8	50,6	65,3	80	101,2	160,1	200,9	249,9
Continuous pressure	(bar)	300	300	280	280	280	330	330	315	300	300	250	160	140
Peak pressure **(1)**	(bar)	330	330	290	290	290	340	340	330	330	330	280	210	150
Recommended pressure on inlet port	(bar)	from 0,8 to 2 (absolute pressure)												
Max speed **(2)**	(rpm)	3600	3600	3400	3200	3000	2400	2400	2400	2200	2200	2000	2000	2000
Volumetric efficiency **(3)**		93	93	94	95	95	93	93	94	94	95	96	96	96
Hydromechanical efficiency **(3)**		92	92	95	93	93	89	89	89	90	90	91	91	91
Noise **(3)**	(dBA)	67	68	69	70	71	72	73	74	75	76	77	77	78

(1) 15% duty cycle, max 10 sec continuously

(2) For max speed when coupled SSP system please consider table **AS200**;

(3) Measuring data with: n = 1450 rpm; Δp = 250 bar;

3 GENERAL CHARACTERISTICS

Assembly position	Any position.
Loads on the shaft	Axial and radial loads are not allowed on the shaft
Ambient temperature range	-20°C ÷ +80°C
Compliance	REACH Regulation (EC) n°1907/2006

4 HYDRAULIC FLUIDS - for other fluids not included in below table, consult our technical office

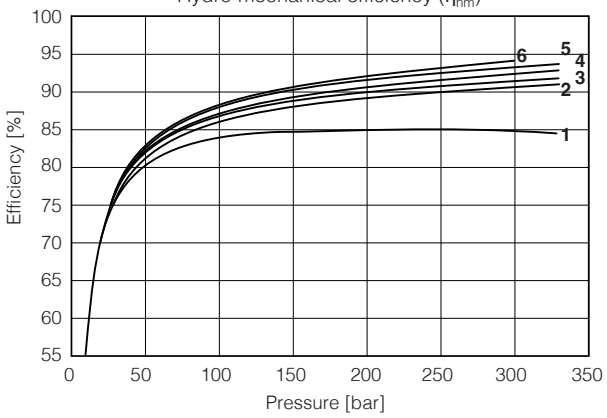
Fluid temperature		-20°C ÷ +80°C	
Recommended viscosity		10 ÷ 300 mm^2/s - max at cold start 2000 mm^2/s	
Max fluid contamination level	normal operation	ISO4406 class 20/18/13 NAS1638 class 9	see also filter section at www.atos.com or KTF catalog
	longer life	ISO4406 class 18/16/11 NAS1638 class 7	
Hydraulic fluid		**Classification**	**Ref. Standard**
Mineral oils		HL, HLP, HLPD, HVLP, HVLPD	DIN 51524

5 DIAGRAMS at 1450 rpm (based on mineral oil ISO VG 46 at 40°C)

5.1 Efficiency

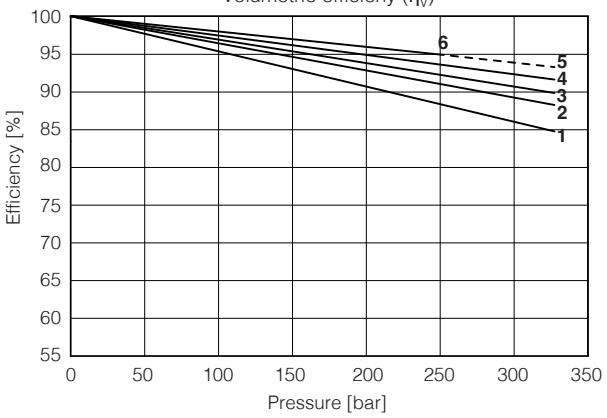
Efficiency is the ratio of useful output energy in relation to the input energy fed to a component.
In fluid power, pump efficiency can split in two different contributes:
- hydro-mechanical efficiency (η_{hm}), that describes the losses created by frictional forces (both mechanical and viscous)
- volumetric efficieny (η_V), that accounts for the flow leakages of a pump

PGI-1



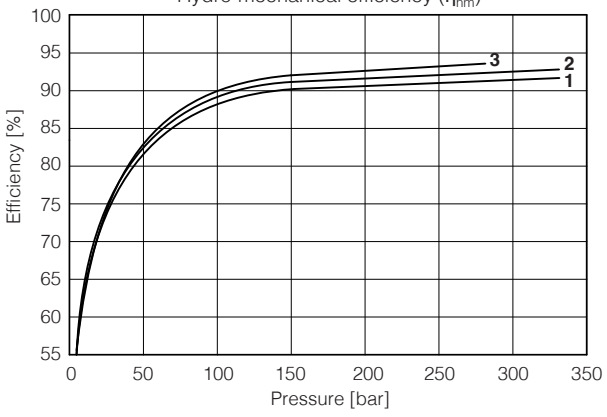
1 = PGI-1004 **4** = PGI-1011 **6** = PGI-1019
2 = PGI-1006 **4** = PGI-1013
3 = PGI-1008 **5** = PGI-1016

PGI-1



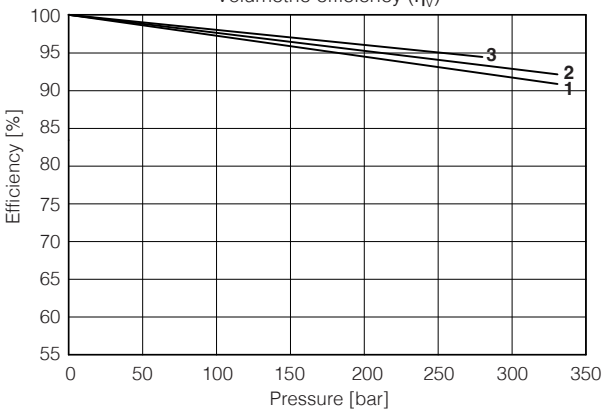
1 = PGI-1004 **4** = PGI-1011 **6** = PGI-1019
2 = PGI-1006 **4** = PGI-1013
3 = PGI-1008 **5** = PGI-1016

PGI-2



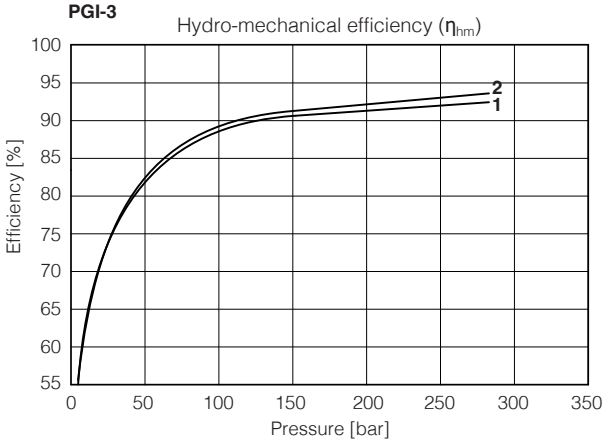
1 = PGI-2020 **3** = PGI-2040; PGI-2050
2 = PGI-2025; PGI-2032

PGI-2



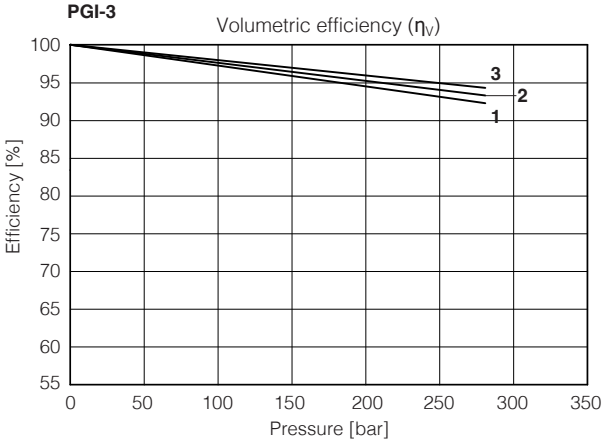
1 = PGI-2020; PGI-2025 **3** = PGI-2040; PGI-2050
2 = PGI-2032

PGI-3



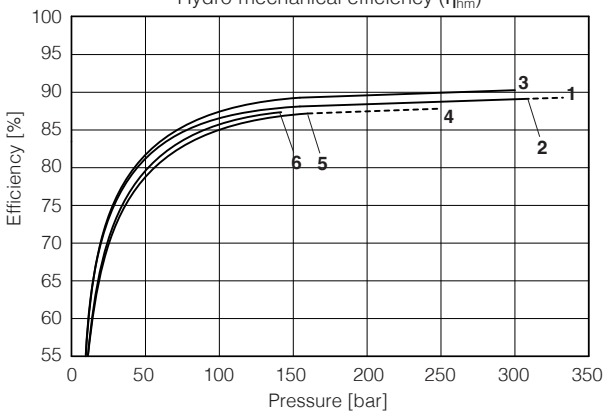
1 = PGI-3040; PGI-3050; PGI-3064 **2** = PGI-3080; PGI-3100

PGI-3



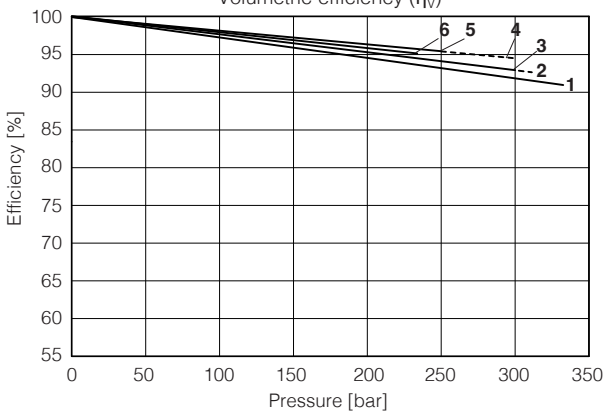
1 = PGI-3040; PGI-3050 **2** = PGI-3064 **3** = PGI-3080; PGI-3100

PGI-4



1 = PGI-4040; PGI-4050
2 = PGI-4064
3 = PGI-4080; PGI-4100
4 = PGI-4160
5 = PGI-4200
6 = PGI-4250

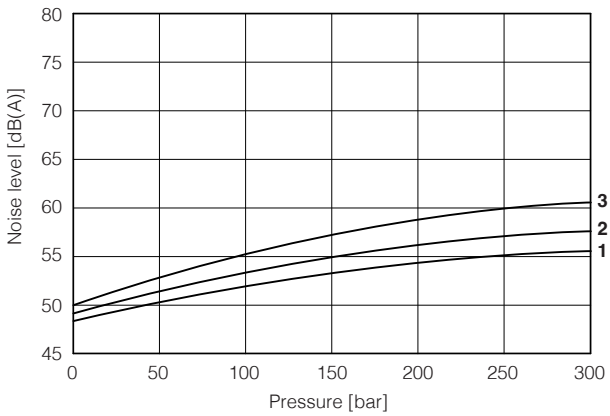
PGI-4



1 = PGI-4040; PGI-4050
2 = PGI-4064
3 = PGI-4080
4 = PGI-4100; PGI-4160
5 = PGI-4200
6 = PGI-4250

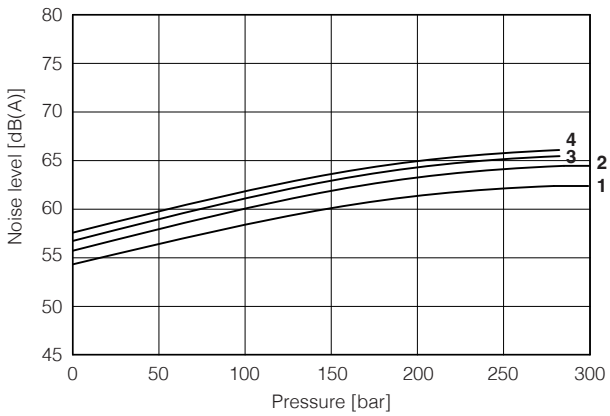
5.2 Noise level

PGI-1



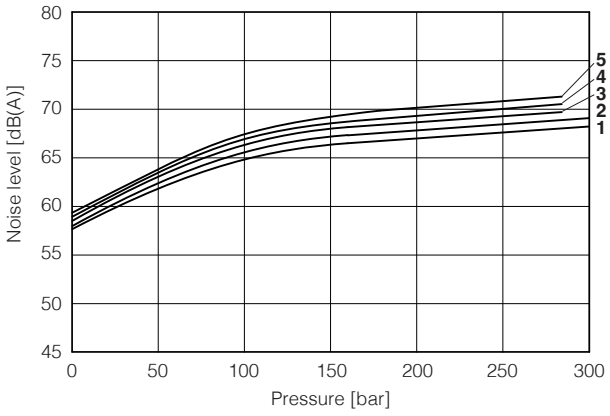
1 = PGI-1004
2 = PGI-1006; PGI-1008; PGI-1011
3 = PGI-1013; PGI-1016; PGI-1019

PGI-2



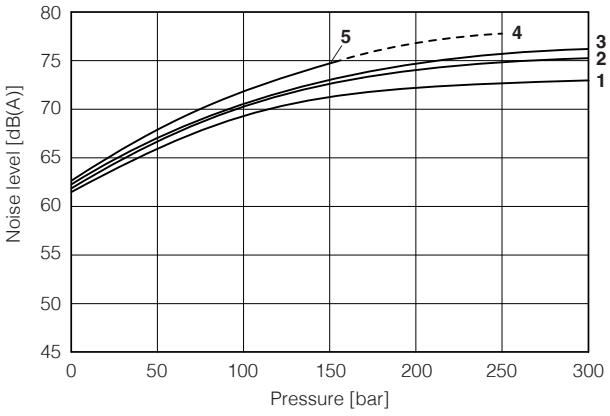
1 = PGI-2020; PGI-2025;
2 = PGI-2032
3 = PGI-2040
4 = PGI-2050

PGI-3



1 = PGI-3040
2 = PGI-3050
3 = PGI-3064
4 = PGI-3080
5 = PGI-3100

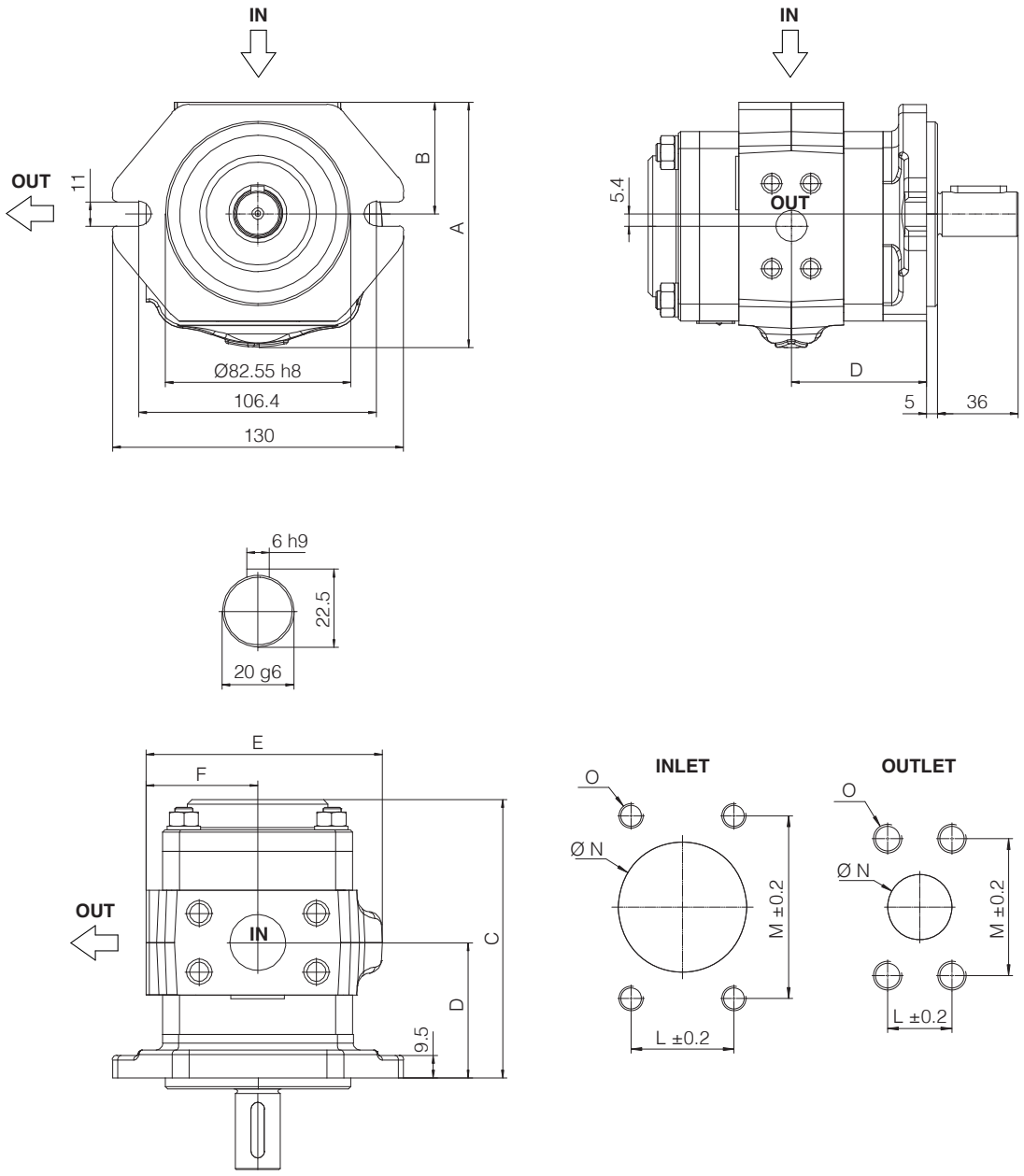
PGI-4



1 = PGI-4040; PGI-4050
2 = PGI-4064; PGI-4080
3 = PGI-4100
4 = PGI-4160
5 = PGI-4200; PGI-4250

PGI-1*

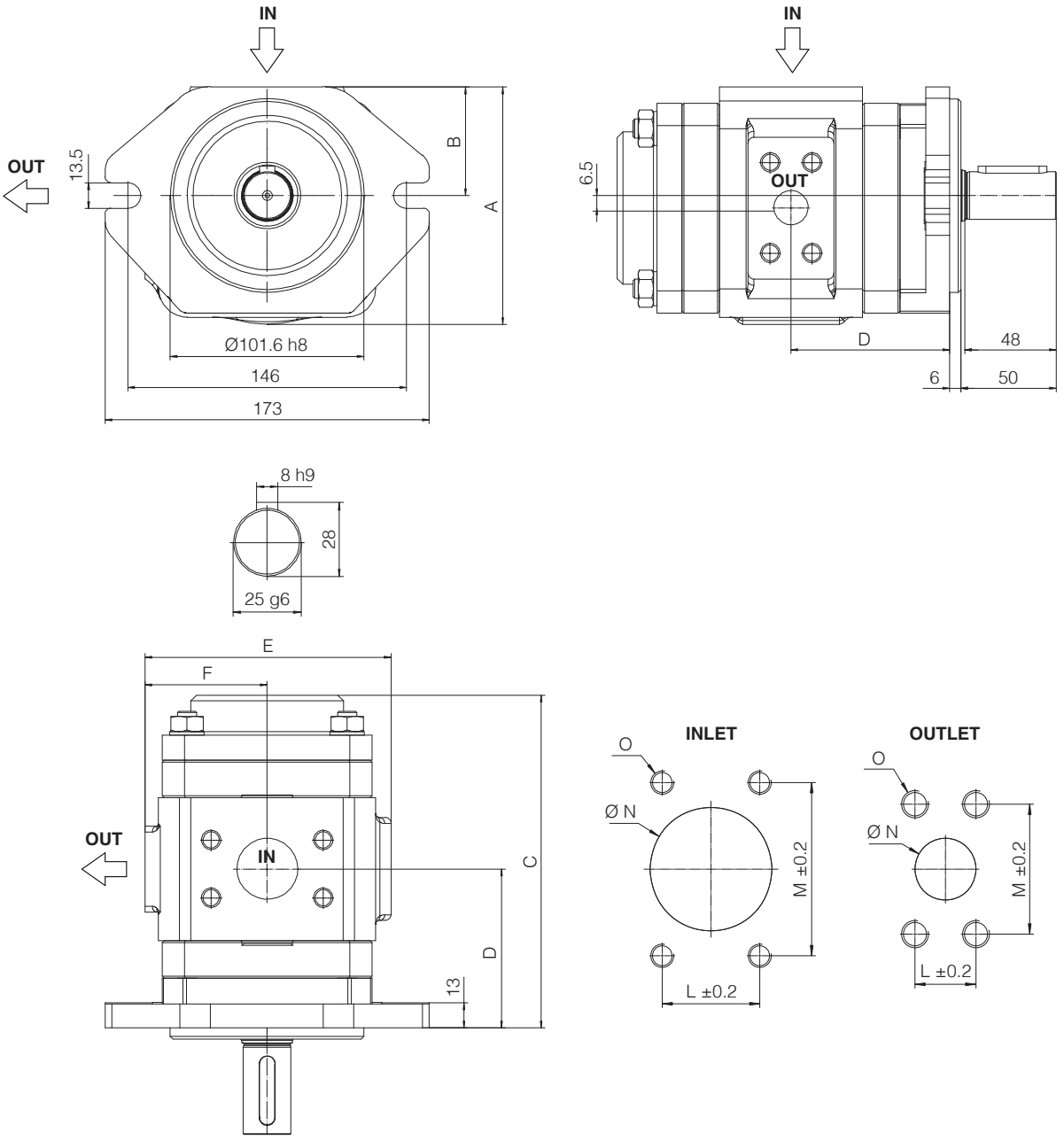
Mounting flange: SAE-A (J744)



Pump code	Dimensions [mm]																Mass [kg]
	A	B	C	D	E	F	INLET port					OUTLET port					
							L	M	N	O	SAE 3000 Flange	L	M	N	O	SAE 3000 Flange	
PGI-1004	109	50	113.5	55	105	50	17.5	38.1	14	M8x15	1/2”	17.5	38.1	14	M8x15	1/2”	4.9
PGI-1006	109	50	115.5	56	105	50	22	47.5	19	M10x17	3/4”	17.5	38.1	14	M8x15	1/2”	5
PGI-1008	109	50	118.5	57.5	105	50	22	47.5	19	M10x17	3/4”	17.5	38.1	14	M8x15	1/2”	5.2
PGI-1011	109	50	124.5	60.5	105	50	26.2	52.4	25	M10x17	1”	17.5	38.1	14	M8x15	1/2”	5.4
PGI-1013	110	50	129.5	63	105	50	26.2	52.4	25	M10x17	1”	17.5	38.1	14	M8x15	1/2”	5.5
PGI-1016	110	50	134.5	65.5	105	50	26.2	52.4	25	M10x17	1”	17.5	38.1	14	M8x15	1/2”	5.7
PGI-1019	120	55	141.5	69	116	55	35.7	69.9	38.1	M12x23	1 1/2”	17.5	38.1	14	M8x15	1/2”	7.4

PGI-2*

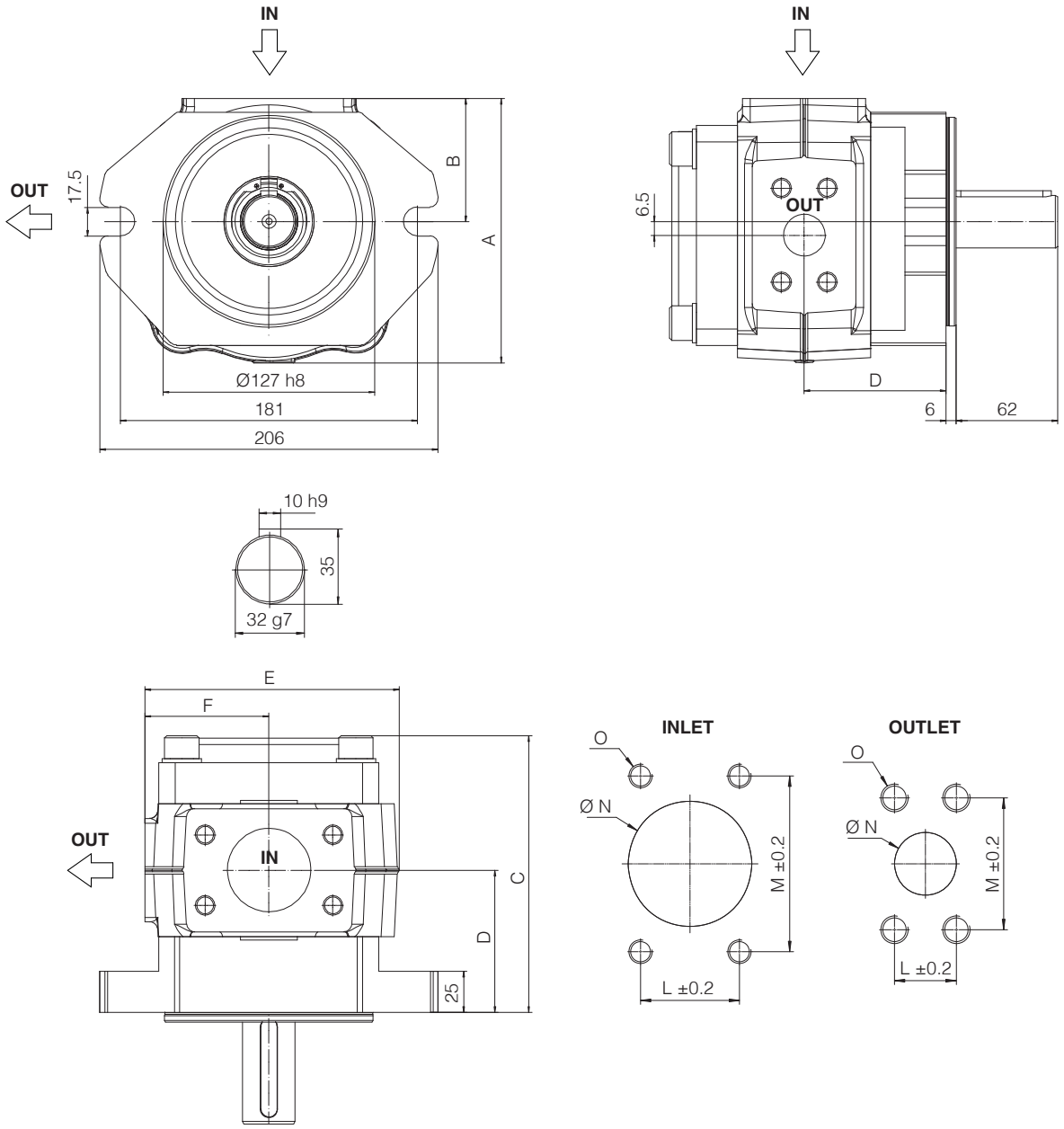
Mounting flange: SAE-B (J744)



Pump code	Dimensions [mm]																Mass [kg]
	A	B	C	D	E	F	INLET port					OUTLET port					
							L	M	N	O	SAE 3000 Flange	L	M	N	O	SAE 3000 Flange	
PGI-2020	124	57	158	75	131	64	30.2	58.7	32	M10x17	1 1/4”	22	47.5	18	M10x17	3/4”	10.5
PGI-2025	124	57	165	78.2	131	64	30.2	58.7	32	M10x17	1 1/4”	22	47.5	18	M10x17	3/4”	11.2
PGI-2032	124	57	175	83.2	131	64	30.2	58.7	32	M10x17	1 1/4”	22	47.5	18	M10x17	3/4”	12
PGI-2040	144	63	186	88.7	151	70	42.9	77.8	51	M12x17	2”	26.2	52.4	20	M10x17	1”	15
PGI-2050	144	63	200	95.7	151	70	42.9	77.8	51	M12x17	2”	26.2	52.4	20	M10x17	1”	17

PGI-3*

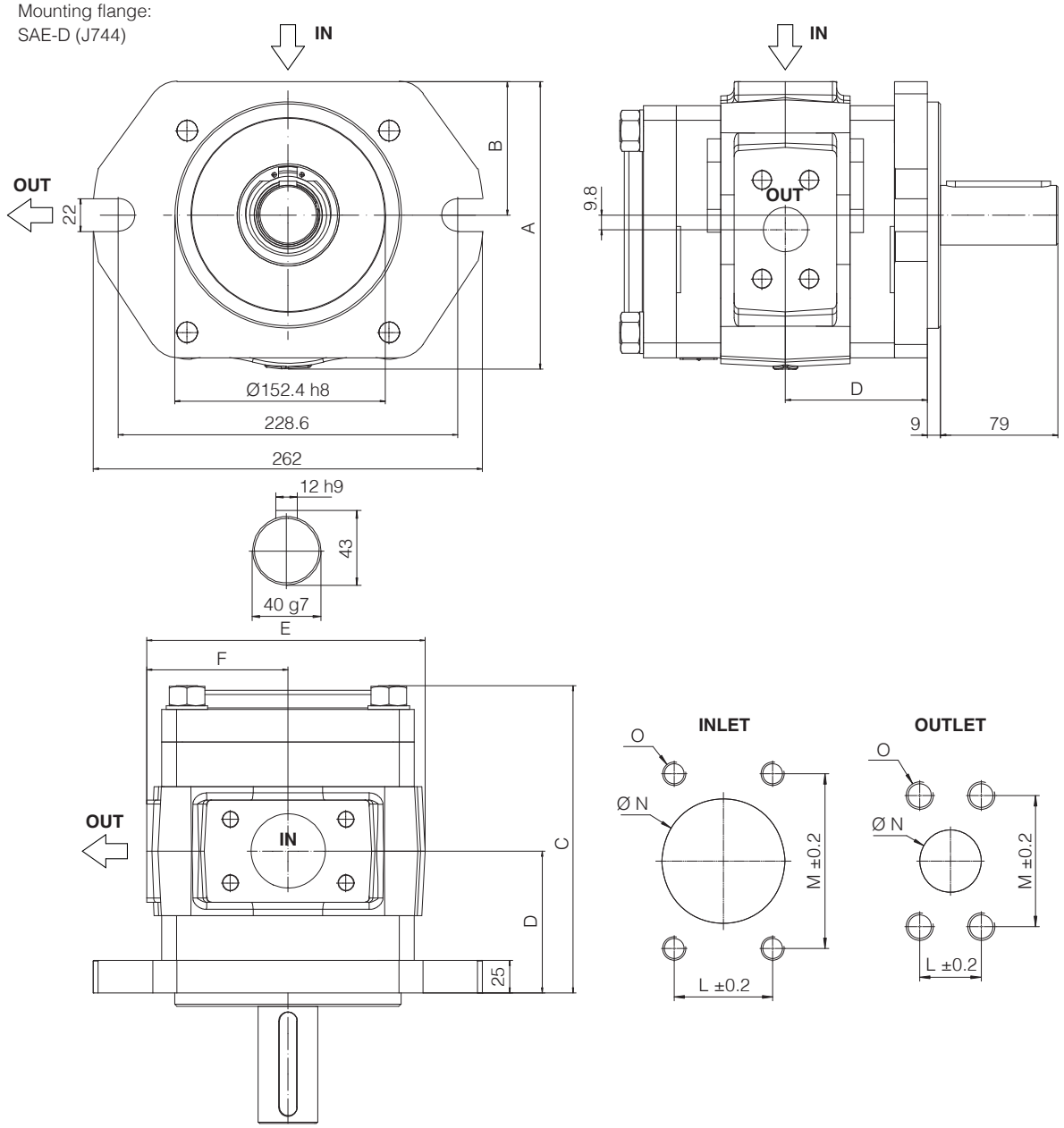
Mounting flange: SAE-C (J744)



Pump code	Dimensions [mm]																Mass [kg]
	A	B	C	D	E	F	INLET port					OUTLET port					
							L	M	N	O	SAE 3000 Flange	L	M	N	O	SAE 3000 Flange	
PGI-3040	161	75	149	76.5	155	75.5	42.9	77.8	51	M12x21	2”	27.8	57.2	25.4	M12x24	1”	12.9
PGI-3050	161	75	167	80.5	155	75.5	42.9	77.8	51	M12x21	2”	27.8	57.2	25.4	M12x24	1”	14
PGI-3064	161	75	169	86.5	155	75.5	42.9	77.8	51	M12x21	2”	27.8	57.2	25.4	M12x24	1”	15.3
PGI-3080	161	75	181	92.5	155	75.5	42.9	77.8	51	M12x21	2”	31.8	66.7	31.75	M14x24	1 1/4”	17.5
PGI-3100	161	75	197	100.5	155	75.5	50.8	88.9	63.5	M12x21	2 1/2”	31.8	66.7	31.75	M14x24	1 1/4”	18.7

PGI-4*

Mounting flange:
SAE-D (J744)



Pump code	Dimensions [mm]															Mass [kg]
	A	B	C	D	E	INLET port					OUTLET port					
						L	M	N	O	SAE 3000 Flange	L	M	N	O	SAE 3000 Flange	
PGI-4040	196	90	189	120	190	35.7	69.9	40	M12x25	1 1/2”	27.8	57.2	20	M12x22	1”	31
PGI-4050	196	90	195	120	190	35.7	69.9	40	M12x25	1 1/2”	27.8	57.2	20	M12x22	1”	32
PGI-4064	196	90	204	120	190	35.7	69.9	40	M12x25	1 1/2”	27.8	57.2	20	M12x22	1”	34
PGI-4080	196	90	213	120	190	42.9	77.8	50	M12x25	2”	31.8	66.7	30	M14x25	1 1/4”	36
PGI-4100	196	90	226	120	190	42.9	77.8	50	M12x25	2”	31.8	66.7	30	M14x25	1 1/4”	39
PGI-4160	196	90	262	121	190	50.8	88.9	65	M12x25	2 1/2”	31.8	66.7	30	M14x25	1 1/4”	46
PGI-4200	198	92	287	121	190	61.9	106.4	76	M16x25	3”	36.5	79.4	38	M16x25	1 1/2”	51
PGI-4250	198	92	317	121	190	61.9	106.4	76	M16x25	3”	36.5	79.4	38	M16x25	1 1/2”	58

7 RELATED DOCUMENTATION

A900	Operating and maintenance informations for pumps