

Aluminium internal gear pumps for SSP servopumps

fixed displacement



PGIL are fixed displacement internal gear pumps suitable for use in SSP system with variable speed drives to provide variable flow rate.

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 **125 cm³/rev**

Max pressure: up to **250 bar**

1 MODEL CODE

PGIL	-	2	020	/	1	D	/	PE
Internal gear pump							Series number	Seals material: PE = FKM
Size, see section 2:						Direction of rotation, viewed at the shaft end: D = clockwise		
2, 3, 4						Shaft, SAE Standard: 1 = keyed		
Displacement (cm ³ /rev), see section 2:		020, 032, 040, 050, 064, 080, 100, 125						

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

Size code	2				3			4
Displacement code	020	032	040	050	064	080	100	125
Max displacement (cm ³ /rev)	20	32,1	40,1	50,3	65,3	80,4	100,5	125,7
Continuous pressure (bar)	250	250	250	250	250	250	250	250
Peak pressure (1) (bar)	320	320	300	280	270	270	270	280
Recommended pressure on inlet port (bar)	from 0,8 to 2 (absolute pressure)							
Max speed (2) (rpm)	3900	3700	3600	3600	3000	3000	3000	2800
Volumetric efficiency (3)	93	94	95	95	94	95	95	94
Hydromechanical efficiency (3)	91	92	93	93	92	93	93	90
Noise (3) (dBA)	62	64	65	66	69	70	71	76

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

(2) For SSP system max speed please consider table AS100;

(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	

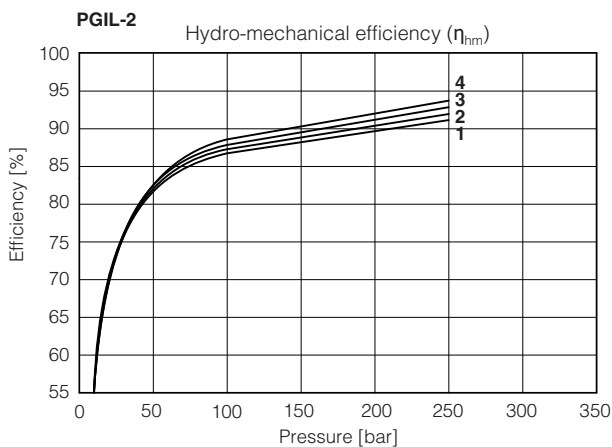
5 DIAGRAMS at 1450 rpm (based on mineral oil ISO VG 46 at 40°C)

5.1 Efficiency

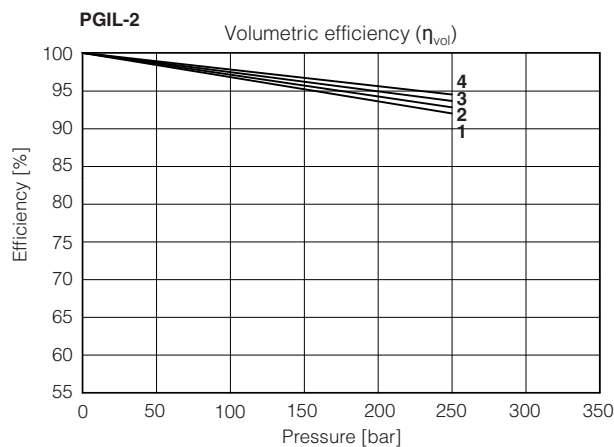
Efficiency is the ratio of useful output energy in relation to the input energy fed to a component.

In fluid power, pump efficiency can split in two different contributes:

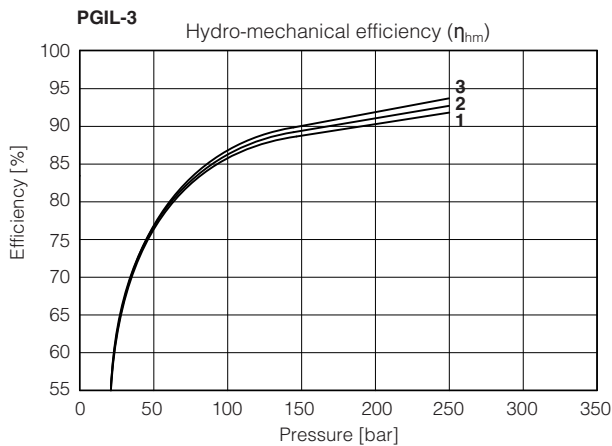
- hydro-mechanical efficiency (η_{hm}), that describes the losses created by frictional forces (both mechanical and viscous)
- volumetric efficiency (η_{vol}), that accounts for the flow leakages of a pump



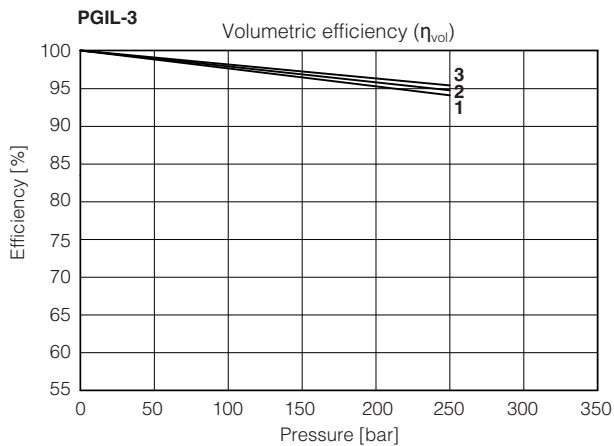
1 = PGIL-2020 2 = PGIL-2032 3 = PGIL-2040 4 = PGIL-2050



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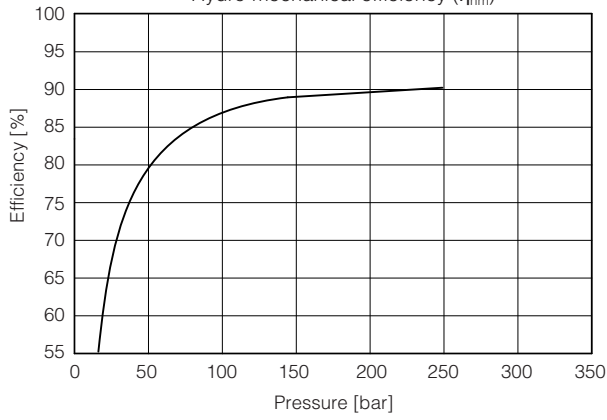
1 = PGIL-3064 2 = PGIL-3080 3 = PGIL-3100



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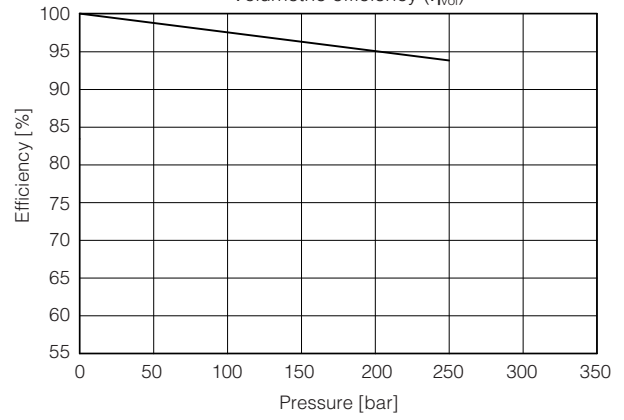
PGIL-4125

Hydro-mechanical efficiency (η_{hm})



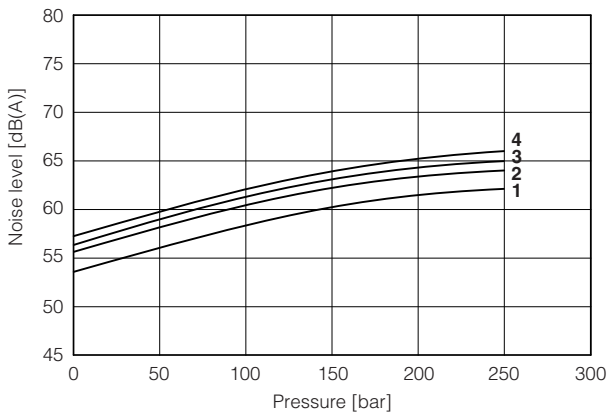
PGIL-4125

Volumetric efficiency (η_{vol})



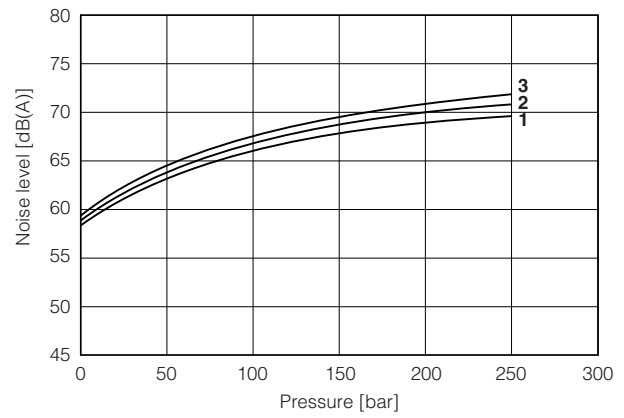
5.2 Noise level

PGIL-2



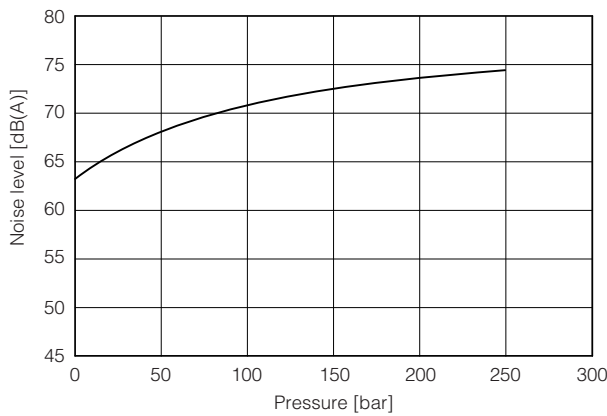
1 = PGIL-2020 2 = PGIL-2032 3 = PGIL-2040 4 = PGIL-2050

PGIL-3

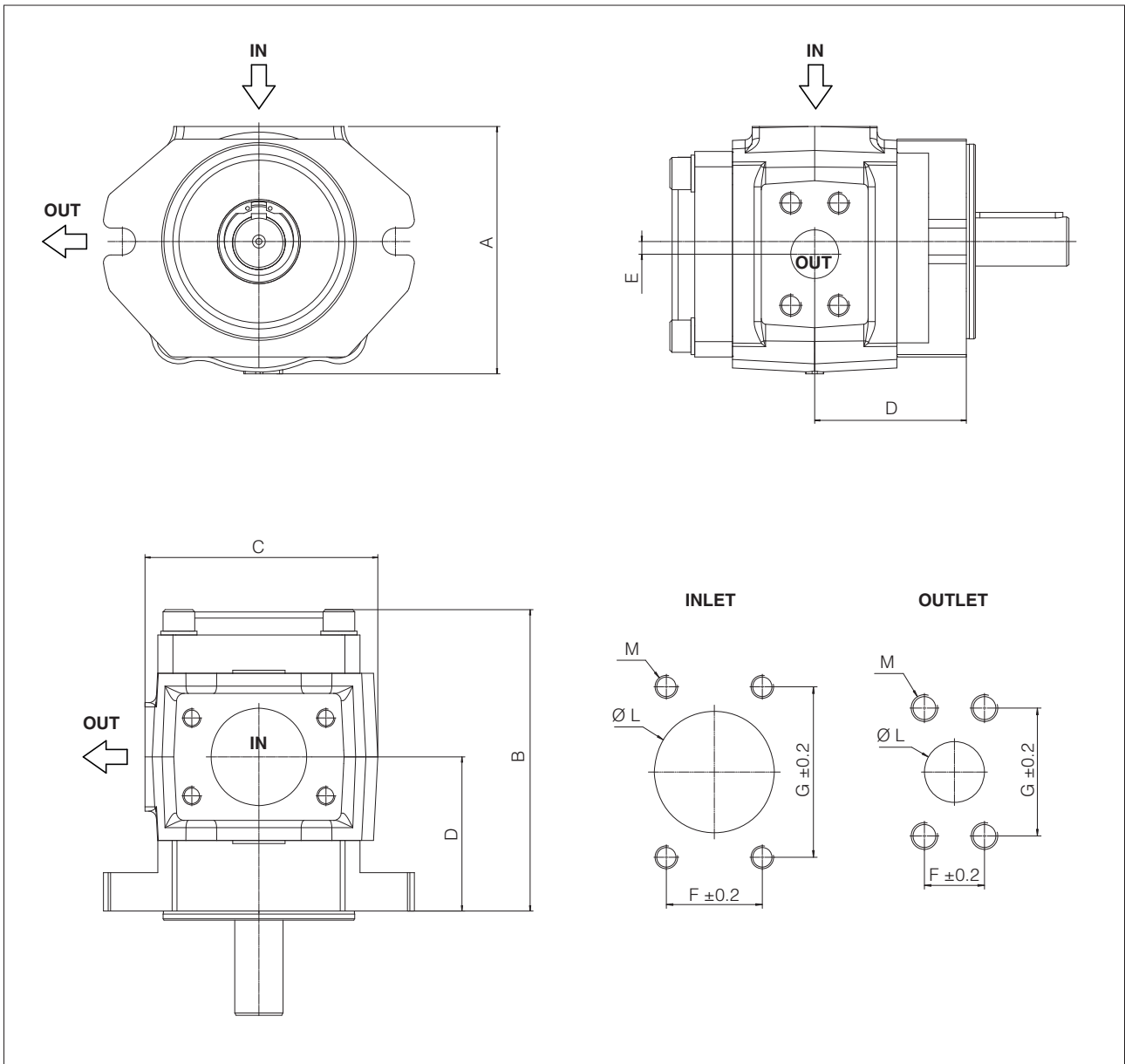


1 = PGIL-3064 2 = PGIL-3080 3 = PGIL-3100

PGIL-4125



6 DIMENSIONS



Pump code	Dimensions [mm]															Mass [kg]
	A	B	C	D	E	INLET port					OUTLET port					
						F	G	L	M	SAE flange	F	G	L	M	SAE flange	
PGIL-2020	126	158	129	75	6.5	30.2	58.7	32	M10x17	1 1/4" SAE3000	22	47.5	18	M10x17	3/4" SAE3000	8.3
PGIL-2032	126	153	129	83.2	6.5	30.2	58.7	32	M10x17	1 1/4" SAE3000	22	47.5	18	M10x17	3/4" SAE3000	9.2
PGIL-2040	135	166	138	88.7	6.5	42.9	77.8	51	M12x17	2" SAE3000	26.2	52.4	20	M10x17	1" SAE3000	9.8
PGIL-2050	135	180	138	95.7	6.5	42.9	77.8	51	M12x17	2" SAE3000	26.2	52.4	20	M10x17	1" SAE3000	10.5
PGIL-3064	160	168.5	155	86.5	8.3	42.9	77.8	51	M12x21	2" SAE3000	27.8	57.2	25.4	M12x22	1" SAE6000	11.5
PGIL-3080	160	180.5	155	92.5	8.3	42.9	77.8	51	M12x21	2" SAE3000	31.8	66.7	31.75	M14x24	1 1/4" SAE6000	13
PGIL-3100	160	196.5	155	100.5	8.3	50.8	88.9	63.5	M12x21	2 1/2" SAE3000	31.8	66.7	31.75	M14x24	1 1/4" SAE6000	13.5
PGIL-4125	189.6	212	185	109.5	9.8	50.8	88.9	63.5	M12x22	2 1/2" SAE3000	36.5	79.4	38.1	M16x27	1 1/2" SAE6000	27.5

7 RELATED DOCUMENTATION

AS050	Basics for Smart Servopumps - SSP	AS800	Programming tools for pumps & servopumps
AS100	SSP Smart Servopumps	AS810	Accessories for servopumps
AS200	Sizing criteria for servopumps	AS910	Operating and maintenance information for servopumps
AS300	PGI cast iron internal gear pumps, high pressure	S-MAN-HW	Servopumps installation manual
AS400	PMM high performance synchronous servomotors	S-MAN-SW	Servopumps programming software manual
AS500	D-MP electronic drives	S-MAN-STO	Servopumps Safe Torque Off manual
AS510	Fieldbus		