



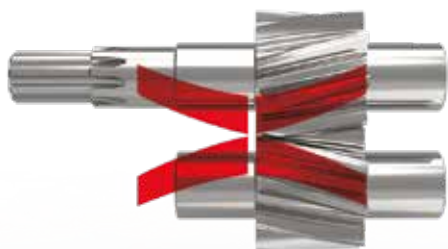
HYDRAULIC
HELICAL GEAR
PUMPS

XLP

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X TECHNOLOGY

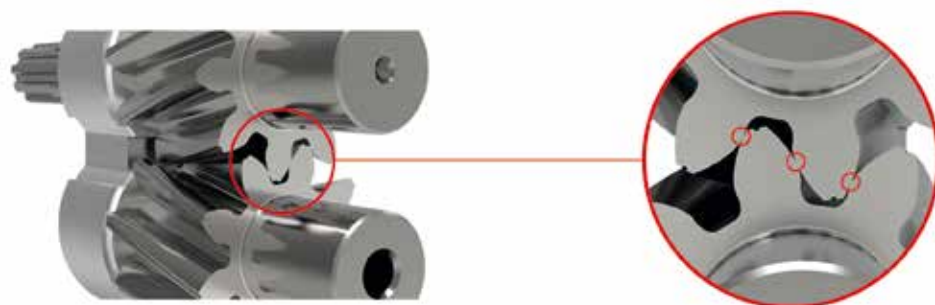


The X technology is a step forward in involute external gear pumps thanks to innovative patented solutions.

PATENTED SOLUTIONS

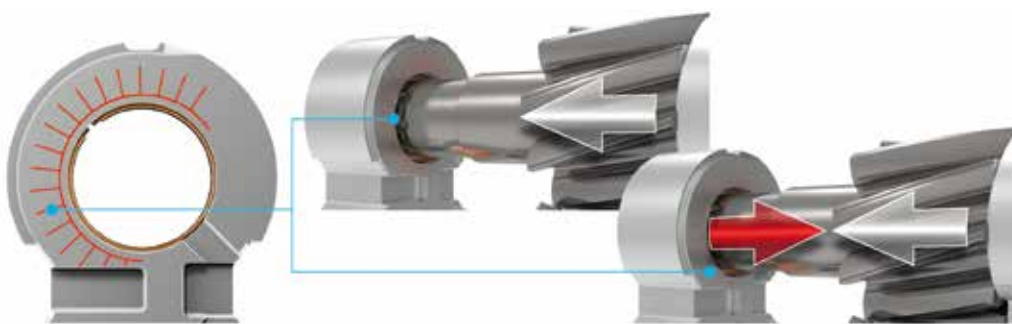
➤ DUAL FLANK

Dual flank meshing combined with helical gear design.



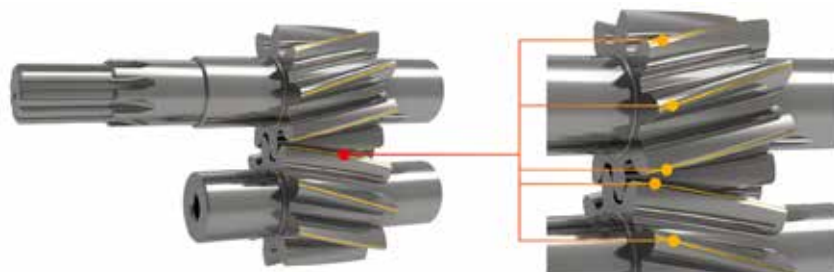
➤ MICRO-GROOVES

Micro-grooves on the bearing block balance the axial forces.



➤ TIP GROOVE

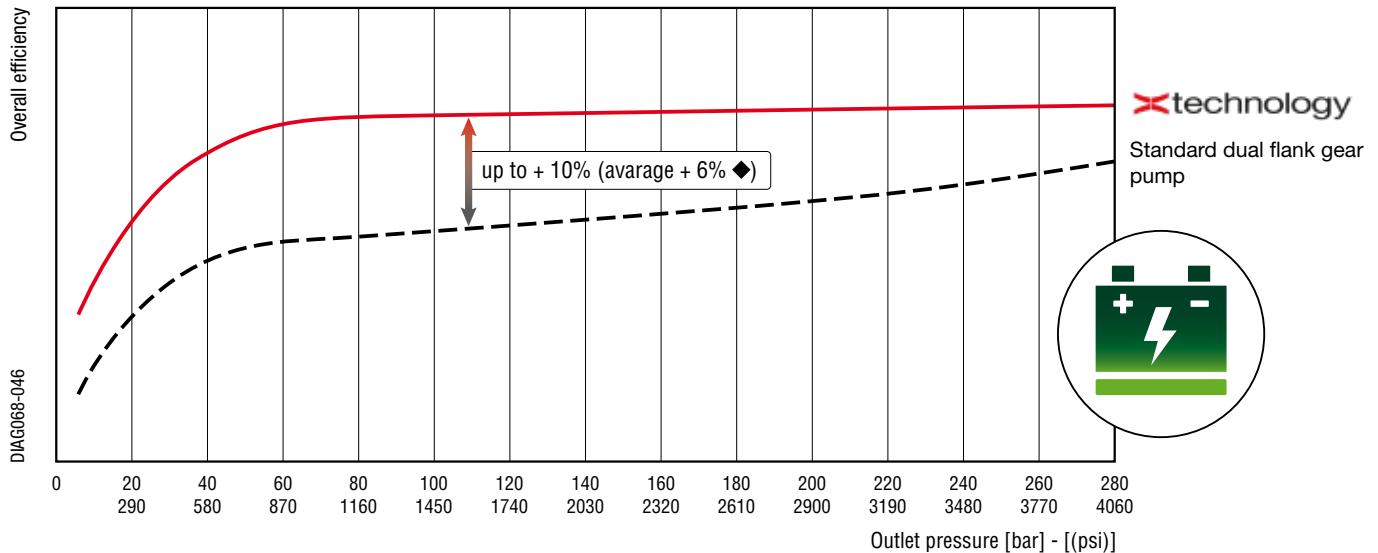
Tip groove on the teeth improves lubrication at high speed.



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X TECHNOLOGY - BENEFITS

➤ SIGNIFICANT INCREASE OF PUMP EFFICIENCY

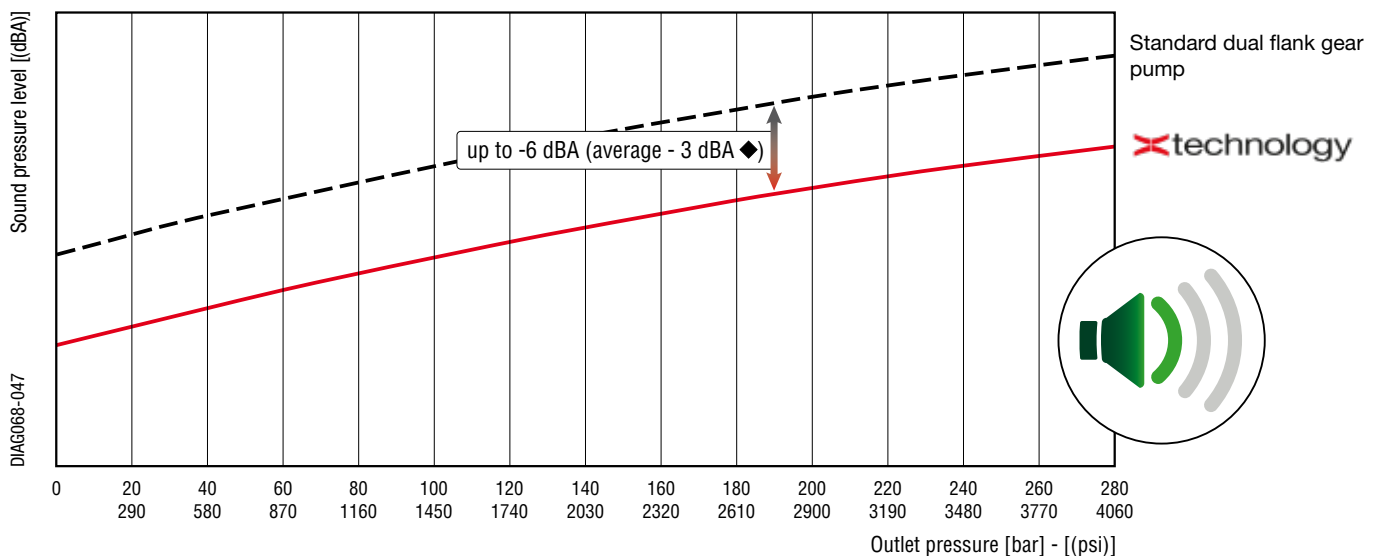


Both volumetric and hydro-mechanical efficiency are improved over the operating range, thanks to:

- ▶ Optimized pump design for higher stiffness
- ▶ Improved lubrication by the tip grooves
- ▶ Better meshing of the helical gears
- ▶ Optimized gear machining process

♦ average over the entire operating range and displacement range.

➤ REMARKABLE REDUCTION OF PUMP NOISE



Thanks to the combination of the dual flank meshing and the high helix angle, the pump noise is further reduced compared to the standard dual flank technology.

In addition, the lower number of teeth of the new X technology reduces pump frequencies by 25%.

This results in a more pleasant sound quality.

♦ average over the entire operating range and displacement range.

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INTRODUCTION

“XLP20” series aluminum body hydraulic gear pumps with helical gear design.
 Three pieces pump - Interchangeable with all Casappa’s group 2 pumps.

DISPLACEMENTS

From 8,06 cm³/rev (0.49 in³/rev)

To 28,01 cm³/rev (1.71 in³/rev)

PRESSURE

Max. constant operating pressure 250 bar (3625 psi)

Max. system pressure (relief valve setting) 280 bar (4060 psi)

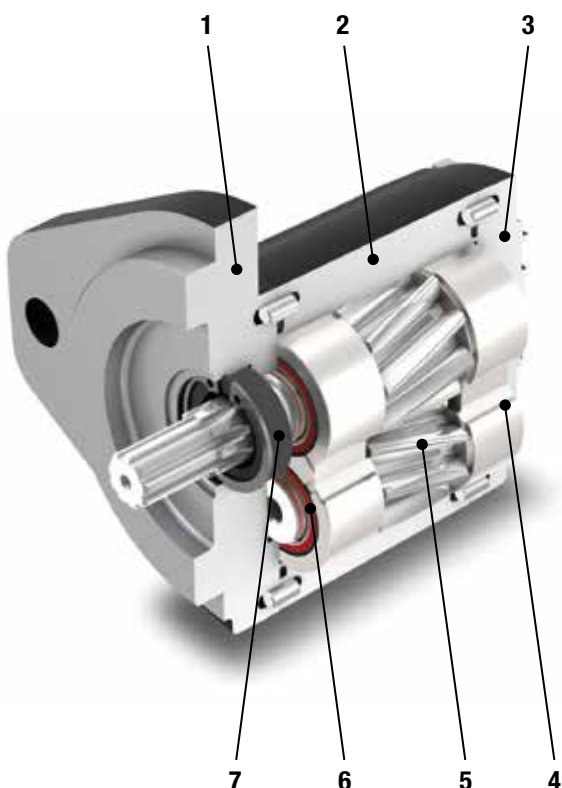
Max. peak of pressure 300 bar (4350 psi)

SPEED

Max. 4000 min⁻¹

TYPICAL APPLICATIONS

- Building & Construction
- Material Handling
- Agriculture
- Forestry
- Turf care & Mowers
- Fan Drive



1	Mounting flange
2	Body
3	Cover
4	Thrust plate
5	Gear
6	Seal
7	Shaft seal

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- High temperature
- High pressure
- High reliability
- Multiple units available in standard version, common inlet and separated stages

INSTRUCTIONS

INSTALLATION

Pump

The direction of rotation of single-rotation pumps must be the same as that of the drive shaft. Check that the coupling flange correctly aligns the transmission shaft and the pump shaft. Flexible couplings should be used (never rigid fittings) which will not generate an axial or radial load on the pump shaft.

TANK

Tank capacity must be sufficient for the system's operating conditions (~ 3 times the amount of oil in circulation) to avoid overheating of the fluid. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

LINES

The lines must have a major diameter which is at least as large as the diameter of pump ports, and must be perfectly sealed. To reduce loss of power, the lines should be as short as possible, reducing the sources of hydraulic resistance (elbow, throttling, gate valves, etc.) to a minimum. A length of flexible tubing is recommended to reduce the transmission of vibrations. All return lines must end below the minimum oil level, to prevent foaming. Before connecting the lines, remove any plugs and make sure that the lines are perfectly clean.

HYDRAULIC FLUID

Use hydraulic fluid conforming to viscosity data as specified in the first pages of the catalogue.

Avoid using mixtures of different oils which could result in decomposition and reduction of the oil's lubricating power.

FILTERS

We recommend filtering the entire system flow. Filters on suction and return line must be fitted in according to the contamination class as indicated in the first pages of the catalogue. Casappa recommends to use its own production filters:

STORAGE

The storage must be in a dry environment. Max storage time in ideal conditions is 24 months. The ideal storage temperature is between 5 °C (41 °F) and 20 °C (68 °F).

No problem in case of temperature between -40 °C (-40 °F) and 50 °C (122 °F). Below -40 °C (-40 °F) please contact us.

STARTING UP

Check that all circuit connections are tight and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting.

Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank.

If the difference between pump temperature and fluid temperature exceeds 10 °C (18 °F), rapidly switch the system on and off to heat it up gradually. Then gradually increase the pressure and speed of rotation until the preset operating levels as specified in the catalogue are attained.

COLD START

Cold start is meant short term and low idle. During cold start of the machine the following limits can be applied:

Minimum inlet pressure	0,5 bar abs. (7 psi)
Outlet pressure (pumps)	≤ 50 bar (725 psi)
Speed	≤ 1500 min ⁻¹
Minimum temperature	-40 °C (-40 °F)
Max oil viscosity	2000 mm ² /s (cSt) [9100 SSU]

If the ambient temperature is lower than -20 °C (-4 °F) the system speed and pressure must be limited until the hydraulic oil temperature exceeds -20 °C (-4 °F).

PERIODICAL CHECKS - MAINTENANCE

Keep the outside surface clean especially in the area of the drive shaft seal. In fact, abrasive powder can accelerate wear on the seal and cause leakage. Replace filters regularly to keep the fluid clean. The oil level must be checked and oil replaced periodically depending on the system's operating conditions.



FEATURES

Construction	External helical gear pumps 3-piece construction
Mounting	EUROPEAN - SAE - GERMAN standard flanges
Ports	Threaded or split flange
Direction of rotation (looking at the drive shaft)	Anti-clockwise (S) - clockwise (D)
Inlet pressure range for pumps	0,7 ÷ 3 bar abs. (10 ÷ 44 psi) If p > 1,5 bar abs. (22 psi) specific shaft sealing have to be applied. Please contact us for more information.
Fluid temperature range	See table (1)
Fluid	Mineral oil based hydraulic fluids to ISO/DIN. Please contact us for other fluids
Viscosity range	From 12 to 100 mm ² /s (cSt) [60 to 456 SSU] recommended Up to 750 mm ² /s (cSt) [3410 SSU] permitted
Filtering requirement and recommended fluid contamination	See table (2) page 8

Tab. 1

Type	Fluid composition	Max pressure bar (psi)	Max speed min ⁻¹	Temperature - °C (°F)			Seals (●)	Shaft seals option (◆)
				Min	Max continuous	Max peak		
ISO/DIN	Mineral oil based hydraulic fluid to ISO/DIN	See page 7	See page 7	-25 (-13)	80 (176)	100 (212)	N	D C1
				-25 (-13)	110 (230)	125 (257)	V	
				-25 (-13)	110 (230)	125 (257)	T-PV	

(●) **N** = Buna NBR (standard) - **V** = Viton-FKM - **T-PV** = Hydrogenated buna HNBR seals with Viton-FKM shaft seals

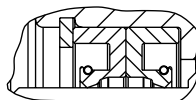
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D (◆) shaft seals with wiper seal

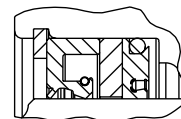
C1 (◆) High pressure special shaft seal with wiper seal

Single rotation pumps

Max drain
line pressure:
0,5 bar (7 psi)



Max drain
line pressure:
10 bar (145 psi)
@ 2000 min⁻¹



FEATURES

FILTRATION

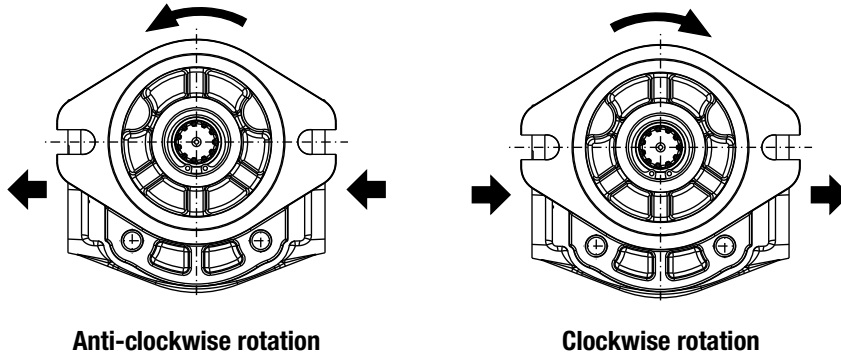
Tab. 2

Working pressure bar (psi)	$\Delta p < 140$ $\Delta p < (2030)$	$140 < \Delta p < 210$ $(2030) < \Delta p < (3045)$	$\Delta p > 210$ $\Delta p > (3045)$
Contamination class NAS 1638	10	9	8
Contamination class ISO 4406	21/19/16	20/18/15	19/17/14
Achieved with filter $\beta_{10}(c) \geq 200$ ISO 16889	-	10 μm	10 μm
Achieved with filter $\beta_{25}(c) \geq 200$ ISO 16889	25 μm	-	-

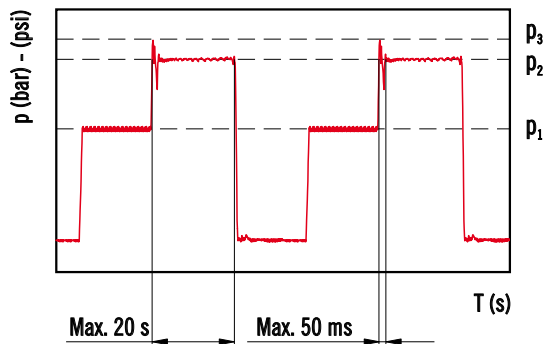
Casappa recommends to use its own production filters:



DEFINITION OF ROTATION DIRECTION LOOKING AT THE DRIVE SHAFT



PRESSURE DEFINITION



- p_1 Constant operating pressure
- p_2 System pressure (relief valve setting)
- p_3 Peak of pressure

The peak of pressure is the max pressure allowed and it corresponds to the overshoot of the relief valve.

Please note that both relief valve setting and overshoot must be lower than their limits.

If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Casappa limit.

Please contact us for high frequency applications.

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FEATURES

Pump type	Displacement	Max. pressure			Max. speed	Min. speed
		p ₁	p ₂	p ₃		
	cm ³ /rev (in ³ /rev)	bar (psi)			min ⁻¹	
XLP20•8	8,06 (0.49)	250 (3625)	280 (4060)	300 (4350)	4000	600
XLP20•10	10,05 (0.61)	250 (3625)	280 (4060)	300 (4350)	4000	600
XLP20•12	12,09 (0.74)	250 (3625)	280 (4060)	300 (4350)	4000	600
XLP20•14	14,02 (0.86)	250 (3625)	280 (4060)	300 (4350)	4000	500
XLP20•16	16,03 (0.98)	250 (3625)	280 (4060)	300 (4350)	3500	500
XLP20•18	18,05 (1.10)	250 (3625)	280 (4060)	300 (4350)	3500	500
XLP20•20	20,00 (1.22)	250 (3625)	280 (4060)	300 (4350)	3500	500
XLP20•22	22,46 (1.37)	230 (3335)	260 (3770)	280 (4060)	3000	500
XLP20•24	24,01 (1.46)	200 (2900)	230 (3335))	250 (3625)	3000	500
XLP20•26	26,03 (1.59)	200 (2900)	230 (3335)	250 (3625)	3000	500
XLP20•28	28,01 (1.71)	170 (2465)	200 (2900)	220 (3190)	3000	500

For configuration with common inlet or with SAE threaded ports max. pressure and speed can change.
 Please contact us for more information.

Q	l/min (US gpm)	Flow
M	Nm (lbf in)	Torque
P	kW (HP)	Power
V	cm ³ /rev (in ³ /rev)	Displacement
n	min ⁻¹	Speed
Δp	bar (psi)	Pressure
$\eta_v = \eta_v(V, \Delta p, n)$		Volumetric efficiency
$\eta_{hm} = \eta_{hm}(V, \Delta p, n)$		Hydro-mechanical efficiency
$\eta_t = \eta_v \cdot \eta_{hm}$		Overall efficiency

DESIGN CALCULATIONS FOR PUMP

$$Q = Q_{\text{theor.}} \cdot \eta_v \quad [\text{l/min}]$$

$$Q_{\text{theor.}} = \frac{V \cdot n}{1000} \quad [\text{l/min}]$$

$$M = \frac{M_{\text{theor.}}}{\eta_{hm}} \quad [\text{Nm}]$$

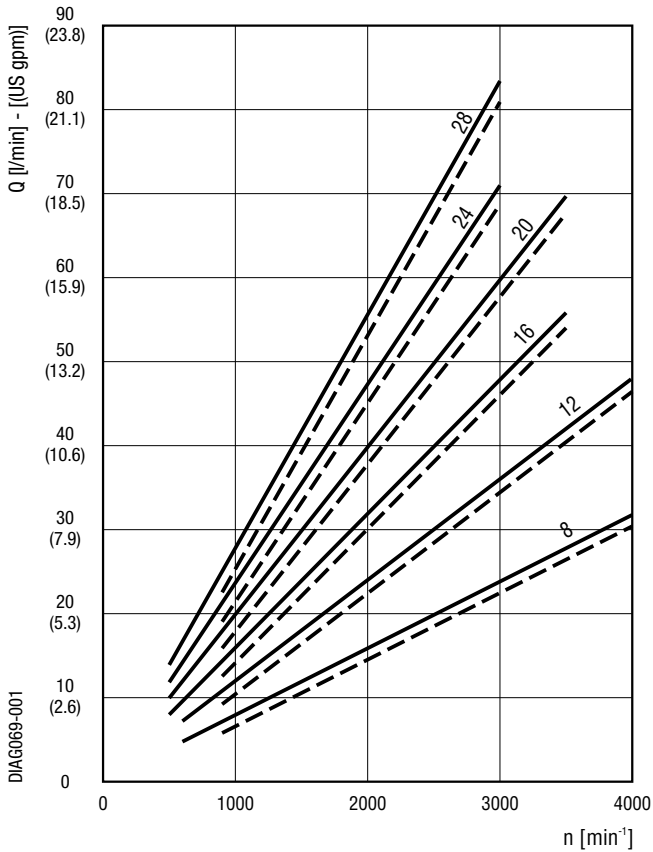
$$M_{\text{theor.}} = \frac{\Delta p \cdot V}{62,83} \quad [\text{Nm}]$$

$$P_{\text{in}} = \frac{P_{\text{out}}}{\eta_t} \quad [\text{kW}]$$

$$P_{\text{out}} = \frac{\Delta p \cdot Q}{600} \quad [\text{kW}]$$

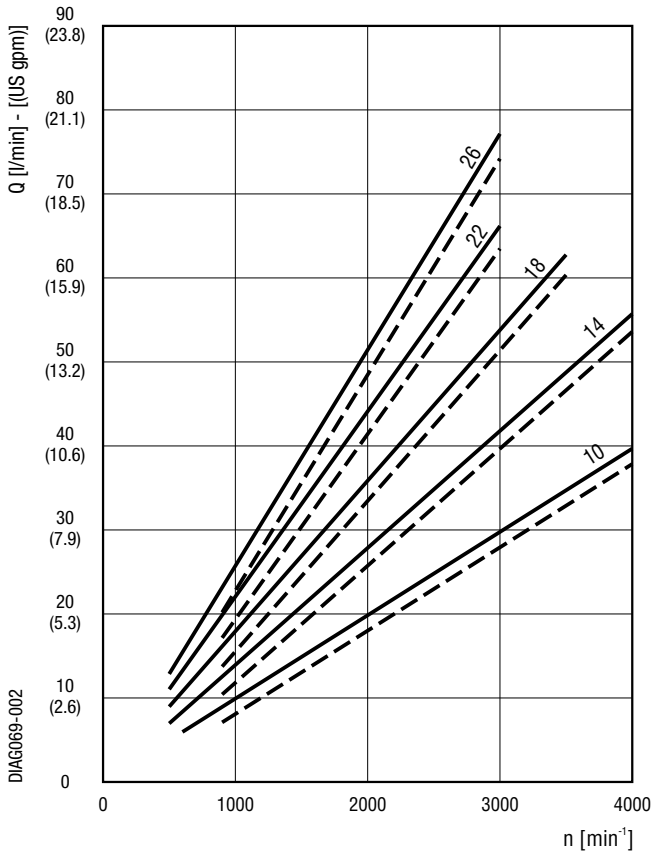
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GEAR PUMPS PERFORMANCE CURVES



Each curve has been obtained at 50°C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40°C (104 °F) and at these pressures.

XLP20•8	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•12	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•16	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•20	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•24	—	20 bar (290 psi)
	- - -	200 bar (2900 psi)
XLP20•28	—	20 bar (290 psi)
	- - -	170 bar (2465 psi)



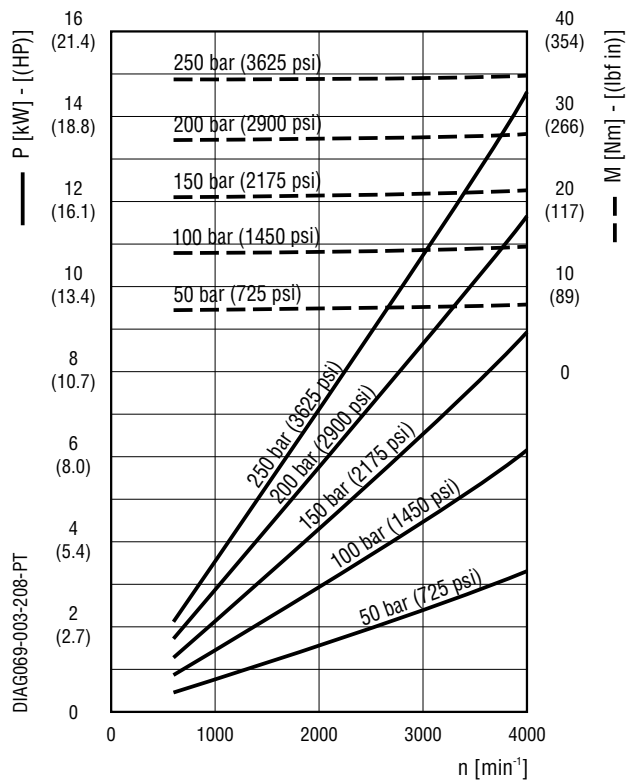
XLP20•10	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•14	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•18	—	20 bar (290 psi)
	- - -	250 bar (3625 psi)
XLP20•22	—	20 bar (290 psi)
	- - -	230 bar (3335 psi)
XLP20•26	—	20 bar (290 psi)
	- - -	200 bar (2900 psi)

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XLP20•8

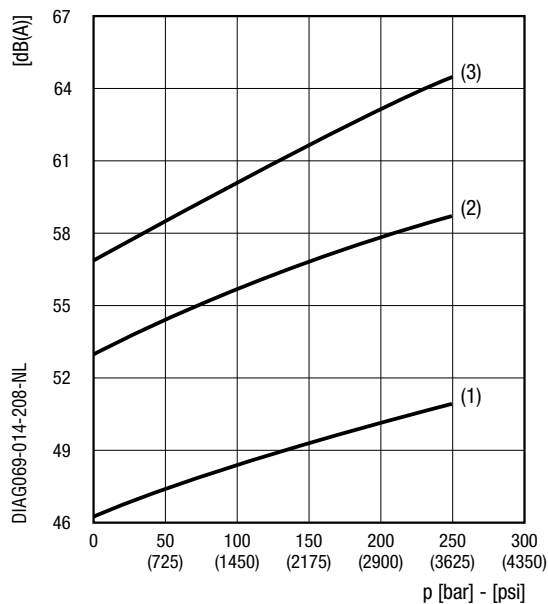
OPERATING CURVES

Power and torque

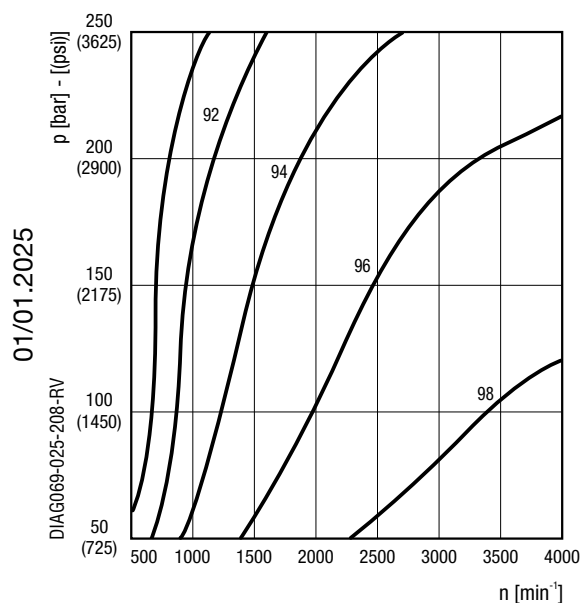


Noise level

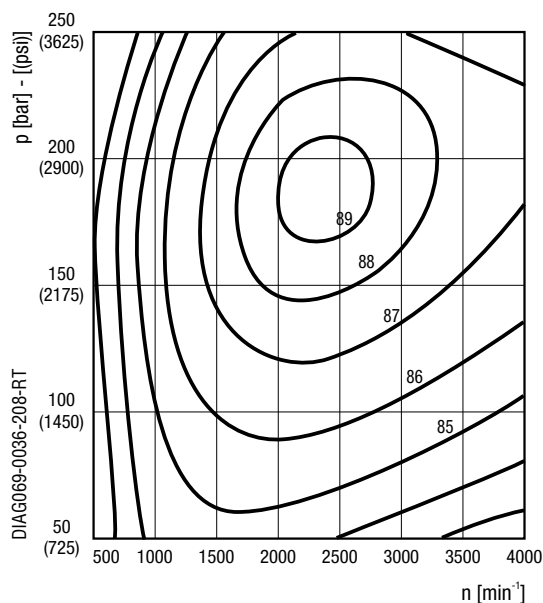
Distance from microphone to pump = 1 m (39.37 in)
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



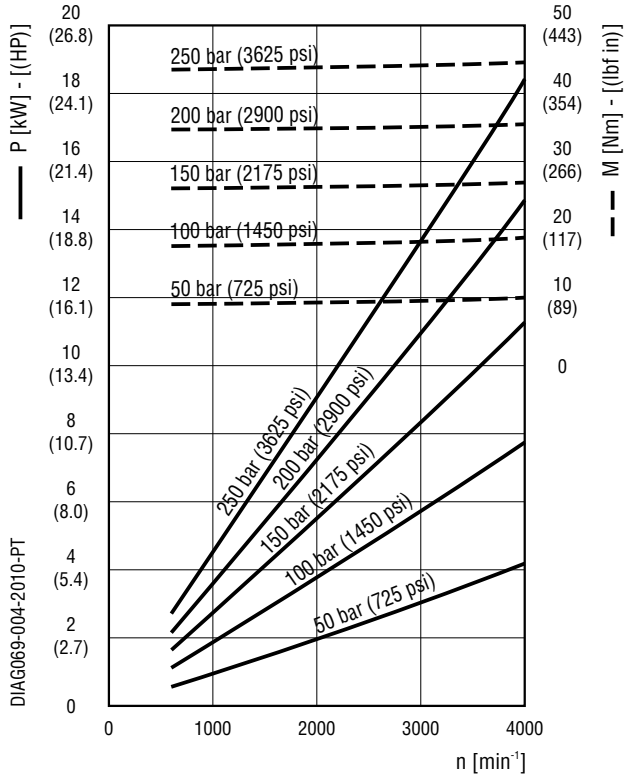
Overall efficiency



XLP20•10

OPERATING CURVES

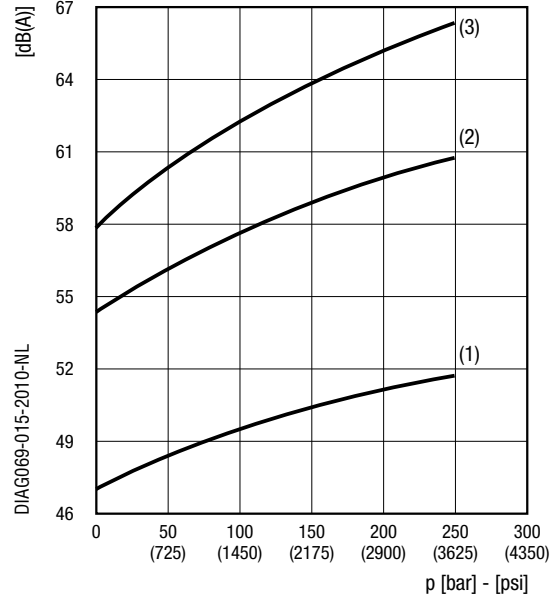
Power and torque



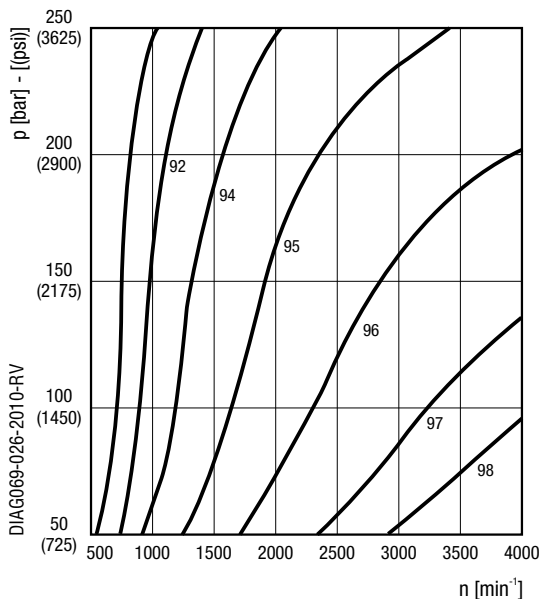
Noise level

Distance from microphone to pump = 1 m (39.37 in)

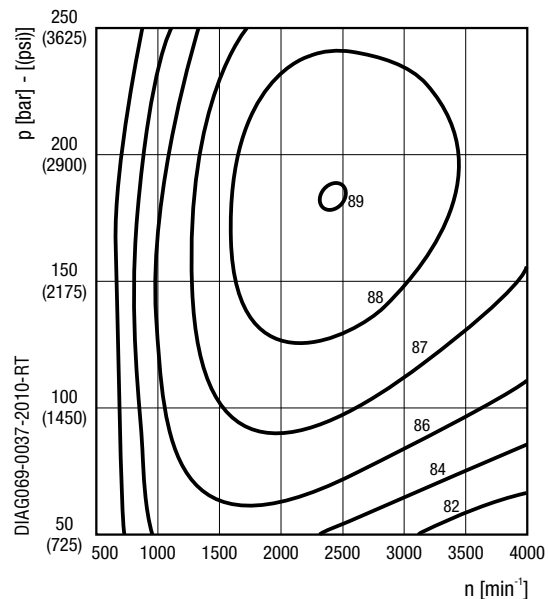
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

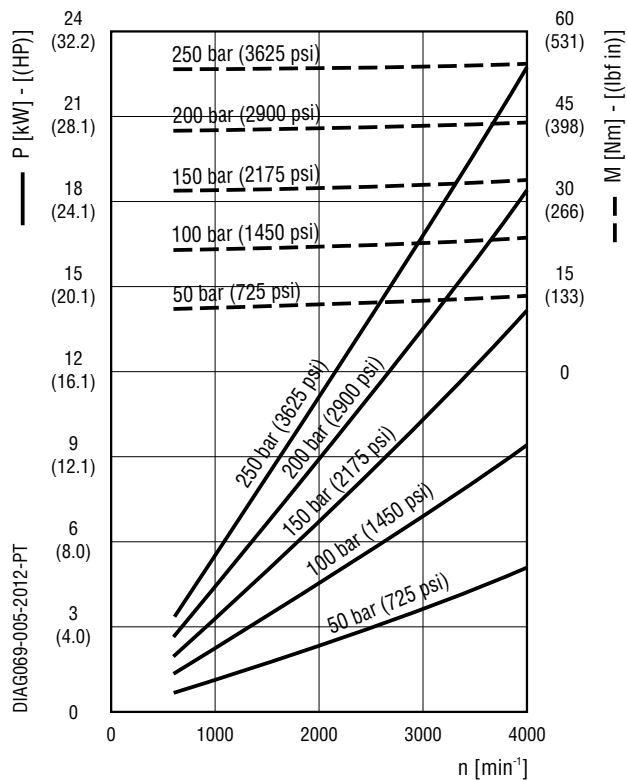


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XLP20•12

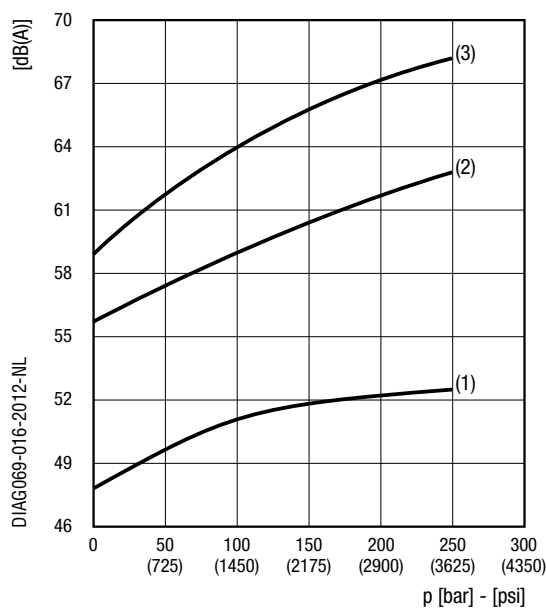
OPERATING CURVES

Power and torque

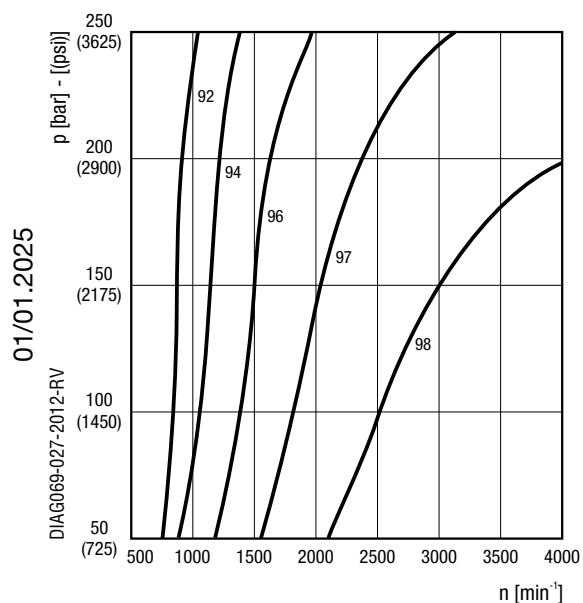


Noise level

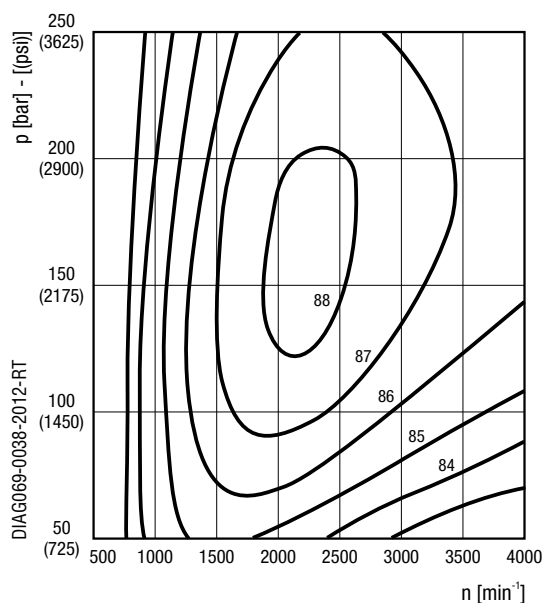
Distance from microphone to pump = 1 m (39.37 in)
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



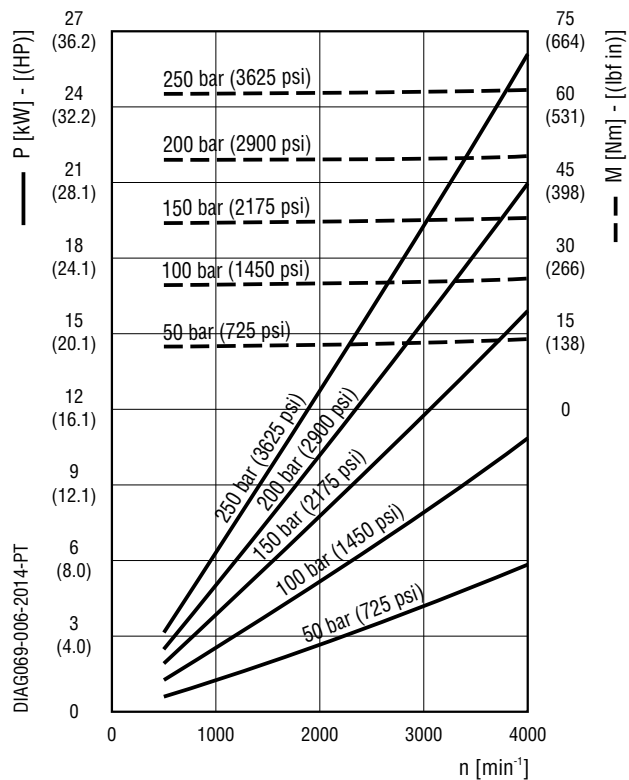
Overall efficiency



XLP20•14

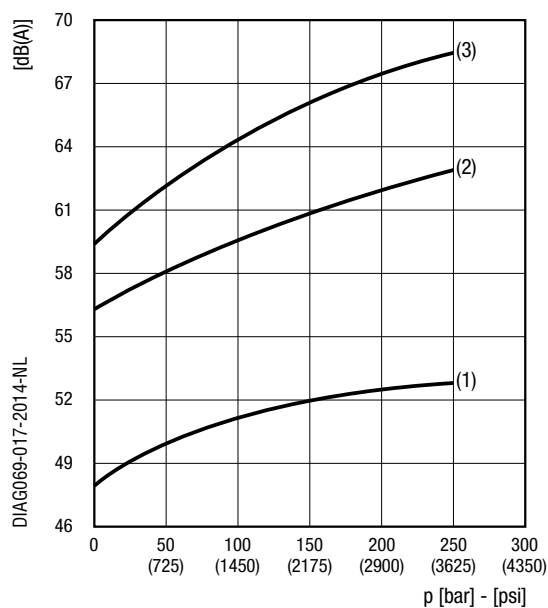
OPERATING CURVES

Power and torque

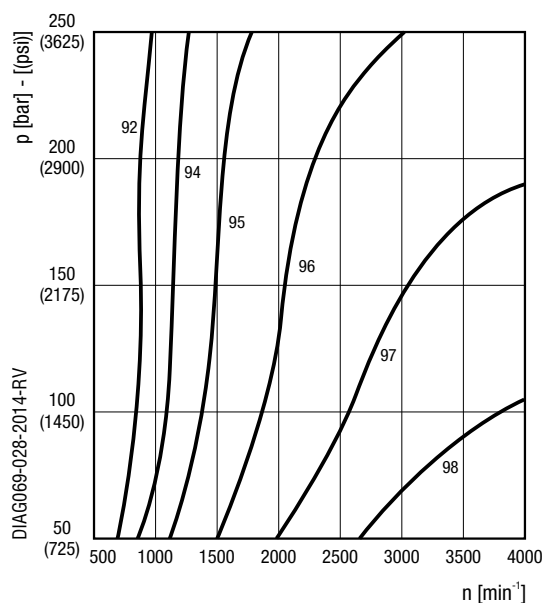


Noise level

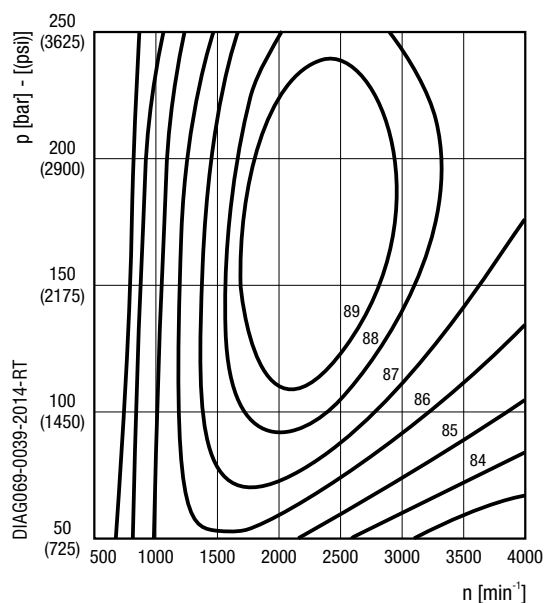
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1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

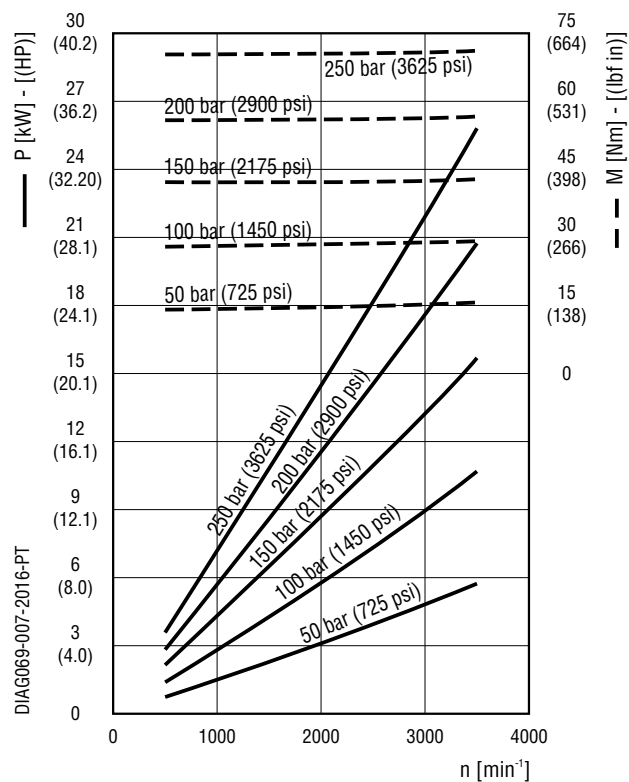


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XLP20•16

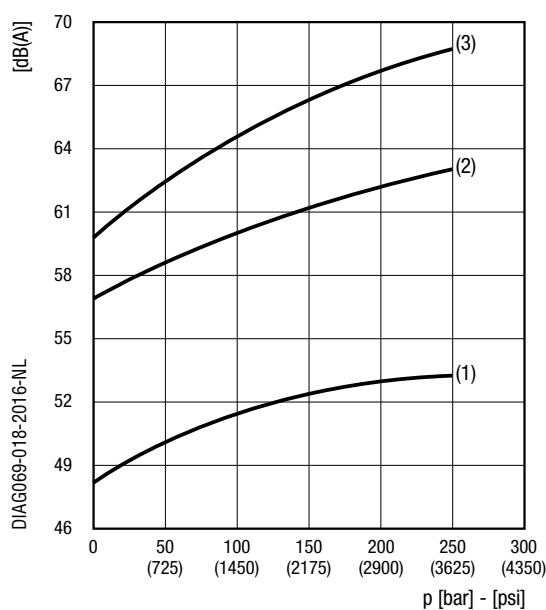
OPERATING CURVES

Power and torque

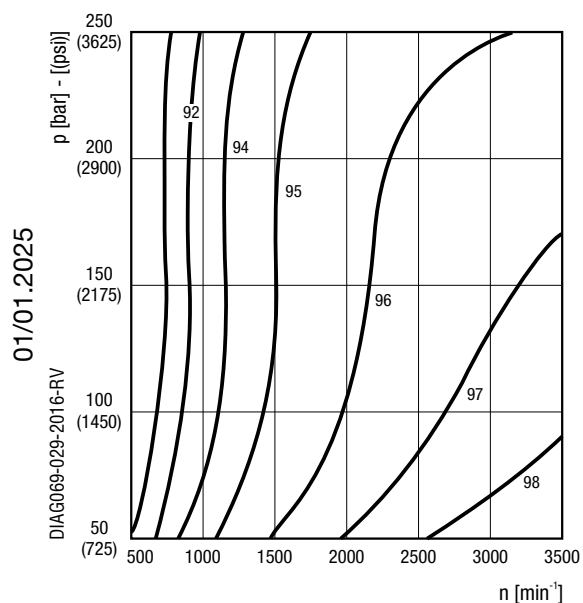


Noise level

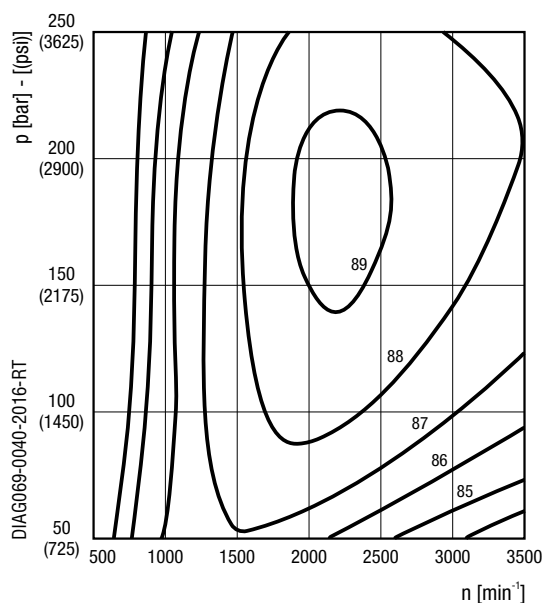
Distance from microphone to pump = 1 m (39.37 in)
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



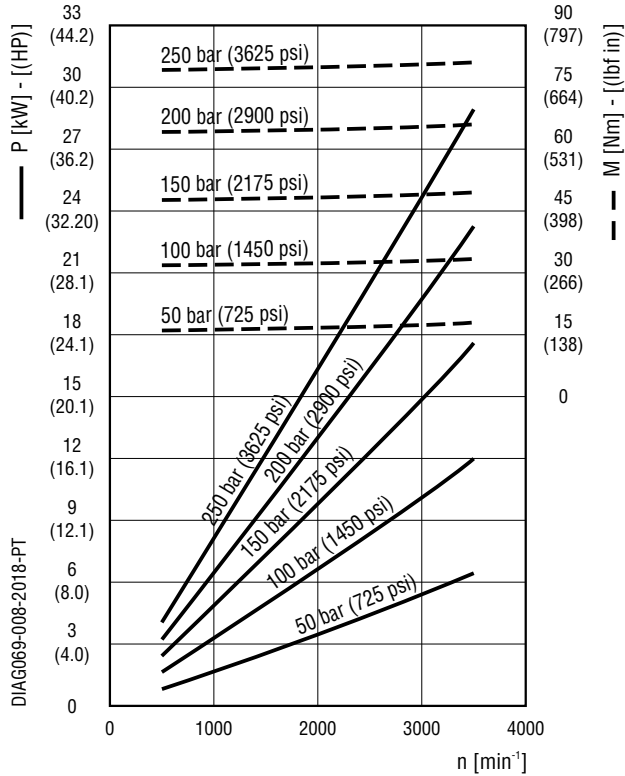
Overall efficiency



XLP20•18

OPERATING CURVES

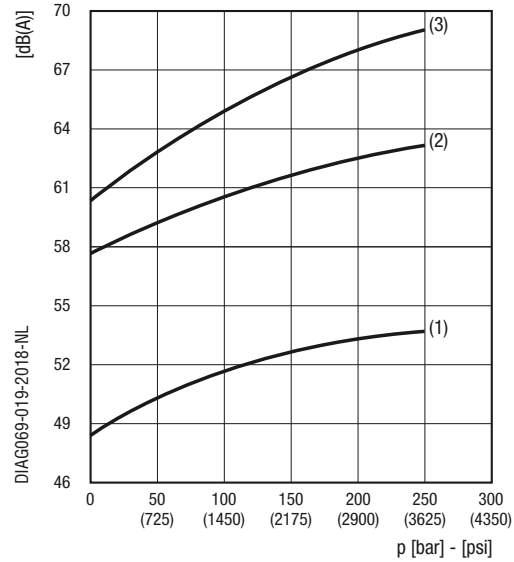
Power and torque



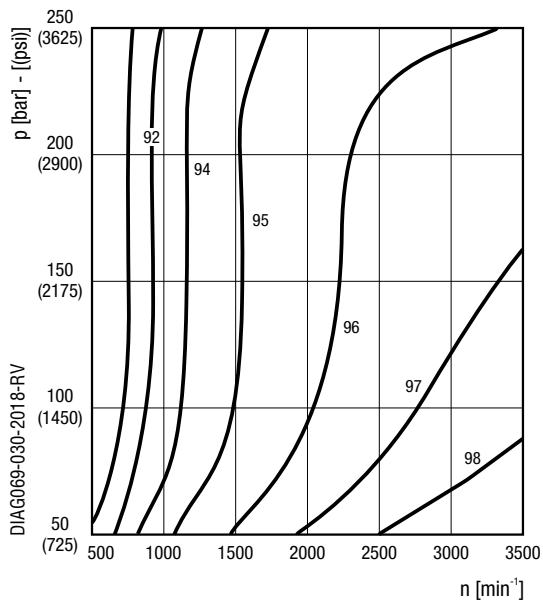
Noise level

Distance from microphone to pump = 1 m (39.37 in)

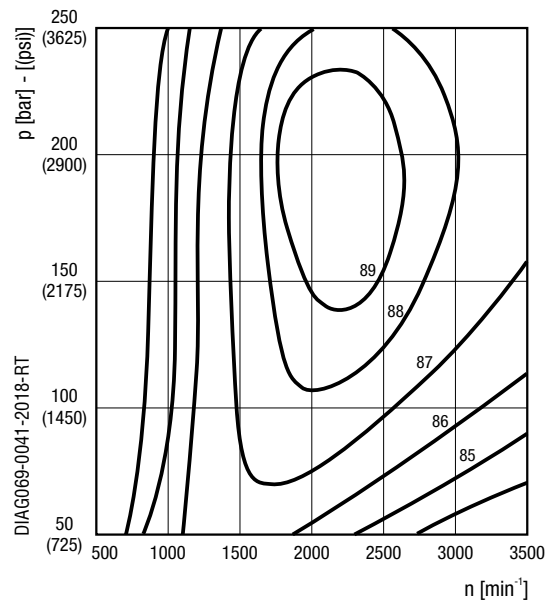
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

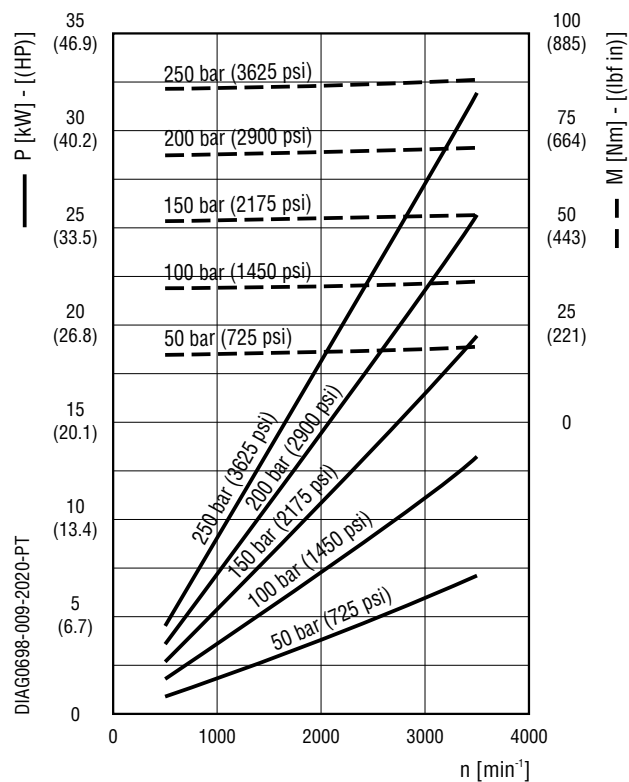


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XLP20•20

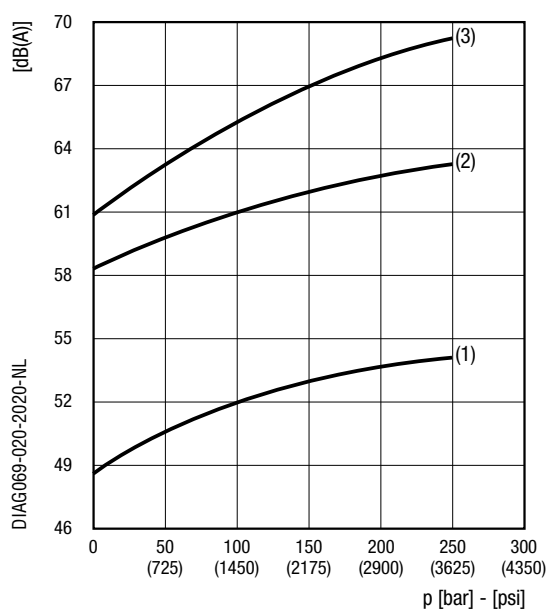
OPERATING CURVES

Power and torque

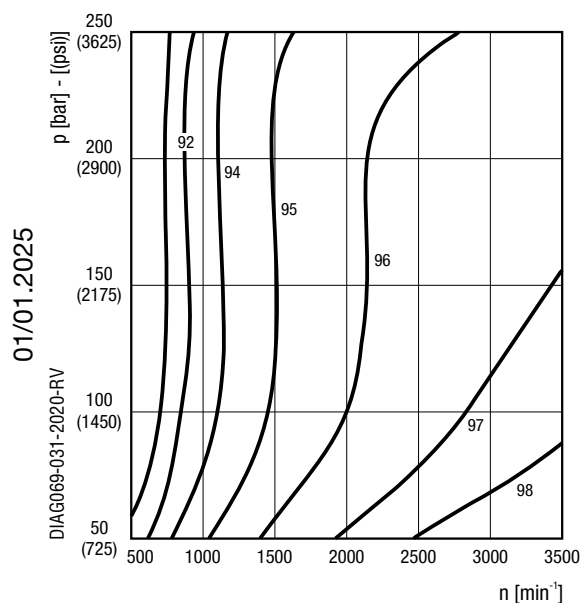


Noise level

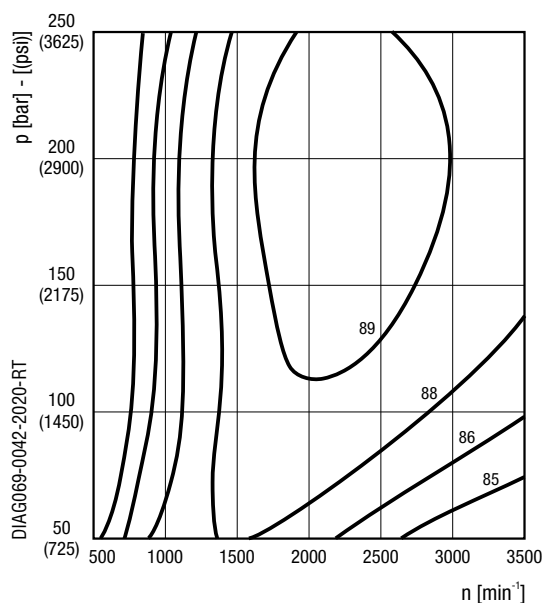
Distance from microphone to pump = 1 m (39.37 in)
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



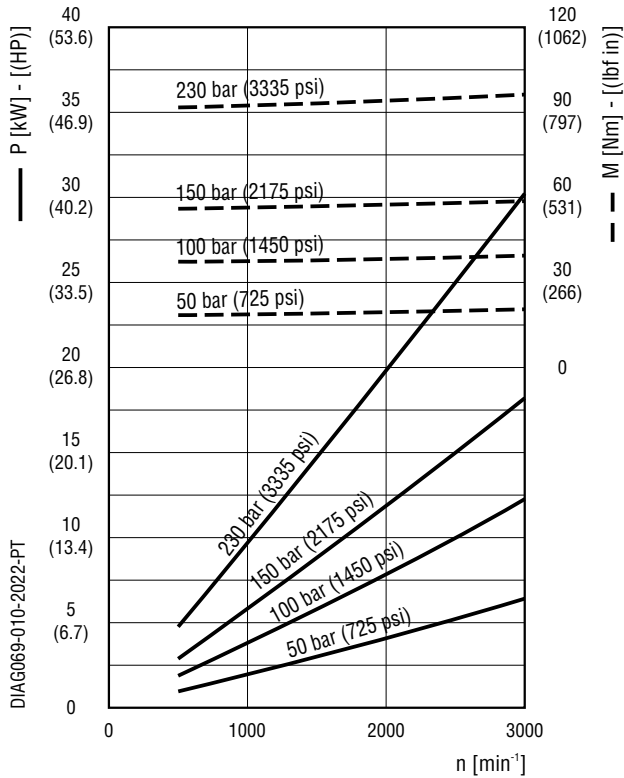
Overall efficiency



XLP20•22

OPERATING CURVES

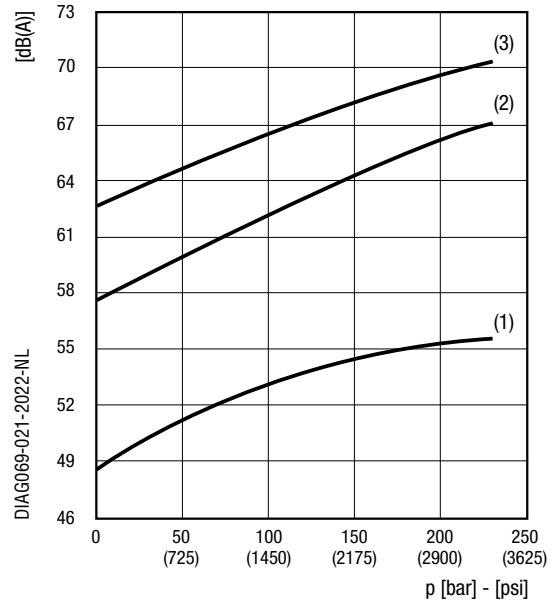
Power and torque



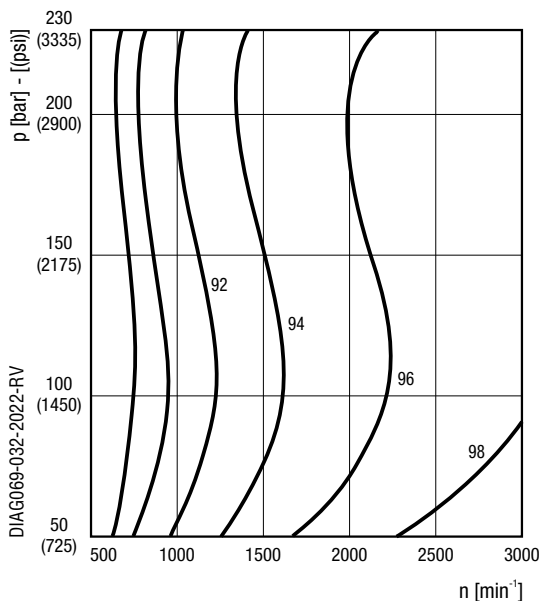
Noise level

Distance from microphone to pump = 1 m (39.37 in)

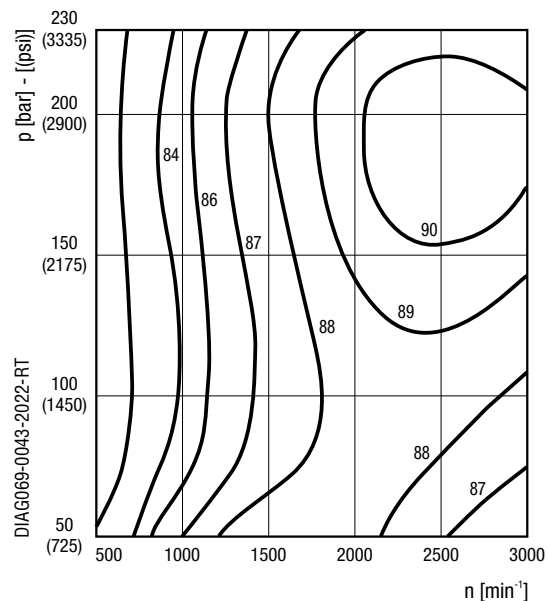
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

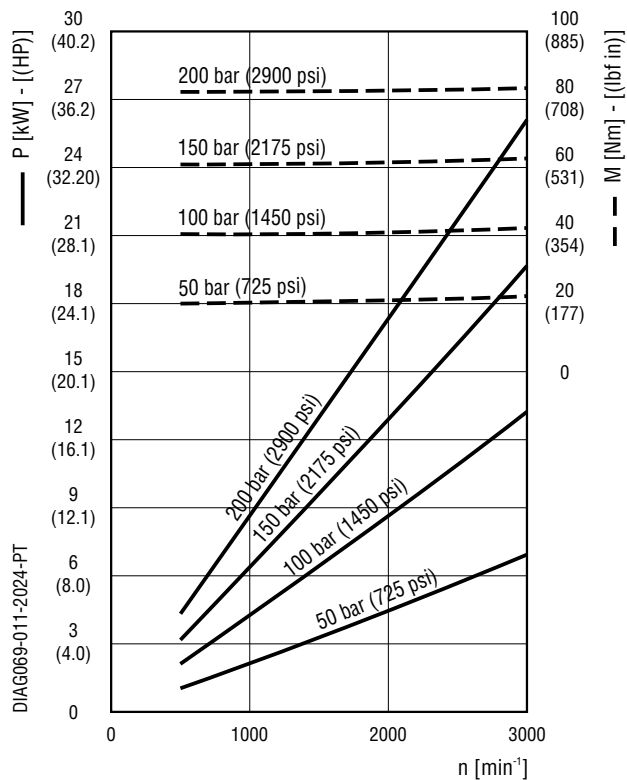


01/01.2025

XLP20•24

OPERATING CURVES

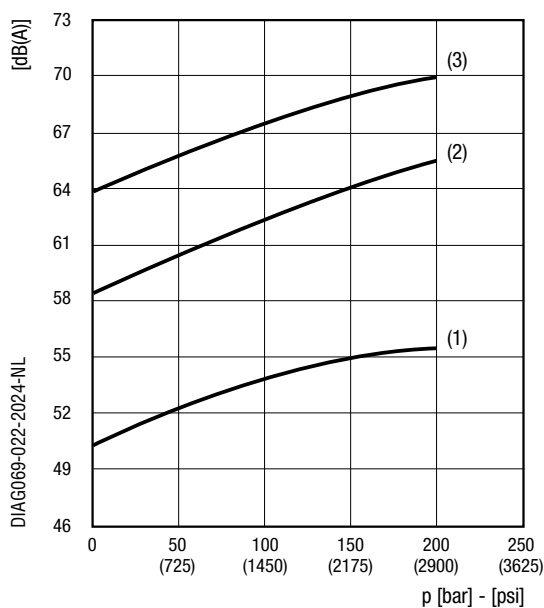
Power and torque



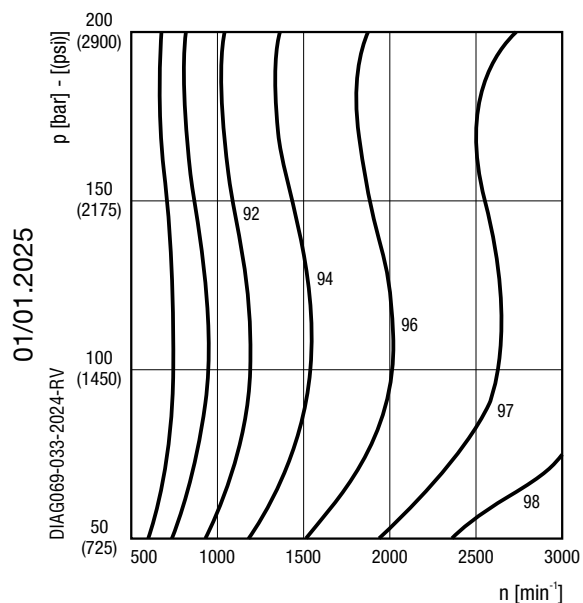
Noise level

Distance from microphone to pump = 1 m (39.37 in)

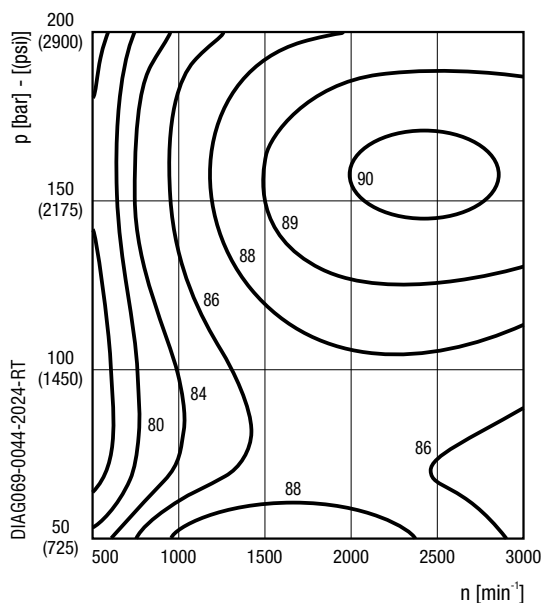
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



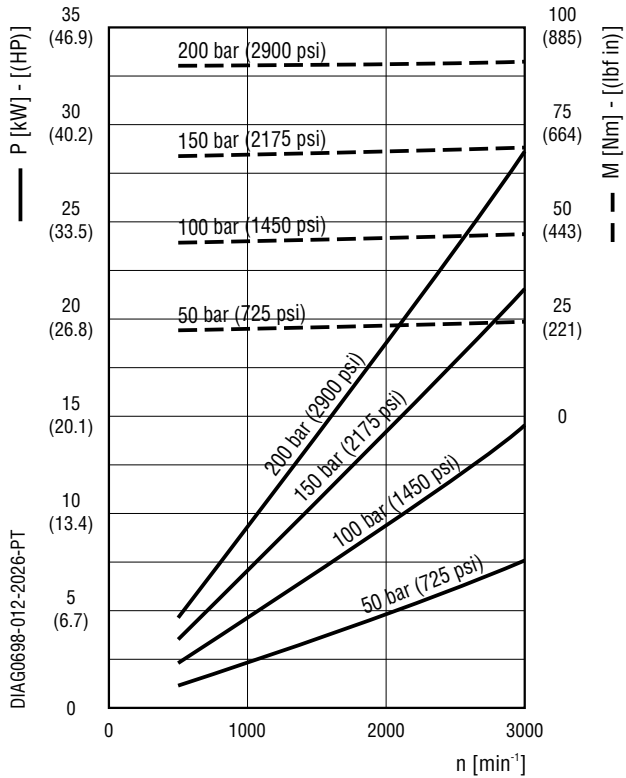
Overall efficiency



XLP20•26

OPERATING CURVES

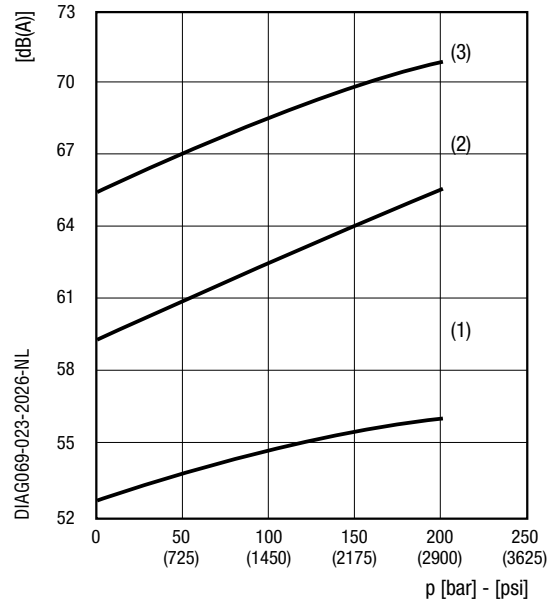
Power and torque



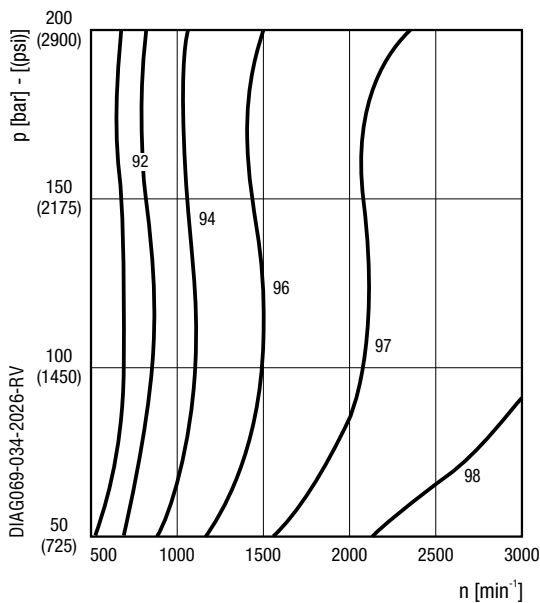
Noise level

Distance from microphone to pump = 1 m (39.37 in)

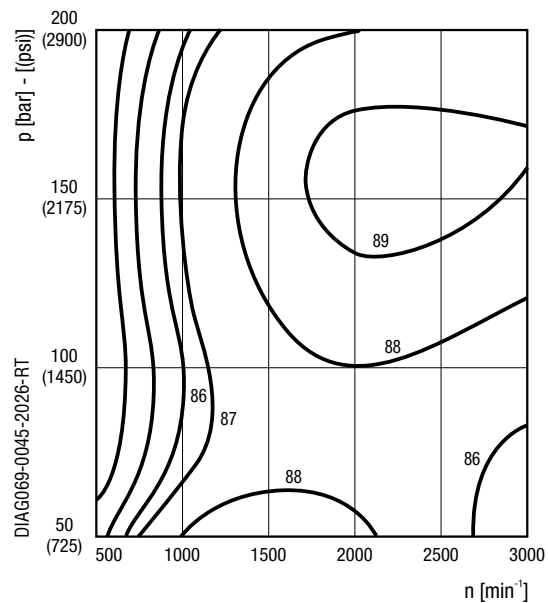
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

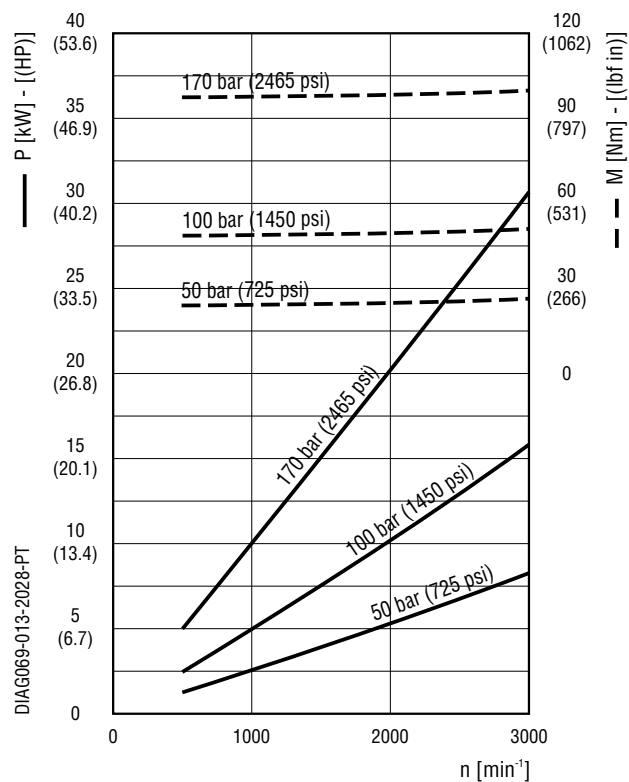


01/01.2025

XLP20•28

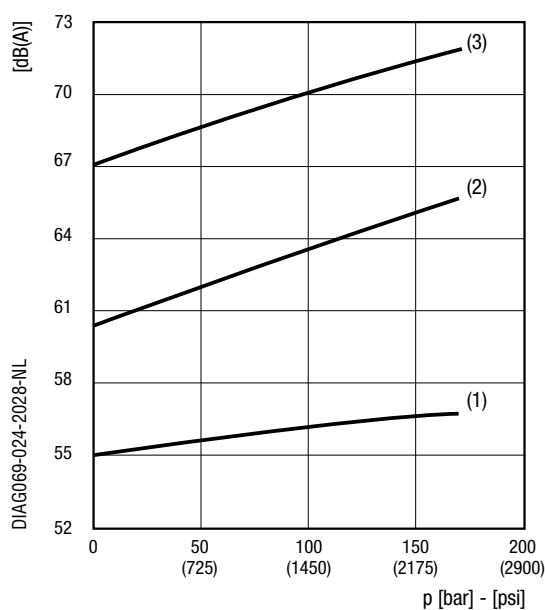
OPERATING CURVES

Power and torque

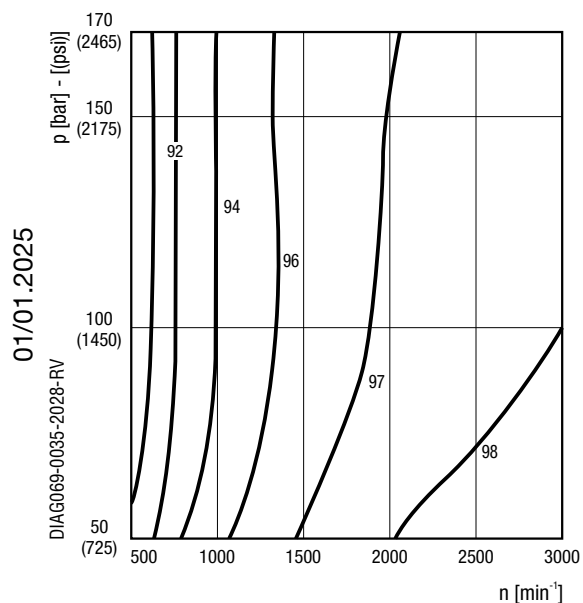


Noise level

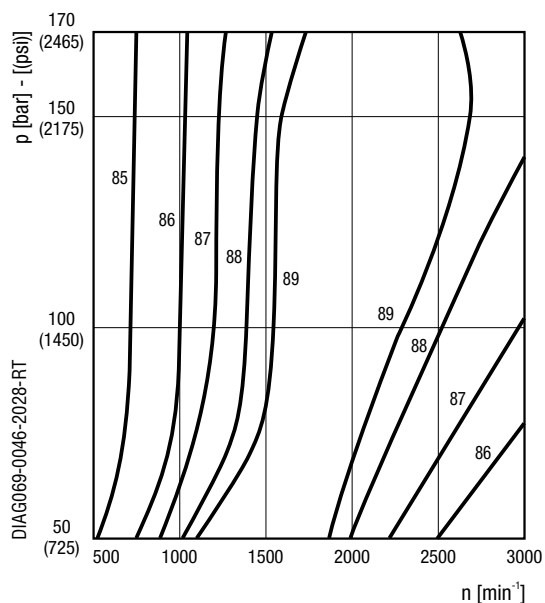
Distance from microphone to pump = 1 m (39.37 in)
1) 1000 min⁻¹ (2) 2000 min⁻¹ (3) 3000 min⁻¹



Volumetric efficiency



Overall efficiency

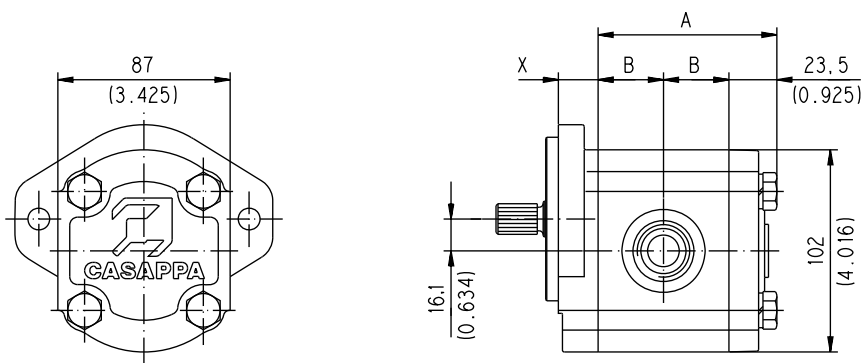


XLP 20
SINGLE PUMPS DIMENSIONS - SIDE PORTS
L

Drive shafts: page 27 ÷ 29
 Mounting flange: for X dimension
 see page 30 ÷ 34

Ports availability: European, Split, Gas,
 SAE and German. See page 35 ÷ 39

XLP-D033-182/0903



Mounting flange and rear cover are
 available in cast iron only.

Pump type	A	B
	mm (inch)	mm (inch)
XLP20•8	75 (2.95)	26 (1.02)
XLP20•10	77,7 (3.06)	27,4 (1.08)
XLP20•12	80,4 (3.17)	28,7 (1.13)
XLP20•14	83,1 (3.27)	30,05 (1.18)
XLP20•16	86,3 (3.40)	31,65 (1.25)
XLP20•18	89,1 (3.51)	33,05 (1.30)
XLP20•20	91,8 (3.61)	34,4 (1.35)
XLP20•22	95,4 (3.76)	36,2 (1.43)
XLP20•24	97,6 (3.84)	37,3 (1.47)
XLP20•26	100,4 (3.95)	38,7 (1.52)
XLP20•28	103,2 (4.06)	40,1 (1.58)

01/01.2025

MULTIPLE PUMPS

XLP series pumps can be coupled together in combination. In applications where the input power requirement of each section varies, the section with the greater requirement must be at the drive shaft end, and progressively smaller to the rear.

Features and performances are the same as the corresponding single pumps, but pressures must be limited according to the transmissible torque of the drive and connecting shafts. To have appropriate data, use the formula below.

The maximum rotational speed is the one of the lowest rated speed of the single units incorporated.

Available with common inlet and separated stages. Please contact us for more information.

M	Nm (lbf in)	Torque
V	cm ³ /rev (in. ³ /rev)	Displacement
Δp	bar (psi)	Pressure
$\eta_{hm} = \eta_{hm}(V, \Delta p, n)$		Hydro-mechanical efficiency

$$M = \frac{M_{theor.}}{\eta_{hm}} \quad [Nm]$$

$$M_{theor.} = \frac{\Delta p \text{ (bar)} \cdot V \text{ (cm}^3\text{/rev)}}{62,83} \quad [Nm]$$

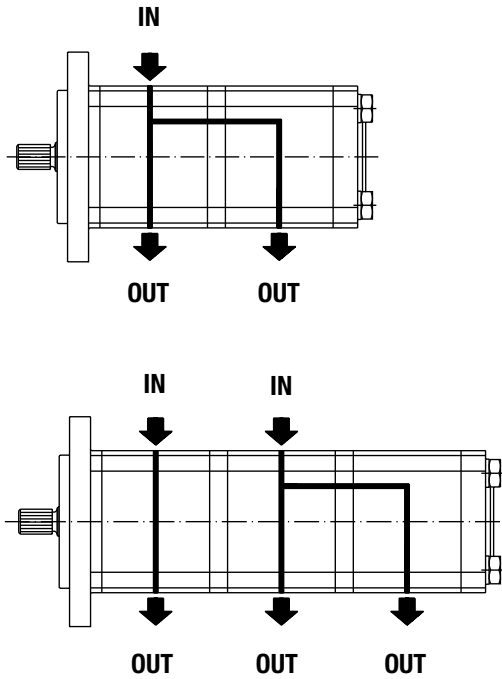
NOTE

The torque absorbed from the shaft of the first pump results from the sum of the torques of all the single stages. The achieved value must not exceed the maximum torque limit given for the shaft of the first pump.

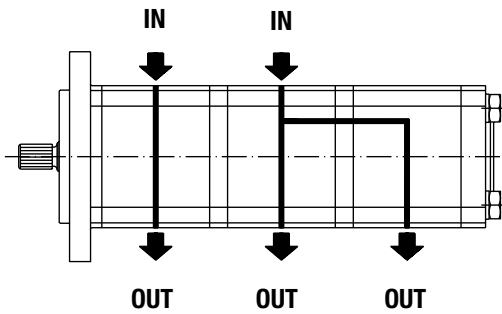
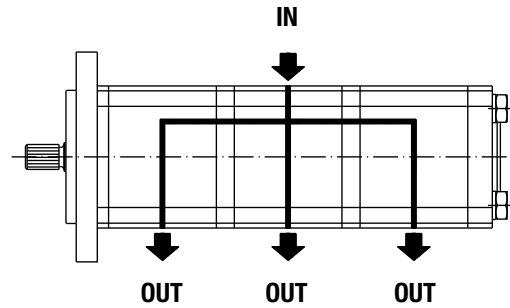
01/01.2025

INLET PORTS CONFIGURATION

STANDARD VERSION



COMMON INLET



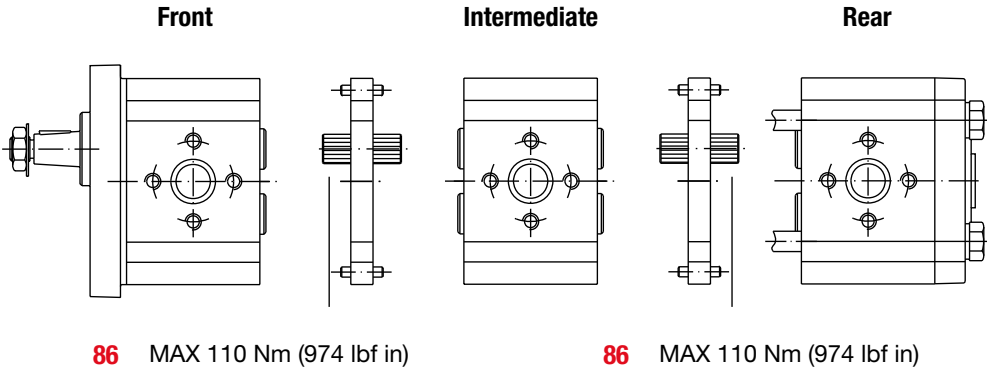
01/01.2025

Reduced inlets provide overall systems savings by reducing the cost of redundant inlet hose and fittings. Please contact us for other combinations.

MULTIPLE PUMPS COMBINATION

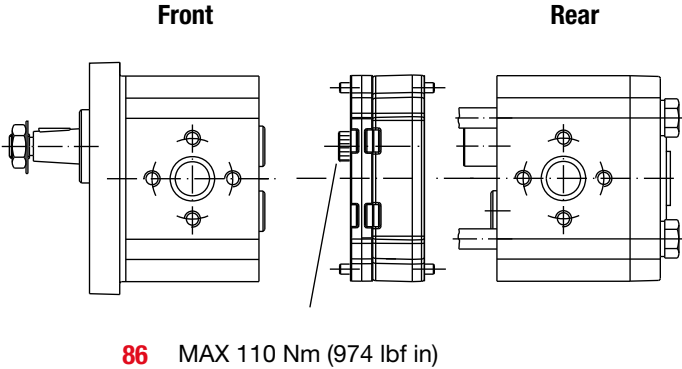
XLP20/XLP20	STANDARD VERSION	S6
XLP20/XLP20	COMMON INLET VERSION	S7

XLP-D033-106/0603



XLP20/XLP20	SEPARATED STAGES VERSION	Z6
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XLP-D033-110/0603



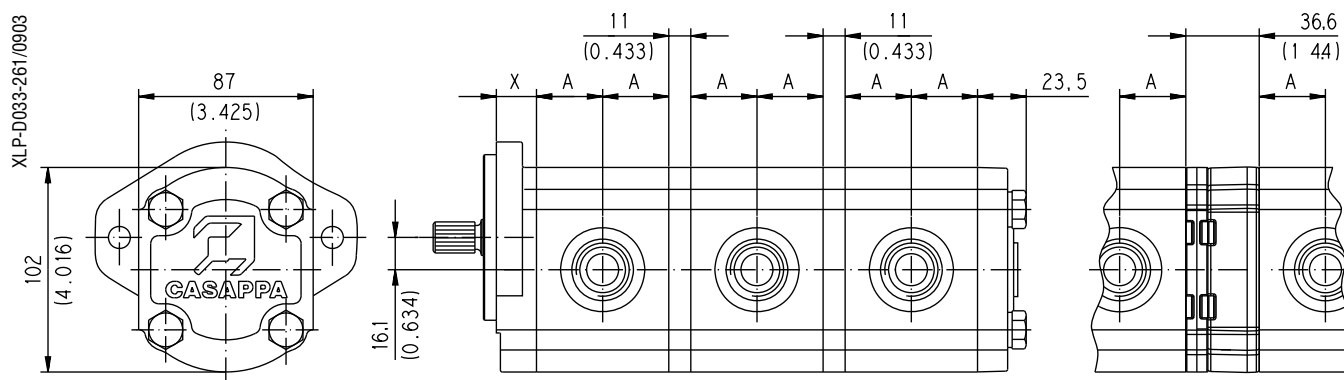
XLP 20

MULTIPLE PUMPS DIMENSIONS - SAME GROUPS

Drive shafts: page 27 ÷ 29
Mounting flange: for X dimension
see page 30 ÷ 34

Ports availability: European, Split, Gas,
SAE and German. See page 35 ÷ 39

XLP20/20



Separated stages

Mounting flange and cover only cast iron.

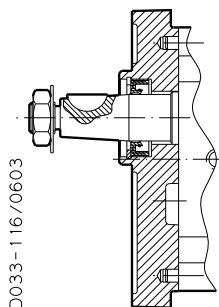
Pump type	A
	mm (inch)
XLP20•8	26 (1.02)
XLP20•10	27,4 (1.08)
XLP20•12	28,7 (1.13)
XLP20•14	30,05 (1.18)
XLP20•16	31,65 (1.25)
XLP20•18	33,05 (1.30)
XLP20•20	34,4 (1.35)
XLP20•22	36,2 (1.43)
XLP20•24	37,3 (1.47)
XLP20•26	38,7 (1.52)
XLP20•28	40,1 (1.58)

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OUTBOARD BEARING OPTIONS - DRIVE SHAFTS

VERSION

0

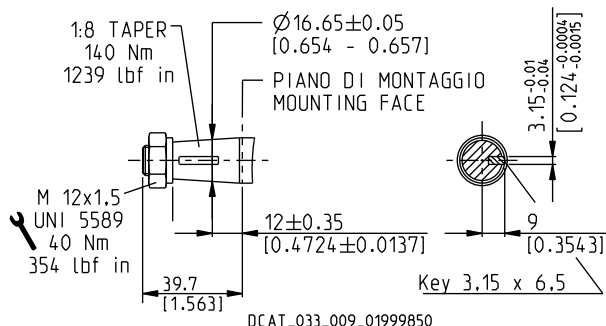


Version for applications with-
out radial and axial load on
the drive shaft.

EUROPEAN TAPERED 1:8

82

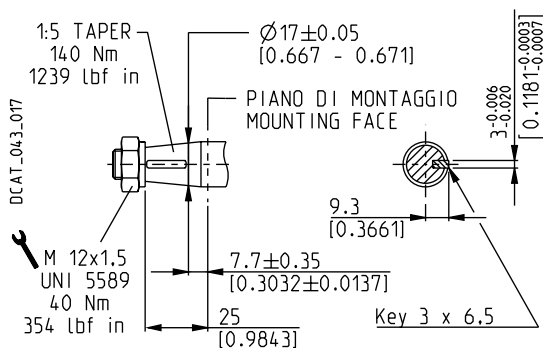
Mounting face refer to flange code E2



GERMAN TAPERED 1:5

54

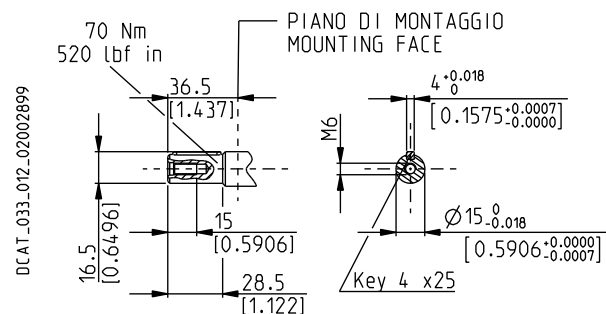
Mounting face refer to flange code B2



STRAIGHT

46

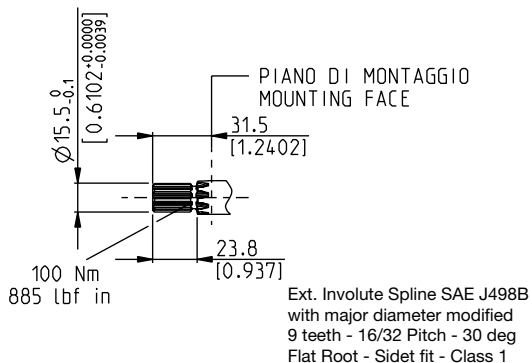
Mounting face refer to flange code E2



SAE "A" SPLINE

03

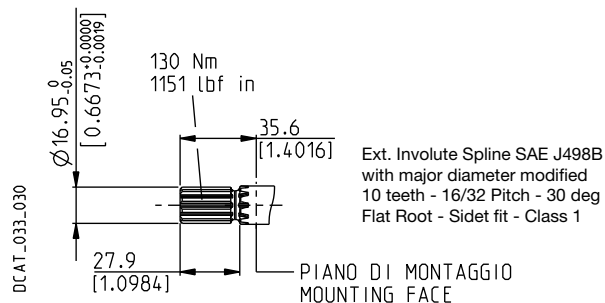
Mounting face refer to flange code S9



SPLINE

01

Mounting face refer to flange code S9



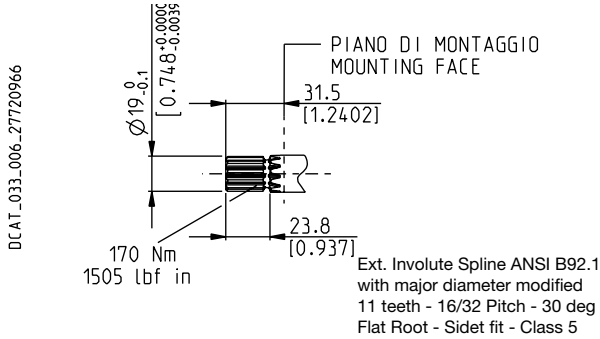
01/01.2025

DRIVE SHAFTS

SAE SPLINE

07

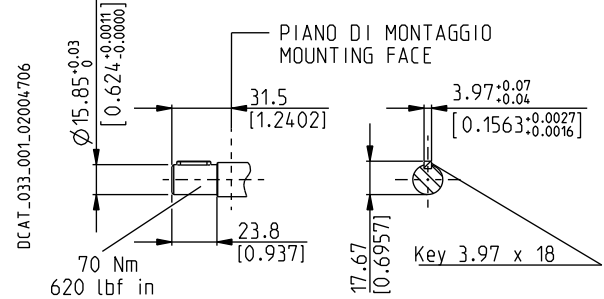
Mounting face refer to flange code **S9**



SAE "A" STRAIGHT

31

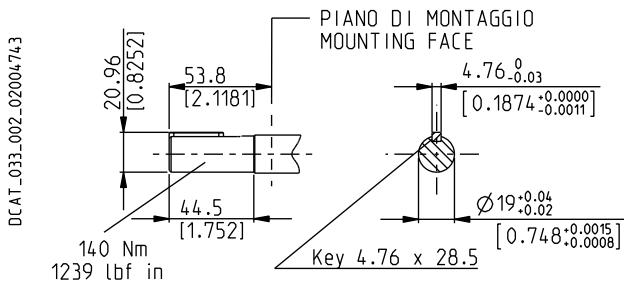
Mounting face refer to flange code **S9**



STRAIGHT

49

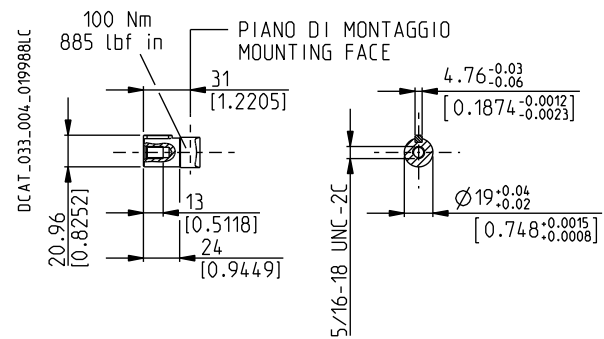
Mounting face refer to flange code **S9**



STRAIGHT

50

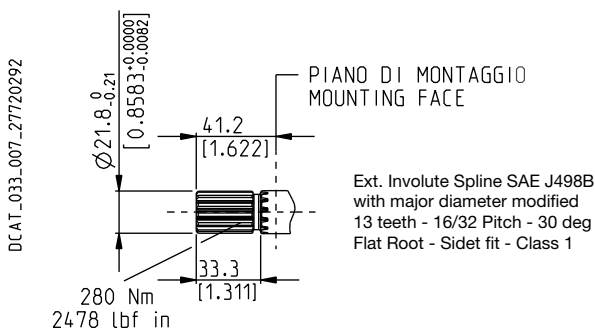
Mounting face refer to flange code **S9**



SAE "B" SPLINE

04

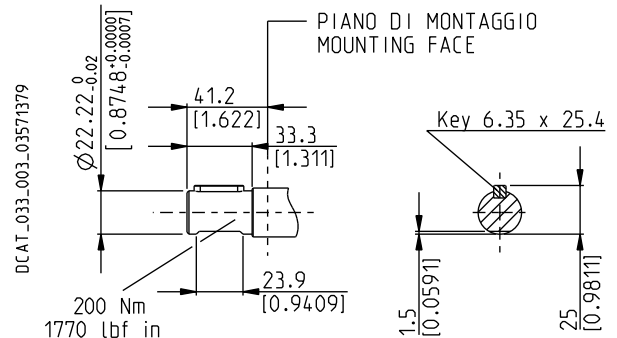
Mounting face refer to flange code **S5**



SAE "B" STRAIGHT

32

Mounting face refer to flange code **S5**



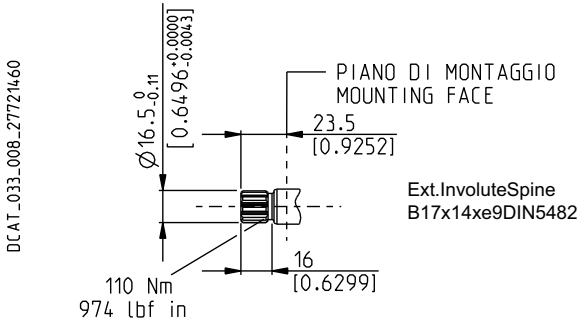
01/01.2025

DRIVE SHAFTS

DIN 5482 SPLINE

12

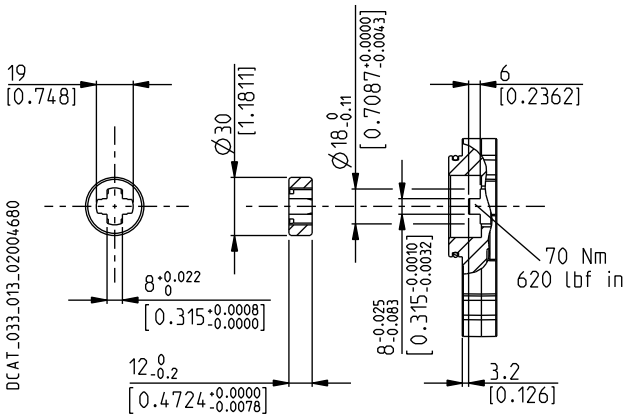
Mounting face refer to flange code **B2**



TANG

95

Mounting face refer to flange code **B6**



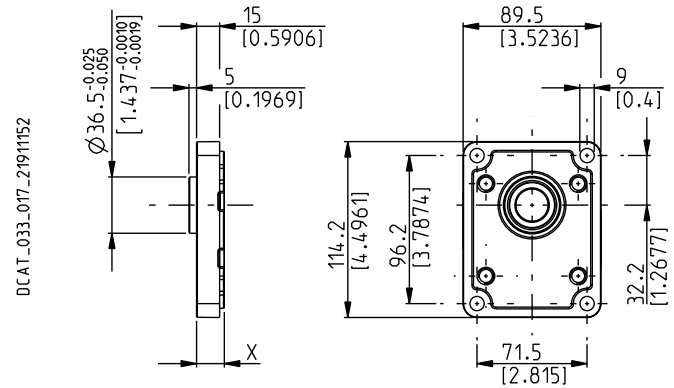
01/01.2025

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

EUROPEAN

E2

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	82	46	03	04	07	12	31	49	50	54
0	18 (0.71)	■	■	●	●	●	●	●	●	●	●

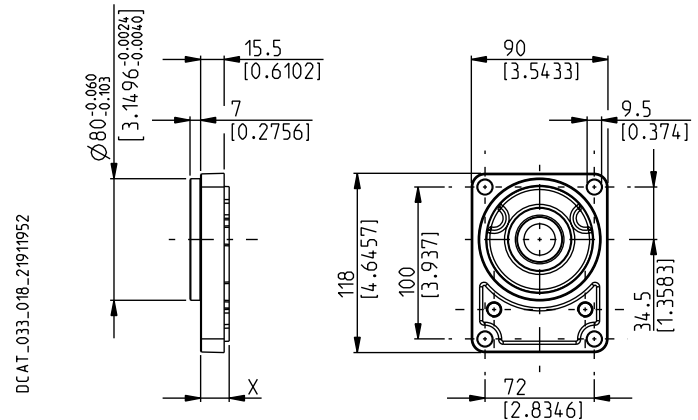
■ Standard combination

● Available combination

GERMAN

B2

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	12	54	01	03	31	46	49	82
0	18,8 (0.74)	■	■	●	●	●	●	●	●

■ Standard combination

● Available combination

01/01.2025

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

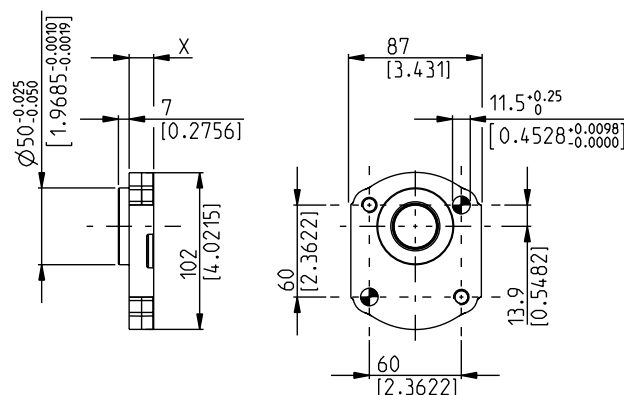
GERMAN 2 BOLTS

B4

Material: cast iron

⊕ Through hole

DCAT_033_020_21912051



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	54	03	12	31	49	82
0	16 (0.63)	■	●	●	●	●	●

■ Standard combination

● Available combination

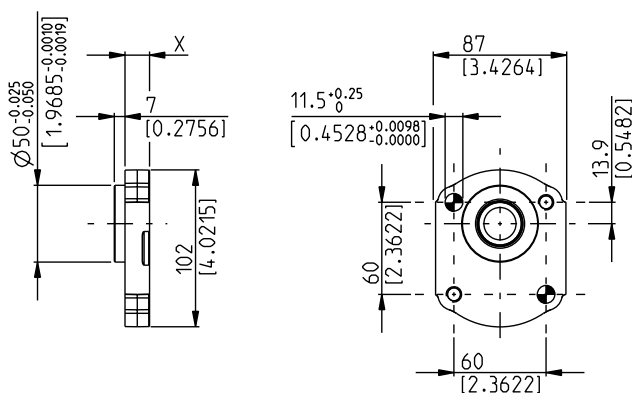
GERMAN 2 BOLTS

B5

Material: cast iron

⊕ Through hole

DCAT_033_021_21912256



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	54	03	12	31	49	82
0	16 (0.63)	■	●	●	●	●	●

■ Standard combination

● Available combination

01/01.2025

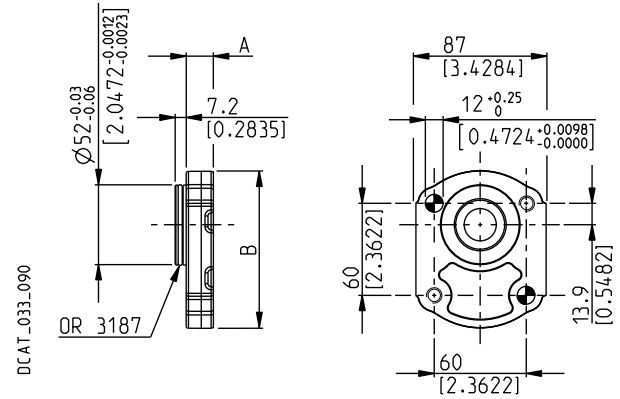
MOUNTING FLANGES AND TABLE OF COMPATIBILITY

GERMAN 2 BOLTS

U2

Material: cast iron

⊕ Through hole



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	A mm (in)	B mm (in)	03	07
0	17,7 (0.6968)	(●) 105 (4.1339)	■	●

■ Standard combination

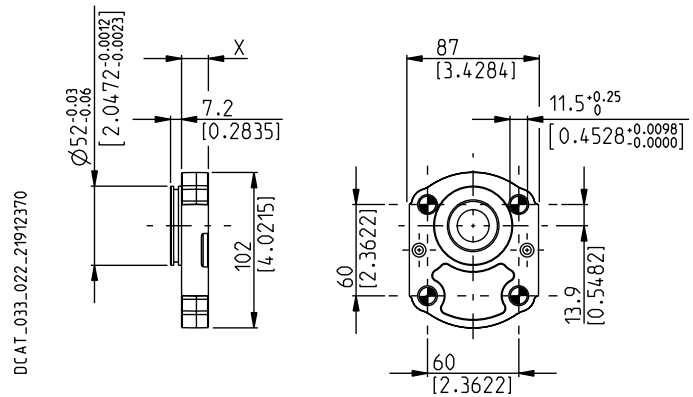
● Available combination (●) Cast iron

GERMAN 4 BOLTS

B6

Material: cast iron

⊕ Through hole



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	95	07	12
0	17,7 (0.70)	■	●	●

■ Standard combination

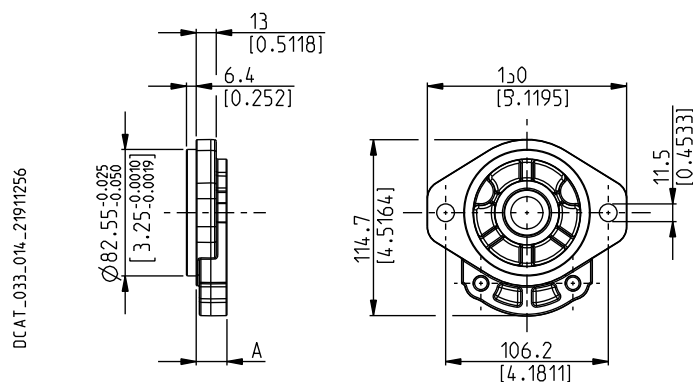
● Available combination

01/01.2025

SAE "A" 2 BOLTS

S1

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

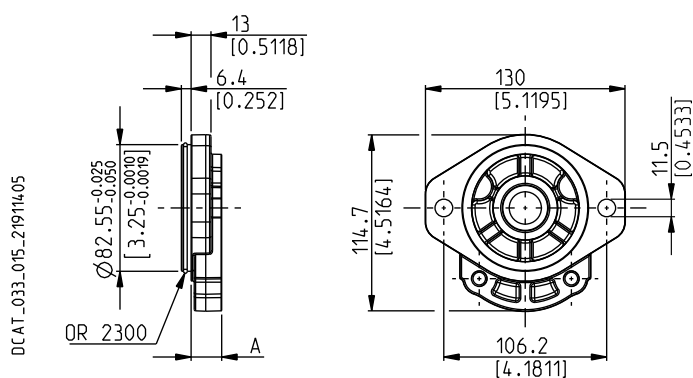
VERSIONS	A	01	03	04	07	12	31	32	46	49	50	54	82
See page 27	mm (in)												
0	20 (0.787)	■	■	●	■	●	■	●	●	■	●	●	●

- Standard combination
- Available combination

SAE "A" 2 BOLTS

S2

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS	A	01	03	04	07	12	31	32	46	49	50	54	82
See page 27	mm (in)												
0	20 (0.7874)	■	■	●	■	●	■	●	●	■	●	●	●

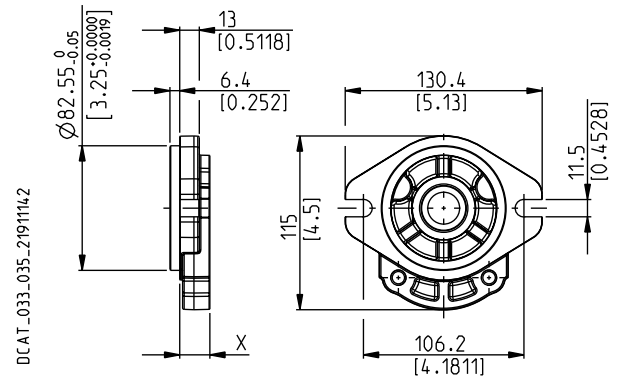
- Standard combination
- Available combination

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

SAE "A" 2 BOLTS

S9

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

VERSIONS See page 27	X mm (in)	01	03	07	12	31	46	49	50	54	82
0	20 (0.79)	■	■	■	●	■	●	■	●	●	●

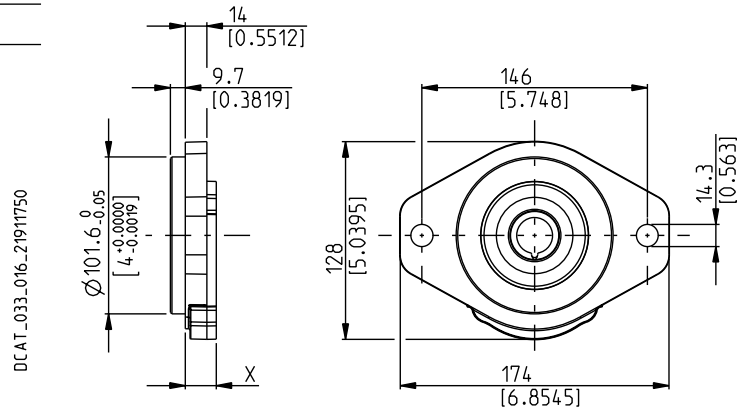
■ Standard combination

● Available combination

SAE "B" 2 BOLTS

S5

Material: cast iron



DRIVE SHAFTS

See page 27 ÷ 29

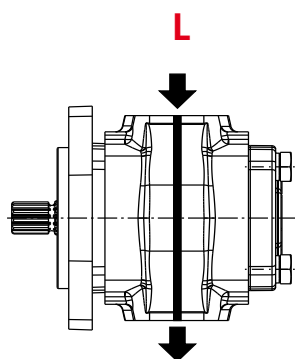
VERSIONS See page 27	X mm (in)	49
0	20 (0.79)	●

■ Standard combination

● Available combination

01/01.2025

PORTS POSITION AND TYPE



SIDE PORTS

PORTS TYPE	German		European		Split SSM		Split SSS		Gas BSPP		SAE ODT	
Pump type	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
XLP20•8	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC
XLP20•10	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC
XLP20•12	BE	BC	EA	EA	MA	MA	SA	SA	GD	GD	OC	OC
XLP20•14	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC
XLP20•16	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC
XLP20•18	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC
XLP20•20	BE	BC	EB	EA	MB	MA	SB	SA	GE	GD	OD	OC
XLP20•22	BE	BC	EB	EA	MC	MB	SC	SB	GF	GD	OF	OC
XLP20•24	BE	BC	EB	EA	MC	MB	SC	SB	GF	GD	OF	OC
XLP20•26	BE	BC	EB	EA	MC	MB	SC	SB	GF	GD	OF	OC
XLP20•28	BE	BC	EB	EA	MC	MB	SC	SB	GF	GD	OF	OC

Different inlet and outlet ports are available.
Please contact us for more information.

EXTERNAL DRAIN PORTS

SIDE PORTS

IN/OUT PORTS TYPE	German	European	Split SSM	Spit SSS	Gas BSPP	SAE ODT
XLP20	TA	GB	GB	03	GB	03

01/01.2025

PORT SIZES

 Tightening torque for low pressure side port.

 Tightening torque for high pressure side port.

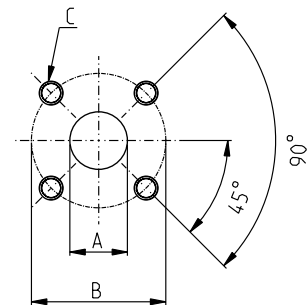
GERMAN FLANGED PORTS - 4 Bolts

GERMAN

Metric thread ISO 60° conforms to ISO/R 262

CODE	A	B	C		
	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
BA	8 (0.3150)	30 (1.1811)	M6 12 (0.4724)	8 ^{+0,5} (71 ÷ 75)	8 ^{+0,5} (71 ÷ 75)
BB	13 (0.5118)	30 (1.1811)	M6 12 (0.4724)	8 ^{+0,5} (71 ÷ 75)	8 ^{+0,5} (71 ÷ 75)
BC	15 (0.5906)	35 (1.3780)	M6 12 (0.4724)	8 ^{+0,5} (71 ÷ 75)	8 ^{+0,5} (71 ÷ 75)
BE	20 (0.7874)	40 (1.5748)	M6 12 (0.4724)	8 ^{+0,5} (71 ÷ 75)	8 ^{+0,5} (71 ÷ 75)
BL	19 (0.7480)	55 (2.1654)	M8 18 (0.7087)	15 ⁺¹ (133 ÷ 142)	20 ⁺¹ (177 ÷ 186)
BM	27 (1.0630)	55 (2.1654)	M8 18 (0.7087)	15 ⁺¹ (133 ÷ 142)	20 ⁺¹ (177 ÷ 186)

DCAT_033_028_17681888



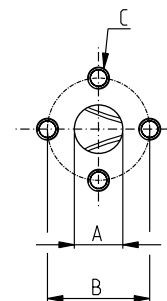
EUROPEAN FLANGED PORTS - 4 Bolts

EUROPEAN

Metric thread ISO 60° conforms to ISO/R 262

CODE	A	B	C		
	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
EA	13 (0.5118)	30 (1.1811)	M 6 13 (0.5118)	8 ^{+0,5} (71 ÷ 75)	8 ^{+0,5} (71 ÷ 75)
EB	19 (0.7480)	40 (1.5748)	M 8	15 ⁺¹	15 ⁺¹
			14 (0.5512)	(133 ÷ 142)	(133 ÷ 142)
			M 8	15 ⁺¹	15 ⁺¹
ED	27 (1.0630)	51 (2.0079)	18 (0.7087)	(133 ÷ 142)	(133 ÷ 142)
			M 10	20 ⁺¹	35 ^{+2,5}
			18 (0.7087)	(177 ÷ 186)	(310 ÷ 332)
EF	33 (1.2992)	62 (2.4409)	M 12	25 ⁺¹	50 ^{+2,5}
			18 (0.7087)	(221 ÷ 230)	(443 ÷ 465)

DCAT_006_024_21060533



01/01.2025

PORT SIZES

 Tightening torque for low pressure side port.

 Tightening torque for high pressure side port.

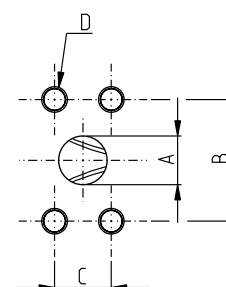
SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI

SSM

Metric thread ISO 60° to ISO/R 262

CODE	A	B	C	D		
	mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
MA	12,5 (0.4921)	38,1 (1.50)	17,5 (0.6890)	M 8	15 ⁺¹	15 ⁺¹
				14 (0.5512)	(133 ÷ 142)	(133 ÷ 142)
				M 8	20 ⁺¹	20 ⁺¹
MB	19 (0.7480)	47,6 (1.8740)	22,2 (0.8740)	22 (0.8661)	(177 ÷ 186)	(177 ÷ 186)
				M 10	20 ⁺¹	25 ⁺¹
				14 (0.5512)	(177 ÷ 186)	(266 ÷ 288)
MC	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10	20 ⁺¹	35 ^{+2,5}
				22 (0.8661)	(177 ÷ 186)	(310 ÷ 332)
				M 10	20 ⁺¹	25 ⁺¹
MD	30,5 (1.2008)	58,7 (2.3110)	30,2 (1.1890)	14 (0.5512)	(177 ÷ 186)	(266 ÷ 288)
				M 10	20 ⁺¹	35 ^{+2,5}
				22 (0.8661)	(177 ÷ 186)	(310 ÷ 332)
ME	39,3 (1.5472)	69,8 (2.7480)	35,7 (1.4055)	M 10	20 ⁺¹	30 ^{+2,5}
				15 (0.5906)	(177 ÷ 186)	(266 ÷ 288)
MF	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 10	20 ⁺¹	35 ^{+2,5}
				22 (0.8661)	(177 ÷ 186)	(310 ÷ 332)
ME	39,3 (1.5472)	69,8 (2.7480)	35,7 (1.4055)	M 12	30 ^{+2,5}	60 ⁺⁵
				22 (0.8661)	(266 ÷ 288)	(531 ÷ 575)
MF	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 12	30 ^{+2,5}	60 ⁺⁵
				22 (0.8661)	(266 ÷ 288)	(531 ÷ 575)

DCAT_006_025_21064252



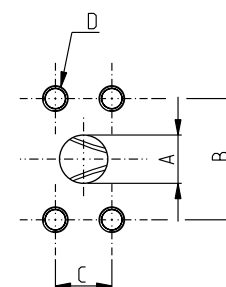
SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI

SSS

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	A	B	C	D		
	mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
SA	12,5 (0.4921)	38,1 (1.50)	17,5 (0.6890)	5/16-18 UNC-2B	15 ⁺¹	15 ⁺¹
				14 (0.5512)	(133 ÷ 142)	(133 ÷ 142)
				5/16-18 UNC-2B	20 ⁺¹	20 ⁺¹
SB	19 (0.7480)	47,6 (1.8740)	22,2 (0.8740)	22 (0.8661)	(177 ÷ 186)	(177 ÷ 186)
				3/8-16 UNC-2B	20 ⁺¹	20 ⁺¹
				14 (0.5512)	(177 ÷ 186)	(177 ÷ 186)
SC	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8-16 UNC-2B	30 ^{+2,5}	20 ⁺¹
				22 (0.8661)	(266 ÷ 288)	(177 ÷ 186)
				3/8-16 UNC-2B	20 ⁺¹	25 ⁺¹
SD	30,5 (1.2008)	58,7 (2.3110)	30,2 (1.1890)	14 (0.5512)	(177 ÷ 186)	(221 ÷ 230)
				3/8-16 UNC-2B	20 ⁺¹	30 ^{+2,5}
				22 (0.8661)	(177 ÷ 186)	(266 ÷ 288)
SE	39,3 (1.5472)	69,8 (2.7480)	35,7 (1.4055)	7/16-14 UNC-2B	20 ⁺¹	45 ^{+2,5}
				22 (0.8661)	(177 ÷ 186)	(398 ÷ 420)
SF	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	1/2-13 UNC-2B	30 ^{+2,5}	70 ⁺⁵
				22 (0.8661)	(266 ÷ 288)	(620 ÷ 664)

DCAT_006_028_21060740



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PORT SIZES



Tightening torque for low pressure side port.



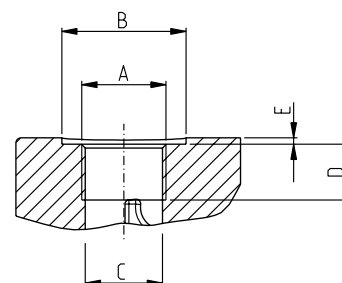
Tightening torque for high pressure side port.

GAS STRAIGHT THREAD PORTS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

DCAT_006_026_21064779



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
GC	3/8"	G 3/8	30 (1.1811)	15 (0.5906)	10 (0.3937)	2 (0.0787)	15 ⁺¹ (133 ÷ 142)	—
			—		14 (0.5512)	—	15 ⁺¹ (133 ÷ 142)	25 ⁺¹ (221 ÷ 230)
			—		14 (0.5512)	—	20 ⁺¹ (177 ÷ 186)	50 ^{+2.5} (443 ÷ 465)
GD	1/2"	G 1/2	—	19 (0.7480)	17 (0.6693)	—	—	—
GE	3/4"	G 3/4	—	24,5 (0.9646)	18 (0.7087)	—	30 ^{+2.5} (266 ÷ 288)	90 ⁺⁵ (797 ÷ 841)
GF	1"	G 1	—	30,5 (1.2008)	18 (0.7086)	—	50 ^{+2.5} (443 ÷ 465)	130 ⁺¹⁰ (1151 ÷ 1239)
GG	1" 1/4	G 1 1/4	—	39 (1.5354)	22 (0.8661)	—	60 ⁺⁵ (531 ÷ 575)	170 ⁺¹⁰ (1505 ÷ 1593)
GH	1" 1/2	G 1 1/2	—	45 (1.7716)	24 (0.9448)	—	70 ⁺⁵ (620 ÷ 664)	210 ⁺¹⁵ (1859 ÷ 1992)

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PORT SIZES

 Tightening torque for low pressure side port.

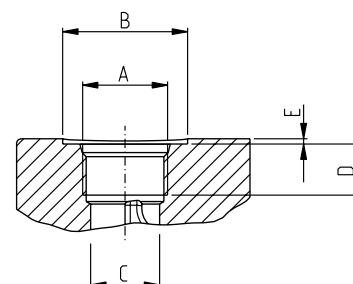
 Tightening torque for high pressure side port.

SAE STRAIGHT THREAD PORTS J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

DCAT_006_027_21060524



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
OA	3/8"	9/16" - 18 UNF - 2B	26 (1.0236)	13 (0.5118)	15 (0.5906)	1 (0.03934)	15 ⁺¹ (133 ÷ 142)	25 ⁺¹ (221 ÷ 230)
						2 (0.0787)	15 ⁺¹ (133 ÷ 142)	—
OB	1/2"	3/4" - 16 UNF - 2B	32 (1.2598)	17,5 (0.690)	15 (0.5906)	—	20 ⁺¹ (177 ÷ 186)	45 ^{+2,5} (398 ÷ 420)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	15 (0.5906)	0,5 (0.0197)	30 ^{+2,5} (266 ÷ 288)	70 ⁺⁵ (620 ÷ 664)
					17 (0.6693)			
OD	3/4"	1 1/16" - 12 UNF - 2B	42 (1.6535)	24,8 (0.9764)	20 (0.7874)	0,5 (0.0197)	40 ^{+2,5} (354 ÷ 376)	120 ⁺¹⁰ (1062 ÷ 1151)
OF	1"	1 5/16" - 12 UNF - 2B	49 (1.9291)	30,5 (1.2008)	20 (0.7874)	0,5 (0.0197)	60 ⁺⁵ (531 ÷ 575)	170 ⁺¹⁰ (1505 ÷ 1593)
OG	1" 1/4	1 5/8" - 12 UNF - 2B	58 (2.2835)	39,1 (1.5394)	20 (0.7874)	0,5 (0.0197)	70 ⁺⁵ (620 ÷ 664)	200 ⁺¹⁵ (1770 ÷ 1858)
OH	1" 1/2	1 7/8" - 12 UNF - 2B	65 (2.5591)	45 (1.7717)	20 (0.7874)	0,5 (0.0197)	100 ⁺⁵ (885 ÷ 929)	270 ⁺¹⁵ (2389 ÷ 2522)

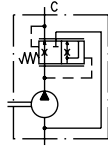
01/01.2025

VALVE OPTIONS

PRIORITY VALVE

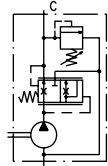
P1

Costant delivery and internal recirculation of excess flow.



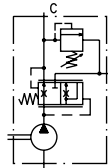
P2

Costant delivery at controlled pressure. Internal recirculation of excess flow and drain valve.



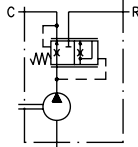
P3

Costant delivery at controlled pressure. Excess flow and drain valve must be connected to tank.



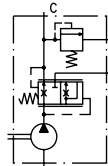
P4

Costant delivery and excess flow can both be used under load.



P5T

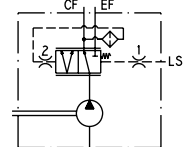
Costant delivery at controlled pressure with drain valve connected to tank. Excess flow can be used under load.



LOAD SENSING VALVE

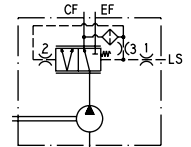
...

Static.



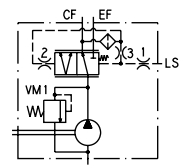
...

Dynamic.



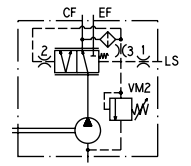
...

Dynamic with relief valve fitted on the main line.



...

Dynamic with relief valve fitted on controlled line.



For more information please refer to our built-in valves technical catalogues.

NOTES

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HOW TO ORDER - SINGLE PUMPS

1	2	3	4	5	6	7	8	9	10					
XLP20•8	S	0	-	82	E2	-	L	EB/EA	-	N	-	D	-	FS

1	Type	Pump type
8,06 cm³/rev (0.49 in³/rev)		XLP20•8
10,05 cm³/rev (0.61 in³/rev)		XLP20•10
12,09 cm³/rev (0.74 in³/rev)		XLP20•12
14,02 cm³/rev (0.86 in³/rev)		XLP20•14
16,03 cm³/rev (0.98 in³/rev)		XLP20•16
18,05 cm³/rev (1.10 in³/rev)		XLP20•18
20,00 cm³/rev (1.22 in³/rev)		XLP20•20
22,46 cm³/rev (1.37 in³/rev)		XLP20•22
24,01 cm³/rev (1.46 in³/rev)		XLP20•24
26,03 cm³/rev (1.59 in³/rev)		XLP20•26
28,01 cm³/rev (1.71 in³/rev)		XLP20•28

2	Rotation	Code
Left		S
Right		D

3	Outboard bearing options	Code
Without outboard bearing		0

4	Drive shaft	Code
European tapered 1:8		82
German tapered 1:5		54
Straight		46
SAE "A" spline (9 teeth)		03
SAE spline (10 teeth)		01
SAE "A" spline (11 teeth)		07
SAE "A" straight		31
Straight		49
Straight		50
SAE "B" spline		04
SAE "B" straight		32
DIN 54 82 spline		12
Tang		95

5	Mounting flange	Code
European		E2
German		B2
German 2 bolt		B4
German 2 bolt		B5
German 2 bolt		U2
German 4 bolt		B6

Code	Mounting flange	5
S1	SAE "A" 2 bolt	
S2	SAE "A" 2 bolt	
S9	SAE "A" 2 bolt	
S5	SAE "B" 2 bolt	

Code	Ports position	6
L	IN/OUT side	

Code	Ports IN/OUT	7
GERMAN FLANGED PORTS		
Side	Type	
BE/BC	XLP 20	8-10-12-14-16-18-20-22-24- 26-28

EUROPEAN FLANGED PORTS		
Side	Type	
EA/EA	XLP 20	8-10-12
EB/EA	XLP 20	14-16-18-20-22-24-26-28

SAE FLANGED PORTS (SSM)		
Side	Type	
MA/MA	XLP 20	8-10-12
MB/MA	XLP 20	14-16-18-20
MC/MB	XLP 20	22-24-26-28

SAE FLANGED PORTS (SSS)		
Side	Type	
SA/SA	XLP 20	8-10-12
SB/SA	XLP 20	14-16-18-20
SC/SB	XLP 20	22-24-26-28

GAS STRAIGHT THREAD PORTS (BSPP)		
Side	Type	
GD/GD	XLP 20	8-10-12
GE/GD	XLP 20	14-16-18-20
GF/GD	XLP 20	22-24-26-28

SAE STRAIGHT THREAD PORTS (ODT)		
Side	Type	
OC/OC	XLP 20	8-10-12
OD/OC	XLP 20	14-16-18-20
OF/OC	XLP 20	22-24-26-28

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HOW TO ORDER - SINGLE PUMPS

8	Seals (a)	Code
	Buna (standard)	N
	Viton	V
	Hydrogenated buna HNBR seals with Viton-FKM shaft seals	T-PV

9	Shaft seal options	Code
	Standard shaft seal with wiper seal	D
	High pressure special shaft seal with wiper seal	C1

10	Shaft arrangement	Code
	Female spline	FS

- (a) Choose the seals according to the temperature shown on page 7

HOW TO ORDER - XLP 20 DOUBLE PUMPS

1	2	3	4	5	6	7	8	9	10	11
XLP20•22	-	82	E2	-	L	EB/EA	/			
Front section										
20•18	-		L	**/EA	-	S7	-	S	/	FS - N - C1
Rear section										

1	Type	Pump type
8,06 cm³/rev (0.49 in³/rev)		XLP20•8
10,05 cm³/rev (0.61 in³/rev)		XLP20•10
12,09 cm³/rev (0.74 in³/rev)		XLP20•12
14,02 cm³/rev (0.86 in³/rev)		XLP20•14
16,03 cm³/rev (0.98 in³/rev)		XLP20•16
18,05 cm³/rev (1.10 in³/rev)		XLP20•18
20,00 cm³/rev (1.22 in³/rev)		XLP20•20
22,46 cm³/rev (1.37 in³/rev)		XLP20•22
24,01 cm³/rev (1.46 in³/rev)		XLP20•24
26,03 cm³/rev (1.59 in³/rev)		XLP20•26
28,01 cm³/rev (1.71 in³/rev)		XLP20•28

2	Drive shaft	Code
European tapered 1:8		82
German tapered 1:5		54
Straight		46
SAE "A" spline (9 teeth)		03
SAE spline (10 teeth)		01
SAE "A" spline (11 teeth)		07
SAE "A" straight		31
Straight		49
Straight		50
SAE "B" spline		04
SAE "B" straight		32
DIN 54 82 spline		12
Tang		95

3	Mounting flange	Code
European		E2
German		B2
German 2 bolt		B4
German 2 bolt		B5
German 2 bolt		U2
German 4 bolt		B6
SAE "A" 2 bolt		S1
SAE "A" 2 bolt		S2
SAE "A" 2 bolt		S9
SAE "B" 2 bolt		S5

Code	Ports position	4
L	IN/OUT side	

Code	Ports IN/OUT	5
GERMAN FLANGED PORTS		
Side	Type	
BE/BC	XLP 20	8-10-12-14-16-18-20-22-24-26-28

EUROPEAN FLANGED PORTS		
Side	Type	
EA/EA	XLP 20	8-10-12
EB/EA	XLP 20	14-16-18-20-22-24-26-28

SAE FLANGED PORTS (SSM)		
Side	Type	
MA/MA	XLP 20	8-10-12
MB/MA	XLP 20	14-16-18-20
MC/MB	XLP 20	22-24-26-28

SAE FLANGED PORTS (SSS)		
Side	Type	
SA/SA	XLP 20	8-10-12
SB/SA	XLP 20	14-16-18-20
SC/SB	XLP 20	22-24-26-28

GAS STRAIGHT THREAD PORTS (BSPP)		
Side	Type	
GD/GD	XLP 20	8-10-12
GE/GD	XLP 20	14-16-18-20
GF/GD	XLP 20	22-24-26-28

SAE STRAIGHT THREAD PORTS (ODT)		
Side	Type	
OC/OC	XLP 20	8-10-12
OD/OC	XLP 20	14-16-18-20
OF/OC	XLP 20	22-24-26-28

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HOW TO ORDER - XLP 20 DOUBLE PUMPS

6	Combination type	Code
	Standard	S6
	Common inlet	S7
	Separate stages	Z6

7	Rotation	Code
	Left	S
	Right	D

8	Outboard bearing options	Code
	Without outboard bearing (standard) no code	...

Code	Shaft arrangement	9
FS	Female spline	

Code	Seals (a)	10
N	Buna (standard)	
V	Viton	
T-PV	Hydrogenated buna HNBR seals with Viton-FKM shaft seals	

Code	Shaft seal options	11
D	Standard shaft seal with wiper seal	
C1	High pressure special shaft seal with wiper seal	

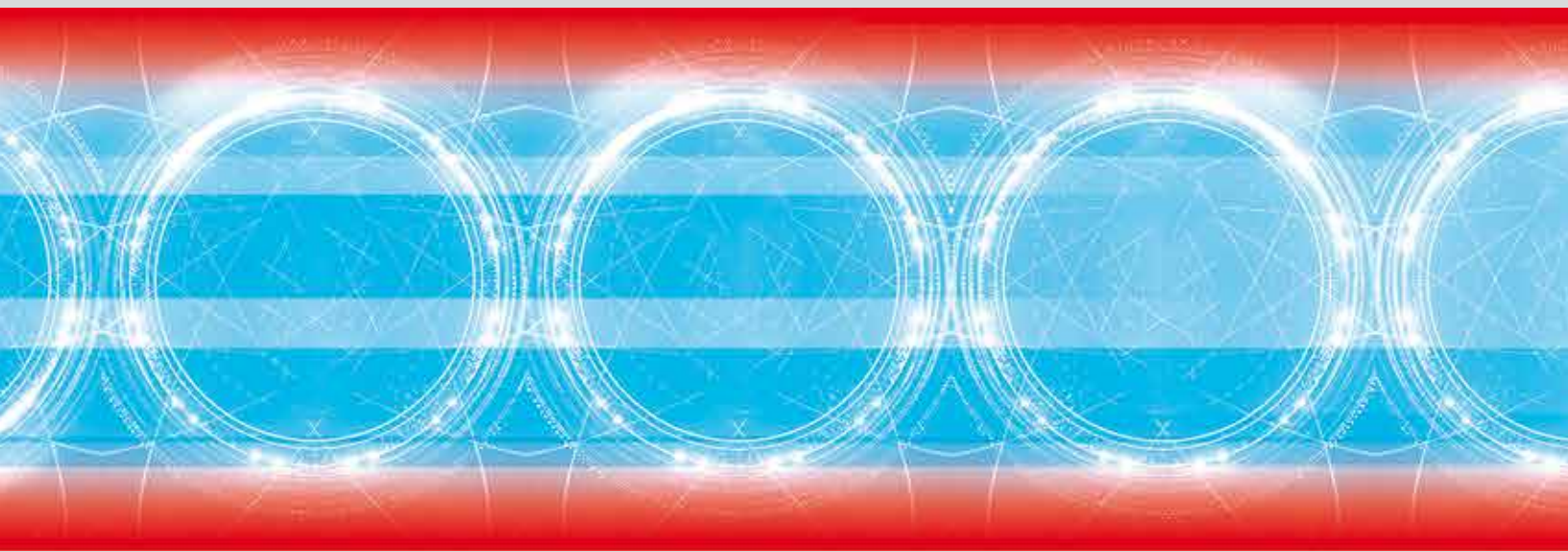
- (a) Choose the seals according to the temperature shown on page 7

NOTES

01/01.2025

XLP20 01 T A

Edition: 01/01.2025



Headquarters:
CASAPPA S.p.A.
Via Balestrieri, 1
43044 Lemignano di Collecchio
Parma (Italy)
Tel. (+39) 0521 30 41 11
E-mail: info@casappa.com
www.casappa.com

