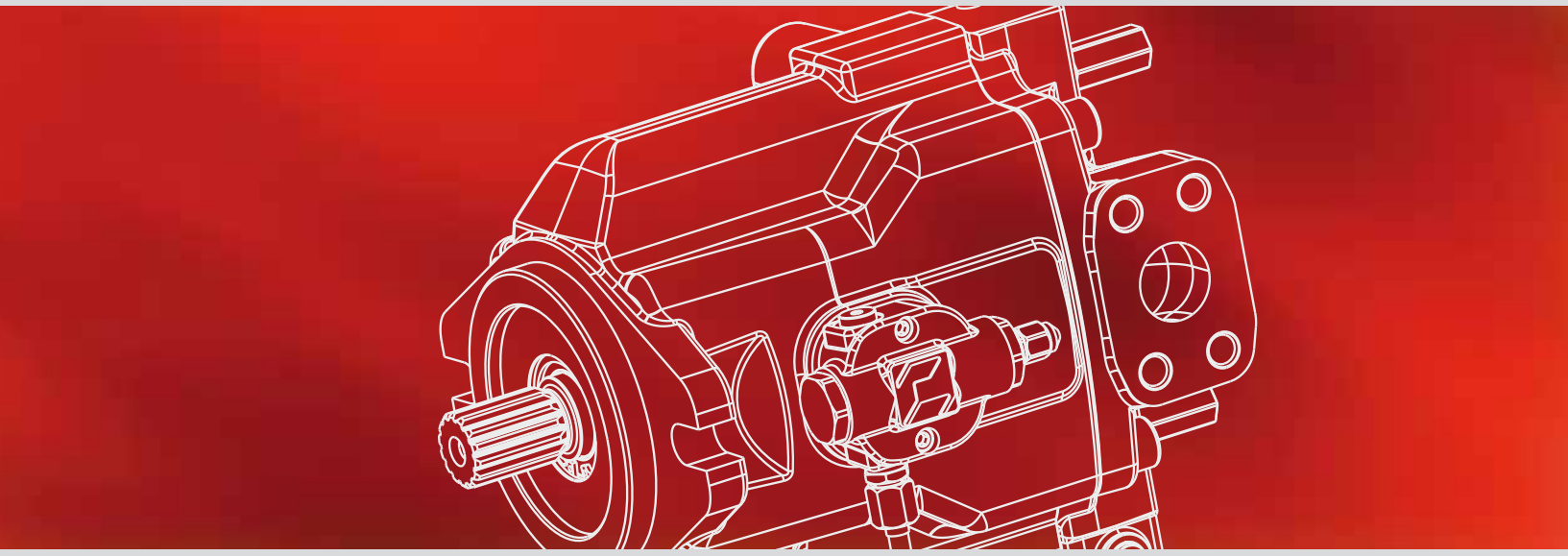
CASAPPA®
FLUID POWER DESIGN



VARIABLE DISPLACEMENTS AXIAL PISTON PUMPS

LVP SERIES

PLATA®

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O 05/12.2022

O Modification from former edition.

INTRODUCTION

Variable displacement axial piston pumps with swash plate design. LVP pumps are ideally suited for medium and high pressure open circuit applications. They are available with a wide range of control options to regulate the pumps displacement. The drive shaft is designed for both radial and axial loads. The pumps are also available with a through drive option to have multiple pumps able to supply several hydraulic systems.

DISPLACEMENTS
From 14 cm^3/rev (0.85 in^3/rev)
To 87,9 cm^3/rev (5.36 in^3/rev)

PRESSURE
Max. constant operating pressure 280 bar (4060 psi)
Max. system pressure (relief valve setting) 315 bar (4568 psi)
Max. peak of pressure 350 bar (5075 psi)

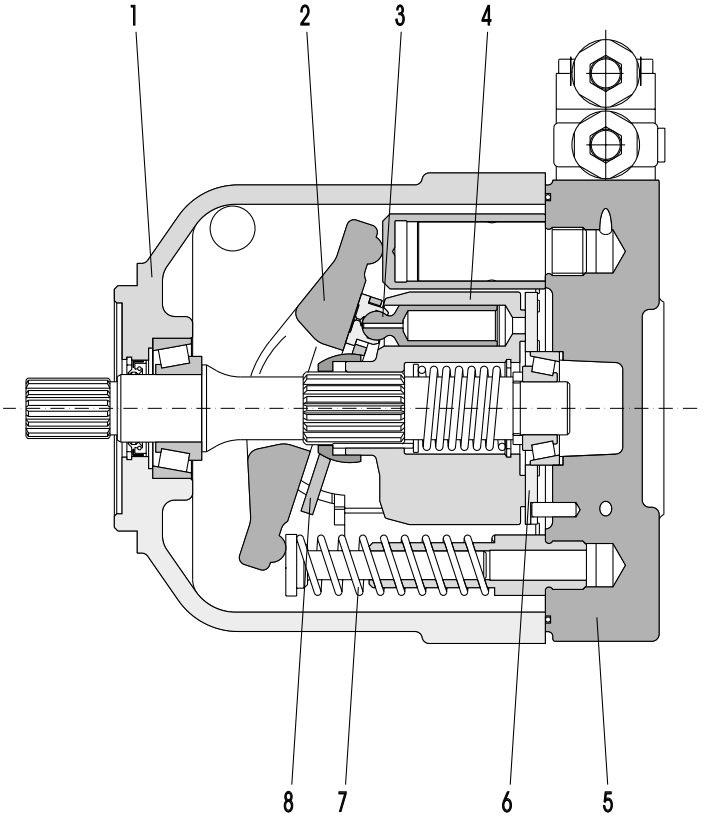
SPEED
Max. 3000 min^{-1}

APPLICATION
Medium, high pressure

SECTOR
Mobile/Industrial

TIPICAL APPLICATIONS
- Wheel Loaders-Backhoe Loaders
- Midi-Excavators
- Asphalt Pavers
- Telehandlers
- Windmills-Green Energy
- Hydraulic Presses
- Hydraulic Power Units
- Injection Molding Machines

- Energy savings
- Low noise emission
- Operational flexibility
- Wide range of controls
- Short response times
- Drive shaft bearing suitable for radial and axial loads



1	Pump body
2	Swash plate
3	Piston
4	Cylinders block
5	Cover
6	Valve plate
7	Counterbalancing spring
8	Piston guide plate

04/04.2013

GENERAL INFORMATION / INSTRUCTIONS

DIRECTION OF ROTATION
Clockwise or anti-clockwise defined looking at the drive shaft.

HYDRAULIC FLUID
Mineral oil based hydraulic fluid conforming to DIN 51524, fire resistant fluids and biodegradable fluids according to the technical data shown in the tables on pages 4 ÷ 6. The system should be designed to prevent aeration of the hydraulic fluid.

FLUID VISCOSITY
The fluid viscosity range for optimal use of LVP pump is betwe en 15 and 35 cSt (77 and 163 SSU).
Functional limit conditions are:
max.: 1500 cSt (6818 SSU) at start up at minimum tempera ture of -25 °C (-13 °F) with straight and short inlet line.
min.: 10 cSt (58 SSU) at maximum temperature of 110 °C (230 °F)

FILTRATION
To ensure the optimal performance and the maximum life to the pump, the hydraulic fluid must have and maintain a fluid contamination within the values shown in the table below.

Working pressure bar (psi)	Δp < 140 (2030)	140 < Δp < 210 (2030) (3045)	Δp > 210 (3045)
Contamination class NAS 1638	9	8	7
Contamination class ISO 4406:1999	20/18/15	19/17/14	18/16/13
Achieved with filter ßx(c) ≥75 according to ISO 16889	10 µm	10 µm	10 µm

FILL WITH OIL BEFORE START-UP

Casappa recommends to use its own production filters:

IKRON® Fluid Filtration

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.

INSTALLATION
Check that the maximum coupling eccentricity stays within 0,25 mm (0.0098 in) to reduce shaft loads due to misalignment. It is advised to use a flexible coupling suitable to absorb eventual rotational shocks. For applications with axial and radial loads exceeding published standards, consult our sales department. The direction of rotation of the pump must agree with the prime mover rotation. Before installation, the case of the pump must be filled with fluid.

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. Before connecting the lines, remove any plug and make sure that the lines are perfectly clean. Check that the drain line is dimensioned in a way to guarantee a case pressure lower than 1,5 bar (22 psi) absolute. The drain line must be connected directly (no filter, no valves, no oil cooler) to the tank and must terminate below the oil level. Check that the dimensions of the suction line guarantee a pressure equal or superior to 0,8 bar (12 psi). Inlet pressure less than 0,8 bar (12 psi) could cause an increase of noise emission, the decrease of the pump performances and a reduction of its life expectancy.

STARTING UP
Check that all connections are secure and that the entire system is completely clean. Add oil to the tank always using a filter. Bleed the air from the circuit to help the filling. 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. Gradually increase the pressure and speed of rotation up to the pre-set operating levels, which must stay within the stated limits as specified in the catalogue.

FOR VERY LOW TEMPERATURE

STARTING UP
We strongly recommend to warm up the oil before running the machine. If this is not possible, the warm up of the oil and of the pump should be carried out following these instructions:
- Start the pump in stand-by condition at minimum speed. Keep this working condition until the pump case reaches -20 °C (-4 °F)
- Increase slowly the displacement.Max pressure permitted: 50 bar (725 psi). The maximum permitted speed is strictly connected to the layout of the inlet circuit; check that there is no cavitation before increasing the speed.
- Keep this working condition until the oil temperature in the whole system is -10 °C (14 °F).
- Maximum pressure can be achieved from now on.
- Always check the outlet flow to prevent cavitation damage.

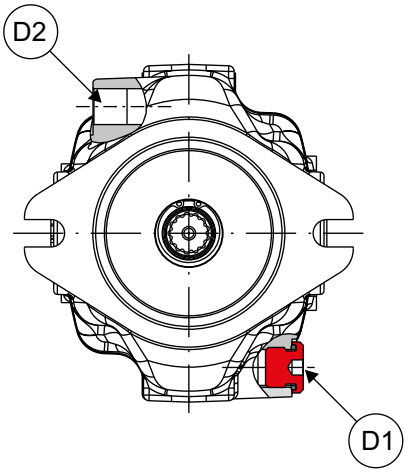
All the temperature are referred to oil with viscosity ISO VG 32 according to DIN 51 519.

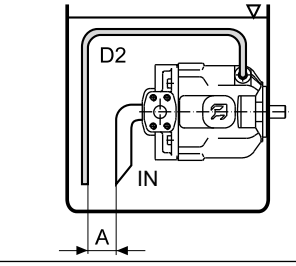
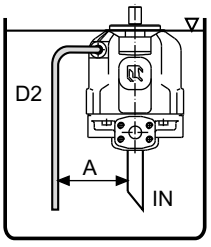
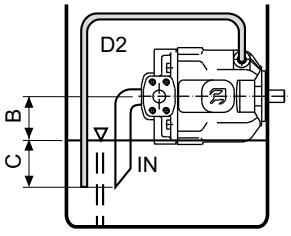
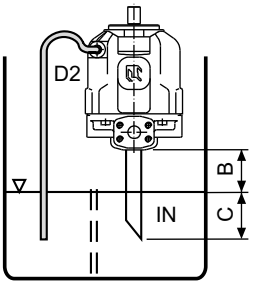
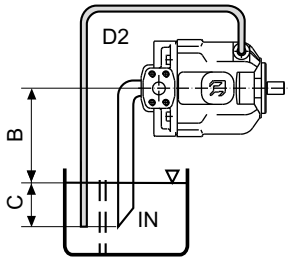
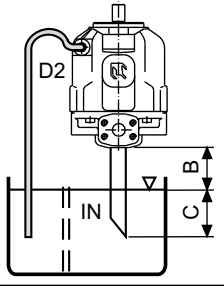
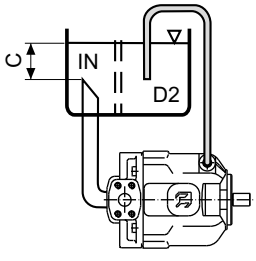
SUGGESTIONS
To prevent cavitation at low temperature we suggest:
- To warm up the tank
- To pressurize the tank
- To oversize the inlet hose

Replaces: 04/04.2013
05/12.2022

MOUNTING POSITIONS

Standard pump is supplied with the D2 drain hole open and D1 plugged.
Before installation fill the pump with hydraulic oil for at least 3/4 of the volume keeping it in horizzontal position.
The pump can be mounted in a horizontal or vertical position.
The highest of the case drain ports must be used to keep the required filling oil.
If D2 is not the highest drain port it must be closed by moving the plug from D1 hole chosen for the drain line.
The pump can be located above the oil level if the absolute pressure at the inlet port stays within the stated limits.
With exception of pump mounted below the oil level, we recommend to interpose a baffle plate between inlet and drain line.
To reduce further noise emission, we recommend to mount the pump below the oil level and avoid suction lines with sharp restrictions.

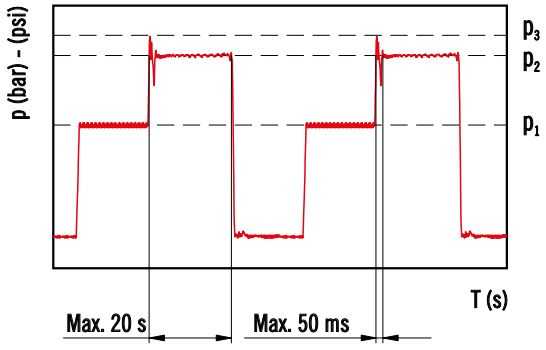


HORIZONTAL MOUNTING		VERTICAL MOUNTING	
	**Arrangement inside the tank.** Minimum oil level equal or above the pump mounting face. A ≥ 200 mm (7.874 in)		**Arrangement inside the tank.** Minimum oil level equal or above the pump mounting face. A ≥ 200 mm (7.874 in)
	**Arrangement inside the tank.** Minimum oil level below the pump mounting face. Min. inlet pressure= 0,8 bar abs (24 in Hg) B ≤ 800 mm (31.4961 in) C = 200 mm (7.874 in)		**Arrangement inside the tank.** Minimum oil level below the pump mounting face. Min. inlet pressure= 0,8 bar abs (24 in Hg) B ≤ 800 mm (31.4961 in) C = 200 mm (7.874 in)
	**Arrangement outside the tank above oil level.** Min. inlet pressure= 0,8 bar abs (24 in Hg) B ≤ 800 mm (31.4961 in) C = 200 mm (7.874 in)		**Arrangement outside the tank above oil level.** Min. inlet pressure= 0,8 bar abs (24 in Hg) B ≤ 800 mm (31.4961 in) C = 200 mm (7.874 in)
	**Arrangement outside the tank below oil level.** C = 200 mm (7.874 in)		

IN= inlet line - D2= drain line - A= min. distance between the line - B+C= permissible suction height - C= line immersion depth

03/01.2007

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.

05/12.2022

FEATURES

Technical data with mineral oil

HL or **HLP** mineral oil based hydraulic fluid to DIN 51524

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. displacement (theor.) V_{max}	cm^3/rev (in^3/rev)		28,7 (1.75)	45,4 (2.77)	73,6 (4.49)	87,9 (5.36)
Inlet pressure	bar abs. (in Hg)	min.	0.8 (24)			
	bar abs. (psi)	max.	25 (363)			
Max. outlet pressure p_{max}	bar (psi)	p_1	280 (4060)	280 (4060)	280 (4060)	250 (3625)
		p_2	315 (4568)	315 (4568)	315 (4568)	280 (4060)
		p_3	350 (5075)	350 (5075)	350 (5075)	315 (4568)
Max. drain line pressure	bar abs. (psi).		1,5 (22)			
Min. speed (recommended)	min^{-1}		500			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	3000	2600	2600	2200
Max. delivery (theor.)	l/min (US gpm)	@ n_{max}	86,1 (22.75)	118,04 (31.19)	191,36 (50.56)	193,4 (51.10)
		@ 1800 min^{-1}	51,7 (13.66)	81,7 (21.59)	132,5 (35.01)	158,2 (41.80)
		@ 1500 min^{-1}	43,1 (11.39)	68,1 (17.99)	110,4 29.17)	131,9 (34.85)
Max. power (theor.) ($\Delta p = p_{max}$ cont.)	kW (HP)	@ n_{max}	40,2 (53.9)	55,1 (73.8)	89,3 (119.7)	80,6 (108.0)
		@ 1800 min^{-1}	24,1 (32.3)	38,1 (51.1)	61,8 (82.8)	65,9 (88.3)
		@ 1500 min-1	20,1 (26.9)	31,8 (42.6)	51,5 (69.0)	54,9 (73.6)
Max. torque (theor.)	Nm (lbf in)	@ pmax cont.	127,9 (1132)	202,3 (1791)	328,0 (2903)	349,8 (3096)
		@ 100 bar (1450 psi)	45,7 (404)	72,3 (640)	117,1 (1036)	139,9 (1238)
Moment of inertia	kgm^2 (ft2 lbs)		0,0020 (0.05)	0,0030 (0.07)	0,0080 (0.19)	0,0080 (0.19)
Fill volume	l (US gallons)		0,7 (0.18)	0,9 (0.24)	1,5 (0.40)	1,5 (0.40)
Mass (without oil)	kg (lbs)		18 (39.69)	24 (52.92)	33 (72.77)	33 (72.77)
Seals			N= Buna		V= Viton	
Operating temperature	°C (°F)	min.	-25 (-13)		-15 (5)	
		max. cont.	80 (176)		110 (230)	
		max. peak	100 (212)		125 (257)	

04/04.2013

(1) = with an inlet pressure of 1 bar abs (14.5 psi) and viscosity between 15 and 35 cSt (77 and 163 SSU).
Reducing the displacement or increasing the inlet pressure the max. speed changes. See table at page 10.
Please contact us for different working conditions.

FEATURES

Technical data restrictions with fire resistant fluid

(1) = with an inlet pressure of 1 bar abs (14.5 psi) and viscosity between 15 and 35 cSt (77 and 163 SSU).

HFA - Oil emulsion in water (5 ÷ 15 % of oil)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	140 (2030)			
		intermittent	150 (2175)			
		peak	160 (2320)			
Max. speed n_{max}	min^{-1}	@ Vmax (1)	1900	1700	1600	1450
Seals			N= Buna			
Operating temperature	°C (°F)	min.	2 (36)			
		max.	55 (131)			
Bearing life (ref. mineral oil)	%		20 %			

HFB - Water emulsion in oil (40 % of water)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	160 (2320)			
		intermittent	170 (2465)			
		peak	180 (2610)			
Max. speed n_{max}	min^{-1}	@ Vmax (1)	2050	1850	1700	1550
Seals			N= Buna			
Operating temperature	°C (°F)	min.	2 (36)			
		max.	60 (140)			
Bearing life (ref. mineral oil)	%		40 %			

HFC - Water-glycol (35 ÷ 55 % of water)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	180 (2610)			
		intermittent	195 (2828)			
		peak	210 (3045)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2050	1850	1700	1550
Seals			N= Buna			
Operating temperature	°C (°F)	min.	-10 (14)			
		max.	60 (140)			
Bearing life (ref. mineral oil)	%		40 %			

04/04.2013

FEATURES

Technical data restrictions with fire resistant fluid

(1) = with an inlet pressure of 1 bar abs (14.5 psi) and viscosity between 15 and 35 cSt (77 and 163 SSU).

HFD - Phosphate ester

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	200 (2900)			
		intermittent	220 (3190)			
		peak	240 (3480)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2050	1850	1700	1550
Seals			V= Viton			
Operating temperature	°C (°F)	min.	-10 (14)			
		max.	80 (176)			
Bearing life (ref. mineral oil)	%		90 %			

Technical data restrictions with biodegradable fluids

HETG - Natural based fluid (the water content must never exceed 0,1 %)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	180 (2610)			
		intermittent	195 (2828)			
		peak	210 (3045)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2050	1850	1700	1550
Seals			N= Buna			
Operating temperature	°C (°F)	min.	-10 (14)			
		max.	60 (140)			
Bearing life (ref. mineral oil)	%		50 %			

HEPG - Polyglycol based synthetic fluid (the water content must never exceed 0,1 %)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Max. outlet pressure p_{max}	bar (psi)	continuous	180 (2610)			
		intermittent	195 (2828)			
		peak	210 (3045)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2050	1850	1700	1550
Seals			V= Viton			
Operating temperature	°C (°F)	min.	-15 (5)			
		max.	90 (194)			
Bearing life (ref. mineral oil)	%		75 %			

HEES - Synthetic esters (the water content must never exceed 0,1 %)

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
Seals			V= Viton			
Operating temperature	°C (°F)	min.	-15 (5)			
		max.	80 (176)			
Bearing life (ref. mineral oil)	%		100 %			

04/04.2013

FEATURES

Design calculations for pump

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, Δp, n)		Volumetric efficiency
$\eta_{hm} = \eta_{hm}$ (V, Δp, n)		Hydro-mechanical efficiency
$\eta_t = \eta_v \bullet \eta_{hm}$		Overall efficiency

$$Q = Q_{theor.} \bullet \eta_v$$

$$Q_{theor.} = \frac{V\ (cm^3/rev) \bullet n\ (min^{-1})}{1000} \quad [l/min]$$

$$M = \frac{M_{theor.}}{\eta_{hm}}$$

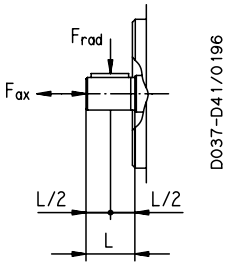
$$M_{theor.} = \frac{\Delta p\ (bar) \bullet V\ (cm^3/rev)}{62{,}83} \quad [Nm]$$

$$P_{IN} = \frac{P_{OUT}}{\eta_t}$$

$$P_{OUT} = \frac{\Delta p\ (bar) \bullet Q\ (l/min)}{600} \quad [kW]$$

Max. permissible load on drive shaft

Pump type			LVP 30	LVP 48	LVP 75	LVP 90
F_{ax} Axial force		N (lbf)	1000 (225)	1500 (337)	2000 (450)	2000 (450)
F_{rad} Radial force	@ L/2	N (lbf)	1500 (337)	1500 (337)	3000 (675)	3000 (675)



% Variation of the max. speed in relation of the inlet pressure and/or displacement reduction

Inlet pressure	Displacement %				
psi (bar abs)	65	70	80	90	100
12 (0,8)	120	115	105	97	90
13 (0,9)	120	120	110	103	95
14.5 (1,0)	120	120	115	107	100
17 (1,2)	120	120	120	113	106
20 (1,4)	120	120	120	120	112
23 (1,6)	120	120	120	120	117
29 (2,0)	120	120	120	120	120

% Variation of the max. speed

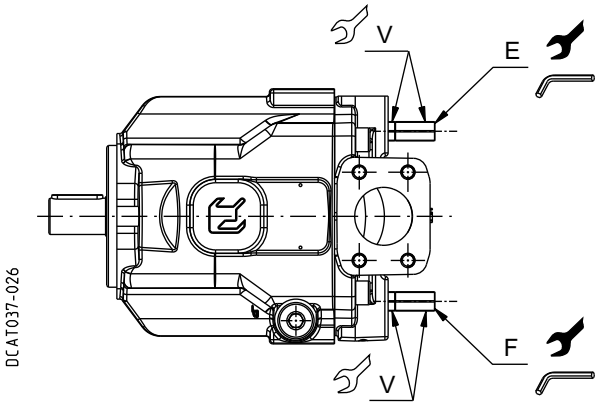
04/04.2013

Max. speed must not exceed the limits specified at page 6.

Example 1
Displacement: 100 %
Speed: 100 %
Inlet pressure: 1,0 bar abs. (14.5 psi)

Example 2
Displacement: 80 %
Inlet pressure: 1,0 bar abs. (14.5 psi)
Speed: 115 %

DISPLACEMENT SETTING

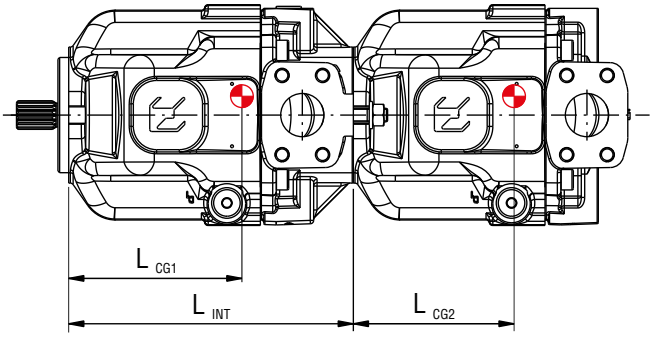


E: Max. displacement limiter
F: Min. displacement limiter
G: Min. and Max. displacement limiter

			LVP 30	LVP 48	LVP 75	LVP 90
Max. displacement setting range	cm³/rev (in³/rev)	from	20,1 (1.23)	31,8 (1.94)	36,8 (2.24)	44,0 (2.68)
		to	28,7 (1.75)	45,4 (2.77)	73,6 (4.49)	87,9 (5.36)
Min. displacement setting range	cm³/rev (in³/rev)	from	0	0	0	0
		to	7,2 (0.44)	4,5 (0.27)	36,8 (2.24)	44,0 (2.68)
One turn of screw changes pump displacement by approximately	cm³/rev (in³/rev)	E	1,5 (0.09)	2,2 (0.13)	3,2 (0.20)	3,2 (0.20)
		F				
			14	14	17	17
			4	4	5	5
Tightening torque	Nm (lbf in)	V	15 ±1 (124 ÷ 142)	15 ±1 (124 ÷ 142)	15 ±1 (124 ÷ 142)	15 ±1 (124 ÷ 142)

Setting ranges with standard limiter. Please contact us for different working conditions.

CENTER OF GRAVITY



Center of gravity

$$M_{MF} = \frac{L_{CG1} \bullet m_1 + (L_{INT} + L_{CG2}) \bullet m_2}{102} \quad [Nm]$$

M_{MF} : Load moment on mounting flange
L_{CG} : Distance from center of gravity to mounting flange [mm]
m : Weight (kg)

		LVP 30	LVP 48	LVP 75	LVP 90
L_{CG1}	mm (in)	110 (4.3307)	130 (5.1181)	145 (5.7087)	145 (5.7087)
L_{CG2}	mm (in)	102 (4.0157)	118 (4.6457)	125 (4.9213)	125 (4.9213)
L_{INT}	mm (in)	values at page 47			

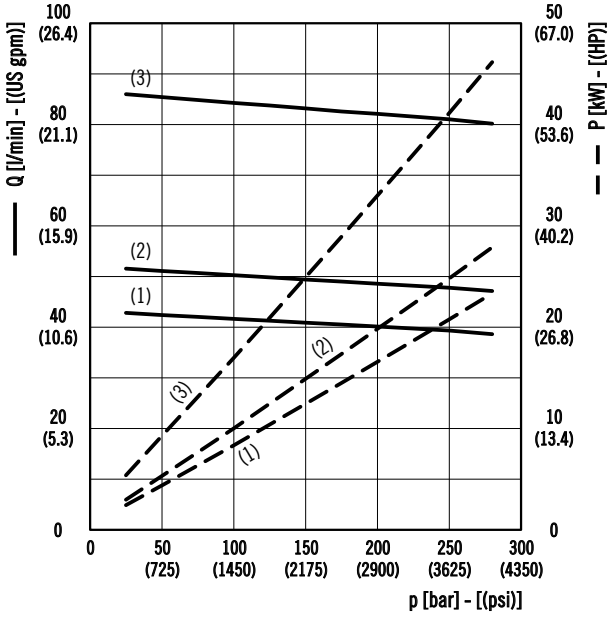
For single pumps refer to L_{CG2} values
Avarage data, please contact us for specific values.

04/04.2013

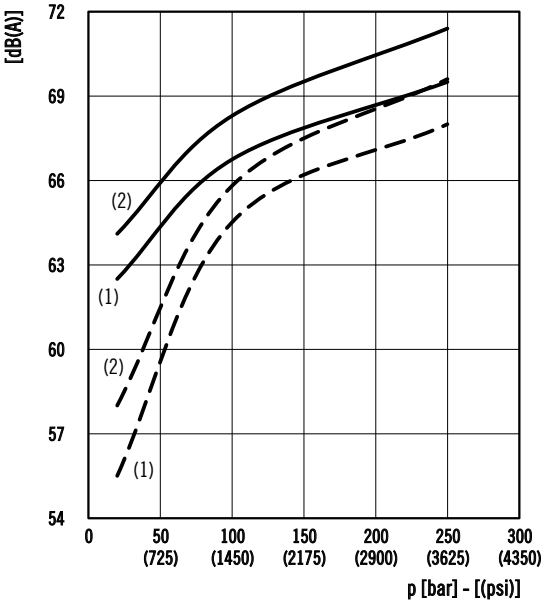
LVP 30 OPERATING CURVES

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 speed: (1) 1500 min^{-1}
(2) 1800 min^{-1}
(3) 3000 min^{-1}

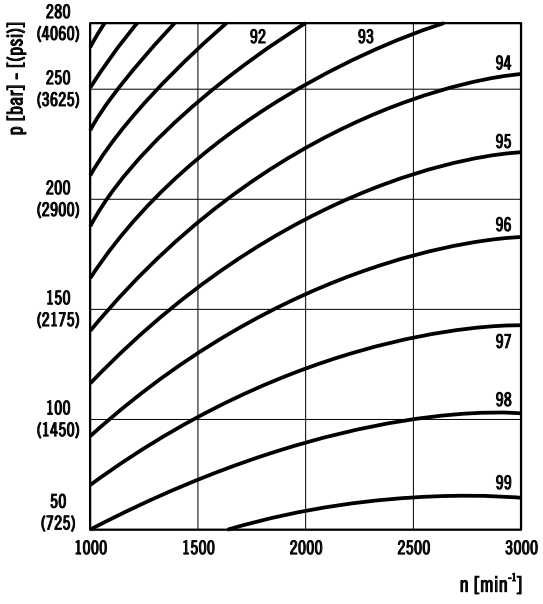
Delivery / power
@ max. displacement



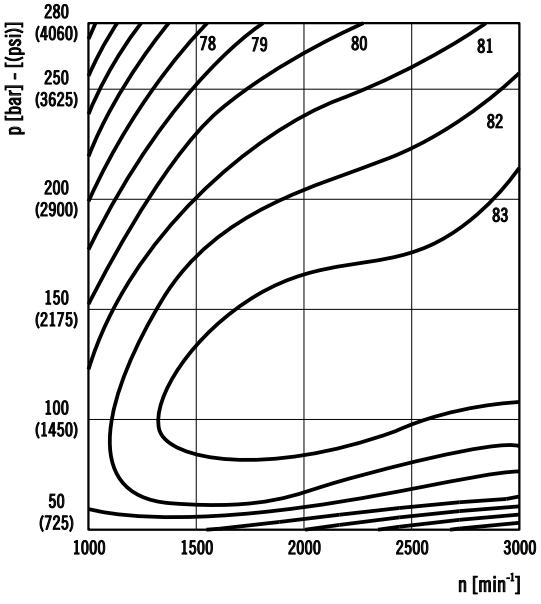
Noise level Distance from microphone to pump = 1 m (39.37 in)
——— @ max. displacement – – – @ min. displacement



Volumetric efficiency
@ max. displacement



Overall efficiency
@ max. displacement



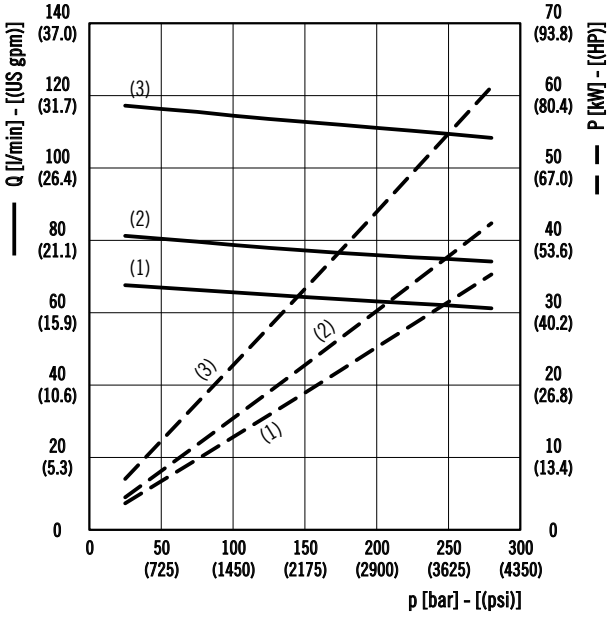
04/04.2013

Values shown in the diagrams are indicative only. Actual values may vary depending on the pump configuration.

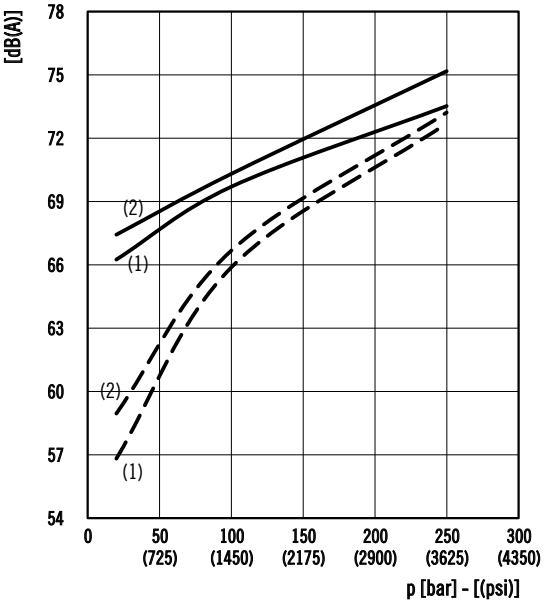
LVP 48 OPERATING CURVES

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 speed: (1) 1500 min^{-1}
(2) 1800 min^{-1}
(3) 2600 min^{-1}

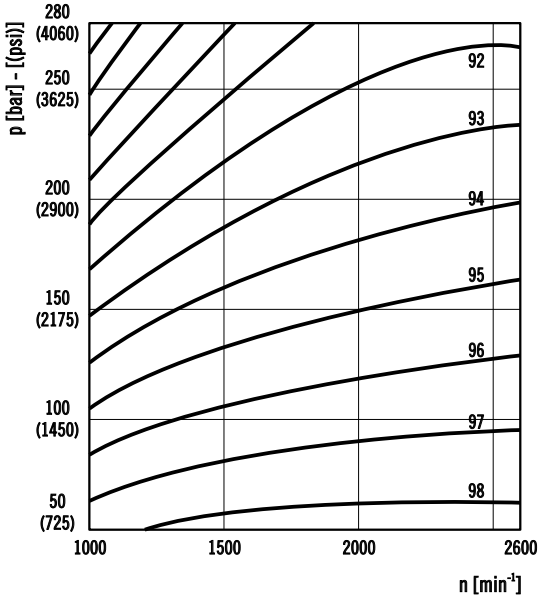
Delivery / power
@ max. displacement



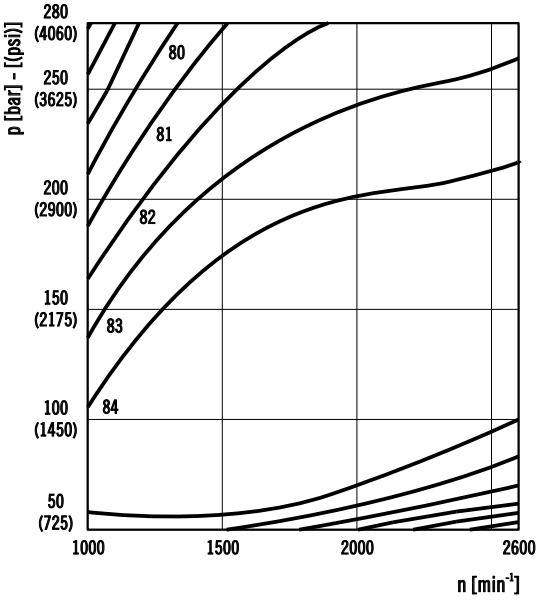
Noise level Distance from microphone to pump = 1 m (39.37 in)
——— @ max. displacement – – – @ min. displacement



Volumetric efficiency
@ max. displacement



Overall efficiency
@ max. displacement



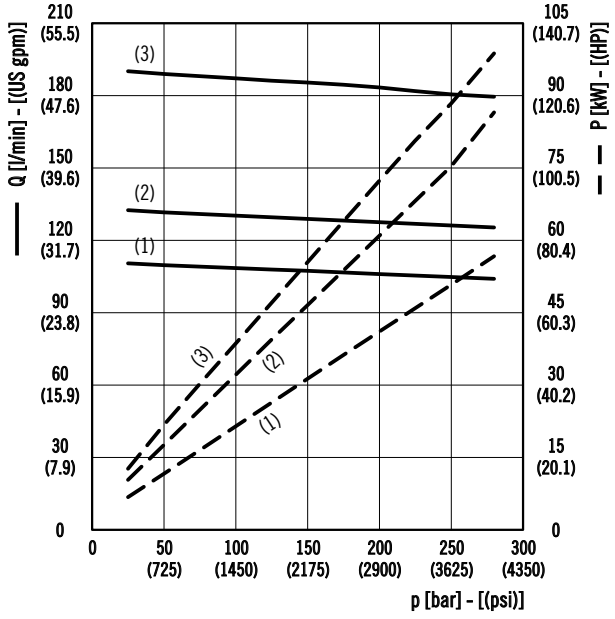
Values shown in the diagrams are indicative only. Actual values may vary depending on the pump configuration.

04/04.2013

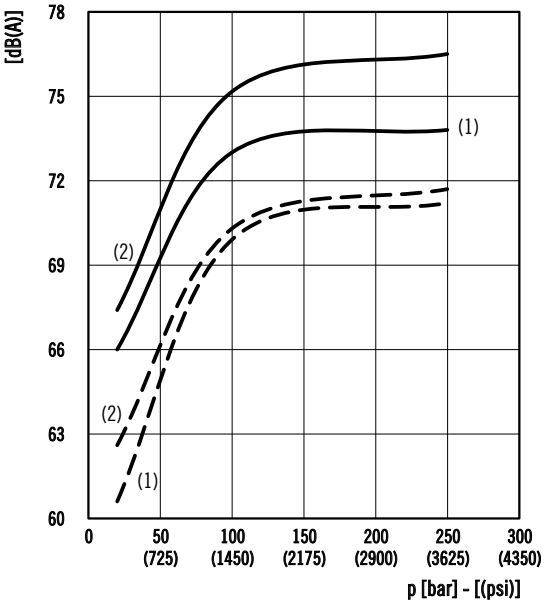
LVP 75 OPERATING CURVES

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 speed: (1) 1500 min^{-1}
(2) 1800 min^{-1}
(3) 2600 min^{-1}

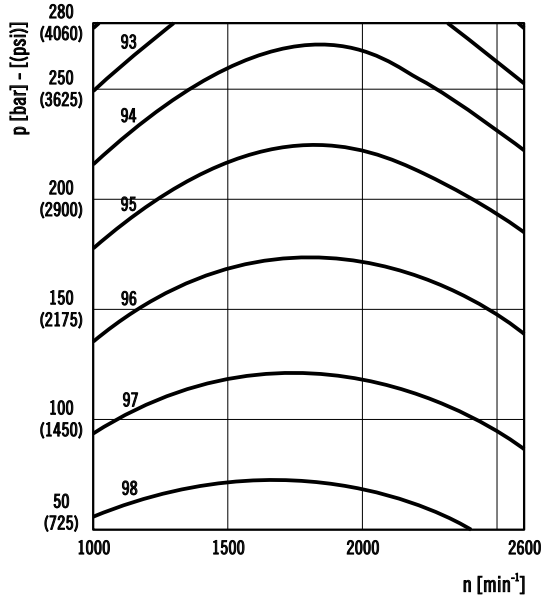
Delivery / power
@ max. displacement



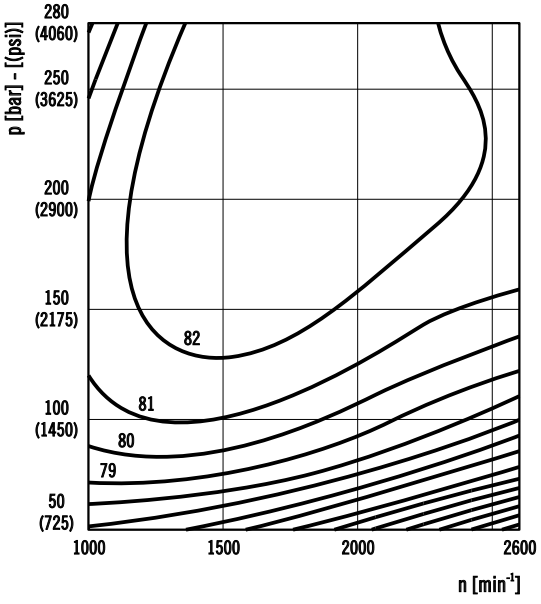
Noise level Distance from microphone to pump = 1 m (39.37 in)
——— @ max. displacement – – – @ min. displacement



Volumetric efficiency
@ max. displacement



Overall efficiency
@ max. displacement



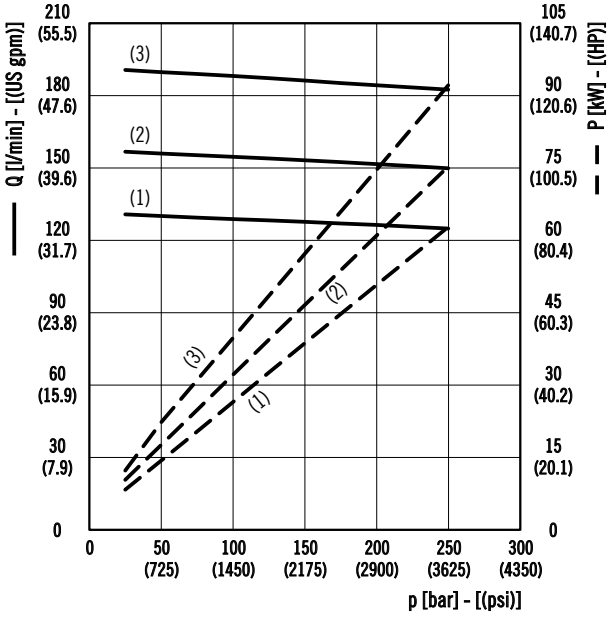
04/04.2013

Values shown in the diagrams are indicative only. Actual values may vary depending on the pump configuration.

LVP 90 OPERATING CURVES

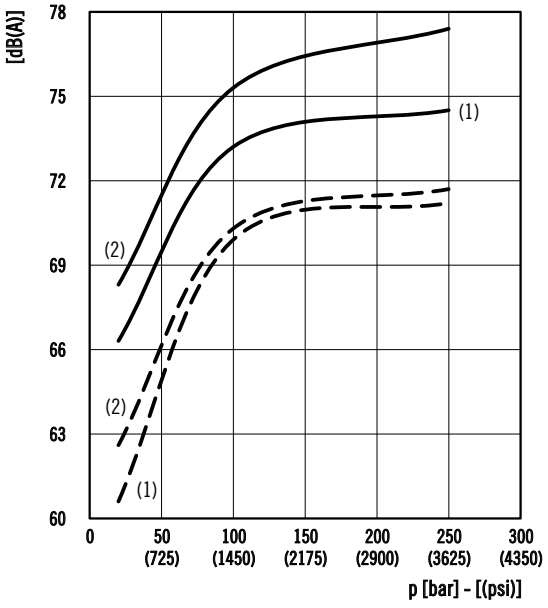
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these speed: (1) 1500 min^{-1}
(2) 1800 min^{-1}
(3) 2200 min^{-1}

Delivery / power
@ max. displacement

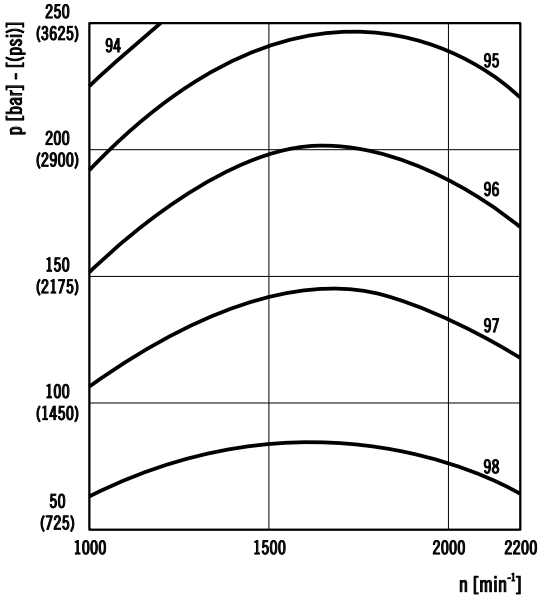


Noise level Distance from microphone to pump = 1 m (39.37 in)

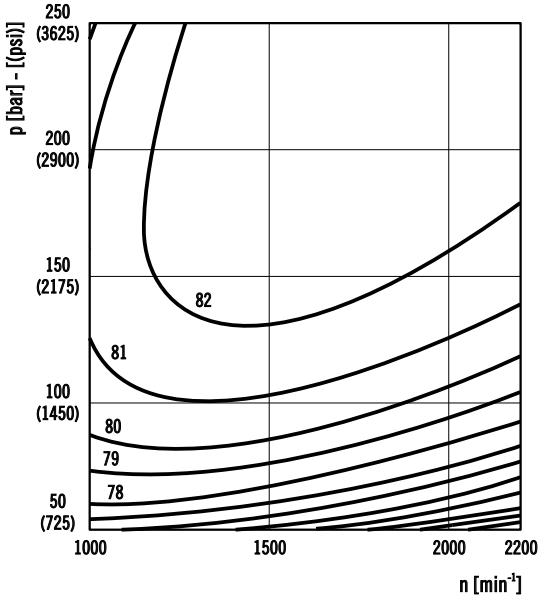
——— @ max. displacement – – – @ min. displacement



Volumetric efficiency
@ max. displacement



Overall efficiency
@ max. displacement



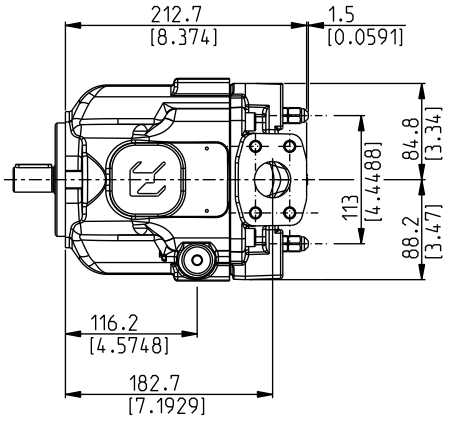
04/04.2013

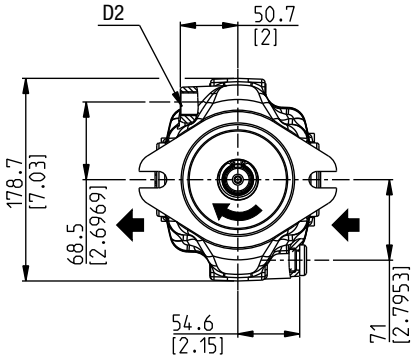
Values shown in the diagrams are indicative only. Actual values may vary depending on the pump configuration.

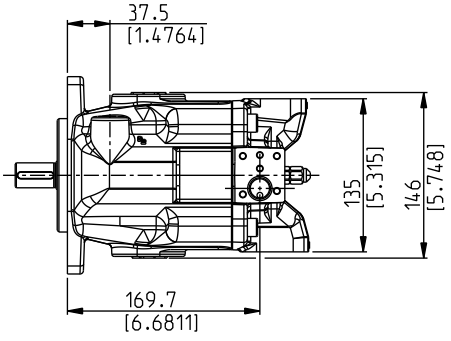
LVP 30 SIDE PORTS - DIMENSIONS L

Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28

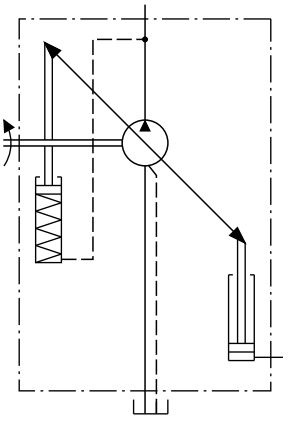
Replaces: 04/04.2013







DCAT037-020

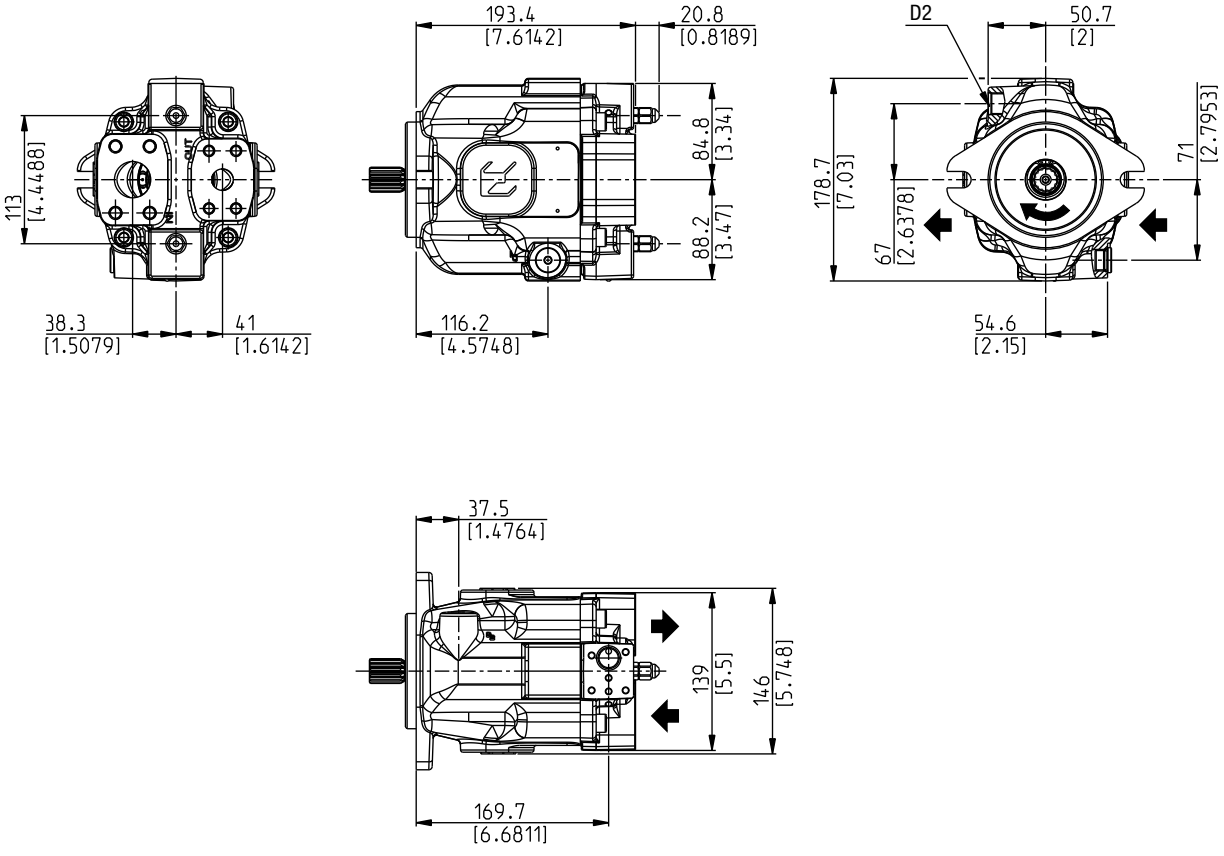


05/12.2022

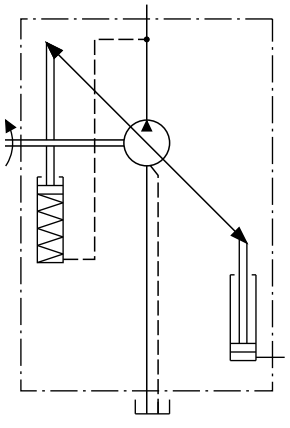
LVP 30 REAR PORTS - DIMENSIONS P

Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28

Replaces: 04/04.2013



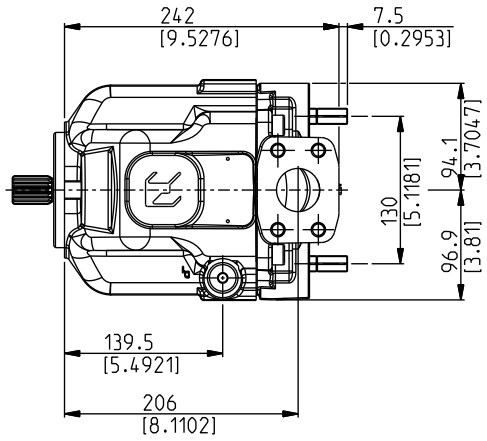
DCAT037-021

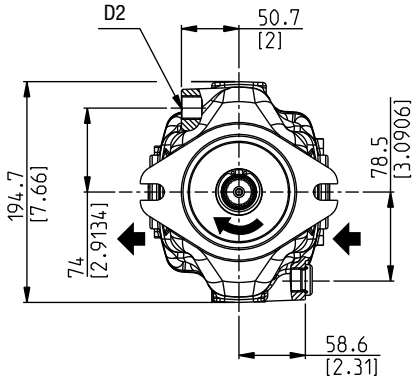


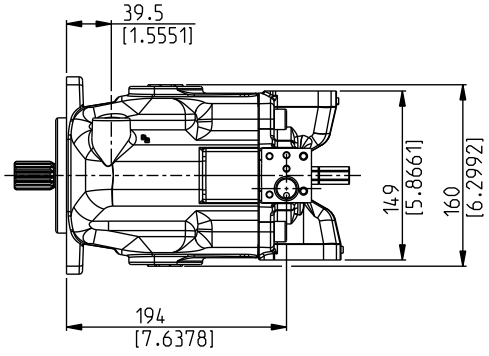
05/12.2022

LVP 48 SIDE PORTS - DIMENSIONS L

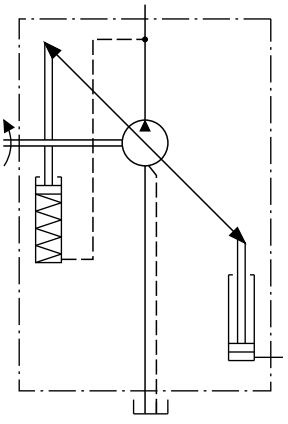
Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28







DCAT037-022



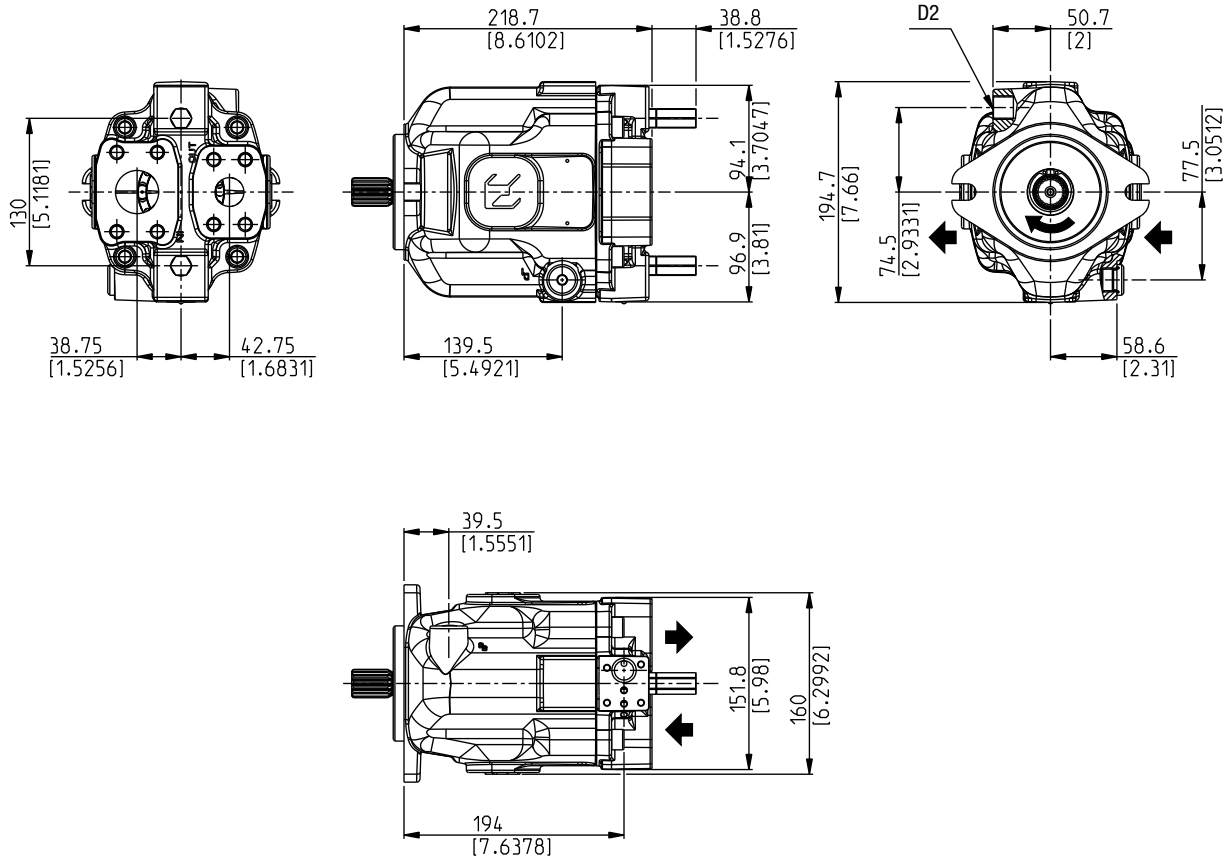
Replaces: 04/04.2013

05/12.2022

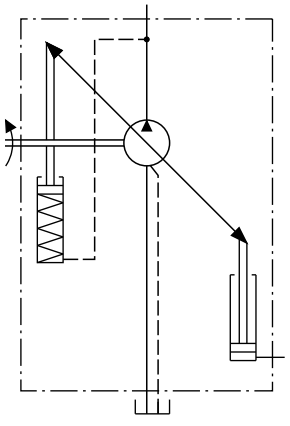
LVP 48 REAR PORTS - DIMENSIONS P

Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28

Replaces: 04/04.2013



DCAT037-023

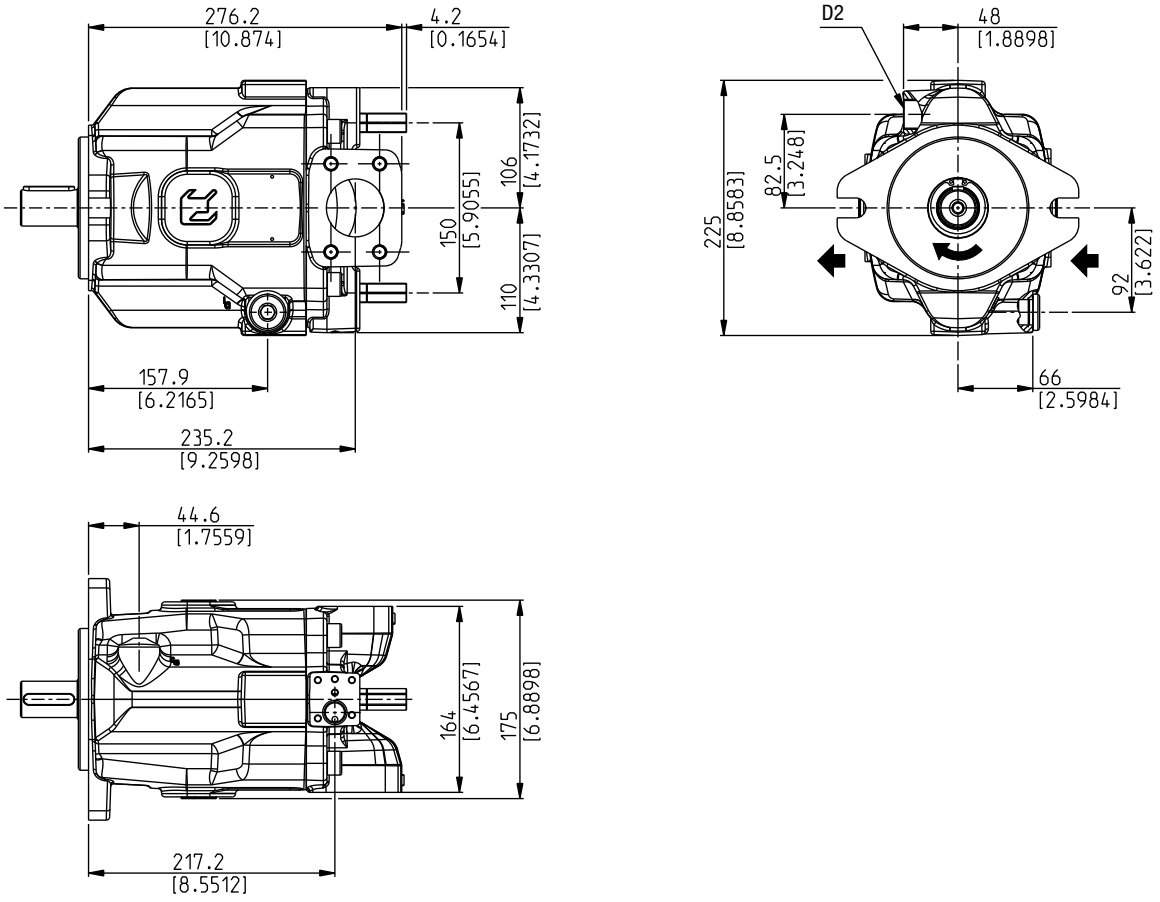


O 05/12.2022

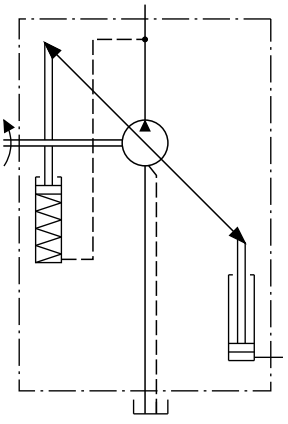
LVP 75-90 SIDE PORTS - DIMENSIONS L

Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28

Replaces: 04/04.2013



DCAT037-024

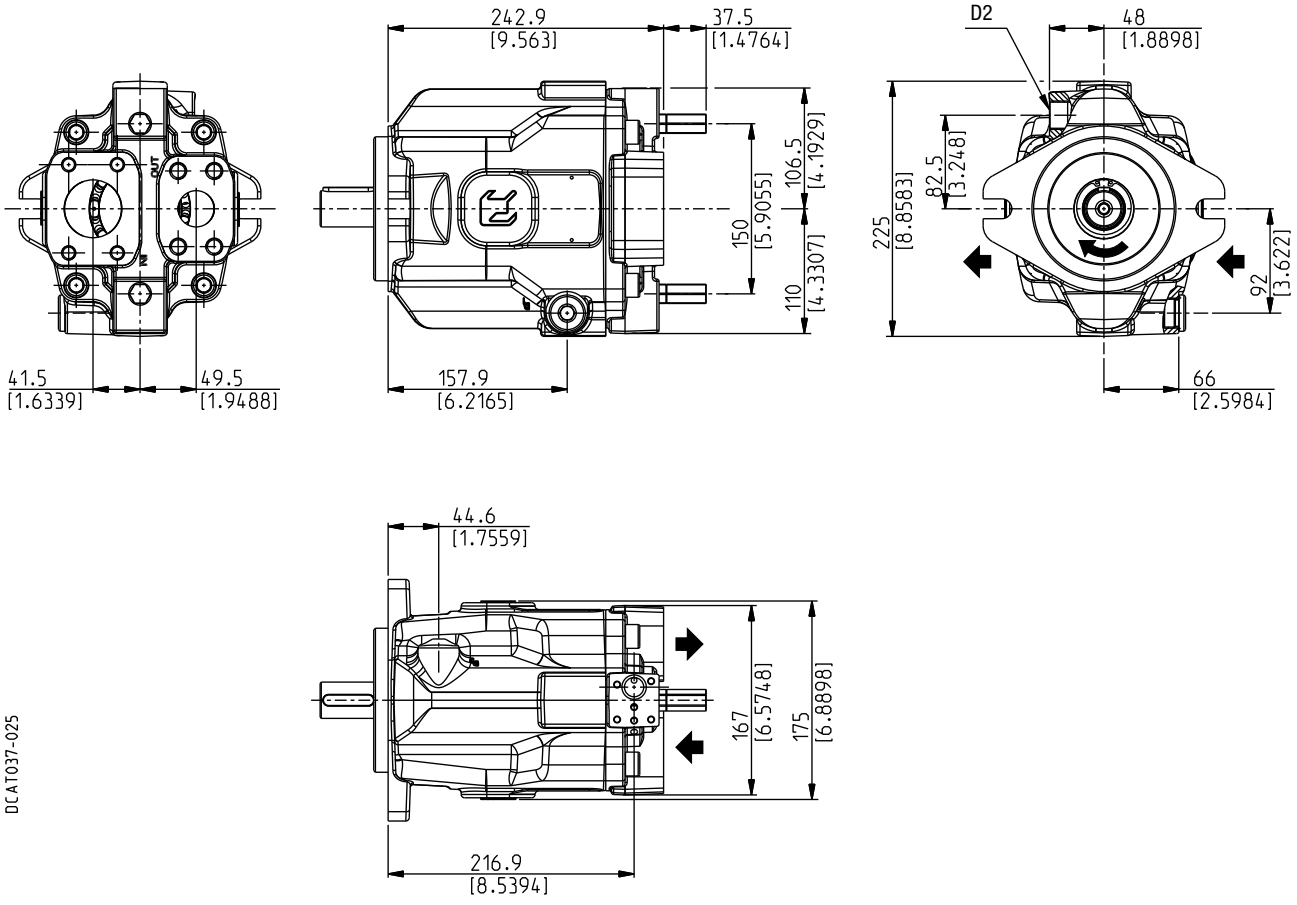


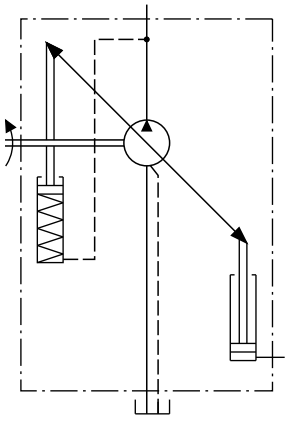
05/12.2022

LVP 75-90 REAR PORTS - DIMENSIONS P

Drive shafts: see page 22 ÷ 23
Mounting flanges: see page 24 ÷ 25
Ports: see page 26 ÷ 28

Replaces: 04/04.2013



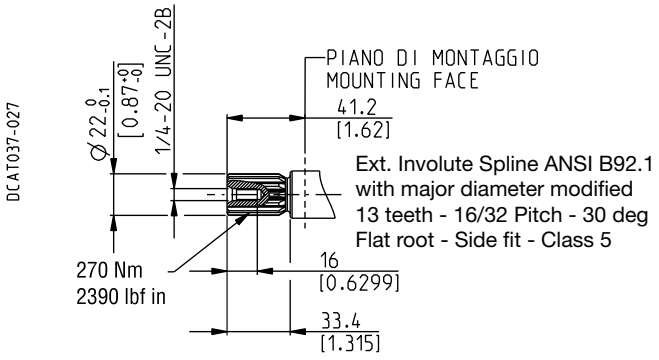


o 05/12.2022

DRIVE SHAFTS

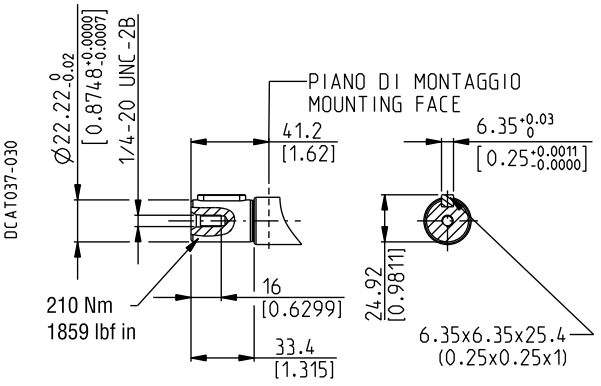
SAE “B” SPLINE 04

Mounting face refers to flange code **S5**



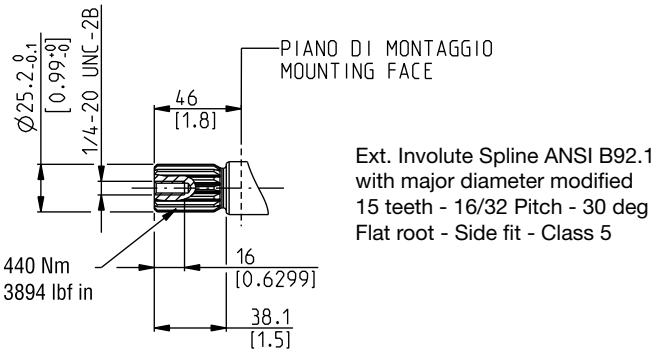
SAE “B” STRAIGHT 32

Mounting face refers to flange code **S5**



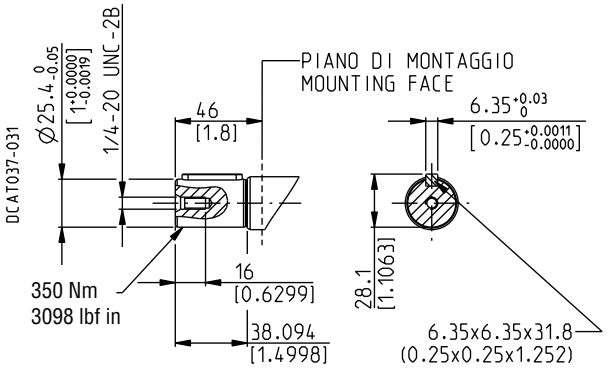
SAE “BB” SPLINE 05

Mounting face refers to flange code **S5**



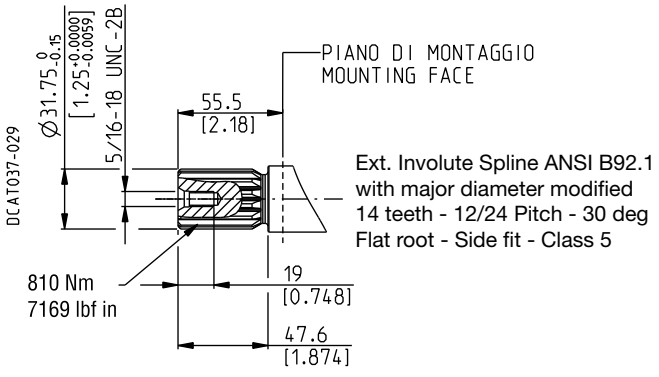
SAE “BB” STRAIGHT 33

Mounting face refers to flange code **S5**



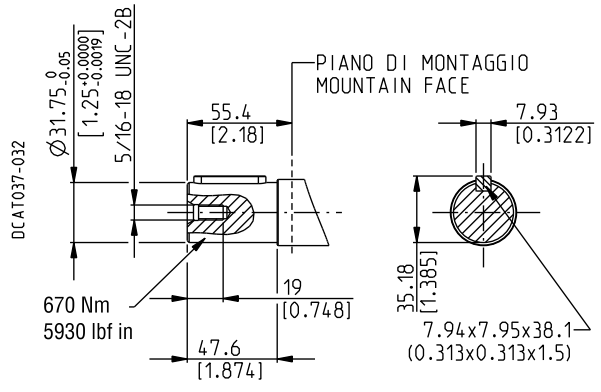
SAE “C” SPLINE 06

Mounting face refers to flange code **S7**



SAE “C” STRAIGHT 34

Mounting face refers to flange code **S7**



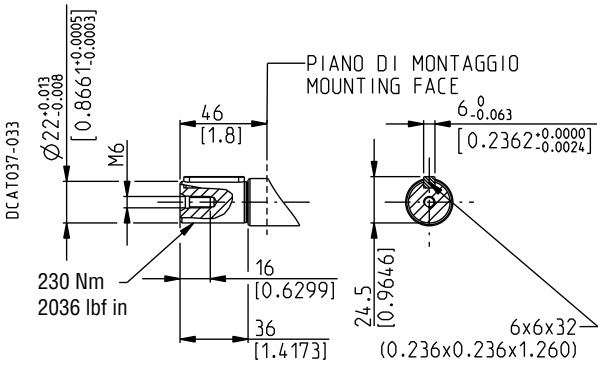
Please contact us for different drive shafts.

04/04.2013

DRIVE SHAFTS

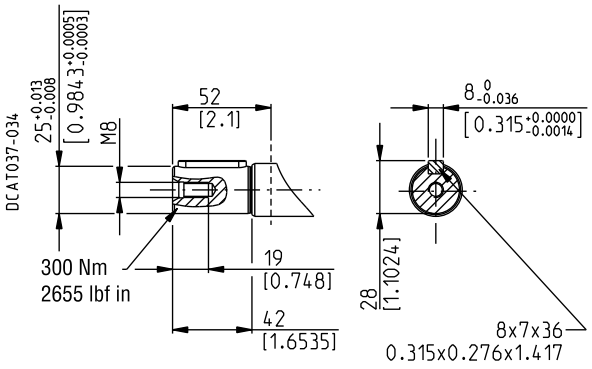
STRAIGHT Ø 22 — 68

Mounting face refers to flange code **Z1**



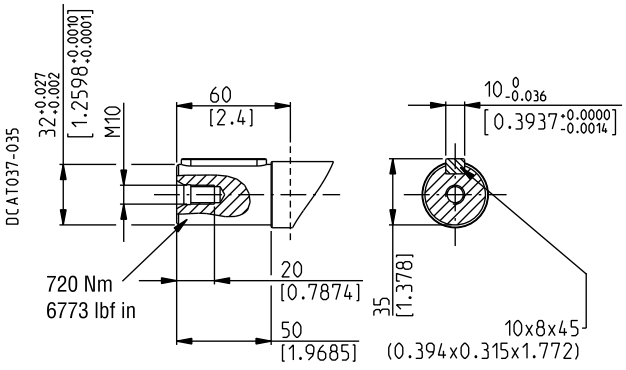
STRAIGHT Ø 25 — 69

Mounting face refers to flange code **Z15**



STRAIGHT Ø 32 — 70

Mounting face refers to flange code **Z2**

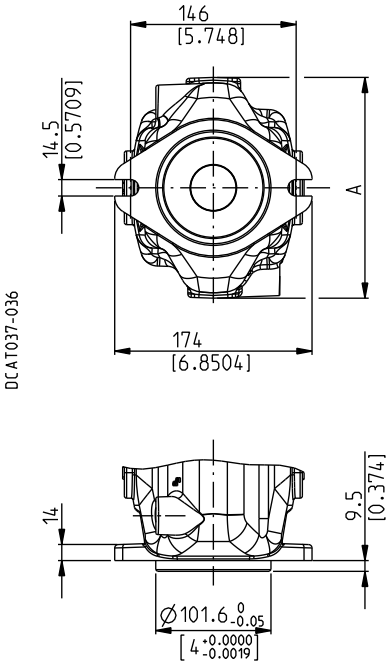


04/04.2013

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

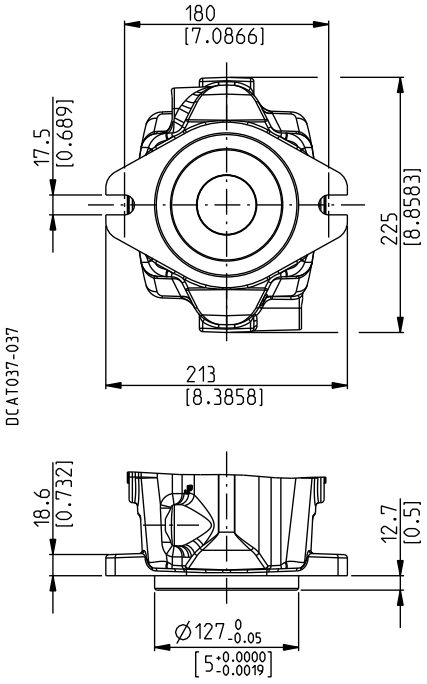
SAE “B” 2 HOLES S5

Conforms to SAE J744



SAE “C” 2 HOLES S7

Conforms to SAE J744



Pump type	A mm (in)	DRIVE SHAFTS See page 22 04	32	05	33
LVP 30	178,7 (7.03)	X	X		X
LVP 48	194,7 (7.66)	X		X	X

X Available combination

Pump type	DRIVE SHAFTS See page 22 06	34
LVP 75	X	X
LVP 90	X	X

X Available combination

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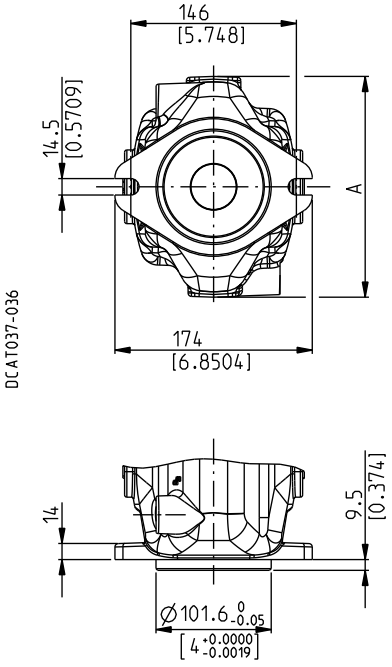
MOUNTING FLANGES AND TABLE OF COMPATIBILITY

ISO Ø 100 — Z1

Conforms to ISO 3019/2

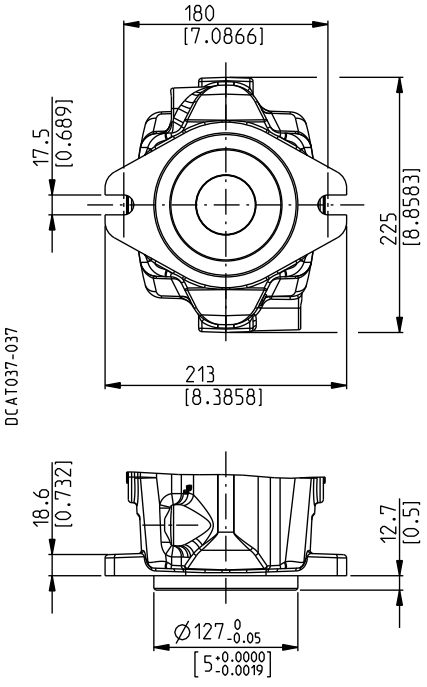


Pump type	A mm (in)	DRIVE SHAFTS See page 23: 68	69
LVP 30	178,7 (7.03)	X	
LVP 48	194,7 (7.66)		X

X Available combination

ISO Ø 125 — Z2

Conforms to ISO 3019/2



Pump type	DRIVE SHAFTS See page 23: 70
LVP 75	X
LVP 90	X

X Available combination

04/04.2013

PORTS SIZES

Ports type	INLET / OUTLET PORTS				DRAIN PORT		LOAD SENSING PORT	
	Split SSM		Split SSS		Gas BSPP	SAE ODT (●)	Gas BSPP (●)	SAE ODT
	IN	OUT	IN	OUT	D1 - D2	D1 - D2	X	X
LVP 30	MD	QB	SD	VB	GD	OB	GA	03
LVP 48	ME	QC	SE	VC	GD	OC	GA	03
LVP 75	MF	QD	SF	VD	GE	OC	GA	03
LVP 90	MF	QD	SF	VD	GE	OC	GA	03

(●) Available only with inlet and outlet ports type Split SSS.

Tightening torque for low pressure side port

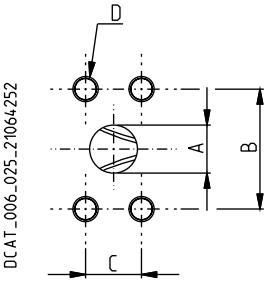
Tightening torque for high pressure side port

SAE FLANGED PORTS J518 — SSM

Metric thread ISO 60° conforms to ISO/R 262

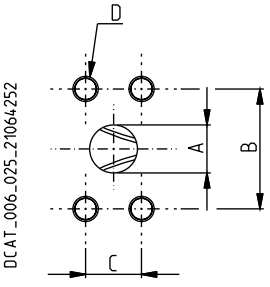
INLET PORT - IN (SAE 3000 STANDARD PRESSURE - CODE 61)

CODE	Nominal size	A	B	C	D		
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
MD	1” 1/4	32 (1.26)	58,7 (2.31)	30,2 (1.19)	M 10 28 (1.10)	20 $^{+1}$ (177 ÷ 186)	–
ME	1” 1/2	38,1 (1.50)	69,8 (2.75)	35,7 (1.41)	M 12 26 (1.02)	30 $^{+2,5}$ (266 ÷ 288)	–
MF	2”	51 (2.01)	77,8 (3.06)	42,9 (1.69)	M 12 25 (0.98)	30 $^{+2,5}$ (266 ÷ 288)	–



OUTLET PORT - OUT (SAE 6000 HIGH PRESSURE - CODE 62)

CODE	Nominal size	A	B	C	D		
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
QB	3/4”	19 (0.75)	50,8 (2.00)	23,8 (0.94)	M 10 24 (0.94)	–	45 $^{+2,5}$ (398 ÷ 420)
QC	1”	25,4 (1.00)	57,2 (2.25)	27,8 (1.09)	M 12 26 (1.02)	–	70 $^{+5}$ (620 ÷ 664)
QD	1” 1/4	32 (1.26)	66,7 (2.63)	31,8 (1.25)	M 14 23 (0.91)	–	60 $^{+5}$ (531 ÷ 575)



03/01.2007

PORTS SIZES

Tightening torque for low pressure side port

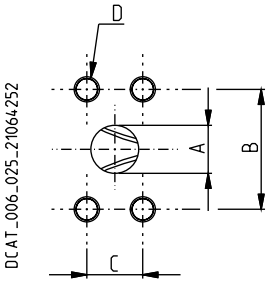
Tightening torque for high pressure side port

SAE FLANGED PORTS J518 — SSS

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

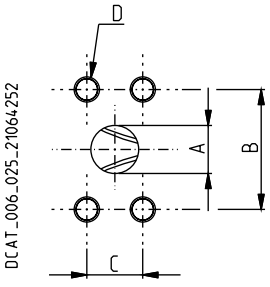
INLET PORT - IN (SAE 3000 STANDARD PRESSURE - CODE 61)

CODE	Nominal size	A mm (in)	B mm (in)	C mm (in)	D Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
SD	1” 1/4	32 (1.26)	58,7 (2.31)	30,2 (1.19)	7/16-14 UNC-2B 28 (1.1024)	25 $^{+1}$ (221 ÷ 230)	–
SE	1” 1/2	38,1 (1.50)	69,8 (2.75)	35,7 (1.41)	1/2-13 UNC-2B 26 (1.0236)	30 $^{+2,5}$ (266 ÷ 288)	–
SF	2”	51 (2.01)	77,8 (3.06)	42,9 (1.69)	1/2-13 UNC-2B 25 (0.9843)	30 $^{+2,5}$ (266 ÷ 288)	–



OUTLET PORT - OUT (SAE 6000 HIGH PRESSURE - CODE 62)

CODE	Nominal size	A mm (in)	B mm (in)	C mm (in)	D Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
VB	3/4”	19 (0.75)	50,8 (2.00)	23,8 (0.94)	3/8-16 UNC-2B 24 (0.9449)	–	45 $^{+2,5}$ (398 ÷ 420)
VC	1”	25,4 (1.00)	57,2 (2.25)	27,8 (1.09)	7/16-14 UNC-2B 20 (0.7874)	–	65 $^{+5}$ (575 ÷ 620)
VD	1” 1/4	32 (1.26)	66,7 (2.63)	31,8 (1.25)	1/2-13 UNC-2B 23 (0.9055)	–	65 $^{+5}$ (575 ÷ 620)



04/04.2013

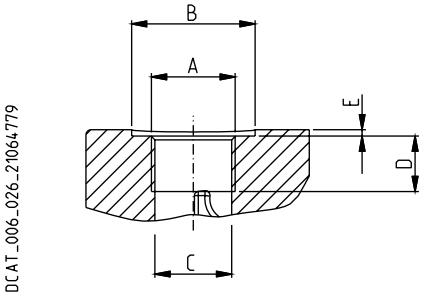
PORTS SIZES

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

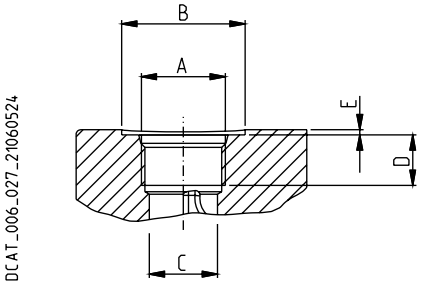


CODE	Nominal size	A	Ø B	Ø C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
GA (X)	1/8”	G 1/8	—	8,75 (0.34)	12 (0.47)	—	—	5 +0,25 (44 ÷ 46)
GD (●)	1/2”	G 1/2	36 (1.42)	19 (0.75)	—	1 (0.04)	20 +1 (177 ÷ 186)	—
GE (●)	3/4”	G 3/4	38 (1.50)	24,5 (0.97)	—	1 (0.04)	30 +2,5 (266 ÷ 288)	—

(X) = Load sensing port - (●) = Drain port

SAE STRAIGHT THREAD PORTS J514 — ODT

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



CODE	Nominal size	A	Ø B	Ø C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
03 (X)	1/4”	7/16” - 20 UNF - 2B	—	9,5 (0.37)	—	—	—	12 +1 (106 ÷ 115)
0B (●)	1/2”	3/4” - 16 UNF - 2B	33 (1.30)	17 (0.67)	—	1 (0.04)	20 +1 (177 ÷ 186)	—
0C (●)	5/8”	7/8” - 14 UNF - 2B	38 (1.50)	20,5 (0.81)	—	1 (0.04)	30 +2,5 (266 ÷ 288)	—

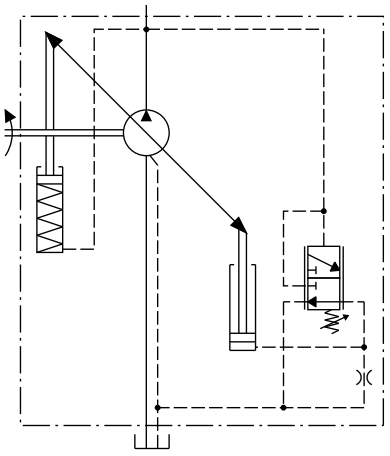
(X) = Load sensing port - (●) = Drain port

04/04.2013

NOTES

PRESSURE COMPENSATOR RP0

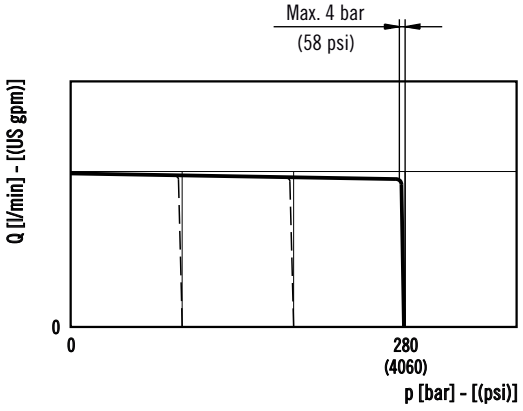
Regulates the pump displacement automatically to mantain the pressure below the fixed pre-adjusted limit.



Compensator type	Pump type	Pressure setting range	Standard setting
		bar (psi)	bar (psi)
RP0	LVP 30	20 ÷ 280 (290 ÷ 4060)	280 (4060)
	LVP 48	20 ÷ 280 (290 ÷ 4060)	280 (4060)
	LVP 75	20 ÷ 280 (290 ÷ 4060)	280 (4060)
	LVP 90	20 ÷ 250 (200 ÷ 3625)	250 (3625)

OPERATING CURVES

Curves have been obtained at the speed of 1500 min^{-1} and oil temperature 50 °C (122 °F).

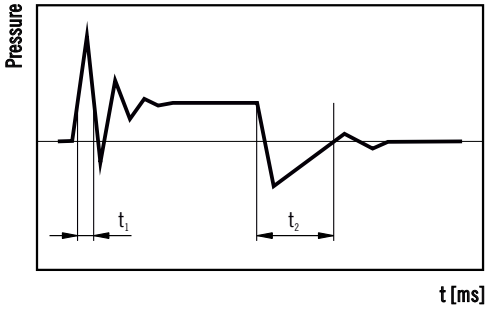


REMOTE CONTROL

For remote pressure compensator LS3 see page 34.

RESPONSE AND RECOVERY TIME

According to SAE J745 (using outlet pressure).



Pump type	t_1 Response time [ms] (off stroke)	t_2 Recovery time [ms] (on stroke)
LVP 30	36	140
LVP 48	42	140
LVP 75	44	160
LVP 90	44	160

NOTES

Angular sensor is available on request.
See page 45 for more information.

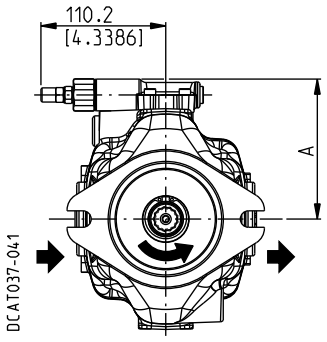
Replaces: 04/04.2013

05/12.2022

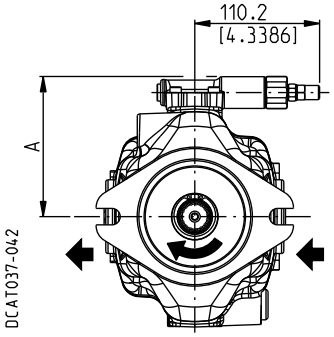
PRESSURE COMPENSATOR RP0

SIDE PORTS

Anti-clockwise rotation

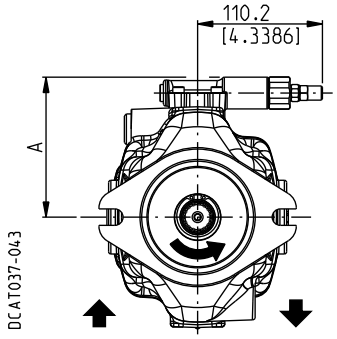


Clockwise rotation

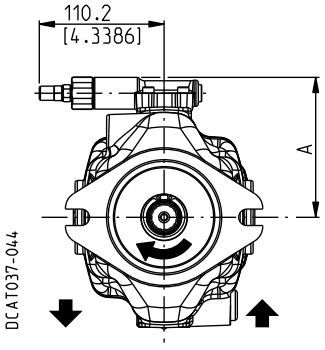


REAR PORTS

Anti-clockwise rotation



Clockwise rotation



Pump type	A
	mm (in)
LVP 30	114 (4.49)
LVP 48	124 (4.88)
LVP 75	136 (5.35)
LVP 90	136 (5.35)

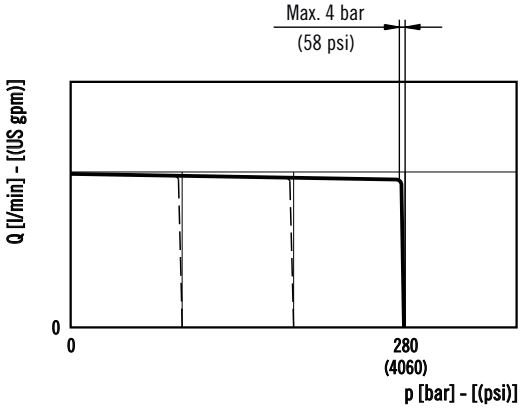
04/04.2013

PRESSURE COMPENSATOR RP1

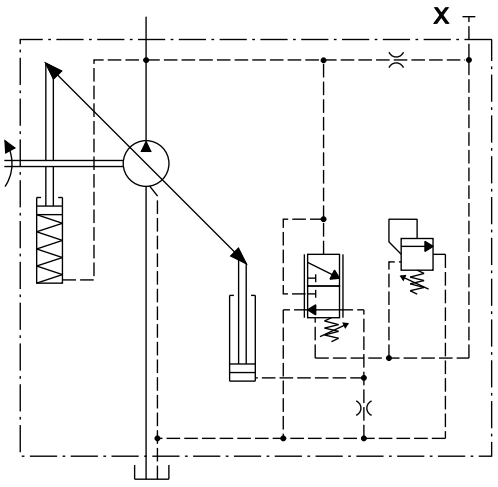
Regulates the pump displacement automatically to mantain the pressure below the fixed pre-adjusted limit.
Designed to work at high frequency ≥ 1 cycle/min and/or at pressure > 280 bar (4060 psi).

OPERATING CURVES

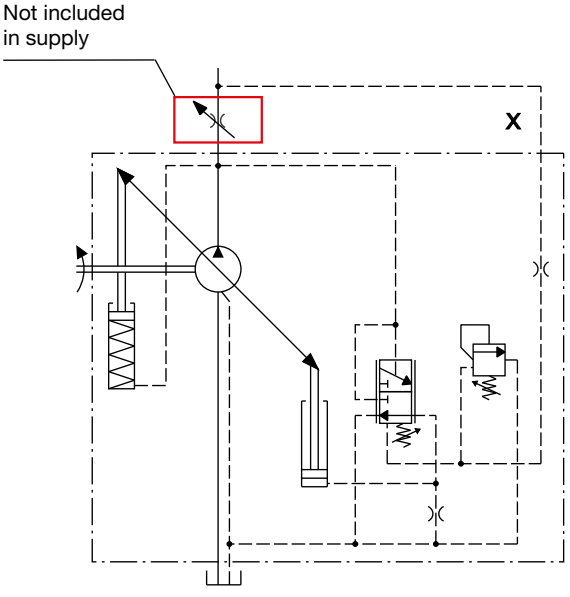
Curves have been obtained at the speed of 1500 min^{-1} and oil temperature 50 °C (122 °F).



RP1



RP1 - LS2 (with flow control)



Replaces: 04/04.2013

O 05/12.2022

NOTES

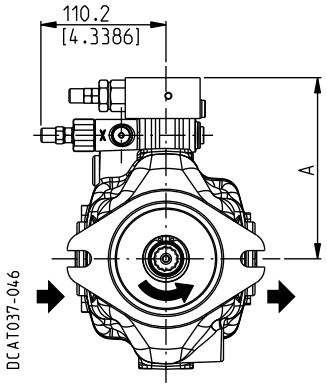
Angular sensor is available on request. O

See page 45 for more information.

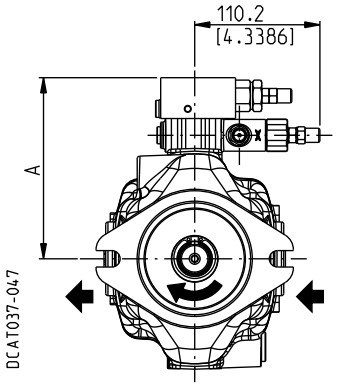
PRESSURE COMPENSATOR RP1

SIDE PORTS

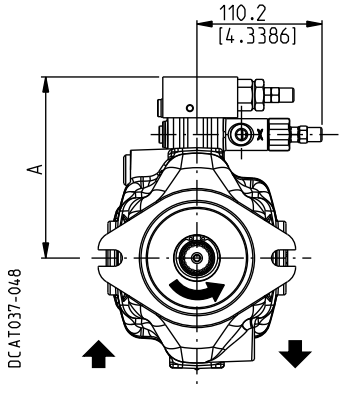
Anti-clockwise rotation



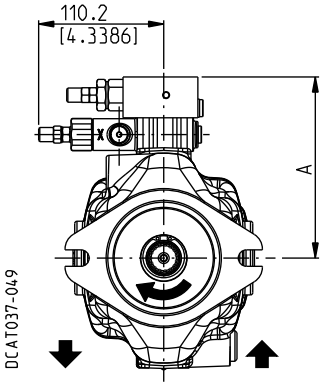
Clockwise rotation



Anti-clockwise rotation



Clockwise rotation



Pump type	A
	mm (in)
LVP 30	151 (5.94)
LVP 48	161 (6.34)
LVP 75	173 (6.81)
LVP 90	173 (6.81)

04/04.2013

FLOW COMPENSATOR (Load-sensing) LS

Regulates the pump displacement to maintain a constant (load independent) pressure drop across a flow metering device.
In the standard version the flow compensator is combined with pressure compensator.

Flow compensator type	Pressure compensator	Differential pressure setting range	Standard setting
		bar (psi)	bar (psi)
LS0 (■)	RPO	10 ÷ 40 (145 ÷ 580)	14 (203)
LS2 (◆)	RPO		
LS3 (●)	RPO		

(■): Suggested when the directional control valve does not have the bleed function.
(◆): Y is plugged. Suggested when the directional control valve has the bleed function
(●): For remote pressure control.

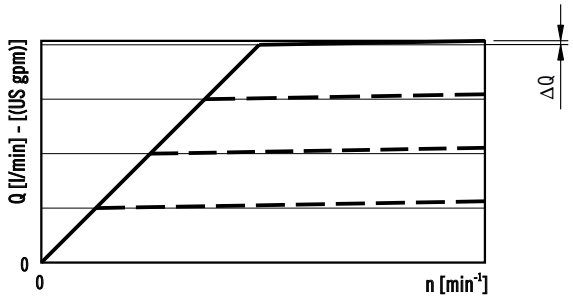
Pilot flow ≈ 1,3 ÷ 1,5 l/min (0.34 ÷ 0.40 US gpm)

In standard setting conditions 14 bar (203 psi) the stand-by pressure is $15^{\pm 2}$ bar ($218^{\pm 29}$ psi).

OPERATING CURVES

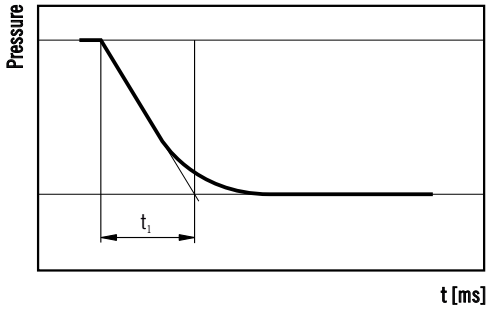
Curves have been obtained at the speed of 1500 min^{-1} and oil temperature 50 °C (122 °F).

Curve at variable speed



RESPONSE TIME

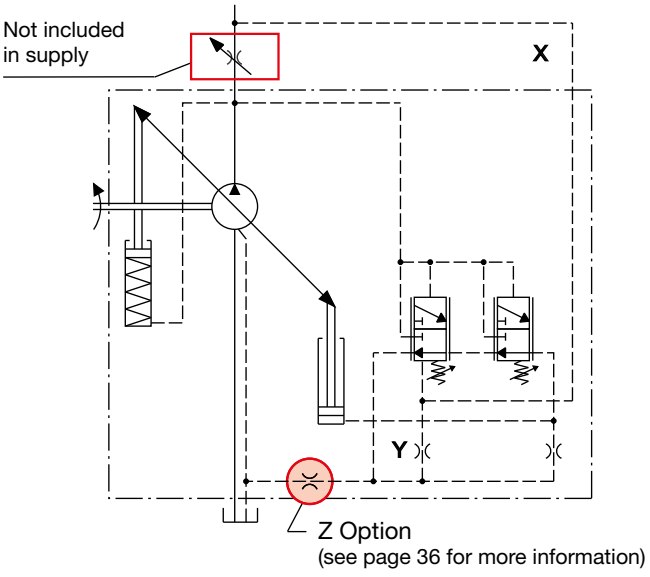
According to SAE J745 (using outlet pressure).



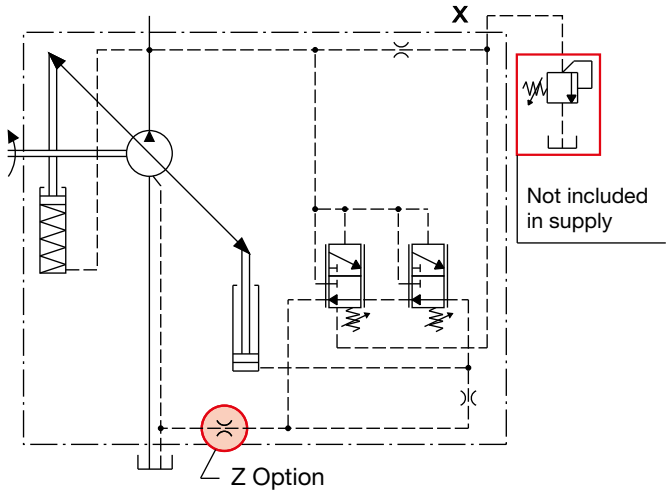
NOTES

Angular sensor is available on request. O
See page 45 for more information.

LS0 (Bleed open) - **LS2** (Bleed closed)



LS3 - Remote pressure compensator

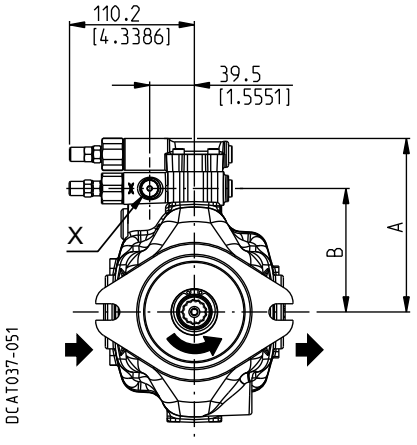


	ΔQ max	t_1 (●)
Pump type	l/min (US gpm)	Response time [ms] (off stroke)
LVP 30	0,9 (0.24)	115
LVP 48	1,7 (0.45)	117
LVP 75	2,5 (0.66)	120
LVP 90	2,5 (0.66)	120

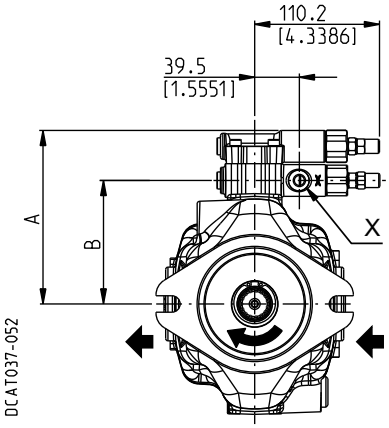
Replaces: 04/04.2013
O 05/12.2022

SIDE PORTS

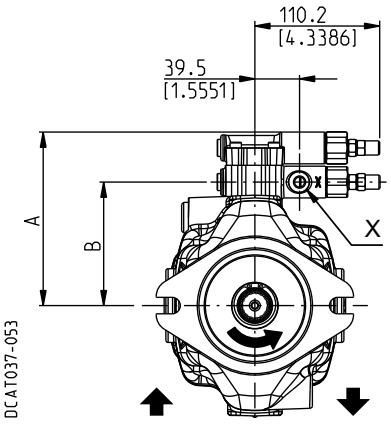
Anti-clockwise rotation



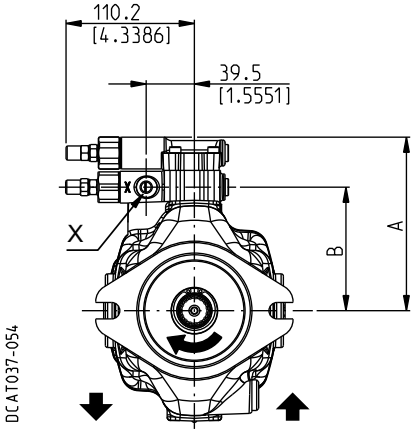
Clockwise rotation



Anti-clockwise rotation



Clockwise rotation



Pump type	A	B
	mm (in)	mm (in)
LVP 30	145 (5.71)	101 (3.98)
LVP 48	154 (6.06)	110 (4.33)
LVP 75	167 (6.57)	123 (4.84)
LVP 90	167 (6.57)	123 (4.84)

X: Load-sensing port. Dimensions at page 26 ÷ 28

04/04.2013

TORQUE LIMITER RN

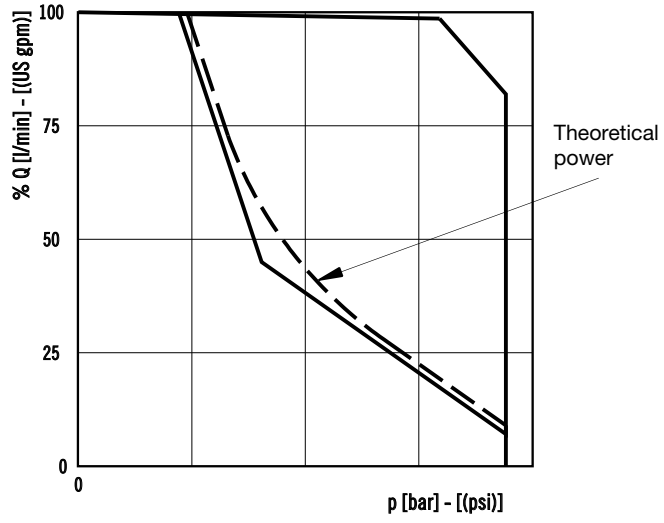
Regulates the pump displacement according to the system pressure, to maintain the pre-adjusted torque value and protect the prime mover from overload. To have the best torque limiter regulation, the pre-adjusted absorbed torque has to be higher than the value shown in the following table.

Pump type	Min. torque	Min. power (●)
	Nm (lbf in)	kW (HP)
LVP30	43 (381)	6,7 (9.0)
LVP48	68 (602)	10,7 (14.3)
LVP 75	113 (1000)	17,8 (23.9)
LVP 90	132 (1168)	20,7 (27.7)

(●) @ 1500 min^{-1}

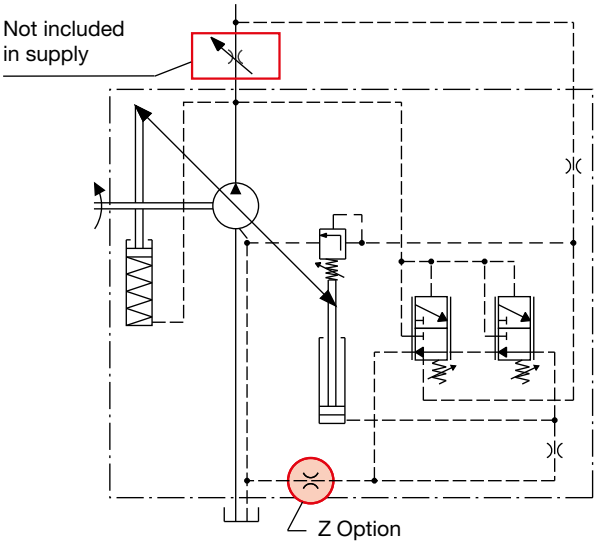
For lower torque setting values, the regulator limits the maxi mum working pressure to a value lower than the standard set ting for the pressure regulator 280 bar (4060 psi).
When ordering the torque limiter please specify the requested value of torque [eg. 70 Nm (620 lbf in)] or the requested po wer and speed [eg. 10 kW (13.4 HP) at 1500 min^{-1}].

OPERATING CURVES



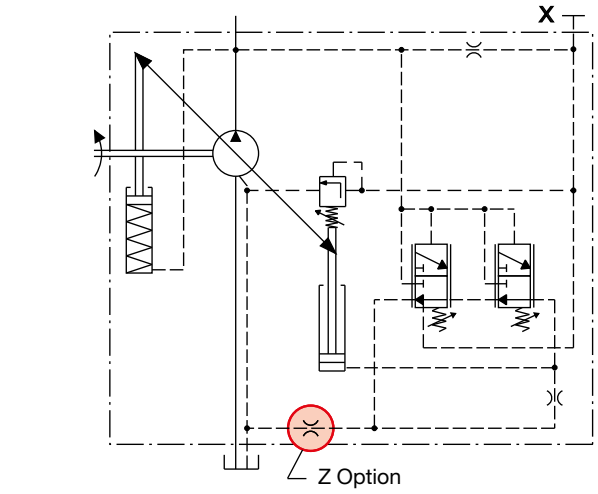
RN0 - Standard

Torque limitation for closed center valve.



RN1 - Internal pilot

Torque limitation for open center valve.



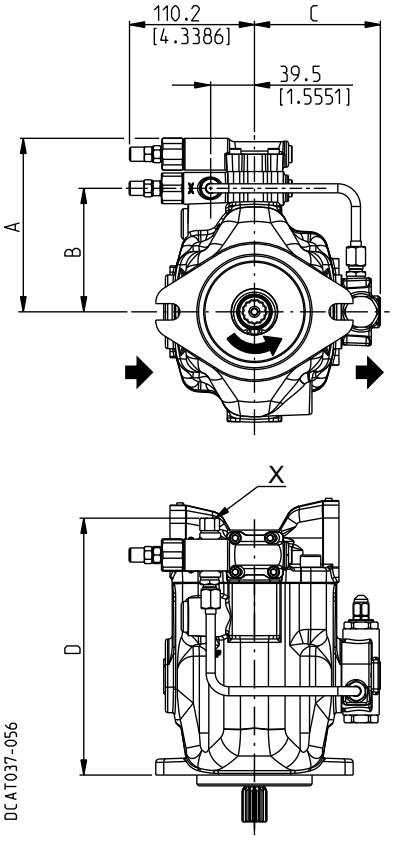
Z OPTION

Damping restrictor for critical applications.
In case of system instability or pressure oscillations, the addi tional damping restrictor slows down the pump control system, damping the regulation transients.
The pump recovery time increases.
The use of the damping restrictor must be evaluated and approved by Casappa technical sales department for the specific application.

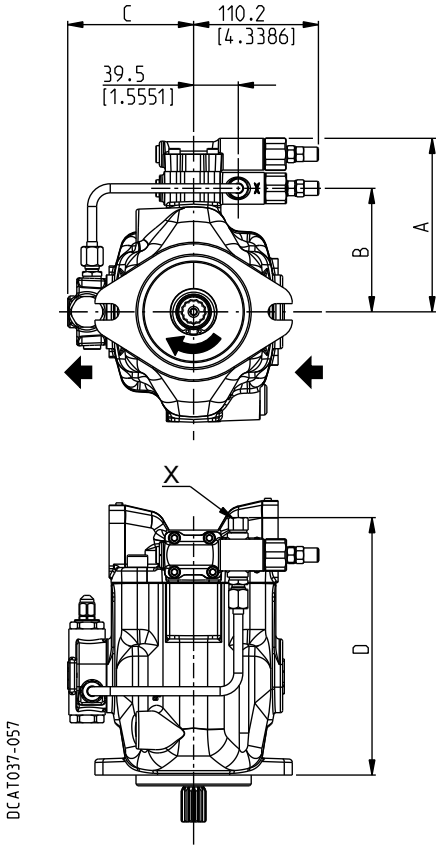
04/04.2013

SIDE PORTS

Anti-clockwise rotation



Clockwise rotation



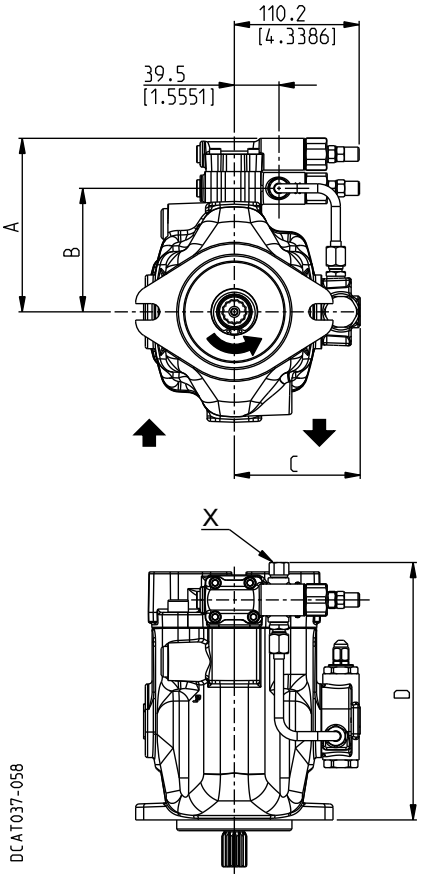
Pump type	A	B	C	D
	mm (in)	mm (in)	mm (in	mm (in
LVP 30	145 (5.71)	101 (3.98)	104 (4.09)	203 (7.99)
LVP 48	154 (6.06)	110 (4.33)	111 (4.37)	227 (8.94)
LVP 75	167 (6.57)	123 (4.84)	120 (4.72)	250 (9.84)
LVP 90	167 (6.57)	123 (4.84)	120 (4.72)	250 (9.84)

X: Load-sensing port. Dimensions at page 26 ÷ 28

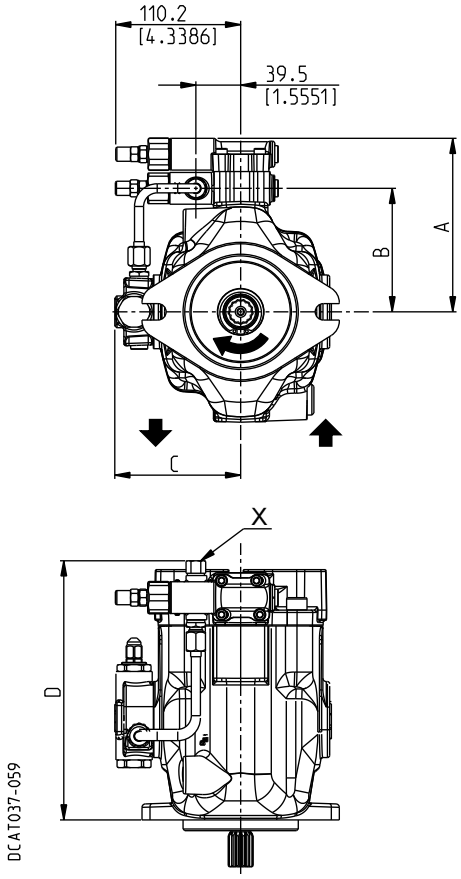
04/04.2013

REAR PORTS

Anti-clockwise rotation



Clockwise rotation



Pump type	A	B	C	D
	mm (in)	mm (in)	mm (in	mm (in
LVP 30	145 (5.71)	101 (3.98)	104 (4.09)	203 (7.99)
LVP 48	154 (6.06)	110 (4.33)	111 (4.37)	227 (8.94)
LVP 75	167 (6.57)	123 (4.84)	120 (4.72)	250 (9.84)
LVP 90	167 (6.57)	123 (4.84)	120 (4.72)	250 (9.84)

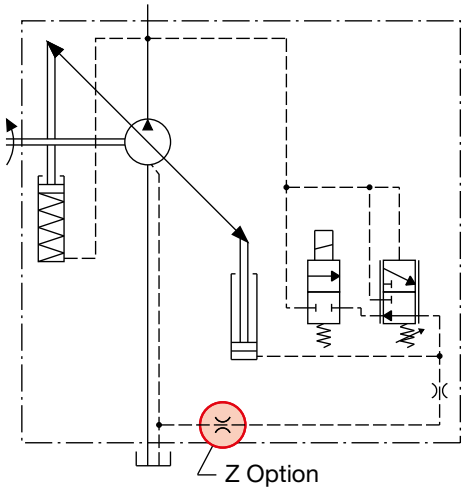
X: Load-sensing port. Dimensions at page 26 ÷ 28

04/04.2013

UNLOADING VALVE U..

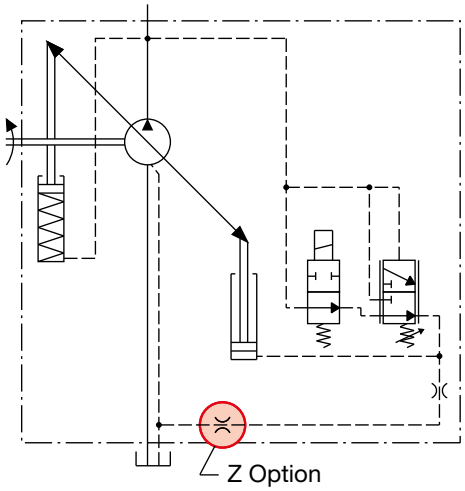
Replaces: 04/04.2013

NC (normally closed)



With the valve NC type (normally closed), energizing the solenoid valve the displacement is reset and the pump is unloaded.

NA (normally open)



With the valve NA type (normally open), energizing the solenoid valve the pump works at the maximum displacement.

VALVE FEATURES

Valve code	Arrangement	Voltage
U1	Normally closed	12 V DC
U2	Normally closed	24 V DC
U3	Normally closed	24 V DC
U4	Normally closed	110 V DC
U5	Normally closed	220 V DC
U6	Normally open	12 V DC
U7	Normally open	24 V DC
U8	Normally open	24 V DC
U9	Normally open	110 V DC
U10	Normally open	220 V DC

O 05/12.2022

NOTES

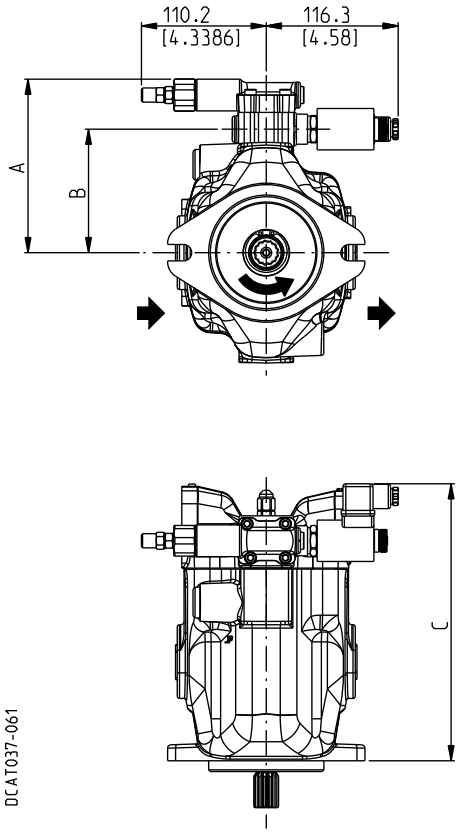
Unloading valve can be supplied only with pressure compensator RP.
Angular sensor is available on request. O
See page 45 for more information.

UNLOADING VALVE

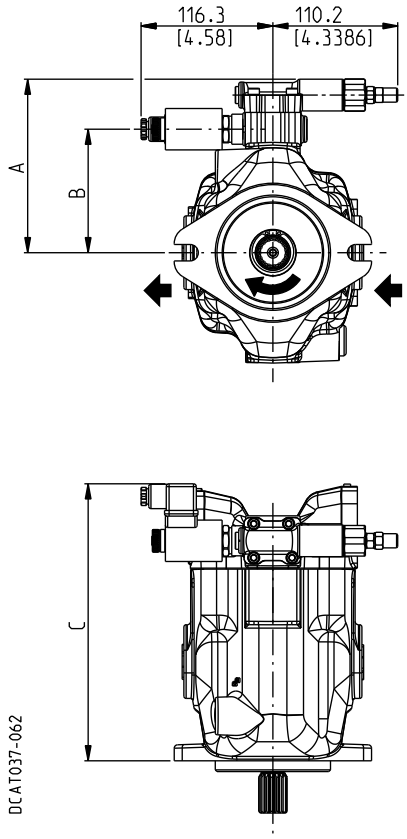
U..

SIDE PORTS

Anti-clockwise rotation



Clockwise rotation



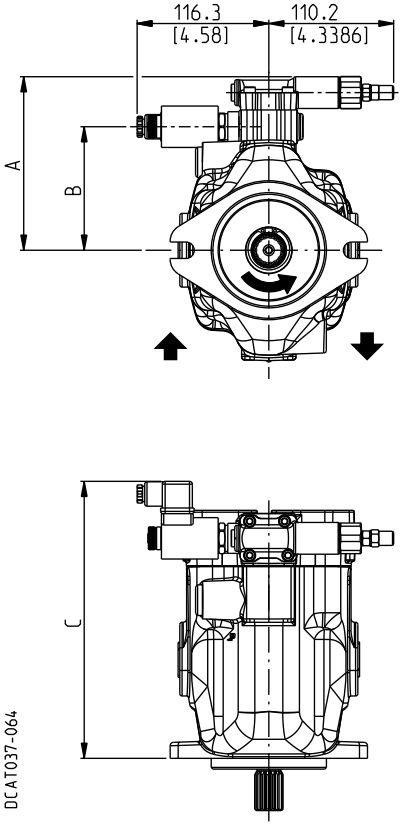
Pump type	A	B	C
	mm (in)	mm (in)	mm (in
LVP 30	145 (5.71)	101 (3.98)	220 (8.66)
LVP 48	154 (6.06)	110 (4.33)	244 (9.61)
LVP 75	167 (6.57)	123 (4.84)	267 (10.51)
LVP 90	167 (6.57)	123 (4.84)	267 (10.51)

04/04.2013

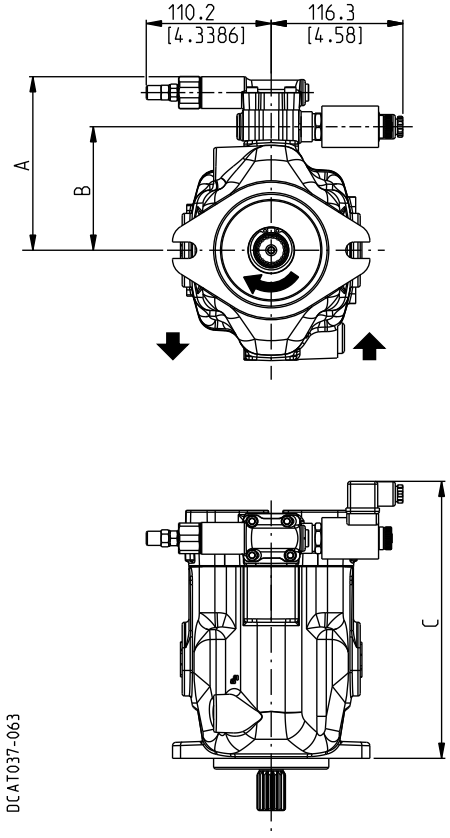
UNLOADING VALVE U..

REAR PORTS

Anti-clockwise rotation



Clockwise rotation



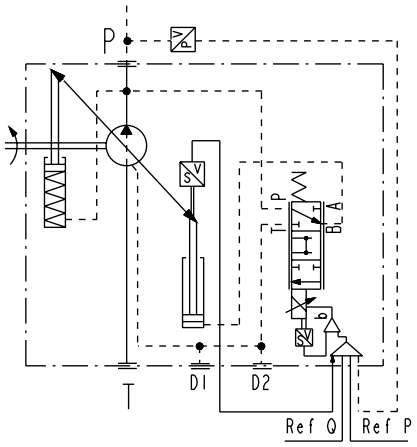
Pump type	A	B	C
	mm (in)	mm (in)	mm (in
LVP 30	145 (5.71)	101 (3.98)	220 (8.66)
LVP 48	154 (6.06)	110 (4.33)	244 (9.61)
LVP 75	167 (6.57)	123 (4.84)	267 (10.51)
LVP 90	167 (6.57)	123 (4.84)	267 (10.51)

04/04.2013

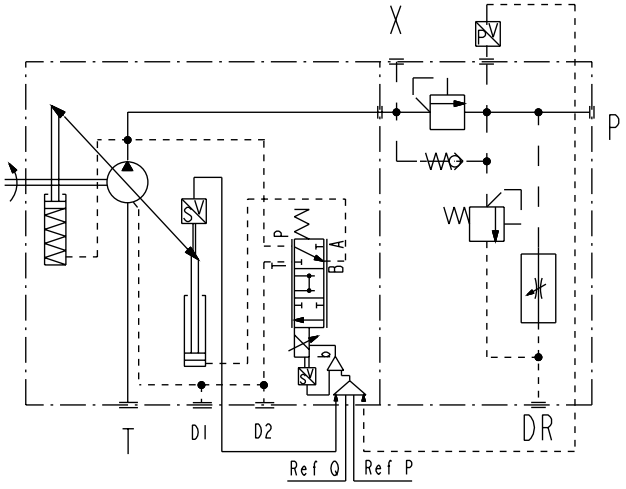
DIGITAL INTEGRATED DRIVERS DES...

Digital drivers, integrated to the pump, realize combined closed loop controls of pressure, flow and maximum power limitation. These controls provide fast dynamics and fine regulations directly commanded from PC or from the machine controller.
They are also available with an optional sequence module that allows the circuit to operate with minimum pressure (close to zero). A remote pressure transducer must be installed on the system and its feedback has to be interfaced to the pump digital driver. If the real pressure value in the system (measured by the pressure transducer) remains below the respective reference signal provided by the machine controller, the digital driver re gulates in closed loop the pump swash plate position according to the flow reference signal.
When the real pressure becomes close to the respective refe rence signal, the driver automatically perfoms the closed loop control of the pressure.
The digital control ensures high performance regulating flow and pressure linearity, better flow knee and internal leakage compensation.

DES Hydraulic circuit



DESR Hydraulic circuit



DES Basic version, without sequence module and without pressure transducer which has to be installed on the outlet line and wired to the 12 poles connectors of the integral digital electronics.

DESR Version with sequence module RES which grant a minimum piloting pressure [18 bar (261 psi)] when the actual pressure falls below that value.
Without pressure transducer.

Technical data for digital electronic drivers

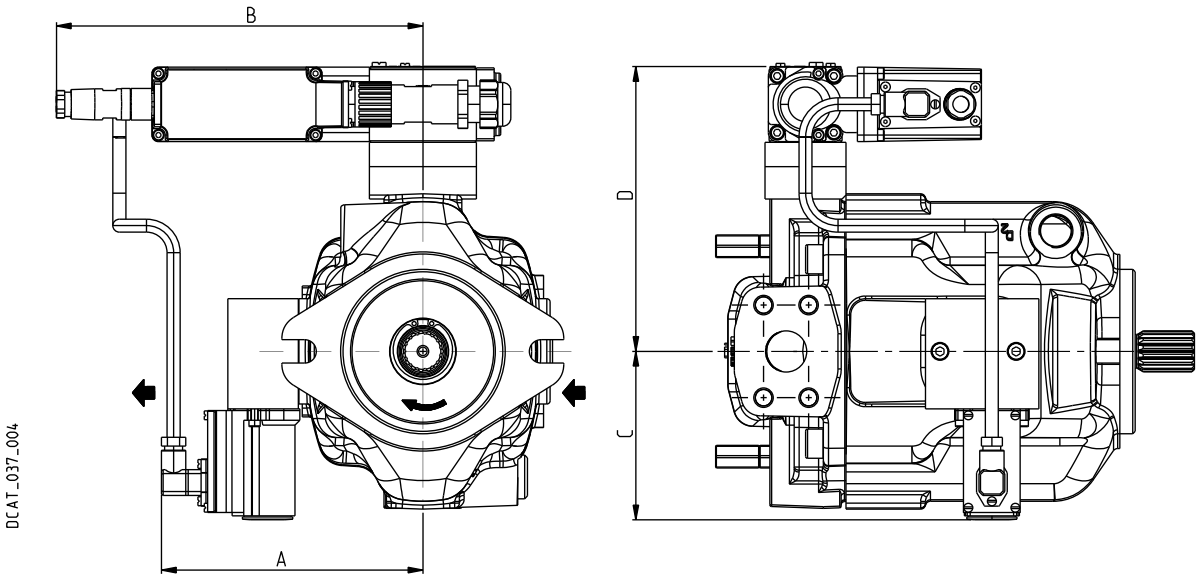
Driver section	
Format	Sealed box on the valve - Protection: IP67 DIN 40050 - Insulation: VDE0110
Electromagnetic compatibility (EMC)	Emission: EN 50081-2 - Immunity: EN 50082-2
Max power consumption	50 W (0.07 HP)
Current supplied to solenoid	Imax = 3,3 A square wave PWM type
Analog input signal impedance	Voltage signal Ri > 50 KΩ
Operating temperature	-20 °C ÷ +60 °C (-4 °F ÷ +140 °F) [storage -20 °C ÷ +70 °C (-4 °F ÷ +158 °F)]
Alarm messages	Electronic overcurrent and overtemperature
Features	Pressure control by P.I.D. - Rapid solenoid excitation and switching off - Output to solenoids protected against accidental short circuits - Feedback cable break produces an inhibition of the driver, zeroing the current to the solenoid

NOTES
Please contact us for functional parameters of the digital valves as the bias, scale, ramp and linearization of the regulation characteristic.

03/01.2007

SIDE PORTS

Clockwise rotation



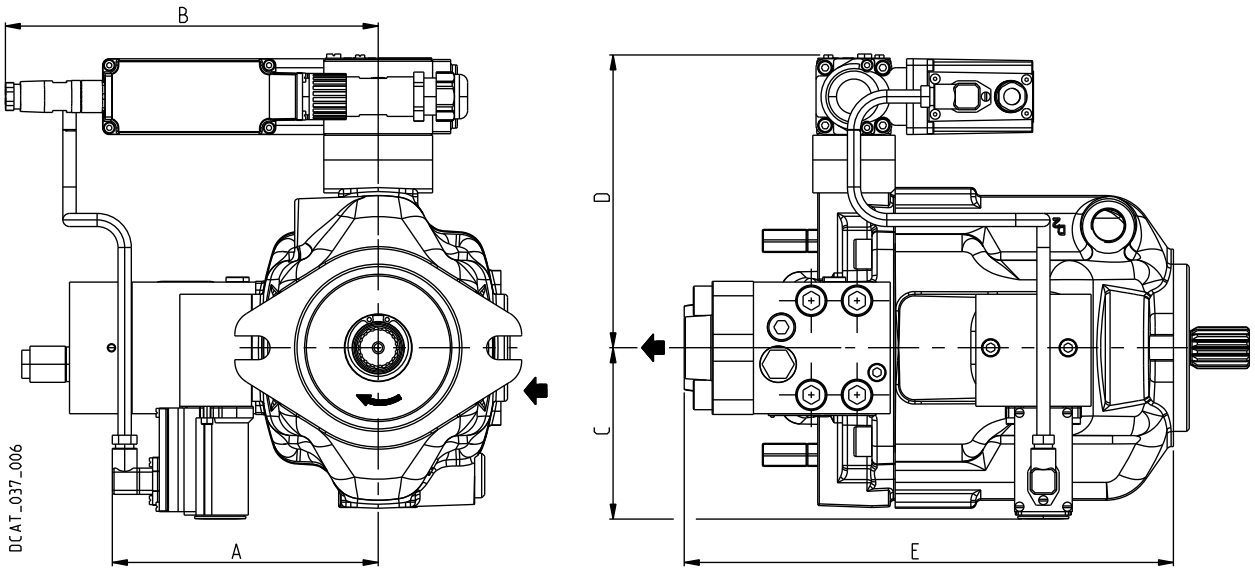
Please contact us for anti-clockwise rotation

04/04.2013

Pump type	A	B	C	D
	mm (in)	mm (in)	mm (in	mm (in
LVP 30	155 (6.10)	246 (9.69)	103,5 (4.07)	170 (6.69)
LVP 48	162 (6.38)	246 (9.69)	103,5 (4.07)	178 (7.01)
LVP 75	171 (6.73)	246 (9.69)	103,5 (4.07)	190 (7.48)
LVP 90	171 (6.73)	246 (9.69)	103,5 (4.07)	190 (7.48)

SIDE PORTS

Clockwise rotation



Please contact us for anti-clockwise rotation

Pump type	A	B	C	D	E
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
LVP 30	155 (6.10)	246 (9.69)	103,5 (4.07)	170 (6.69)	262,5 (10.33)
LVP 48	162 (6.38)	246 (9.69)	103,5 (4.07)	178 (7.01)	299 (11.77)
LVP 75	171 (6.73)	246 (9.69)	103,5 (4.07)	190 (7.48)	337 (13.27)
LVP 90	171 (6.73)	246 (9.69)	103,5 (4.07)	190 (7.48)	337 (13.27)

04/04.2013

SWIVEL ANGULAR SENSOR

The swivel angular sensor converts the actual position of the swashplate into a voltage output signal that can be used for different purposes.

Application: Non-contact swashplate position measurement (for example for electronic torque regulation in CS torque control).

Electrical characteristics

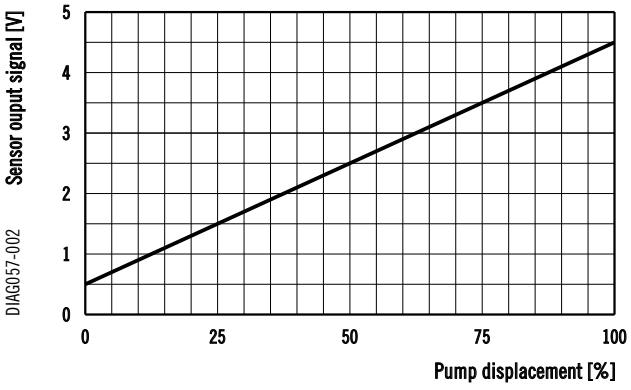
Power supply	8 ÷ 30 V DC
Operating temperature	-40 ÷ 125 °C (-40 ÷ 257 °F)
Cable lenght	280 mm (11.02 in)
Angular resolution	12 bit
Output signal	0,5 ÷ 4,5 V
Cable	4-core, 0,34 mm² (0.0005 in²) unshielded
Current consumption	< 40 mA
Short circuit immunity	Output against ground Output against Vbb
Reverse polarity protection	Power supply lines

EMC protection

Radiated emission	Reference standards: UNI EN 14982 • Frequency range: 30 MHz ÷ 1 GHz
Radiated immunity	Reference standards: ISO11452-2 • Frequency range: 200 MHz ÷ 2 GHz • Test level: 100 V/m
Load dump protection	Reference standards: ISO 7637-2 • Test level: 123 V
Electrostatic discharge	Reference standards: ISO 10605 • ±4, ±6, ±8 kV (Contact discharge) • ±4, ±6, ±8, ±15 kV (Indirect discharge) • ±4, ±6, ±8, ±15 kV (Air discharge)

Output signal

Output signal is proportional to swashplate angular position

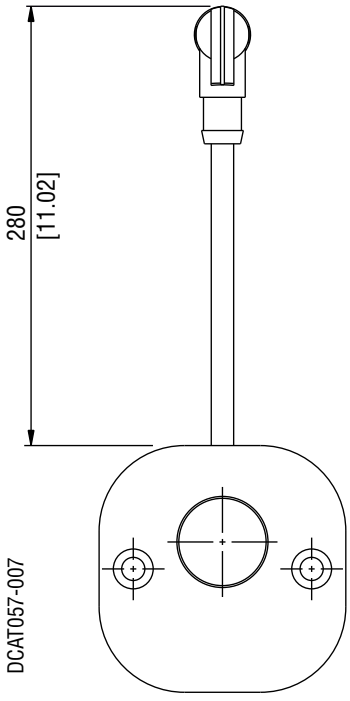


Environmental resistance

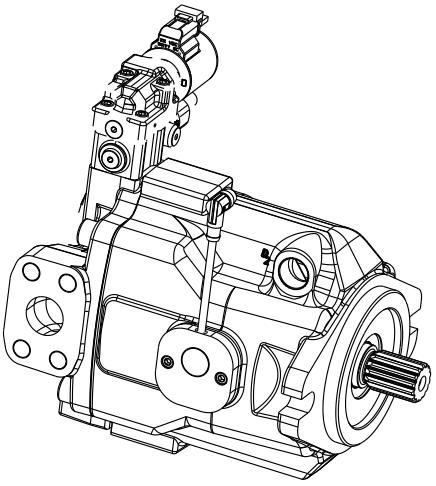
Random noise	Reference standards: EN 60068-2-64 • ASD= 0,1 g² (RMS 3,3 g) • f= 10 ÷ 1000 Hz • Duration per axis (xyz): 8 h
Mechanical shock	Reference standards: EN 60068-2-29 • Type of shock: Half sine • Acceleration amplitude: = 40 g • Shock duration: 6 ms • 100 positive shocks for each axis • 100 negative shocks for each axis
IP67 protection	Reference standards: EN 60529
IP6K9K protection	Reference standards: ISO 20653
Temperature cycle test	Reference standards: ISO 16750-4 • Temperature: -40 ÷ 125 °C (-40 ÷ 257 °F) • Number of cycles: 30
Temperature shock test	Reference standards: ISO 16750-4 • 60 min @ -40 °C (-40 °F) • 20 min @ 125 °C (257 °F) • Number of cycles: 20
Low temperature test	Reference standards: ISO 16750-4 • Temperature: -40 °C (-40 °F) • Test duration: 24 h
High temperature test	Reference standards: ISO 16750-4 • Temperature: 125 °C (257 °F) • Test duration: 48 h

05/12.2022

SWIVEL ANGULAR SENSOR

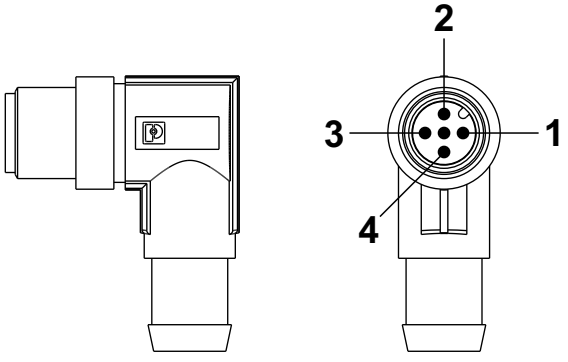


Mounting position



Connector type

5 pin M12x1 male plug 90° angled



Pin	Function
1	Vprog
2	Power supply / V DC
3	Ground
4	Signal

Mating Connector: 5 pin M12x1 female connector

05/12.2022

MULTIPLE PUMPS

Replaces: 04/04.2013

THROUGH DRIVE

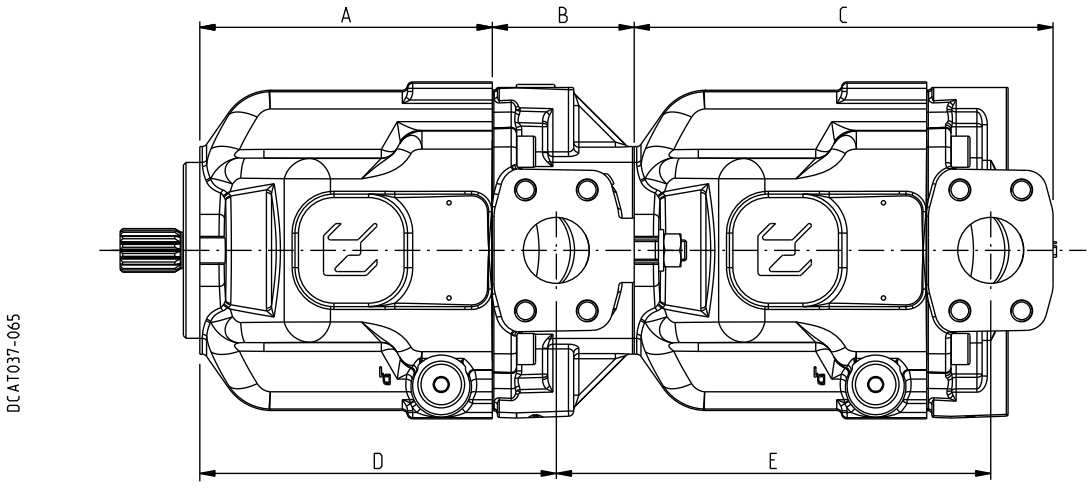
LVP through drive axial piston pumps offer the flexibility to obtain different groups able to supply several hydraulic systems. The operating characteristics of each assembled pumps are the same as the corresponding single pumps according to the fol lowing conditions:

1) Do not exceed the maximum transmissible torque.
2) The maximum rotational speed is that of the lowest rated speed of the single unit incorporated.

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

$$M = \frac{\Delta p\ (bar) \bullet V\ (cm^3/rev)}{62{,}83 \bullet \eta_{hm}} \quad [Nm]$$

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



Pump type	A	B (●)			C	D	E
	mm (in)	mm (in)	Flanged for	Code	mm (in)	mm (in)	mm (in)
LVP 30	145 (5.71)	77 (3.03)	SAE A	AS1	213 (8.39)	183 (7.20)	222 (8.74)
			SAE B (◆) O	AS5			
LVP 48	169 (6.65)	82 (3.23)	SAE A	AS1	242 (9.53)	206 (8.11)	251 (9.88)
			SAE B	AS5			
LVP 75	192 (7.56)	99 (3.90)	SAE A	AS1	276 (10.87)	235 (9.25)	291 (11.46)
			SAE B	AS5			
		104 (4.09)	SAE C (◆) O	AS7			296 (11.65)
LVP 90	192 (7.56)	99 (3.90)	SAEA	AS1	276 (10.87)	235 (9.25)	291 (11.46)
			SAE B	AS5			
		104 (4.09)	SAE C (◆) O	AS7			296 (11.65)

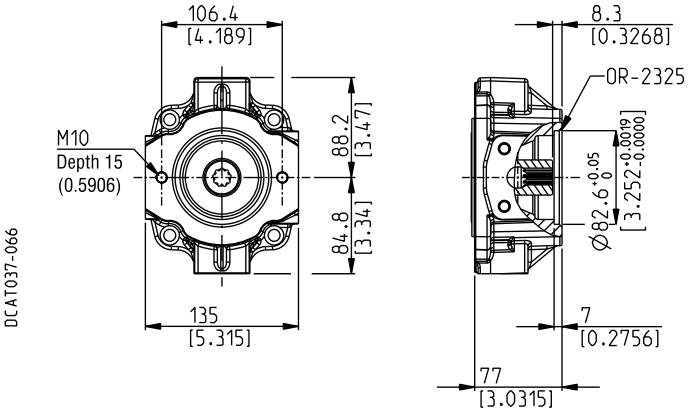
O 05/12.2022

Overall dimensions: the same as the single pumps.
Ports dimensions at pages 26 ÷ 28. - Screws are supplied with the first pump.
(●) Cover kit are available to obtain single pumps starting from front sections of multiple pumps. Dimensions at page. 55
(◆): Available without displacement limiters

LVP 30 INTERMEDIATE FLANGES

SAE “A” 2 HOLES AS1

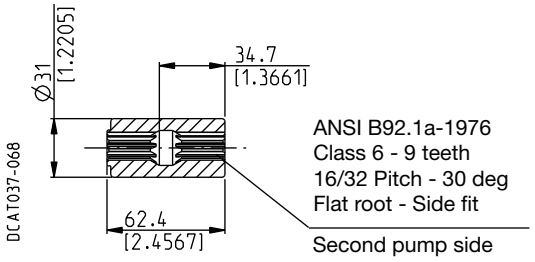
SAE J744



LVP 30 COUPLINGS - DIMENSIONS

SAE “A” SPLINE 03

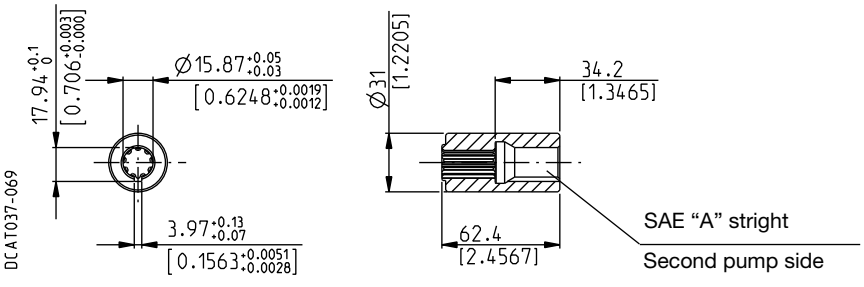
Available with flange code **AS1**



MAX 100 Nm (885 lbf in)

SAE “A” STRAIGHT 31

Available with flange code **AS1**



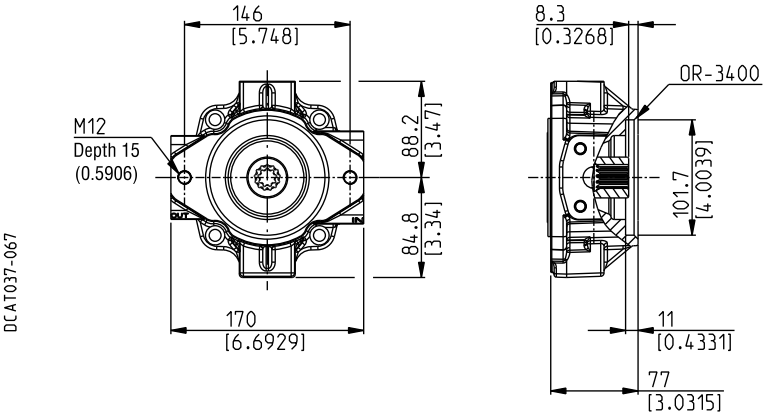
MAX 70 Nm (620 lbf in)

04/04.2013

LVP 30 INTERMEDIATE FLANGES

SAE “B” 2 HOLES AS5

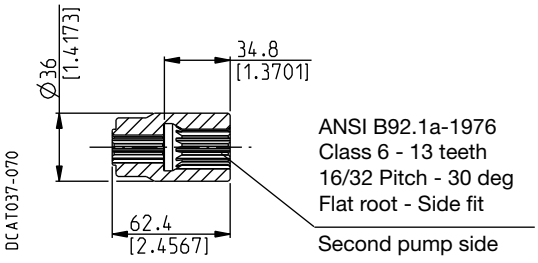
SAE J744



LVP 30 COUPLINGS - DIMENSIONS

SAE “B” SPLINE 04

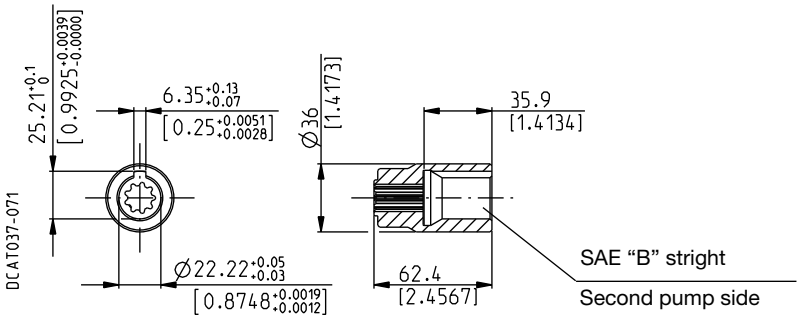
Available with flange code **AS5**



MAX 100 Nm (885 lbf in)

SAE “B” STRAIGHT 32

Available with flange code **AS5**



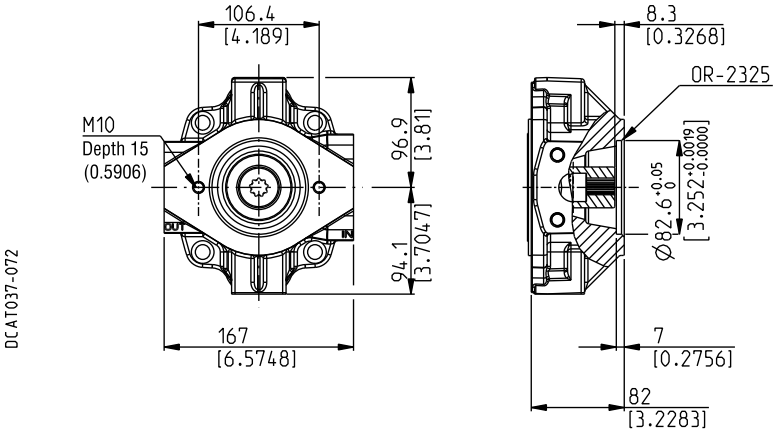
MAX 100 Nm (885 lbf in)

04/04.2013

LVP 48 INTERMEDIATE FLANGES

SAE “A” 2 HOLES AS1

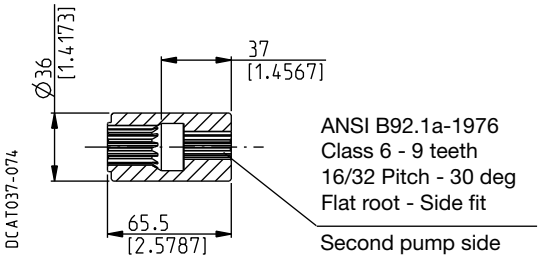
SAE J744



LVP 48 COUPLINGS - DIMENSIONS

SAE “A” SPLINE 03

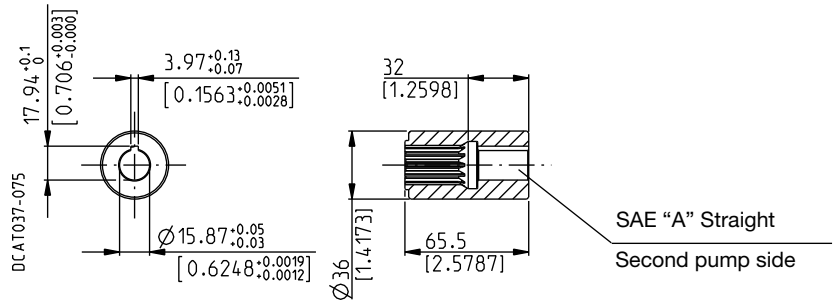
Available with flange code **AS1**



MAX 100 Nm (885 lbf in)

SAE “A” STRAIGHT 31

Available with flange code **AS1**



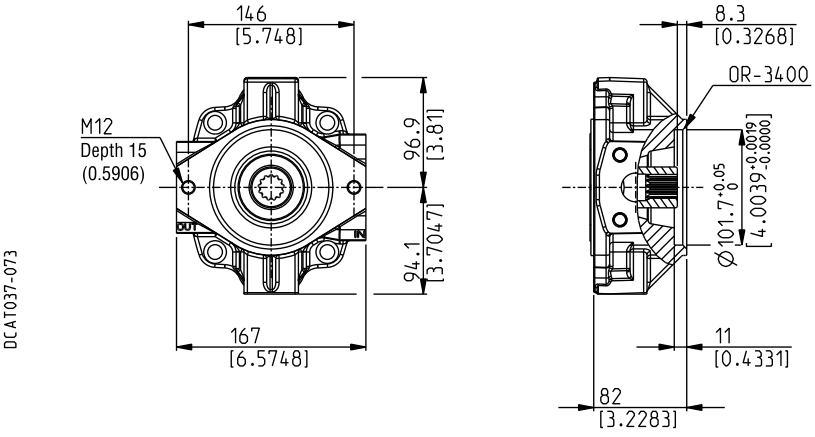
MAX 70 Nm (620 lbf in)

04/04.2013

LVP 48 INTERMEDIATE FLANGES

SAE “B” 2 HOLES AS5

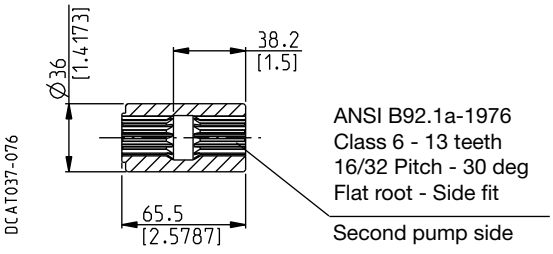
SAE J744



LVP 48 COUPLINGS - DIMENSIONS

SAE “B” SPLINE 04

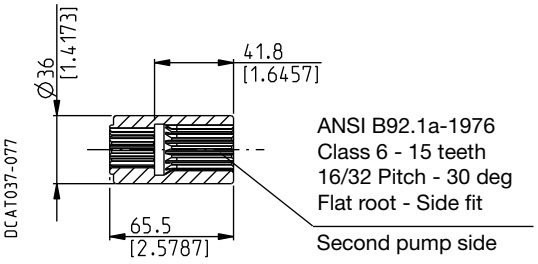
Available with flange code **AS5**



MAX 200 Nm (1770 lbf in)

SAE “BB” SPLINE 05

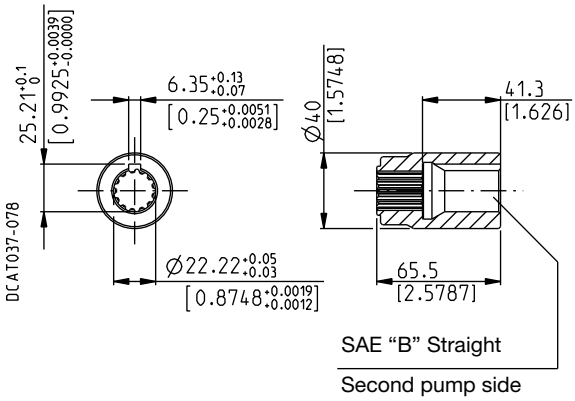
Available with flange code **AS5**



MAX 250 Nm (2213 lbf in)

SAE “B” STRAIGHT 32

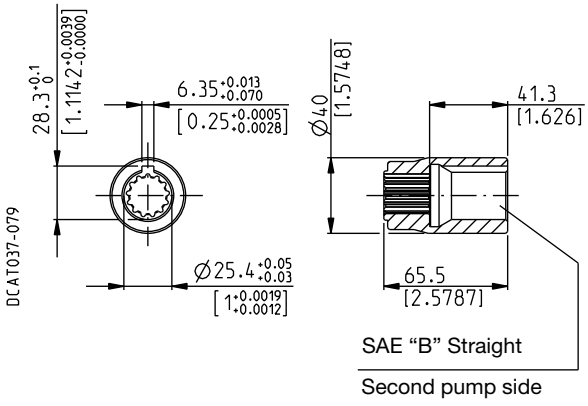
Available with flange code **AS5**



MAX 250 Nm (2213 lbf in)

SAE “BB” STRAIGHT 33

Available with flange code **AS5**



MAX 250 Nm (2213 lbf in)

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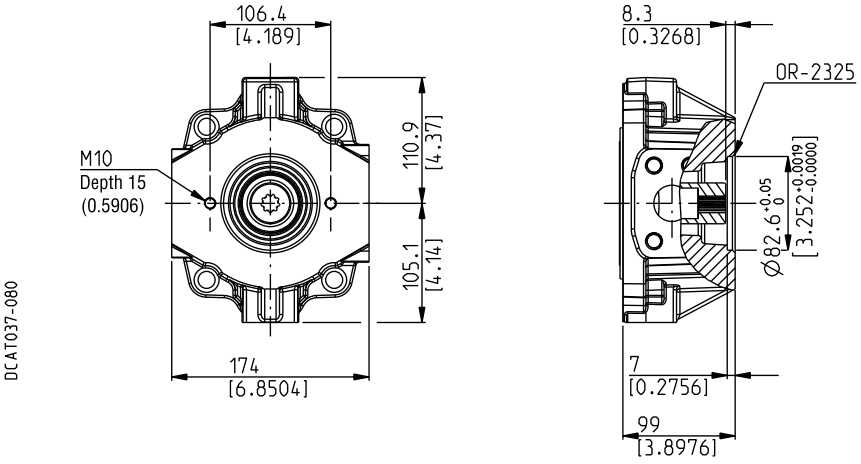
LVP 75 - 90 INTERMEDIATE FLANGES

SAE “A” 2 HOLES AS1

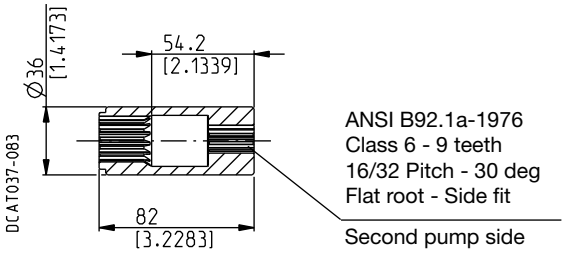
SAE J744



LVP 75 - 90 COUPLINGS - DIMENSIONS

SAE “A” SPLINE 03

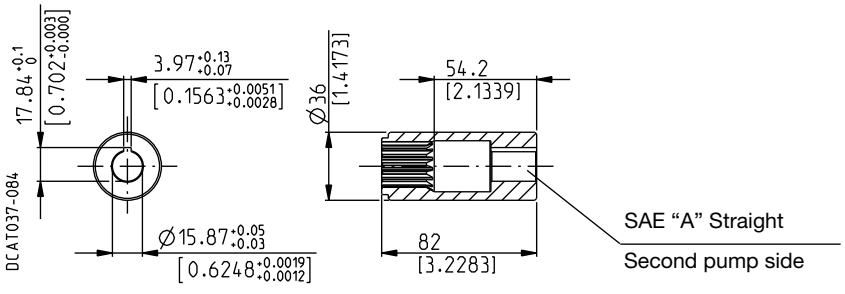
Available with flange code **AS1**



MAX 100 Nm (885 lbf in)

SAE “A” STRAIGHT 31

Available with flange code **AS1**



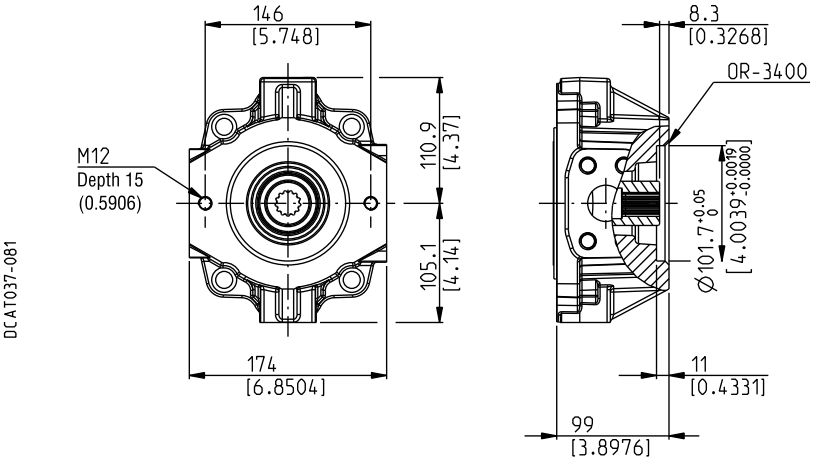
MAX 70 Nm (620 lbf in)

04/04.2013

LVP 75 - 90 INTERMEDIATE FLANGES

SAE “B” 2 HOLES AS5

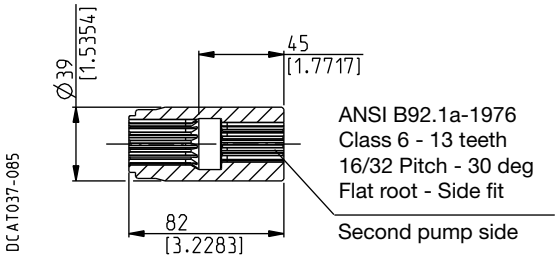
SAE J744



LVP 75 - 90 COUPLINGS - DIMENSIONS

SAE “B” SPLINE 04

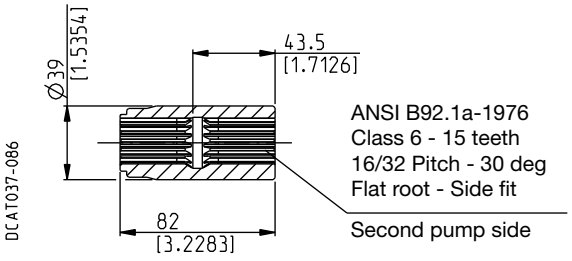
Available with flange code **AS5**



MAX 200 Nm (1770 lbf in)

SAE “BB” SPLINE 05

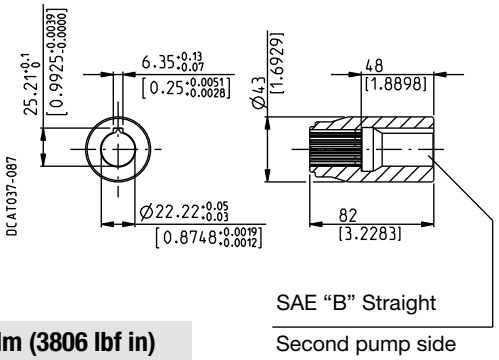
Available with flange code **AS5**



MAX 250 Nm (2213 lbf in)

SAE “B” STRAIGHT 32

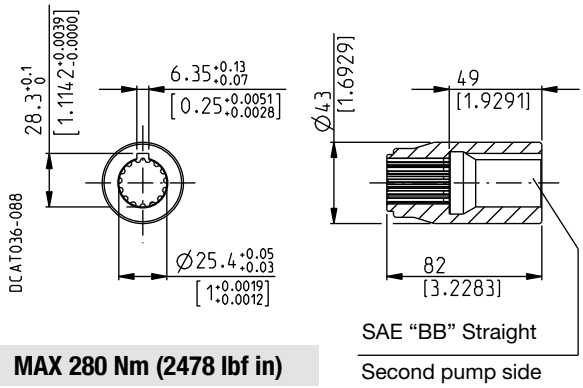
Available with flange code **AS5**



MAX 430 Nm (3806 lbf in)

SAE “BB” STRAIGHT 33

Available with flange code **AS5**



MAX 280 Nm (2478 lbf in)

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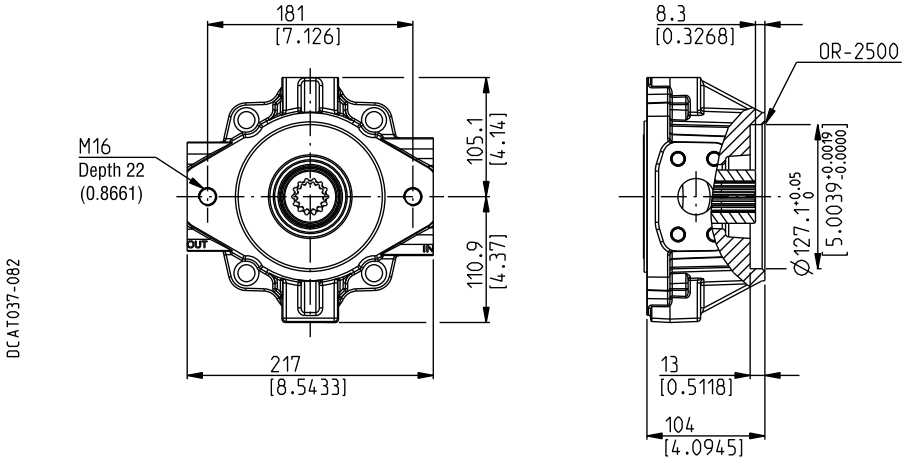
LVP 75 - 90 INTERMEDIATE FLANGES

SAE “C” 2 HOLES AS7

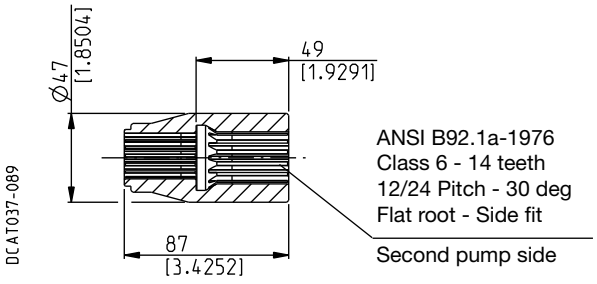
SAE J744



LVP 75 - 90 COUPLINGS - DIMENSIONS

SAE “C” SPLINE 06

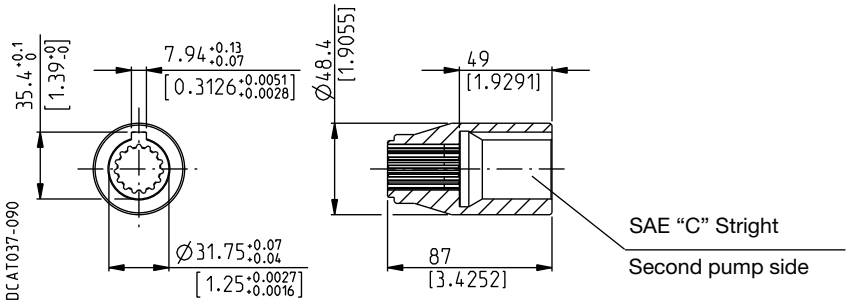
Available with flange code **AS7**



MAX 430 Nm (3806 lbf in)

SAE “C” STRAIGHT 34

Available with flange code **AS7**



MAX 430 Nm (3806 lbf in)

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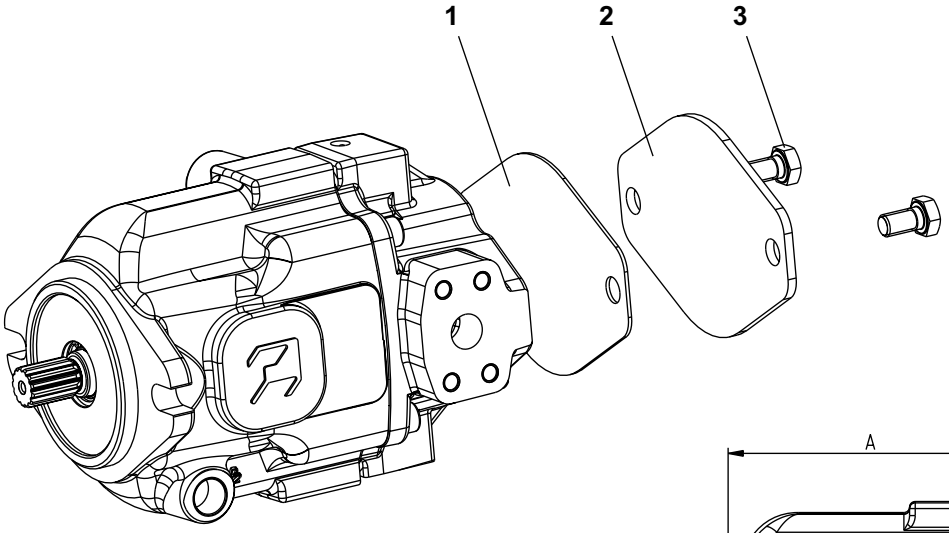
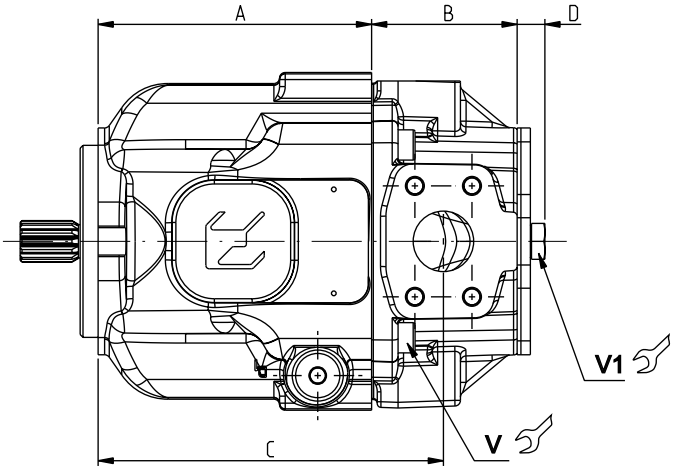
FRONT SECTION KIT COVER

Kit cover is available to obtain single pumps starting from the front sections of multiple pumps.
Before closing the intermediate flange check that the coupling has been removed.



Kit part brake down
1 - Seal
2 - Flange
3 - Screws



DCAT_037_008

Screws tightening torque Nm (lbf in)

V			V1
LVP 30	LVP 48	LVP 75 - LVP 90	
70 ±7 (558 ÷ 682)	100 ±10 (797 ÷ 974)	130 ±13 (1036 ÷ 1266)	20 ±1 (159 ÷ 195)

Pump type	A	B			C	D	
	mm (in)	mm (in)	Flanged for	Code	mm (in)	mm (in)	Kit code
LVP 30	145 (5.7087)	77 (3.0315)	SAE A	AS1	183 (7.2047)	13,4 (0.5276)	62082200
			SAE B	AS5		14,5 (0.5709)	62082300
LVP 48	169 (6.6535)	82 (3.2283)	SAE A	AS1	206 (8.1102)	13,4 (0.5276)	62082200
			SAE B	AS5		14,5 (0.5709)	62082300
LVP 75	192 (7.5591)	99 (3.8976)	SAE A	AS1	235 (9.2520)	13,4 (0.5276)	62082200
			SAE B	AS5		14,5 (0.5709)	62082300
		104 (4.0945)	SAE C	AS7		17 (0.6693)	62082400
LVP 90	192 (7.5591)	99 (3.8976)	SAE A	AS1	235 (9.2520)	13,4 (0.5276)	62082200
			SAE B	AS5		14,5 (0.5709)	62082300
		104 (4.0945)	SAE C	AS7		17 (0.6693)	62082400

Overall dimensions: the same as the single pumps.
Ports dimensions at pages 26 ÷ 28. - Screws are supplied with the first pump.

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HOW TO ORDER SINGLE PUMPS

1	2		3	4		5	6		7		8 ...
LVP 30	S	-	04	S5	-	L	MD/QB	-	N	-	...

1 Pump type (max. displacement)	Code
28,7 cm3/rev (1.75 in3/rev)	LVP 30
45,4 cm^3/rev (2.77 in^3/rev)	LVP 48
73,6 cm^3/rev (4.49 in^3/rev)	LVP 75
87,9 cm^3/rev (5.36 in^3/rev)	LVP 90

2 Rotation	Code
Anti-clockwise	S
Clockwise	D

3 Drive shaft (a)	Code
SAE “B” spline (13 teeth)	04
SAE “B” straight	32
Straight Ø 22	68
SAE “BB” spline (15 teeth)	05
SAE “BB” straight	33
Straight Ø 25	69
SAE “C” spline (14 teeth)	06
SAE “C” straight	34
Straight Ø 32	70

4 Mounting flange (a)	Code
SAE “B” 2 holes	S5
SAE “C” 2 holes	S7
ISO Ø 100	Z1
ISO Ø 125	Z2

5 Ports position	Code
Side	L
Rear	P

Code	6 Inlet/outlet ports		
	Nominal size		Pump type
	Inlet IN	Outlet OUT	
	SAE 3000	SAE 6000	
SAE FLANGED PORTS METRIC THREAD (SSM)			
MD/QB	1” 1/4	3/4”	LVP 30
ME/QC	1” 1/2	1”	LVP 48
MF/QD	2”	1”	LVP 75
MF/QD	2”	1” 1/4	LVP 90
SAE FLANGED PORTS UNC THREAD (SSS)			
SD/VB	1” 1/4	3/4”	LVP 30
SE/VC	1” 1/2	1”	LVP 48
SF/VD	2”	1”	LVP 75
SF/VD	2”	1” 1/4	LVP 90

Code	7 Seals
N	Buna (standard)
V	Viton

Code	8 Regulators
...	See how to order at page 57

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(a) Drive shafts availability at pages 22 ÷ 23 and mounting flanges availability at pages 24 ÷ 25

HOW TO ORDER REGULATORS

Replaces: 04/04.2013

O 05/12.2022

	8		9		10		11		12		13		14
Pressure compensator	RP0	-					SA	-	G				
Pressure compensator	RP1	-					SA	-	G				
Pressure compensator with flow control	RP1	-	LS2	-			SA	-	G				
Flow compensator	LS0	-			Z	-	SA	-	G				
Flow compensator without bleed	LS2	-			Z	-	SA	-	G				
Pressure compensator for remote control	LS3	-			Z	-	SA	-	G				
Torque limiter - standard	RN0	-			Z	-			G	-	...	/	...
Torque limiter - internal pilot	RN1	-							G	-	...	/	...
Unloading valve	U..	-			Z	-	SA	-	G				
Pressure and flow digital regulator	DES.												

8 Regulators type	Code
Pressure compensator	RP0
Pressure compensator	RP1
Flow compensator	LS0
Flow compensator without bleed	LS2
Pressure compensator for remote control	LS3
Torque limiter - standard	RN0
Torque limiter - internal pilot	RN1
Unloading valve - Normally closed 12 VDC	U1
Unloading valve - Normally closed 24 VDC	U2
Unloading valve - Normally closed VAC	U3
Unloading valve - Normally closed 110 VAC	U4
Unloading valve - Normally closed 220 VAC	U5
Unloading valve - Normally open 12 VDC	U6
Unloading valve - Normally open 24 VDC	U7
Unloading valve - Normally open 24 VAC	U8
Unloading valve - Normally open 110 VAC	U9
Unloading valve - Normally open 220 VAC	U10
Pressure and flow digital regulator (b)	DES
Pressure and flow digital regulator with sequence module RES (b)	DESR

Code	Flow control option (c) 9
LS2	With flow control

Code	Restrictor option (d) 10
	Without restrictor (standard - no code)
Z	Damping restrictor (only for critical applications)

Code	Angular sensor option O 11
	Without angular sensor (standard - no code)
SA	With angular sensor

Code	Displacement limiter 12
	Without limiter (standard - no code)
E	Max. displacement limiter
F	Min. displacement limiter
G	Max. and min. displacement limiter

Code	Torque limiter setting (e) (g) 13
...	Please specify the requested torque value in Nm

Code	Torque limiter setting speed (f) (g) 14
...	Please specify the requested speed value

(b) Please contact us before ordering
(c) Only for RP1
(d) Only for LS.., RN0 and U.. unloading valve
(e) Refer to page 36 for more information
(f) Do not exceed the maximum speed shown at page 7 ÷ 9
(g) For multiple pumps please write these codes at the end

HOW TO ORDER MULTIPLE PUMPS

1	2		3	4		5	6		7	8 ... 14		15		16					
LVP 48	S ◆	-	05	S5	-	L	ME/QC	-	N #	-	...	-	AS5	-	04	/	...	/	...	/

Front section (through drive)

LVP 30	S #	-	04	S5	-	L	MD/QB	-	N	-	...	-	-		/	...	/	...	

Rear section (single pump)

1	**Pump type (max. displacement) (a)**	Code
The same of single pumps		LVP ...

2	**Rotation**	Code
Anti-clockwise		S
Clockwise		D

3	**Drive shaft (b)**	Code
SAE “B” spline (13 teeth)		04
SAE “B” straight		32
Straight Ø 22		68
SAE “BB” spline (15 teeth)		05
SAE “BB” straight		33
Straight Ø 25		69
SAE “C” spline (14 teeth)		06
SAE “C” straight		34
Straight Ø 32		70

4	**Mounting flange (b)**	Code
SAE “B” 2 holes		S5
SAE “C” 2 holes		S7
ISO Ø 100		Z1
ISO Ø 125		Z2

5	**Ports position**	Code
Side		L
Rear (only for rear section)		P

6	**Inlet/outlet ports**			Code
	Nominal size			
Pump type	Inlet IN	Outlet OUT		
	SAE 3000	SAE 6000		
SAE FLANGED PORTS METRIC THREAD (SSM)				
LVP 30	1” 1/4	3/4”		MD/QB
LVP 48	1” 1/2	1”		ME/QC
LVP 75	2”	1” 1/4		MF/QD
LVP 90	2”	1” 1/4		MF/QD

Code	**Inlet/outlet ports**		6
	Nominal size		
	Inlet IN	Outlet OUT	Pump type
	SAE 3000	SAE 6000	
SAE FLANGED PORTS UNC THREAD (SSS)			
SD/VB	1” 1/4	3/4”	LVP 30
SE/VC	1” 1/2	1”	LVP 48
SF/VD	2”	1” 1/4	LVP 75
SF/VD	2”	1” 1/4	LVP 90

Code	**Seals**	7
N	Buna (standard)	
V	Viton	

Code	**Regulators**	8 ... 14
...	See how to order at page 57	

Code	**Intermediate flange (c)**	15
AS1	SAE “A” 2 holes	
AS5	SAE “B” 2 holes	
AS7	SAE “C” 2 holes	

Code	**Coupling (c)**	16
03	SAE “A” spline (9 teeth)	
31	SAE “A” straight	
04	SAE “B” spline (13 teeth)	
32	SAE “B” straight	
05	SAE “BB” spline (15 teeth)	
33	SAE “BB” straight	
06	SAE “C” spline (14 teeth)	
34	SAE “C” straight	

◆ Write the rotation code letter at the end of the complete ordering code

\# Omit code only if ordering assembled multiple pumps

(a) Displacements at page 56

(b) Drive shafts availability at pages 22 ÷ 23 and mounting flanges availability at pages 24 ÷ 25

(c) Intermediate flanges and couplings availability at pages 47 ÷ 55

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ORDER EXAMPLE

SINGLE PUMPS

With pressure compensator and flow control	LVP 30 S-04S5-L MD/QB-N-RP1-LS2
With flow compensator without bleed	LVP 30 S-04S5-L MD/QB-N-LS2
With torque limiter - internal pilot	LVP 30 S-04S5-L MD/QB-N-RN1-150/2100

ASSEMBLED MULTIPLE PUMPS

With pressure compensator and flow control	LVP 30-04S5-L MD/QB-N-RP1-LS2-AS5-04/30·28-04S5-L MD/QB-N-RP1-LS2-S
With flow compensator without bleed	LVP 30-04S5-L MD/QB-N-LS2-AS5-04/30·28-04S5-L MD/QB-N-LS2-S

INDIVIDUAL SECTIONS

Front section with pressure compensator and flow control	LVP 30 S-04S5-L MD/QB-N-RP1-LS2-AS5-04/30·28-04S5-L MD/QB-N-RP1-LS2
Rear section with pressure compensator and flow control	LVP 30 S-04S5-L MD/QB-N-RP1-LS2

04/04.2013

Our policy is one of continuous improvement in product. Specification of items may, therefore, be changed without notice.

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