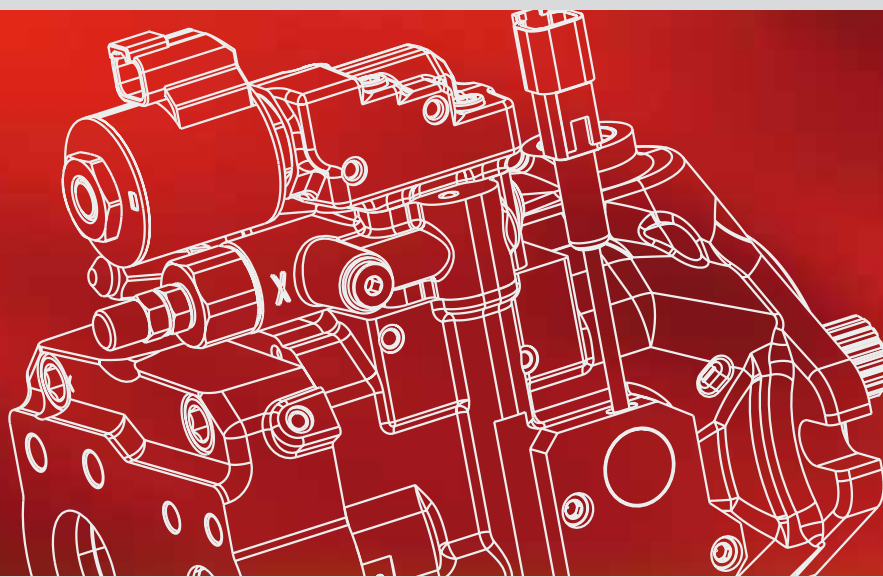




VARIABLE
DISPLACEMENTS
AXIAL PISTON
PUMPS

MVP

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06/06.2020



Modification from former edition.

INTRODUCTION

Variable displacement axial piston pumps swash plate design ideally suited for medium and high pressure open circuit applications. The compact design allows to be mounted directly on engine motors.

Replaces: 05/10.2014

DISPLACEMENTS

From 14 cm³/rev (0.85 in³/rev)

To 84,7 cm³/rev (5.17 in³/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. 3500 min⁻¹

APPLICATION

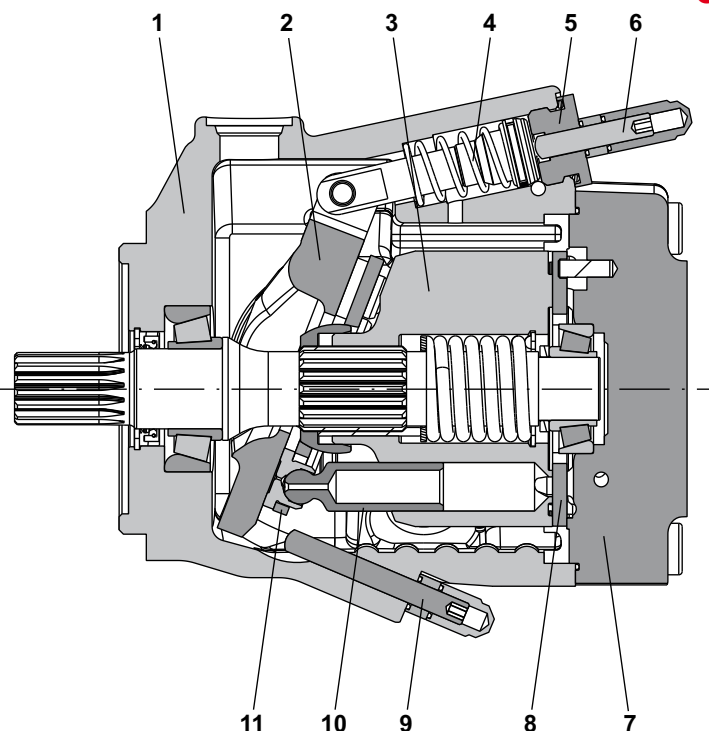
Medium, high pressure

SECTOR

Mobile

TYPICAL APPLICATIONS

- Skid Steer Loaders
- Wheel Loaders - Backhoe Loaders
- Mini and Midi-Excavators
- Telehandlers
- Forklifts
- Windmills - Green Energy
- Tractors & Attachements



1	Pump body
2	Swash plate
3	Cylinders block
4	Counterbalancing spring
5	Plug
6	Max. displacement limiter
7	Cover
8	Valve plate
9	Min. displacement limiter
10	Piston
11	Piston guide plate

06/06.2020

- Compact design
- Longer service life
- Low noise emission
- Max. and min. displacement limiter

- Drive shaft bearing suitable for radial and axial loads
- Hydraulic and Electro-hydraulic displacement controls

GENERAL NOTES

For some configuration the double shaft seals is available.

For more information please consult our pre-sales department.

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 5 ÷ 7. The system should be designed to prevent aeration of the hydraulic fluid.

FLUID VISCOSITY

The fluid viscosity range for optimal use of MVP pump is between 15 and 35 cSt (77 and 163 SSU).

Functional limit conditions are:

max.: 1500 cSt (6818 SSU) at start up at minimum temperature 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)	$\Delta p < 140$ (2030)	$140 < \Delta p < 210$ (2030) (3045)	$\Delta p > 210$ (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 $\beta_{x_{(c)}} \geq 75$ according to ISO 16889	10 μm	10 μm	10 μm

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 consult our pre-sales department.

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

05/10.2014

MOUNTING POSITIONS

0

Standard pump is supplied with D1 drain hole open and D2, D3, D4 plugged (♦ if available).

Before installation fill the pump with hydraulic oil for at least 3/4 of the volume keeping it in horizontal position.

The pump can be mounted in a horizontal or vertical position.

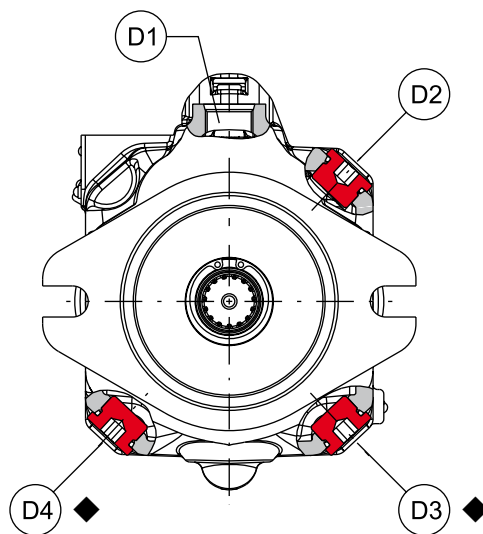
The highest of the case drain ports must be used to keep the required filling oil.

If D1 is not the highest drain port it must be closed by moving the plug from the 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.



Replaces: 03/06.2011

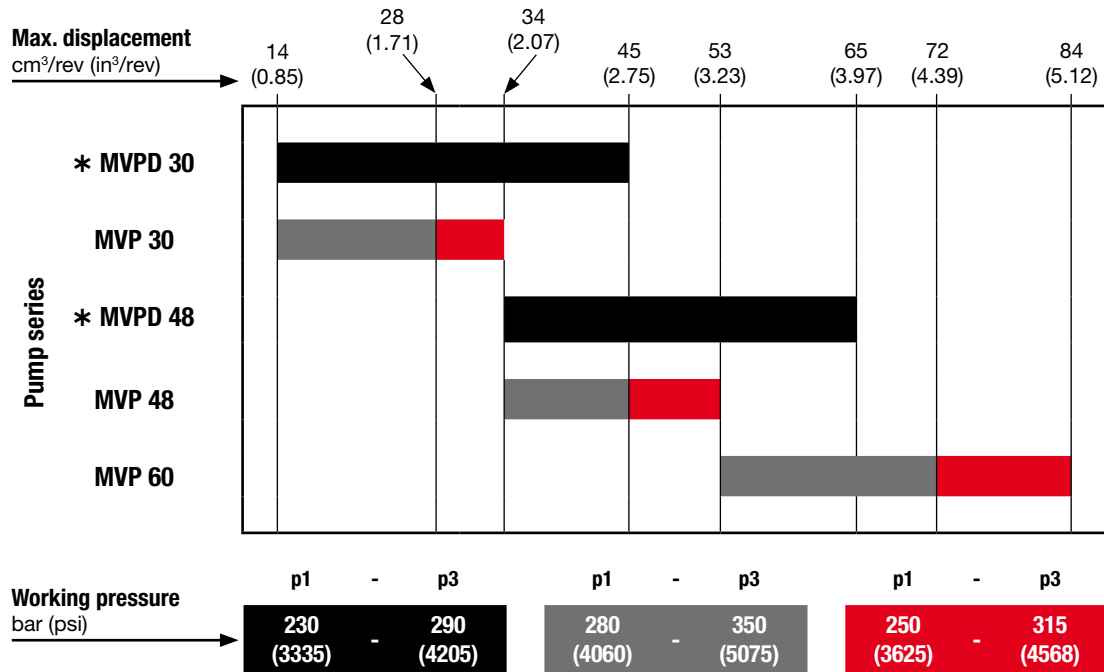
06/06.2020

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

IN= inlet line - D1= drain line - A= min. distance between the line - B+C= permissible suction height - C= line immersion depth

DISPLACEMENTS AND WORKING PRESSURES RANGE

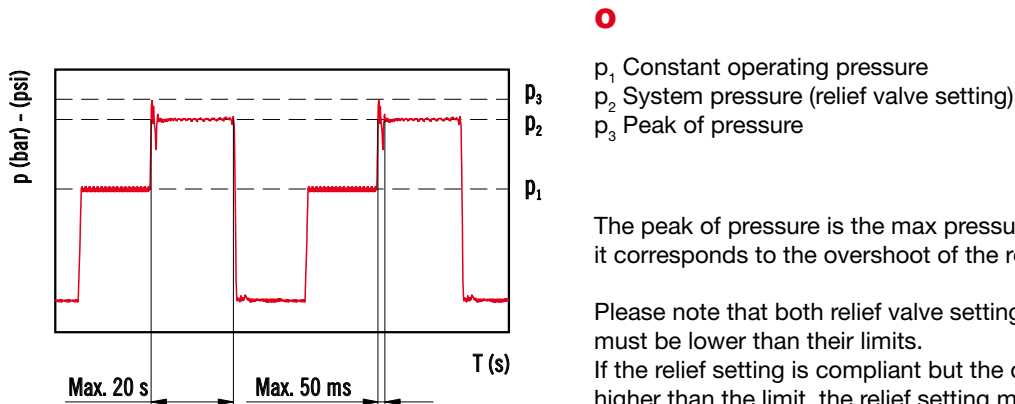
MVP-MVPD Comparison



*: MVPD Series. For more information please consult the respective technical catalogue.

Replaces: 05/10.2014

PRESSURE DEFINITION



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.

For high frequency applications please consult our pre-sales department.

06/06.2020

FEATURES

Technical data with mineral oil

HL or HLP mineral oil based hydraulic fluid to DIN 51524

Replaces: 05/10.2014

06/06.2020

Pump type MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. displacment (theor.) V_{max}	cm ³ /rev (in ³ /rev)		28 (1.71)	34,8 (2.12)	45 (2.75)	53,7 (3.28)	60 (3.66)	72 (4.39)	84,7 (5.17)
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)	250 (3625)	280 (4060)	250 (3625)	280 (4060)	280 (4060)	250 (3625)
		p_2	315 (4568)	280 (4060)	315 (4568)	280 (4060)	315 (4568)	315 (4568)	280 (4060)
		p_3	350 (5075)	315 (4568)	350 (5075)	315 (4568)	350 (5075)	350 (5075)	315 (4568)
Max. drain line pressure	bar abs. (psi)					1,5 (22)			
Max. speed n_{max}	min ⁻¹	@ V_{max} (1)	3500	2900	3000	2500	3000	2700	2300
Max. delivery (theor.)	l/min (US gpm)	@ n_{max}	98 (25.9)	101 (26.7)	135 (35.7)	134 (35.4)	180 (47.6)	194 (51.3)	212 (56.0)
		@ 2000 min ⁻¹	56 (14.8)	70 (18.5)	90 (23.8)	107 (28.3)	120 (31.7)	144 (38.0)	169 (44.7)
		@ 1500 min ⁻¹	42 (11.1)	52 (13.7)	68 (18.0)	81 (21.4)	90 (23.8)	108 (28.5)	127 (33.6)
Max. power (theor.) ($\Delta p = p_{max}$ cont.)	kW (HP)	@ n_{max}	45,7 (61.2)	42,1 (56.4)	63 (84.4)	55,9 (74.9)	84 (112.6)	90,7 (121.5)	88,2 (118.2)
		@ 2000 min ⁻¹	26,1 (35.0)	29 (38.9)	42 (56.3)	44,8 (60.0)	56 (75.0)	67,2 (90.0)	70,6 (94.6)
		@ 1500 min ⁻¹	19,6 (26.3)	21,8 (29.2)	31,5 (42.2)	33,6 (45.0)	42 (56.3)	50,4 (67.5)	52,9 (70.9)
Max. torque (theor.)	Nm (lbf in)	@ p_{max} cont.	124,8 (1105)	138,5 (1226)	200,5 (1775)	213,7 (1891)	267,4 (2367)	320,9 (2840)	337 (2983)
		@ 100 bar (1450 psi)	44,6 (395)	55,4 (490)	71,6 (634)	85,5 (757)	95,5 (845)	114,6 (1014)	134,8 (1193)
Moment of inertia rotary group	kgm ² (ft ² lbs)		0,002 (0.05)	0,002 (0.05)	0,003 (0.07)	0,003 (0.07)	0,008 (0.19)	0,008 (0.19)	0,008 (0.19)
Fill volume	l (US gallons)		0,85 (0.22)	0,85 (0.22)	1 (0.26)	1 (0.26)	1,3 (0.34)	1,3 (0.34)	1,3 (0.34)
Mass (approx.)	kg (lbs)		15 (33.1)	15 (33.1)	19 (41.9)	19 (41.9)	22 (48.5)	22 (48.5)	22 (48.5)
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)		

(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.
 Max. speed limit are: MVP 30: 3500 m⁻¹ – MVP 48: 3000 m⁻¹ – MVP 60: 3000 m⁻¹
 For different working conditions, please consult our pre-sales department.

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 MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure $p_{\max}$	bar (psi)	p_1				140 (2030)			
		p_2				150 (2175)			
		p_3				160 (2320)			
Max. speed $n_{\max}$	min^{-1}	@ $V_{\max}$ (1)	2200	1800	2000	1700	2000	1700	1500
Seals						N= Buna			
Operating temperature	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	min.				2 (36)			
		max.				55 (131)			
Bearing life (ref. mineral oil)	%					20 %			

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

Pump type MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure $p_{\max}$	bar (psi)	p_1				160 (2320)			
		p_2				170 (2465)			
		p_3				180 (2610)			
Max. speed $n_{\max}$	min^{-1}	@ $V_{\max}$ (1)	2350	1900	2150	1800	2150	1800	1600
Seals						N= Buna			
Operating temperature	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	min.				2 (36)			
		max.				60 (140)			
Bearing life (ref. mineral oil)	%					40 %			

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

Pump type MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure $p_{\max}$	bar (psi)	p_1				180 (2610)			
		p_2				195 (2828)			
		p_3				210 (3045)			
Max. speed $n_{\max}$	min^{-1}	@ $V_{\max}$ (1)	2350	1900	2150	1800	2150	1800	1600
Seals						N= Buna			
Operating temperature	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	min.				-10 (14)			
		max.				60 (140)			
Bearing life (ref. mineral oil)	%					40 %			

05/10.2014

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 MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure p_{max}	bar (psi)	p_1				200 (2900)			
		p_2				220 (3190)			
		p_3				240 (3480)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2350	1900	2150	1800	2150	1800	1600
Seals						V= Viton			
Operating temperature	$^{\circ}C$ ($^{\circ}F$)	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 MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure p_{max}	bar (psi)	p_1				180 (2610)			
		p_2				195 (2828)			
		p_3				210 (3045)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2350	1900	2150	1800	2150	1800	1600
Seals						N= Buna			
Operating temperature	$^{\circ}C$ ($^{\circ}F$)	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 MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. outlet pressure p_{max}	bar (psi)	p_1				180 (2610)			
		p_2				195 (2828)			
		p_3				210 (3045)			
Max. speed n_{max}	min^{-1}	@ V_{max} (1)	2350	1900	2150	1800	2150	1800	1600
Seals						V= Viton			
Operating temperature	$^{\circ}C$ ($^{\circ}F$)	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 MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Seals						V= Viton			
Operating temperature	$^{\circ}C$ ($^{\circ}F$)	min.				-15 (5)			
		max.				80 (176)			
Bearing life (ref. mineral oil)	%					100 %			

05/10.2014

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

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

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

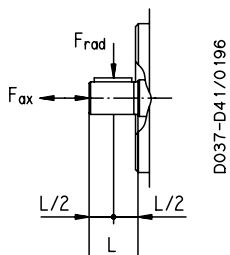
$$M = \frac{M_{theor.}}{\eta_{hm}}$$

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

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

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

Max. permissible load on drive shaft

Pump type		MVP 30•28	MVP 30•34	MVP 48•45	MVP 48•53	MVP 60•60	MVP 60•72	MVP 60•84
F_{ax} Axial force		N (lbf)	1000 (225)	1000 (225)	1500 (337)	1500 (337)	2000 (450)	2000 (450)
F_{rad} Radial force	@ L/2	N (lbf)	1500 (337)	1500 (337)	1500 (337)	3000 (675)	3000 (675)	3000 (675)

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

Inlet pressure	Displacement %					% Variation of the max. speed
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	

Max. speed must not exceed the limits specified at page 7.

Example 1

Displacement: 100 %

Speed: 100 %

Inlet pressure: 1,0 bar abs. (14.5 psi)

Example 2

Displacement: 80 %

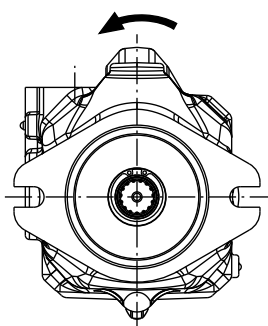
Inlet pressure: 1,0 bar abs. (14.5 psi)

Speed: 115 %

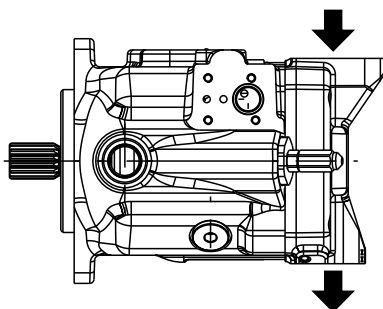
FEATURES

Definition of rotation direction looking at the drive shaft

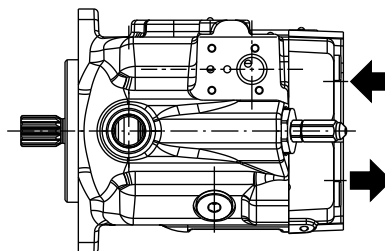
Anti-clockwise rotation



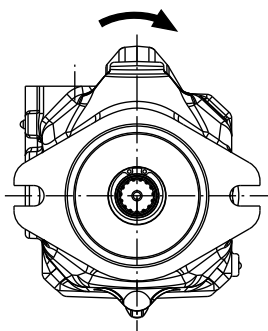
Side ports



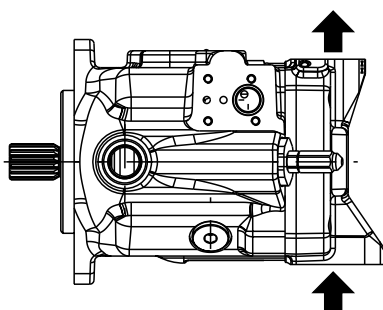
Rear ports



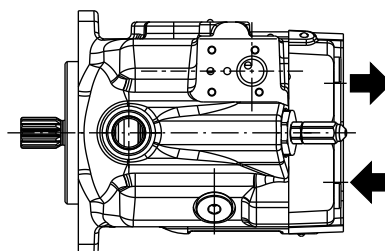
Clockwise rotation



Side ports



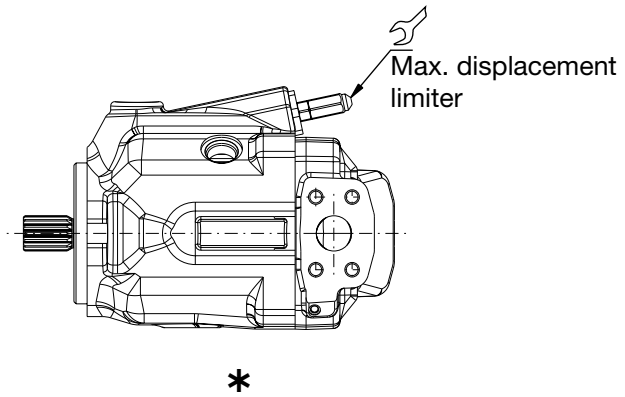
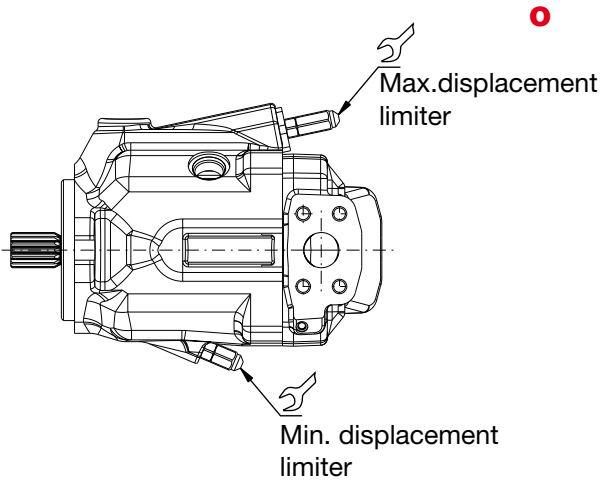
Rear ports



03/06.2011

DISPLACEMENT SETTING

Replaces: 05/10.2014



E: Max. displacement limiter (Min displacement limiter is plugged)

G: Min. and Max. displacement limiter

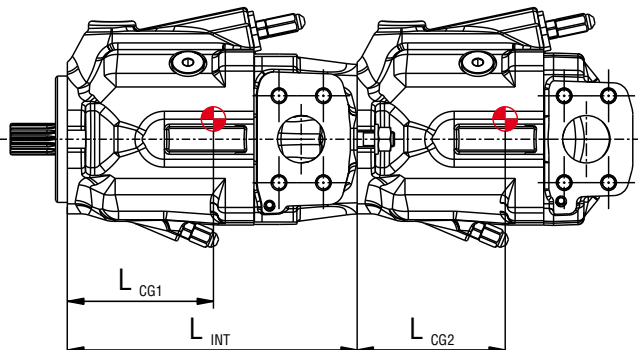
Tightening torque 15^{+1}_{-1} Nm (124 ÷ 142 lbf in)

***** Special body without Min. displacement limiter is available only on request, please consult our pre-sales department

			MVP30	MVP48	MVP60
Max. displacement setting range	cm ³ /rev (in ³ /rev)	from	17,4 (1.06)	34,9 (2.13)	55 (3.36)
		to	34,8 (2.12)	53,7 (3.28)	84,7 (5.17)
Min. displacement setting range	cm ³ /rev (in ³ /rev)	from	0	0	0
		to	17,4 (1.06)	10,7 (0.65)	38,1 (2.32)
One turn of screw changes pump displacement by approximately	cm ³ /rev (in ³ /rev)	E	2,8 (0.17)	3,2 (0.20)	5,0 (0.31)
		F	2,3 (0.14)	3,0 (0.18)	4,2 (0.26)

For different setting range, please consult our pre-sales department.

CENTER OF GRAVITY



Center of gravity

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

M_{MF} : Load moment on mounting flange

L_{CG} : Distance from center of gravity to mounting flange [mm]

m : Weight (kg)

		MVP30	MVP48	MVP60
L_{CG1}	mm (in)	100 (3.94)	116 (4.57)	120 (4.72)
L_{CG2}	mm (in)	90 (3.54)	99 (3.90)	107 (4.21)
L_{INT}	mm (in)	208 (8.19)	233 (9.17)	253 (9.96)

For single pumps refer to L_{CG2} values
Average data, for specific values please consult our pre-sales department.

06/06.2020

MVP30•28

OPERATING CURVES

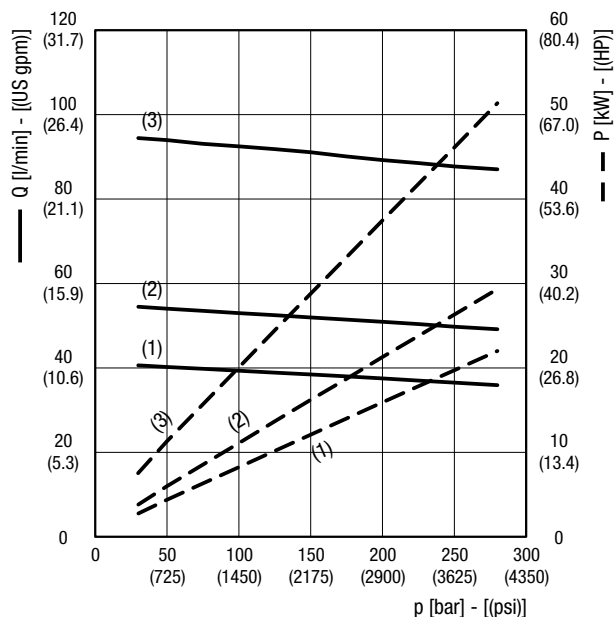
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these speed:

- (1) 1500 min⁻¹
- (2) 2000 min⁻¹
- (3) 3500 min⁻¹

Replaces: 03/06.2011

Delivery / power

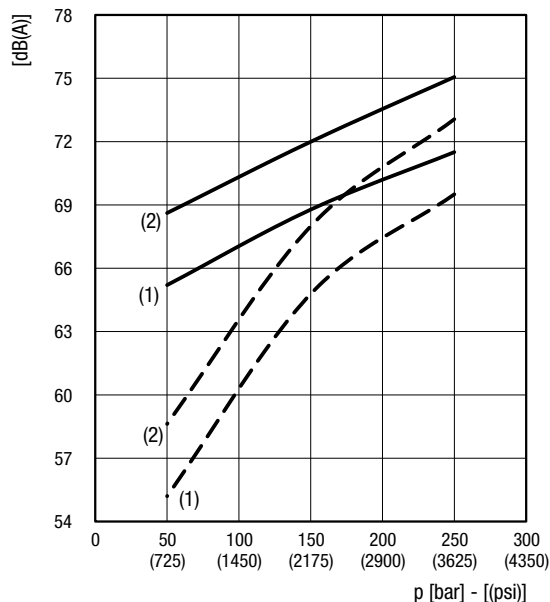
@ max. displacement



Noise level

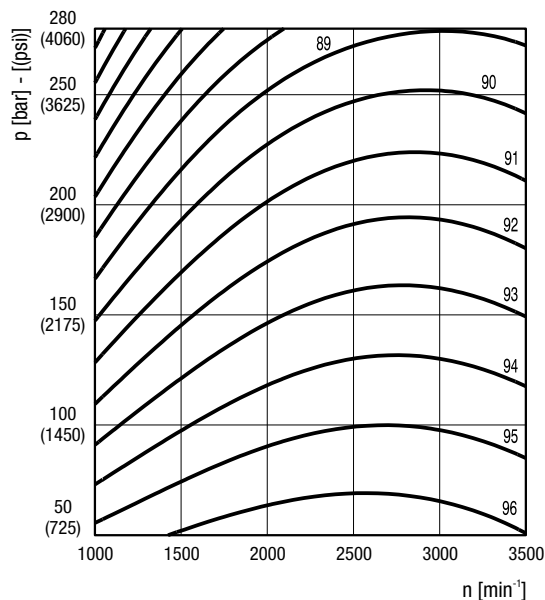
Distance from microphone to pump = 1 m (39.37 in)

— @ max. displacement - - - @ min. displacement



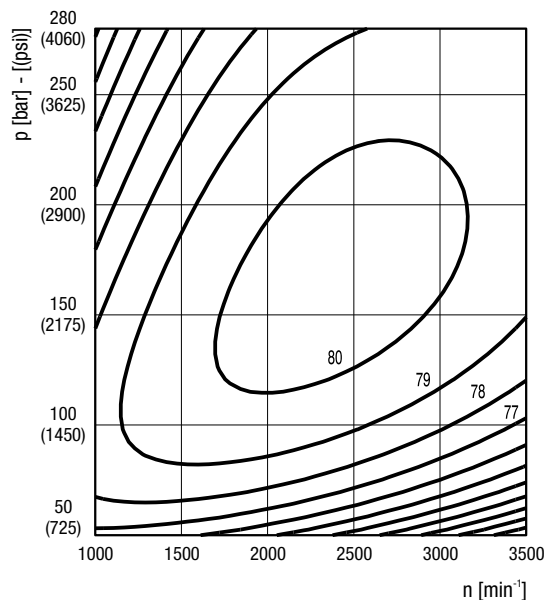
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



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

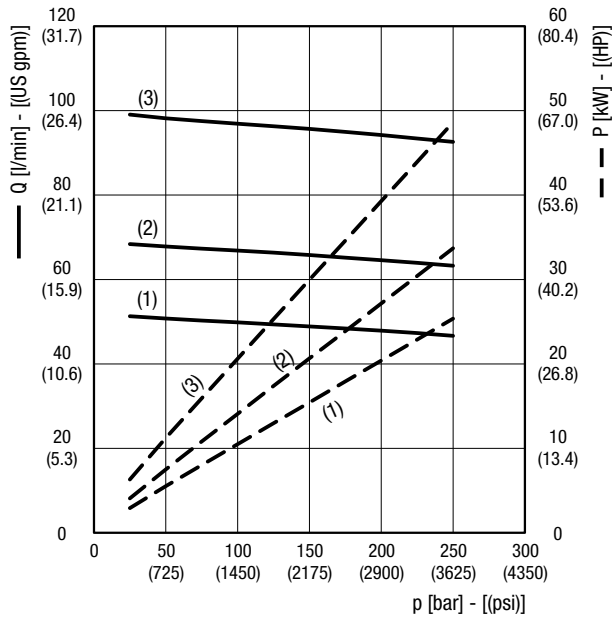
MVP30•34

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) 2000 min⁻¹
(3) 2900 min⁻¹

Delivery / power

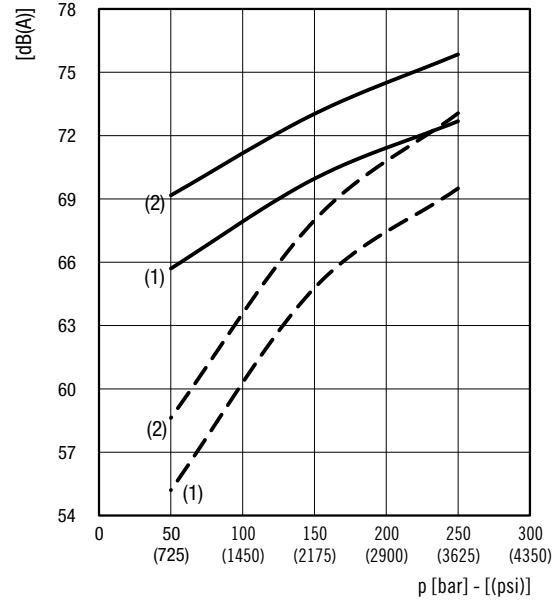
@ max. displacement



Noise level

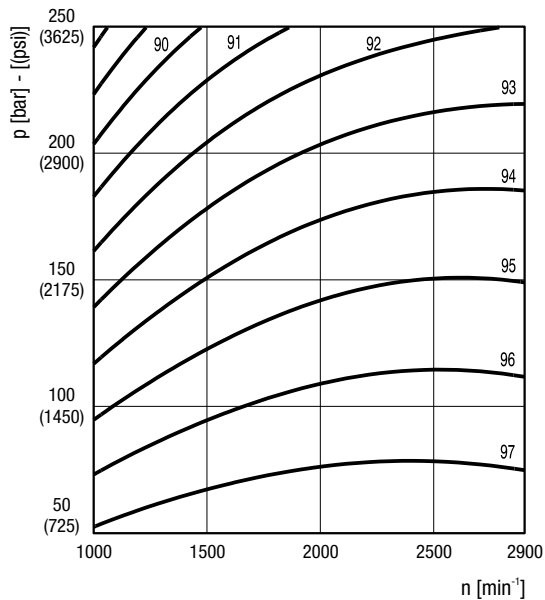
Distance from microphone to pump = 1 m (39.37 in)

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



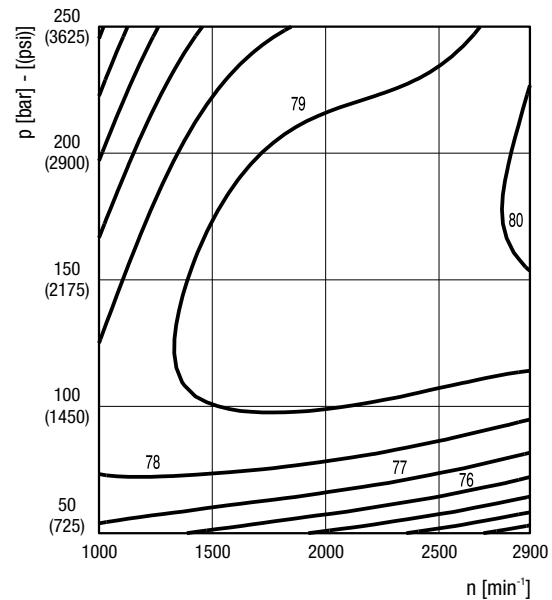
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



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

MVP48•45

OPERATING CURVES

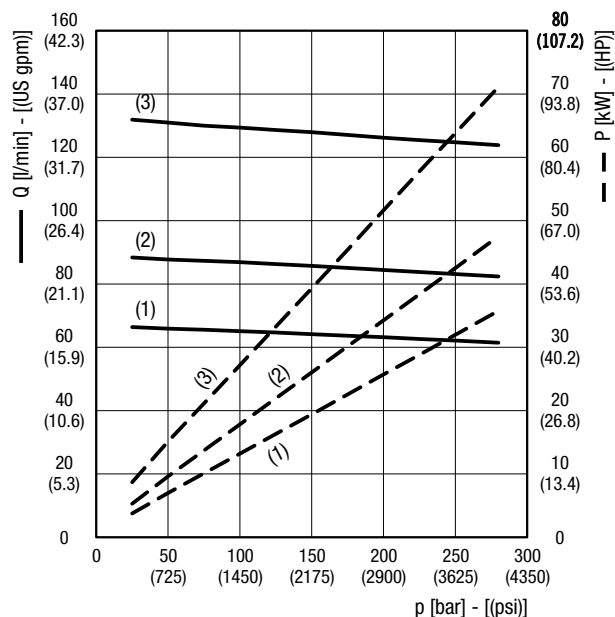
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these speed:

- (1) 1500 min⁻¹
- (2) 2000 min⁻¹
- (3) 3000 min⁻¹

Replaces: 03/06.2011

Delivery / power

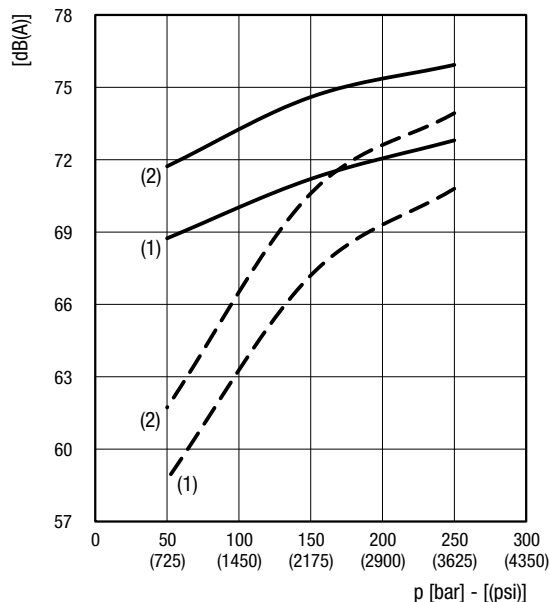
@ max. displacement



Noise level

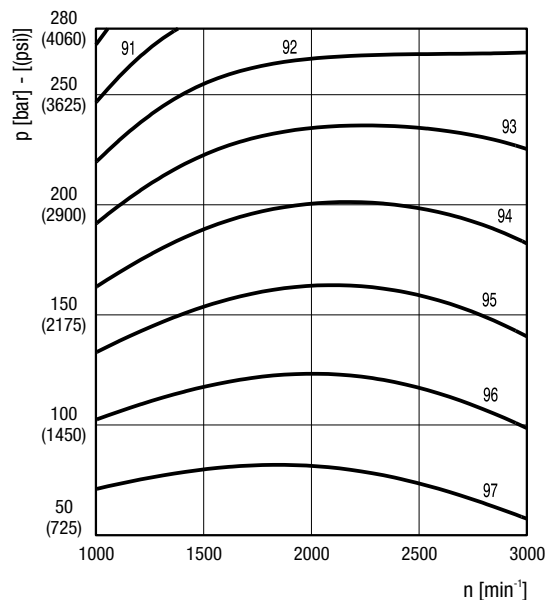
Distance from microphone to pump = 1 m (39.37 in)

— @ max. displacement — — @ min. displacement



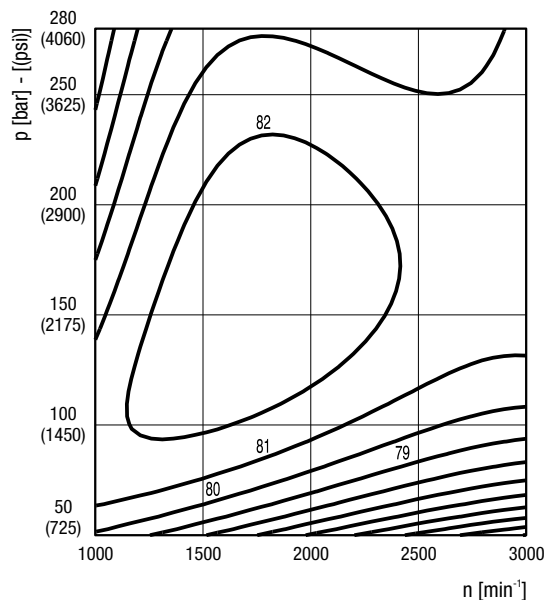
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



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

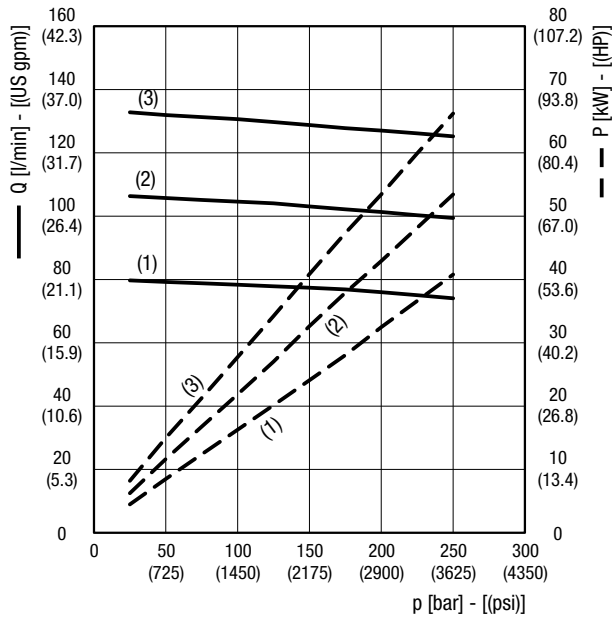
MVP48•53

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) 2000 min⁻¹
(3) 2500 min⁻¹

Delivery / power

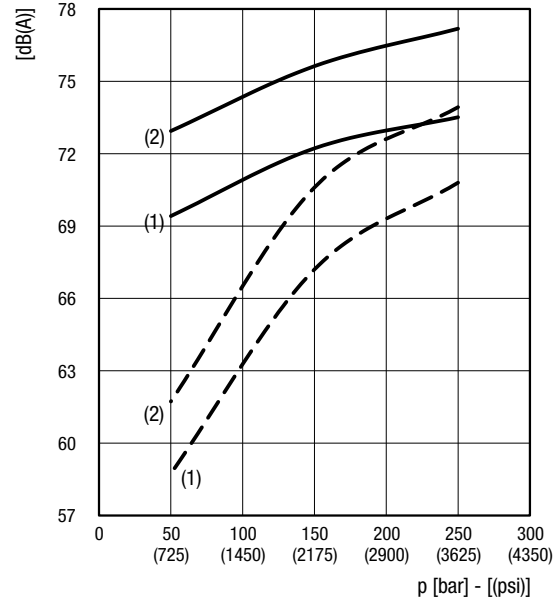
@ max. displacement



Noise level

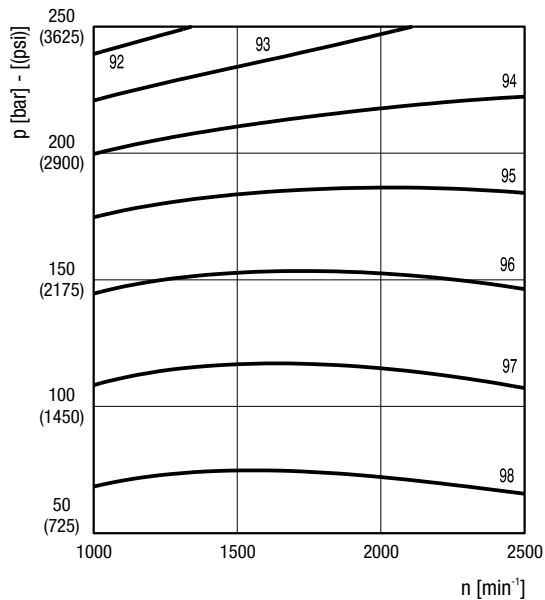
Distance from microphone to pump = 1 m (39.37 in)

— @ max. displacement - - - @ min. displacement



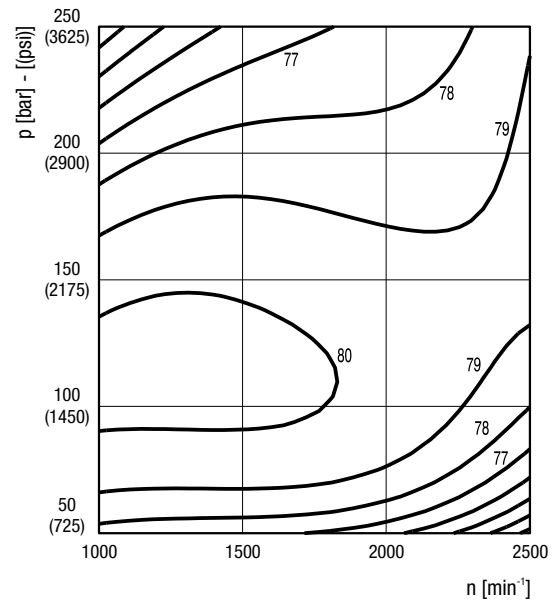
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



Replaces: 03/06.2011

06/06.2020

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

MVP60•60

OPERATING CURVES

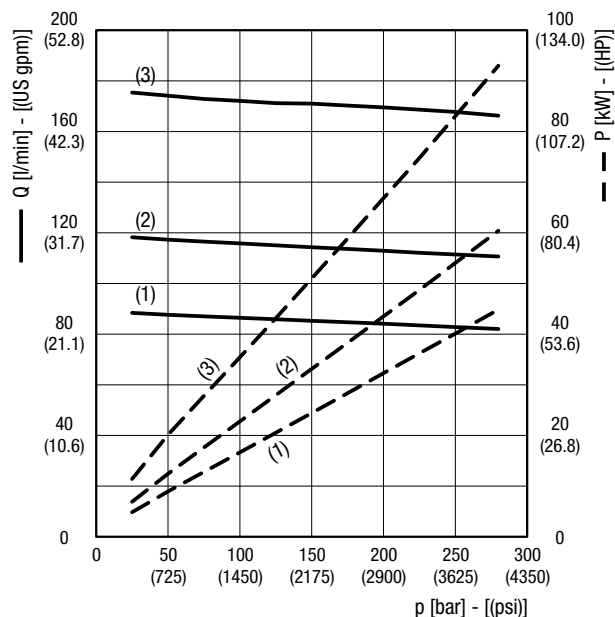
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these speed:

- (1) 1500 min⁻¹
- (2) 2000 min⁻¹
- (3) 3000 min⁻¹

Replaces: 03/06.2011

Delivery / power

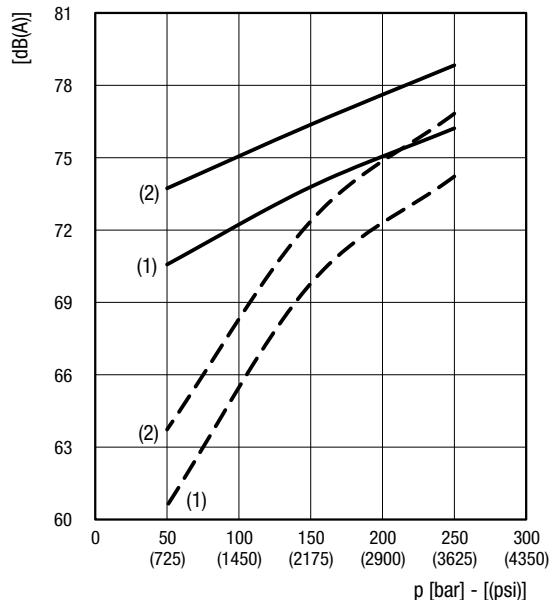
@ max. displacement



Noise level

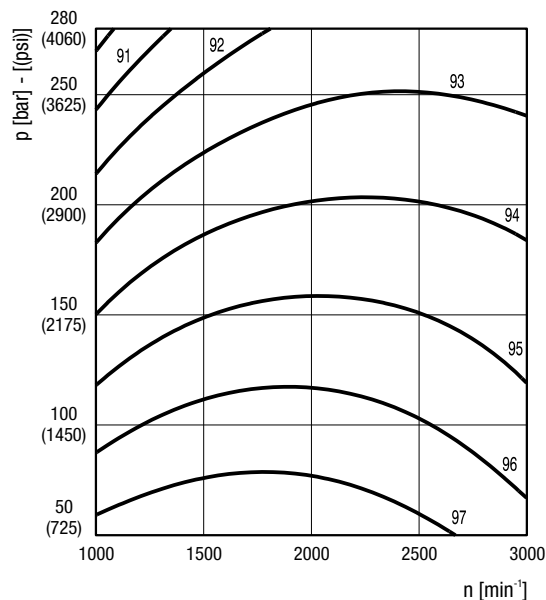
Distance from microphone to pump = 1 m (39.37 in)

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



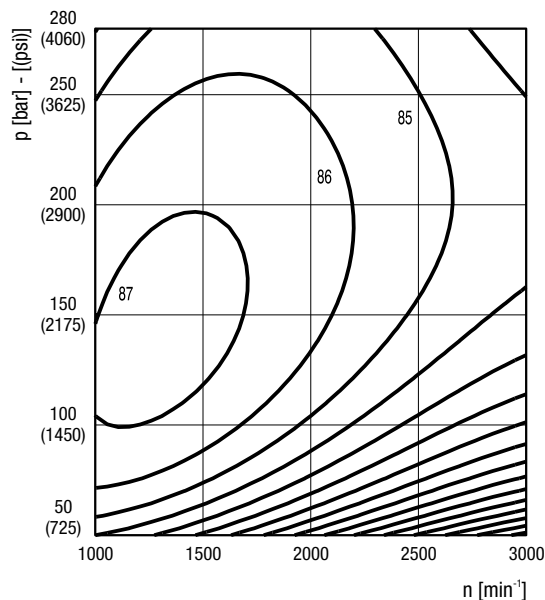
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



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

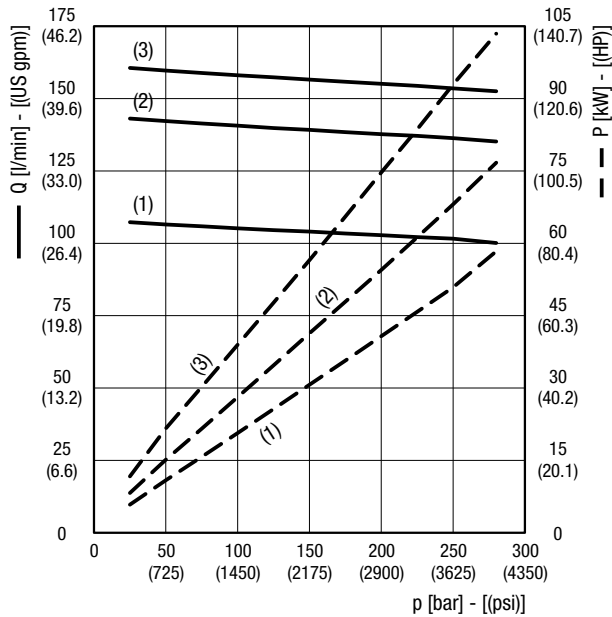
MVP60•72

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) 2000 min⁻¹
(3) 2700 min⁻¹

Delivery / power

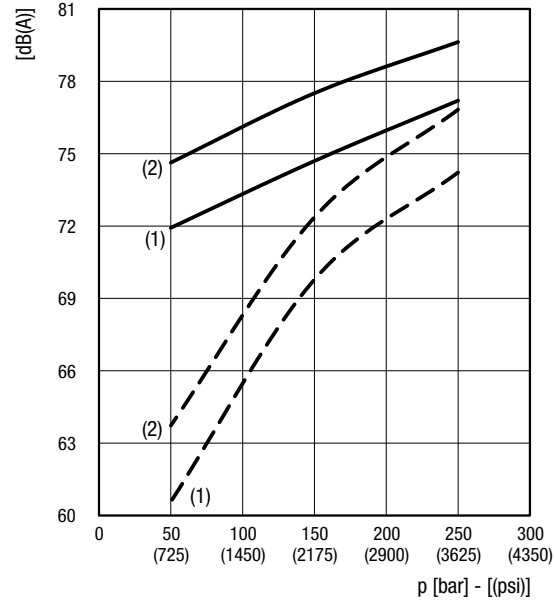
@ max. displacement



Noise level

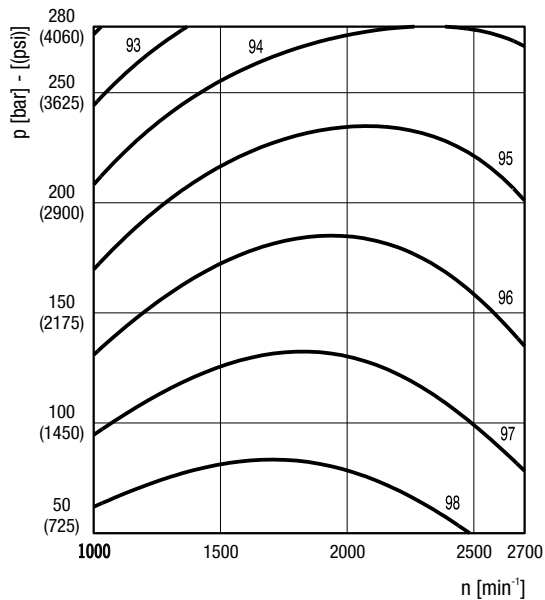
Distance from microphone to pump = 1 m (39.37 in)

— @ max. displacement - - - @ min. displacement



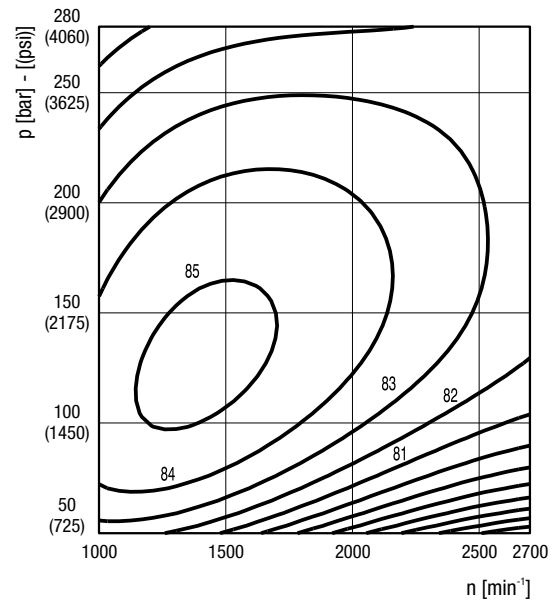
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



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

MVP60•84

OPERATING CURVES

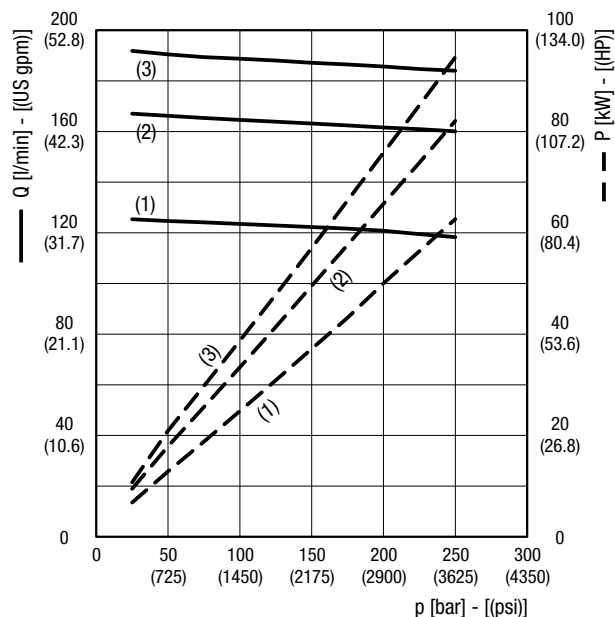
Each curve has been obtained at 50 °C (122 °F), using oil with viscosity 46 cSt (210 SSU) at 40 °C (104 °F) and at these speed:

- (1) 1500 min⁻¹
- (2) 2000 min⁻¹
- (3) 2300 min⁻¹

Replaces: 05/10.2014

Delivery / power

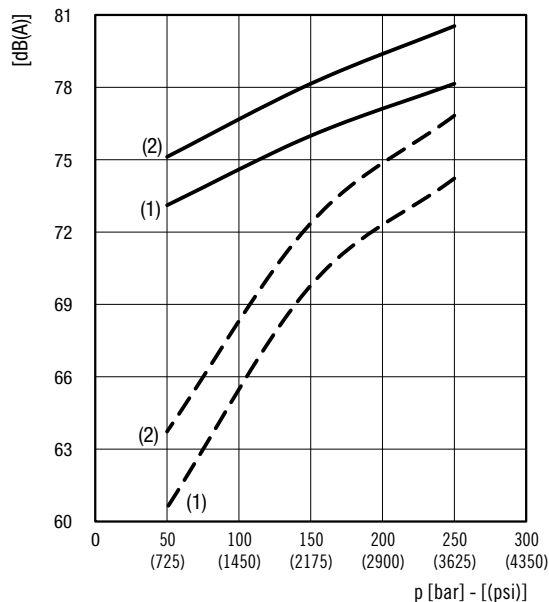
@ max. displacement



Noise level

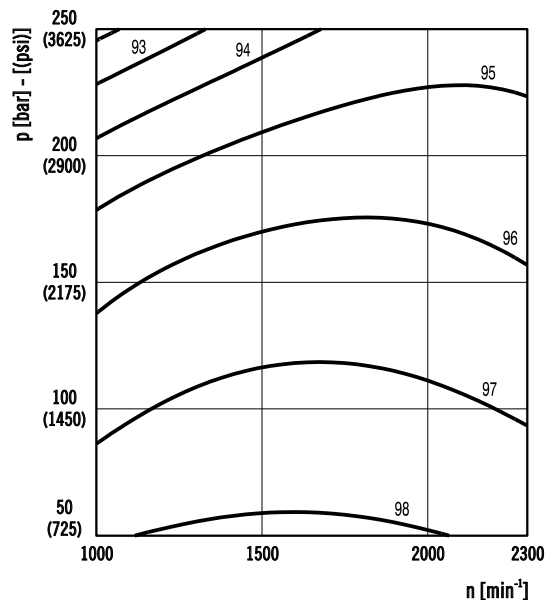
Distance from microphone to pump = 1 m (39.37 in)

— @ max. displacement - - - @ min. displacement



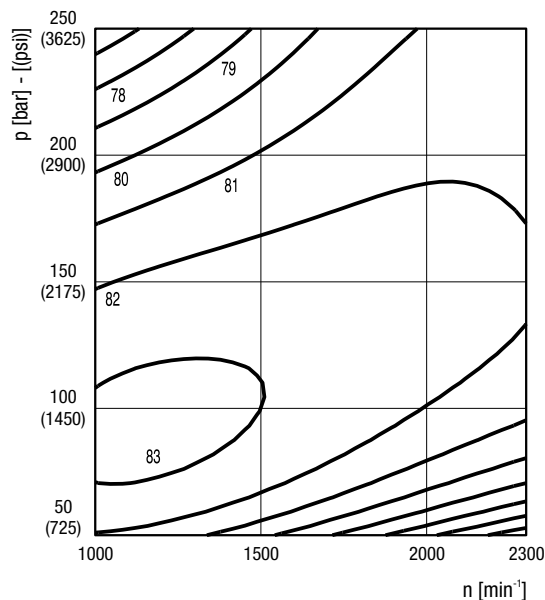
Volumetric efficiency

@ max. displacement



Overall efficiency

@ max. displacement



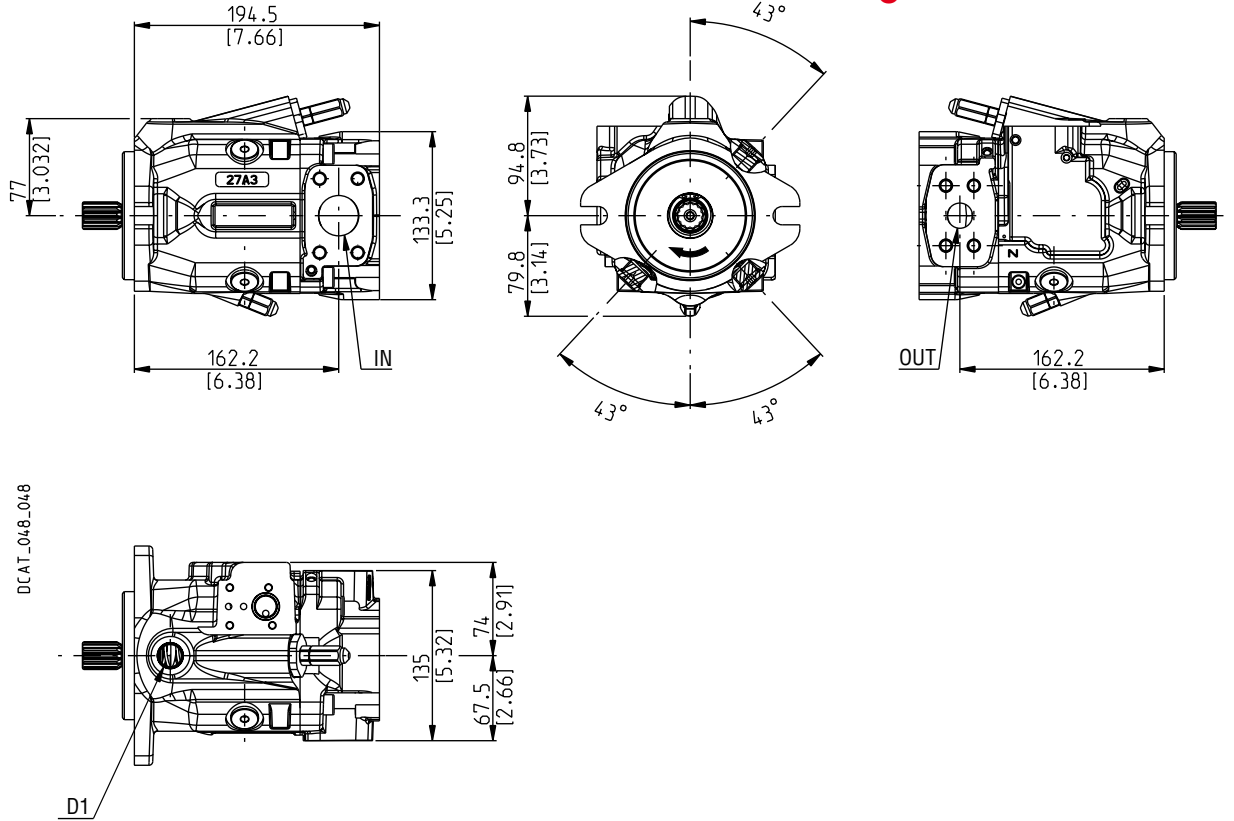
Values shown in the diagrams are indicative only. Actual values may vary depending on the pump configuration.

MVP30

SIDE PORTS - DIMENSIONS

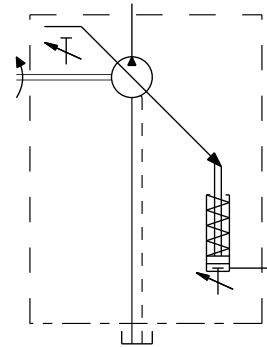
L

Drive shafts: see page 32
Mounting flanges: see page 36
Ports: see page 38 ÷ 40



DCAT_048_048

D1



Replaces: 03/60.2011

06/06.2020

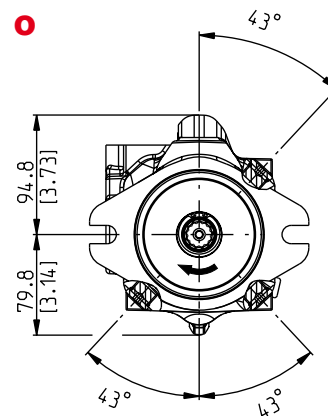
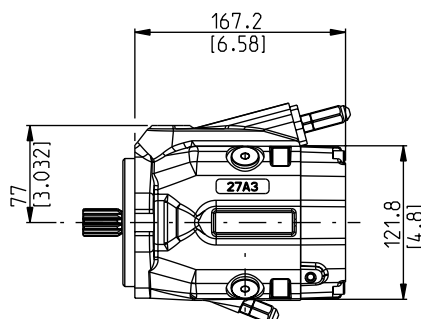
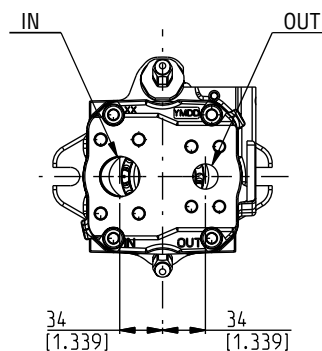
MVP30

REAR PORTS - DIMENSIONS

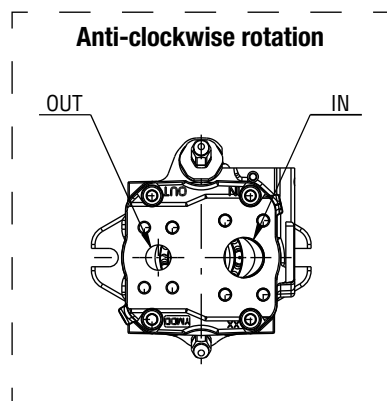
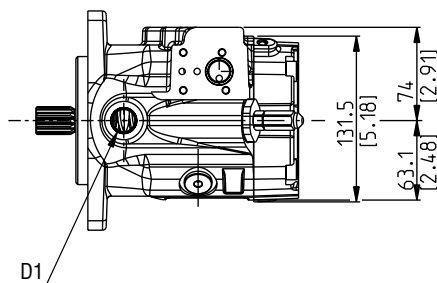
P

Drive shafts: see page 32
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

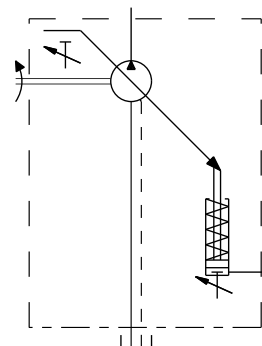
Replaces: 03/06.2011



DCAT_048_047



06/06.2020



MVP30/KP20

MULTIPLE PUMPS - DIMENSIONS

L

Common inlet intermediate flange:

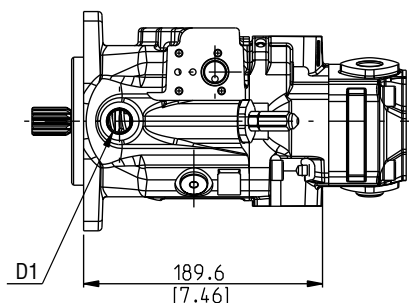
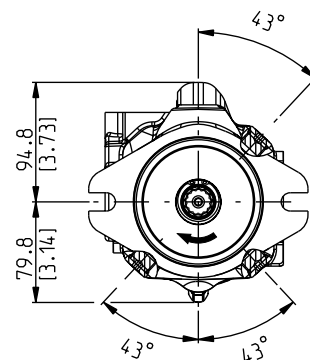
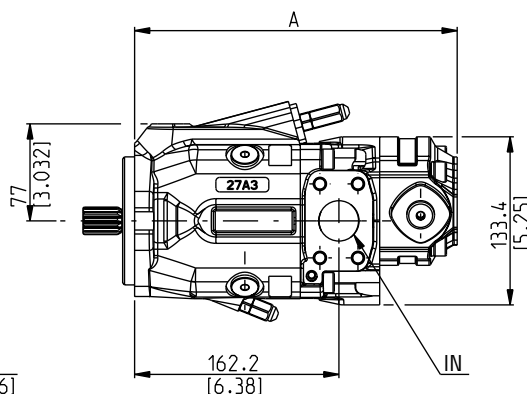
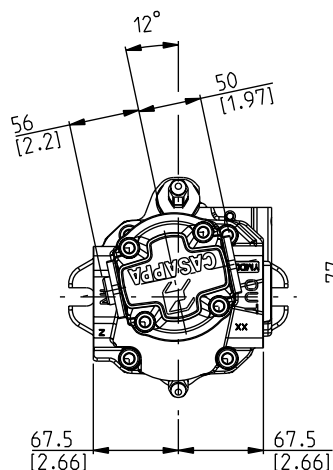
MVP code **P7**

KP20 code **N5**

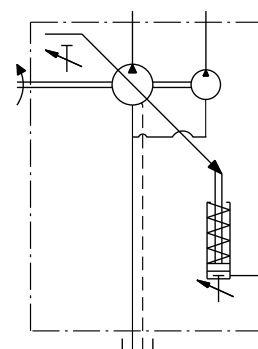
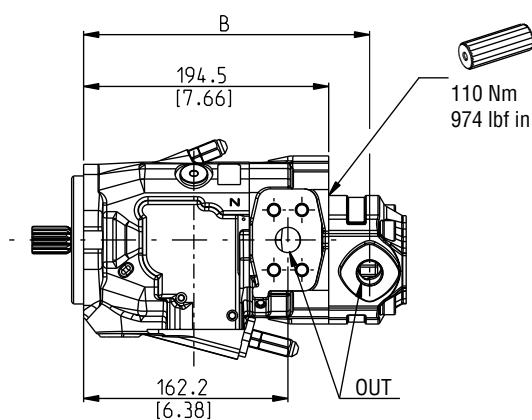
Drive shafts: see page 32

Mounting flanges: see page 36

Ports: see page 38 ÷ 40



DCAT_048_048_KP20



Replaces: 03/60.2011

06/06.2020

O

Gear pump KAPPA 20 (for more information please consult our pre-sales department)

Pump type	4	6,3	8	11,2	14	16	20	Dimensions
MVP30	247,5 (9.74)	250 (9.84)	252,5 (9.94)	256 (10.08)	260 (10.24)	265,5 (10.45)	272 (10.71)	mm (in) A
	218,5 (8.60)	221 (8.70)	223,5 (8.80)	227 (8.94)	225,5 (8.86)	231 (9.09)	237,5 (9.35)	mm (in) B

MVP30/PHP20

MULTIPLE PUMPS - DIMENSIONS

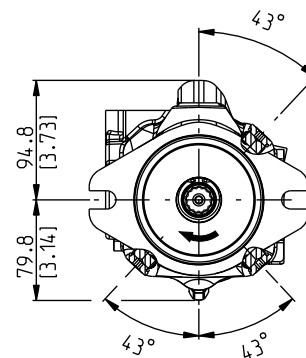
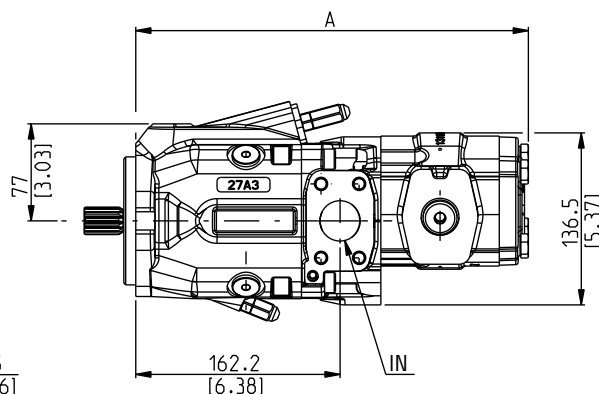
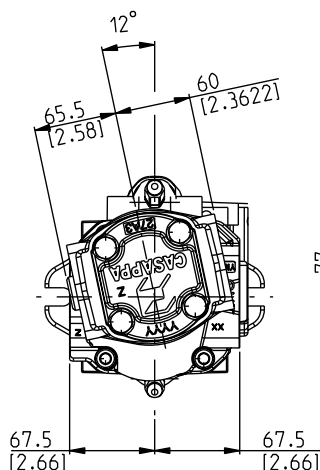
L

Common inlet intermediate flange:
MVP code **I7**
PHP20 code **S7**

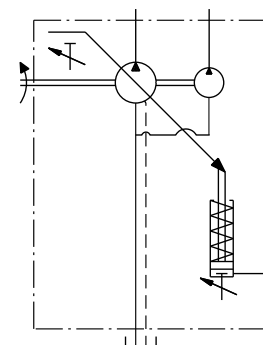
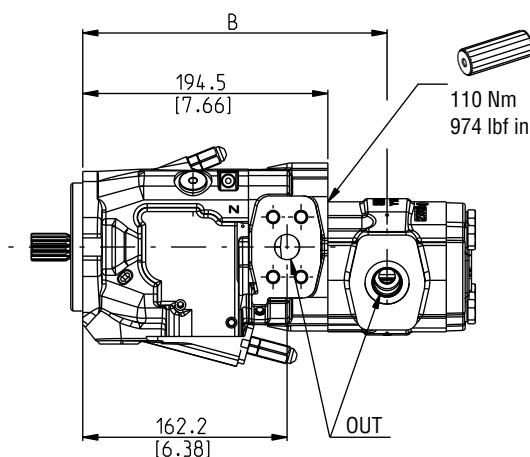
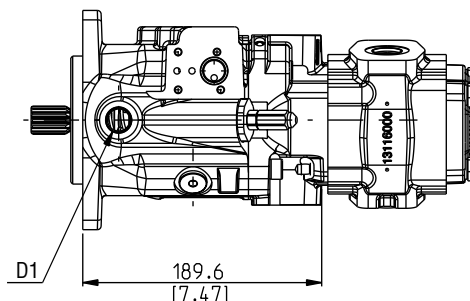
Drive shafts: see page 32
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

Also available in
combination with PLP20

Replaces: 03/60.2011



DCAT_048_048_PHP20



O

Gear pump POLARIS PH20 (for more information please consult our pre-sales department)

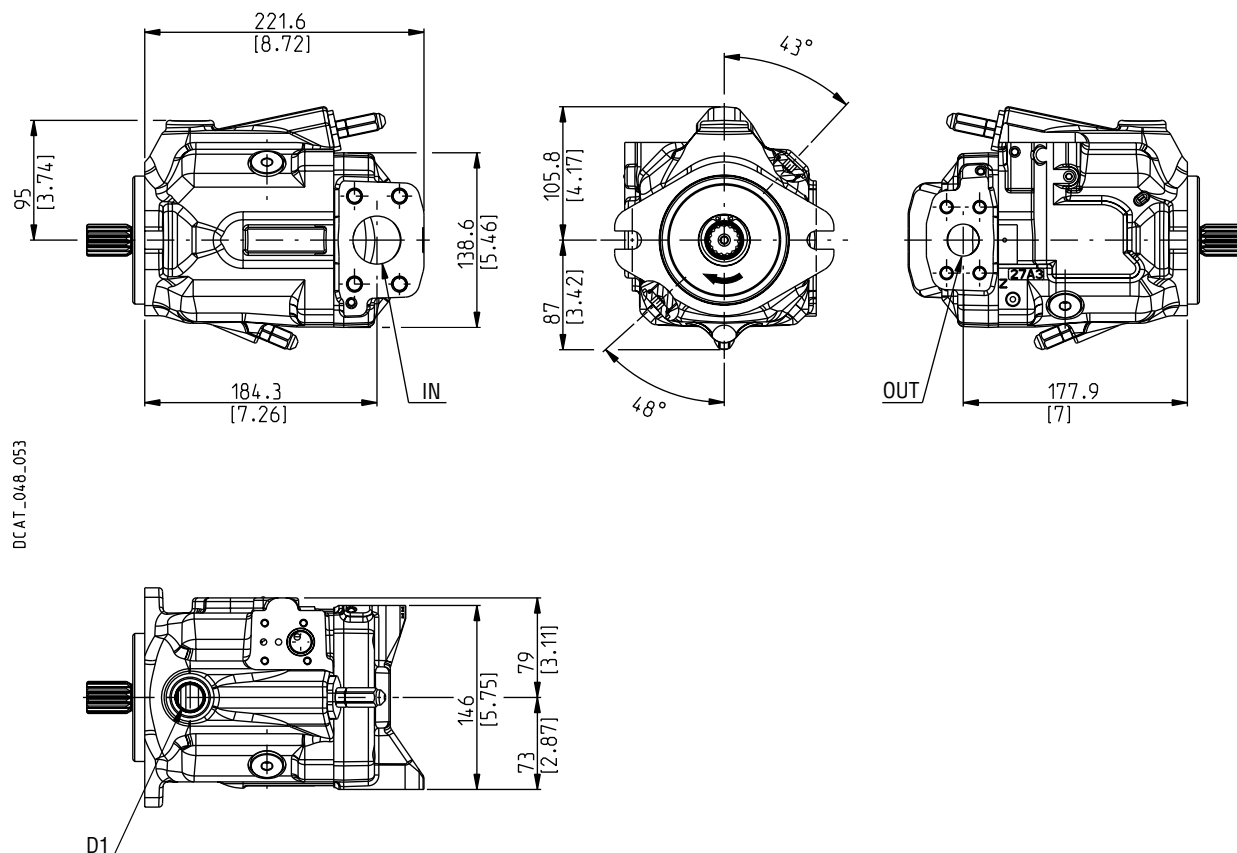
Pump type	8	10,5	11,2	14	16	18	19	20	23	24,5	25	27,8	31,5	Dimensions
MVP30	274,6 (10.81)	278,6 (10.97)	279,1 (10.99)	284,1 (11.41)	287,6 (11.32)	289,8 (11.41)	291 (11.46)	294,1 (11.58)	297,6 (11.72)	299,9 (11.81)	301,6 (11.87)	304,4 (11.98)	311,6 (12.27)	mm (in) A
	228 (8.98)	231 (9.09)	231,5 (9.11)	236,5 (9.31)	239,5 (9.43)	230,4 (9.07)	231 (9.09)	232,5 (9.15)	234,2 (9.22)	235,3 (9.26)	236,5 (9.31)	237,9 (9.36)	241,5 (9.51)	mm (in) B

MVP48

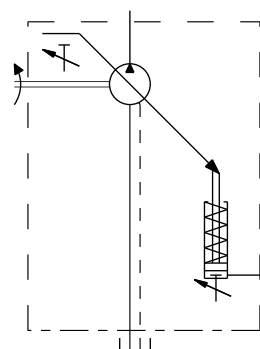
SIDE PORTS - DIMENSIONS

L

Drive shafts: see page 33
Mounting flanges: see page 36
Ports: see page 38 ÷ 40



Replaces: 03/06.2011



06/06.2020

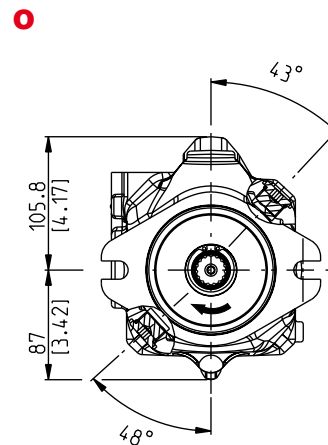
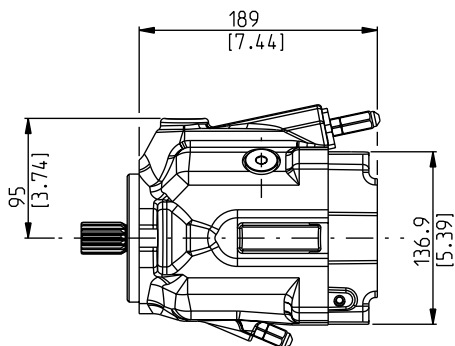
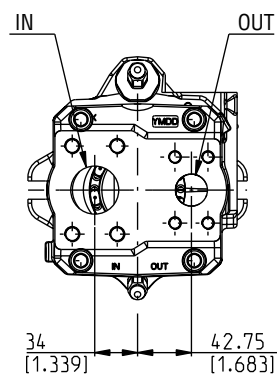
MVP48

REAR PORTS - DIMENSIONS

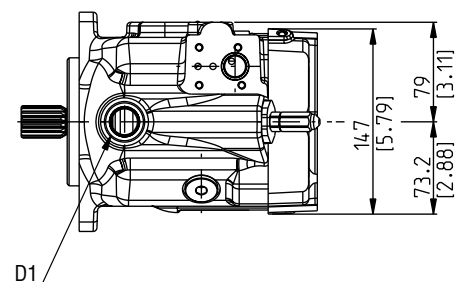
P

Drive shafts: see page 33
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

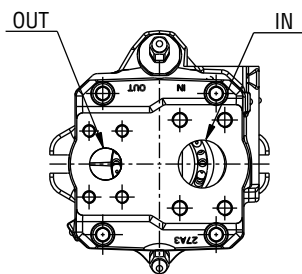
Replaces: 03/06.2011



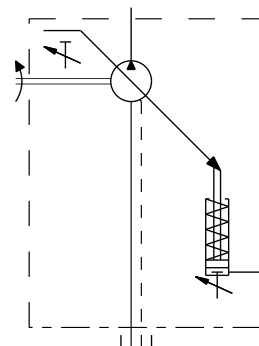
DCAT_048_031



Anti-clockwise rotation



06/06.2020



MVP48/KP20

MULTIPLE PUMPS - DIMENSIONS

L

Common inlet intermediate flange:

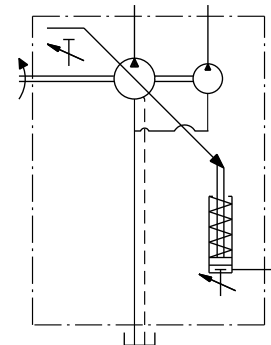
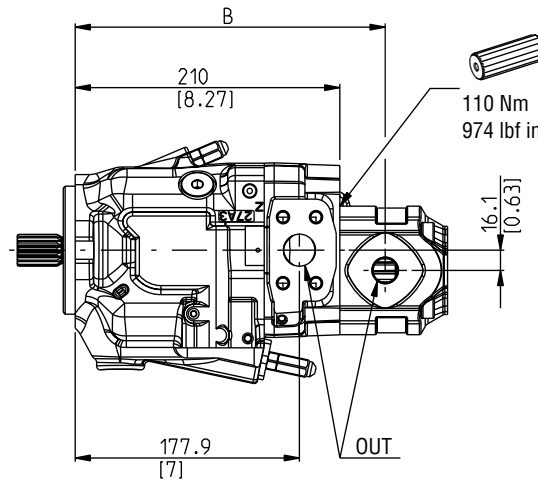
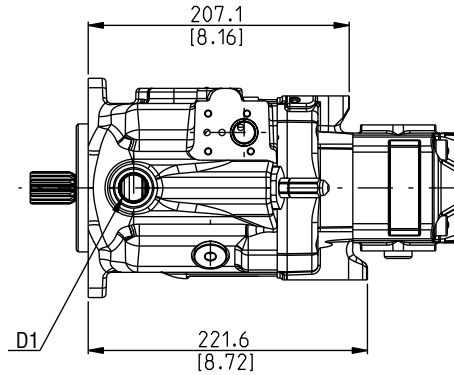
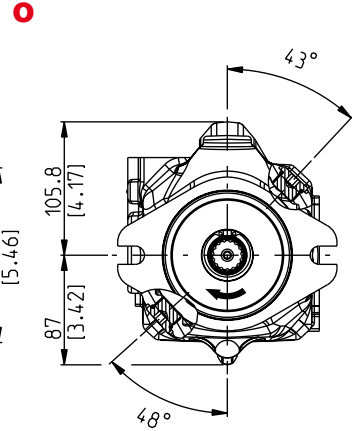
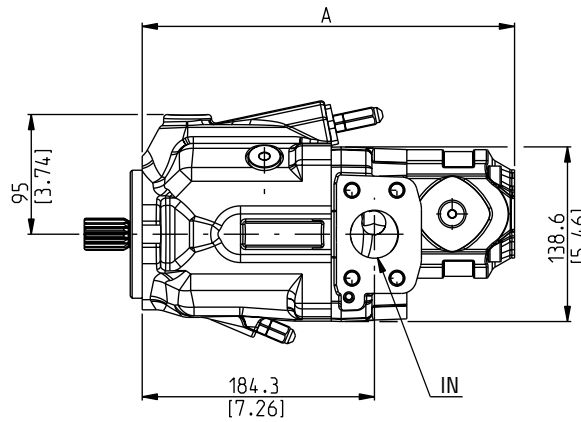
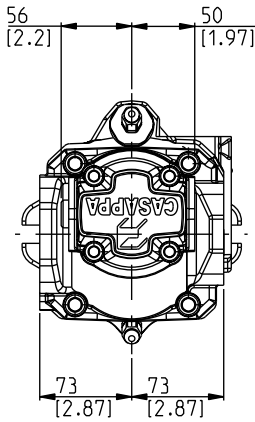
MVP code **P7**

KP20 code **N5**

Drive shafts: see page 33

Mounting flanges: see page 36

Ports: see page 38 ÷ 40



DCAT_048_031_KP20

Replaces: 03/06.2011

06/06.2020

Gear pump KAPPA 20 (for more information please consult our pre-sales department)

Pump type	4	6,3	8	11,2	14	16	20	Dimensions	
MVP48	263 (10.35)	265,5 (10.45)	268 (10.55)	271,5 (10.69)	275,5 (10.85)	281 (11.06)	287,5 (11.32)	mm (in)	A
	234 (9.21)	236,5 (9.31)	239 (9.41)	242,5 (9.55)	241 (9.49)	246,5 (9.70)	253 (9.96)	mm (in)	B

MVP48/PHP20

MULTIPLE PUMPS - DIMENSIONS

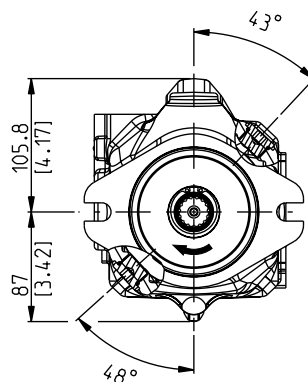
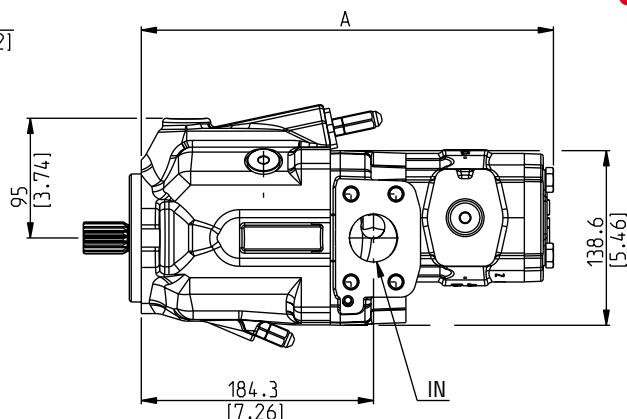
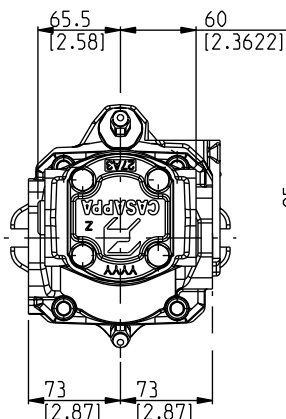
L

Common inlet intermediate flange:
MVP code **I7**
PHP20 code **S7**

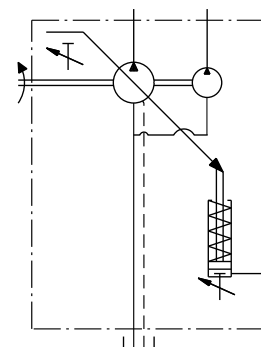
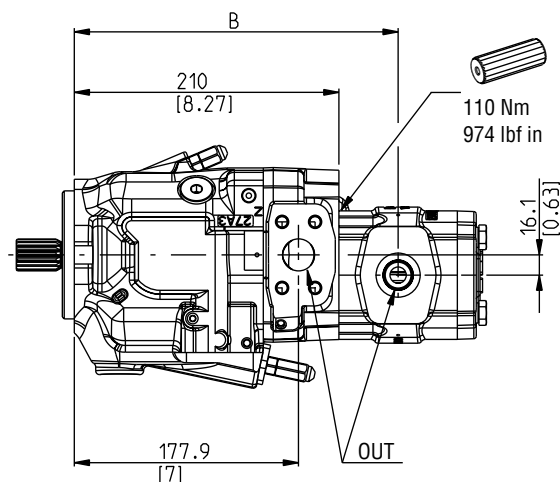
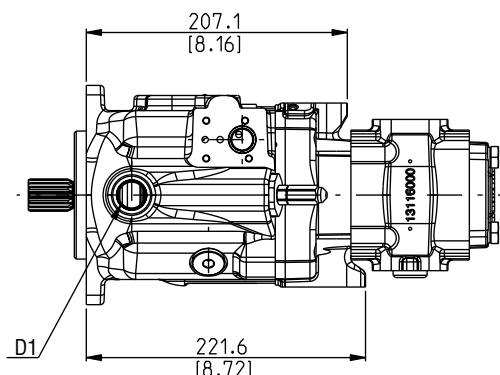
Drive shafts: see page 33
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

Also available in
combination with PLP20

Replaces: 03/06.2011



DCAT_048_031_PHP



Gear pump POLARIS PH20 (for more information please consult our pre-sales department)

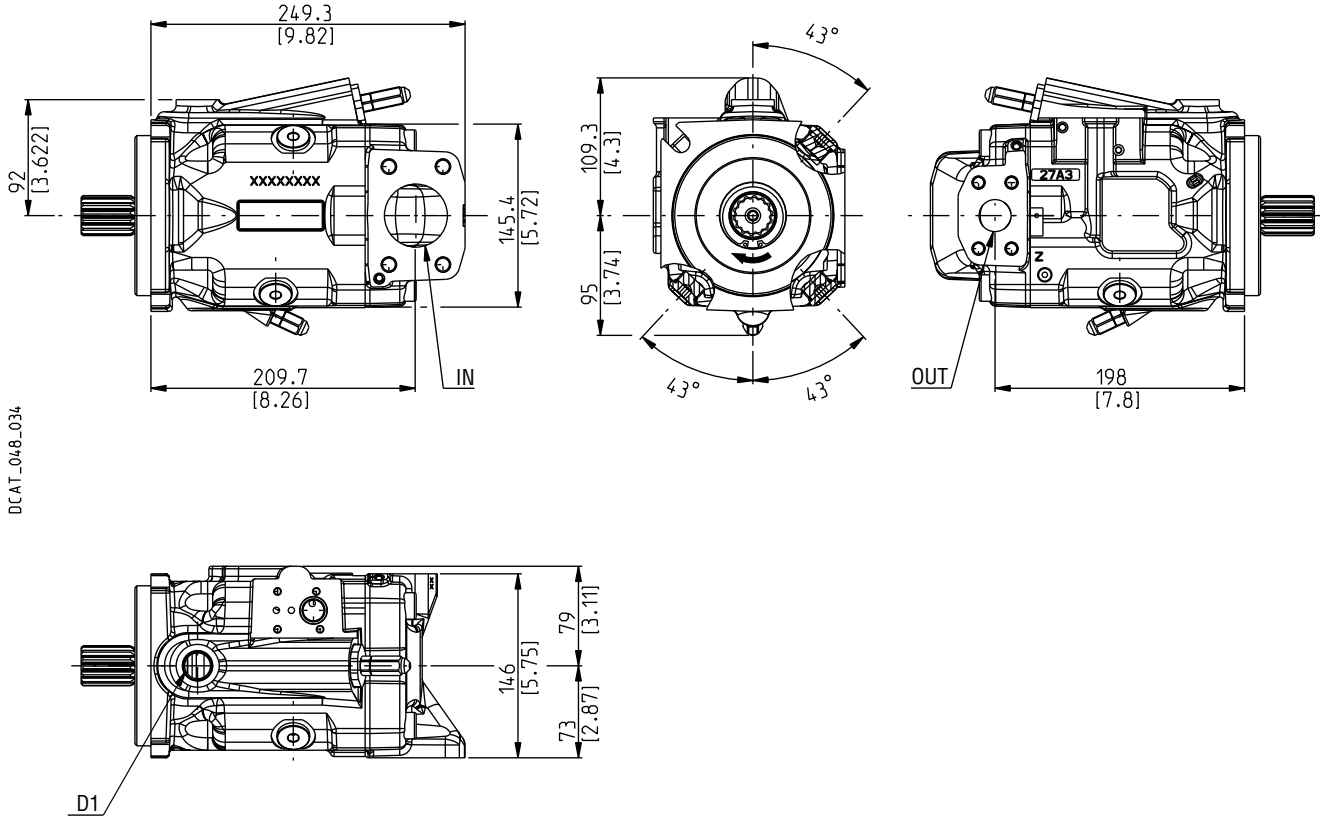
Pump type	8	10,5	11,2	14	16	18	19	20	23	24,5	25	27,8	31,5	Dimensions
MVP48	290,1 (11.42)	294,1 (11.58)	294,6 (11.60)	299,6 (11.80)	303,1 (11.93)	305,3 (12.02)	306,5 (12.07)	309,6 (12.19)	313,1 (12.33)	315,4 (12.42)	317,1 (12.48)	319,9 (12.59)	327,1 (12.88)	mm (in) A
	243,5 (9.59)	246,5 (9.70)	247 (9.72)	252 (9.92)	255 (10.04)	245,9 (9.68)	246,5 (9.70)	248 (9.76)	249,7 (9.83)	250,8 (9.87)	252 (9.92)	253,4 (9.97)	257 (10.12)	mm (in) B

MVP60

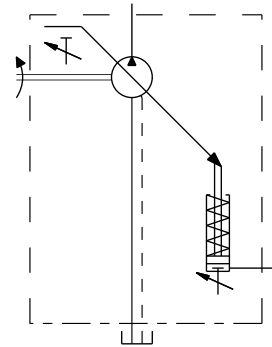
SIDE PORTS - DIMENSIONS

L

Drive shafts: see page 34 ÷ 35
Mounting flanges: see page 36 ÷ 37
Ports: see page 38 ÷ 40



Replaces: 03/06.2011



06/06.2020

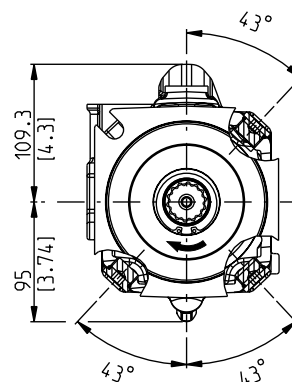
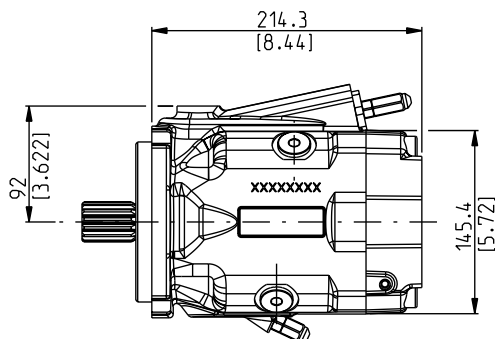
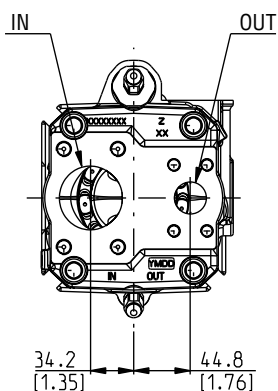
MVP60

REAR PORTS - DIMENSIONS

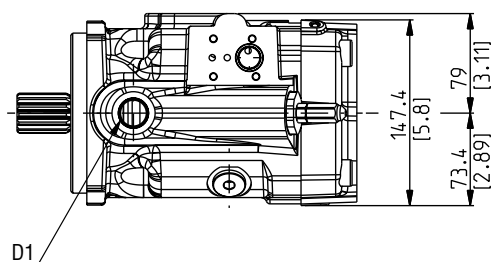
P

Drive shafts: see page 34 ÷ 35
Mounting flanges: see page 36 ÷ 37
Ports: see page 38 ÷ 40

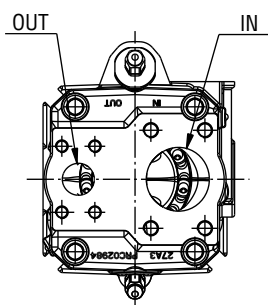
Replaces: 03/06.2011



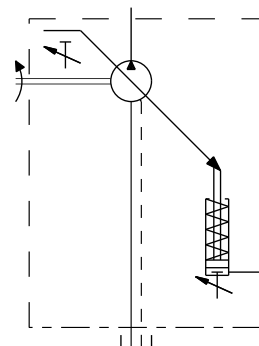
DCAT_048_005



Anti-clockwise rotation



06/06.2020



MVP60/KP20

MULTIPLE PUMPS - DIMENSIONS

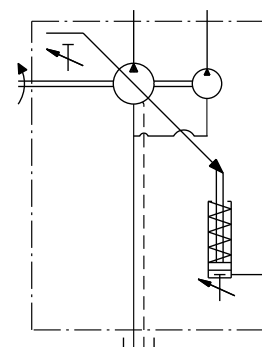
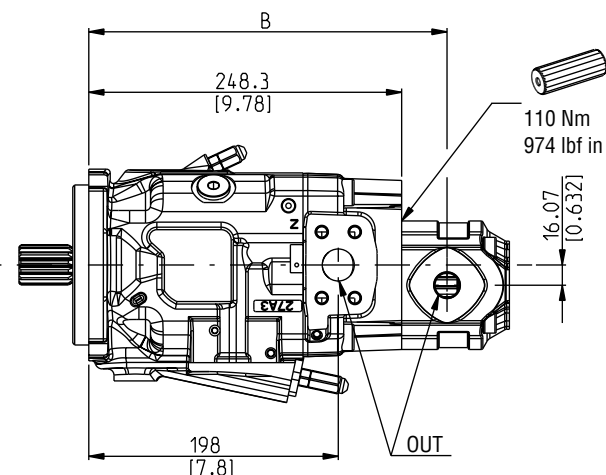
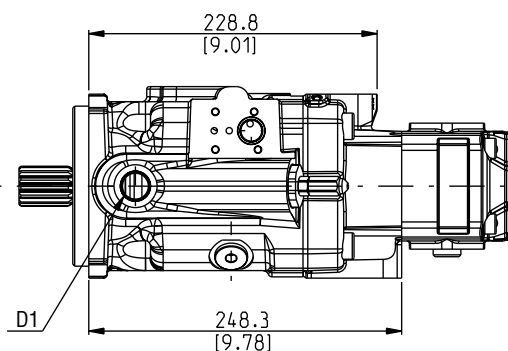
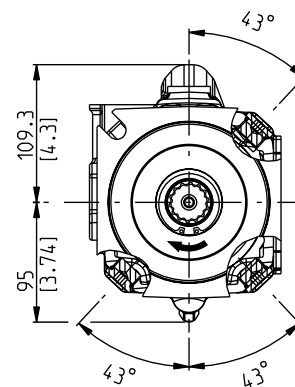
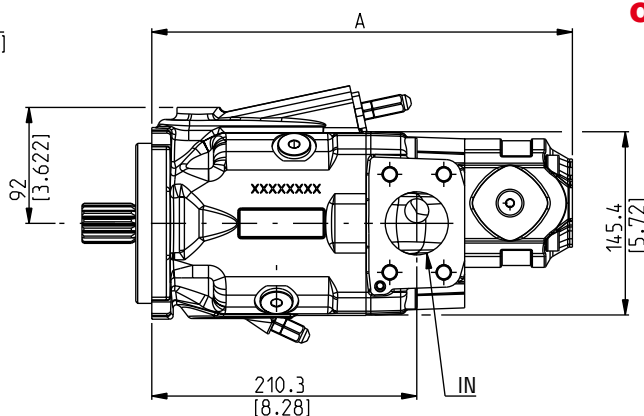
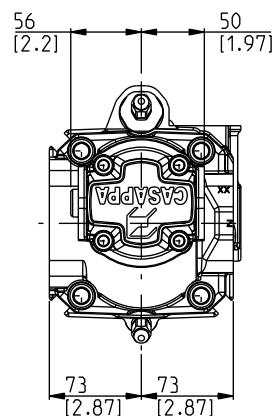
L

Common inlet intermediate flange:
MVP code **P7**
KP20 code **N5**

Drive shafts: see page 34 ÷ 35
Mounting flanges: see page 36 ÷ 37
Ports: see page 38 ÷ 40

Replaces: 03/06.2011

06/06.2020



Gear pump KAPPA 20 (for more information please consult our pre-sales department)

Pump type	4	6,3	8	11,2	14	16	20	Dimensions
MVP60	301,3 (11.86)	303,8 (11.96)	306,3 (12.06)	309,8 (12.20)	313,8 (12.35)	319,3 (12.57)	325,8 (12.83)	mm (in) A
	272,3 (10.72)	274,8 (10.82)	277,3 (10.92)	280,8 (11.06)	279,3 (11.00)	284,8 (11.21)	291,3 (11.47)	mm (in) B

MVP60/PHP20

MULTIPLE PUMPS - DIMENSIONS

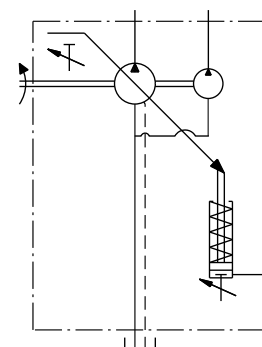
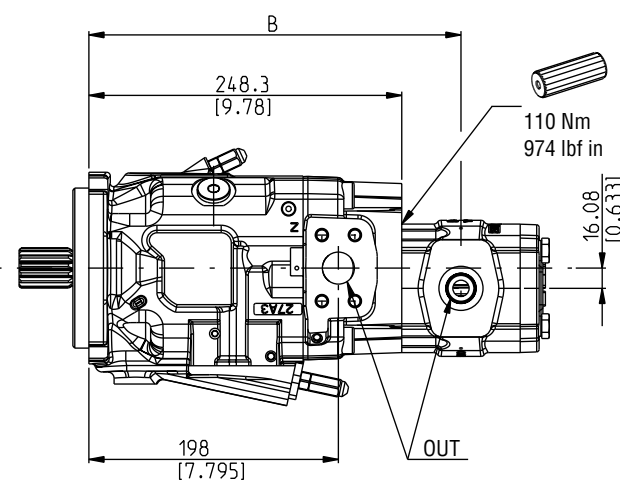
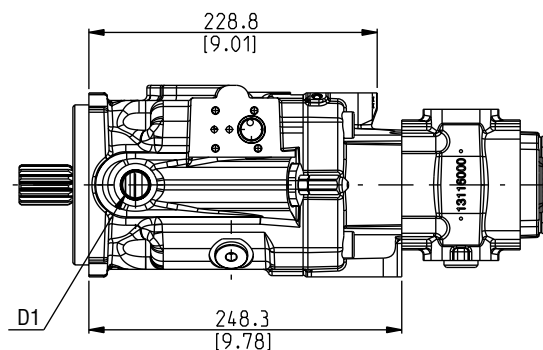
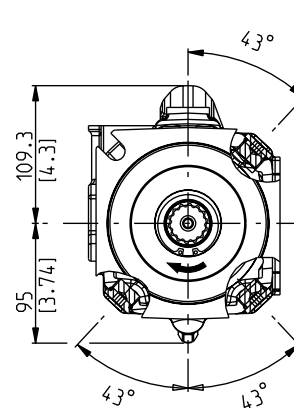
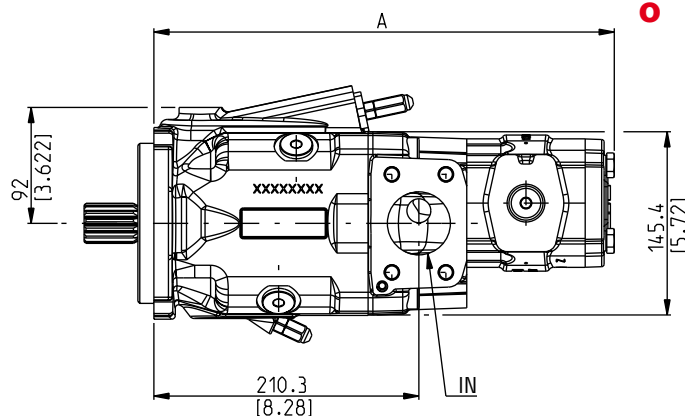
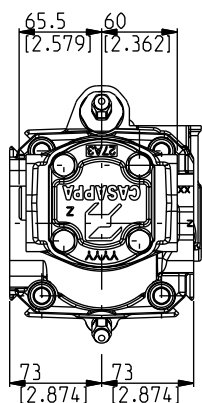
L

Common inlet intermediate flange:
MVP code **I7**
PHP20 code **S7**

Drive shafts: see page 34 ÷ 35
Mounting flanges: see page 36 ÷ 37
Ports: see page 38 ÷ 40

Also available in
combination with PLP20

Replaces: 03/06.2011



DCAT_048_035_PHP

06/06.2020

O

Gear pump POLARIS PH20 (for more information please consult our pre-sales department)

Pump type	8	10,5	11,2	14	16	18	19	20	23	24,5	25	27,8	31,5	Dimensions
MVP60	328,4 (12.93)	332,4 (13.09)	332,9 (13.11)	337,9 (13.30)	341,4 (13.44)	343,6 (13.53)	344,8 (13.57)	347,9 (13.70)	351,4 (13.83)	353,7 (13.93)	355,4 (13.99)	358,2 (14.10)	365,4 (14.39)	mm (in) A
	281,8 (11.09)	284,8 (11.21)	285,3 (11.23)	290,3 (11.43)	293,3 (11.55)	284,2 (11.19)	284,8 (11.21)	286,3 (11.27)	288 (11.34)	289,1 (11.38)	290,3 (11.43)	291,7 (11.48)	295,3 (11.63)	mm (in) B

MVP30

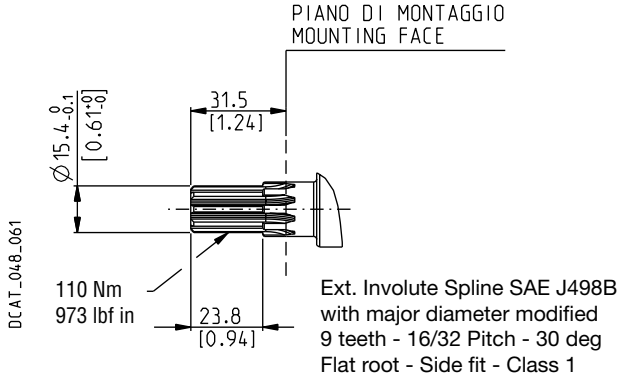
DRIVE SHAFTS

SAE "A" SPLINE

03

Mounting face refers to flange code **S1**

0

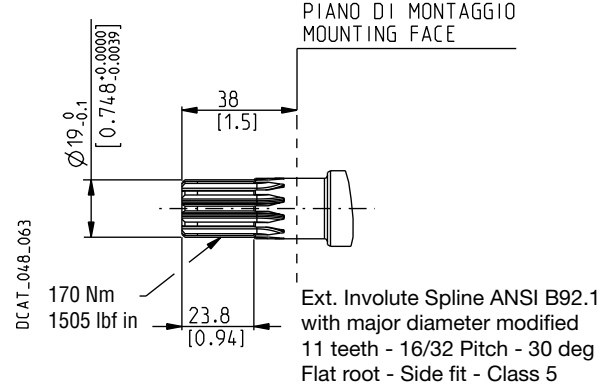


SAE SPLINE

07

Mounting face refers to flange code **S1**

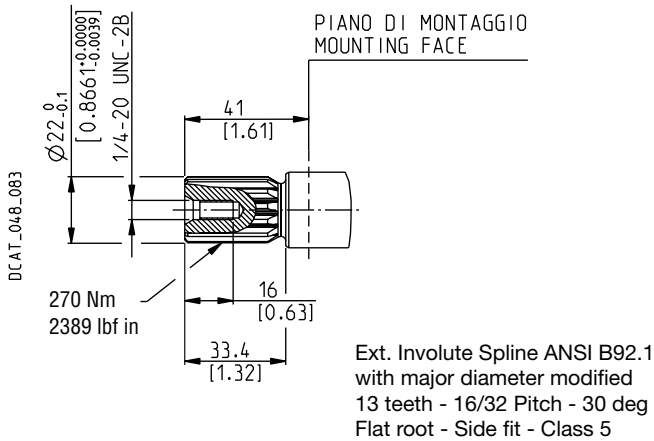
0



SAE "B" SPLINE

04

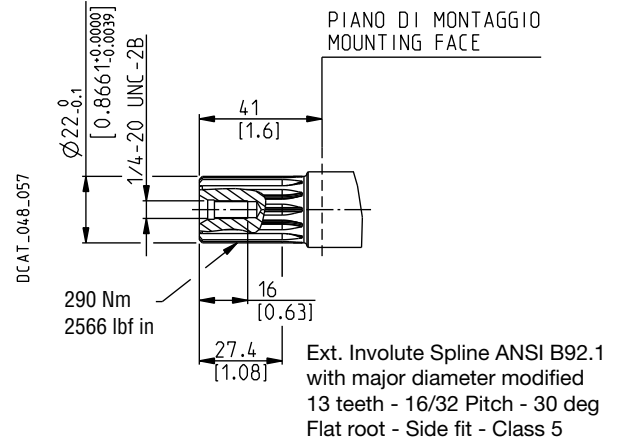
Mounting face refers to flange code **S5**



SAE "B" SPLINE

4R

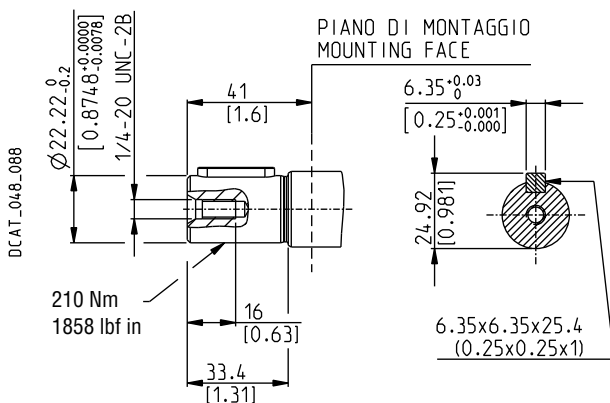
Mounting face refers to flange code **S5**



SAE "B" STRAIGHT

32

Mounting face refers to flange code **S5**



For different drive shafts, please consult our pre-sales department.

Replaces: 05/10.2014

0 06/06.2020

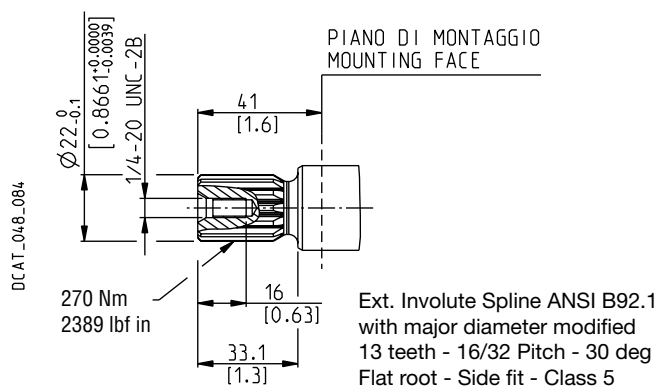
MVP48

DRIVE SHAFTS

SAE "B" SPLINE

04

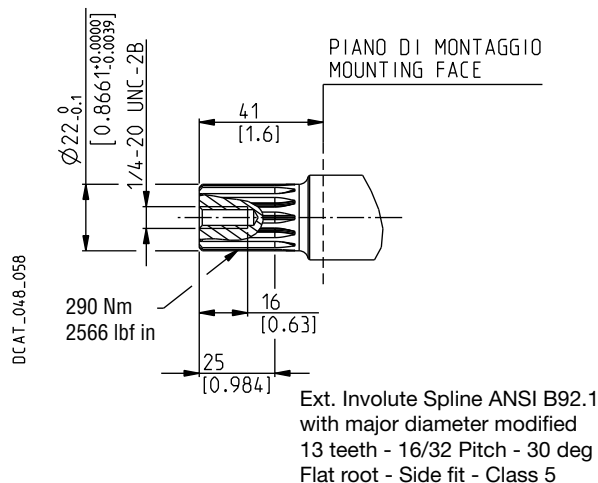
Mounting face refers to flange code **S5**



SAE "B" SPLINE

4R

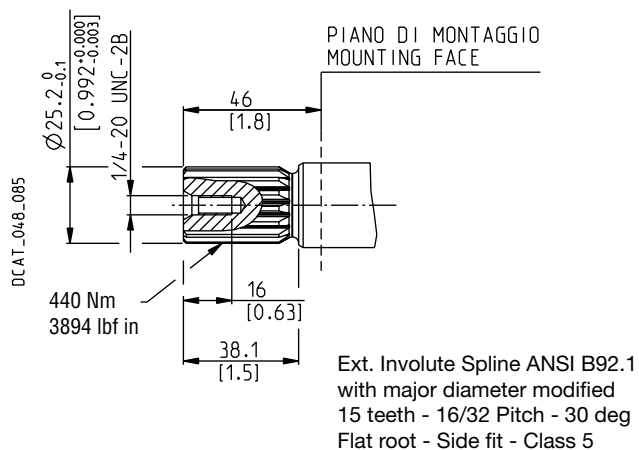
Mounting face refers to flange code **S5**



SAE "BB" SPLINE

05

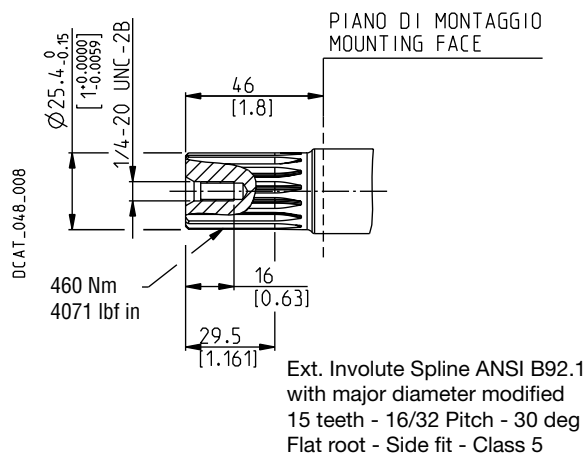
Mounting face refers to flange code **S5**



SAE "BB" SPLINE

5R

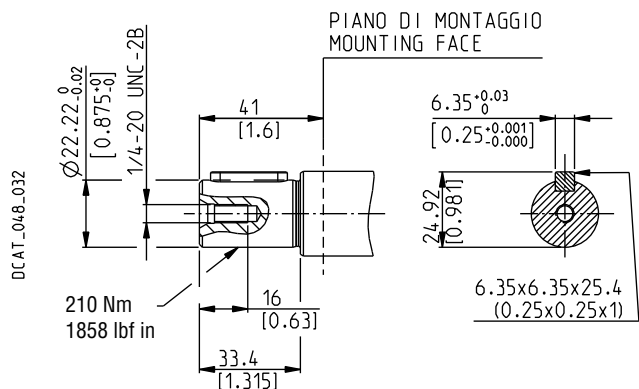
Mounting face refers to flange code **S5**



SAE "B" STRAIGHT

32

Mounting face refers to flange code **S5**



For different drive shafts, please consult our pre-sales department.

MVP60

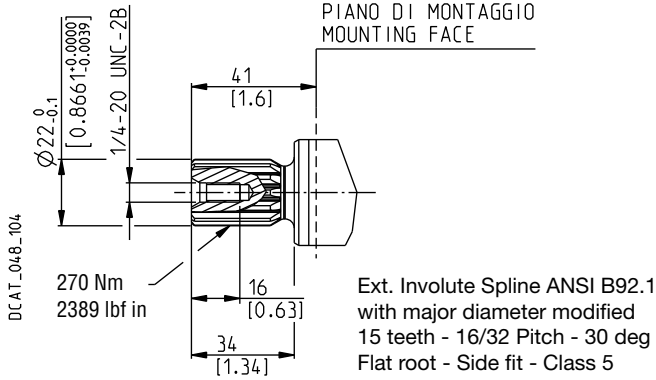
DRIVE SHAFTS

SAE "B" SPLINE

04

Mounting face refers to flange code **S5**

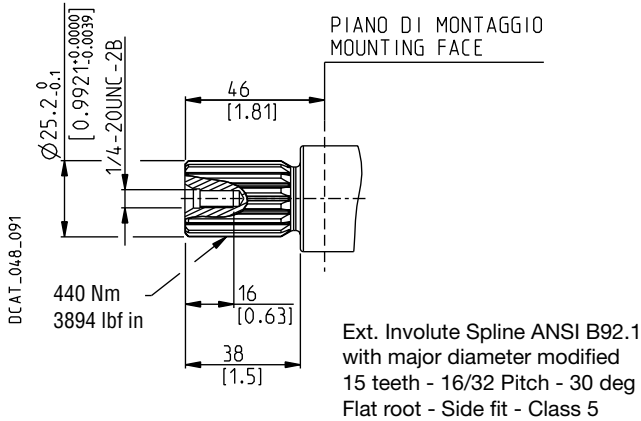
0



SAE "BB" SPLINE

05

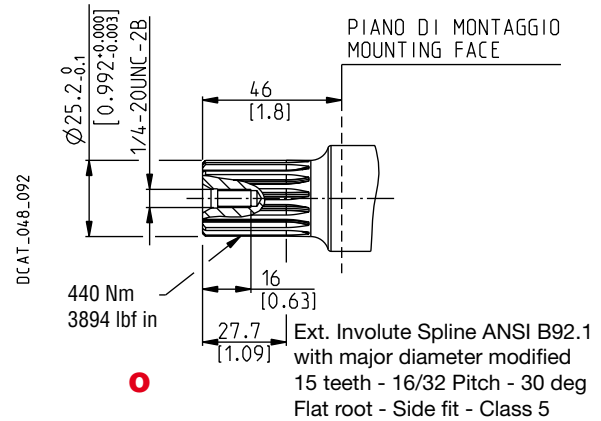
Mounting face refers to flange code **S5**



SAE "BB" SPLINE

5R

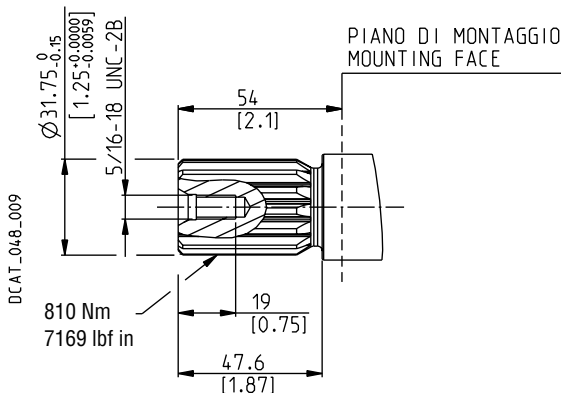
Mounting face refers to flange code **S5**



SAE "C" SPLINE

06

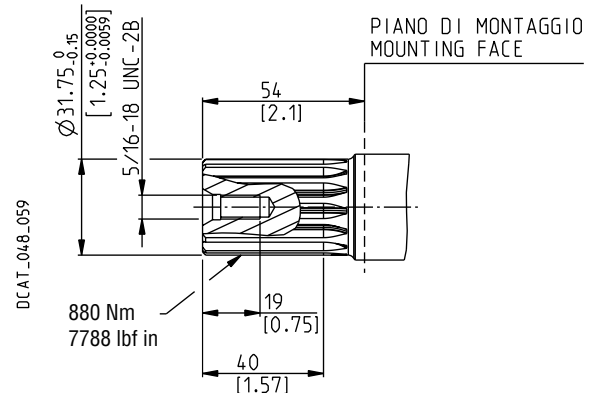
Mounting face refers to flange code **S7** and **S8**



SAE "C" SPLINE

6R

Mounting face refers to flange code **S7** and **S8**



For different drive shafts, please consult our pre-sales department.

Replaces: 05/10.2014

0 06/06.2020

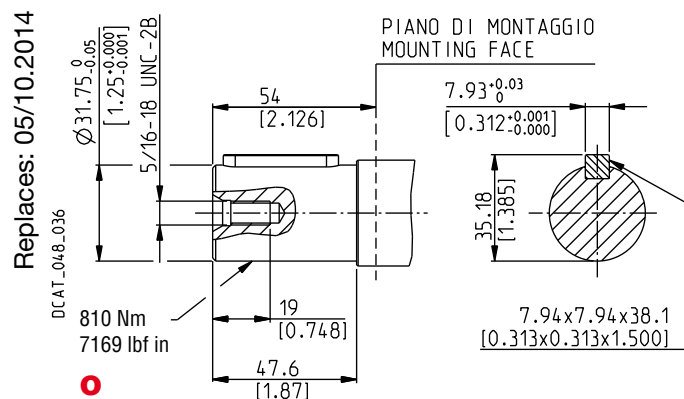
MVP60

DRIVE SHAFTS

SAE "C" STRAIGHT

34

Mounting face refers to flange code **S8**



0 06/06.2020

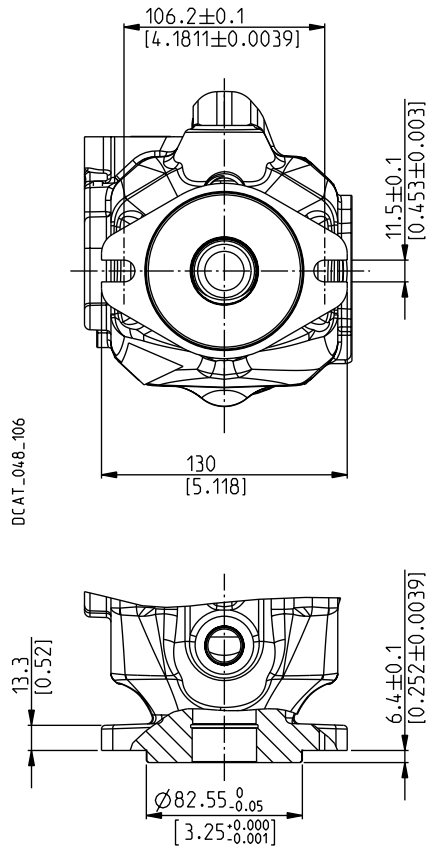
MOUNTING FLANGES AND TABLE OF COMPATIBILITY

SAE "A" 2 HOLES

S1

Conforms to SAE J744

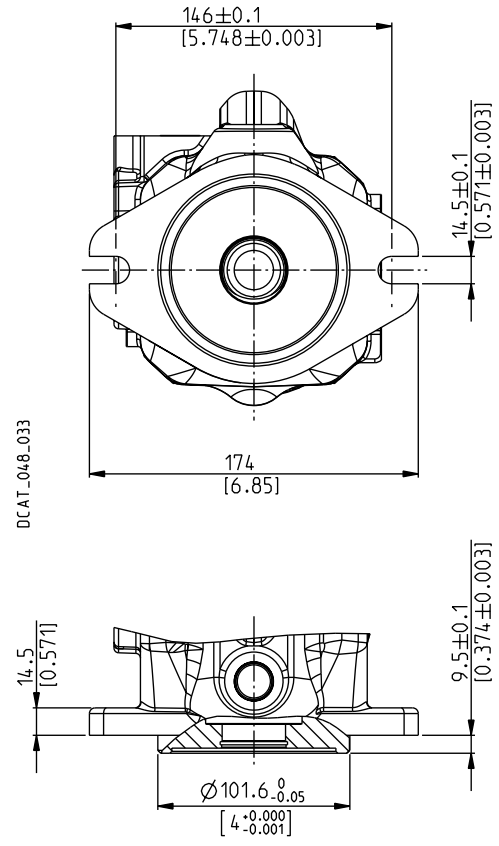
O



SAE "B" 2 HOLES

S5

Conforms to SAE J744



Replaces: 05/10.2014

DRIVE SHAFTS See page 32

Pump type	03	07	04
MVP30	X	X	X

X Available combination

DRIVE SHAFTS See page 32 ÷ 35

Pump type	04	4R	32	05	5R	06	6R	34
MVP30	X	X	X					
MVP48	X	X	X	X	X			
MVP60	X			X	X	X	X	X

X Available combination

06/06.2020 **O**

MOUNTING FLANGES AND TABLE OF COMPATIBILITY

SAE "C" 2 HOLES

S7

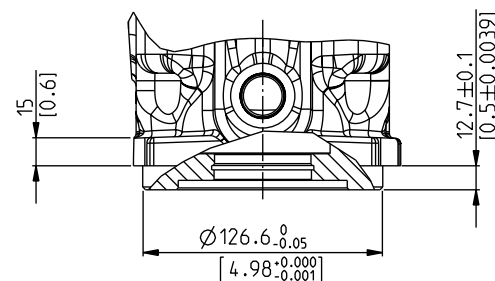
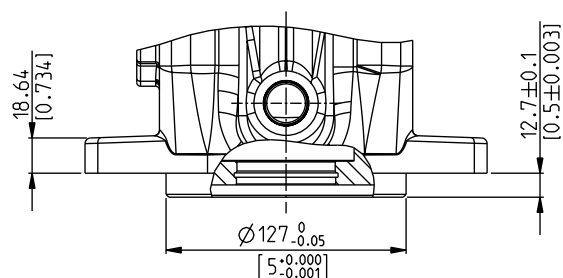
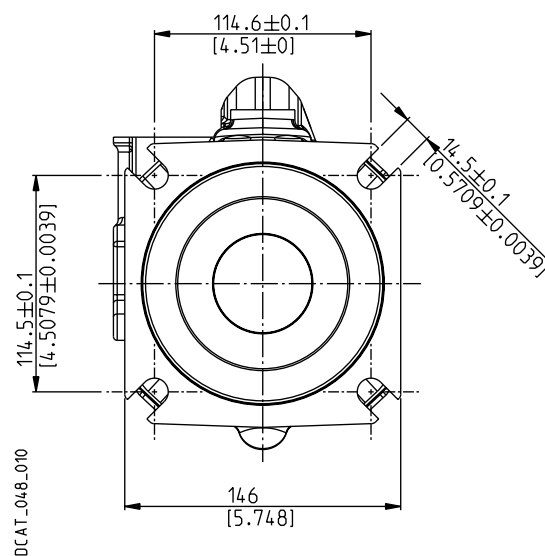
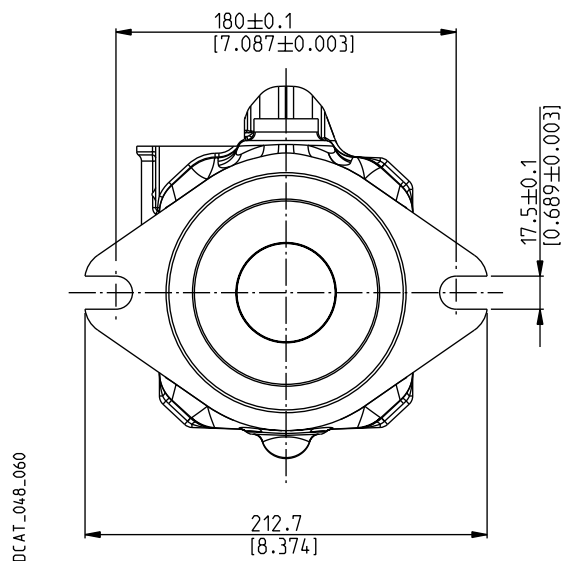
Conforms to SAE J744

SAE "C" 4 HOLES

S8

Conforms to SAE J744

Replaces: 05/10.2014



DRIVE SHAFTS See page 34 ÷ 35

Pump type	04	05	5R	06	6R	34
MVP60	X	X	X	X	X	X

X Available combination

DRIVE SHAFTS See page 34 ÷ 35

Pump type	04	05	5R	06	6R	34
MVP60	X	X	X	X	X	X

X Available combination

06/06.2020

PORTS TYPE

Ports type	INLET / OUTLET PORTS						DRAIN PORTS		LOAD SENSING PORTS (X)		KP20 / PHP20 GEAR PUMPS	
	Split SSM		Split SSS		SAE ODT		Gas BSPP	SAE ODT (●)	Gas BSPP (●)	SAE ODT	Gas BSPP	SAE ODT
	IN	OUT	IN	OUT	IN	OUT	D1 - D2 - D3 - D4		X	X	OUT	OUT
MVP30	MD	MB	SD	SB	OG (■)	OD (■)	—	OB	GA	03	GD	OC
MVP48	ME	MC	SE	SC	OH (■)	OF (■)	GD	OC	GA	03	GD	OC
MVP60	MF	MC	SF	SC	MF	OF	GD	OC	GA	03	GD	OC

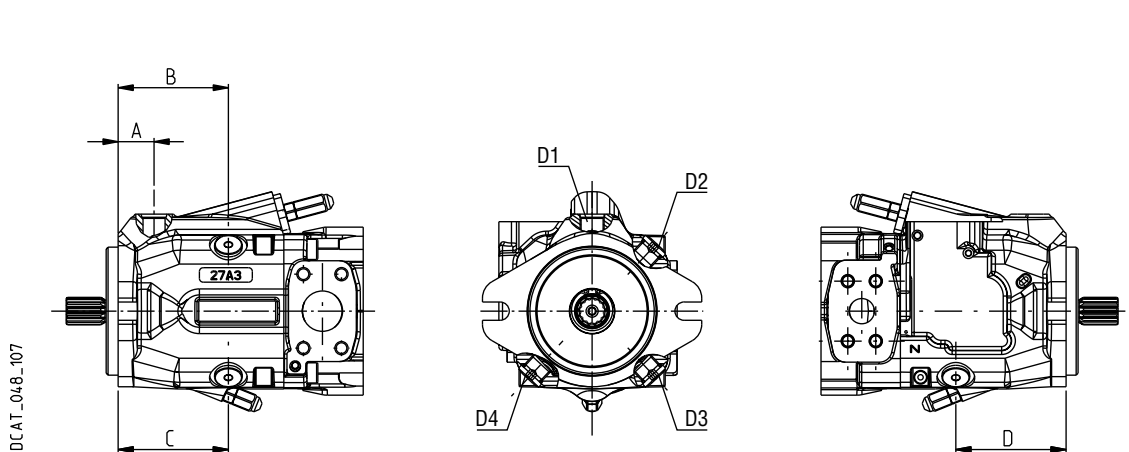
(X) Load sensing port. For more information please consult our pre-sales department.

(●) Standard.

(■) Only for rear ports.

Replaces: 03/06.2011

DRAIN PORTS POSITION



Pump type	A	B	C	D
	mm (in)	mm (in)	mm (in)	mm (in)
MVP30	28,5 (1.12)	87,5 (3.44)	87,5 (3.44)	87,5 (3.44)
MVP48	36 (1.42)	97 (3.82)	—	97 (3.82)
MVP60	37 (1.46)	113 (4.45)	99 (3.90)	99 (3.90)

06/06.2020

PORTS SIZES



Tightening torque for low pressure side port



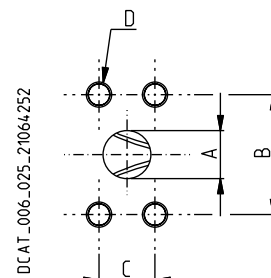
Tightening torque for high pressure side port

SAE FLANGED PORTS J518 - Standard pressure series 3000 psi - Code 61

SSM

Metric thread ISO 60° conforms to ISO/R 262

CODE	Nominal size	A	B	C	D		
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
MB	3/4"	20 (0.79)	47,6 (1.87)	22,2 (0.87)	M 10 17 (0.67)	—	45 ^{+2,5} (398 ÷ 420)
MC	1"	25,4 (1.00)	52,4 (2.06)	26,2 (1.03)	M 10 17 (0.67)	—	30 ^{+2,5} (266 ÷ 288)
MD	1" 1/4	32 (1.26)	58,7 (2.31)	30,2 (1.19)	M 10 17 (0.67)	20 ⁺¹ (177 ÷ 186)	—
ME	1" 1/2	38,1 (1.50)	69,8 (2.75)	35,7 (1.41)	M 12 20 (0.79)	30 ^{+2,5} (266 ÷ 288)	—
MF	2"	51 (2.01)	77,8 (3.06)	42,9 (1.69)	M 12 20 (0.79)	30 ^{+2,5} (266 ÷ 288)	—



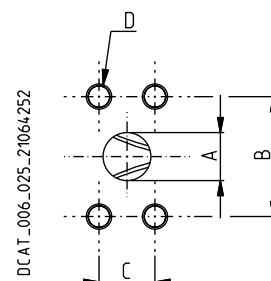
DCAT_006_025_21064252

SAE FLANGED PORTS J518 - Standard pressure series 3000 psi - Code 61

SSS

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

CODE	Nominal size	A	B	C	D		
		mm (in)	mm (in)	mm (in)	Thread Depth mm (in)	Nm (lbf in)	Nm (lbf in)
SB	3/4"	20 (0.79)	47,6 (1.87)	22,2 (0.87)	3/8 - 16 UNC-2B 17 (0.67)	—	30 ^{+2,5} (266 ÷ 288)
SC	1"	25,4 (1.00)	52,4 (2.06)	26,2 (1.03)	3/8 - 16 UNC-2B 17 (0.67)	—	35 ^{+2,5} (310 ÷ 332)
SD	1" 1/4	32 (1.26)	58,7 (2.31)	30,2 (1.19)	7/16 - 14 UNC-2B 17 (0.67)	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 20 (0.79)	30 ^{+2,5} (266 ÷ 288)	—
SF	2"	51 (2.01)	77,8 (3.06)	42,9 (1.69)	1/2 - 13 UNC-2B 20 (0.79)	30 ^{+2,5} (266 ÷ 288)	—



DCAT_006_025_21064252

03/06.2011

PORTS SIZES



Tightening torque for low pressure side port

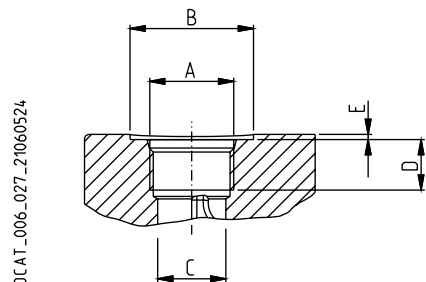


Tightening torque for high pressure side port

SAE STRAIGHT THREAD PORTS J514

ODT

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



Replaces: 03/06.2011

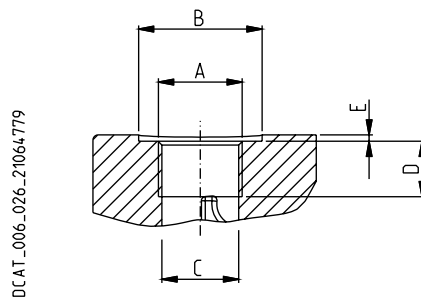
CODE	Nominal size	A	Ø B	Ø C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
03 (X)	1/4"	7/16" - 20 UNF - 2B	—	9,5 (0.37)	—	—	—	12 ⁺¹ (106 ÷ 115)
0B (●)	1/2"	3/4" - 16 UNF - 2B	33 (1.30)	17 (0.67)	—	1 (0.04)	20 ⁺¹ (177 ÷ 186)	—
0C (●)	5/8"	7/8" - 14 UNF - 2B	35 (1.38)	20,5 (0.81)	—	2 (0.08)	30 ^{+2,5} (266 ÷ 288)	—
0C (◆)			34 (1.34)	20,5 (0.81)	17 (0.67)	0,5 (0.02)	—	70 ⁺⁵ (620 ÷ 664)
0D	3/4"	1 1/16" - 12 UNF - 2B	—	—	20 (0.79)	—	—	120 ⁺¹⁰ (1062 ÷ 1151)
0F	1"	1 5/16" - 12 UNF - 2B	—	30,5 (1.20)	20 (0.79)	—	—	170 ⁺¹⁰ (1505 ÷ 1593)
0G	1" 1/4	1 5/8" - 12 UNF - 2B	—	—	20 (0.79)	—	70 ⁺⁵ (620 ÷ 664)	—
0H	1" 1/2	1 7/8" - 12 UNF - 2B	—	45 (1.77)	20 (0.79)	—	100 ⁺⁵ (885 ÷ 929)	—

(X) = Load sensing port - (●) = Drain port - (◆) = KP20 / PHP20 outlet port

GAS STRAIGHT THREAD PORTS

BSPP

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



06/06.2020

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	30 (1.18)	19 (0.75)	17 (0.67)	2 (0.08)	20 ⁺¹ (177 ÷ 186)	—
GD (◆)			—	19 (0.75)	17 (0.67)	—	—	50 ^{+2,5} (443 ÷ 465)

(X) = Load sensing port - (●) = Drain port - (◆) = KP20 / PHP20 outlet port

PRESSURE COMPENSATOR

RPO

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

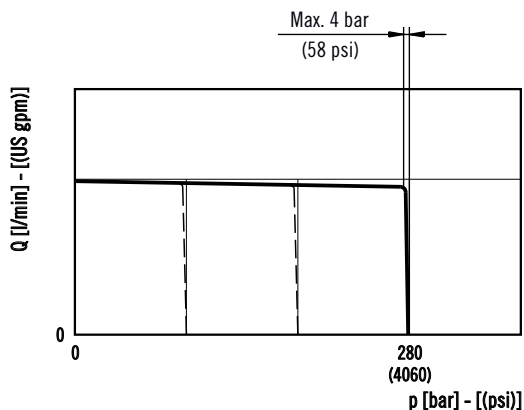
Compensator type	Pump type	Pressure setting range	Standard setting
		bar (psi)	bar (psi)
RPO	MVP30-28	80 ÷ 280 (1160 ÷ 4060)	280 (4060)
	MVP30-34	80 ÷ 250 (1160 ÷ 3625)	250 (3625)
	MVP48-45	80 ÷ 280 (1160 ÷ 4060)	280 (4060)
	MVP48-53	80 ÷ 250 (1160 ÷ 3625)	250 (3625)
	MVP60-60	80 ÷ 280 (1160 ÷ 4060)	280 (4060)
	MVP60-72	80 ÷ 280 (1160 ÷ 4060)	280 (4060)
	MVP60-84	80 ÷ 250 (1160 ÷ 3625)	250 (3625)

NOTES

For more information, please consult our pre-sales department.

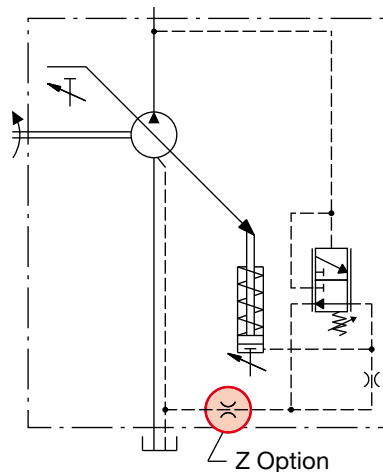
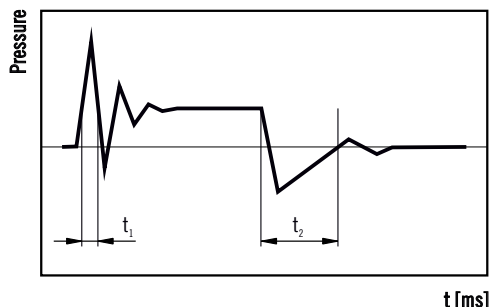
OPERATING CURVES

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



RESPONSE AND RECOVERY TIME

According to SAE J745 (using outlet pressure).



Z OPTION

Damping restrictor for critical applications. In case of system instability or pressure oscillations, the additional 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.

REMOTE CONTROL

For remote pressure compensator LS3 see page 46.

	t_1	t_2
Pump type	Response time [ms] (off stroke)	Recovery time [ms] (on stroke)
MVP30	46	150
MVP48	48	150
MVP60	50	150

05/10.2014

PRESSURE COMPENSATOR

RP1

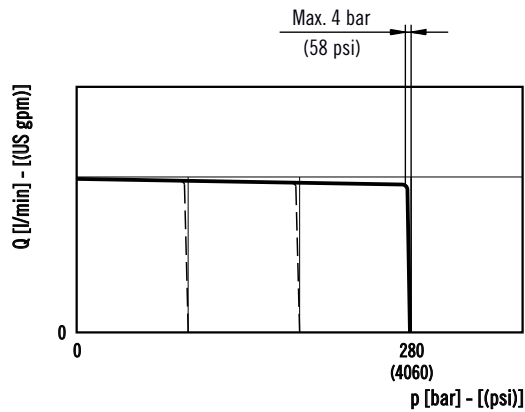
Regulates the pump displacement automatically to maintain the pressure below the fixed pre-adjusted limit.
Designed to work at high frequency ≥ 2 cycle/min and/or at pressure > 280 bar (4060 psi).

NOTES

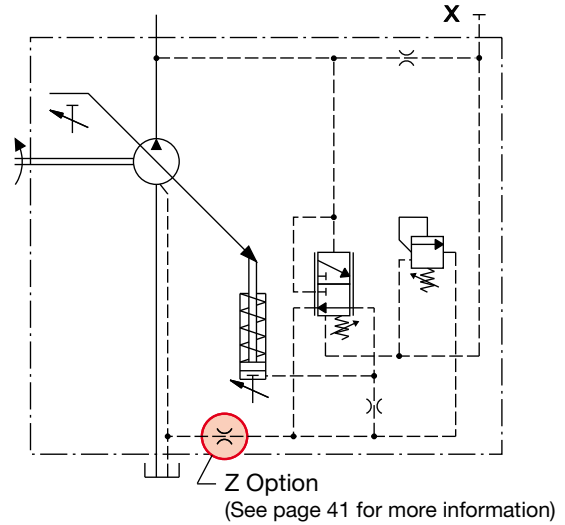
X: Load-sensing port. Dimensions at page 38 ÷ 40.
For more information, please consult our pre-sales department.

OPERATING CURVES

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

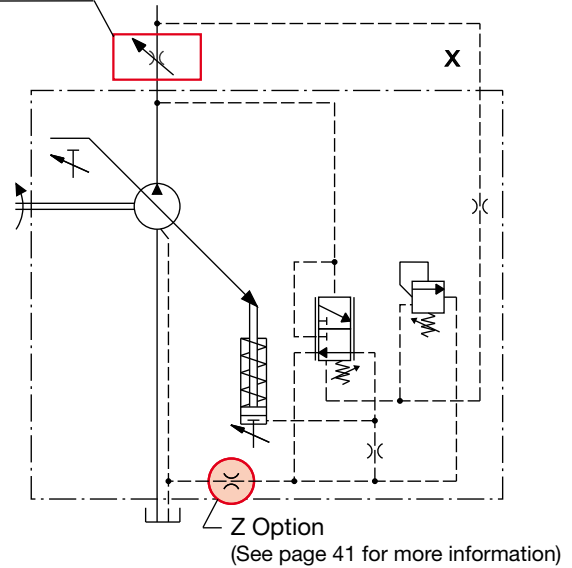


RP1



RP1 - LS2 (with flow control)

Not included
in supply



05/10.2014

DUAL SETTING PRESSURE COMPENSATOR

RP2

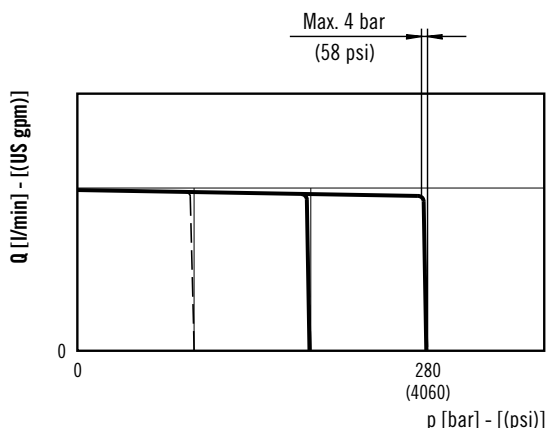
Regulates the pump displacement automatically to maintain the pressure below two fixed pre-adjusted limits. The electrically piloted valve allows to switch between the two different limits.

NOTES

X: Load-sensing port. Dimensions at page 38 ÷ 40.
Connector: Standard type DIN 43650.
For other connectors and more information please consult our pre-sales department.

OPERATING CURVES

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

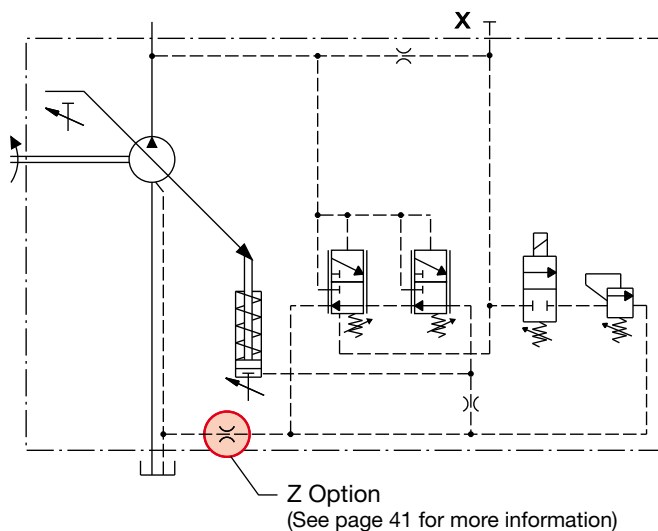


VALVE FEATURES



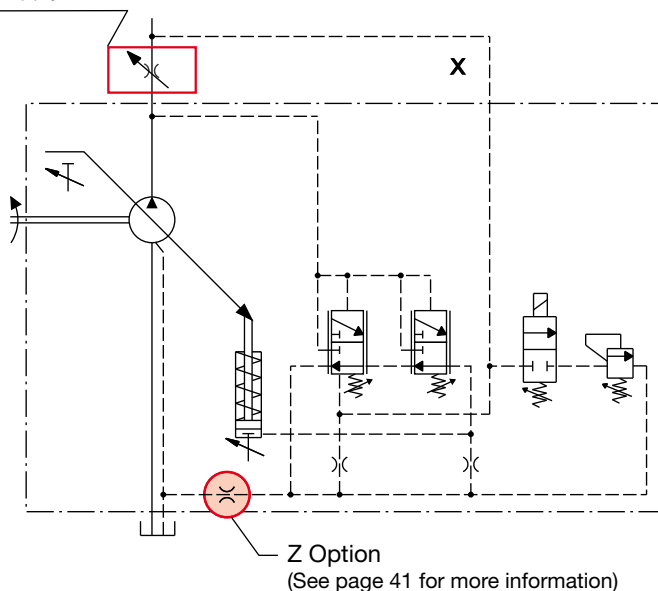
Valve code	Arrangement	Voltage
1	Normally closed	12 V DC
2	Normally closed	24 V DC
6	Normally open	12 V DC
7	Normally open	24 V DC

RP2



RP2 - LS2 (with flow control)

Not included in supply



Replaces: 05/10.2014

06/06.2020

ELECTRO-PROPORTIONAL PRESSURE COMPENSATOR

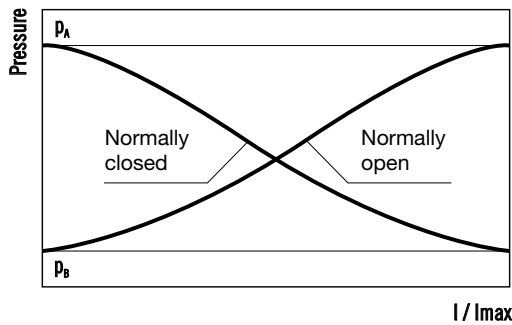
PEC

Regulates the pump displacement automatically to maintain the pressure below the variable limit set through a command current signal.

NOTES

X: Load-sensing port. Dimensions at page 38 ÷ 40.
For more information please consult our pre-sales department.

OPERATING CURVES

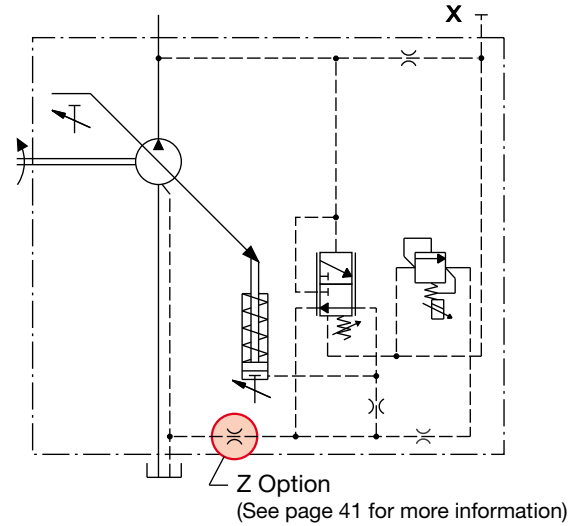


VALVE FEATURES

Valve code	Arrangement	Voltage
1	Normally closed	12 V DC
2	Normally closed	24 V DC
6	Normally open	12 V DC
7	Normally open	24 V DC

Connector type	DIN 43650/		DEUTSCH DT04-2P	
Voltage	12 V DC	24 V DC	12 V DC	24 V DC
Power	18 W	19 W	18 W	19 W
Resistance @ 20 °C (68 °F)	8 Ω	30 Ω	8 Ω	30 Ω
Limit current	1500 mA	800 mA	1500 mA	800 mA
Dither frequency	200 Hz			
Operating temperature	-40 ÷ 100 °C (-40 ÷ 212 °F)			

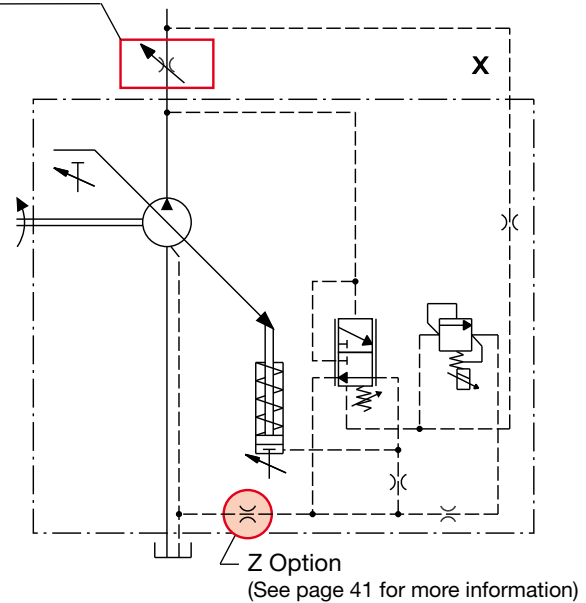
PEC



Replaces: 05/10.2014

PEC - LS2 (with flow control)

Not included
in supply



06/06.2020

ELECTRO-PROPORTIONAL PRESSURE COMPENSATOR PLUS ANGULAR SENSOR

PECA

Regulates the pump displacement automatically to maintain the pressure below the variable limit set through a command current signal. The swivel angular sensor converts the actual position of the swashplate into a voltage output signal that can be used for different purposes. This signal and the proportional relief valve allow to realise the following different control logics by means of an external control unit:

- Variable maximum pressure limiter
- Electronic flow compensator with variable setting (variable Load-Sensing)
- Electronic torque limiter with variable torque setting
- Power limiter
- Flow control
- Working e-modes

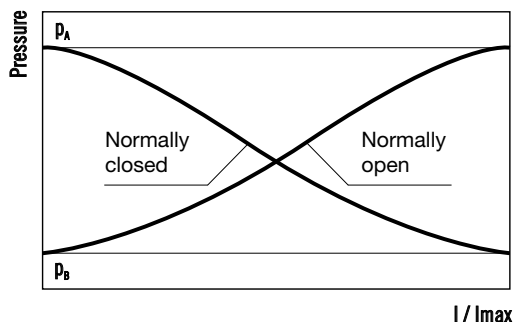
NOTES

Not available with MVP30.

X: Load-sensing port. Dimensions at page 38 ÷ 40.

For more information please consult our pre-sales department.

OPERATING CURVES

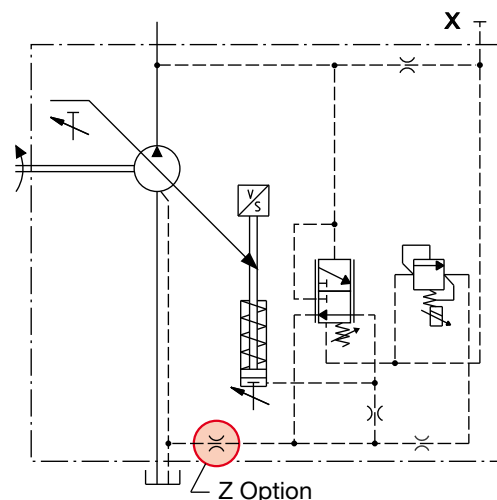


VALVE FEATURES

Valve code	Arrangement	Voltage
1	Normally closed	12 V DC
2	Normally closed	24 V DC
6	Normally open	12 V DC
7	Normally open	24 V DC

Connector type	DIN 43650	DEUTSCH DT04-2P
Voltage	12 V DC 24 V DC	12 V DC 24 V DC
Power W	18 W 19 W	18 W 19 W
Resistance @ 20 °C (68 °F)	8 Ω 30 Ω	8 Ω 30 Ω
Limit current	1500 mA 800 mA	1500 mA 800 mA
Dither frequency	200 Hz	
Operating temperature	-40 ÷ 100 °C (-40 ÷ 212 °F)	
Angular sensor connector type	DEUTSCH DTM04-4P	

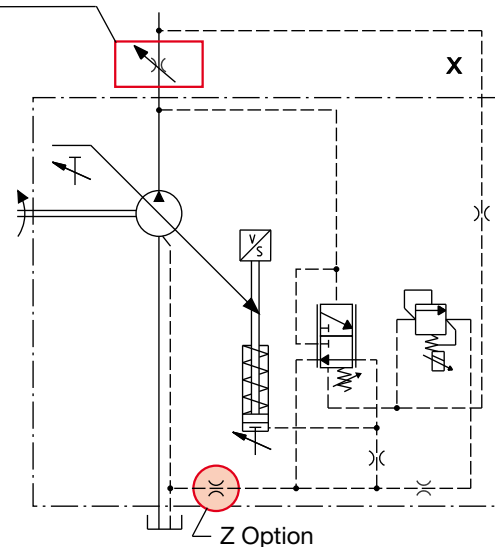
PECA



(See page 41 for more information)

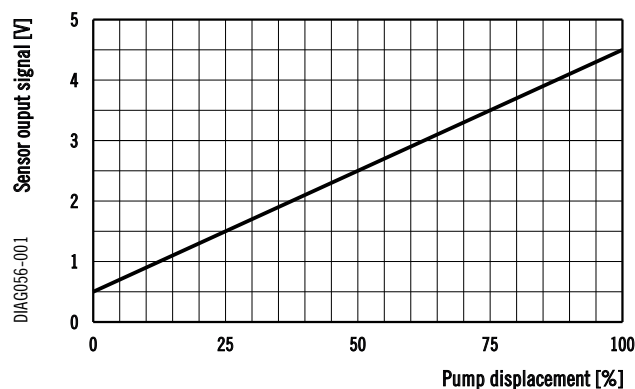
PECA - LS2 (with flow control)

Not included in supply



(See page 41 for more information)

ANGULAR SENSOR



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 bar (psi)	Standard setting bar (psi)
LS0 (■)	RPO		
LS2 (◆)	RPO	12 ÷ 40 (174 ÷ 580)	14 (203)
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 $\approx 1,3 \div 1,5$ 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).

NOTES

X: Load-sensing port. Dimensions at page 38 ÷ 40.

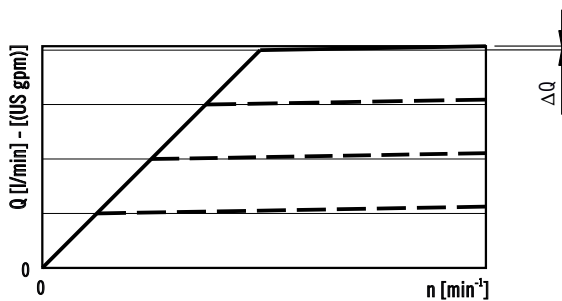
Available without pressure compensator RP.

For more information please consult our pre-sales department.

OPERATING CURVES

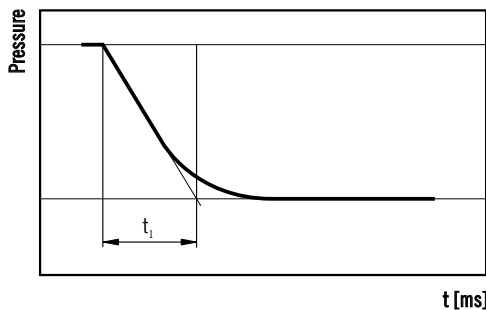
Curves have been obtained at the speed of 1500 min^{-1} and oil temperature 50°C (122°F).

Curve at variable speed

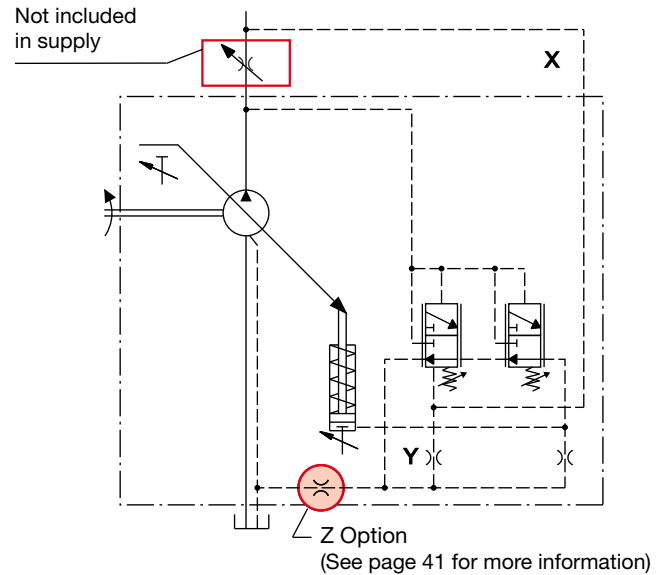


RESPONSE TIME

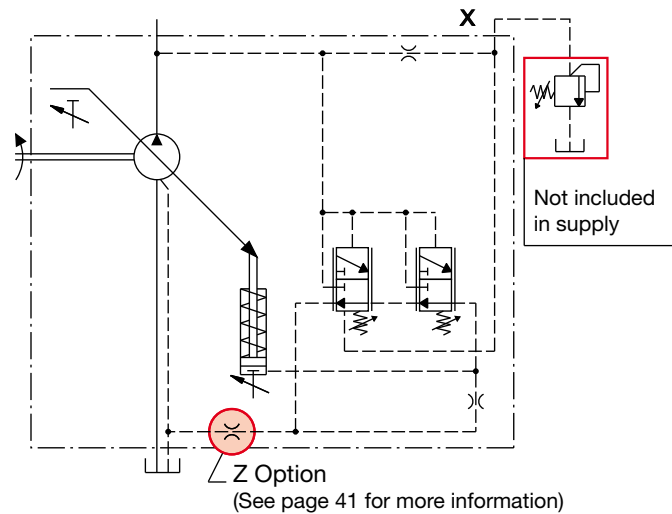
According to SAE J745 (using outlet pressure).



LS0 (Bleed open) - LS2 (Bleed closed)



LS3 - Remote pressure compensator



ΔQ max

Pump type	l/min (US gpm)
MVP 30	0,9 (0.24)
MVP 48	1,7 (0.45)
MVP 60	2,5 (0.66)

t₁

Pump type	Response time [ms] (off stroke)
MVP 30	120
MVP 48	120
MVP 60	120

According to SAE J745 (using outlet pressure)

05/10.2014

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)
MVP30	45 (398)	7.1 (9,5)
MVP48	61 (540)	9.6 (12,9)
MVP60	97 (859)	15.2 (20,4)

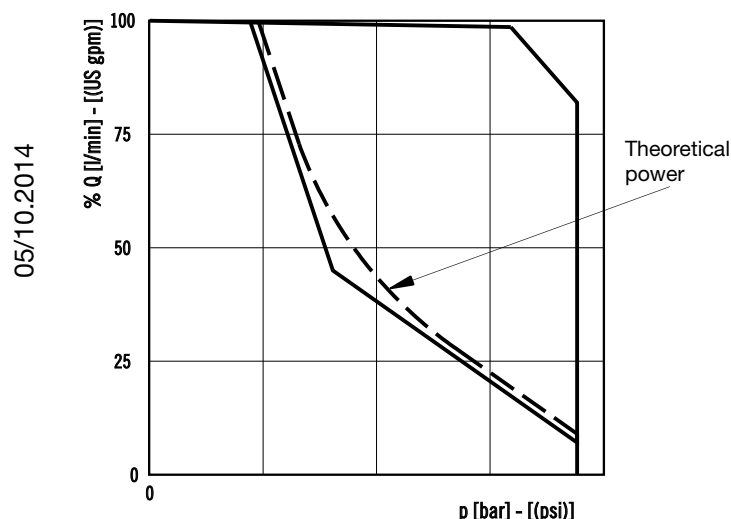
(●) @ 1500 min⁻¹

For lower torque setting values, the regulator limits the maximum working pressure to a value lower than the standard setting 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 power and speed [eg. 10 kW (13.4 HP) at 1500 min⁻¹].

NOTES

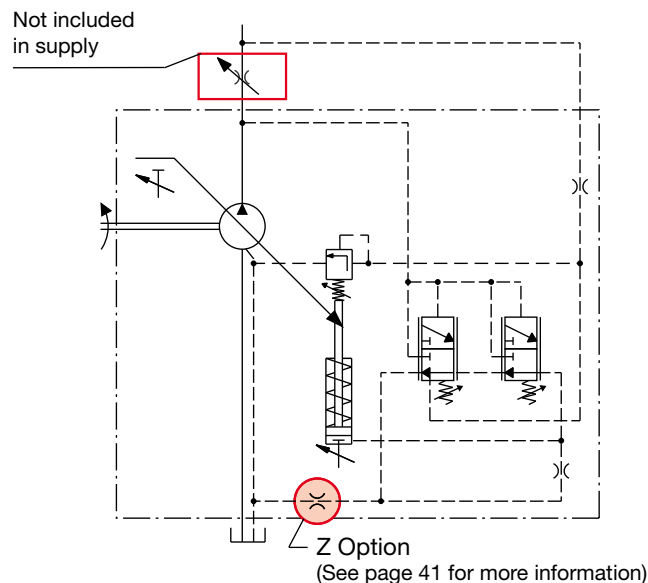
X: Load-sensing port. Dimensions at page 38 ÷ 40.
Available without pressure compensator RP.
For more information please consult our pre-sales department.

OPERATING CURVES



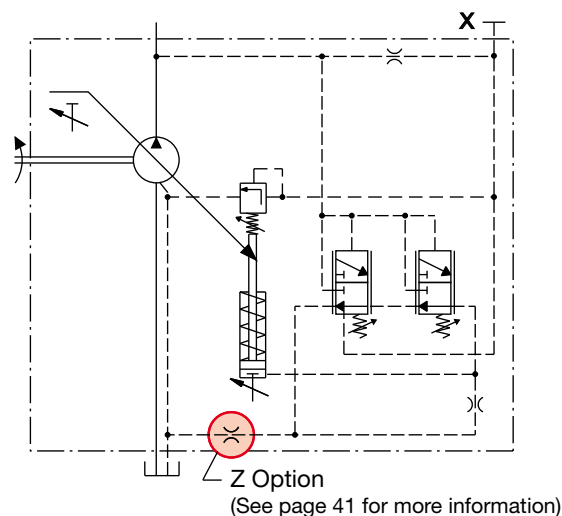
RN0 - Standard

Torque limitation for closed center valve.



RN1 - Internal pilot

Torque limitation for open center valve.



DUAL SETTING TORQUE LIMITER

RN2

Regulates the pump displacement automatically to maintain the torque below two fixed pre-adjusted limits. The electrically piloted valve allows to switch between the two different limits.

RN2-LS0 / RN2-LS2

For LS2 configuration Y is plugged.

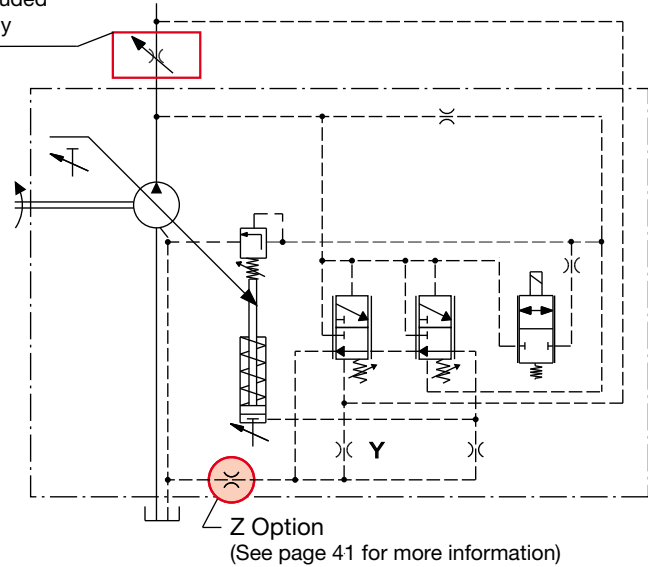
Pump type	Min. torque	Min. power (●)
	Nm (lbf in)	kW (HP)
MVP30	45 (398)	7.1 (9,5)
MVP48	61 (540)	9.6 (12,9)
MVP60	97 (859)	15.2 (20,4)

(●) @ 1500 min⁻¹

For lower torque setting values, the regulator limits the maximum working pressure to a value lower than the standard setting 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 power and speed [eg. 10 kW (13.4 HP) at 1500 min⁻¹].

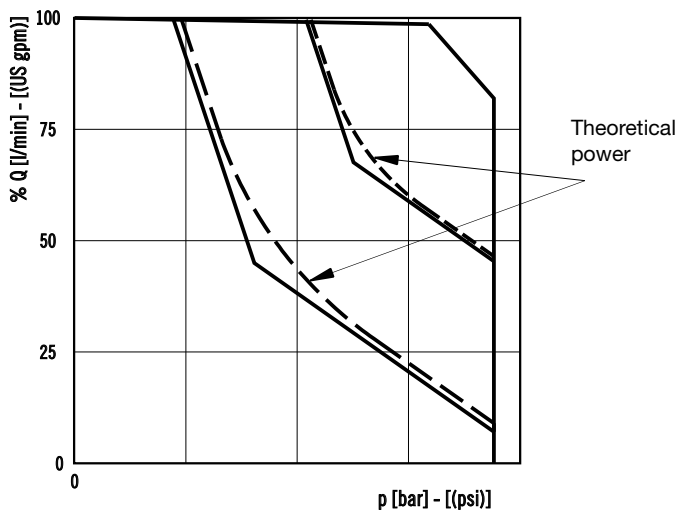
Not included in supply



NOTES

X: Load-sensing port. Dimensions at page 38 ÷ 40.
For more information please consult our pre-sales department.

OPERATING CURVES



VALVE FEATURES

Valve code	Arrangement	Voltage
1	Normally closed	12 V DC
2	Normally closed	24 V DC
6	Normally open	12 V DC
7	Normally open	24 V DC

Connector type	DIN 43650 DEUTSCH DT04-2P
----------------	------------------------------

05/10.2014

HIGH PERFORMANCE TORQUE LIMITER

RN3

Regulates the pump displacement according to the system pressure, to maintain the pre-adjusted torque value and protect the prime mover from overload.

This version is optimized for LS systems. With the standard torque limiter RN0, in case of a high flow through the LS main valve the torque absorbed by the pump can be slightly lower than the pre-adjusted torque value, resulting in a lower flow. The RN3 version grants the pre-adjusted torque value even at high flow through the LS main valve.

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)
MVP30	45 (398)	7.1 (9,5)
MVP48	61 (540)	9.6 (12,9)
MVP60	97 (859)	15.2 (20,4)

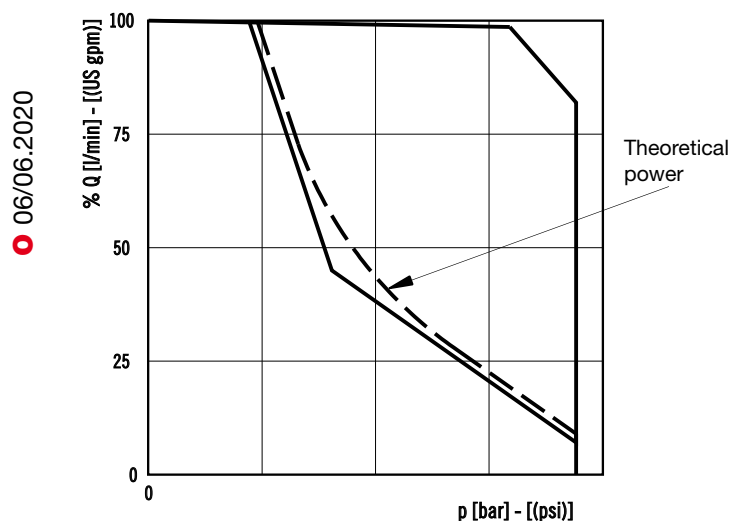
(●) @ 1500 min⁻¹

For lower torque setting values, the regulator limits the maximum working pressure to a value lower than the standard setting 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 power and speed [eg. 10 kW (13.4 HP) at 1500 min⁻¹].

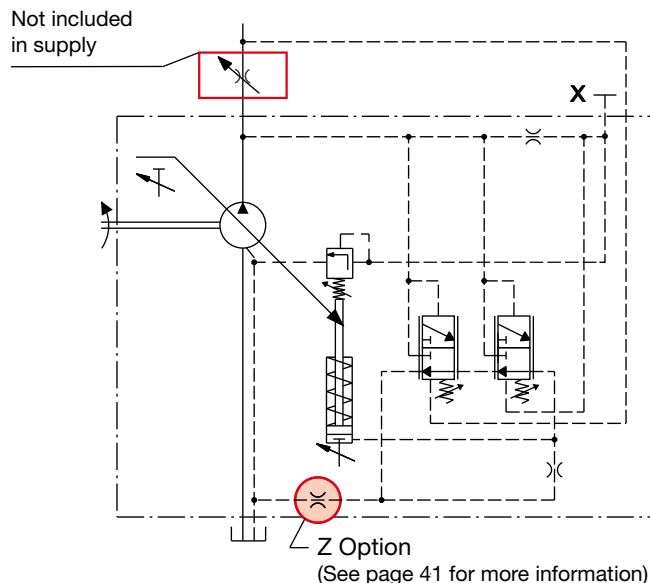
NOTES

X: Load-sensing port. Dimensions at page 38 ÷ 40.
Available with or without pressure compensator RP.
For more information please consult our pre-sales department.

OPERATING CURVES



RN3 - Special version

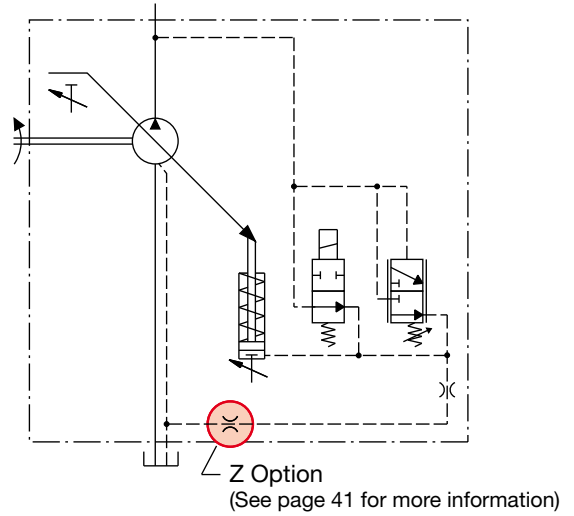
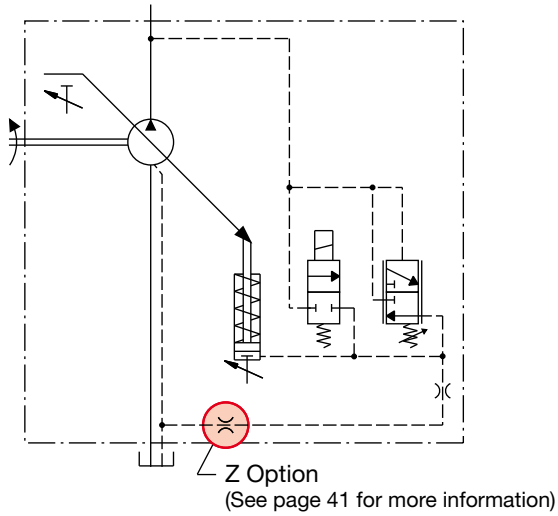


UNLOADING VALVE

U ..

NC (normally closed)

NA (normally open)



Replaces: 05/10.2014

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

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

NOTES

Available without pressure compensator RP.

Connector type: DIN 43650.

For other connectors and more information please consult our pre-sales department.

VALVE FEATURES ●

Valve code	Arrangement	Voltage
U1	Normally closed	12 V DC
U2	Normally closed	24 V DC
U6	Normally open	12 V DC
U7	Normally open	24 V DC

● 06/06.2020

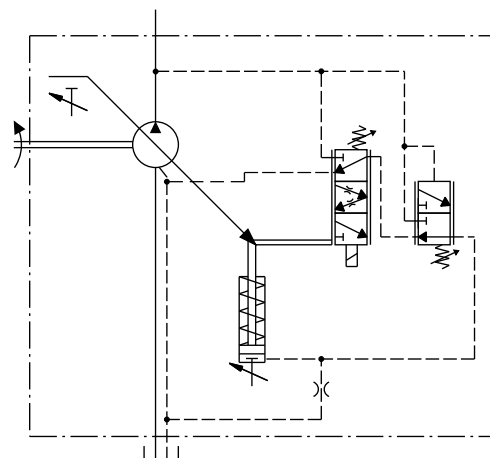
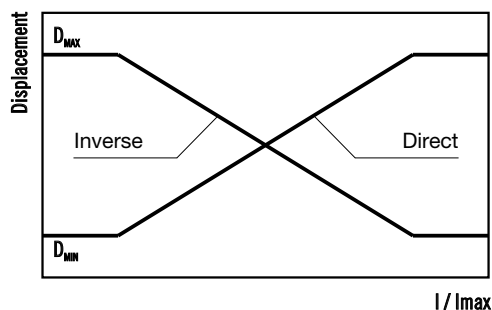
ELECTRO-PROPORTIONAL DISPLACEMENT COMPENSATOR

DEC

Regulates the pump displacement automatically to maintain it below the variable limit set through a command current signal.

DEC

OPERATING CURVES



VALVE FEATURES

Valve code	Arrangement	Voltage
1	Inverse	12 V DC
2	Inverse	24 V DC
6	Direct	12 V DC
7	Direct	24 V DC

Connector type	DIN 43 650		DEUTSCH DT04-2P	
Voltage	12 V DC	24 V DC	12 V DC	24 V DC
Power	33 W		33 W	
Resistance @ 20 °C (68 °F)	4,4 Ω	17,4 Ω	4,3 Ω	17,5 Ω
Limit current	1700 mA	850 mA	1700 mA	850 mA
Dither frequency	150 Hz		150 Hz	
Operating temperature	-40 ÷ 100 °C (-40 ÷ 212 °F)		-40 ÷ 100 °C (-40 ÷ 212 °F)	

06/06.2020

NOTES

06/06.2020

MULTIPLE PUMPS WITH THROUGH DRIVE

THROUGH DRIVE

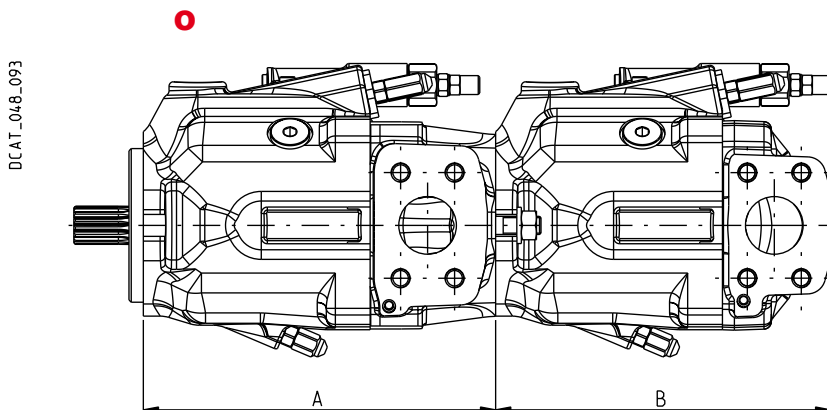
MVP through drive axial piston pumps offer the flexibility to obtain different groups able to supply several hydraulic systems. The operating characteristics of each assembled pumps are the same as the corresponding single pumps according to the following conditions:

- 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
$\eta_{hm} = \eta_{hm}(V, \Delta p, n)$		Hydro-mechanical efficiency

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

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.



A: Front section (through drive)

B: MVP Rear pump (the same of single pump with side or rear ports)

Gear rear pump are also available, please see the respective technical catalogues.

A		
Pump type	Flanged for	Code
MVP30	SAE A	AS1
	SAE B	AS5
MVP48	SAE B	AS5
MVP60	SAE B	AS5

MVP30

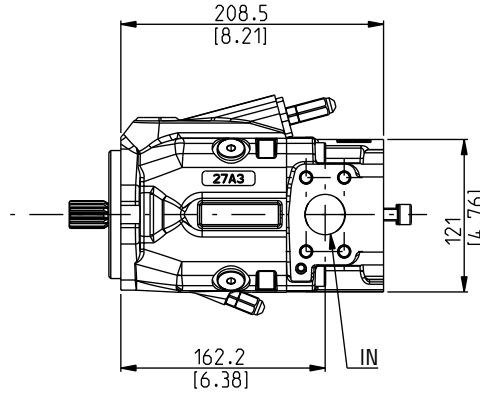
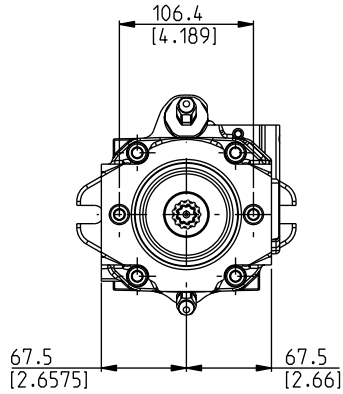
FRONT SECTION - DIMENSIONS

AS1

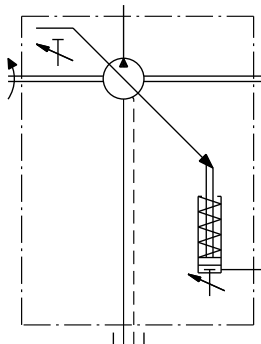
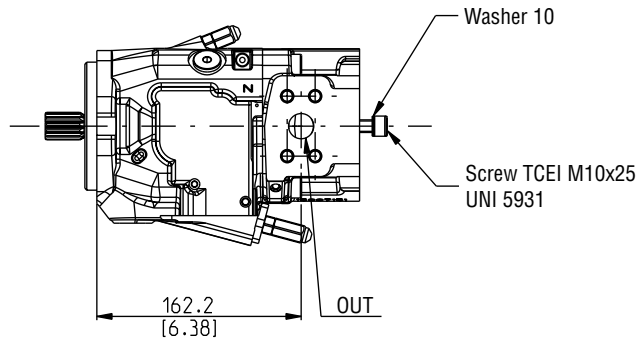
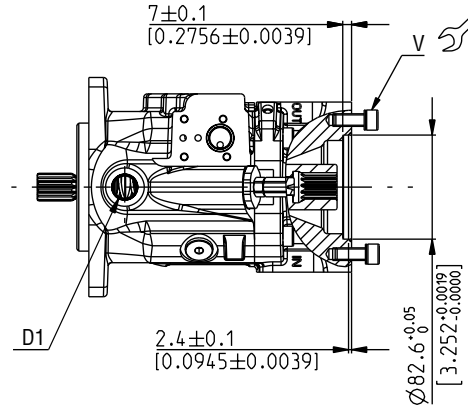
Through drive SAE A

Drive shafts: see page 32
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

The drawing shows a front section with clockwise rotation



DCAT_048_103



Screws tightening torque Nm (lbf in)

V

70 ±7
(558 ÷ 682)

Replaces: 05/10.2014

06/06.2020

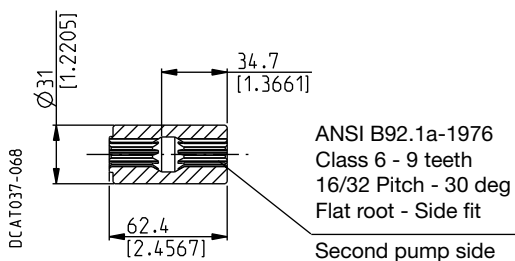
MVP30

COUPLINGS - DIMENSIONS

SAE "A" SPLINE

03

Available with flange code **AS1**

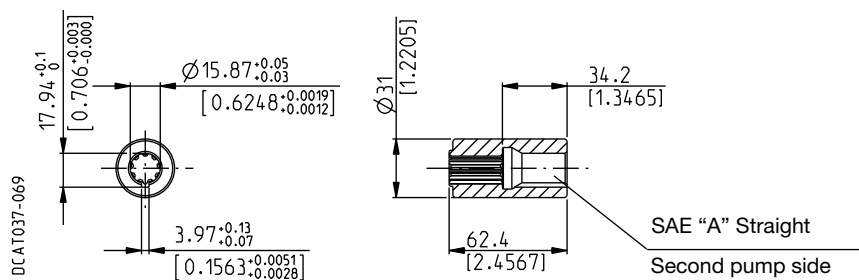


MAX 100 Nm (885 lbf in)

SAE "A" STRAIGHT

31

Available with flange code **AS1**



MAX 70 Nm (620 lbf in)

05/10.2014

MVP30

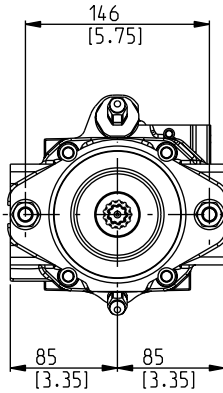
FRONT SECTION - DIMENSIONS

AS5

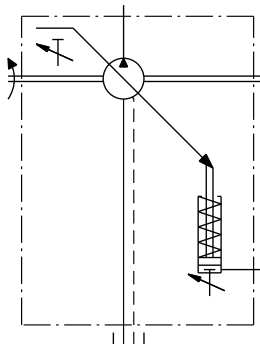
Through drive SAE B

Drive shafts: see page 32
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

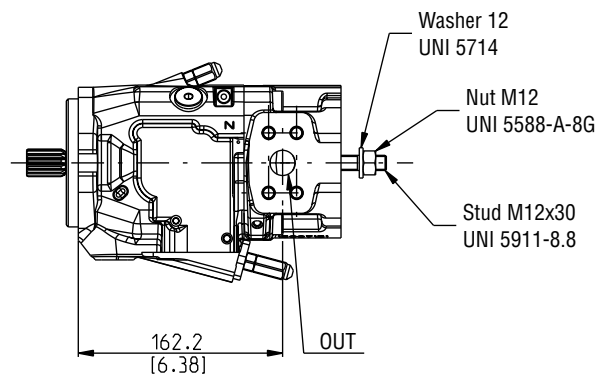
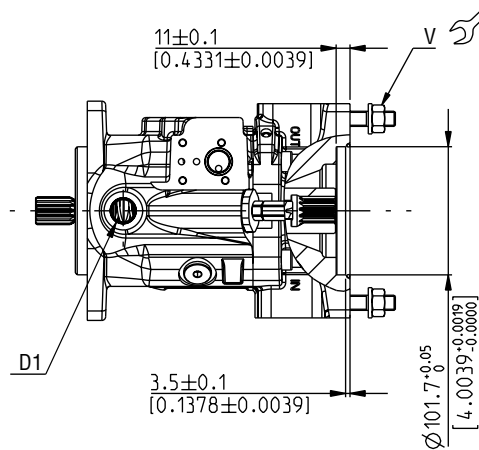
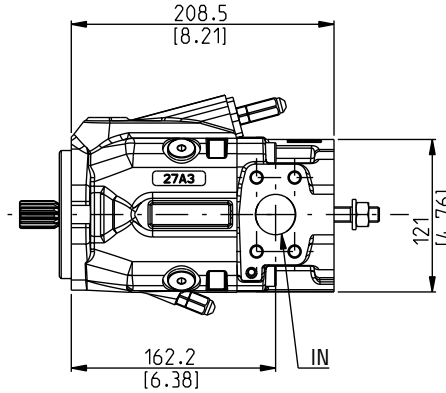
The drawing shows a front section with clockwise rotation



DCAT_048_062



○



Nuts tightening torque Nm (lbf in)

V

100 ±10
(797 ÷ 974)

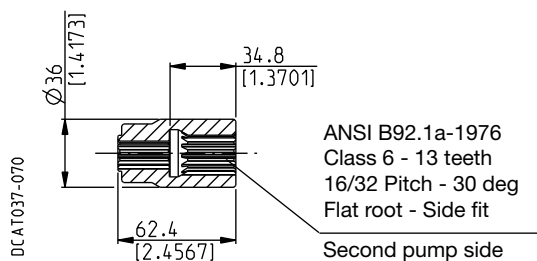
Replaces: 05/10.2014

○ 06/06.2020

SAE "B" SPLINE

04

Available with flange code **AS5**

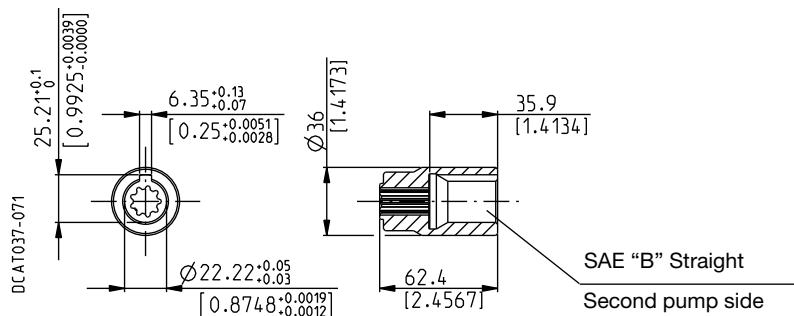


MAX 100 Nm (885 lbf in)

SAE "B" STRAIGHT

32

Available with flange code **AS5**



MAX 100 Nm (885 lbf in)

05/10.2014

MVP48

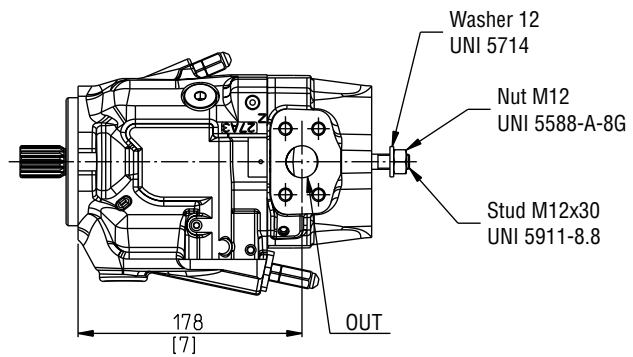
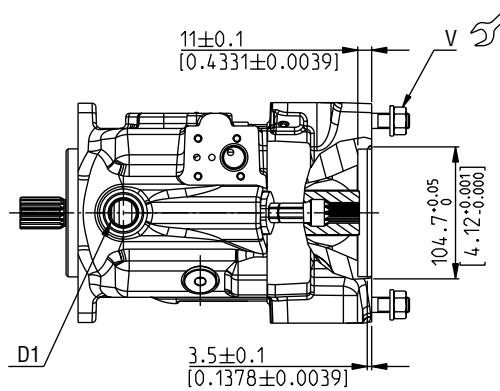
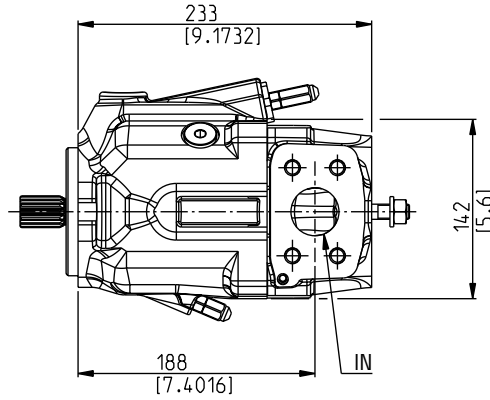
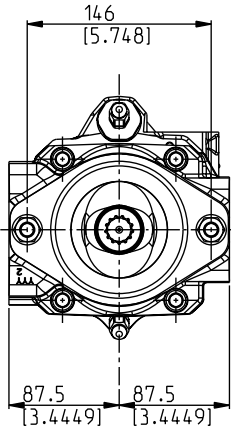
FRONT SECTION - DIMENSIONS

AS5

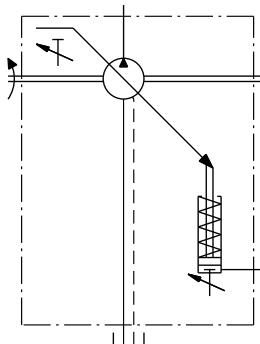
Through drive SAE B

Drive shafts: see page 33
Mounting flanges: see page 36
Ports: see page 38 ÷ 40

The drawing shows a front section with clockwise rotation



DCAT_048_038



Nuts tightening torque Nm (lbf in)

V

100 ±10
(797 ÷ 974)

Replaces: 05/10.2014

06/06.2020

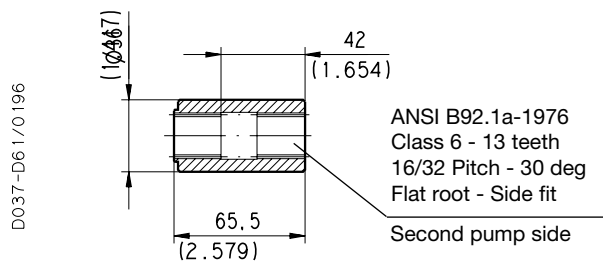
MVP48

COUPLINGS - DIMENSIONS

SAE "B" SPLINE

04

Available with flange code **AS5**

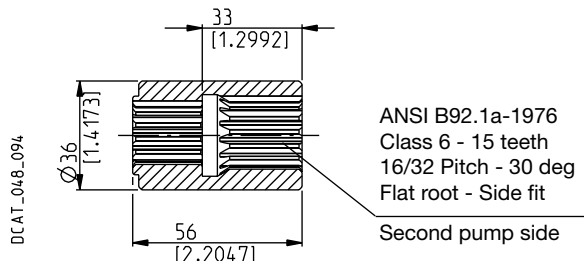


MAX 200 Nm (1770 lbf in)

SAE "BB" SPLINE

05

Available with flange code **AS5**

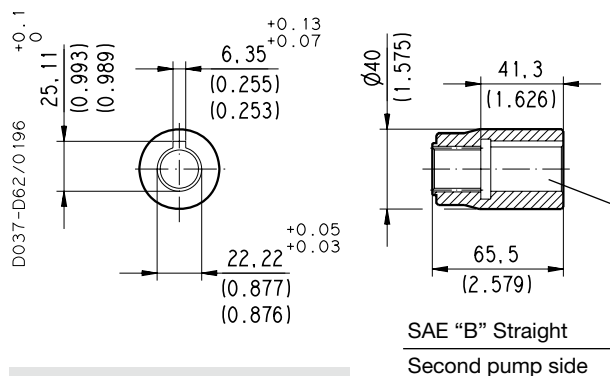


MAX 250 Nm (2213 lbf in)

SAE "B" STRAIGHT

32

Available with flange code **AS5**

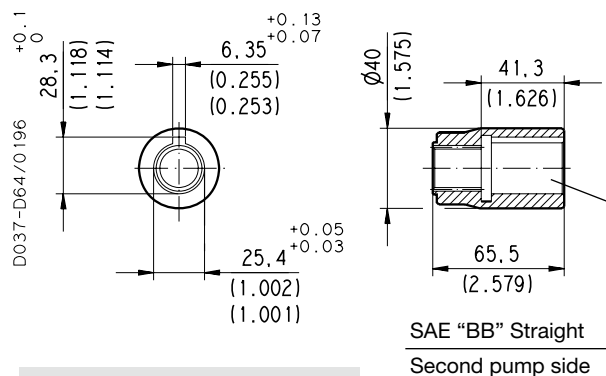


MAX 250 Nm (2213 lbf in)

SAE "BB" STRAIGHT

33

Available with flange code **AS5**



MAX 250 Nm (2213 lbf in)

05/10.2014

MVP60

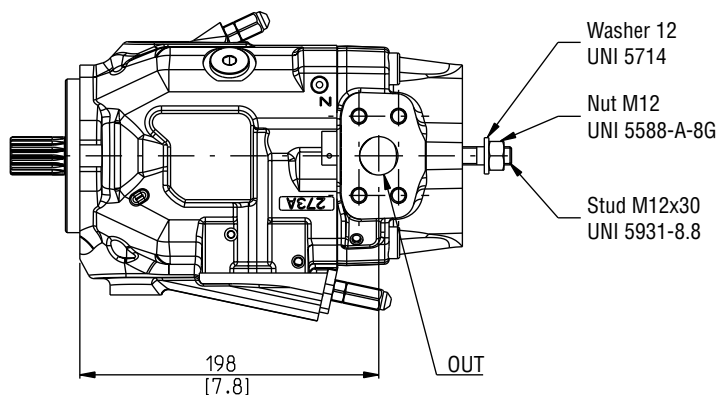
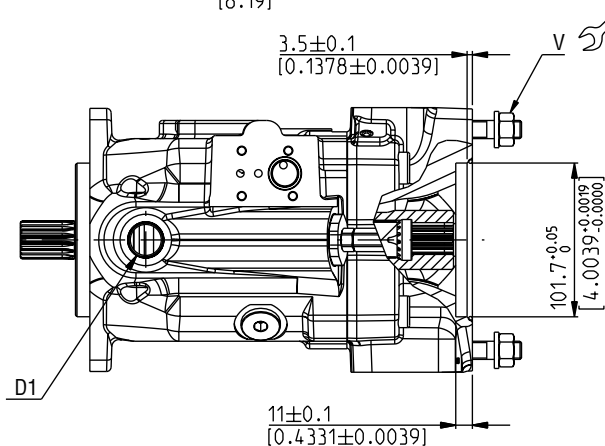
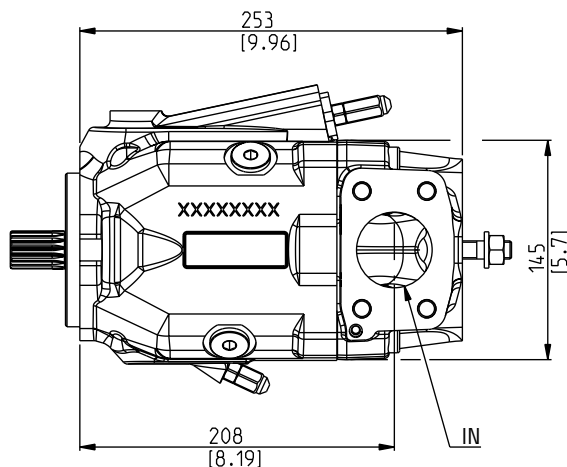
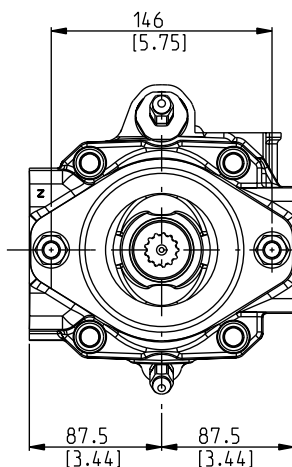
FRONT SECTION - DIMENSIONS

AS5

Through drive SAE B

Drive shafts: see page 34 ÷ 35
Mounting flanges: see page 36 ÷ 37
Ports: see page 38 ÷ 40

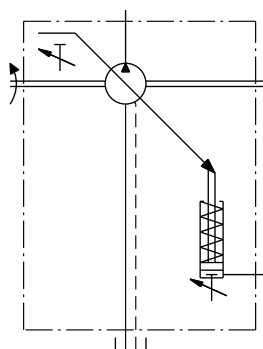
The drawing shows a front section with clockwise rotation



Replaces: 05/10.2014

06/06.2020

DCAT_048_040



Screws tightening torque Nm (lbf in)

V

$$100 \pm 10$$

$$(797 \div 974)$$

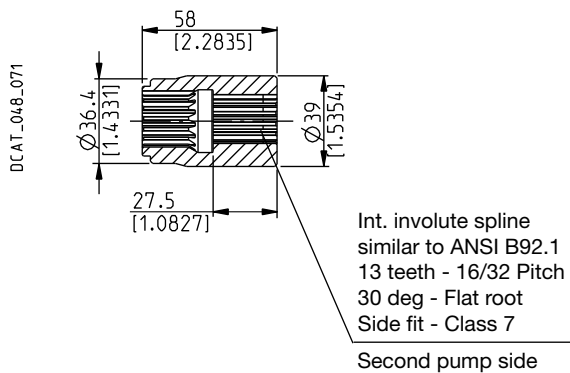
MVP60

COUPLINGS - DIMENSIONS

SAE "B" SPLINE

04

Available with flange code **AS5**

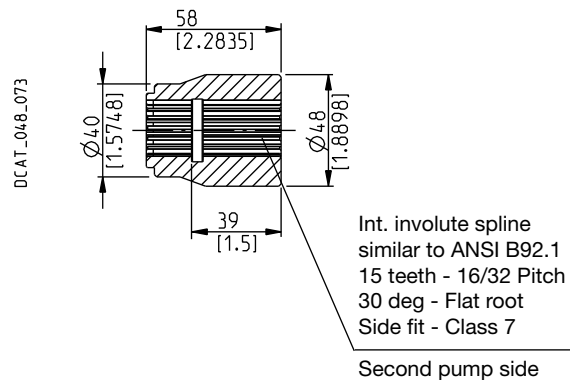


MAX 200 Nm (1770 lbf in)

SAE "BB" SPLINE

05

Available with flange code **AS5**

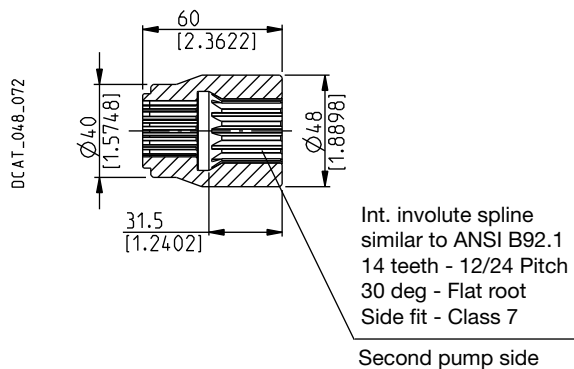


MAX 250 Nm (2213 lbf in)

SAE "C" SPLINE

06

Available with flange code **AS5**

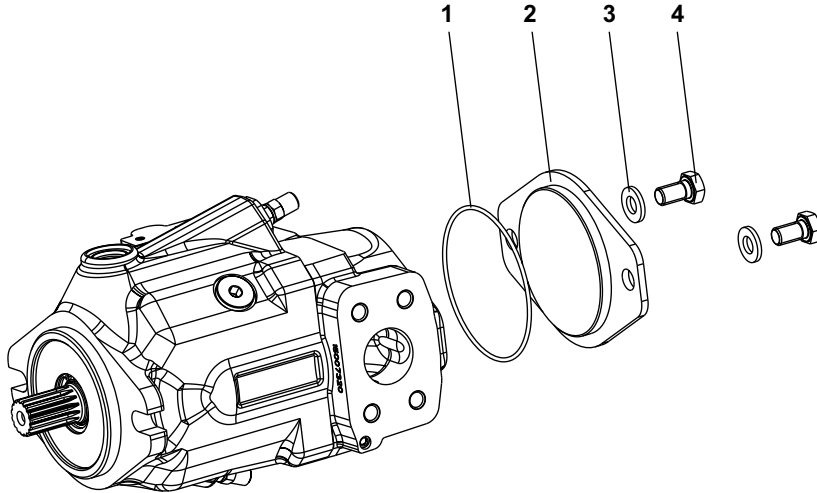


MAX 430 Nm (3806 lbf in)

05/10.2014

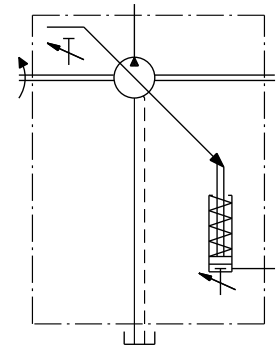
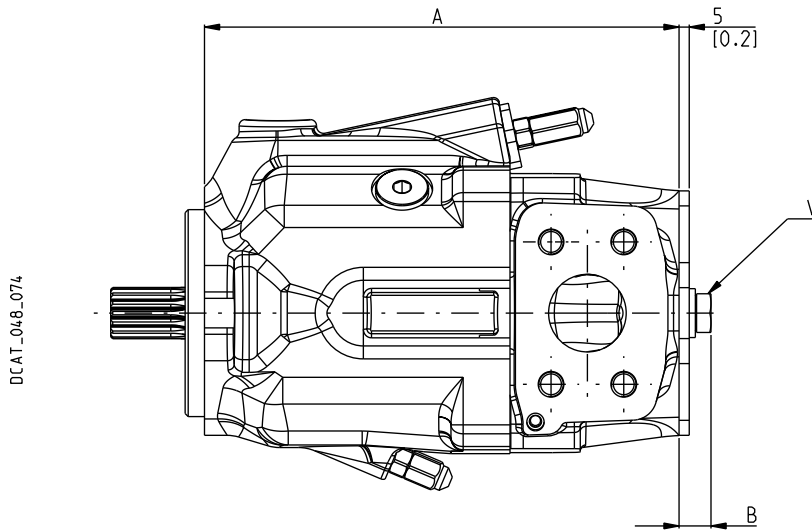
FRONT SECTION KIT COVER

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 - Washers
- 4 - Screws



05/10.2014

Front section					Kit cover
Pump type	Flanged for	Code	A mm (in)	B mm (in)	Code
MVP30	SAE A	AS1	209 (8.2283)	14 (0.5512)	62100006
MVP30			209 (8.2283)		
MVP48	SAE B	AS5	233 (9.1732)	16 (0.6299)	62100007
MVP60			253 (9.9606)		

Screws tightening torque Nm (lbf in)

V
20 ±1 (159 ÷ 195)

NOTES

06/06.2020

HOW TO ORDER SINGLE PUMPS

1	2	3	4	5	6	7	8 ...
MVP30-28	S	-	04	S5	-	L	MD/MB - N - ...

1	Pump type (max. displacement)	Code
	28 cm ³ /rev (1.74 in ³ /rev)	MVP 30-28
	34,8 cm ³ /rev (2.12 in ³ /rev)	MVP 30-34
	45 cm ³ /rev (2.75 in ³ /rev)	MVP 48-45
	53,7 cm ³ /rev (3.28 in ³ /rev)	MVP 48-53
	60 cm ³ /rev (3.66 in ³ /rev)	MVP 60-60
	72 cm ³ /rev (4.39 in ³ /rev)	MVP 60-72
	84,7 cm ³ /rev (5.17 in ³ /rev)	MVP 60-84

2	Rotation	Code
	Anti-clockwise	S
	Clockwise	D

3	Drive shaft (a)	Code
	SAE "B" spline (13 teeth)	04
	SAE "B" spline (13 teeth)	4R
	SAE "B" straight	32
	SAE "BB" spline (15 teeth)	05
	SAE "BB" spline (15 teeth)	5R
	SAE "C" spline (14 teeth)	06
	SAE "C" spline (14 teeth)	6R
	SAE "C" straight	34

4	Mounting flange (a)	Code
	SAE "B" 2 holes	S5
	SAE "C" 2 holes	S7
	SAE "C" 4 holes	S8

5	Ports position	Code
	Side	L
	Rear	P

Code	Inlet/outlet ports		6
	Nominal size		
	Inlet IN	Outlet OUT	Pump type
	SAE 3000	SAE 3000	
SAE FLANGED PORTS METRIC THREAD (SSM)			
MD/MB	1" 1/4	3/4"	MVP 30
ME/MC	1" 1/2	1"	MVP 48
MF/MC	2"	1"	MVP 60
SAE FLANGED PORTS UNC THREAD (SSS)			
SD/SB	1" 1/4	3/4"	MVP 30
SE/SC	1" 1/2	1"	MVP 48
SF/SC	2"	1"	MVP 60
SAE STRAIGHT THREAD PORTS (ODT)			
OG/OD (b)	1" 1/4	3/4"	MVP 30
OH/OF (b)	1" 1/2	1"	MVP 48
MF/OF	2"	1"	MVP 60

Code	Seals	7
N	Buna (standard)	
V	Viton	

Code	Regulators	8
...	See how to order on page 65 ÷ 67	

- (a) Drive shafts availability at pages 32 ÷ 35 and mounting flanges availability at pages 36 ÷ 37
- (b) Only for rear ports

Replaces: 05/10.2014

06/06.2020

HOW TO ORDER REGULATORS

PRESSURE COMPENSATORS - FLOW COMPENSATORS (Load-sensing)

Replaces: 05/10.2014		8	9	10	11	12	13
	Pressure compensator	RP0 -			Z -		G
	Pressure compensator	RP1 -			Z -		G
	Pressure compensator with flow control	RP1 -		LS2 -	Z -		G
	Dual setting pressure compensator	RP2 -	1 -		Z -	S -	G
	Dual setting pressure compensator with flow control	RP2 -	1 -	LS2 -	Z -	S -	G
	Flow compensator	LS0 -			Z -		G
	Flow compensator for remote control	LS2 -			Z -		G
	Pressure compensator for remote control	LS3 -			Z -		G

8	Regulators type	Code
	Pressure compensator	RP0
	Pressure compensator	RP1
	Dual setting pressure compensator	RP2
	Flow compensator	LS0
	Flow compensator for remote control	LS2
	Pressure compensator for remote control	LS3

9	Valve type	O	Code
	Normally closed 12 V DC		1
	Normally closed 24 V DC		2
	Normally open 12 V DC		6
	Normally open 24 V DC		7

Code	Flow control option	10
LS2	Flow compensator	

Code	Restrictor option	11
	Without restrictor (standard - no code)	
Z	Damping restrictor (only for critical applications)	

Code	Connector type	12
S	DIN 43650 (standard)	
D	Deutsch DT04-2P	

Code	O Displacement limiter	13
E	Max. displacement limiter	
G	Min. and Max. displacement limiter	

ORDER EXAMPLE

MVP60 pump with dual setting pressure compensator:

MVP60.60S-05S5-LMF/MC-N-RP2-1-S-G

HOW TO ORDER REGULATORS

ELECTRO-PROPORTIONAL PRESSURE AND DISPLACEMENT COMPENSATORS - UNLOADING VALVES

	8	9	10	11	12	13	14	15	16						
Electro-proportional pressure compensator	PEC	-	1	-	A	-	...	/	...	-	D	-	G		
Electro-proportional pressure compensator with flow control	PEC	-	1	-	A	-	LS2	-	...	/	...	-	D	-	G
Electro-proportional pressure compensator plus angular sensor	PECA	-	1	-	A	-	...	...	D	G					
Electro-proportional pressure compensator plus angular sensor with flow control	PECA	-	1	-	A	-	LS2	-	...	...	-	D	-	G	
Unloading valve	○	U..	-			Z	-						G		
Electro-proportional displacement compensator	○	DEC	-	1	-	LS2	-			D	-	G			

Replaces: 05/10.2014

8	Regulators type (a)	Code
	Electro-proportional pressure compensator	PEC
	Electro-proportional pressure compensator and swashplate angular sensor (a)	PECA
	Unloading valve - Normally closed 12 V DC	U1
	Unloading valve - Normally closed 24 V DC	U2
	Unloading valve - Normally open 12 V DC	U6
	Unloading valve - Normally open 24 V DC	U7
	Electro-proportional displacement compensator	DEC

9	Valve type	Code
	Normally closed 12 V DC	1
	Normally closed 24 V DC	2
	Normally open 12 V DC	6
	Normally open 24 V DC	7

10	Position	Code
	Position 0°	A
	Position 90°	B

Code	Flow control option	11
LS2	Flow compensator for remote control	

Code	Restrictor option	12
	Without restrictor (standard - no code)	
Z	Damping restrictor (only for critical applications)	

Code	Min. pressure setting	13
...	Please specify the requested value in bar	

Code	Max. pressure setting	14
...	Please specify the requested value in bar	

Code	Connector type	15
S	DIN 43650	
D	Deutsch DT04-2P	

Code	○	Displacement limiter	16
E		Max. displacement limiter	
G		Min. and Max. displacement limiter	

06/06.2020

(a) PECA: not available with MVP 30

ORDER EXAMPLE

MVP60 pump with electro-proportional pressure compensator with flow control:

MVP60.60S-05S5-LMF/MC-N-PEC-1-A-LS2-100/300-D-G

HOW TO ORDER REGULATORS

TORQUE LIMITERS

Replaces: 05/10.2014

	8	9	10	11	12	13	14	15	16						
Torque limiter - standard	RN0	-			Z	-	G	-	... /	...					
Torque limiter - internal pilot	RN1	-			Z	-	G	-	... /	...					
Dual setting torque limiter with flow control	RN2	-	1	-	S	-	LS0	-	Z	-	G	-	... /	... /	...
Dual setting torque limiter with remote flow control	RN2	-	1	-	S	-	LS2	-	Z	-	G	-	... /	... /	...
High performance torque limiter	ⓘ RN3	-				Z	-	G	-	... /	...				

8	Regulators type	Code
	Torque limiter - standard	RN0
	Torque limiter - internal pilot	RN1
	Dual setting torque limiter with flow control	RN2
	High performance torque limiter	RN3

9	Valve type	Code
	Normally closed 12 V DC	1
	Normally closed 24 V DC	2
	Normally open 12 V DC	6
	Normally open 24 V DC	7

10	Connector type	Code
	DIN 43650 (standard)	S
	Deutsch DT04-2P	D

Code	Flow control option	11
LS0	Flow compensator	
LS2	Flow compensator for remote control	

Code	Restrictor option	12
	Without restrictor (standard - no code)	
Z	Damping restrictor (only for critical applications)	

Code	Displacement limiter	13
E	Max. displacement limiter	
G	Min. and Max. displacement limiter	

Code	Torque limiter setting (a)	14
...	Please specify the requested torque value in Nm	

Code	Second torque limiter setting (a)	15
...	Please specify the requested torque value in Nm	

Code	Torque limiter setting speed (b)	16
...	Please specify the requested speed value	

(a) Refer to page 47 ÷ 49 for more information

(b) Do not exceed the maximum speed shown on page 7 ÷ 9

ORDER EXAMPLE

MVP60 pump with dual setting torque limiter with flow control:

MVP60.60S-05S5-LMF/MC-N-RN2-1-S-LS0-Z-G-150/200/2100

06/06.2020

HOW TO ORDER MULTIPLE PUMPS - PISTON PUMP/GEAR PUMP

Common inlet

1	2	3	4	5	6	7	8...	9	10	7	11	12	13	14				
MVP30-28	S	-	04	S5	-	L	MD/MB	-	N	-	...	-	G	-	P7	-	A	(# / # / #) /

Front section

KP20-6,3	S	-	-	L	**GD	-	N5	-	N	-	P
----------	---	---	---	---	------	---	----	---	---	---	---

Rear section

1	Pump type (max. displacement)	Code
---	-------------------------------	------

Front section - The same of single pumps

MVP ...

Rear section - KAPPA 20 gear pumps (a)

KP 20 ...

Rear section - POLARIS PH gear pumps (b)

PHP 20 ...

2	Rotation	Code
---	----------	------

Anti-clockwise

S

Clockwise

D

3	Drive shaft (c)	Code
---	-----------------	------

SAE "B" spline (13 teeth)

04

SAE "B" spline (13 teeth)

4R

SAE "B" straight

32

SAE "BB" spline (15 teeth)

05

SAE "BB" spline (15 teeth)

5R

SAE "C" spline (14 teeth)

06

SAE "C" spline (14 teeth)

6R

SAE "C" straight

34

4	Mounting flange (c)	Code
---	---------------------	------

SAE "B" 2 holes

S5

SAE "C" 2 holes

S7

SAE "C" 4 holes

S8

5	Ports position	Code
---	----------------	------

Side

L

6	Inlet/outlet ports (a) - (b)	Code
---	------------------------------	------

Nominal size

Pump type

Inlet IN

Outlet OUT

SAE 3000

SAE 6000

SAE FLANGED PORTS METRIC THREAD (SSM)

MVP 30

1" 1/4

3/4"

MD/MB

MVP 48

1" 1/2

1"

ME/MC

MVP 60

2"

1" 1/4

MF/MC

Code	Inlet/outlet ports	6
------	--------------------	---

Nominal size

Inlet IN

Outlet OUT

Pump type

SAE 3000

SAE 3000

SAE FLANGED PORTS UNC THREAD (SSS)

SD/SB

1" 1/4

3/4"

MVP 30

SE/SC

1" 1/2

1"

MVP 48

SF/SC

2"

1"

MVP 60

SAE STRAIGHT THREAD PORTS (ODT)

—

—

MVP 30

—

—

MVP 48

MF/OF

2"

1"

MVP 60

Code	Seals	7
------	-------	---

N

Buna (standard)

V

Viton

Code	Regulators	8
------	------------	---

...

See how to order on page 65 ÷ 67

Code	Displacement limiter	9
------	----------------------	---

E

Max. displacement limiter

G

Min. and Max. displacement limiter

Code	Intermediate flange	10
------	---------------------	----

FRONT SECTION

P7

Flanged for KP20

I7

Flanged for PHP20

REAR SECTION

N5

Kappa 20 (common inlet)

S7

Polaris PHP 20 (common inlet)

Code	Sections	11
------	----------	----

A

Front

P

Rear

Replaces: 05/10.2014

06/06.2020

HOW TO ORDER MULTIPLE PUMPS - PISTON PUMP/GEAR PUMP

Code	Torque limiter setting (#)	12
...	Please specify the requested torque value in Nm	
Code	Second torque limiter setting (#)	13
...	Please specify the requested torque value in Nm	
Code	Torque limiter setting speed (#)	14
...	Please specify the requested speed value	



- ☐ Omit code only if ordering assembled multiple pumps
- (#) Only for torque limiter. Refer to page 67 for more information. Write these codes at the end only if ordering assembled multiple pumps
- (a) KAPPA 20 gear pumps: displacements on page 22, 26 and 30. For more information, please see the respective technical catalogue
- (b) POLARIS PH gear pumps: displacements on page 23, 27 and 31. For more information, please see the respective technical catalogue
- (c) Drive shafts availability at pages 32 ÷ 35 and mounting flanges availability at pages 36 ÷ 37

ORDER EXAMPLE

Common inlet double pump MVP 60 with RN1 torque limiter-internal pilot + PHP20 gear pump.

INDIVIDUAL SECTIONS

Front section

MVP 60.60S-06S8-LMF/MC-N-RN1-G-I7-A (100/2500)

Rear section

PHP 20.23S-L **/GD-S7-N-P

ASSEMBLED DOUBLE PUMP

MVP 60.60S-06S8-LMF/MC-N-RN1-G/PHP 20.23-L/GD (100/2500)**

05/10.2014

HOW TO ORDER MULTIPLE PUMPS - PISTON PUMP/PISTON PUMP

Through drive

O

1	2	3	4	5	6	7	8 ...	9	10	11	12	13	14							
MVP 60-60	S	-	05	S5	-	L	MF/MC	-	N	-	...	-	G	-	AS5	-	04	-	(# / # / #)	/

Front section (through drive)

MVP 30-28	S	-	04	S5	-	L	MD/MB	-	N	-	...	-	G	-	-	-	...	/	...	/	...
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Rear section (single pump)

1	Pump type (max. displacement)	Code
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Front section MVP (the same of single pumps) (a) **MVP ...**

Rear section MVP (the same of single pumps) (a) **MVP ...**

2	Rotation	Code
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Anti-clockwise **S**

Clockwise **D**

3	Drive shaft (b)	Code
---	-----------------	------

SAE "B" spline (13 teeth) **04**

SAE "B" spline (13 teeth) **4R**

SAE "B" straight **32**

SAE "BB" spline (15 teeth) **05**

SAE "BB" spline (15 teeth) **5R**

SAE "C" spline (14 teeth) **06**

SAE "C" spline (14 teeth) **6R**

SAE "C" straight **34**

4	Mounting flange (b)	Code
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SAE "B" 2 holes **S5**

SAE "C" 2 holes **S7**

SAE "C" 4 holes **S8**

5	Ports position	Code
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Side **L**

6	Inlet/outlet ports	Code
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Pump type	Nominal size		Code
	Inlet IN	Outlet OUT	
	SAE 3000	SAE 6000	
SAE FLANGED PORTS METRIC THREAD (SSM)			
MVP 30	1" 1/4	3/4"	MD/MB
MVP 48	1" 1/2	1"	ME/MC
MVP 60	2"	1" 1/4	MF/MC
SAE FLANGED PORTS UNC THREAD (SSS)			
MVP 30	1" 1/4	3/4"	SD/SB
MVP 48	1" 1/2	1"	SE/SC
MVP 60	2"	1"	SF/SC

Code	Inlet/outlet ports	6
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Nominal size			Pump type
Inlet IN	Outlet OUT		
SAE 3000	SAE 3000		
SAE STRAIGHT THREAD PORTS (ODT)			
—	—	MVP 30	
—	—	MVP 48	
MF/OF	2”	1”	MVP 60

Code	Seals	7
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N Buna (standard)

V Viton

Code	Regulators	8
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... See how to order on page 65 ÷ 67

Code	Displacement limiter	9
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E Max. displacement limiter

G Min. and Max. displacement limiter

Code	Intermediate flange (c)	10
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AS1 SAE "A" 2 holes

AS5 SAE "B" 2 holes

Code	Coupling (d)	11
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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)

Code	Torque limiter setting (#)	12
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... Please specify the requested torque value in Nm

Replaces: 05/10.2014

06/06.2020

HOW TO ORDER MULTIPLE PUMPS - PISTON PUMP/PISTON PUMP

Code	Second torque limiter setting (#)	13
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... Please specify the requested torque value in Nm

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

- (a) Displacements on page 64
- (b) Drive shafts availability at pages 32 ÷ 35 and mounting flanges availability at pages 36 ÷ 37
- (c) Intermediate flanges on page 53
- (d) Couplings availability:
MVP30 on page 55 and 57
MVP48 on page 59
MVP60 on page 61

☐ Omit code only if ordering assembled multiple pumps

(#) Only for torque limiter. Refer to page 67 for more information.

ORDER EXAMPLE

Through drive double pump MVP 60 with RN2 (dual setting torque limiter with remote flow control) + MVP 30 with LS0 flow compensator.

INDIVIDUAL SECTIONS

Front section

MVP 60.60S-06S8-LMF/MC-N-RN2-1-S-LS2-G-AS5/04 (70/85/2600)

Rear section

MVP 30.34S-04S5-LMD/MB-N-LS0-Z-G

ASSEMBLED DOUBLE PUMP

MVP 60.60S-06S8-LMF/MC-N-RN2-1-S-LS2-G (70/85/2600)/ MVP 30.34S-04S5-LMD/MB-N-LS0-Z-G

Through drive double pump MVP 48 with RN0 (standard torque limiter) + KP 30 gear pump.

INDIVIDUAL SECTIONS

Front section

MVP 48.45S-04S5-LME/MC-N-RN0-G-AS5/04 (80/2300)

Rear section

KP30.51S0-04S5-LED/EB-N-P

ASSEMBLED DOUBLE PUMP

POMPA MVP 48.45S-04S5-LME/MC-N-RN0-G/KP30.51-04S5-LED/EB (80/2300)

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

MVP 06 T A

Edition: 06/06.2020

Replaces: MVP 05 T A



Headquarters:

CASAPPA S.p.A.

Via Balestrieri, 1

43044 Lemignano di Collecchio

Parma (Italy)

Tel. (+39) 0521 30 41 11

Fax (+39) 0521 80 46 00

E-mail: info@casappa.com

www.casappa.com

