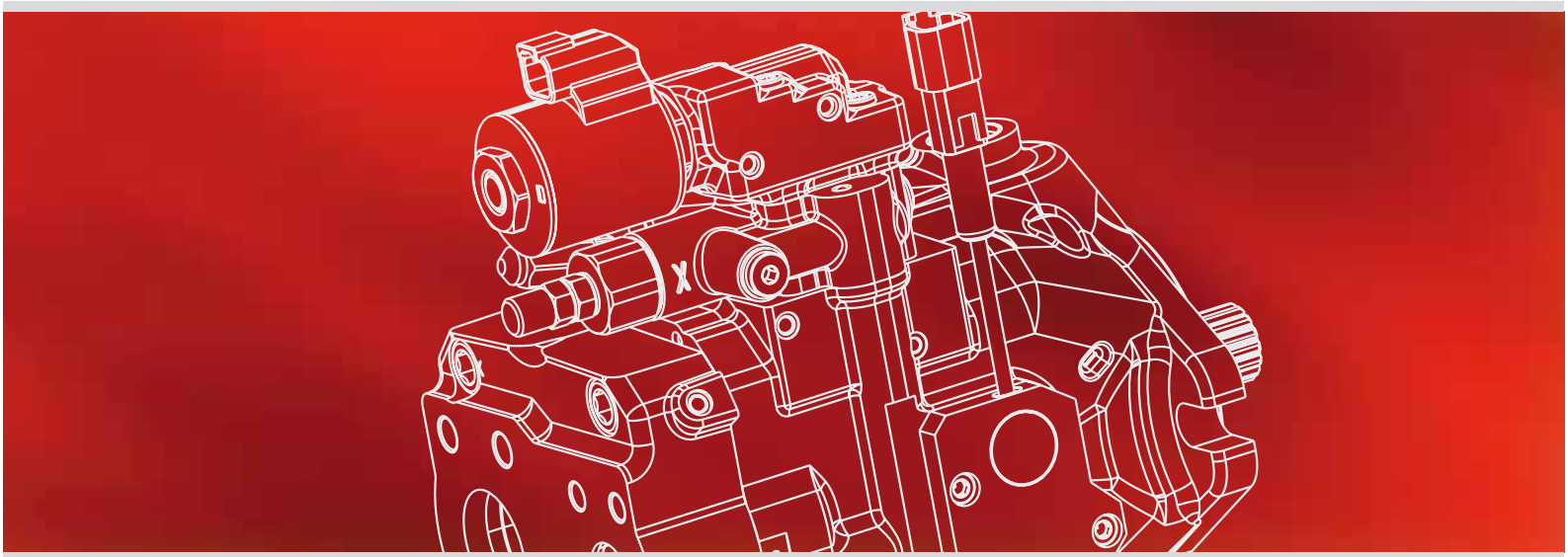
CASAPPA®
FLUID POWER DESIGN



VARIABLE DISPLACEMENTS AXIAL PISTON PUMPS

MVP

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Replaces: 06/06.2020

o 07/03.2022

o 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.

DISPLACEMENTS
From 14 cm^3/rev (0.85 in^3/rev)
To 84,7 cm^3/rev (5.17 in^3/rev)

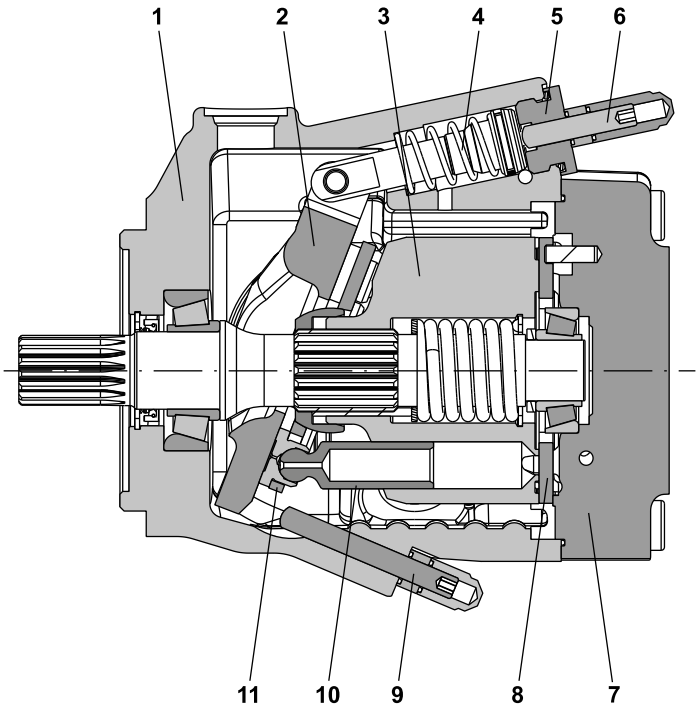
PRESSURE
Max. constant operating pressure 280 bar (4060 psi)
Max. system pressure (relief valve setting) 315 bar (4568 psi)
Max. peak of pressure 350 bar (5075 psi)

SPEED
Max. 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 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 7 ÷ 9. 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 tempera ture of -25 °C (-13 °F) with straight and short inlet line.
min.: 10 cSt (58 SSU) at maximum temperature of 110 °C (230 °F)

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

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

Casappa recommends to use its own production filters:

IKRON® Fluid Filtration

STORAGE
The storage must be in a dry environment.
Max storage time in ideal conditions is 24 months.
The ideal storage temperature is between 5 °C (41 °F) and 20 °C (68 °F). No problem in case of temperature between -40 °C (-40 °F) and 50 °C (122 °F). Below -40 °C (-40 °F) please 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.

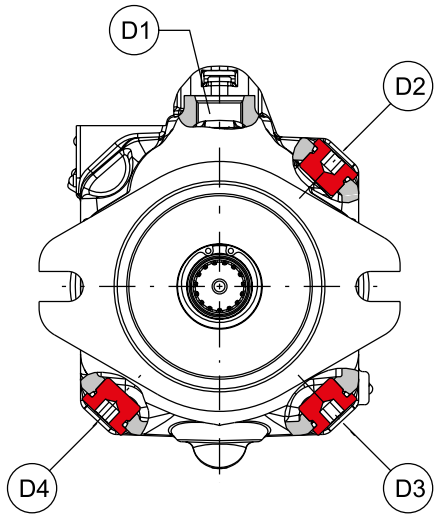
All the temperature are referred to oil with viscosity ISO VG 32 according to DIN 51 519.

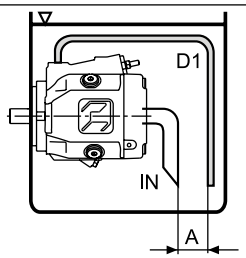
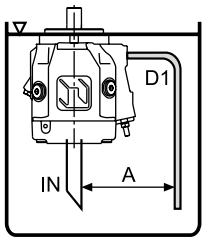
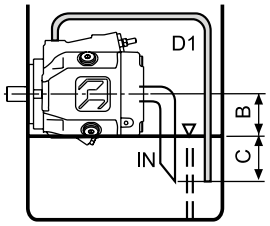
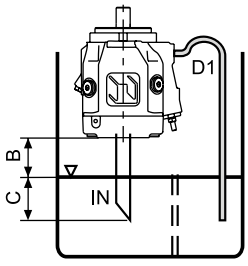
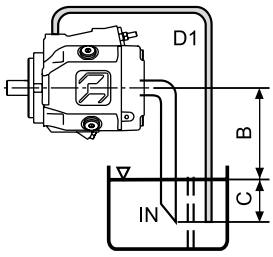
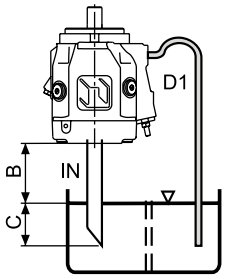
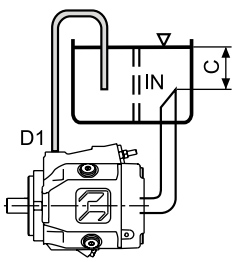
SUGGESTIONS
To prevent cavitation at low temperature we suggest:
- To warm up the tank
- To pressurize the tank
- To oversize the inlet hose

05/10.2014

MOUNTING POSITIONS

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.



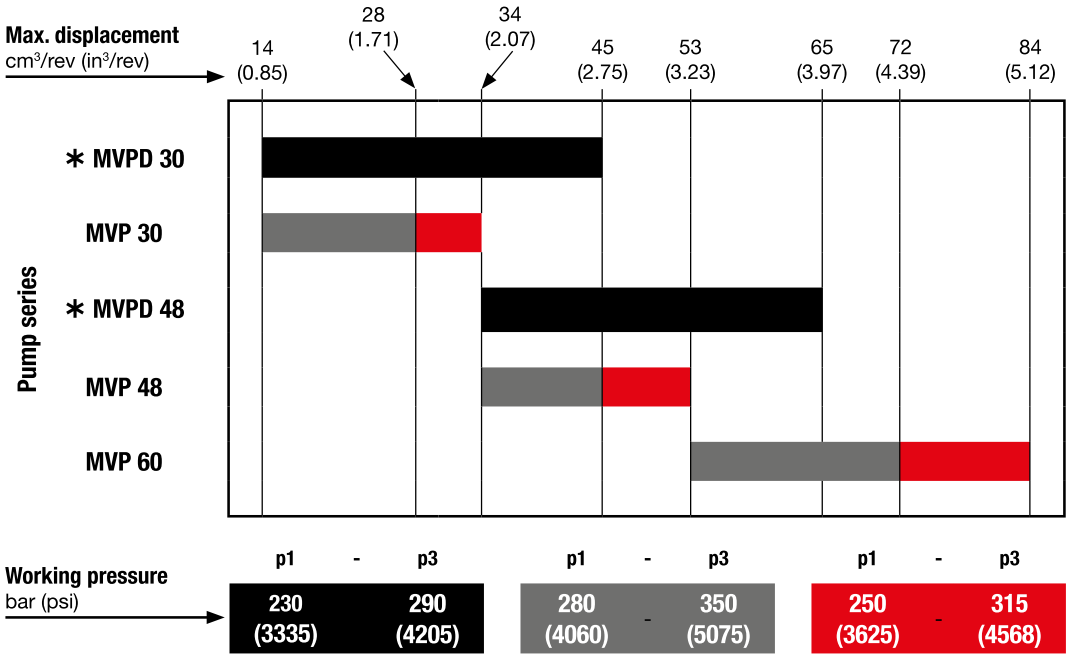
HORIZONTAL MOUNTING		VERTICAL MOUNTING	
	**Arrangement inside the tank.** Minimum oil level equal or above the pump mounting face. A ≥ 200 mm (7.874 in)		**Arrangement inside the tank.** Minimum oil level equal or above the pump mounting face. A ≥ 200 mm (7.874 in)
	**Arrangement inside the tank.** Minimum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

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

06/06.2020

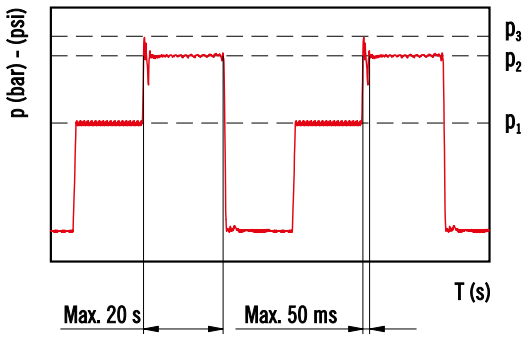
DISPLACEMENTS AND WORKING PRESSURES RANGE

MVP-MVPD Comparison



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

PRESSURE DEFINITION



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

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

Please note that both relief valve setting and overshoot must be lower than their limits.
If the relief setting is compliant but the overshoot is higher than the limit, the relief setting must be decreased until the overshoot is compliant to Casappa limit.

Please contact us for high frequency applications.

06/06.2020

FEATURES

Technical data with mineral oil

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

Replaces: 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)	194 (51.3) o
		@ 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)	81 (108.5) o
		@ 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)		

o 07/03.2022

(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}
Please contact us for different working conditions.

FEATURES

Technical data restrictions with fire resistant fluid

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

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

Pump type 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	°C (°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	°C (°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	°C (°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).

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	°C (°F)	min.				-10 (14)			
		max.				80 (176)			
Bearing life (ref. mineral oil)	%					90 %			

Technical data restrictions with biodegradable fluids

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

Pump type 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	°C (°F)	min.				-10 (14)			
		max.				60 (140)			
Bearing life (ref. mineral oil)	%					50 %			

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

Pump type 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	°C (°F)	min.				-15 (5)			
		max.				90 (194)			
Bearing life (ref. mineral oil)	%					75 %			

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

Pump type MVP			30·28	30·34	48·45	48·53	60·60	60·72	60·84
Seals						V= Viton			
Operating temperature	°C (°F)	min.				-15 (5)			
		max.				80 (176)			
Bearing life (ref. mineral oil)	%					100 %0			

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

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

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

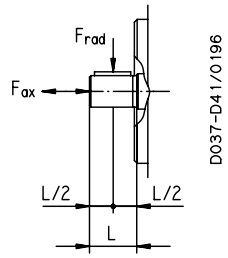
$$M = \frac{M_{theor.}}{\eta_{hm}}$$

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

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

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

Max. permissible load on drive shaft

Pump type				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)	2000 (450)
F_{rad} Radial force		@ L/2	N (lbf)	1500 (337)	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 %				
psi (bar abs)	65	70	80	90	100
12 (0,8)	120	115	105	97	90
13 (0,9)	120	120	110	103	95
14.5 (1,0)	120	120	115	107	100
17 (1,2)	120	120	120	113	106
20 (1,4)	120	120	120	120	112
23 (1,6)	120	120	120	120	117
29 (2,0)	120	120	120	120	120

% Variation of the max. speed

03/06.2011

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)

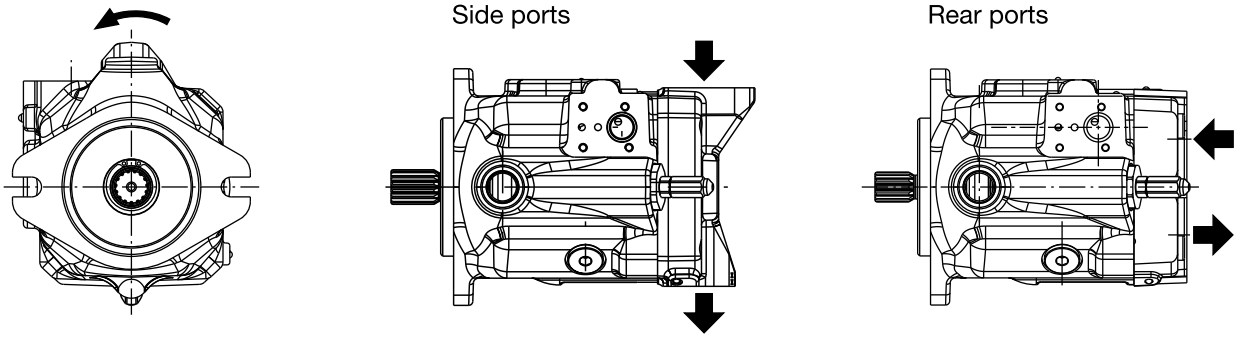
Example 2
Displacement: 80 %
Inlet pressure: 1,0 bar abs. (14.5 psi)
Speed: 115 %

FEATURES

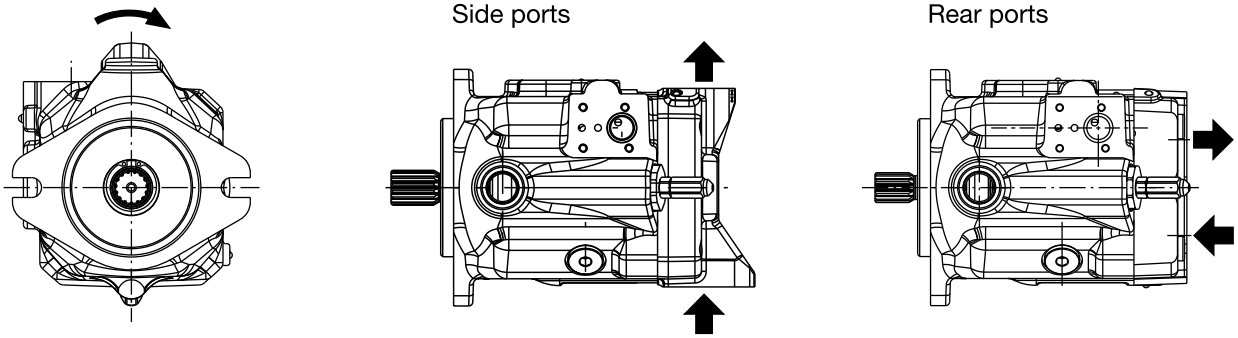
Definition of rotation direction looking at the drive shaft

Replaces: 03/06.2011

Anti-clockwise rotation

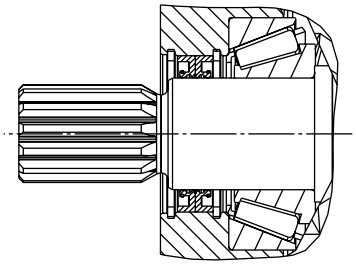


Clockwise rotation



DOUBLE SHAFT SEAL OPTION

o 07/03.2022



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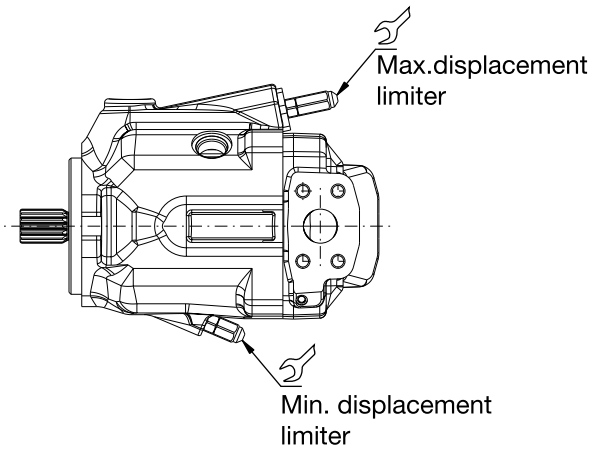
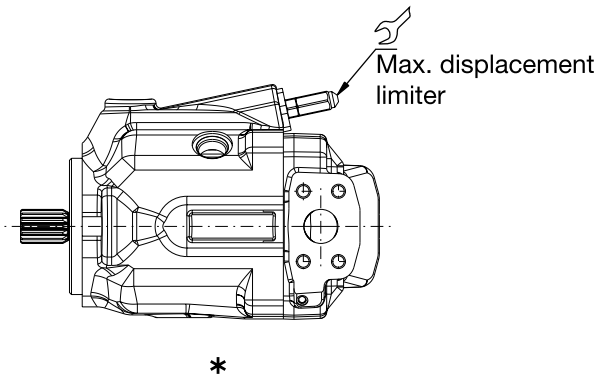
The double shaft seal is available for the following configuration:

Pump type	MOUNTING FLANGES			
	S1	S5	S7	S8
MVP30	X	X		
MVP48		X		
MVP60			X	X

X Available combination

DISPLACEMENT SETTING





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

G: Min. and Max. displacement limiter

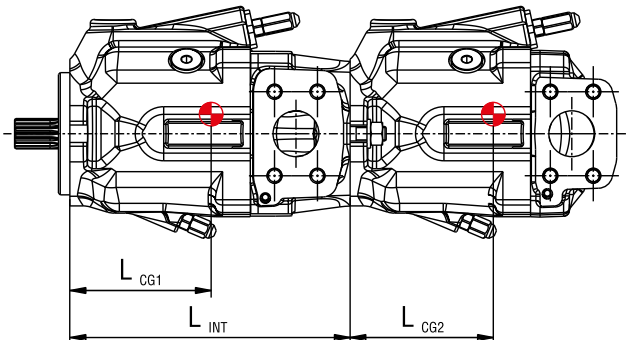
Tightening torque 15$^{\pm 1}$ Nm (124 ÷ 142 lbf in)

* Special body without Min. displacement limiter is available only on request, please contact us for more information

			MVP30	MVP48	MVP60
Max. displacement setting range	cm³/rev (in³/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	cm³/rev (in³/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	cm³/rev (in³/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)

Please contact us for different setting range.

CENTER OF GRAVITY



Center of gravity

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

M_{MF} : Load moment on mounting flange

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

m : Weight (kg)

		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
Avarage data, please contact us for specific values.

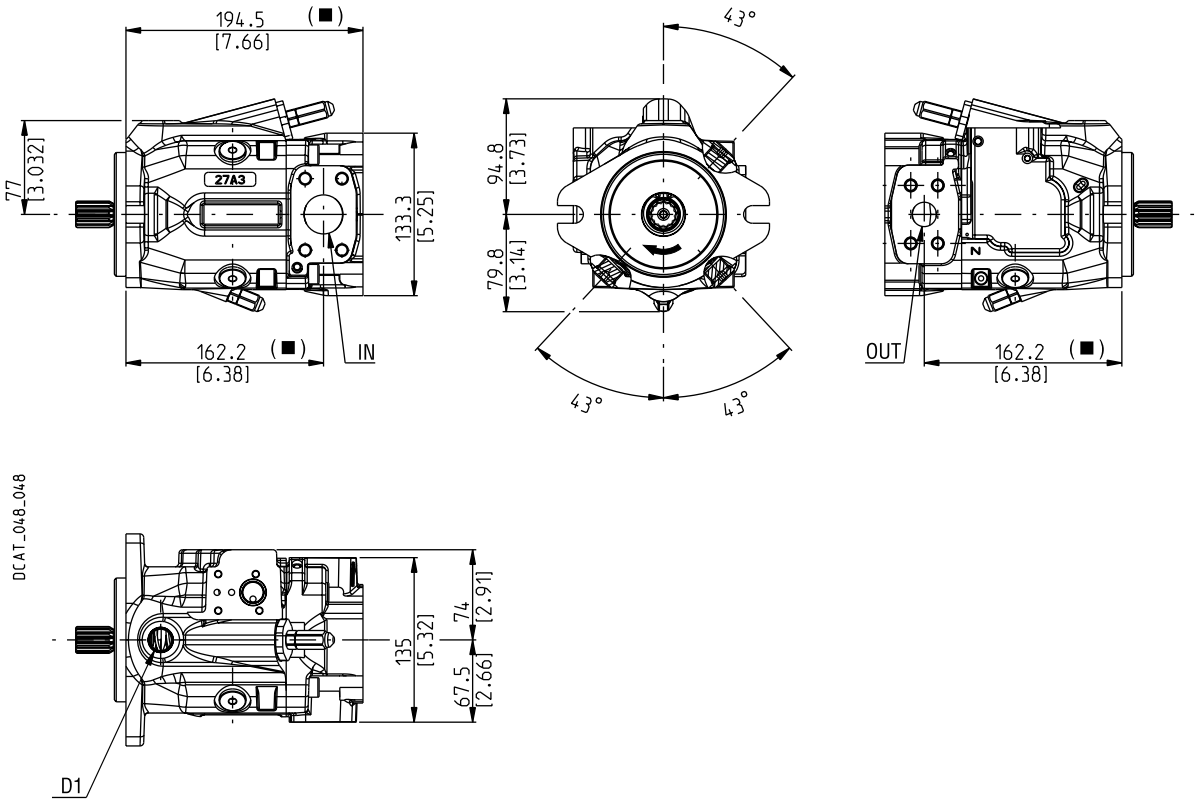
06/06.2020

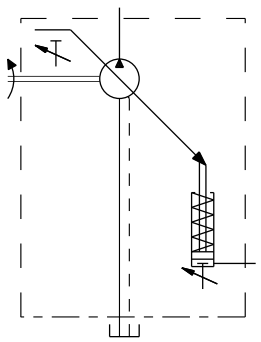
MVP30 SIDE PORTS - DIMENSIONS L

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

(■)
Dimension refer to S5 mounting flange.
For S1 flange add 27 mm (1.06 in).

Replaces: 06/06.2020





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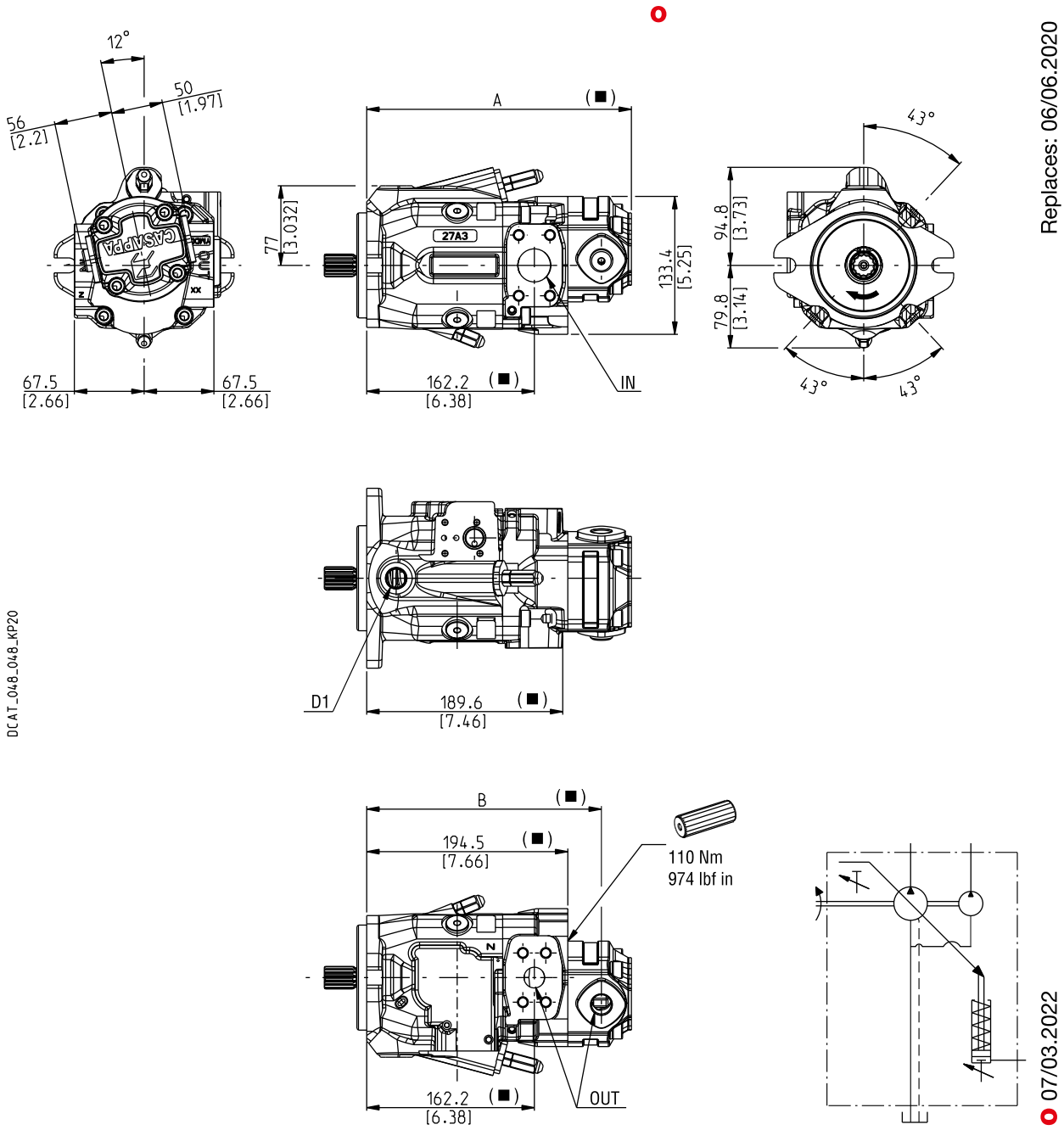
MVP30/KP20 SIDE PORTS - DIMENSIONS L

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

(■)
Dimension refer to S5 mounting flange.
For S1 flange add 27 mm (1.06 in).

Replaces: 06/06.2020



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Gear pump KAPPA 20 (for more information please see the respective technical catalogue)

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

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 cm³/rev (1.74 in³/rev)	MVP 30-28
34,8 cm³/rev (2.12 in³/rev)	MVP 30-34
45 cm³/rev (2.75 in³/rev)	MVP 48-45
53,7 cm³/rev (3.28 in³/rev)	MVP 48-53
60 cm³/rev (3.66 in³/rev)	MVP 60-60
72 cm³/rev (4.39 in³/rev)	MVP 60-72
84,7 cm³/rev (5.17 in³/rev)	MVP 60-84

2 Rotation	Code
Anti-clockwise	S
Clockwise	D

3 Drive shaft (a)	Code
SAE “A” spline (9 teeth)	03
SAE spline (11 teeth)	07
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 “B” straight	34

4 Mounting flange (a)	Code
SAE “A” 2 holes	S1
SAE “B” 2 holes	S5
SAE “C” 2 holes	S7
SAE “C” 4 holes	S8

5 Ports position	Code
Side	L
Rear	P

Code	6 Inlet/outlet ports		
	Nominal size		Pump type
	Inlet IN SAE 3000	Outlet OUT 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	7 Seals
N	Buna (standard)
V	Viton

Code	8 Regulators
...	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

06/06.2020

HOW TO ORDER REGULATORS

PRESSURE COMPENSATORS - FLOW COMPENSATORS (Load-sensing)

Replaces: 06/06.2020

	8		9		10		11		12		13		14
Pressure compensator	RP0	-					Z	-			G	-	DP
Pressure compensator	RP1	-					Z	-			G	-	DP
Pressure compensator with flow control	RP1	-			LS2	-	Z	-			G	-	DP
Dual setting pressure compensator	RP2	-	1	-			Z	-	S	-	G	-	DP
Dual setting pressure compensator with flow control	RP2	-	1	-	LS2	-	Z	-	S	-	G	-	DP
Flow compensator	LS0	-					Z	-			G	-	DP
Flow compensator for remote control	LS2	-					Z	-			G	-	DP
Pressure compensator for remote control	LS3	-					Z	-			G	-	DP

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

Code	O Double shaft seal option	14
	Without double shaft seal (standard - no code)	
DP	Double shaft seal (availability at page 11)	

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ORDER EXAMPLE

MVP60 pump with dual setting pressure compensator:
MVP60.60S-05S5-LMF/MC-N-RP2-1-S-G-DP