



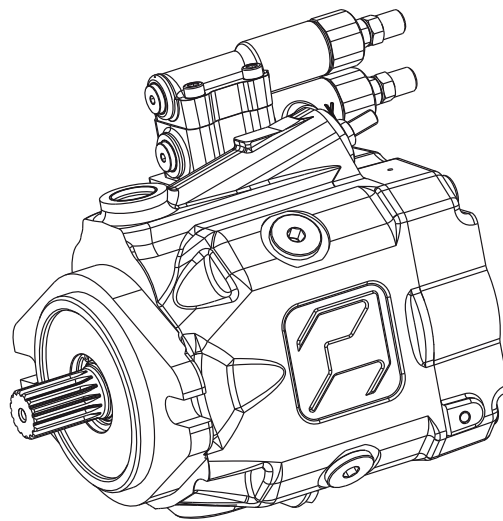
## Variable displacement axial piston pumps, for open circuit

### DISPLACEMENTS

From	2.75 in <sup>3</sup> /rev (45 cm <sup>3</sup> /rev)
To	5.12 in <sup>3</sup> /rev (84 cm <sup>3</sup> /rev)

### MAX SPEED

3000 min<sup>-1</sup>



### PRESSURE

Max. continuous	4060 psi (280 bar)
Max. intermittent	4568 psi (315 bar)
Max. peak	5075 psi (350 bar)

### APPLICATION

Medium, high pressure

### SECTOR

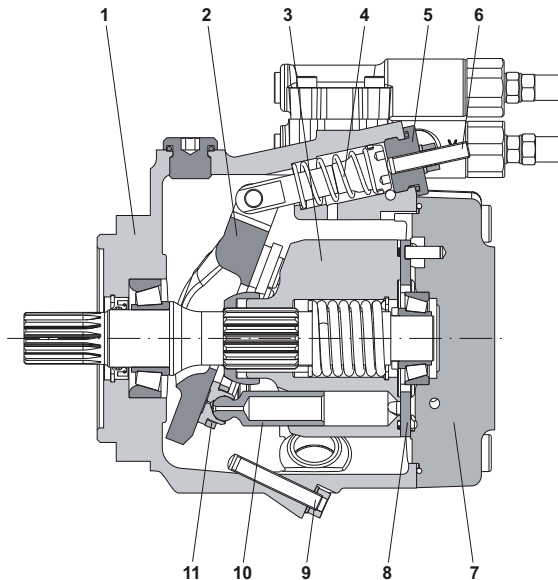
Mobile / Industrial

- Compact design
- Longer service life
- Low noise emission
- Max. and min. displacement limiter
- Drive shaft bearing suitable for radial and axial loads.

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.



## GENERAL INFORMATIONS / INSTRUCTIONS



- 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

### DIRECTION OF ROTATION

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

### HYDRAULIC FLUID

Mineral oil based hydraulic fluid HL or HLP type conforming to DIN 51524 and fire resistant fluids HF type according to the technical data shown in the tables on page 4. 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 77 and 163 SSU (15 and 35 cSt).

Functional limit conditions are:

max.: 6818 SSU (1500 cSt) at start up at -13 °F (-25 °C) with straight and short inlet line.

min.: 58 SSU (10 cSt) at maximum temperature of 194 °F (90 °C)

### 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 psi (bar)	$\Delta p < 2030$ (140)	$2030 < \Delta p < 3045$ (140) (210)	$\Delta p > 3045$ (210)
Contamination class NAS 1638	9	8	7
Contamination class ISO 4406:1999	20/18/15	19/17/14	18/16/13
Achieved with filter $\beta_{10} \geq 75$ according to ISO 16889	10 $\mu\text{m}$	10 $\mu\text{m}$	10 $\mu\text{m}$

Casappa recommends to use its own production filters:



### INSTALLATION

Check that the maximum coupling eccentricity stays within 0.0098 in (0,25 mm) to reduce shaft loads due to misalignment. It is advised to use a flexible coupling suitable to absorb eventual rotational shock. 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 plugs 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 22 psi (1,5 bar) 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 24 in Hg (0,8 bar). Inlet pressure less than 24 in Hg (0,8 bar) could cause an increase of noise emission, decreasing pump performance 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.

## MOUNTING POSITIONS

Standard pump is available with the D1 drain hole open and D2, D3, D4 plugged.

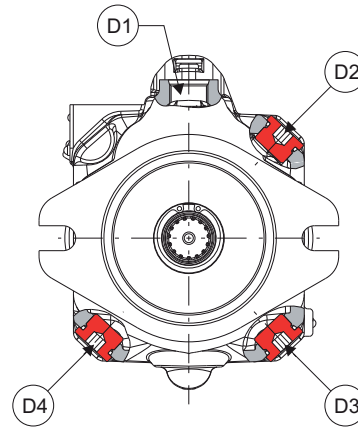
Before installation fill the pump with hydraulic oil for at least 3/4 of the volume keeping it in horizontal position.

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.

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 that the pump be mounted below the oil level and avoid suction lines with sharp restrictions.



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

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

## TECHNICAL DATA

### Technical data with mineral oil

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

Pump type MVP			48•45	48•53	60•60	60•72	60•84
Max. displacement (theor.) $V_{max}$	$\text{in}^3/\text{rev}$ ( $\text{cm}^3/\text{rev}$ )		2.75 (45)	3.23 (53)	3.66 (60)	4.39 (72)	5.12 (84)
Inlet pressure	in Hg (bar abs.)	min.	24 (0.8)				
		psi (bar abs.)	max. 363 (25)				
Max. outlet pressure $p_{max}$	psi (bar)	continuous	4060 (280)	3625 (250)	4060 (280)	4060 (280)	3625 (250)
		intermittent	4568 (315)	4060 (280)	4568 (315)	4568 (315)	4060 (280)
		peak	5075 (350)	4568 (315)	5075 (350)	5075 (350)	4568 (315)
Max. drain line pressure	psi (bar abs.)		22 (1,5)				
Max. speed $n_{max}$	$[\text{min}^{-1}]$	@ $V_{max}$ (1)	3000	2800	2700	2500	2500
Max. delivery (theor.)	US gpm (l/min)	@ $n_{max}$	35.7 (135)	39.2 (148,4)	42.8 (162)	47.6 (180)	55.5 (210)
		@ 1800 $\text{min}^{-1}$	21.4 (81)	25.2 (95,4)	28.5 (108)	34.2 (129,6)	39.9 (151,2)
		@ 1500 $\text{min}^{-1}$	17.8 (67,5)	21.0 (79,5)	23.8 (90)	28.5 (108)	33.3 (126)
		@ $n_{max}$	84.4 (63)	82.8 (61,8)	101.3 (75,6)	112.6 (84,0)	117.3 (87,5)
Max. power (theor.) ( $\Delta p = p_{max}$ cont.)	HP (kW)	@ 1800 $\text{min}^{-1}$	50.7 (37,8)	53.3 (39,8)	67.5 (50,4)	81.0 (60,5)	84.4 (63,0)
		@ 1500 $\text{min}^{-1}$	42.2 (31,5)	44.4 (33,1)	56.3 (42,0)	67.5 (50,4)	70.4 (52,5)
		@ $p_{max}$ cont.	1775 (200,5)	1867 (210,9)	2367 (267,4)	2840 (320,9)	2958 (334,2)
Max. torque (theor.)	lbf in (Nm)	@ 1450 psi (100 bar)	634 (71,6)	747 (84,4)	845 (95,5)	1014 (114,6)	1183 (133,7)
		Moment of inertia	$\text{ft}^2 \text{ lbs}$ ( $\text{kgm}^2$ )	0.07 (0,003)	0.07 (0,003)	0.19 (0,008)	0.19 (0,008)
Fill capacity	US gallons (l)		0.26 (1)	0.26 (1)	0.34 (1,3)	0.34 (1,3)	0.34 (1,3)
Mass (without oil)	lbs (kg)		41.9 (19)	41.9 (19)	48.5 (22)	48.5 (22)	48.5 (22)
Seals			N= Buna			V= Viton	
Operating temperature	°F (°C)	min.	-13 (-25)			14 (-10)	
		max. cont.	176 (+80)			230 (110)	
		max. peak	212 (+100)			257 (125)	

(1) = with an inlet pressure of 14.5 psi (1 bar abs).

Reducing the displacement or increasing the inlet pressure the max. speed change. See table at page 6.

For different working conditions, please consult our sales department.

## TECHNICAL DATA

### Technical data restrictions with fire resistant fluid

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

Pump type MVP			48•45	48•53	60•60	60•72	60•84
Max. outlet pressure $p_{max}$	psi (bar)	continuous	2465 (170)				
		intermittent	2683 (185)				
		peak	2900 (200)				
Max. speed $n_{max}$	$[min^{-1}]$	@ $V_{max}$ (1)	2000	2000	1700	1700	1700
Seals			N= Buna - V= Viton				
Operating temperature	°F (°C)	min.	0				
		max.	194 (90)				
Life bearing	%		75 %				

#### Phosphate ester - HFD

Pump type MVP			48•45	48•53	60•60	60•72	60•84
Max. outlet pressure $p_{max}$	psi (bar)	continuous	2900 (200)				
		intermittent	3190 (220)				
		peak	3480 (240)				
Max. speed $n_{max}$	$[min^{-1}]$	@ $V_{max}$ (1)	2000	2000	1700	1700	1700
Seals			V= Viton				
Operating temperature	°F (°C)	min.	14 (-10)				
		max.	122 (50)				
Life bearing	%		90 %				

## TECHNICAL DATA

### Design calculations for pump

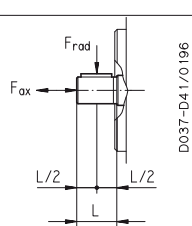
<b>Q</b>	US gpm (l/min)	Flow
<b>M</b>	lbf in (Nm)	Torque
<b>P</b>	HP (kW)	Power
<b>V</b>	in <sup>3</sup> /rev (cm <sup>3</sup> /rev)	Displacement
<b>n</b>	min <sup>-1</sup>	Speed
<b>Δp</b>	psi (bar)	Pressure
$\eta_v = \eta_v(V, \Delta p, n)$		Volumetric efficiency
$\eta_m = \eta_m(V, \Delta p, n)$		Mechanical efficiency
$\eta_t = \eta_v \cdot \eta_m$		Overall efficiency

$$Q = V \cdot \eta_v \cdot n \cdot 10^{-3} \quad [\text{l/min}]$$

$$M = \frac{\Delta p \cdot V}{62,83 \cdot \eta_m} \quad [\text{Nm}]$$

$$P = \frac{\Delta p \cdot V \cdot n}{600 \cdot 1000 \cdot \eta_t} \quad [\text{kW}]$$

### Max. permissible loading on drive shaft

Max. permissible loading on drive shaft		MVP 48•45	MVP 48•53	MVP 60•60	MVP 60•72	MVP 60•84
$F_{ax}$ Axial force		337 (1500)	337 (1500)	450 (2000)	450 (2000)	450 (2000)
$F_{rad}$ Radial force	@ L/2	337 (1500)	337 (1500)	675 (3000)	675 (3000)	675 (3000)

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

Inlet pressure psi (bar abs.)	Displacement %					% Variation of the max. speed
	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	

#### Example 1

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

#### Example 2

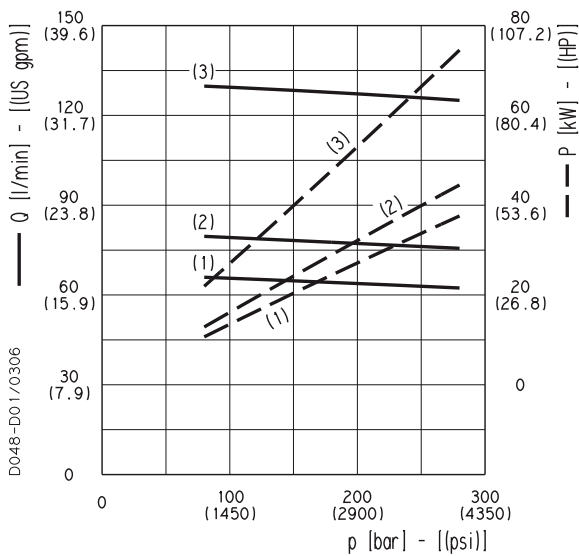
Displacement: 80 %  
Inlet pressure: 14.5 psi (1,0 bar abs.)  
Speed: 115 %

**Delivery / power (max. displacement)**

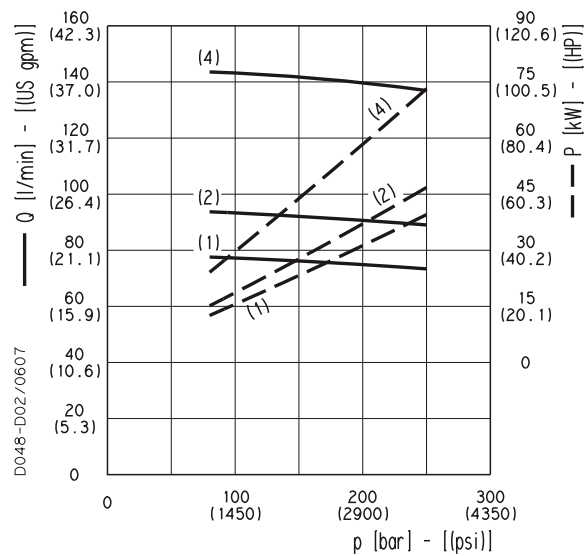
Each curve has been obtained at 122 °F (50 °C), using oil with viscosity 210 SSU (46 cSt) at 104 °F (40 °C) and at these speed:

- (1) 1500 min<sup>-1</sup>      (3) 3000 min<sup>-1</sup>
- (2) 1800 min<sup>-1</sup>    (4) 2800 min<sup>-1</sup>

**MVP48•45**



**MVP48•53**

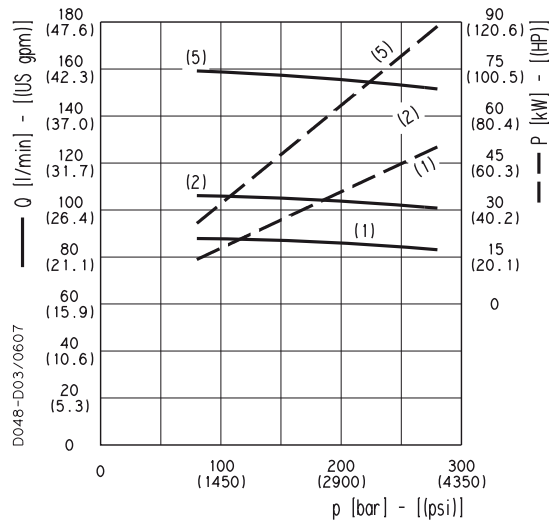


**Delivery / power (max. displacement)**

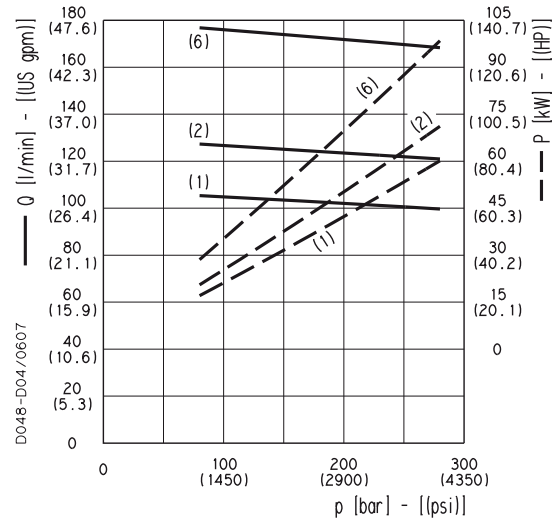
Each curve has been obtained at 122 °F (50 °C), using oil with viscosity 210 SSSU (46 cSt) at 104 °F (40 °C) and at these speed:

- (1) 1500 min<sup>-1</sup>
- (2) 1800 min<sup>-1</sup>
- (5) 2700 min<sup>-1</sup>
- (6) 2500 min<sup>-1</sup>

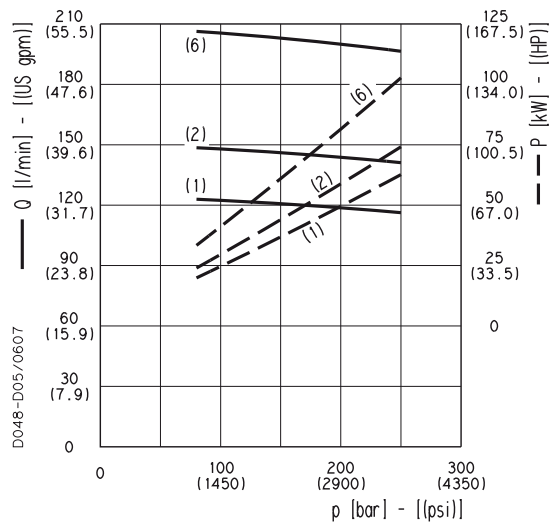
**MVP60•60**



**MVP60•72**



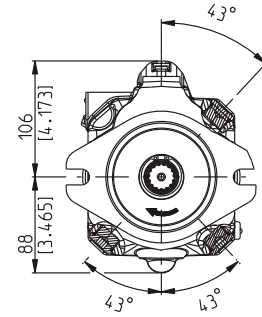
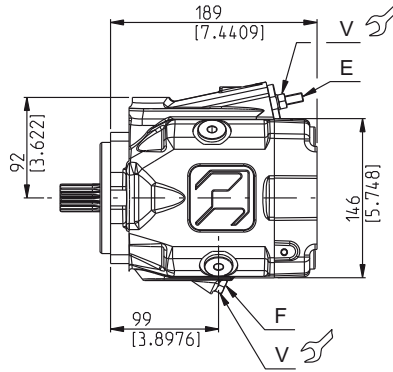
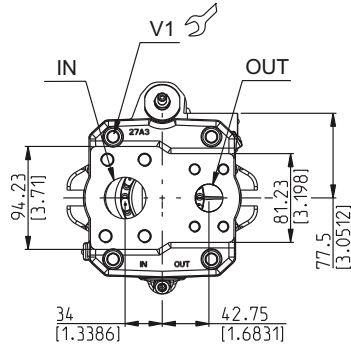
**MVP60•84**



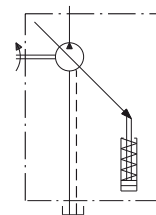
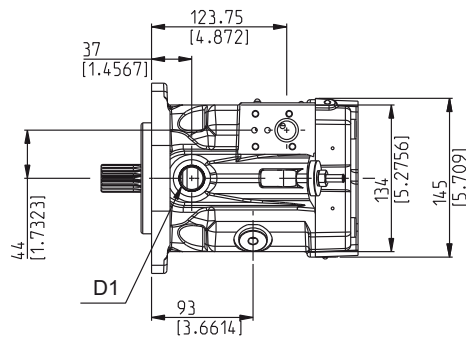
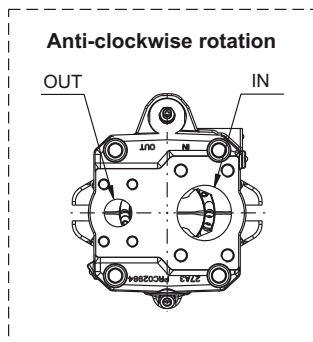


DIMENSIONS

MVP 48



DCAT\_048\_003



**E:** Max. displacement limiter  
**F:** Min. displacement limiter

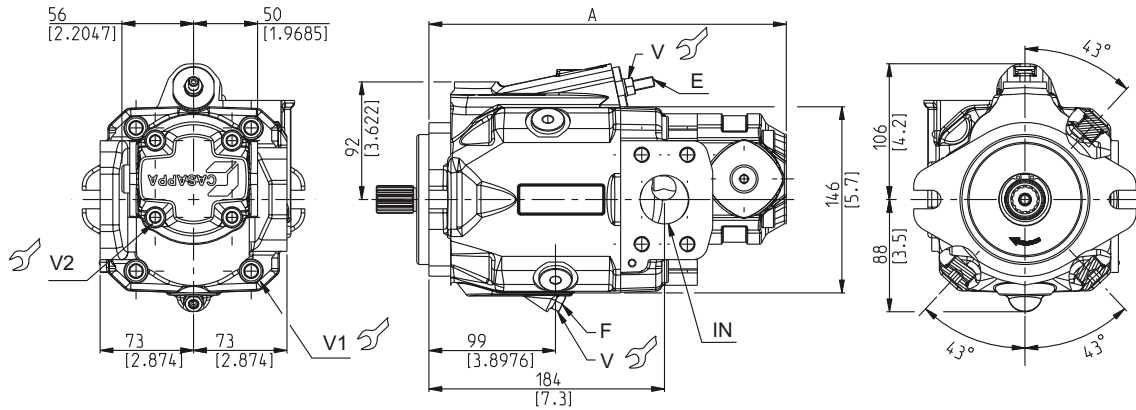
Screws tightening torque Nm (lbf in)	
V	V1
10 ±1 (80 ÷ 97)	130 ±13 (1036 ÷ 1266)

PORTS		
IN	OUT	D1
Nominal size		Drain port
1" 1/2	1"	

Dimensions at page 16

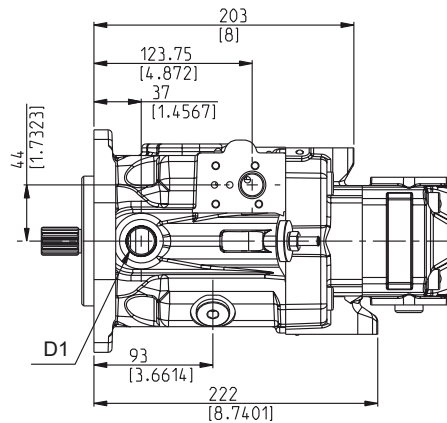
## MULTIPLE PUMPS DIMENSIONS

**MVP 48/KP20**



Screws tightening torque Nm (lbf in)		
V	V1	V2
10 ±1 (80 ÷ 97)	130 ±13 (1036 ÷ 1266)	70 ±7 (558 ÷ 682)

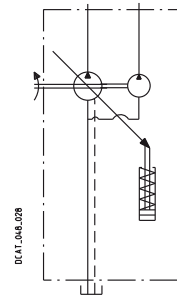
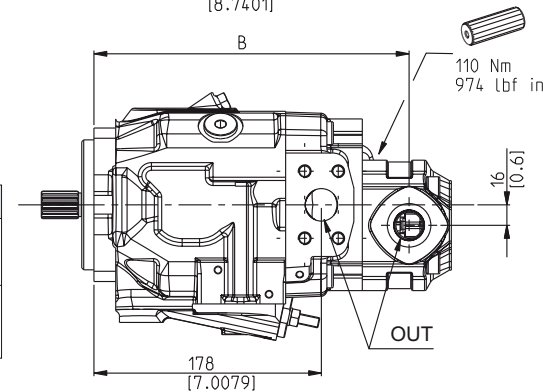
DCAT\_048\_025



**E:** Max. displacement limiter  
**F:** Min. displacement limiter

PORTS			
IN	OUT		D1
MVP	MVP	KP20	Drain port
Nominal size			
1" 1/2	1"	1/2"	

Dimensions at page 16



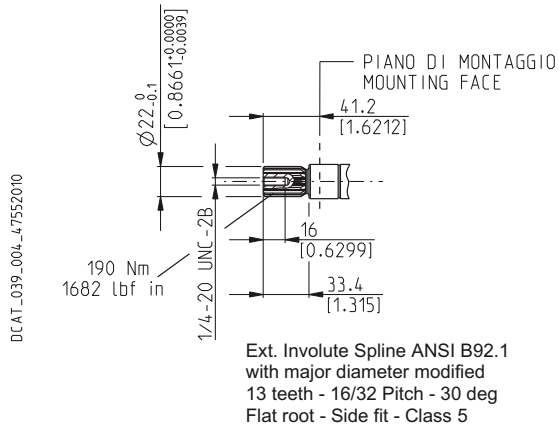
DCAT\_048\_028

		Gear pump KAPPA							Dimensions	
Pump type	Mounting flange	20•4	20•6,3	20•8	20•11,2	20•14	20•16	20•20	mm (in)	
<b>MVP 48</b>	<b>S5</b>	261,5 (10.2953)	264 (10.3937)	266,5 (10.4921)	270 (10.6299)	274 (10.7874)	280 (11.0236)	286 (11.2598)	mm (in)	<b>A</b>
		234 (9.2126)	236,5 (9.3110)	239 (9.4094)	242,5 (9.5472)	241 (9.4882)	246,5 (9.7047)	253 (9.9606)	mm (in)	<b>B</b>

**SAE "B" SPLINE**

**04**

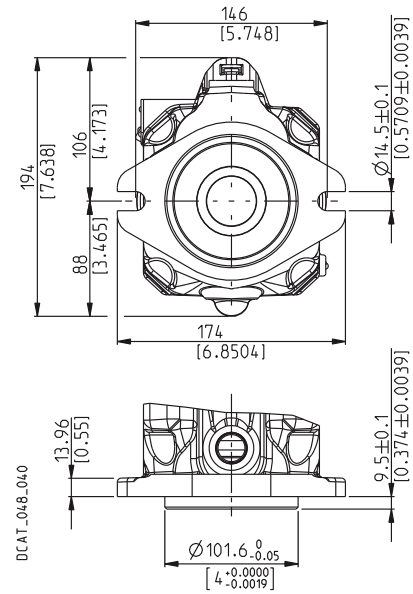
Mounting face refer to flange code **S5**



**SAE "B" 2 HOLES**

**S5**

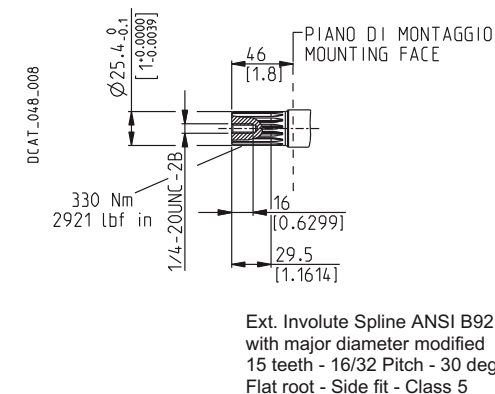
Conforms to SAE J744



**SAE "BB" SPLINE**

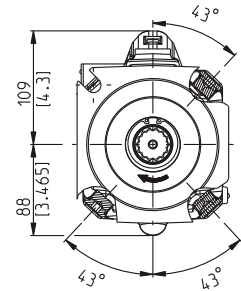
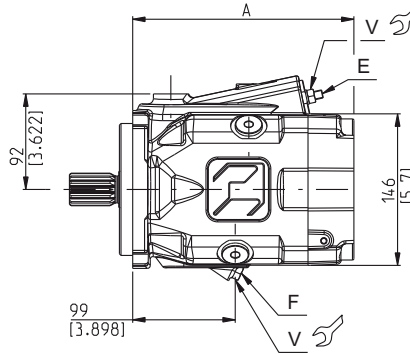
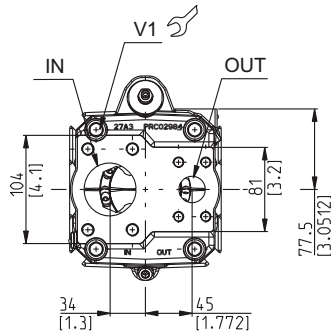
**05**

Mounting face refer to flange code **S5**

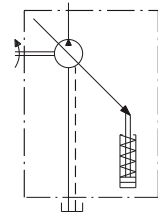
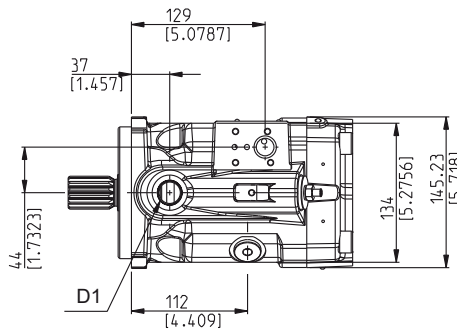
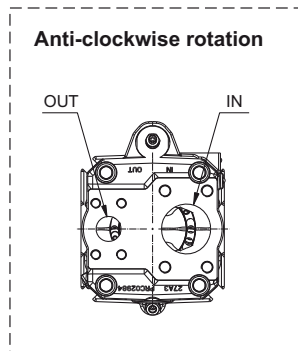


**DIMENSIONS**

**MVP 60**



DCAT\_048\_005



**E:** Max. displacement limiter  
**F:** Min. displacement limiter

Mounting flange	<b>A</b>
	mm (in)
<b>S5 SAE "B"</b>	213 (8.3858)
<b>S8 SAE "C"</b>	217 (8.5434)

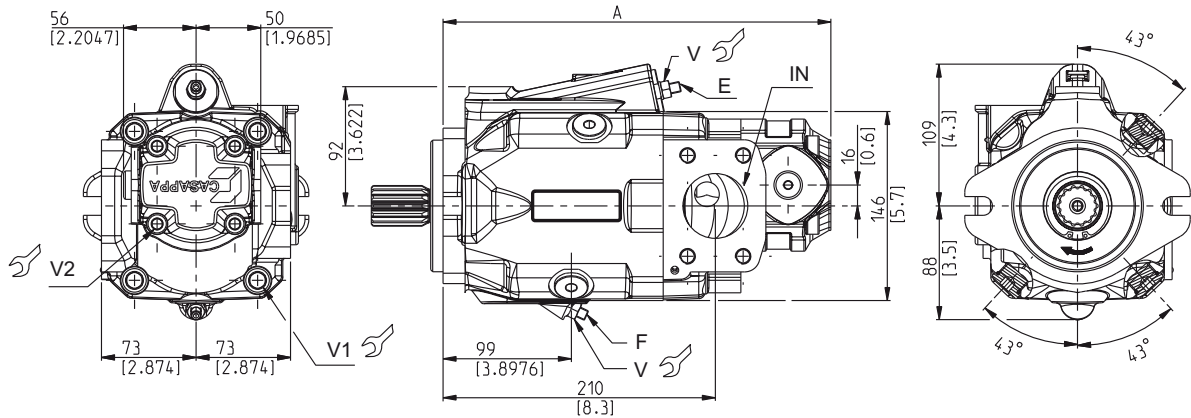
Screws tightening torque Nm (lbf in)	
<b>V</b>	<b>V1</b>
10 ±1 (80 ÷ 97)	130 ±13 (1036 ÷ 1266)

PORTS		
IN	OUT	D1
Nominal size		Drain port
1" 1/2	1"	

Dimensions at page 16

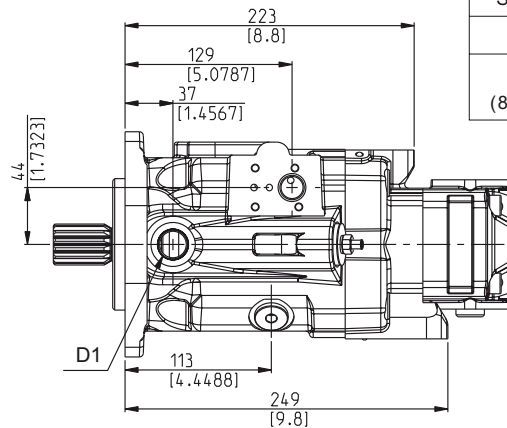
## MULTIPLE PUMPS DIMENSIONS

## MVP 60/KP20



Screws tightening torque Nm (lbf in)		
V	V1	V2
10 ±1 (80 ÷ 97)	130 ±13 (1036 ÷ 1266)	70 ±7 (558 ÷ 682)

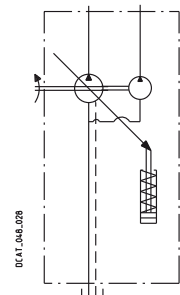
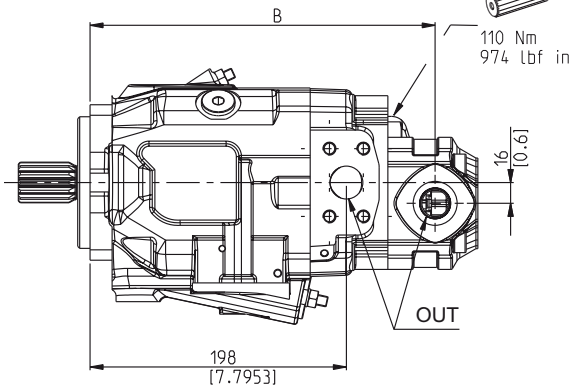
DCAT\_048\_029



**E:** Max. displacement limiter  
**F:** Min. displacement limiter

PORTS			
IN	OUT		D1
MVP	MVP	KP20	Drain port
Nominal size			
1" 1/2	1"	1/2"	

Dimensions at page 16

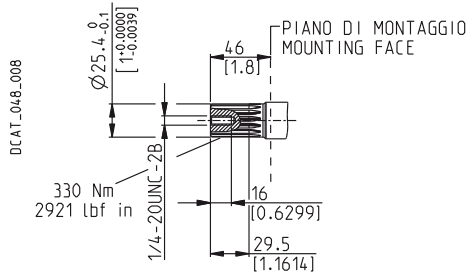


		Gear pump KAPPA								
Pump type	Mounting flange	20•4	20•6,3	20•8	20•11,2	20•14	20•16	20•20	Dimensions	
MVP 60	S5 - S8	281,5 (11.0827)	284 (11.1811)	286,5 (11.2795)	290 (11.4173)	294 (11.5748)	300 (11.8110)	306 (12.0472)	mm (in)	<b>A</b>
		254 (10.0000)	256,5 (10.0984)	259 (10.1969)	262,5 (10.3346)	261 (10.2756)	266,5 (10.4921)	273 (10.7480)	mm (in)	<b>B</b>

### SAE "BB" SPLINE

05

Mounting face refer to flange code **S5**

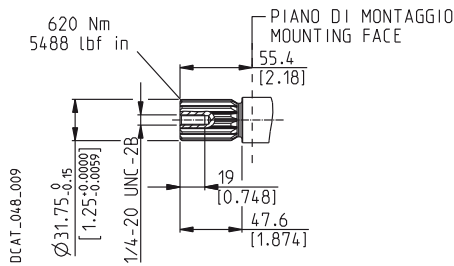


Ext. Involute Spline ANSI B92.1  
with major diameter modified  
15 teeth - 16/32 Pitch - 30 deg  
Flat root - Side fit - Class 5

### SAE "C" SPLINE

06

Mounting face refer to flange code **S8**

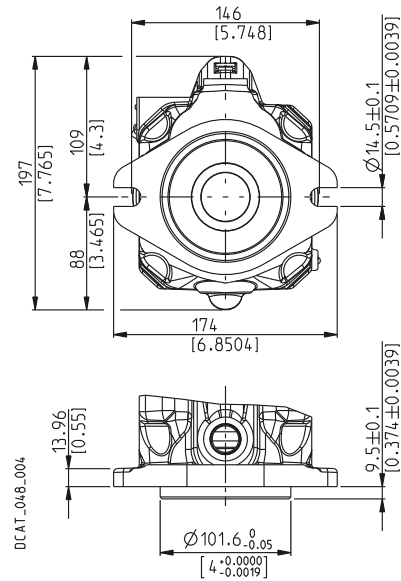


Ext. Involute Spline ANSI B92.1  
with major diameter modified  
14 teeth - 12/24 Pitch - 30 deg  
Flat root - Side fit - Class 5

### SAE "B" 2 HOLES

S5

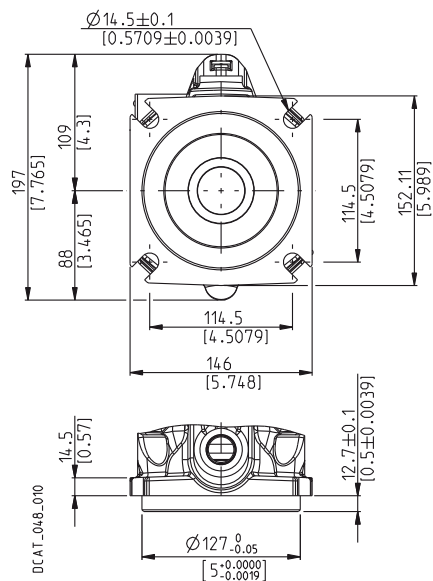
Conforms to SAE J744



### SAE "C" 4 HOLES

S8

Conforms to SAE J744



**PORTS SIZES**

PORTS TYPE	INLET / OUTLET PORTS						DRAIN PORTS		LOAD SENSING PORT		KP20 GEAR PUMP	
	Split SSM		Split SSS		SAE ODT		Gas BSPP	SAE ODT (●)	Gas BSPP	SAE ODT (●)	Gas BSPP	SAE ODT
Pump type	IN	OUT	IN	OUT	IN	OUT	D1	D1	X	X	OUT	OUT
<b>MVP 48</b>	ME	MC	SE	SC	OH	OF	GD	OC	GE	OD	GD	OC
<b>MVP 60</b>	MF	MC	SF	SC	OH	OF	GD	OC	GE	OD	GD	OC

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



Tightening torque for low pressure side port





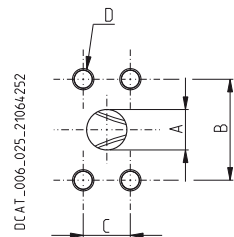
Tightening torque for high pressure side port [values obtained at 5075 psi (350 bar)]

**SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI**

**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)
<b>MC</b>	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10 17 (0.6693)	—	35 <sup>+2,5</sup> (310 ÷ 332)
<b>ME</b>	1" 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	M 12 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—
<b>MF</b>	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 12 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—

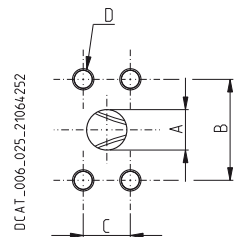


**SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI**



**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)
<b>SC</b>	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8 - 16 UNC-2B 17 (0.6693)	—	35 <sup>+2,5</sup> (310 ÷ 332)
<b>SE</b>	1" 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	1/2 - 13 UNC-2B 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—
<b>SF</b>	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	1/2 - 13 UNC-2B 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—



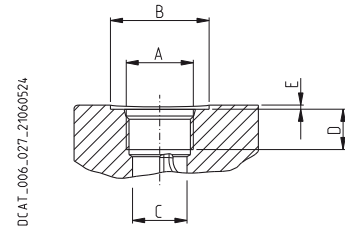
## PORTS SIZES



-  Tightening torque for low pressure side port
-  Tightening torque for high pressure side port [values obtained at 5075 psi (350 bar)]

### SAE STRAIGHT THREAD PORTS J514

### ODT

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



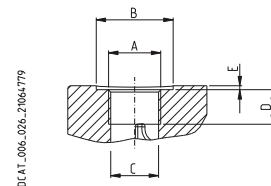
CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
<b>03 (X)</b>	1/4"	7/16" - 20 UNF - 2B	—	9,5 (0.3740)	—	—	—	35 <sup>+1</sup> (133 ÷ 142)
<b>OC (●)</b>	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	—	2 (0.0787)	30 <sup>+2,5</sup> (266 ÷ 288)	—
<b>OC (◆)</b>			34 (1.3386)	20,5 (0.8071)	17 (0.6693)	0,5 (0.0197)	—	70 <sup>+5</sup> (620 ÷ 664)
<b>OF</b>	1"	1 5/16" - 12 UNF - 2B	—	30,5 (1.2008)	20 (0.7874)	—	—	170 <sup>+10</sup> (1505 ÷ 1593)
<b>OH</b>	1" 1/2	1 7/8" - 12 UNF - 2B	—	45 (1.7717)	20 (0.7874)	—	100 <sup>+5</sup> (885 ÷ 929)	—



- (X) = Load sensing port  
 (●) = Drain port  
 (◆) = KP 20 outlet port

### GAS STRAIGHT THREAD PORTS

### BSPP

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



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
<b>GA (X)</b>	1/8"	G 1/8	—	8,75 (0.3444)	12 (0.4724)	—	—	35 <sup>+1</sup> (133 ÷ 142)
<b>GD (●)</b>	1/2"	G 1/2	30 (1.1811)	19 (0.7480)	17 (0.6693)	1 (0.0394)	20 <sup>+1</sup> (177 ÷ 186)	—
<b>GD (◆)</b>			—		20 (0.7874)	—	—	50 <sup>+2,5</sup> (443 ÷ 465)

- (X) = Load sensing port  
 (●) = Drain port  
 (◆) = KP 20 outlet port





## HOW TO ORDER SINGLE PUMPS

1	2	3	4	5	6	7	8	9	10
Pump type	Rotation	Drive shaft	Mounting flange	Ports position	Ports IN/OUT	Seals	Regulators	Additional options	Fluid
MVP 48•45	D	04	S5	P	ME/MC	N	RP0	E	...

1	Pump type (max displacement)	CODE
in <sup>3</sup> /rev	cm <sup>3</sup> /rev	
2.75	45	MVP 48•45
3.23	53	MVP 48•53
3.66	60	MVP 60•60
4.39	72	MVP 60•72
5.12	84	MVP 60•84

2	Rotation	CODE
Anti-clockwise		S
Clockwise		D

3	Drive shaft	CODE
SAE "B" spline (13 teeth)		04
SAE "BB" spline (15teeth)		05
SAE "C" spline (14 teeth)		06

4	Mounting flange	CODE
SAE "B" 2 holes		S5
SAE "C" 4 holes		S8

5	Ports position	CODE
Rear		P

6	Inlet/outlet ports	CODE
<b>SAE FLANGED PORTS METRIC THREAD (SSM)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	2"
MVP 60	2"	1"
		ME/MC MF/MC
<b>SAE FLANGED PORTS UNC THREAD (SSS)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	1"
MVP 60	2"	1"
		SE/SC SF/SC
<b>SAE STRAIGHT THREAD PORTS (ODT)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	1"
MVP 60	1"1/2	1"
		OH/OF OH/OF

CODE	Seals	7
N	Buna (standard)	
V	Viton	

CODE	Regulators	8
RP0	Pressure compensator - setting range 290 - 5075 psi (20 - 350 bar) (a)	
LS0	Flow compensator (b)	
LS2	Flow compensator for remote control (b)	
LS3	Flow compensator for internal control (b)	
RN0	Torque limiter - standard	
RN1	Torque limiter - internal pilot	

CODE	Additional options (c)	9
	Without additional options (no code)	
E	Max. displacement limiter (d)	
F	Min. displacement limiter (d)	
G	Min. and max. displacement limiter (d)	

CODE	Fluid	10
	Mineral oil (no code)	
H	HF fire resistant fluid (e)	

- a) For standard setting see page 18. ●
- b) Differential pressure standard setting 203 psi (14 bar) - Setting range 145 - 580 psi (10 - 40 bar).
- c) For additional options, please consult our sales department.
- d) Max. up to 50% of the displacement.
- e) For HF fire resistant fluid please consult our sales department.



## HOW TO ORDER DOUBLE PUMPS

1	2	3	4	5	6	7	8	9	10
Pump type	Rotation	Drive shaft	Mounting flange	Ports position	Ports IN/OUT	Seals	Regulators	Additional options	Fluid
MVP 48•53	D	05	S5	L	ME/MC	N	LS0	G	...
Front section									
KP 20.6,3 (#)				L	**/GD				
Rear section									

1	Pump type (max displacement)	CODE
	in <sup>3</sup> /rev	cm <sup>3</sup> /rev
	2.75	45
	3.23	53
	3.66	60
	4.39	72
	5.12	84
		MVP 48•45
		MVP 48•53
		MVP 60•60
		MVP 60•72
		MVP 60•84

2	Rotation	CODE
	Anti-clockwise	S
	Clockwise	D

3	Drive shaft	CODE
	SAE "B" spline (13 teeth)	04
	SAE "BB" spline (15teeth)	05
	SAE "C" spline (14 teeth)	06

4	Mounting flange	CODE
	SAE "B" 2 holes	S5
	SAE "C" 4 holes	S8

5	Ports position	CODE
	Side	L

6	Inlet/outlet ports	CODE
<b>SAE FLANGED PORTS METRIC THREAD (SSM)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	2"
MVP 60	2"	1"
		ME/MC
		MF/MC
<b>SAE FLANGED PORTS UNC THREAD (SSS)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	1"
MVP 60	2"	1"
		SE/SC
		SF/SC
<b>SAE STRAIGHT THREAD PORTS (ODT)</b>		
Pump type	Nominal size	
	Inlet IN SAE 3000	Outlet OUT SAE 3000
MVP 48	1"1/2	1"
MVP 60	1"1/2	1"
		OH/OF
		OH/OF

CODE	Seals	7
N	Buna (standard)	
V	Viton	

CODE	Regulators	8
RP0	Pressure compensator - setting range 290 - 5075 psi (20 - 350 bar) (a)	
LS0	Flow compensator (b)	
LS2	Flow compensator for remote control (b)	
LS3	Flow compensator for internal control (b)	
RN0	Torque limiter - standard	
RN1	Torque limiter - internal pilot	

CODE	Additional options (c)	9
	Without additional options (no code)	
E	Max. displacement limiter (d)	
F	Min. displacement limiter (d)	
G	Min. and max. displacement limiter (d)	

CODE	Fluid	10
	Mineral oil (no code)	
H	HF fire resistant fluid (e)	

- a) For standard setting see page 18. ●
- b) Differential pressure standard setting 203 psi (14 bar) - Setting range 145 - 580 psi (10 - 40 bar).
- c) For additional options, please consult our sales department.
- d) Max. up to 50% of the displacement.
- e) For HF fire resistant fluid please consult our sales department.

#: KP 20 Gear pumps:  
Displacements: see page 11 and page 14  
Ports: see page 16 and page 17  
For more informations, please see the respective technical catalogue.