

VARIABLE
DISPLACEMENT
AXIAL PISTON
PUMPS

MVP

HOW TO ORDER SINGLE PUMPS

MVP48.45 D - 04 S5 - L ME/MC - N - RN - G
 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)			
	—	—	MVP 30
OH/OF	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 71 ÷ 73	

(a) Drive shafts availability at pages 32 ÷ 35 and mounting flanges availability at pages 36 ÷ 37

Replaces: 03/06.2011

05/10.2014

HOW TO ORDER REGULATORS

TORQUE LIMITERS

Replaces: 03/06.2011

	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	- ... /	... /	...

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

9	Valve type (a)	Code
	Normally closed 12 VDC	1
	Normally closed 24 VDC	2
	Normally open 12 VDC	6
	Normally open 24 VDC	7

10	Connector type (a)	Code
	DIN 43 650 / ISO 4400 (standard)	S
	Deutsch DT04-2P	D

Code	Flow control option (a)	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
G	Min. and Max. displacement limiter	

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

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

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

05/10.2014

- (a) Only for RN2
- (b) Refer to page 52 and 54 for more information
- (c) 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

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)
MVP 30	45 (398)	7.1 (9,5)
MVP 48	61 (540)	9.6 (12,9)
MVP 60	97 (859)	15.2 (20,4)

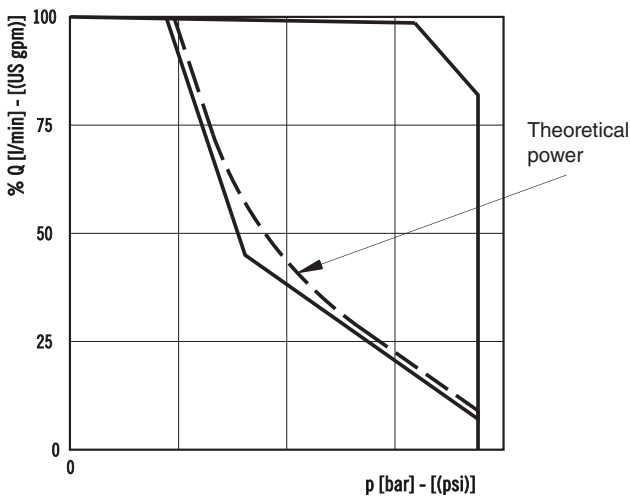
(●) @ 1500 min⁻¹

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

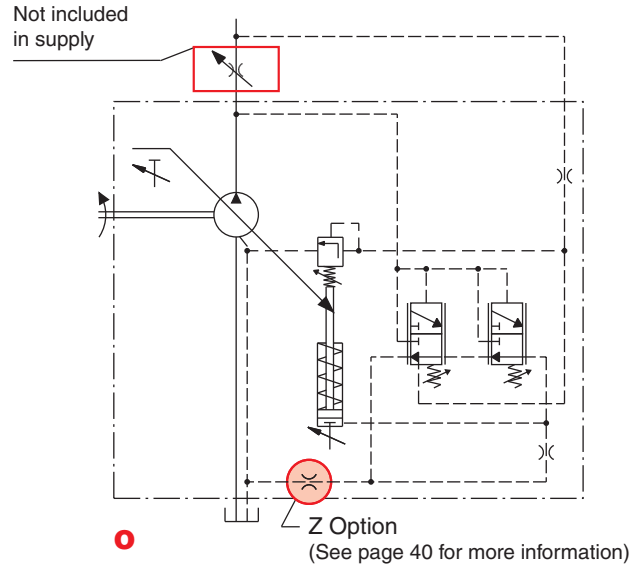
Available without pressure compensator RP.
For more information, please consult our technical sales department.

OPERATING CURVES



RN0 - Standard

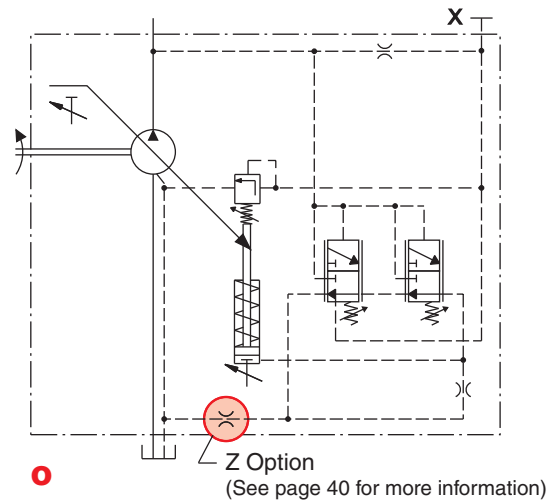
Torque limitation for closed center valve.



Replaces: 04/01.2012

RN1 - Internal pilot

Torque limitation for open center valve.

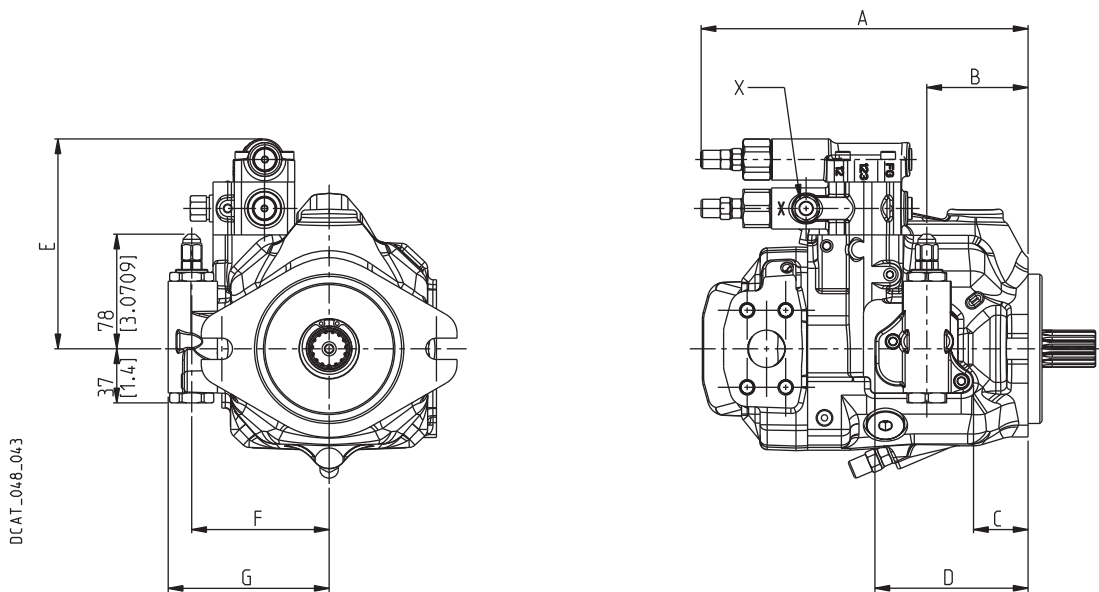
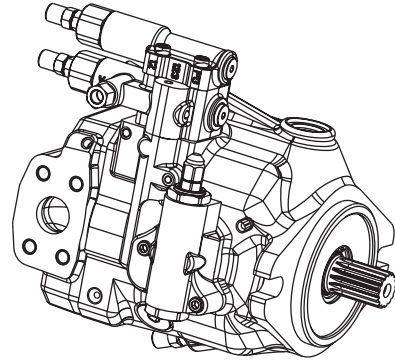


05/10.2014

TORQUE LIMITER

RN

Replaces: 03/06.2011



05/10.2014



Pump type	A	B	C	D	E	F	G
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
MVP 30	204 (8.0315)	77 (3.0315)	45 (1.7717)	111 (4.3701)	136 (5.3543)	89,5 (3.5236)	105,5 (4.1535)
MVP 48	223 (8.7795)	69 (2.7165)	37 (1.4567)	103 (4.0551)	143 (5.6299)	93,5 (3.6811)	109,5 (4.3110)
MVP 60	229 (9.0157)	80 (3.1496)	48 (1.8898)	114 (4.4882)	143 (5.6299)	93,5 (3.6811)	109,5 (4.3110)

X: Load-sensing port. Dimensions at page 38 ÷ 39

TECHNICAL DATA

Technical data with mineral oil

HL or HLP mineral oil based hydraulic fluid to DIN 51524

Replaces: 03/06.2011

05/10.2014

Pump type MVP			30-28	30-34	48-45	48-53	60-60	60-72	60-84
Max. displacement (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)				25 (363)			
Max. outlet pressure p_{max}	bar (psi)	continuous	280 (4060)	250 (3625)	280 (4060)	250 (3625)	280 (4060)	280 (4060)	250 (3625)
		intermittent	315 (4568)	280 (4060)	315 (4568)	280 (4060)	315 (4568)	315 (4568)	280 (4060)
		peak	350 (5075)	315 (4568)	350 (5075)	315 (4568)	350 (5075)	350 (5075)	315 (4568)
Max. drain line pressure	bar abs. (psi)				2 (29)				
Max. speed n_{max}	min ⁻¹	@ V_{max} (1)	3500	2900	3000	2500	3000	2700	2500
		@ n_{max}	98 (25.9)	101 (26.7)	135 (35.7)	134 (35.4)	180 (47.6)	194 (51.3)	212 (56.0)
Max. delivery (theor.)	l/min (US gpm)	@ 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)
		@ 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)
Max. power (theor.) ($\Delta p = p_{max}$ cont.)	kW (HP)	@ 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)
		@ p_{max} cont.	124,8 (1105)	138,5 (1226)	200,5 (1775)	213,7 (1891)	267,4 (2367)	320,9 (2840)	337 (2983)
Max. torque (theor.)	Nm (lbf in)	@ 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	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)
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)		

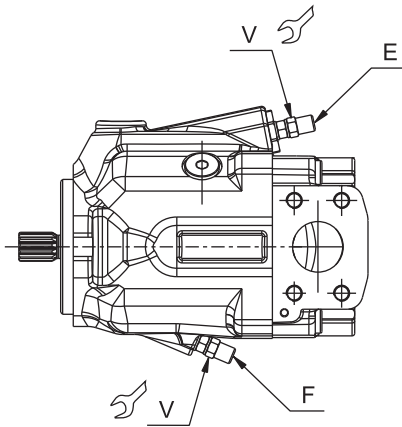
(1) = with an inlet pressure of 1 bar abs (14.5 psi) and viscosity between 15 and 35 cSt (77 and 163 SSU).

Reducing the displacement or increasing the inlet pressure the max. speed changes. See table at page 10.

For different working conditions, please consult our technical sales department.

DISPLACEMENT SETTING

Replaces: 03/06.2011



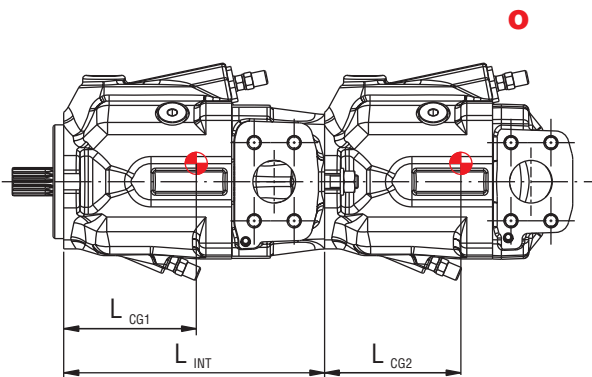
- E:** Max. displacement limiter
- F:** Min. displacement limiter
- G:** Min. and Max. displacement limiter (standard)
- V:** Tightening torque $10^{\pm 1}$ Nm (80 ÷ 97 lbf in)

			MVP 30	MVP 48	MVP 60
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 ranges, please consult our technical sales department.

CENTER OF GRAVITY

05/10.2014



Center of gravity

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

M_{MF} : Load moment on mounting flange

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

m : Weight (kg)

		MVP 30	MVP 48	MVP 60
L_{CG1}	mm (in)	100 (3.9370)	116 (4.5669)	120 (4.7244)
L_{CG2}	mm (in)	90 (3.5433)	99 (3.8976)	107 (4.2126)
L_{INT}	mm (in)	208 (8.1890)	233 (9.1732)	253 (9.9606)

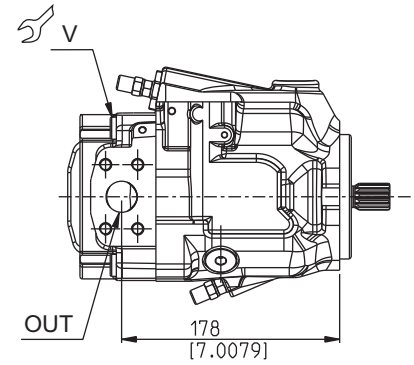
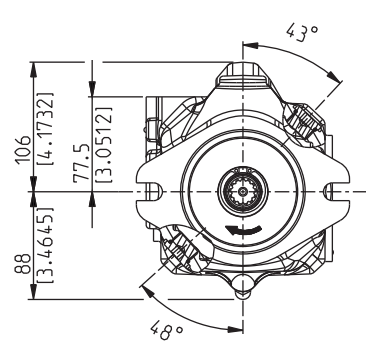
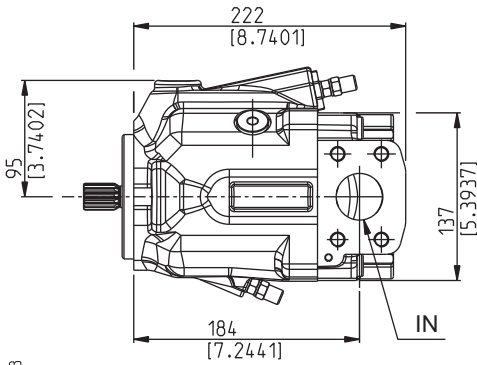
For single pumps refer to L_{CG2} values

MVP48

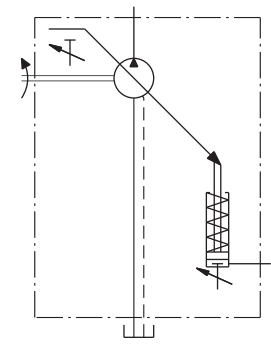
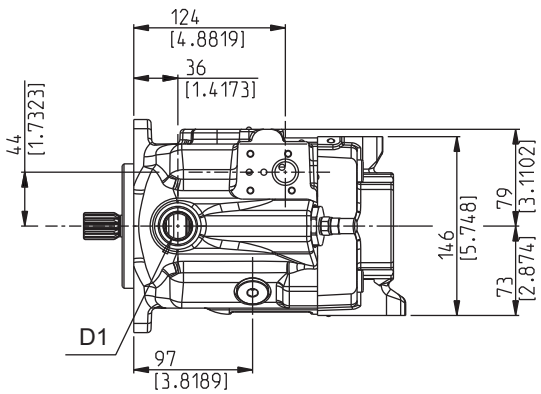
SIDE PORTS - DIMENSIONS

L

Drive shafts: page 33
Mounting flanges: page 36



DCAT_048_053



Screws tightening torque Nm (lbf in)

V
100 ±10 (797 ÷ 974)

Ports (Nominal size)

IN	OUT	D1
1" 1/2	1"	Drain port

Dimensions at page 38 ÷ 39

03/06.2011

MVP48

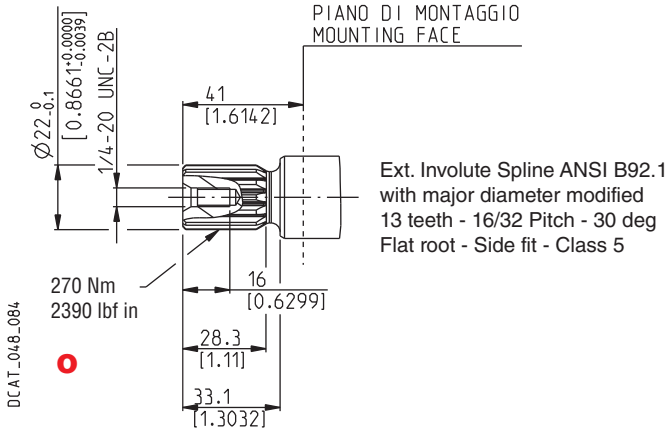
DRIVE SHAFTS

SAE "B" SPLINE

04

Mounting face refers to flange code **S5**

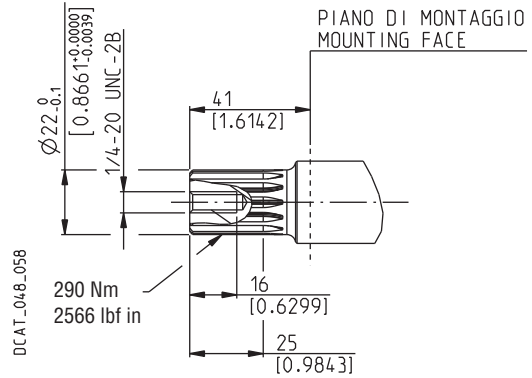
Replaces: 03/06.2011



SAE "B" SPLINE

4R

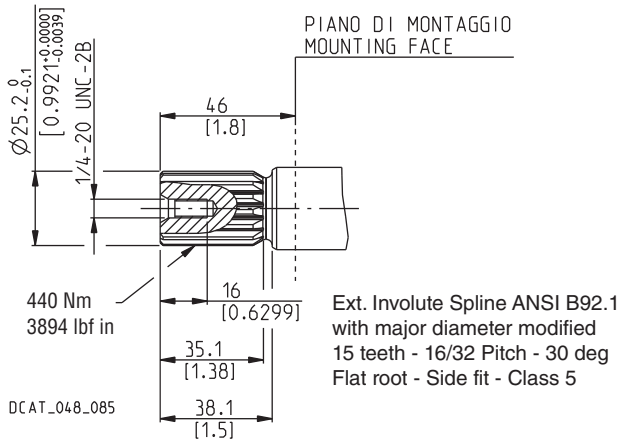
Mounting face refers to flange code **S5**



SAE "BB" SPLINE

05

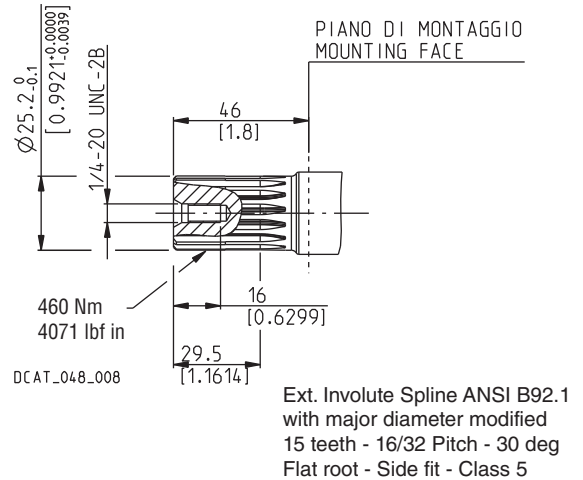
Mounting face refers to flange code **S5**



SAE "BB" SPLINE

5R

Mounting face refers to flange code **S5**

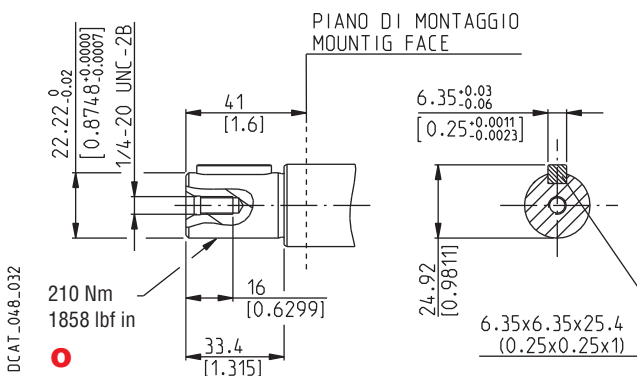


SAE "B" STRAIGHT

32

Mounting face refers to flange code **S5**

05/10.2014

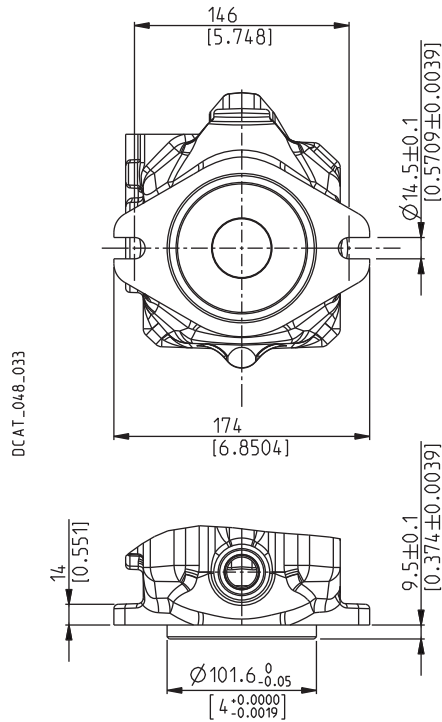


MOUNTING FLANGES AND TABLE OF COMPATIBILITY

SAE "B" 2 HOLES

S5

Conforms to SAE J744



Replaces: 03/06.2011

DRIVE SHAFTS
See page 32 ÷ 35

Pump type	04	4R	32	05	5R	06	6R	34
MVP 30	X	X	X					
MVP 48	X	X	X	X	X			
MVP 60				X	X	X	X	X

X Available combination

05/10.2014

PORTS SIZES

Ports type	INLET / OUTLET PORTS						DRAIN PORTS		LOAD SENSING PORTS		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	D1	X	X	OUT	OUT
MVP 30	MD	MB	SD	SB	—	—	—	OB	GA	03	GD	OC
MVP 48	ME	MC	SE	SC	OH	OF	GD	OC	GA	03	GD	OC
MVP 60	MF	MC	SF	SC	MF	OF	GD	OC	GA	03	GD	OC

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



Tightening torque for low pressure side port

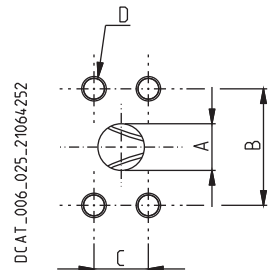


Tightening torque for high pressure side port [values obtained at 350 bar (5075 psi)]

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 (0.7874)	47,6 (1.8740)	22,2 (0.8740)	M 10 17 (0.6693)	—	45 ^{+2,5} (398 ÷ 420)
MC	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10 17 (0.6693)		30^{+2,5} (266 ÷ 288)
MD	1" 1/4	32 (1.2598)	58,7 (2.3110)	30,2 (1.1890)	M 10 17 (0.6693)	20 ⁺¹ (177 ÷ 186)	—
ME	1" 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	M 12 20 (0.7874)	30^{+2,5} (266 ÷ 288)	
MF	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 12 20 (0.7874)	30 ^{+2,5} (266 ÷ 288)	—

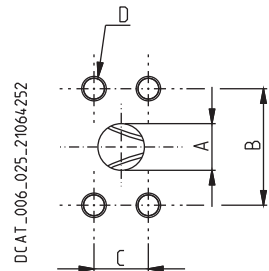


DCAT_006_025_21064252

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 (0.7874)	47,6 (1.8740)	22,2 (0.8740)	3/8 - 16 UNC-2B 17 (0.6693)	—	30 ^{+2,5} (266 ÷ 288)
SC	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8 - 16 UNC-2B 17 (0.6693)	—	35 ^{+2,5} (310 ÷ 332)
SD	1" 1/4	32 (1.2598)	58,7 (2.3110)	30,2 (1.1890)	7/16 - 14 UNC-2B 17 (0.6693)	25 ⁺¹ (221 ÷ 230)	—
SE	1" 1/2	38,1 (1.5000)	69,8 (2.7480)	35,7 (1.4055)	1/2 - 13 UNC-2B 20 (0.7874)	30 ^{+2,5} (266 ÷ 288)	—
SF	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	1/2 - 13 UNC-2B 20 (0.7874)	30 ^{+2,5} (266 ÷ 288)	—



DCAT_006_025_21064252

03/06.2011