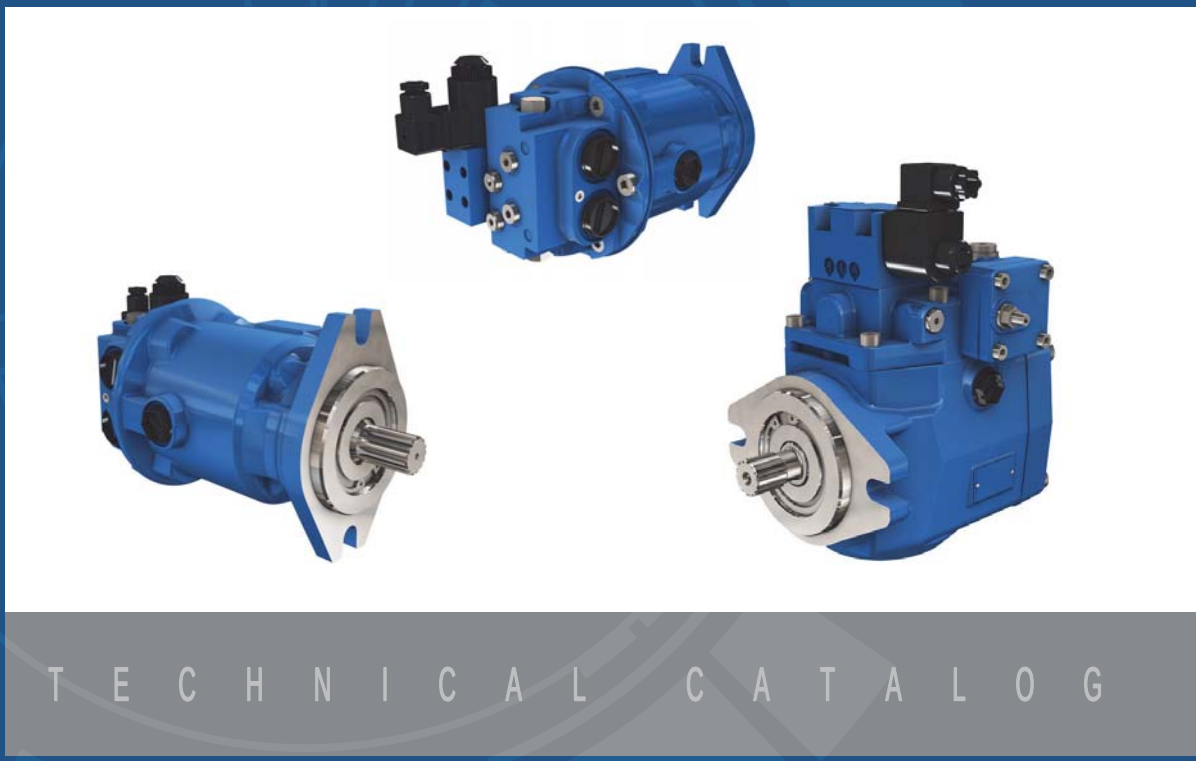
MOTORS MV

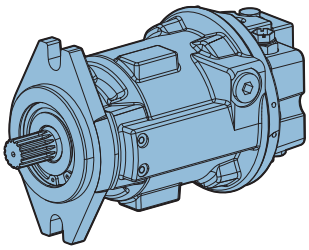
HYDRAULIC MOTORS

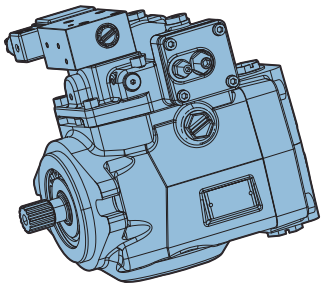


TECHNICAL CATALOG

POCLAIN Hydraulics

OVERVIEW





			MV2	MV3
Displacement	Maximum	cm³/rev *[in³/rev.]*	From 35 *[2.14]* to 53 *[3.23]*	From 55 *[3.36]* to 65 *[3.973]*
	Minimum	cm³/rev *[in³/rev.]*	From 17 *[1.04]* to 41 *[2.50]*	25 *[1.53]*
Speed	at max. displacement	rpm	3 200	
	at mini. displacement	rpm	4 200	
Output torque		N.m *[lbf.in]*	211 *[1868]*	256 *[2266]*
Max. pressure	Continuous	bar *[PSI]*	250 *[3 626]*	
	Peak	bar *[PSI]*	350 *[5 076]*	
Case pressure	Continuous	bar *[PSI]*	1,5 *[21,7]*	
	Maximum (cold start)	bar *[PSI]*	2,5 *[36.2]*	
Mounting flange and shaft			SAE B	
Mass		kg *[lb]*	19 *[42]*	30 *[66]*

* minimal displacement is determined by max. acceptabe speed (4200 rpm)

The MV motors are 2 displacement axial pistons swashplate design. They can be used for close or open loop circuits. The MV motors provide a torque according to the differential pressure between A and B ports. Their speed of rotation is function of input flow and motor displacement.

The displacement is obtained by number of pistons, piston diameter and angle of swash plate.
The MV motors are available with hydraulic or electrical two position control.

The MV motors can be equipped with flushing valve to reduce the oil temperature in the circuit.



CONTENT

MOTOR MV2 **4**

Model Code **4**
Characteristics **5**
Options **9**

MOTOR MV3 **10**

Model Code **10**
Characteristics **11**
Options **16**

OPERATING PARAMETERS **18**

Operating parameters **18**

MODEL CODE

1	2	3	4	5	6	7	8	9
M V 2				S4	03	VS	1,4	

1

Control	
Hydraulic 2 positions	**S**
Electrical 2 positions	**B**

2

Volt	
None (for hydraulic control)	**00**
12 V	**12**
24 V	**24**

3 - 4

Displacement max. / min cm^3/rev *[in^3/rev]*		
35 *[2.13]* / 17 *[1.04]*	**35**	**17**
42 *[2.56]* / 19 *[1.16]*	**42**	**19**
45 *[2.75]* / 23 *[1.40]*	**45**	**23**
53 *[3.23]* / 27 *[1.65]*	**53**	**27**
53 *[3.23]* / 41 *[2.50]*	**53**	**41**

5

Mounting flange and shaft	
SAE B; z = 15; 16/32 D.P.	**S4**

6

Connections	
Same side	**03**

7

Flushing valve	
Yes	**VS**

8

Orifice for flushing valve	
Ø 1,4 mm *[dia. 0.055 in]*	**1,4**

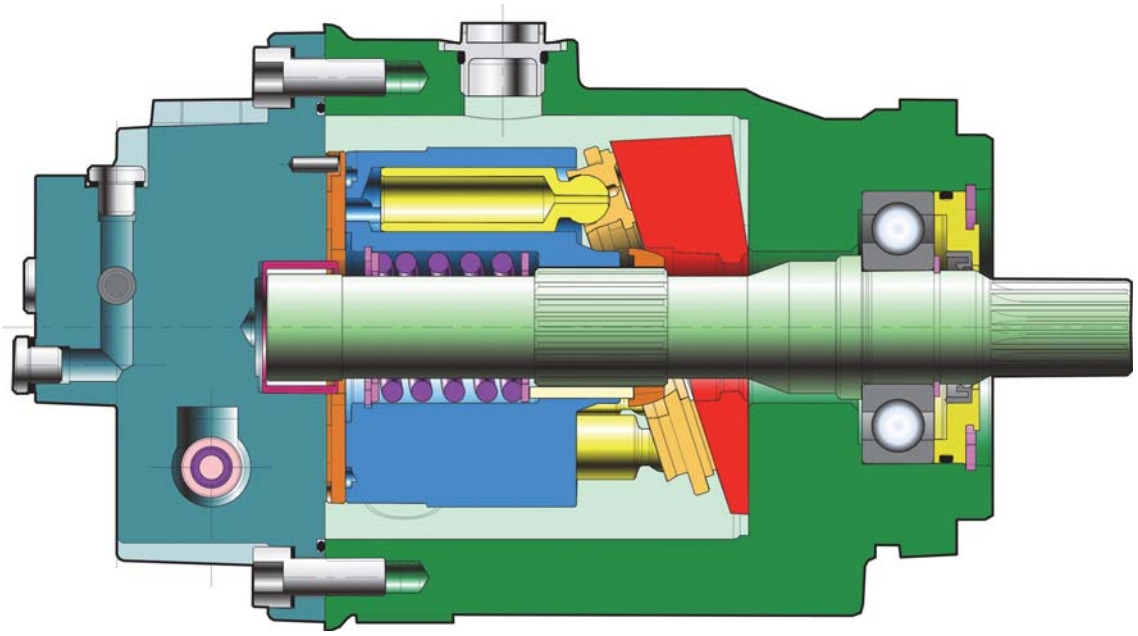
The orifice diameter is adaptable to necessary flushing flow.

9

Options	
Finishing coat	**PA**
UNF Threads	**FU**
Customized identification plate	**DP**
Installed speed sensor	**SS**

In case of request for a combination of several options, please contact your Poclain Hydraulics application engineer for further information.

CHARACTERISTICS



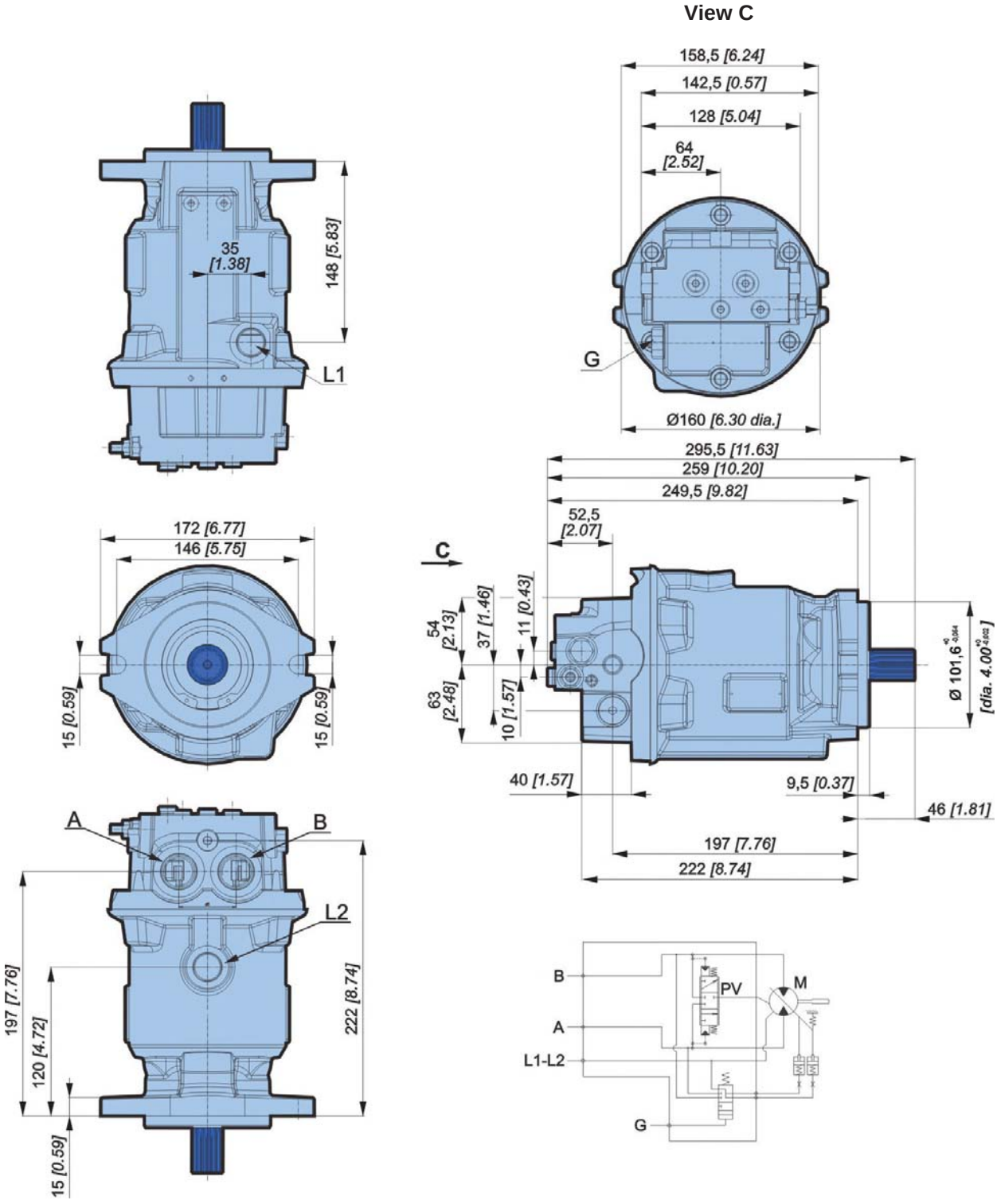
Max. displacement*	cm^3/rev *[in^3/rev.]*	From 35 *[2.14]* to 53 *[3.23]*
Mini. displacement*	cm^3/rev *[in^3/rev.]*	From 17 *[1.04]* to 41 *[2.50]*
Speed at max. displacement	rpm	3 200
Speed at mini. displacement	rpm	4 200
Output torque	N.m *[lbf.in]*	211 *[1868]*
Max.continuous pressure	bar *[PSI]*	250 *[3 626]*
Max. peak pressure	bar *[PSI]*	350 *[5 076]*
Mounting flange and shaft		SAE B
Mass	kg *[lb]*	19 *[42]*

* The maximal and minimal displacements are determined from angle of swashplate and can not be subsequently changed.
If the motor is installed in an open loop, be careful to provide a backpressure (return line) of 10 bar *[145 PSI]*.

Hydraulic control (two positions)

	1	2	3	4	5	6	7	8	9
MV2	S	00			S4	03	VS	1,4	

The displacement is modifiedby feeding an input pressure into the port G (minimal required pressure is 10 bar *[145 PSI]*).
Motor without pressure is at max. displacement.

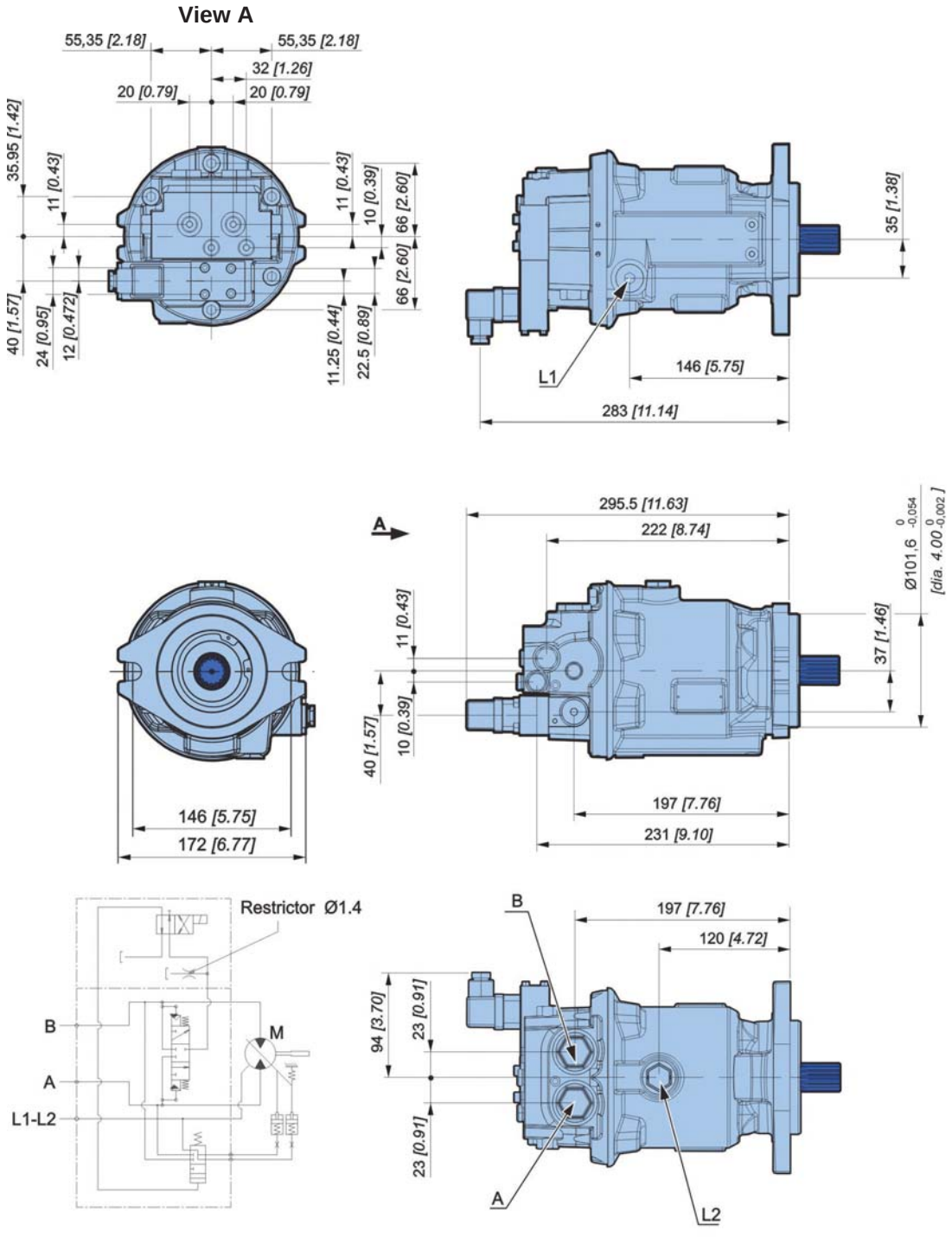


Electrical control (two positions)

1	2	3	4	5	6	7	8	9	
M V 2	B				S4	03	VS	1,4	

12 V	12
24 V	24

The motor is at maximal displacement if there is no current. The pressure to change the dispacement comes from an internal line. There is no need of external line.

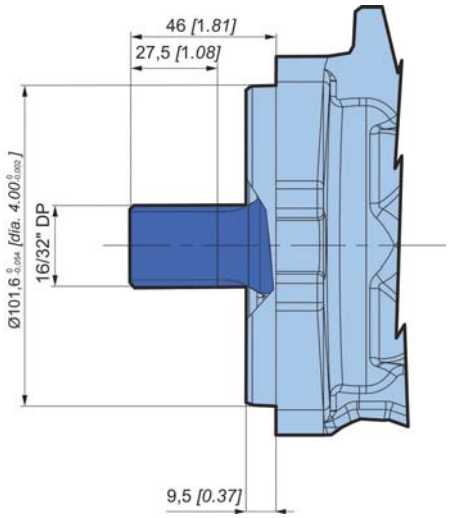


Mounting flange and shaft

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	

S4 **SAE-B**

15 teeth
Max torque: 360 N.m *[3186 in.lbf]*

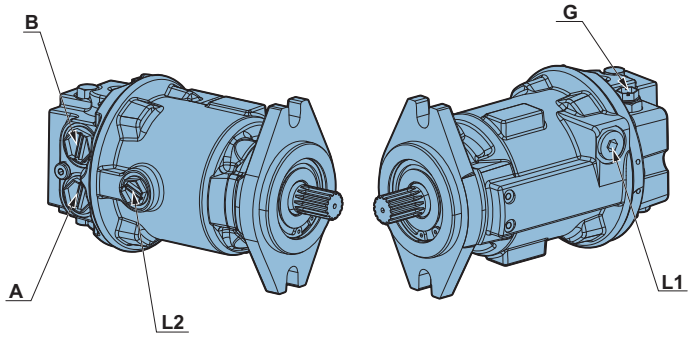


Splined ANSI B92.1a-1996
Pitch 16/32'' DP
Pressure angle 30°
Tolerance class: 5

Connections

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	

03 **Same side**



Port	Function	ISO 1179-1 (standard)
A-B	Pressure	3/4'' - BSPP
L1/L2	Drain	1/2'' - BSPP
G	External hydraulic shifting	1/4'' - BSPP

OPTIONS

Finishing coat

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	PA

The motors can be delivered with finishing coat when requested. Standard paint is RAL 9005 (black color).

Consult your Poclain Hydraulics application engineer for other colors of topcoat.

UNF threads

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	FU

Port	Function	ISO 11926-1 (option FU)
A-B	Pressure	1'' 1/16 - 12 UNF
L1/L2	Drain	7/8'' - 14 UNF
G	External hydraulic shifting	7/16'' - 20 UNF

Customized identification plate

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	DP

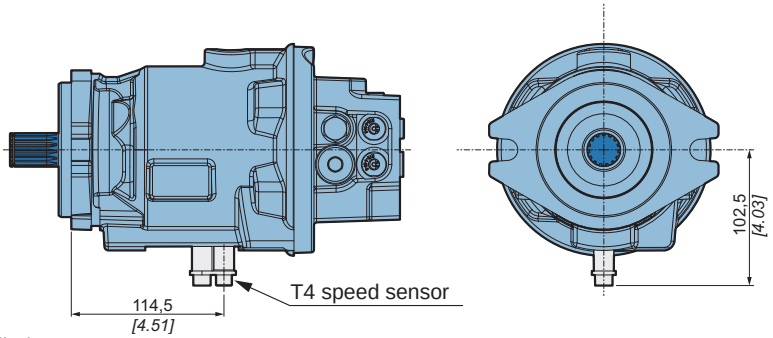
It is possible to provide our products with dedicated plate (your part number engraved on the plate) when requested.

This option is available only for minimum volume of 50 pieces.

Consult your Poclain Hydraulics application engineer for other possibilities.

Installed speed sensor

1	2	3	4	5	6	7	8	9
M V 2					S4	03	VS	1,4	SS



A speed sensor can be installed on MV2 motor.

Look at the "Mobile Electronic" N° A01889D technical catalogue for the sensor specifications and its connection.

Speed sensor sends a signal of 9 pulses per revolution.

MODEL CODE

1	2	3	4	5	6	7	8	9
M V 3				S4				

1

Control	
Hydraulic 2 positions	S
Electrical 2 positions	B

2

Volt	
None (for hydraulic control)	00
12 V	12
24 V	24

3 - 4

Displacement max. / min cm^3/rev *[in^3/rev]*		
55 *[3.36]* / 25* *[1.53]*	55	25*
60 *[3.66]* / 25* *[1.53]*	60	25*
65 *[3.97]* / 25* *[1.53]*	65	25*

* Maximal and minimal displacement is adjustable by an adjusting screw.

5

Mounting flange and shaft	
SAE B; z = 15; 16/32 D.P.	S4

6

Connections	
Opposite side	02
Rear side	04
Opposite and rear side	05

7

Flushing valve	
No	00
Yes	VS

Inside the motor cover, a purge valve can be fitted. The flushing valve is useful in case when the temperature of the oil in the close and open circuit is too high.

8

Orifice for flushing valve	
No	00
Ø 1,4 mm *[dia. 0.055 in]*	1,4

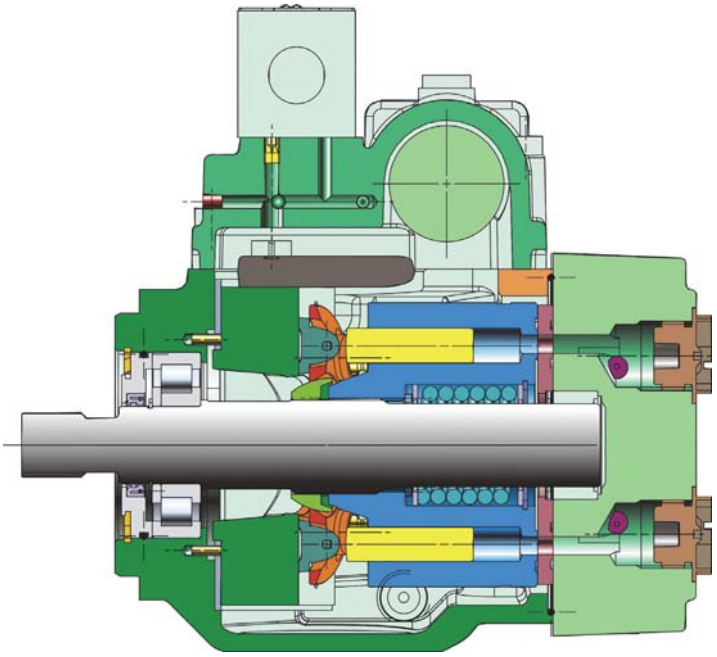
The orifice diameter is adaptable to necessary flushing flow.

9

Options	
Finishing coat	PA
UNF Threads	FU
Customized identification plate	DP

In case of request for a combination of several options, please contact your Poclain Hydraulics application engineer for further information.

CHARACTERISTICS



Max. displacement*	cm³/rev *[in³/rev.]*	From 55 *[3.36]* to 65 *[3.973]*
Mini. displacement**	cm³/rev *[in³/rev.]*	25 *[1.53]*
Speed at max. displacement	rpm	3 200
Speed at mini. displacement	rpm	4 200
Output torque	N.m *[lbf.in]*	256 *[2266]*
Max.continuous pressure	bar *[PSI]*	250 *[3 626]*
Max. peak pressure	bar *[PSI]*	350 *[5 076]*
Mounting flange and shaft		SAE B
Mass	kg *[lb]*	30 *[66]*

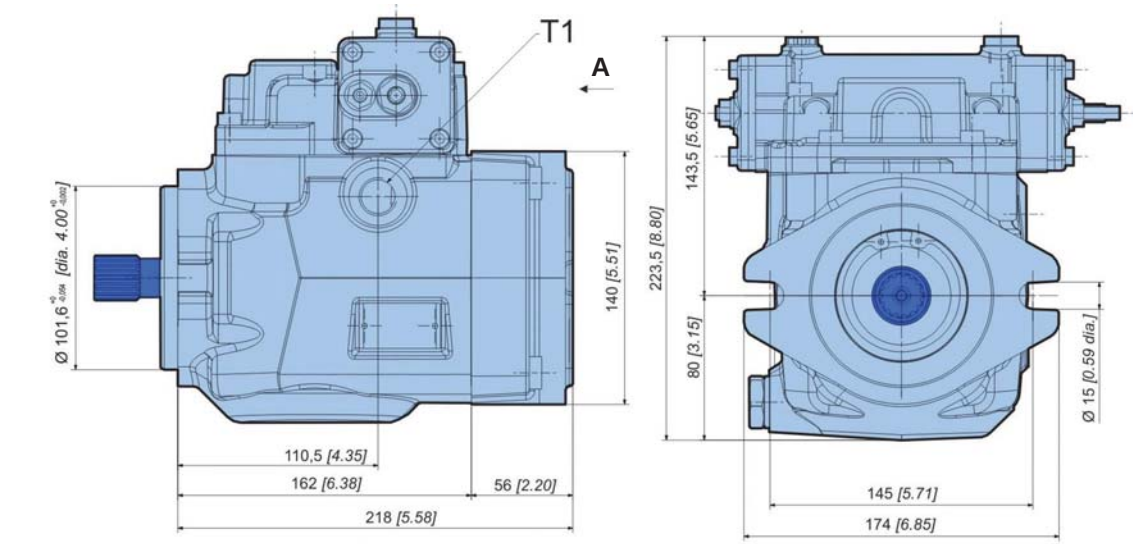
* The maximal displacement can be reduced with the screw of max. displacement limiter.
** The minimal displacement can be adjusted with the screw of mini. displacement limiter. Taking care that the max. speed is 4200 RPM.

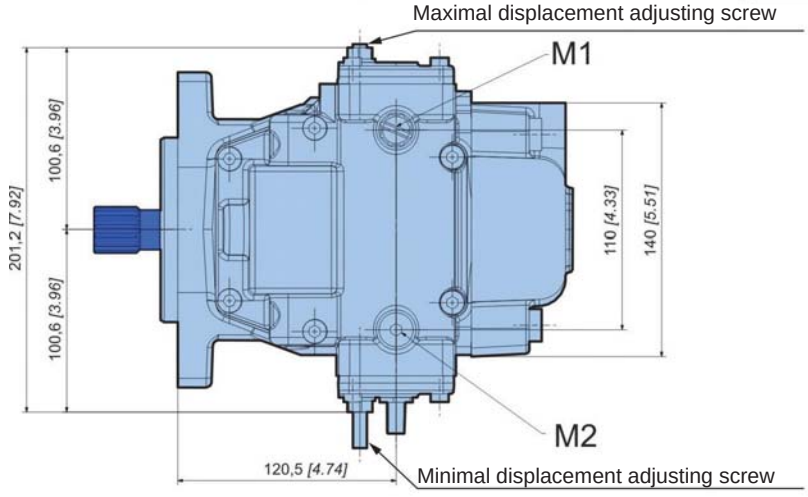
If the motor is installed in an open loop circuit, make sure that the back pressure is 10 bar *[145 PSI]*.

Hydraulic control (two positions)

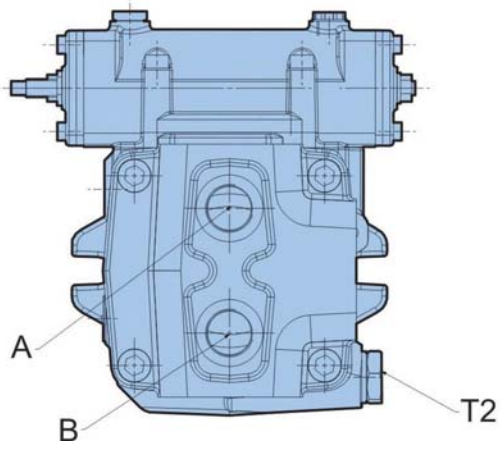
		1	2	3	4	5	6	7	8	9
M	V	3	S	00			S4				

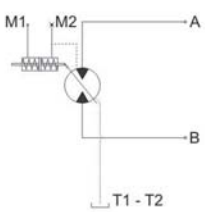
The displacement is modifiedby feeding an input pressure into the port M1 (minimal required pressure is 15 bar *[210 PSI]*).
Motor with no pressure is at max. displacement.





View A



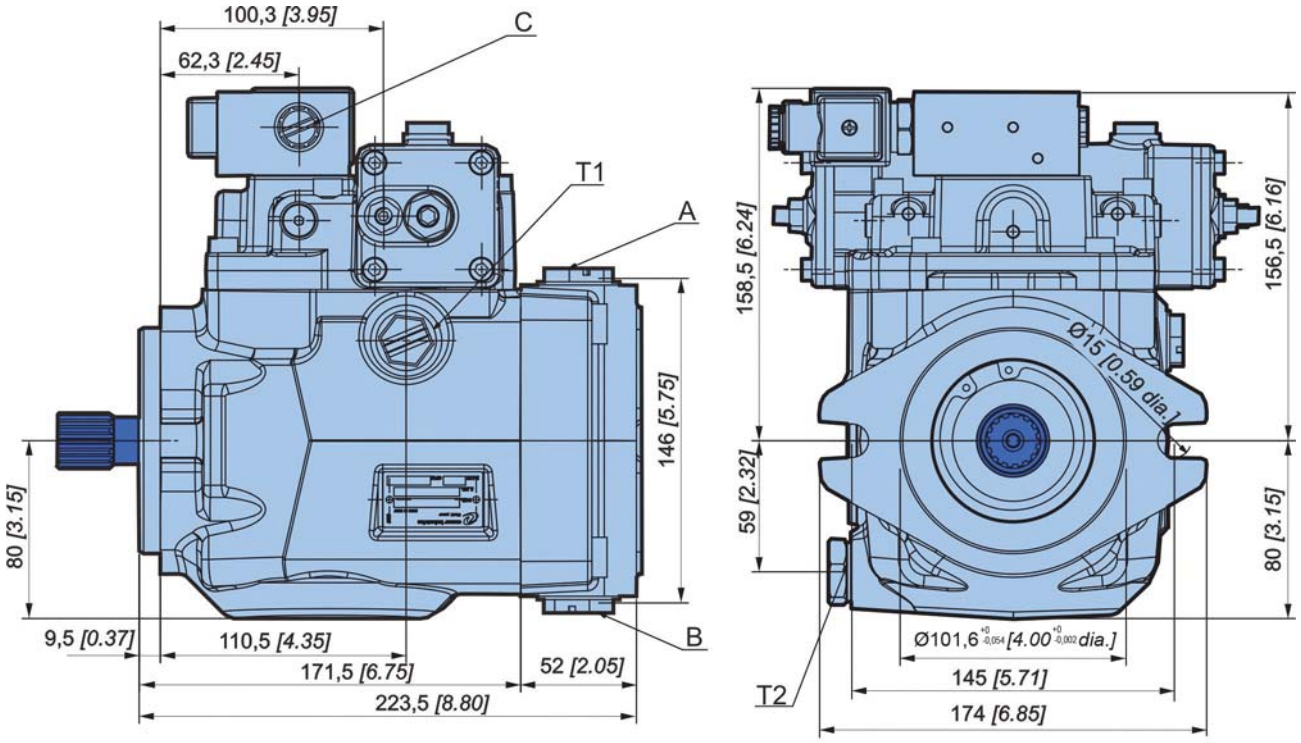


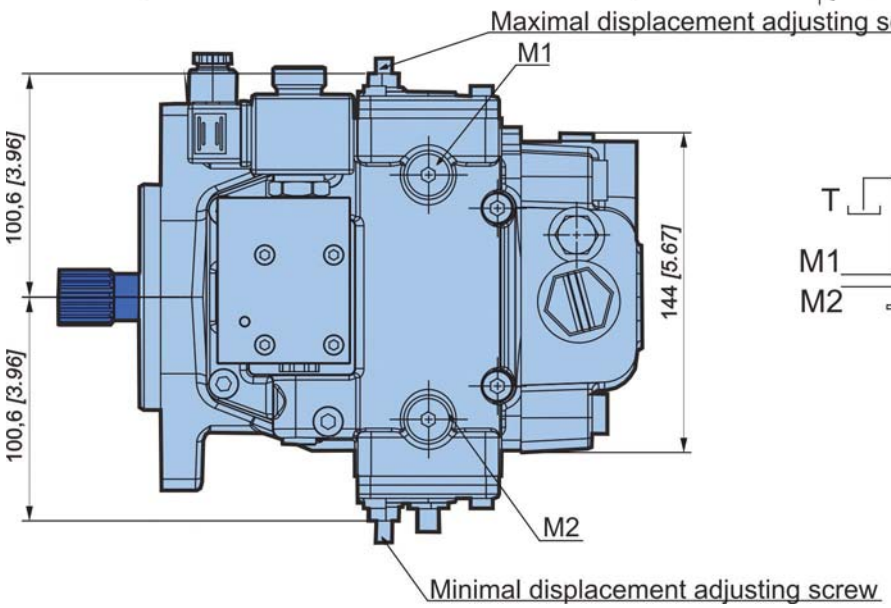
Electrical control (two positions)

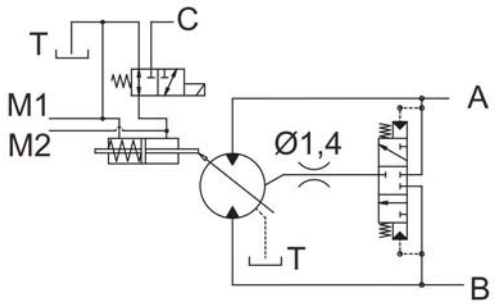
1	2	3	4	5	6	7	8	9
M V 3	B	☐	☐	☐	S4	☐	☐	☐	☐

12 V	**12**
24 V	**24**

The motor is at maximal displacement if there is no current.
The pressure to change the dispacement comes from an external line at the port C.





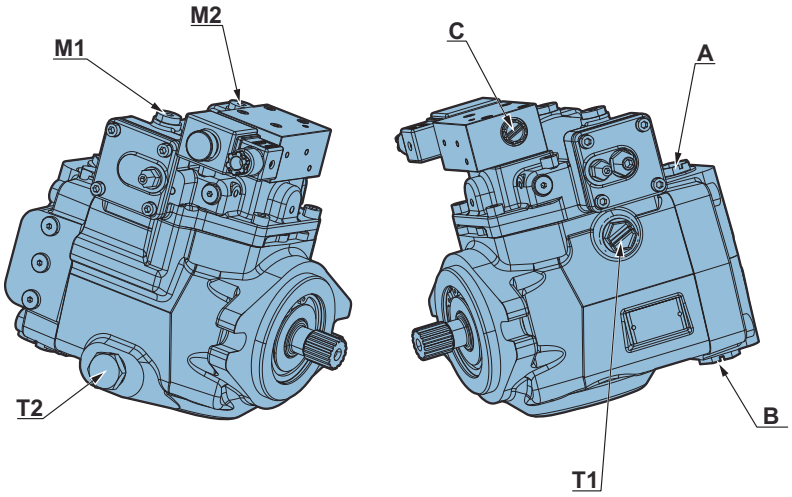


Connections

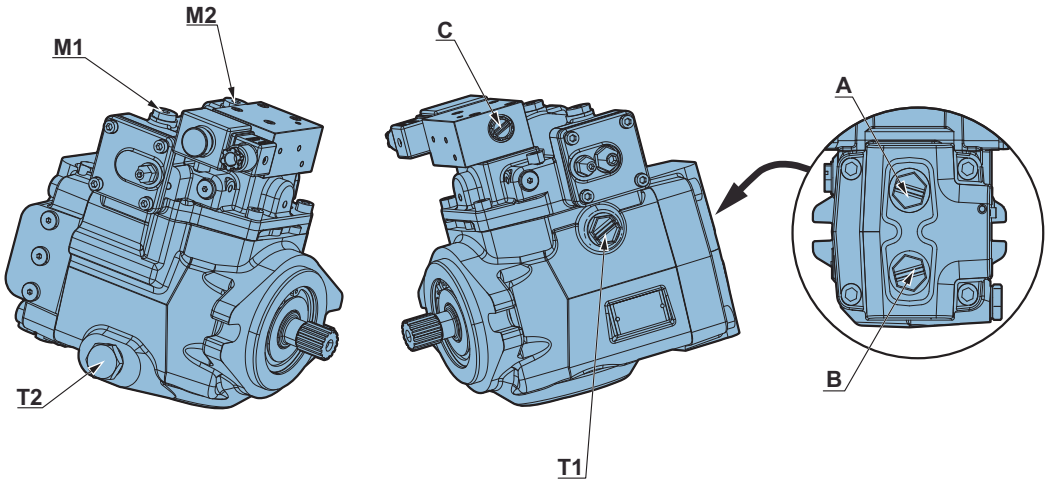
1	2	3	4	5	6	7	8	9
M	V	3	☐	☐	☐	☐	S4	☐	☐	☐

Port	Function	ISO 1179-1 (standard)
A-B	Services	3/4''
M1/M2	Servo control pilot	1/4''
T1/T2	Drain	1/2''
C	Variable displacement control	1/4''

02 Opposite side



04 Rear side

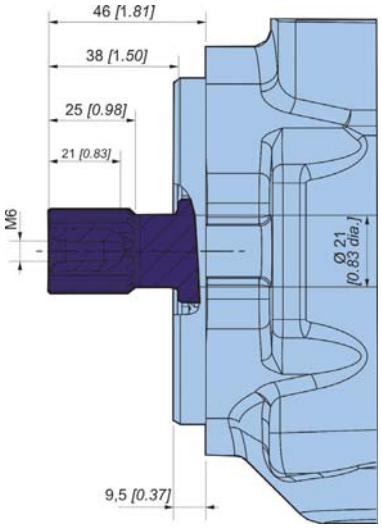


05 Opposite and rear sides

Mounting flange and shaft

1	2	3	4	5	6	7	8	9
M	V	3	☐	☐	☐	☐	S4	☐	☐	☐	☐

15 teeth
Max torque: 360 N.m *[3186 in.lbf]*



Splined ANSI B92.1a-1996
Pitch 16/32" DP
Pressure angle 30°
Tolerance class: 5

OPTIONS

Finishing coat

		1	2	3	4	5	6	7	8	9
M	V	3					S4				PA

The motors can be delivered with finishing coat when requested. Standard paint is RAL 9005 (black color).

Consult your Poclain Hydraulics application engineer for other colors of topcoat.

UNF threads

		1	2	3	4	5	6	7	8	9
M	V	3					S4				FU

Port	Function	ISO 11926-1 (option FU)
A-B	Services	1 1/6 UNF
M1/M2	Servo control pilot	1/2 20 UNF
T1/T2	Drain	7/8 UNF
C	Variable displacement control	G 1/4

Customized identification plate

		1	2	3	4	5	6	7	8	9
M	V	3					S4				DP

It is possible to provide our products with dedicated plate (your part number engraved on the plate) when requested.

This option is available only for minimum volume of 50 pieces.

Consult your Poclain Hydraulics application engineer for other possibilities.



OPERATING PARAMETERS

Poclain Hydraulics recommandations for fluid

Poclain hydraulics recommends the use of hydraulic fluids defined by the ISO 15380 and ISO 6743-4 standards.
For temperate climates, the following types are recommended.
- HM 46 or HM 68 for fixed installations.
- HV 46 or HV 68 for mobile installations.
- HEES 46 for mobile installations.

These specifications correspond to category 91H of the CETOP standard, parts 1, 2 and 3 of the DIN 51524 standard, and grades VG32, VG 46 and VG68 of the ISO 6743-4 standards.

It is also possible to use ATF, HD, HFB, HFC or HFD type hydraulic fluid upon Poclain Hydraulics specific approval of the components' operating conditions.

Standardized designations for the fluids
- **HM :** Mineral fluids having specific antioxidant, anticorrosion and antiwear properties (HLP equivalent to DIN 51524 parts 1 and 2).
- **HV :** HM mineral fluids providing improved temperature and viscosity properties (DIN 51524 part 3).
- **HEES :** Biodegradable fluids based on organic esters.

It is also possible to use a fluid that meets the biodegradability criteria and is compatible in the event of accidental food contact. The BIOHYDRAN FG 46 fluid designed by the company Total has undergone testing of its properties and performance on our test benches. Since this type of fluid has not yet been categorized, it is the responsibility of machine manufacturers to validate its compatibility with all of the components used in order to guarantee that the intended functions will be fulfilled and this for the desired life time of all equipment items.

For biodegradable fluids, consult your Poclain Hydraulics' application engineer

During operation, the temperature of the oil must be between 0°C *[32°F]* and 80°C *[176°F]*; the minimum and maximum temperatures may be exceeded momentarily by ± 20°C *[± 68°F]* for a duration of less than 30 minutes. For all applications outside these limits, please consult with your Poclain Hydraulics' application engineer.

Fluid and filtration

The contaminating particles suspended in the hydraulic fluid cause the hydraulic mechanisms moving part wear. On hydraulic pumps, these parts operate with very small dimensional tolerances. In order to reach the part life, it is recommended to use a filter that maintains the hydraulic fluid contamination class at a max. of:

9 according to NAS 1638
20/18/15 according to ISO 4406:1999

According to the type of application decided for the pump, it is necessary to use filtration elements with a filtration ratio of:

β 20 to 30 $\geq$ 100

Making sure that this ratio does not worsen together with the increasing of the filter cartridge differential pressure.

If these values cannot be observed, the component life will consequently be reduced and it is recommended to contact the Poclain Hydraulics Customer Service.

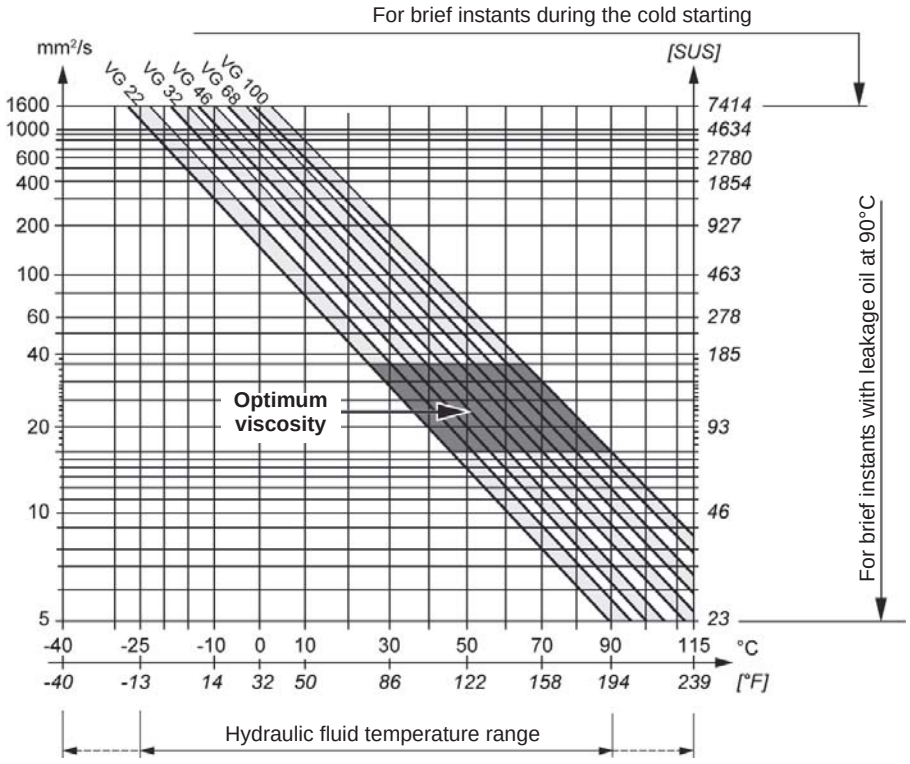
Filters on charge circuit
Filters on the charge circuit (F0-F2) are designed without by-pass. The max. pressure drop on the filtration part must not exceed 2 bar *[29 PSI]* (3 bar *[43.5 PSI]* in case of cold starting) at pump full rating. To monitor the pressure drop, It is recommended to use the clogging indicator on the filtration element (F2 option). Contact your Poclain Hydraulics Application engineer, each time the pump is not charged by its internal charge pump.
Filters on charge circuit are mounted on the pump special support.

Filters assembling
The suction filter is mounted on the suction line. Check that the pressure before the charge pump is 0.8 bar abs. *[11.6 PSI abs.]*, measured on the pump suction port (0.5 bar *[7.2 PSI]* for cold starting).

Viscosity range

For both max. efficiency and life of the unit, the operative viscosity should be chosen within the optimum range of:
√opt = optimum operating viscosity from 16 to 36 mm^2/s *[from 74.1 to 166.8 SUS]* referred to the closed loop temperature.

Working conditions: the following limits of viscosity apply
√min = 5 mm^2/s *[23 SUS]* short-duration at a max. permissible leakage oil temperature of 90° C *[194°F]*
√max = 1000 mm^2/s *[4 634 SUS]* short-duration, on cold start.



Ensure fluid temperature and viscosity limits are concurrently satisfied.

POCLAIN
Hydraulics

Poclain Hydraulics reserves the right to make any modifications it deems necessary to the products described in this document without prior notification.The information contained in this document must be confirmed by Poclain Hydraulics before any order is submitted.
Illustrations are not binding.
The Poclain Hydraulics brand is the property of Poclain Hydraulics S.A.

26/05/2015

A43498F

www.poclain-hydraulics.com