HANSA · TMP srl

HYDRAULIC COMPONENTS
HYDROSTATIC TRANSMISSIONS
GEARBOXES - ACCESSORIES

MANUFACTURING
THE PRODUCTION LINE OF HANSA-TMP

HT 16 / M / 703 / 1211 / E

Fixed Displacement Axial Piston Motor for Open and Closed Loop System

TMF 300

CONTENTS

GENERAL INFORMATION

The fixed-displacement axial piston motors TMF 300 with swash plate system may operate in either closed or open circuit.
Proper selection of materials and the use of steel cylinder blocks with inserted bushings guarantee the high performance of the TMF 300 motors, in terms of max. speed and working pressure.

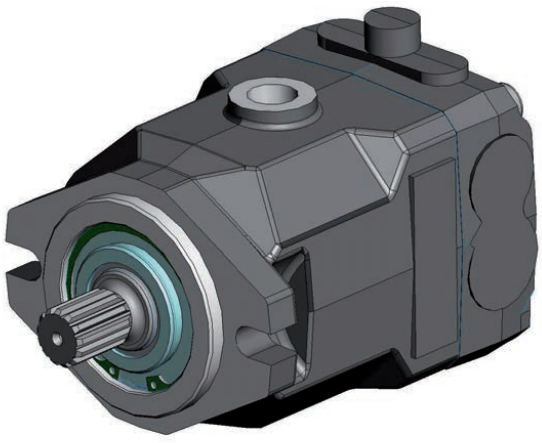
The main features of TMF 300 motors include:
- Exceptionally high power/weight ratio
- Excellent volumetric and mechanical efficiency
- Long life
- Compact design
- Purge valve fitted as optional. (All dimensions remain unchanged).

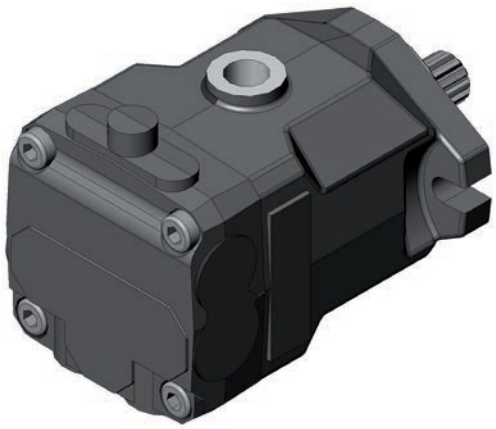
The very small dimensions allow to fit the motor in restricted room or positions which are difficult with traditional mechanical transmission**.**

Installation Instructions
- During the assembly check that the motor is in line and concentric with the drive shaft sleeve to prevent overloading of the shaft bearings.
- Clean carefully all tanks and pipes internally before assembly.
- The pipe internal diameter must be suitable for the max. oil speed through the pipes.
- Fit the motor lower than oil level in tank.
- Heat exchanger must be provided in the machine design, to keep temperature level within the limit of 80°C.

First Starting
- Before starting fill all the system components with new and filtered oil.
- Verify that the charge pressure is correct.
- Restore the tank oil level.

Maintenance
To guarantee long life, the motor must work with oil cleaned according ISO 4406 class 18/16/13 (NAS 8) or better.
- First oil change must be made after approximately 500 hours of operations, and then every 2000 hours.
- The filter cartridge must be replaced the first time after 50 hours and then every 500 hours; such time should be reduced when the filter clogging indicator shows that the catridge is clogged or when the system works in a heavily polluted environment.





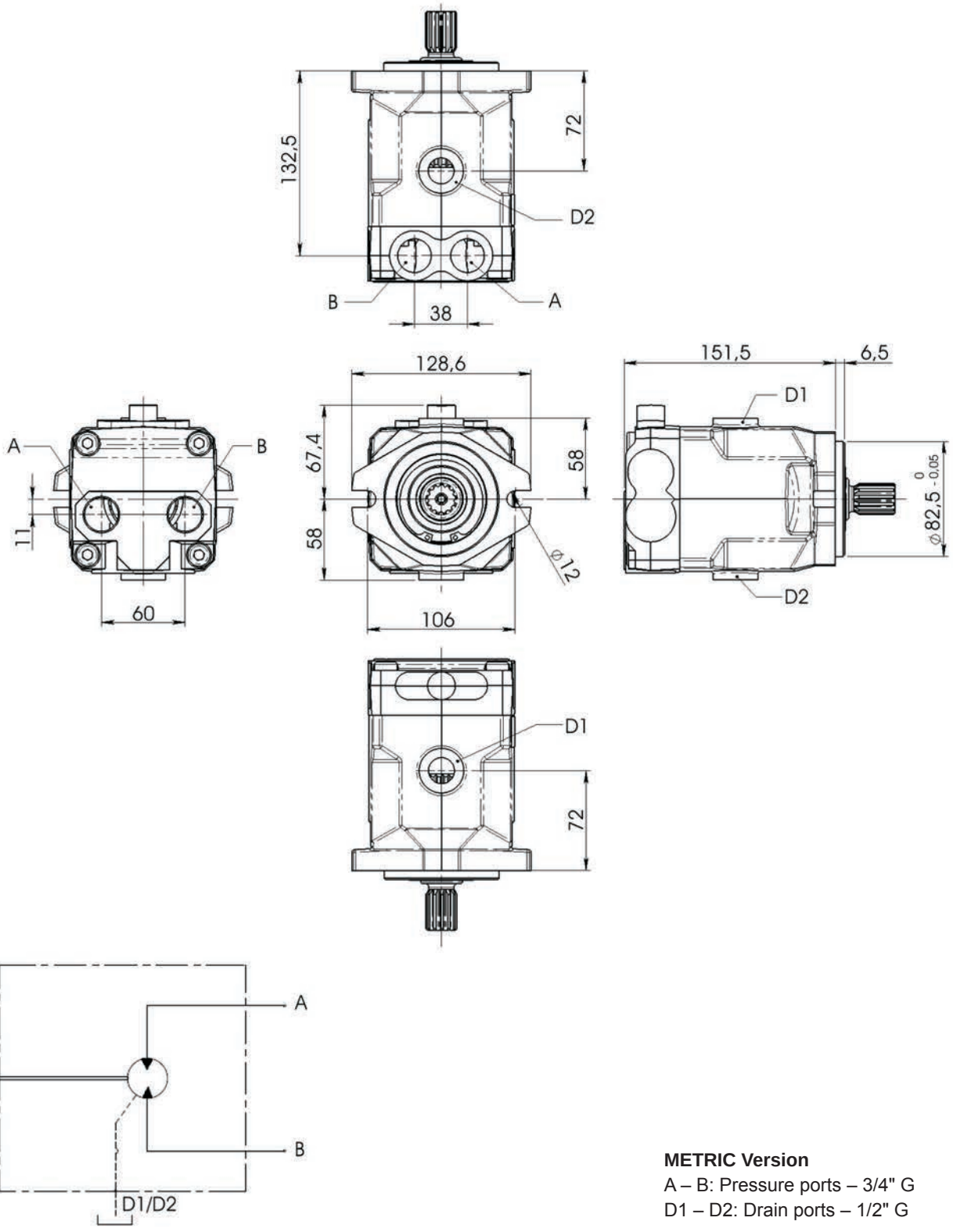
TECHNICAL SPECIFICATIONS

Motor Model			TMF 21	TMF 28
Displacement	V	cm^3/min.	21	28
Theoric specific torque	M	Nm/bar	0,33	0,44
Flow rating (1)	Q	l/min.	75,6	100,8
Power rating (2)	W	kW	31,8	42
Continuous pressure	$P_{nom.}$	bar	250	
Peak pressure	$P_{max.}$	bar	350	
Max. case pressure	P_{case}	bar	2	
Polar moment of inertia	J	Nm/sec^2	$15x10^{-1}$	$19x10^{-1}$
Minimum speed	$n_{min.}$	n/min.	700	
Max. cont. speed with load	$n_{max-cont.}$	n/min.	3.600	
Max. speed without load	$n_{max-int.}$	n/min.	4.000	
Max oil temperature	T	°C	80	
Oil viscosity	v	mm^2/sec.	15 - 60	
Fluid contamination			18/16/13 according ISO 4406 (NAS 8)	
Mass	m	kg	7,5	7,8
Mounting flange			SAE A	

Notes:
(1) [V x $n_{max.}$]
(2) 3.600 n/min. at 250 bar
(3) The motor 21 and 28 use the same external housing

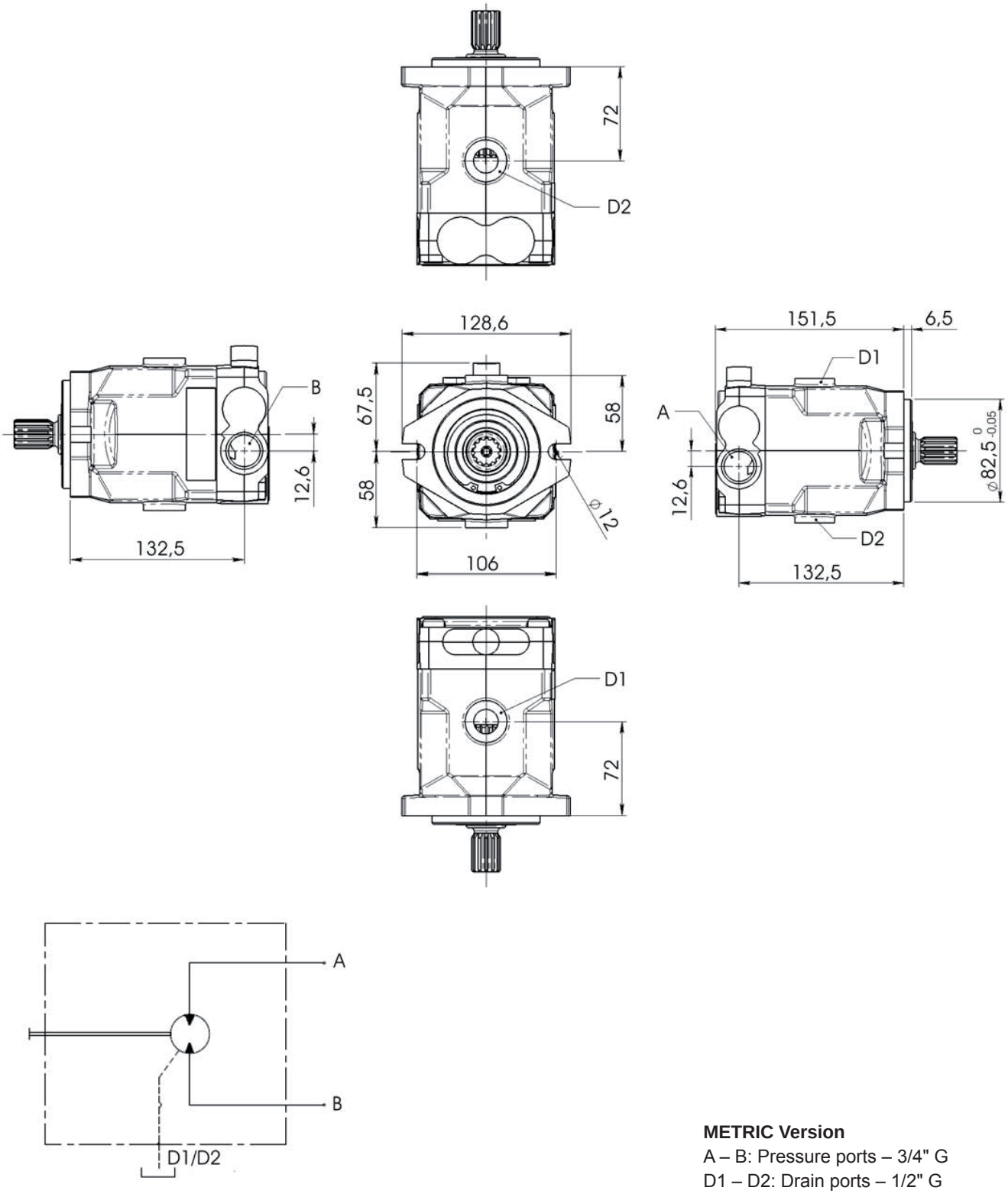
Peak operations must not exceed 1% of every minute.
A simultaneous max. pressure and speed are not recommended.

INSTALLATION DRAWING
Side Combined A - B Connection



METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2: Drain ports – 1/2" G

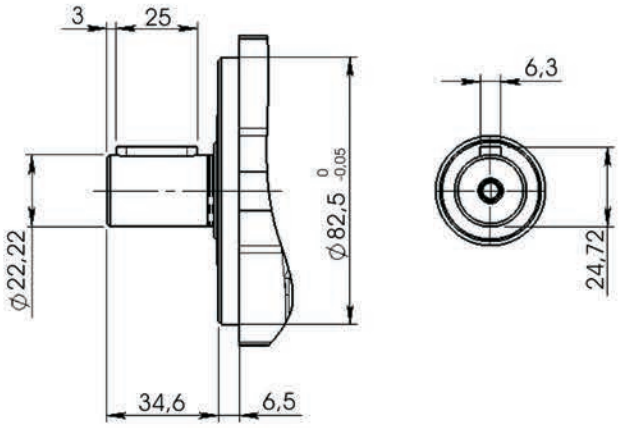
INSTALLATION DRAWING
Opposite Lateral A - B Connection



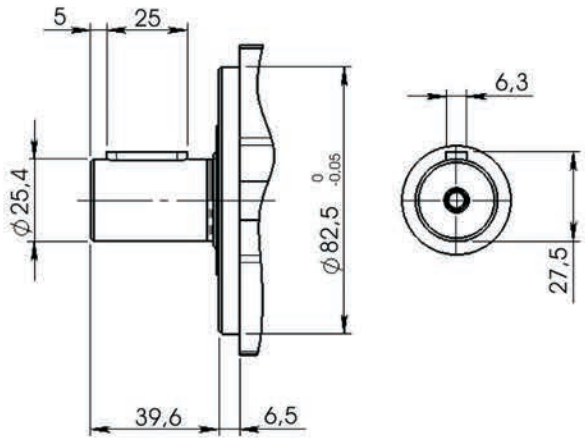
METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2: Drain ports – 1/2" G

SHAFTS

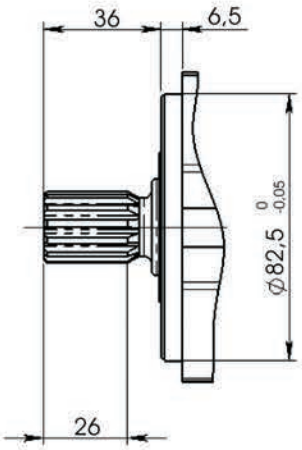
Type 1 - Parallel diam. 22,22



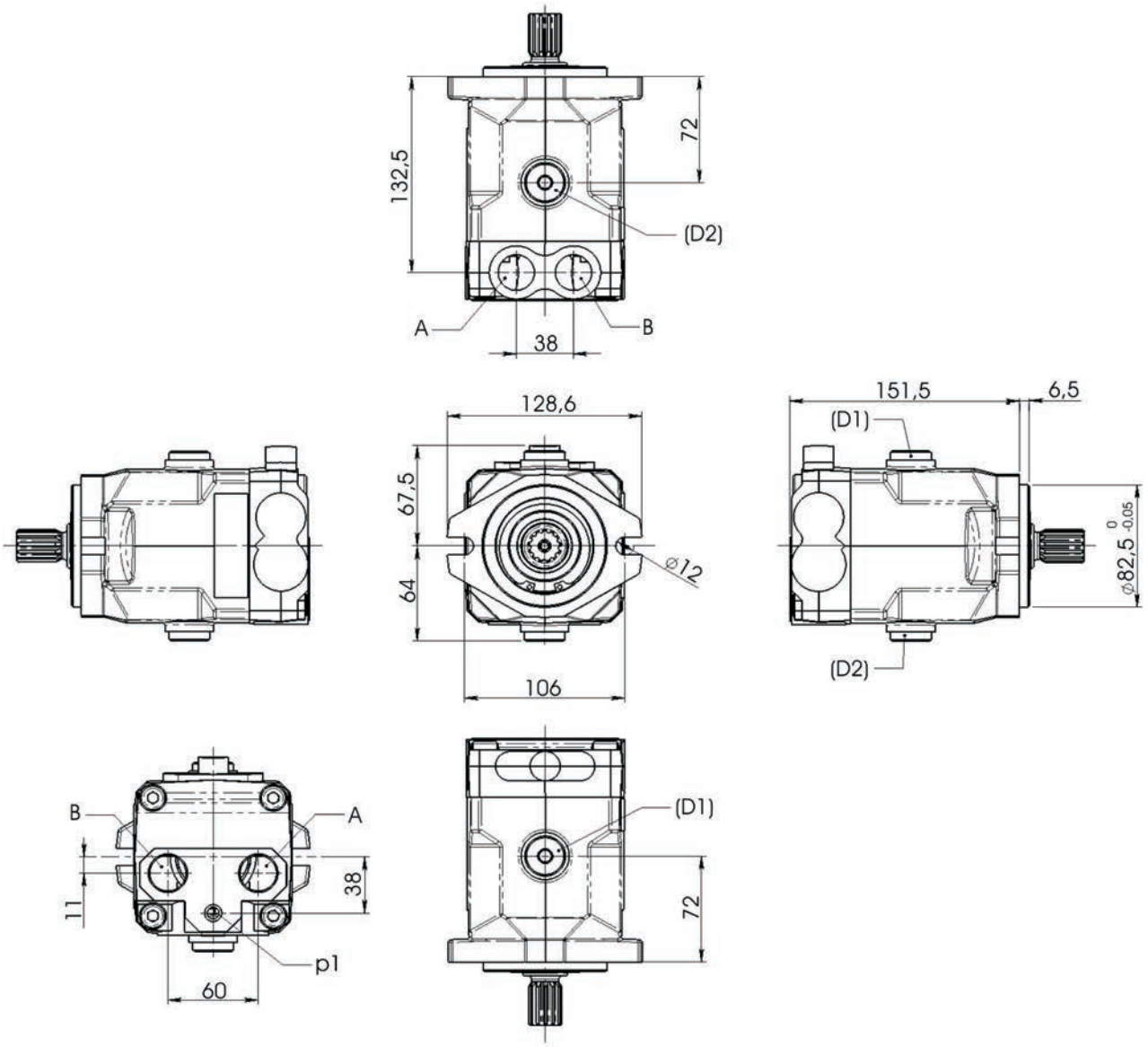
Type 2 - Parallel diam. 25,4



Type 5 - Splined Male 13T DP 16/32

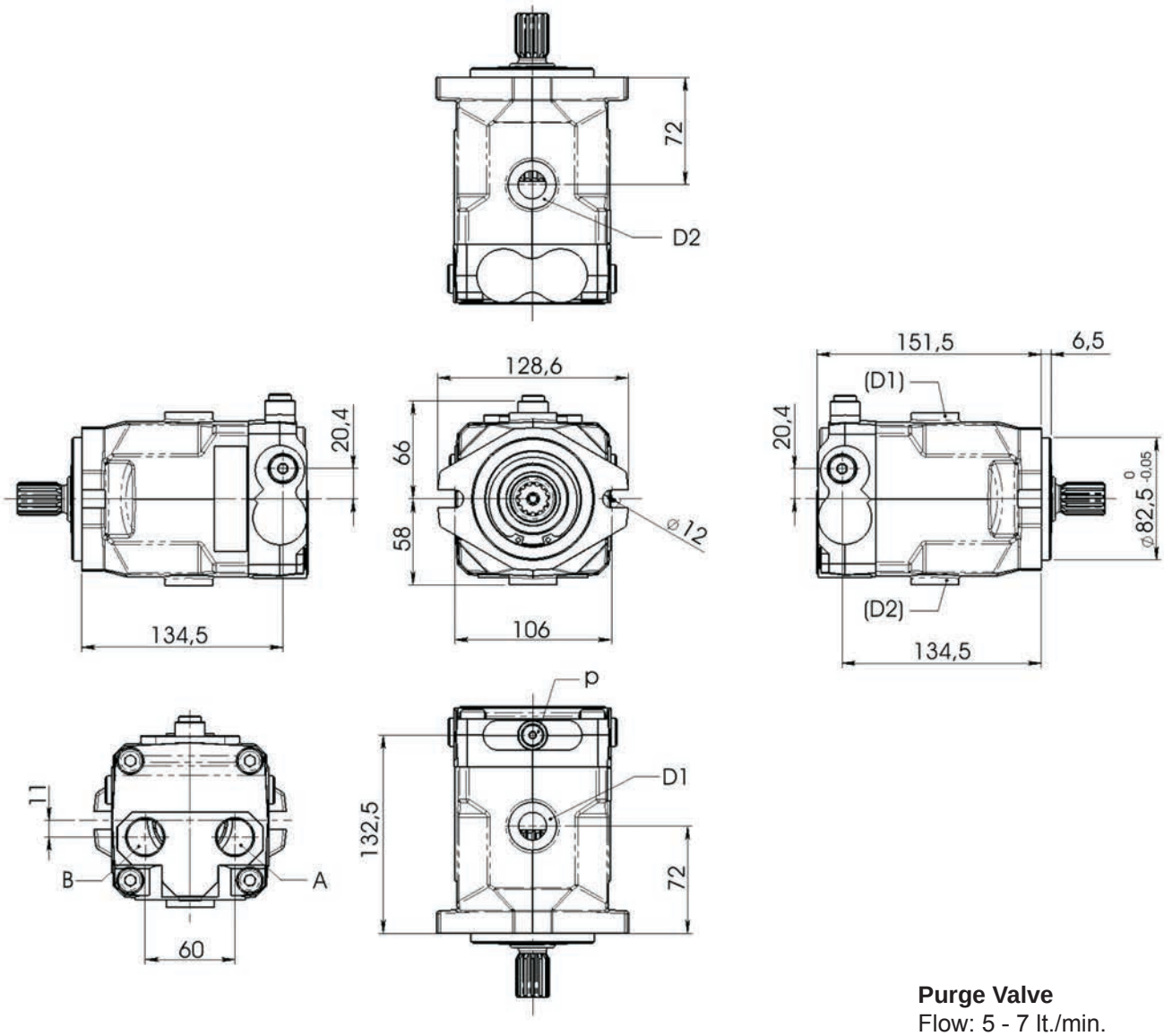


ACCESSORIES
Rear Drain P

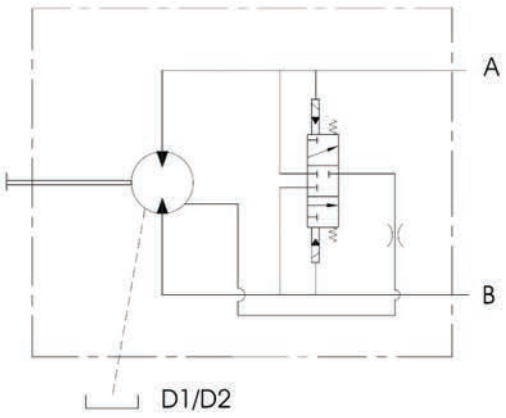


METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2: Drain ports – 1/2" G
p1: Rear drain – 1/4" G

ACCESSORIES (continued)
Purge Valve V

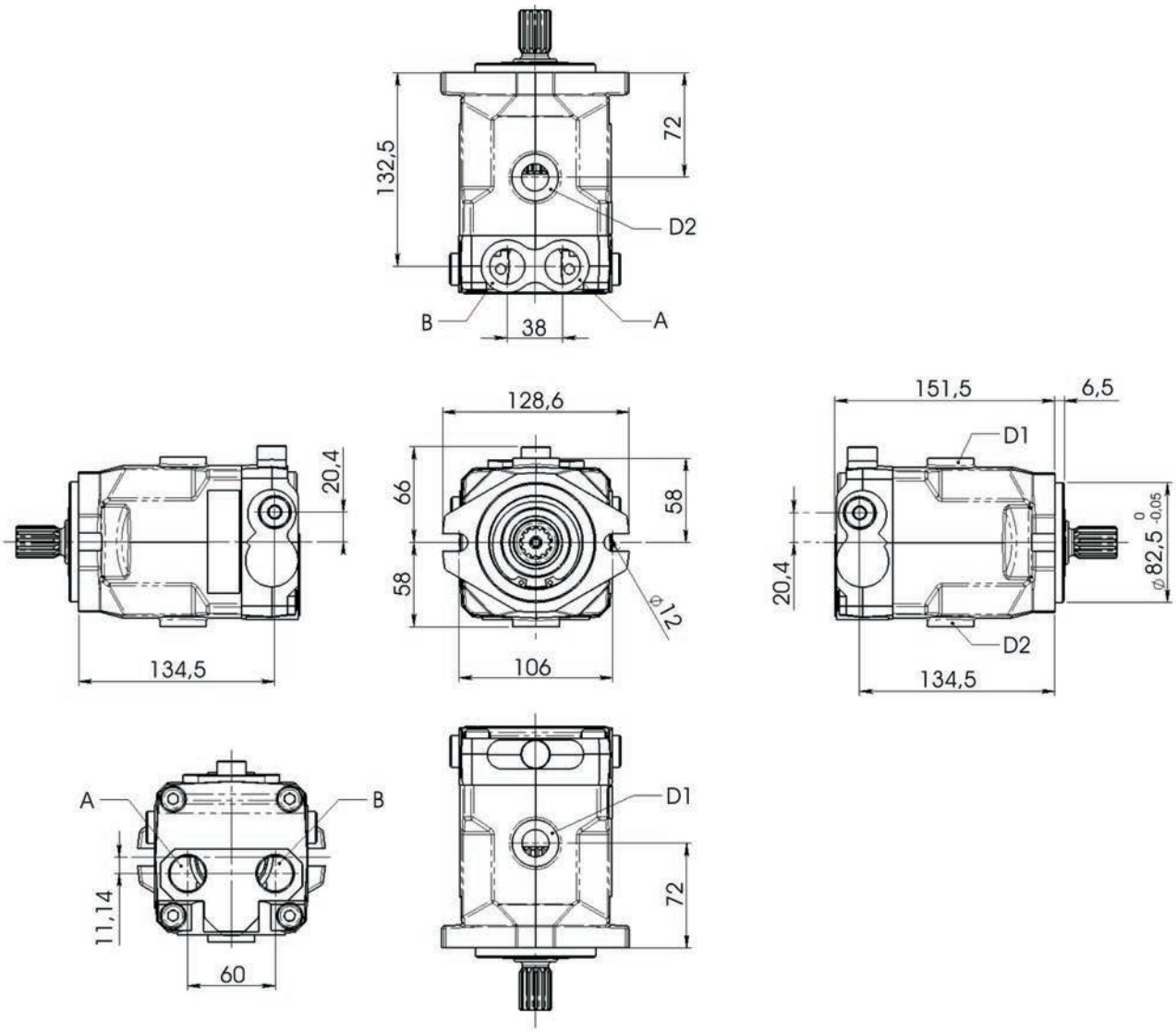


Purge Valve
Flow: 5 - 7 lt./min.



METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2: Drain ports – 1/2" G

ACCESSORIES (continued)
Pressure Relief Valve



METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2: Drain ports – 1/2" G

ORDER CODE

TMF 300	21	1	B	1	T	P	-
1	2	3	4	2	6	7	8

Pag.

1 - Motor Series

TMF 300 = Fixed displacement motor TMF 300 Series

2 - Motor Displacement 5

21 = 21 cm^3/n

28 = 28 cm^3/n

3 - Main Ports

1 = Rear A and B connection

2 = Side combined A and B connection

3 = Opposite side A and B connection

4 - Rotation Direction

B = Bidirectional (standard)

5 - Shafts 8

1 = Parallel diam. 22,2 with key

2 = Parallel diam. 25,4 with key

5 = Splined male 13 teeth 16/32 DP

6 - Port Version

T = A and B ports thread - 3/4" BSPP

7 - Optional (omit if not requested)

- = Without optional

P = Rear drain 9

V = Purge valve 10

8 - Special versions (omit if not requested)

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HYDRAULIC COMPONENTS
HYDROSTATIC TRANSMISSIONS
GEARBOXES - ACCESSORIES

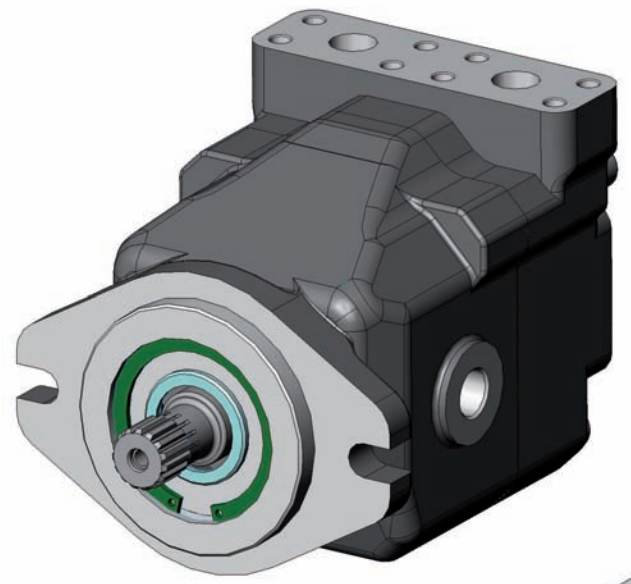
Certified ISO 9001 and 14001 TÜV INTER CERT SAAR

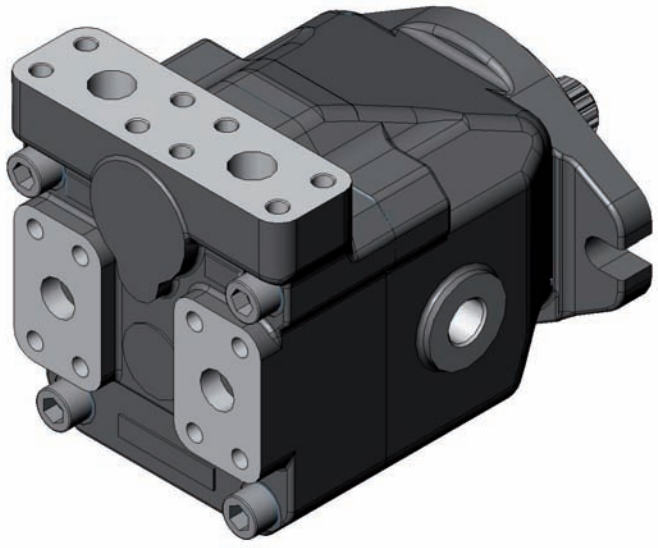
HT 16 / M / 733 / 1212 / E

THE PRODUCTION LINE OF HANSA-TMP

Fixed Displacement Axial Piston Motor for Open and Closed Loop System

TMF 500





CONTENTS

GENERAL INFORMATION

The fixed-displacement axial piston motors TMF 500 with swash plate system may operate in either closed or open circuit.
Proper selection of materials and the use of steel cylinder blocks with inserted bushings guarantee the high performance of the TMF 500 motors, in terms of max. speed and working pressure.

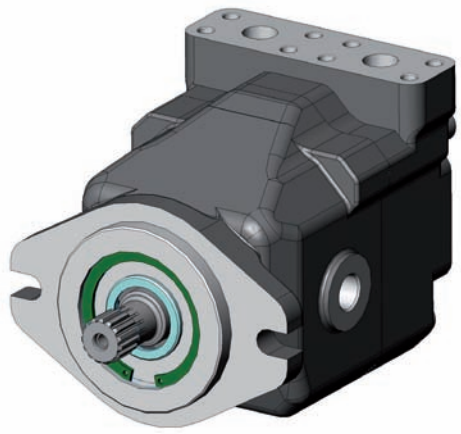
The main features of TMF 500 motors include:
- Exceptionally high power/weight ratio
- Excellent volumetric and mechanical efficiency
- Long life
- Compact design
- Purge valve fitted as optional. (All dimensions remain unchanged).

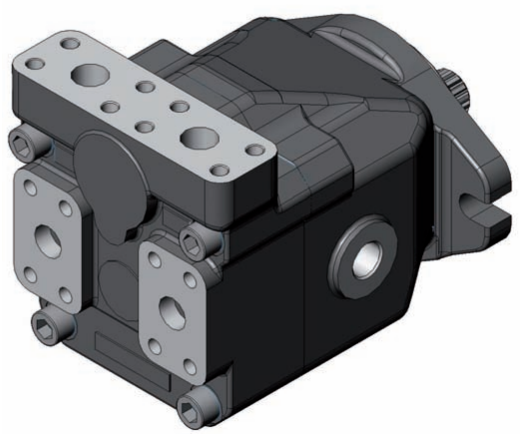
The very small dimensions allow to fit the motor in restricted room or positions which are difficult with traditional mechanical transmission.

Installation Instructions
- During the assembly check that the motor is in line and concentric with the drive shaft sleeve to prevent overloading of the shaft bearings.
- Clean carefully all tanks and pipes internally before assembly.
- The pipe internal diameter must be suitable for the max. oil speed through the pipes.
- Fit the motor lower than oil level in tank.
- Heat exchanger must be provided in the machine design, to keep temperature level within the limit of 80°C.

First Starting
- Before starting fill all the system components with new and filtered oil.
- Verify that the charge pressure is correct.
- Restore the tank oil level.

Maintenance
To guarantee long life, the motor must work with oil cleaned according ISO 4406 class 18/16/13 (NAS 8) or better.
- First oil change must be made after approximately 500 hours of operations, and then every 2000 hours.
- The filter cartridge must be replaced the first time after 50 hours and then every 500 hours; such time should be reduced when the filter clogging indicator shows that the catridge is clogged or when the system works in a heavily polluted environment.





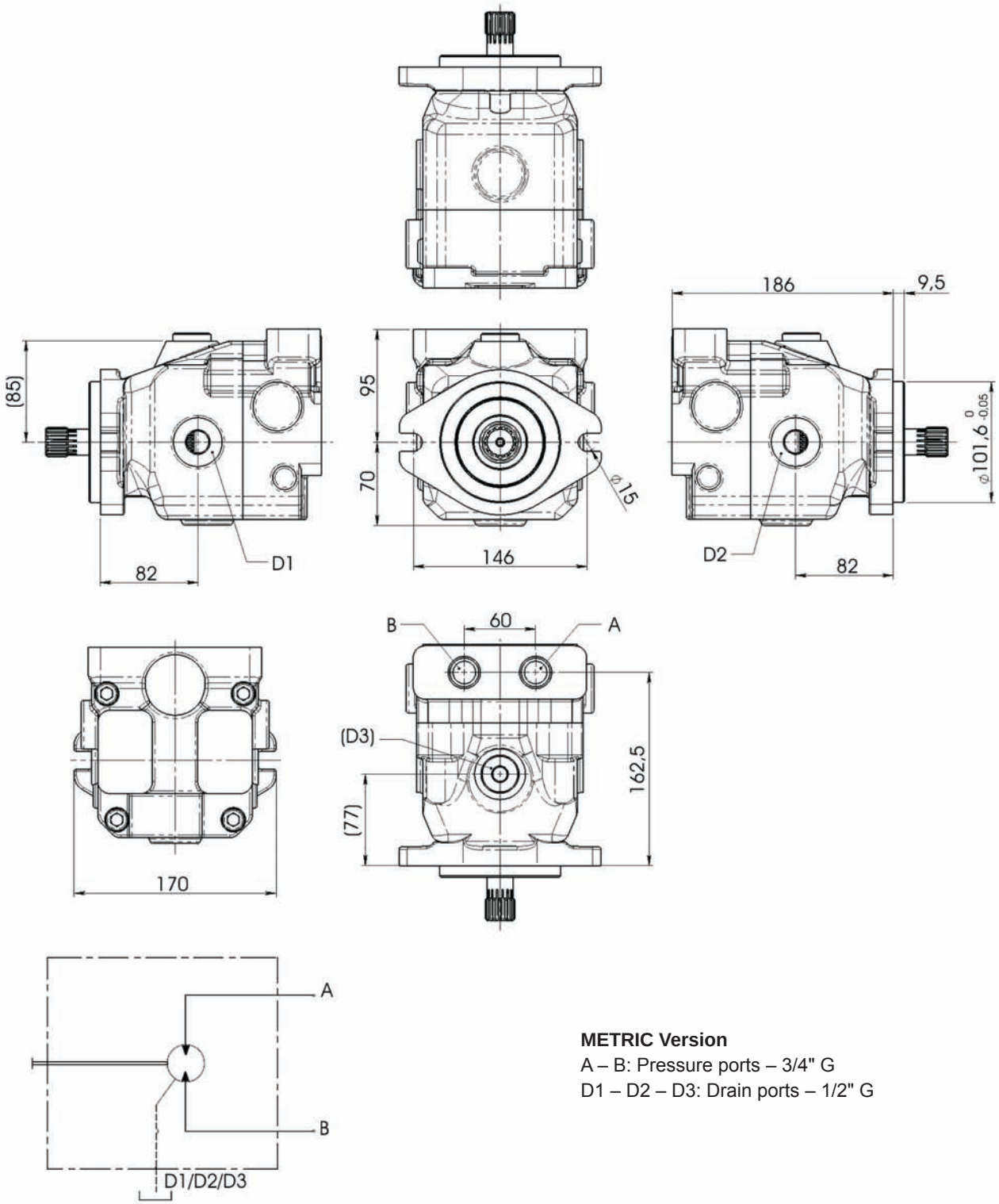
TECHNICAL SPECIFICATIONS

Motor model			TMF 34	TMF 46	TMF 50	TMF 64
Displacement	V	cm^3/min.	34	46	50	64
Theoric specific torque	M	Nm/bar	0,54	0,73	0,79	1,02
Flow rating (1)	Q	l/min.	122	165	180	230
Power rating (2)	W	kW	50,8	68,5	75	95,8
Continuous pressure	$P_{nom.}$	bar	250			
Peak pressure	$P_{max.}$	bar	350			
Max. case pressure	P_{case}	bar	2			
Polar moment of inertia	J	Nm/sec^2	$60x10^{-1}$	$60x10^{-1}$	$59x10^{-1}$	$59x10^{-1}$
Minimum speed	$n_{min.}$	n/min.	700			
Max. cont. speed with load	$n_{max-cont.}$	n/min.	3.600			
Max. speed without load	$n_{max-int.}$	n/min.	4.000			
Max oil temperature	T	°C	80			
Oil viscosity	v	mm^2/sec.	15 - 60			
Fluid contamination			18/16/13 according ISO 4406 (NAS 8)			
Mass	m	kg	18,43			
Mounting flange			SAE B			

Notes:
(1) [V x $n_{max.}$]
(2) 3.600 n/min. at 250 bar
(3) The motor 34, 46, 50 and 64 use the same external housing

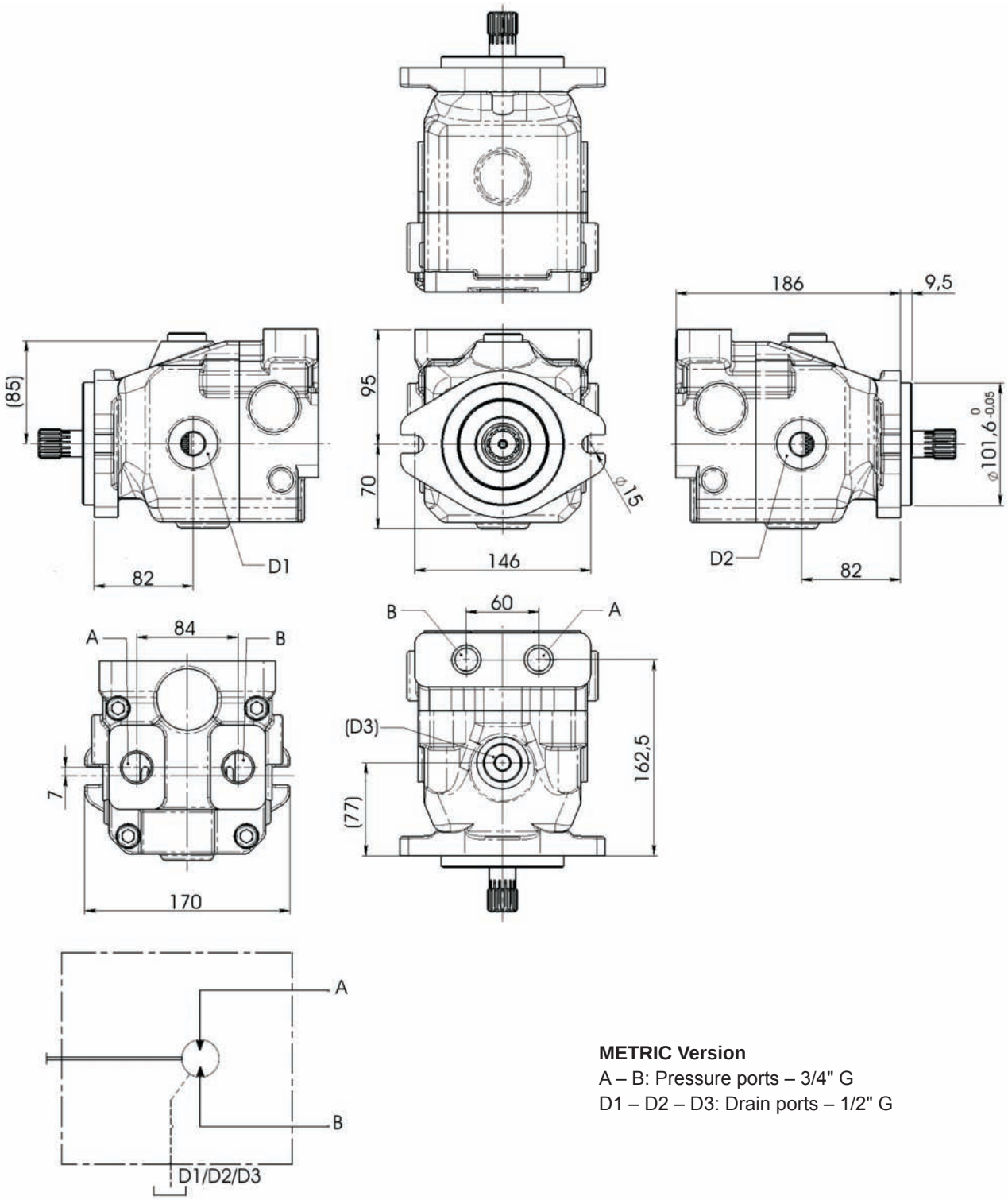
Peak operations must not exceed 1% of every minute.
A simultaneous max. pressure and speed are not recommended.

INSTALLATION DRAWING
Side Combined A - B Connection



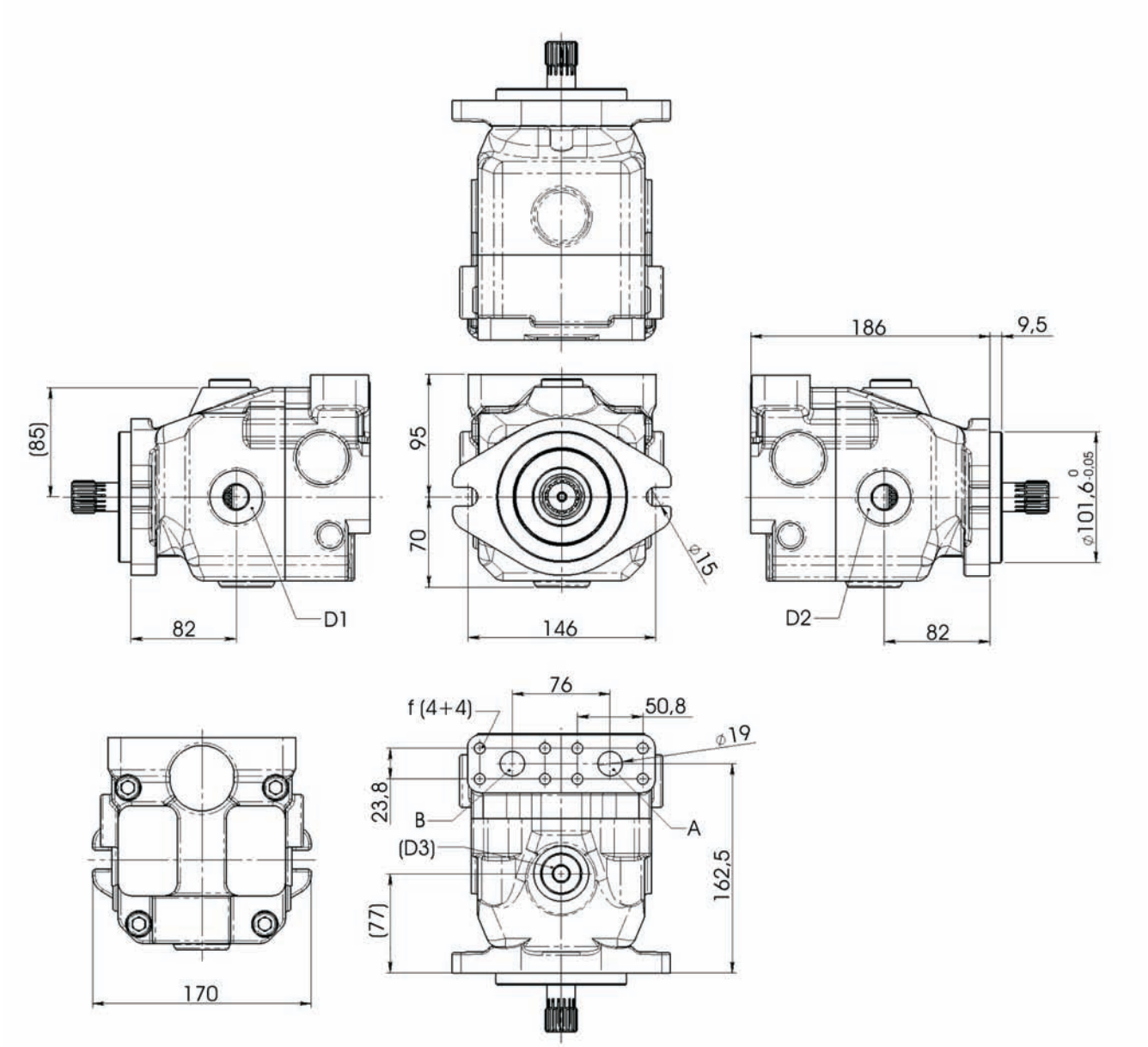
METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2 – D3: Drain ports – 1/2" G

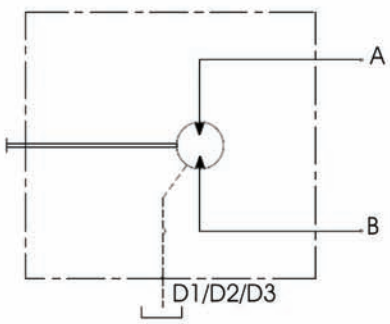
INSTALLATION DRAWING
Rear A-B Connection



METRIC Version
A – B: Pressure ports – 3/4" G
D1 – D2 – D3: Drain ports – 1/2" G

INSTALLATION DRAWING
Side Combined A - B Connection - SAE 6000 - 3/4"



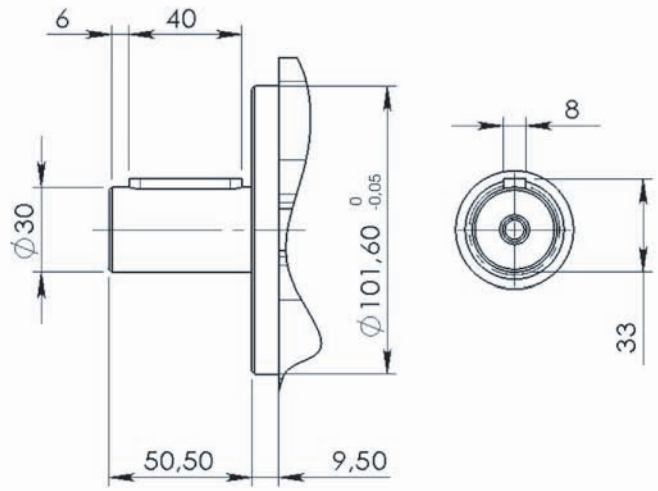


METRIC Version
A – B: Pressure ports – SAE flange 6000 – 3/4"
f: SAE flange fixing holes – M 10 depth 15 mm.
D1 – D2 – D3: Drain port – 1/2" G

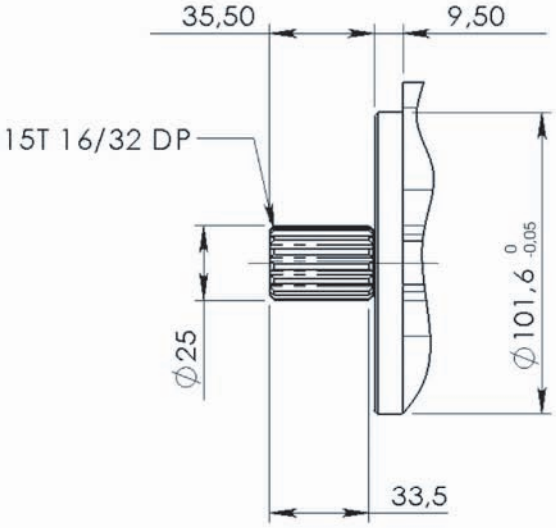
SAE Version
A – B: Pressure ports – SAE flange 6000 - 3/4"
f: SAE flange fixing holes – 3/8" – 16 UNC 2B depth 15 mm.
D1 – D2 – D3: Drain port – 1/2" G

INSTALLATION DRAWING
SHAFTS

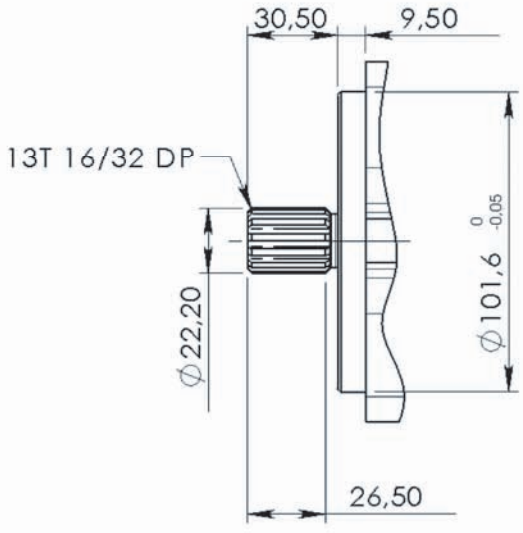
Type 1 - Parallel 30 mm. diam.



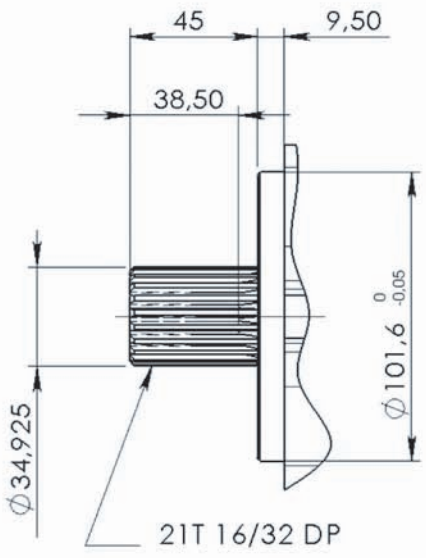
Type 3 - Splined Male 15 T - 16/32 DP



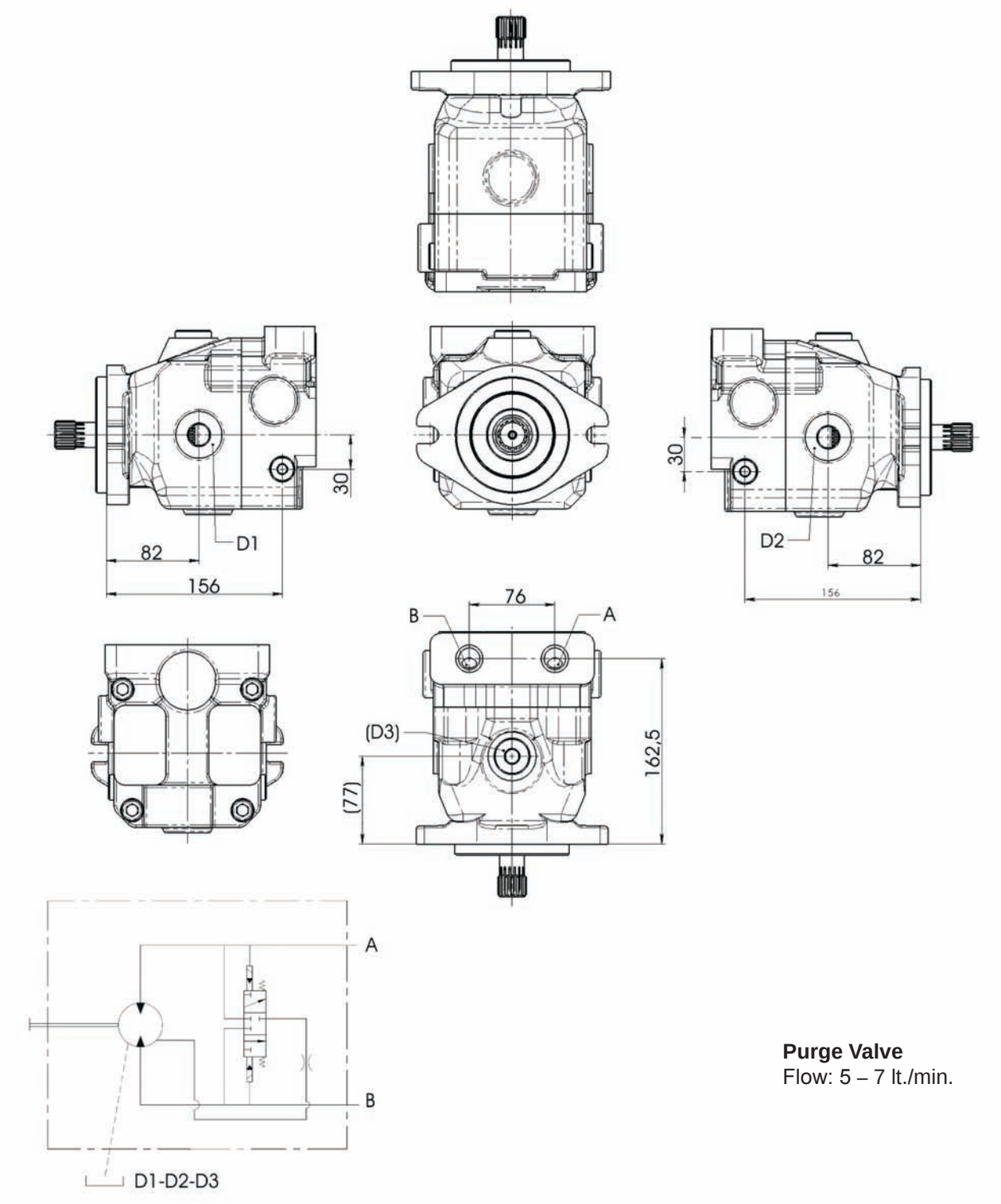
Type 5 - Splined Male 13T - 16/32 DP



Type 7 - Splined Male 21T - 16/32 DP



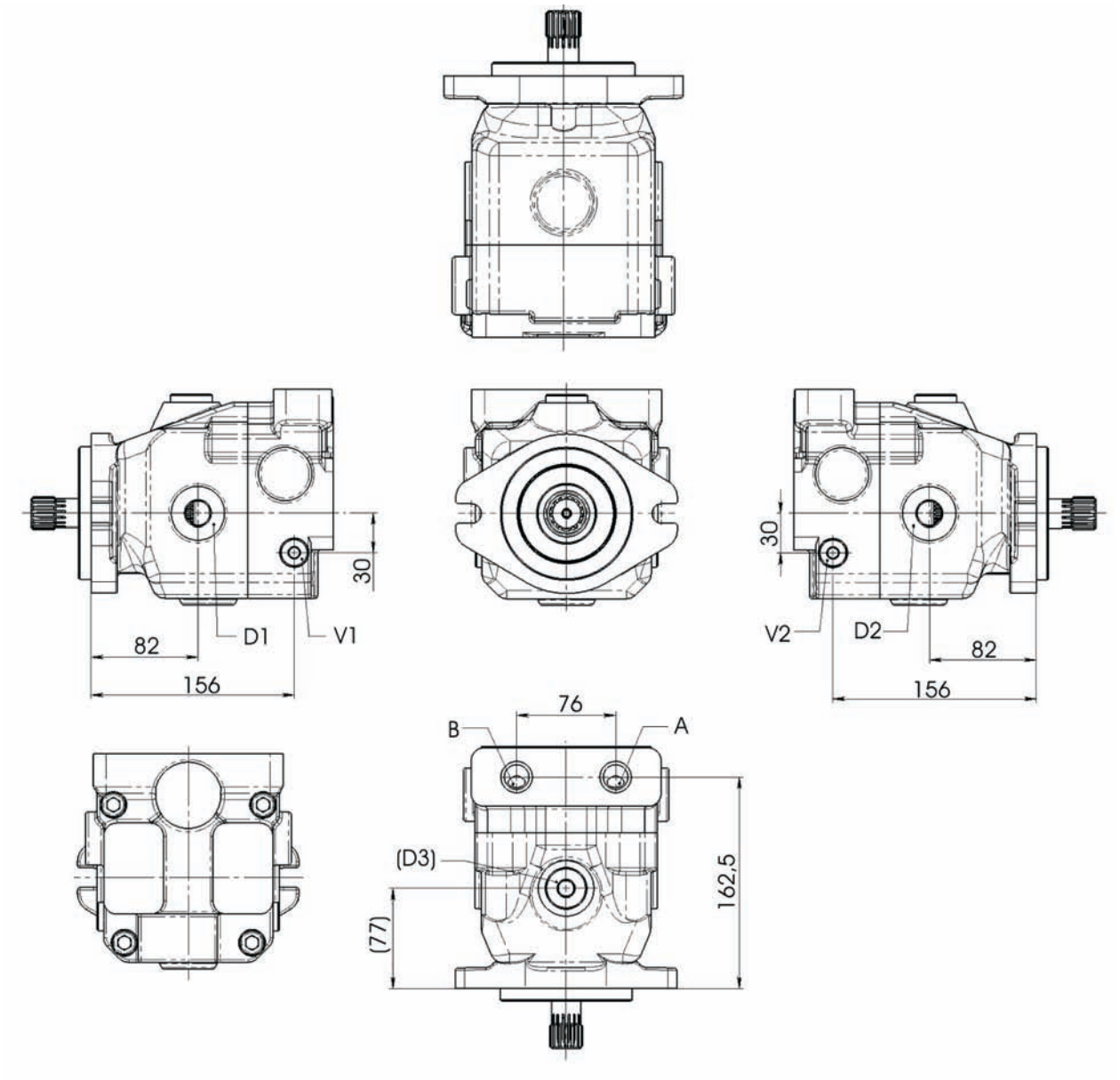
ACCESSORIES
Purge Valve V



Purge Valve
Flow: 5 – 7 lt./min.

ACCESSORIES (continued)

Pressure Relief Valve



ORDER CODE

TMF 500	46	1	B	1	T	P	-
1	2	3	4	2	6	7	8

Pag.

1 - Motor Series

TMF 500 = Fixed displacement motor TMF 500 Series

2 - Motor Displacement 5

34 = 34 cm^3/n
46 = 46 cm^3/n
50 = 50 cm^3/n
64 = 64 cm^3/n

3 - Main Ports

1 = Rear A and B connection
2 = Side combined A and B connection
3 = Opposite side A and B connection

4 - Rotation Direction

B = Bidirectional (standard)

5 - Shafts 9

1 = Parallel 30 mm. diam. 30 with key
3 = Splined male 15 teeth 16/32 DP
5 = Splined male 13 teeth 16/32 DP
7 = Splined male 21 teeth 16/32 DP

6 - Port Version

G = SAE A (flange 6000 3/4")
U = SAE (UNF thread)
T = A and B ports thread - 3/4" BSPP

7 - Optional (omit if not requested)

- = Without optional
P = Rear drain
V = Purge valve 10

8 - Special versions (omit if not requested)

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HYDRAULIC COMPONENTS
HYDROSTATIC TRANSMISSIONS
GEARBOXES - ACCESSORIES

HT 16 / M / 901 / 0913 / E

THE PRODUCTION LINE OF HANSA-TMP

Fixed Displacement Axial Piston Motor for Open and Closed Loop System

TMF 900

CONTENTS

MAIN FEATURES

General Information

This is a fixed displacement motor with axial pistons, swash plate design and can be used in closed and open loop systems. The motor was developed for use on hydraulic transmissions, where high speeds and high torques are demanded.

The construction features help to minimize the losses due to leakage and considerably reduces the frictions. The small sizes allow easy installation.

The motor is equipped with flushing valve integrated on the motor casing which allows the temperature control, especially in heavy duty applications.

TECHNICAL SPECIFICATIONS

Operating Parameters

Model		TMF 900	55	72	90	110
Displacement	V	cm^3	55	72	90	110
Maximum speed	n_{max}	rpm	4.300	4.100	4.000	3.800
Maximum flow	q_{max}	l/min.	237	295	340	400
Nominal pressure	p_{nom}	bar	400	400	400	400
Maximum pressure	p_{max}	bar	450	450	450	450
Maximum power	P_{max}	Kw	130	156	180	210
Theoretical max torque	C_{max}	Nm	350	480	570	700

Hydraulic Fluid

Recommended Hydraulic Fluid	Mineral Oil High Viscosity Index		
Operating viscosity *	v	cSt	16 ÷ 36
Maximum viscosity short term at cold start	v_{max}	cSt	≤1600
Minimum viscosity at maximum temperature	v_{min}	cS	≥7
Maximum working temperature of the fluid	T_{max}	°C	90
Permissible temperature range of seals	ΔT	°C	-25 ÷ 120

**Referred to the circuit temperature-closed circuit*

Filtration

It is recommended for an efficient and lasting working life, a solid particle contamination level of 18/16/13 according to ISO 4406. To ensure said level of contamination is not exceeded, filter should be chosen accordingly, with filtration grade of $\beta 10 \geq 2$.

In any case the contamination level must not be below 20/18/15 according to ISO 4406.

Safety Regulation

This publication provides just an overview of the product and it is addressed to skilled personnel properly equipped to perform maintenance. During maintenance, assembly and disassembly activities use caution and proper safety equipment, in observance of the rules provided by safety laws.

ATTENTION

The motors are made with heavy parts: secure the parts and use proper lifting equipment.

ORDER CODE

EXAMPLE						
1	2	3	4	5	6	7
TMF 900	**90**	**V**	**C4**	**21N**	**RO**	**F18**

1	PRODUCT GROUP AND FAMILY
TMF 900	Fixed displacement axial piston motor

2	DISPLACEMENT
55	55,0 cm^3 (@18°)
72	72,1 cm^3 (@18°)
90	89,2 cm^3 (@18°)
110	110,0 cm^3 (@18°)

3	SHAFT SEAL	55	72	90	110
V	Viton	A	A	A	A

4	MOUNTING FLANGE	55	72	90	110
C4	SAE J 744 - SAE C four bolts	A	A	A	A

5	SHAFT END	55	72	90	110
21N	ANSI B92.1A - 1976 - 1"3/8 - 21T - 16/32 DP	A	A	A	A

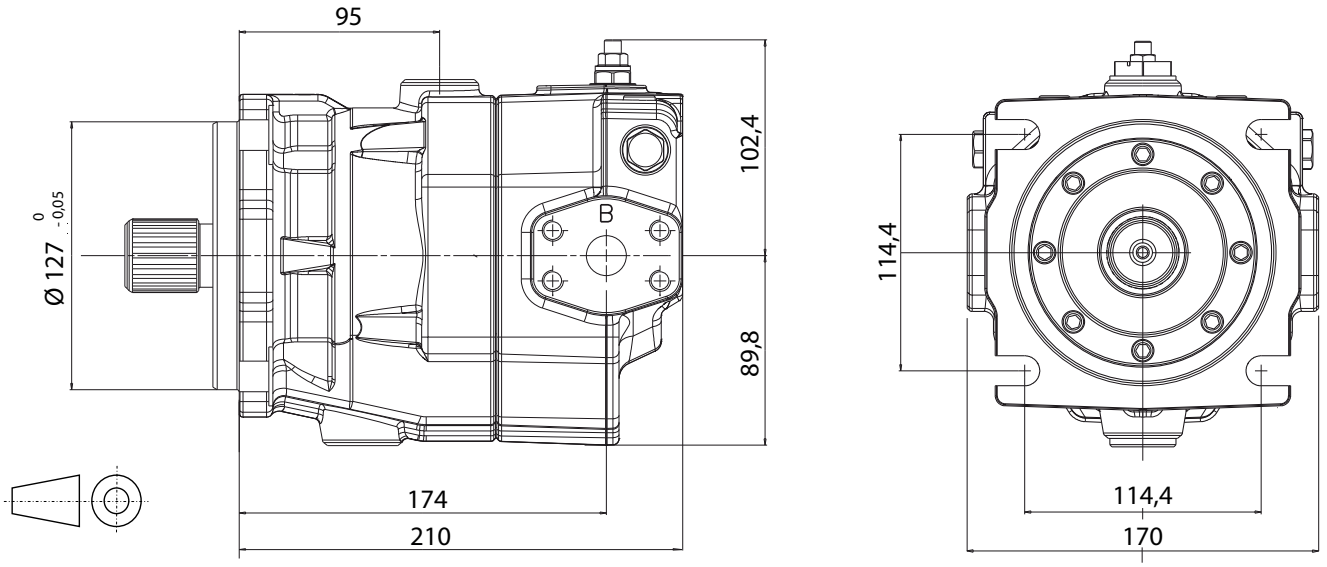
6	SERVICE LINE PORTS	55	72	90	110
RO	Radial opposite side	A	A	A	A

7	FLUSHING VALVE SETTINGS	55	72	90	110
0	Without pressure valve	R	R	R	R
F20	20 bar	A	A	A	A
F18	18 bar	R	R	R	R
F16	16 bar	R	R	R	R

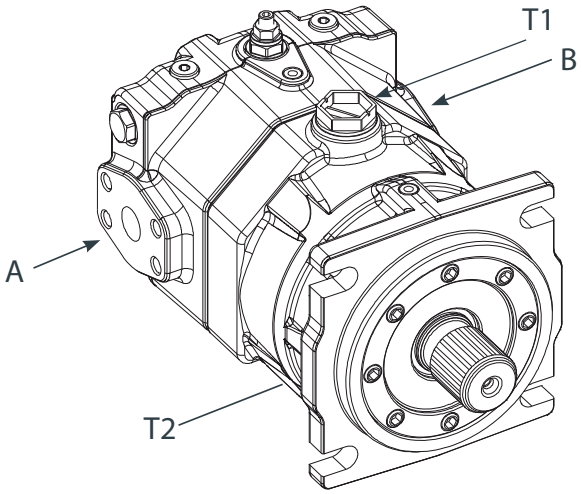
LEGEND							
A	available (preferred)	**A**	available	**R**	on request	**-**	not available

INSTALLATION DRAWINGS

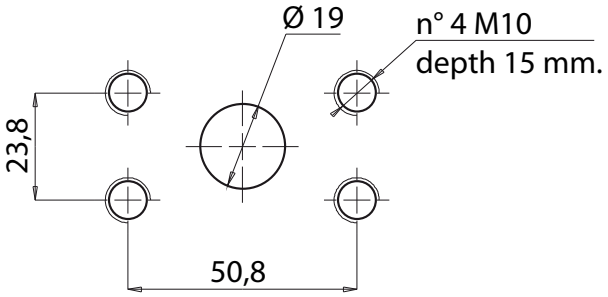
Size 55



Ports

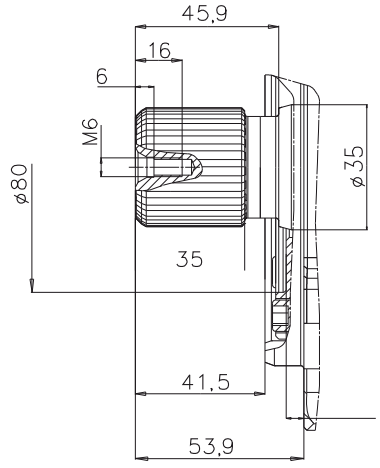


Detail Ports A-B **SAE J 518 - 3/4"- Code 62**

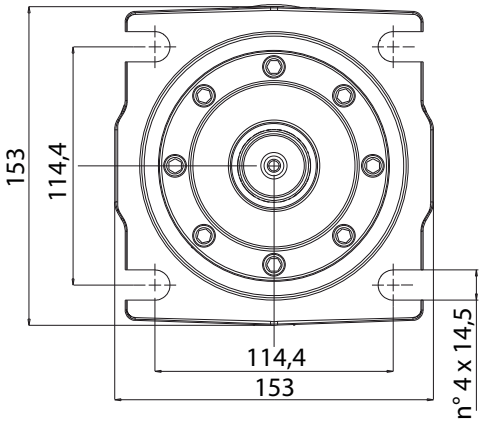


Port	Description	Standards	Size
A,B	High pressure ports	SAE Flange J518-62	3/4"
T1, T2	Case drain ports	ISO 1179	3/4" BSP

Shaft End 21 N
ANSI B92.1A-1976 - 1"3/8 - 21 T - 16/32 DP

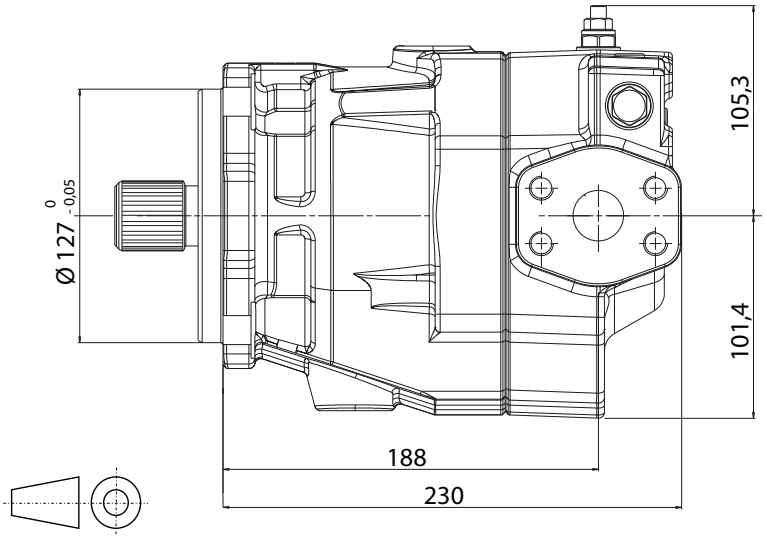


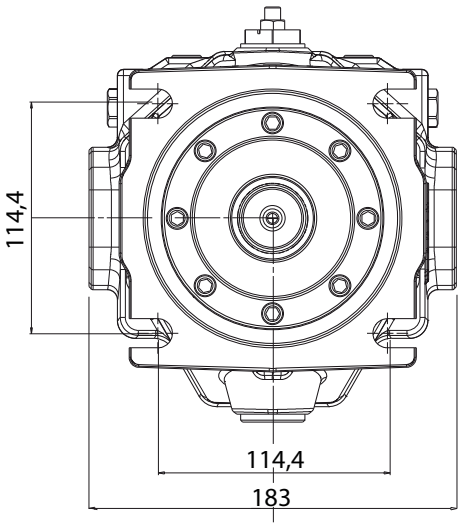
Mounting Flange C4
SAE J744 - Flange SAE C - 4 Bolts



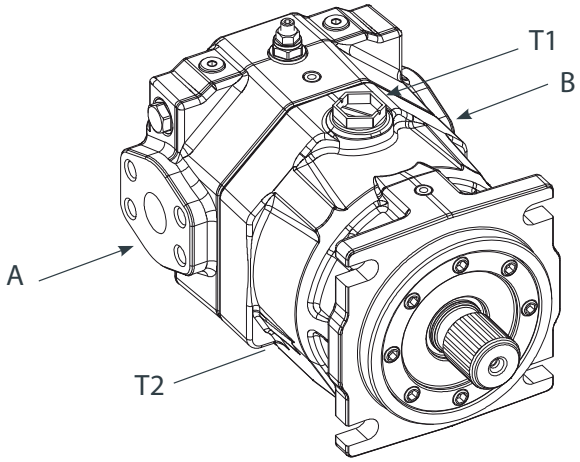
INSTALLATION DRAWINGS

Size 72



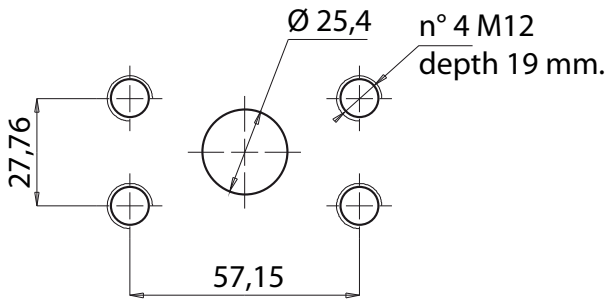


Ports



Detail Ports A-B

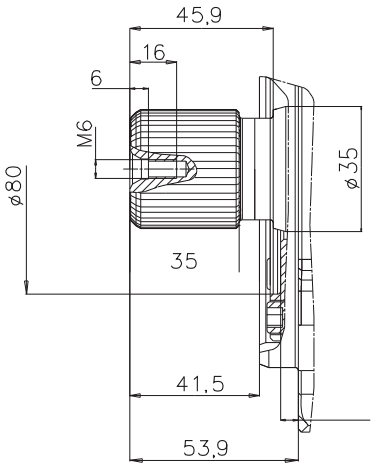
SAE J 518 - 1"- Code 62



Port	Description	Standards	Size
A,B	High pressure ports	SAE flange J518-62	1"
T1, T2	Case drain ports	ISO 1179	3/4" BSP

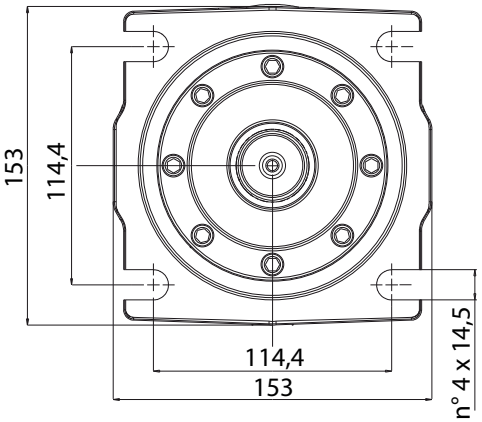
Shaft End 21 N

ANSI B92.1A-1976 - 1"3/8 - 21 T - 16/32 DP



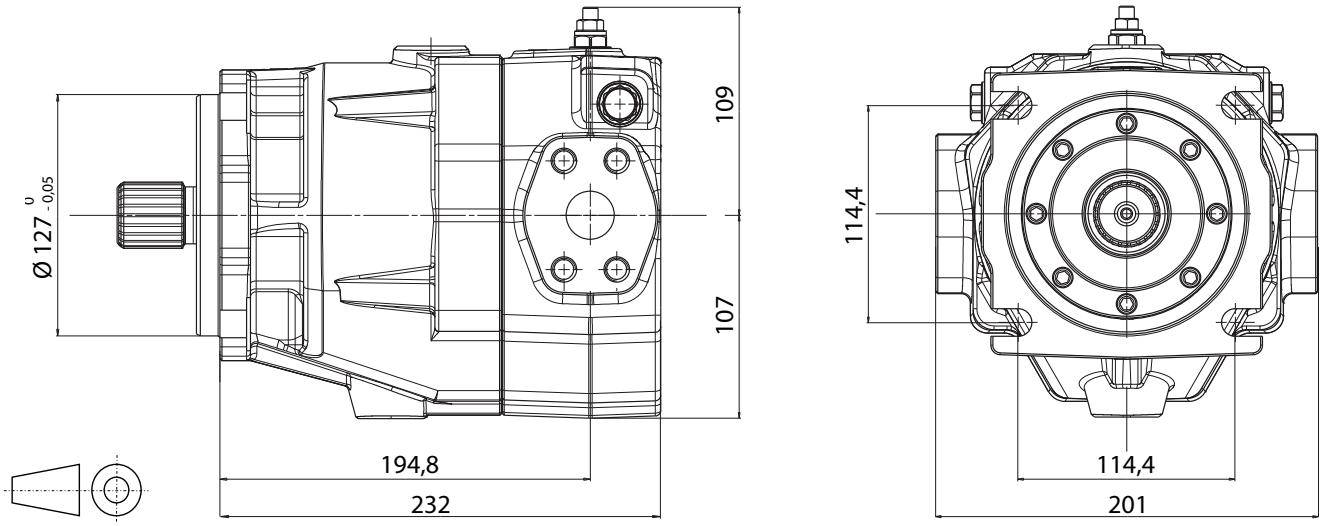
Mounting Flange C4

SAE J744 - Flange SAE C - 4 Bolts

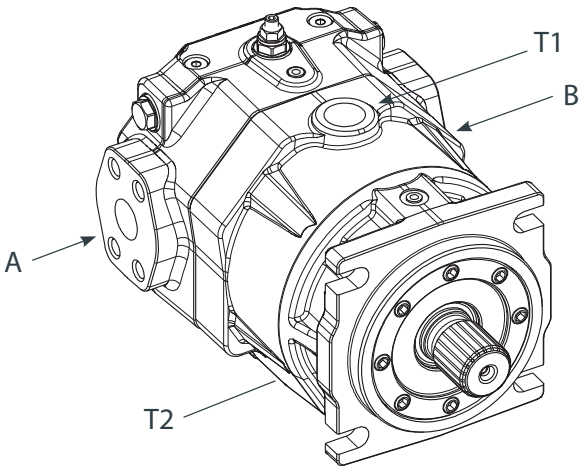


INSTALLATION DRAWINGS

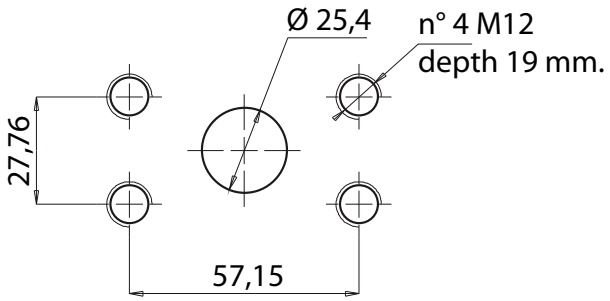
Size 90 - 110



Ports



Detail Ports A-B **SAE J 518 - 1"- Code 62**



Port	Description	Standards	Size
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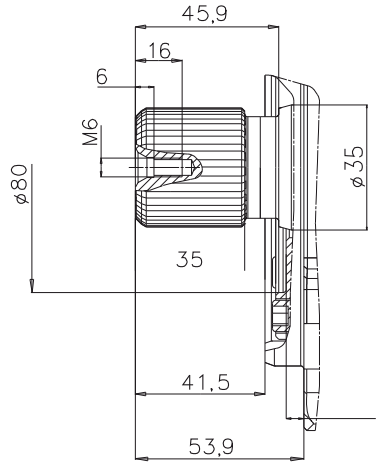
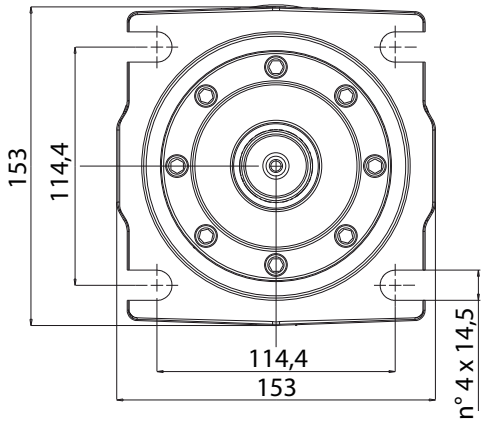
T1, T2	Case drain ports	ISO 1179	3/4" BSP

Shaft End 21 N
ANSI B92.1A-1976 - 1"3/8 - 21 T - 16/32 DP

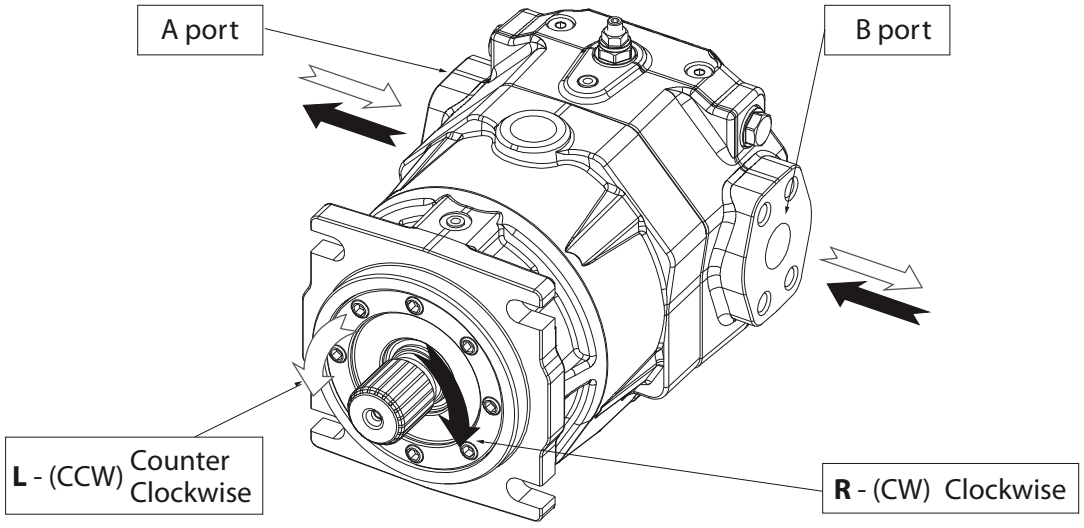


Mounting Flange C4
SAE J744 - Flange SAE C - 4 Bolts



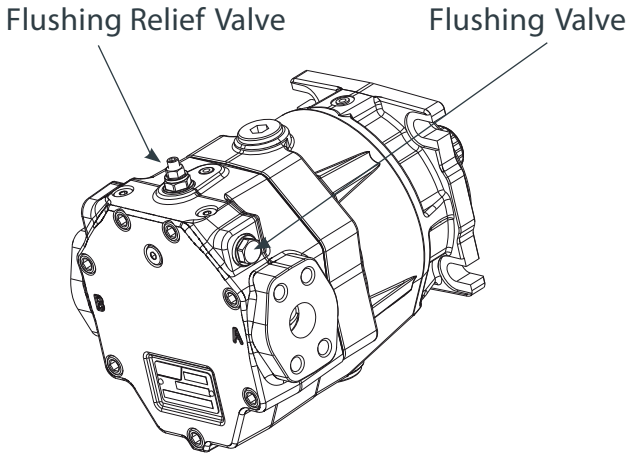
DIRECTION of ROTATION - DIRECTION of the FLOW
Ports

Flow direction through the motor		
Direction of rotation	**R** (CW)	B in to A out
	L (CCW)	A in to B out

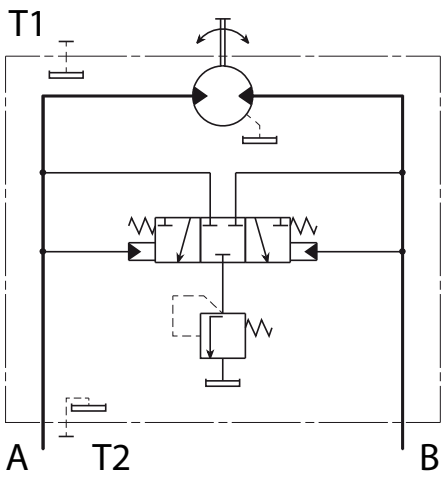


Flushing Valve

The motor is equipped with a flushing valve, integrated on the distributor of the motor that allows to direct a flow of oil from the low pressure channel inside the motor and later, through the discharge port, to a heat exchanger.
This flow is restored by the anticavitation valve on the pump.
The use of this valve allows dispose of excessive heat.



Hydraulic Diagram

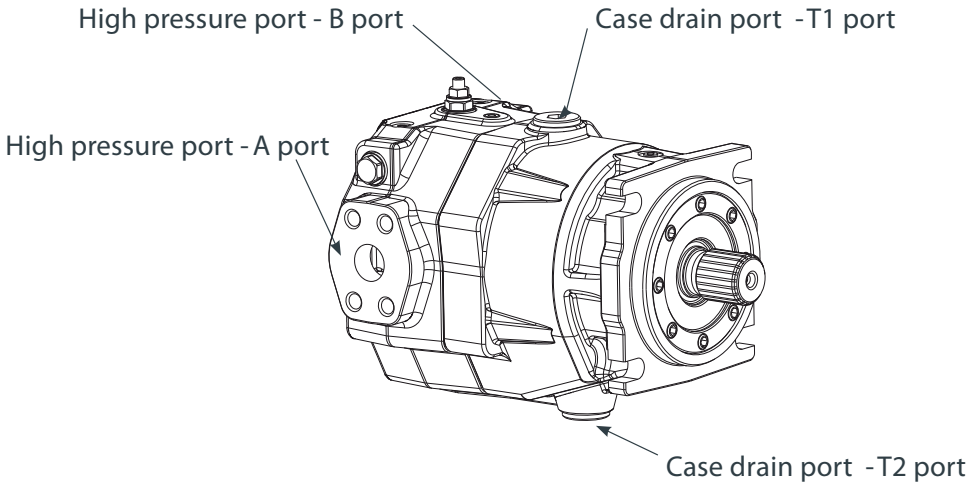


A, B	High pressure ports
T1, T2	Case Drain ports

INSTALLATION INSTRUCTION

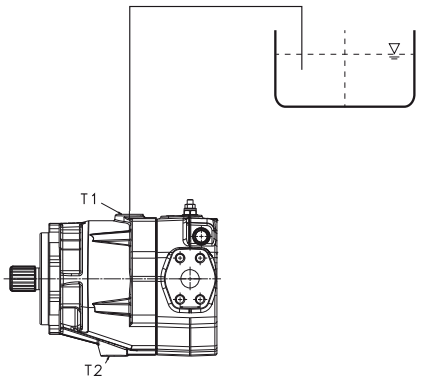
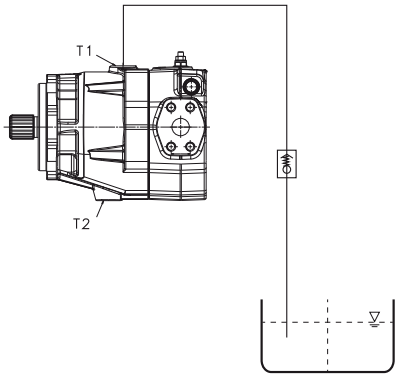
Introduction

In the following pages are described the standards of installation of the motor.
Compliance of the standards set has decisive effect on the life of the unit.
The following illustration can identify the links for a correct installation.
A standard requirement is that the motor must be filled with pre filtered hydraulic oil.
The case must be filled with oil both in operation and during the break.
The motor must be connected to the tank through the drain line.
Lack of compliance with that condition can damage the unit irreparably.



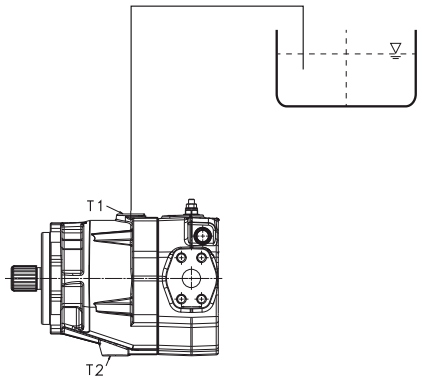
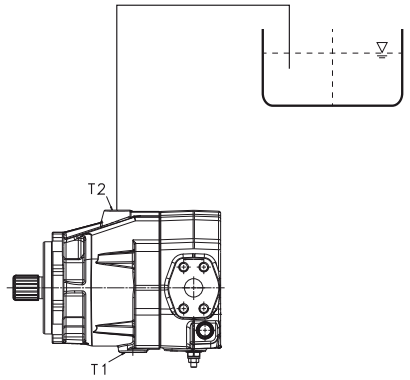
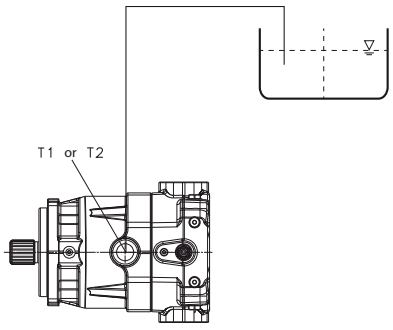
Installation Position

The case drain line must be always connected with the highest port.
The motor can be installed in the following positions respect to the level of the tank of the hydraulic fluid:

	Motor Orientation	Notes
Under the tank		Standard Positioning
Above the tank		You must provide a non return valve on the case drain line to prevent the emptying of the line.

INSTALLATION INSTRUCTION
Motor Orientation

The motor can be oriented in the following positions:

	Motor Orientation	Notes
Horizontal shaft Service lines on side		The case drain line must be always connected with the highest port (T1)
Horizontal shaft Service lines on side		The case drain line must be always connected with the highest port (T2).
Horizontal shaft and Service lines on top and bottom		The case drain line must be always connected with the highest port (T1 orT2).

As HANSA-TMP has a very extensive range of products and some products have a variety of applications, the information supplied may often only apply to specific situations.

If the catalogue does not supply all the information required, please contact HANSA-TMP.
In order to provide a comprehensive reply to queries we may require specific data regarding the proposed application.

Whilst every reasonable endeavour has been made to ensure accuracy, this publication cannot be considered to represent part of any contract, whether expressed or implied.

The data is this catalogue refer to the standard product. The policy of HANSA-TMP consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information.

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