

THE PRODUCTION LINE OF HANSA-TMP

**Heavy Duty Open Loop System
Fixed Displacement Axial Piston Pump**

TPF 60
(36,16 ÷ 49,94 cm³/rev.)



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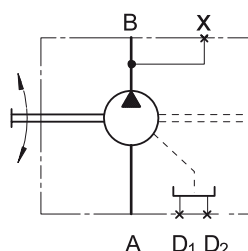
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Hydraulic Pumps Type TPF 60

Heavy Duty Axial Piston Pumps Fixed Displacement

Symbols

B Pressure port
A Suction port
D₁, D₂ Drain ports
X Gauge port



open drain line is always required

OPTIONS

- » Swash plate
- » Flange options
- » Port options
- » Shaft options
- » High pressure ports

APPLICATION

- » Agricultural machines
- » Road building machines
- » Mining machinery
- » Food industry machines
- » Special vehicles

ADVANTAGES

- » Low noise
- » Low pulsation
- » Long service life
- » High power density

GENERAL

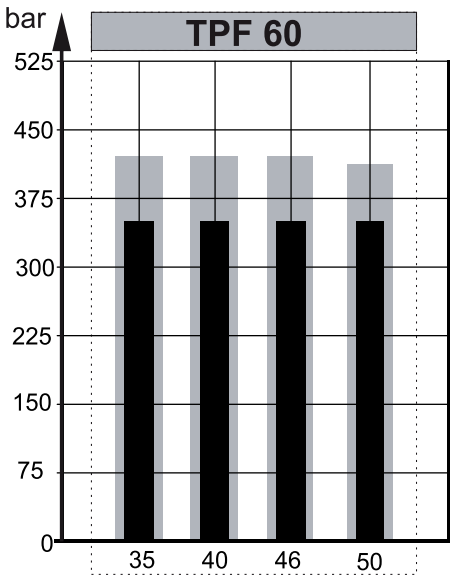
Displacement,	cm ³ /rev	36,16÷49,94
Max. Driving Speed,	RPM	2800
Max. Driving Torque,	Nm	278
Max. Power,	kW	54
Max. Pressure Drop,	bar	350
Max. Oil Flow,	lpm	132
Min. Driving Speed,	RPM	500
Fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)	
Temperature Range,	°C	-40÷82
Optimal Viscosity Range, mm ² /s [SUS]	12÷60	
Filtration	ISO code 18/16/13 (Min. recommended fluid filtration of 10 micron)	

Specification Data TPF

Intermittent values

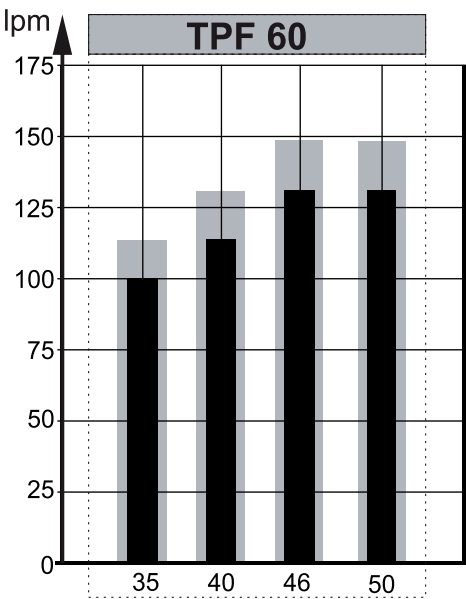
Continuous values

Max. Pressure



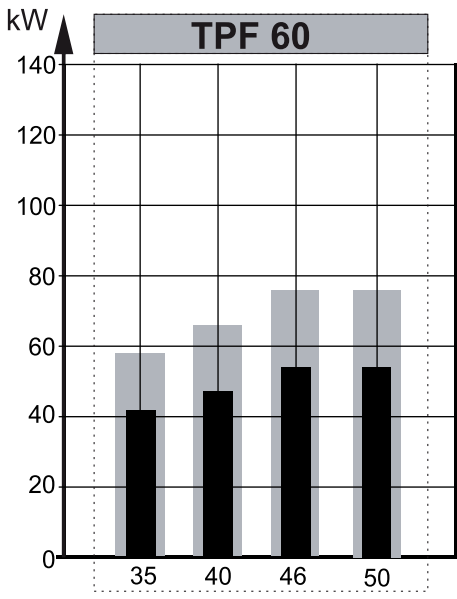
Displacement

Max. Oil Flow



Displacement

Max. Power



Displacement

SPECIFICATION DATA

Type		TPF 35	TPF 40	TPF 46	TPF 50
Displacement, cm.³/rev.		36.16	41.59	47.13	49.94
Max. Driving Speed, Cont.		2800	2800	2800	2500
[RPM]	Int.*	3150	3150	3150	2800
Max. Driving Torque,** Cont.		202	232	263	278
Nm	Int.**	242	278	315	326
Power, Cont.		41	47	54	54
kW	Int.**	58	67	77	77
Max. Pressure Cont.		350	350	350	350
bar	Int.**	420	420	420	410
Max. Oil Flow, Cont.		100	116	132	132
lpm	Int.*	114	131	148	148
Permissible Shaft Load					
max Axial**** N		Fa=2000			
max Radial**** N		Fr=3600			
Min. Speed		500			
Max. Pressure in		5			
Drain Line, bar		open drain line is always required			
Weight kg		20,5			

* Intermittent speed (flow) is for pressure up to 150 bar.

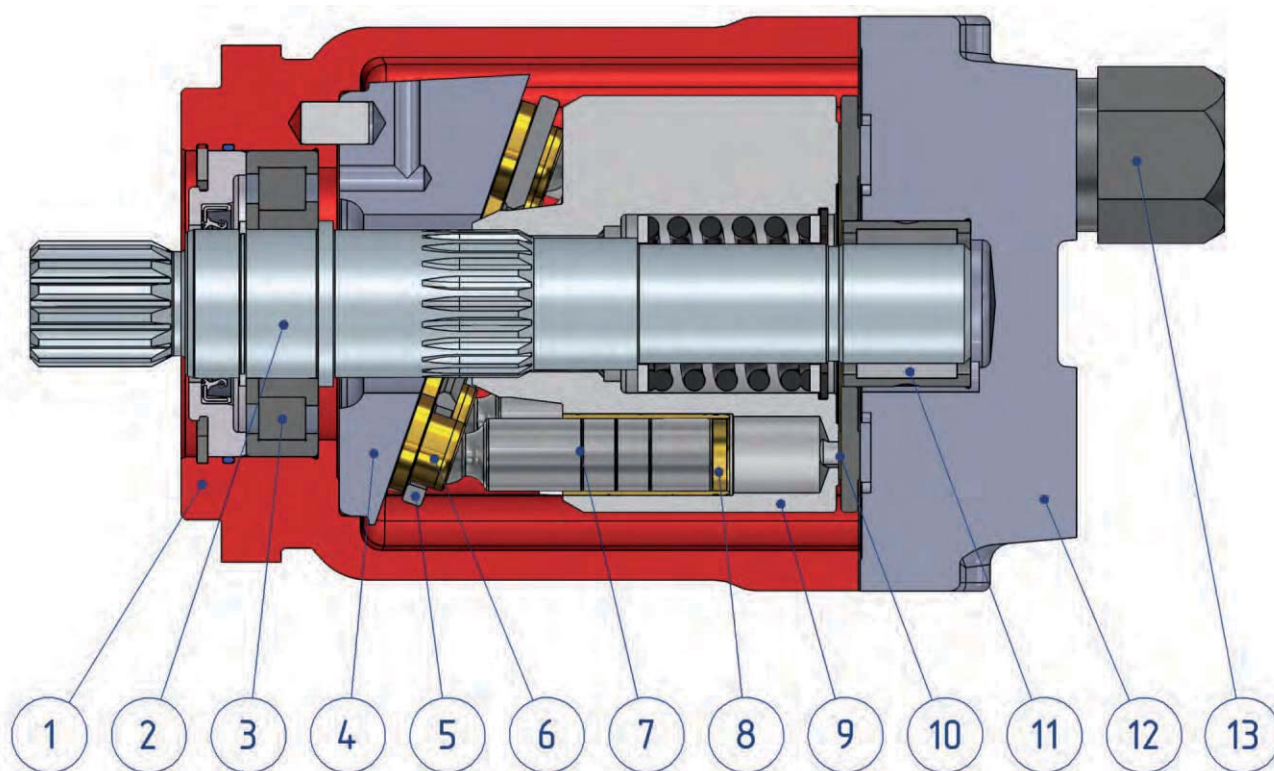
** Intermittent load: the permissible values may occur for max. 10% of every minute.

*** Theoretical torque

**** The calculated max values are based on the optimal direction of the forces Fr, Fa and optimal position of the shaft.

1. The recommended output power for continuous operations should not be exceeded.
2. Recommended filtration as per ISO 4406 cleanliness code 18/16/13 or better. This filtration corresponds to SAE AS 4059 8A/7B/7C. Nominal filtration - 10 micron or better.
3. Recommend using of a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).
4. Recommended oil viscosity - 15...30 cSt or less.
5. Recommended maximum system operating temperature 82°C.
6. To ensure optimum life of the pump, fill it up with fluid prior to load it and run with moderate load and speed for about 10-15 minutes.

SECTION VIEW

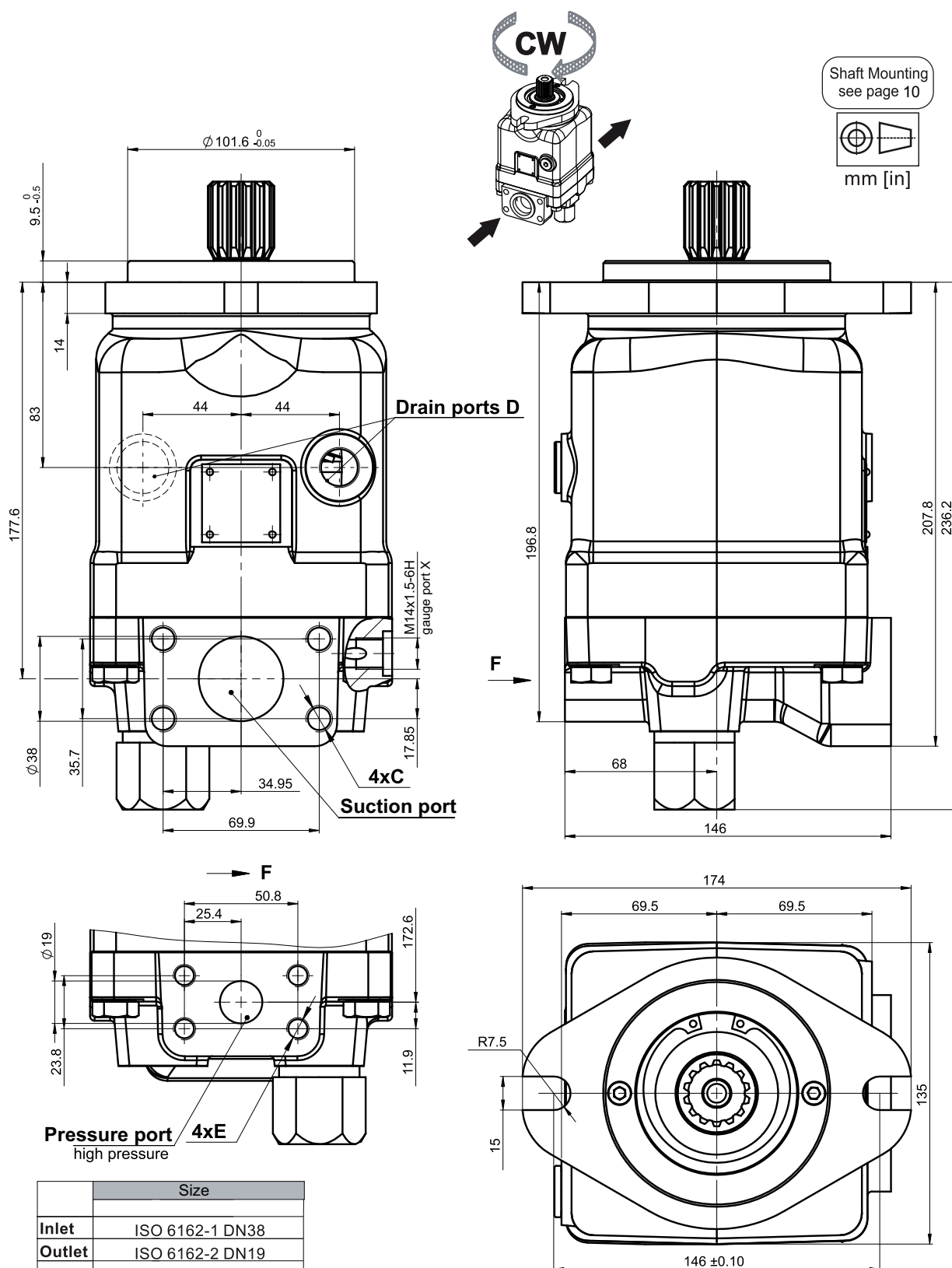


1. Cast iron body.
2. Hardened shaft.
3. Robust radial - axial roller bearing.
4. Solid swash plate.
5. Retainer plate.
6. Improved piston shoes.
7. Improved pistons.
8. Brass bushings.
9. Hardened steel cylinder block.
10. Bimetal distributor.
11. Needle bearing.
12. Solid end cover .
13. Part of hydraulic system helps to reduce pump noise and vibration.

The heavy duty design of the TPF pumps gains big advantage over the typical swash plate pumps. One of them is a special hydraulic system, which reduces noise and vibration created from pump. Another big advantage of our design, which in general is typical for swash plate pumps, is that the pulsations during the operation are much less. In general the swash plate pumps are more reliable than the bent axis pumps and gear pumps.

Overall Dimensions and Ports

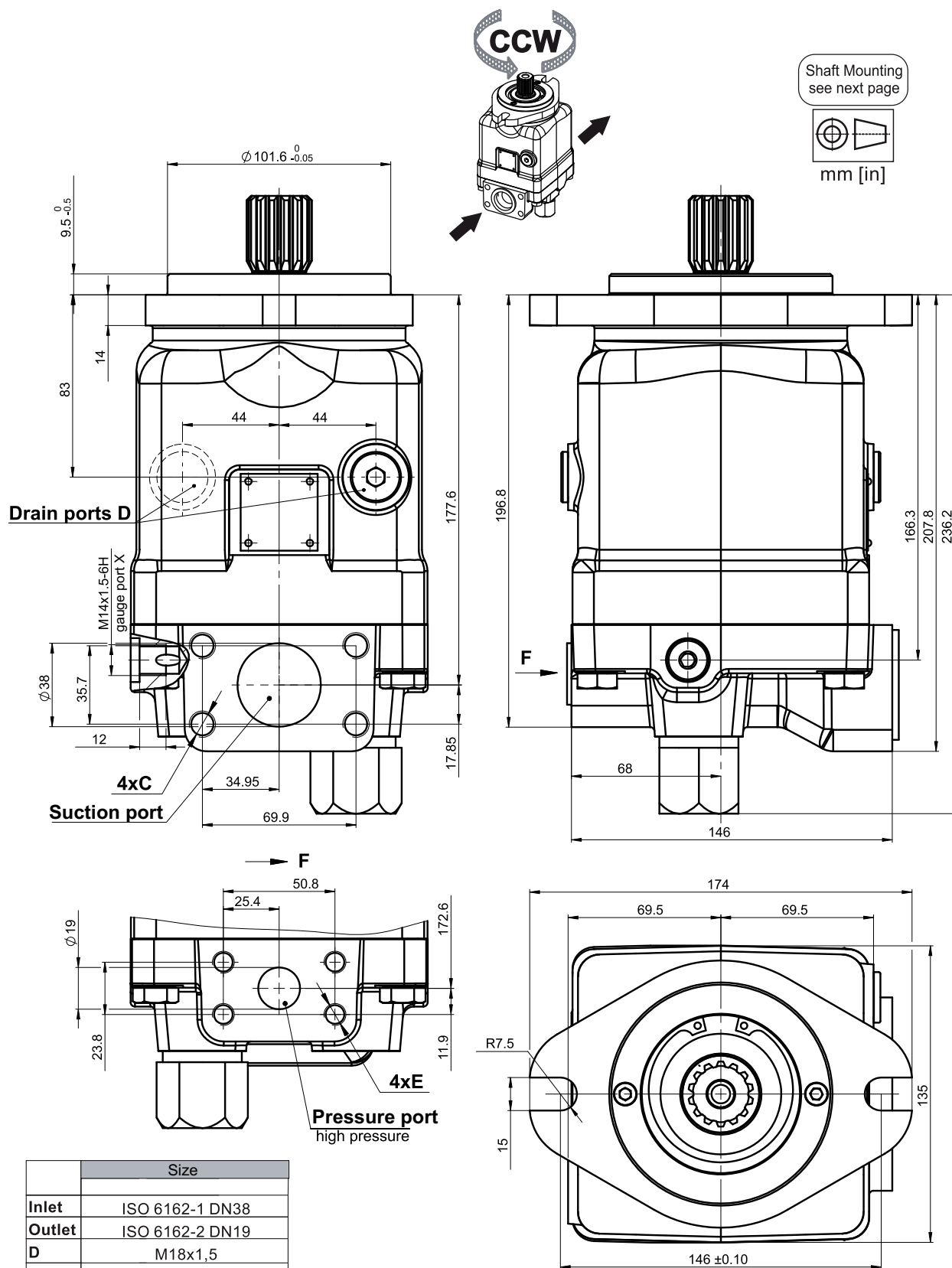
Direction of Rotation **CW**(Right)



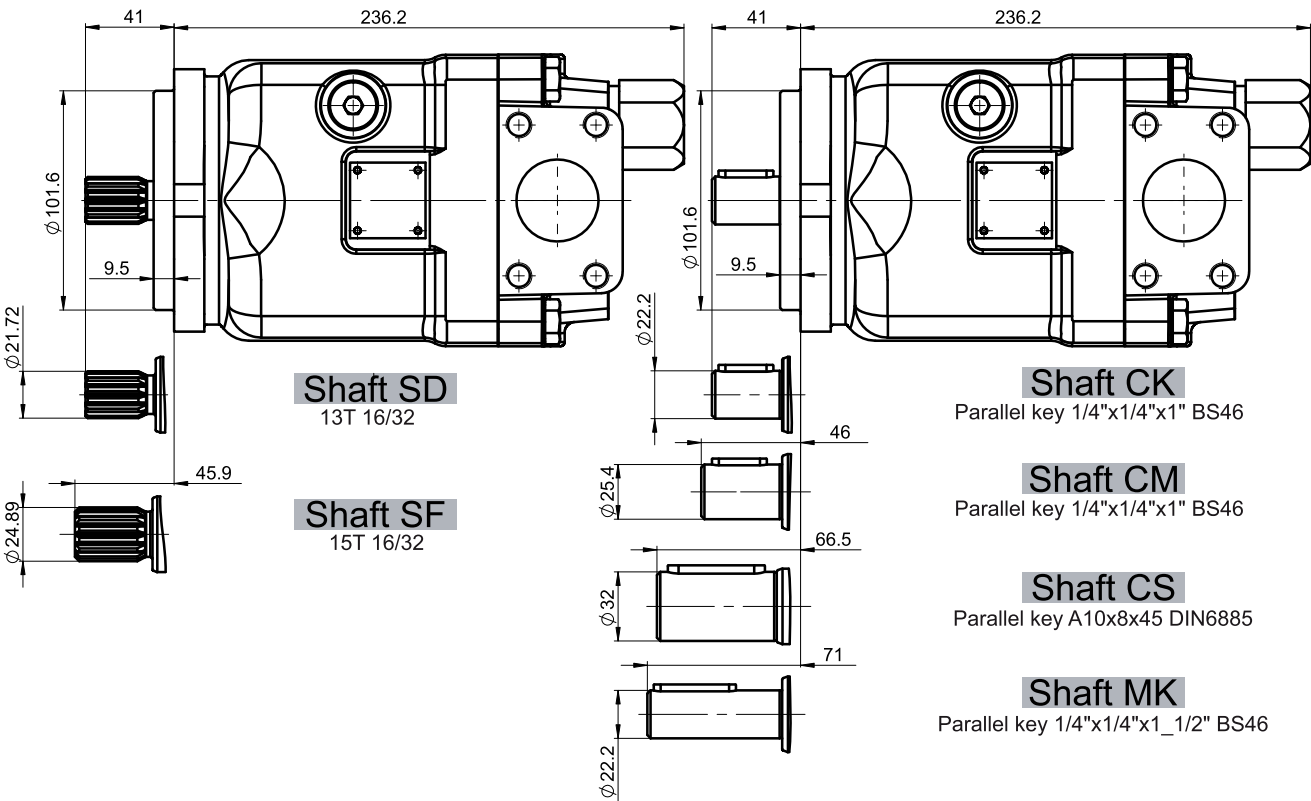
	Size
Inlet	ISO 6162-1 DN38
Outlet	ISO 6162-2 DN19
D	M18x1,5
C	4xM12-6H
E	4xM10-6H

Overall Dimensions and Ports

Direction of Rotation **CCW**(Left)



Shaft Types and Dimensions

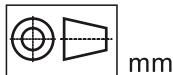


Shaft Dimensions
See Page 11

PERMISSIBLE SHAFT LOAD

Permissible shaft load		
max Axial	N	Fa=2000 [450]
max Radial	N	Fr=3600 [810]

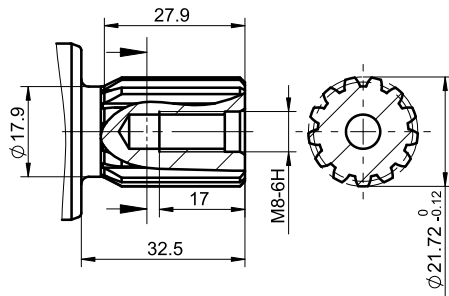
The calculated max values are based on the optimal direction of the forces Fr, Fa and optimal position of the shaft. For more information, please, feel free to contact us.



Shaft Types and Dimensions

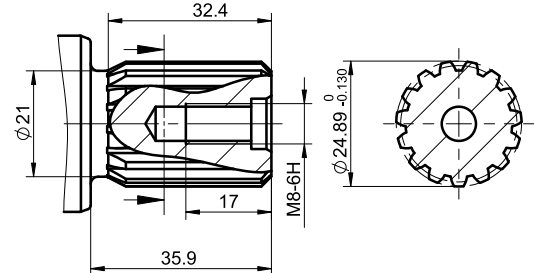
SD

ø21.72 M8-6H thread
13T 16/32 DP splined ANSI B92.1-1970
Max. torque 220 Nm



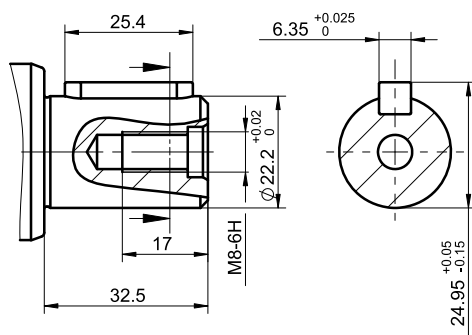
SF

ø24.89 M8-6H thread
15T 16/32 DP splined ANSI B92.1-1970
Max. torque 360 Nm



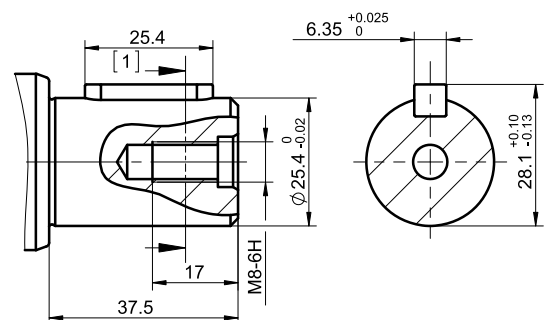
CK

ø22.2 straight, M8-6H thread
Parallel key **1/4"x1/4"x1"** BS46
Max. torque 180 Nm



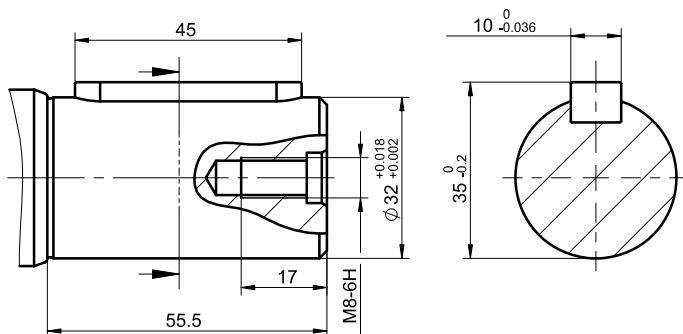
CM

ø25.4 straight, M8-6H thread
Parallel key **1/4"x1/4"x1"** BS46
Max. torque 250 Nm



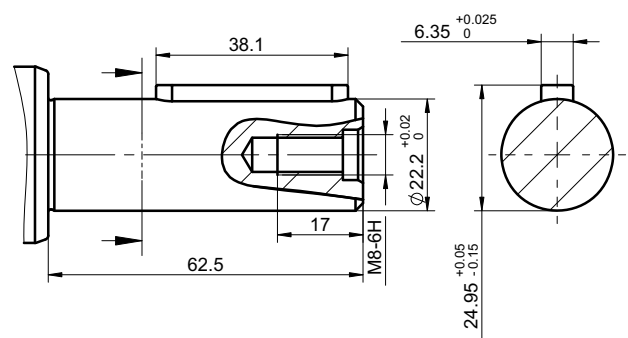
CS

ø32 straight, M8-6H thread
Parallel key **A10x8x45** DIN6885
Max. torque 565 Nm

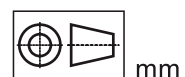


MK

ø22.2 straight, M8-6H thread
Parallel key **1/4"x1/4"x1 1/2"** BS46
Max. torque 180 Nm



The required max. torque
must not be exceeded



ORDERING CODE

	1	2	3	4	5	6
TPF						

Pos.1 - Mounting Flange

B - SAE B - 2-Bolt flange
spigot diam. 101,6 mm - BC 146 mm

Pos.5 - Port Size

omit - Suction ISO 6162-1 DN38, Pressure ISO
6162-2 DN19 metric thread, drain port M18x1.5

Pos.2 - Displacement Code

35 - 36.16 cm.³/rev.
40 - 41.59 cm.³/rev.
46 - 47.13 cm.³/rev.
50 - 49.94 cm.³/rev.

Pos.6 - Seal, Corrosion Resistant Seal Surface

omit - NBR seal type material
V - FKM seal type material

Pos.3 - Direction of Rotation

R - CW, Right direction
L - CCW, Left direction

Pos.4 - Shaft Extensions*

SD - ø21,72 spline SAE 13T 16/32 DP, M8
SF - ø24,9 spline SAE 15T 16/32, M8-6H
CK - ø22.2 straight, M8-6H thread
Parallel key 1/4"x1/4"x1" BS46
MK - ø22.2 straight, M8-6H thread
Parallel key 1/4"x1/4"x1_1/2" BS46
CM - ø25.4 straight, M8-6H thread
Parallel key 1/4"x1/4"x1" BS46
CS - ø32 straight, M8-6H thread
Parallel key A10x8x45 DIN6885

* The permissible output torque for shafts must not be exceeded! (see page 11)

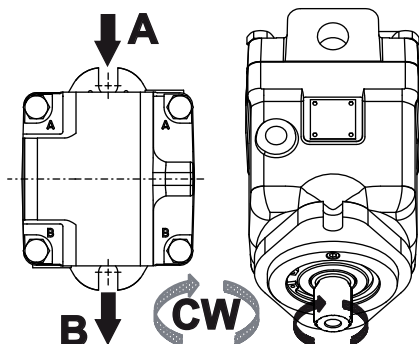
We remain open to meet your special requirements upon request.

INSTALLATION

DIRECTION OF ROTATION

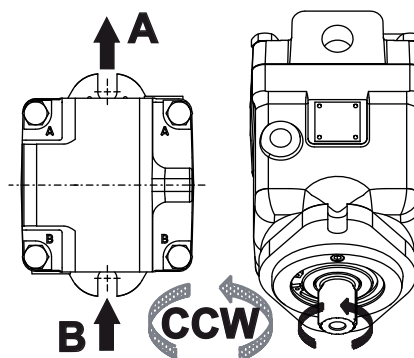
Standard Rotation

Viewed from shaft end
Port A Pressurized - CW
Port B Pressurized - CCW



Reverse Rotation

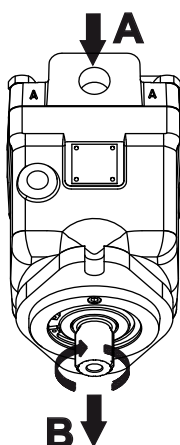
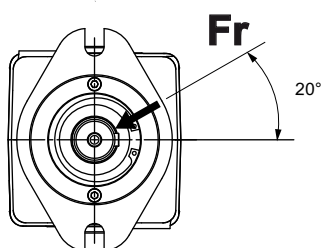
Viewed from shaft end
Port A Pressurized - CCW
Port B Pressurized - CW



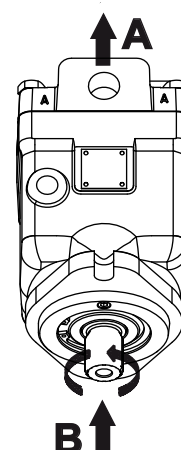
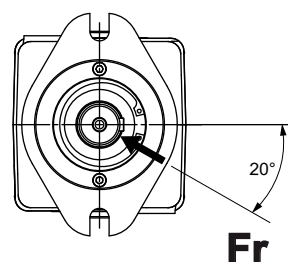
BEST POSITION FOR APPLYING RADIAL LOAD

Optimal position for applying radial load depending on the direction of rotation

Standard Rotation

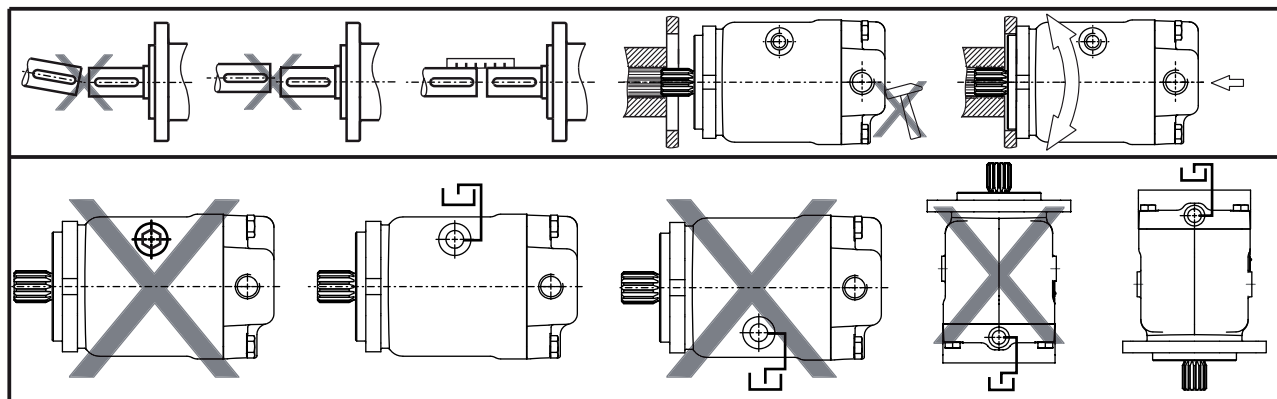


Reverse Rotation

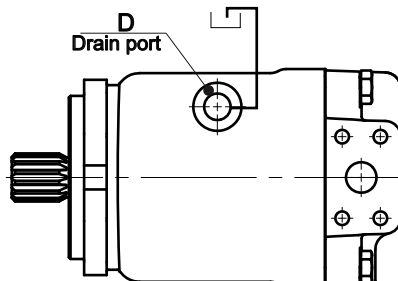
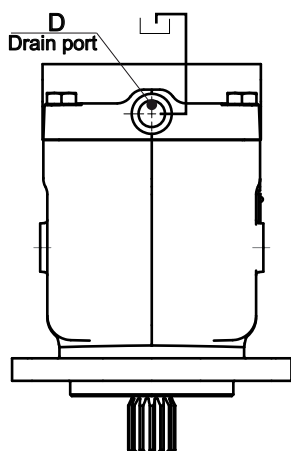


INSTALLATION

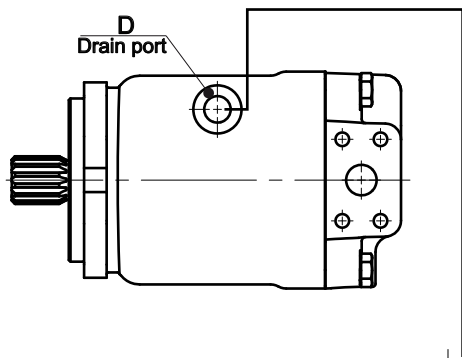
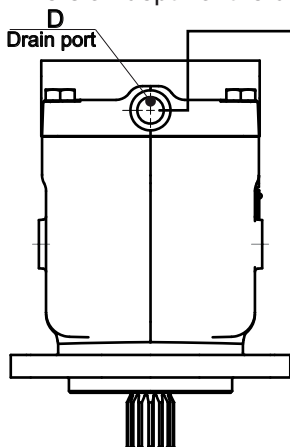
At start-up and during operation the pump housing has to be filled up with hydraulic fluid. Start-up has to be carried out at low or moderate speed and without load (for example 1000 rpm and pressure 50 bar [725 PSI]) till the pump and the hydraulic scheme are filled up with oil. Typically the start-up needs 10-15 minutes to finish. The leakage oil in the housing has to be discharged to the tank through the highest positioned drain port D. The max. pressure in the drain line is 5 bar.

**Installation below tank level (recommended)**

- Fill up the axial piston pump before the start-up through the highest positioned drain port D.
- Operate the pump at low speed till the pump system is completely filled up.
- The minimum immersion depth of the drain line in the tank is 200 mm relative to the minimum oil level in the tank.

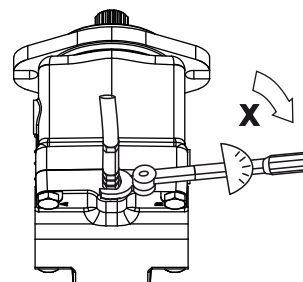
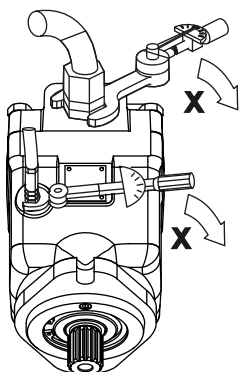
**Installation on top of tank level**

- Fill up the axial piston pump before the start-up through the highest positioned drain port D.
- Operate the pump at low speed till the pump system is completely filled up.
- The minimum immersion depth of the drain line in the tank is 200 mm relative to the minimum oil level in the tank.



INSTALLATION

Recommended max. tightening torque X for metal plugs and orifice



Screwed connection	Max. Tightening Torque X, Nm			
	With copper washer	With aluminium washer	With cutting edge	With "O" ring
G 1/4	20	30	40	20
G 3/8	20	50	60	20
G 1/2	30	80	100	30
G 3/4	50	130	160	50
G 1	80	200	250	80
M 8	20	10	20	
M 10	20	10	20	
M 12	20	30	40	
M 14x1,5	20	30	40	30
M 16x1,5	20	50	60	50
M 18x1,5	20	50	60	50
M 20x1,5	30	80	100	80
M 22x1,5	30	80	100	80
M 24x1,5	20	30	40	100
M 27x2	50	130	100	100

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 in 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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