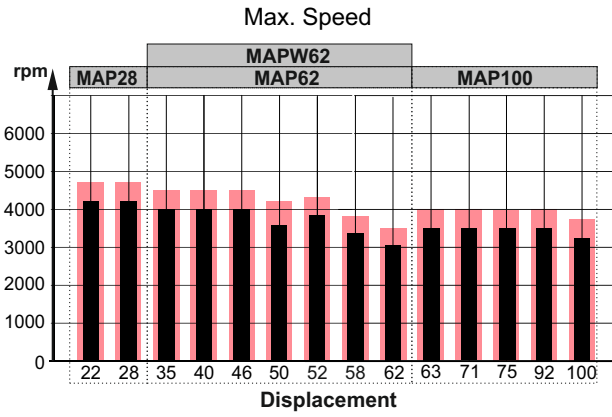
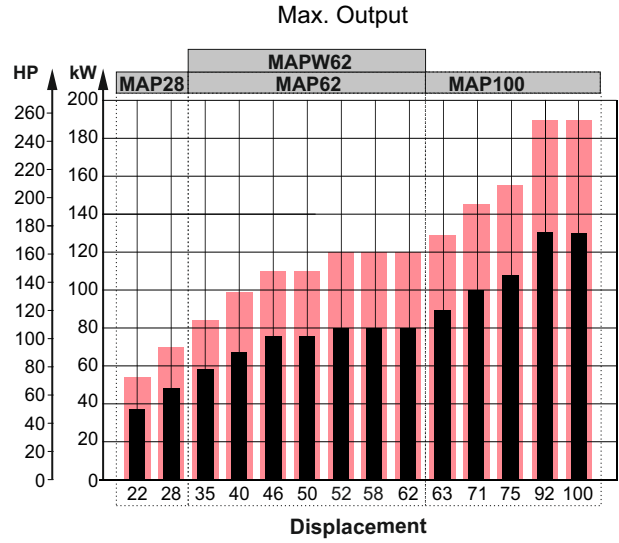
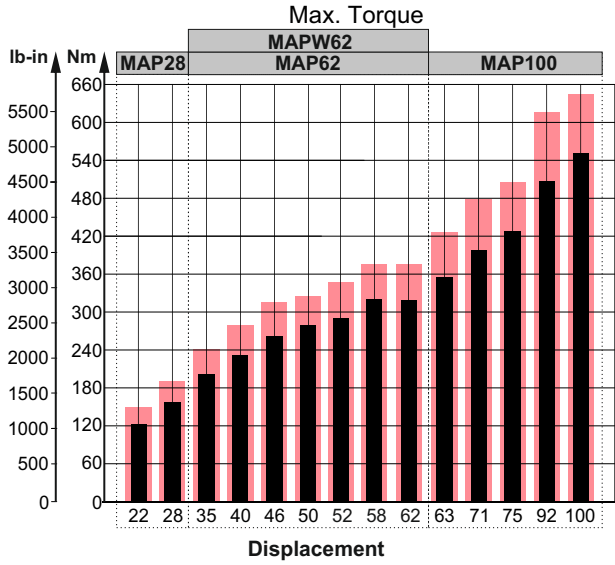


**SPECIFICATION DATA MOTORS TYPE MAP**

Intermittent values

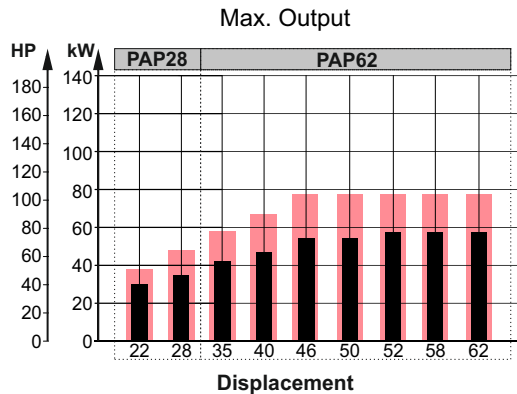
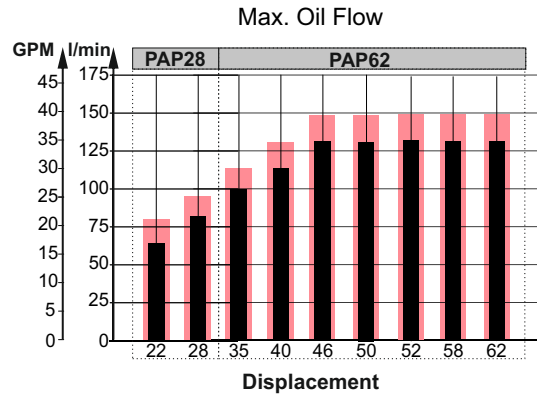
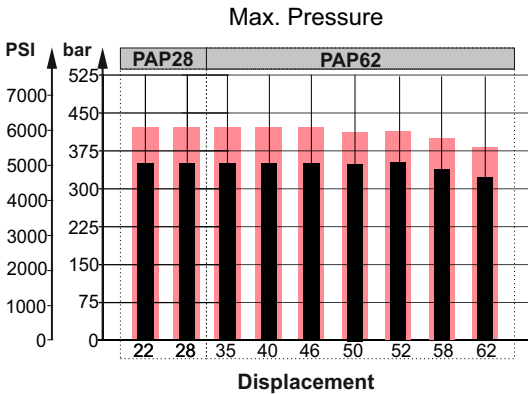
Continuous values

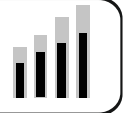


**Specification Data Pumps Type PAP**

Intermittent values

Continuous values





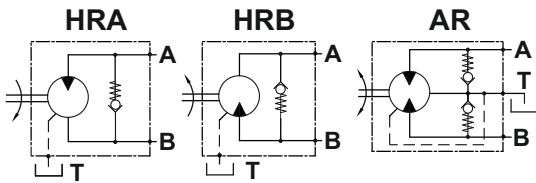
**PORT, SHAFT AND FLANGE TYPES**

PORTS SIZE - THREAD OPTION		Type of threads
PAP28	PAP62	
default		Inlet ISO 6162-1 DN32, Outlet ISO 6162-2 DN19, drain ports M18x1.5
5		Inlet SAE J518 1 1/2 PSI3000, Outlet SAE J518 3/4 PSI6000, drain ports 7/8-14 UNF
9		Inlet ISO 6162-1 DN32, Outlet ISO 6162-2 DN19, drain ports G1/2
	default	Inlet ISO 6162-1 DN32, Outlet ISO 6162-2 DN19, drain ports M18x1.5
	5	Inlet SAE J518 1 1/2 PSI3000, Outlet SAE J518 3/4 PSI6000, drain ports 7/8-14 UNF
	9	Inlet ISO 6162-1 DN32, Outlet ISO 6162-2 DN19, drain ports G1/2

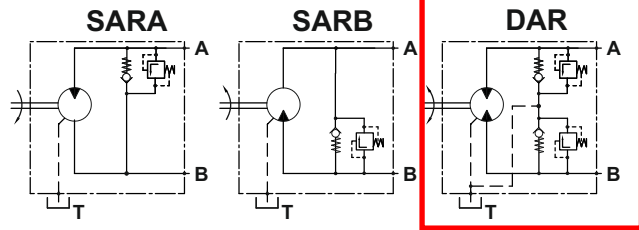
**Cross Table - Port Types For Pumps**

**VALVE OPTIONS FOR MOTORS**

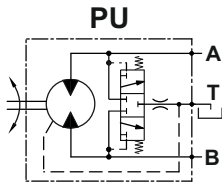
**Anti-Cavitation Valve**



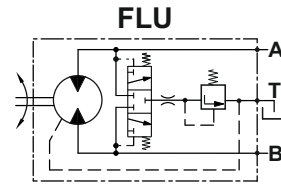
**Combined Anti-Cavitation and Relief Valve**



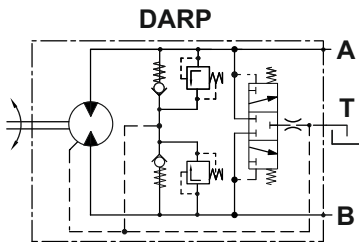
**Purge Valve**



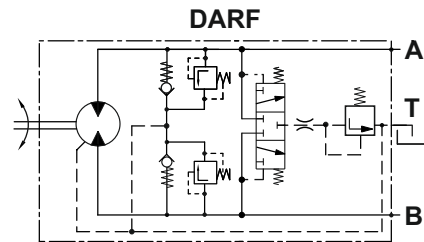
**Flush Valve**



**Dual Anti-Cavitation, Relief and Purge Valve**



**Dual Anti-Cavitation, Relief and Flush Valve**



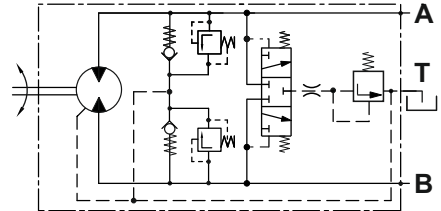
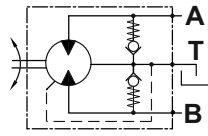
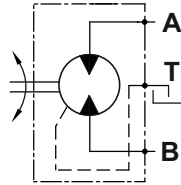
**Cross Table - Valve Types**

Type of valves	MAP28			MAP62			MAP100			MAPW62		
	omit	T	E	omit	T	E	omit	T	E	omit	T	E
HRA	x	x	x	x	x	x	x	x	x	x	x	x
HRB	x	x	x	x	x	x	x	x	x	x	x	x
AR	x	x		x	x	x	x	x	x	x	x	x
SARA	x	x		x	x	x	x	x	x	x	x	x
SARB	x	x		x	x	x	x	x	x	x	x	x
DAR	x	x		x	x	x	x	x	x	x	x	x
PU	x	x	x	x	x	x	x	x	x	x	x	x
FLU	x	x	x	x	x	x	x	x	x	x	x	x
DARP		x		x	x		x	x	x	x	x	
DARF		x		x	x		x	x	x	x	x	



# Hydraulic Motors Type MAP62

## Heavy Duty Axial Piston Motors Fixed Displacement



open drain line is always required

### APPLICATION

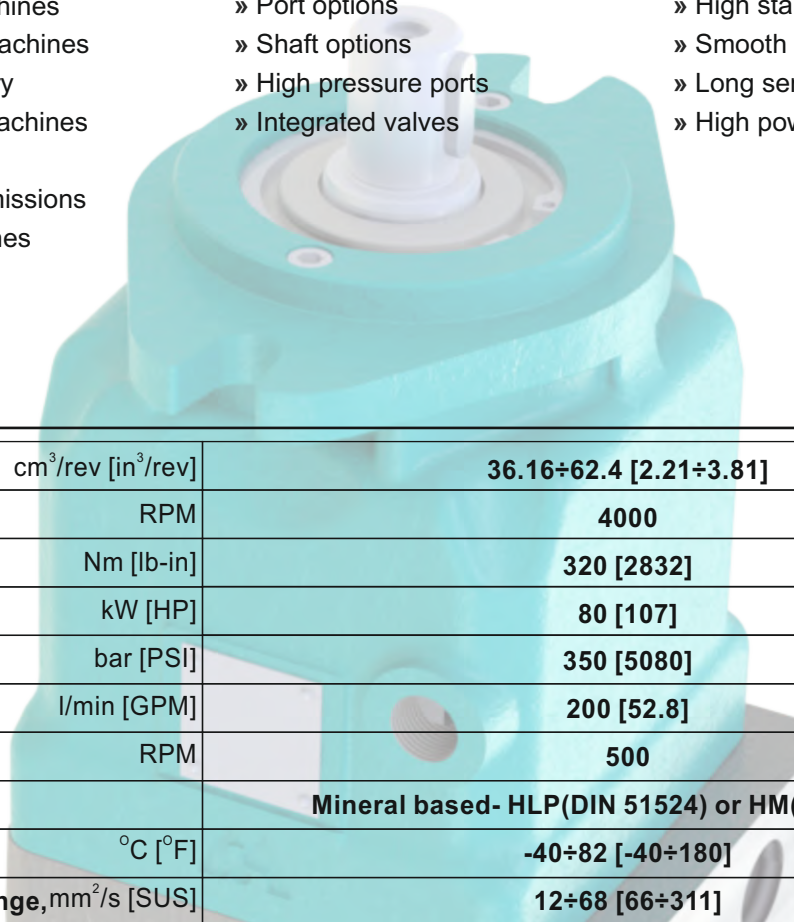
- » Agricultural machines
- » Road building machines
- » Mining machinery
- » Food industry machines
- » Swing drives
- » Hydraulic transmissions
- » Vibration machines
- » Fan drives
- » Special vehicles

### OPTIONS

- » Port options
- » Shaft options
- » High pressure ports
- » Integrated valves

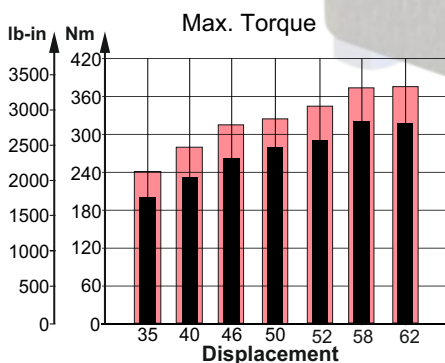
### ADVANTAGES

- » High starting torque
- » Smooth operation
- » Long service life
- » High power density

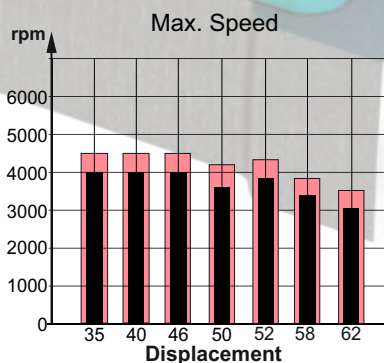


### GENERAL

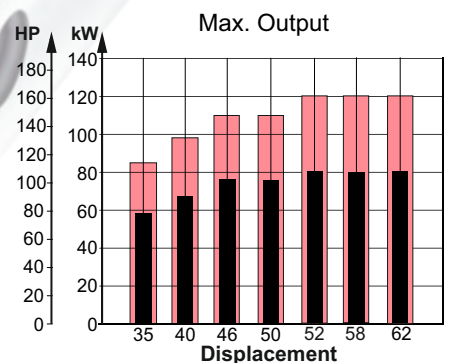
Displacement,	cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	36.16÷62.4 [2.21÷3.81]
Max. Speed,	RPM	4000
Max. Torque,	Nm [lb-in]	320 [2832]
Max. Output,	kW [HP]	80 [107]
Max. Pressure Drop,	bar [PSI]	350 [5080]
Max. Oil Flow,	l/min [GPM]	200 [52.8]
Min. Speed,	RPM	500
Fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)	
Temperature Range,	°C [°F]	-40÷82 [-40÷180]
Optimal Viscosity Range,	mm <sup>2</sup> /s [SUS]	12÷68 [66÷311]
Filtration	ISO code 18/16/13 (Min. recommended fluid filtration of 10 micron)	



Intermittent values

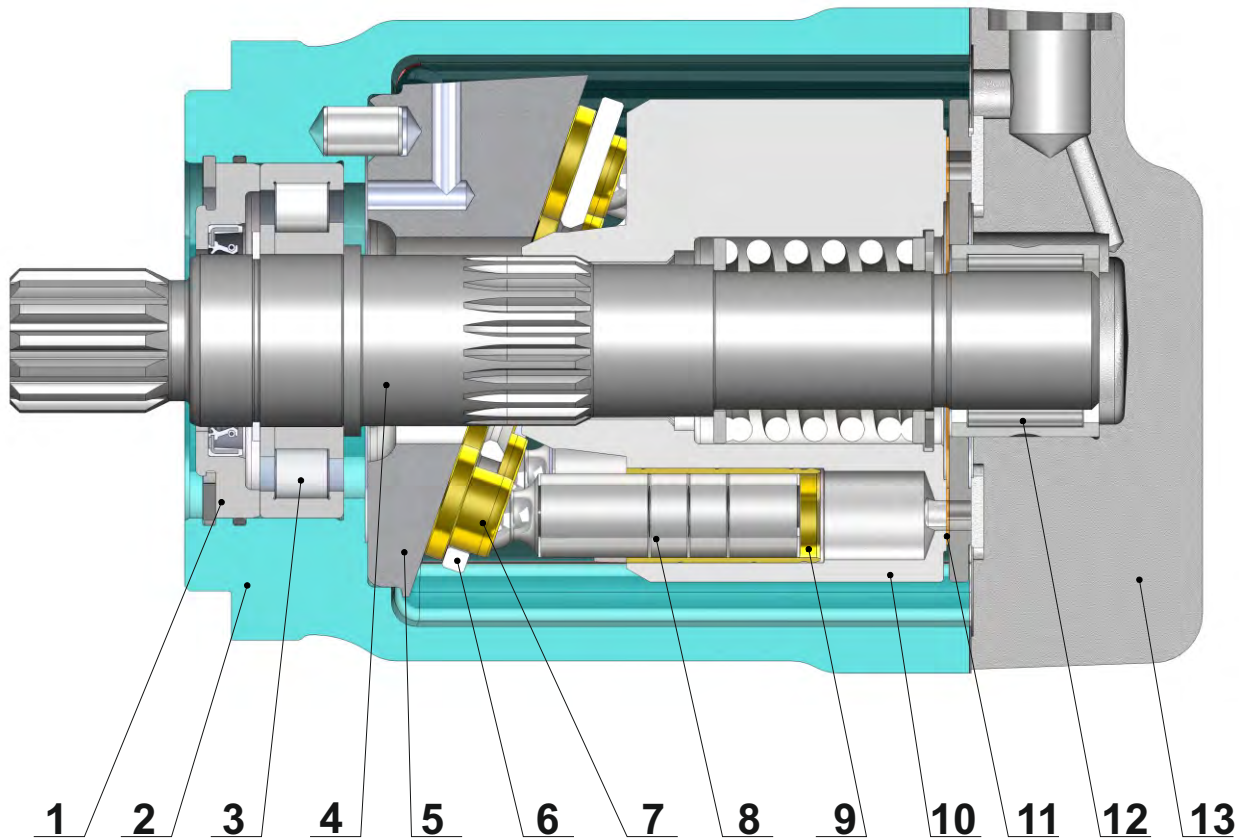


Continuous values





## SECTION VIEW



1. Front cover
2. Cast iron body
3. Robust radial - axial roller bearing
4. Hardened shaft
5. Solid swash plate
6. Retainer plate
7. Improved piston shoes
8. Improved pistons
9. Brass bushings
10. Hardened steel cylinder block
11. Bimetal distributor
12. Needle bearing
13. Solid end cover

The main advantages of the heavy duty design of the MAP motors over the typical swash plate motors are the higher starting torque and the higher total efficiency. In regards to these two parameters, under normal working mode, the MAP is comparable to the bent axis motors. The advantages of the MAP over the bent axis motors are the higher reliability and the lower degree of pulsation and vibration during operation.



**SPECIFICATION DATA**

Type		MAP 35	MAP 40	MAP 46	MAP 50	MAP 52	MAP 58	MAP 62
<b>Displacement,</b> <b>cm<sup>3</sup>/rev [in<sup>3</sup>/rev]</b>		36.16 [2.21]	41.59 [2.54]	47.13 [2.88]	49.94 [3.05]	51.95 [3.17]	58.8 [3.59]	62.4 [3.81]
<b>Max. Speed,</b> <b>[RPM]</b>	Cont.	4000	4000	4000	3600	3850	3398	3050
	Int.*	4500	4500	4500	4200	4330	3823	3500
<b>Max. Torque,**</b> <b>Nm [lb-in]</b>	Cont.	202 [1789]	232 [2053]	263 [2328]	278 [2460]	290 [2566]	320 [2832]	318 [2814]
	Int.**	242 [2142]	278 [2460]	315 [2788]	326 [2885]	347 [3071]	375 [3320]	377 [3337]
<b>Output,</b> <b>kW [HP]</b>	Cont.	58 [78]	67 [90]	76 [102]	76 [102]	80 [107]	80 [107]	80 [107]
	Int.**	84 [113]	97 [130]	110 [148]	110 [148]	120 [161]	120 [161]	120 [161]
<b>Max. Pressure,</b> <b>bar [PSI]</b>	Cont.	350 [5080]	350 [5080]	350 [5080]	350 [5080]	350 [5080]	340 [4930]	320 [4640]
	Int.**	420 [6100]	420 [6100]	420 [6100]	410 [5950]	420 [6100]	400 [5800]	380 [5510]
	Peak	450 [6527]	450 [6527]	450 [6527]	450 [6527]	450 [6527]	440 [6381]	410 [5950]
<b>Max. Oil Flow,</b> <b>l/min [GPM]</b>	Cont.	145 [38.3]	167 [44.1]	189 [50]	180 [47.5]	200 [52.8]	200 [52.8]	190 [50]
	Int.*	163 [43.1]	187 [49.4]	212 [56]	210 [55.5]	225 [59.4]	225 [59.4]	215 [56.8]
<b>Torque Constant</b> ***** <b>Nm/bar [lb-in/PSI]</b>		0.52 [0.32]	0.6 [0.364]	0.68 [0.41]	0.72 [0.437]	0.75 [0.454]	0.85 [0.515]	0.9 [0.546]
<b>Speed Constant</b> ***** <b>RPM/(l/min) [RPM/GPM]</b>		26.3 [99.4]	22.84 [86.5]	20.2 [76.3]	19.02 [72]	18.28 [70.2]	16.13 [61.1]	15.23 [57.6]
<b>Permissible Shaft Load</b>		Fa=2000 [450]						
<b>max Axial**** N[lb]</b>		Fr=3600 [810]				Fr=3200 [720]		
<b>max Radial**** N[lb]</b>		Fr=3600 [810]				Fr=3200 [720]		
<b>Min. Speed, [RPM]</b>		500						
<b>Max. Pressure in Drain Line, bar [PSI]</b>		5 [70] open drain line is always required						
<b>Weight, kg [lb]</b>		17.65 [38.9] for SAE-B flange; 19.8 [43.7] for SAE-4C flange						

Peak pressure is the highest allowable pressure, may occur for max. 1% of every minute;

\* Intermittent speed (flow): for pressure up to 150[2200] bar[PSI];

\*\* Intermittent load: the permissible values may occur for max. 10% of motor lifetime;

\*\*\* Theoretical torque;

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

\*\*\*\*\* The constant values are used for calculation of torque and speed with motor efficiencies  $\eta_v=0.95$  and  $\eta_{mh}=0.9$ .

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. Recommended a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).
4. Recommended oil viscosity - 12...68 cSt or see page 84.
5. Recommended maximum system operating temperature - 82°[180°] C[F].
6. To ensure optimum life of the motor, fill it up with fluid prior to load it and run with moderate load and speed for about 10-15 minutes.

**Hint: Motor Torque = Torque Constant \* Pressure Drop**

**Rotation Speed = Speed Constant \* Oil Flow**

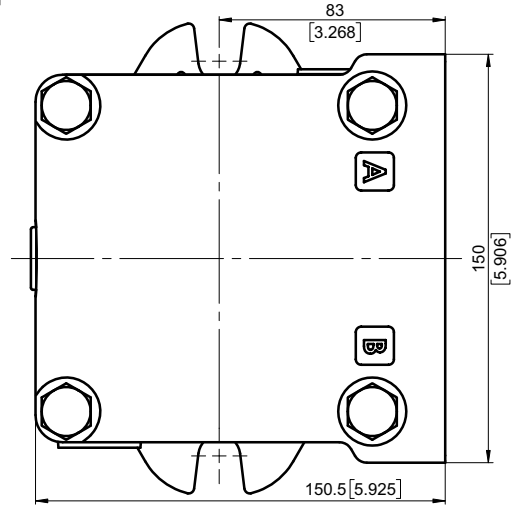
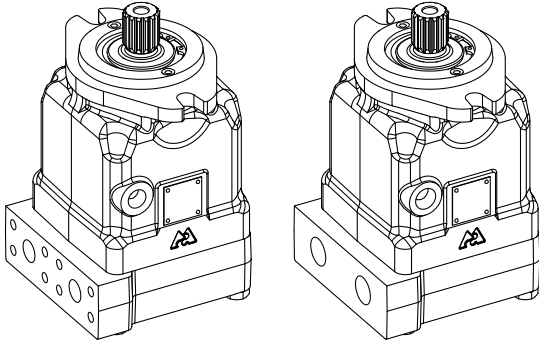
The constant values are approximate. Motor torque and rotation speed for a particular project are depending on the real operating conditions. For more detailed calculations please see efficiencies on page 74 and formulas on page 85.



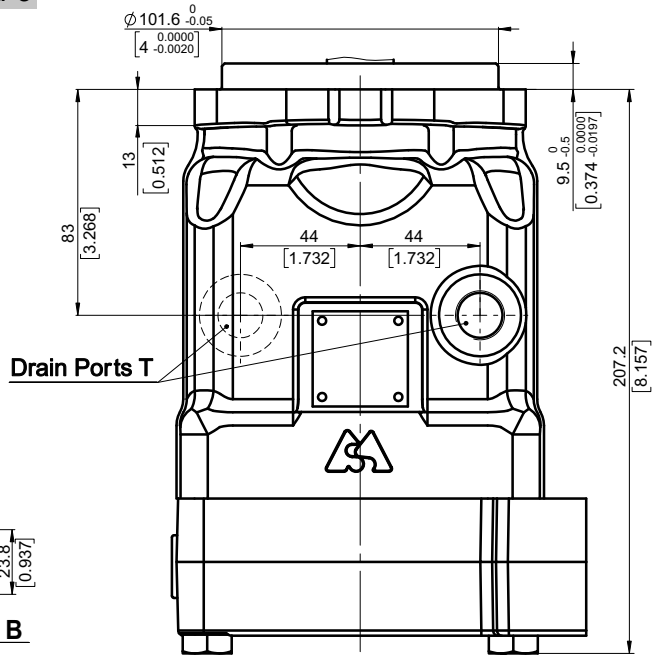
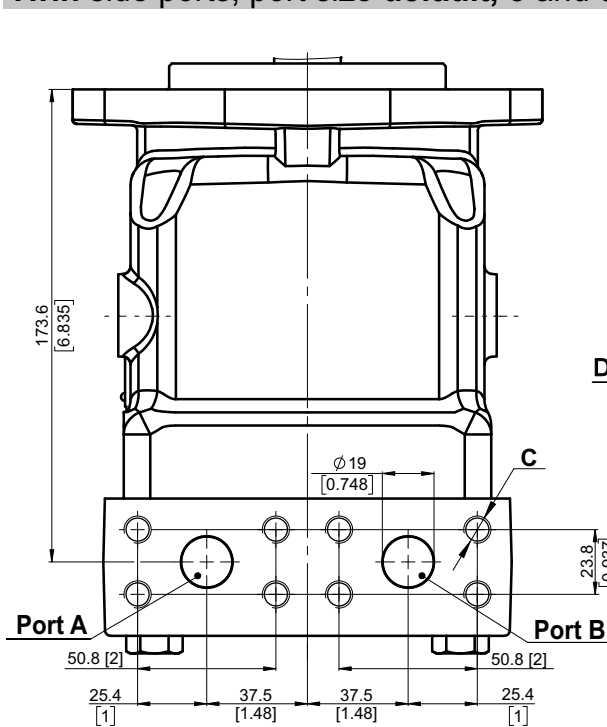
**OVERALL DIMENSIONS AND PORTS**

**Twin Side Ports - Type T**

**Standard Rotation**  
Viewed from shaft end  
Port A Pressurized - CW  
Port B Pressurized - CCW  
see page 81

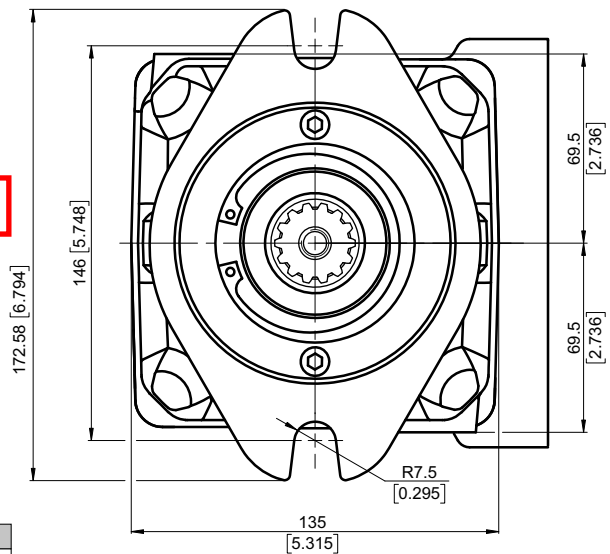
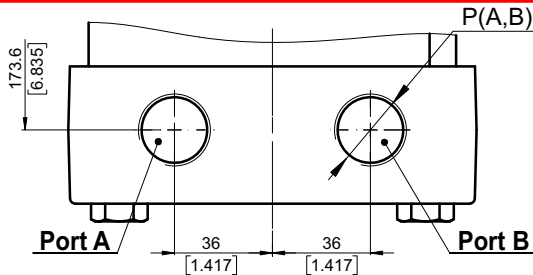


**Twin side ports, port size default, 5 and 9**



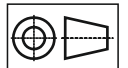
	Port Size		
	default	5	9
P <sub>A,B</sub>	2xISO 6162-2 DN19	2xSAE J518 3/4" PSI6000	2xISO 6162-2 DN19
T	M18x1.5	7/8-14 UNF	G1/2
C	8xM10	8x3/8-16 UNC	8xM10

**Twin side ports, port size 2,3,4,6,7 and 8**



	Port Size					
	2	3	4	6	7	8
P <sub>A,B</sub>	2xG 3/4	2xM27x2	2x1 1/16-12UN	2xG 1/2	2xM22x1.5	2x7/8-14UNF
T	G 1/2	M18x1.5	7/8-14UNF	G 1/2	M18x1.5	3/4-16UNF

Shaft Mounting  
see next page

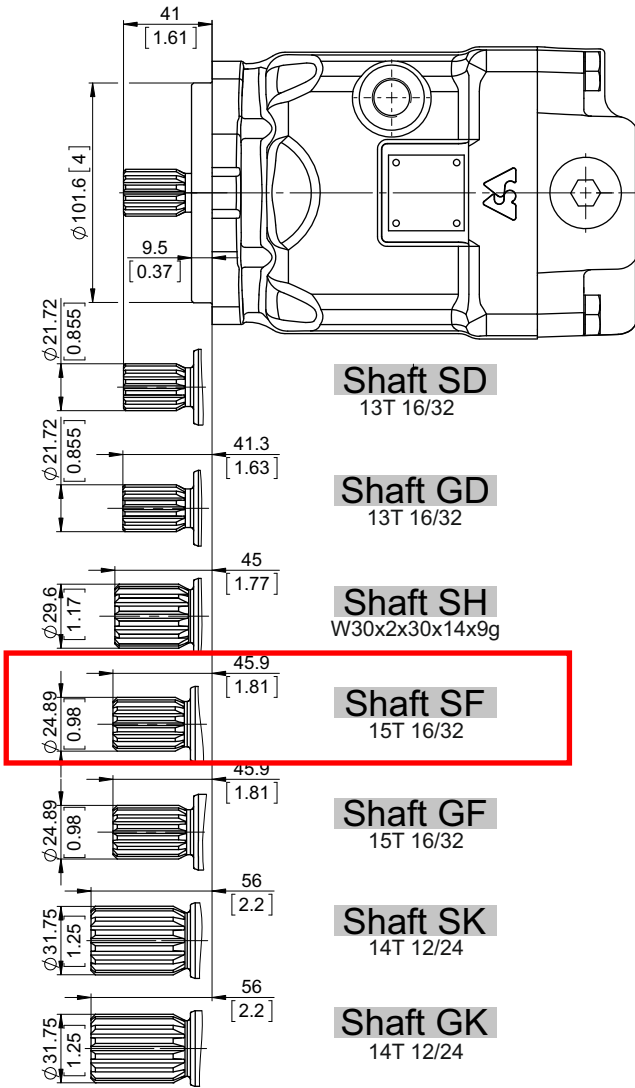


mm [in]



**SHAFTS MOUNTING**

Mounting Flange - Type **SAE-B**



**Shaft SD**  
13T 16/32

**Shaft GD**  
13T 16/32

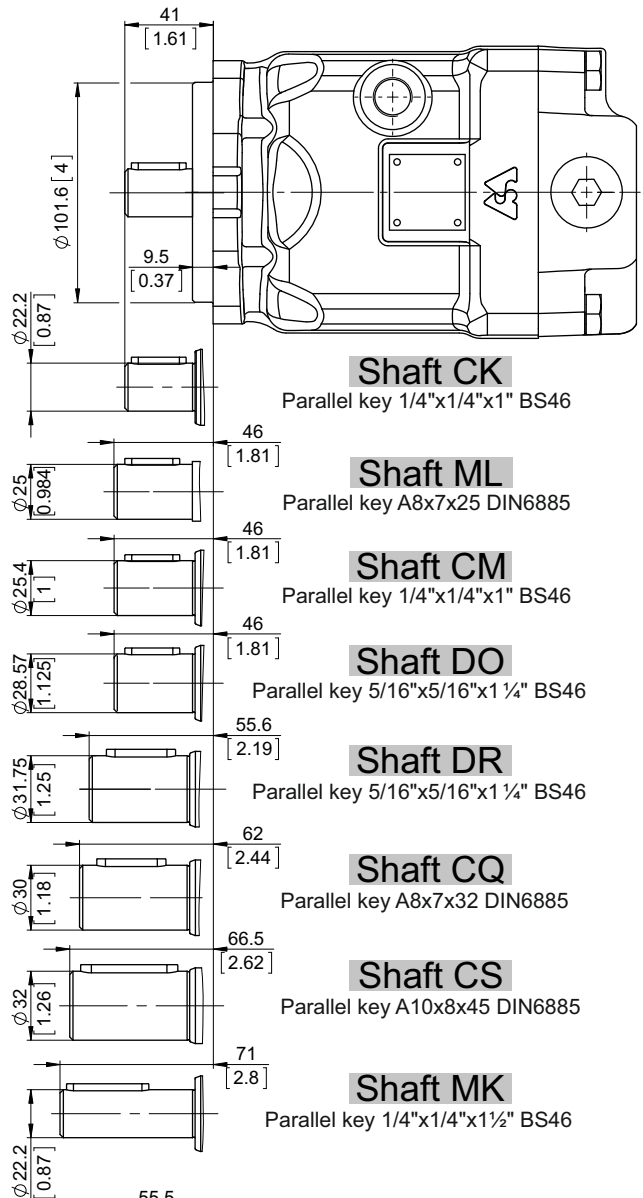
**Shaft SH**  
W30x2x30x14x9g

**Shaft SF**  
15T 16/32

**Shaft GF**  
15T 16/32

**Shaft SK**  
14T 12/24

**Shaft GK**  
14T 12/24



**Shaft CK**  
Parallel key 1/4"x1/4"x1" BS46

**Shaft ML**  
Parallel key A8x7x25 DIN6885

**Shaft CM**  
Parallel key 1/4"x1/4"x1" BS46

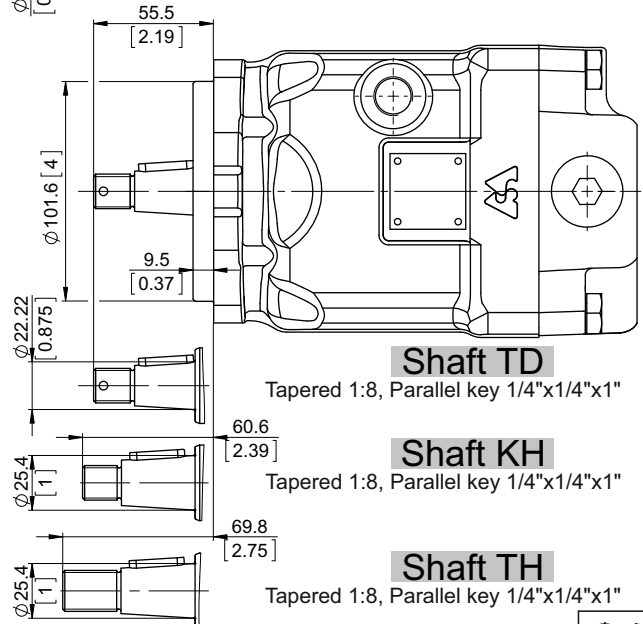
**Shaft DO**  
Parallel key 5/16"x5/16"x1 1/4" BS46

**Shaft DR**  
Parallel key 5/16"x5/16"x1 1/4" BS46

**Shaft CQ**  
Parallel key A8x7x32 DIN6885

**Shaft CS**  
Parallel key A10x8x45 DIN6885

**Shaft MK**  
Parallel key 1/4"x1/4"x1 1/2" BS46



**Shaft TD**  
Tapered 1:8, Parallel key 1/4"x1/4"x1"

**Shaft KH**  
Tapered 1:8, Parallel key 1/4"x1/4"x1"

**Shaft TH**  
Tapered 1:8, Parallel key 1/4"x1/4"x1"

**PERMISSIBLE SHAFT LOAD**

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

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

