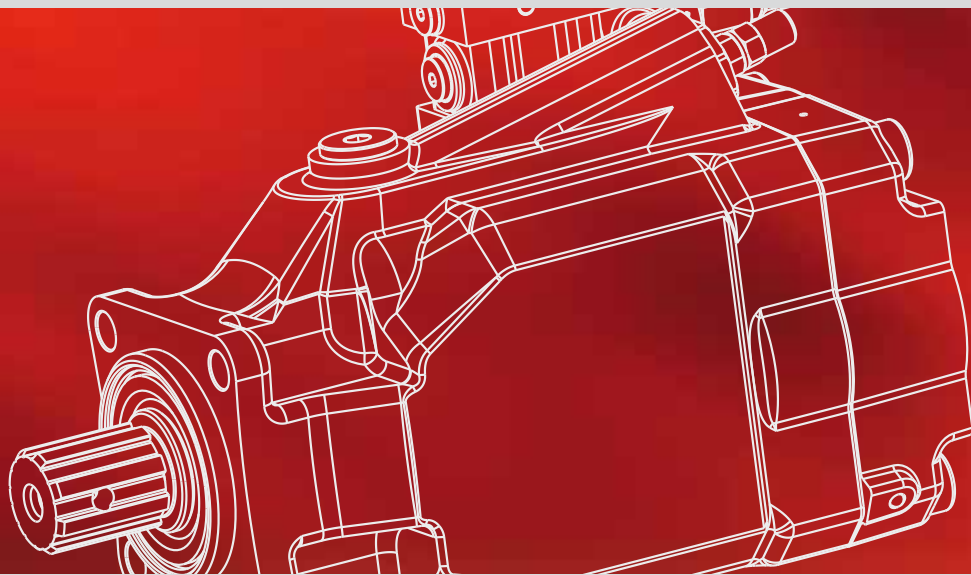


**PRELIMINARY**  
FOR INTERNAL USE ONLY



VARIABLE  
DISPLACEMENT  
AXIAL PISTON  
PUMPS

For truck  
applications



## FEATURES

Variable displacement axial piston pumps swash plate design ideally suited for open circuit truck applications. The compact design allows to be mounted directly on the PTOs.

### DISPLACEMENTS

Up to 84,7 cm<sup>3</sup>/rev (5.17 in<sup>3</sup>/rev)

### PRESSURE

Max. continuous 350 bar (5075 psi)

Max. peak 400 bar (5800 psi)

### SPEED

Max. 2500 min<sup>-1</sup>

### SECTOR

Truck applications

### DIRECTION OF ROTATION

Clockwise or anti-clockwise defined looking at the drive shaft.

### HYDRAULIC FLUID

Mineral oil based hydraulic fluid conforming to DIN 51524.

### FLUID VISCOSITY

The fluid viscosity range for optimal use of TVP pump is between 15 and 400 cSt (68 and 1819 SSU).

Functional limit conditions are:

max.: 1500 cSt (6819 SSU) at start up at -25 °C (-13 °F) with straight and short inlet line.

min.: 10 cSt (46 SSU) at maximum temperature of 110 °C (230 °F)

- Pump internal drain line
- Compensators external drain line
- Direct mounting on the PTOs
- Body width 124,2 mm (4.8898 in)
- Max. and min. displacement limiter
- Flow and pressure compensator
- Compact design
- Low noise emission

### FILTRATION

To ensure the optimal performance and the maximum life to the pump, the hydraulic fluid must have and maintain a contamination level within the values shown in the table below.

Working pressure bar (psi)	$\Delta p < 210$ (3045)	$\Delta p > 210$ (3045)
Contamination class NAS 1638	8	7
Contamination class ISO 4406:1999	19/17/14	18/16/13
Achieved with filter $\beta_{x(c)} \geq 75$ according to ISO 16889	10 $\mu\text{m}$	10 $\mu\text{m}$

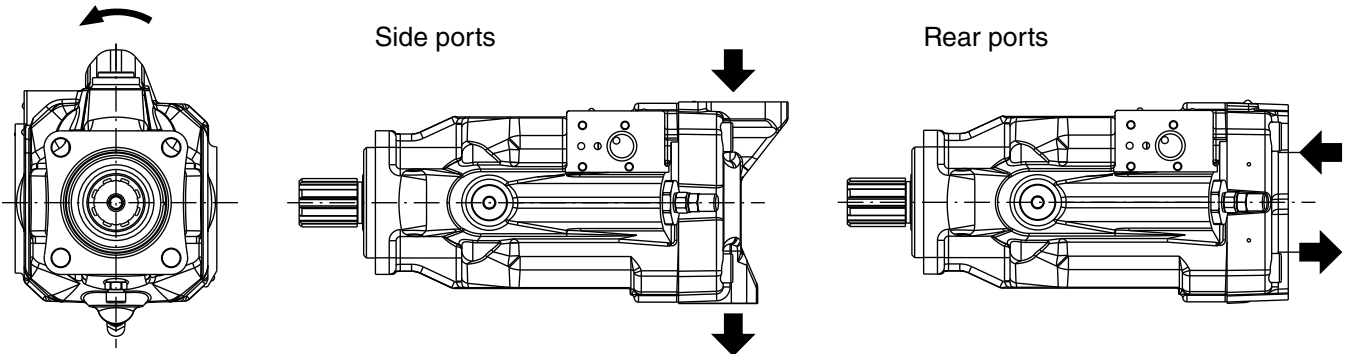
### FILL WITH OIL BEFORE START-UP

Pump type	<b>TVP 60-84</b>			
Max. displacement (theor.) $V_{max}$	cm <sup>3</sup> /rev (in <sup>3</sup> /rev)	84,7 (5.17)		
Inlet pressure	bar abs. (in Hg) min. bar abs. (psi) max.	0,85 (25)		
		continuous	350 (5075)	
Max. outlet pressure $p_{max}$	bar (psi)	peak	400 (5800)	
		Compensator max. drain line pressure	bar abs. (psi) 1,5 (22)	
Max. speed $n_{max}$	min <sup>-1</sup>	@ $V_{max}$ (1)	2500	
		@ $n_{max}$	211,8 (55.96)	
Max. delivery (theor.)	l/min (US gpm)	@ 2000 min <sup>-1</sup>	169,4 (44.76)	
		@ 1500 min <sup>-1</sup>	127,1 (33.58)	
		@ $n_{max}$	123,5 (165.5)	
Max. power (theor.) ( $\Delta p = p_{max}$ cont.)	kW (HP)	@ 2000 min <sup>-1</sup>	98,8 (132.4)	
		@ 1500 min <sup>-1</sup>	74,1 (99.3)	
		@ $p_{max}$ cont.	471,8 (4176)	
Max. torque (theor.)	Nm (lbf in)	@ 100 bar (1450 psi)	134,8 (1193)	
		Moment of inertia	kgm <sup>2</sup> (ft <sup>2</sup> lbs)	0,009 (0.21)
Weight torque	Nm (lbf in)	38 (336)		
Fill volume	l (US gallons)	1,1 (0.29)		
Mass (approx. - without oil)	kg (lbs)	26 (57.33)		
Seals		Buna	Viton	
		min.	-25 (-13)	-15 (5)
		max. cont.	80 (176)	110 (230)
Operating temperature	°C (°F)	max. peak	100 (212)	125 (257)

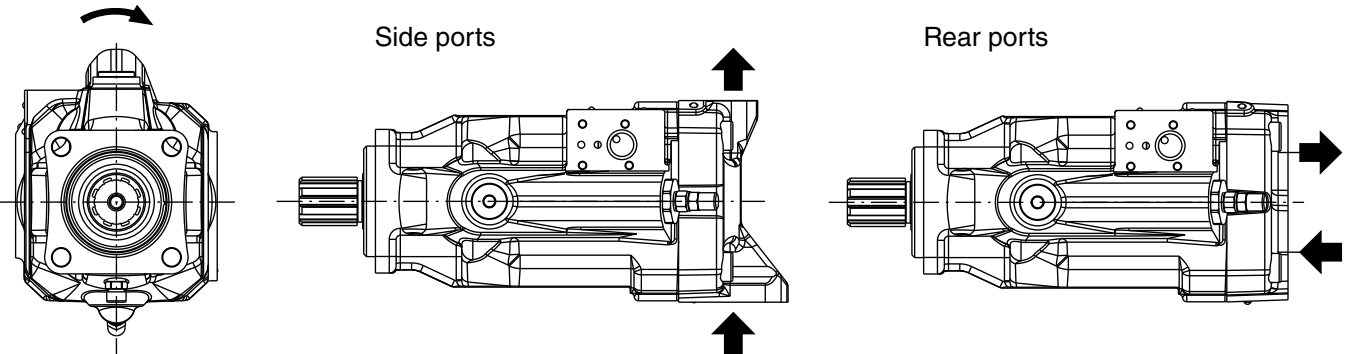
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## PORTS POSITION

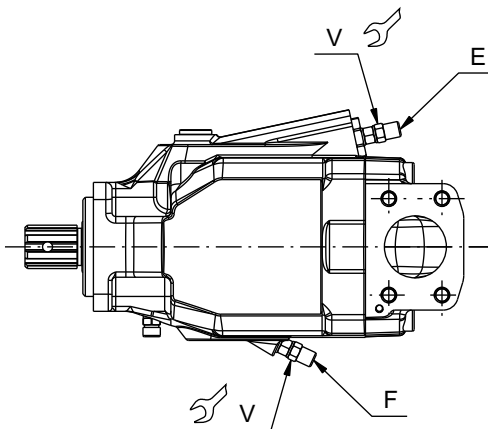
### Anti-clockwise rotation



### Clockwise rotation



## DISPLACEMENT SETTING



- 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)

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### TVP 60-84

Max. displacement setting range	cm <sup>3</sup> /rev (in <sup>3</sup> /rev)	from	55 (3.36)
		to	84,7 (5.17)
Min. displacement setting range	cm <sup>3</sup> /rev (in <sup>3</sup> /rev)	from	0
		to	38,1 (2.32)
One turn of screw changes pump displacement by approximately	cm <sup>3</sup> /rev (in <sup>3</sup> /rev)	E	5,0 (0.31)
		F	4,2 (0.26)

For different setting ranges, please consult our technical sales department.

**TVP 60-84**

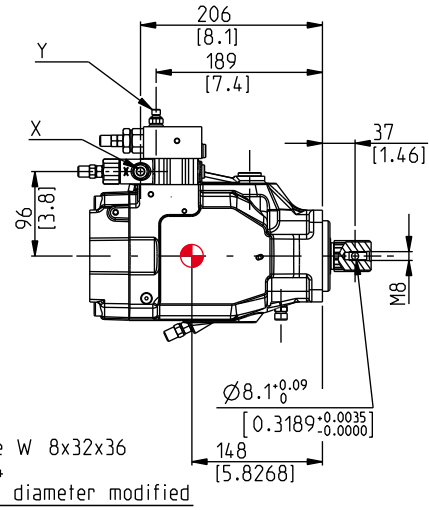
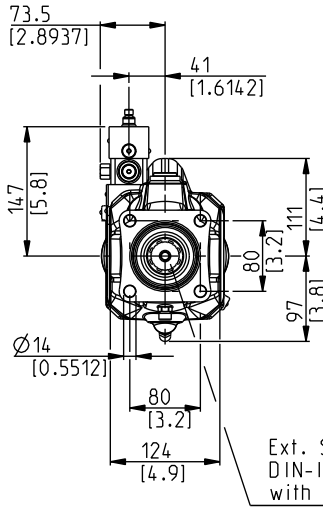
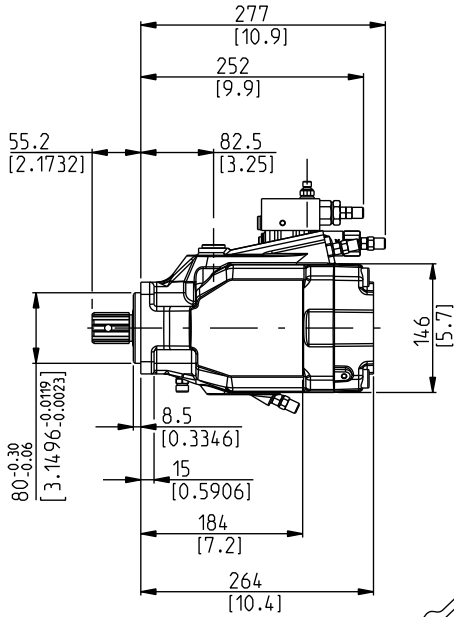
**REAR PORTS - DIMENSIONS - ISO STANDARD**

**16 Z0**

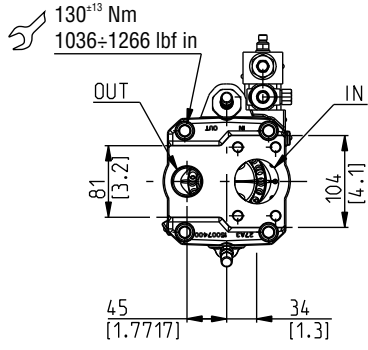
Drive shaft: **16**  
Conforms to DIN ISO 14

Mounting flange: **Z0**  
Conforms to ISO 7653

Regulators: The drawing shows a pump with flow and pressure compensator. For different regulators please consult our technical sales department.



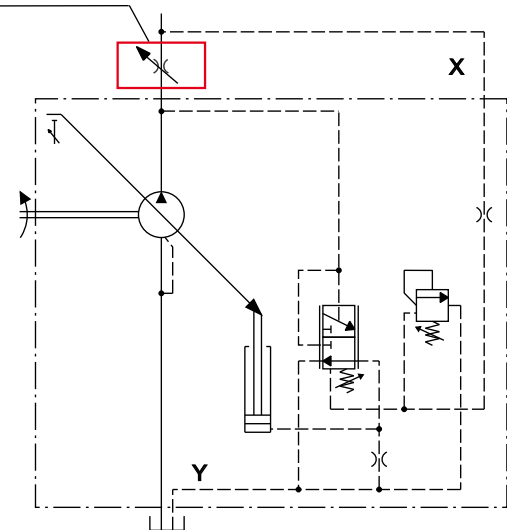
Ext. Spline W 8x32x36  
DIN-ISO 14  
with major diameter modified



Center of gravity

**RP1 - LS2 (with flow control)**

Not included in supply



Ports (Nominal size)

IN	OUT	X	Y
2"	1"	Load sensing port	Compensator drain port

Dimensions at page 5 and page 6

Order example

**TVP 60-84 S-16 Z0-P MF/OF-N-RP1-LS2-G**

## PORTS SIZES

Ports type	INLET / OUTLET PORTS						LOAD SENSING PORTS		COMPENSATOR DRAIN PORTS	
	Split SSM		Split SSS		SAE ODT		Gas BSPP	SAE ODT (●)	Gas BSPP	SAE ODT (●)
	IN	OUT	IN	OUT	IN	OUT	X	X	Y	Y
TVP 60-84	MF	MC	SF	SC	MF	OF	GA	03	GA	03

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

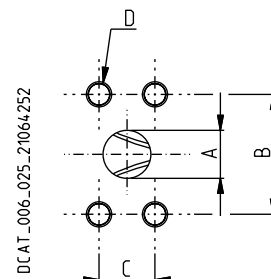
Tightening torque for low pressure side port

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

### SAE FLANGED PORTS J518 - Standard pressure series 3000 psi 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)
<b>MC</b>	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	M 10 17 (0.6693)	—	30 <sup>+2,5</sup> (266 ÷ 288)
<b>MF</b>	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	M 12 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—

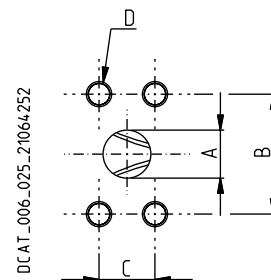


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### SAE FLANGED PORTS J518 - Standard pressure series 3000 psi SSS

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)
<b>SC</b>	1"	25,4 (1.0000)	52,4 (2.0630)	26,2 (1.0315)	3/8 - 16 UNC-2B 17 (0.6693)	—	35 <sup>+2,5</sup> (310 ÷ 332)
<b>SF</b>	2"	51 (2.0079)	77,8 (3.0630)	42,9 (1.6890)	1/2 - 13 UNC-2B 20 (0.7874)	30 <sup>+2,5</sup> (266 ÷ 288)	—




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## PORTS SIZES

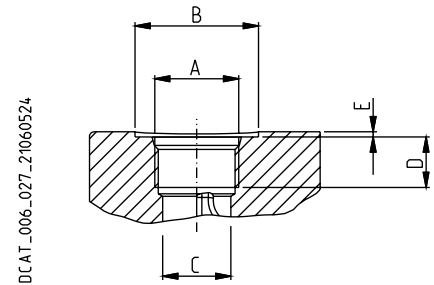
 Tightening torque for low pressure side port



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

### SAE STRAIGHT THREAD PORTS J514

**ODT**

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

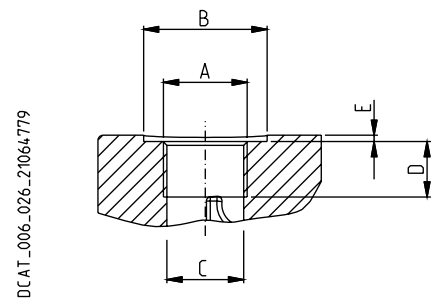




CODE	Nominal size	A	Ø B	Ø C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
<b>03</b>	1/4"	7/16" - 20 UNF - 2B	—	9,5 (0.3740)	—	—	—	12 <sup>+1</sup> (106 ÷ 115)
<b>0F</b>	1"	1 5/16" - 12 UNF - 2B	—	30,5 (1.2008)	20 (0.7874)	—	—	170 <sup>+10</sup> (1505 ÷ 1593)

### GAS STRAIGHT THREAD PORTS

**BSPP**

British standard pipe parallel (55°) conforms to UNI - ISO 228



CODE	Nominal size	A	Ø B	Ø C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
<b>GA</b>	1/8"	G 1/8	—	8,75 (0.3444)	12 (0.4724)	—	—	5 <sup>+0,25</sup> (44 ÷ 46)

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**TVP 01 T A**

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