

Axial Piston Variable Pump A2VK

RE 94001/06.10 1/12
Replaces: 07.04

Data sheet

Size 12 to 107
Series 1 and 4
Nominal pressure 250 bar
Maximum pressure 315 bar
Version for pumping plastic components



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Features

- Variable axial piston pump for pumping and metering polyurethane components
- High metering accuracy and reproducibility of the variable pumped volumes
- Robust manual adjustment via handwheel with integral precision measuring scale
- Operating pressure up to 250 bar
- Low pulsation of the pumped medium
- Pump components are compatible with the pumped media (polyol, isocyanate) due to special pairings of materials and sealing elements
- Low-noise
- Excellent volumetric efficiency for high metering accuracy
- Double shaft seals with buffer fluid ports to guarantee safe operation (and protect the environment)
- With corrosion protection

Note

Size 12 and 28 are in the phase-out program.

Replacement product is the A7VK, see RE 94010.

Ordering code for standard program

	A2VK		MA				G		P	E		-	SO2										
Axial piston unit																							
Variable pump A2VK																							
Size																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">$\triangleq$ Displacement $V_{g \max}$ in cm^3</td> <td style="width: 12.5%; text-align: center;">12</td> <td style="width: 12.5%; text-align: center;">28</td> <td style="width: 12.5%; text-align: center;">55</td> <td style="width: 12.5%; text-align: center;">107</td> </tr> <tr> <td></td> <td style="text-align: center;">▲</td> <td style="text-align: center;">▲</td> <td style="text-align: center;">●</td> <td style="text-align: center;">●</td> </tr> </table>														$\triangleq$ Displacement $V_{g \max}$ in cm^3	12	28	55	107		▲	▲	●	●
$\triangleq$ Displacement $V_{g \max}$ in cm^3	12	28	55	107																			
	▲	▲	●	●																			
Control device																							
Manual adjustment MA																							
Operating mode																							
Open circuit O																							
Closed circuit G																							
Direction of rotation																							
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	Size 28-107	1																					
	Size 12	4																					
Model																							
Enclosed pump G																							
Valve attachment																							
Without valve attached 0																							
Pressure limiting valve attached 1																							
Drive shaft																							
Cylindrical with key P																							
Swivel angle																							
One-sided E																							
Handwheel assembly version																							
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	right side	2																					
Corrosion-protected version																							
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● = Available ▲ = Phase-out program

Technical data

Fluid

The pump pumps and meters fluids for manufacturing polyurethane (polyol and isocyanate components).

Operating viscosity range

The following limit conditions apply:

$v_{\min}$ _____ 1 mm²/s,

$v_{\max}$ _____ 2000 mm²/s

Please contact us if higher values are required.

Operating temperature range

Optimum operating temperature range t _____ 10-50°C

Maximum operating temperature $t_{\max}$ _____ 80°C

The permitted working temperature depends on the lubricity of the fluid. The maximum fluid temperature must not be exceeded even locally (e.g. no more than 5K over the leakage fluid temperature).

Filtering the fluid

The filter should be arranged so that only filtered fluid enters the pump. The finer the filter, the longer the service life of your axial piston pump.

We recommend a filter grade $\eta_{\text{abs.}} \leq$ _____ 125 μm

Operating pressure range

Input

Open circuit:

Max. filling pressure at the port S $p_{\max \text{ abs.}}$ _____ 10 bar

Min. filling pressure at the port S $p_{\min \text{ abs.}}$ _____ 1 bar

The pump must always be filled completely.

Closed circuit:

Leakage fluid pressure $p_{\max \text{ abs.}}$ _____ 10 bar

Max. intermittent cumulative pressure A + B $p_{\max}$ _____ 250 bar

Output

Maximum pressure at port A or B
(pressure data according to DIN 24312)

Nominal pressure p_N _____ 250 bar

Maximum pressure $p_{\max}$ _____ 315 bar

Leakage fluid

Max. leakage fluid pressure $p_{L \max}$ _____ 10 bar

In the closed circuit, pump ports A and B are separated from the housing space. The leakage fluid must be removed via port T₁ or T₂ using a separate line.

In the open circuit, the suction port S is connected to the housing space. There is no need for a line for the leakage fluid. Ports T₁ and T₂ are plugged. The filling pressure at port S acts on the shaft sealing ring via the housing space.

The service life of the shaft sealing ring decreases as the pressure of the leakage fluid or the filling pressure at port S increases.

Through put flow

Swivel direction	Direction of rotation "clockwise"		Direction of rotation "anti-clockwise"	
	open circuit	closed circuit	open circuit	closed circuit
clockwise	S to B A plugged	A to B	S to A B plugged	B to A
anti-clockwise	S to A B plugged	B to A	S to B A plugged	A to B

Installation position

Any. The pump must be completely filled with fluid. If installed with the shaft pointing upwards, the top leakage fluid port must be connected to the housing for both types of circuit to ensure that the housing is vented in the vicinity of the bearing.

Preferred installation position: drive shaft horizontal

The adjustment display in the handwheel can only be guaranteed to work if the adjusting spindle is installed -30° to +30° from the horizontal.

Technical data

Table of values

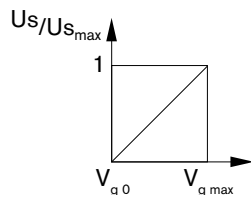
Size				12	28	55	107
Displacement	$V_{g\ max}$		cm ³	11.6	28.1	54.8	107
Flow ¹⁾ at speed n	$q_{v\ max}$	n = 735 rpm	l/min	8.3	20	39.1	76.3
		n = 970 rpm	l/min	10.9	26.4	51.6	100.7
		n = 1450 rpm	l/min	16.3	39.5	77.1	150.5
		n = 1800 rpm	l/min	20.3	49.1	95.7	186.8
Power at $\Delta p = 250\ \text{bar}$ and speed n	$P_{\max}$	n = 735 rpm	kW	3.4	8.3	16.3	31.8
		n = 970 rpm	kW	4.5	11	21.5	41.9
		n = 1450 rpm	kW	6.8	16.5	32.1	62.7
		n = 1800 rpm	kW	8.4	20.4	39.9	77.8

¹⁾ Includes 3% loss of displacement

Control unit MA

Turning the handwheel turns a self-locking threaded spindle which steplessly adjusts the pump's swivel section, and thus the volumetric flow in the range from $V_{g\ 0}$ to $V_{g\ max}$.

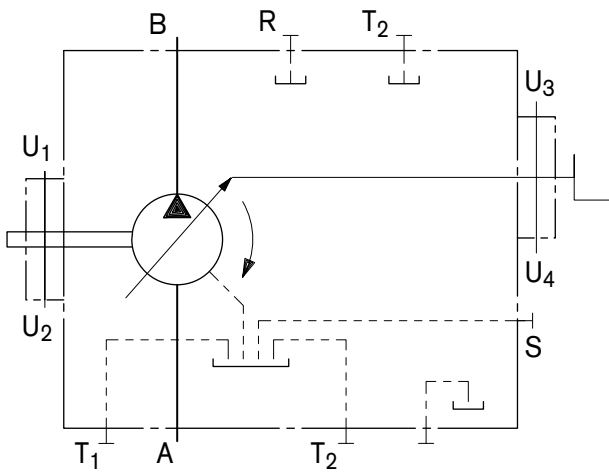
Characteristic



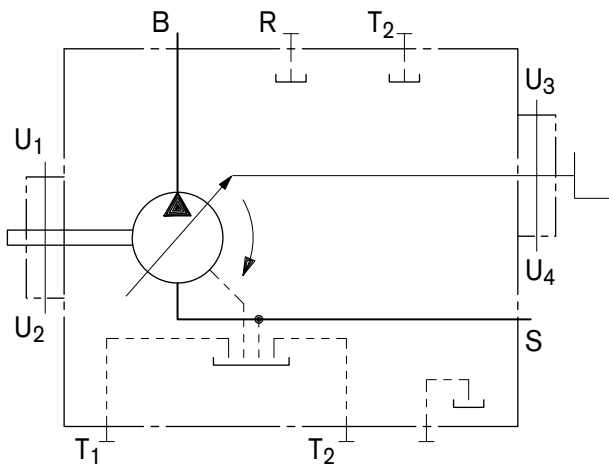
Control unit MA		12	28	55	107
Handwheel turns from $V_{g\ 0}$ to $V_{g\ max}$	U_s	10.6	12.7	16	13.4
Max. handwheel adjustment force $F_{\max}$	N	70	70	80	120
Mass, approx. (pump with control unit)	kg	19	36	64	117

Circuit diagram

closed circuit

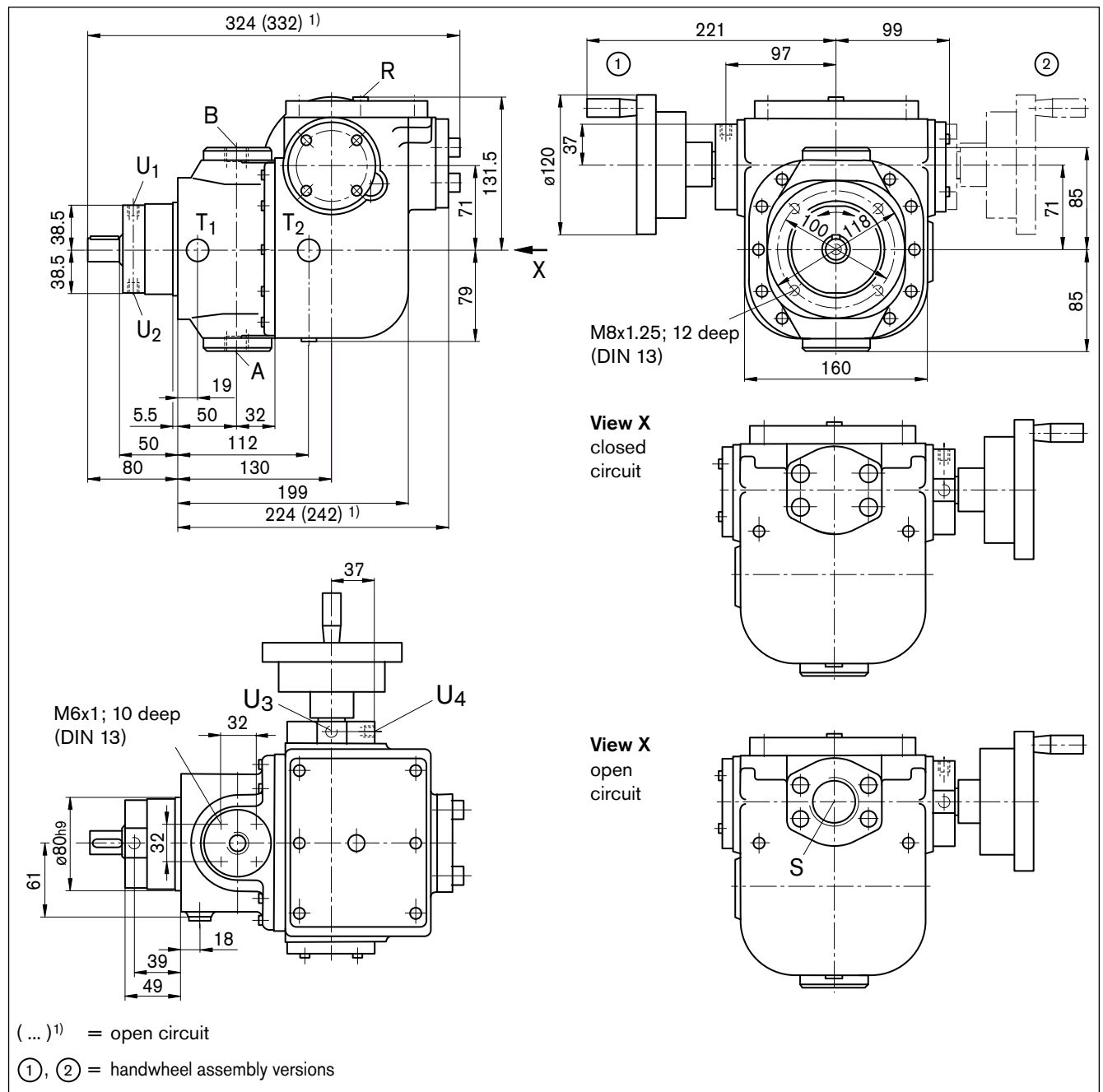


open circuit



Dimensions size 12

Before finalizing your design, request a binding installation drawing. Dimensions in mm.



Ports

A, B	Service line ports	M22x1.5 ⁴⁾
S	Suction port ²⁾	G1 1/4 ⁵⁾
T ₁ , T ₂	Leakage port ³⁾	M12x1.5 ⁴⁾
R	Air bleed ³⁾	M12x1.5 ⁴⁾
U ₁ -U ₄	Ports for buffer fluid	M10x1; 8 deep ⁴⁾

2) plugged in the closed circuit

3) plugged

4) DIN 3852

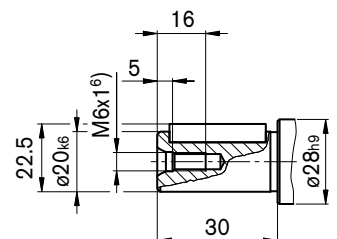
⁵⁾ DIN ISO 228⁶⁾ centering hole to DIN 332

**Tightening
torque, max.**

210 Nm
720 Nm
50 Nm
50 Nm
30 Nm

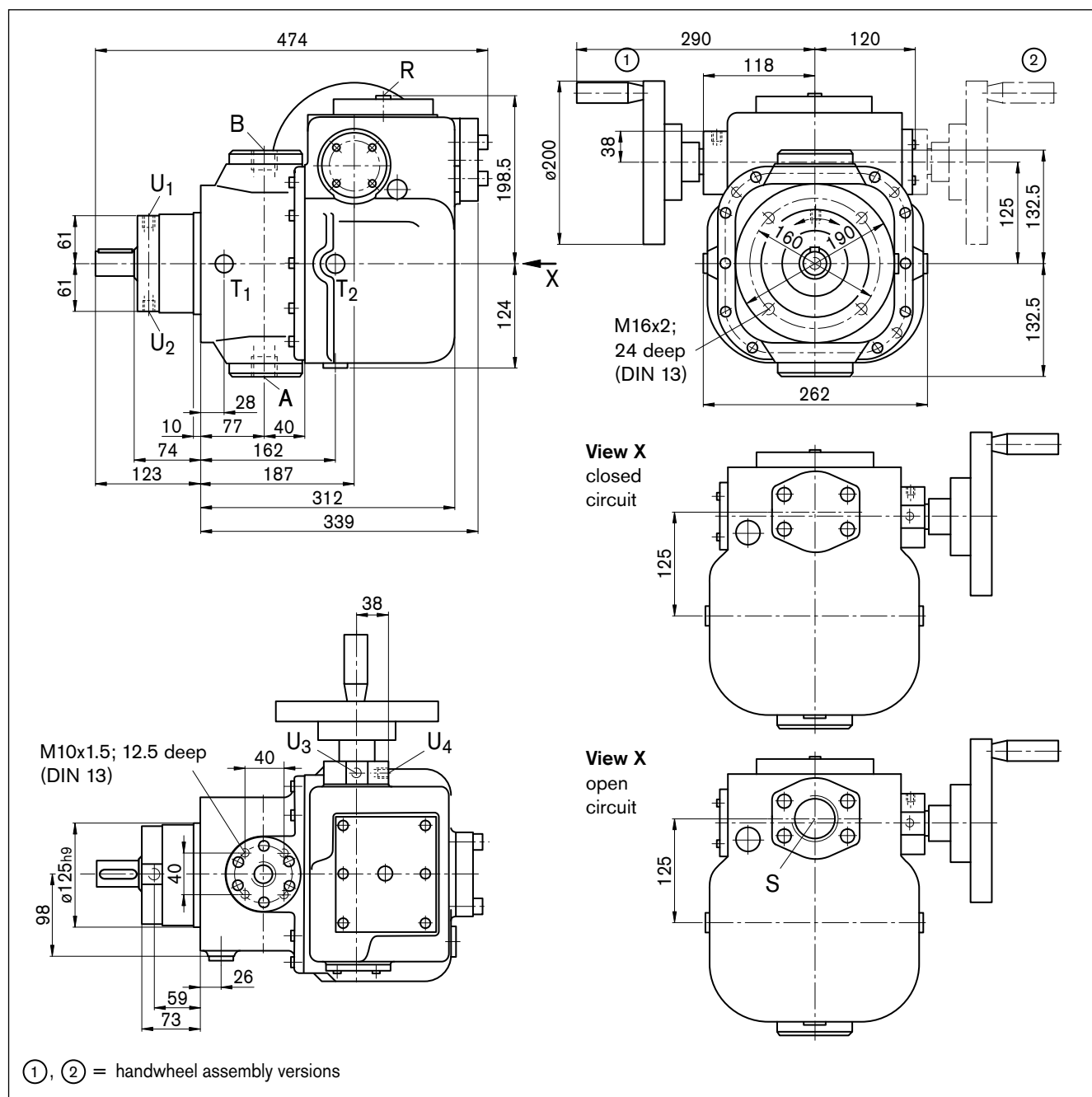
Drive shaft

P Cylinder shaft with key
DIN 6885 – A6x6x25.5



Dimensions size 55

Before finalizing your design, request a binding installation drawing. Dimensions in mm.



Ports

A, B	Service line ports	M33x2 ³⁾	540 Nm
S	Suction port ¹⁾	G2 ⁴⁾	1200 Nm
T ₁ , T ₂	Leakage port ²⁾	M18x1.5 ³⁾	140 Nm
R	Air bleed ²⁾	M12x1.5 ³⁾	50 Nm
U ₁ -U ₄	Ports for buffer fluid	M10x1; 8 deep ³⁾	30 Nm

1) plugged in the closed circuit

2) plugged

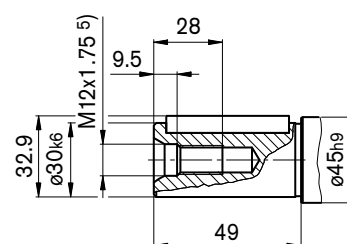
³⁾ DIN 3852

4) DIN ISO 228

⁵⁾ centering hole to DIN 332

Drive shaft

P Cylinder shaft with key
DIN 6885 – AS8x7x43

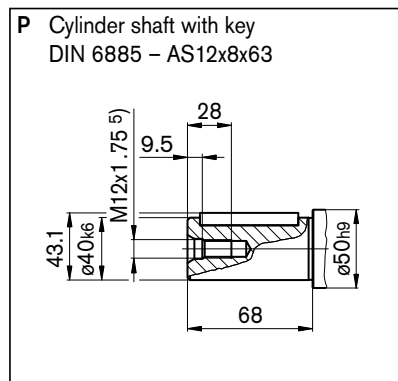


Before finalizing your design, request a binding installation drawing. Dimensions in mm.

Drive shaft

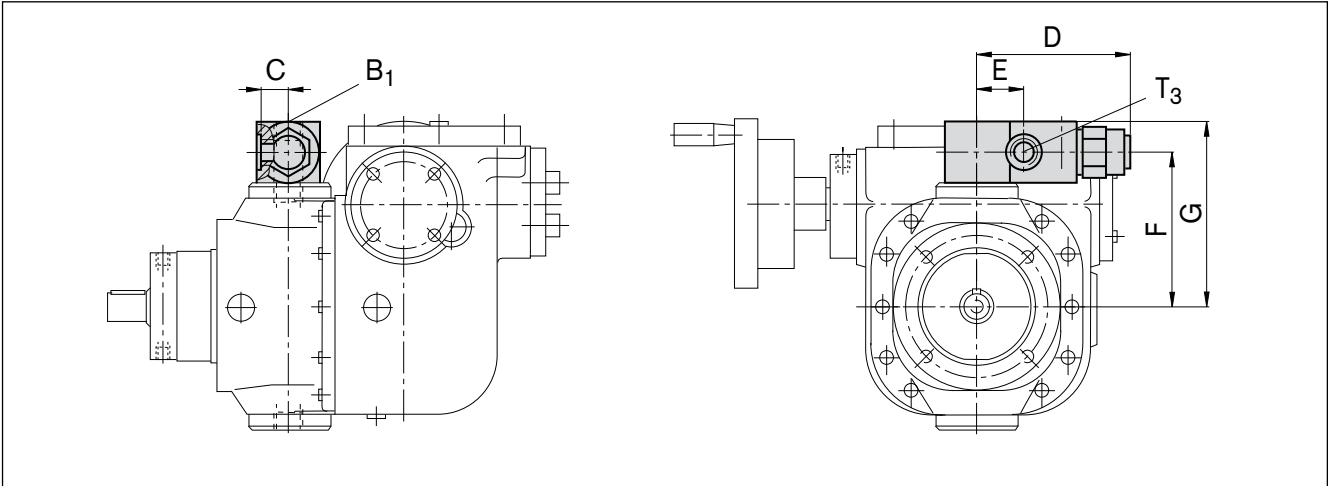
A, B	Service line ports	M42x2 ³⁾	720 Nm
S	Suction port ¹⁾	G2 1/2 ⁴⁾	2000 Nm
T ₁ , T ₂	Leakage port ²⁾	M18x1.5 ³⁾	140 Nm
R	Air bleed ²⁾	M12x1.5 ³⁾	50 Nm
U ₁ -U ₄	Ports for buffer fluid	M10x1; 8 deep ³⁾	30 Nm

- 1) plugged in the closed circuit
- 2) plugged
- 3) DIN 3852
- 4) DIN ISO 228
- 5) centering hole to DIN 332



Pressure limiting valve attached

Before finalizing your design, request a binding installation drawing. Dimensions in mm.



Size	C	D	E	F	G	Service line port B ₁ ¹⁾	Tightening torque, max.	Return port T ₃ ¹⁾	Tightening torque, max.
12	25	109	32	108	131	M22x1.5; 14 deep	210 Nm	M18x1.5; 12 deep	140 Nm
28	26.5	121	40	131	156	M27x2; 16 deep	330 Nm	M22x1.5; 14 deep	210 Nm
55	31.5	133.5	46	160.5	188.5	M33x2; 18 deep	540 Nm	M27x2; 16 deep	330 Nm
107	38.5	174	58	192.5	225	M42x2; 20 deep	720 Nm	M33x2; 20 deep	540 Nm

¹⁾ DIN 3852