Rexroth
Bosch Group

Axial Piston Variable Pump A17VO

RE 92260/03.10 **1**/16
Replaces: RE 92250

Data sheet

Series 10
Size 55 to 107
Nominal pressure 300 bar
Maximum pressure 350 bar
For commercial vehicles, open circuit

Contents

Features

- Variable pump with axial tapered piston rotary group of bent axis design with special characteristics and dimensions for use in commercial vehicles.
- The flow is proportional to the drive speed and displacement.
- By adjusting the bent axis, the flow can be steplessly changed from its maximum value to zero.
- Favorable power/weight ratio, small dimensions, optimum efficiency, economic design
- Self-priming
- Flange and shaft designed for direct mounting on the power take-off of commercial vehicles
- Reduced noise
- Other pumps with special characteristics and dimensions for use in commercial vehicles can be found in the following data sheets:
  - RE 91510: Fixed pump A17FNO, 250/300 bar
  - RE 91520: Fixed pump A17FO, 300/350 bar
  - RE 91540: 2-circle fixed pump A18FDO, 350/400 bar
  - RE 92270: Variable pump A18VO, 350/400 bar
  - RE 92280: Variable pump A18VLO, 350/400 bar

Ordering code for standard program

A17V	O				0	/	10	M		W	K0	E8	1	–	
01	02	03	04	05	06		07	08	09	10	11	12	13		14

Axial piston unit

01	Bent-axis design, variable, nominal pressure 300 bar, maximum pressure 350 bar, for commercial vehicles (trucks)	**A17V**

Operation mode

02	Pump, open circuit	**O**

Size (NG)

03	Theoretical displacement see table of values on page 5	**055**	**080**	**107**

Control device

				055	080	107	
04	Pressure controller with load-sensing			●	●	●	**DRS**
	Proportional control electric	positive control	U = 24V DC	●	●	●	**EP2**
		negative control	U = 24V DC	❍	❍	●	**EP6**

Connector for solenoids

05	Without	**0**
	DEUTSCH - molded connector, 2-pin – without suppressor diode	**P**

Additional functions

06	Without additional functions, standard	**0**

Series

07	Series 1, index 0	**10**

Version of port and fixing threads

08	Metric	**M**

Direction of rotation

				055	080	107	
09	Viewed from drive shaft	clockwise	DRS	●	●	●	**R**
			EP2	●	●	●	
			EP6	❍	❍	●	
		counter-clockwise	DRS	●	●	●	**L**
			EP2	❍	❍	●	
			EP6	❍	❍	❍	

Seals

10	FKM (fluor-caoutchouc) including the 2 shaft seal rings in FKM	**W**

Mounting flange

11	Special flange ISO 7653-1985 (for trucks)	**K0**

Drive shaft

12	Splined shaft similar to DIN ISO 14 (for trucks)	**E8**

Service line ports

13	Threaded port A and S at rear	**1**

Standard / special version

14	Standard version	**0**
	Special version	**S**

Note

Short designation X refers to a special version not covered by the ordering code.

● = Available ❍ = On request

Technical data

Hydraulic fluid

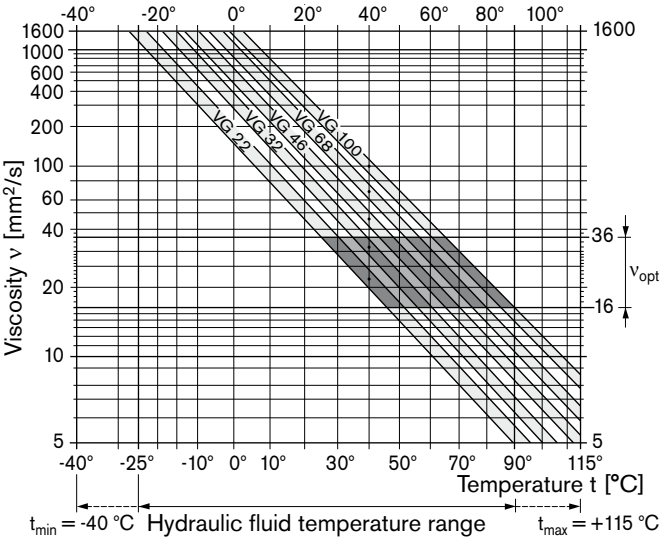
Before starting project planning, please refer to our data sheets RE 90220 (mineral oil) and RE 90221 (environmentally acceptable hydraulic fluids) for detailed information regarding the choice of hydraulic fluid and application conditions.

If environmentally acceptable hydraulic fluids are being used, the limitations regarding technical data and seals mentioned in RE 90221 must be observed.

When ordering, indicate the hydraulic fluid that is to be used.

Note
The variable pump A17VO is not suitable for operation with water-containing HF hydraulic fluid.

Selection diagram



Details regarding the choice of hydraulic fluid

The correct choice of hydraulic fluid requires knowledge of the operating temperature in relation to the ambient temperature: in an open circuit the tank temperature.

The hydraulic fluid should be chosen so that the operating viscosity in the operating temperature range is within the optimum range (ν_{opt}), see shaded area of the selection diagram. We recommended that the higher viscosity class be selected in each case.

Example: At an ambient temperature of X °C, an operating temperature of 60 °C is set in the circuit. In the optimum operating viscosity range ($\nu_{opt.}$ shaded area), this corresponds to the viscosity classes VG 46 or VG 68; to be selected: VG 68.

Note
The case drain temperature, which is affected by pressure and speed, is always higher than the tank temperature. At no point of the component may the temperature be higher than 115 °C, however. The temperature difference specified below is to be taken into account when determining the viscosity in the bearing.

If the above conditions cannot be maintained due to extreme operating parameters, please contact us.

Filtration of the hydraulic fluid

Filtration improves the cleanliness level of the hydraulic fluid, which, in turn, increases the service life of the axial piston unit.

To ensure the functional reliability of the axial piston unit, a gravimetric evaluation is necessary for the hydraulic fluid to determine the amount of contamination by solid matter and to determine the cleanliness level according to ISO 4406. A cleanliness level of at least 20/18/15 is to be maintained.

At very high hydraulic fluid temperatures (90 °C to maximum 115 °C), a cleanliness level of at least 19/17/14 according to ISO 4406 is necessary.

If the above classes cannot be achieved, please contact us.

Viscosity and temperature

	Viscosity [mm²/s]	Temperature	Comment
Transport and storage		$T_{min} \geq$ -50 °C T_{opt} = +5 °C to +20 °C	up to 12 months with standard factory preservation up to 24 months with long-term factory preservation
(Cold) start-up	ν_{max} = 1600	$T_{St} \geq$ -40 °C	t ≤ 3 min, without load (p ≤ 50 bar), n ≤ 1000 rpm
Permissible temperature difference		$\Delta T \leq$ 25 K	between axial piston unit and hydraulic fluid
Warm-up phase	ν < 1600 to 400	T = -40 °C to -25 °C	at p_{nom}, 0.5 • n_{nom} and t ≤ 15 min
Operating phase			
Temperature difference		ΔT = approx. 12 K	The temperature of the hydraulic fluid in the bearing is (depending on pressure and speed) approx. 12 K higher than that of the case drain fluid at port R.
Continuous operation	ν = 400 to 10 ν_{opt} = 16 to 36	T = -25 °C to +90 °C	no restriction within the permissible data
Short-term operation	ν_{min} = < 10 to 5	T_{max} = +115 °C	t < 3 min, p < 0.3 • p_{nom}
Shaft seal ring FKM		T ≤ +115 °C	see page 4

Technical data

Operating pressure range

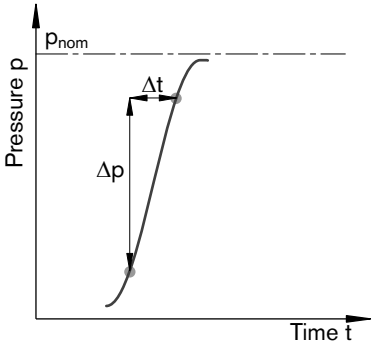
Pressure at service line port A

Nominal pressure p_{nom} _____ 300 bar absolute

Maximum pressure p_{max} _____ 350 bar absolute
Single operating period _____ 5 s
Total operating period _____ 50 h

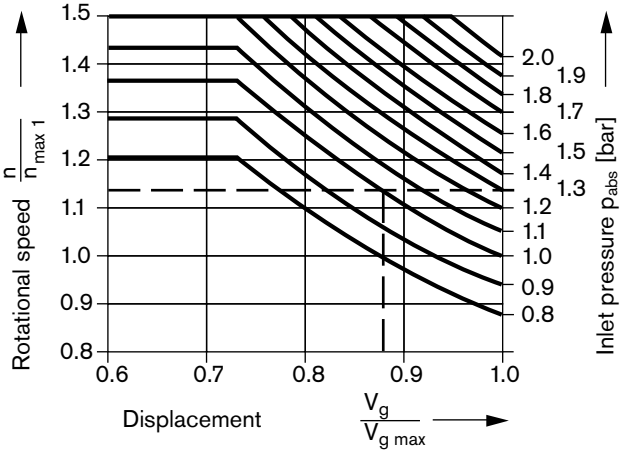
Minimum pressure (high-pressure side) _____ 10 bar

Rate of pressure change $R_{A\,max}$ _____ 9000 bar/s



Pressure at suction port S (inlet)
Minimum suction pressure $p_{S\,min}$ _____ 0.8 bar absolute
Maximum suction pressure $p_{S\,max}$ _____ 2 bar absolute

Minimum pressure (inlet)
In order to avoid damage to the axial piston unit, a minimum pressure must be ensured at the suction port S (inlet). The minimum pressure is dependent on the speed and displacement of the axial piston unit.



Please contact us if these conditions cannot be satisfied.

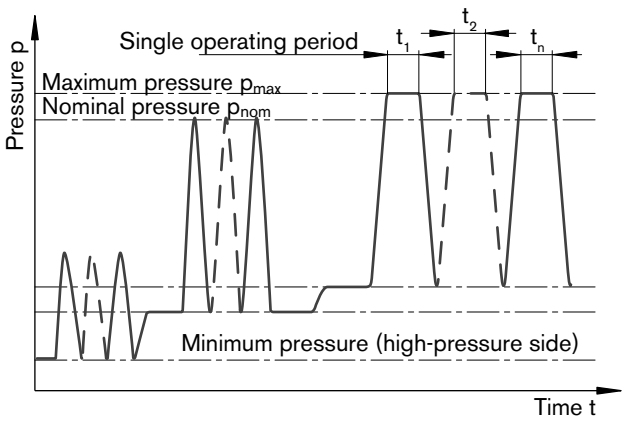
Definition

Nominal pressure p_{nom}
The nominal pressure corresponds to the maximum design pressure.

Maximum pressure p_{max}
The maximum pressure corresponds to the maximum operating pressure within the single operating period. The sum of the single operating periods must not exceed the total operating period.

Minimum pressure (high-pressure side)
Minimum pressure on the high-pressure side (A) that is required in order to prevent damage to the axial piston unit.

Rate of pressure change R_A
Maximum permissible rate of pressure build-up and pressure reduction during a pressure change over the entire pressure range.



Total operating period = $t_1 + t_2 + \ldots + t_n$

Case drain fluid

The case drain chamber is connected to the suction chamber. A case drain line from the case to the tank is not required (port "R" is plugged).
When using the version with DRS control, a case drain line is essential as a pressure relief from port "T" to the tank (not necessary in case of an EP control).

Shaft seal ring

The FKM shaft seal ring is permissible for case drain temperatures from -25 °C to +115 °C.

Note
For the temperature range below -25 °C, the values in the table on page 3 are to be observed.

Technical data

Table of values (theoretical values, without efficiencies and tolerances; values rounded)

Size		NG		55	80	107
Displacement		$V_{g\,max}$	cm^3	54.8	80	107
Speed maximum[1]	at $V_{g\,max}$	n_{nom}	rpm	2500	2240	2150
	at $V_{g\,max}$ to 0.74 • $V_{g\,max}$ (see diagram on page 4)	n_{max1}	rpm	3400	3000	2900
Speed maximum[2]		n_{max2}	rpm	3750	3350	3200
Flow	at n_{nom} and $V_{g\,max}$	$q_{v\,max}$	l/min	137	179	230
Power	at n_{nom} , $V_{g\,max}$ and $\Delta p = 300$ bar	P_{max}	kW	69	90	115
Torque	at $V_{g\,max}$ and $\Delta p = 300$ bar	T	Nm	262	382	511
Mass moment		T_G	Nm	20	28	39
Rotary stiffness	$V_{g\,max}$ to 0.5 • $V_{g\,max}$	c_{min}	Nm/rad	10594	15911	21469
	0.5 • $V_{g\,max}$ to $0_{(interpolated)}$	c_{max}	Nm/rad	32103	48971	67666
Moment of inertia for rotary group		J_{GR}	kgm^2	0.0034	0.0066	0.0109
Maximum angular acceleration		α	rad/s^2	31600	24200	19200
Filling capacity		V	L	0.6	0.8	1.2
Mass (approx.)		m	kg	16	20	24

1) The values shown are valid for an absolute pressure p_{abs}= 1 bar at suction port "S" and for operation with mineral fluid with a specific mass of 0.88 kg/l.

2) Maximum speed (limiting speed) with increased inlet pressure p_{abs} at suction port S and $V_g < V_{g\,max}$(see diagram on page 4)

Note

Operation above the maximum values or below the minimum values may result in a loss of function, a reduced service life or in the destruction of the axial piston unit. Other permissible limit values with respect to speed variation, reduced angular acceleration as a function of the frequency and the permissible startup angular acceleration (lower than the maximum angular acceleration) can be found in data sheet RE 90261.

Determining the size

Flow $q_v = \dfrac{V_g \cdot n \cdot \eta_v}{1000}$ [l/min]

Torque $T = \dfrac{V_g \cdot \Delta_p}{20 \cdot \pi \cdot \eta_{mh}}$ [Nm]

Power $P = \dfrac{2\,\pi \cdot T \cdot n}{60000} = \dfrac{q_v \cdot \Delta p}{600 \cdot \eta_t}$ [kW]

V_g = Displacement per revolution in cm^3

Δp = Differential pressure in bar

n = Speed in rpm

η_v = Volumetric efficiency

η_{mh} = Mechanical-hydraulic efficiency

η_t = Total efficiency ($\eta_t = \eta_v \cdot \eta_{mh}$)

Permissible axial loading of the drive shaft

The values given are maximum values and do not apply to continuous operation. For drives with radial loading (pinion, V-belt drives), please contact us!

Size		NG		55	80	107
When standstill or when axial piston unit operation in non-pressurized conditions		$\pm F_{ax\,max}$	N	0	0	0
Permissible axial force per bar operating pressure	F_{ax} + −	+ $F_{ax\,per}$	N/bar	66	86	103
		− $F_{ax\,per}$	N/bar	0	0	0

Note

Force-transfer direction of the permissible axial force

+ $F_{ax\,max}$ = Increase in service life of bearings

− $F_{ax\,max}$ = Reduction in service life of bearings (avoid)

DRS – Pressure controller with load-sensing

Function of the pressure controller

The pressure controller keeps the pressure in a hydraulic system constant within its control range even under varying flow conditions. The variable pump only moves as much hydraulic fluid as is required by the consumers. If the operating pressure exceeds the setpoint set at the integral pressure control valve, the pump displacement is automatically swiveled back and the control deviation reduced.

When pressureless, the pump is swiveled to its starting position $V_{g\,max}$ by an control spring.

Adjustment range for pressure control _____ 80 to 320 bar

Standard adjustment _____ 300 bar

Note
Any pressure-relief valve included in the system to limit the maximum pressure must be set to a cracking pressure at least 20 bar above the controller adjustment.

The pressure controller overrides the load-sensing controller, i.e. the load-sensing function operates below the set pressure.

Load-sensing function

The load-sensing controller is a flow control option that operates as a function of the load pressure to regulate the pump displacement to match the consumer flow requirement.

The flow of the pump depends here on the cross section of the external sensing orifice (1) fitted between the pump and the consumer. The flow is independent of the load pressure below the pressure controller adjustment and within the control range of the pump.

The sensing orifice is usually a separately arranged load-sensing directional valve (control block). The position of the directional valve piston determines the opening cross section of the sensing orifice and thus the flow of the pump.

The load-sensing controller compares pressure before and after the sensing orifice and keeps the pressure drop (differential pressure Δp) and with it the pump flow constant.

If the differential pressure Δp at the sensing orifice increases, the pump is swiveled back (towards $V_{g\,min}$) and, if the differential pressure Δp decreases, the pump is swiveled out (towards $V_{g\,max}$) until equilibrium at the sensing orifice is restored.

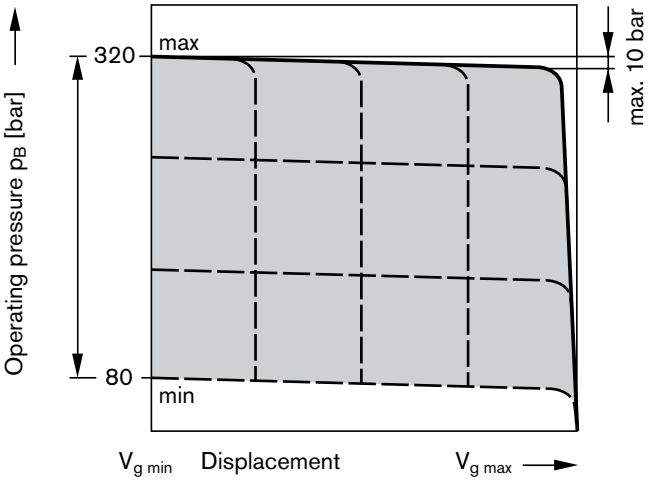
$\Delta p_{sensing\ orifice} = p_{pump} - p_{consumer}$

Adjustment range for pressure control _____ 19 to 40 bar

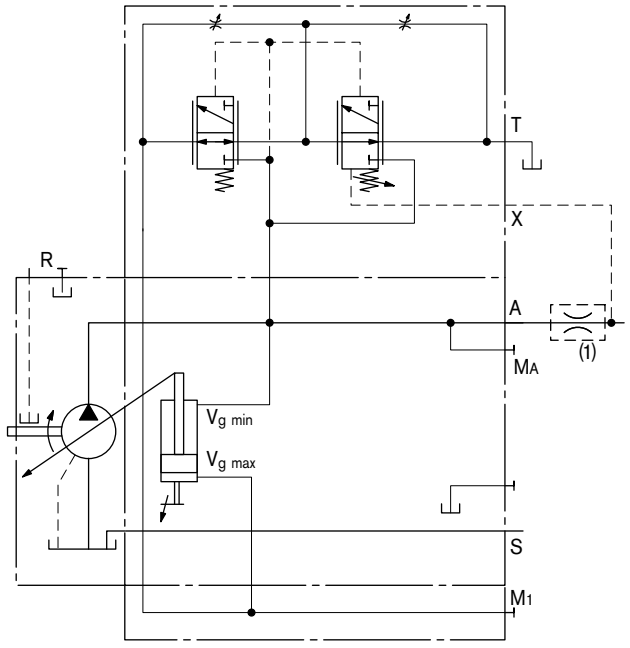
Standard adjustment _____ 30 bar

The standby pressure in zero stroke operation (sensing orifice plugged) is slightly above the Δp adjustment.

Characteristic DRS



Circuit diagram DRS



(1) The sensing orifice (control block) is not included in the delivery contents.

Zero stroke operation

The standard pump unit is designed for intermittent constant pressure operation. Short-term operation at zero-stroke (< 1 min.) is permissible up to an operating pressure p_{max} = 300 bar at a tank temperature ≤50 °C.

Note
When using the DRS controller, a case drain line from port "T" to the tank is, however, generally necessary to maintain thermal stability (not necessary for EP control).

When ordering, state in clear text:
– Adjustment of the pressure controller
– Δp adjustment of the load-sensing function

Unless otherwise specified, the pump will be delivered with standard adjustments, see above.

EP – Proportional control electric

With the electric proportional control the pump displacement is adjusted by magnetic force in proportion and steplessly to the current.

EP2

Adjustment from $V_{g\ min}$ to $V_{g\ max}$

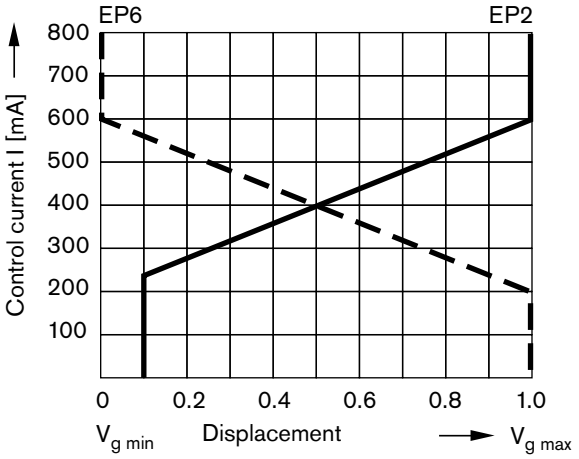
With increasing control current the pump swivels to a higher displacement. A control pressure is required to swivel the pump from its starting position $V_{g\ min}$ to $V_{g\ max}$. The required control power is taken from the operating pressure. In order to be able to build up pressure, a residual of approx. 10 % of $V_{g\ max}$ is set permanently.

EP6

Adjustment from $V_{g\ max}$ to $V_{g\ min}$

With increasing control current the pump swivels to a lower displacement. The required control power is taken from the operating pressure.

Characteristic curve EP



Note

Install pump with EP control in the oil tank only when using mineral hydraulic oils and an oil temperature in the tank of max. 80° C.

Technical data, solenoid	EP2	EP6
Voltage	24 V +20 %	24 V +20 %
Start of control	approx. 230 mA	200 mA
End of control	600 mA	600 mA
Limiting current	0.77 A	0.77 A
Nominal resistance (at 20 °C)	22.7 Ω	22.7 Ω
Dither frequency	100 Hz	100 Hz
Actuated time	100 %	100 %
Type of protection see also connector design page 14		

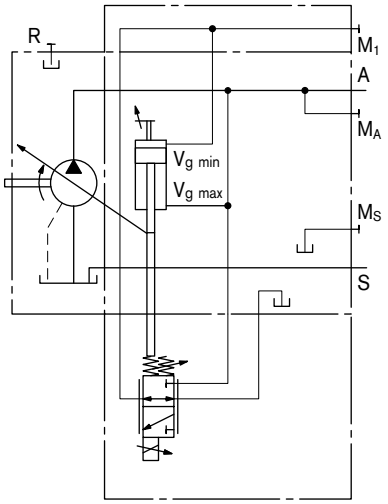
The following electronic controllers and amplifiers are available for controlling the proportional solenoids:

– BODAS controller RC
  Series 20 ____ RE 95200
  Series 21 ____ RE 95201
  Series 22 ____ RE 95202
  Series 30 ____ RE 95203
  and application software

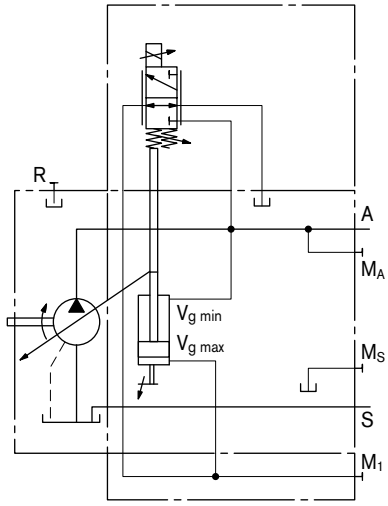
– Analog amplifier RA ____ RE 95230

Further information can also be found on the Internet at www.boschrexroth.com/mobile-electronics.

Circuit diagram EP2



Circuit diagram EP6



Note

The spring return feature in the controller is not a safety device

The spool valve in the controller can get stuck in an undefined position by internal contamination (contaminated hydraulic fluid, abrasion or residual contamination from system components). As a result, the axial piston unit can no longer supply the flow specified by the operator.

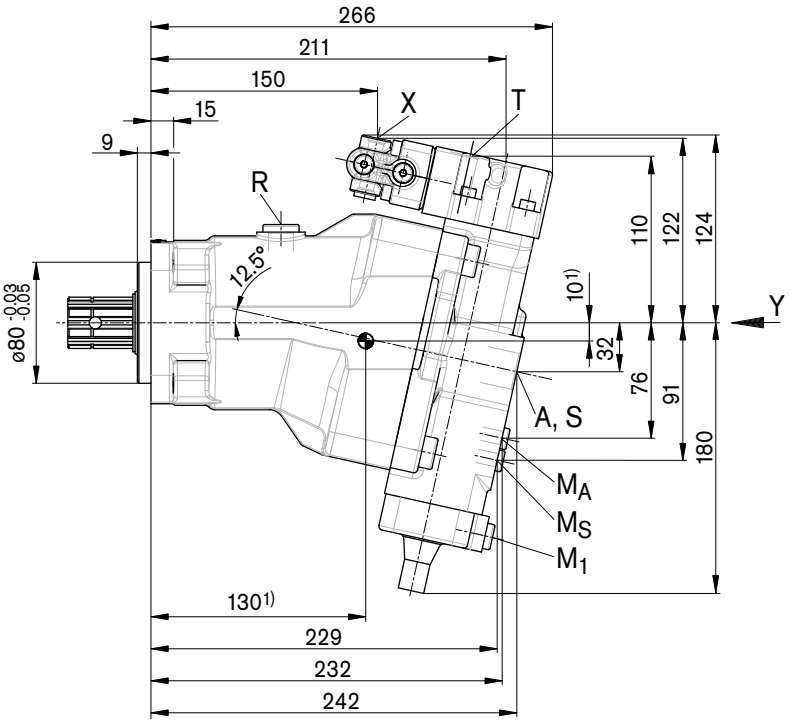
Check whether your application requires that remedial measures be taken on your machine in order to bring the driven consumer into a neutral position (e. g. immediate stop).

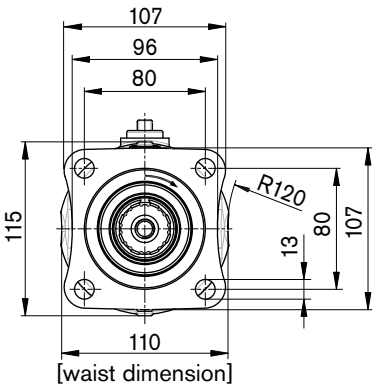
Dimensions size 55

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

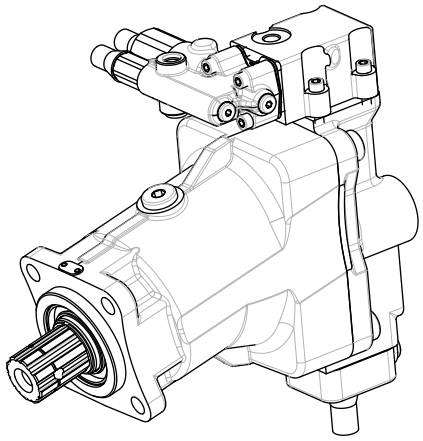
DRS – Pressure controller with load-sensing

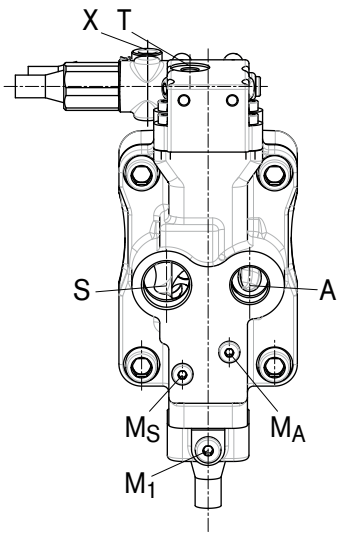
1) Center of gravity



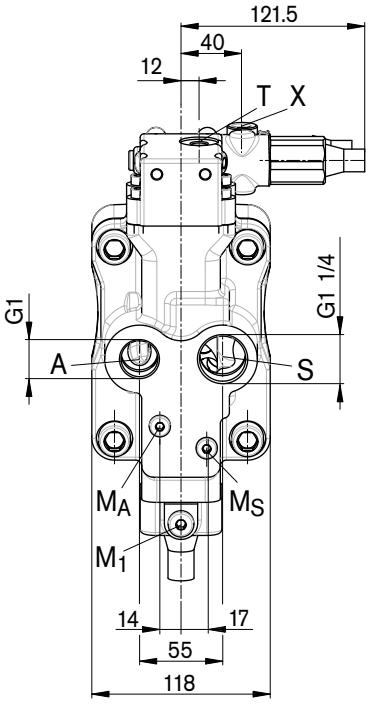


View Y
counter-clockwise
rotation





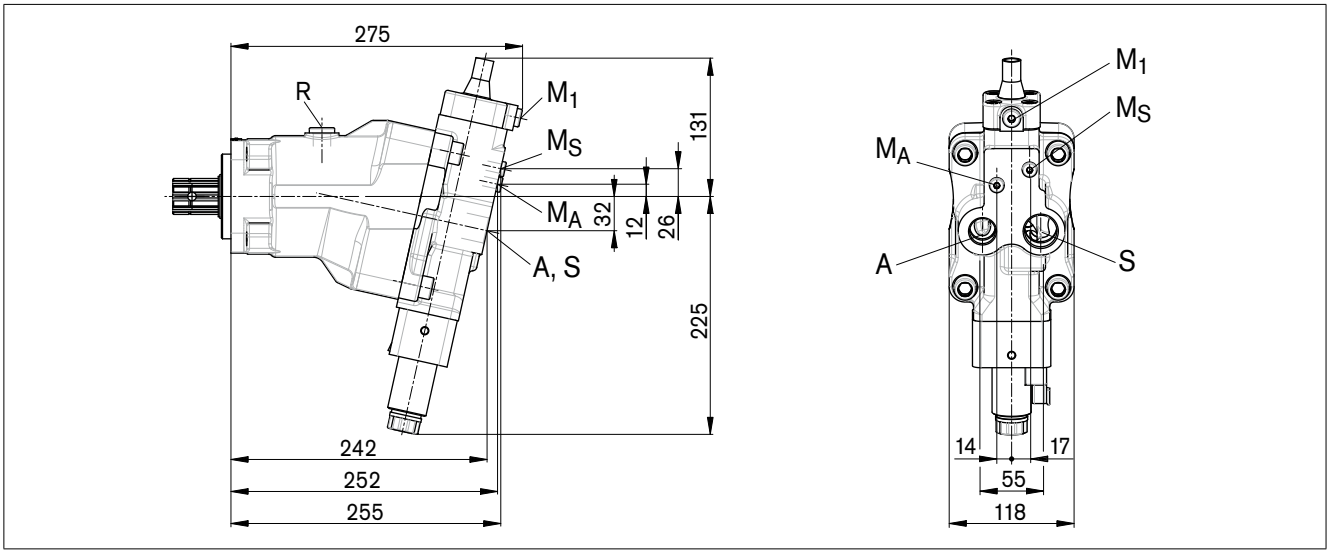
View Y
clockwise rotation



Dimensions size 55

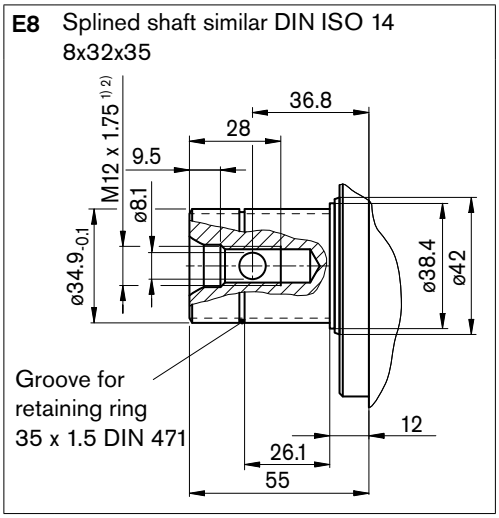
Before finalizing your design, request a binding installation drawing. Dimensions in mm.

EP2 – Proportional control electric, positive control, clockwise rotation



Drive shaft

E8 Splined shaft similar DIN ISO 14
8x32x35



Ports

Designation	Port for	Standard	Size[2)]	Maximum pressure [bar][3)]	State
A	Service line	DIN ISO 228	G3/4; 16 deep	350	O
S	Suction	DIN ISO 228	G1; 18 deep	2	O
T	Tank (DRS only)	DIN 3852[5)]	M12 x 1.5; 12 deep	2	O
M_A	Measuring pressure A	DIN 3852[5)]	M10 x 1; 8 deep	350	X
M_S	Measuring suction pressure	DIN 3852[5)]	M10 x 1; 8 deep	2	X
M_1	Measuring stroking chamber	DIN 3852[5)]	M10 x 1; 8 deep	350	X
R	Air bleed	DIN 3852[5)]	M18 x 1.5; 12 deep	2	X[4)]
X	Load pressure (Load-sensing)	ISO 11926[5)]	7/16-20UNF-2B; 11.5 deep	350	O

1) Center bore according to DIN 332 (thread according to DIN 13)
2) Observe the general instructions on page 20 for the maximum tightening torques.
3) Short-term pressure spikes may occur depending on the application. Keep this in mind when selecting measuring devices and fittings.
4) Only open port R for filling and air bleed
5) The spot face can be deeper than specified in the appropriate standard.

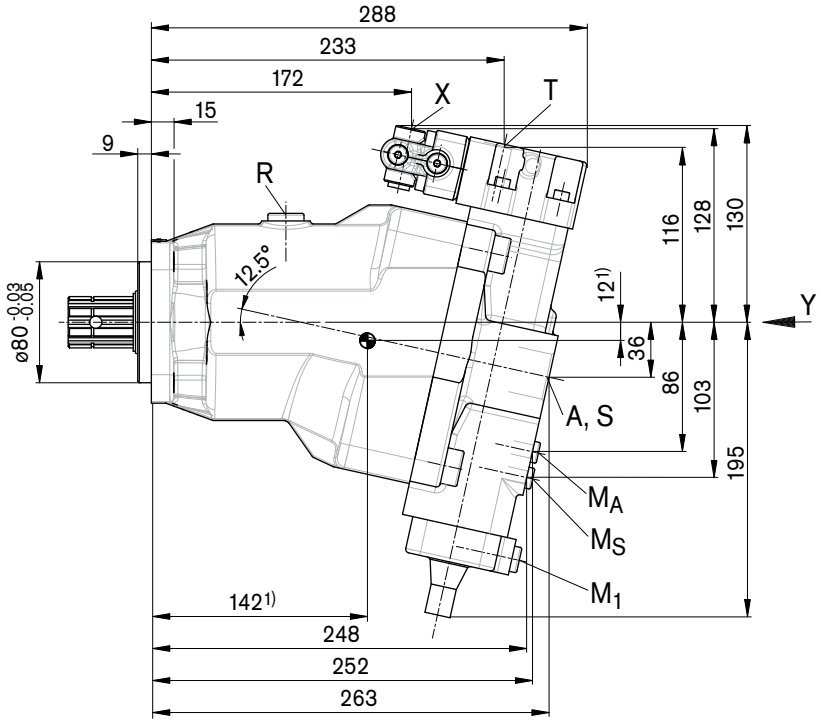
O = Must be connected (plugged on delivery)
X = Plugged (in normal operation)

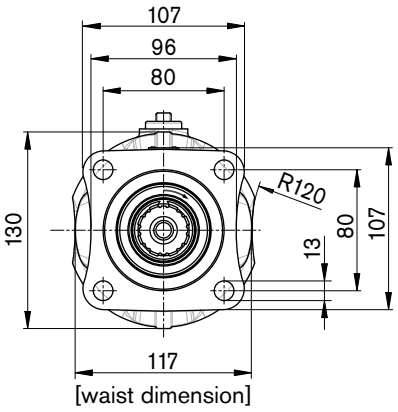
Dimensions size 80

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

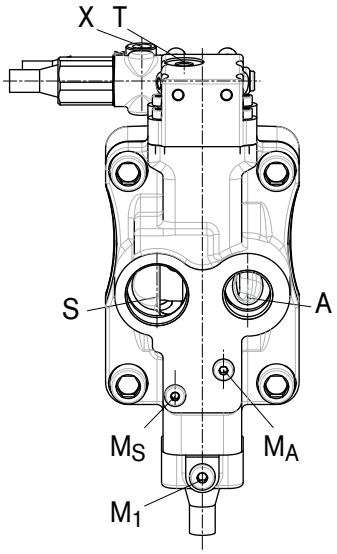
DRS – Pressure controller with load-sensing

1) Center of gravity

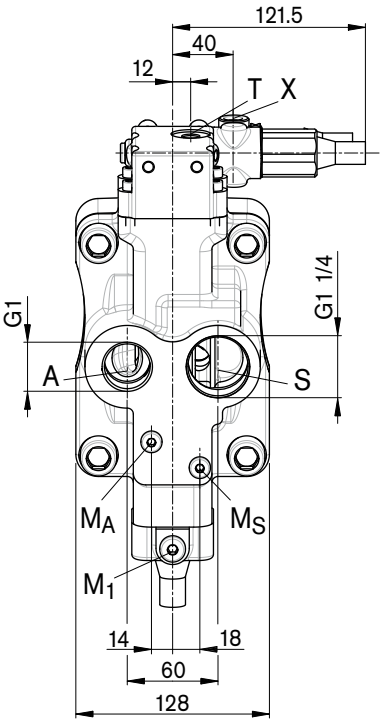


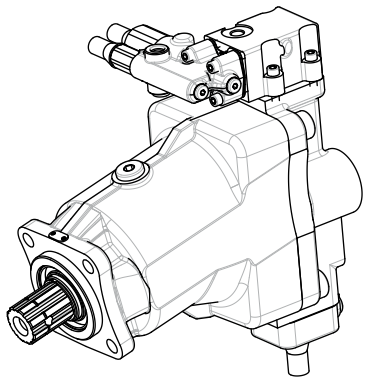


View Y
counter-clockwise
rotation



View Y
clockwise rotation

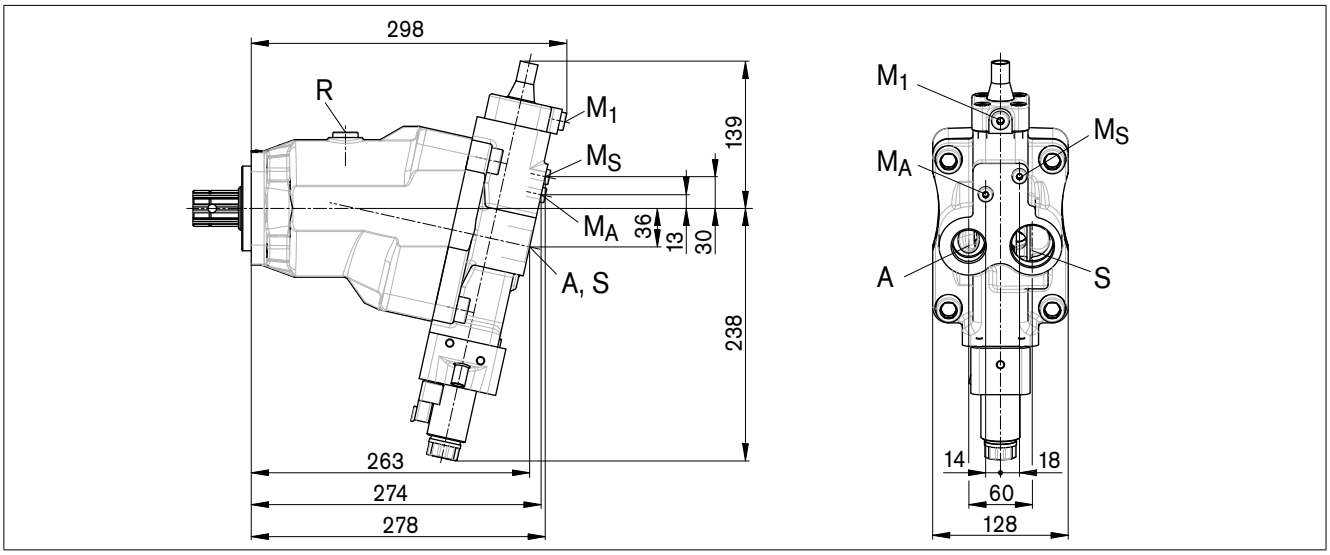




Dimensions size 80

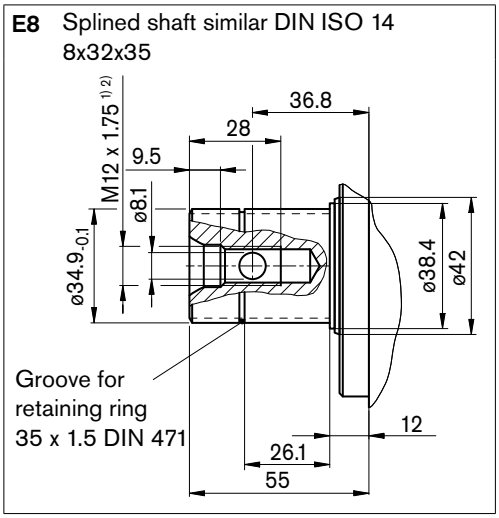
Before finalizing your design, request a binding installation drawing. Dimensions in mm.

EP2 – Proportional control electric, positive control, clockwise rotation



Drive shaft

E8 Splined shaft similar DIN ISO 14
8x32x35



Ports

Designation	Port for	Standard	Size[2)]	Maximum pressure [bar][3)]	State
A	Service line	DIN ISO 228	G1; 18 deep	350	O
S	Suction	DIN ISO 228	G1 1/4; 20 deep	2	O
T	Tank (DRS only)	DIN 3852[5)]	M12 x 1.5; 12 deep	2	O
M_A	Measuring pressure A	DIN 3852[5)]	M10 x 1; 8 deep	350	X
M_S	Measuring suction pressure	DIN 3852[5)]	M10 x 1; 8 deep	2	X
M_1	Measuring stroking chamber	DIN 3852[5)]	M10 x 1; 8 deep	350	X
R	Air bleed	DIN 3852[5)]	M18 x 1.5; 12 deep	2	X[4)]
X	Load pressure (Load-sensing)	ISO 11926[5)]	7/16-20UNF-2B; 11.5 deep	350	O

1) Center bore according to DIN 332 (thread according to DIN 13)
2) Observe the general instructions on page 20 for the maximum tightening torques.
3) Short-term pressure spikes may occur depending on the application. Keep this in mind when selecting measuring devices and fittings.
4) Only open port R for filling and air bleed
5) The spot face can be deeper than specified in the appropriate standard.

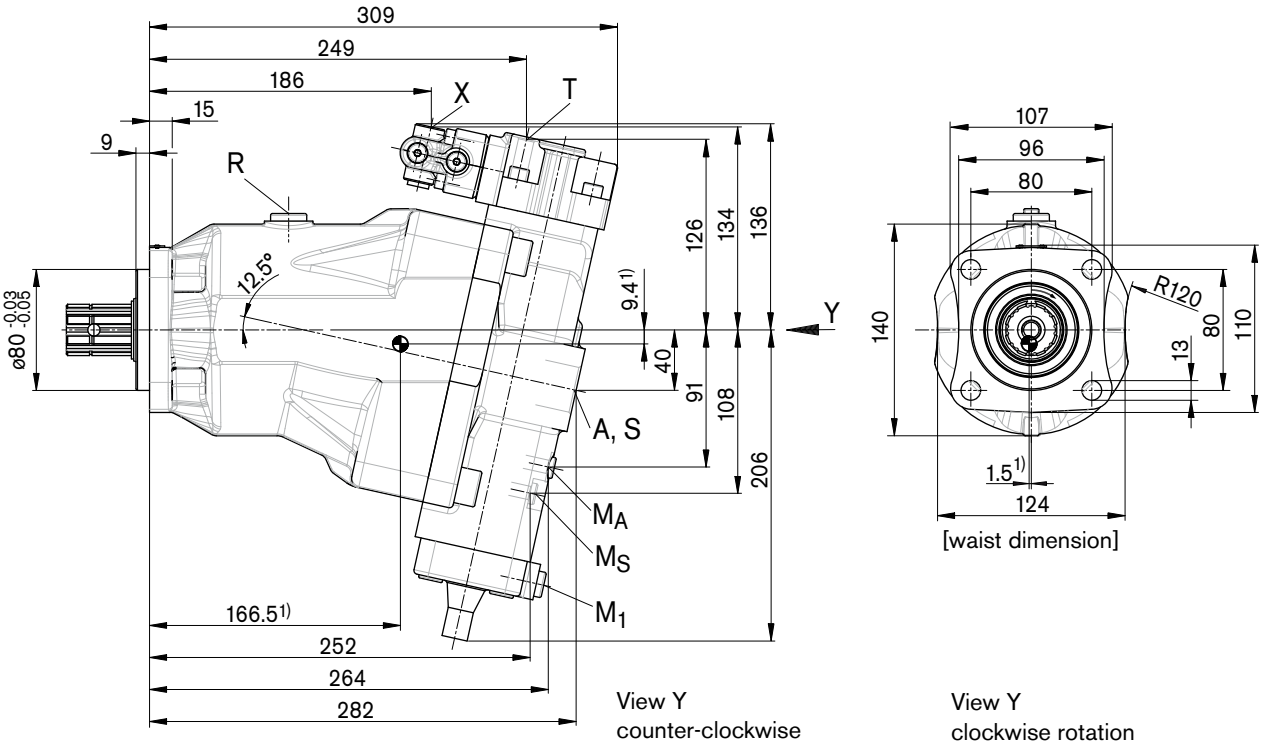
O = Must be connected (plugged on delivery)
X = Plugged (in normal operation)

Dimensions size 107

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

DRS – Pressure controller with load-sensing

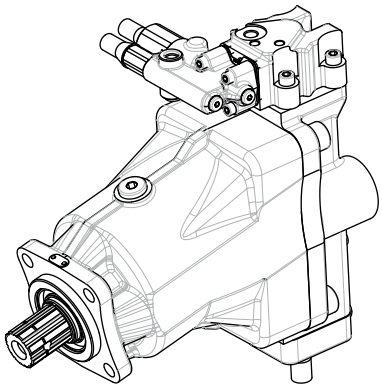
1) Center of gravity

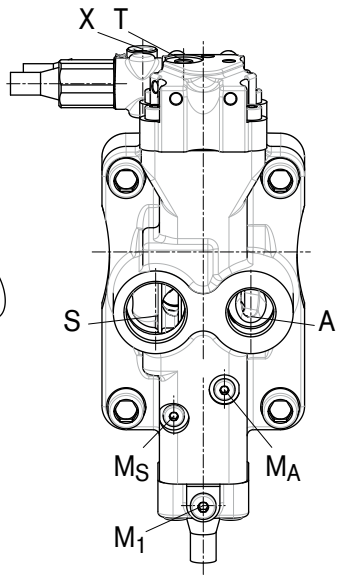


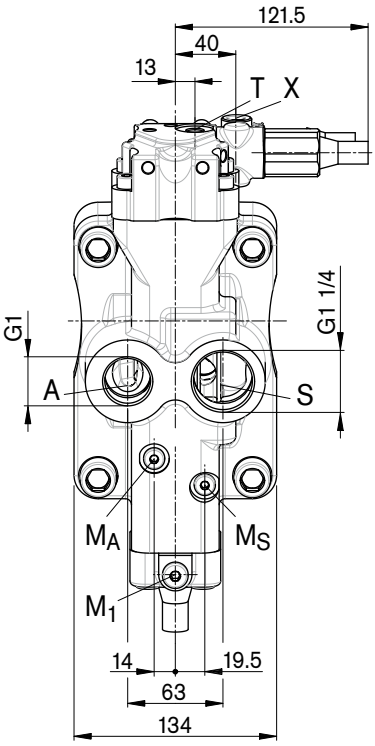
[waist dimension]

View Y
counter-clockwise
rotation

View Y
clockwise rotation



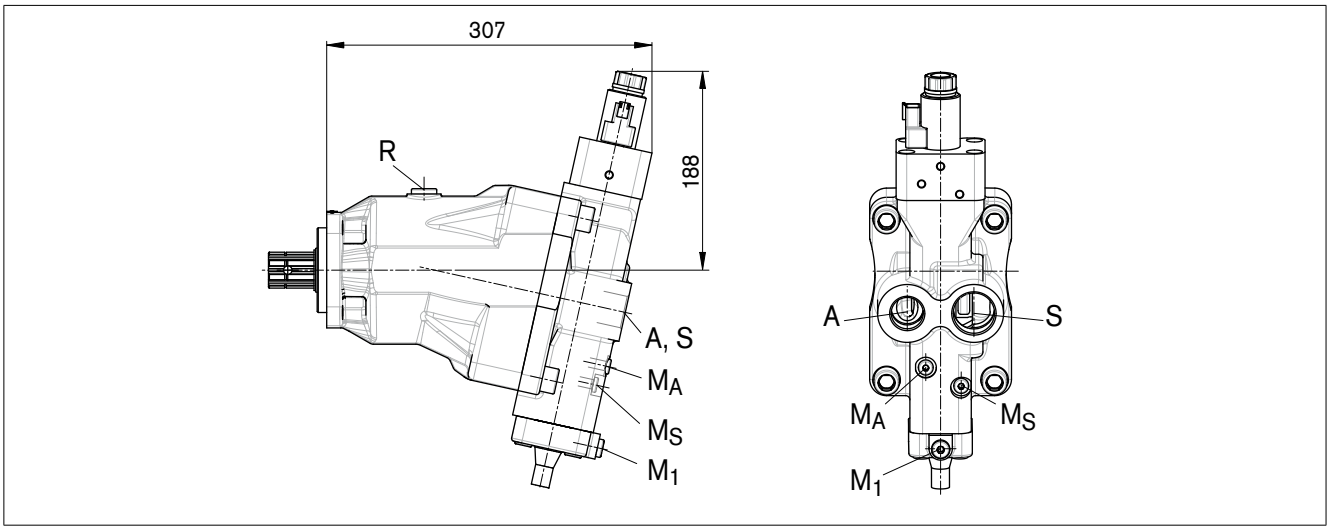




Dimensions size 107

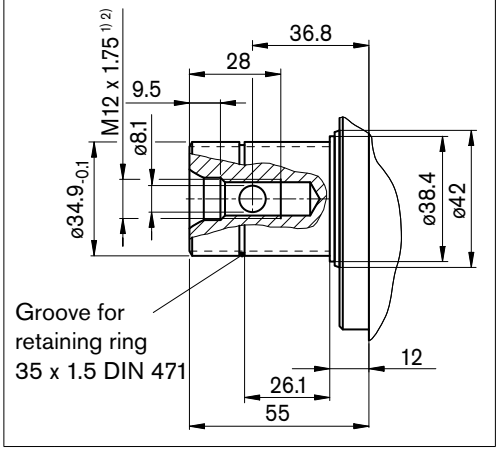
Before finalizing your design, request a binding installation drawing. Dimensions in mm.

EP6 – Proportional control electric, negative control, clockwise rotation



Drive shaft

E8 Splined shaft similar DIN ISO 14 8x32x35



Ports

Designation	Port for	Standard	Size[2)]	Maximum pressure [bar][3)]	State
A	Service line	DIN ISO 228	G1; 18 deep	350	O
S	Suction	DIN ISO 228	G1 1/4; 20 deep	2	O
T	Tank (DRS only)	DIN 3852[5)]	M12 x 1.5; 12 deep	2	O
M_A	Measuring pressure A	DIN 3852[5)]	M10 x 1; 8 deep	350	X
M_S	Measuring suction pressure	DIN 3852[5)]	M10 x 1; 8 deep	2	X
M_1	Measuring stroking chamber	DIN 3852[5)]	M10 x 1; 8 deep	350	X
R	Air bleed	DIN 3852[5)]	M18 x 1.5; 12 deep	2	X[4)]
X	Load pressure (Load-sensing)	ISO 11926[5)]	7/16-20UNF-2B; 11.5 deep	350	O

1) Center bore according to DIN 332 (thread according to DIN 13)
2) Observe the general instructions on page 20 for the maximum tightening torques.
3) Short-term pressure spikes may occur depending on the application. Keep this in mind when selecting measuring devices and fittings.
4) Only open port R for filling and air bleed
5) The spot face can be deeper than specified in the appropriate standard.

O = Must be connected (plugged on delivery)
X = Plugged (in normal operation)

Connector for solenoids

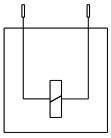
DEUTSCH DT04-2P-EP04, 2-pin

Molded, without bidirectional suppressor diode _____ **P**

Type of protection according to DIN/EN 60529:
IP67 and IP69K

Circuit symbol

Without bidirectional suppressor diode

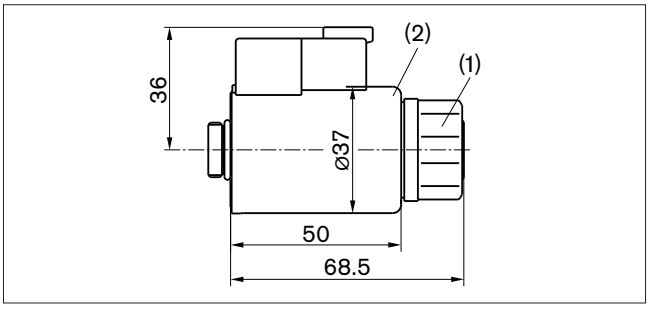


Mating connector

DEUTSCH DT06-2S-EP04
Rexroth mat. no. R902601804

Consisting of:	DT designation
– 1 case	DT06-2S-EP04
– 1 wedge	W2S
– 2 female connectors	0462-201-16141

The mating connector is not included in the delivery contents. This can be supplied by Rexroth on request.



Changing connector position

If necessary, you can change the position of the connector by turning the solenoid.

To do this, proceed as follows:

1. Loosen the fixing nut (1) of the solenoid. To do this, turn the fixing nut (1) one turn counter-clockwise.
2. Turn the solenoid body (2) to the desired position.
3. Retighten the fixing nut. Tightening torque of the fixing nut: 5 +1 Nm (WAF 26, 12-sided DIN 3124).

On delivery, the position of the connector may differ from that shown in the brochure or drawing.

Installation instructions

General

During commissioning and operation, the axial piston unit must be filled with hydraulic fluid and air bled. This is also to be observed following a relatively long standstill as the system may empty via the hydraulic lines.

The case drain chamber is internally connected to the suction chamber. A case drain line from the case to the tank is not required. When using the DRS controller, a case drain line from port T to the tank is, however, generally necessary to maintain thermal stability.

To achieve favorable noise values, decouple all connecting lines using elastic elements and avoid above-tank installation.

In all operational states, the suction and case drain lines must flow into the tank below the minimum fluid level. The permissible suction height h_S results from the overall loss of pressure, it must not, however, be higher than $h_{S\,max} = 800$ mm. The minimum suction pressure at port S must also not fall below 0.8 bar absolute during operation and during cold start.

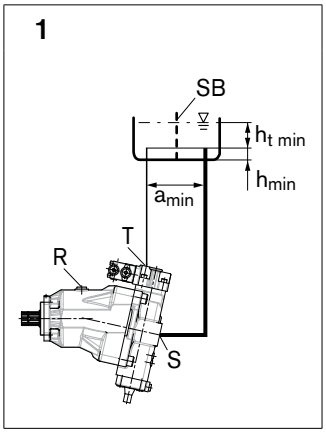
Installation position

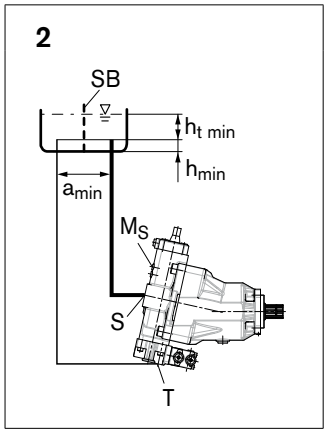
See the following examples 1 to 4.
Additional installation positions are available upon request.

Recommended installation position: 1 and 2.

Below-tank installation (standard)

Below-tank installation is when the axial piston unit is installed outside of the tank below the minimum fluid level.



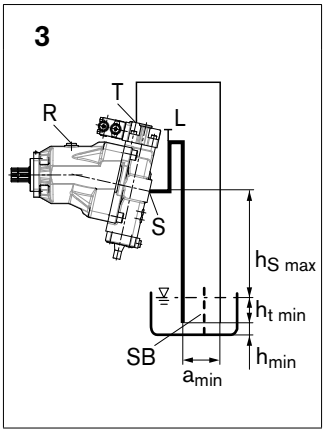


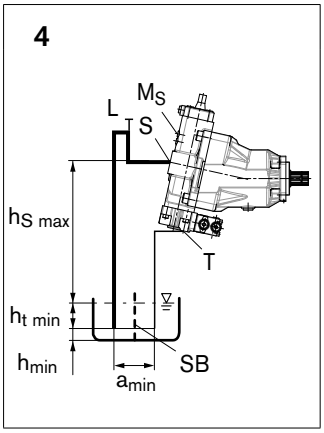
Installation position	Air bleed	Filling
1	R	S
2	M_S	S

Above-tank installation

Above-tank installation is when the axial piston unit is installed above the minimum fluid level of the tank.

Observe the maximum permissible suction height $h_{S\,max} = 800$ mm.





Installation position	Air bleed	Filling
3	R	L
4	M_S	L

L	Filling / air bleed
R	Air bleed port
S	Suction port
T	Tank port (DRS only)
$h_{t\,min}$	Minimum permissible immersion depth (200 mm)
h_{min}	Minimum permissible spacing from suction port to tank base (100 mm)
$h_{S\,max}$	Maximum permissible suction height (800 mm)
M_S	Measuring suction pressure
SB	Baffle (baffle plate)
a_{min}	When designing the tank, ensure adequate space between the suction line and the case drain line to prevent the heated, returned fluid from being directly drawn back out.

General instructions

– The A17VO pump is designed to be used in open circuits.

– Project planning, assembly and commissioning of the axial piston unit require the involvement of qualified personnel.

– Before using the axial piston unit, please read the corresponding operating instructions completely and thoroughly. If necessary, these can be requested from Rexroth.

– The service line ports and function ports are only designed to accommodate hydraulic lines.

– During and shortly after operation, there is a risk of burns on the axial piston unit and especially on the solenoids. Take appropriate safety measures (e.g. by wearing protective clothing).

– Depending on the operational state of the axial piston unit (operating pressure, fluid temperature), the characteristic may shift.

– Pressure ports:
The ports and fixing threads are designed for the specified maximum pressure. The machine or system manufacturer must ensure that the connecting elements and lines correspond to the specified application conditions (pressure, flow, hydraulic fluid, temperature) with the necessary safety factors.

– The data and notes contained herein must be adhered to.

– The following tightening torques apply:

- Threaded hole of the axial piston unit:
The maximum permissible tightening torques $M_{G\ max}$ are maximum values of the threaded holes and must not be exceeded. For values, see the following table.

- Fittings:
Observe the manufacturer's instruction regarding the tightening torques of the used fittings.

- Fixing screws:
For fixing screws according to DIN 13, we recommend checking the tightening torque individually according to VDI 2230.

- Locking screws:
For the metal locking screws supplied with the axial piston unit, the required tightening torques of the locking screws M_V apply. For values, see the following table.

– The product is not approved as a component for the safety concept of a general machine according to DIN EN ISO 13849.

Ports		Maximum permissible tightening torque of the threaded holes $M_{G\ max}$	Required tightening torque of the locking screws M_V	WAF hexagon socket of the locking screws
Standard	Threaded size			
DIN 3852	M10 x 1	30 Nm	12 Nm	5 mm
	M12 x 1.5	50 Nm	25 Nm	6 mm
	M18 x 1.5	66 Nm	60 Nm	8 mm
ISO 11926	7/16-20 UNF-2B	40 Nm	15 Nm	3/16 in
DIN ISO 228	G3/4	330 Nm	–	–
	G1	480 Nm	–	–
	G1 1/4	720 Nm	–	–

Accessories for A17VO

The following accessories are available from Rexroth for the A17VO:

– Coupling flange, for pumps driven via a cardan shaft (see RE 95001)

– Suction studs, in all variations (see RE 95004)

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