

Pressure reducing valve type ADC, ADM, ADME, AM

Product documentation



Operating pressure p_{\max} :	400 bar
Flow rate Q_{\max} :	10 lpm



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1 Overview of pressure reducing valve type ADC, ADM, ADME, AM

Pressure reducing valves are a type of pressure control valve. They maintain a largely constant outlet pressure even at a variable (higher) inlet pressure. Pressure reducing valves type ADC and AM are suitable for the supply of control circuits with low oil consumption. These valves feature an override compensation, i.e. acting like a pressure-limiting valve if the secondary pressure exceeds the set pressure e.g. due to external forces. Leakage flow is present due to design-based reasons. Pressure reducing valves type ADM and ADME are suitable for larger flow rates to supply systems with up to 10 lpm.

Features and benefits:

- Compact design
- Numerous configurations

Intended applications:

- For control oil supply in pilot circuits



Pressure reducing valve type AM

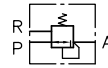
2 Available versions, main data

Circuit symbol:

ADC 1 - 15



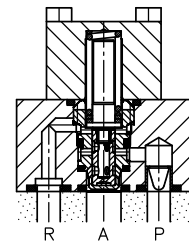
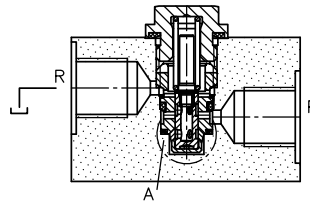
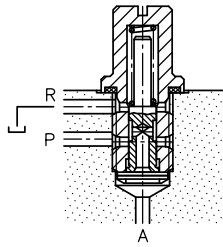
AM 1 20 - 1/4



AM 11 E - 25



Sectional drawings:



Order coding example:

ADC 1 - 15
AM 1 - 20 - 1/4
AM 11 E - 25

Basic type and size ["Table 1"](#)

Table 1 Basic type and size

Type		Max. pressure (bar)		Flow rate $Q_{A \max}$ (lpm)	
Screw-in valve	Housing version		Output A (reference value) $p_A \pm \text{approx. } 15\%$	Input P p_I	
	For direct pipe connection	For manifold mounting			
ADC 1 - 15	ADC 1 - 15 - 1/4	--	18	315	2
ADC 1 - 25	ADC 1 - 25 - 1/4	--	30		
ADC 1 K - 25	ADC 1 K - 25 - 1/4	--	25		
AM 1 - 20	AM 1 - 20 - 1/4	--	20	400	2
AM 1 - 25	AM 1 - 25 - 1/4	--	25		
--	--	AM 11 F - 5	5	400	2
--	--	AM 11 F - 10	10		
--	--	AM 11 F - 15	15		
--	--	AM 11 F - 20	20		
AM 1 E - 20	AM 1 E - 20 - 1/4	AM 11 E - 25	20	400	2
AM 1 E - 25	AM 1 E - 25 - 1/4	AM 11 E - 30	25		
AM 1 E - 30	AM 1 E - 30 - 1/4	AM 11 E - 35	30		
AM 1 E - 35	AM 1 E - 35 - 1/4	--	35		
AM 1 E - 40	AM 1 E - 40 - 1/4	--	40		
AM 1 D - 40	AM 1 D - 40 - 1/4	--	40	400	2
AM 1 D - 45	AM 1 D - 45 - 1/4	--	45		
AM 1 D - 50	AM 1 D - 50 - 1/4	--	50		
AM 1 D - 55	AM 1 D - 55 - 1/4	--	55		
AM 1 D - 60	AM 1 D - 60 - 1/4	--	60		
AM 1 C - 60	--	AM 11 C - 60	60	400	2
AM 1 C - 70	--	AM 11 C - 70	70		
AM 1 C - 80	--	AM 11 C - 80	80		
AM 1 C - 90	--	AM 11 C - 90	90		
AM 1 C - 100	--	AM 11 C - 100	100		
--	ADM 1 - 15	--	15	315	8
--	ADM 1 - 20	--	25		
--	ADM 1 - 30	--	28		
--	ADM 1 - 40	--	40		
--	ADM 1 - 50	--	50		
--	ADM 1 - 70	--	70	315	10
ADME 1 - 15	ADM 1 K - 15	--	15	315	8
ADME 1 - 20	--	--	20		
ADME 1 - 30	--	--	30		
ADME 1 - 50	--	--	50		
ADME 1 - 70	--	--	70		

3 Parameters

3.1 General information

Designation	Pressure reducing valve	
Design	Slide valve	
Model	Screw-in valve or housing version for pipe connection or manifold mounting	
Material	Screw-in valve: <ul style="list-style-type: none"> ▪ Nitrided screw ▪ Diamond-honed bore ▪ Control piston made from stainless steel (ADC 1.., AM 1(11)..) or rolling bearing steel (ADM ..), hardened or ground ▪ Bore and piston deburred with polishing ▪ Control edges have optimum wear resistance to erosion and cavitation effects of the medium flowing through 	
Tightening torques	See Chapter 4, "Dimensions"	
Installation position	As desired	
Line connection	Screw-in valve:	For mounting hole see Chapter 4.1, "Screw-in valve"
	Housing version:	For direct pipe connection (G 1/4 (ISO 228-1 (BSPP) and DIN 3852-1))
Ports	Ports P and A Port R	See "Table 1: Basic type and size" Max. 20 bar
Leakage oil	ADC 1(K) - .. AM 1(E, D, C) - .. ADM(E) 1 - .. AM 11 ...	= approx. 0.5 lpm for $p_i \approx 300$ bar = approx. 0.1 lpm for $p_i \approx 300$ bar Depends largely on the thread tolerance
Flow direction	Operating direction	P → A
	Free return flow	A → P only possible to a limited extent, see characteristics
	Override	A → T(R) see following p_A - Q_A characteristic
Hydraulic fluid	Hydraulic oil: according to DIN 51 524 Part 1 to 3; ISO VG 10 to 68 according to DIN 51 519 Viscosity range: min. approx. 4; max. approx. 800 mm ² /s Optimal operating range: approx. 10 ... 200 mm ² /s Also suitable for biologically degradable pressure fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.	
Cleanliness level	ISO 4406 <hr style="width: 50%; margin-left: 0;"/> 21/18/15	

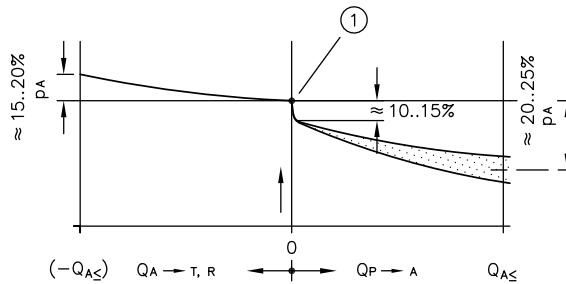
Temperatures

Ambient: approx. $-40 \dots +80^{\circ}\text{C}$, Fluid: $-25 \dots +80^{\circ}\text{C}$, Note the viscosity range!
 Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation.
 Biologically degradable pressure fluids: Observe manufacturer's specifications. By consideration of the compatibility with seal material not over $+70^{\circ}\text{C}$.

Characteristics

Oil viscosity approx. $60 \text{ mm}^2/\text{s}$

p_A - Q_A characteristics
 (Tendency)



1 p_A as per [See "Table 1 Basic type and size"](#)

Override

Override compensation occurs when the consumer is forced back against p_A due to an external force. The valve then acts as a pressure-limiting valve from $A \rightarrow T(R)$.

Free return flow $A \rightarrow P$

A free return flow $A \rightarrow P$ is only possible if the valve was previously without load, i.e. was in open initial position $P \rightarrow A$, and around $1/3$ of $Q_{A \max}$ is not exceeded. If return flow $A \rightarrow P$ is to be possible without restrictions, a bypass check valve is required.

Weight

Screw-in valve

Type

ADC 1 - ..	= 30 g
ADC 1 K - 25	= 45 g
AM 1 - ..	= 30 g
AM 1 E - .., AM 1 D - .., AM 1 C - ..	= 70 g
ADME 1 - ..	= 50 g

Housing version

Type

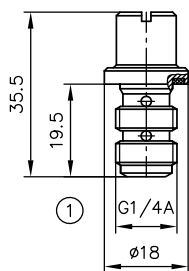
ADC 1 - ..	= 320 g
ADC 1 K - 25	= 340 g
AM 1 - ..	= 340 g
AM 1 E - .., AM 1 D - .., AM 1 C - ..	= 380 g
AM 11 ...	= 200 g
ADM 1 - ..	= 350 g

4 Dimensions

All dimensions in mm, subject to change.

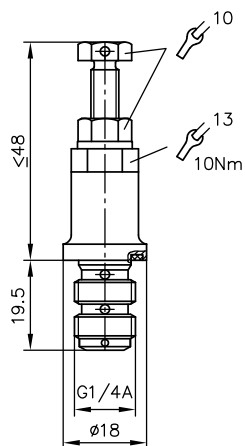
4.1 Screw-in valve

ADC 1 - ..

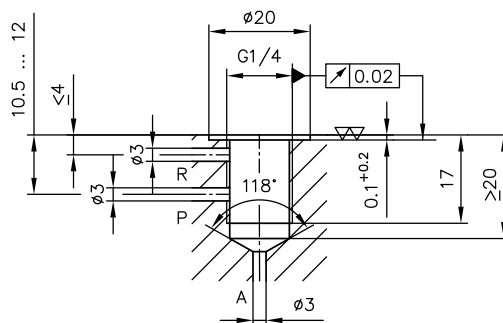


1 Tightening torque 10 Nm

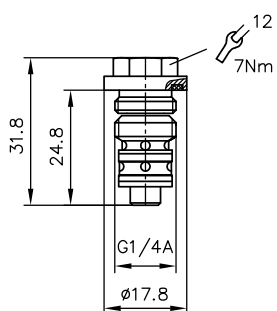
ADC 1 K - 25



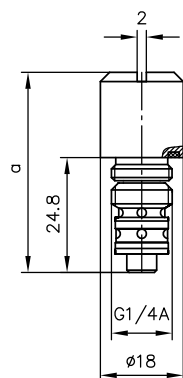
Mounting hole



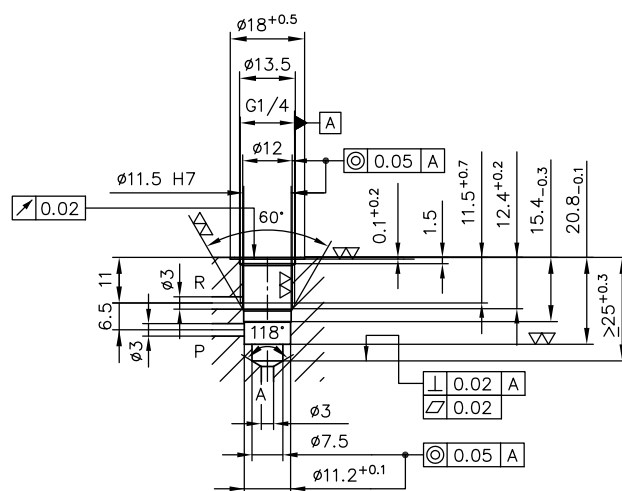
AM 1 - 20(25)



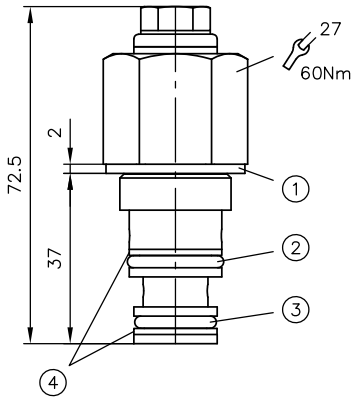
AM 1 E(D, C) - ..



Mounting hole

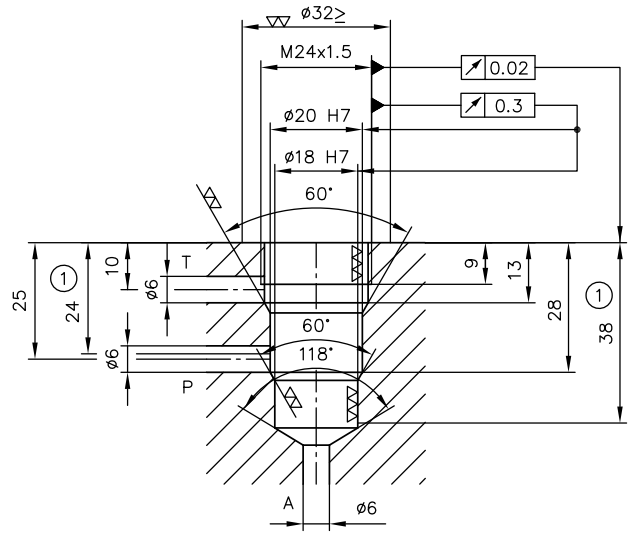


ADME 1 - ..



- 1 Sealing ring Cu A24x30x2
- 2 O-ring 15.55x2.62 NBR 90 Sh
- 3 O-ring 12.37x2.62 NBR 90 Sh
- 4 Teflon supporting rings

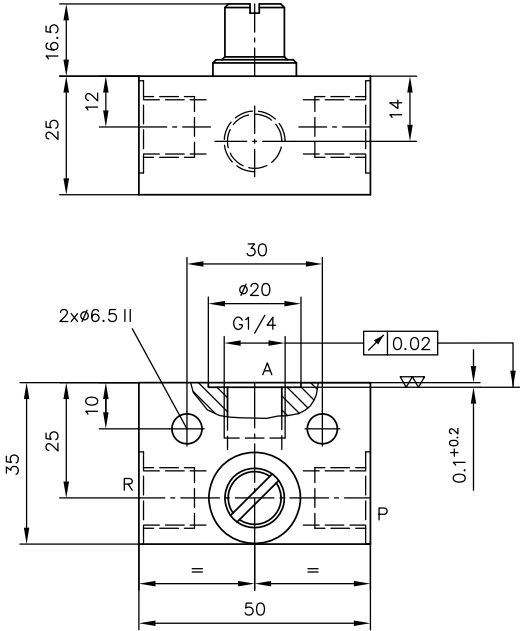
Mounting hole



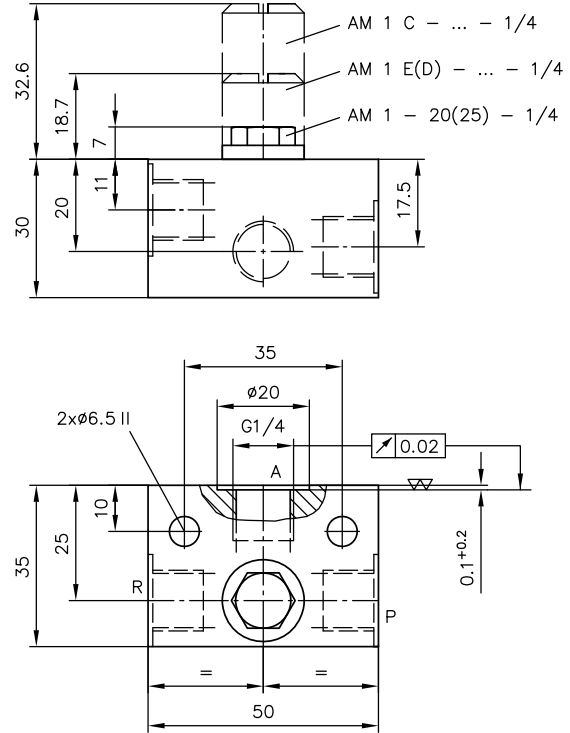
- 1 Reaming depth

4.2 Housing versions

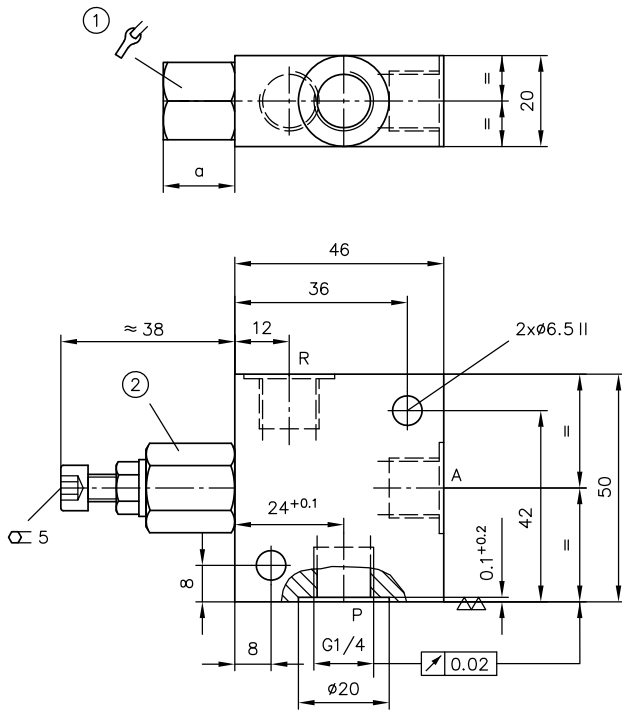
ADC 1 - ... - 1/4



AM 1 - 20(25) - 1/4 AM 1 E(D, C) - .. - 1/4

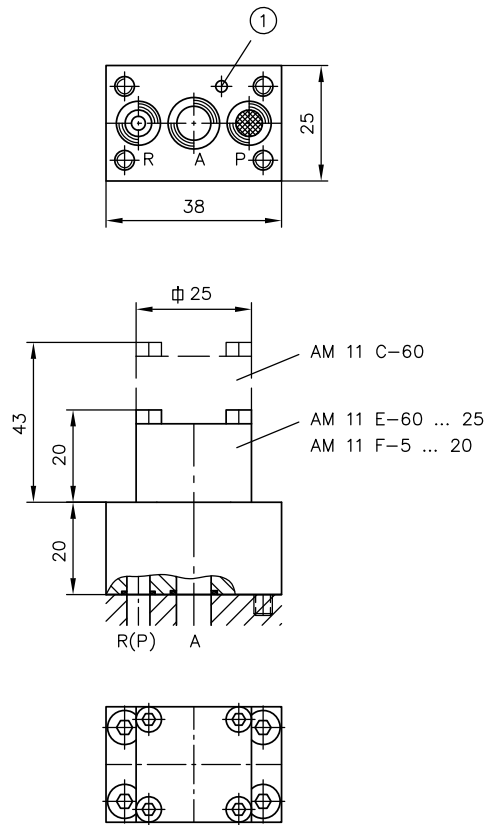


ADM 1 - ...
ADM 1 K - 15



- 1 ADM 1 - ..
- 2 ADM 1 K - 15

AM 11 ...



- 1 Connecting bore Ø3, 2.5 deep for mounting centring pin

Type	a	SW	Ports (ISO 228-1 (BSPP)) A, P, T	Tightening torque (Nm)
ADM 1 - 15				
ADM 1 - 20	15	17	G 1/4	20
ADM 1 - 30				
ADM 1 - 40				
ADM 1 - 50	21	19	G 1/4	20
ADM 1 - 70				

Sealing of the ports:

	O-ring NBR 90 Sh
A	7.65x1.78
P, R	6.07x1.78

5 Assembly, operation and maintenance recommendations

5.1 Intended use

This valve is exclusively intended for hydraulic applications (fluid engineering).

The user must observe the safety measures and warnings in this documentation.

Essential requirements for the product to function correctly and safely:

- All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- The product must only be assembled and put into operation by qualified personnel.
- The product must only be operated within the specified technical parameters. The technical parameters are described in detail in this documentation.
- All components must be suitable for the operating conditions in the event of application in an assembly.
- The operating and maintenance manual of the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
- ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to dismantling (in particular in combination with hydraulic accumulators).



DANGER

Risk to life caused by sudden movement of the hydraulic drives when dismantled incorrectly!

Risk of serious injury or death.

- Depressurise the hydraulic system.
- Perform safety measures in preparation for maintenance.

5.2.1 Creating the mounting hole

See description in [Chapter 4, "Dimensions"](#).

5.3 Operating instructions

Note product configuration and pressure / flow rate

The statements and technical parameters in this documentation must be strictly observed.
The instructions for the complete technical system must also always be followed.

i NOTE

- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.

⚠ CAUTION

Risk of injury on overloading components due to incorrect pressure settings!

Risk of minor injury.

- Pay attention to the maximum operating pressure of the pump and the valves.
- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the hydraulic component. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Metal chips
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

i NOTE

New hydraulic fluid from the manufacturer does not necessarily have the required level of purity.
The hydraulic fluid must be filtered during filling.

Pay attention to the cleanliness level of the hydraulic fluid to maintain faultless operation.
(Also see cleanliness level in [Chapter 3, "Parameters"](#)).

Additionally applicable document: [D 5488/1](#) Oil recommendations

5.4 Maintenance information

Conduct a visual inspection at regular intervals, but at least once per year, to check if the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the device surface of dust deposits and dirt at regular intervals, but at least once per year.

6 Other information

6.1 Accessories, spare parts and separate components

Pressure adjustment using washers

Type	Washer (HAWE no.)
AM 1 E - 20...40	7625 525
AM 1 D - 40...60	(for each washer 0.75 mm approx. $\Delta p = 5$ bar)
AM 11 E - ...	
AM 11 F - ...	
AM 1 C - ...	7625 549
AM 11 - ...	(for each washer 0.4 mm approx. $\Delta p = 5$ bar)
ADM 1 - 20...30	7434 006a - 0.5 mm
ADME 1 - 20...30	7434 006b - 1.0 mm
ADME 1 - 50...70	7434 006c - 2.0 mm (depending on requirements)

Further information

Additional versions

- Pressure-reducing valve type ADM: D 7120
- Pressure-reducing valve, pilot-controlled type VDM: D 5579
- Pressure-reducing valve type CDK: D 7745
- Pressure-reducing valve type CLK: D 7745 L
- Pressure-reducing valve type DK, DZ and DLZ: D 7941
- Proportional pressure-reducing valve type PDM and PDMP: D 7584/1
- Proportional pressure-limiting valve type PDV and PDM: D 7486
- Proportional pressure-reducing valve type PM and PMZ: D 7625
- Proportional pressure-reducing valve type KFB 01: D 6600-01