2 CETOP 02

STACKABLE PRESSURE RELIEF VALVES

AM2-MO-*

20 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure relief valve direct operated. The valve is made with a steel body combined with a pressure relief cartridge valve with an anti vibration system.
The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.

2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)		(7)
AM2	-	MO	-		/		-		-		/	10

(1) AM2 : stackable valve CETOP 02 - Pressure 32 MPa (320 bar)

(2) MO : pressure relief, direct acting

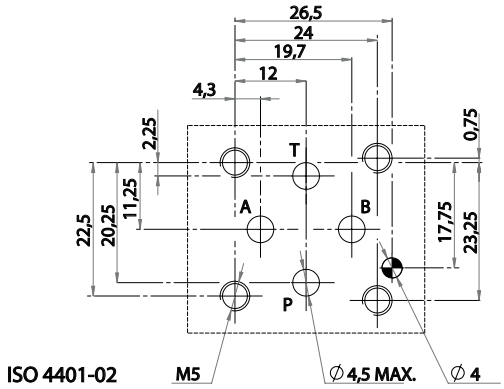
(3) Service lines where the controls operate:
P : relief on P and discharge to T
B : relief on B and discharge to T
BA: indipendent relief on B and on A and discharge to T

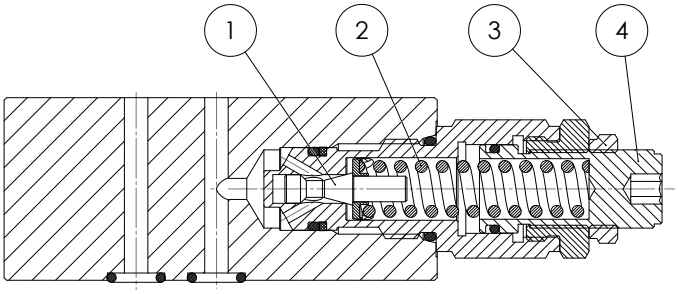
(4) Pressure adjustement ranges:
10: from 6,3 MPa to 12,5 MPa (from 63 to 125 bar)
20: from 8 MPa to 21 MPa (from 80 to 210 bar)
32: from 12,5 MPa to 35 MPa (from 125 to 350 bar)

(5) Pressure adjustement range for relief on A (only for models AM2-MO-BA)

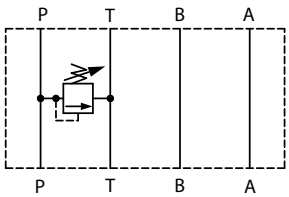
(6) Code reserved for special variants (materials, seals,surface treatments, etc.)

(7) Design number (progressive) of the valves.

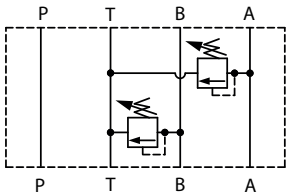




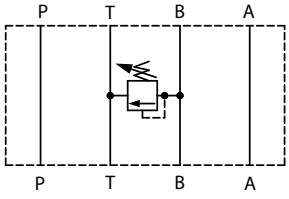
AM2-MO-P



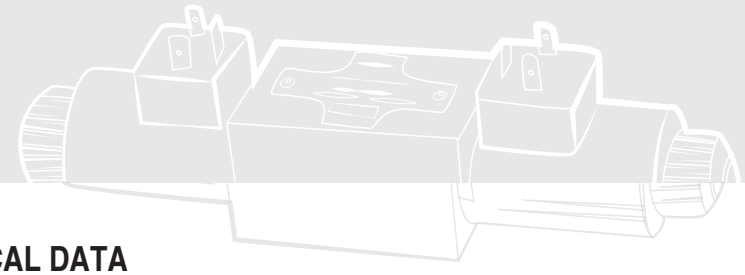
AM2-MO-BA



AM2-MO-B



Fluid flows freely on A, B, P and T lines; when on service line,protected by the relief valve, the pressure exceeds the settled value, the piston 1 is pushed by axial hydraulic force, overcomes the force of spring 2, and shifts in its cylindrical seat and opens to the pressurized fluid annular passage to T, thus keeping the pressure level at the requested value.



3 TECHNICAL DATA

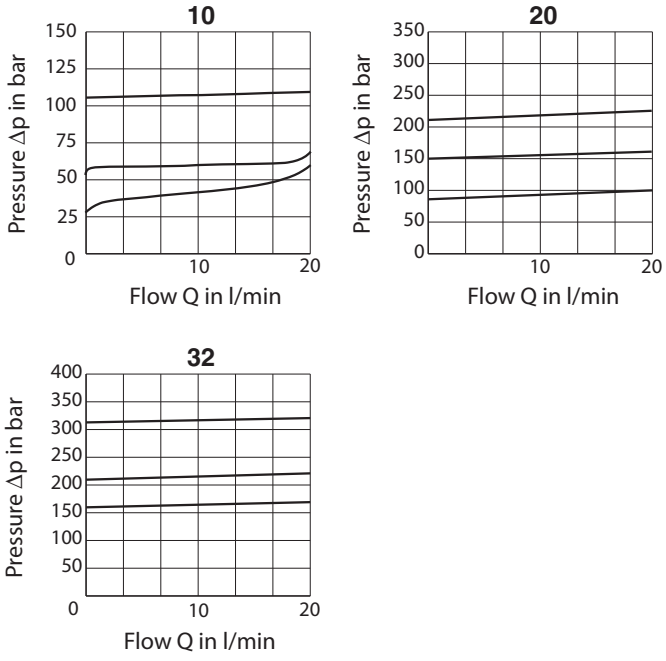
Maximum rec. flow rate	20 l/min
Maximum nominal pressure	32 MPa (320 bar)
Pressure relief curves	see 4
Installation and dimensions	see 5
Masses:	
AM2-MO-P or -B	approx 0,85 kg
AM2-MO-BA	approx 1 kg

Adjustment of the relief pressure:

Relief pressure is reached when the axial hydraulic forces on piston equal the force of spring; the value of the relief pressure can be therefore changed, within the limits of the chosen adjustement range, by changing the compression of spring. To increase the relief pressure, turn clock wise the adjustement screw, after having unlocked its nut.
For each pressure adjustement range, the pressure gradient is approx:
10 : 1,6 MPa/mm (16 bar/turn)
20 : 2,6 MPa/mm (26 bar/turn)
32 : 5 MPa/mm (50 bar/turn)
When the required level of pressure is reached, lock the nut.

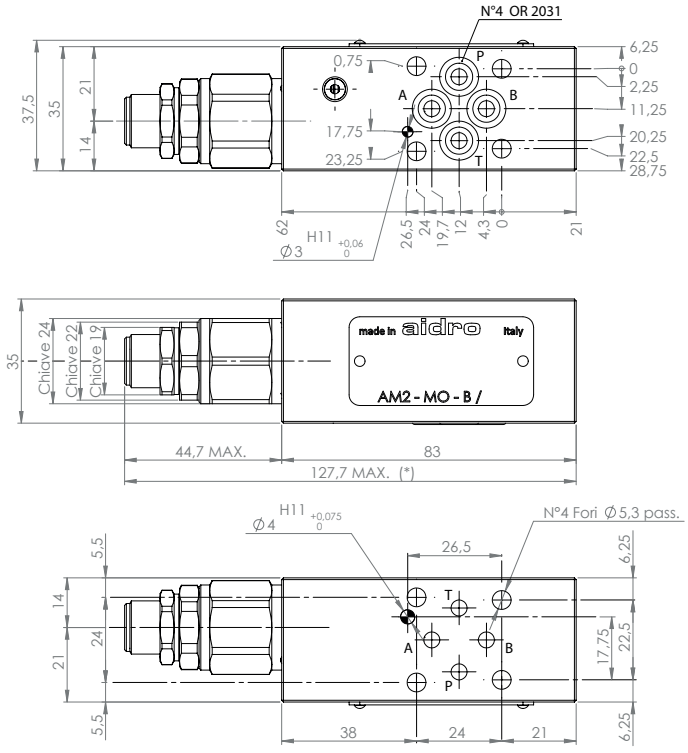
4 TYPICAL DIAGRAMS

Typical curves for valves AM2-MO-* in standard configuration, with mineral oil at 36 cSt and at 50°C.

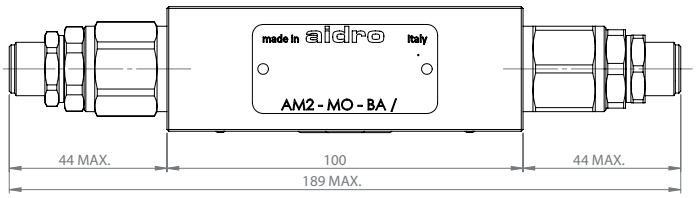


5 INSTALLATION DIMENSIONS (mm)

AM2-MO-B or AM2-MO-P



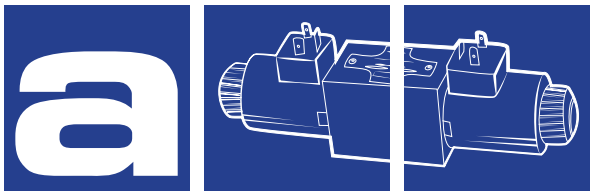
AM2-MO-BA



All stackable valves AM2-MO-* conform with ISO and CETOP specifications for mounting surface dimensions (see also front page). Valves height 35 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals of OR type. All valves have on their "mounting" surface a ø 4 mm cylindrical hole and have on their "seals" surface a ø 3 mm cylindrical hole, conform with ISO and CETOP norms.

6 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM2-* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.



MODULAR VALVES PRESSURE REDUCING

AM2-RO-*

30 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure reducing valve direct operated. The valve is made with a steel body combined with a pressure relief cartridge valve.The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.

2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)
AM2	-	RO	-		/		-		/	20

(1) AM2 : stackable valve CETOP 02 - Pressure 32 MPa (320 bar)

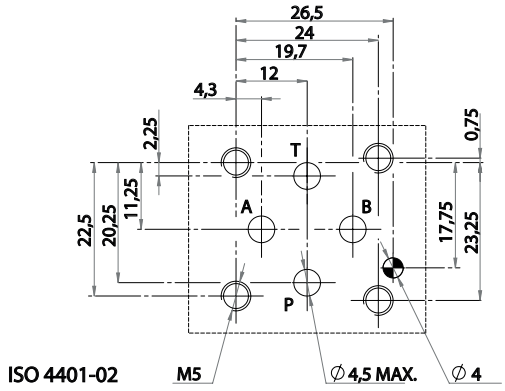
(2) RO : pressure reducing, direct operated- 3 way valve

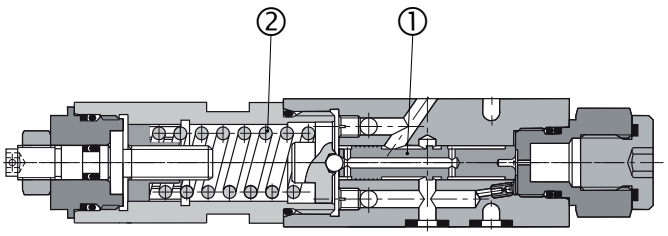
(3) Service lines where the controls operate:
P : control on P with 3[a] way and drain to T line
AC: control on A with check valve
B : control on P with pressure reduced on B

(4) Controlled pressure adjustement ranges:
2,5: from 0,4 MPa to 3,2 MPa (from 4 to 32 bar)
6,3: from 0,5 MPa to 8 MPa (from 5 to 80 bar)
16: from 1 MPa to 20 MPa (from 10 to 200 bar)
20: from 2,5 MPa to 25 MPa (from 25 to 250 bar)

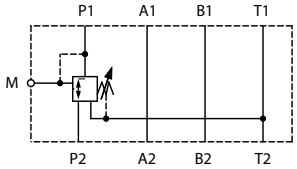
(5) Code reserved for special variants (materials, seals,surface treatments, etc.)
V= adjustement hand knob

(6) Design number (progressive) of the valves.

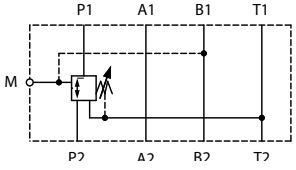




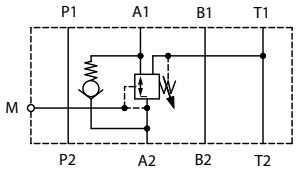
AM2-RO-P



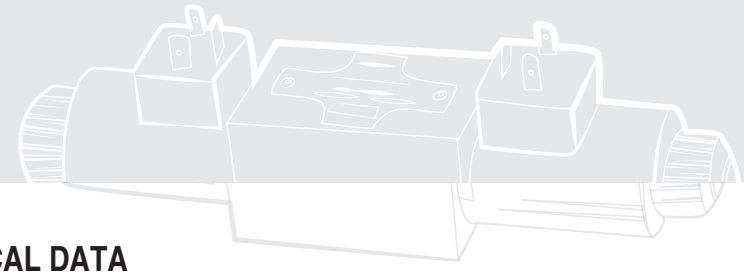
AM2-RO-B



AM2-RO-AC



Reduced pressure is obtained by throttling the flow on spool 2 which is balanced, on one side, by the reduced pressure and, on the other side, by the spring. All valves AM2-RO-* are 3 way, direct operated: If the pressure in the regulated chamber overcomes the value of the adjusted, reduced pressure, the valve discharges to T (at pressure value higher than the reduced pressure, see diagrams) thus acting as safety or relief valve.

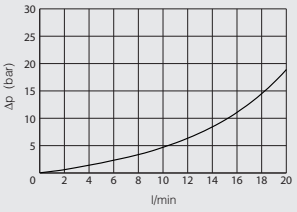


3 TECHNICAL DATA

Maximum rec. flow rate on free lines	30 l/min
on controlled lines	20 l/min
Maximum nominal pressure	32 MPa (320 bar)
Maximum pressure on T	10 MPa (100 bar)
Pressure curves	see 4
Installation and dimensions	see 5
Masses:	
AM2-RO-P or -B	approx 0,6 kg
AM2-RO-AC	approx 0,8 kg

Adjustment of the pressure:

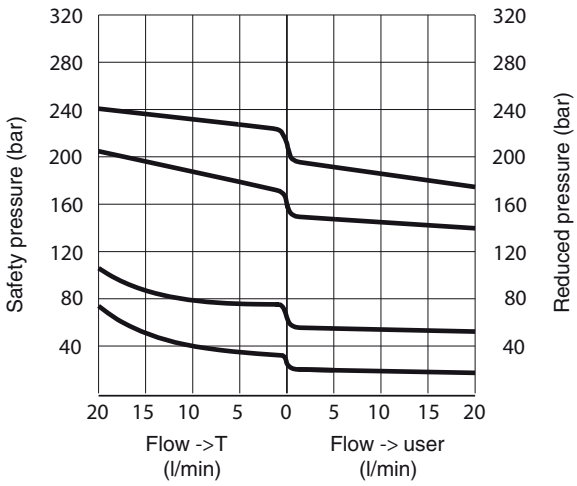
The value of the reduced pressure, is changing the compression of spring.
To increase the value of the reduced pressure, unlock nut ch. 13 and turn clockwise the screw with outside hex 4.



Valve reducing pressure on A or B lines can be:
- indirect (type AM2-RO-B) they act on P line, receive reduced pressure pilot signal from B line that is controlled; (eventual pressurized reverse flow is directed to T by 3° way).
- with integral check valve (type AM2-RO-AC) they act on A line and they allow free reverse flow to port A of the solenoid valve. (see P).

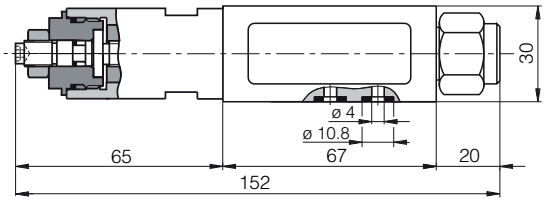
4 TYPICAL DIAGRAMS

Typical curves for valves AM2-RO in standard configuration, with mineral oil at 36 cSt and at 50°C.

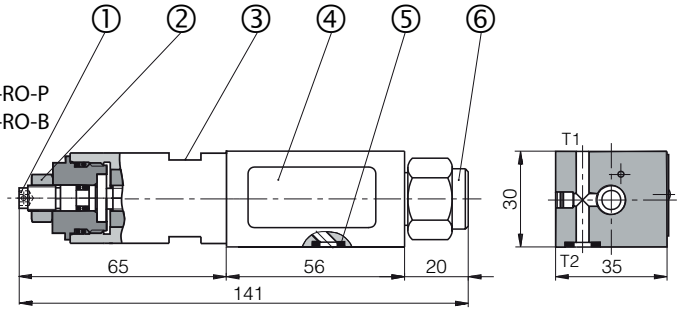


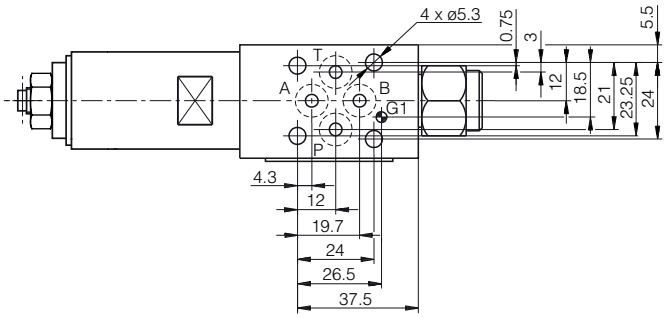
5 INSTALLATION DIMENSIONS (mm)

AM2-RO-AC



AM2-RO-P
AM2-RO-B





① Pressure adjustment element, screw with outside ch. 4
② Locknut ch. 13
③ Wrench flats ch. 24
④ Name plate
⑤ N°4 square ring 7.65x1.68 supplied with each valve
⑥ Plug for pressure gauge connection, thread G1/4"

6 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM2-RO* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

All stackable valves AM2-* conform with ISO and CETOP specifications for mounting surface dimensions. Valves height 30 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals of OR type.

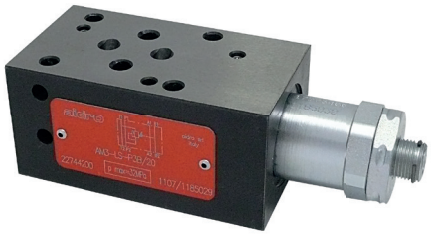
MODULAR VALVES 3-WAY PRESSURE COMPENSATOR WITH LOAD SENSING

AM3-LS-P3

40 l/min - 32 MPa (320 bar)

1 DESCRIPTION

3 way pressure compensator normally used together with proportional directional valves in order to control the flow indipendetly from pressure variations.
The selection of the piloting pressure is made by the use of the integrated shuttle valve which controls the ports A nad B.



2 ORDERING CODE

(1)		(2)		(3)	(4)	(5)		(6)		(7)
AM3	-	LS	-	P	3		/		/	10

(1) AM3: 4-way modular valve CETOP 03

(2) LS: pressure compensator with "Load sensing" function and adjustable QP

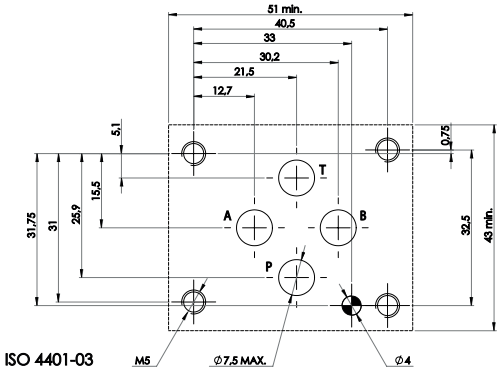
(3) P: control on P line

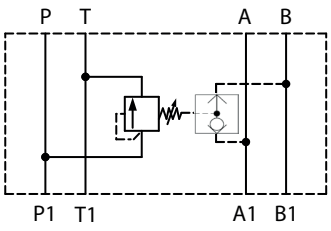
(4) 3: 3-way compensator with unloading of exceed pressure in T

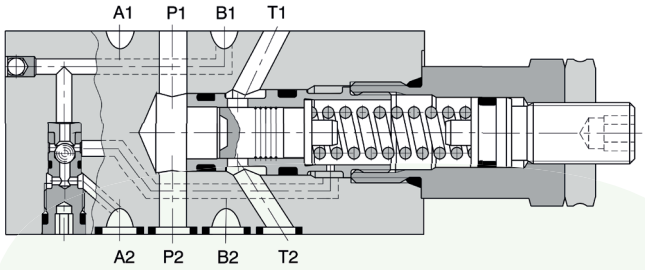
(5) Code reserved for more options and variants
V= adjustement knob

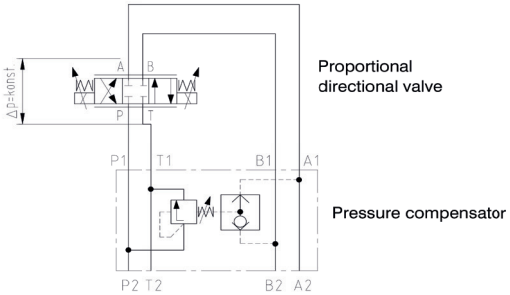
(6) Standard version- control in A and B
A-control in A
B- control in B

(7) Design number (progressive) of the valves

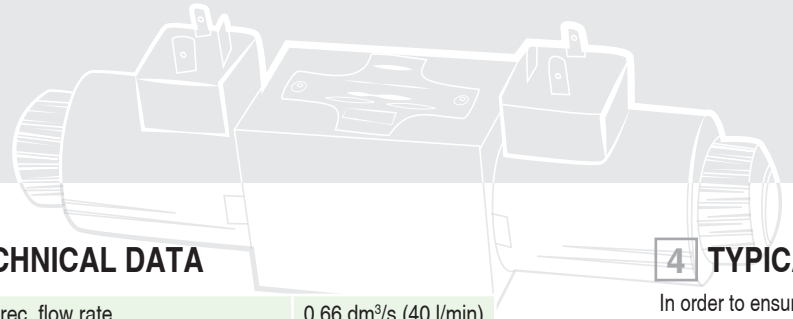








The valve is a 3-way pressure compensator, with direct action, modular version with the mounting surface correspondent to CETOP and ISO standards. It's function is a maintenance of pressure drops DP characteristics between the P and A or B. Normally used in a combination with directional proportional valves in order to provide control of the flow independently from the variations of the pressure. The selection of the pressure of the pilot on A and B lines is automatically executed by a check valve incorporated in the compensator

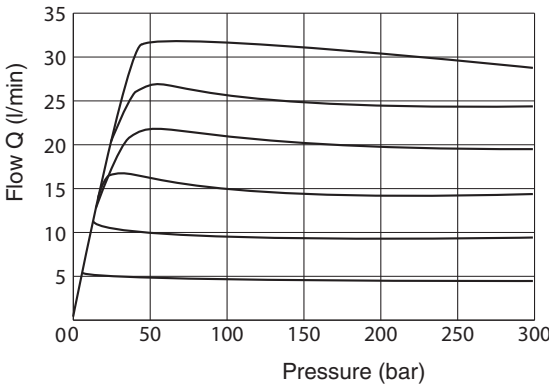


3 TECHNICAL DATA

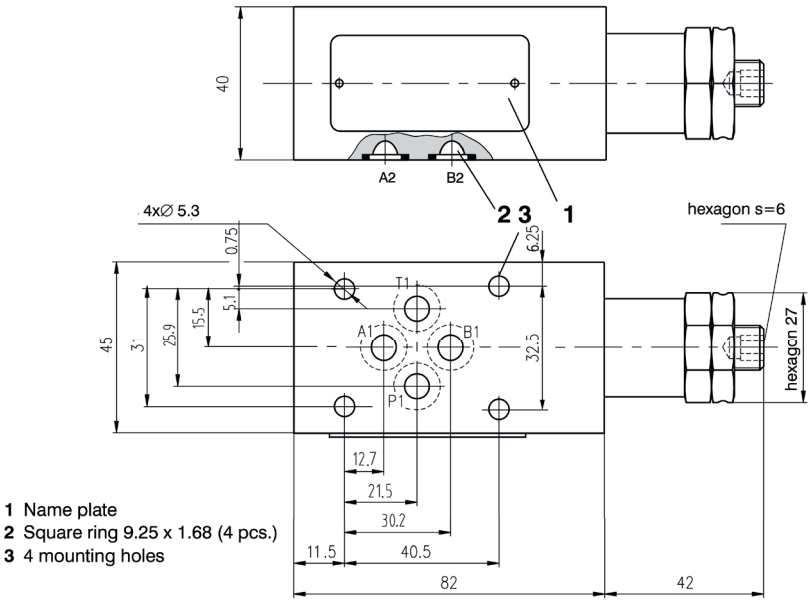
Maximum rec. flow rate	0,66 dm³/s (40 l/min)
Maximum nominal pressure	32 MPa (320 bar)
Setting calibration Δp	adjustable from 0,5 to 4 MPa (5-40 bar)
Installation and dimensions	see 5
Mass	1kg

4 TYPICAL DIAGRAMS

In order to ensure the correct control function the outside pressure difference has to be increased when increasing the flow resistance due to a flow rate increase



5 INSTALLATION DIMENSIONS (mm)



1 Name plate
2 Square ring 9.25 x 1.68 (4 pcs.)
3 4 mounting holes

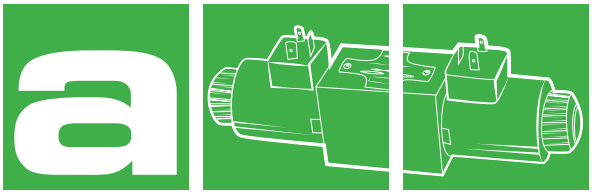
The valves AM3-LS-P3* conform to ISO and CETOP standards with regards to mounting surface. Height of stacking is 40 mm. The sealing between the valve and mounting surface is insured by 4 seals type OR 2037 or Quad-ring.

6 CALIBRATION OF ΔP

Efficient calibration of DP of the valve AM3-LSP3 is fundamental procedure for setting range of flow to utensils. Increasing DP, according to the non-linear law, increases also value of compensated flows, that pass through regulating organ (throttle with variable light) independently of working pressure of the system. For example in a system illustrated in Typical applications p.1, composed of AM3-LSP3 and proportional valve HD3-PS-3RC-xx (see table HD3-PS), with DP of the valve of 1 MPa (10 bar), the flow to the actuator will be between 0 and 16 l/min, with DP of the valve of 3 MPa (30 bar), the flow to the actuator will be between 0 and 28 l/min (always independently of working pressure of the system). Therefore it is essential in order to optimize functioning of the system to regulate DP of the compensator. This can be done by acting with CH6 mm on the pin regulator after locking nut has been loosen to CH27 mm: it is suggested to loosen the spring completely by turning the pin with thread pitch 1,25 mm anticlockwise until full mechanical stop.

Thereafter by turning clockwise you obtain:
DP = 0,4 MPa (4 bar) run 2,5 mm* (2 turns)
DP = 1,2 MPa (12 bar) run 3,75 mm* (3 turns)
DP = 2,1 MPa (21 bar) run 5 mm* (4 turns)
DP = 3 MPa (30 bar) run 6,25 mm* (5 turns)
DP = 3,9 MPa (39 bar) run 7,5 mm* (6 turns)
* including one initial “dead” turn of appr. 2 mm (1,5 turns).

After desired calibration was done, lock with the fixing nut 1 to CH27 mm.



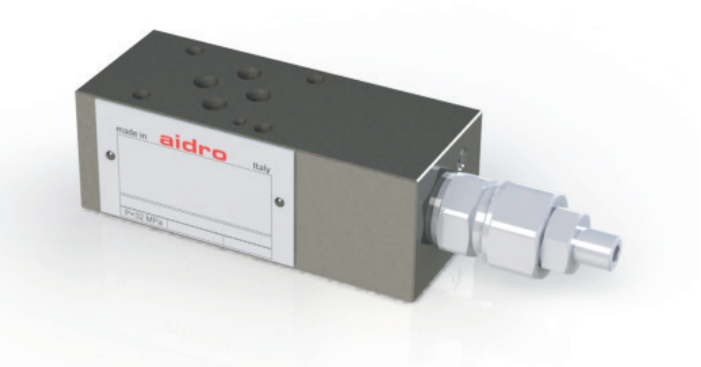
PRESSURE RELIEF VALVES

AM3-MO-*

60 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure relief valve direct operated. The valve is made with a steel body combined with a pressure relief cartridge valve with an anti vibration system.
The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.



2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)		(7)
AM3	-	MO	-		-		-		-		/	10

(1) AM3: stackable valve CETOP 03 - Pressure 32 MPa (320 bar)

(2) MO: pressure relief, direct acting

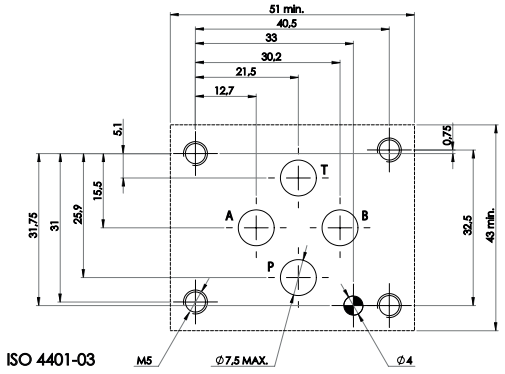
(3) Service lines where the controls operate:
P: relief on P and discharge to T
B: relief on B and discharge to T
BA: indipendent relief on B and on A and discharge to T

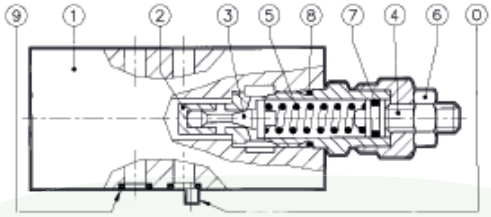
(4) Pressure adjustement ranges:
10: from 2,5 MPa to 12,5 MPa (from 25 to 125 bar)
20: from 4 MPa to 25 MPa (from 40 to 250 bar)
32: from 10 MPa to 32MPa (from 100 to 320 bar)

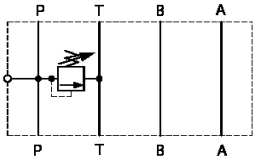
(5) Pressure adjustement range for relief on A
(only for models AM3-MO-BA) see 4

(6) Code reserved for more options and variants

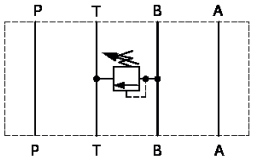
(7) Design number (progressive) of the valves



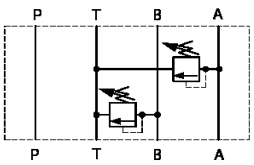




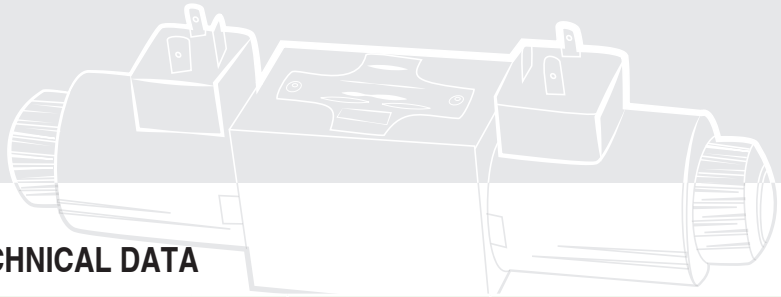
AM3-MO-P



AM3-MO-B



AM3-MO-BA



3 TECHNICAL DATA

Maximum nominal flow	
Maximum rec. flow rate on free lines	1dm³/s (60 l/min)
On protected lines	0,5 dm³/s approx 32 l/min
Maximum nominal pressure	32 MPa (320 bar)
Pressure relief curves	see 4
Installation and dimensions	see 5
Masses	
AM3-MO-P or B	approx 1,7 kg
AM3-MO-BA	approx 2,3 kg

Adjustement of the relief pressure:

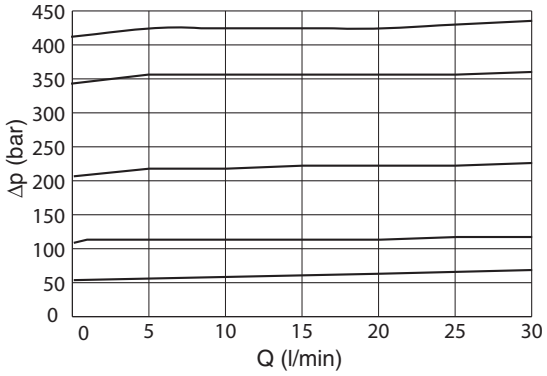
Relief pressure is reached when the axial hydraulic forces on piston 3 equal the force of spring 5; the value of the relief pressure can be therefore changed, within the limits of the chosen adjustement range, by changing the compression of spring 5. To increase the relief pressure, turn clock wise the adjustement screw 4, after having unlocked ist nut 6.
For each pressure adjustement range, the pressure gradient is approx:

- 10: 1,6 MPa/mm (24 bar/turn)
- 20: 3,2 MPa/mm (48 bar/turn)
- 32: 5 MPa/mm (75 bar/turn)

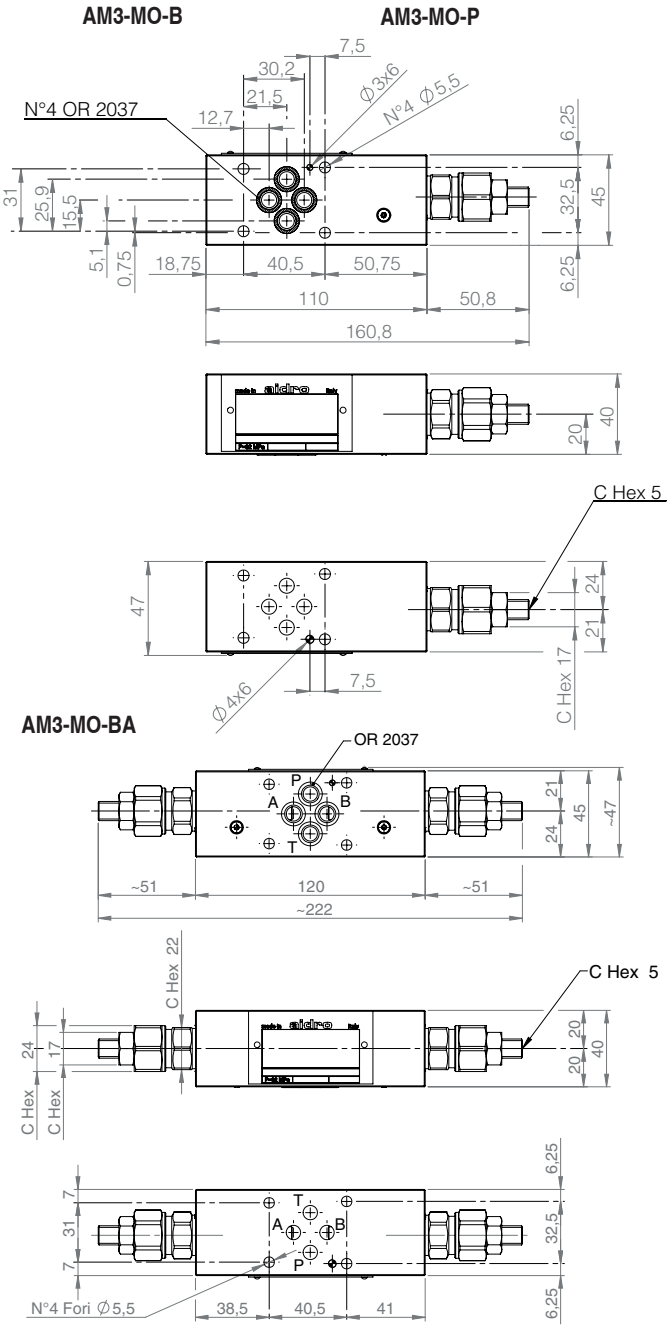
When the required level of pressure is reached, lock the nut 6.

4 TYPICAL DIAGRAMS

Typical Δp-Q curves for valves AM3-MO-* in standard configuration, with mineral oil at 36 cSt and at 50°C



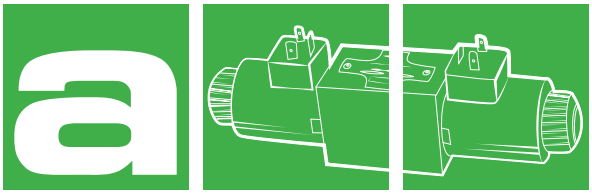
5 INSTALLATION DIMENSIONS (mm)



6 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM3 - * are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

All stackable valves AM3-* conform with ISO and CETOP specifications for mounting surface dimensions. Valves height 40 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals of OR type. All valves have on their "mounting" surface a ø4 mm cylindrical hole and have on their "seals" surface a ø 3 mm locating pin, to conform with the norms. In case of necessity, the pin can be easily removed.



PRESSURE RELIEF VALVES

AM3-MP-*

60 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure relief valve pilot operated. The valve is made with a steel body combined with a pressure relief cartridge valve pilot operated for a stable pressure control.
The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.

2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)		(7)
AM3	-	MP	-		/		-		-		/	10

(1) AM3: stackable valve CETOP 03 - Pressure 32 MPa (320 bar)

(2) MP: pressure relief- pilot operated

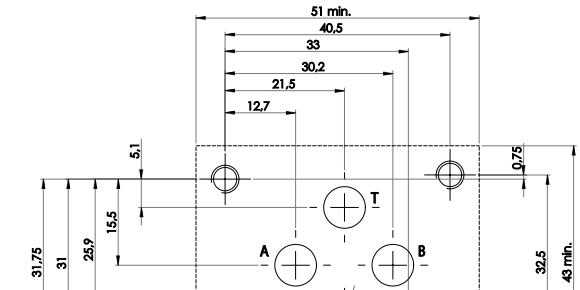
(3) Service lines where the controls operate:
P: relief on P and discharge to T
B: relief on B and discharge to T
BA: indipendent relief on B and on A and discharge to T
AB: relief on A and B with crossed discharge

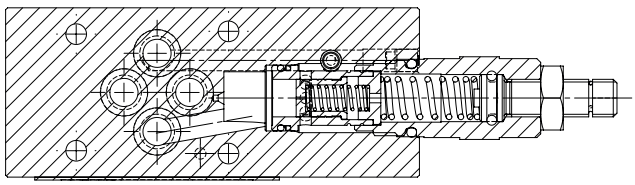
(4) Pressure adjustement ranges:
6,3 : from 1 to 7 MPa (from 10 to 70 bar)
12,5: from 1to 14 MPa (from 10 to 140 bar)
20: from 2 to 21 MPa (from 20 to 210 bar)
32: from 2 to 32 MPa (from 20 to 320 bar)

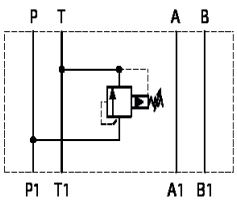
(5) Pressure adjustement range for relief on A
(only for models AM3-MP-BA) or for relief on B for models AM3-MP-AB

(6) Code reserved for more options and variants

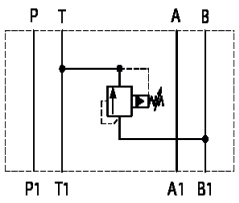
(6) Design number (progressive) of the valves



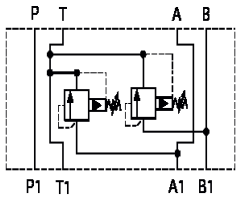




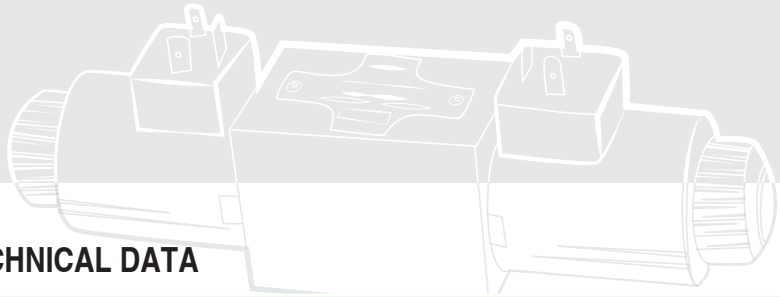
AM3-MP-P



AM3-MP-B



AM3-MP-BA



3 TECHNICAL DATA

Maximum nominal flow	
Maximum rec. flow rate	1 dm³/s (60 l/min)
Maximum nominal pressure	32 MPa (320 bar)
Pressure relief curves	see 4
Installation and dimensions	see 5
Masses	
AM3-MP-P	approx 1,7 kg
AM3-MP-BA	approx 2,3 kg

Adjustement of the relief pressure:

Relief pressure is reached when the axial hydraulic forces on piston 3 equal the force of spring; the value of the relief pressure can be therefore changed, within the limits of the chosen adjustement range, by changing the compression of spring. To increase the relief pressure, turn clock wise the adjustement screw CH5, after having unlocked ist nut CH17 mm.

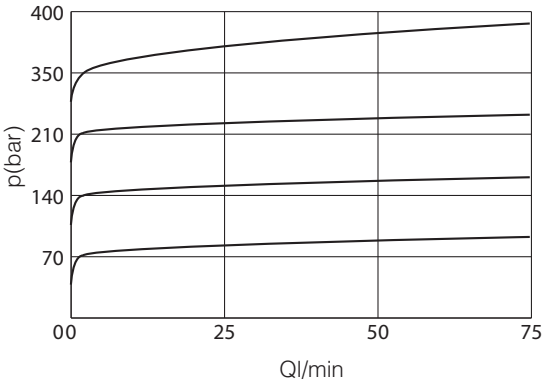
For each pressure adjustement range, the pressure gradient is approx:

- 6,3: 2 MPa/turn (24 bar/turn)
- 12,5: 4 MPa/turn (40 bar/turn)
- 20: 6,3 MPa/turn (630 bar/turn)
- 32: 10 MPa/turn (100 bar/turn)

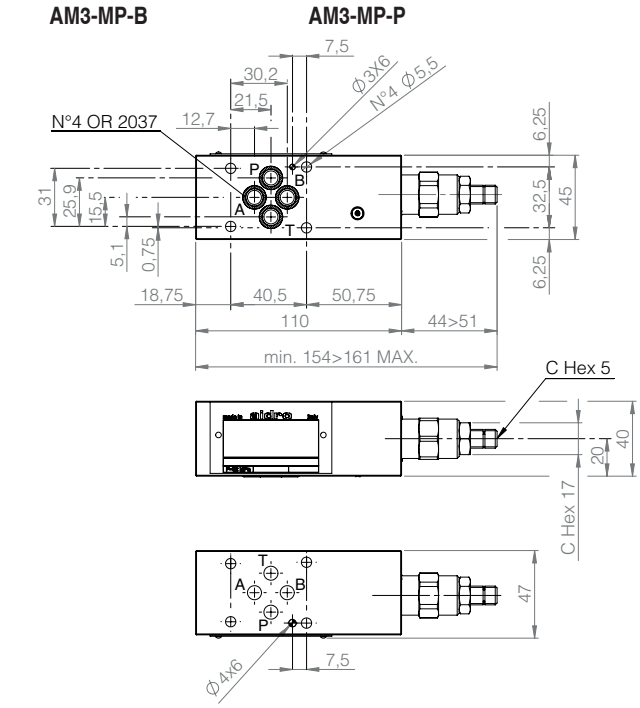
When the required level of pressure is reached, lock the nut CH17mm.

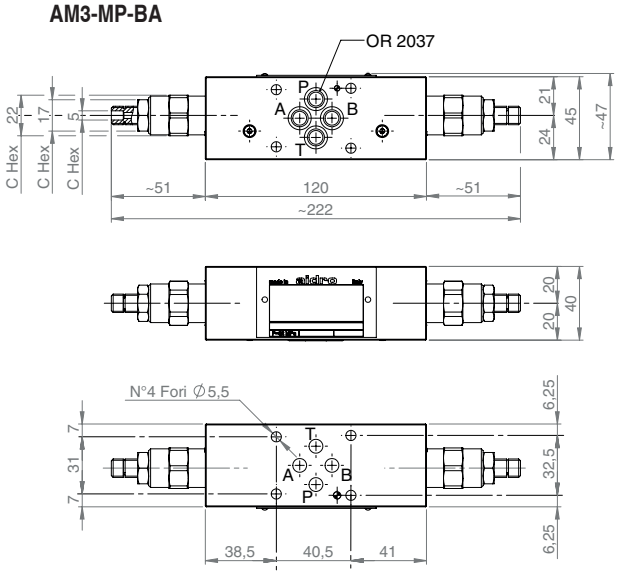
4 TYPICAL DIAGRAMS

Typical curves for valves AM3-MP in standard configuration, with mineral oil at 36 cSt and at 50°C



5 INSTALLATION DIMENSIONS (mm)

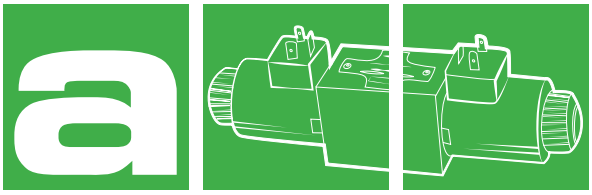




6 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM3-* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

All stackable valves AM3-* conform with ISO and CETOP specifications for mounting surface dimensions and for valves height 40 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals type OR 2037.



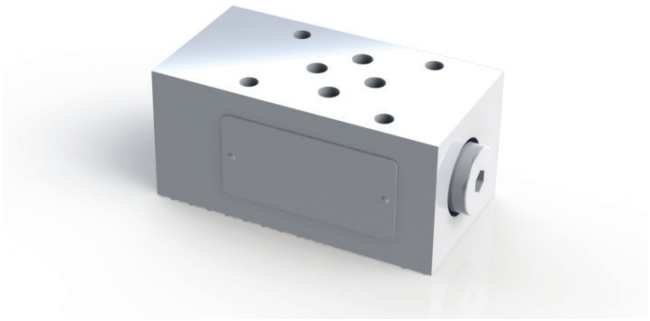
2-WAY PRESSURE COMPENSATOR MODULAR VALVES

AM3-PC-*

32 l/min - 32 MPa (320 bar)

1 DESCRIPTION

2 Way pressure compensator for meter- in application. The pressure variations due to loading changes are compensated that means that an increase in pump pressure cannot result in any flow icrease. Provided that there is no preloading of the outlet port, the use of a meter in pressure compensator is limited only to drives with exclusively positive load direction.



2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)
AM3	-	PC	-		/		-		/	10

(1) AM3: stackable valve CETOP 03 - Pressure 32 MPa (320 bar)

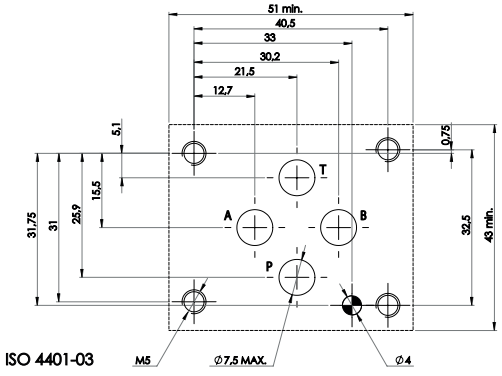
(2) PC: pressure compensator 2-way valve

(3) Service lines where the controls operate:
P: control on P with A, B selection
A: control on A
B: control on B

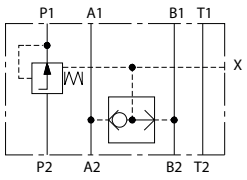
(4) Pressure compensator Δp
Δp standard= 1MPa (10 bar)

(5) Code reserved for more options and variants

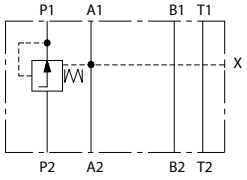
(6) Design number (progressive) of the valves



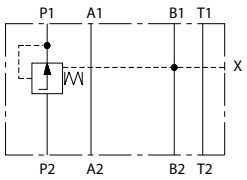
AM3-PC-P

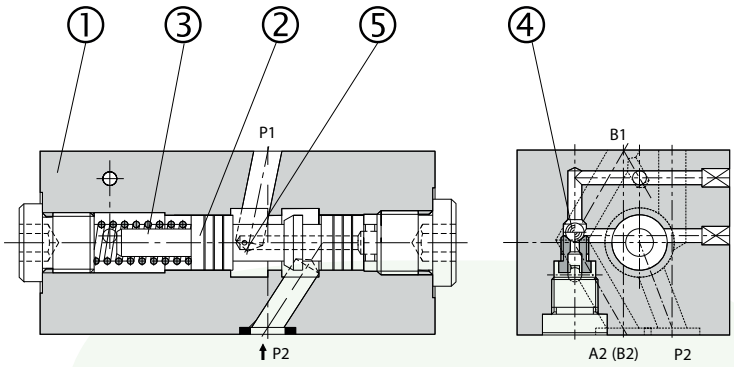


AM3-PC-A

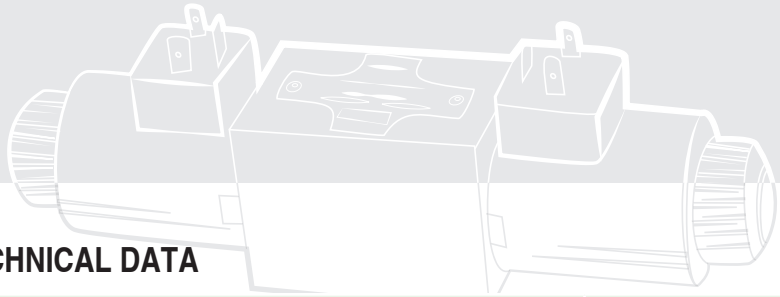


AM3-PC-B





Valves AM3-PC-* are directly operated 2-way pressure compensators .
The main parts of these valves are the housing 1, control spool 2, spring 3 and logic valve 4. The spring 3 holds the spool in the open position from P2 to P1, provided that the pressure difference between P1 and A (P1 - B) is less than p = 10 bar. When the pressure difference exceeds the value of p = 10 bar, the spool shifts against spring until the desired pressure difference has been restored.

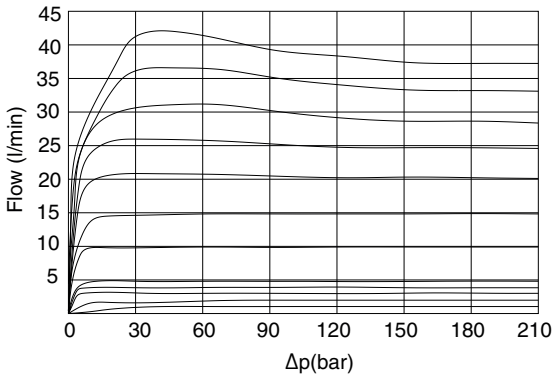


3 TECHNICAL DATA

Maximum rec. flow rate	32 l/min
Maximum nominal pressure	32 MPa (320 bar)
Pressure curves	see 4
Installation and dimensions	see 5
AM3-PC-P	approx 1,1 kg

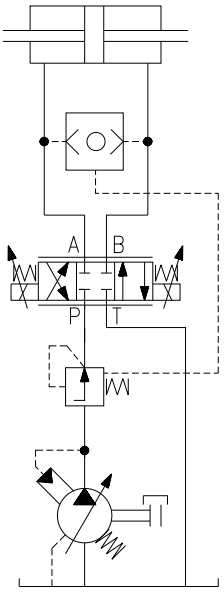
4 TYPICAL DIAGRAMS

Typical curves for valves AM3-PC in standard configuration, with mineral oil at 36 cSt and at 50°C

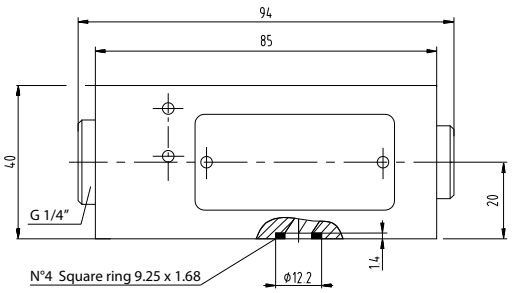


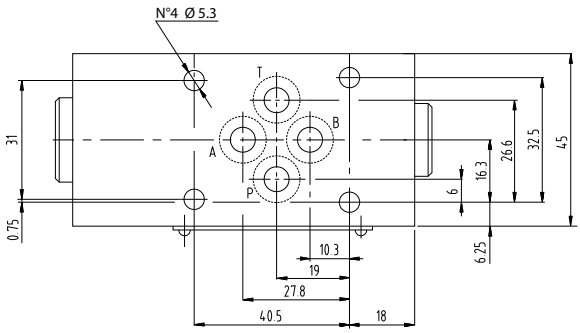
EXAMPLE

Two way pressure compensator for meter-in application



5 INSTALLATION DIMENSIONS (mm)

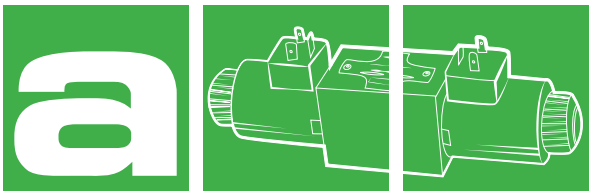




All stackable valves AM3-PC-* conform with ISO and CETOP specifications for mounting surface dimensions and for valves height 40 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals type OR 2037.

6 HYDRAULIC FLUIDS

Seals and materials used on standard valve AM3-* are fully compatible with hydraylic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.



PRESSURE REDUCING VALVES

AM3-RO-*

60 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure reducing valve direct operated. The valve is made with a steel body combined with a pressure relief valve integrtaed in the body.The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.

2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)
AM3	-	RO	-		/		-		/	10

(1) AM3: stackable valve CETOP 03 - Pressure 32 MPa (320 bar)

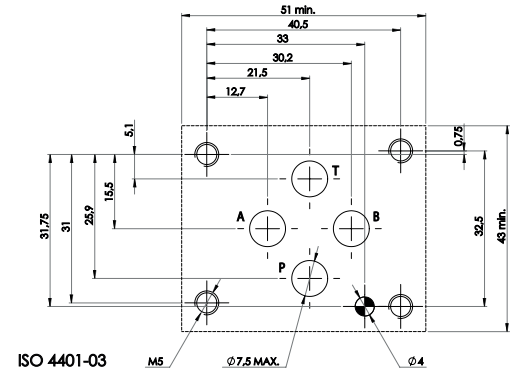
(2) RO: pressure reducing,direct operated- 3 way valve

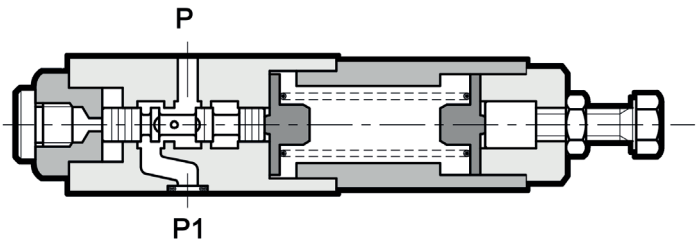
(3) Service lines where the controls operate:
P: control on P with 3ª way and drain to T line
A: control on A with 3ª way and drain to T line
B: control on B with 3ª way and drain to T line

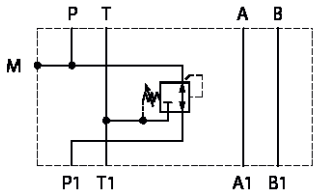
(4) Pressure adjustement ranges:
32 : from 0,3 to 3,5 MPa (from 3 to 35 bar)
6,3: from 1 to 7 MPa (from 10 to 70 bar)
12,5: from 3 to 14 MPa (from 30 to 140 bar)
25: from 6 to 28 MPa (from 60 to 280 bar)

(5) Code reserved for more options and variants
V= adjustement hand knob

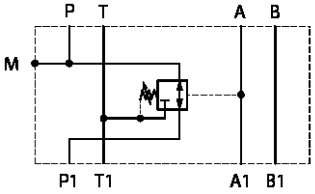
(6) Design number (progressive) of the valves



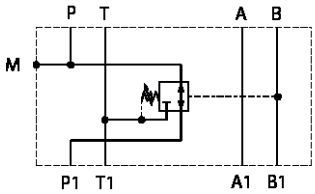




AM3-RO-P

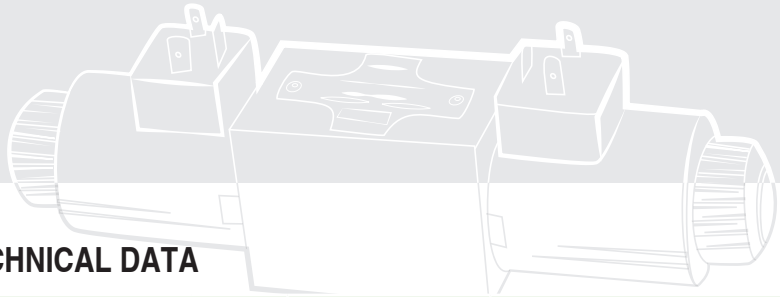


AM3-RO-A



AM3-RO-B

All valves AM3-RO-* are 3 way, direct operated: If the pressure in the regulated chamber overcomes the value of the adjusted, reduced pressure, the valve discharges to T (at pressure value higher then the reduced pressure- see diagrams) thus acting as safety or relief valve.



3 TECHNICAL DATA

Maximum rec. flow rate on free lines	1d m^3/s (60 l/min)
on controlled lines	0,66 dn3/s (40 l/min)
Maximum nominal pressure	32 MPa (320 bar)
Maximum pressure on T	10 MPa (100 bar)
Max drain	<1,2 cm^3/s (0,07 l/min)
Pressure curves	see 4
Installation and dimensions	see 5
Masses	
AM3-MP-BA	approx 2,3 kg

Adjustement of the relief pressure:

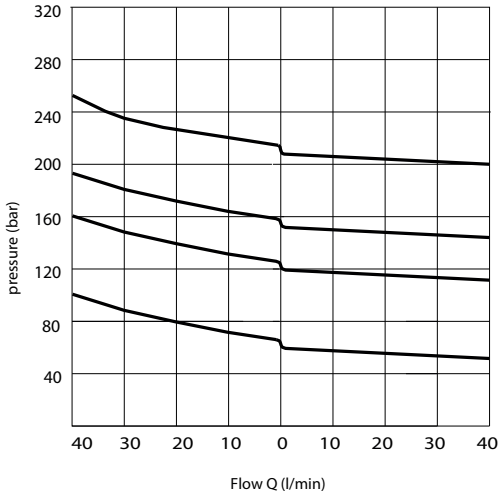
Reduced pressure is obtained by throtting the flow on spool which is balanced, on one side, by the reduced pressure and, on the other side by the positioning spring. The value of the reduced pressure is changed by changing the compression of spring. To increase the value of the reduced pressure, turn clockwise the handknob or screw 3 by acting on ex. CH17 mm, after having unlocked ist nut. when the required level of pressure is reached, lock the nut.

For each pressure adjustement range, the pressure gradient is approx:

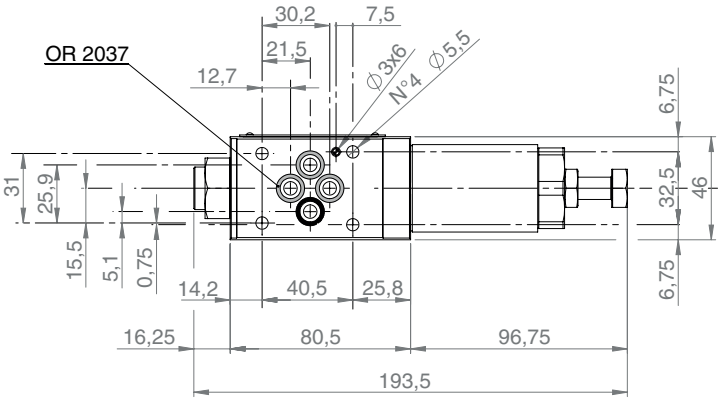
3,2: 0,7 MPa/turn (7 bar/turn)
6,3: 1,4 MPa/turn (14 bar/turn)
12,5: 2,5 MPa/turn (25 bar/turn)
25: 5 MPa/turn (50 bar/turn)

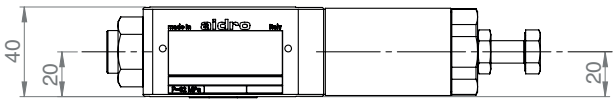
4 TYPICAL DIAGRAMS

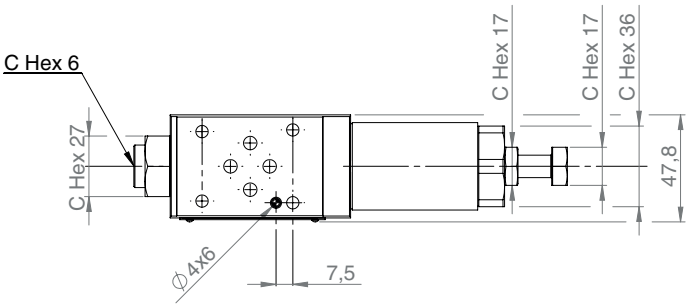
Typical curves for valves AM3-RO in standard configuration, with mineral oil at 36 cSt and at 50°C



5 INSTALLATION DIMENSIONS (mm)



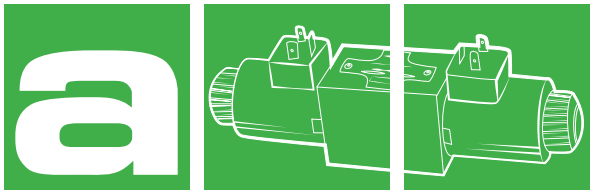




6 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM3-* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 406 class 19/17/14, or better, and used in a recom ended viscosity range from 10 cSt to 60 cSt.

All stackable valves AM-RO- * conform with ISO and CETOP specifications for mounting surface dimensions and for valves height 40 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals type OR 2037.



PRESSURE REDUCING MODULAR VALVES

AM3-RP-*

60 l/min - 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure reducing valve pilot operated. The valve is made with a steel body combined with a pressure relief valve. The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.

2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)
AM3	-	RP	-		/		-		/	10

(1) AM3: stackable valve CETOP 03 - Pressure 32 MPa (320 bar)

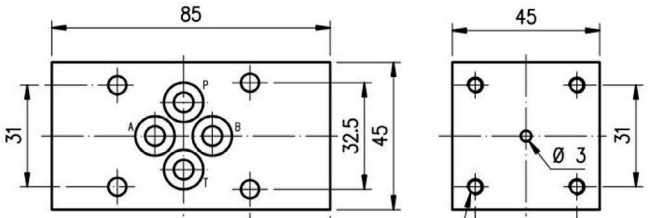
(2) RP: pressure reducing, pilot operated- 3 way valve

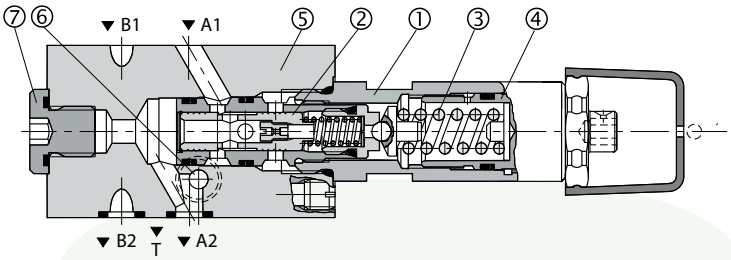
(3) Service lines where the controls operate:
P: control on P with 3ª way and drain to T line
AC: control on A with check valve

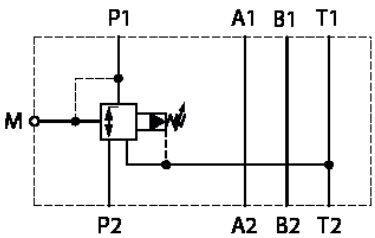
(4) Pressure adjustement ranges:
6,3: from 0,5 to 7MPa (from 5 to 70bar)
20: from 1 to 14MPa (from 30 to 140bar)

(5) Code reserved for more options and variants
V= adjustement hand knob

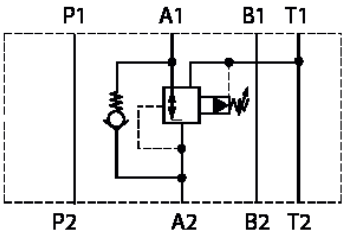
(6) Design number (progressive) of the valves



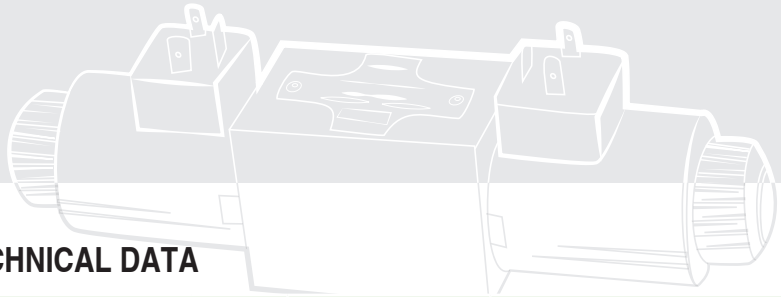




AM3-RP-P



AM3-RP-AC



3 TECHNICAL DATA

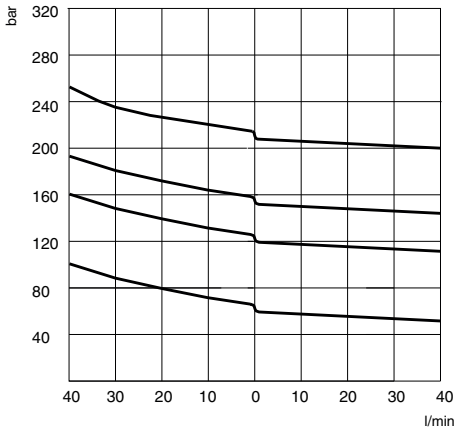
Maximum rec. flow rate on free lines	1 dm³/s (60 l/min)
on controlled lines	0,66 dm³/s (40 l/min)
Maximum nominal pressure	32 MPa (320 bar)
Maximum pressure on T	10 MPa (100 bar)
Pilot flow rate	4 cm³/s (0,24 l/min)
Pressure curves	see 4
Installation and dimensions	see 5
Masses	
AM3-RP-P	approx 1,1 kg
AM3-RP-AC	approx 1,45 kg

Adjustement of the pressure:

Reduced pressure is obtained by throtting the flow on spool 2 which is balanced, on one side, by the reduced pressure and, on the other side by the positioning spring and by the pilot pressure. Pilot pressure in estabilished by the action on spring 3 on the pilot valve 7. The value of the reduced pressure is changed by changing the compression of spring 3. To increase the value of the reduced pressure, turn clockwise the handknob or screw by acting on ex. CH10mm, after having unlocked ist nut 8 (CH 26 mm). When the required level of pressure is reached, lock the nut 8.

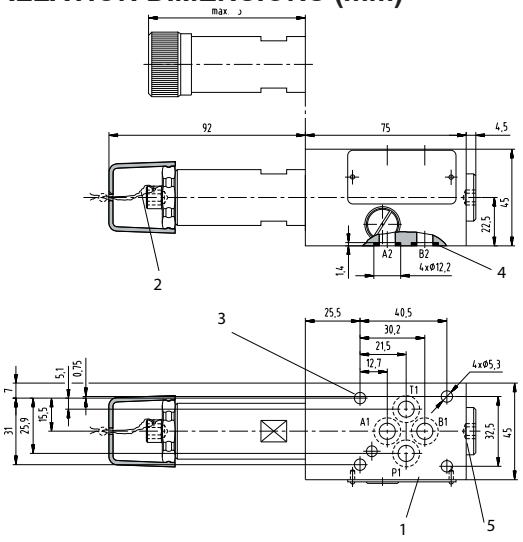
4 TYPICAL DIAGRAMS

Typical curves for valves AM3-RP in standard configuration, with mineral oil at 36 cSt and at 50°C

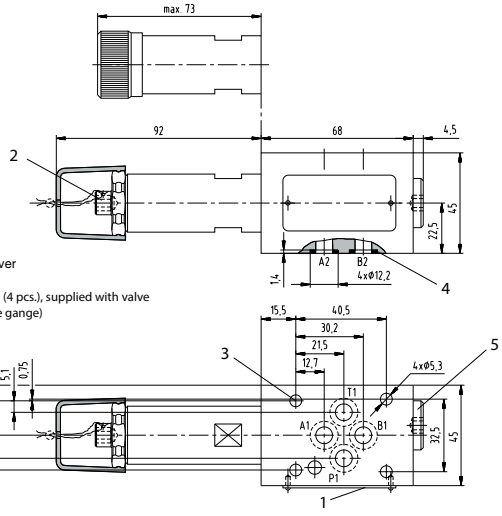


All valves AM3-RP-* are 3 way, direct operated:
If the pressure in the regulated chamber overcomes the value of the adjusted, reduced pressure, the valve discharges to T (at pressure value higher then the reduced pressure- see diagrams) thus acting as safety or relief valve. Valves reducing pressure anA or B lines are with integral check valve 9 (types AM3-RP-AC or BC) and they allow reverse flow to port A or B of the solenoid valve.

5 INSTALLATION DIMENSIONS (mm)

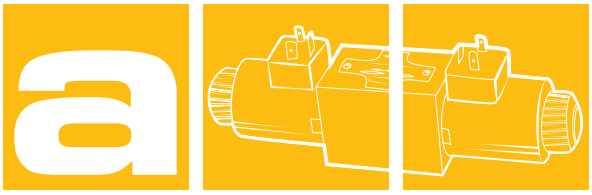


Model AM3-RP-P



1 Label
2 Adjustment screw cover
3
4 Square ring 9.25 x 1.68 (4 pcs.), supplied with valve
5 Plug G1/4 (for pressure gange)

All stackable valves AM-RP-* conform with ISO and CETOP specifications for mounting surface dimensions and for valves height 45 mm. Leakage between valve and mounting surface is prevented by the positive compression on their seats of 4 seals type OR 2037.



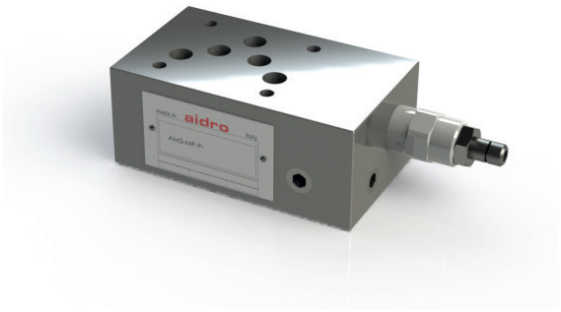
STACKABLE VALVES PILOT OPERATED

AM5-MP-*

100 l/min 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure relief valve pilot operated. The valve is made with a steel body combined with a pressure relief cartridge valve pilot operated for a stable pressure control.
The body of the valve is phosphate coated. The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.



2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)		(7)
AM5	-	MP	-		/		-		-		/	10

(1) AM5: stackable valve CETOP 05 - Pressure 32 MPa (320 bar)

(2) MP: pressure relief-pilot operated (hydraulically)

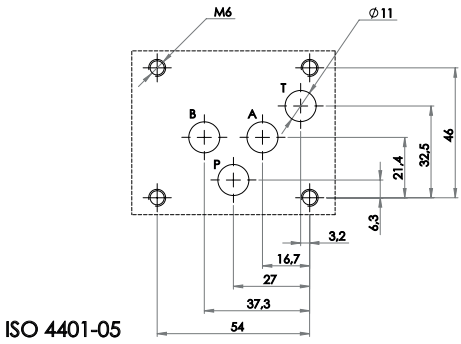
(3) Service lines where the controls operates:
P : relief on P and discharge to T
A : relief on A and discharge to T
BA: indipendent relief on B and on A and discharge to T
AB: relief on A and B with crossed discharge

(4) Pressure adjustement ranges:
6,3 from 10 to 70 bar
12,5 from 10 to 140 bar
20 from 20 to 210 bar
32 from 20 to 320 bar

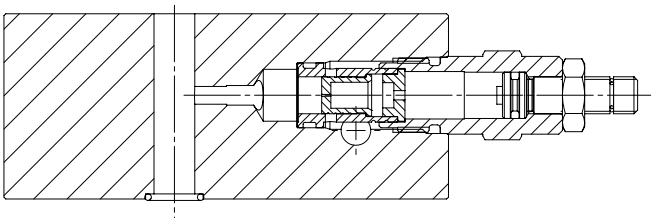
(5) pressure adjustement range for relief on A (only for models AM5-MP-BA or for relief on B for models AM5-MP-AB)

(6) code reserved for special variants (materials, seals,surface treatments, etc.)

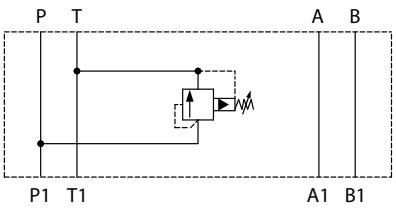
(7) Design number (progressive) of the valves



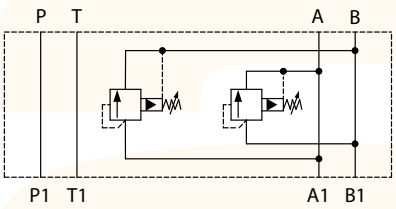
ISO 4401-05



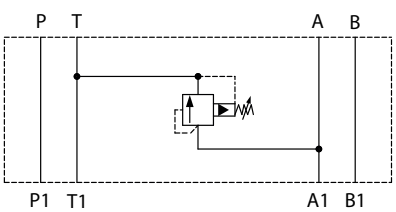
AM5-MP-P



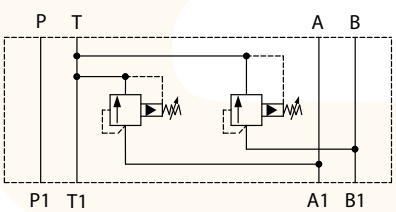
AM5-MP-AB

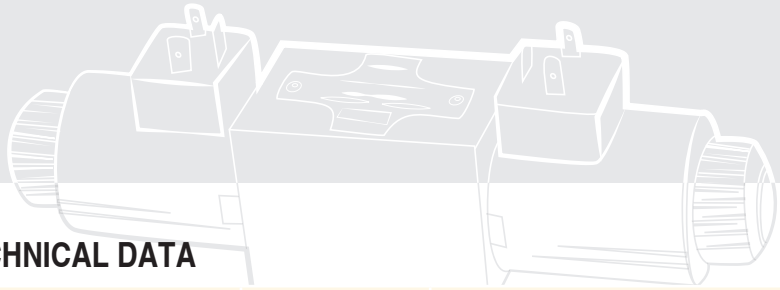


AM5-MP-A



AM5-MP-BA





3 TECHNICAL DATA

Maximum rec. flow rate	100 l/min
Maximum nominal pressure	32 MPa (320 bar)
Pressure relief curves	see 4
Installation and dimensions	see 5
mass:	
AM5-MP-P	approx 2,7 Kg
AM5-MP-AB	approx 3,6 Kg

Adjustement of the relief pressure:

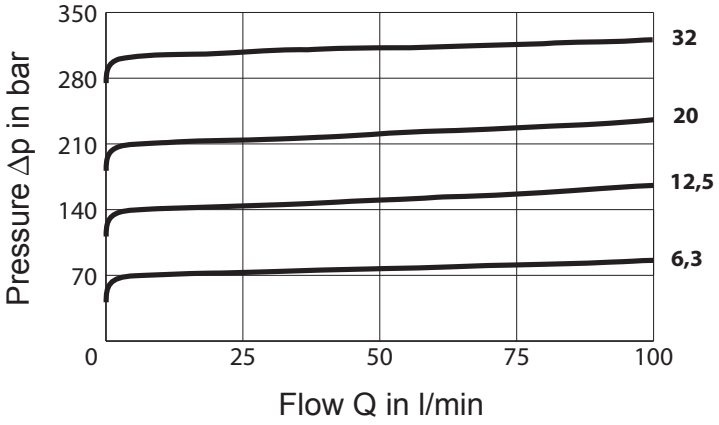
Relief pressure is reached when the axial hydraulic forces on piston equal the force of spring; the value of the relief pressure can be therefore changed, within the limits of the chosen adjustement range, by changing the compression of spring. To increase the relief pressure, turn clock wise the adjustement screw ch.5 , after having unlocked its nut ch.17.
The pressure gradient is approx:

6,3 : 20 bar/turn
12,5 : 40 bar/turn
20 : 63 bar/turn
32 : 100 bar/turn

When the required level of pressure is reached, lock the nut.

4 TYPICAL DIAGRAMS

Typical Δp-Q curves for valves AM5-CP-AB in standard configuration, with mineral oil at 36 cSt and at 50°C.

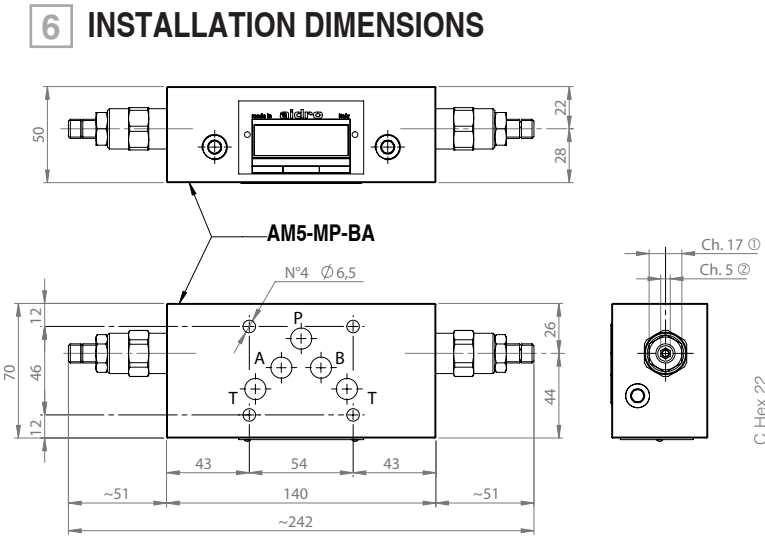


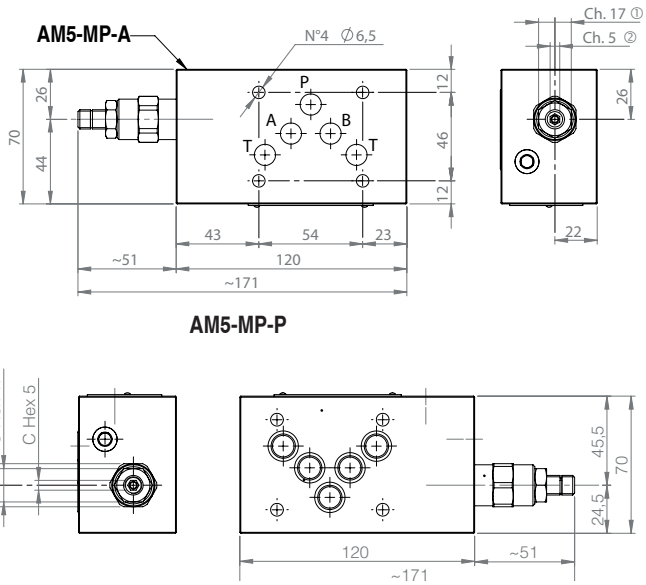
5 HYDRAULIC FLUIDS

Seals and materials used on standard valves AM5-* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt

All stackable valves AM5-MP-* conform with ISO and CETOP specifications for mounting surface dimensions (see also front page) and for valves height (50mm). Leakage between valve and mounting surface is prevented by the positive compression on their seats of 5 seals (OR 2050).

6 INSTALLATION DIMENSIONS





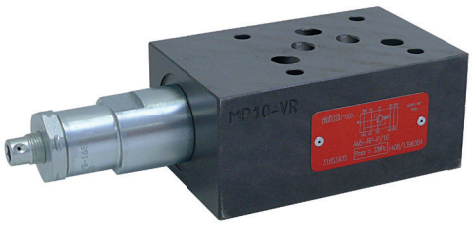
STACKABLE VALVES PRESSURE REDUCING

AM5-RP-*

100 l/min 32 MPa (320 bar)

1 DESCRIPTION

Stackable pressure reducing valve pilot operated. The valve is made with a steel body combined with a pressure relief valve.
The body of the valve is phosphate coated.
The cartridge valve is zinc coated.
The pressure can be set in different pressure ranges.



2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)
AM5	-	RP	-		-		-		/	20

(1) AM5 : stackable valve CETOP 05 - Pressure 32 MPa (320 bar)

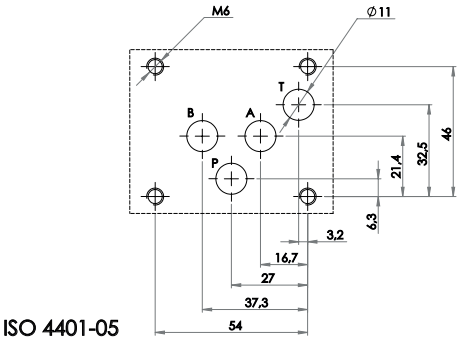
(2) RP : pressure reducing, pilot operated

(3) Lines where the control operates
P : relief on P and discharge to T
A : relief on A and discharge to T
B : relief on A and discharge to T

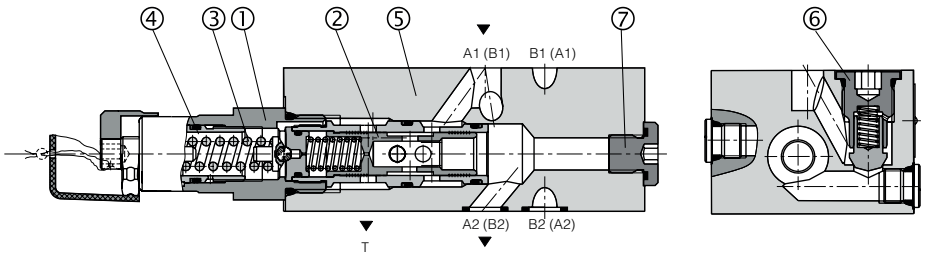
(4) controlled pressure adjustment ranges :
6,3: from 0,5 to 7 MPa (from 5 to 70 bar)
16: from 1 to 16 MPa (from 10 to 160 bar)
20: from 1,6 to 2,1 MPa (from 16 to 210 bar)

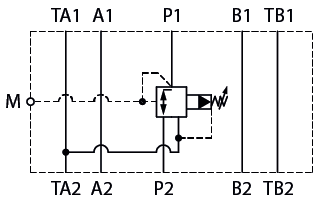
(5) Code reserved for special variants
V: adjustement with knob

(6) Design number (progressive) of the valves

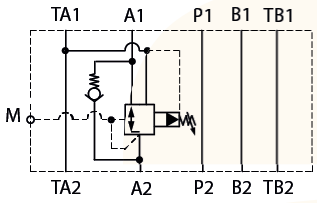


ISO 4401-05

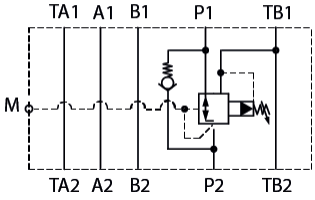




AM5-RP-P



AM5-RP-A



AM5-RP-B

All valves type AM5-RP-* reduce pressure P of the solenoid valve as follows : On version P, the valve constantly reduce pressure at the settled value On version A, the pressure is reduced in direction A ->A1 while the return is free On version B, the pressure is reduced in direction B-> B1 while the return is free All valves type AM5-RP-* have a 1/4" BSP manometer port (M) for the direct reading of the reduced pressure.

3 TECHNICAL DATA

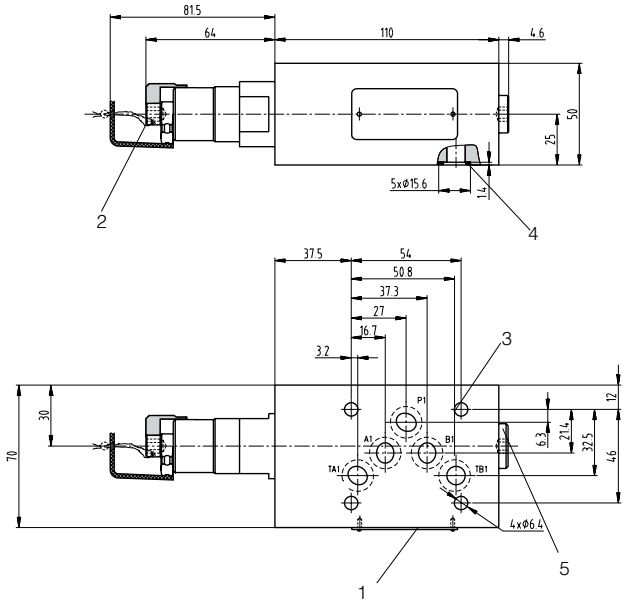
Maximum rec. flow rate on regulated line	80 l/min
Maximum input pressure	32 MPa (320 bar)
Maximum rec. flow rate on free lines	100 l/min
Pilot flow rate	0,7 l/min
mass	
3,2 kg	Model A,B
2,85 kg	Model P

Adjustement of the pressure:

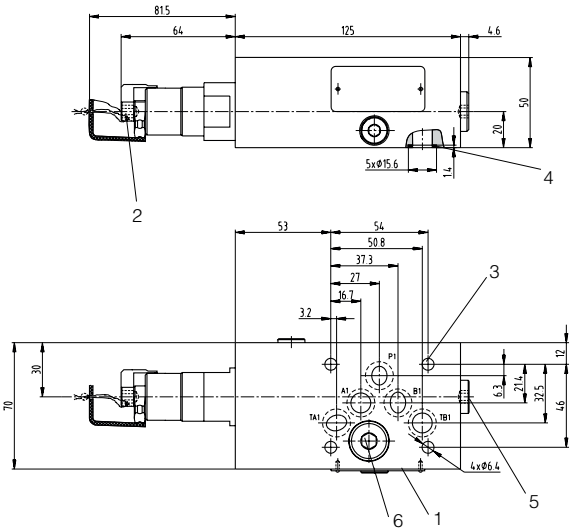
Reduced pressure is obtained by throttling the flow on spool which is balanced, on one side, by the reduced pressure and, on the other side, by the positioning spring and by the pilot pressure. Pilot pressure is established by the action of spring on the pilot valve. The value of the reduced pressure is changed by changing the compression of spring. To increase the value of the reduced pressure, turn clockwise acting on adjustment element 2 (C hex 6 mm), after having unlocked its retaining nut (C hex 27 mm).

4 INSTALLATION DIMENSIONS (mm)

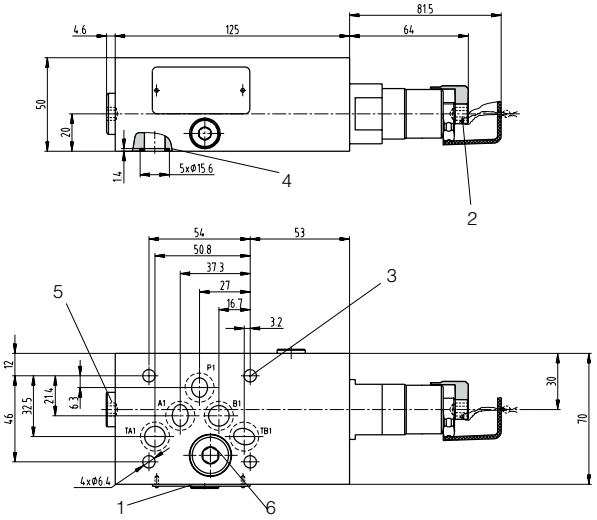
AM5-RP-A/*



AM5-RP-B/*



AM5-RP-P/*

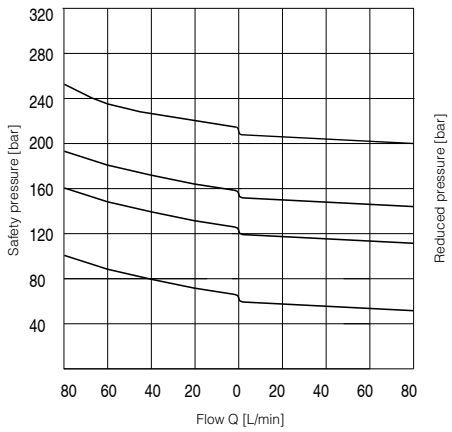


5 HYDRAULIC FLUIDS

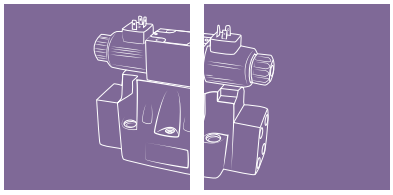
Seals and materials used on standard valves AM5-* are fully compatible with hydraulic fluids of mineral oil base, upgraded with antifoaming and antioxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

6 TYPICAL DIAGRAMS

measured at ν= 36 cSt and 50°C



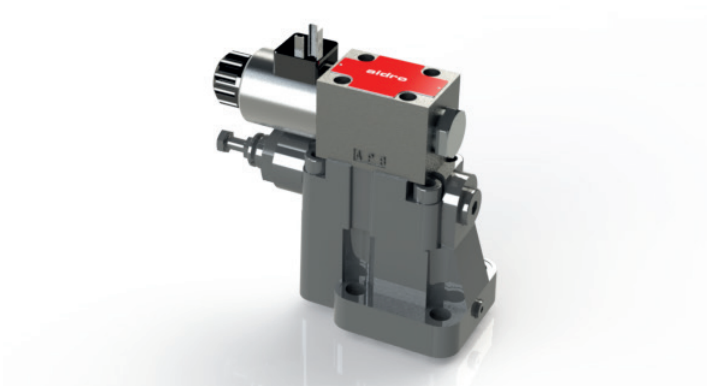
All stackable valves AM5-RP-* conform with ISO and CETOP specifications for mounting surface dimensions and for valves height (50 mm). Leakage between valve and mounting surface is prevented by the positive compression on their seats of 5 seals type Quad-Ring (12.42 x 1.69 mm)



PRESSURE RELIEF VALVE WITH UNLOADING AND PRESSURE SELECTION
GMG*-*/40
500 l/min 35 MPa (350 bar)

1 DESCRIPTION

Solenoid pressure relief valve with unloding and pressure selection. There are three different sizes for flow rates up to 500 l/min and 5 different configurations which permit a wide range of hydraulic configurations. The pilot valve is a CETOP 3 HD3-ES valve.



2 ORDERING CODE

(1)		(2)		(3)		(4)		(5)		(6)		(7)
GMG	-		-		/		/		/		/	40

(1) GMG : Pressure relief valve pilot operated

(2) Nominal dimensions:
- 10 : CETOP R06 : max flow rate 200 l/min
- 20 : CETOP R08 : max flow rate 400 l/min
- 32 : CETOP R10 : max flow rate 500 l/min

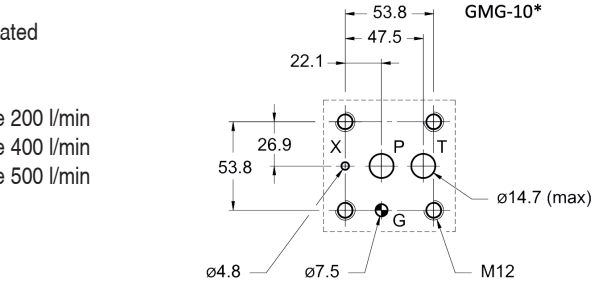
(3) Subplate mounting: H

(4) Versions A, B, C, D, G (see 5)

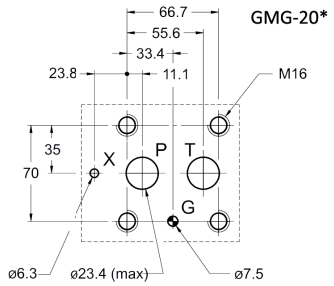
(5) Pressure:
- 20 : 5 - 210 bar
- 32 : 10 - 350 bar

(6) Electric voltage and solenoid coils (DIN 43650-A ISO 4400)
- 012C : coils for V12DC
- 024C : coils for V24DC
- 115A : coils for V110/50 – V 115/60 AC
- 230A : coils for V220/50 – V 230/60 AC

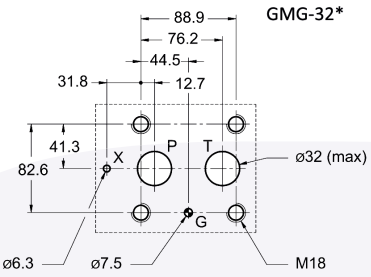
(7) Series number



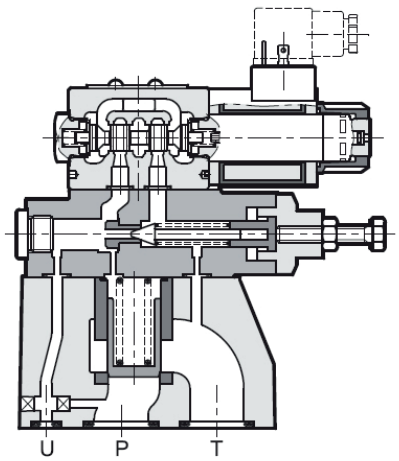
ISO 6264-06-09-*-97 (CETOP 4.4.2-2-R06-350)



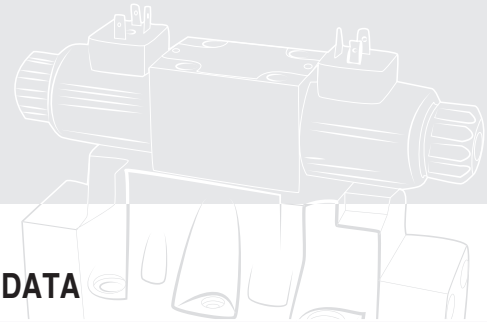
ISO 6264-08-13-*-97 (CETOP 4.4.2-2-R08-350)



ISO 6264-10-17-*-97 (CETOP 4.4.2-2-R10-350)



GMG*-/40 are pilot operated pressure relief valves, available in 5 versions and up to 3 selections of pressure values. In order to set the 2nd and 3rd value, a pressure relief valve must be placed between the main body and the solenoid valve. Valves are normally supplied with a hexagonal head adjustment screw (SIC BLOC adjustment knob on the mainpressure control is available upon request)



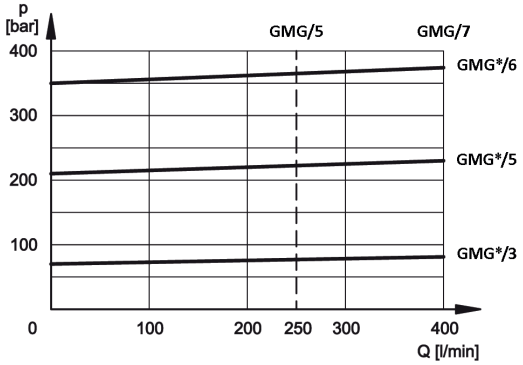
3 TECNICAL DATA

Max. flow	up to 500	Hydraulic fluids:
Max. nominal pressure	35 MPa (350 bar)	Seals and materials used on standard valves GMG*/40 are fully compatible with hydraulic fluids of mineral base, upgraded with antifoaming and anti oxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.
Ambient T	-20 + 50 °C	
Fluid T range	-20 + 80 °C	
Fluid viscosity range	10 - 400 cSt	
Recommended viscosity	10 cSt - 60 cSt	

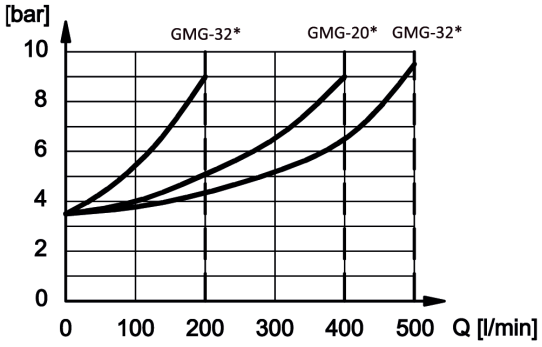
4 TYPICAL DIAGRAMS

Typical P-Q curves for valves GMG*/40 are obtained with mineral oil at viscosity 36 cSt at T = 50 °C.

ADJUSTMENT

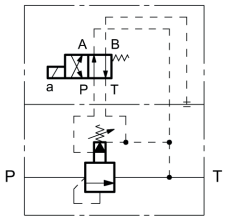


MINIMUM CONTROLLED PRESSURE



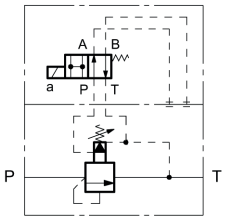
5 VERSIONS

A



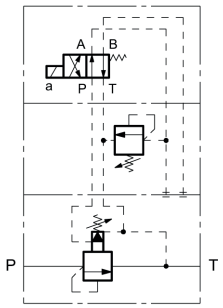
1 pressure setting and unloading with de-energized solenoid

B



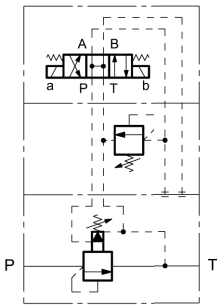
1 pressure setting and unloading with energized solenoid

C



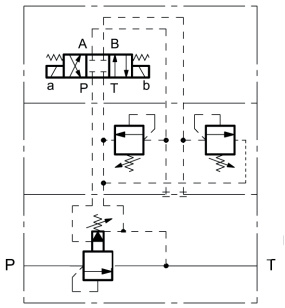
2 pressure settings The highest setting is reached with energized solenoid

D



2 pressure settings and unloading with de-energized solenoids

G



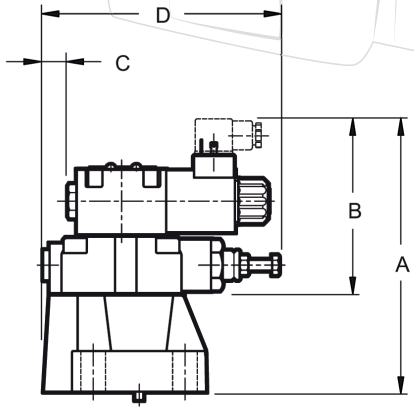
3 pressure settings The highest setting is reached with de-energized solenoids

6 HYDRAULIC FLUIDS

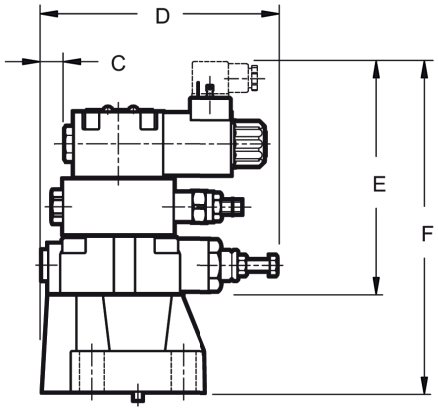
Seals and materials used on standard valves GMG*/40 are fully compatible with hydraulic fluids of mineral base, upgraded with antifoaming and anti oxidizing agents. The hydraulic fluid must be kept clean and filtered to ISO 4406 class 19/17/14, or better, and used in a recommended viscosity range from 10 cSt to 60 cSt.

7 INSTALLATION DIMENSIONS (mm)

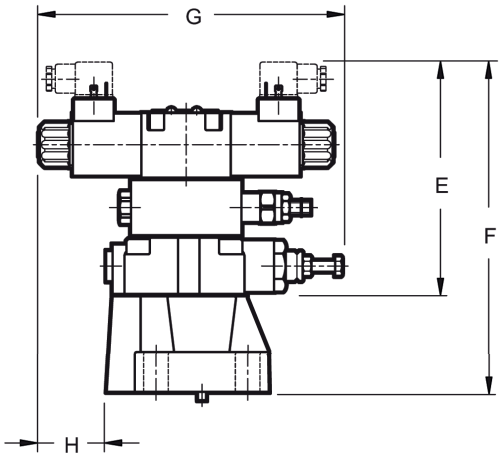
dimentions are in mm



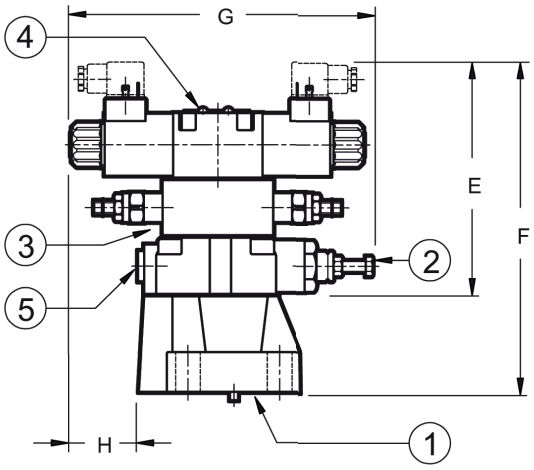
GMG*/A
GMG*/B



GMG*/C



GMG*/D



GMG*/G

	A	B	C	D	E	F	G	H
GMG-10*	186	126	22	179	164	226	223	44
GMG-20*	192	126	14	170	164	236	222	52
GMG-32*	206	126	25	180	164	246	221	41

8 FASTENING BOLTS AND SEALING RINGS

	GMG-10*	GMG-20*	GMG-32*
Fastening (4bolts)	M 12x40	M 16x50	M 18x60
Torque	69 Nm	170 Nm	235 Nm
Sealing rings	2 OR type 123 1 OR type 109	2 OR type 3118 1 OR type 109	2 OR type 4137 1 OR type 109