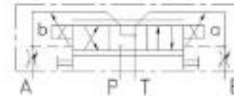
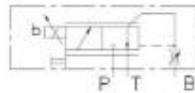


MDM PROPORTIONAL PRESSURE-REDUCING VALVE

Electrical operation

Size 5

Series MDM-5



FEATURES

- * Pressure reducing over the whole range independent of the supply pressure.
- * Several sub-plates available.
- * Conversion to ISO/CETOP mounting surface.
- * Several control pressure ranges available.
- * Different pressure ranges for the two pilot lines possible.
- * Proportional solenoids with longer life for the armature in the oil.
- * Several types of proportional solenoids, such as explosion proof "II 2 G EEx m II T4" and IP67.
- * Adjustable valve response time.

TECHNICAL DATA

| | |
|--------------------------------------|---|
| - maximum operating pressure conn. P | 350 bar (5000 psi) |
| - maximum return pressure conn. T | 15 bar (215 psi) |
| - pressure range conn. A and B | 0 - 12 bar (0- 172 psi) or 0 - 30 bar (0- 429 psi) |
| | 0 - 70 bar (0-1000 psi) or 0 - 120 bar (0-1716 psi) |
| | 0 - 190 bar (0-2717 psi) or 0 - 350 bar (0-5000 psi) |
| - flow range | 6 l/min (1.6 USgpm) with 32 cSt and $\Delta p = 30$ bar (429 psi) |
| - viscosity range | 2,8 - 380 cSt |
| - contamination level max. | NAS 1638 class 9 or ISO 18/15 |
| - ambient temperature | -35°C to +80°C (-31°F to 176°F) |
| - mounting position | any |
| - fluid | mineral oil; other media on request |
| - mounting surface roughness | N6 (0,8 μ m) according to ISO 468 and ISO 1302. |
| - mounting surface flatness | 0,01 mm over a distance of 100 mm according to ISO 1101. |
| - nominal voltage | 12 V DC, 24 V DC |
| - nominal current | see diagrams Fig. 1 and 2 |
| - valve response time | adjustable: $\pm 0,08$ - 10 seconds |
| - hysteresis | < 3% (with dither) |
| - resolution | < 0,5% (with dither) |
| - continuous operation | 100% |
| - seals | std. BUNA-N, optional Viton |
| - recommended dither frequency | 100 Hz |

DIAGRAMS

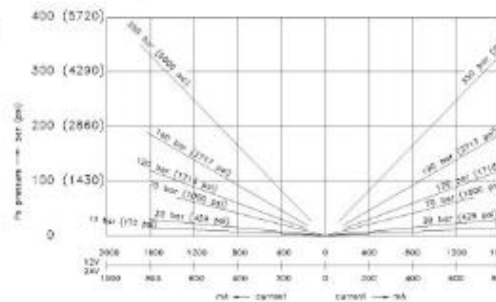


Fig. 1 DUAL TYPE

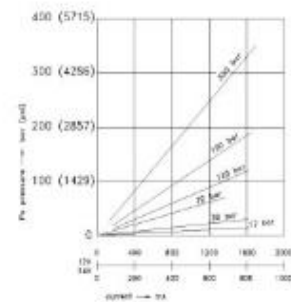


Fig. 2 SINGLE TYPE

ORDERING CODE

MDM 5

MDM - 5 - 70 - 190 - B / Viton

SERIES

MDM-5

CONTROL PRESSURE RANGE, DUAL TYPE:

Port A in bar : 12, 30, 70, 120, 190 or 350 bar

CONTROL PRESSURE RANGE,

Port B in bar: 12, 30, 70, 120, 190 or 350 bar

SOLENOID TYPE

A = 12V DC IP65 with emergency control by pin

B = 24V DC IP65 with emergency control by pin

E = 12V DC IP65 with emergency control by button

F = 24V DC IP65 with emergency control by button

H = 24V DC IP57 II 2 G EEx m II T4 (Explosion Proof)

J = 24V DC IP67, without female connector

OPTIONS

Viton = With Viton seals

SUB-PLATE

A-5-DM - 3 / Viton

SERIES

A-5-DM = Sub-plate

NUMBER

**1-8 = choose number of MDM-5 valve which
has to be mounted on one subplate (up to 8)**

OPTIONS

SAE = S.A.E. straight thread 'O'RING BOSS

Viton = With Viton seals

CONVERSION PLATE

A-5-PS / Viton

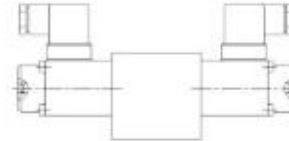
SERIES

A-5-PS = Conversion to ISO/CETOP 3 model

OPTIONS

Viton = With Viton seals

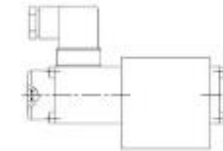
DUAL TYPE



Example: MDM-5-70-70/B

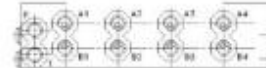
* only in code for dual type

SINGLE TYPE

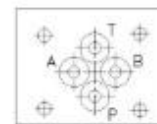


Example: MDM-5-350/B

SUBPLATE



CONVERSION PLATE



RECOMMENDED SPARE PARTS

R - ... - 016

R SPARE KIT

01 SEALS (BUNA-N)

06 ASSEMBLY KIT:SEALS (BUNA-N) AND SCREWS

11 SEALS (VITON)

16 ASSEMBLY KIT:SEALS (VITON) AND SCREWS

SOLENOID, incl. bolts and seal

8WX-2170-002 = 12V DC IP65 with emergency control by pin

8WX-2170-001 = 24V DC IP65 with emergency control by pin

8WX-2170-012 = 12V DC IP65 with emergency control by button

8WX-2170-011 = 24V DC IP65 with emergency control by button

8WX-2270-051 = 24V DC IP57 II 2 G EEx m II T4 (Explosion Proof)

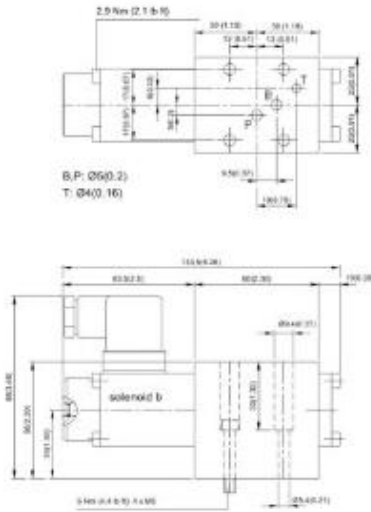
8WX-2270-041 = 24V DC IP67, without female connector

DIMENSIONS / TIGHTENING TORQUES

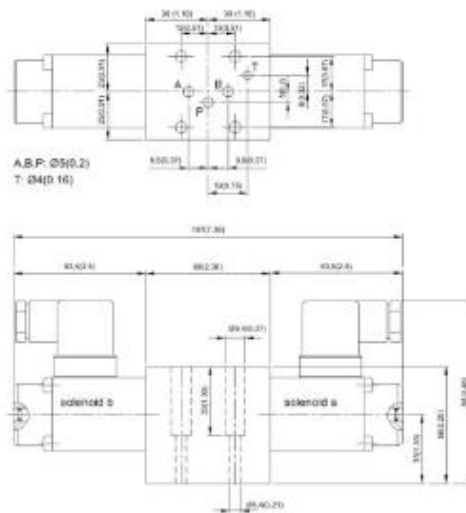
dimensions in millimeters (inches)

MDM-5

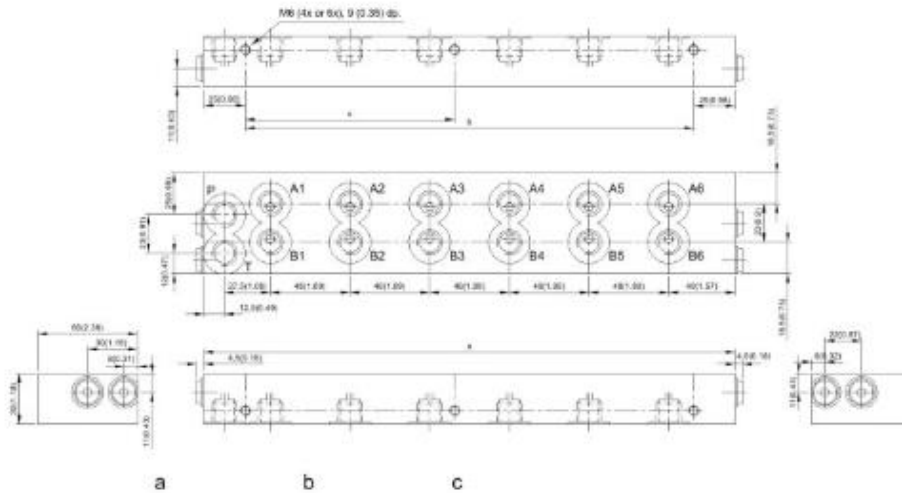
Single Type



Dual Type



SUBPLATE: A-5-DM



| | | | |
|-----------|------------|-------------|------------|
| A-5-DM-1: | 80(3.14) | 30 (1,18) | - |
| A-5-DM-2: | 128(5.04) | 78 (3,07) | - |
| A-5-DM-3: | 176(6.96) | 126 (4.96) | - |
| A-5-DM-4: | 224(8.82) | 174 (6.85) | - |
| A-5-DM-5: | 272(10.71) | 222 (8.74) | 126 (4.96) |
| A-5-DM-6: | 320(12.6) | 270 (10.63) | 126 (4.96) |

Connecting threads: P,T,A,B
in BSP: 1/4" (standard)
in SAE: SIZE 6 (optional)

CONVERSION PLATE: A-5-PS



MAINTENANCE DATA

Mounting procedure

- AMCA-valves shall not be mounted by overtightening of mounting bolts, causing mechanical distortion and thus spool lock.
- Mounting on flat surface, flatness 0,01/100.
- Don't use conical thread for port-fittings.
- For sealing purposes, use O-rings.
- Check the voltage and current of the solenoids, before operation.
- Avoid ingestion of contaminants during mounting.

Start-up procedure

- Check the valve-function and the tightness of fittings etc.
- Bleed by repeated energizing of solenoid(s).
- Run the system to raise the fluid temperature. Rebleed to remove the dissolved air.

Adjustment procedure

- Valve response time:
The valve response time is adjustable from $\pm 0,08 - 10$ seconds.
- Adjustment screws (damping throttles) are on the MDM-5 valve below the solenoids, fig 12 (1).
- Turn the adjustment screws clockwise to enlarge valve response time.
 - Turn the adjustment screws anti-clockwise to shorten valve response time.

Fluid maintenance

- Due to the construction, these AMCA-valves, are not highly susceptible to particulate (silt type) lock, nor to contaminant wear. Therefore the contaminant sensitivity is very low.
- Use mineral oil (recommended ISO/VG-32). Other fluids on request.
 - Keep the contamination level better or equal NAS 1638 class 9 or ISO 18/15.

TROUBLE SHOOTING

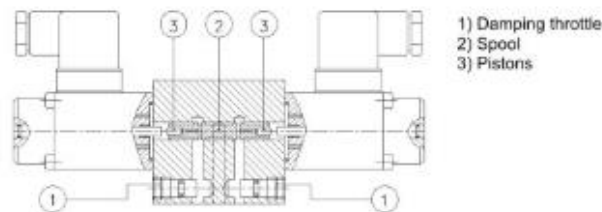


FIG. 12

A. Valve operates erratically

- 1) Check the current on the solenoid plug.
- 2) Air in system: Bleed by repeated energizing of solenoid(s). Run the system to raise the fluid temperature. Rebleed to remove the dissolved air.
- 3) Check the resistance of the solenoid coil:
 - 24 VDC at 20 °C (68 °F) = 25 Ohm, at 60 °C (140 °F) = 30 Ohm
 - 12 VDC at 20 °C (68 °F) = 6,5 Ohm, at 60 °C (140 °F) = 7,5 Ohm

B. Max. reducing pressure too low

- 1) Maximum current is faulty: check max. current.
- 2) Supply pressure is too low: Check system pressure.

- 3) Spool, pistons or solenoids are dirty: Remove solenoids or cover and clean solenoids' bore and spool (take care of the small pistons (3) in the spool (2) if placed, see fig.12).

C. System is too slow

- 1) Damping throttles are closed too much: open up the throttles.
- 2) Electrical fault (ramp generator): check and reset.
- 3) Damping throttle or spool are dirty: Remove the parts, 1, 2 and 3, clean everything and replace.

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