



# MDF3

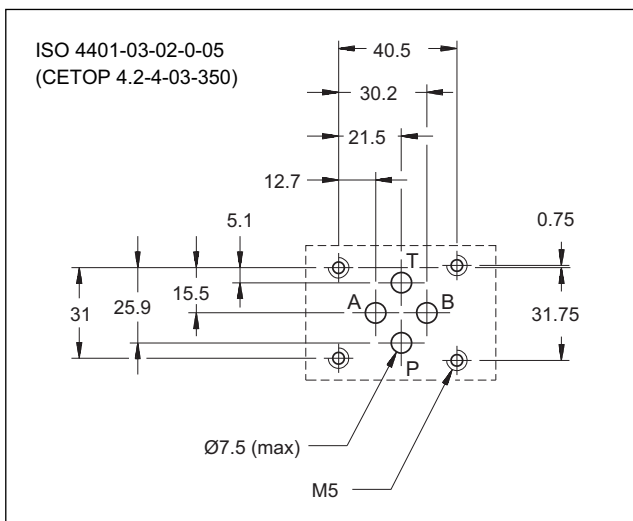
## SHUT-OFF SOLENOID VALVE

### SERIES 10

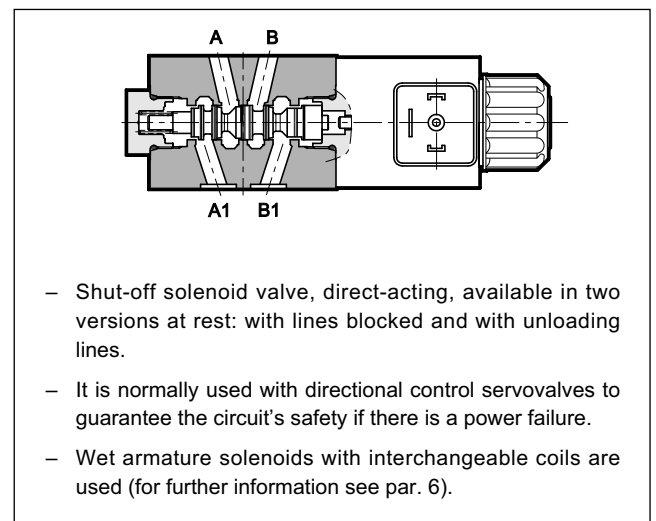
**MODULAR VERSION**  
**ISO 4401-03 (CETOP 03)**

**p** max **350** bar  
**Q** max **50** l/min

#### MOUNTING INTERFACE



#### OPERATING PRINCIPLE



#### SPOOL TYPE (see hydraulic symbols table)

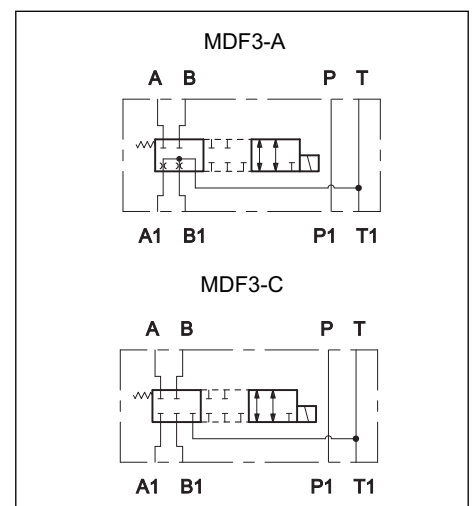
Type "A": it is used to unload the lines, with the valve at rest.

Type "C": it is used to block the lines, with the valve at rest.

#### PERFORMANCE RATINGS (working with mineral oil of viscosity of 36 cSt at 50°C)

Maximum operating pressure	bar	350
Maximum flow rate	l/min	50
Ambient temperature range	°C	-20 / +50
Fluid temperature range	°C	-20 / +80
Fluid viscosity range	cSt	10 ÷ 400
Fluid contamination degree	According to ISO 4406:1999 class 20/18/15	
Recommended viscosity	cSt	25
Mass:	kg	1,5

#### HYDRAULIC SYMBOLS



## 1 - IDENTIFICATION CODE

	<b>M</b>	<b>D</b>	<b>F</b>	<b>3</b>	-		/	<b>10</b>		-		<b>K1</b>
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Modular solenoid valve

FAIL SAFE feature

ISO 4401-03 (CETOP 03) size

Spool type:  
**A** = open (with lines A1 and B1 in T at rest)  
**C** = closed (with lines A1 and B1 closed, at rest)

Coil electrical connection:  
 plug for connector type DIN 43650  
**(standard)**

Power supply:  
**D12** = 12 V  
**D24** = 24 V  
**D110** = 110 V  
**D220** = 220 V  
**D00** = valve without coils  
 (see **NOTE**)

Seals:  
**N** = NBR seals for mineral oil **(standard)**  
**V** = FPM seals for special fluids

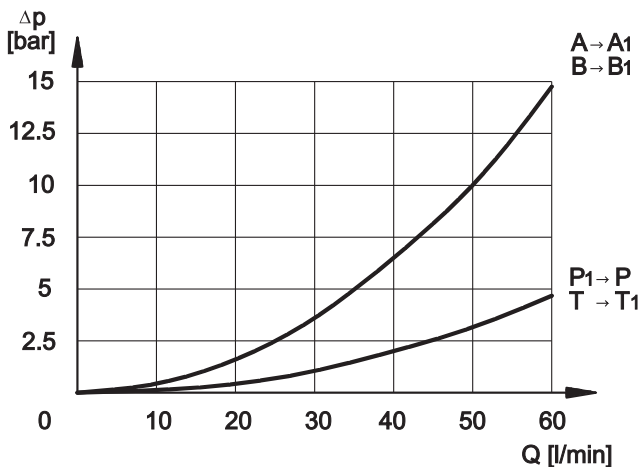
Series: (the overall and mounting dimensions remain unchanged from 10 to 19)

**NOTE:** the locking ring of the coil and the relevant O-Rings are supplied together with valves.

## 2 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals (code N). For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other fluid types such as HFA, HFB, HFC, please consult our technical department. Using fluids at temperatures higher than 80 °C causes a faster degradation of the fluid and of the seals characteristics. The fluid must be preserved in its physical and chemical characteristics.

## 3 - PRESSURE DROPS $\Delta p$ -Q (obtained with viscosity 36 cSt at 50 °C)



## 4 - SWITCHING TIMES

The values indicated are obtained according to ISO 6403 standard, with mineral oil viscosity 36 cSt at 50°C.

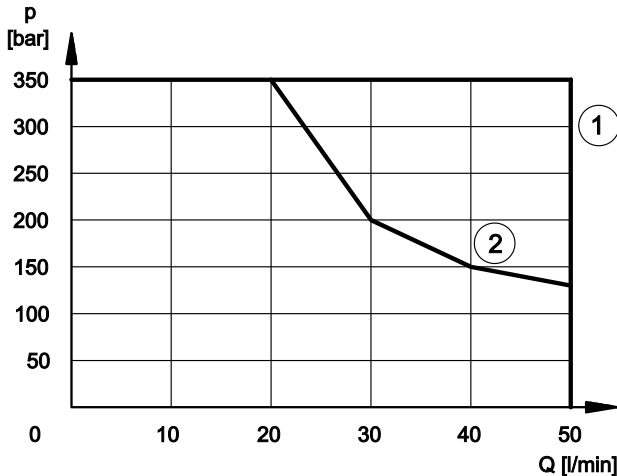
TIMES	
ENERGIZING	DE-ENERGIZING
60 ÷ 90 ms	20 ÷ 50 ms

### 5 - OPERATING LIMITS

The curves define the flow rate operating fields according to the valve pressure of the different versions.

The values have been obtained according to ISO 6403 norm with solenoids at rated temperature and supplied with voltage equal to 90% of the nominal voltage.

The values have been obtained with mineral oil, viscosity 36 cSt, temperature 50 °C and filtration according to ISO 4406:1999 class 18/16/15.



- 1) Curve related to the de-energizing of the solenoid valve  
Curve related to the energizing of the solenoid valve, without any flow in A and B lines
- 2) Curve related to the energizing of the solenoid valve, with flow in A and B lines

### 6 - ELECTRICAL FEATURES

#### 6.1 Solenoids

These are essentially made up of two parts: tube and coil. The tube is threaded into the valve body and includes the armature that moves immersed in oil, without wear. The inner part, in contact with the oil in the return line, ensures heat dissipation.

The coil is fastened to the tube by a threaded ring, and can be rotated, to suit the available space.

**NOTE 1:** In order to further reduce the emissions, use of type H connectors is recommended. These prevent voltage peaks on opening of the coil supply electrical circuit (see cat. 49 000).

<b>VOLTAGE SUPPLY FLUCTUATION</b>	± 10% Vnom
<b>MAX SWITCH ON FREQUENCY</b>	18.000 ins/hr
<b>DUTY CYCLE</b>	100%
<b>ELECTROMAGNETIC COMPATIBILITY (EMC) (NOTE 1)</b>	In compliance with 2004/108/CE
<b>LOW VOLTAGE</b>	In compliance with 2006/95/CE
<b>CLASS OF PROTECTION:</b> Atmospheric agents (CEI EN 60529) Coil insulation (VDE 0580) Impregnation: CC valve CA valve	IP 65 ( <b>NOTE 2</b> ) class H class F class H

**NOTE 2:** The IP65 protection degree is guaranteed only with the connector correctly connected and installed.

#### 6.2 Current and absorbed power

The table shows current and power consumption values relevant to the different coil types for DC.

The rectified current supply takes place by fitting the valve (with the exception of D12 coil) with an alternating current source (50 or 60 Hz), rectified by means of a bridge built-in to the "D" type connectors (see cat. 49 000), by considering a reduction of the operating limits of about 5-10%.

#### Coils for direct current (values ± 5%)

Suffix	Nominal voltage [V]	Resistance at 20°C [Ω]	Current consumpt. [A]	Power consumpt. [W]	Coil code
<b>D12</b>	12	4,4	2,72	32,6	1902860
<b>D24</b>	24	18,6	1,29	31	1902861
<b>D48</b>	48	78,6	0,61	29,3	1902863
<b>D110</b>	110	423	0,26	28,6	1902864
<b>D220</b>	220	1692	0,13	28,6	1902865

## 7 - ELECTRIC CONNECTORS

The solenoid operated valves are delivered without the connectors. They must be ordered separately.  
For the identification of the connector type to be ordered, please see catalogue 49 000.

## 8 - OVERALL AND MOUNTING DIMENSIONS

