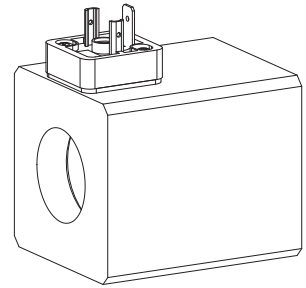


Solenoid coil M..60/31 x 72
according to VDE 0580
Protection class IP65/IP67

DESCRIPTION

The slip-on solenoid coil M..60/31 x 72 is available with different types of electric connections. The AC voltage type incorporates a rectifier. The available AC voltages are listed in the type code section. The construction corresponds to standard VDE 0580. The steel housing is zinc-/nickel-coated as standard.

FUNCTION

In combination with the corresponding armature tube the function of an on-off solenoid or proportional solenoid will be obtained.

TYPE CODE

Metal housing square		M <input type="checkbox"/> <input type="checkbox"/> 60/31 x 72 - <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> # <input type="checkbox"/>	
Connection execution		Flying leads execution <input type="checkbox"/> L (only DC)	
Connector socket EN175301-803/ISO 4400 <input type="checkbox"/> D		Cable execution <input type="checkbox"/> K	
Connector socket AMP Junior-Timer <input type="checkbox"/> J (only DC)		Bayonet connector VG 95234 <input type="checkbox"/> B	
Connector Deutsch DT04-2P <input type="checkbox"/> G (only DC)		Screw clamp <input type="checkbox"/> X (only DC)	
Coil execution	Standard <input type="checkbox"/> S	Proportional <input type="checkbox"/> A	
Coil size			
Internal coil diameter 31 mm			
Coil length 72 mm			
Voltage	Direct current <input type="checkbox"/> G	Alternating current <input type="checkbox"/> R	
Nominal voltage	12 VDC <input type="checkbox"/> 12	115 VAC <input type="checkbox"/> 115	
	24 VDC <input type="checkbox"/> 24	230 VAC <input type="checkbox"/> 230	
Standard	<input type="checkbox"/>		
Special cable execution	<input type="checkbox"/> M28		
With pressure compensation	<input type="checkbox"/> M35 (only DC)		
Special screw clamp	<input type="checkbox"/> M209 (only DC)		
Screw clamp and electric wiring	<input type="checkbox"/> M222 (only DC)		
Design-Index (Subject to change)			

SPECIFICATIONS

		12 VDC	24 VDC	115 VAC	230 VAC
Coil winding	min. H (180 °C)				
insulation class					
Relative duty factor	depending on the connector version IP65 or IP67 according to EN 60529 (if correctly mounted)	Nominal power (W) (Switching function) 37,4	37,4	34,1	37,1
Relative duty factor	100 % ED / 5 min	Limiting power (W) (Proportional function) 27,5	27,5	–	–
Ambient temperature	See temperature curve on page 4	Limiting current (50 °C) (A) (Proportional function) 2,29	1,14	–	–
Nominal voltage range	10–250 VDC	Nominal resistance (Ω) 3,9	15,4	309	1146
Corrosion protection	50–250 VAC	Number of windings (–) 725	1451	6463	12'438
	Salt spray test in accordance with EN ISO 9227 > = 1000 hours	Weight of solenoid coil (kg) 1,30	1,30	1,30	1,30

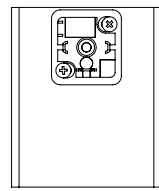
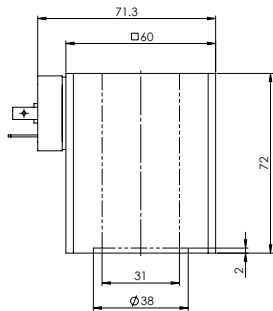
SAFE OPERATION


Caution: To avoid overheating the coil may only be energised when mounted on an armature tube and valve.

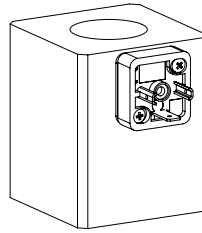

NOTE!

The effective heat emissions depends on the installation conditions (heat emission surface, air circulation, etc.), these influence the described area of application.

TYPE LISTE/DIMENSIONS/GENERAL SPECIFICATIONS

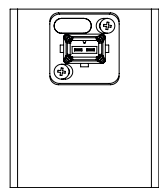
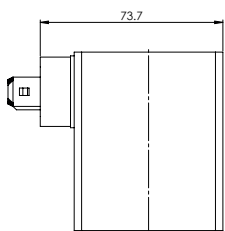


Valve side

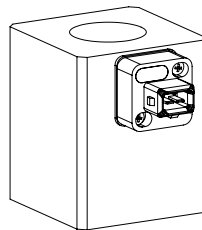


Execution: M **D** . 60/31 x 72-...

- 3 pole 2 P+E
 - DC- and AC-execution available
 - Connector socket plastic
 - Protection class IP65
- With corresponding mating connector
(not included in delivery)
and professional assembly

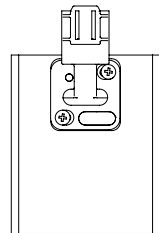
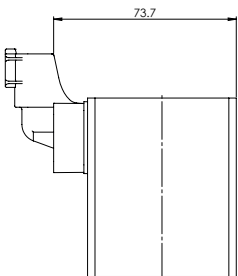


Valve side

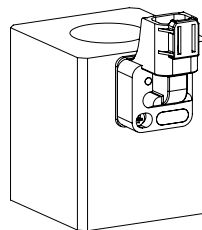


Execution: M **J** . 60/31 x 72-...

- 2 pole 2P
 - DC-execution available
 - only for $U_N \leq 75$ VDC
 - Connector socket plastic
 - Protection class IP65
- With corresponding mating connector
(not included in delivery)
and professional assembly

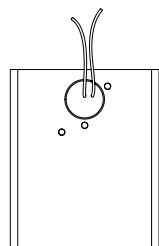
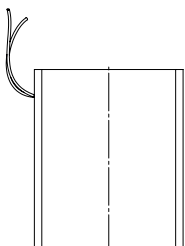


Valve side

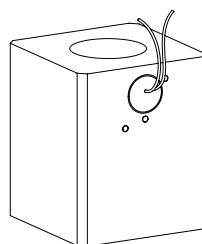


Execution: M **G** . 60/31 x 72

- 2 pole 2P
 - DC-execution available
 - only for $U_N \leq 75$ VDC
 - Protection class IP 67 and 69 K
- With corresponding mating connector
(not included in delivery)
and professional assembly

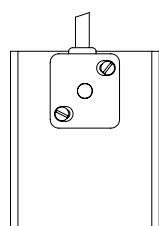
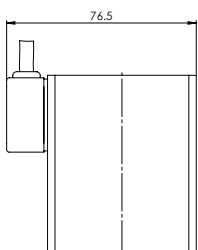


Valve side

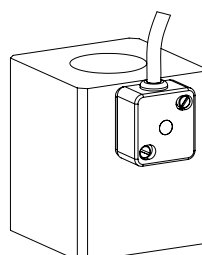


Execution: M **L** . 60/31 x 72-...

- 2 pole 2P (2x 0,25 mm²)
 - Cable length 500 mm
 - DC-execution available
 - only for $U_N \leq 75$ VDC
 - Protection class IP65
- With professional assembly

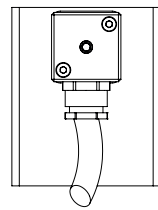
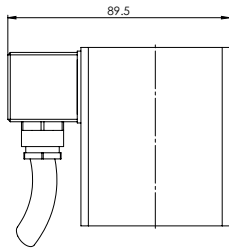


Valve side



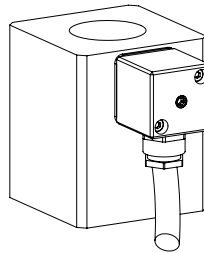
Execution: M **K** . 60/31 x 72-...

- 3 pole 2P+E 3x 0,75 mm² Thermoplast
 - Cable length 1500 mm
 - Cable diameter 6 mm
 - DC- and AC-execution available
 - Cable housing plastic
 - Protection class IP67
- With professional assembly



Valve side

DC-execution

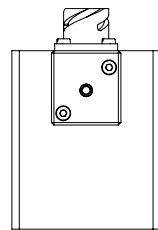
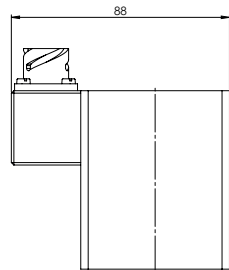


AC-execution

Execution: M **K** . 60/31 x72-... **M28**

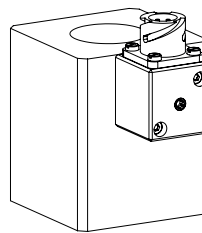
- 3 pole 2P+E 2x 1 mm² [E] (acc. to IEC 332)
- Cable length 1500 mm
- DC- and AC-execution available
- Connector housing steel
- Protection class IP67
- With professional assembly

- Plastic rectifier housing, h+10,5 mm



Valve side

DC-execution

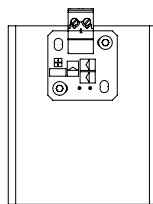
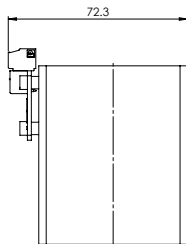
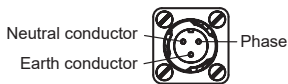


AC-execution

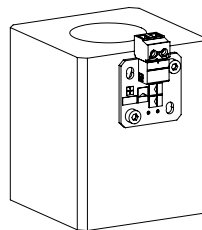
Execution: M **B** . 60/31 x72-...

- 3 pole 2P+E
- DC- and AC-execution available
- Connector housing steel
- Protection class IP67
- With corresponding mating connector (not included in delivery) and professional assembly

- Plastic rectifier housing, h+10,5 mm



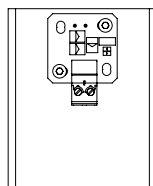
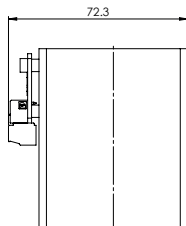
Valve side



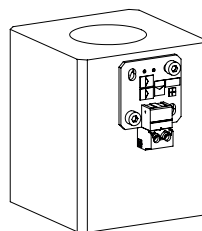
M209a

Execution: M **X** . 60/31 x72-... **M209**

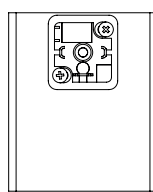
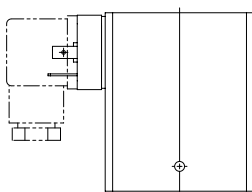
- 2 pole
- DC-version available up to 28 VDC
- Screw clamp plastic
- Printed circuit board protected with conformal coating



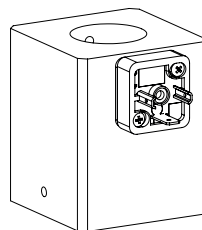
Valve side



M209b



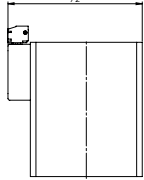
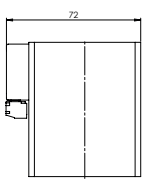
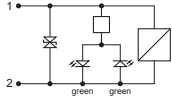
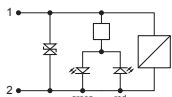
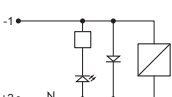
Valve side



Execution: M . S60/31 x72-... **M35**
M . S60/31 x72-... **M../35**

- With pressure equalising bore for underwater applications in oil bath
- Oil tank separated from water by a membrane
- With connection type «D», «L», «X»
- DC-execution available

Attention:
In case of the connection execution «D» only plugs with the additional designation «Z23» must be utilised (not included in the scope of supply of the solenoid)

Plug alignment		Electric wiring
		
M222a	M222b	
M222c	M222d	
M222e	M222f	

Execution: M . 60/31x72-...**M222**

- 2 pole
- DC-version available up to 28 VDC
- Screw clamp plastic
- Plug housing plastic, transparent, removable
- Printed circuit board protected with conformal coating
- Protection type IP40 with plastic hood installed

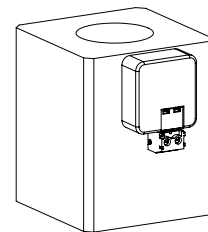
$I_{max} = 1,0 \text{ A at } 130 \text{ }^\circ\text{C}$
 $I_{max} = 1,5 \text{ A at } 120 \text{ }^\circ\text{C}$
 $I_{max} = 2,0 \text{ A at } 110 \text{ }^\circ\text{C}$

PARTS LIST

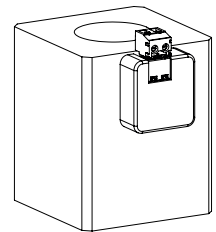
Position	Article	Description
10	219.2802	Mating connector (M209 and M222)
20	088.1116	Plastic hood (only M222)

NOTE!
 Technical explanation see data sheet 1.1-400/410/430

M222b/d/f



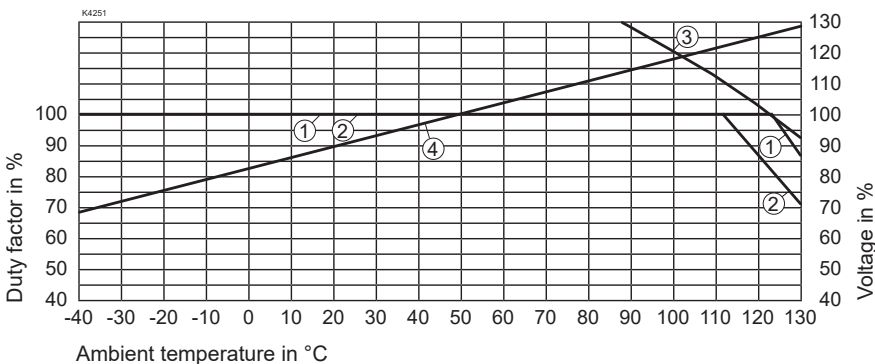
M222a/c/e



Valve side

DUTY FACTOR / TEMPERATURE

TEMPERATURE / VOLTAGE



- ① Duty factor at nominal voltage
- ② Duty factor at 110% nominal voltage
- ③ Max. voltage in % for 100% duty factor
- ④ Min. voltage in % for proportional limiting current at 100% duty factor