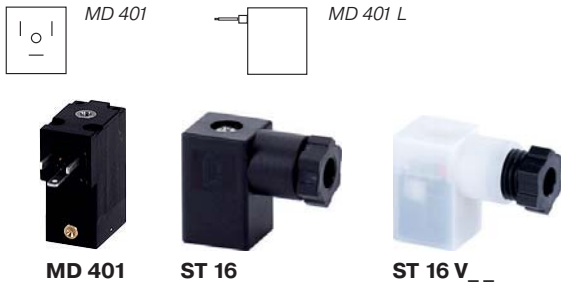




# 2.13

## Coils and Connectors

# MD 401/ST 16



16 mm wide solenoid system for solenoid valves type MD and MK, including valve-head with manual override to push.

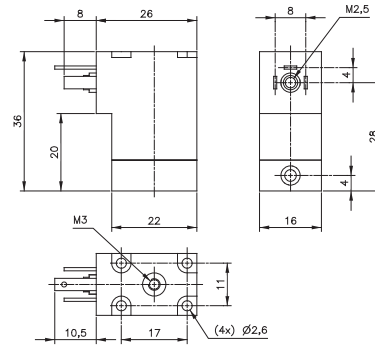
Coil made from 25 % glass filled thermoplastic PA material, epoxy filled. Valve head glass filled thermoplastic PA including a manual override to push.

### Type MD 401

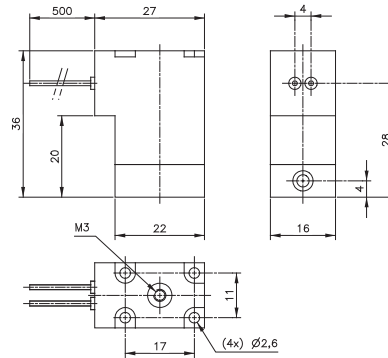
Interface form C (DIN EN 175301-803), with 8 mm contact distance. Equipped with appropriate connector, solenoid system offers IP 65.

### Type MD 401 L

Version with flying leads. Cable length 500 mm, others available on request. The coils are not grounded, take national safety regulations into consideration!



**MD 401**



**MD 401 L**

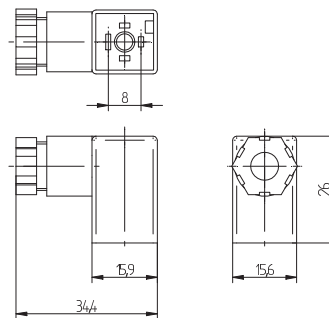
### Suitable connectors:

#### Type ST 16

Connector with black housing. Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

#### Type ST 162 V\_\_

Connector with LED and varistor. Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



**ST 16/ST 162 V\_\_**

Type	Voltage	Ampere	Power cons.	Connection
MD 401 6DC	6 V=	300 mA	1,8 W	Form C (EN 175301-803)
MD 401 6DC L	6 V=	300 mA	1,8 W	Flying leads 500 mm long
MD 401 12DC	12 V=	150 mA	1,8 W	Form C (EN 175301-803)
MD 401 12DC L	12 V=	150 mA	1,8 W	Flying leads 500 mm long
MD 401 24DC	24 V=	75 mA	1,8 W	Form C (EN 175301-803)
MD 401 24DC L	24 V=	75 mA	1,8 W	Flying leads 500 mm long
MD 401 24AC	24 V~	125 mA	3 VA	Form C (EN 175301-803)
MD 401 24AC L	24 V~	125 mA	3 VA	Flying leads 500 mm long
MD 401 110AC	110 V~	27 mA	3 VA	Form C (EN 175301-803)
MD 401 230AC	230 V~	13 mA	3 VA	Form C (EN 175301-803)

Type	LED	VAR	Operat. Voltage	Max. current	Cable diameter	Connection
ST 16	no	no	0 - 250 V	6 A	5 - 6,5 mm	Form C (EN 175301-803)
ST 162 V 24	red	yes	24 V ± 10 %	6 A	5 - 6,5 mm	Form C (EN 175301-803)
ST 162 V 230	red	yes	230 V ± 10 %	6 A	5 - 6,5 mm	Form C (EN 175301-803)



MA 22  
MA 22 D  
MA 22 U



MA 22 L




22 mm wide coils for solenoid valves of the MH-series, type MH, MOH, MEH, MEOH, MNH and MNOH.

### Type MA 22

Housing made from heat resistant thermoplastic polyester material 30 % glass filled.  
Interface industry form B (DIN / ISO 436 50).  
Isolation class F. Wire class H.  
Equipped with appropriate connector, solenoid offers IP 65.

### Type MA 22 U

Same as MA 22 but with UL-certification.   
AC-coils can be operated at 50 Hz and 60 Hz.

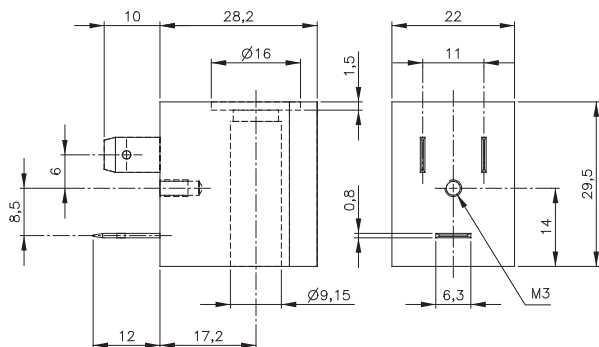
### Type MA 22 L

Housing made from heat resistant thermoplastic polyester material with 30 % glass filled.  
Isolation class F. Wire class H.  
Version with flying leads. Cable length 500 mm, others available on request. The coils are not grounded, take national safety regulations into consideration!

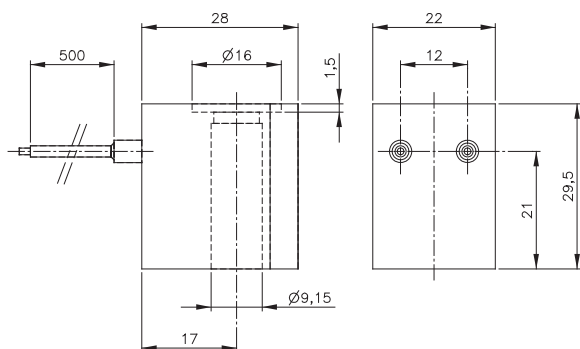
### Type MA 22 D

Housing made from Epoxy.  
Interface industry form B (DIN/ISO 436 50).  
Isolation class F. Wire class H  
Equipped with connector type ST 22 L 5000 or ST 222 V \_\_ L 1500 and additional O-rings the system offers IP 67.

Suitable connectors for coils displayed on this page, type ST 22 ..., can be found on page 2.13.3.



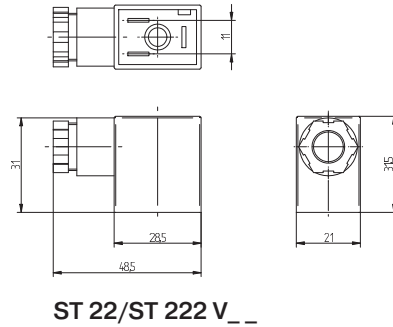
MA 22/MA 22 D/MA 22 U



MA 22 L

Type	Voltage	Tolerance	Ampere	Power cons.	Connection
MA 22 12DC	12 V=	±10 %	250 mA	3 W	Industry form B
MA 22 24DC	24 V=	±10 %	125 mA	3 W	Industry form B
MA 22 24DC L700	24 V=	±10 %	125 mA	3 W	Flying leads 700 mm long
MA 22 48DC	48 V=	±10 %	62 mA	3 W	Industry form B
MA 22 220DC	220 V=	±10 %	14 mA	3 W	Industry form B
MA 22 24AC	24 V~	±10 %	200 mA	5 VA	Industry form B
MA 22 110AC	110 V~	±10 %	45 mA	5 VA	Industry form B
MA 22 110AC L500	110 V~	±10 %	45 mA	5 VA	Flying leads 500 mm long
MA 22 230AC	230 V~	±10 %	22 mA	5 VA	Industry form B
MA 22 230AC L500	230 V~	±10 %	22 mA	5 VA	Flying leads 500 mm long
MA 22 D 24DC	24 V=	±10 %	125 mA	3 W	Industry form B
MA 22 D 24AC	24 V=	±10 %	200 mA	5 VA	Industry form B
MA 22 D 230AC	230 V~	±10 %	22 mA	5 VA	Industry form B
MA 22 U 24DC	24 V=	±10 %	125 mA	3 W	Industry form B
MA 22 U 24AC	24 V=	±10 %	200 mA	5 VA	Industry form B
MA 22 U 110AC	110 V~	±10 %	45 mA	5 VA	Industry form B
MA 22 U 230AC	230 V~	±10 %	22 mA	5 VA	Industry form B

# ST 22/ST 22 L 5000/ST 222 V \_\_ L 1500 ST 22 M12/ST 22 NPTF



ST 22/ST 222 V \_\_

Connectors for coils type MA 22.

### Type ST 22

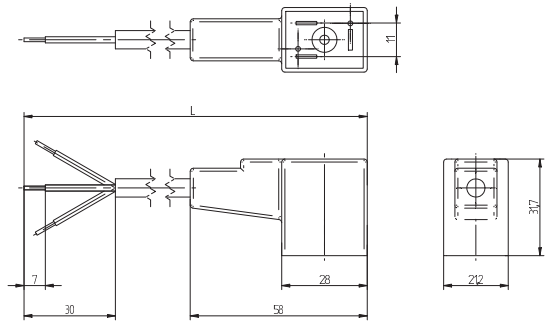
Connector with black housing.

Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

### Type ST 222 V \_\_

Connector with LED and varistor.

Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



ST 22 L 5000/ ST 222 V \_\_ L 1500

### Type ST 22 L 5000

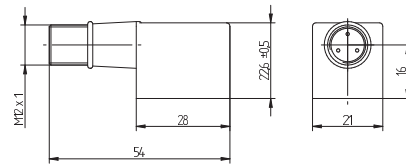
Connector with black housing and 5 meter moulded cable.

In combination with the Hafner Epoxy coils type MA 22 D, adding two O-rings at the top of the solenoid system, fastening screw and nut appropriately the system reaches protection class IP 67 in accordance to IEC 60 529. Seal is part of the housing.

### Type ST 222 V \_\_ L 1500

Connector with LED and varistor and 1,5 meter moulded cable.

In combination with the Hafner Epoxy coils type MA 22 D, adding two O-rings at the top of the solenoid system, fastening screw and nut appropriately the system reaches protection class IP 67 in accordance to IEC 60 529. Seal is part of the housing.



ST 22 M12

### ST 22 M12

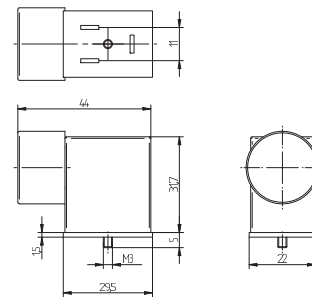
Connector with black housing and M12 x 1 connection.

Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

### ST 22 NPTF

Connector with black housing and 1/2" NPTF conduit connection.

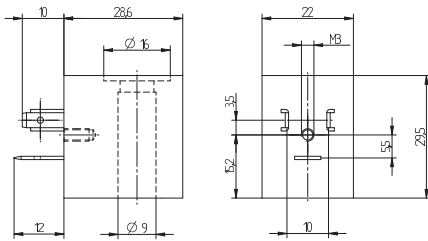
Using the enclosed screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



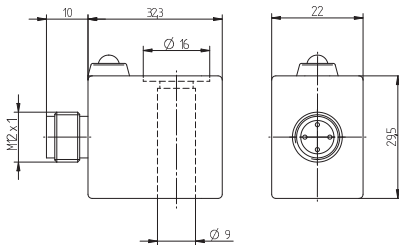
ST 22 NPTF

Other connectors are available on request.

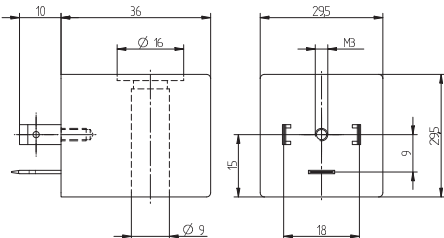
Type	LED	VAR	Operat. voltage	Max. current	Cable diameter	Cable length [mm]	Cable material	Connection
ST 22	no	no	0 - 250 V	10 A	4 - 8 mm			Industry form B
ST 222 V 24	red	yes	24 V ± 10 %	10 A	6 - 8 mm			Industry form B
ST 222 V 110	red	yes	110 V ± 10 %	10 A	6 - 8 mm			Industry form B
ST 222 V 230	red	yes	230 V ± 10 %	10 A	6 - 8 mm			Industry form B
ST 22 L 5000	no	no	0 - 250 V	6 A	6,5 mm	5.000	PVC	Industry form B
ST 222 V 24 L 1500	red	yes	24 V ± 10 %	6 A	6,5 mm	1.500	PUR	Industry form B
ST 222 V 110 L 1500	red	yes	110 V ± 10 %	6 A	6,5 mm	1.500	PVC	Industry form B
ST 222 V 230 L 1500	red	yes	230 V ± 10 %	6 A	6,5 mm	1.500	PVC	Industry form B
ST 22 M12	no	no	0 - 250 V	4 A				Industry form B - M12x1
ST 22 NPTF	no	no	0 - 250 V	10 A				Industry form B - 1/2" NPTF



**MA 22 DIN**



**MA 22 D 24DC M12**



**MA 30 S9**



**MA 22 DIN**

**MA 22 D 24DC M12**

**MA 30 S9**

22 mm wide coils for solenoid valves of the MH-series, type MH, MOH, MEH, MEOH, MNH and MNOH.

### Type MA 22 DIN

Housing made from heat resistant thermoplastic polyester material 30 % glass filled.  
Form B according to EN 175301-803.  
Isolation class F. Wire class H.  
Equipped with appropriate connector, solenoid offers IP 65.

### Type MA 22 D 24DC M12

Housing made from Epoxy.  
Connection M12x1 according to DIN EN 60947-5-2.  
Coil with yellow LED.  
Isolation class F. Wire class H.  
Equipped with appropriate connector, solenoid offers IP 67.

30 mm wide coil for solenoid valves of the MH-series, type MH, MOH, MEH, MEOH, MNH and MNOH.

When used with valve series MNH or MNOH, please consider that a NAMUR distance plate type ZPN 5 (page 2.10.12) might be needed.

### Type MA 30 S9

Housing made from heat resistant thermoplastic polyester material 30% glass filled.  
Form A according to EN 17301-803.  
Isolation class F. Wire class H.  
Equipped with appropriate connector, solenoid offers IP 65.

Suitable connectors for MA 30 S9 coils, type ST 30 ..., can be found on page 2.13.5.

Type	Voltage	Tolerance	Ampere	Power cons.	LED	Connection
MA 22 24DC DIN	24 V=	±10 %	110 mA	2,6 W	no	Form B (EN 175301-803)
MA 22 230AC DIN	230 V~	±10 %	26 mA	6 VA	no	Form B (EN 175301-803)
MA 22 D 24DC M12	24 V=	±10 %	175 mA	4,2 W	yellow	M12x1
MA 30 S9 24DC	24 V~	±10 %	83 mA	2 W	no	Form A (EN 175301-803)
MA 30 S9 110AC	110 V~	±10 %	27 mA	3 VA	no	Form A (EN 175301-803)
MA 30 S9 230AC	230 V~	±10 %	13 mA	3 VA	no	Form A (EN 175301-803)



# MA 30 S13/ST 30/ESR



MA 30 S13



ST 30



ST 302 V\_\_



ESR \_\_

## Type MA 30 S13

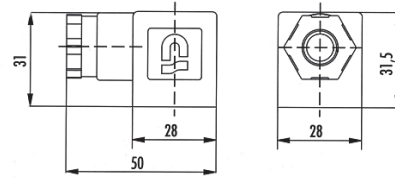
30 mm wide coil for solenoid valves type MH 311 205 and MH 311 209 displayed on page 2.5.1.1.3.

Housing made from heat resistant thermoplastic polyester material 30% glass filled.

Form A according to EN 17301-803.

Isolation class F. Wire class H.

Equipped with appropriate connector, solenoid offers IP 65.



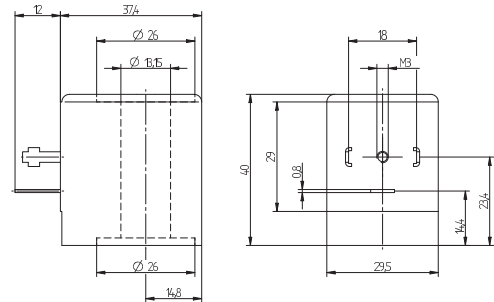
ST 30/ST 302 V\_\_

## Suitable connectors:

### Type ST 30

Connector with black housing.

Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



MA 30 S13

### Type ST 302 V\_\_

Connector with LED and varistor.

Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

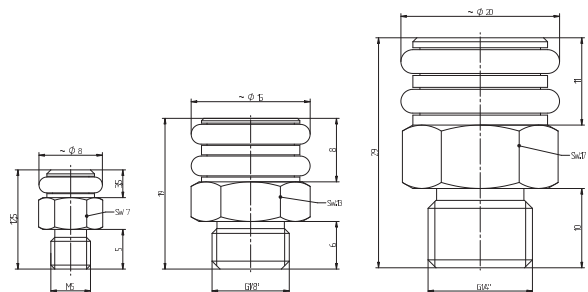
Type	Voltage	Tolerance	Ampere	Max. current	Power cons.	LED	VAR	Connection
MA 30 S13 24DC	24 V~	±10 %	428 mA		10 W	no		Form A (EN 175301-803)
MA 30 S13 24AC	24 V~	±10 %			13/11 VA	no		Form A (EN 175301-803)
MA 30 S13 230AC	230 V~	±10 %			13/11 VA	no		Form A (EN 175301-803)
ST 30	0 - 250 V			6 A		no		Form A (EN 175301-803)-M20x 1,5; 6-8 mm
ST 302 V 24	24 V~	±10 %		6 A		red	yes	Form A (EN 175301-803)-M20x 1,5; 6-8 mm
ST 302 V 230	230 V~	±10 %		6 A		red	yes	Form A (EN 175301-803)-M20x 1,5; 6-8 mm

## Exhaust Protection Fittings:

The Hafner exhaust protection fittings protect exhaust ports from dirt and moisture.

The exhaust drillings are covered by a prestressed O-ring. These kind of fittings are typically used in the armature tube of an operator system as well as in the valve exhaust ports.

Type	Port size	Material body	O-Ring
ESR M5	M5	Brass	NBR
ESR G 1/8"	G 1/8"	Brass	MVQ50
ESR G 1/4"	G 1/4"	Brass	MVQ50



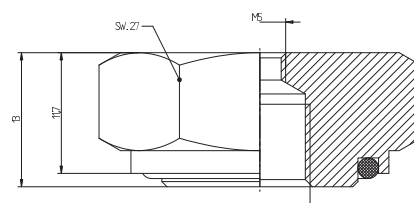
ESR M5

ESR G 1/8"

ESR G 1/4"

Other materials as well as high- and low temperature versions available on request.

The ESR M5 can also be used in combination with the M G1/8 M5 nut on Ex e mb operator systems in order to reach IP 67. Further details on page 2.14.3.5.4.



M G1/8" M5