Solenoid drive
Series MA...

CE

Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

UNI geräte
elektrotechnische fabrik gmbh

Operating Instruction (translation)

Basics

Valve – solenoid actuator – combinations are supplied fully assembled and tested as standard. When replacing or changing solenoid actuators, care should be taken that the combination with a UNI valve is approved and the magnet is properly secured to the valve (permissible tightening torque, for example). The device-specific serial number for unequivocal identification and the year of build can be obtained from the type plate.
Solenoid actuators are electrotechnical components that are inoperative without the associated valve and also may not be operated for themselves alone! For outdoor installations always use solenoid actuators with a IP65 rating and a rain cover. Any solenoid actuators showing signs of damage are not to be installed and must be replaced. If the solenoid actuators are subject to external loads of an exceptional kind, additional protective measures are to be taken by the operator, if required. Any undefined or unsuitable changes to the device may negatively influence the explosion protection and in the worst case even render it totally ineffective. UNI devices shall accept no liability for any loss or damage (to the device/over and above this) which have been brought about by change(s) to the device. The same applies for claims under the warranty.

Description of the device

The solenoid actuator (pot magnet) is used as an actuating unit for valves. Constructionally the actuator consists of a magnet housing (tube), a coil and electronics. Depending on the version, the solenoid actuator may be operated with DC or AC voltage. The version that runs off AC voltage has a built-in rectifier. Therefore when energised, direct current flows through the coils of all types.
The internal built-in controller switch over after a defined time from the higher pickup power to the lesser holding winding power. In this way, very high pickup forces can be achieved short-term with simultaneous low current consumption in sustained (holding) operation.
The solenoid drives operate in continuous operation so extremely energy efficient and economical.

Electrical connection

The diameter range / clamping range of the cable gland must be noted and adhered to. Where a flexible connecting line is used, insulated wire-end sleeves with plastic collars conforming to DIN 46228 part 4 are to be used. The voltage supply at the solenoid actuator must lie within the range -15% to +10%. The appropriate circuit diagram can be obtained from the connection diagrams at the end of these operating instructions. To guarantee an IP degree of protection, the terminal box lid must be refitted carefully . Versions supplied with a connecting cable ex works are ready for use, i.e. the connection compartment does not need to be opened again.
The solenoid actuators need to be protected against the dangerous consequences of short circuits, earth faults and overloads. A line-side fuse appropriate to the rated current (max. 3xIB acc. to IEC 60127-2-1) is to chosen. A line-side motor circuit breaker - with short-circuit and thermal instantaneous tripping - is to be adjusted for the rated current. If the magnet has very low rated currents, fusing with the lowest current value in keeping with the stated IEC standard is sufficient.
Protective devices must be of the kind that prevents automatic reconnection under fault conditions. The fusing rated voltage must match or exceed the specified nominal voltage of the solenoid actuator. The breaking capacity of the fuse link must match or exceed the maximum short-circuit current expected at the place of installation (usually 1500 A).

CE- Identification

The Council of the European Community passed common directives for the free movement of goods within the European Community, which determine the minimum requirements for safety and health protection. The CE-identification confirms, that the products correspond to the EC directives, i.e. are in agreement with the relevant, especially harmonized standards.

Note concerning directive 2014/35/EU (Low-Voltage Directive):

The solenoid drives MA were developed, designed and produced in accordance with the standard „Electromagnetic Appliances“ DIN EDV 0580. Thus they will also fulfil the requirements of the low voltage guidelines, which apply to rated voltages from 50 to 1000V AC and from 75 to 1500V DC.

Note concerning directive 2014/30/EU (EMV-Directive):

The solenoid drives fulfil the requirements of the specification to be applied of the product families concerning the industrial sector as well as the sectors of private housing, business and trading, as well as of small businesses.

On using of AC- and DC-variants the user must provide a suitable mains filter (e.g. X-capacitor 47 nF) at the mains entrance to attenuate the physically caused line-related turn-off current of the solenoid.

In the sense of the EMV-directives solenoid drives with driving elements for valves are not regarded as independently operable appliances and are only processed further by expert companies, or respectively installed into a machine. They must not be started up until it was determined that the machine, or respectively, the complete line, corresponds to the regulations of the EMV-directives.

Operation

100% ED are permitted even in case of the most unfavourable ambient conditions permissible.

DANGER!
During continuous operation the solenoid drive may get hot. Don't touch, danger of injuries!

During operation it must be guaranteed, that neither the maximum permitted ambient temperature or of the fluid nor the load limit (excess voltage) will be exceeded. If necessary the solenoid drive is to be protected against overcharging. All solenoid drives are wired with a varistor. To avoid induced voltage, which may cause damage of the line, the user must provide protective measures in case of necessity which go beyond the installed varistor.

Dismounting of the solenoid drive

Stop the solenoid drive and cut off voltage supply.

DANGER!
During continuous operation the solenoid drive may get hot. Don't touch, danger of injuries!!

MA20: Loosen cylinder head screw (910), remove the solenoid drive (800) with washer (906) from the upper part of housing (106).

MA40, MA50, MA60: Loosen hex. nut (901) and remove the complete solenoid drive (800) from upper part of housing (106).

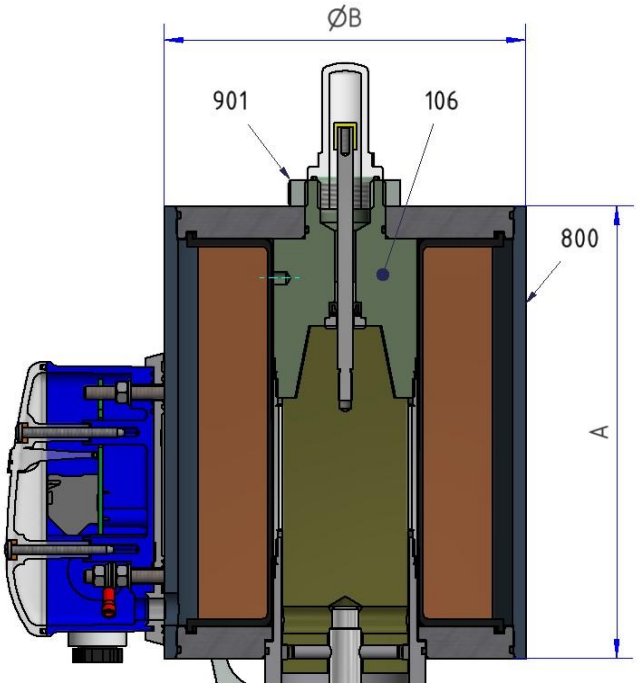


Fig. 1: MA40, MA50, MA60

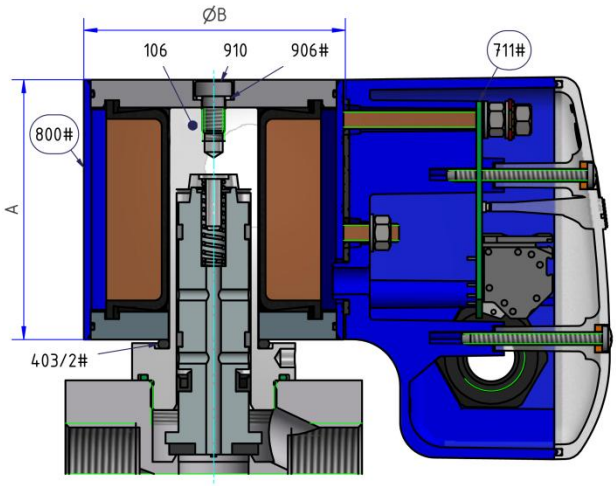


Fig. 2: MA20

○ = spare part kit

(…#) supplied as a complete unit

Item	Description
106	upper part of housing
403/2	o-ring
800	solenoid drive
711	printed circuit board
901	hex. nut
906	washer
910	cylinder head screw

Type	A	ØB	Item/ Screw torques	Thread	Weight
MA20	70	70	910 / 10Nm	M6	1,4kg
MA40	135	110	901 / 50Nm	M30	5,9kg
MA50	170	135	901 / 50Nm	M30	11,5kg
MA60	213	160	901 / 50Nm	M30	20,3kg

Technical Data

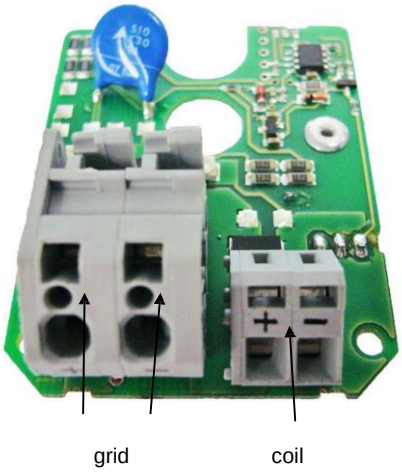
Protection class:	IP65
Ambient temperature:	-20°C to +60°C
Temperature of fluid:	-20°C to +60°C
Duty cycle:	100%

Drive	24V DC	110V AC	230V AC	Permissible switching frequency	Wiring diagram AP
	Control device				
MA20	PS200			300c/h	DC: 01 AC: 02
MA40				600c/h	
MA50					
MA60	TS900		TS1500	20c/h	03

Drive	Type	Nominal Power W		Rated current A					
				24V DC		110V AC		230V AC	
		Pickup	Holding	Pickup	Holding	Pickup	Holding	Pickup	Holding
MA20	P3	100	10	4,17	0,42	1,00	0,10	0,49	0,05
MA40	P1	72	8	3,00	0,33	0,72	0,08	0,35	0,04
	P2	110	11	4,58	0,46	1,10	0,11	0,54	0,05
	P3	200	20	8,33	0,83	2,00	0,20	0,98	0,10
MA50	P1	147	15	6,13	0,63	1,47	0,15	0,72	0,07
	P2	190	19	7,92	0,79	1,90	0,19	0,93	0,09
MA60	P1	500	70	20,83	2,92	5,00	0,70	2,44	0,34

Wiring diagram

PS 200

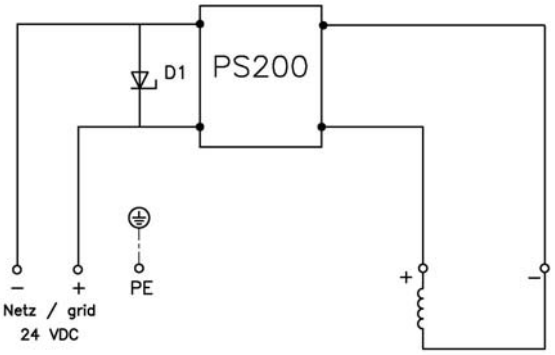


TS 900

TS 1500

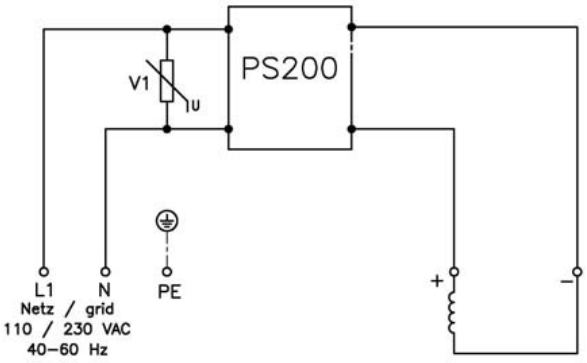
coil

AP 01



coil

AP 02



D1 = Inverse polarity protection diode
V1 = Varistor

AP 03