

BOSS™

MANUAL RESET NORMALLY CLOSED SOLENOID VALVE FOR GAS

355AM

DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200 - DN 250 - DN 300



EN

CE-51AT1440/ED05

CE 0051

MADE IN ITALY

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1.0 - GENERAL

This manual shows you how to safely install, operate and use the device.

The instructions for use **ALWAYS** need to be available in the facility where the device is installed.

ATTENTION: installation/wiring/maintenance need to be carried out by qualified staff (as explained in section 1.3) using appropriate personal protective equipment (PPE).

For any information pertaining to installation/wiring/maintenance or in any case problems that cannot be resolved with the use of the instructions, it is possible to contact the manufacturer from the address and phone numbers provided on the last page.

1.1 - DESCRIPTION

Normally closed, manual reset solenoid valves for gas, suitable to shut-off gas and signal danger sent by gas detectors (methane, LPG, carbon monoxide and similar) or safety thermostats, and for blackouts.

For additional safety, this solenoid valve can only be reset with the power supply connected and only when the gas detector is not signalling danger.

IMPORTANT NOTE: The valve will not open by simply powering the coil. You must manually press the reset mechanism (as indicated in 4.0).

They can be equipped with CPI switches to control the valve's plunger position (closed) from remote.

The CPI can also be installed at a later stage. Further information regarding the CPI switch is available in 7.0.

Reference standards: EN 161 - EN 13611.

1.2 - KEY OF SYMBOLS



DANGER: In the event of inobservance, may be caused damages to tangible goods.



DANGER: In the event of inobservance, may be caused damages to tangible goods, to people and/or pets.



ATTENTION: Attention is drawn to the technical details intended for qualified staff.

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1.3 - QUALIFIED STAFF

These are people who:

- Are qualified to carry out product installation, assembly, start-up and maintenance;
- Know the regulations in force in the region or country pertaining to installation and safety;
- Are trained in first aid.



1.4 - USING NON-ORIGINAL SPARE PARTS

- To perform maintenance or replace parts (ex. coil, connector, etc.) **ONLY** manufacturer-recommended parts can be used. Using different parts not only voids the product warranty, it could compromise correct device operation.
- The manufacturer is not liable for malfunctions caused by unauthorised tampering or use of non-original parts.



1.5 - IMPROPER USE

- The product must only be used for the purpose it was built for.
- It is not allowed to use different fluids than those expressly stated.
- The technical data set forth on the rating plate must not be exceeded whatsoever. The end user or installer is in charge of implementing proper systems to protect the device, which prevent exceeding the maximum pressure indicated on the plate.
- The manufacturer is not responsible for any damage caused by improper use of the device.

2.0 - TECHNICAL DATA

• Use	: non-aggressive gases of the three families (dry gases)
• Ambient temperature (TS)	: -20 ÷ +60 °C
• Power voltages (see table 2)	: 24 V/50 Hz - 230 V/50-60 Hz*
• Power supply tolerance	: -15% ... +10%
• Electric wiring	: cable gland M20x1.5
• Absorbed power	: see table 2
• Maximum operating pressure	: 500 mbar
• Closing time	: < 1 s
• Protection rating	: IP65
• Class	: A (DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200) B (DN 250 - DN 300)
• Mechanical resistance	: Group 2
• Flanged connections to be coupled with PN 16 flanges	: (DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200 - DN 250 - DN 300) ISO 7005 / EN 1092-1
• ANSI 150 flanged fittings	: on request
• Filter element	: filtering 50µm on DN 65 - DN 80 - DN 100 filtering 10µm on DN 125 - DN 150 not provided on DN 200 - DN 250 - DN 300
• In compliance with	: Regulation (EU) 2016/426 (Appliances burning gaseous fuels) EMCDirective 2014/30/EU - LVD Directive 2014/35/EU RoHS II Directive 2011/65/EU

* Only single-phase, the device does not work if powered with three-phase voltage.

2.1 - MODEL IDENTIFICATION

See Table 2 on page 17.

3.0 - COMMISSIONING THE DEVICE



3.1 - OPERATIONS PRIOR TO INSTALLATION

- It is necessary to close the gas upstream of the valve prior to installation;
- Make sure that the line pressure **DOES NOT EXCEED** the maximum pressure declared on the product label;
- Any protective caps (if any) must be removed prior to installation;
- Valve pipes and insides must be clear of any foreign bodies;
- Make sure the inlet and outlet counter-flanges are perfectly coaxial and parallel in order to prevent unnecessary mechanical stress to the body. Also calculate the space to insert the seal gasket;
- The safety regulations on handling loads in force in the country of installation must be complied with. If the device to be installed exceeds the weight allowed, suitable mechanical equipment and adequate slings must be used. Necessary precautions must be taken during the handling phases so as not to damage/ruin the external surface of the device;
- With regard to tightening operations, equip yourself with one or two calibrated torque wrenches or other controlled locking tools;
- In accordance with EN 161 a suitable filter must be installed upstream of a gas closing safety device;
- With outdoor installation, it is advisable to provide a protective roof to prevent rain from damaging the electrical parts of the device.
- Prior to carrying out any electrical wiring operations, make sure that the main voltage matches the supply voltage indicated on the product label;
 - Cut out power prior to proceeding with wiring;
 - According to the plant geometry, check the risk of explosive mixture arising inside the piping;
 - If the solenoid valve is installed near other devices or as part of an assembly, compatibility between the solenoid valve and this other device must be evaluated beforehand.
 - Avoid installing the solenoid valve near surfaces that could be damaged by the coil temperature;
 - Provide a protection against impacts or accidental contacts if the solenoid valve is accessible to unqualified personnel.



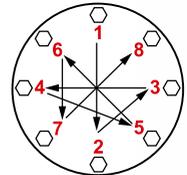
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3.2 - INSTALLATION (see example in 3.4)

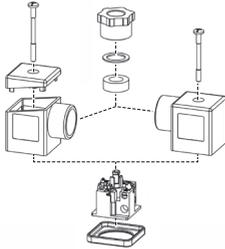
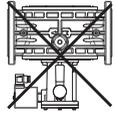
- Assemble the device by flanging it, with the correct seals, onto the plant with pipes whose flanges match up with the connection being attached. The gaskets must be free from defects and must be centred between the flanges;
- If, after installing the gaskets, there is still an excessive space in between, do not try to reduce said gap by excessively tightening the bolts of the device;
- The arrow, shown on the body (**5**) of the device, needs to be pointing towards the utility;
- Insert the relative washers inside the bolts in order to prevent damage to the flanges during tightening;
- When tightening, be careful not to "pinch" or damage the gasket;
- Tighten the nuts or bolts gradually, in a "cross" order (as shown in the lateral figure);
- Tighten them, first by 30%, then by 60%, and finally 100% of the maximum torque (see the table below according to EN 13611);

Diameter	DN 65	DN 80	DN 100	DN 125	DN 150	> DN 150
Max. torque (N.m)	50	50	80	160	160	160



- Tighten each nut and bolt again clockwise at least once, until the maximum torque has been achieved uniformly;

- The device can also be installed vertically without prejudicing the correct operation. It cannot be put in upside down (with the cover **(2)** pointing downwards);
- During installation, avoid debris or metal residues from getting into the device;
- To guarantee mechanical tension-free assembly, we recommend using compensating joints, which also adjust to the pipe's thermal dilation;
- If the device is to be installed in a ramp, it is the installer's responsibility to provide suitable supports or correctly sized supports, to properly hold and secure the assembly. Never, for any reason whatsoever, leave the weight of the ramp only on the connections (flanged or threaded) of the individual devices;
- In any case, following installation, check the tightness of the plant;
- Wiring cannot have cables connected directly to the coil. **ALWAYS and ONLY** use the connector identified by the manufacturer;
- Before wiring the connector **(16)**, unscrew and remove the central screw **(17)**. Use the proper cable terminals (see figures below). **NOTE:** Connector **(16)** wiring must be done ensuring a product rating of IP65;
- Wire the connector **(16)** with 3x0.75mm² cable for external Ø 6.2 to 8.1 mm. The cable to be used must be in double sheath, suitable for outdoor use, with a minimum voltage of 500V and a temperature of at least 90°C;



- Connect terminals 1 and 2 to the power supply and the earth cable to terminal \perp ;
- Secure the connector **(16)** to the coil **(18)**, tightening (recommended tightening torque 0.4 N.m \pm 10%) the centre screw **(17)**;
- The valve needs to be connected to earth either through the pipe or through other means (ex. cable jumpers).

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3.3 - INSTALLATION IN PLACES WHERE THERE IS THE RISK OF EXPLOSION (DIRECTIVE 2014/34/EU)

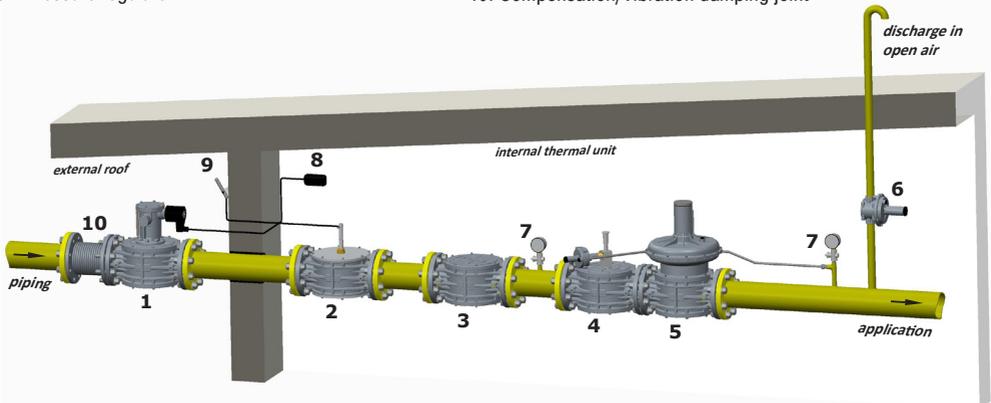
The solenoid valve is not suitable for use in zones where there is the risk of explosion.

3.4 - GENERIC EXAMPLE OF INSTALLATION

1. 355AM Manual reset solenoid valve

2. Jerk ON/OFF valve
3. Gas filter
4. OPSO shut off valve
5. Pressure regulator

6. Relief valve
7. Pressure gauge and relative button
8. Gas detector
9. Remote jerk ON/OFF valve lever control
10. Compensation/Vibration damping joint





4.0 - MANUAL RESET

To reset the solenoid valve:

- Make sure the power supply is connected;
- Close the flow downstream of the solenoid valve in order to balance the pressure between upstream and downstream when opening.
- **DN 65 - DN 80 - DN 100 - DN 125 - DN 150** without CPI (see fig. 1):
 - Loosen completely and remove the protective cover (**13**);
 - Loosen the reset pin (**14**) from the fastening screw (**15**);
 - Insert the non-threaded part of the reset pin (**14**) in the hole provided on the hex knob (**1**);
 - Using the pin (**14**):
 - Turn the reset knob (**1**) slightly clockwise and wait a few seconds for the pressure upstream and downstream of the valve to stabilise;
 - After balancing the pressure, turn the reset knob (**1**) clockwise to its stroke end, when it is coupled;
 - Remove the pin (**14**) from the knob (**1**) and screw it on in its original position. Alternatively to the reset pin (**14**), it is possible to use a size 32 commercial spanner to turn the reset knob (**1**);
 - Screw the protective cover (**13**) back on in its original place. Or seal it in that position.
- **DN 200 - DN 250 - DN 300** without CPI (see fig. 2):
 - Loosen completely and remove the protective cover (**13**);
 - Using a size 32 commercial spanner:
 - Turn the reset knob (**1**) slightly clockwise and wait a few seconds for the pressure upstream and downstream of the valve to stabilise;
 - After balancing the pressure, turn the reset knob (**1**) clockwise to its stroke end, when it is coupled;
 - Remove the commercial spanner from the knob (**1**), then tighten the protective cover (**13**) back into its original position. Or seal it in that position.
- **DN 65 - DN 80 - DN 100 - DN 125 - DN 150 - DN 200 - DN 250 - DN 300** with CPI (see fig. 3 and 4):
 - Loosen the fastening screw (**23**) and remove the protective cover (**13**);
 - Using a size 32 commercial spanner:
 - Turn the reset knob (**1**) slightly clockwise and wait a few seconds for the pressure upstream and downstream of the valve to stabilise;
 - After balancing the pressure, turn the reset knob (**1**) clockwise to its stroke end, when it is coupled;
 - Remove the commercial spanner from the knob (**1**);
 - Screw the protective cover (**13**) back on in its original place and secure it with the screw (**23**). Or seal the cover in that position.



IMPORTANT NOTE:

- Hold the pin or size 32 commercial spanner tightly during resetting operations;
- After completing the operation, **ALWAYS** remember to remove the tool used for resetting in order to avoid the valve from possibly suddenly closing, which could harm people or damage property if the tool accidentally remains inserted in the knob (**1**).



5.0 - FIRST START-UP



- Before start-up make sure that all of the instructions on the rating plate, including the direction of flow, are observed;
- After gradually pressurising the system, reset the solenoid valve, as indicated in 4.0;
- Check the tightness, the operation and the closing of the solenoid valve, electrically disconnecting the connector **ONLY IF** connected to the coil. **IMPORTANT NOTE:** Do not use the connector as a switch to close the solenoid valve.



5.1 - RECOMMENDED PERIODIC CHECKS

- use a suitable calibration tool to ensure the bolts are tightened as indicated in 3.2;
- check tightness of the flanged/threaded connections on the system;
- check tightness and operation of the solenoid valve;

It is the responsibility of the final user or installer to define the frequency of these checks based on the severity of the service conditions.



6.0 - MAINTENANCE

On completion of the operations described below, repeat the procedure indicated in paragraph 5.

If the coil and/or connector need to be replaced (see fig. 1):

- Before performing any operation, make sure that the device is not electrically powered;
- Since the coil is also suitable to be permanently powered, high coil temperature in case of continuous operation is entirely normal. It is advisable to avoid touching the coil with bare hands after a continuous power supply lasting longer than 20 minutes. In case of maintenance, wait for the coil to cool down or, if necessary, use suitable protection.

NOTE: if the coil (**18**) needs to be changed following an electrical failure, we recommend changing the connector (**16**) as well. The coil and/or connector replacement operations need to be carried out taking care to ensure the product's IP65 rating.



6.1 - REPLACING THE CONNECTOR

- Unscrew and remove the central screw (**17**), then remove the connector (**16**) from the reel (**18**);
- When you have taken out the existing internal electrical cable, wire the new connector and secure it to the coil, as shown in 3.2



6.2 - REPLACING THE COIL

- Unscrew and remove the central screw (**17**), then remove the connector (**16**) from the reel (**18**);
- Loosen the screw (**19**) that locks the coil (**18**) and take it out of the armature assembly along with the gaskets/discs;
- Place the new coil + gaskets + discs inside the armature assembly and secure with the relative screw;
- Couple the connector to the coil and secure it as indicated in 3.2;
- If it is necessary to set up the wiring, proceed as described in 3.2

If internal checks must be carried out, before carrying out any operations:



- Close the gas upstream of the valve;
- Make sure there is no pressurised gas inside the device.



6.3 - REPLACING THE FILTER ELEMENT (DN 65 - DN 80 - DN 100 - DN 125 - DN 150)

- Loosen (see fig.1) the fastening screws (**3**) and very carefully remove the cover (**2**) from the valve body (**5**);
- Extract the filter element and check its conditions. Blow it and clean it and, if necessary, replace it (see fig. 5 and 6 for positioning);
- Check the status of the cover's O-Ring and replace if necessary;
- Make sure the cover's O-ring seal is inside the provided groove;
- Reassemble the cover and secure it in its original position, being very careful not to "pinch" or damage the O-ring during tightening;
- Tighten the screws gradually, following a "cross" pattern, until the torque (tolerance -15%) indicated in the table below is reached. Use a calibrated torque wrench to do this;

Screw	M5		M6		M8		M10		M12	
	Galvanised	Stain. STEEL								
Max. torque (N.m)	6	4,5	10	7,5	25	18,5	49,5	37	84,5	63,5

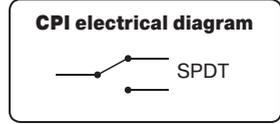
- Check the body/cover seal;
- **NOTE:** for internal inspections (see fig.1), it is recommended:
 - also check the obturator's (**11**) integrity and, if necessary, replace the rubber seal (**10**);
 - replace the seals before reassembling.

7.0 - CPI SWITCH

If the solenoid valve comes with CPI, the position of the micro switch is already calibrated and set, therefore, for operation you simply need to connect it to the power supply. If it is supplied separately (as a kit), it must be installed on the solenoid valve and then calibrated. In both cases, follow the instructions in 7.2.

7.1 - CPI SWITCH TECHNICAL DATA

- Ambient temperature : -20 ÷ +60 °C
- Switchable voltage : max 250 V (Vac)
- Switchable current : max 2 A
- Protection rating : IP67



7.2 - CPI SWITCH INSTALLATION and CALIBRATION

- black cable: common
- red cable: signal with micro switch not pressed
- white cable: signal with micro switch pressed

if the CPI kit is supplied separately, you must proceed as follows to install in on the solenoid valve:

DN 65 - DN 80 - DN 100 - DN 125 - DN 150 (see fig. 3):

- Loosen the fastening screw **(24)** inside the reset knob **(1)** and remove it;
- In the pin without the knob, insert the eccentric grub screw **(22)** with the larger part of the half moon on the left, and the new knob supplied with the kit. The knob **(1)** must be inserted with the threaded hole facing up and making said threaded hole match up with the pin hole. Secure the knob **(1)** by tightening and securing the grub screw **(24)** inside;
- Loosen the 2 screws **(15)** of the upper cover **(25)**;
- Secure the upper cover **(25)** to the support bracket **(21)** of the micro switch using the 2 screws **(15)**;
- Tighten or loosen the micro switch **(27)** for calibration so that when the solenoid valve is closed, the micro switch pin **(26)** is pressed;
- Secure the micro switch **(27)** in that position by tightening the 2 threaded grub screws **(20)**;
- The kit is now installed. Reset and close the solenoid valve (by cutting off the power) to make sure the microswitch is signalling correctly. Repeat the operation 2-3 times;
- Position the cover of the knob **(13)** and secure it in that position with the screw **(23)**.

DN 200 - DN 250 - DN 300 (see fig. 4):

- Use the knob **(1)**, to insert the eccentric ring nut **(22)** with the larger part of the half moon on the left and the fastening grub screw holes facing up;
- Secure the eccentric ring nut **(22)** by tightening the 2 grub screws **(28)**;
- Loosen the 2 screws **(15)** of the upper cover **(25)**;
- Secure the support bracket **(21)** of the micro switch **(27)** to the upper cover, using the screws **(15)**;
- Tighten or loosen the micro switch **(27)** for calibration so that when the solenoid valve is closed, the micro switch's pin is pressed;
- Secure the micro switch **(27)** in that position by tightening the 2 threaded grub screws **(20)**;
- The kit is now installed. Reset and close the solenoid valve (by cutting off the power) 2-3 times to make sure the microswitch is signalling correctly;
- Position the cover of the knob **(13)** and secure it in that position with the screw **(23)**.

8.0 - TRANSPORT, STORAGE AND DISPOSAL

- During transport the material needs to be handled with care, avoiding any impact or vibrations to the device;
- If the product has any surface treatments (ex. painting, cathoporesis, etc) it must not be damaged during transport;
- The transport and storage temperatures must observe the values provided on the rating plate;
- If the device is not installed immediately after delivery it must be correctly placed in storage in a dry and clean place;
- In humid facilities it is necessary to use driers or heating to avoid condensation.
- At the end of its service life, the product is to be disposed of separately from other waste (WEEE directive 2012/19/EU) and in compliance with the legislation in force in the country where this operation is performed.



9.0 - WARRANTY

The warranty conditions agreed with the manufacturer at the time of the supply apply.

For damage caused by:

- Improper use of the device;
- Failure to observe the requirements described herein;
- Failure to observe the regulations pertaining to installation;
- Tampering, modification and use of non-original spare parts;

are not covered by the rights of the warranty or compensation for damage.

The warranty also excludes maintenance work, other manufacturers's assembling units, making changes to the device and natural wear.

10.0 - RATING PLATE DATA

The rating plate data (see example above) includes the following:

- Manufacturer's name/logo and address (possible distributor name/logo)
- Mod.: = name/model of the device followed by the diameter size
- CE-51AT1440/ED05 = certification pin number
- Cl. ... = Seal strength in counterflow (A = 150 mbar - B = 50 mbar) in accordance with EN 161
- Gr. 2 = Mechanical resistance group 2 in accordance with EN 161
- EN 161 = Product reference regulation
- P.max = Maximum pressure at which product operation is guaranteed
- IP... = Protection rating
- 230V... = Power supply voltage, frequency (if Vac), followed by electrical absorption
- TS = Temperature range within which product operation is guaranteed
- 0051 = Conformity with Regulation (EU) 2016/426 followed by Notified Body No.
- year = Year of manufacture

- Lot = Product serial number (see explanation below)
 - U2002 = Lot issued in year 2020 in the 2nd week
 - 1728 = progressive job order number for the indicated year
 - 00002 = progressive number referred to the quantity of the lot
-  = Disposal in accordance with WEEE directive 2012/19/EU

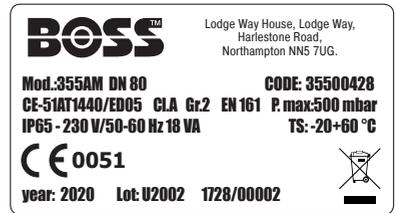
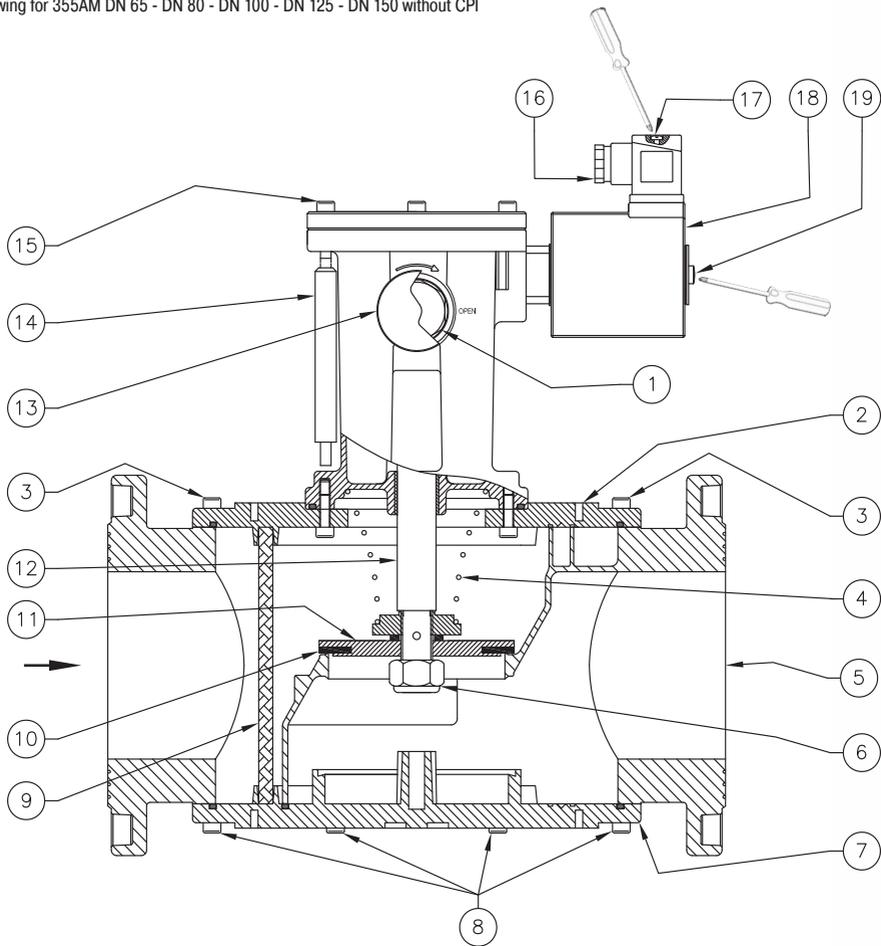


fig. 1

Approximate drawing for 355AM DN 65 - DN 80 - DN 100 - DN 125 - DN 150 without CPI



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MANUAL RESET WITH SUPPLIED PIN (execute as indicated in 4.0)

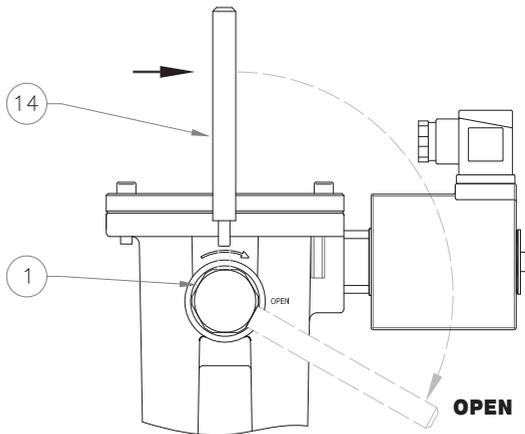
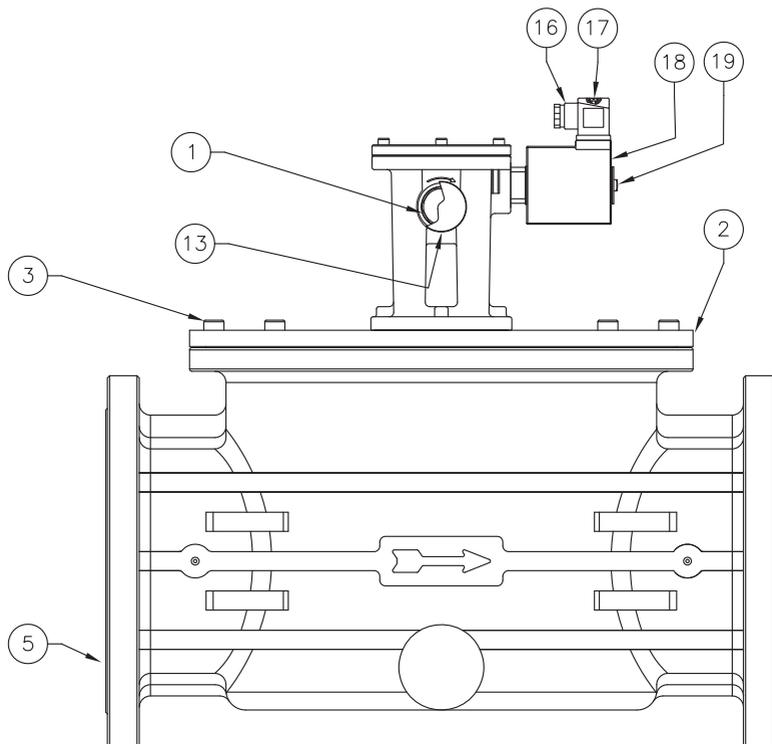


fig. 2

Approximate drawing for 355AM DN 200 - DN 250 - DN 300 without CPI



MANUAL RESET WITH SIZE 32 COMMERCIAL SPANNER
(execute as indicated in 4.0)

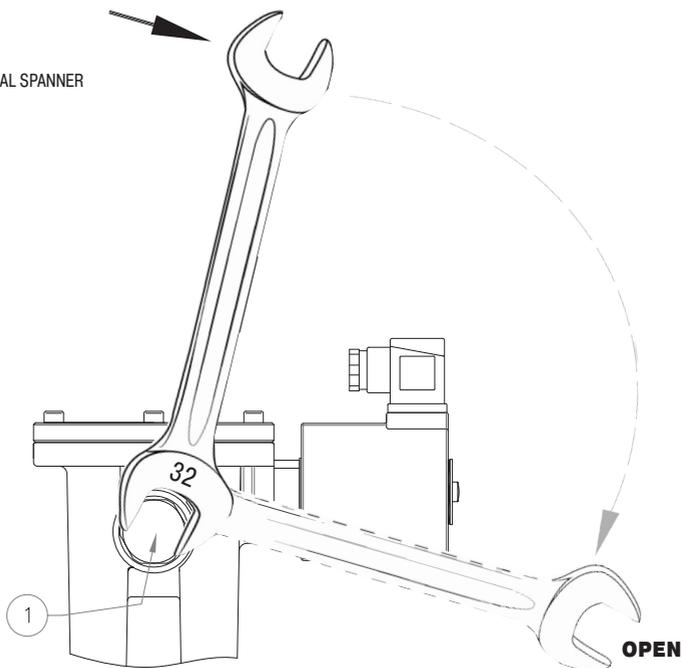
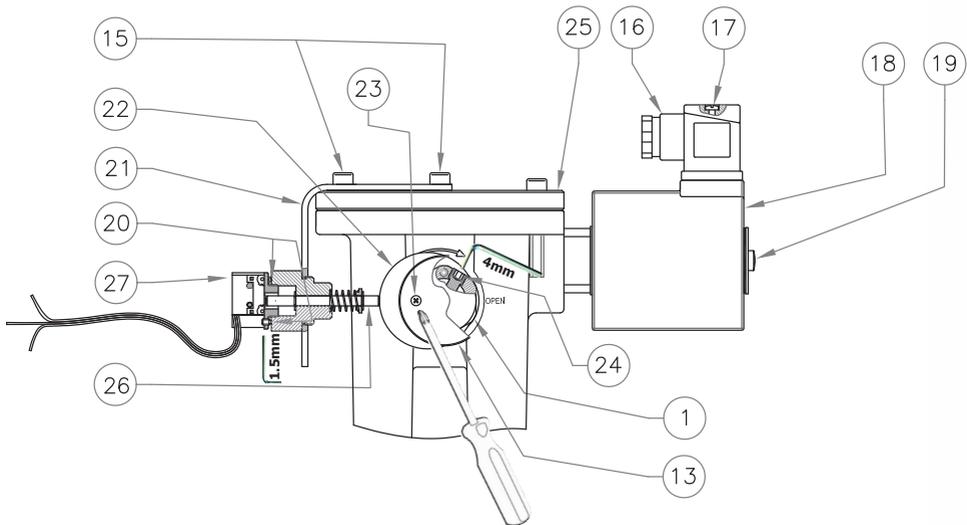
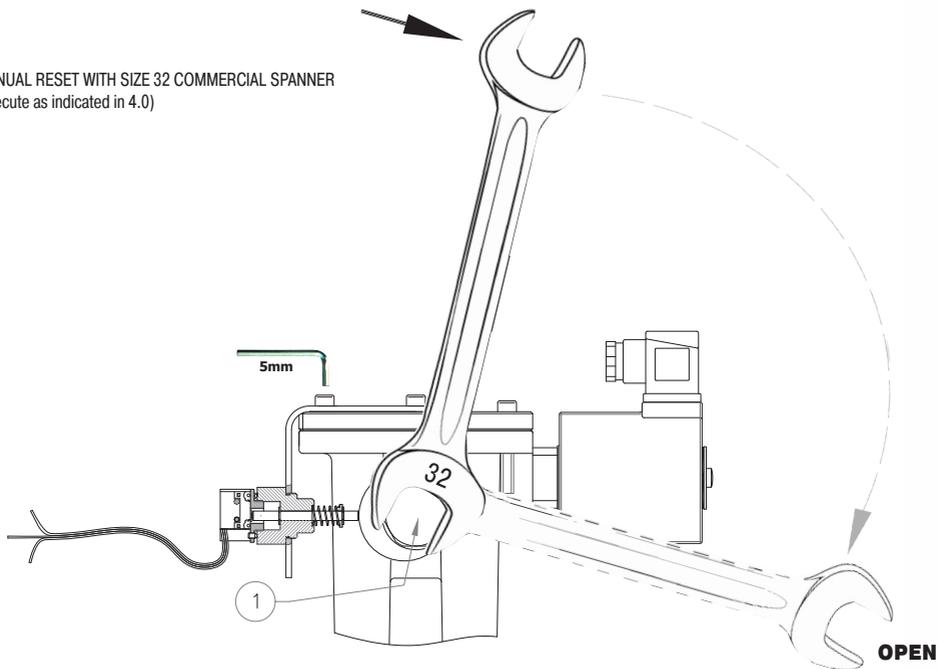


fig. 3

Approximate drawing for 355AM DN 65 - DN 80 - DN 100 - DN 125 - DN 150 with CPI



MANUAL RESET WITH SIZE 32 COMMERCIAL SPANNER
(execute as indicated in 4.0)



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fig. 4

Approximate drawing for 355AM DN 200 - DN 250 - DN 300 with CPI

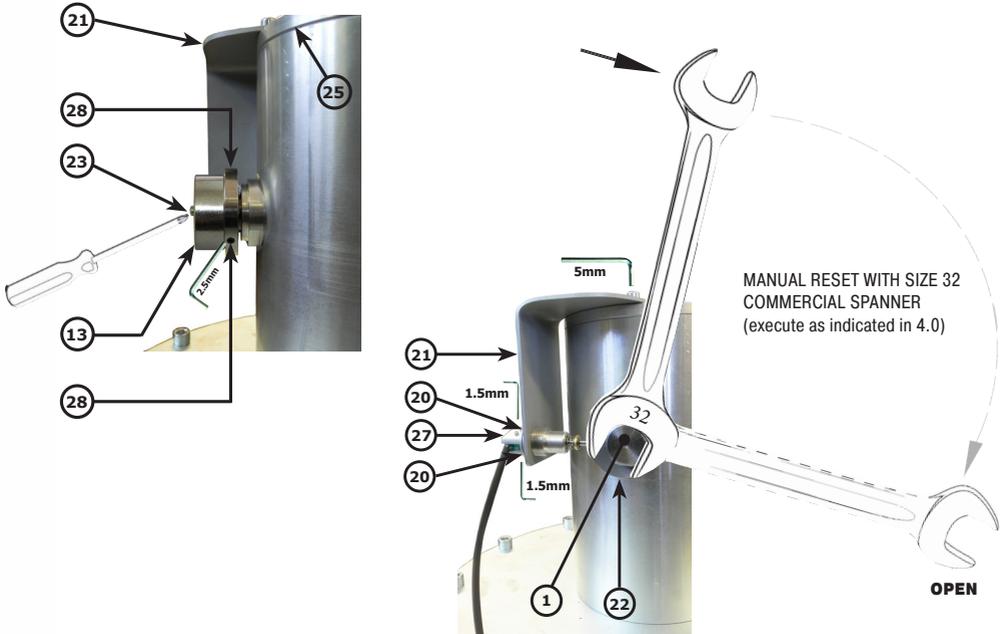
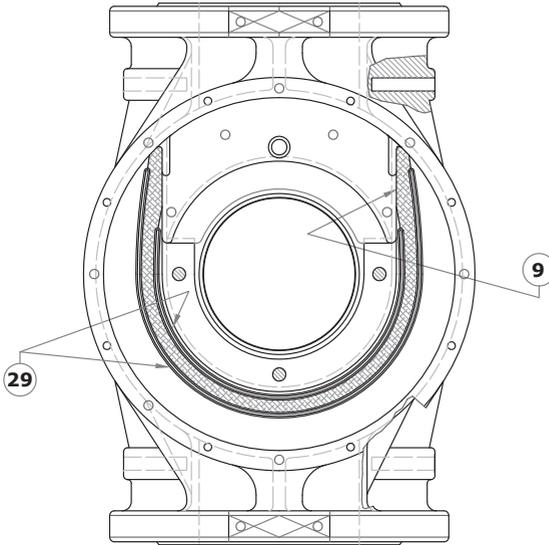


fig. 1, 2, 3, 4, 5 and 6

- | | |
|--|---|
| 1. Reset knob | 17. Connector clamping screw |
| 2. Cover | 18. Electric coil |
| 3. Cover clamping screws | 19. Coil locking screw |
| 4. Closing spring | 20. Microswitch clamping grub screw |
| 5. Valve body | 21. Microswitch support bracket |
| 6. Self-locking nut | 22. Eccentric ring nut |
| 7. Bottom (on DN 100 only) | 23. Protective cover clamping screw |
| 8. Bottom clamping screws (on DN 100 only) | 24. Knob clamping grub screw |
| 9. Filter element | 25. Upper cover |
| 10. Sealing washer | 26. Microswitch pin |
| 11. Plunger | 27. Microswitch |
| 12. Centre pin | 28. Eccentric ring nut clamping grub screws |
| 13. Protective cover | 29. Filter element guides |
| 14. Reset pin | 30. Filter element fins |
| 15. Upper cover clamping screws | (on DN 125 - DN 150 only) |
| 16. Electric connector | |

fig. 5

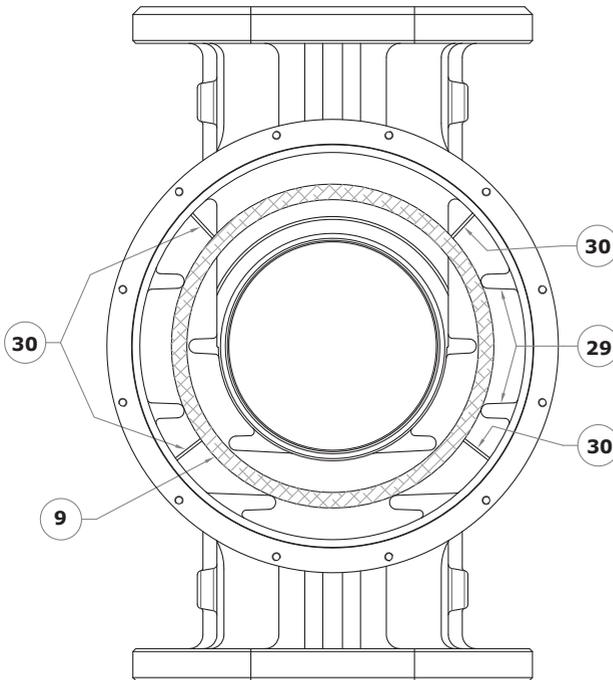


DN 65 - DN 80 - DN 100

fig. 5: view from above without cover

Position the filter element (9), making sure it is between the relative guides (29).

fig. 6



DN 125 - DN 150

fig. 6: view from above without cover

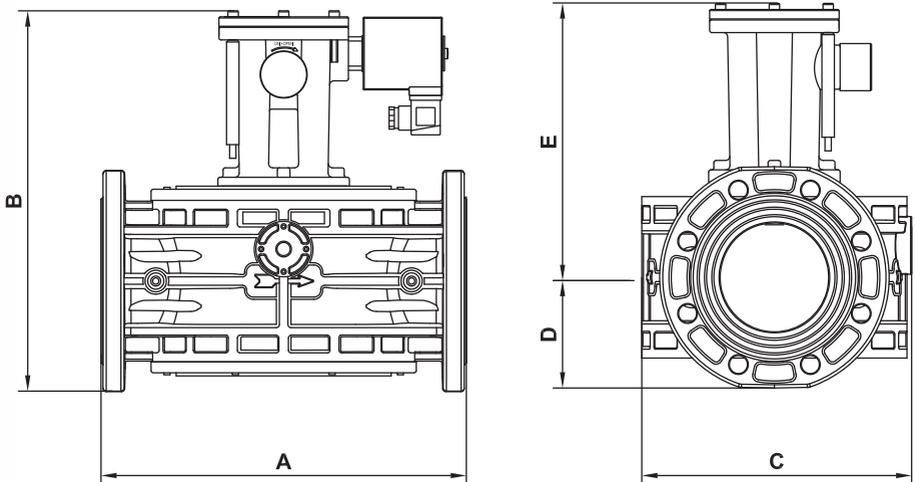
Position the filter element (9), making sure it is inserted between the relative guides (29) and check that the fins (30) are secured well to the valve body.

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Table 1

Overall dimensions in mm

Flanged connections	holes	A	B (D+E)	C	D	E
PN 16 - ANSI 150 DN 65	4	290	355	198	90	265
PN 16 DN 80	8	310	363	198	97	266
ANSI 150 DN 80	4	290	355	198	90	265
PN 16 - ANSI 150 DN 100	8	350	363	260	105	258
PN 16 - ANSI 150 DN 125	8	480	460	328	125	335
PN 16 - ANSI 150 DN 150	8	480	465	328	130	335
PN 16 DN 200	12	600	540	450	165	375
ANSI 150 DN 200	8	600	540	450	165	375
PN 16 - ANSI 150 DN 250	12	673	720	510	197	523
PN 16 - ANSI 150 DN 300	12	737	765	570	220	545



The dimensions are provided as a guideline, they are not binding

Table 2
Coils and connectors for 355AM solenoid valve

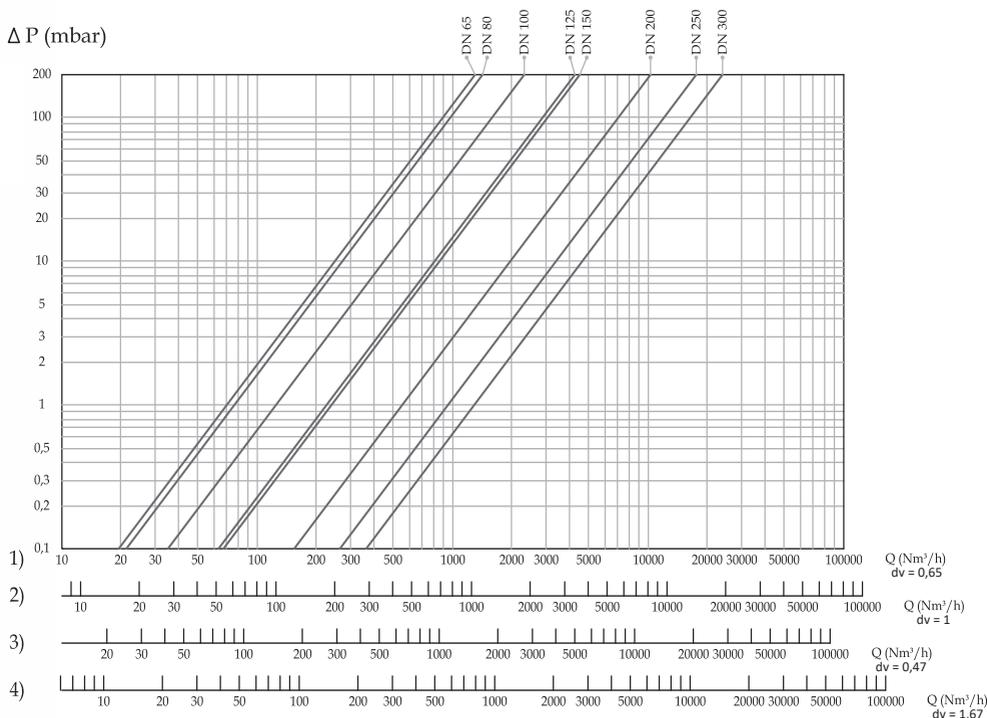
Valve code		Connections	Voltage	Coil + connector code (available as special order)	Coil stamping	Connector type	Absorbed power
Without CPI	With CPI						
35500579	-	DN 65	24 V/50 Hz	B13062	BO-0285 V 24 DC W 18	24 Vac Rectifier	20 VA
35500590	-	DN 80					
35500609	-	DN 100					
35500620	-	DN 125					
35500631	-	DN 150					
-	35500642	DN 200					
-	35500653	DN 250					
-	35500664	DN 300					
35500406	-	DN 65	230 V/50-60 Hz	B13061	BO-0325 V 196 DC W 18	230 Vac Rectifier	18 VA
35500428	-	DN 80					
35500439	-	DN 100					
35500450	-	DN 125					
35500461	-	DN 150					
-	35500472	DN 200					
-	35500483	DN 250					
-	35500494	DN 300					

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Pressure loss diagram (calculated with P1 = 50 mbar)

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ΔP (mbar)



- 1) methane
- 3) town gas

- 2) air
- 4) lpg

dv = density relative to the air

We reserve the right to any technical and construction changes.



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