



**AUTOMATIC NORMALLY CLOSED SOLENOID VALVE FOR GAS**

**355AA**

**DN 32 - DN 40 - DN 50 - DN 65 - DN 80**

**DN 100 - DN 125 - DN 150**

**P.max: 360 mbar**



**EN**

**CE-51BS3422/ED05**

**CE 0051**

**MADE IN ITALY**

	pag.
English .....	3
Drawings.....	13
Dimensions (table 1) .....	17
Spare coils and connectors (table 2) .....	18
SIL Level (table 3) .....	19
Diagram .....	19

## 1.0 - GENERAL INFORMATION

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 automatic fast opening solenoid valves for gas. They open the flow of gas when the coil is electrically powered and close them when power is disconnected. They can be controlled by pressure switches, thermostats, etc.

They can be equipped with CPI switches to control the valve's obturator position (closed) remotely. The CPI can also be installed at a later time **ONLY IF** the device is set-up properly (cap under the valve body). Further information regarding the CPI switch is available in 6.0.

Reference standards: EN 161 - EN 13611.

### 1.2 - KEY OF SYMBOLS



**DANGER:** In the event of inobservance, this may cause damage to tangible goods.



**DANGER:** In the event of inobservance, this may cause damage to tangible goods, to people and/or pets.



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

### 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 rating plate.
- The manufacturer is not responsible for any damage caused by improper use of the device.

EN

## 2.0 - TECHNICAL DATA

• Use	: non-aggressive gases of the three families (dry gases)
• Ambient temperature (TS)	: -20 ÷ +60 °C
• Supply voltages (see table 2)	: 24 V/50 Hz - 110 V/50-60 Hz - 230 V/50-60 Hz*
• Supply voltage tolerance	: -15% ... +10%
• Electric wiring	: cable gland PG 11
• No. cycles/hour**	:
DN 32 - DN 40 - DN 50 - DN 65 - DN 80 - DN 100	~195 (ON time 5s - OFF time 13.5s)
DN 125 - DN 150	~90 (ON time 10s - OFF time 30s)
• Absorbed power	: see table 2
• Maximum operating pressure	: 360 mbar
• Opening time	: <1 s
• Closing time	: <1 s
• Protection rating	: IP65
• Class	: A
• Mechanical resistance	: Group 2
• Rp Threaded connections	: (DN 32 - DN 40 - DN 50) according to EN 10226
• Flanged connections to be coupled with PN 16 flanges	: (DN 65 - DN 80 - DN 100 - DN 125 - DN 150) ISO 7005 / EN 1092-1
• NPT threaded or ANSI 150 flanged connections	: on request
• Filter element	: 1 mm wire mesh on connections DN 32 - DN 40 - DN 50 filtering 50µm on DN 65 - DN 80 - DN 100 filtering 10µm on DN 125 - DN 150
• In compliance with	: Regulation (EU) 2016/426 (Appliances burning gaseous fuels) Directive EMC 2014/30/EU - Directive LVD 2014/35/EU Directive RoHS II 2011/65/EU

\* Only single-phase, the device does not work if powered with three-phase voltage.  
 \*\* For cycles/hours with ON/OFF times different from those indicated, contact our technical office

## 2.1 - MODEL IDENTIFICATION

See Table 2 on page 18.

## 2.2 - SIL LEVEL

The SIL level of the stand-alone solenoid valve is SIL 2; when two solenoids are installed in series and the relative leak test (Valve Proving System), certified according to EN 1643, the achieved level is SIL 3, as set forth in EN 676:2008. The solenoid valve has PL d level. For further data refer to the SIL LEVEL table (table 3).

## 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;

If the device is threaded:

make sure that the pipe thread is not too long, to prevent damaging the body of the device when screwing it on;

If the device is flanged:

- 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;
  - With regard to tightening operations, equip yourself with one or two calibrated torque wrenches or other controlled locking tools;
- 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;
  - 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 mains 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.

EN



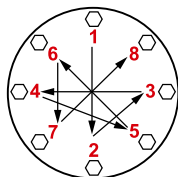
## 3.2 - INSTALLATION (see examples in 3.4)

### Threaded devices:

- Assemble the device by screwing it, with the correct seals, onto the plant with pipes and/or fittings whose threads are consistent with the connection being attached.
- Do not use the coil (**4**) as a lever to help you screw it on, only use the specific tool;
- The arrow, shown on the body (**7**) of the device, needs to be pointing towards the application;

### Flanged devices:

- Assemble the device by flanging it, with the correct seals, onto the plant with pipes whose flanges are consistent 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 the said gap by excessively tightening the bolts of the device;
- The arrow, shown on the body (**7**) of the device, needs to be pointing towards the application;
- 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 (see the example below);
- Tighten them, first by 30%, then by 60%, and finally 100% of the maximum torque (see the table below according to EN 13611);

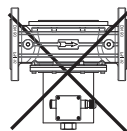


Diameter	DN 65	DN 80	DN 100	DN 125	DN 150
Max. torque (N.m)	50	50	80	160	160

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

### Common procedures (threaded and flanged devices):

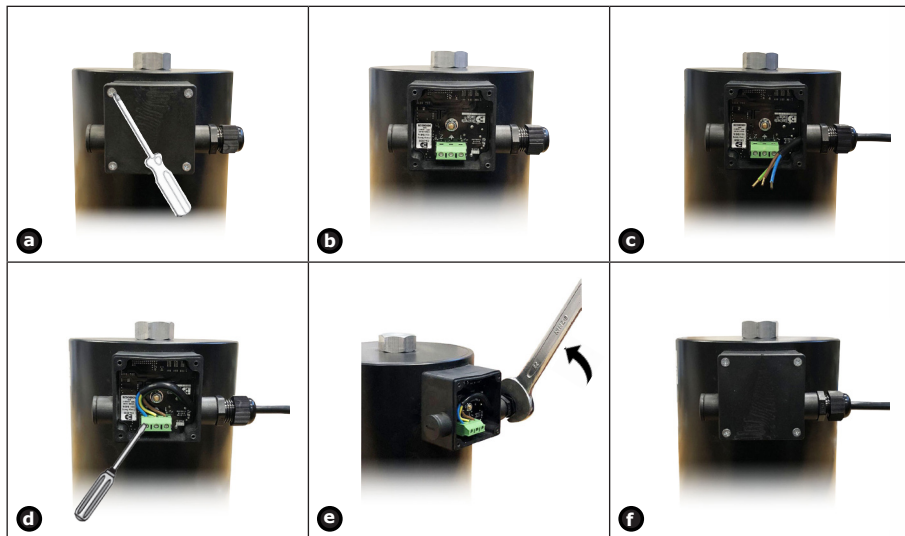
- The device can also be installed vertically without prejudicing correct operation. It cannot be put in upside down (with the coil (**4**) pointing downwards);
- During installation, avoid debris or metal residues from getting into the device;
- To guarantee mechanical tension-free assembly, we recommend using compensating joints, which also adjust to the pipe's thermal expansion;
- 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 (threaded or flanged) 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/electronic board recommended by the manufacturer;
- Wire the terminal board (**31**) with a cable 3x1 mm<sup>2</sup>, outside Ø between 8.3 and 9.5 mm using the relative terminals for cables, as shown in the general figure on the side. The cable to use must have double sheathing, be suitable for use outdoors, with minimum voltage of 500V, and minimum temperature of 105°C;



To wire the solenoid valve (see the images below):

- Loosen the 4 fastening screws (1);
- Remove the cover (2) and loosen the cable gland (3);
- Pass the cable through the cable gland (3), leaving a suitable length at the end to facilitate wiring to the terminal board without tensioning or forcing;
- Secure the cables (duly crimped) to the terminal board (31), connecting terminals 1 and 2 to the power supply and the earthing cable to the terminal  $\perp$ . **IMPORTANT:** respect the polarity with 24 Vdc power supply;
- Use a 22mm commercial spanner to secure the cable gland (3), ensuring the product has a protection rating of IP65;
- Secure the cover (2) with the 4 fastening screws (1). Make sure to place the rubber sealing gasket (33) correctly in order to ensure product rating of IP65;

• The valve needs to be earthed either through the pipe or through other means (eg cable jumpers).



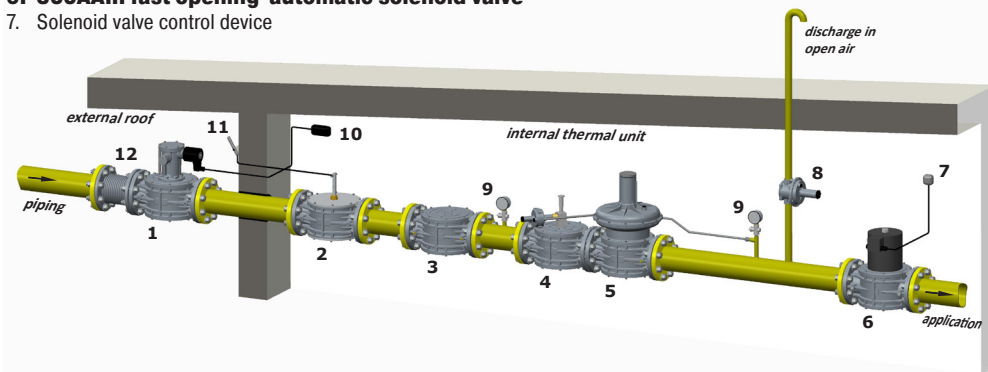
### 3.3 - INSTALLATION IN PLACES WHERE THERE IS THE RISK OF EXPLOSION (DIRECTIVE 2014/34/EU)

The solenoid valve is not suitable for use in potentially explosive areas.

### 3.4 - GENERAL EXAMPLES OF INSTALLATION

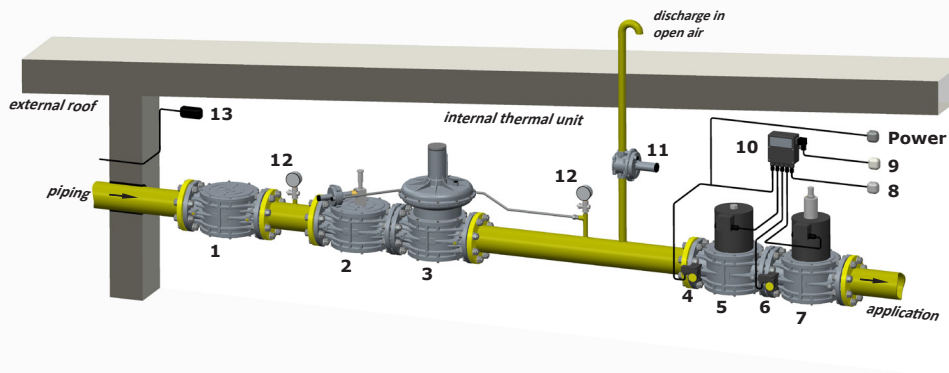
#### EXAMPLE 1

- |  |  |
|--|--|
| 1. 355AM... Manual reset solenoid valve                  | 8. Relief valve                            |
| 2. Jerk ON/OFF valve                                     | 9. Pressure gauge and relative button      |
| 3. Gas filter  | 10. Gas detector                           |
| 4. OPSO shut off valve                                   | 11. Remote jerk ON/OFF valve lever control |
| 5. Pressure regulator                                    | 12. Expansion joint/anti-vibration mount   |
| <b>6. 355AA... fast opening automatic solenoid valve</b> |  |
| 7. Solenoid valve control device                         |  |



## EXAMPLE 2 (Burner Gas Train)

1. Gas filter
2. OPSO shut off valve
3. Pressure regulator
4. Minimum pressure switch
- 5. 355AA... fast opening automatic solenoid valve**
6. Maximum pressure switch
7. Slow opening automatic solenoid valve
8. External reset
9. Burner control
10. Valve proving system
11. Relief valve
12. Pressure gauge and relative button
13. Gas detector



### 4.0 - 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 plant, check tightness and operation of the solenoid valve by supplying/cutting off the electricity.



### 4.1 - 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.



### 5.0 - MAINTENANCE

If the coil and/or electronic board/connector need to be replaced:



- 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;

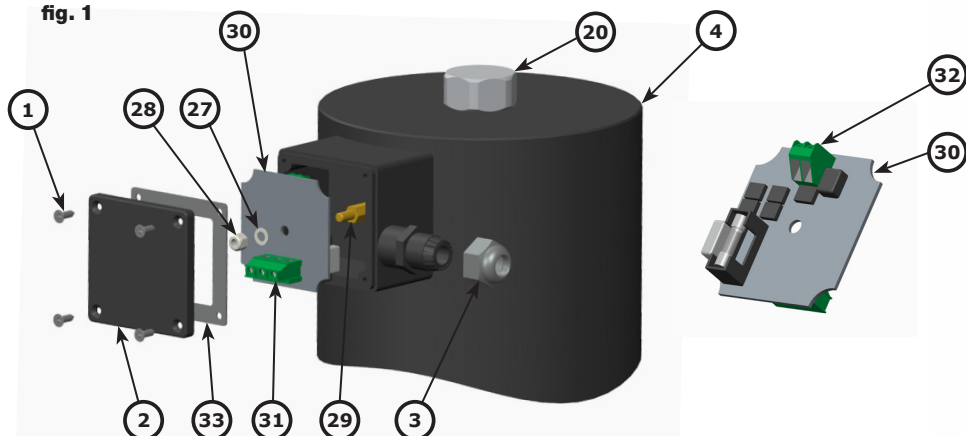
**NOTE:** The coil and/or electronic board/connector replacement operations need to be carried out taking care to ensure the product's IP65 rating.





## 5.1 - CONNECTOR/ELECTRONIC BOARD REPLACEMENT

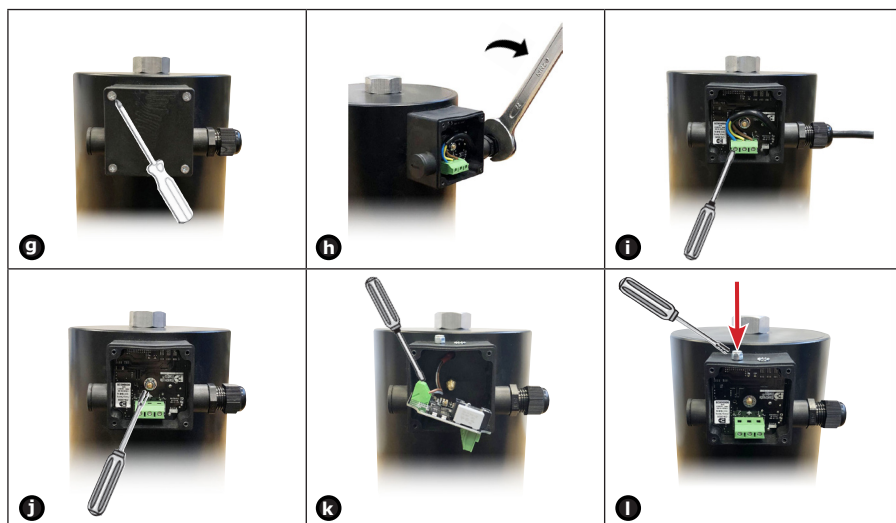
fig. 1



- g. Loosen the 4 fastening screws (1) of the cover (2);
- h. Remove the over (2) and loosen the cable gland (3) with a 22mm commercial spanner;
- i. Loosen the screws of the main terminal board (31) and remove the existing electric wiring by extracting the cables from the terminal board and cable gland (3);
- j. Using an 8 mm socket spanner, loosen the fastening nut (28) and remove it together with the toothed washer (27);
- k. Remove the connector/board (30) as shown in **k**. Loosen the screws from the rear terminal board (32) and remove the two wires that come out;
- l. Wire the two wires coming out from the rear terminal board (32) of the new connector/board.

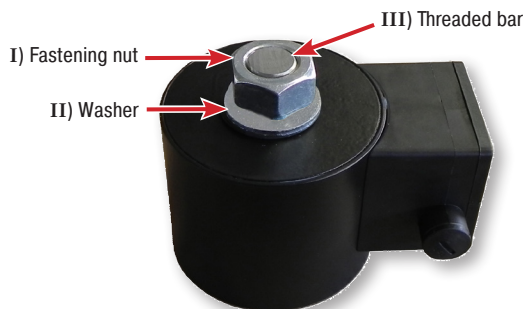
**IMPORTANT:** Being careful not to pinch the two cables, in the centre pin (29) insert: the new connector/board + toothed washer (27) + nut (28). With an 8mm socket spanner, tighten the nut (28);

Proceed as specified in points c-f in section 3.2.







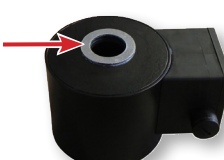
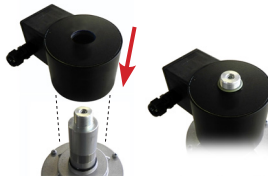





## 5.2 - REPLACING THE COIL



Complete coil  
(including connector/board)  
supplied as a spare part

<p>Remove the fastening ring nut (<b>20</b>) with a 35mm commercial spanner</p>  <p><b>m</b></p>	<p>Remove the O-Ring (<b>19</b>)</p>  <p><b>n</b></p>	<p>Extract and remove the coil (<b>4</b>)</p>  <p><b>o</b></p>
<p>Now proceed with replacing the coil</p>  <p><b>p</b></p>	<p>Loosen the nut (I) with a 35mm commercial spanner</p>  <p><b>q</b></p>	<p>Remove the coil from the threaded bar (III)</p>  <p><b>r</b></p>
<p>Remove the washer (II)</p>  <p><b>s</b></p>	<p>Insert the new coil and position the O-Ring</p>  <p><b>t</b></p>	<p>Tighten and secure the fastening ring nut again with a 35 mm commercial spanner</p>  <p><b>u</b></p>

· On completion of the above operations, proceed with wiring the coil just installed, as shown in 3.2



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

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.

**NOTE:** given its weight, it is recommended to carry out the following operations after having removed the coil (see paragraph 5.2 - images m-n-o-p-t-u coil removal and repositioning)

- Loosen the fastening screws (**17**) and very carefully remove the cover (**6**) from the valve body (**7**);
- Extract the filter element (**15**) and check its condition. Blow it and clean it and, if necessary, replace it (see fig. 6 and 7 for positioning);
- Check the status of the cover's O-Ring (**16**) and replace, if necessary;
- Make sure the cover's O-Ring (**16**) is inside the provided groove;
- Reassemble the cover (**6**) and secure it in its original position, being very careful not to "pinch" or damage the O-ring (**16**) during tightening;
- Tighten the screws gradually, following a "cross" pattern, until the torque (tolerance -15%) indicated in table 4 on page 19 is reached. Use a calibrated torque wrench to do this;
- Check the body/cover seal;

**NOTE:** for internal inspections, it is recommended to:

- also check the obturator's (**10**) integrity and, if necessary, replace the rubber seal (**12**);
- replace the seals before reassembling.

## 6.0 - CPI SWITCH

The microswitch that signals the closed position (CPI SWITCH) is a magnetic proximity sensor with a normally open contact. It provides a signal when the valve obturator closes.

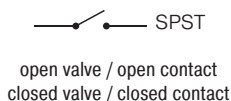
If the solenoid valve comes with CPI, the position of the sensor is already calibrated and set, therefore, for operation you simply need to connect it to the power supply.

If it comes separately and is installed at a later time on a solenoid valve with CPI set-up, follow the instructions provided in paragraph 6.2

### 6.1 - CPI SWITCH TECHNICAL DATA

- Ambient temperature : -20 ÷ +60 °C
- Switchable voltage : max 1000 V (dc or ac peak)
- Switchable current : max 1 A (dc or ac peak)
- Switchable power : max 40W ohmic
- Resistance : 200 mΩ
- Protection rating : IP65
- Cable length : max 5m

#### CPI wiring diagram



### 6.2 - CPI SWITCH INSTALLATION and CALIBRATION

It is necessary to close the gas prior to installation.

**NOTE:** CPI connector (**23**) wiring must be done ensuring a product rating of IP65;

- Remove the cap (**11**) under the valve body (**7**) and remove the aluminium washer (found between the cap and body);
- Instead of the cap (**11**), tighten the CPI ring nut kit (**21**). Make sure that between body (**7**) and kit (**21**) there is the new aluminium washer or an O-Ring (**25**);
- Tighten the CPI ring nut kit (**21**) to the valve's body (**7**) with a special commercial spanner;
- Before wiring the CPI connector (**23**), unscrew and remove the central screw (**36**);
- Connect the CPI connector (**23**) terminals 1 and 2 in series to the signalling device. Use proper cable terminals (see the figures in 3.2);
- Wire the CPI connector (**23**) with 2x1mm<sup>2</sup> cable with external Ø of 6.7 mm. The cable must be in double sheath, suitable for outdoor use, with a minimum voltage of 500V and a temperature of at least 90°C;
- Secure the CPI connector (**23**), tightening (recommended tightening torque 0.4 N.m ± 10%) the centre screw (**36**);
- To calibrate the microswitch, loosen the fastening nut (**22**) and position (by screwing on or off) the adjustment ring nut (**24**) so that, with the solenoid valve in a closed position, the CPI provides the signal;
- Secure the adjustment ring nut (**24**) in that position by tightening the nut (**22**);
- The kit is now installed. Open and close the solenoid valve (by supplying and cutting off power) 2-3 times to make sure the microswitch is signalling correctly.

## 7.0 - 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, cataphoresis, 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 in compliance with the legislation in force in the country where this operation is performed.

## 8.0 - 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;

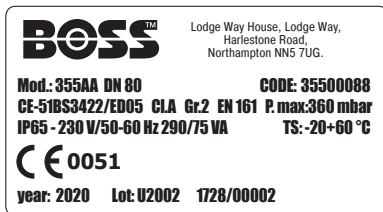
are not covered by the rights of the warranty or compensation for damage.

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

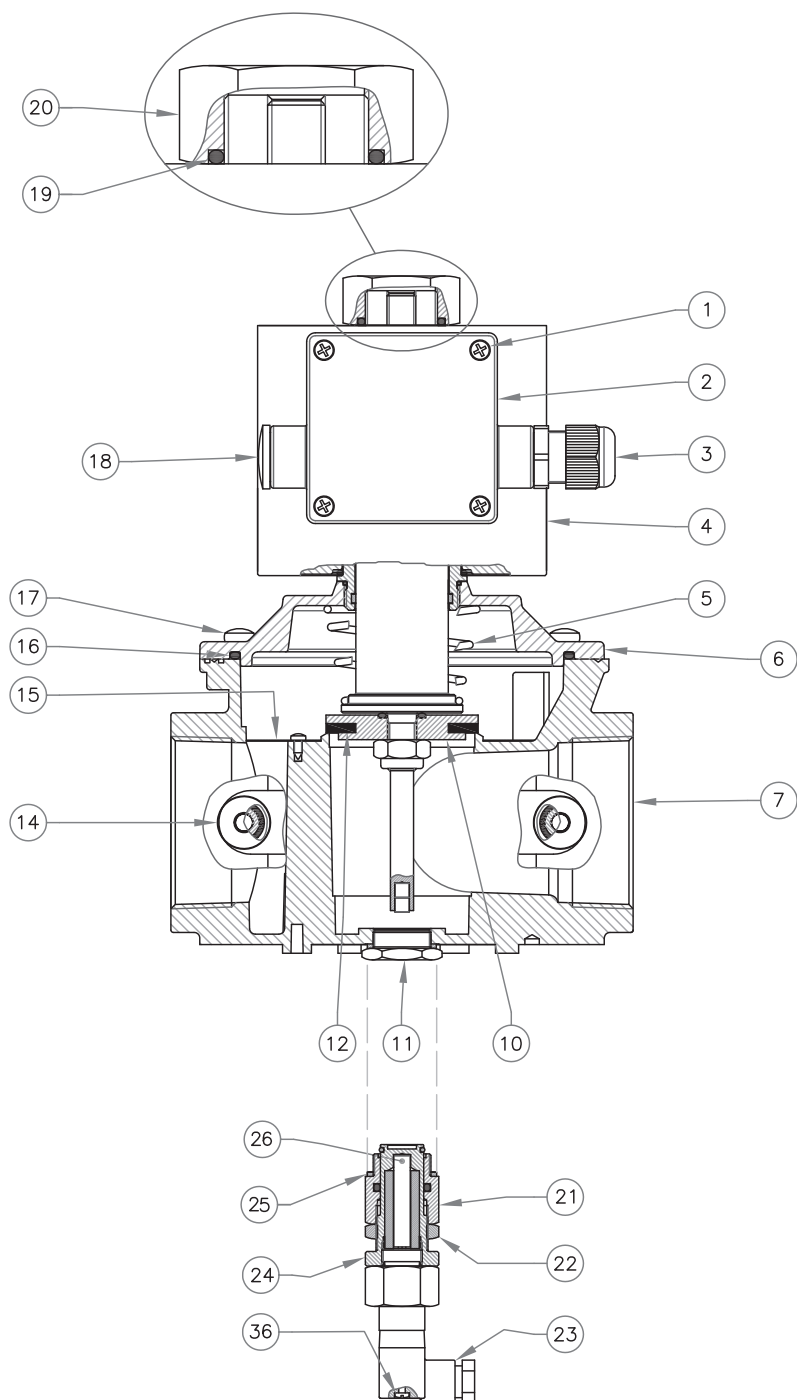
## 9.0 - RATING PLATE DATA

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

- Manufacturer's name/logo and address
- Mod.: = device name/model followed by the connection diameter
- CE-51BS3422/ED05 = certification pin number
- Cl. A = Seal strength in counterflow at 150 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
- Example of electrical absorption indication: 290/75 VA indicates 290 VA at start, 75 VA at steady state
- 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 2<sup>nd</sup> week
  - 1728 = progressive job order number for the indicated year
  - 00002 = progressive number referring to the quantity of the lot

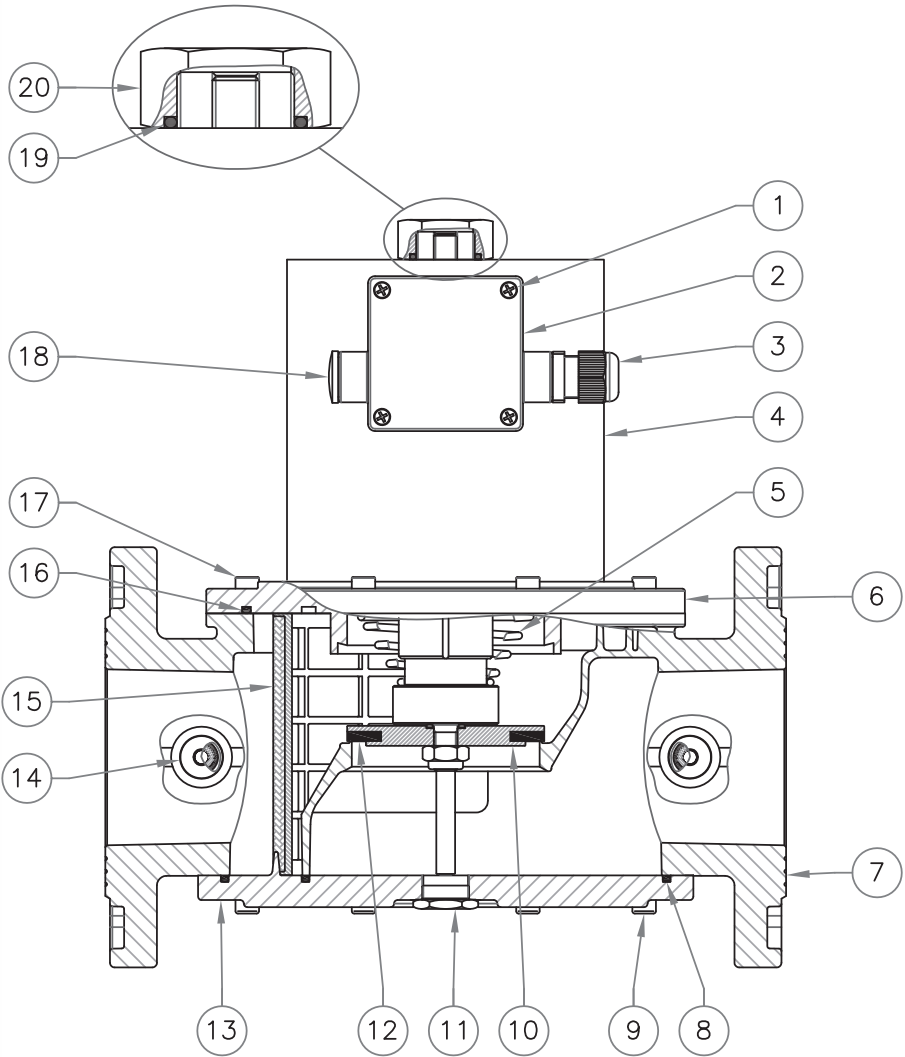


**fig. 2**  
DN 32 - DN 40 - DN 50



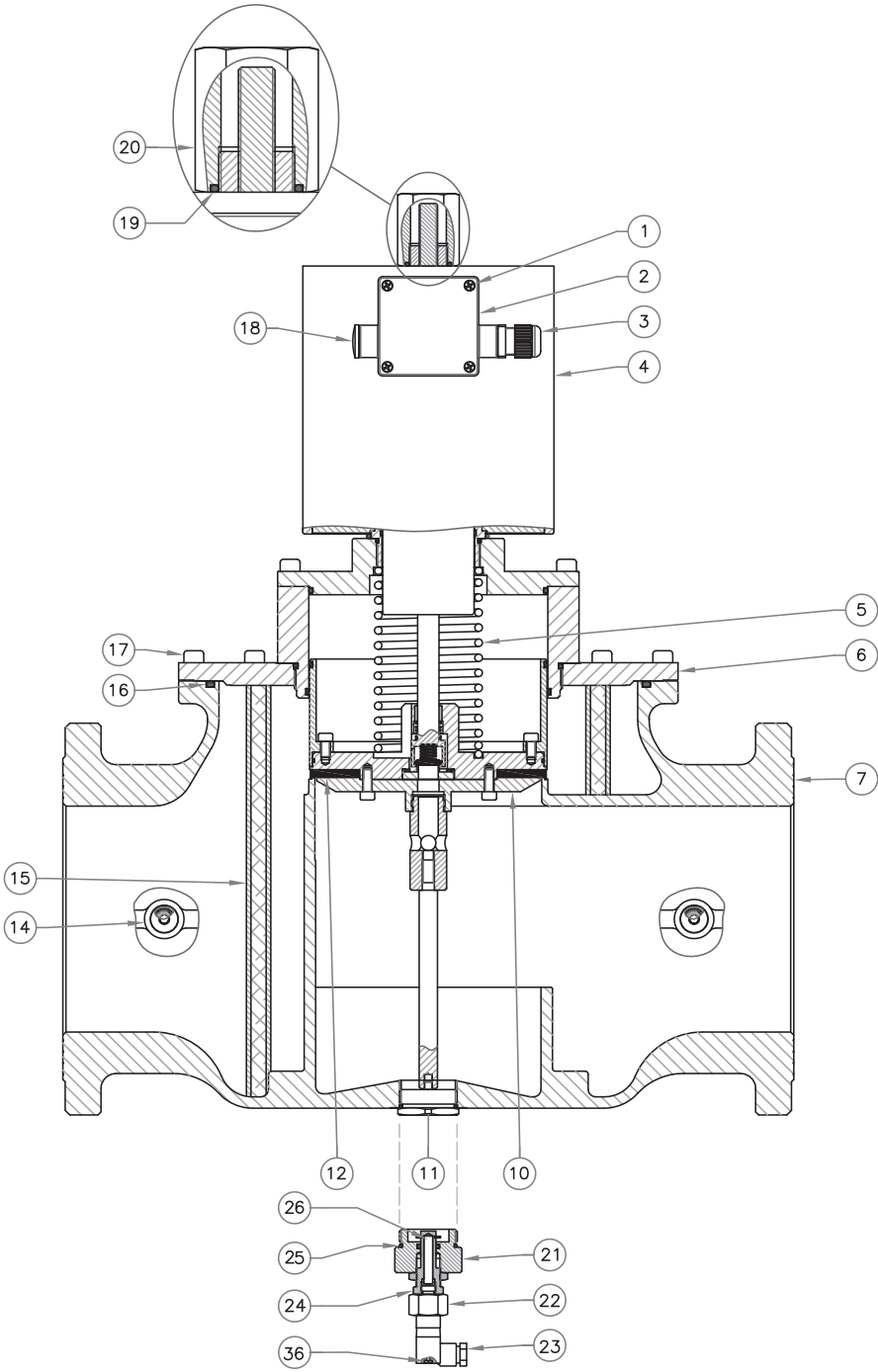
**fig. 3**

DN 65 - DN 80 - DN 100



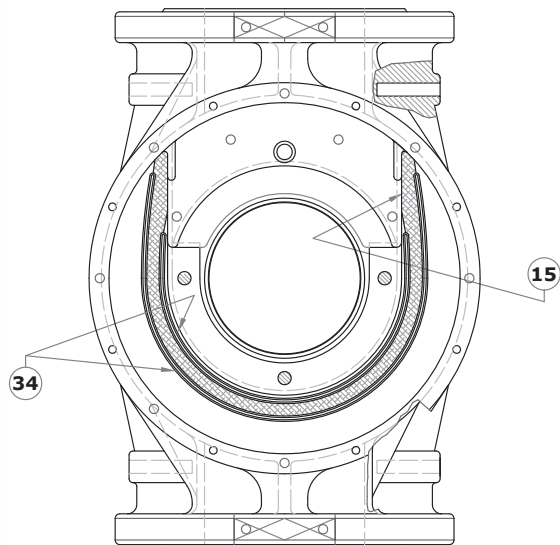
EN

**fig. 4**  
DN 125 - DN 150



EN

fig. 5



DN 65 - DN 80 - DN 100

**fig. 5: view from above without cover**  
Position the filter element (15), making sure it is between the relative guides (34).

fig. 6

DN 125 - DN 150

**fig. 6: view from above without cover**  
Position the filter element (15), making sure it is inserted between the relative guides (34) and check that the fins (35) are secured well to the valve body.

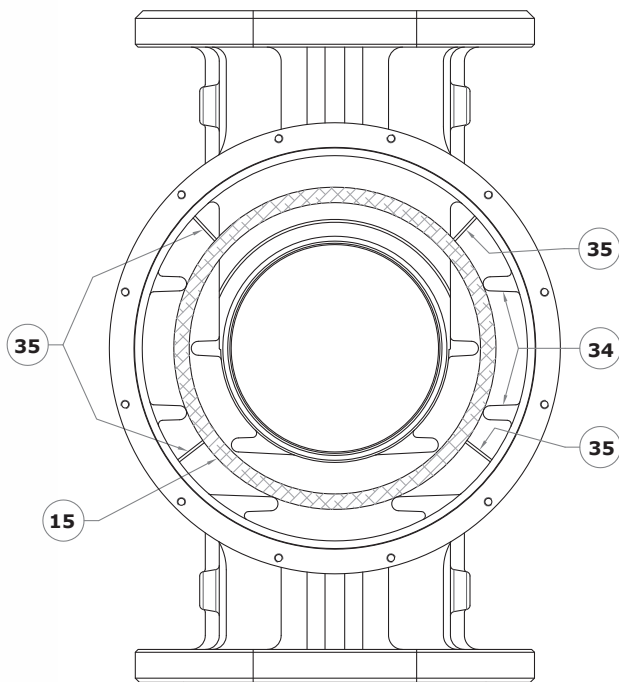




fig. 1, 2, 3, 4, 5 and 6

1. Cover fastening screws

2. Electrical box cover

3. Cable gland

4. Coil

5. Closing spring

6. Valve cover

7. Valve body

8. Bottom sealing O-Ring  
(on DN 65-80-100 only)

9. Bottom fastening screws  
(on DN 65-80-100 only)

10. Obturator

11. Lower cap (on versions set-up for  
CPI installation)
12. Sealing washer

13. Bottom (on DN 65-80-100 only)

14. Cap G 1/4

15. Filter element

16. Valve cover sealing O-Ring

17. Valve cover fastening screws

18. Electrical box cap

19. Coil O-Ring

20. Coil fastening ring nut

21. CPI kit ring nut

22. CPI fastening nut

23. CPI connector

24. CPI adjustment ring nut

25. Aluminium washer or O-Ring
26. Microswitch

27. Toothed washer

28. Connector/board fastening nut

29. Connector/board support pin

30. Connector/board (electronic)

31. Main power supply terminal board

32. Rear terminal board (coil)

33. Cover gasket

34. Filter element guides  
(on DN 125 - DN 150 only)

35. Filter element fins

36. CPI connector centre screw

Table 1

Overall dimensions in mm								
Threaded connections	Flanged connections	holes	A	B=(D+E)	C	D	E	F
Rp DN 32 - Rp DN 40	-	-	160	210	140	37	173	108
Rp DN 50	-	-	160	235	140	45	190	122
-	PN 16 - ANSI 150 DN 65	4	290	317	211	89	228	141
-	PN 16 DN 80	8	310	325	211	97	228	141
-	ANSI 150 DN 80	4	290	317	211	89	228	141
-	PN 16 - ANSI 150 DN 100	8	350	388	254	105	283	167
-	PN 16 - ANSI 150 DN 125	8	480	575	328	127	448	204
-	PN 16 - ANSI 150 DN 150	8	480	579	328	131	448	204



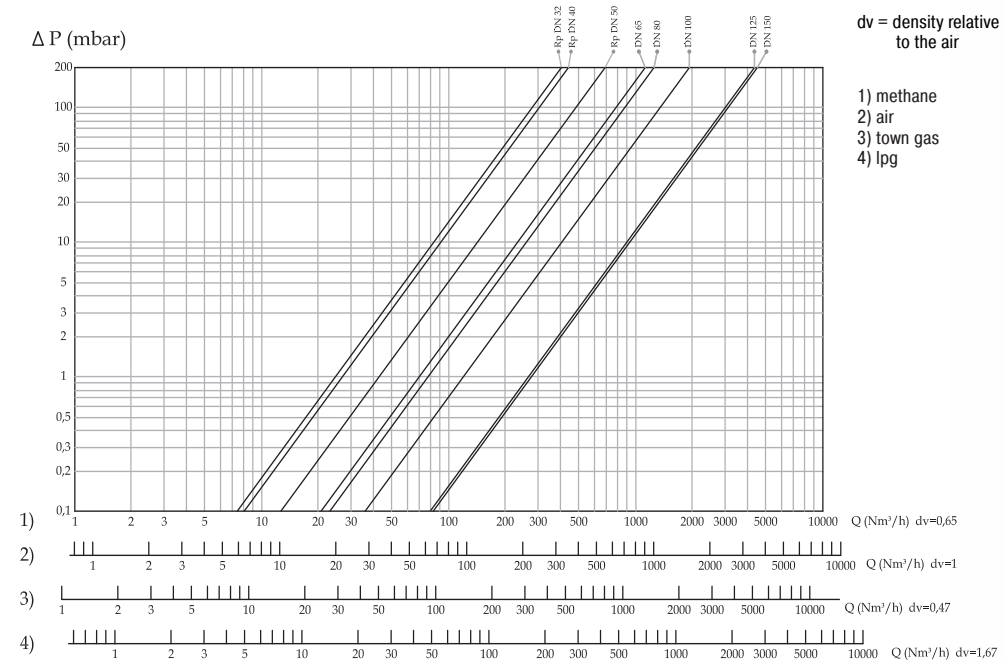
The dimensions are provided as a guideline, they are not binding

Table 2						
Coils and connectors for 355AA solenoid valve						
Valve code	Connections	Voltage	Coil + connector code (available as special order)	Coil stamping	Connector type	Absorbed power
						VA*
35500203	Rp DN 32	24 V/50 Hz	B13138	BO-1015 24 Vac DN 32 - 40 - 50	Energy Saving 24 Vac	97 / 41
35500214	Rp DN 40					
35500236	Rp DN 50					
35500675	Rp DN 32	110 V/50-60 Hz	B13137	BO-1020 110 Vac DN 32 - 40 - 50	Energy Saving 110 Vac	132 / 60
35500686	Rp DN 40					
35500697	Rp DN 50					
35500044	Rp DN 32	230 V/50-60 Hz	B13136	BO-1030 230 Vac DN 32 - 40 - 50	Energy Saving 230 Vac	82 / 32
35500055	Rp DN 40					
35500066	Rp DN 50					
35500247	DN 65	24 V/50 Hz	B13055	BO-1115 24 Vac DN 65 - 80	Energy Saving 24 Vac	185 / 50
35500258	DN 80					
35500705	DN 65	110 V/50-60 Hz	B13092	BO-1120 110 Vac DN 65 - 80	Energy Saving 110 Vac	260 / 70
35500716	DN 80					
35500077	DN 65	230 V/50-60 Hz	B13054	BO-1130 230 Vac DN 65 - 80	Energy Saving 230 Vac	290 / 75
35500088	DN 80					
35500269	DN 100	24 V/50 Hz	B13057	BO-1215 24 Vac DN 100	Energy Saving 24 Vac	120 / 35
35500738	DN 100	110 V/50-60 Hz	B13093	BO-1220 110 Vac DN 100	Energy Saving 110 Vac	270 / 70
35500099	DN 100	230 V/50-60 Hz	B13056	BO-1230 110 Vac DN 100	Energy Saving 230 Vac	270 / 70
35500280	DN 125	24 V/50 Hz	B13108	BO-2215 24 Vac DN 100-125-150	Energy Saving 24 Vac	120 / 35
35500291	DN 150					
35500749	DN 125	110 V/50-60 Hz	B13094	BO-2220 110 Vac DN 100-125-150	Energy Saving 110 Vac	270 / 70
35500760	DN 150					
35500107	DN 125	230 V/50-60 Hz	B13109	BO-2230 110 Vac DN 100-125-150	Energy Saving 230 Vac	270 / 70
35500129	DN 150					
* Example of electrical absorption indications: 270/70 VA indicates 270 VA on PTO, 70 VA at full speed						

Table 3	
SIL LEVEL	
Parameter	Value
Hardware Failure Tolerance - HFT	0
Common Cause Failure - CCF in points	75
Safe Failure Fraction - SFF in %	65%
Expected Lifetime Cycles - B <sub>10d</sub>	251278
Expected Lifetime - T <sub>10d</sub> [years]	87
Probability of Dangerous Failures - PFH <sub>0</sub> [1/h]	1.33E-07
Performance Level - PL	d
Safety Integrity Level - SIL	2
Mean Time to Dangerous Failure - MTTF <sub>0</sub> [years]	860
DESIGNED LIFETIME	
Designed operating cycles (According to EN 161)	Time (years)
from 100.000 to 200.000 depends on diameter	10

Table 4						
Vite / Screw		M5	M6	M8	M10	M12
Max. torque (N.m)	Galvanised	6	10	25	49,5	84,5
	Stainless Steel	4,5	7,5	18,5	37	63,5

Pressure drop diagram (calculated with P1 = 50 mbar)



We reserve the right to any technical and construction changes.



---

Registered Office: Travis Perkins PLC, Lodge Way House, Lodge Way, Harlestone Road, Northampton NN5 7UG.  
Telephone Number: 0116 245 5500  
[www.bssindustrial.co.uk](http://www.bssindustrial.co.uk) - [inquiries@bssgroup.com](mailto:inquiries@bssgroup.com)