

Serie IEL1/3/6...

DESCRIPTION

Single stage automatic normally closed solenoid valves that open when the coil is energized and close when there is no tension.

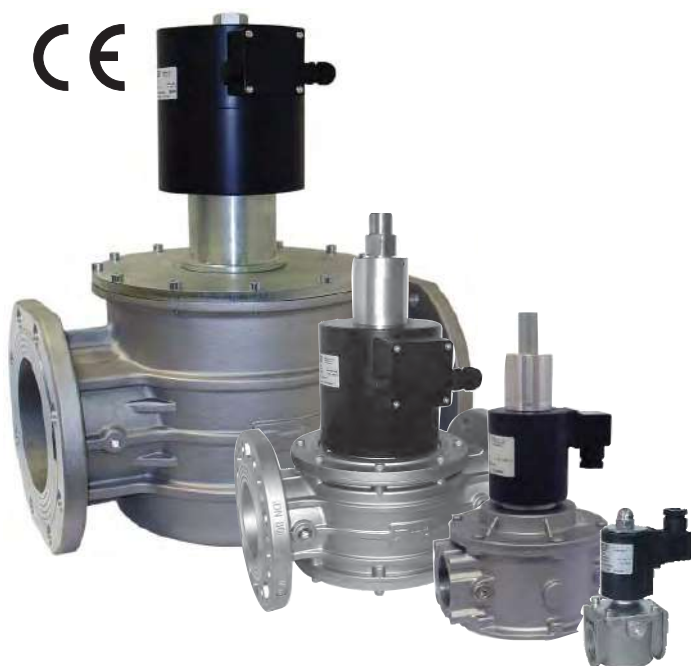
Pmax = 1 bar

Pmax = 3 bar

Pmax = 6 bar

They are equipped with a flow regulator and adjustable slow opening kit.

- EC certified according to EN 161
- In conformity with the 2009/142/EC Directive (Gas Directive)
- In conformity with the 94/9/EC Directive (ATEX Directive)
- In conformity with the 2004/108/EC Directive (Electromagnetic Compatibility)
- In conformity with the 2006/95/EC Directive (Low Voltage)



IDENTIFICATION

IEL S 3 02N 1 1 B

Gas automatic solenoid valve **series IEL...**

Types

- S** = standard (fast opening)
R = with flow regulation
L1 = with adjustable slow opening
 + flow regulation + adjustable rapid stroke
L2 = with adjustable slow opening
 + flow regulation
L3 = with adjustable slow opening
 + adjustable rapid stroke
L4 = with adjustable slow opening

Pmax

- 1** = Pmax 1 bar
3 = Pmax 3 bar
6 = Pmax 6 bar

B = biogas

CPI switch

- 0** = no CPI switch
1 = CPI switch (P.max ≤ 1 bar)
2 = CPI switch (P.max > 1 bar)

Voltage

- 1** = 12 V/50 Hz
2 = 12 Vdc
3 = 24 V/50 Hz
4 = 24 Vdc
6 = 110 V/50-60 Hz with rectifier
8 = 230 V/50-60 Hz with rectifier

Connections

Threaded				Flanged			
Code	GAS	Code NPT	NPT	Code	PN 16	Code ANSI	ANSI PN 16
02	DN 15 (G 1/2")	02N	DN 15 (NPT 1/2")				
03	DN 20 (G 3/4")	03N	DN 20 (NPT 3/4")				
04	DN 25 (G 1")	04N	DN 25 (NPT 1")	25	DN 25	25A	DN 25 ANSI
05	DN 32 (G 1 1/4")	05N	DN 32 (NPT 1 1/4")	32	DN 32	32A	DN 32 ANSI
06	DN 40 (G 1 1/2")	06N	DN 40 (NPT 1 1/2")	40	DN 40	40A	DN 40 ANSI
07	DN 50 (G 2")	07N	DN 50 (NPT 2")	50	DN 50	50A	DN 50 ANSI
				08	DN 65	08A	DN 65 ANSI
				09	DN 80	09A	DN 80 ANSI
				10	DN 100	10A	DN 100 ANSI

NOTE: not all combinations are possible
Please contact the technical department.

GENERAL DATA

TECHNICAL DATA

- Use: not aggressive gases of the 3 families (dry gases)
- Threaded connections Rp: (DN 15 ÷ DN 50) according to EN 10226
- Flanged connections PN 16: (DN 25 ÷ DN 100) according to ISO 7005
- On request ANSI 150 flanged connections
- Power supply voltage: 12 Vdc, 12 V/50 Hz (only for DN 15-25)
24 Vdc, 24 V/50 Hz, 110 V/50-60 Hz, 230 V/50-60 Hz
- Power supply voltage tolerance: -15% ... +10%
- Power absorption: see coils and connector table
- Max. working pressure: 1 - 3 - 6 bar
- Environment temperature: -15 ÷ +60 °C
- Max superficial temperature: 85 °C
- Protection degree: IP65
- Class: A;
- Group: 2
- Closing time: <1 s
- Opening time: <1 s

Coils: IEL1 DN 15 ÷ DN 50 and IEL3/IEL6 DN 15 ÷ DN 25

polyammiadic resin encapsulated with glass fibre, connection type DIN 43650; the insulation class is F (155°) and the enamelled copper wire class is H (180°).

IEL1 DN 65 ÷ DN 100 and IEL3/IEL6 DN 32 ÷ DN 100
the insulation class and the enamelled copper wire class is H (180°).

MATERIALS

- Die-cast aluminium (UNI EN 1706)
- OT-58 brass (UNI EN 12164)
- 11S aluminium (UNI 9002-5)
- Galvanized and 430 F stainless steel (UNI EN 10088)
- NBR rubber (UNI 7702)
- Nylon 30% glass fibre (UNI EN ISO 11667)
- Viledon

COMPONENTS

THREADED CONNECTIONS

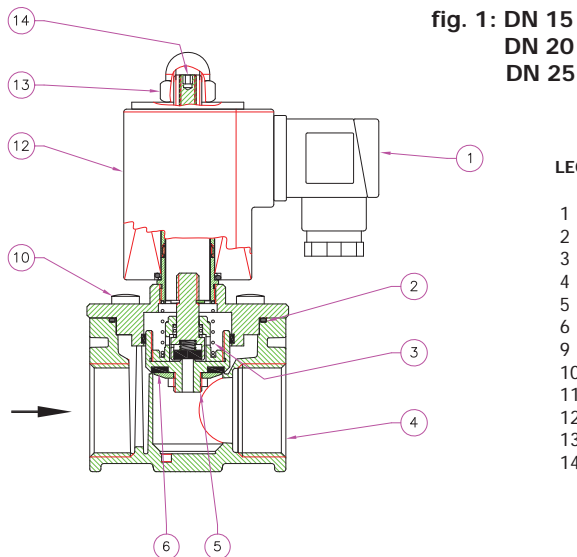


fig. 1: DN 15
DN 20
DN 25

LEGEND

- 1 - Electrical connector
- 2 - Seal O-Ring
- 3 - Closing spring
- 4 - Valve body
- 5 - Closure member
- 6 - Washer seal
- 9 - Pressure tap / test nipple
- 10 - Cover fixing screws
- 11 - Cover
- 12 - Electrical coil
- 13 - Coil fixing nut
- 14 - Flow calibration screw (IELR version)

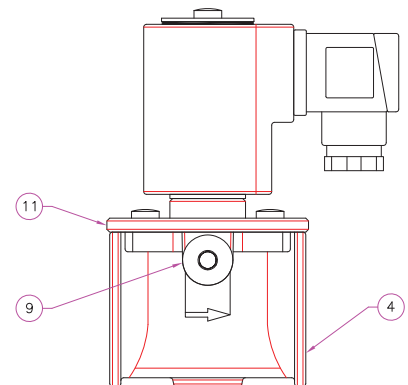


fig. 2: DN 32
DN 40
DN 50

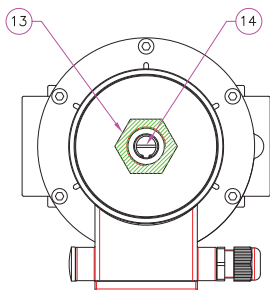
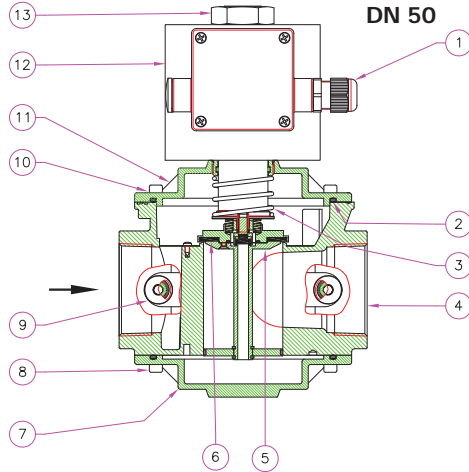
LEGEND

- 1 - Electrical connector
- 2 - Seal O-Ring
- 3 - Closing spring
- 4 - Valve body
- 5 - Closure member
- 6 - Washer seal
- 9 - Pressure tap / test nipple
- 10 - Cover fixing screws
- 11 - Cover
- 12 - Electrical coil
- 13 - Coil fixing nut
- 14 - Flow calibration screw (IELR version)

COMPONENTS

FLANGED CONNECTIONS

fig. 3: DN 32
DN 40
DN 50



LEGEND

- | | |
|--------------------------|--|
| 1 - Electrical connector | 8 - Bottom fixing screws |
| 2 - Seal O-Ring | 9 - Pressure tap / test nipple |
| 3 - Closing spring | 10 - Cover fixing screws |
| 4 - Valve body | 11 - Cover |
| 5 - Closure member | 12 - Electrical coil |
| 6 - Washer seal | 13 - Coil fixing nut |
| 7 - Bottom | 14 - Flow calibration screw (IELR version) |

fig. 4: DN 65
DN 80
DN 100

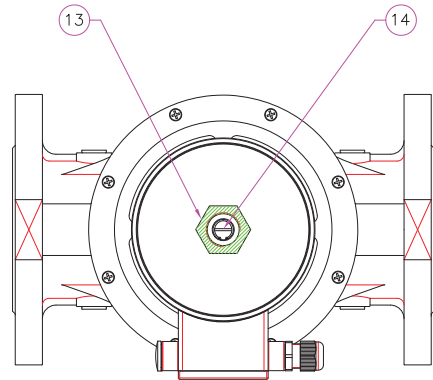
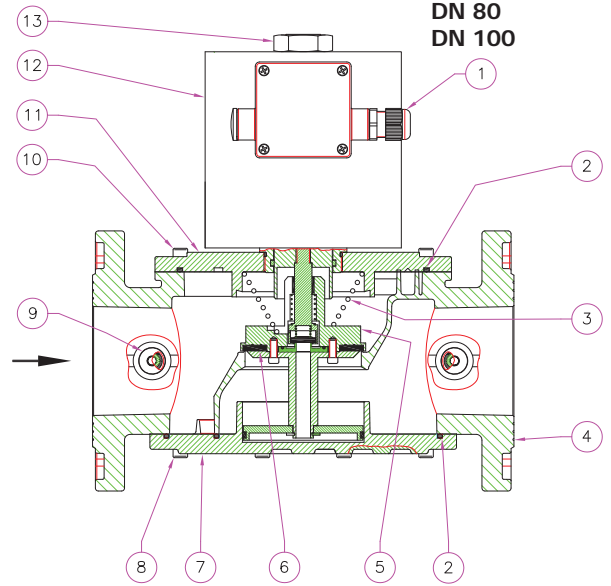
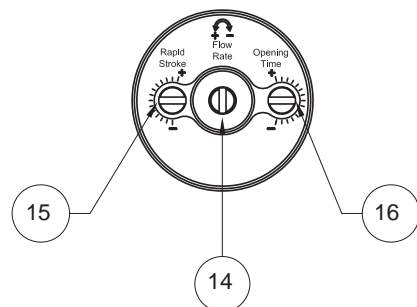
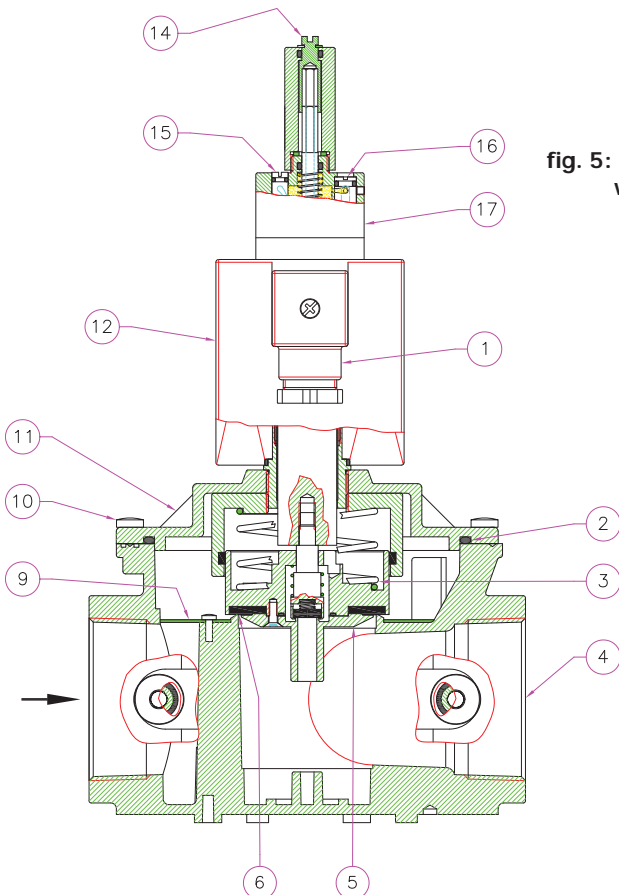


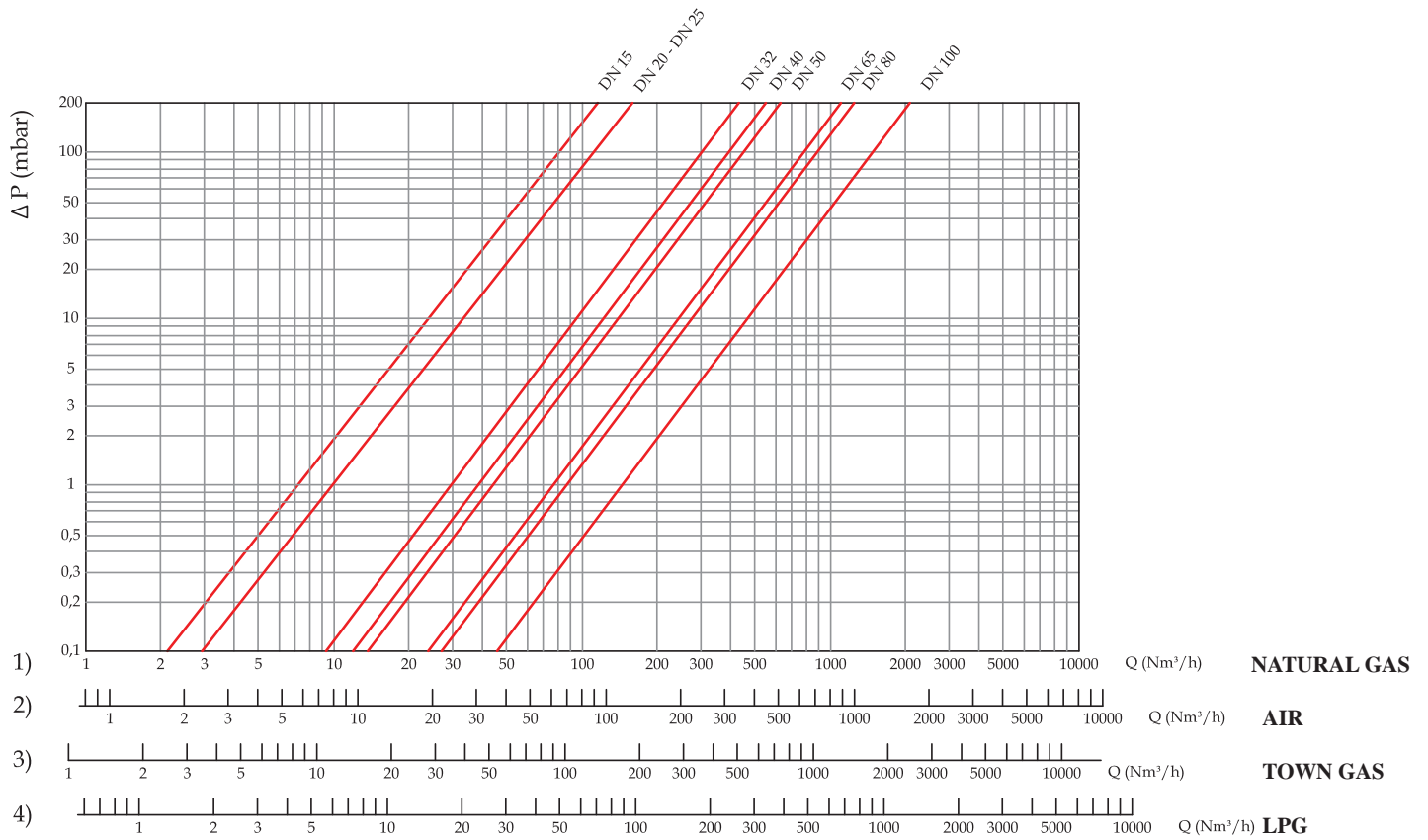
fig. 5: DN 15 - DN 100
with flow regulation

LEGEND

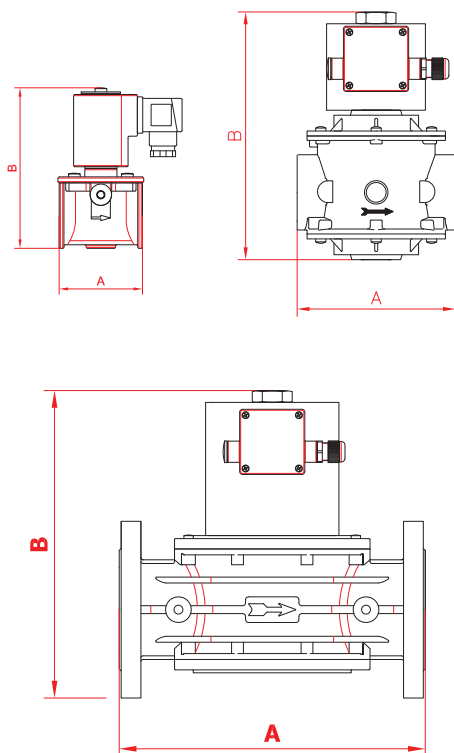
- | | |
|--------------------------|-------------------------------|
| 1 - Electrical connector | 10 - Cover fixing screws |
| 2 - Seal O-Ring | 11 - Cover |
| 3 - Closing spring | 12 - Electrical coil |
| 4 - Valve body | 14 - Flow calibration screw |
| 5 - Closure member | 15 - Rapid stroke calibration |
| 6 - Washer seal | 16 - Opening speed regulation |
| 9 - Filter | 17 - Slow opening kit |



PRESSURE DROP DIAGRAM



DIMENSIONS



Threaded connections	Flanged connections	P. max (bar)	A	B	
				IEL	IELR
DN 15 - DN 20 - DN 25	-	1 - 3 - 6	70	137	150
-	DN 25	1 - 3 - 6	142	170	195
DN 32 - DN 40 - DN 50		1	160	210	226
DN 32 - DN 40 - DN 50	-	3 - 6	160	258	258
	DN 32 - DN 40 - DN 50	1	230	237	252
	DN 32 - DN 40 - DN 50	3 - 6	230	261	261
	DN 65	1 - 3 - 6	290	318	318
	DN 80	1 - 3 - 6	310	325	325
	DN 100	1 - 3 - 6	350	392	392

COILS AND CONNECTORS

Connections	Voltage	Coil code	Coil stamping	Connector code	Connector type	Connections	Voltage	Coil code	Coil stamping	Connector code	Connector type
DN 15 - DN 25 (P.max 1 bar)	12 Vdc	BO-0400	BO-0400 12 VDC 17W	CN-0010	NORMAL	DN 15 - DN 25 (P.max 3 - 6 bar)	12 Vdc	BO-0510	BO-0510 12 VDC 28W	CN-2100	NORMAL
	12 V/50 Hz	BO-0400	BO-0400 12 VDC 17W	CN-0050	RECTIFIER		12 V/50 Hz	BO-0510	BO-0510 12 VDC 28W	CN-2110	RECTIFIER + Energy Saving
	24 Vdc	BO-0410	BO-0410 24 VDC 17W	CN-0010	NORMAL		24 Vdc	BO-0520	BO-0520 24 VDC 28W	CN-2100	NORMAL
	24 V/50 Hz	BO-0410	BO-0410 24 VDC 17W	CN-0050	RECTIFIER		24 V/50 Hz	BO-0520	BO-0520 24 VDC 28W	CN-2110	RECTIFIER + Energy Saving
	110 V/50-60 Hz	BO-0420	BO-0420 110 V RAC 17W	CN-0045	RECTIFIER		110 V/50 Hz	BO-0530	BO-0530 110 V RAC 28W	CN-2130	RECTIFIER + Energy Saving
	230 V/50-60 Hz	BO-0430	BO-0430 230 V RAC 17W	CN-0045	RECTIFIER		230 V/50-60 Hz	BO-0540	BO-0540 230 V RAC 28W	CN-2130	RECTIFIER + Energy Saving
DN 32 - 50 (P.max 1 bar)	24 Vdc	BO-0355	BO-0355 24V RAC ES	CN-2100	NORMAL + Energy Saving	DN 32 - 50 (P.max 3 - 6 bar)	12 Vdc	BO-1000	12 Vdc DN 32 - 40 - 50	CN-2000	NORMAL
	24 V/50 Hz	BO-0355	BO-0355 24V RAC ES	CN-2110	RECTIFIER + Energy Saving		24 Vdc	BO-1010	24 Vdc DN 32 - 40 - 50	CN-2000	NORMAL
	110 V/50 Hz	BO-0365	BO-0365 110 V RAC ES	CN-2130	NORMAL + Energy Saving		24 V/50 Hz	BO-1015	24 Vac DN 32 - 40 - 50	CN-2010	RECTIFIER + Energy Saving
	230 V/50-60 Hz	BO-0375	BO-0375 230 V RAC ES	CN-2130	RECTIFIER + Energy Saving		110 V/50 Hz	BO-1020	110 Vac DN 32 - 40 - 50	CN-2020	RECTIFIER + Energy Saving
							230 V/50-60 Hz	BO-1030	230 Vac DN 32 - 40 - 50	CN-2030	RECTIFIER + Energy Saving
Connections	Voltage	Coil code	Coil stamping	Connector code	Connector type	Connections	Voltage	Coil code	Coil stamping	Connector code	Connector type
DN 65 - DN 80 (P.max 1 - 3 - 6 bar)	24 Vdc	BO-1110	24 Vdc DN 65 - 80	CN-2000	NORMAL	DN 100 (P.max 1 - 3 - 6 bar)	24 Vdc	BO-1210	24 Vdc DN 100	CN-2000	NORMAL
	24 V/50 Hz	BO-1115	24 Vac DN 65 - 80	CN-2010	RECTIFIER + Energy Saving		24 V/50 Hz	BO-1215	24 Vac DN 100	CN-2010	RECTIFIER + Energy Saving
	110 V/50 Hz	BO-1120	110 Vac DN 65 - 80	CN-2020	RECTIFIER + Energy Saving		110 V/50 Hz	BO-1220	110 Vac DN 100	CN-2020	RECTIFIER + Energy Saving
	230 V/50-60 Hz	BO-1130	230 Vac DN 65 - 80	CN-2030	RECTIFIER + Energy Saving		230 V/50-60 Hz	BO-1230	230 Vac DN 100	CN-2030	RECTIFIER + Energy Saving

INSTALLATION

The solenoid valve is in conformity with the Directive 94/9/CE (said Directive ATEX 100 a) as device of group II, category 3G and as device of group II, category 3D; for this reason it is suitable to be installed in the zones 2 and 22 as classified in the attachment I to the Directive 99/92/EC.

The solenoid valve is not suitable to be used in zones 1 and 21 and, all the more so, in zones 0 and 20 as classified in the already said Directive 99/92/EC.

To determine the qualification and the extension of the dangerous zones, see the norm EN 60079-10.

The device, if installed and serviced respecting all the conditions and the technical instructions of this document, is not source of specific dangers: in particular, there is no emission in the atmosphere of inflammable substance in way to cause an explosive atmosphere.



Installation must be in compliance with local legislation in force!

WARNING: Read carefully the instruction sheet of each product before installing.

All installation and maintenance operations must be carried out by qualified personnel.

- The gas supply must be shut off before installation.
- Check that the line pressure **DOES NOT EXCEED** the maximum pressure stated on the product label.
- The device must be installed with the arrow (on the body of the device) facing towards the user appliance.
- The solenoid valves DN 15 - 20 - 25 (P. max 1-3-6 bar) and DN 32 - 40 - 50 (P. max -1 bar) will function equally effectively if installed vertical. The devices must not be installed upside down (with the coil underneath).
- The solenoid valves DN 32 - 40 - 50 (P. max 3-6 bar) and DN 65 - 80 - 100 (P. max 1-3-6 bar) must be installed with the pipe in horizontal position and with upright coil.
- During installation take care not to allow impurities or scraps of metal to enter the device.
- If the device is threaded check that the pipeline thread is not too long; overlong threads may damage the body of the device when screwed into place. Do not use the coil for leverage when screwing into position; use the appropriate tool.
- If the device is flanged check that the inlet and outlet counterflanges are perfectly parallel to avoid unnecessary mechanical stresses on the body of the device. Also calculate the space needed to fit the seal. If the gap left after the seal is fitted is too wide, do not try to close it by over-tightening the device's bolts.
- Always check that the system is gas-tight after installation.

CALIBRATIONS

- To regulate the opening speed of the obturator operate on the screw **(16)**. The opening speed increases gradually screwing clockwise the screw **(16)**.
WARNING: Inlet pressure and environment temperature changes can influence the valve opening time.
- To regulate the rapidly of the stroke operate on the screw **(15)**. Screwing counterclockwise till the limit, the opening of the valve will be slow at first, screwing it clockwise you get a first phase of speed opening and a second slow one.
- To regulate the flow operate on the screw **(14)**. Screwing it clockwise in order to decrease the flow, counterclockwise in order to increase it.
For connections \geq DN 65 in order to make this regulation you need at first to take off the electrical power to the coil. In this way you avoid the regulation screw to be submitted to useless mechanical efforts.

ELECTRICAL CONNECTIONS

- Before making electrical connections, check that the mains voltage is the same as the power supply voltage stated on the product label.
- Disconnect the power supply before wiring.
- Wire the connector with cable type: IEL1 / 3 / 6 ... DN 15 ÷ DN 25 and IEL1... DN 32 ÷ DN 50
H05RN-F 3X0,75mm², Ø outside from 6,2 to 8,1 mm

IEL 3 / 6 ... DN 32 ÷ DN 100
H05RN-F 3X1 mm², Ø outside from 8,3 to 9,5 mm

Ensure that the device has IP65 protection.

- Connect the power supply to terminals 1 and 2 and the ground wire to terminal \perp .
IMPORTANT: with tension 12 Vdc and 24 Vdc with energy saving connector C21-23 observe the polarity.

The coil is also suitable for permanent power supply. In case of continuous duty, it is absolutely normal for the coil to heat up.

The coil should not be touched with bare hands after it has been continuously powered for more than 20 minutes. Before maintenance work, wait for the coil to cool or use suitable protective equipment.

MAINTENANCE

Before performing any internal checks make sure that:

1. the power supply to the device is disconnected
2. there is no pressurised gas inside the device

Unscrew the nut **(13)** and remove the coil **(12)**. Unscrew the fixing screws **(10)** and, with care, take the cover **(11)** off the body **(4)** of the valve, then control the closure member **(5)** and if it is necessary change the rubber made seal component **(6)**. For threaded connection clean or blow the filter (metallic net).

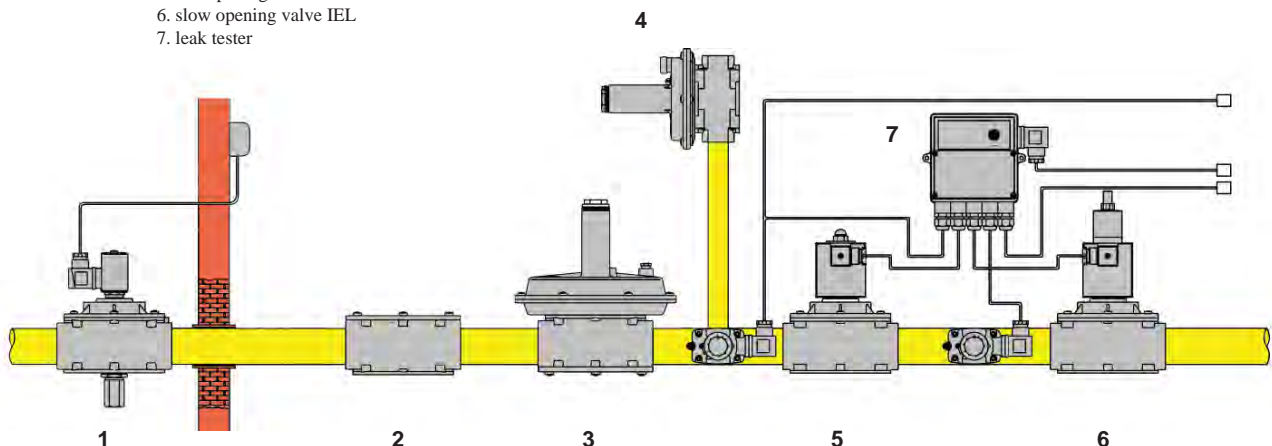
Then assemble doing backward the same operation.



All operations must be carried out only by qualified personnel.

EXAMPLE OF INSTALLATION

1. manual reset solenoid valve IENA
2. gas filter IF
3. filter regulator IFR
4. overflow valve
5. fast opening valve IEL
6. slow opening valve IEL
7. leak tester



FOR FURTHER INFORMATION PLEASE CONTACT OUR TECHNICAL OFFICE.