



**Solenoid valve**  
direct acting  
**2/2 way type ZEA BIO**

**Class A**

**Group 1**

**Diameters range DN**

przyłącze gwintowe **Rp 1 ÷ Rp 2 (DN25 ÷ DN50)**

przyłącze kołnierzowe **DN50 ÷ DN100**

**Media**

**gas fuels** (gases as per PN-EN 437); air, non-aggressive gases

**FEATURES:**

- poppet valve
- simple design
- single-stage, unidirectional
- closed in deenergized state **-NC**
- uniform flow - standard design
- manual regulation of flow (flow capacity) - version **ZEAb BIO**
- suited to zero pressure differential conditions ( $\Delta P_{\min} = 0$  bar)
- maximum pressure difference  $\Delta P_{\max}$  that can appear on the valve depends on nominal diameter of valve (see **-TABLE 1**)
- permanent strainer built-in
- conforms to **PN-EN 161:2011+A3:2013**
- meets principal requirements of Regulations (UE)
  - **2016/426** (GAR) from 9'th March 2016
- meets principal requirements of Directive UE:
  - **2014/35/UE** (LVD)
  - **2014/30/UE** (EMC)

**VERSIONS:**

- type **ZEA BIO...** standard design (uniform flow)
- type **ZEAb BIO...** manual regulation of flow design in range 0%÷100%

**APPLICATION:**

- designed for reliable service in all types of installations and appliances (e.g burners, heating boilers), supplied from low pressure gas network
- as a part of the **gas train** supplying high power gas appliances (mentioned above), the valve will act as an automatic safety shut-off valve class A
- in air conditioning systems
- pneumatic control systems

**TECHNICAL DATA**

**Valve**

maximum operating pressure.....	$P_{\max}$	see TABLE 1
differential pressure minimum .....	$\Delta P_{\min} = 0$ bar	
maximum .....	$\Delta P_{\max}$	see TABLE 1
safe static pressure.....	$P_s = 5$ bar	
closing/opening time .....	< 1s	
ambient and media temperature.....	-10°C ÷ 60°C	
pipe threaded connection.....	Rp - internal straight thread	compliant with PN-EN 10226
pipe flanged connection.....	keeps compatibility of flange	connection dimensions [PN16, 01, B] in acc. with PN-EN 1092-1
mounting direction.....	coil upwards	acceptable deviation from vertical position up to - 90°
solenoid coil.....	replaceable	(together with terminal block)
coil replacement.....	without valve disassembly	
coil position on the valve .....	any	(360° rotation)

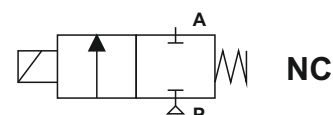
**Coil**

control voltage alternating	AC(50Hz) ....	230V	24V	(110V - option)
direct	DC .....	24V		(12V - option)
voltage tolerance.....		-15%; +10%		
ambient temperature .....		-10°C ÷ 60°C		
operation type .....		S1 continuous		
electrical connection .....		tri-contact terminal block		
safety class.....		I (earthing)		
degree of protection (acc. PN-EN 60529) .....		IP54		
coil types (other data).....		see <b>COILS</b> data sheet...		
design (integrated) .....		resin-molded coil		

**CE**<sub>1015</sub>

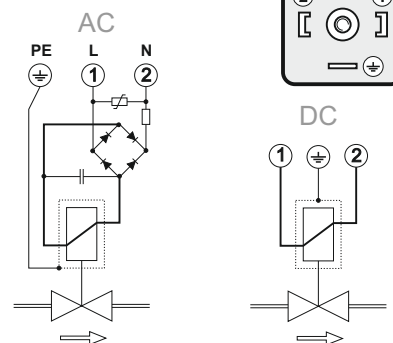


**Schematic symbol**



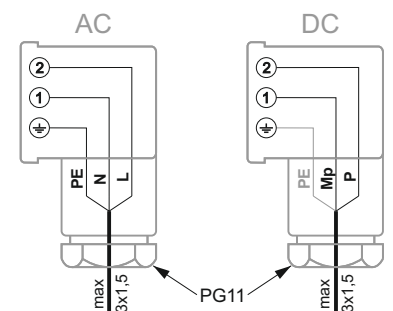
**ELECTRICAL TERMINATION**

**coil connection**



**plug-in socket**

The plug can be fixed in **4 positions** towards the socket (each 90°)



Conductor wires polarization- **indifferent** (apart from PE);  
**recommended** - as on figure

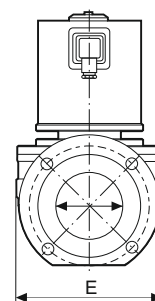
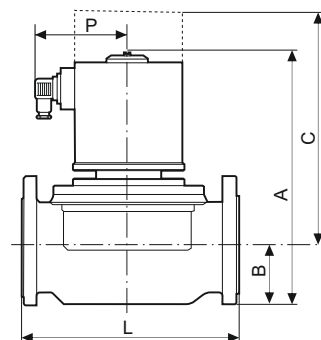
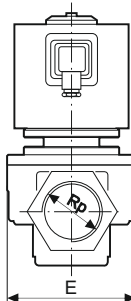
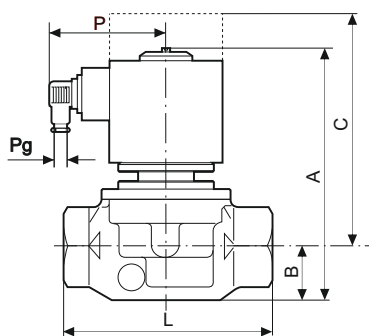
TABLE 1	Valve type	DN	Rp	Diff.pressure $\Delta P$ [bar]		$P_{\text{MAX}}$ [bar]	Coil type						
							voltage AC		voltage DC				
				$\Delta P_{\text{min}}$	$\Delta P_{\text{max}}$		230V	110V	24V	12V			
	ZEA-25 BIO	25	1	0	0,17 0,30	0,17 0,30	AC 230/25 AC 230/25B	AC 110/25 AC 110/25B	AC-DC 24/25 AC-DC 24/25B	DC 12/25 DC 12/25B			
	ZEA-40 BIO	40	1 1/2	0	0,25	0,25	AC 230/50	AC 110/50	AC-DC 24/50	DC 12/50			
	ZEA-50 BIO	50	2	0	0,14 0,20	0,14 0,20							
	ZEA-50k BIO*	50		0	0,14 0,20	0,14 0,20							
	ZEA-65k BIO*	65		0	0,25	0,25	AC 230/80				AC 110/80	AC-DC 24/80	DC 12/80
	ZEA-80k BIO*	80		0	0,11	0,11	AC 230/100				AC 110/100	AC-DC 24/100	DC 12/100
	ZEA-100k BIO*	100		0	0,11	0,11							

(\*) flanged connection valves

## OVERALL DIMENSIONS (mm), WEIGHT (kg)

Type	ZEA-25 BIO	ZEA-40 BIO	ZEA-50 BIO	ZEA-50k BIO	ZEA-65k BIO	ZEA-80k BIO	ZEA-100k BIO
	threaded connection valves			flanged connection valves [PN16, 01, B]			
DN	1	1 1/2	2	50	65	80	100
Rp	156	224	232				
A	166	248	255	268	314	360	373
A*	28	48	40	292	366	412	426
B	170	239	254	78	83	94	103
C <sup>(1)</sup>	190	273	288	253	323	344	349
C*	79	112	142	287	388	409	414
E	115	178	193	165	185	200	222
L	95/102 <sup>(2)</sup>	110	110	230	270	310	350
P	11	11	11	110	132	132	144
Pg	2,13	6,00	6,75	11	11	11	11
Weight <sup>(2)</sup>				7,75	17,80	24,65	28,55

(\*) dimension for valve with flow regulation-ZEABIO  
(1) dimension updated to allow coil maintenance  
(2) approximate value (dependant on the selected coil)



## ACCESSORIES - options (available upon request)

- plugs G1/8 or G1/4 (position 28) with gaskets  
**Note that standard version does not have holes for above plugs.**
- counterflanges with connector pipe (for valves with flanged connection)
- stub pipe for inlet and/or outlet pressure measurement (Ø9, G1/8 lub G1/4 together with gaskets)  
- used alternatively with plugs
- gas pressure sensor (at the inlet and/or outlet of a valve)  
Pressure sensors are assembled as marked on figure, position 28
- valve head position sensor (position 31) from **DUNGS** type **K01/1**
- plug with voltage presence indicator
- colour

## ORDERING

Necessary information for ZEABIO valve order:

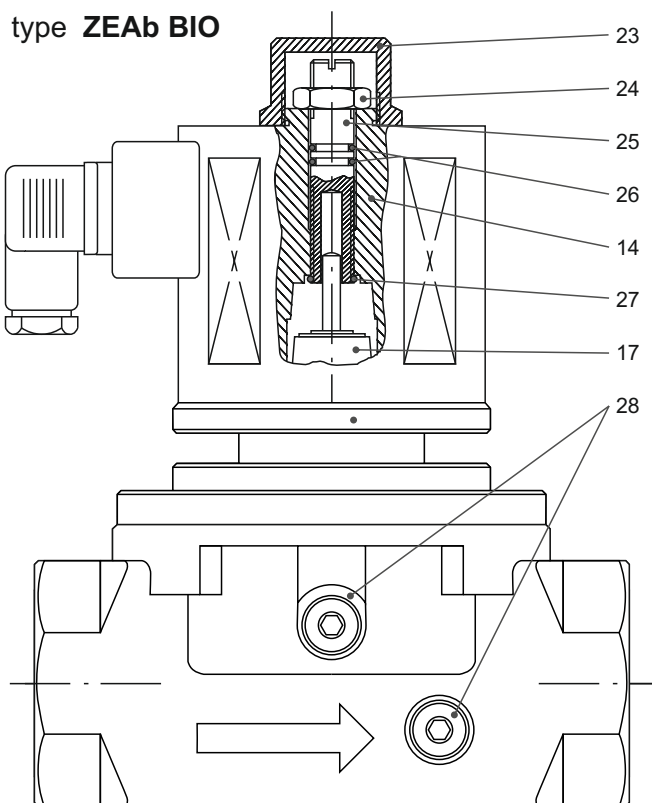
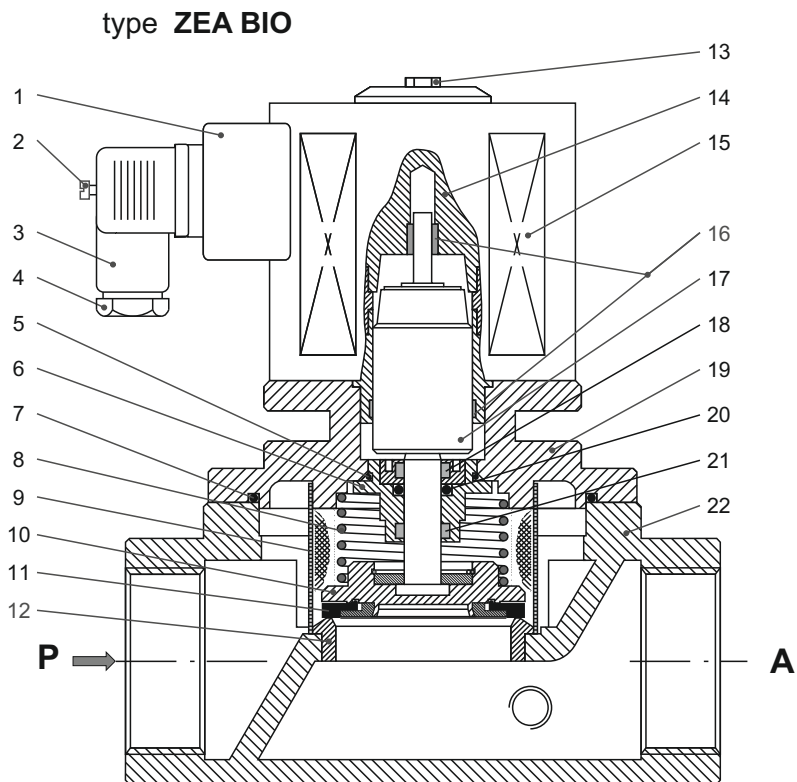
- valve **type** and pressure  $P_{max}$
- control voltage
- possible option and accessories

Example: ZEA-50 BIO/0,3bar/24V DC

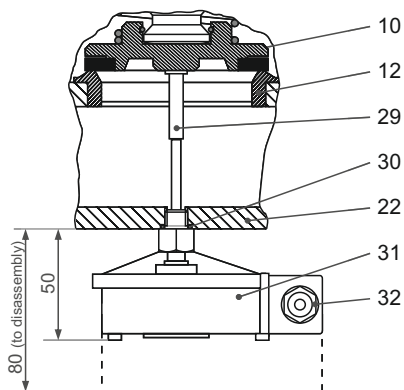
it means: valve with threaded connection Dn50  
maximum operating pressure 0,2bar  
control voltage DC 24V  
standard design

## CONSTRUCTION

1. power supply socket
2. fastening screw
3. plug-in socket
4. impedance coil Pg11
5. separating ring (o-ring)
6. sealing sleeve
7. separating ring (o-ring)
8. pressing spring
9. filter
10. poppet
11. poppet gasket
12. valve seat
13. coil fastening screw
14. coil sleeve
15. solenoid coil
16. slide rings
17. movable core
18. lubricating felt I
19. bonnet
20. separating ring
21. lubricating felt II
22. valve body
23. housing
24. counter nut
25. control mandrel
26. sealing rings (o-ring)
27. protective ring
28. plug G1/8 lub G1/4
29. push rod
30. sealing ring (o-ring)
31. limit switch K01/1 type from DUNGS
32. impedance coil Pg11



### Valve head\* position sensor (valve closing)



(\*) - valve head: movable part of valve which shuts-off gas flow

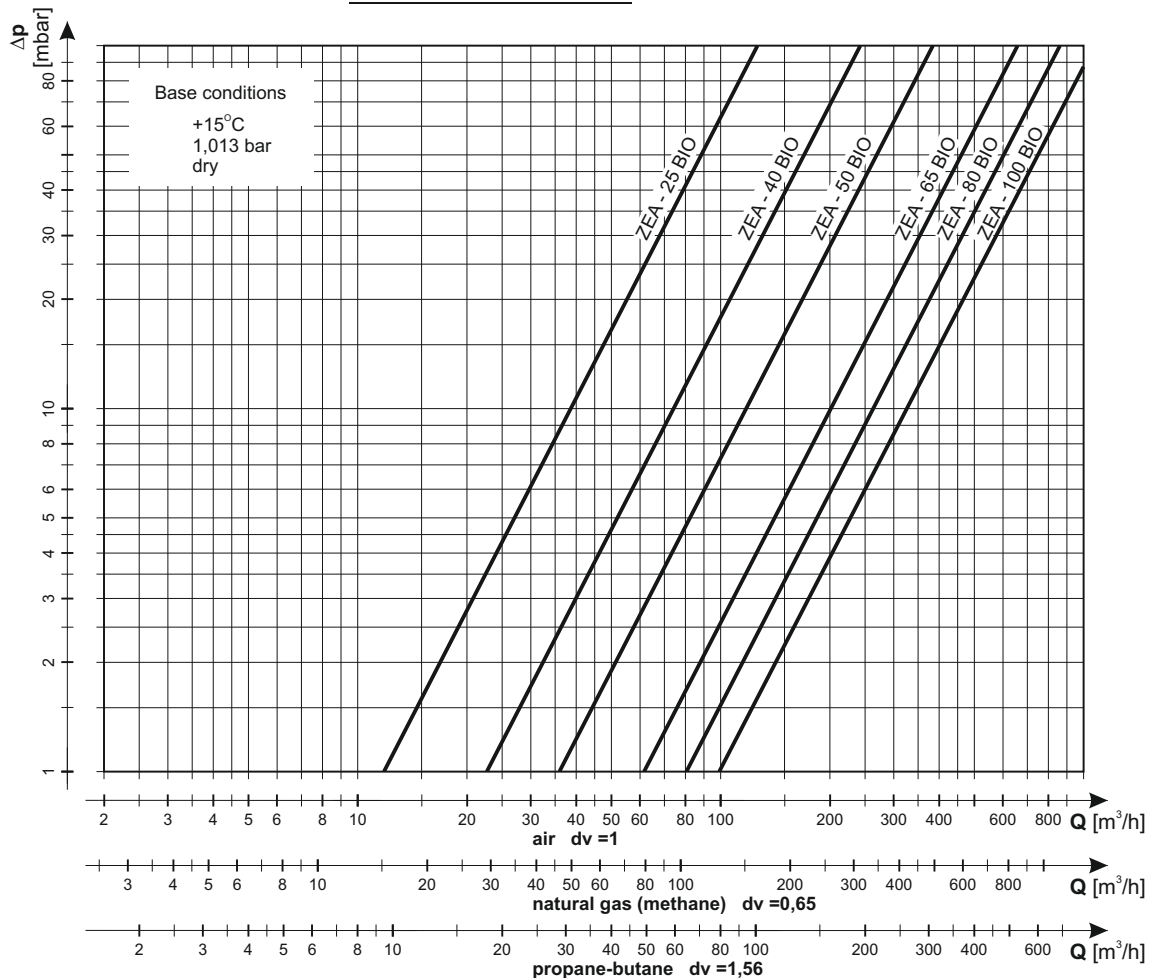
### Constructional materials

valve body  
movable core  
coil sleeve  
springs

poppet body  
poppet gasket  
valve seat  
sealings  
slide rings  
filter  
coil

aluminium alloy  
ARMCO  
ARMCO + brass  
galvanized or  
stainless steel  
aluminium alloy  
VITON  
acid resistant steel  
VITON  
PTFE or brass  
stainless steel- filter gauze  
copper

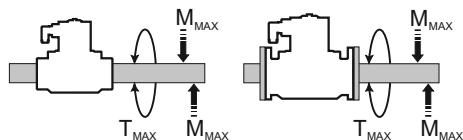
## FLOW CHARACTERISTIC



### INSTALLATION - basic assembly requirements:

- mounting to installation according to the gas flow arrow on the valve
- it is necessary to anticipate and take into account the pressure surplus that may occur at the valve inlet in case of failure to components in the system located upstream the valve
- mounting position is coil upwards. Acceptable deviation from vertical position cannot exceed  $90^\circ$ .
- direct contact of the valve with wall, ground, etc. is unacceptable; keep the minimum distance - about 1 cm
- location of the valve should be selected so as to ensure free access needed to its operation (for persons authorized to do so)
- attention should be paid so that after valve installation there is enough space left (**maneuvering area**) for ease coil replacement
- ensure proper rigidity of the installation in the place where the valve is installed (Group 1 valve).  
This can be achieved by using rigid supports to the bending and torsional stress exerted by the piping system in the installation (eg due to the lack of alignment of the of the pipeline at the inlet and outlet of the valve).
- maximum moments: turning  $T_{MAX}$  and bending  $M_{MAX}$  cannot exceed the values given in TABLE 2
- ensure that valve is mounted rigidly so as to avoid any vibration
- in valves with threaded connections pipe should be screw in that way so that 10 second torque not exceed values of  $T_{MAX}$  given in TABLE 2
- use appropriate thread sealant to ensure tightness of the connections
- tighten the flange screws crosswise **Attention:** maximum torque of **50 Nm (~5 kGm)**
- a strainer which protects from mechanical impurities should be fitted upstream the valve in the gas installation. Maximum dimension of strainer openings should not exceed 0,2 mm
- valve's assembly should be finalized with carrying out an leaktightness test of installation including **ZEA** valve using compressed air or inert gas (oxygen use is forbidden)  
Test pressure cannot exceed  
 **$P_s = 5 \text{ bar}$**
- during operation valve
  - cannot be exposed to dilatation nor dynamic forces
  - need to have ensured correct operating temperature (ambient and media)
  - should be protected against strong dustiness and water flooding

**TABLE 2**



DN	25	40	50	65	80	100
Rp	1	1 1/2	2	2 1/2		
$T_{MAX}$ [Nm] $t \leq 10s$	125	200	250	325	400	400
$M_{MAX}$ [Nm] $t \leq 10s$	160	350	520	630	780	950