

After re-opening the valve according to the procedure described in point 8, it can be considered that the ZB valve is working properly and is ready for operation.

Required frequency of periodical inspections:

- after the first month of operation
- then around every 3 months, but not longer than every 6 months

At a certain time (depending on the type of media, its contamination and local operating conditions), the valve should be partially dismantled for cleaning and maintenance of its internal parts. Performing these activities should be entrusted to the manufacturer's service department or a person with appropriate qualifications. The re-commissioning of the valve should be preceded by checking its tightness in accordance with generally applicable rules.

11. Accessories - option (available on order)

- counterflanges with stub pipe (for valves with flanged connection)
- plug with voltage presence indicator
- colour

12. Storage guidelines

Valve should be stored in a dry place, in a vibration, dust or gas and noxious fumes free environment. The storage room's temperature should not be lower than +5°C

13. Overall dimensions (mm); Valve Class; Weight (kg)

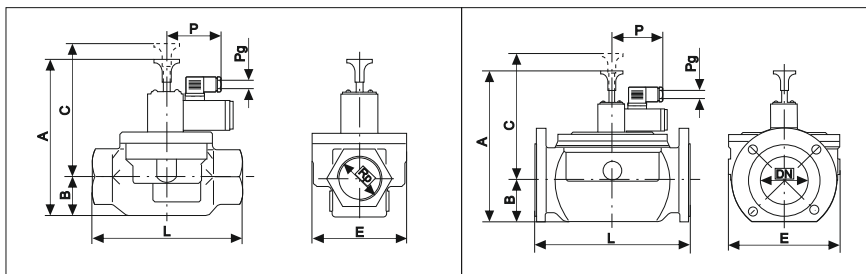


TABLE 1	Type	ZB-20	ZB-25	ZB-32	ZB-40	ZB-50	ZB-65	ZB-50k	ZB-65k	ZB-80k	ZB-100k
		valve class A						valve class B			
		valves with threaded connection						valves with flanged connection			
	DN	20	25	32	40	50	65	50	65	80	100
	Rp	3/4	1	1 1/4	1 1/2	2	2 1/2				
	A	127	137	155	180	188	218	225	243	307	318
	B	22	28	37	48	40	61	78	83	94	103
	C ⁽¹⁾	112	116	126	143	158	170	157	171	231	239
	E	77	79	100	112	142	170	165	185	200	222
	L	105	115	144	178	193	240	230	270	310	350
	P	92	92	92	92	92	92	92	92	95	95
	Pg	11	11	11	11	11	11	11	11	11	11
	Weight	1,20	1,35	1,96	2,62	3,18	4,81	4,06	5,82	9,80	11,82

(1) - opened valve dimension

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Shut-off poppet valve type ZB

designed to operate with gas detectors



- The following document should be consulted first before installing the valve.
- Proceed with the installation only if following documentation fully understood
- Valves should be installed in accordance with prevailing regulations in force.

SERVICE MANUAL

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1. Description

Shut-off valve ZB type is quick-closing poppet valve designed to operate with gas detectors (detection systems).

The valve can only be **opened** manually, however it may be **closed** either by an electrical impulse (or manually by a dedicated button).

The valve does not require power supply either in opened or closed position. In operating mode the valve is fully opened allowing an unrestricted medium passage. The valve is triggered resulting in cutting of the gas supply to the installation immediately by an electrical impulse from the detection system sensing the gas presence in protected areas. The impulse is only generated when the gas concentration exceeds a predefined level.

ZB valve features:

- 2/2-way, poppet
- unidirectional
- light weight
- very small (**maneuvering area**) necessary for valve service
- equipped in permanent built-in filter
- adapted for external application (see p. 7.)
- meets standard **PN-EN 161:2011+A3:2013** requirements
- meets applicable requirements of Regulation (UE) **2016/426** from 9th March 2016 (GAR) and Directives UE: **2014/35/UE** (LVD); **2014/30/UE** (EMC)

The valve is equipped as standard with an solenoid trigger for 12V DC voltage, adapted to work with all gas detection systems (detectors) available on the market. There is also a variant with an solenoid trigger for 230V AC (see section 3.1 - **Electrical parameters**).

2. Application

- in **Gas Safety Systems** installed in: gas boiler rooms, industrial facilities, public utility buildings, domestic installations (i.e. one family houses and multi-family houses, farmsteads, private use recreational buildings), gas reduction-measuring stations, etc. i.e. - **as an actuator** that surely and effectively cuts off the gas supply to faulty installations when a gas presence is detected in supervised by **System** compartments
- in gas installations supplied in conformance with appropriate regulations from low pressure gas grid
- due to the possibility of manual opening and closing additionally valve can be used as manual stopcock
- valve **can not** act as gas installation **main stopcock**
- together with gas detection system, valve can perform a function of lock-up for devices that burn gas fuels and are intended for use inside the buildings and utility compartments. Such a lock-up prevents from accumulation of burning gas in mentioned buildings and compartments

valves with flanged connections

- protecting lateral surfaces of the flanges from mechanical damage
- flange repair by welding is not admissible
- leave counterflanges tightened to the valve only during the initial part of the welding procedure (positioning the valve). **The actual welding of counterflanges must be carried out without the valve** (after it is disassembled)
- ensuring the inside of the valve and pipe is clean before its reassembly
- ensure correct positioning of the gasket
- flange bolts should be tightened across
- maximum torque for flange bolts

DN	50	65	80	100
Torque [Nm]	50	50	50	80

- valve's assembly should be finalized with carrying out an leaktightness test of valve and connections together with functional test for verification its correct operation
- leaktightness test of installation including **ZB** valve can be performed with pressure not exceeding **P_s = 5 bar**.
Oxygen use for this test is strictly forbidden (for example from gas bottle). **There is huge risk of explosion initiation (oxygen+lubricant in valve)**
- protecting the valve against heavy dust and flushing (both before, during and after assembly)
- ensuring the correct operating temperature
- valve should not be exposed to dilatation nor any dynamic forces under operating conditions
- the protective conductor contact in the plug-in socket must be connected to the electrical system in accordance with the locally applied anti-electrocution protection system
- it is forbidden to apply voltage to the solenoid trigger coil when it is dismounted from the valve

8. Setting up procedure - opening the valve

Attention! The valve is delivered in closed state.

Opening the valve: Pulling the manual valve opening handle (1), lift the valve in the upper extreme position until it is secured (blocked) by the ball of the ratchet mechanism in the open position

9. Valve manual closing

The valve construction enables its manual closing, without electrical impulse generated by gas leak detection system.

For this purpose:

- press button (9) "**MANUAL CLOSE**" located on solenoid trigger

ATTENTION! Under no circumstances it is allowed to attempt a force closing the valve by applying a pressure to the manual valve opening handle.

This may damage the ratchet mechanism and result in the loss of warranty rights.

10. Periodical inspection and service

The poppet ZB shut-off valve is a device that does not require other maintenance activities other than operation ones. It also does not require interference in internal mechanisms. It is only necessary to take care of periodic removal of accumulated dust, at least during periodical inspections of correctness of operation.

Checking the correct operation of the valve consists of two attempts to close the valve:

- the signal generated by the System (detector, control module). The method of performing this test is given in the Safety System Operation Manual by the manufacturer of this system
- and manually using the „**MANUAL CLOSE**“ button on the valve

7. Installation - assembly requirements

- valve can only be installed by a person holding appropriate qualifications and relevant authorization
- before moving on to installation, it is essential to:
 - carefully read the information from the nominal table of the valve and coil to verify that the required parameters dictated by the installation's location are met (pressure level, voltages, nominal diameters, etc.)
 - take into account the pressure that may occur at the valve inlet in case of failure to components in the system located upstream the valve

- valve can be installed:

- ✓ outside the buildings - in the junction box protecting against direct influence of atmospheric factors

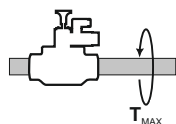
Attention! Valve is not waterproof!!!

It should be installed in such a box and in such a way that it is completely protected against dripping water during rain and snowfall.

- ✓ inside the buildings
- assembly should be performed in professional way with use of proper tools
- install downstream the main tap, upstream or downstream the gas meter
- assemble to installation according to the gas flow arrow on the valve
- mounting position - any
- 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**), necessary for its ease opening (or manual closing) - see p. 13
- 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)
- ensure that valve is mounted rigidly so as to avoid any vibration
- no part of the valve should be used as a „lever“ to facilitate the installation
- 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
- it is required to blow installation just before valve assembly
- during valve installation, attention should be paid to the following:**
 - putting a lot of emphasis to keep interiors of the installation clean
 - thoroughly cleaning the pipes from carbon deposits, filings and corrosion products etc.
 - ensuring no stresses on the valve during the installation

valve with threaded connection

- use appropriate thread sealant to ensure tightness of the connections
- in valves with threaded connections pipe should be screw in that way so that 10 second torque not exceed below values:



DN Rp	20 3/4	25 1	32 1 1/4	40 1 1/2	50 2	65 2 1/2
T _{MAX} [Nm] t ≤ 10s	85	125	160	200	250	325

- protect the valve against contamination and in particular against excess material used to seal threaded joints

3. Technical data

valve class..... (see TABLE 1).....	kl.A - valves DN20 ÷ DN66 kl.B - valves DN80 ÷ DN100
group.....	1
diameter range..... (see TABLE 1).....	Rp 3/4 ÷ 2 1/2; DN20 ÷ DN100
media.....	gas fuels (natural gas, propane-butane)
maximum operating pressure.....	P _{MAX} = 0,25 bar
safe static pressure	P _S = 5 bar (It is used during leaktightness test of installation-valve by this pressure can not operate)
flow	see p.6 - Flow characteristics
opening the valve	only manual
closing the valve.....	electric impulse or manual
closing time.....	< 1s
ambient and media temperature	-25° C ÷ 60° C
pipe threaded connection.....	Rp - internal straight thread compliant with PN-EN 10226
flanged	flanges are an integral part of the valve and are suitable for connections with flanges (PN16, 01, B) in accordance with PN-EN 1092-1 - keeps compatibility of connection dimensions *
material: valve body.....	aluminium alloy
internal elements	aluminium alloy, brass, stainless steel or galvanized steel
sealing material.....	nitrile-butadiene rubber NBR
mounting direction.....	any

3.1. Electrical parameters

	WE	EZB-12,6G
solenoid trigger (type).....	12V DC	230V AC
control voltage.....	-15%; +10%	-15%; +10%
voltage tolerance.....	26W	46VA
power consumption.....	5,5 Ω	134 Ω
coil resistance (T = 20° C).....	III	I (earthing)
safety class.....	0,2s	-0,3s
impulse minimum time duration		
(necessary for closing the valve)		
impulse time duration or (impulses group).....	any	
time interval between impulses	any	
operation type.....	S1 continuous 100 %	
electrical connection.....	tri-contact terminal block	
degree of protection (acc. PN-EN 60529)	IP65	

4. Construction and the principle of operation

In this valve, the poppet pin (3) mechanically connected to the poppet (13) and the manual valve opening hand grip (1) is a valve which directly closes or opens the flow port of the valve seat (15).

The valve can only be opened manually. Pulling the manual valve opening (1) by the handle, lift the valve in the upper extreme position until it is secured (blocked) by the ball (2a) of the ratchet mechanism (2) in the fully open position (as in the drawing below).

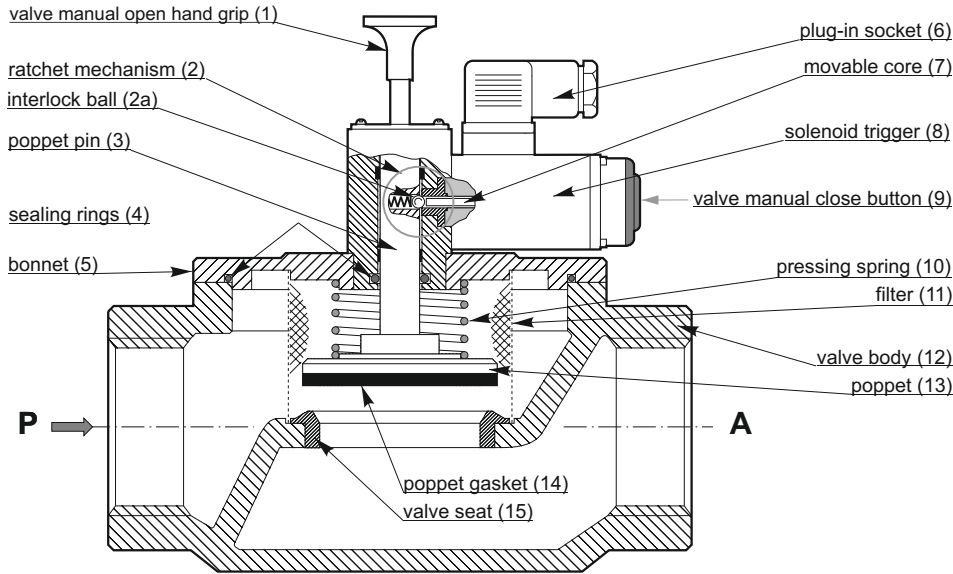
Closing the valve (under pressing spring (10)) can take place in two ways:

- short-duration electrical impulse** applied to the solenoid trigger coil (8) causes its core movement (7), which - by pushing the ball (2a) - releases the blockade of the valve head by the ratchet mechanism (2). The valve head, under the influence of the pressing spring (10), goes into the closed position. The gas flow is cut off by mechanically pressed poppet (13) together with the gasket (14)

into the valve seat (15) caused by the pressing spring (10). This has a direct effect on obtaining the proper internal tightness of the valve.

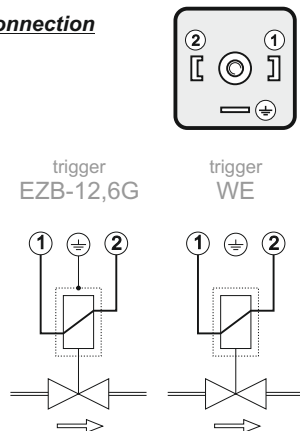
- **by pressing the manual valve closing button (9)** we force mechanically the movement of the solenoid trigger core, thus releasing the valve head and closing the valve.

The external tightness of the valve is ensured by, among other things, sealing rings (4). Built-in permanent filter (11) protects against contamination ensuring the correct cooperation of the poppet plug - valve seat (in the aspect of maintaining proper internal tightness during operation).

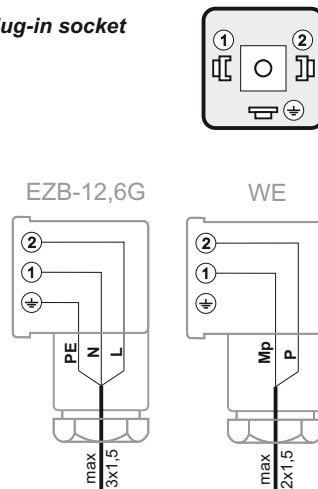


5. Electrical connection:

trigger coil connection



plug-in socket



- the maximum conductor wire size that can be inserted into the plug-in socket of the connection is 3 x 1.5 mm²
- the plug can be fixed in **3 positions** towards the socket (each 90°)
- if it is necessary to use a conductor with a larger wire size, use a tight, intermediate junction box with the degree of protection IP54 or higher
- the electric connection of the valve with the control device (central unit) is recommended to be made with a homogeneous cable. The conductor wire size depends, among other things, on the distance of the valve from the central unit with which it cooperates. Its selection is given by the manufacturer of the Gas Detection System in the **Service Manual** for this system.
- polarization of wire in conductor is **indifferent** (apart from PE wire). However, the PN-EN 161 standard unambiguously assigns to the contact pins connections of PE, L, N potentials of the power cable respectively.

6. Flow characteristic

