



Solenoid Valve

assisted lift

2/2 way type ZEF

Class A

Group 1

Diameters range DN

threaded connection Rp 3/4 ÷ Rp 2 1/2 (DN20 ÷ DN65)

flanged connection DN50 ÷ DN100

Media

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

FEATURES:

- membrane valve
- simple design
- single-stage, unidirectional
- closed in deenergized state -NC
- uniform flow -standad design
- manual regulation of flow (flow capacity) - version ZEFb...
- suited to zero pressure differential conditions ($\Delta P_{\min} = 0$ bar)
- suited to applications where pressure differential fluctuates or is very hard to define
- conforms to **PN-EN 161:2011+A3:2013**
- meets principal requirments of Regulations (UE):
2016/426 (GAR) from 9th March 2016
- meets applicable UE Directive:
2014/35/UE (LVD) and **2014/30/UE** (EMC)

VERSIONS:

- type ZEF... standard design (uniform flow)
- type ZEFb... manual regulation of flow design
0% ÷ 100% (refer to valve with nominal diameter DN20÷DN50)

APPLICATION:

- designed for reliable service in all types of installations and appliances (e.g burners, heating boilers), supplied with gas fuels (gas with low and medium pressure - see TABLE 1)
- as a part of the **gas train** supplying high power gas appliances, the valve will act as an automatic safety shut-off
- air and non-aggressive gases 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)

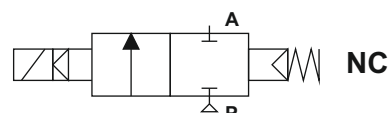
Coil

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 COILS data sheet...		
design (integrated)		resin-molded coil		

CE₁₀₁₅

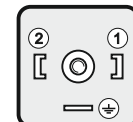
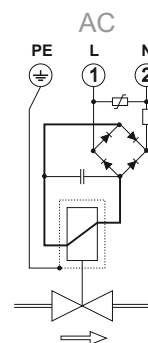


Schematic symbol

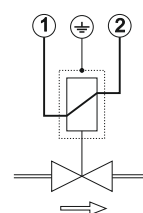


ELECTRICAL TERMINATION

coil connection

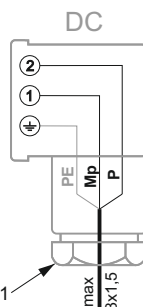
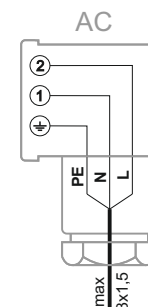
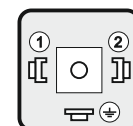


DC



plug-in socket

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



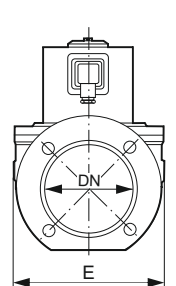
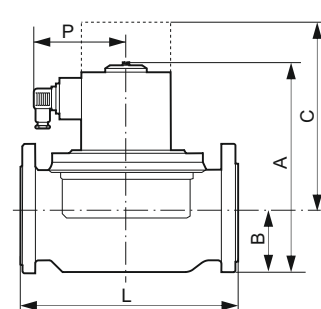
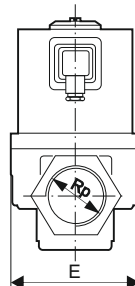
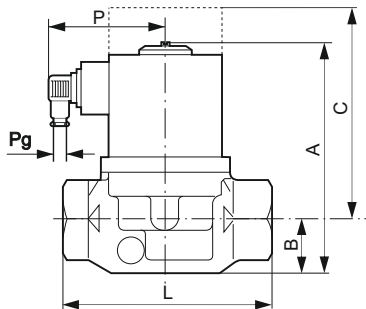
Conductor wires polarization- **indifferent** (apart from PE);
recommended - (as on figure)

TABLE 1	Valve type	DN	Rp	Diff.pressure ΔP [bar]		P_{MAX} [bar]	Coil type (belonging to valve)				
							voltage AC			voltage DC	
				ΔP_{min}	ΔP_{max}		230V	110V	24V	24V	12V
	ZEF-20	ZEFb-20	20	3/4	0	4	4	AC 230/25	AC 110/25	AC-DC 24/25	DC 12/25
	ZEF-25	ZEFb-25	25	1	0	4	4				
	ZEF-32	ZEFb-32	32	1 1/4	0	4	4	AC 230/25B	AC 110/25B	AC-DC 24/25B	DC 12/25B
	ZEF-40	ZEFb-40	40	1 1/2	0	4	4	AC 230/50	AC 110/50	AC-DC 24/50	DC 12/50
	ZEF-50	ZEFb-50	50	2	0	4	4				
	ZEF-50k		50		0	4	4	AC 230/65	AC 110/65	AC-DC 24/65	DC 12/65
	ZEF-65		65	2 1/2	0	2	2				
	ZEF-65k		65		0	2	2	AC 230/80	AC 110/80	AC-DC 24/80	DC 12/80
	ZEF-80k		80		0	0,5	0,5				
	ZEF-100k		100		0	0,5	0,5	AC 230/100	AC 110/100	AC-DC 24/100	DC 12/100

OVERALL DIMENSIONS (mm), WEIGHT (kg)

Type	ZEF-20	ZEF-25	ZEF-32	ZEF-40	ZEF-50	ZEF-65	ZEF-50k	ZEF-65k	ZEF-80k	ZEF-100k
	threaded connection valves						flanged connection valves [PN16, 01, B]			
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	146	146	166	197	208	230	242	255	318	332
A*	156	156	182	220	2					
B	30	30	32	31	36	61	78	83	94	103
C ⁽¹⁾	176	176	212	255	261	258	253	261	344	349
C*	186	186	228	278	285					
E	75	75	100	125	150	170	165	185	200	222
L	110	110	145	156	190	240	230	270	310	350
P	95	95	102	110	110	110	110	110	132	144
Pg	11	11	11	11	11	11	11	11	11	11
Weight ⁽²⁾	1,95	1,92	4,20	5,80	6,40	8,10	7,40	9,10	19,55	27,20

(*) dimension for valve with flow regulation-ZEFb...
 (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 22) 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 ($\varnothing 9$, G1/8 or G1/4 together with gasket)
 - 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 22
- valve head position sensor (position 25) from **DUNGS** type **K01/1** ($P_{MAX}=500\text{mbar}$)
- plug with voltage presence indicator
- colour

ORDERING

Necessary information for ZEF valve order:

- valve **type**
- control voltage
- possible option and accessories

example:

ZEF-80k/24V AC

it means: valve with flange connection DN80
 control voltage AC 24V
 basic version

CONSTRUCTION

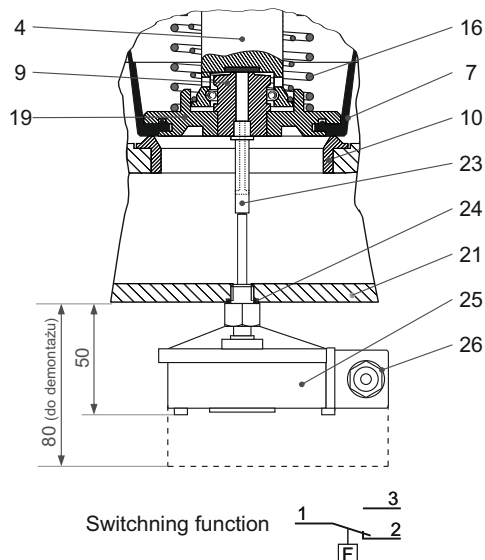
1. power supply socket
2. plug
3. plug fastening screw
4. movable core
5. bonnet
6. equalization channel
7. membrane
8. pilot valve pressing spring
9. pilot valve seat
10. main valve seat
11. coil fastening screw
12. cover plate
13. coil sleeve
14. solenoid coil
15. slide rings
16. main valve pressing spring
17. pilot valve gasket
18. steel spheres (settling)
19. poppet
20. pilot valve channel
21. valve body
22. plug G1/8 or G1/4
23. pushing pin
24. sealing ring (o-ring)
25. limit switch type K01/1 from DUNGS
26. impedance coil Pg11
27. diaphragm
28. sealing ring (o-ring)
29. lock nut

Constructional materials

valve body	aluminium alloy
movable core	ARMCO
coil sleeve	ARMCO + brass
springs	galvanized or stainless steel
poppet body	aluminium alloy
membrane	NBR (nitrile-butadiene rubber)
valve seat	aluminium alloy
pilot valve seat	brass
sealings	NBR (nitrile-butadiene rubber)
slide rings	PTFE or brass
solenoid coil	copper

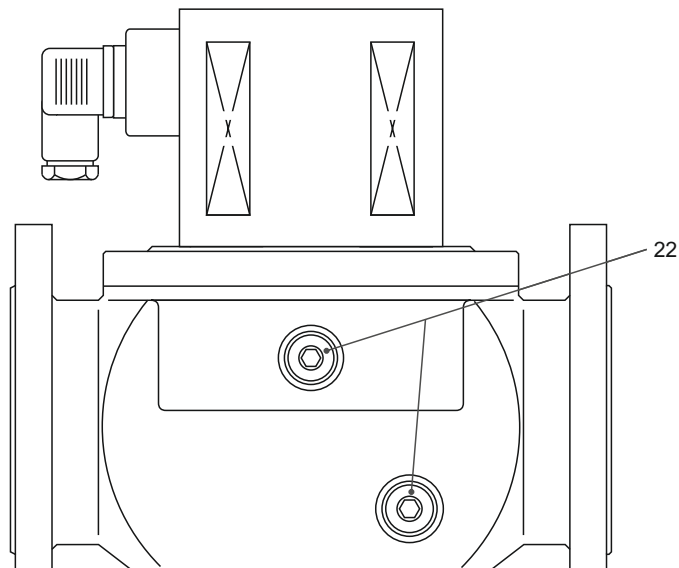
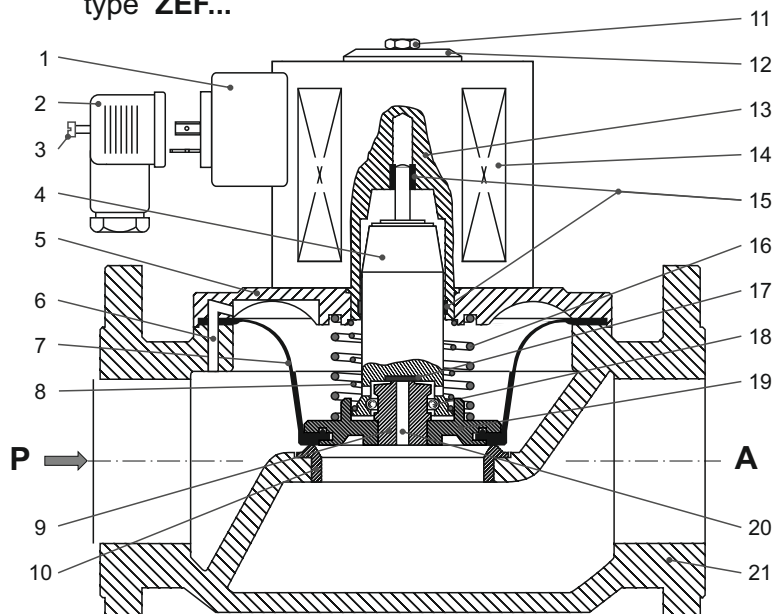
Valve head* position sensor

available for valves ZEF-80k
ZEF-100k

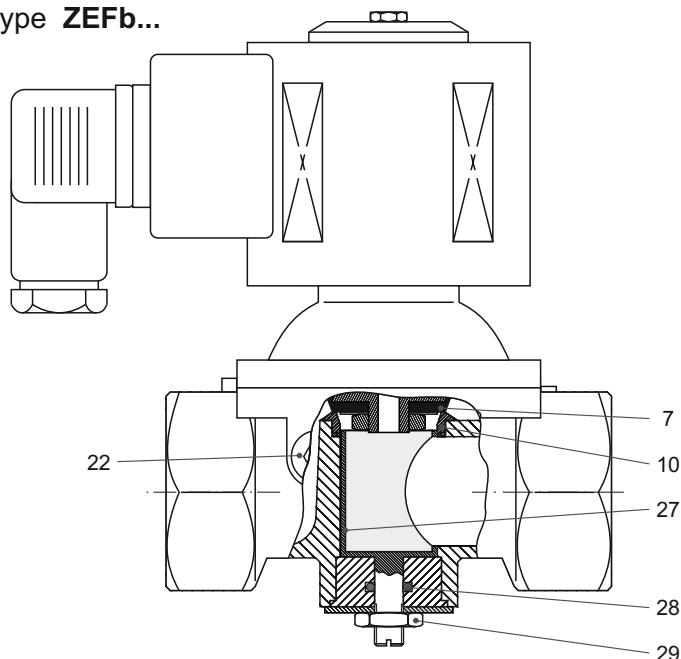


(*) - valve head: movable part of valve which shuts-off gas flow

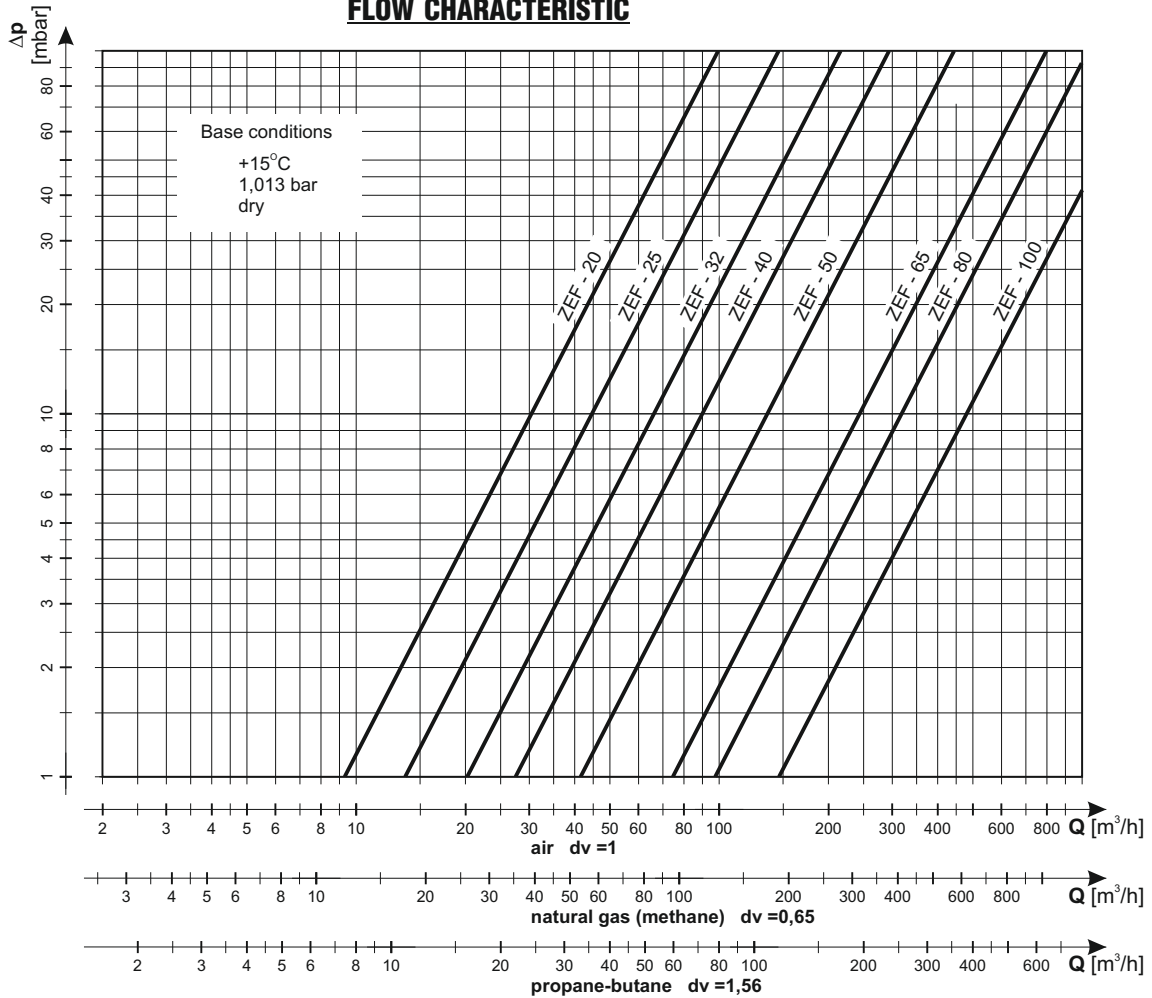
type ZEF...



type ZEFb...



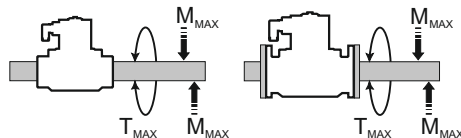
FLOW CHARACTERISTIC



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°.
- 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 ZEF valve using compressed air or inert gas (oxygen use is forbidden) Test pressure cannot exceed $P_s = 5$ 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	20	25	32	40	50	65	80	100
Rp	3/4	1	1 1/4	1 1/2	2	2 1/2		
T_{MAX} [Nm] $t \leq 10s$	85	125	160	200	250	325	400	400
M_{MAX} [Nm] $t \leq 10s$	90	160	260	350	520	630	780	950