Two-stage
safety solenoid valves
ZRDLE/5

6.22

DUNGS®
Combustion Controls



Technical description

The DUNGS safety solenoid valve ZR... is a two-stage automatic shut-off valve as per EN 161 for gas burners and gas appliances.

- Max. operating pressure up to 360 mbar (36 kPa)
- Class A, Group 2 as per EN 161
- normally closed
- Fast closing
- Slow opening with adjustable fast stroke for start gas volume: ZRDLE
- Main and partial volumes adjustable: ZRDLE
- DC solenoid, rectifier wiring with radio interference suppression in terminal box
- Mountable closed position signal contact to monitor closed position of valve
- Pipe thread as per ISO 7/1
- Flange connection as per DIN EN 1092-1
- Reliable function, rugged and maintenance-free

Application

The solenoid valve is used for securing, limiting, shutting off and releasing gas supply to gas burners and gas appliances.
The DUNGS safety solenoid valve ZR... is suitable for gases of families 1, 2, 3 and other neutral gaseous media.

Approval

EC type testing certificate as per:

- EC-Gas Appliances Regulation

Approvals in other important gas consuming countries.

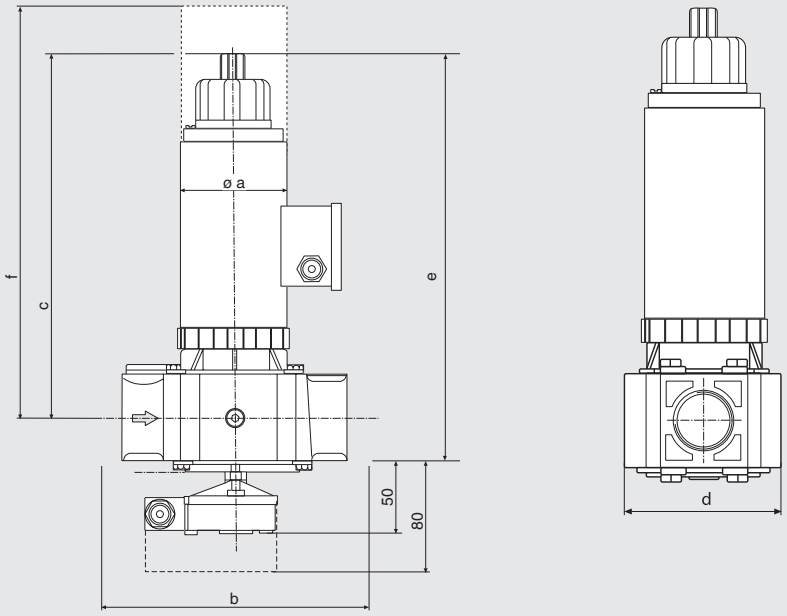
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ZRDLE/5 Two-stage solenoid valve, normally when closed, slow opening with adjustable fast stroke, fast closing. Main volume adjustable. Partial volume adjustable. Closed position signal contact mountable.

Specifications

Nominal diameters Pipe thread as per ISO 7/1 Flange	 Rp 3/4 1 1 1/2 2 Connection flange (PN 16) as per DIN EN 1092-1
Max. operating pressure	up to 360 mbar (36 kPa)
Solenoid valve	Valve as per EN 161, Class A, Group 2, two-stage mode, EN 1531
Closing time	< 1 s
Opening time	approx. 20 s at approx. +20°C and without fast stroke
Fast stroke	Manually adjustable
Main volume adjustment	Manually adjustable
Partial volume adjustment	Manually adjustable
Materials of gas-conveying parts	Housing: aluminium, steel, brass Seals: NBR basis
Voltage/frequency	50-60 Hz, 230 V AC (+10% -15%); further voltages on request
Rating / power consumption	Refer to type overview
Switch-on duration	100%
Degree of protection	IP 54, IP 65 on request
Electrical connection	At screw terminals via PG* 11 cable gland (* = heavy-gauge conduit thread)
Switching rate	max. 100/h
Measuring/ignition gas connection	G 1/4 ISO 228, on both sides in inlet section, additionally G 3/4 on inlet side, from size DN 40 (flange) upwards
Dirt trap	Sieve installed, mesh width 1 mm
Ambient temperature	-15 °C to +60 °C
Installation position	Solenoid from vertically upright to horizontally lying
Closed position signal contact	Type K01/1, DIN-tested
Valve proving system	Type VDK 200 A S02, mountable via G 1/4 test connection, Type VPS 504, mountable on housing Rp 3/4 to Rp 2 with adapter
Accessories	K01 closed position signal contact, see Datasheet 12.01 211 202

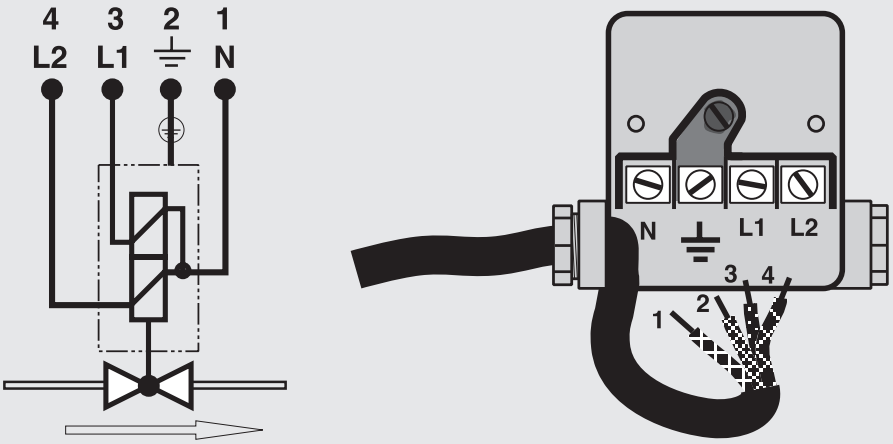
Dimensions [mm]



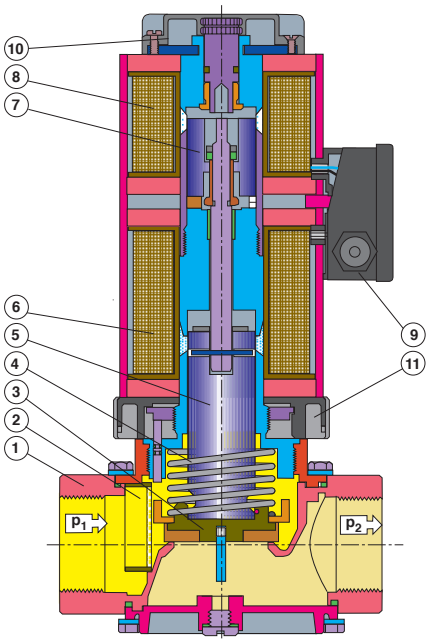
d = largest width

Type		DN/Rp	$P_{max.}$ [VA]	Order No.	$I_{max.}$ ~(AC) 230 V	$I_{max.}$ ~(AC) 230 V	Opening time	Dimensions [mm] a	b	c	d	e	f	Weight [kg]
ZRDLE 407/5	**360 mbar**	Rp 3/4	52	153 820	0.10	0.14	20 s	75	100	235	80	260	300	4.0
ZRDLE 410/5		Rp 1	52	153 840	0.10	0.14	20 s	75	110	235	90	265	300	4.2
ZRDLE 415/5		Rp 11/2	90	153 860	0.14	0.27	20 s	95	150	295	116	340	410	9.5
ZRDLE 420/5		Rp 2	90	153 880	0.14	0.27	20 s	95	170	300	130	345	410	10.4

Electrical connection



ZRDLE sectional drawing



1	Housing
2	Sieve
3	Valve plate
4	Closing spring
5	Armature, stage 2
6	Solenoid, stage 2
7	Armature, stage 1
8	Solenoid, stage 1
9	Electrical connection
	Setting
10	- Stage 1
11	- Stage 2
12	- Fast stroke
13	Hydraulic brake

Functional description

The DUNGS safety solenoid valve is an automatic shut-off valve operated with auxiliary power.

The electromagnetic drive opens against the force of the closing spring 4.

The stroke of armature 7 can be limited by the setting screw.

The hydraulic brake 13 permits slow opening. Fast stroke 12 can be adjusted.

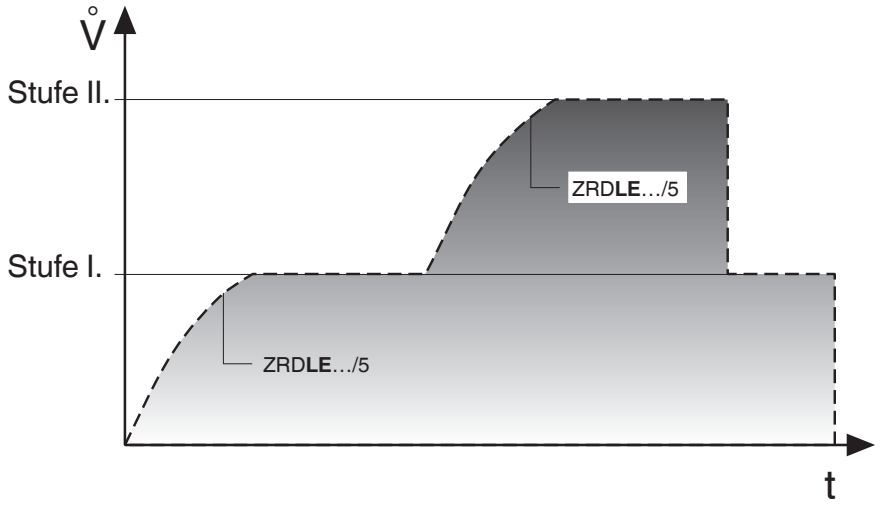
If voltage is applied to the solenoid of stage 1, armature 7 opens up to the adjusted partial volume.

If voltage is applied to the solenoid of stage 2, armature 5 opens up to the adjusted main volume.

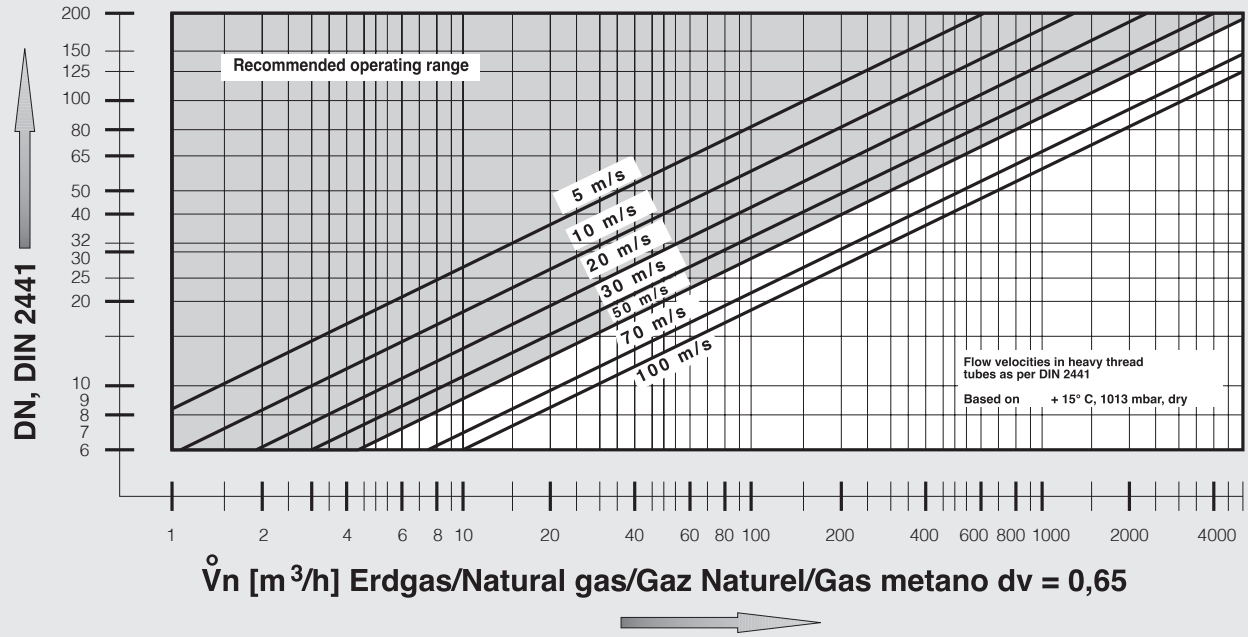
If the auxiliary power is interrupted (operating voltage), closing spring 4 closes the valve within 1 second.

The closed position of the valve can be monitored by a mountable closed position signal contact.

Opening behaviour of ZR.../5



Flow velocity



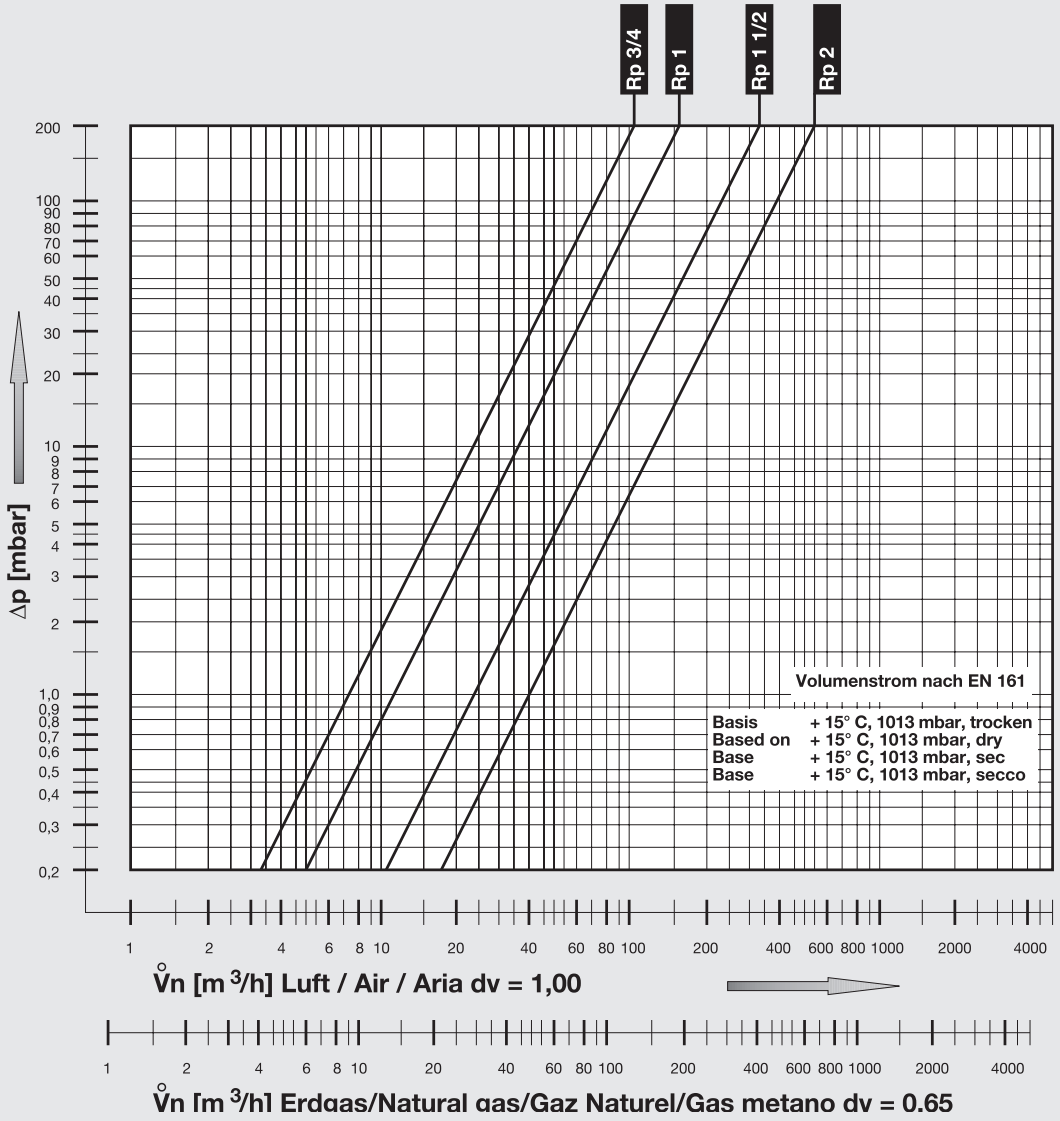
$$\mathring{V}_{\text{verwendetes Gas/gas used/ gaz utilisé/gas utilizzato}} = \mathring{V}_{\text{Luft/air/air/aria}} \times f$$

$$f = \sqrt{\frac{\text{Dichte Luft / Spec. weight air / poids spécifique de l´air / peso specifico aria}}{\text{Dichte des verwendeten Gases / Spec. weight of gas used / poids spécifique du gaz utilisé / peso specifico del gas utilizzato}}}$$

Gasart Type of gas Type de gaz Tipo di gas	Dichte Spec. Wgt. poids spécifique Peso specifico [kg/m³]	dv	f
Erdgas/Nat.Gas/ Gaz naturel/Gas metano	0.81	0.65	1.24
Stadtgas/City gas/ Gaz de ville/Gas città	0.58	0.47	1.46
Flüssiggas/LPG/ Gaz liquide/Gas liquido	2.08	1.67	0.77
Luft/Air/ Air/Aria	1.24	1.00	1.00

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Flow diagram



We reserve the right to make any changes in the interest of technical progress.

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