

Dual Safety Shutoff Valves

Two-stage operation

DMV-ZRD/6, DMV-ZRDLE/6

DMV-ZRD/11, DMV-ZRDLE/11

DUNGS®



Two normally closed safety shutoff valves in one housing; each with the following approvals.

UL Recognized

- UL 429
- File # MH16727

CSA Certified

- ANSI Z21.21 •CGA 6.5
- C/I Automatic Valves
- File #

FM Approved

- Class 7411
- Report # J.I. 3007653



DUNGS is an ISO 9001 manufacturing facility.

Description

The DUNGS Two-Stage Dual Multi-Valve (DMV-ZR) combines two safety shutoff valves in one compact housing, which can be wired independently or in parallel. Valve 2 incorporates two stages, which can be set at two different firing rates. Both firing rates are field adjustable and can modulate from high to low during burner operation.

Valve 1(V1) of the DMV-ZRD and DMV-ZRDLE series is fast opening and fast closing. Valve 2 (V2) is a two stage valve. V2 of the DMV-ZRD is fast opening, while V2 of the DMV-ZRDLE is slow-opening for smoother light-off. Max. flow adjustment on V2 provides variable main flow on both models.

Internal profiles and compact design optimize flow and provide a low pressure drop. Three body styles reduce inventory. Directly mounting the following DUNGS accessories creates a compact valve train without additional piping:

- Pressure regulator
- High and low gas pressure switches
- Valve proving system
- Vent line adapter

Application

The DUNGS DMV-ZR is recommended for industrial and commercial heating applications where two safety shutoff valves and modulating between two firing rates during burner operation are required. The DMV-ZR Dual Multi-Valve two stage is suitable for natural gas, propane, butane, air and other inert gases.

DMV-ZR.../6 Two normally closed safety shutoff valves in one housing. V1 and V2 are fast opening, fast closing. Two stage and adjustable max flow with V2.

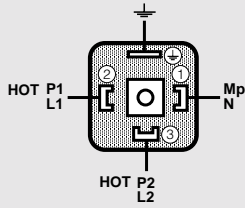
DMV-ZRDLE.../6 Two normally closed safety shutoff valves in one housing. V1 fast opening, fast closing. V2 is a two stage, slow opening, fast closing valve. Adjustable max flow and adjustable initial lift with V2.

Specifications

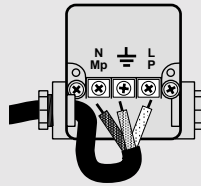
Body sizes pipe size / thread	DMV-ZRD(LE) 701 1/2" - 1" NPT	DMV-ZRD(LE) 702 1" - 2" NPT	DMV-ZRD(LE) 703 1" - 2" NPT
Max. operating pressure	7 PSI (500 mbar) UL models	5 PSI (360 mbar) CSA models	
Max. body pressure	15 PSI (1000 mbar)		
Max. close-off pressure	7 PSI (500 mbar) UL models	5 PSI (360 mbar) CSA models	
Electrical ratings (+10% / -15%)	110 - 120 Vac/50 - 60 Hz (other voltages available)		
Power ratings	701:70 VA	702:120 VA	703:135 VA
	Ratings shown are total power consumption for all valves inclusive. Inrush and full load current have the same VA rating.		
Enclosure rating	NEMA Type 1		
Electrical connection	DIN-connector with 1/2" NPT conduit adapter for valve 1 and valve 2, stage one. Screw terminals with 1/2" NPT conduit connection for valve 2, stage two. Use moisture-resistant No. 14 wire suitable for at least 194 °F (90 °C)		
Operating time	100 % duty cycle		
Closing time	< 1 s		
Opening time (to max. flow)	DMV-ZRD.../6 DMV-ZRDLE.../6	V1 & V2 < 1 s V1 < 1 s; V2 Adjustable to approx. 10 to 20 s at 70 °F	
Initial lift adjustment	Adjustable on V2 stage one, ZRDLE only: approx. 0 to 35 % of total flow		
Max. flow adjustment	Adjustable on V2, stage one: approx. 5 to 30 % of total flow Adjustable on V2, stage two: approx. 20 to 100 % of flow		
Materials in contact with gas	Housing: Aluminium, Steel Sealings on valve seats: NBR-based rubber		
Ambient temperature rating	-30 °F to +150 °F (-35 °C to +65 °C)		
Installation position	Safety valve upright vertical to horizontal		
Test ports / Pressure switch mounting ports	G 1/8 ISO 228 ports available on both sides. Each side has one port upstream V1, one between V1 and V2, one downstream V2, and one on each flange.		
Gas filter (optional)	Replaceable integral gas filter (50 micron) in inlet of DMV or Pre-Mount Filter Block for DMV 702 and 703. (Cannot be used with FRI directly mounted to the DMV.)		
Gas strainer (standard)	Installed in the housing upstream V1 (23 mesh)		
Position indication (order separately)	CPI 400 with indication lamps and SPDT interlock switch or visual indicator (VI)		
Valve proving system	Requires VPS 504; mounts directly to either side of DMV-ZRD(LE).		

Electrical connection

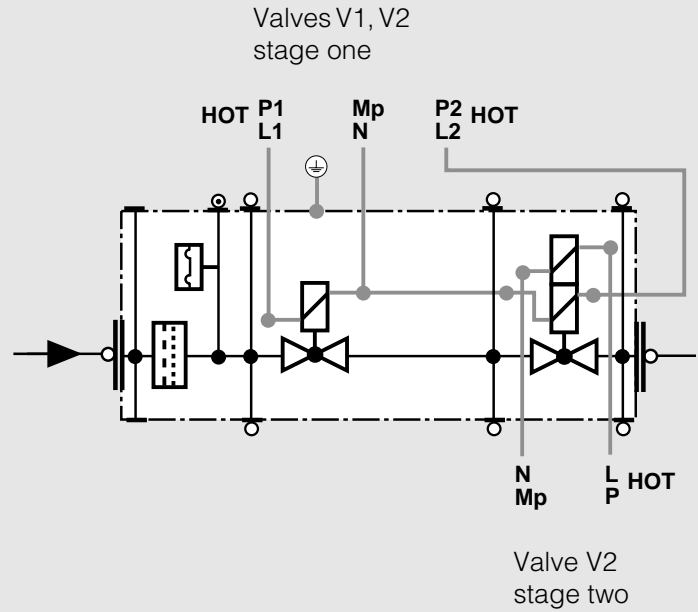
Use moisture-resistant No. 14 wire suitable for at least 194 °F (90 °C)



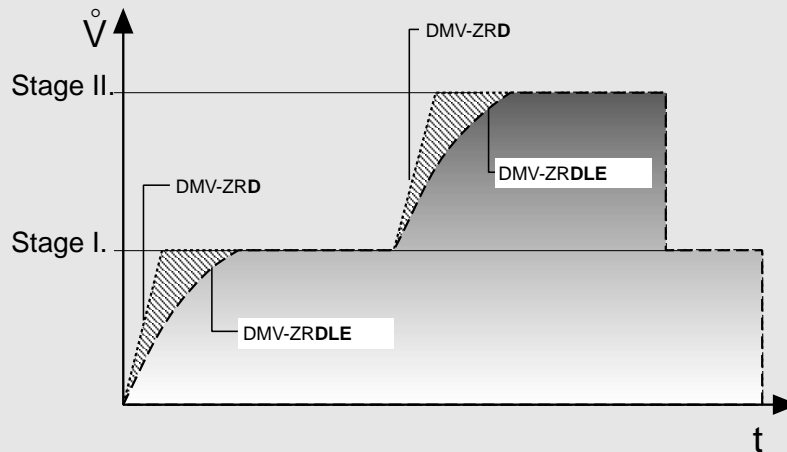
Valves V1, V2 stage one



Valve V2 stage two



Opening behavior DMV-ZRD(LE)



FRI Gas pressure regulator

Mounting the FRI series gas pressure regulator directly to the DMV dual safety shutoff valve is possible with a mounting kit.

The FRI pressure regulator can be installed upstream or downstream of the DMV dual safety shutoff valve depending on application requirements.

FRI mounting kit for DMV ZR

FRI 705 - 707/6 to DMV 701/6
Order No. 219 967
(Previously FRI 505-507/6)

FRI 710-712/6 to DMV 702/6 + 703/6
Order No. 219 968
(Previously FRI 505-507/6)

Additional Accessories

VPS 504

Valve proving system (approved by some authorities having jurisdiction in lieu of vent valve and "proof of closure" e.g. FM, IRI).

Integral gas filter (optional)

50 micron gas filter

Pre-Mount Filter (optional)

50 micron gas filter

GAO/GMH/GML A2 pressure switch

Position indication

CPI 400 with indication lamps and SPDT switch, or Visual indicator (VI)

DMV ZRD(LE) 7xx/6 VL (with vent line adapter)

Factory installed vent line adapter which integrates a vent line connection with the DMV series.

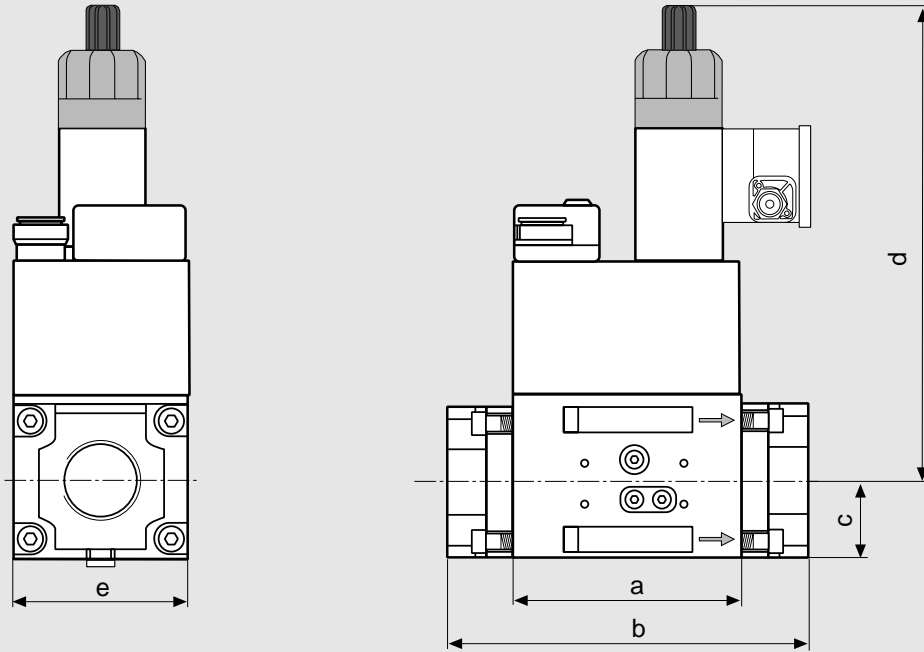
Adapters

- 1/4" NPT adapter (D225047)
- 1/2" NPT Pilot gas adapter; Check flow requirements. (D225043)
- G 1/8" Test nipple (D219008)
- Port 3 Pressure switch mounting adapter (D214975)



When an accessory is added to the DMV, it may not be possible to mount other devices.

Dimensions inch (mm)



Type	110-120 Vac 50-60 Hz Order No.	24 Vac Order No.	24 Vdc Order No.	Power** [VA]	Dimensions [inch]				Weight [lbs] [kg]	
					a	b	c*	d		
DMV-ZRD 701/6 (UL)	D231 844	upon request	upon request	70	3.7	5.6	1.4	7.5	2.9	6.6
					93	141	35	190	73	3.0
DMV-ZRD 702/6 (UL)	D232 025	upon request	upon request	120	4.9	6.9	1.8	10.0	3.9	14.3
					124	174	45	255	101	6.5
DMV-ZRD 703/6 (UL)	D232 079	upon request	upon request	135	4.9	7.9	1.8	11.0	3.9	18.0
					124	201	45	280	101	8.2
DMV-ZRDLE 701/6 (UL)	D232 173	upon request	upon request	70	3.7	5.6	1.4	8.5	2.9	6.8
					93	141	35	215	73	3.1
DMV-ZRDLE 702/6 (UL)	D232 214	upon request	upon request	120	4.9	6.9	1.8	10.6	3.9	14.5
					124	174	45	270	101	6.6
DMV-ZRDLE 703/6 (UL)	D232 232	upon request	upon request	135	4.9	7.9	1.8	13.0	3.9	18.3
					124	201	45	330	101	8.3

* When using with the vent line adapter assembly, add 1.65" to dimension c. (see vent line info sheet or call KDI to order)

** Inrush current and full load current have the same VA rating.

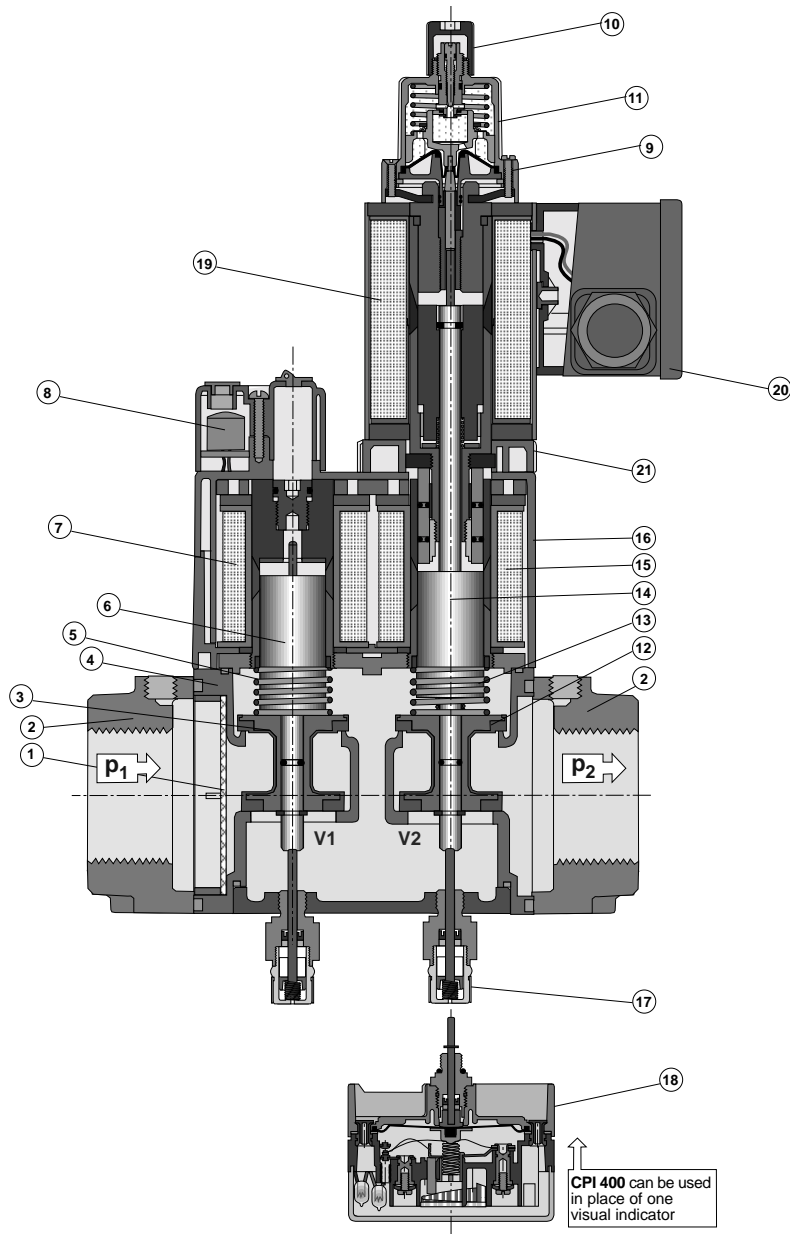
DMV-ZRD(LE) 7../6 and 5../11 flanges and other accessories are interchangeable

Valve	Flange	NPT	Rp
DMV-ZR 701/6	1/2"	D222 371	D222 341
DMV-ZR 701/6	3/4"	D222 368	D222 342
DMV-ZR 701/6	1"	D221 999	D222 001
DMV-ZR 702/6 & 703/6	1"	D222 369	D222 343
DMV-ZR 702/6 & 703/6	1 1/4"	D222 370	D222 344
DMV-ZR 702/6 & 703/6	1 1/2"	D222 003	D221 884
DMV-ZR 702/6 & 703/6	2"	D221 997	D221 926

DIN-Connector	D210 319
CPI 400	D224 253
Visual indicator	46000-6

Please order flanges, position indicators and gas filters separately

Pre-Mount Filter		Pre-Mount replacement filter		Integral replacement filter (50 micron)	
DMV-ZR 701/6	not available	DMV-ZR 701/6	not available	DMV-ZR 701/6	D214 276
DMV-ZR 702/6	D226 342	DMV-ZR 702/6	D226 997	DMV-ZR 702/6	D214 525
DMV-ZR 703/6	D226 342	DMV-ZR 703/6	D226 997	DMV-ZR 703/6	D214 525



- 1 Strainer
- 2 Flange
- 3 Valve V1
- 4 Housing
- 5 Closing spring V1
- 6 Plunger V1
- 7 Solenoid V1
- 8 Electrical connection (V1 & stage 1 of V2)
- 9 Max flow adjustment (stage 2)
- 10 Initial lift adjustment (DMV-DLE)
- 11 Hydraulic brake (DMV-DLE)
- 12 Valve V2
- 13 Closing spring V2
- 14 Plunger V2
- 15 Solenoid V2 (stage 1)
- 16 Solenoid housing
- 17 Visual indicator (VI)
- 18 CPI 400 Interlock switch
- 19 Solenoid V2 (stage 2)
- 20 Electrical connection (stage 2 of V2)
- 21 Main flow adjustment (stage 1)

$$\dot{V}_{\text{gas used}} = \dot{V}_{\text{Natural Gas}} \times f$$

f = correction factor to determine flow through valves with other gases.

$$f = \sqrt{\frac{\text{Spec. gravity of Natural Gas}}{\text{Spec. gravity of gas used}}}$$

Type of gas	Density [kg/m ³]	sg	f
Natural gas	0.81	0.65	1.00
Butane	2.39	1.95	0.58
Propane	1.86	1.50	0.66
Air	1.24	1.00	0.80

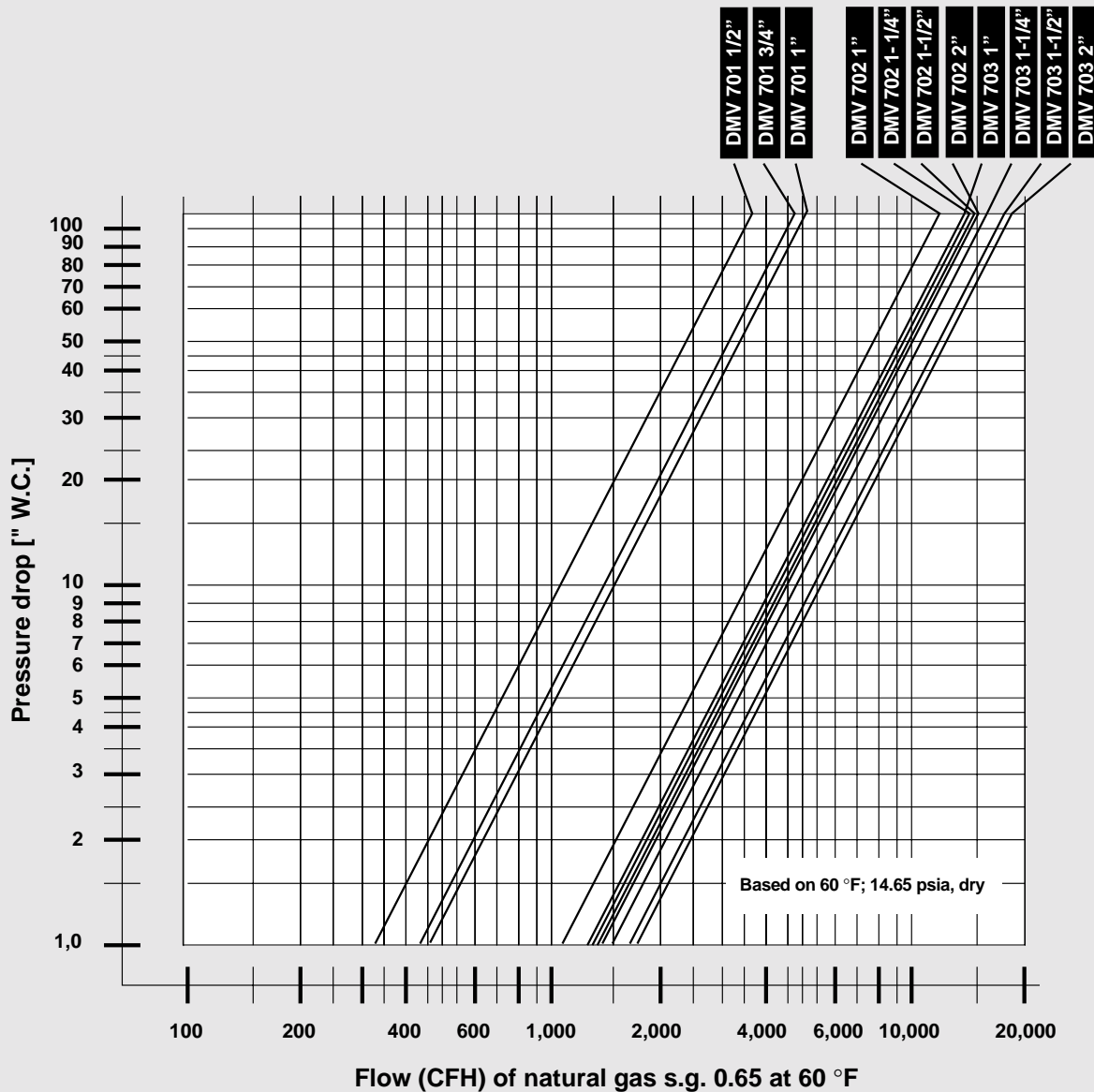
Flow (CFH) of natural gas, s.g. 0.65 at 60 °F with 1 in. W.C. pressure drop

	1/2 "	3/4 "	1 "	1-1/4 "	1-1/2 "	2 "
DMV-ZR 701	345	429	457	–	–	–
DMV-ZR 702	–	–	1065	1277	1368	1430
DMV-ZR 703	–	–	1230	1532	1698	1795

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Flow diagram



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

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