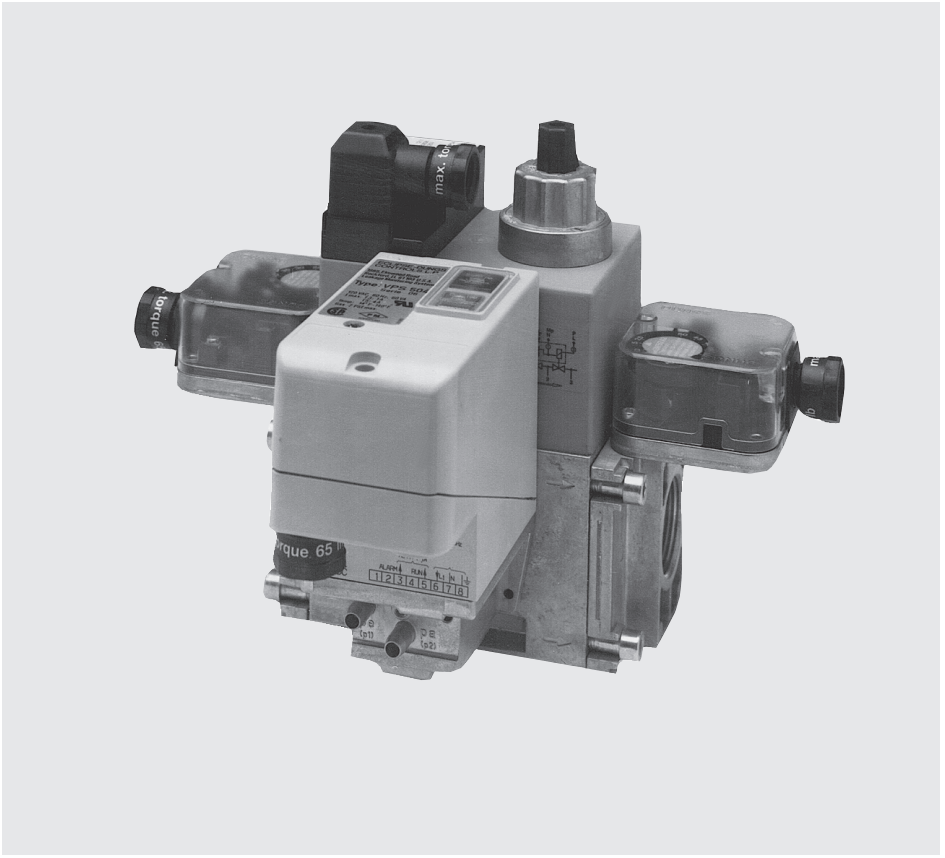
Gas Safety and Control Technology for Commercial and Industrial Gas Fired Systems

DUNGS®
Combustion Controls

US-Versions
UL, FM, CSA
***Approvals**



Karl Dungs is an ISO 9001 manufacturing facility.

European versions CE compliant

***Check model listing for specific approvals**

Karl Dungs GmbH & Co. KG has been developing and manufacturing high-quality components for gas safety and control systems for over 50 years. The American versions are tested and approved to UL, FM and CSA standards. European designs are tested to EN and DIN standards.

Millions of gas fired systems all over the world rely on DUNGS valves and controls for the safe, environmentally friendly use of natural gas, propane and manufactured gas.

Karl Dungs, Inc. is a subsidiary of Karl Dungs GmbH & Co. KG, Germany, a privately owned company with over 800 employees manufacturing DUNGS products in two factories:

Karl Dungs GmbH & Co. KG in Urbach, Germany

Karl Dungs A/S in Hedensted, Denmark.

The Karl Dungs, Inc. product offerings represent a wide range of gas flow controls, air and gas pressure switches, sensors, actuators and other burner equipment.

Imagebrochure• P/N 225 751• Ed. 01/08

Dual Modular Valves

The Dual Modular Valve (DMV) combines two automatic shutoff valves (which can be wired independently or in parallel) in one compact housing. Valve 1 (V1) of the DMV-D and DMV-DLE series is fast opening and fast closing. Valve 2 (V2) of the DMV-D is fast opening, while V2 of the DMV-DLE is slow-opening for smoother light-off. Max. flow adjustment on V2 provides variable main flow on both models.

Application
This DMV is recommended for industrial and commercial heating applications that require two automatic shutoff valves in series. The DMV is suitable for natural gas, propane, butane, air and other inert gases.

Specifications

Pipe size / thread
1/2" - 2" NPT or Rp Threaded
DN 40 - 125 ISO Flanged

Max. operating pressure
7 PSI UL, FM; 5 PSI CSA

Max. close-off pressure
7 PSI UL, FM; 5 PSI CSA

Electrical ratings (+10% / -15%)
24Vac, 120Vac, and
24 Vdc

Enclosure rating
NEMA Type 12 (/602) or NEMA Type 4x (/604)

Operating time
100 % duty cycle

Closing time
< 1 s

Opening time (to max. flow)
DMV-D: V1 & V2 < 1 s
DMV-DLE: V1 < 1 s; V2 Adjustable 10 - 20 s @ 70 °F

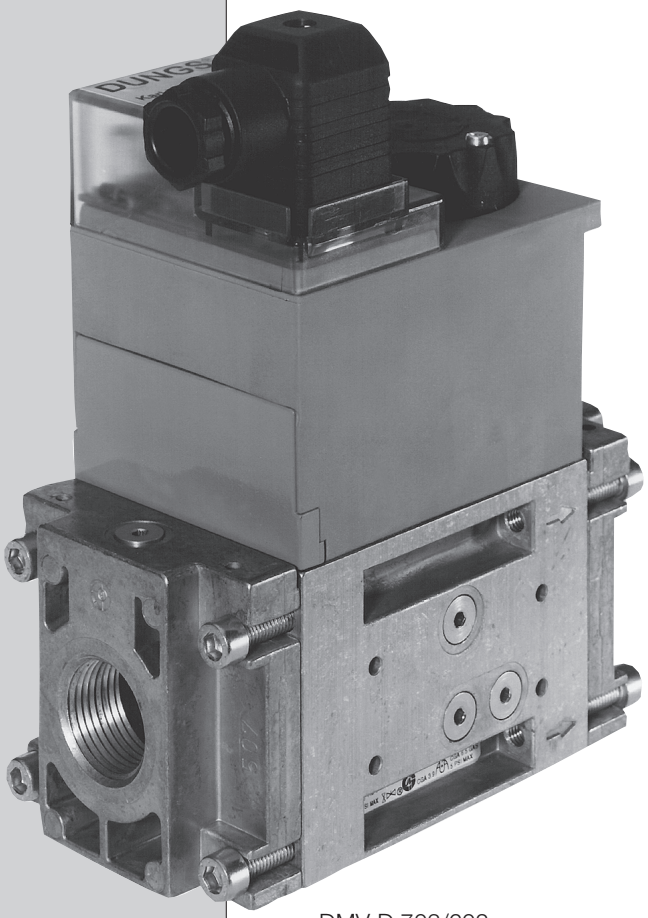
Ambient temperature rating
-40 °F to +150 °F (-40 °C to +65 °C) NEMA 12
-20 °F to +140 °F (-30 °C to +60 °C) NEMA 4x

Max. flow adjustment
Adjustable on V2: approx. <10 to 100 % of stroke

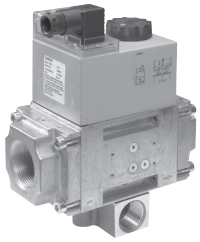
Installation position
Safety valve upright vertical to horizontal

Test ports & system accessory mounting ports
G 1/8 ISO 228 ports available on both sides. See sales literature for valve specifics.

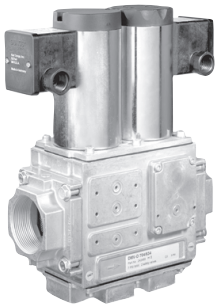
Capacities @ 2 in. W.C. pressure drop
450 - 15,000 CFH Natural Gas



DMV-D 703/602



DMV-D 702/602 with Vent Line Adapter



DMV-D 704/604

DMV-DLE 5100/11

Dual Modular Valves - with Proof of Closure

The Dual Modular Valve (DMV) combines two automatic shutoff valves (which can be wired independently or in parallel) in one compact housing. Valve 1 (V1) of the DMV-D and DMV-DLE series is fast opening and fast closing. Valve 2 (V2) of the DMV-D is fast opening, while V2 of the DMV-DLE is slow-opening for smoother light-off. Max. flow adjustment on V2 provides variable main flow on both models. Valve 2 (V2) incorporates proof of closure (POC) on models designated /622 & /624. Valves 1 & 2 (V1 & V2) incorporate proof of closure on models /634.

Application

This DMV is recommended for industrial and commercial heating applications that require two automatic shutoff valves in series with POC. The DMV is suitable for natural gas, propane, butane, air and other inert gases.

Specifications

Pipe size / thread
1/2" - 2" NPT or Rp

Max. operating pressure
7 PSI UL, FM; 5 PSI CSA

Max. close-off pressure
7 PSI UL, FM; 5 PSI CSA

Electrical ratings (+10% / -15%)
120 Vac 50 - 60 Hz (others available depending on body size)

Enclosure rating
NEMA Type 12 (/622) or NEMA Type 4x (/624; /634)

Operating time
100 % duty cycle

Closing time
< 1 s

Opening time (to max. flow)
DMV-D: V1 & V2 < 1 s
DMV-DLE: V1 < 1 s; V2 Adjustable 10 - 20 s @ 70 °F

Ambient temperature rating
-40 °F to +150 °F (-40 °C to +65 °C) NEMA 12
-20 °F to +140 °F (-30 °C to +60 °C) NEMA 4x

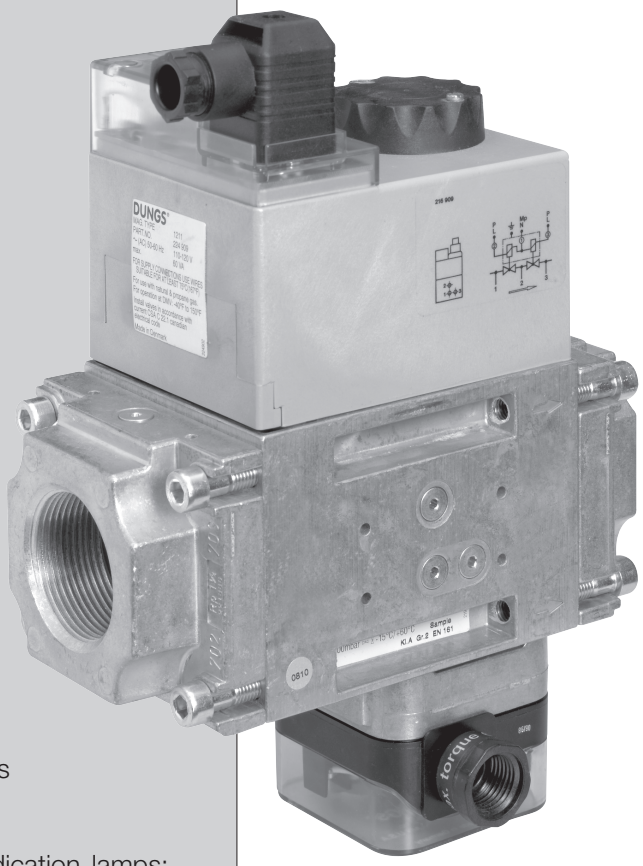
Max. flow adjustment
Adjustable on V2: approx. <10 to 100 % of stroke

Installation position
Safety valve upright vertical to horizontal.

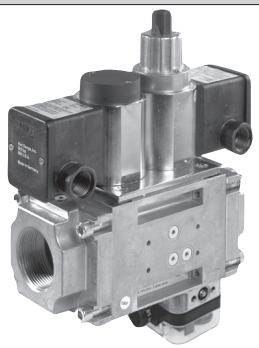
Test ports & system accessory mounting ports
G 1/8 ISO 228 ports available on both sides. See sales literature for valve specifics.

Proof of Closure Switch
Factory mounted & calibrated; SPDT switch with indication lamps;
AC max. 10A resistive @ 120 Vac
AC max. 8A inductive @ 120 Vac

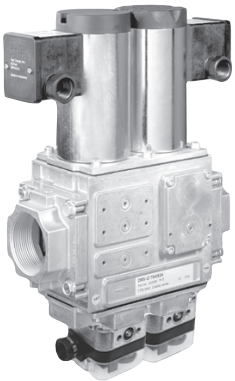
Capacities @ 2 in. W.C. pressure drop
450 - 4,000 CFH Natural Gas



DMV-D 702/622



DMV-DLE 702/624



DMV-D 704/634

Dual Modular Valves - Two Stage (optional Proof of Closure)

The Two-Stage Dual Modular Valve (DMV-ZR) combines two automatic shutoff valves (which can be wired independently or in parallel) in one compact housing. 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-D and DMV-DLE series is fast opening and fast closing. Valve 2 (V2) of the DMV-D is fast opening, while V2 of the DMV-DLE is slow-opening for smoother light-off. Max. flow adjustment on V2 provides variable main flow on both models. Valve 1 (V1) incorporates proof of closure (POC) on models designated /612.

Application

This DMV-ZR is recommended for industrial and commercial heating applications, where two automatic shutoff valves and modulating between two firing rates is required. The DMV-ZR Dual Modular Valve two stage is suitable for natural gas, propane, butane, air and inert gases.

Specifications

Pipe size / thread
1/2" - 2" NPT or Rp

Max. operating pressure
7 PSI UL, FM; 5 PSI CSA

Max. close-off pressure
7 PSI UL, FM; 5 PSI CSA

Electrical ratings (+10% / -15%)
110 - 120 Vac 50 - 60 Hz (others available depending on body size)

Enclosure rating
NEMA Type 12 (/602)

Operating time
100 % duty cycle

Closing time
< 1 s

Opening time (to max. flow)
DMV-ZRD: V1 & V2 < 1 s
DMV-ZRDLE: V1 < 1 s; V2 Adjustable 10 - 20 s @ 70 °F

Ambient temperature rating
-20 °F to +150 °F (-30 °C to +65 °C)

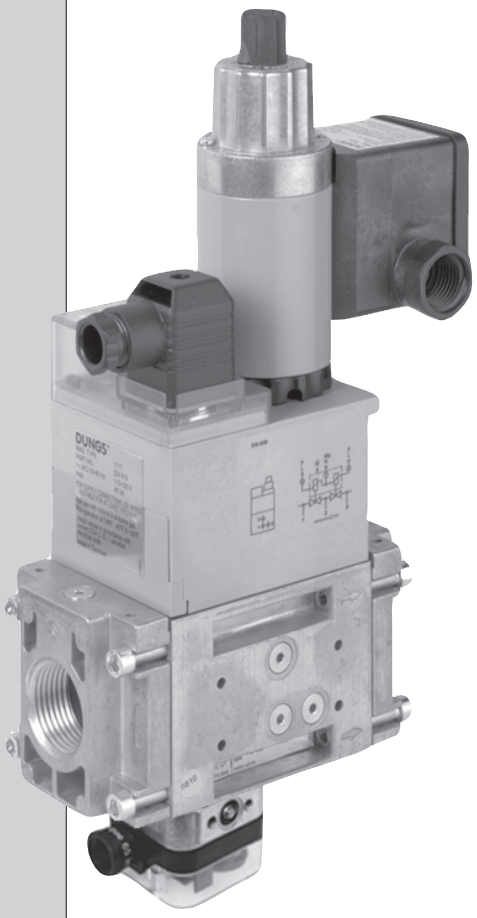
Max. flow adjustment
Adjustable on V2, stage one: approx. 5 to 30 % of stroke
Adjustable on V2, stage two: approx. 20 to 100 % of stroke

Installation position
Safety valve upright vertical to horizontal

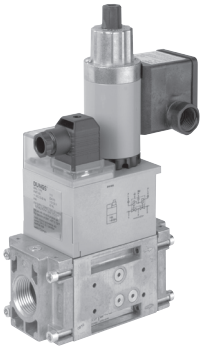
Test ports & system accessory mounting ports
G 1/8 ISO 228 ports available on both sides. See sales literature for valve specifics.

Proof of Closure Switch (/612 models only)
Factory mounted & calibrated; SPDT switch with indication lamps;
AC max. 10A resistive @ 120 Vac
AC max. 8A inductive @ 120 Vac

Capacities @ 2 in. W.C. pressure drop
450 - 3,000 CFH Natural Gas



DMV-ZRDLE 701/612



DMV-ZRDLE 701/602

SV - Single Valves (with or without Proof of Closure)

The automatic shutoff valve SV is a single-stage automatic shut-off valve for gas burners and gas burning appliances:

- SV series are fast opening and closing
- SV-DLE series are slow opening and fast closing.
- Models ending in /614 integrated proof of closure. Models ending in /604 are of the non-proof of closure type.
- All models pipe thread on inlet side and threaded flange on outlet side.
- An additional threaded flange on inlet side is optional
- All models can use DMV modular mount accessories.

Application

The SV is recommended for industrial and commercial heating applications that require an automatic shutoff valve incorporating proof of closure. The SV is suitable for natural gas, propane, butane, air and inert gases.

Specifications

Pipe size / thread
1/2" - 2" NPT or Rp

Max. operating pressure
10 PSI for FM and CSA: UL Pending

Max. body pressure
15 PSI

Max. close-off pressure
15 PSI

Electrical ratings (+10% / -15%)
110 - 120 Vac 50 - 60 Hz (others available depending on body size)

Enclosure rating
NEMA Type 4 for indoor use
NEMA Type 12 for outdoor use

Operating time
100 % duty cycle

Closing time
< 1 s

Opening time (to max. flow)
SV: < 1 s
SV-DLE: Adjustable 10 - 20 s @ 70 °F

Ambient temperature rating
-40 °F to +140 °F (-40 °C to +60 °C)

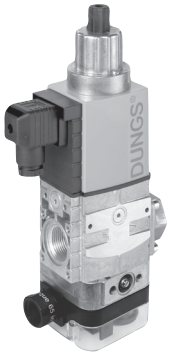
Installation position
Safety valve upright vertical to horizontal

Test ports & system accessory mounting ports
G 1/8 ISO 228 ports available on both sides. See sales literature for valve specifics

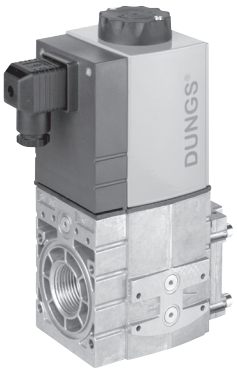
Proof of Closure Switch on /614 models
Factory mounted & calibrated; SPDT switch with indication lamps;
AC max. 10A resistive @ 120 Vac
AC max. 8A inductive @ 120 Vac

Capacities @ 1in. W.C. pressure drop
300 - 2,250 CFH Natural Gas

SV 1010/614



SV-DLE 1005/614



SV 1010/604

Single Valves

The MVD/6 and the MVDLE/6 are electrically operated normally closed, automatic safety shutoff valves for gas burners and gas appliances.

- Max. operating pressure up to
  7 PSI (500 mbar) on MVD/6 (5 PSI @ CSA)
  3 PSI (200 mbar) on MVDLE/6 (2 PSI @ CSA)
- MVD/6 is fast opening and closing. MVDLE/6 is slow opening and fast closing.
- Optional field installable visual indicator (VI) or CPI 400 with indication lamps and SPDT interlock switch for valve position.

Application

The MVD/6 and MVDLE/6 are recommended for industrial and commercial heating applications that require one safety shutoff valve or two safety shutoff valves in series. The MVD/6 and MVDLE/6 safety shutoff valves are suitable for natural gas, propane, butane, air and inert gases.

Specifications

Pipe size / thread
1/2" - 3" NPT

Max. operating pressure
7 PSI UL, FM; 5 PSI CSA

Max. body pressure
15 PSI

Max. close-off pressure
7 PSI UL, FM; 5 PSI CSA

Electrical ratings (+10% / -15%)
110 - 120 Vac 50 - 60 Hz (others available depending on body size)

Enclosure rating
NEMA Type 12

Operating time
100 % duty cycle

Closing time
< 1 s

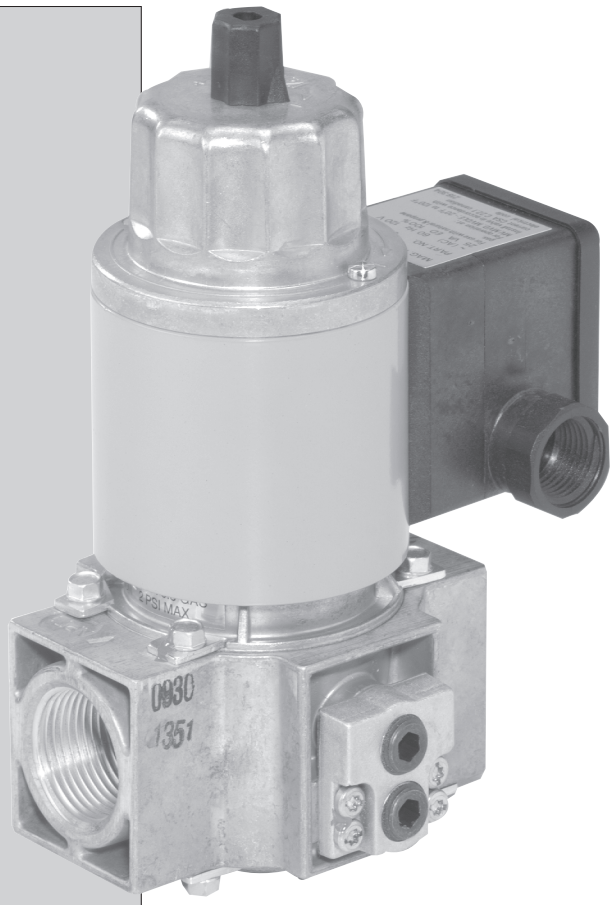
Opening time (to max. flow)
MVD/6:< 1 s
MVDLE/6: Adjustable 10 - 20 s @ 70 °F

Ambient temperature rating
-20 °F to +140 °F (-30 °C to +60 °C)

Installation position
Safety valve upright vertical to horizontal

Test ports & system accessory mounting ports
1/4 NPT ports available on both sides. See sales literature for valve specifics

Capacities @ 1 in. W.C. pressure drop
250 - 5,000 CFH Natural Gas



MVDLE 205/6

MVD 520/6

Valve Proving Systems

The valve proving systems - Model VPS 504 S06 available for the DMV /SV series modular automatic valves and model VDK 200A S02 available for stand alone valves test and verify that two automatic shutoff valves in series are fully closed before either a system start-up and/or after system shutdown when wired and interlocked to a suitable flame safeguard control. The valve proving system will halt the start-up sequence to a burner if it detects an open automatic shutoff valve, thus preventing ignition under dangerous conditions.

Application

The valve proving systems are recommended for industrial and commercial heating applications. Some authorities having jurisdiction accept the VPS in lieu of "proof of closure" when integrated with the preignition system and/or in lieu of a vent valve when it checks the valves at start up and shut down. It can also be used as a valve seat tightness check when used within its capabilities. The VPS is suitable for natural gas, propane, air and inert gases. Not suitable for butane gas.

Specifications

Pipe size / thread
1/4" NPT (VDK Only)

Max. operating pressure
7 PSI for VPS at CSA
5 PSI for VDK at CSA

Max. body pressure
10 PSI

Max. close-off pressure
7 PSI - VPS; 5 PSI - VDK

Electrical ratings (+10% / -15%)
120 Vac 60 Hz (others available)

Power ratings
Test period: 60 VA; In operation: 17 VA - VPS
Test period: 80 VA; In operation: 20 VA - VDK

Enclosure rating
NEMA Type 12

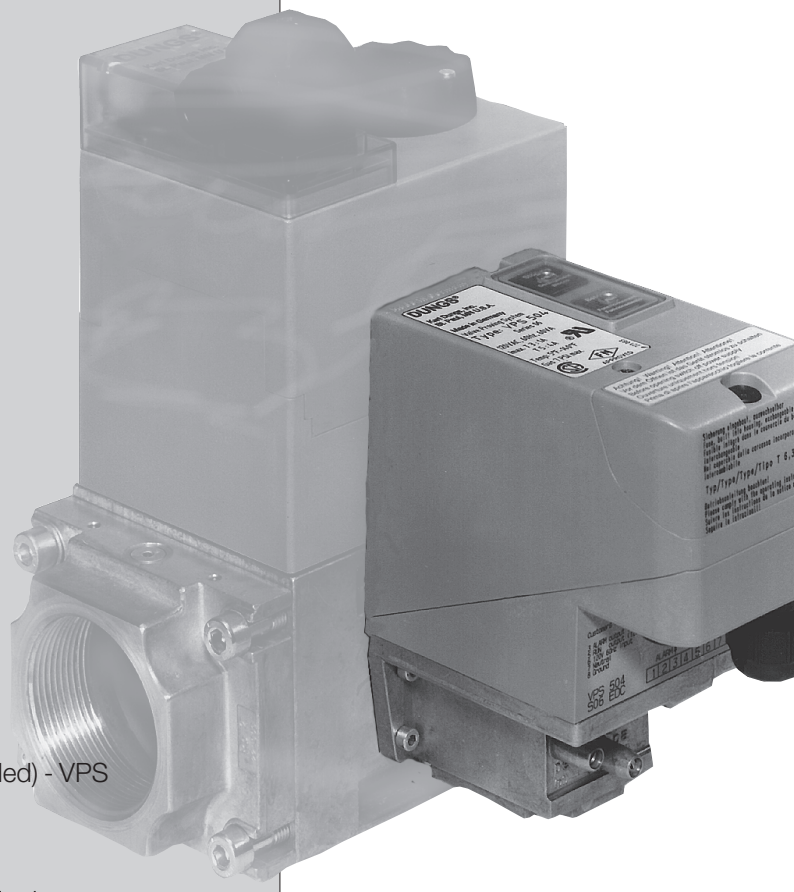
Operating time
100 % duty cycle, max. 20 test cycles/h - VPS
100 % duty cycle, max. 15 test cycles/h - VDK

Ambient temperature rating
+5 °F to +140 °F (-15 °C to +60 °C) VPS
+15 °F to +140 °F (-10 °C to +60 °C) VDK

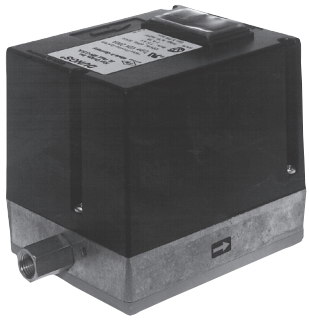
Installation position
Mounts directly to DMV via mounting screws (included) - VPS
Upright vertical to horizontal - VPS
Upright to horizontal, not inverted - VDK

Accessory: CM 100, CM 101

The DUNGS CM 100 and CM 101 incorporate the relays and logic necessary to operate a Valve Proving System on a system start up and after shutdown when wired **and** interlocked with a suitable flame safeguard control. When a Valve Proving System is integrated with the CM 100 or CM 101, the Valve Proving System can be used in lieu of a vent line when accepted by the authority having jurisdiction.



VPS 504 S06



VDK 200A S02

Gas Pressure Switches

The GAO-, GMH-, and GML-A2… pressure switches are compact ventless pressure switches for direct mounting to DUNGS modular valve train components and the SV valve. The GAO-, GMH-, and GML-A4… pressure switches are compact pressure switches with 1/4" NPT threaded connections. The A2 & A4 series pressure switches are suitable for making and/or breaking a circuit when the medium's pressure changes relative to the set point. The set point can be set in the field by an adjustable dial with an integrated scale. The GAO is an automatic reset pressure switch, while the GMH and GML are manual reset pressure switches.

Application

The DUNGS series of pressure switches are recommended for industrial and commercial heating applications with the DUNGS DMV dual modular valves or with 1/4" NPT connections. The GAO-, GMH-, and GML-A2 & A4… pressure switches are suitable for natural gas, propane, butane, air and other inert gases.

Specifications

Pressure connection

A2- O-ring flange connection on underside of pressure switch
A4- Standard: 1/4" NPT female thread centered, underside

Max. operating pressure; Set point range

GAO-A2 or -A4-4-2,3,5,6:	7 PSI; 0.16 to 60 in. W.C.
GMH-, GML-A2 or -A4-4 and-6:	7 PSI; 0.16 to 60 in. W.C.
GAO-, GMH- and GML-A2 or -A4-4-8:	14 PSI; 40 to 200 in. W.C.

Max. body pressure

15 PSI

Electrical ratings (+10% / -15%)

AC eff. min. 24 V max. 120 V
DC min. 24 V max. 48 V

Current ratings

Silver (Ag) contact ratings	Gold (Au) contact ratings
AC 10A resistive @ 120 VAC	
AC 8A inductive @ 120 VAC	
DC min. 20 mA @ 24 VDC	DC min. 5 mA @ 5 VDC
DC max. 1 A @ 48 VDC	DC max. 20 mA @ 24 VDC

Electrical connection

Screw terminals via 1/2" NPT conduit connection

Enclosure rating

NEMA Type 4

Ambient temperature rating

GAO-, GMH- and GML-2 to -6 series

Ambient temperature -40 °F to +140 °F (-40 °C to +60 °C)
Medium temperature -40 °F to +140 °F (-40 °C to +60 °C)

GAO-, GMH- and GML-8 series

Ambient temperature -22 °F to +140 °F (-30 °C to +60 °C)
Medium temperature -22 °F to +140 °F (-30 °C to +60 °C)

Installation position

±15% switching point deviation referred to set point, adjusted as pressure rises, vertical diaphragm position.

GAO-A4-4…

GMH-A2-4…

GML-A2-4…

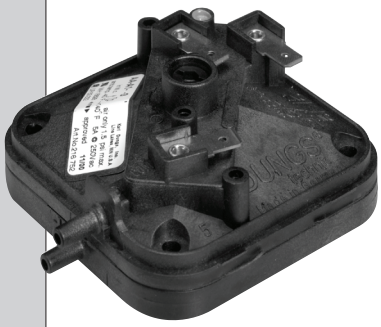
Differential Air Pressure Switches

AA-… Compact pressure switches for automatic burner controls.
AA-A1…Pressure switches that are factory set with hose connections.
AA-A2-4… Pressure switches that are field adjustable and feature hose connections.
AA-A2-6… Pressure switches that are field adjustable with NPT threaded connections also include a test button in the lower housing.
AA-C2… Low pressure differential pressure switches that are field adjustable with hose connections.

Application
Differential pressure monitoring in combustion air proving, ventilation and air-conditioning systems. The AA-… can be used as a pressure, vacuum or differential pressure switch for air and non-aggressive gases. These switches are not suitable for natural gas, propane, butane and other combustible gases.

Specifications

Pressure connection
AA-A1; AA-A2-4; AA-C2
0.16" (4 mm) dia. positive and negative (also 0.24" [6 mm] diameter positive and negative for C2 series only)
AA-A2-6
1/4" NPT positive ;1/8" NPT negative
5/32" (4.6 mm) test connection
Max. operating pressure; Setpoint range
AA-A1: 1.5 PSI; 0.16 to 20 in. W.C.
AA-A2-4 / 6: 7 PSI; 0.16 to 60 in. W.C.
AA-C2: 20 in. W.C.; 0.08 to 4.0 in. W.C.
Electrical ratings (+10% / -15%)
AC eff. min. 24 V max. 120 V
DC min. 24 V max. 48 V
Current ratings
AC 5 A resistive @ 120 VAC
AC 2.5 A inductive @ 120 VAC
DC min. 20 mA @ 24 VDC
DC max. 1 A @ 48 VDC
Electrical connection
AA-A1
1/4 x 1/32" (6.3 x 0.8 mm) flat male terminals
AA-A2, AA-C2
Screw terminals via 1/2" NPT conduit connection
Enclosure rating
AA-A1
NEMA Type1 or 12 depending on optional cover.
AA-A2-4; AA C2
NEMA Type 4
Ambient temperature rating
AA-A1; AA-A2-4 or -6
Ambient temperature -40 °F to +140 °F (-40 °C to +60 °C)
Medium temperature -40 °F to +140 °F (-40 °C to +60 °C)
AA-C2
Ambient temperature +5 °F to +140 °F (-15 °C to +60 °C)
Medium temperature +5 °F to +140 °F (-15 °C to +60 °C



AA-A1…

AA-A2-6…

AA-A2-4…

AA-C2-…

Pressure Regulators and Ratio Regulators/Zero Governors

The FR_ series pressure regulators, are spring-loaded pressure regulators with adjustable setpoint that feature an internal sensor for regulating output pressure.

- FRI 7../6: Modular design, directly mounts to DMV valves - Constant output pressure with integrated 50 micron filter.
- FRS 7../6 Threaded connections - Constant output pressure
- FRS 5... Flanged connections- Constant output pressure
- FRG 7../6 Threaded connections - Ratio Regulator/ Zero Govorner
- FRNG 5...ISO flanged connections - Ratio Regulator/ Zero Govorner
- Lock-up type regulators & vent limiter.

Application

The FR_ series gas pressure regulators are recommended for industrial and commercial heating applications and are suitable for natural gas, propane, butane, air and inert gases.

Specifications

Pipe size / thread

FRI 7../6: Modular mount or 1/2" to 2" stand alone - flanges required.
FRS 7../6: NPT 1/2" to NPT 3"
FRS 5... DN 40 to DN 150 - ISO Flanged
FRG 7../6: NPT 1/2" to NPT 3" and FRNG 5... ISO Flanged

Input pressure range; Output pressure range

FRI 7../6: 7 PSI; +1 to + 60 in.W.C.
FRS 7../6: 10 PSI; +1 to + 80 in. W.C.
FRS 5... 7 PSI; +1 to + 80 in. W.C.
FRG 7../6: 7 PSI; -1.2 to 110 in. W.C.

Max. body pressure

FRI 7../6; FRS 5...; FRG 7../6: 10 PSI
FRS 7../6: 15 PSI
FRNG 5... 10 PSI

Ambient temperature rating

FRI 7../6; FRG 7../6
+5 to +150 °F up to 7 PSI
-40 to +150 °F up to 2 PSI and outlet 3 - 60"WC.
FRS 7../6;
+5 to +150 °F up to 10 PSI
-40 to +150 °F up to 2 PSI and outlet 3 - 60"WC.
FRS 5...+5 to +150 °F (-15 to +70 °C)
FRNG 5... +5 to +150 °F (-15 to +70 °C)

Installation position

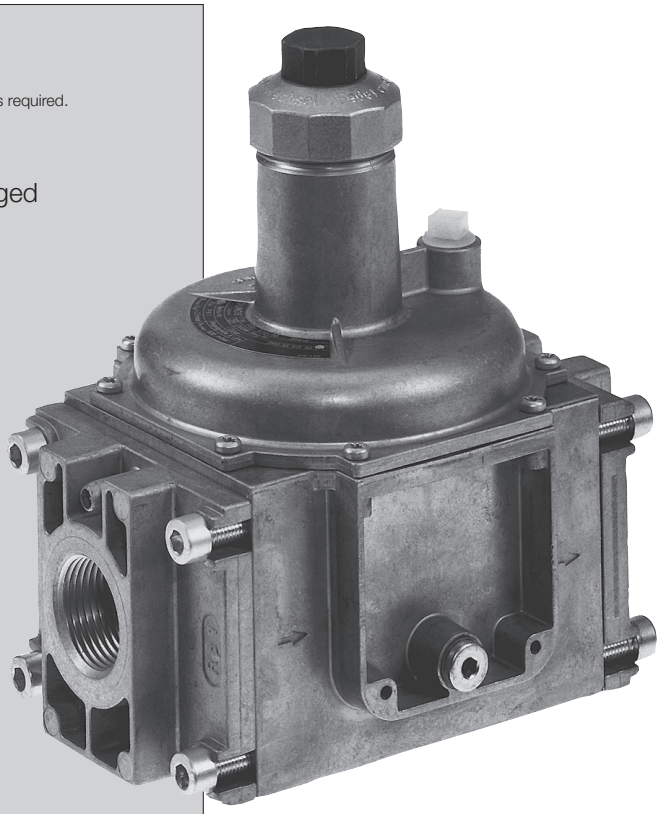
Regulator dome from vertically upright to lying horizontally

Vent Line

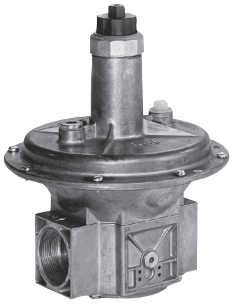
A vent limiting orifice is installed as standard with the option to also connect a vent line connection if required. Check applicable codes for requirements.

Capacities @ 1 in. W.C. pressure drop

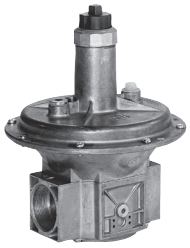
200 - 15,000 CFH Natural Gas



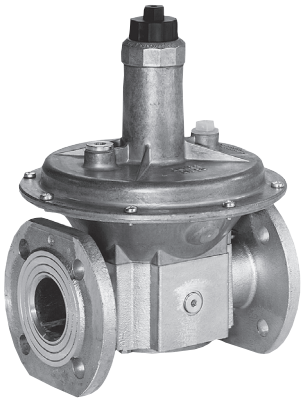
FRI 705/6
(Shown with optional flanges)



FRG 725/6



FRS 710/6



FRS 5050

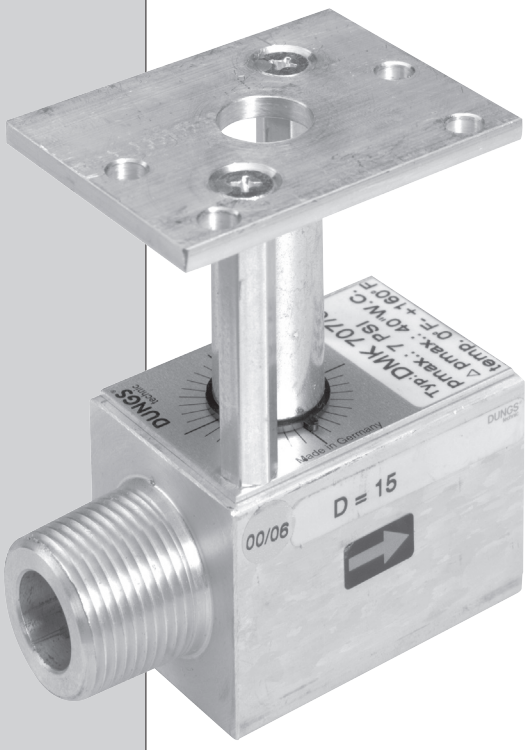
Modulating Control Valves & Motors

The DMA actuator drives from 0° to 90° via a 4 - 20 mA input signal and features integrated 4-20 mA output terminals. The DMA can move in any direction and stop anywhere over the entire 90° stroke. The DMA is available in three different set speeds: 6s, 12s, and 30s. The DMA has one independent, field adjustable auxiliary SPDT switch and two field adjustable limit switches. The DUNGS DMK butterfly control valve operates from 0° to 90° degrees in either direction. Inlet-side male thread and outlet-side female thread enable a space-saving assembly directly to most DUNGS valves. The DUNGS DML linear control valve operates from 0° to 90° degrees in the clockwise direction. Inlet female thread enables in line assembly.

Application
The DMA is used to automatically modulate the amount of gas supplied to the burner.
The DMK & DML are recommended for industrial and commercial heating applications for modulating gas or air supply to burners. The DMK & DML control valves are suitable for natural gas, propane, butane, air and other inert gases.

Specifications
DMA - Actuator
Electrical ratings (+10% / -15%)
110 - 120 Vac 50 - 60 Hz
Power rating
Holding: max. 2.0 VA - Operation: max. 5.4 VA
Enclosure rating
NEMA Type 1 (Optional NEMA type 4 cover avaliable)
Electrical connection
Screw terminals with 1/2” NPT conduit connection
Operating time
100 % duty cycle
Ambient temperature rating
+15 °F to +120 °F (-10 °C to +50 °C)
Installation position
Multipoised

Specifications
DMK & DML - Modulating valves
Pipe thread, Male input female output
DMK: NPT: 3/4“; 1“; 1 1/4“; 1 1/2“; 2“
Max. inlet pressure
7 PSI
Max. differential pressure
1.5 PSI
Max. body pressure
15 PSI
Ambient temperature rating
5 °F to +140 °F (-15 °C to +60 °C)
Installation position
Multipoised
Capacities @ 4 in. W.C. pressure Drop
500 - 5,000 CFH Natural Gas



DMK 707/6

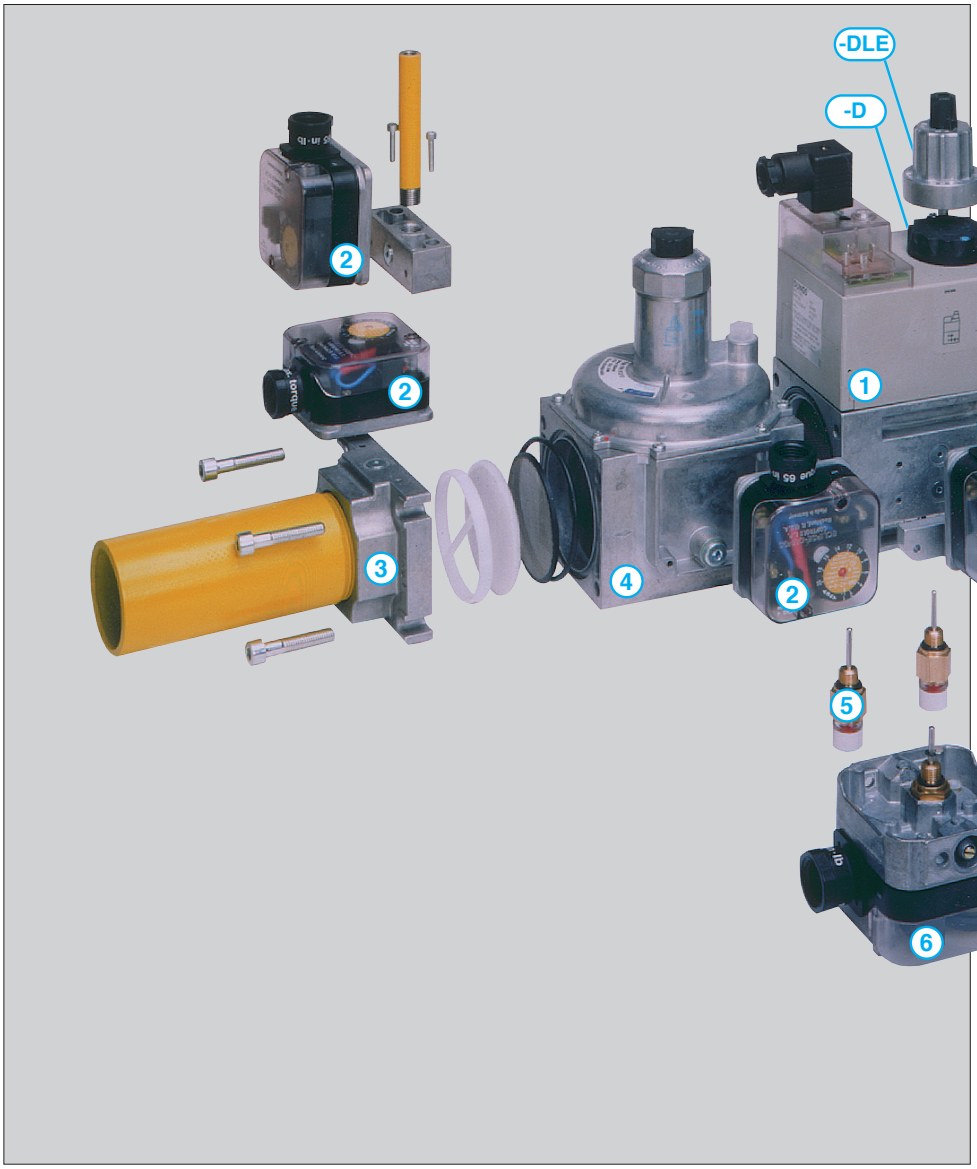

DMA 12B120


DMK 5050

DUNGS Modular System

The DMV is the main component of the DUNGS Modular Gas Safety System comprised of:

1 DMV combines two Automatic Shut-Off Valves in one housing
2 GAO (or GMH & GML) Gas Pressure Switch
3 Flanges 1/2" to 2" NPT threaded
4 FRI Pressure Regulator with built in 50 micron Filter
5 Visual Indicator
6 Proof of Closure switch or CPI 400 Closed Position Indicator Switch
7 Pilot Line Connector
8 VPS 504 Valve Proving System



The modular gas safety system reduces piping costs and space requirements. When using the VPS 504 with a CM 100/101, the need of a vent line is eliminated in an Swiss Re (formerly GE GAP and IRI) gas train.

Pre-Piped Valve Trains

DUNGS designs, builds and tests high quality fuel trains for just about any application. 50 years in the gas control industry allows DUNGS to be your design partner with experience in Europe, The Americas, Australia and Asia.

DUNGS Fuel Trains:

- Comply with applicable US Standards and European Directives
- Capacities to 4500 kW (150 Mbtu/h)
- Natural gas, propane, butane, air, manufactured gas, and other inert gases.

Specifications

Electrical ratings

120 Vac 50 - 60 Hz, 230 Vac 50 - 60 Hz, 24 Vdc

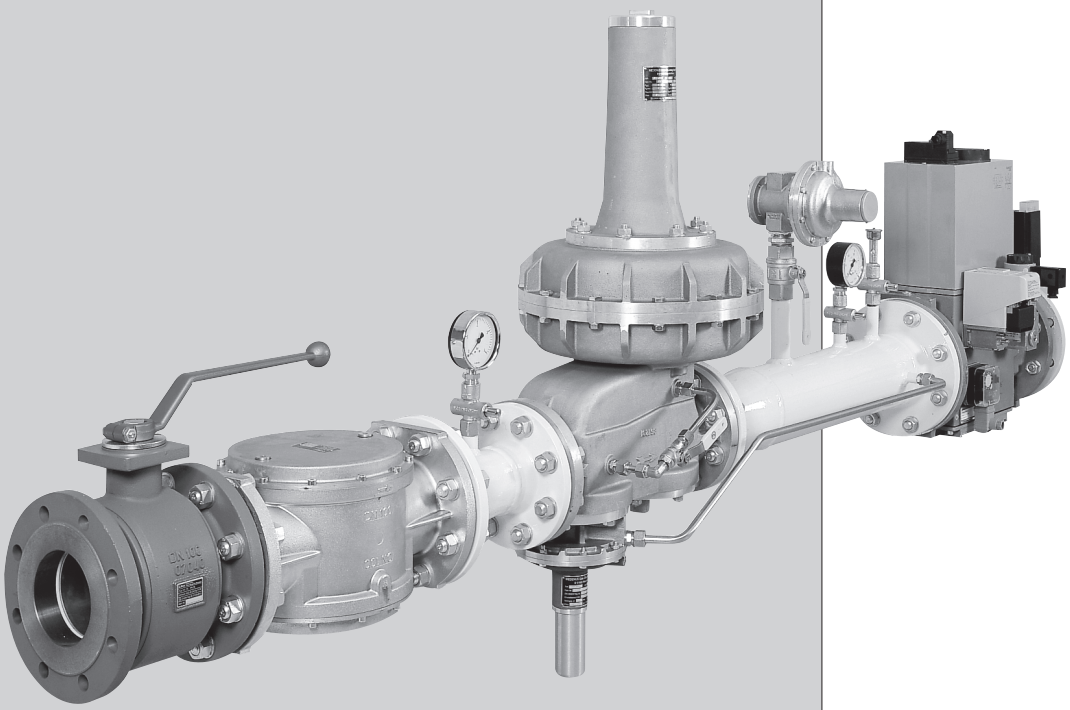
Enclosure rating

IP 54 (NEMA Type 12), IP65 (NEMA Type 4)
or hazardous location

Input pressure range

Up to 6 Bar (87 PSI)

Delivered fully assembled and pressure tested with certificate.



Gas flow controls & Burner accessories

Multi Purpose Ball Valves
Fully ported manual shut-off ball valves with low turning torque. Valve seat and packing are made of Teflon; O-ring is made of Viton.

Gas Orifice & Venturi Meters
Permit accurate setting of burner air & gas flow for optimum efficiency.

Electric Actuators
Designed to operate dampers, butterfly valves and similar devices. Torques from 16 in. lb. to 1300 in. lb.

Ignition Transformers
For reliable ignition of gas burners.

Specifications

Multi purpose Ball Valves
CSA certified, UL Listed,
Pipe sizes (NPT): 1/4" to 3"
Ambient temperatures: -40 °F to +300 °F
max. operating pressures (ratings):

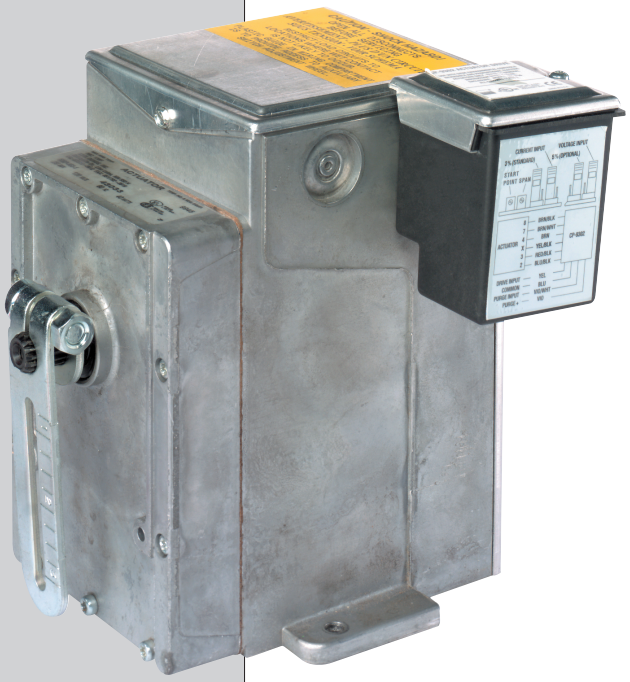
UL	1/4" to 2"	125 PSIG
CSA	1/4" to 2"	5 PSIG

Gas Orifice Meters
Max. operating pressure: 250 PSI
Brass construction: 1/2" to 2"
Carbon steel: 2 1/2" to 24"

Gas Venturi Meters
Max. operating pressure: 250 PSI
Brass construction: 1/2" to 11/4"
Carbon steel: 2 1/2" to 8"

Electric Actuators
All models are UL listed and CSA approved.
EMA- • Two Position
EMP- • Position Proportioning 100 Ohm Slidewire Feedback
- Potentiometer Slaved Proportioning, 100-1000 Ohm, Slidewire feedback
- Proportioning, 4-20 mA Input
- High Torque

Ignition Transformers
Primary 120 or 240 V
50 or 60 Hz Models
Secondary 6000 V
UL listed, CSA approved (120 V-Version)



EMP 454-5

Ball Valve

Orifice

Venturi

Ignition Transformer

DUNGS®
Combustion Controls

DUNGS has over 800 employees manufacturing DUNGS products in two factories. These products, which comply with high safety requirements, are used in gas firing systems throughout the world.

DUNGS products are suitable for all industrial combustion gases, non-corrosive gases and air.
Free of non-ferrous metal versions are suitable for gases with max. 0,1 Vol.% H_2S, dry (sewer or bio gases).

Karl Dungs GmbH & Co. KG Head Office
Urbach, Germany

Karl Dungs A/S
Hedensted, Denmark

Karl Dungs Inc. Scope of supply

Safety Valves (MV)
Manual Shut-Off Valves
Vent Valves (EU)
Dual Safety Valves (DMV)
Combination Regulator and Safety Valves

Pressure Regulators
Proportionators
Gas Pressure Switches
Air Pressure Switches
Klima-Sets
Closed Position Indicator Switches
Closed Position Visual Indicators
Valve Proving Systems
Control Modules

Gas Filters (EU)
Ball Valves
Butterfly Valves
Linear Butterfly Valves
Gas Orifice Meters

Automatic Gas Burner Controls (EU)
UV Sensors (EU)
Control Units (EU)
Analog Pressure Sensors (EU)
Electric Actuators
Ignition Transformers
Accessories

Control cabinets (EU)
Gas trains

(EU) European specifications only

Specifications subject to alteration in the interest of technical progress.