Butterfly Control Valve

DMK/6 Series

DUNGS®
Combustion Controls

UL Listed for US and Canada
- UL 842 and ULc C125 & C842
- File # MH 18741

Models
- DMK 707/6 (3/4” NPT)
- DMK 710/6 (1” NPT)
- DMK 712/6 (1 1/4” NPT)
- DMK 715/6 (1 1/2” NPT)
- DMK 720/6 (2” NPT)

Commonwealth of Massachusetts Approved Product
- Approval code G1-1107-35
- Control Valve, Butterfly Type

Codes and Standards
This product is intended for installations covered by but not limited to NFPA 86, ANSI Z83.4/ CSA 3.7, ANSI Z83.18/CSA 4.9, ANSI Z21.13, CSD-1, UL 795 or CSA B149.1, CSA B149.3, CSA B149.6.

DUNGS is an ISO 9001 manufacturing facility.

Technical description
The DMK butterfly control valve actuates from 0° to 90° degrees in either direction; it is not a tight shut-off valve. Inlet side male thread and outlet-side female thread enable a space-saving assembly directly on most DUNGS safety shutoff valves.

- Max. operating pressure: 7 PSI
- Max. differential pressure: 3.6 PSI
- Multiple internal orifice diameters available for specific flow requirements
- Requires a DUNGS direct drive DMA actuator with operation time: 12 s or 30 s for 90°; 4 - 20 mA input.
- Small, light weight, easy to install, functional, rugged, and maintenance-free due to no linkages

Application
The DMK is recommended for industrial and commercial heating applications for modulating gas or air supply to burners. The DMK butterfly control valve is suitable for dry natural gas, propane, butane, air and other inert gases. Suitable for up to 0.1 % by volume, dry H_2S.

A “dry” gas has a dew point lower than +15 °F and its relative humidity is less than 60 %.

DMK/6 Butterfly control valve is used for modulating gas or air supply to burners; not a tight shut-off valve.

Specifications	DMK 707/6	DMK 710/6	DMK 712/6	DMK 715/6	DMK 720/6
Pipe thread (NPT) Male input female output	3/4“	1“	1 1/4“	1 1/2“	2“
Max. pressure	7 PSI (500 mbar)				
Max. differential pressure (Highfire)	3.6 PSI (250 mbar) for optimal performance				
Max. body pressure	15 PSI (1000 mbar)				
Flow when closed (0°) Flow when open (90°)	See flow curve 1 See flow curves 2, 3, & 4				
Torque	Max. 4.4 in-lbs (50 Ncm)				
Actuator angle	90° from open to closed				
Orifice diameters avaliable (mm)	DMK 707/6 Diameters (mm) 11 DMK 710/6 Diameters (mm) 15 DMK 712/6 Diameters (mm) 19 DMK 715/6 Diameters (mm) 24 and 28 DMK 720/6 Diameters (mm) 32				
Materials in contact with gas	Housing: Aluminium Shaft: Stainless steel Seals: NBR-based rubber				
Ambient temperature	5 °F to +140 °F (-15 °C to +60 °C)				
Installation position	Multipoised				
Actuator	Use with DUNGS DMA actuator				
Turndown	20 : 1				

Equipment selection
Always select the valve with the largest Δp pressure drop (Δp > 4.0 in. W.C.) to achieve good “regulating and control behavior”.

The following values must be known to size the DMK.

1. Maximum flow $V_{max.}$
2. Pressure drop Δp at maximum flow.
3. Minimum flow $V_{min.}$
4. Pressure drop Δp at minimum flow.

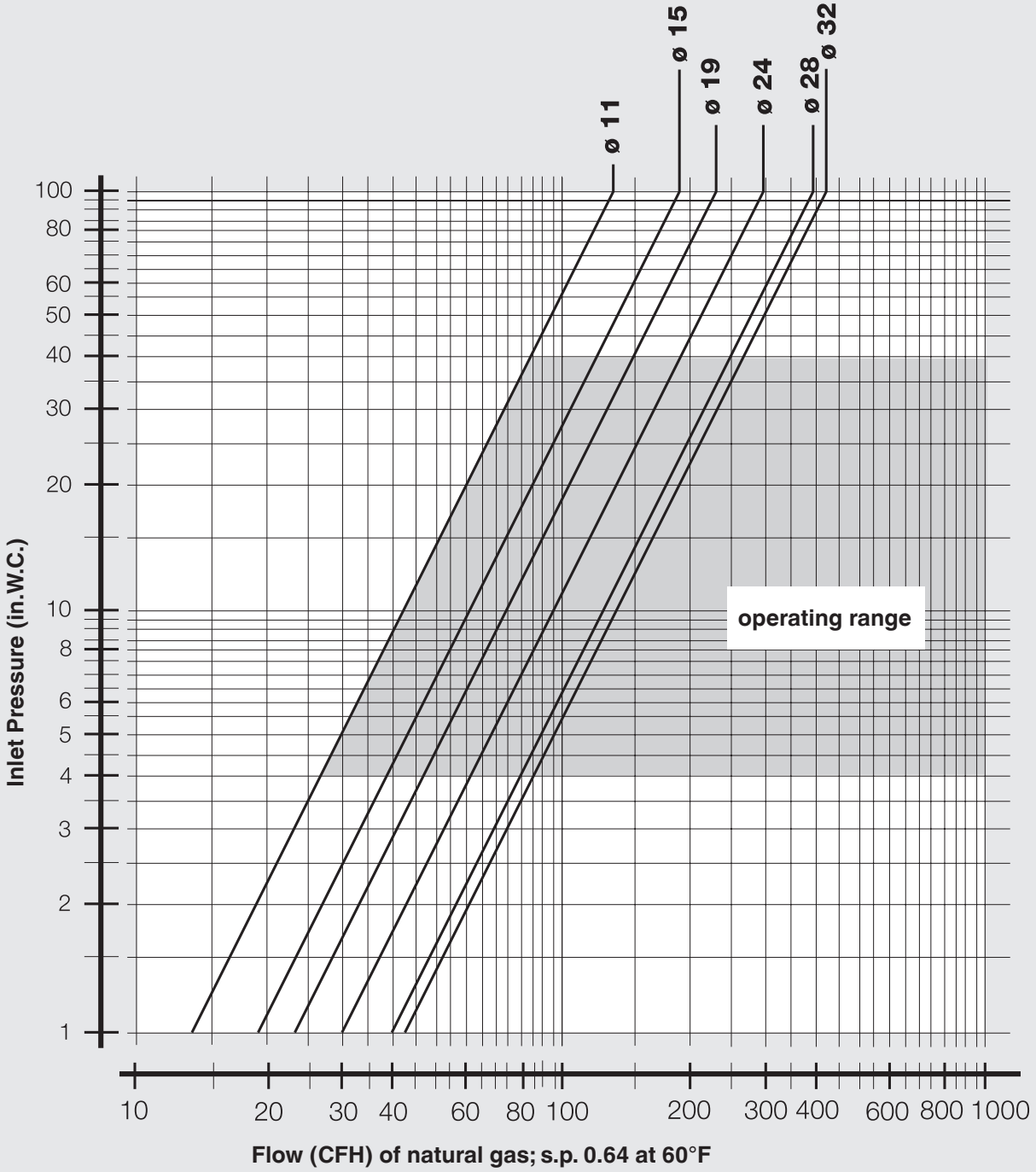
Check whether the required minimum flow is attained in valve position 0°. The minimum flow of the application should fall within the recommended operating ranges in diagram 1.
At low flow, the pressure drop of upstream equipment is reduced and the available Δp of the valve increases. At low flow, the pressure drop of upstream equipment is reduced and the available Δp of the valve increases.


Perform leakage and functional tests after mounting.

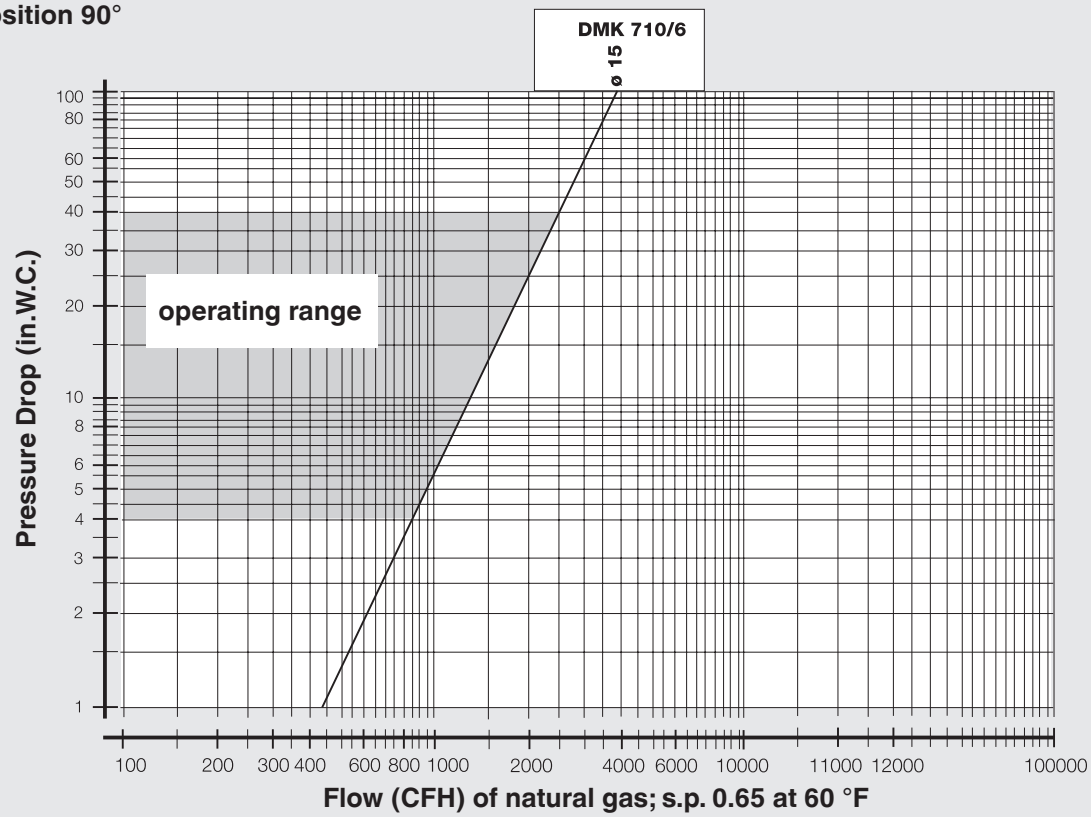

Direct contact between hardening masonry, concrete walls, floors and butterfly valve is not permitted.


Set pressure reference value on gas pressure regulator. Only perform load reduction via butterfly valve.

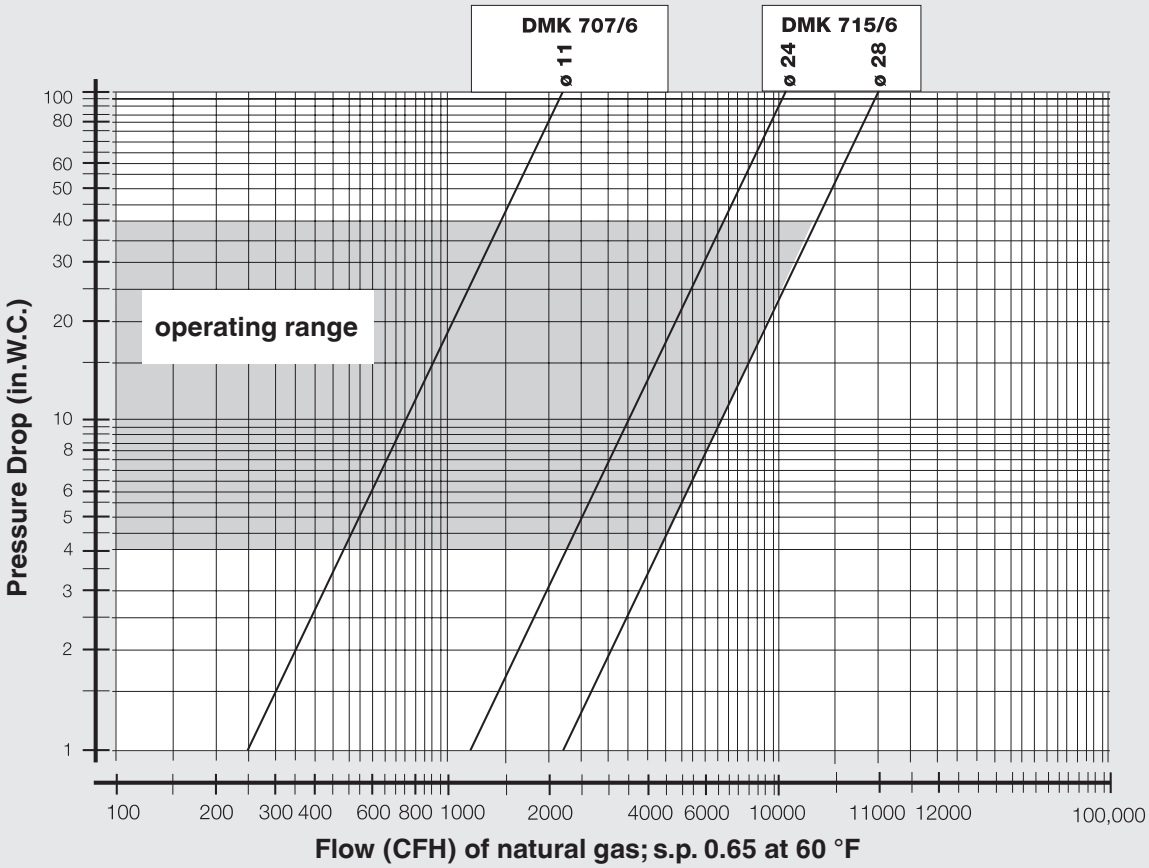
Flow Curve 1
DMK/6 series
$V_{min.}$ valve position 0°
valve closed



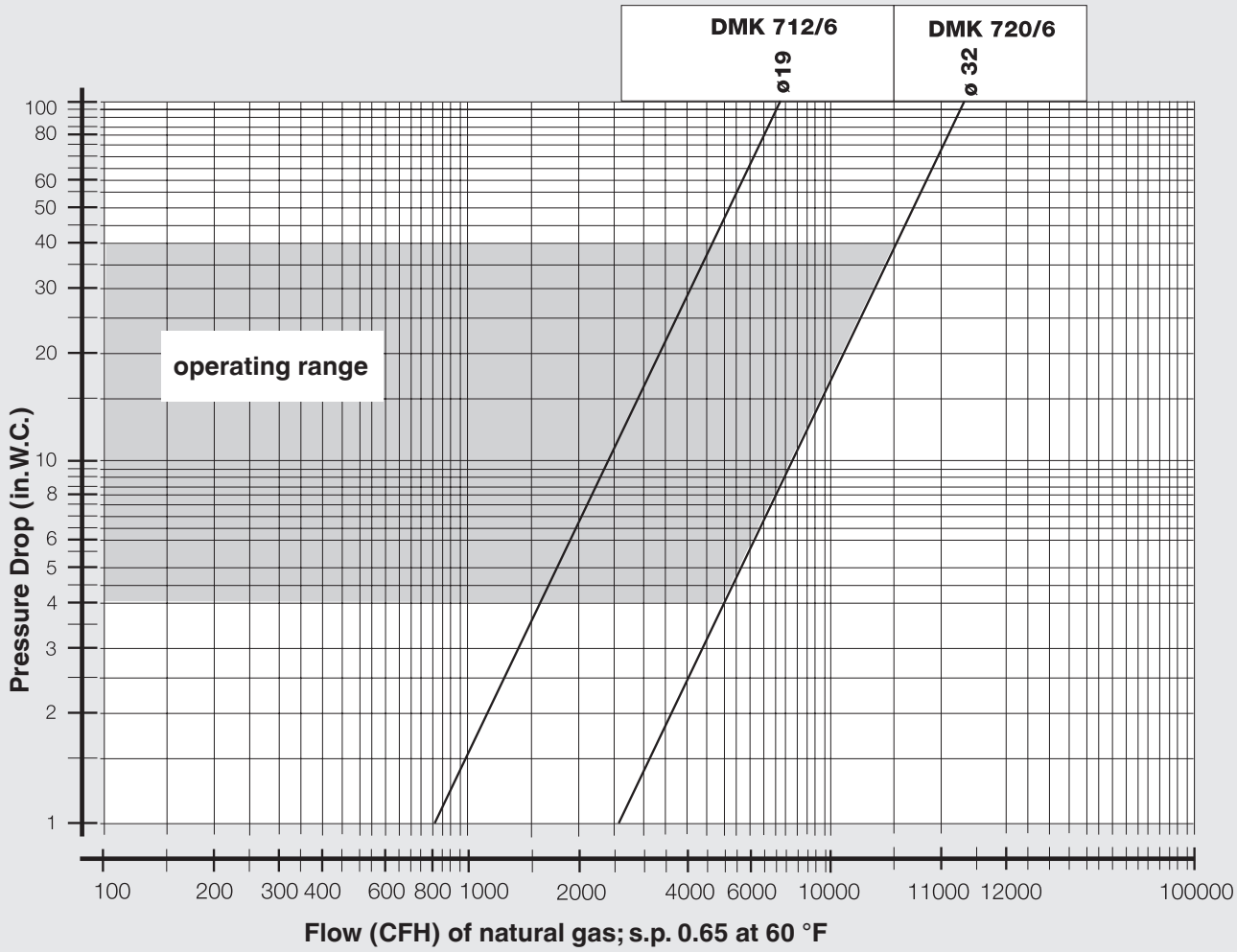
Flow Curve 2
DMK 710/6
$V_{max.}$ valve position 90°
valve open



Flow Curve 3
DMK 707/6 - DMK 715/6
$V_{max.}$ valve position 90°
valve open



Flow Curve 4
DMK 712/6, DMK 720/6
$V_{max.}$ valve position 90°
valve open



Pressure drop for other gases
To determine the pressure drop when using a gas other than natural gas, use the flow formula below and f value located in the table below to determine the "corrected" flow rate in CFH through the valve for the other gas used. For example, when using propane, divide the volume (CFH) of propane required for the application by the calculated value f (f = 0.66 for propane). Use this "corrected" flow rate and the flow curve on the next page to determine pressure drop for propane.

Determining equivalent flow through valves using another gas

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

$$f = \sqrt{\frac{\text{Density of Natural gas}}{\text{Density of gas used}}}$$

Type of gas	Density [kg/m³]	s.g.	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

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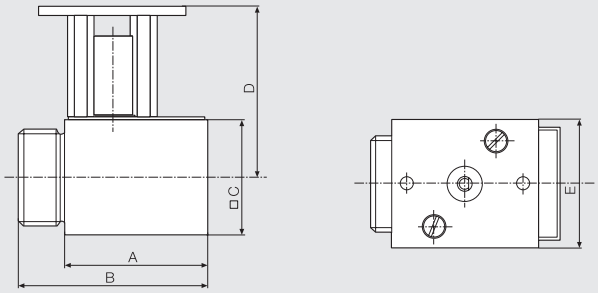
Dimensions inch (mm)
DMK 707/6 - 720/6

	A	B	C	D	E
DMK 707/6	2.3 (59)	3.2 (81)	1.6 (40)	2.8 (70)	2.0 (50)
DMK 710/6	2.5 (62,5)	3.4 (87,5)	2.0 (50)	3.0 (75)	2.0 (50)
DMK 712/6	2.5 (62,5)	3.7 (90,5)	2.0 (50)	3.0 (75)	2.0 (50)
DMK 715/6	2.6 (66)	3.7 (94)	2.4 (60)	3.2 (80)	2.0 (50)
DMK 720/6	2.3 (70)	3.9 (100)	3.0 (75)	3.5 (87,5)	2.0 (50)



Typ	Orifice [mm]	NPT	Order No.
DMK 707/6	11	3/4“	228754
DMK 710/6	15	1“	237614
DMK 712/6	19	1 1/4“	228770
DMK 715/6	24	1 1/2“	228779
DMK 715/6	28	1 1/2“	228783
DMK 720/6	32	2“	228787

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

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