

708LMO Series Motor Valve

Fractional Flow Control Valves

CRN Registration Number Available

FRACTIONAL FLOW CONTROL VALVES

The Mark 708LMO offers many advantages including extreme accuracy, high turndown ratios and repeatability. The features of this high resolution, low hysteresis digitally controlled motor makes the MK708LMO a premiere control valve for applications involving chemical injection, dosing, pilot plants and research labs. In addition, it is a prime valve for skid builders.

Additional features of the MK708LMO include 120 VAC or 220 VAC capability, stowable hand operator for manual operation, and a 4-20 mA or split range current input signal. 0-5 or 0-10 VDC voltage signal, and various protective enclosure classes are standard options on these motors. Upon loss of command signal, the motor is designed to either lock in place, or fail to minimum input signal position.

FEATURES

- Spring-loaded TFE/Chevron packing – the spring-loaded packing maintains a proper compression, while minimizing excessive friction. This alleviates the need for most field adjusting. The TFE packing is suitable for temperatures to 450°F (232°C), while braided or Graphite/Grafoil may be used for higher temperature requirements.
- Bolted body/bonnet connection – the bolting provides solid construction and secure connection. This bolting adds ease to maintenance, as bonnet/actuator assembly may be removed with the valve body in-line.
- Guided trim – extended orifice and plug guiding are standard and offers improved shutoff and accuracy equivalent to heavy duty trim option of competitors (not applicable to cv's below 0.05).
- Manual operation by stowable hand crank
- Output shaft with soft seating mechanism
- Optional 4-20mA position feedback (requires customer supplied external 12-36 power supply and a load connected in series with one lead from power supply)



MK708LMO SERIES SPECIFICATIONS

Sizes: 1/4", 1/2", 3/4" (DN8, DN15, DN20)

End Connections

- Threaded – NPT, BSPT, BSPP
- Socket weld
- Integral tube ends
- Welded flanges (ANSI, DIN, JIS)

Body/Bonnet Materials

- Carbon Steel
- Stainless Steel
- Hastelloy C*
- Hastelloy B*
- Alloy 20*
- Monel*
- Titanium*
- Other materials upon request*

*Trim matches body material unless specified otherwise

Trim Materials for Carbon and Stainless Steel

- Cv's 0.05 (0,04 Kv) and above: 17-4 plug, 316SS & seat
- Cv's below 0.05 (0,04 Kv): Nitronic 60 stem/plug & seat

Optional Trim Materials

- 17-4 plug, 416SS seat
- Stellite plug and Stellite seat (hard seat only)
- 316SS stem/plug & seat
- Contact factory for other trim materials

Stem Packing

- Standard: spring-loaded TFE/Chevron (to 450°F/232°C)
- Optional: braided or Graphite/Grafoil

Body/Bonnet Gasket: RPTFE or Grafoil (*matches packing material unless specified*)

Service: steam, air, gas, oil, water, chemicals

Shutoff

- Standard – Cv's 0.05 and greater: ANSI Class IV; Cv's 0.02 and lower: ANSI Class VI
- Optional – Cv's 0.05 and greater: ANSI Class VI (with PEEK seats)

Action

- Direct (increasing signal closes valve)
- Reverse (increasing signal opens valve)

Flow Characteristic: linear (all Cv's), equal percentage (Cv ≥ 0.05/0,43 Kv only); or quick opening (Cv ≥ 0.05/0,43 Kv only)

Maximum Allowable ΔP Rating

Cv (Kv)	4.0 (3,4)	1.25-2.0 (1,1-1,7)	0.5-1.0 (0,4-0,9)	0.02-0.05 (0,017-0,04)	<0.02 (<0,017)
ΔP (bar)	1000 (69)	1600 (110)	5000 (345)	5000 (345)	5000 (345)

Cv (Kv) Selection

4.0** (3,4)	2.0* (1,7)	1.25* (1,1)	1.0 (0,9)	0.5 (0,43)
0.2 (0,17)	0.1 (0,09)	0.05 (0,04)	0.02 (0,017)	0.01 (0,009)
0.005 (0,00043)	0.002 (0,0017)	0.001 (0,0009)	0.0005 (0,00043)	0.0002 (0,00017)
0.0001 (0,00009)	0.00005 (0,000043)	0.00002 (0,000017)	0.00001 (0,000009)	

* 3/4" & 1/2" only

** 3/4" only

Pressure & Temperature Ratings

Temp F° (°C)	1/4" & 1/2" (DN8 & 15) Body/Bonnet psi (bar)		3/4" (DN20) Body/Bonnet psi (bar)	
	CF8M, SST	A105, CS	CF8M, SST	A105, CS
100 (38)	5000 (345)	5000 (345)	4000 (276)	4000 (276)
200 (93)	4299 (296)	4555 (314)	3439 (237)	3644 (251)
300 (149)	3882 (268)	4426 (305)	3106 (214)	3541 (244)
400 (204)	3569 (246)	4278 (295)	2855 (199)	3422 (236)
500 (260)	3319 (229)	4042 (279)	2655 (183)	3234 (223)
600 (316)	3132 (216)	3691 (254)	2506 (173)	2953 (204)
650 (343)	3083 (213)	3623 (250)	2466 (170)	2898 (200)
700 (371)	3000 (207)	3596 (248)	2400 (165)	2877 (198)
750 (399)	2931 (202)	3401 (234)	2345 (162)	2721 (188)
800 (427)	2882 (199)	2780 (192)	2306 (159)	2224 (153)
850 (454)	2819 (194)	—	2255 (155)	—
900 (482)	2736 (189)	—	2189 (151)	—
950 (510)	2681 (185)	—	2145 (148)	—
1000 (538)	2528 (174)	—	2022 (139)	—

MK708LMO SERIES SPECIFICATIONS

Body Rating Tables

Valve pressure rating based on body/bonnet material and bolting material. Units in psi (bar)

- **1/4" – 1/2" (DN8 – DN15)**

Bolting Material	Body/Bonnet Material				
	At 100°F/38°		At Maximum Temperature		
	CF8M	A105	CF8M	A105	Max °F/°C
ASTM A193, Gr. B7	— 3600 (248)	5000 (345) —	— 2736 (189)	2780 (192) —	800 (427) 450 (232)

- **3/4" (DN20)**

Bolting Material	Body/Bonnet Material				
	At 100°F/38°		At Maximum Temperature		
	CF8M	A105	CF8M	A105	Max °F/°C
ASTM A193, Gr. B7	— 4000 (276)	4000 (276) —	— 2400 (165)	2224 (153) —	800 (427) 700 (371)

MK708LMO SERIES MOTOR SPECIFICATIONS

Electrical

- Line Voltage: 120 or 240 VAC (contact factory for other)
- Conduit Entry: two 1/2" NPT
- Frequency: 50/60 Hz
- Current:
 - 0.75A / 120 VAC
 - 1.38A / 240 VAC
- Command Signal Input (programmable)
 - Current: 4-20mA; 4-12mA; 12-20mA
 - Voltage: 0-5VDC; 0-10VDC

Mechanical

- Thrust: 175 lb
- Speed: 0.16 sec (4 mm/sec)
- Action: direct or reverse (programmable)

Environmental

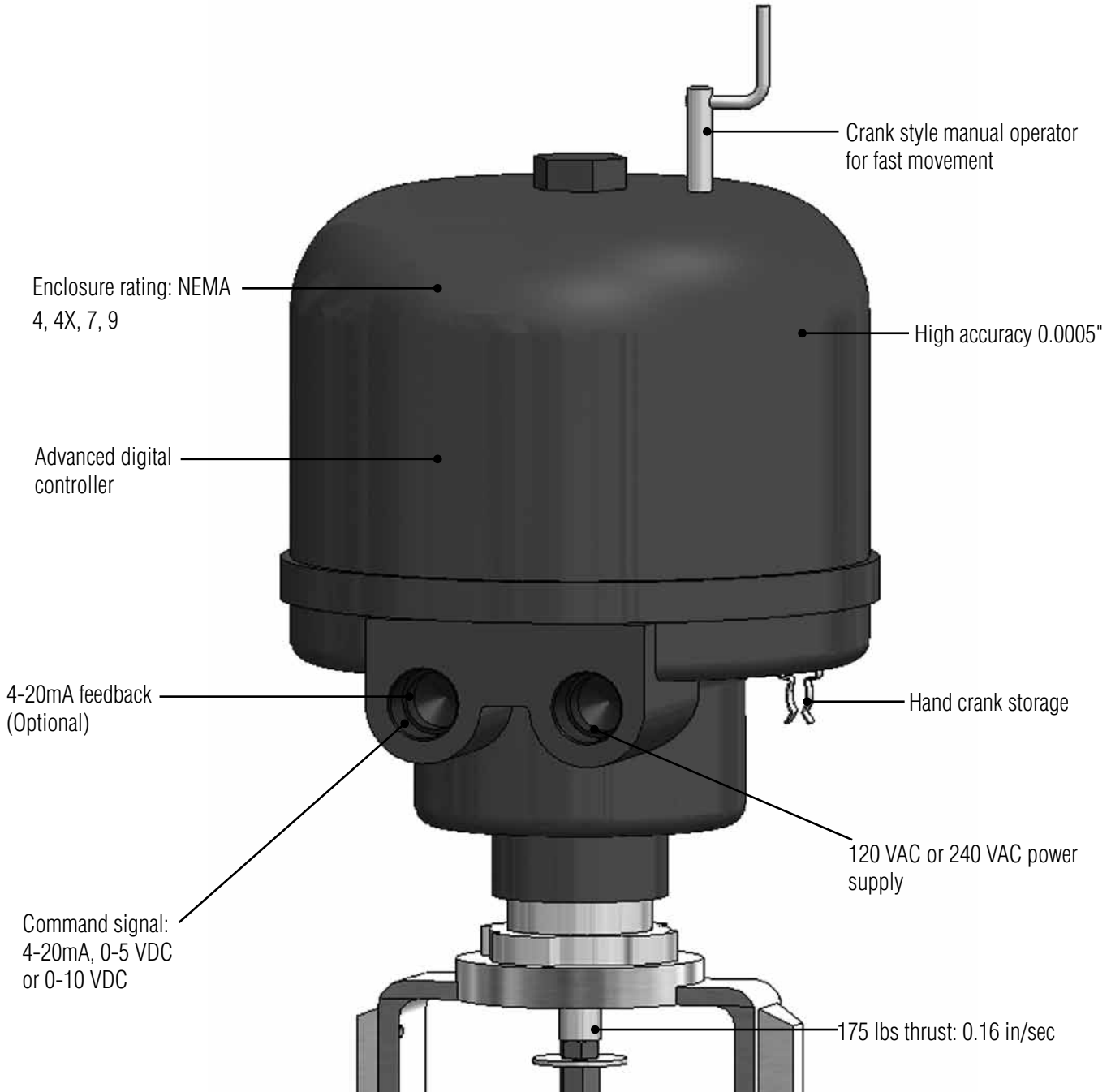
- Temperature Limits: -40°F to +150°F (-40°C to +66°C)
- Enclosure:
 - Explosion-proof for Class I, Div. 1, Group C & D
 - Dust-ignition-proof for Class II, Div. 1, Group E, F, G
 - NEMA 4, 4X, 7, 9

Performance: Position Accuracy: +/- 0.0005 unrestricted modulating duty

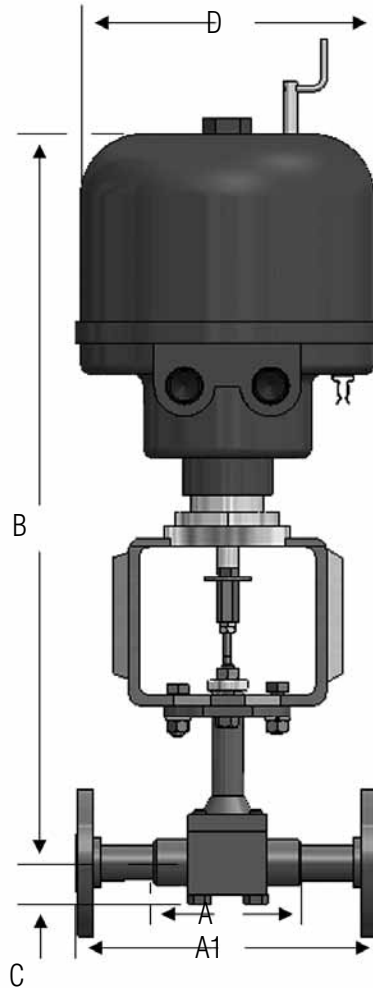
Features

- Manual operation by stowable hand crank
- Optional -20mA position feedback
- Output shaft with soft seating mechanism

MK708LMO SERIES FEATURES AND BENEFITS



MK708LMO SERIES DIMENSIONS



- Mark 708LMO Series Threaded & FSW Ends, Inches**

VALVE SIZE	DIMENSIONS, INCHES				WEIGHT LBS
	A	B*	C	D	
1/4"	3.50	17.40	0.9	7.25	14.8
1/2"	3.50	17.40	0.9	7.25	14.8
3/4"	4.38	17.40	1.2	7.25	17.1

- Mark 708LMO Series Threaded & FSW Ends, Metric**

VALVE SIZE	DIMENSIONS, MM				WEIGHT KGS
	A	B*	C	D	
DN8	89	442	23	184	6,7
DN15	89	442	23	184	6,7
DN20	111	442	30	184	7,8

- Mark 708LMO Series Flanged Ends, Inches**

VALVE SIZE	ANSI FLANGE	DIMENSIONS, INCHES				WEIGHT LBS
		A1	B*	C	D	
1/2"	150#	7.25	17.40	0.9	7.25	16.8
	300#	7.50				18.8
3/4"	150#	7.25	17.40	1.2	7.25	21.1
	300#	7.62				23.1

- Mark 708LMO Series Flanged Ends, Metric**

VALVE SIZE	ANSI FLANGE	DIMENSIONS, MM				WEIGHT KGS
		A1	B*	C	D	
DN15	10/16	130	442	23	184	7,6
	25/40	130				8,5
DN20	10/16	184	442	30	184	9,6
	25/40	184				10,5

* An additional 4.50" is needed to remove motor cover for electrical connections

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MK708LMO SERIES ORDERING SCHEMATIC

Model No.	Size	Body Mat'l	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

MODEL	
708LMO	Motor Valve

SIZE	
025	1/4" (DN8)
050	1/2" (DN15)
075	3/4" (DN20)

BODY MATERIAL	
CS	Carbon Steel (WCB)
S6	Stainless Steel (CF8M)
MN	Monel
A2	Alloy 20

1 & 2 END CONNECTION	
PT	NPT
SW	FSW
F5	150# FE
F3	300# FE
TN	Integral Tube Nuts
ZZ	Non-Standard

3 & 4 TRIM	
T6	316SS/Teflon Packing
TM	Monel/Teflon Packing
TA	Alloy 20/Teflon Packing
G6	316SS/Graphite
ZZ	Non-Standard

5 & 6 PLUG SEAT			
	Material of Stem/Plug/Seat		Cv
A	Standard - Linear Hard	A	0.00001
B	Standard =% Hard	B	0.00002
C	Standard Q.O. Hard	C	0.00005
D	Standard Linear Soft (PEEK)	D	0.0001
E	Standard =% Soft (PEEK)	E	0.0002
F	Standard Q.O. Soft (PEEK)	F	0.0005
M	316/Stellite/Stell-Lin. Hard	G	0.001
N	316/Stellite/Stell =% Hard	H	0.002
P	316/Stellite/Stell Q.O. Hard	I	0.005
		J	0.01
		K	0.02
		L	0.05
		M	0.1
		N	0.2
		P	0.5
		Q	1.0
		R	2.0
		S	4.0
ZZ	Non-standard		

7 & 8 RANGE	
42	4-20mA
41	4-12mA
12	12-20mA
V5	0-5V
V1	0-10V
ZZ	Non-Standard

9 & 10 DIAPHRAGM	
00	None

11 & 12 ACTUATOR	
M5	LFA-110VAC
M6	LFA-240VAC

13 & 14 ACCESSORIES	
00	None
XC	Oxygen Clean
PF	Position Feedback 4-20 Ma for 110VAC motor
PG	Position feedback 4-20 Ma for 240VAC motor

15 ACTION	
D	Direct
R	Reverse