



# 708DP Series With Double Packing

## Fractional Flow Control Valves

CRN Registration Number Available

### FRACTIONAL FLOW CONTROL VALVES

The Mark 708DP with Double Packing is an alternative to a bellows stem seal, and is used when standard packing will not adequately contain the controlled media. The optional bonnet features a double packing arrangement separated by a lantern ring. With a double packed bonnet, lubricant is pumped into the packing sets, supplying a tight seal similar to that provided by a bellows stem seal. The double packed bonnet is an excellent choice when service conditions could cause damage to a bellows assembly.

#### Features:

- Ideal for applications where service conditions can damage a bellows assembly
- Features standard bonnet port for use in lubricating the packing for added protection against leakage, or for use as a detection port for monitoring potential fugitive emissions
- For use in R & D, pilot plants and low flow process applications

#### SPECIFICATIONS

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

#### End Connections

- Threaded – NPT, BSPT, BSPP
- Socket weld
- Integral tube ends
- Welded flange ends

#### Actuator

- Standard – 14M (14 in<sup>2</sup>) multi-spring
- Optional – 35M (35 in<sup>2</sup>) multi-spring on 3/4" (DN20) size

#### Body/Bonnet Materials

- Carbon Steel
- Stainless Steel
- Hastelloy C
- Hastelloy B
- Alloy 20
- Monel
- Titanium

#### Trim Materials

- Standard trim – 17-4 plug, 316 SST stem and seat
- Optional Trim – 17-4 plug, 416 SST seat, Stellite plug and seat; 316 SST stem, plug and seat



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## MK708DP SERIES DOUBLE PACKED

**Actuator Material:** Aluminum (14M); Steel (35M)

**Diaphragm Material**

- 14M Actuator: Nylon/Nitrile
- Optional 35M Actuator: Buna-N fabric reinforced

**Stem Packing Materials**

- Standard – 2 sets of adjustable TFE/Chevron (to 450°F/232°C)
- Optional – 2 sets of braided or Graphite/Grafoil with positioner on 14M

**Bonnet/Body Seal Materials:** Teflon or Grafoil (matches packing material unless specified)

**Lantern Ring Material:** Stainless Steel

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

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

**Ranges:** 3-15 (0,2-1,0) or 6-30 (0,4-2,1) psi (bar) (split ranges are available with optional positioner)

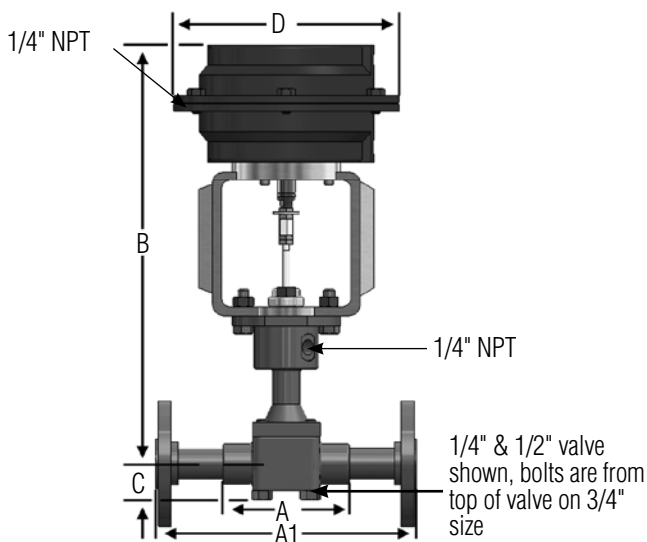
**Valve Action**

- Direct (ATC)
- Reverse (ATO)

**Flow Characteristics:** linear (available for all Cv's/Kv's); equal percentage or quick opening for Cv's greater than or equal to 0.05 (0,04 Kv)

**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)



### Standard 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 (0,043) |

\* Available in 1/2" & 3/4" sizes (DN15 & DN20) only

\*\* Available in 3/4" size (DN20) only

Consult factory for lower Cv (Kv) values

### Maximum Allowable ΔP Ratings

- Standard 14M Actuator

| Cv (Kv)             | ATO 3-15   | ATO 6-30   | ATO w/pos. @ 40 psi (2,8 bar) | ATC3-15 @ 20 psi (1,4bar) | ATC 6-30 @ 40 psi (2,8 bar) | ATC w/pos. @ 40 psi (2,8 bar) |
|---------------------|------------|------------|-------------------------------|---------------------------|-----------------------------|-------------------------------|
| 4.0 (3,4)           | 264 (18)   | 532 (37)   | 532 (37)                      | 432 (30)                  | 864 (60)                    | 1994 (137)                    |
| 2.0 (1,7)           | 400 (26)   | 800 (55)   | 800 (55)                      | 650 (45)                  | 1300 (90)                   | 3000 (207)                    |
| 1.25 (1,1)          | 400 (26)   | 800 (55)   | 800 (55)                      | 650 (45)                  | 1300 (90)                   | 3000 (207)                    |
| 0.32-1.0 (0,3-0,9)  | 1275 (88)  | 2350 (162) | 2350 (162)                    | 2065 (142)                | 4100 (283)                  | 5000 (345)                    |
| 0.05-0.2 (0,04-0,2) | 2700 (186) | 5000 (345) | 5000 (345)                    | 5000 (345)                | 5000 (345)                  | 5000 (345)                    |

- Optional 35M Actuator

| Cv (Kv)   | ATO 3-15 | ATO 6-30 | ATO w/pos. @ 40 psi (2,8 bar) | ATC3-15 @ 20 psi (1,4bar) | ATC 6-30 @ 40 psi (2,8 bar) | ATC w/pos. @ 40 psi (2,8 bar) |
|-----------|----------|----------|-------------------------------|---------------------------|-----------------------------|-------------------------------|
| 4.0 (3,4) | 440 (30) | 880 (61) | 880 (61)                      | 704 (49)                  | 1460 (101)                  | 3600 (248)                    |

Note: ATO ratings determined at nominal bench seat and 0 psig in actuator

- Mark 708DP Series Double Packed Threaded & FSY Ends

| VALVE SIZE | ACTUATOR | DIMENSIONS, INCHES |       |     |     | WEIGHT LBS |
|------------|----------|--------------------|-------|-----|-----|------------|
|            |          | A                  | B     | C   | D   |            |
| 1/4"       | 14M      | 3.50               | 12.04 | 0.9 | 6.3 | 7.0        |
| 1/2"       | 14M      | 3.50               | 12.04 | 0.9 | 6.3 | 7.0        |
| 3/4"       | 14M      | 4.38               | 12.07 | 1.2 | 6.3 | 9.0        |
| 3/4"       | 35M      | 4.38               | 14.11 | 1.2 | 9.5 | 18.0       |

- Mark 708DP Series Double Packed Flanged Ends

| VALVE SIZE | ANSI FLANGE | DIMENSIONS, INCHES |       |     |     | WEIGHT LBS |
|------------|-------------|--------------------|-------|-----|-----|------------|
|            |             | A1                 | B     | C   | D   |            |
| 1/2" (14M) | 150#        | 7.25               | 12.04 | 0.9 | 6.3 | 10.5       |
|            | 300#        | 7.50               |       |     |     | 11.5       |
| 3/4" (14M) | 150#        | 7.25               | 12.07 | 1.2 | 6.3 | 13.5       |
|            | 300#        | 7.62               |       |     |     | 15.5       |
| 3/4" (35M) | 150#        | 7.25               | 14.11 | 1.2 | 9.5 | 22.5       |
|            | 300#        | 7.62               |       |     |     | 24.5       |

## MK708DP SERIES ORDERING SCHEMATIC

| Model No. | Size | Body Mat'l | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|-----------|------|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
|           |      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |

| MODEL |                |
|-------|----------------|
| 708DP | Double Packing |

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

| BODY MATERIAL |                                   |
|---------------|-----------------------------------|
| CB#           | A105 Carbon Steel Barstock        |
| CS#           | WCB Carbon Steel                  |
| SB#           | 316/316L Stainless Steel Barstock |
| S6#           | CF8M Stainless Steel              |
| HC#           | Hastelloy C                       |
| MN#           | Monel                             |
| A2#           | Alloy 20                          |

| 1 & 2 END CONNECTIONS |                    |
|-----------------------|--------------------|
| 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     |
|                 |                              | T | 3.0     |
| ZZ              | Non-standard                 |   |         |

| 7,8,9,10,11,12 ACTUATOR |              |               |          |
|-------------------------|--------------|---------------|----------|
|                         | Range        | Diaphragm     | Actuator |
| N4Q4N4                  | 3-15 DIR     | Nylon/Nitrile | 14M      |
| Q4Q4N4                  | 3-15 REV     |               |          |
| G4T4D4                  | 6-30 DIR     |               |          |
| H4T4R4                  | 6-30 REV     |               |          |
| A3B3D3                  | 3-15 DIR     | Buna-N        | 35M      |
| B3B3R3                  | 3-15 REV     |               |          |
| G3B3D3                  | 6-30 DIR     |               |          |
| H3B3R3                  | 6-30 REV     |               |          |
| ZZ                      | Non-standard |               |          |

Continued on next page



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|-----------|------|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
|           |      |            |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |

| 13 & 14 | ACCESSORIES                      |
|---------|----------------------------------|
| 00      | None                             |
| A7      | Air Regulator for 14M Actuator   |
| A5      | Air Regulator for 35M Actuator   |
| G2      | Two Gages on TMP                 |
| SH      | 304SS Strain Hardened            |
| S2      | 3-way Solenoid Energize to Open  |
| S3      | 3-way Solenoid Energize to Close |
| ZZ      | Non-standard                     |

| 16 | I/P                          |
|----|------------------------------|
| 0  | None                         |
| 4  | I/P 14M Act. 4-20Ma/3-15 psi |
| 3  | I/P 35M Act. 4-20Ma/3-15 psi |
| 9  | I/P 14M Act. 4-20Ma/6-30 psi |
| Z  | Non-standard                 |

| 15 | ACTION       |
|----|--------------|
| D  | Air-to-close |
| R  | Air-to-open  |



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