

Double A
Hydraulics

Hydraulics

®

series Q-05 premier directional control valve



536 TOWNSHIP LINE ROAD
FLUID TECHNOLOGY ANNEX
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4500 psi, 32 gpm max
wet armature solenoid operated



Specifications

| MAXIMUM OPERATING PRESSURE | | RATED FLOW CAPACITY | MOUNTING BOLT | VISCOSITY RANGE | TEMPERATURE RANGE | FLUID CLEANLINESS | WEIGHT |
|----------------------------|----------|---------------------|---------------------------|-----------------|-------------------|-------------------------------|---|
| P,A,B PORTS | T PORT | P,A,B,T PORTS | 1/4"-20 UNC x 1 3/8" INCH | 60-1800 SSU | -13 TO 194F | 20/18/15 Or Better (ISO 4406) | Single Solenoid AC-7.5lb DC/RF 8.8lb |
| 4500 psi | 2350 psi | 32 gpm | 104-130 inch-# | | | | Double Solenoid AC-9lb DC/RF 12.1lb |

| SOLENOID COIL TYPE | CYCLES (Hz) | VOLTAGE RANGE (Volts) | CURRENT (Amps) | | MAXIMUM FREQUENCY OF OPERATION (CPM) |
|--------------------|-------------|-----------------------|----------------|---------|--------------------------------------|
| | | | IN-RUSH | HOLDING | |
| A120 | 50 Hz | 99 - 121 | 4.29 | .78 | 240 |
| | 60 Hz | 108 - 138 | 3.99 | .70 | 240 |
| R120 | 50 / 60 Hz | 99 - 126 | .47 | .47 | 240 |
| D12 | | 10.80 - 13.20 | 2.58 | 2.58 | 240 |
| D24 | | 21.60 - 26.40 | 1.33 | 1.33 | 240 |

Ordering Information

Q * * - 05 - * * * - * - * * - * * * - 10E1

SUBPLATE MOUNTED

SPOOL/SPRING ARRANGEMENT

- F – 3 POS. SPRING CENTERED
- G – 2 POS. SPRING OFFSET, SOL A
- J – 2 POS. SPRING OFFSET, SOL B
- K – 3 POS. DETENTED
- M – 2 POS. DETENTED

ACTUATION TYPE

- OMIT – SOLENOID OPERATED
- R – MANUAL (LEVER) OPERATED

VALVE INTERFACE

- 05 – NFPA D05
- NG10
- CETOP 05

SPOOL FUNCTION AND TYPE

(SEE SPOOL CONFIGURATION ON PAGE 4)

DESIGN CODE

COIL VOLTAGE

- A120 – 120 VAC 50/60 HZ
- D12 – 12 VDC
- D24 – 24 VDC
- R120 – RECTIFIED 120 VDC
- OMIT FOR MANUAL TYPE

ELECTRICAL CONNECTION

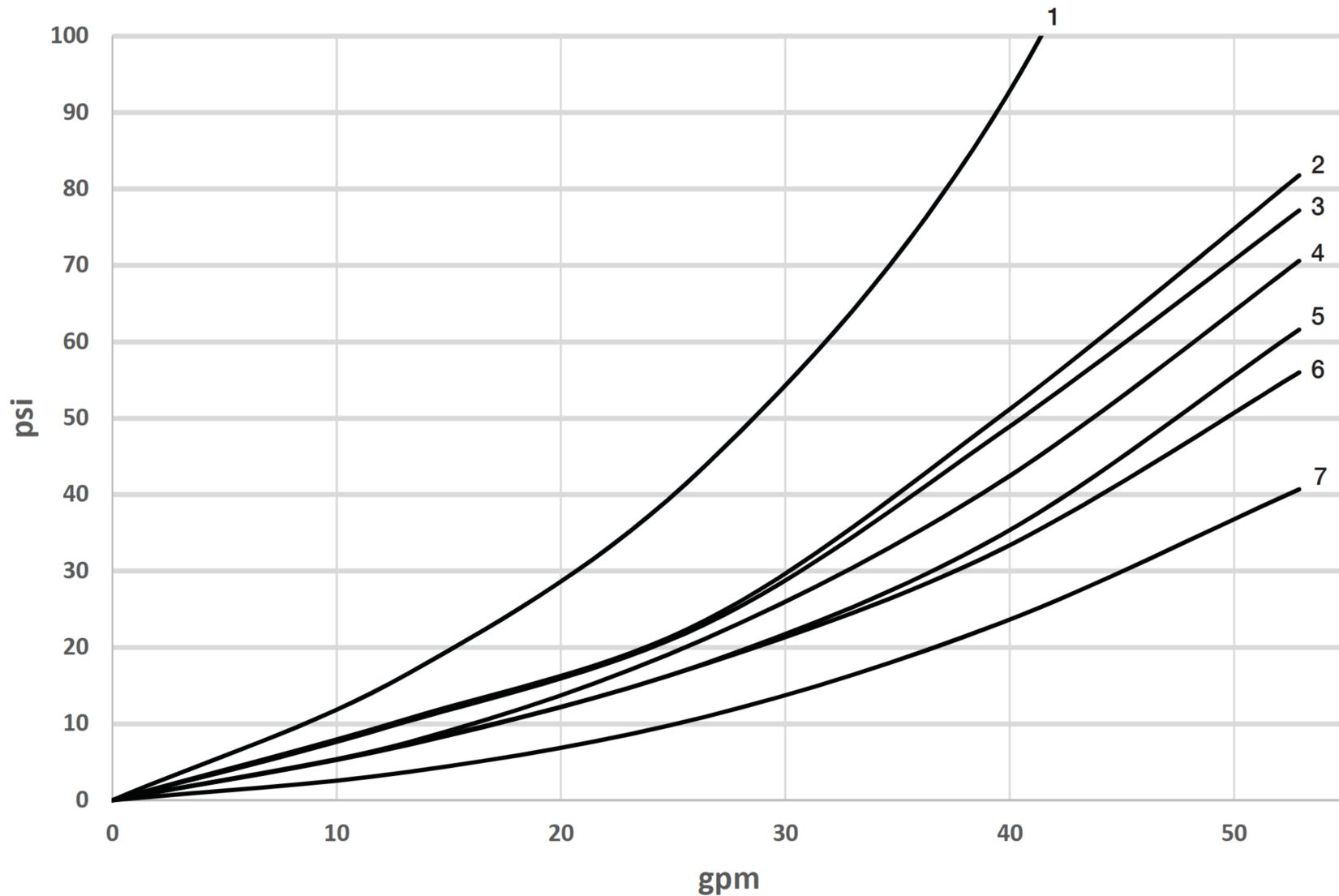
- DN – DIN HIRSCHMANN WITH INDICATING LIGHT
- JL – JUNCTION BOX WITH INDICATING LIGHT
- OMIT FOR MANUAL

SEAL OPTION

- B – BUNA
- V – VITON

Performance

Fluid Viscosity: 35cst (175 ssu)



PRESSURE DROP CURVE REFERENCE

Viscosity Factors

| Factor | Viscosity | |
|--------|-----------|-----|
| | SSU | CST |
| 0.81 | 77 | 15 |
| 0.87 | 98 | 20 |
| 0.96 | 141 | 30 |
| 1.03 | 186 | 40 |
| 1.09 | 232 | 50 |
| 1.14 | 278 | 60 |
| 1.19 | 324 | 70 |
| 1.23 | 371 | 80 |
| 1.27 | 417 | 90 |
| 1.30 | 464 | 100 |

| SPOOL TYPE | P → | | | | |
|------------|-----|-------|---|-------|---|
| | A | B → T | B | A → T | T |
| FC | 6 | 6 | 6 | 6 | - |
| FO | 7 | 7 | 7 | 7 | 5 |
| FFF | 6 | 7 | 6 | 7 | - |
| FFFX | 6 | 7 | 6 | 7 | - |
| FFO1 | 5 | 2 | 2 | 5 | 8 |
| FFTO | 2 | 2 | 2 | 2 | 5 |
| FFTC | 1 | 1 | 1 | 1 | 4 |
| FOP | 7 | 6 | 7 | 6 | - |
| FF1 | 6 | 6 | 6 | 7 | - |
| JC | 2 | 2 | 6 | 6 | - |
| JO | 3 | 3 | 6 | 6 | - |
| GC | 6 | 6 | 2 | 2 | - |
| GO | 6 | 6 | 3 | 3 | - |
| JP | 5 | - | 5 | - | - |

Not all spools shown

$$\Delta P' = \Delta P(G'/0.85) \text{ for other specific gravity (G')}$$

Spool Functions

QF-05-**

3 POSITION
SPRING CENTERED
SOLENOID OPERATED

| TYPE | GRAPHIC SYMBOLS |
|------|-----------------|
| FC | |
| FO | |
| FFF | |
| FFFX | |
| FFO1 | |
| FTTO | |
| FTTC | |
| FOP | |
| FF1 | |
| FOP1 | |
| FFO2 | |
| FF2 | |
| FOP2 | |

QJ-05-**

2 POSITION
SPRING RETURN
SOLENOID OPERATED

| TYPE | GRAPHIC SYMBOLS |
|-------|-----------------|
| JC | |
| JO | |
| JP | |
| JFC | |
| JFO | |
| JFFF | |
| JFFFX | |
| JFFO1 | |
| JFTTO | |
| JFTTC | |
| JFOP | |
| JFF1 | |
| JFOP1 | |

QG-05-**

2 POSITION
SPRING RETURN
SOLENOID OPERATED

| TYPE | GRAPHIC SYMBOLS |
|-------|-----------------|
| GC | |
| GO | |
| GP | |
| GFC | |
| GFO | |
| GFFF | |
| GFFFX | |
| GFFO1 | |
| GFTTO | |
| GFTTC | |
| GFOP | |
| GFF1 | |
| GFOP1 | |

QFR-05-**

3 POSITION
SPRING CENTERED
LEVER OPERATED

| TYPE | GRAPHIC SYMBOLS |
|------|-----------------|
| FC | |
| FO | |
| FFF | |
| FTTO | |
| FOP | |
| FF1 | |
| FOP1 | |

QKR-05-**

3 POSITION
SPRING RETURN
LEVER OPERATED

| TYPE | GRAPHIC SYMBOLS |
|-------|-----------------|
| KC | |
| KO | |
| KFFF | |
| KFTTO | |
| KFOP | |
| KFF1 | |
| KFOP1 | |

QJR-05-**

2 POSITION
SPRING RETURN
LEVER OPERATED

| TYPE | GRAPHIC SYMBOLS |
|------|-----------------|
| JC | |
| JO | |

QMR-05-**

2 POSITION
DETENTED
LEVER OPERATED

| TYPE | GRAPHIC SYMBOLS |
|------|-----------------|
| MC | |
| MO | |

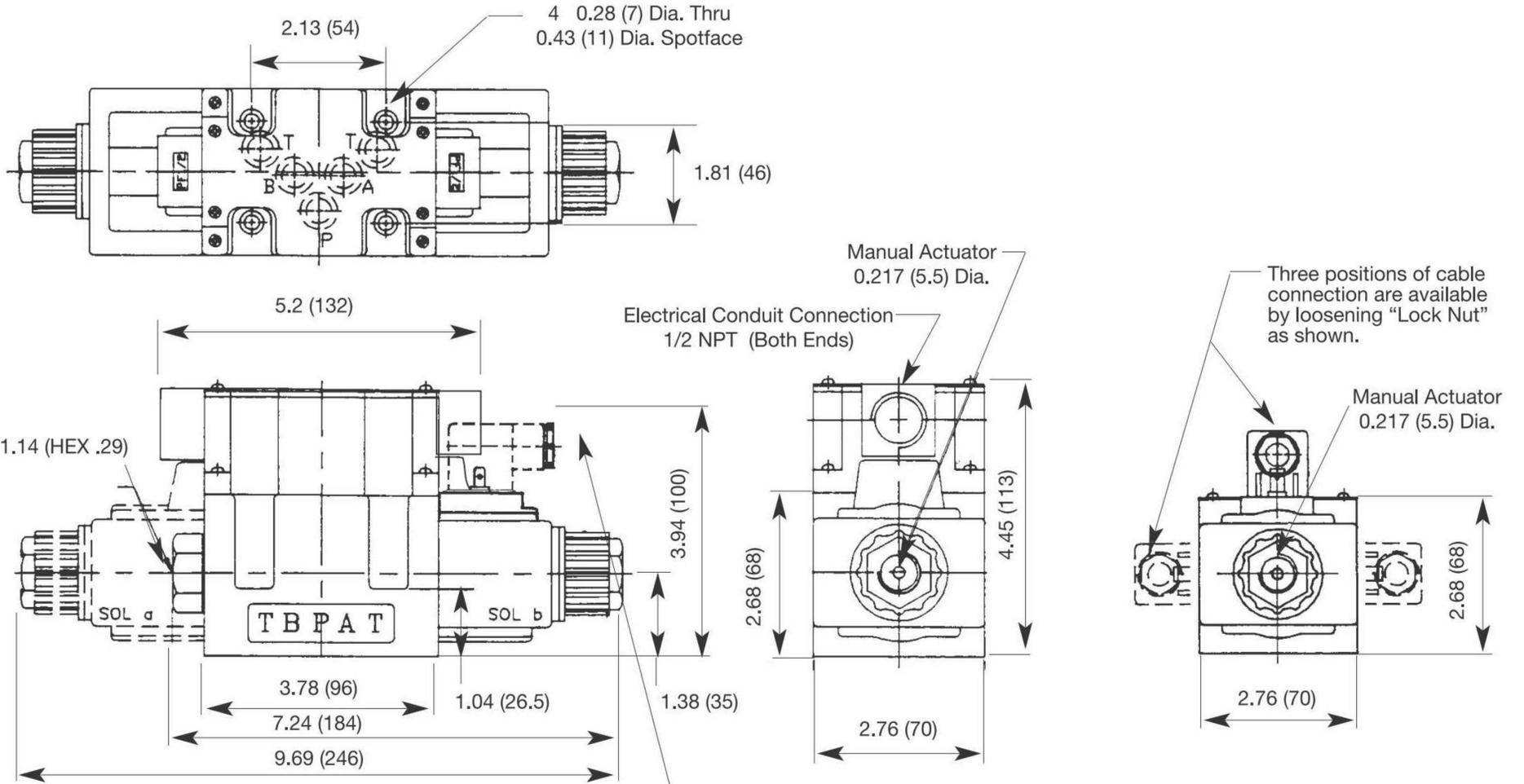
PORT INTERCONNECTION:

- With solenoid "a" energized P → A, B → T
- With solenoid "b" energized P → B, A → T
- Both port interconnections are reversed for FFO1, FFO2, FTTO, and FTTC type

Installation Dimensions

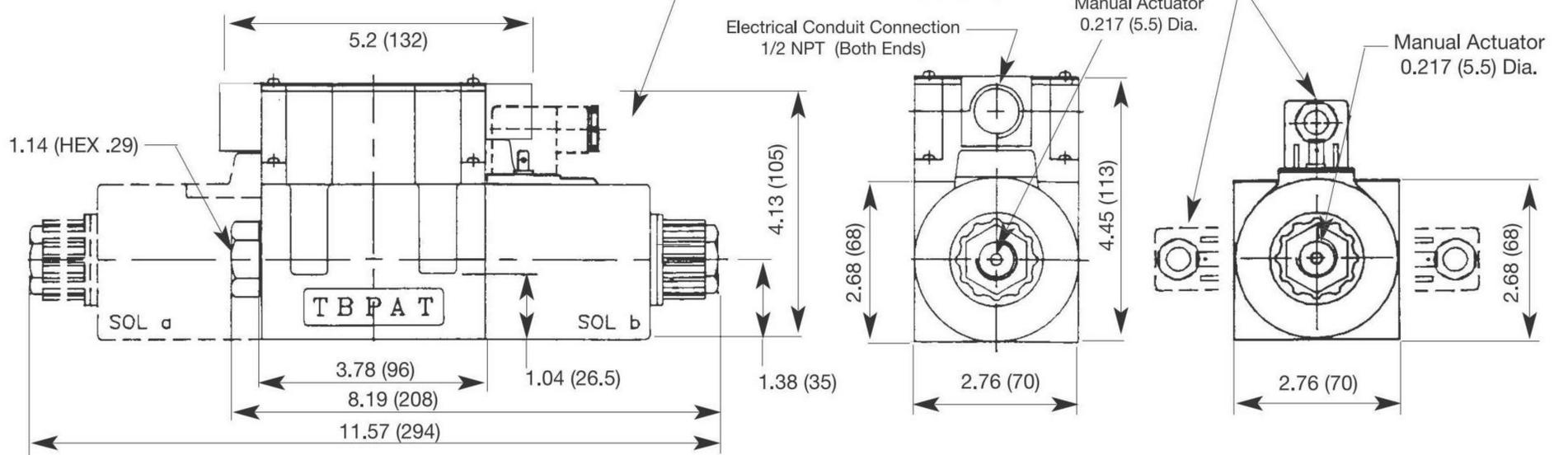
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Models with AC solenoids



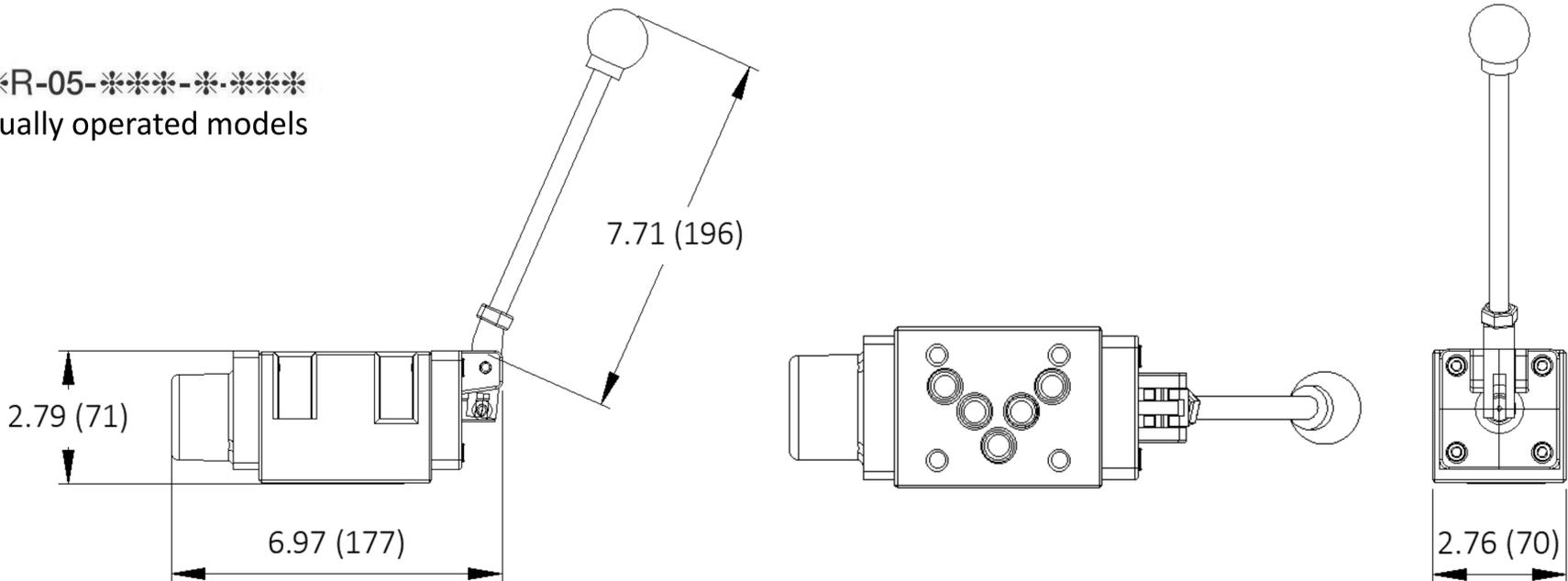
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Models with DC, RF solenoids



Q*R-05-***-**-***-***

Manually operated models



List of Spool Function

THE MAXIMUM FLOW RATE GPM (LPM) UNDER DIFFERENT PRESSURE PSI (KGF/CM²)

Spool valves have flow forces acting on them based on flow and pressure that will cause them to malfunction when certain combinations are exceeded. The chart below lists maximum rates under various conditions beyond which these valves will malfunction. It must be noted that this data was obtained on a laboratory test stand under controlled conditions, and cannot replicate the condition in your application. Therefore, it is required that each customer qualify all valves for their actual application under all of the conditions that may affect the valves' performance in their particular application.

| SPOOL TYPE NORMAL POSITION | P → A, B → T P → B, A → T | | | | | P → A | | | | | P → B | | | | | | | |
|---|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| | 735 PSI (50kgf/cm ²) | 1470 PSI (100kgf/cm ²) | 2200 PSI (150kgf/cm ²) | 3000 PSI (210kgf/cm ²) | 3675 PSI (250kgf/cm ²) | 4500 PSI (315kgf/cm ²) | 735 PSI (50kgf/cm ²) | 1470 PSI (100kgf/cm ²) | 2200 PSI (150kgf/cm ²) | 3000 PSI (210kgf/cm ²) | 3675 PSI (250kgf/cm ²) | 4500 PSI (315kgf/cm ²) | 735 PSI (50kgf/cm ²) | 1470 PSI (100kgf/cm ²) | 2200 PSI (150kgf/cm ²) | 3000 PSI (210kgf/cm ²) | 3675 PSI (250kgf/cm ²) | 4500 PSI (315kgf/cm ²) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 14.3 (54) | 10.6 (40) | 7.4 (28) | 6.6 (25) | 3.7 (14) | 26.4 (100) | 14.3 (54) | 10.6 (40) | 7.4 (28) | 6.6 (25) | 3.7 (14) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 7.9 (30) | 7.9 (30) | 7.9 (30) | 7.9 (30) | 7.9 (30) | 7.9 (30) | 8.1 (33) | 7.2 (26) | 5.3 (20) | 4.8 (18) | 4.8 (18) | 4.6 (16) | 26.4 (100) | 7.9 (26) | 5.3 (20) | 5.0 (19) | 4.8 (18) | 4.6 (16) |
|  | 18.6 (70) | 18.6 (70) | 18.6 (70) | 18.6 (70) | 18.6 (70) | 18.6 (70) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 26.4 (100) | 26.4 (100) | 20.1 (76) | 7.4 (28) | 5.5 (21) | 3.7 (14) | 26.4 (100) | 14.0 (53) | 8.5 (32) | 7.4 (28) | 5.5 (21) | 4.0 (15) | 26.4 (100) | 12.7 (48) | 7.1 (27) | 5.5 (21) | 4.0 (15) | 2.4 (9) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 15.1 (57) | 15.1 (57) | 15.1 (57) | 15.1 (57) | 15.1 (57) | 15.1 (57) | 26.4 (100) | 14.0 (53) | 12.4 (47) | 11.9 (45) | 10.6 (40) | 9.0 (34) |
|  | 23.8 (90) | 23.8 (90) | 23.8 (90) | 23.8 (90) | 23.8 (90) | 23.8 (90) | 16.6 (63) | 16.6 (63) | 16.6 (63) | 16.6 (63) | 16.6 (63) | 16.6 (63) | 26.4 (100) | 20.6 (78) | 11.9 (45) | 11.4 (43) | 10.0 (38) | 8.5 (32) |
|  | 23.5 (89) | 23.5 (89) | 23.5 (89) | 23.5 (89) | 23.5 (89) | 23.5 (89) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) |
|  | 21.4 (81) | 21.4 (81) | 21.4 (81) | 21.4 (81) | 21.4 (81) | 21.4 (81) | 21.4 (81) | 7.7 (29) | 5.0 (19) | 3.2 (12) | 2.4 (9) | 1.8 (7) | 26.4 (100) | 21.1 (80) | 8.5 (32) | 6.6 (25) | 5.3 (20) | 3.7 (14) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 15.9 (60) | 10.6 (40) | 10.6 (40) | 7.9 (30) | 7.4 (28) | 7.4 (28) | 15.9 (60) | 10.6 (40) | 10.6 (40) | 10.6 (40) | 10.6 (40) | 10.6 (40) |
|  | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 26.4 (100) | 18.5 (70) | 15.9 (65) | 15.9 (60) | 11.1 (42) | 9.5 (36) | 9.5 (36) | 18.5 (70) | 15.9 (60) | 15.9 (60) | 15.9 (60) | 15.9 (60) | 15.9 (60) |

The numbers in the above table describe the maximum flow under AC.

WARNING

Use of a directional valve with an incorrect flow path could result in machine malfunction which, in turn, could result in personal injury or death to the operator. Physical interchangeability or the ability of one directional valve to fit in place of another does not mean that the replacement has the same flow paths or will function the same. Use and application of these valves should be done by qualified individuals after consulting with the product literature before making substitutions. The right to modification is reserved.

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