



RATINGS

Maximum Flow See Chart
Maximum Operating Pressure
("A", "B" and "P" Ports) 350 bar (5000 PSI)
Maximum Tank Line Pressure 103 bar (1500 PSI)
Mounting Pattern ISO 4401-AB-03-4-A, NFPA-D03
(Formerly D01) and ANSI-B93.7

FLUIDS AND SEALS

Valves using synthetic, fire-resistant fluids require special seals. When phosphate ester or its blends are used, FLUOROCARBON seals are required. Water-glycol, water-in-oil emulsions, and petroleum oil may be used with NITRILE seals.

WEIGHT

Single Solenoid Models 1.36 kg (3.0 lbs.)
Double Solenoid Models 1.6 kg (3.5 lbs.)

FILTRATION

For maximum valve and system component life, the system should be protected at a contamination level not to exceed 125 particles greater than 10 microns per milliliter of fluid (SAE Class 4 or better, ISO Code 16/13).

SILTING

Silting can cause any sliding spool valve to stick and not spring return, if held shifted under pressure for long periods of time. The valve should be cycled periodically to prevent sticking.

MOUNTING BOLTS

When provided by customer, mounting bolts should be SAE Grade 8, 10-24 UNC-2A; or better.
(Bolt Length = 1.25 inches)
Bolt Torque 5.6N (50 in-lbs.)

D03 Solenoid Electrical Characteristics

[Based on nominal voltage @ 22°C (72°F)]

| Nominal Volts/Hz | In Rush Amps | Holding Amps | Watts |
|--------------------------|--------------|--------------|----------|
| 120/60 VAC 110/50 VAC | 2.00 2.10 | 0.49 0.58 | 25 27 |
| 240/60 VAC 220/50 VAC | 1.00 1.05 | 0.26 0.31 | 25 27 |
| 24/60 VAC | 10.50 | 2.70 | 27 |
| 24/50 VAC | 8.7 | 2.65 | 28 |
| 6VDC | - | 5.00 | 30 |
| 12VDC | - | 2.50 | 30 |
| 24VDC | - | 1.25 | 30 |
| 120VDC | - | 0.25 | 30 |

TANK LINE SURGES

If several valves are piped with a common tank line, flow surges in the line may cause unexpected spool shift. Detent style valves are most susceptible to this. Separate tank lines should be used when line surges are expected in an application.

SOLENOID ENERGIZING

Spring centered and spring offset types will be spring positioned unless solenoid is energized continuously.

NOTE: Solenoids are designed to function continuously at ± 10% of the rated voltage.



RATINGS

Recommended Flow Capacity See chart.
Maximum Operating Pressure 207 bar (3000 PSI)
Maximum Tank Line Back Pressure
..... 103 bar (1500 PSI)
Mounting Pattern ISO 4401-05/NFPA-D05
(Formerly D02) and ANSI-B93.7

FLUIDS AND SEALS

Valves using synthetic, fire-resistant fluids require special seals. When phosphate ester or its blends are used, FLUOROCARBON seals are required. Water-glycol, water-in-oil emulsions, and petroleum oil may be used with NITRILE seals.

WEIGHT

Single Solenoid Models 5.3 kg (11.6 lbs.)
Double Solenoid Models 7.3 kg (16.0 lbs.)

FILTRATION

For maximum valve and system component life, the system should be protected at a contamination level not to exceed 125 particles greater than 10 microns per milliliter of fluid (SAE Class 4 or better, ISO Code 16/13).

SILTING

Silting can cause any sliding spool valve to stick and not spring return, if held shifted under pressure for long periods of time. The valve should be cycled periodically to prevent sticking.

D05 Solenoid Electrical Characteristics

[Based on nominal voltage @ 22°C (72°F)]

| Nominal Volts/Hz | In Rush VA | Holding VA | Nominal Watts (Ref) |
|--------------------------|------------|------------|---------------------|
| 120/60 VAC 110/50 VAC | 298 294 | 95 102 | 32 |
| 240/60 VAC 220/50 VAC | 288 288 | 96 101 | 32 |
| 24/60 VAC 24/50 VAC | 290 381 | 77 110 | 32 |
| 12VDC | - | 3.00 | 36 |
| 24VDC | - | 1.50 | 36 |
| 120DC | - | 0.30 | 36 |

* DC holding amps

MOUNTING BOLTS

When provided by customer, mounting bolts should be SAE Grade 8, ¼-20 UNC-2A; or better.

Maximum recommended mounting bolt torque
..... 16Nm (12 ft-lbs.)
(Bolt Length = 1.62 inches)

TANK LINE SURGES

If several valves are piped with a common tank line, flow surges in the line may cause unexpected spool shift. Detent style valves are most susceptible to this. Separate tank lines should be used when line surges are expected in an application.

SOLENOID ENERGIZING

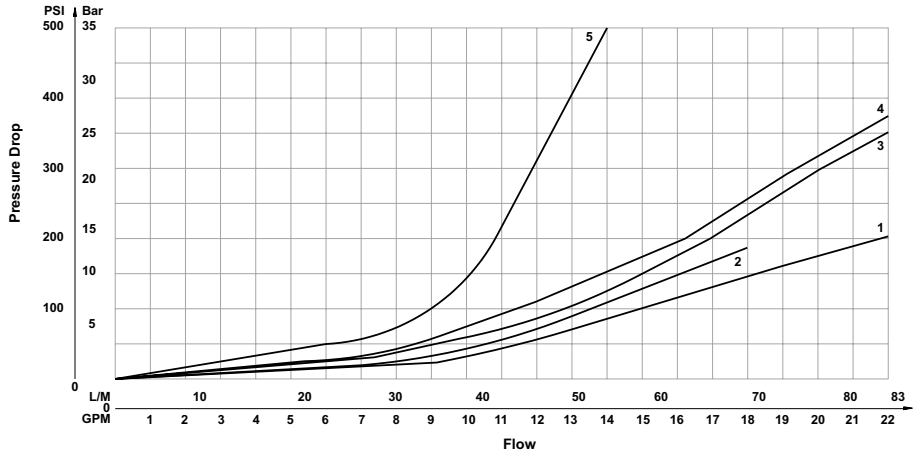
Spring centered and spring offset types will be spring positioned unless solenoid is energized continuously.

NOTE: Solenoids are designed to function continuously at ± 10% of the rated voltage.

OPERATING AND TECHNICAL DATA

D03 Pressure Drop Reference Chart

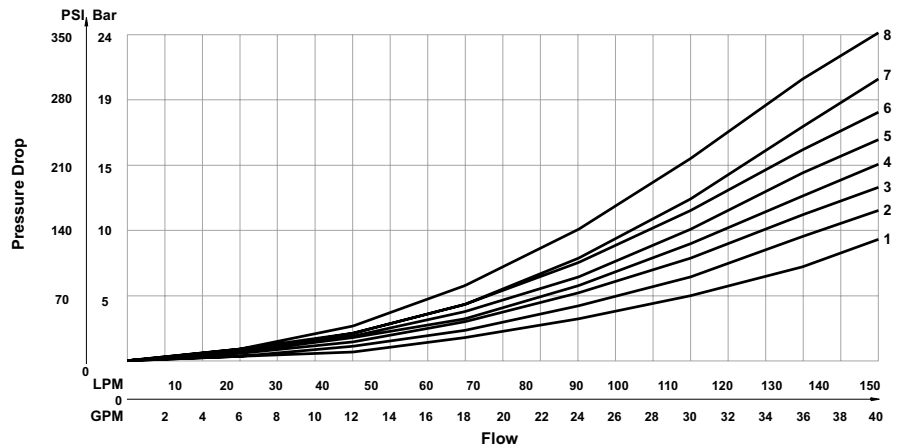
| Spool Center Position | Curve Number | | | | | | | Maximum Flow, L/M (GPM) 350 Bar (5000 PSI) w/o Malfunction |
|-----------------------|--------------|-----|-----|-----|-----|-----|-----|--|
| | P-A | P-B | P-T | A-T | B-T | B-A | A-B | |
| | 4 | 4 | - | 1 | 1 | - | - | 49 (13) |
| | 3 | 3 | 4 | 1 | 1 | 4 | 4 | 45(12) |
| | 4 | 4 | - | 1 | 1 | - | - | 30 (8) |
| | 2 | 2 | 5 | 4 | 4 | 5 | 5 | 45 (12) |



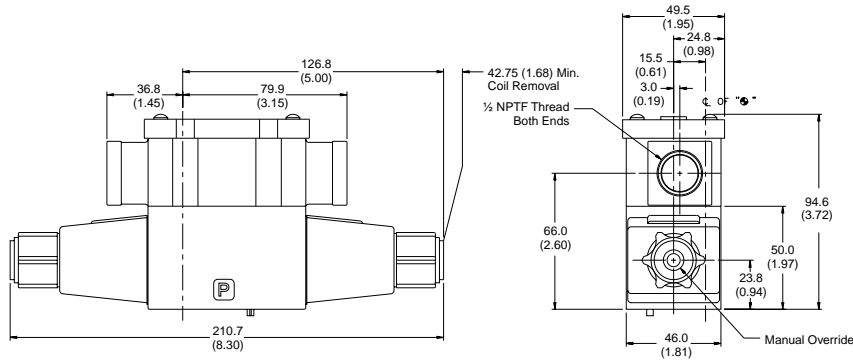
OPERATING AND TECHNICAL DATA

D05 Pressure Drop Reference Chart

| Spool Center Position | Curve Number | | | | | | | | | | Maximum Flow, L/M (GPM) 350 Bar (5000 PSI) w/o Malfunction | |
|-----------------------|--------------|-----|-----|-----|------------------|-------|-------|-------|-------|-------|--|----------|
| | Shifted | | | | Center Condition | | | | | | | |
| | P-A | P-B | B-T | A-T | (P-T) | (B-A) | (A-B) | (P-A) | (P-B) | (A-T) | | (B-T) |
| | 5 | 5 | 2 | 2 | - | - | - | - | - | - | - | 130 (33) |
| | 4 | 4 | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 1 | 1 | 115 (30) |
| | 4 | 4 | 3 | 3 | - | - | - | - | - | 1 | 1 | 130 (33) |
| | 8 | 8 | 7 | 7 | 6 | - | - | - | - | - | - | 39 (10) |



UNIT DIMENSIONS



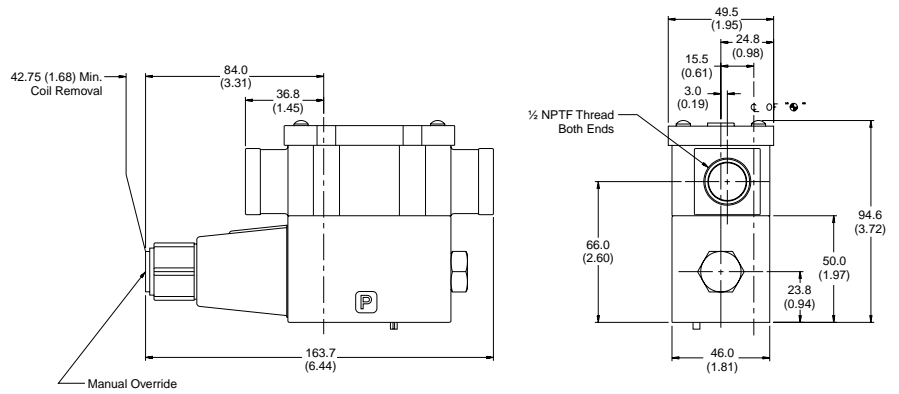
Double Solenoid

NOTE:

Mounting bolt spacing helps to insure proper mounting and port relationship.

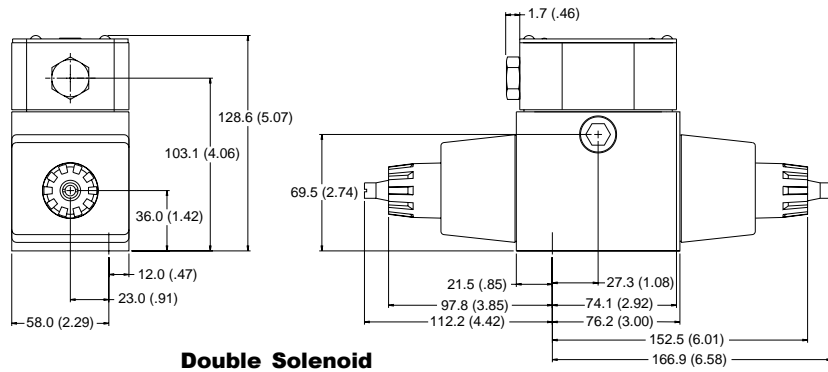
Spring centered models - when solenoid is deenergized the spool is returned to the spring centered position.

DIMENSIONS SHOWN FOR AC COILS
MILLIMETERS (INCHES)

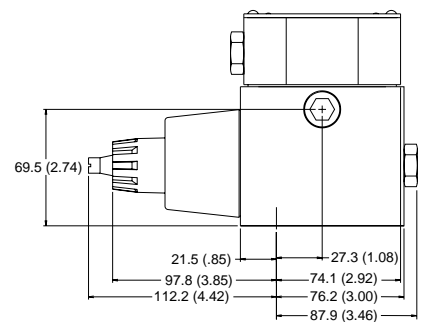


Single Solenoid Spring Offset

UNIT DIMENSIONS



Double Solenoid



Single Solenoid Spring Offset

DIMENSIONS SHOWN FOR AC COILS
MILLIMETERS (INCHES)



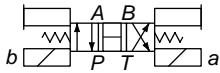
PRODUCT SELECTION DATA

GENERAL DATA

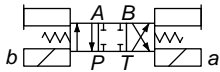
Models are direct solenoid operated four-way directional control valves. Their primary function, in a hydraulic circuit, is to determine the direction of fluid flow to a work cylinder, or control the direction of rotation of a fluid motor. Port connections are made by mounting the valve on a subplate or manifold. The valve has wet armature type solenoids.

Electrical connections to the valve are made in the electrical wiring housing or by various plug-in devices. A ground terminal is provided.

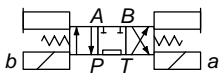
DIRECTIONAL CONTROL VALVES



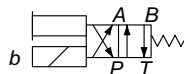
SCHEMATIC "A"



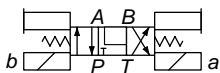
SCHEMATIC "B"



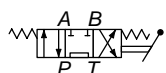
SCHEMATIC "C"



SCHEMATIC "D"



SCHEMATIC "E"



SCHEMATIC "F"

NFPA • D03 ISO-4401-03

| Part No. | Description | Voltage | Schematic |
|----------|--|---------|-----------|
| 00961-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 12 VDC | "B" |
| 00962-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 12 VDC | "C" |
| 00963-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 12 VDC | "A" |
| 00964-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 24 VDC | "B" |
| 00965-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 24 VDC | "C" |
| 00966-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 24 VDC | "A" |
| 00968-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 110 VAC | "B" |
| 00970-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 110 VAC | "C" |
| 00967-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 110 VAC | "A" |
| 01039-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 24 VDC | "E" |
| 01040-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 12 VDC | "E" |
| 01041-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 110 VAC | "D" |
| 00969-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 110 VAC | "E" |
| 00957-P | Valve, 4-Way/3 Position, Tandem Center, Manual | ----- | "F" |
| 00460-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 12 VDC | "D" |
| 00461-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 24 VDC | "D" |

NFPA • D05 ISO-4401-05

| Part No. | Description | Voltage | Schematic |
|----------|--|---------|-----------|
| 01060-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 110 VAC | "C" |
| 01061-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 110 VAC | "A" |
| 01062-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 110 VAC | "B" |
| 01063-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 110 VAC | "E" |
| 01064-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 110 VAC | "D" |
| 00462-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 12 VDC | "C" |
| 00463-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 12 VDC | "A" |
| 00464-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 12 VDC | "B" |
| 00465-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 12 VDC | "E" |
| 00475-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 12 VDC | "D" |
| 00476-P | Valve, 4-Way/3 Position, Tandem Center, Double Solenoid | 24 VDC | "C" |
| 00477-P | Valve, 4-Way/3 Position, Open Center, Double Solenoid | 24 VDC | "A" |
| 00478-P | Valve, 4-Way/3 Position, Closed Center, Double Solenoid | 24 VDC | "B" |
| 00479-P | Valve, 4-Way/3 Position, P Closed, A & B to T, Double Solenoid | 24 VDC | "E" |
| 00480-P | Valve, 4-Way/2 Position, Spring Offset, B Solenoid | 24 VDC | "D" |

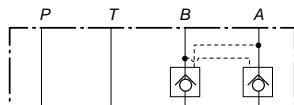
NFPA • D03 & NFPA • D05

| D03 | D05 | Description | Schematic |
|---------|---------|---|-----------|
| 00466-P | 00766-P | P Port Direct Check DO3 5 PSI, DO5 15 PSI | "G" |
| 00467-P | 00767-P | P Port Direct Check DO3 50 PSI, DO5 73 PSI | "G" |
| 00468-P | 00768-P | Dual Pilot Operated Check DO3 & DO5 15 PSI | "H" |
| 00469-P | 00769-P | Dual Meter-Out Flow Control | "I" |
| 00470-P | 00770-P | P → T Single Relief DO3 75-3600 PSI, DO5 60-2900 PSI | "J" |
| 00471-P | 00771-P | P Port Pressure Reducing DO3 1450-3600 PSI, DO5 125-2900 PSI | "K" |
| 00472-P | 00772-P | P Port Sequence Valve DO3 725-2000 PSI, DO5 73-2900 PSI | "L" |
| 00474-P | 00773-P | Dual Relief A & B → T DO3 250-3500 PSI, DO5 60-2900 PSI | "M" |
| 00443-P | 00765-P | Crossline Relief DO3 725-3600 PSI, DO5 60-2900 PSI | "N" |
| 00481-P | 00763-P | Blanking Plate | "N/A" |
| 00442-P | 00774-P | Single Relief A → T DO3 100-2000 PSI, DO5 60-2900 PSI | "O" |

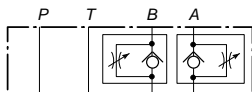
NOTE: For information on additional valves and pressure ranges consult factory.



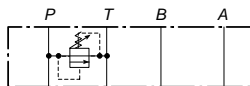
SCHEMATIC "G"



SCHEMATIC "H"

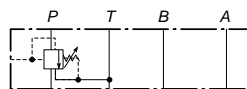


SCHEMATIC "I"

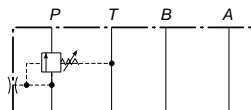


SCHEMATIC "J"

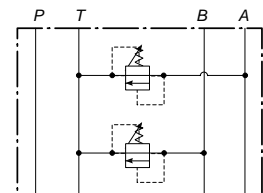
AUXILIARY VALVE MODULES



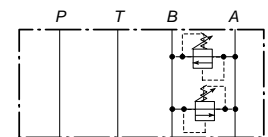
SCHEMATIC "K"



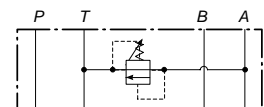
SCHEMATIC "L"



SCHEMATIC "M"



SCHEMATIC "N"



SCHEMATIC "O"

DISTRIBUTED BY:

U.S.A.:
MONARCH HYDRAULICS, INC.
 T UNITS and DISTRIBUTION
 4770 50th St. Kentwood, MI 49512
 Telephone: (616) 458-1306
 Telefax: (616) 455-0240
<http://www.monarchhyd.com>

CANADA:
FLUID-PACK INTERNATIONAL LIMITED
 A Part of the Monarch Hydraulics Group
 460 Newbold St., London, Ontario, Canada N6E 1K3
 Telephone: (519) 686-5900
 Telefax: (519) 686-8976

Catalog information also available at :

www.monarchhyd.com