

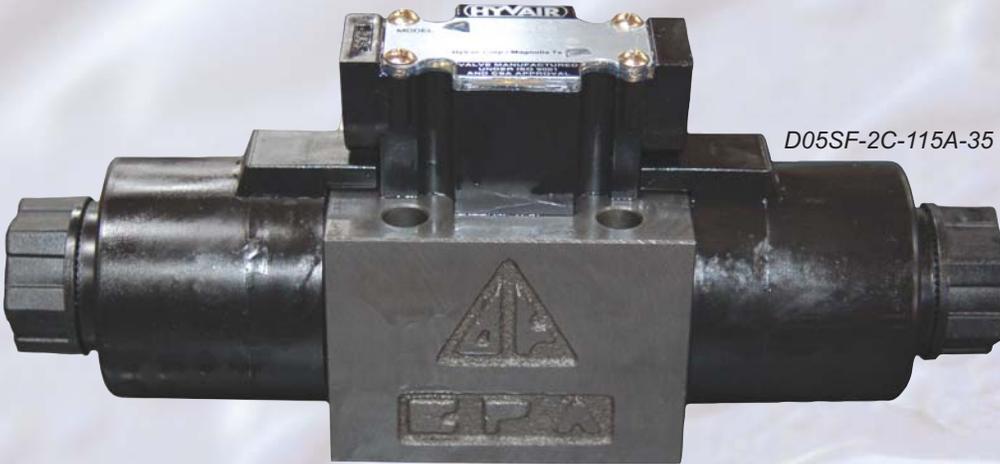


INDUSTRIAL FLUID POWER COMPONENTS
AND SYSTEMS

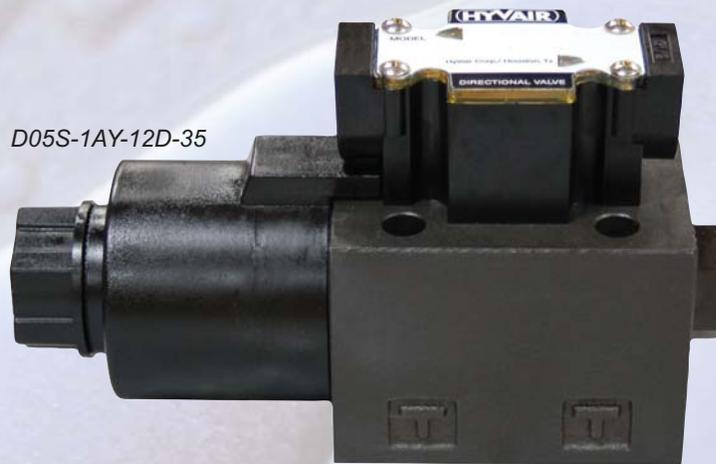


D05 SERIES 35

Solenoid Operated Directional Valves



D05SF-2C-115A-35



D05S-1AY-12D-35



D05SD-2C-12D-35

Features

- **High Flow/ High Pressure:** Up to 40 gpm / 5000 psi working pressure*.
- **Oil Immersed, Quiet Solenoid Design:** Moving core immersed in hydraulic oil provides quiet operation.
- **High Tank Port Pressure:** Up to 3000 psi tank port back pressure (Check each spool type for max. allowable).
- **Twin Tank Line Design:** Upper and lower tank line channels (Double Loop) greatly reduces pressure drop.
- **Wiring:** Electrical box with indicator lights and terminal strip connection standard. DIN connector provided standard on DIN style coils. (Connectors may optionally be supplied with lights.) Lead wire also available.
- **Hydraulic/ Electric Shockless:** Valve coils available electric shockless (rectified)- reducing voltages spikes, extending relay contact life, and providing even quieter operation. Spool shifting time is increased up to four times by metering the oil in the core tube. Option F (Electrical Box version only)
- **Maintenance:** Indicator lamps to diagnose connection; Plug-in coils provide easy changing without disturbing wiring.
- **High Reliability:** Valve designed to last 30 million spool shifts under proper use.
- **Bolt Kit included with valve standard**

*Some spools rated less- check max. pressures and flows chart

Series 35
High Flow/ High Pressure Directional Valves



D05SD DIN Type



D05S Electrical Box Type

Specifications

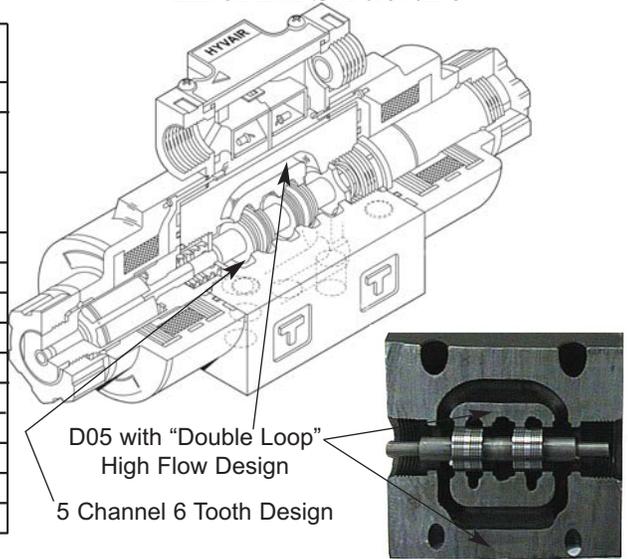
Model		Standard type				Hydraulic Shockless type	
		AC		DC & Rectified			
Symbol	Valve spool type	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)
	1A8	5000 (35)	10.6 (40)	5000 (35)	22.5 (85)	3600 (25)	22.5 (85)
	1A8R		22.5 (35)		22.5 (85)		
	3A8	5000 (35)	34.1 (130)	5000 (35)	42.3 (160)	3600 (25)	34.3 (130)
	1A						
	1AR						
	3A						
	1AY						
	1ARY						
	3AY						
	5B						

Note: The maximum flow capacity is shown here. The maximum flow of each valve differs depending on pressure. See HP (Pressure-Flow) curve for each model.

Model		Standard type				Hydraulic Shockless type	
		AC		DC & Rectified			
Symbol	Valve spool type	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)	Max. operating pressure psi (Mpa)	Max. flow gpm (liters/min)
	5BR	5000 (35)	34.1 (130)	5000 (35)	42.3 (160)	3600 (25)	34.3 (130)
	2J						
	2B						
	2T						
	2K1						
	2F1						
	2K						
	2F						
	2H						
	2C						
	2C5						

Specifications
Internal Structure

		DC solenoid		
		AC solenoid	Built-in rectifier	
		AC	RAC	DC
Max. operating pressure	P, A, B ports	5070 psi Note: Less for some valve types such (35 Mpa) as hyd. shockless and tandem spool		
Maximum permissible back pressure	T port	2320 psi (16 MPa)		
Changeover frequency (cycles/min)	Standard type	300	120	240
	Shockless type	—		120
Mounting Surface	Nfpa, (ISO)	T3.5.1.MR1-D05, (4401-05)		
Internal Leakage*	cu-in/min, (ml/min)	0.22, (3.5)		
Mass lbs (kg)	Double solenoids	9.2 (4.2)	11 (5.0)-35	
	Single solenoid	7.9 (3.6)	8.6 (3.9)-35	
Recommended operating conditions	Operating temperature range	41 ~ 140° F (5 ~ 60 °C)		
	Operating viscosity	80 ~ 1400 SUS (15 ~ 300 mm ² /s ²)		
	Viscosity index	90 or above		
	Filtration	25 μm or less		


 * @3000psi Viscosity of hydraulic fluid: 150SUS (32mm²/s)

Symbols

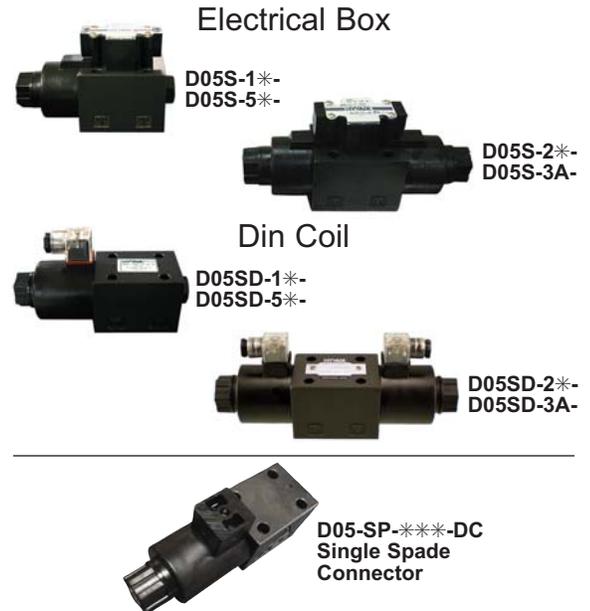
2H PT	5H PT	5HR PT
2B PT	5B PT	5BR PT
2K PT	5K PT	5KR PT
2F PT	5F PT	5FR PT
2T PT	5T PT	5TR PT
2C5 PT	5C5 PT	5C5R PT
2C PT	5C PT	5CR PT
2C25 PT	5C25 PT	5C25R PT
2C10 PT	5C10 PT	5C10R PT
2F1 PT	5F1 PT	5FR1 PT
2J PT	5J PT	5JR PT

1AY PT	PT 1AYR
1A PT	PT 1AR
1A8 PT	PT 1A8R
1A12 PT	PT 1A12R
1B2A PT	PT 1B2AR
1H2A PT	PT 1H2AR
3AY PT	PT 3A8
3A PT	

Common 115 VAC Models

Common Configurations

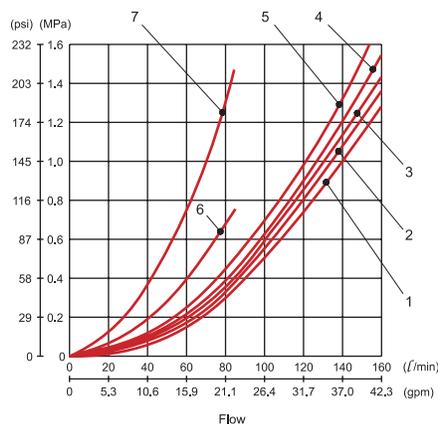
D05	Symbol	D05	Symbol
D05S-1A-115A-35		D05S-2H-115A-35	
D05S-1AY-115A-35		D05S-2K-115A-35	
D05S-2B-115A-35		D05S-2T-115A-35	
D05S-2C-115A-35		D05S-3A-115A-35	
D05S-2F-115A-35			



Example of Code "R" Reversed (symbols shown in simplified form - D03 valves pictured)

D05SD-2B (standard)	D05SD-2BR (no change to DIN coil valve, electrical box flipped for opposite coil markings)	D05SD-1A (standard)	D05SD-1AR (coil supplied reversed from normal position & spool reversed)	D05SD-5B (standard)	D05SD-5BR (right or "b" coil side of valve provided)
		(symbol shown blocked during valve transition only)			

Pressure Drop Curves



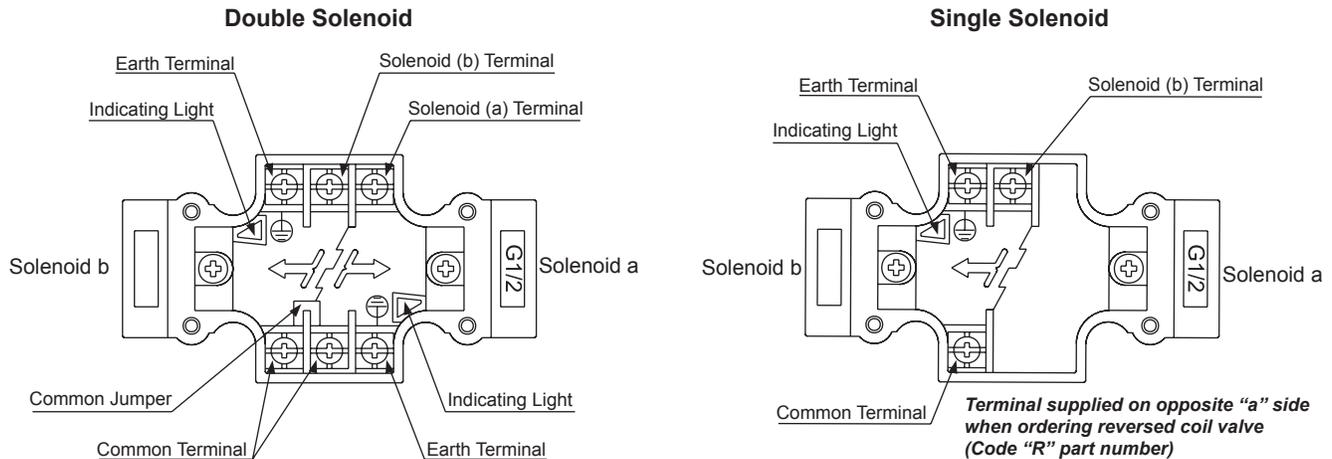
Model	Valve spool type	P→A	P→B	A→T	B→T	P→T
D05 SERIES	1A8, 1A8R, 3A8	5	5	—	—	—
	5B	—	3	3	—	—
	5BR	3	—	—	3	—
	1A, 1AR, 3A	3	3	4	4	—
	1AY, 1AYR	1	1	4	4	—
	3AY	2	2	1	1	—
	2K	3	3	1	3	—
	2J	1	3	3	3	—
	2H	1	1	1	1	1
	2B, 2K1, 2F1	3	3	3	3	—
	2F	3	3	1	1	—
	2C	7	7	7	7	6
	2C5	1	7	1	7	6
	2T	1	1	3	3	—

Viscosity of hydraulic fluid 150 SUS {32 mm /s²}

Electrical Information

D05	Solenoid Coil Specifications											
Solenoid Voltage	115V-AC			230V-AC			115V-RAC (rectified)		230V-RAC (rectified)		12V-DC	24V-DC
Coil Model D05S (Elect. Box)	3BH-C1/C3			3BH-C2/C4			3EB-R1/R3		3EB-R2/R4		3EB-D1	3EB-D2
Coil Model D05SD (DIN)	3AH-C1/C3			3AH-C2/C4			3EA-R1/R3		3EA-R2/R4		3EA-D1	3EA-D2
Applied Voltage	AC110		AC120	AC220		AC240	AC110		AC120	AC220		AC240
Frequency (Hz)	50	60	60	50	60	60	50 / 60		50 / 60			
Starting Current (A)	5.5	4.6	5.0	2.7	2.3	2.5						
Holding Current (A)	1.1	0.86	1.0	0.52	0.42	0.48	0.46	0.49	0.22	0.24	3.0	1.5
Holding Power (W)	36	34	42	36	34	32	31	34	30	33	31	36
Permissible Voltage Range (V)	80-120			180-240			80-130		180-250		10.8-13.2	21.6-26.4
Insulation Resistance (M Ω)	100 or above (500V)											

Electrical Box Wiring



Notes:

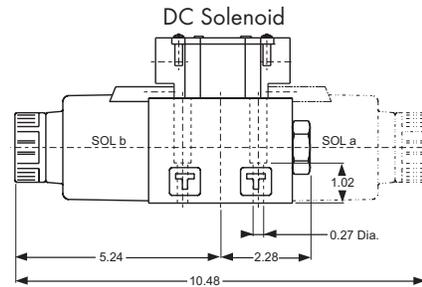
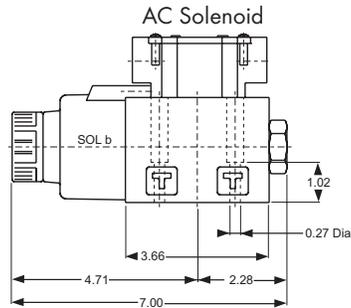
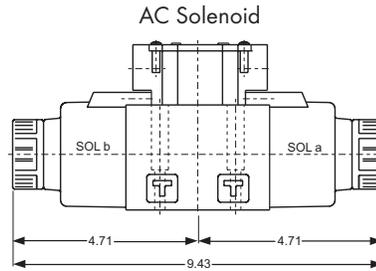
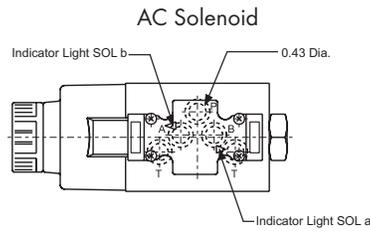
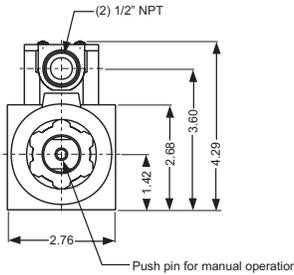
- DIN Coils manufactured to accept standard 3 pin DIN 43 650 and ISO 4400 connectors.
- AC Coils are rated for both 50/60Hz (rewiring not required)
- DC coils are not polarity sensitive
- Rectifier is supplied: in the electrical box- D05S, in the coil (internal)- D05SD
- Hydraulic shockless AC valves are always supplied with rectifier.
- Hydraulic shockless valves will not operate as shockless until the tank line has become filled with oil- occurs automatically after the first few cycles. Mounting valve below the reservoir oil level or using check valve ensures that the tank line remains filled.
- Do not supply electrical power to the AC coils unless the coil is mounted on the valve.
- Do not exceed voltage specifications shown above.
- Electrical power should be maintained on detented valves (spool code 3A). Detent only maintains start-up position of the valve.

Dimensional Data

**Electrical Box Type
D05S
D05SF**

Units: Inches

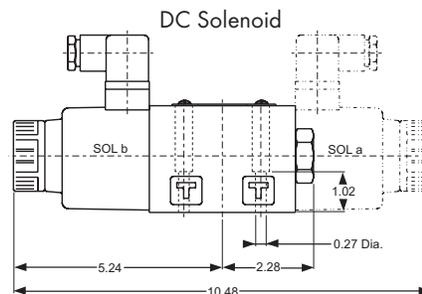
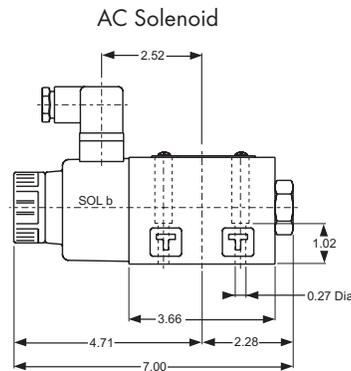
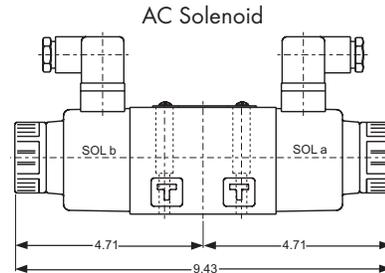
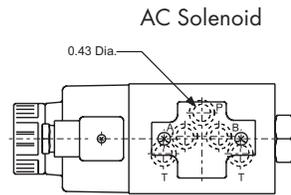
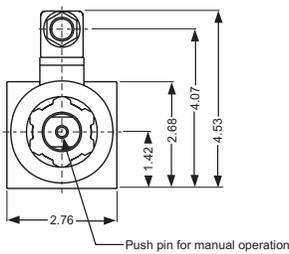
Mounting: (4) 1/4-20 SHCS x 1-1/2"
Torque 105-110 in-lbs



**DIN Type
D05SD**

Units: Inches

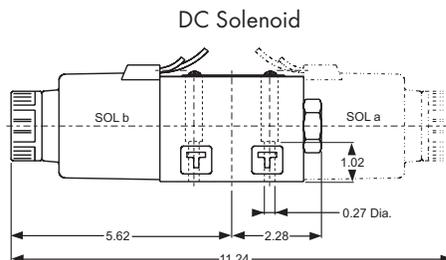
Mounting: (4) 1/4-20 SHCS x 1-1/2"
Torque 105-110 in-lbs

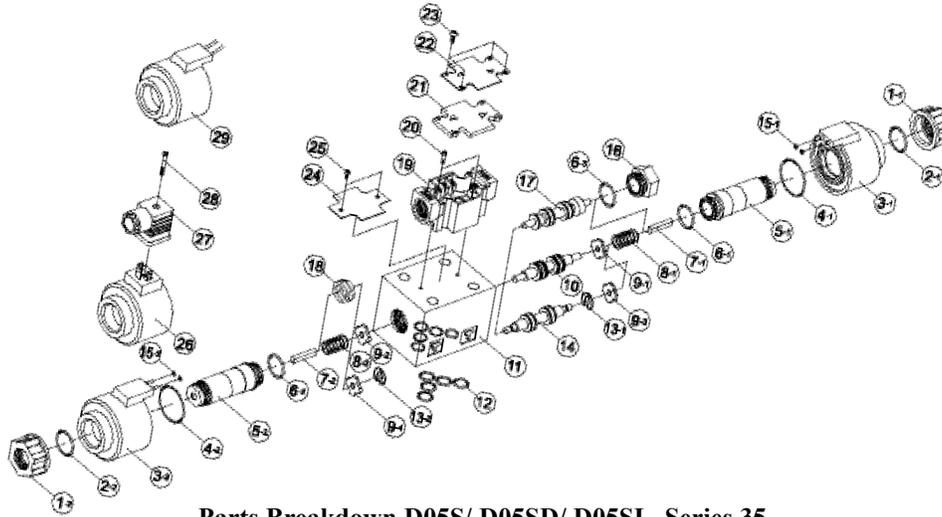


**Lead Wire Type
D05SL**

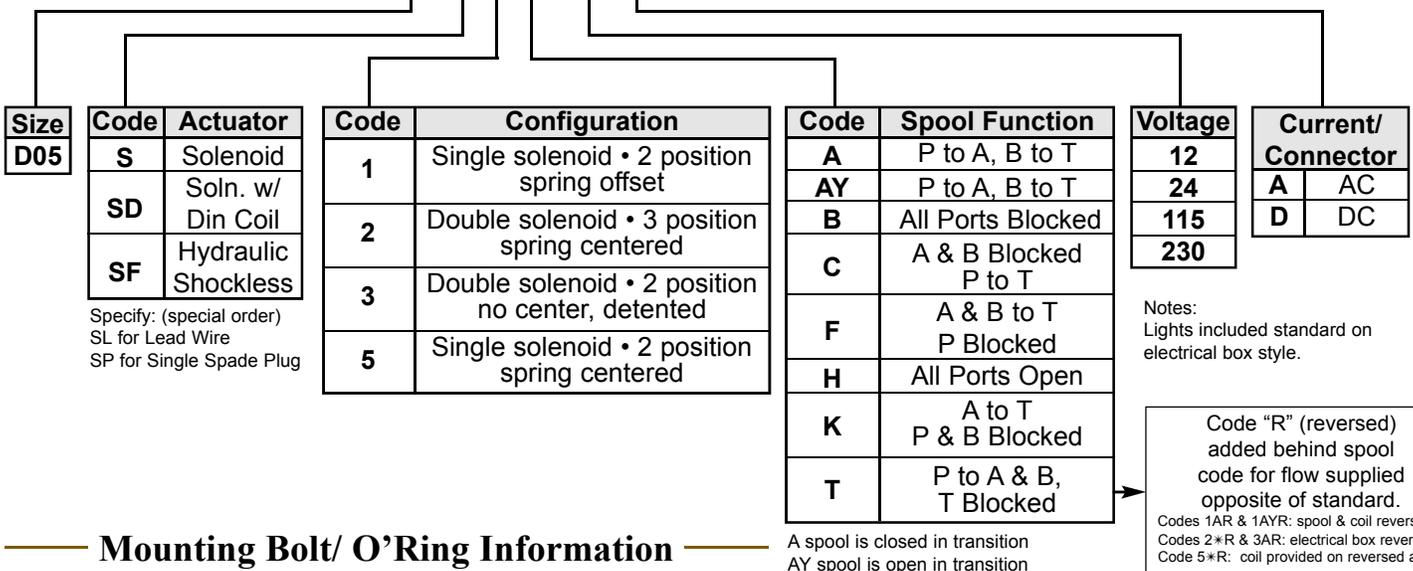
Units: Inches

Mounting: (4) 1/4-20 SHCS x 1-1/2"
Torque 105-110 in-lbs



Parts Breakdown D05S/ D05SD/ D05SL Series 35

Parts Breakdown D05S/ D05SD/ D05SL Series 35

1) Solenoid Magnet	9) Retainer	17) Spool (2 pos. single coil)	25) Screw
2) O-Ring	10) Spool (3 position)	18) Retainer	26) Coil (For DIN Type)
3) Coil (For Elect. Box Type)	11) Body	19) Joint Box	27) Connector
4) O-Ring	12) O-Ring	20) Joint Box Screw	28) Screw
5) Armature (Core Tube)	13) Concave Pin	21) Acrylic Cover	29) Coil (For Lead Wire Type)
6) O-Ring	14) Spool (2 position detent)	22) Nameplate	
7) Push Pin	15) O-Ring	23) Screw	
8) Spring	16) Hex Plug	24) Nameplate (Non-Box Type)	

Ordering Information
D05 S-2 B-115 A-35

Mounting Bolt/ O'Ring Information

Size	Thread US Metric	Torque in-lbs/ (Nm)	O'Ring
D05	1/4 - 20 UNC	105 - 110 (11.9 - 12.4)	11.8mm I.D. x 2.4mm C.S.