

General Purpose Solenoid Valves

Two-Way Solenoid Valves — Type I

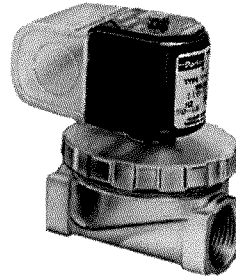
Normally Closed Only

Applications

These valves are for general application on non-corrosive fluids such as air, water below 180°F, light oils below 300 SSU, and low vacuum. All seal off bubbletight.

General Specifications

Type I two-way solenoid valves can be used on either low or high pressure and are available in 1/4" NPT through 1" NPT. The smaller valves are direct acting while the larger valves are pilot operated.



Materials

Body.....Forged Brass or Brass Bar
Plunger430 Stainless Steel
Seals, Discs & Diaphragms.....Buna N (Seat Disc in "G" models is Fluoroelastomer)
Enclosing Tube300 Series Stainless Steel
Springs300 Series Stainless Steel

Type I Two-Way Normally Closed (AC) Voltages

Pipe Size	Orifice	Cv	Operating Pressure Differential				°F Maximum Temp	Valve Model #	Coil Type
			Minimum PSI	Maximum (MOPD) PSI					
				Air Inert Gas	Water	Light Oil 300 SSU			
1/4	5/16	.98	1	150	150	150	225	GP200	G-23
3/8	1/2	3.00	1	150	150	150	225	GP300	G-23
1/2	1/2	3.60	1	150	150	150	225	GP400	G-23
3/4	3/4	7.40	1	150	150	150	225	GP600	G-23
1	1	12.20	1	150	150	150	225	GP10A	G-23

Flow Capacities — Water GPM

Model Numbers									
Type I	Type III	1 psi	2 psi	5 psi	10 psi	15 psi	25 psi	50 psi	
Normally Closed	Normally Closed								
GP200	GP207	.98	1.36	2.16	3.90	3.78	4.90	6.90	
GP300	GP307	3.00	4.23	6.70	9.50	11.60	15.00	21.20	
GP400	GP407	3.60	5.09	8.05	11.38	13.94	18.00	25.46	
GP600	GP607	7.40	10.40	16.70	23.60	29.00	37.50	53.00	
GP10A	GP1007	12.20	17.30	27.30	39.00	43.70	62.00	88.00	

Steam Capacities — Pounds Per Hour

Model Numbers		5 psig Inlet Pressure		10 psig Inlet Pressure			Model Numbers		25 psig Inlet Pressure			50 psig Inlet Pressure		
Type III	Type IV	Pressure Drop(psi)		Pressure Drop(psi)			Type IV		Pressure Drop(psi)			Pressure Drop(psi)		
		2	4	2	5	7			5	10	15	10	20	30
GP207	GP257	19.40	27.40	21.40	33.90	40.30	GP257		42.30	60.00	73.00	76.00	107.00	130.00
GP307	GP357	56.50	79.90	63.30	100.00	118.30	GP357		126.80	179.30	219.60	228.90	323.70	396.50
GP407	GP457	67.80	95.90	75.80	120.00	142.00	GP457		152.20	215.20	263.60	274.70	388.50	475.80
GP607	GP657	147.00	211.00	162.00	261.00	312.00	GP657		326.00	462.00	565.00	581.00	821.00	1005.00
GP1007	GP1057	245.00	346.00	270.00	431.00	511.00	GP1057		538.00	760.00	927.00	956.00	1348.00	1667.00

Type II														
* 32F24C2199ACF	—	—	—	—	—	—	—	77.00	123.00	175.00	214.00	278.00	390.00	
** 48F24C2199ACF	—	—	—	—	—	—	—	177.00	280.00	395.00	485.00	625.00	870.00	

* GP20

** GP30

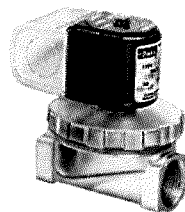
Two-Way Solenoid Valves — Type III

Applications

These valves were developed primarily for use on hot water and low pressure steam (to 10 psi), but can be used on air and other non-corrosive fluids. They can be used with fluid temperatures ranging from -20° to 240°F.

General Specifications

Type III two-way solenoid valves have a brass body with a stainless steel seat insert and a PTFE diaphragm. They are available with 1/4" NPT through 1" NPT connection; normally closed only. These valves are not available with an explosion proof coil enclosure.

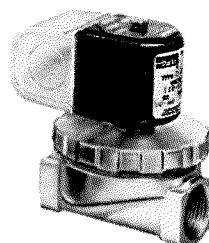


Materials

Body.....Forged Brass with Stainless Steel Seat
Bonnett.....Forged Brass
Diaphragms.....PTFE
Enclosing Tube300 Series Stainless Steel
Plunger.....430 Series Stainless Steel
Plunger Seat DiscFluoroelastomer
Springs.....300 Series Stainless Steel
Seal.....EPT

Valve Specifications — Type III

Pipe Size	Orifice	Cv	Operating Pressure Differential				°F Maximum Temp	AC Coil Wattage	D C Coil Wattage	Valve Model #	Coil Type
			Minimum PSI	Maximum (MOPD) PSI							
				Air Inert Gas	Water	Light Oil 300 SSU					
1/4	5/16	.98	1	150	150	150	240	9.0	14.0	GP207	G-23
3/8	1/2	3.00	1	150	150	150	240	9.0	14.0	GP307	G-23
1/2	1/2	3.60	1	150	150	150	240	9.0	14.0	GP407	G-23
3/4	3/4	7.40	1	150	150	150	240	9.0	14.0	GP607	G-23
1	1	12.20	1	150	150	150	240	9.0	14.0	GP1007	G-23



Two-Way Solenoid Valves — Type IV

Applications

These valves are recommended for steam service up to 50 psig saturated steam.

NOTE: Do not apply on systems where steam is regulated to 50 psig or below from above 50 psig. Damaged to the valve will result.

General Specifications

Type IV two-way solenoid valves have a brass body with a stainless steel seat insert and an ethylene propylene (EPT) diaphragm and seal. These valves are available with 1/4" NPT through 1" NPT connection; normally closed only. They are not available with an explosion proof coil enclosure.

Materials

Body.....Forged Brass with Stainless Steel Seat
Bonnett.....Forged Brass
Diaphragms.....EPT
Enclosing Tube300 Series Stainless Steel
Plunger.....430 Series Stainless Steel
Plunger Seat DiscEPT
Springs.....300 Series Stainless Steel
Seal.....EPT

Valve Specifications — Type IV

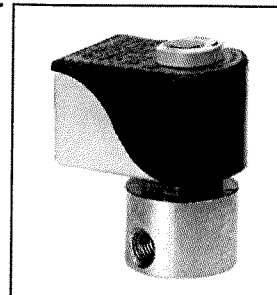
Pipe Size	Orifice	Cv	Operating Pressure Differential			°F Maximum Temp	AC Coil Wattage	Valve Model #	Coil Type
			Minimum PSI	Maximum (MOPD) PSI					
				Steam/Water	Water				
1/4	5/16	.98	1	50/150	300	150	9.0	GP257	G-23
3/8	1/2	3.00	1	50/150	300	150	9.0	GP357	G-23
1/2	1/2	3.60	1	50/150	300	150	9.0	GP457	G-23
3/4	3/4	7.40	1	50/150	300	150	9.0	GP657	G-23
1	1	12.20	1	50/150	300	150	9.0	GP1057	G-23

General Purpose Solenoid Valves

2-Way

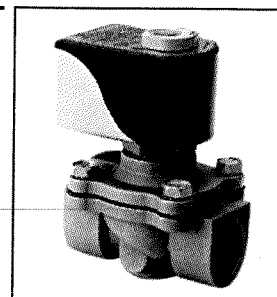
Series 20 $\frac{1}{8}$ " - $\frac{3}{8}$ " NPT connections, $\frac{3}{64}$ " - $\frac{9}{32}$ " orifice

- Pressures from 0-2200 psi depending on orifice size and operation
- UL Listed and CSA Certified
- Normally open or normally closed, direct acting
- Brass or stainless steel (303ss for $\frac{1}{8}$ " and $\frac{1}{4}$ " NPT, 316ss for $\frac{3}{8}$ " NPT)
- Buna-N, Viton, Neoprene, Ethylene propylene or PTFE seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available



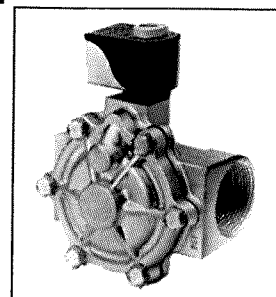
Series 20 $\frac{3}{8}$ " - $\frac{3}{4}$ " NPT connections, $\frac{5}{16}$ " - $\frac{3}{4}$ " orifice

- For low pressure applications, 0-20 psi, depending on orifice size
- UL Listed and CSA Certified
- Normally open or normally closed, direct acting
- Brass or 316 stainless steel
- Buna-N, Viton, Neoprene or Ethylene propylene seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available



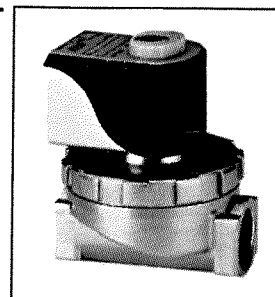
Series 22, 23, 24 and 26 $\frac{3}{8}$ "-3" NPT connections, $\frac{5}{8}$ "-3" orifice

- Pressures from 0-300 psi depending on construction
- Internally piloted diaphragm or piston depending on size
- UL Listed and CSA Certified (through 1 $\frac{1}{2}$ ")
- Normally open or normally closed construction
- Brass or 316 stainless steel (to 1 $\frac{1}{2}$ " NPT)
- Buna-N, Viton, Neoprene or Ethylene propylene seals (to 1 $\frac{1}{2}$ ")
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available



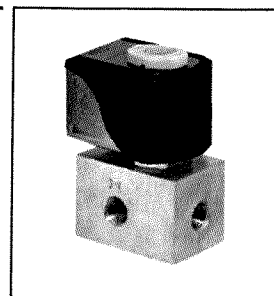
Series H5, S5 and 25 $\frac{1}{4}$ "-1" NPT connections, $\frac{11}{32}$ "-1" orifice

- Pressures from 0-300 psi depending on operation
- S5 series for steam service 125 psi saturated steam
- Normally open or normally closed construction
- Internally piloted floating diaphragm
- Brass with optional integral stainless steel seat
- PTFE Buna-N, or Ethylene propylene seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available

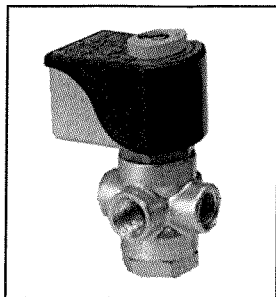


Series 28 $\frac{1}{4}$ " - $\frac{3}{4}$ " NPT connections, $\frac{5}{16}$ " - $\frac{3}{4}$ " orifice

- High pressure applications to 1500 psi
- Normally open or normally closed, internally piloted piston
- Brass bodies
- For air, inert gasses, water or light oil control
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available

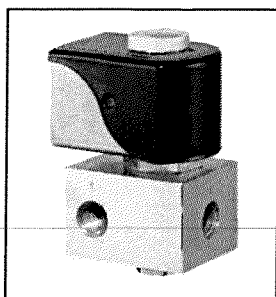


3-Way



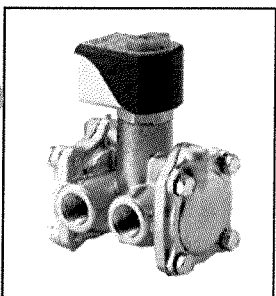
Series 30 1/8"- 1/4" NPT connections, 3/64"- 11/64" orifice

- Pressures from 0-250 psi depending on orifice size and operation
- UL Listed and CSA Certified
- Normally open, normally closed, or universal construction
- Direct acting
- Brass or 303 stainless steel
- Buna-N, Viton, Neoprene, Ethylene propylene or PTFE seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available



Series 35 and 38 1/4"- 3/8" NPT connections, 3/32"- 9/32" pressure orifice, 1/4"- 11/32" exhaust orifice

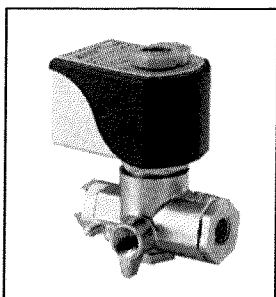
- Quick exhaust
- Pressures from 5-200 psi depending on construction
- Normally open, normally closed, or universal construction
- Internally pilot operated
- Brass bodies, 303 stainless steel available (series 35)
- Buna-N or Viton seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available



Series 34 3/8" - 3/4" NPT connections, 5/8" pressure & exhaust orifices

- Pressures from 10-250 psi depending on construction
- Normally open or normally closed construction
- Internally pilot operated diaphragms
- Brass bodies
- Buna-N, Viton, Neoprene or Ethylene propylene seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available

4-Way



Series 48 1/4" NPT connections, 1/16" pressure orifices, 3/32" exhaust orifices

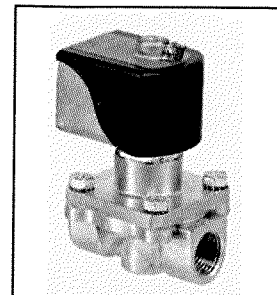
- Pressures from 10-150 psi
- Internally pilot operated
- UL Approved
- Brass bodies, Buna-N seals
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, and 9 enclosures are available

Special Purpose Solenoid Valves

Special Purpose Valves Designed for Specific Applications

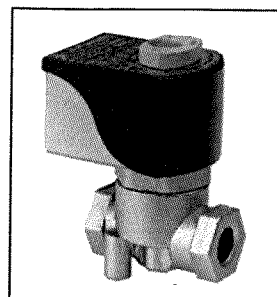
Cryogenic Valves 1/8"-1" NPT connections, 3/64"-1" orifice

- Pressures from 0-500 psi depending on construction
- 2-way, normally closed or normally open
- Brass or 303 stainless steel depending on construction
- For liquid CO₂ and other cryogenic fluids to -320°F. (-196°C)
- PTFE or urethane standard seals; Kel-F seal for bubbletight shutoff
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7 and 9 enclosures are available



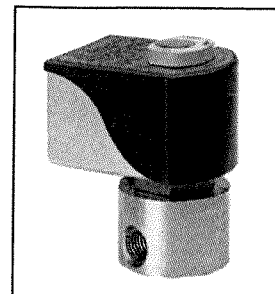
Vacuum Service Valves 1/4"-1" NPT connections, 9/32"-1" orifice

- Suitable for vacuum service to 10⁻⁶ torrs
- Brass with degassed Buna-N or Viton seals
- Normally open or normally closed construction
- AC or DC voltage
- NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7 and 9 enclosures are available



Long Life – Quiet Operating Valves 1/4"-1 1/2" NPT connections, 1/8"-1 1/4" orifice

- Pressures from 0-175 psi depending on construction
- Brass with Buna-N, Viton, Neoprene or Ethylene propylene seals
- Design life of 5 million cycles for diaphragm valves and 20 million cycles for direct acting valves
- Normally open or normally closed construction
- AC or DC voltage



Enclosure/Coil Terminal Combinations

Enclosures	Coil Termination						
	Screw(K)	Spade(S)	D.I.N.(H)	6" leads	18" leads	24" leads	36" leads
Strain Relief (C)					X	X	X
Explosion Proof (E)					X	X	X
General Purpose (G)					X	X	X
316 SS Explosion Proof (M)					X	X	X
Open Frame (O)	X	X			X	X	X
Encapsulated D.I.N. (P)			X				
Rainproof (R)					X	X	X
Splice Box (S)				X			
Conduit Hub (T)					X	X	X
316 SS Submersible (U)					X	X	X
Submersible Splice Box (W)	X	X		X			
Explosion Proof W/Ground Lead (Y)					X	X	X
316 SS Explosion Proof W/Ground Wire (Z)					X	X	X
Gold Ring II™ (4)					X		

Condensed listing of NEMA Enclosures

NEMA Type	Gold Ring™ Enclosure Code
1	C, G, P, S, T, GP
2	4
3	4
3R	R, 4
3S	4
4	P, 4
4X	4
6	W
7	E, M, Y, Z
9	E, M, Y, Z

* with Suitable Connector

PRESSURE VESSEL NUMBERING 2-WAY VALVES

For reference only. Consult catalog listings for available combinations.

1	2 Actuation	3 Functional Type	4 Flow Pattern	5 Family*	6 Body Material	7 Threading/ Process Connection	8 Pipe Size (NPT)	9 Orifice Code#	10 Seals/+ Elastomers	11 & 12 Mech. Options
7	1 Direct Acting 2 Direct Lift	2 Two-Way	1 Normally Closed 2 Normally Open 3 pressure in/out of body Multi/Dual purpose	1 2 4 5 6 8 9 F G H K	A Aluminum B Brass L Noryl R 316 SS S 430F SS T Teflon	A SAE E Male NPT F Flange G BSP-Parallel R BSP-Taper J Bib Fitting N NPT(Female T Nat'l Pipe thread) Barbed Fitting	1 1/8" 2 1/4" 3 3/8" 4 1/2" 5 3/4" 6 1" 7 1-1/4" 8 1-1/2" 9 2"	A B C D E F G H J K L M N P Q R S T U V 0 thru 9	C CR E EPDM F PCTFE K PTFE L Nylon M Metal N NBR R Ruby T PTFE U PTFE V FKM	00 No Option A2 Silver Shading Ring C0 4-Step Variable Closing J1 Exhaust Adaptor Nut M0 Manual Override MC Manual Override w/Var. Closing M5 Manual Override w/Exhaust Adaptor R0 Sleeve Exhaust Metering R1 Mainstream Metering R2 Adjustable Bypass S0 Steam Service Rated W0 Anti-Water Hammer (fixed) NO Cleaned for oxygen service

Note: These tables are provided to interpret product specifications. It should not be used to create a valve number without reference to the catalog listings or consultation with Skinner Valve personnel.

* The family designator is assigned to organize products by physical similarity.

Orifice codes relate to a range of Cv factors and sizes. They are listed in ascending order.

+ Reference Seal Material Designations, page 131.

PRESSURE VESSEL NUMBERING 3- AND 4-WAY VALVES

For reference only. Consult catalog listings for available combinations.

1	2 Actuation	3 Functional Type	4 Flow Pattern	5 Family*	6 Body Material	7 Threading/ Process Connection	8 Pipe Size (NPT)	9 Orifice Code#	10 Seals/+ Elastomers	11 & 12 Mech. Options
7	1 Direct Acting 2 Direct Lift 3 Pilot Operated 4 Int. Pilot Supply 5 Pilot Operated Ext. 6 Pilot Supply 7 Remote Pressure operated 8 Manual/Mech. Operated	3 Three-Way 4 Four-Way	1 3-Way Valves 2 Normally Closed 3 Normally Open pressure in/out of body 4 Multi/Dual Purpose 5 Diverting 6 Normally Open pressure in the sleeve, pressure out the body 4-Way Valves 1 2-position, single operator 2 3-position, dual operator center closed 3 3-position, dual operator center open 4 3-position, dual operator center pressurized 7 2-position, dual operator bi-stable	1 2 3 4 5 6 8 9 E F G H K L T	A Aluminum B Brass L Noryl M Zinc Die Cast R 316 SS S 430F SS T Teflon W 303 SS	A SAE E Male NPT F Flange G BSP-Parallel R BSP-Taper J Bib Fitting N NPT (Female National Pipe Thread) S Subbase Mounted T Barbed Fitting	1 1/8" 2 1/4" 3 3/8" 4 1/2" 5 3/4" 6 1" 7 1-1/4" 8 1-1/2" 9 2"	A B C D E F G H J K L M N P Q R S T U V 0 thru 9	C CR E EPDM F PCTFE K PTFE L Nylon M Metal N NBR R Ruby T PTFE U PTFE V FKM	00 No Option A2 Silver Shading Ring CA Cylinder "A" normally open to pressure inlet CB Cylinder "B" normally open to pressure inlet C0 4-Step Variable Closing J0 Pilot Exhaust Return Pipe J1 Exhaust Adaptor Nut M0 Manual Override MC Manual Override w/Var. Closing MJ Manual Override w/Exhaust Return Pipe MR Manual Override w/Main Stream Metering M5 Manual Override w/Exhaust Adaptor R0 Sleeve Exhaust Metering R1 Mainstream Metering R2 Adjustable Bypass S0 Steam Service Rated W0 Anti-Water Hammer (fixed) NO Cleaned for oxygen service

ENCLOSURE, COIL AND VOLTAGE NUMBERING 2-, 3- AND 4-WAY VALVES

13 & 14 Enclosure Type		15 & 16 Coil Construction and Type		17 & 18 Terminations and Option Codes		19 & 20 Voltage	
A0	7/8" Knockout	Integrated Coils		00	Standard DIN, Screw, Tab Coils (no leads)	B2	24/60
B0	1/2" Conduit	C1	1/2" NPT Conduit, 10 Watt Class F, NEMA 4X	11	Class F Coils with 18" leads	C1	12VDC
F0	Yoke	C2	1/2" NPT Conduit, 10 Watt Class H, NEMA 4X	22	Class H Coils with 18" leads	C2	24VDC
G0	Water Tight	C3	1/2" NPT Conduit, 22 Watt Class H, NEMA 4X	GL	C1,C2,C3 & H1,H2, H3 Coils with Ground lead	C4	48VDC
J0	Junction Box	D1	DIN, 10 Watt Class F	D1	All DIN Coils with Cable Gland Connector	C6	120VDC
M1	Magnetlatch	D2	DIN, 10 Watt Class H	D2	All DIN Coils with 1/2" Conduit Connector	P0*	24,50/60
	1/2" Conduit						
M2	Magnetlatch	D3	DIN, 22 Watt Class H	D4	D1,D2,D4 coils for timer assembly with fixed-off and adjustable on-time	P3	110/50-120/60
	Grommet						
N0	Nut and Washer	H1	1/2" NPT Conduit, 10 Watt Class F, NEMA 7, 9	DB	All DIN Coils with Terminal Box	Q3	220/50-240/60
		H2	1/2" NPT Conduit, 10 Watt Class H, NEMA 7, 9	TB	S1,S2,S3 Coils with Terminal Box	Q8	440/50-480/60
		H3	1/2" NPT Conduit, 22 Watt Class H, NEMA 7, 9	S1	Hazardous stainless steel yoke with 18" leads and ground lead	2K	208/60
		L1	18" leads, 10 Watt Class F			2W*	110-120,50/60
		L2	18" leads, 10 Watt Class H			3W*	220-240,50/60
		L3	18" leads, 22 Watt Class H				
		S1	Screw Terminal, 10 Watt Class F				
		S2	Screw Terminal, 10 Watt Class H				
		S3	Screw Terminal, 22 Watt Class H				
		T1	1/4" Tab Terminal, 10 Watt Class F				
		Conventional Coils					
		J1	18" leads, 10 Watt Class F				
		J2	18" leads, 10 Watt Class H				
		J3	18" leads, 22 Watt Class H				
		Specialty Coils					
		F6	Fluxtron 4-wire, 1 Watt molded				
		J6	Fluxtron 2-wire, 1 Watt molded				
		J0	Magnetlatch 2-wire DC only				
		G0	Magnetlatch 3-wire AC/DC (DC pulse)				

+ See Note on page 133.









* Fluxtron only

ELECTRICAL ENCLOSURE OPTIONS

A coil enclosure is needed to complete the magnetic flux path of conventional molded coils and specialty coils. The enclosure can also serve to protect the coil and provide a means to accommodate the electrical connection. This section describes the most common electrical enclosure options available.

7000 Series Enclosure Options

7000 Series integrated coils incorporate these features into a one-piece assembly which requires only a nut and washer (enclosure code N0) to fasten to the pressure vessel. The 7000 Series conventional enclosure selection is provided to complement the integrated coil offering providing flexibility in product type and installation.

Coil Picture	Enclosure Code	Description	Applicable Coils
	A0	Standard Connection, 7/8" exit to accommodate strain relief, adapter or fittings for lead wires, NEMA Type 2	J111, J222, J322, F611, J611
	B0	1/2" Conduit Connection for attachment of conduit, 1/2" NPT fittings or BX cable, NEMA Type 2	F611, J611
	F0	Yoke for use where open enclosure is suitable	F611, J611
	G0	Watertight, 1/2" conduit hub accommodating 1/2" NPT fittings or BX cable, NEMA Type 4X	F611, J611
	J0	Splice box, 7/8" exit allowing for internal splice, NEMA Type 2	J111, J222, J322, F611, J611
	M1	Magnetlatch, 1/2" conduit hub for attachment of conduit, 1/2" NPT fittings or BX cable, NEMA Type 2	G011, J011
	M2	Magnetlatch, leaded with grommet connection, NEMA Type 2	G011, J011
	N0	Nut and Washer	All Integrated Coils