

## High Pressure, Subplate Mounted Directional Control Valves

**HP05H SERIES**  
**30 gpm (114 L/min) Nominal**  
**40 gpm (151 L/min) Maximum**  
**8500 psi (586 bar)**

HP05H valves provide high pressure capability greater than D05H valves.

The valve's low pressure drop is enhanced with the use of the Dynex standard subplate, which takes advantage of the valve's special double tank port design.

For a description of spools, operators and application information, see [Directional Control Valve Operating Recommendations](#).

### SPECIFICATIONS

#### Special Valve Mounting

Although similar to standard NFPA D05 (CETOP 5) valves in size, HP05H valves require a special high pressure mounting pattern. This pattern incorporates auxiliary "X" and "Y" ports for external pilot and drain. Refer to page 2.

#### Rated Flow

30 U.S. gpm (114 L/min) nominal;  
40 U.S. gpm (151 L/min) maximum for most spool types.

#### Rated Pressure

8500 psi (586 bar).

#### Tank Port Pressure (Maximum)

Standard External Drain:  
3000 psi (210 bar).

Internal Drain ("ID" Option):  
Solenoid models, 1500 psi (105 bar);

Solenoid models with "HT" Option,  
AC models, 2300 psi (160 bar),  
DC models, 3000 psi (210 bar);

Air piloted models,  
3000 psi (210 bar).



*HP05H Valve With Optional Plug-In-Terminal Solenoids*

#### 6600 Series Solenoid Piloted Models

These models use a HP03 valve as a pilot.

Pilot Pressure:  
Minimum, 500 psi (34 bar);  
Maximum, 3000 psi (210 bar).

Solenoids:  
These models use a HP03 valve as a pilot. Models are available with standard AC or DC solenoids. Optional Plug-In-Terminal Solenoids fit DIN Connector, Standard 43650 Form A ("Hirschmann" type).

See [Directional Control Valve Operating Recommendations](#) for "Electrical Connections" and "Explosion Proof Option".

#### 6800 Series Hydraulic Piloted Models

Pilot Pressure:  
Minimum, 500 psi (34 bar)\*  
\*based on zero tank pressure. As back pressure increases above zero, the minimum pilot pressure must be increased equally.

Maximum, 3000 psi (210 bar).

Required Volume (to shift spool full stroke):  
0.014 in<sup>3</sup> (0,23cm<sup>3</sup>).

#### 6900 Series Air Piloted Models

These models use a HP03 valve as a pilot.

Pilot Pressure:  
Minimum, 500 psi (34 bar);  
Maximum, 3000 psi (210 bar).

Air Pilot Pressure:  
Minimum, 75 psi (5 bar);  
Maximum, 200 psi (14 bar).

Required Volume (to shift spool full stroke):  
0.22 in<sup>3</sup> (3,6 cm<sup>3</sup>).

#### Response Time (Full Stroke)

Spring Centered Models:  
Solenoid Energized, 40-70 ms.  
Spring Returned, 40-45 ms.

Spring Offset Models:  
Solenoid Energized, 50-55 ms.  
Spring Returned, 85 ms.

## VALVE EFFICIENCY

Efficiencies for all models are shown by the typical performance curves. The table identifies the appropriate pressure drop curve for each spool and flow path.

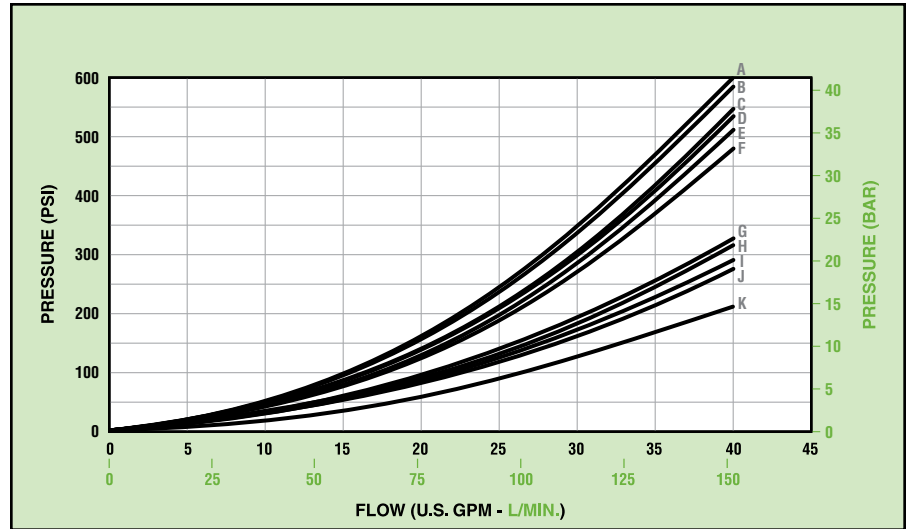
For example, in the table under Spool Type 5, curve C is called out to determine the pressure drop for P→A. Looking at the curves, C indicates a drop of about 300 psi at 30 U.S. gpm (21 bar at 114 L/min).

To determine total "Loop" drop, the individual pressure drops for P→A and B→T (or P→B and A→T) must be added.

Example: Spool Type 5 (@ 30 US gpm)

P→A Curve C = 300 psi  
 B→T Curve H = +180 psi  
 Total "Loop" drop = 480 psi

## Pressure Drop ( $\Delta P$ )



## INSTALLATION AND DIMENSIONS

### Valve Mounting

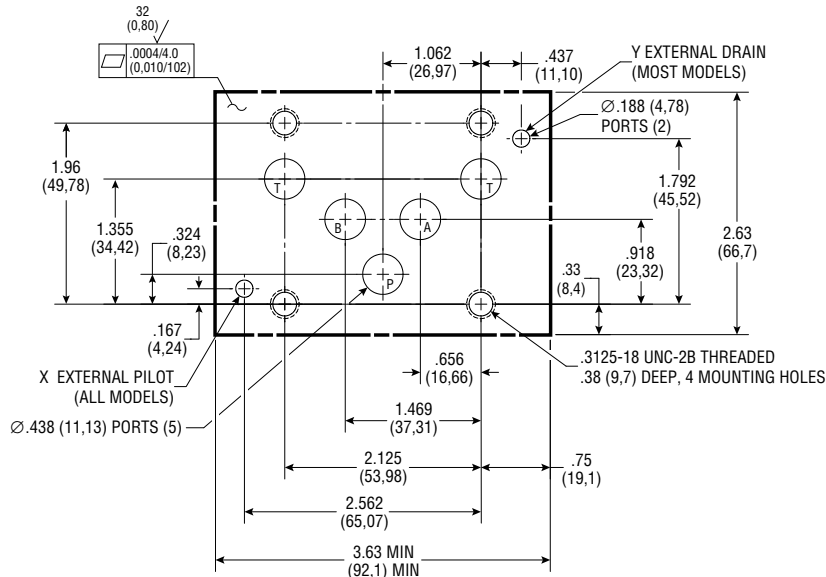
HP05H valves have a second "T" port into a common tank passageway, for lower pressure drop. HP05H valves require a special high pressure mounting pattern with auxiliary "X" and "Y" ports for external pilot and drain.

Port O-rings are included with valves.

Mounting bolts must be ordered separately: .3125-18 UNC-2B Threaded x 1.00 inch (25,4 mm), Grade 8 or better, four required. Recommended mounting torque is 25 lb·ft (34 N·m).

### Flow Curve Reference

Flow Path	Spool Type					
	5	6	8	9	25	26
P→A	C	F	D	F	D	D
P→B	-	-	-	-	A	B
A→T	-	-	-	-	G	I
B→T	H	K	K	H	I	J
P→T	-	E	-	-	-	-



Recommended Minimum Mounting Surface, special HP05H pattern with auxiliary "X" and "Y" ports and two tank ports "T" into common tank passageway

## SUBPLATE AND BOLT KITS

Subplates are available for mounting HP05H pattern valves, with a choice of SAE or British Standard Pipe Parallel (BSPP) ports, or ports which fit Autoclave or Butech fittings.

Mounting bolts are supplied with kit. When ordering together, valves are not mounted on subplates.

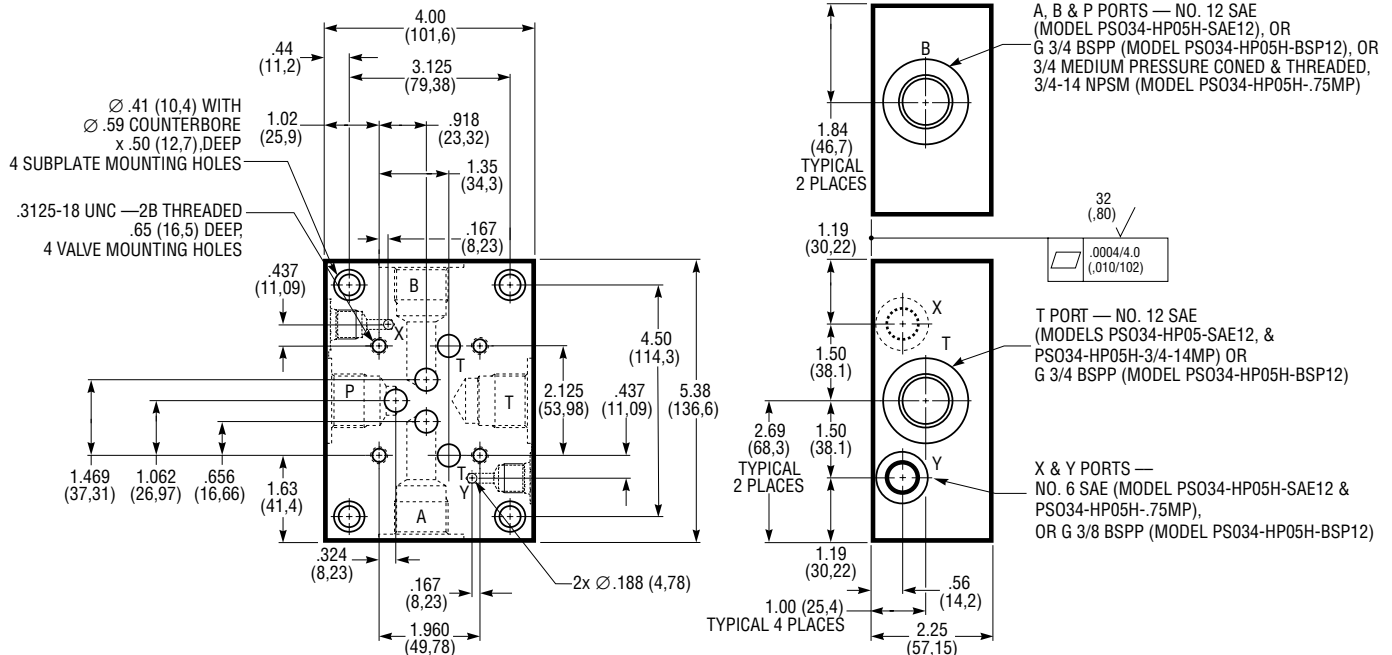
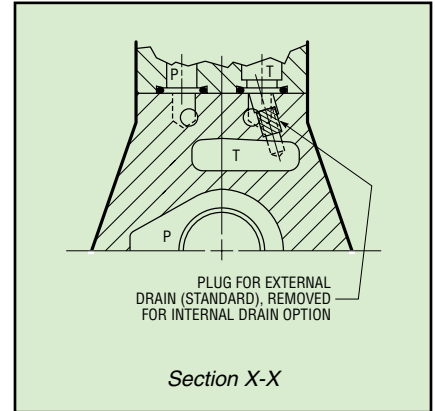
## PART NUMBERS

Part Number	Description
<i>Subplates:</i>	
PSO34-HP05H-SAE12	Side Ports, No. 12 SAE
PSO34-HP05H-BSP12	Side Ports, G 3/4 (BSPP) <sup>①</sup>
PSO34-HP05H-.75MP	Side Ports, Medium Pressure Coned and Threaded <sup>②</sup> .75 NPSM
<i>Mounting Bolts:</i>	
P34-BK-16	Four .3125-18 UNC Threaded x 1.00 inch (25,4 mm)

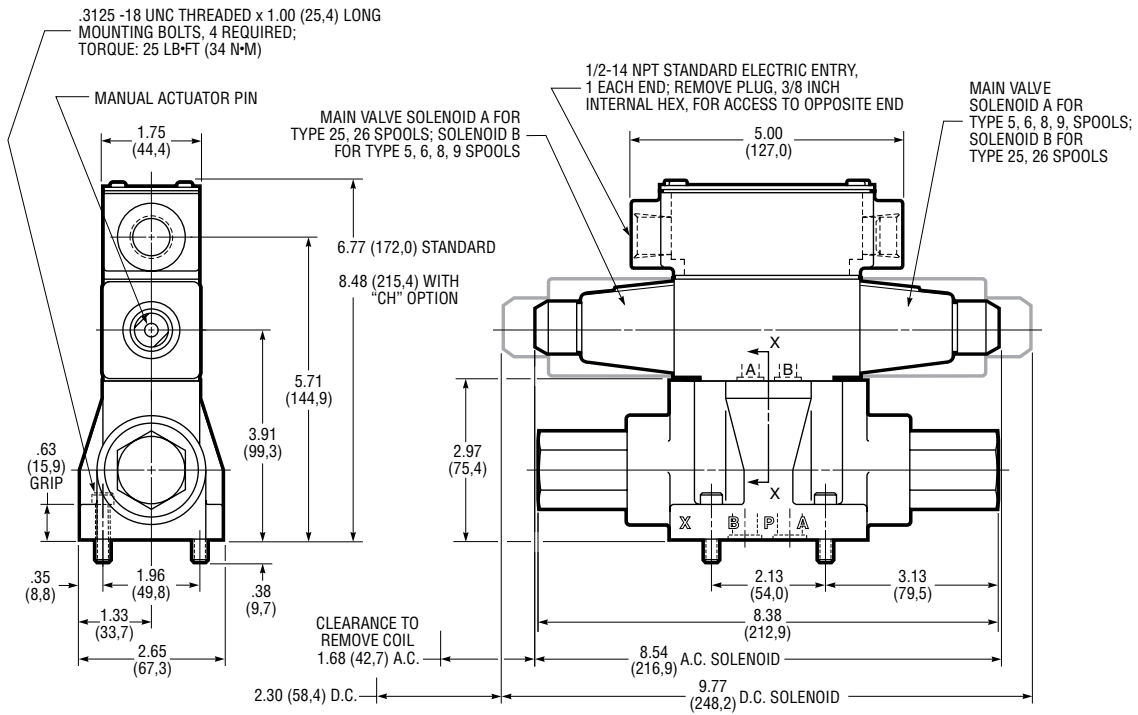
- ① Port fits British Standard Pipe Parallel fitting.
- ② High pressure port fits Autoclave Medium Pressure, Butech M/P or equivalent fitting.

## Pilot and Drain Options

The "Section X-X" drawing shows the location of the plug for external drain. Omitted for internal drain (mandatory for hydraulic piloted actuators).



Subplate PSO34-HP05H-SAE-12 or PSO34-HP05H-BSP-12 or PSO34-HP05H-.75MP



6600 Series, Double Solenoid Piloted Models

### Solenoid Model Dimensions

Dimensions are shown for both AC and DC solenoids. DC configuration is shown printed in gray.

The overall length of a single solenoid model (not shown) is 7.00 inches (177,8 mm) AC and 7.62 inches (193,5 mm) DC.

Weight (Mass):

Single Solenoid,  
AC, 9.3 lb (4,2 kg);  
DC, 9.8 lb (4,4 kg).

Double Solenoid,  
AC, 10.0 lb (4,5 kg);  
DC, 11.3 lb (5,1 kg).

### Explosion Proof Solenoids

"EP" solenoids with special enclosures are approved by UL and CSA.

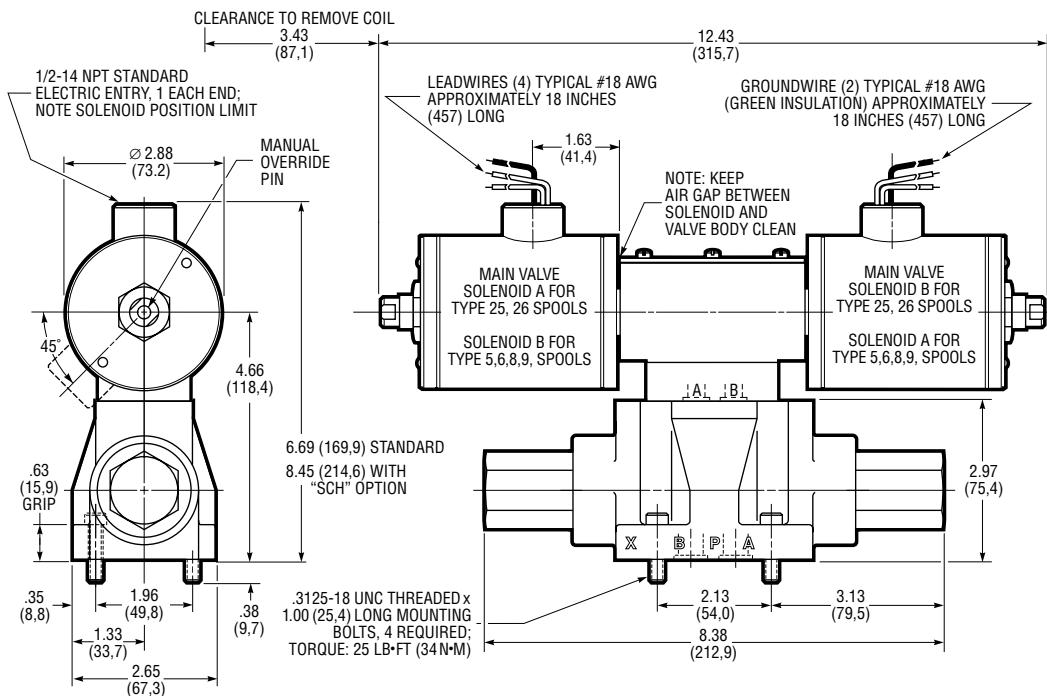
UL Class 1 Group C, D

UL Class 2 Groups E, F, G for use in hazardous locations. Overall length of single solenoid models (not shown) is 8.90 inches (226,1 mm).

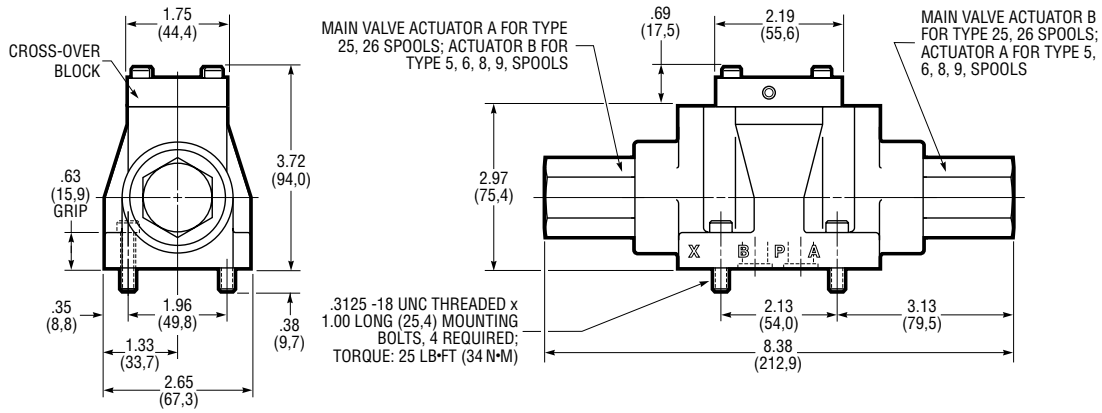
Weight (Mass):

Single Solenoid, 14.3 lb (6,5 kg);

Double Solenoid, 20.0 lb (9,1 kg).



6600 Series, "EP" Double Solenoid Models



6800 Series, Double Direct Hydraulic Piloted Models

### Direct Hydraulic Pilot Operated

As shown, these models use a cross-over block to direct pilot pressure from auxiliary ports "X" and "Y".

Weight (Mass):  
6.0 lb (2,7 kg).

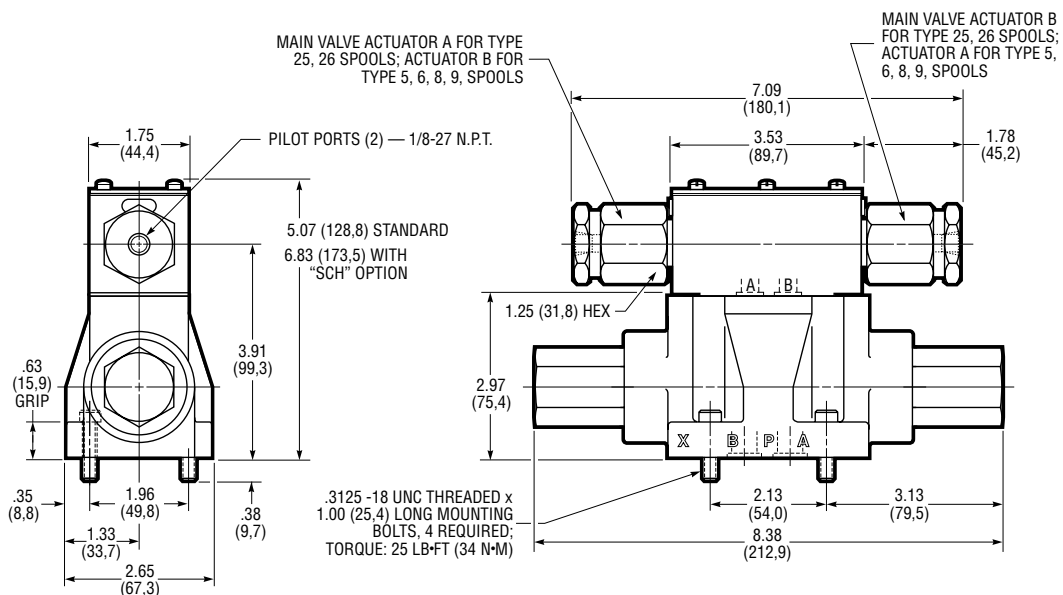
### "X" and "Y" Port Function

Model	Port "X"	Port "Y"
681*	Actuator A	External Drain
682*	External Drain	Actuator B
685*	Actuator A for: Type 5, 6, 8, 9	Actuator B for: Type 5, 6, 8, 9
	Actuator B for: Type 25, 26	Actuator A for: Type 25, 26

### Air Piloted Models

Overall length of single actuator configuration (not shown) is 6.24 inches (158,5 mm).

Weight (Mass):  
Single Actuator, 8.4 lb (3,8 kg);  
Double Actuator, 9.1 lb (4,1 kg).



6900 Series, Double Air Piloted Models

# TYPICAL MODEL CODE

6 6 1 5 - HP05H - 24DF - R - C - ID - XP - 2 0

Valve Type	
6	Subplate Mounted Directional Control

Actuator	
6	Solenoid Operated
8	Hydraulic Piloted
9	Air Piloted

Internal Operator	
1	Two Position: Spring Offset (P→B), Actuator Offset (P→A) <sup>①</sup>
2	Two Position: Spring Offset (P→A), Actuator Offset (P→B) <sup>①</sup>
3	Two Position: Actuator Offset, Detented
4	Two Position: Spring Centered, Actuator Offset <sup>②</sup>
5	Three Position: Spring Centered, Actuator Offset

① Only available with Type 25 and 26 spools.  
② For most spools, normal flow is actuator offset P→A.

Spools	
5, (25) <sup>①</sup>	
6, (26) <sup>①</sup>	
8	
9	

① Code 1 or 2 operators only use Type 25 or 26 spools. These spools provide the same function, but are not interchangeable with Type 5 or 6 spools.

Valve Size	
HP05H	High Pressure Special Mounting Pattern

Reverse Flow Option	
R	Reverse Flow (Code 4 Operator Only)

Design Number

Modification Number

External Pilot	
XP	External Pilot (Required for All Models)

Solenoid Options	
BH3A	3-pin Connector for single solenoid models on port "A" end <sup>①②③</sup>
BH3B	3-pin Connector for single solenoid models on port "B" end <sup>①②③</sup>
BH5A	5-pin Connector for single or double solenoid models on port "A" end <sup>①②③</sup>
BH5B	5-pin Connector for single or double solenoid models on port "B" end <sup>①②③</sup>
C	cUL and UL Recognized Coils (Etched with Symbol) <sup>④</sup>
CG	Cable Grip for .38 to .44 inch (9,5 to 11,1 mm) O.D. machine tool cable <sup>①②</sup>
HT	High Pressure Tank Port: 2300 psi (160 bar) maximum AC models; 3000 psi (210 bar) maximum DC models
M	Hand Actuated Manual Override <sup>①</sup>
SL	Solenoid Lights (available 115DF AC only) <sup>①②</sup>
T	Terminal Strip <sup>①②</sup>

① Option not available with "EP" solenoid models.  
② Option not available with "Plug-In Terminal" solenoid models.  
③ NFPA standard T3.539-1980; ANSI standard B93.55M-1981.  
④ Available with 115DF & 230DF solenoids only.

General Options <sup>①</sup>	
ID	Internal Drain (Solenoid + Air Piloted only)

① Not available with hydraulic piloted models.

Electrical Options			
<i>Standard AC Solenoids (Dual Frequency):</i>		<i>Standard DC Solenoids:</i>	
24DF	24V/60Hz, 24V/50Hz	12DC	12VDC
115DF	115V/60HZ, 110V/50Hz	24DC	24VDC
230DF	230V/60Hz, 220V/50Hz		
460DF	460V/60Hz, 440V/50Hz		
<i>Plug-In Terminal AC Solenoids:<sup>①</sup></i>		<i>Plug-In Terminal DC Solenoids:<sup>①</sup></i>	
115HA	115V/60Hz, 110V/50Hz	12HD	12VDC
230HA	230V/60Hz, 220V/50Hz	24HD	24VDC
<i>Explosion-Proof AC Solenoids:</i>		<i>Explosion-Proof DC Solenoids:</i>	
115EP	115V/60Hz	12EP	12VDC
110EP	110V/50Hz	24EP	24VDC
220EP	220V/50Hz		

① Fits DIN Connector Standard 43650 Form A ("Hirschmann" type).

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