

Features

- Available in 4 different coil terminations
- H Class coil construction
- Designed solely for installation in intrinsically safe or NIFW areas, with properly approved and sized limiting barriers
- Compatible with supervisory current applications
- Mountable in any position

Enclosure Ratings

Catalog Prefix	Description	Enclosure Type Rating	Enclosure IP Rating
IS	1/2" NPT Conduit	3, 3S	IP55
		4, 4X	IP66
		6, 6P	IP67
JIS	Aluminum Junction Box	3, 3S	IP45
		4, 4X	
ISVT	5-Pin (Male M12)	NA	IP20
ISSC	DIN (Form A)	NA	IP20

Valve Construction

Valve Parts in Contact with Fluids			
Body	Aluminum	Brass	Stainless Steel
Seals and Discs	PUR, NBR, FKM as listed		
Sleeve	430 Stainless Steel		
Core and Plugnut	430F Stainless Steel		
Core Springs	302 Stainless Steel		
Pilot Seat Insert (Series 8316 & 8344 only)	CA		
Rider Rings	PTFE		
Spring Retainer	CA		

Electrical

Nominal voltage before the barrier – 24VDC +/- 10%. Maximum Allowable "Off" State Leakage Current or Supervisory Current – 1.6mA

I_{loop} - Loop current in the circuit, which may be calculated as follows:

$$I_{loop} = \frac{V_{supply}}{(R_{coil} + R_{loop} + R_{barrier})}$$

Where: R_{coil} - The resistance of the solenoid coil at $T_{ambient}$ in degrees C

$$R_{coil} = 320 \text{ ohms} \times \frac{(T_{ambient} + 234)}{254}$$

R_{loop} - Resistance of the lead wires

$R_{barrier}$ - Internal resistance of the barrier

V_{supply} - Supply voltage

This current must always be greater than or equal to 0.030 amps for proper operation of the solenoid valve.

Ordering Information

Example:

With Junction Box – JIS8314B300

With Conduit – IS8314B300

With Quick Disconnect – ISVT8314B300

With DIN Connector – ISSC8314B300



Nominal Ambient Temp. Ranges

Series	Body Material	Temperature Range
8551/8553	Aluminum	5°F to 149°F (-15°C to 65°C)
	Brass & Stainless Steel	-40°F to 149°F (-40°C to 65°C)
8262	Brass & Stainless Steel	
8314		
8317		
8344*		
8316		
8223	-40°F to 149°F (-40°C to 65°C)	
8316 (Suffix V)		32°F to 149°F (0°C to 65°C)

*Not available in stainless steel

Approvals

Approved for IS - Class I, Div. 1 & 2;

NIFW - Class I, Div. 2 (US only)

FM (US & Canada) approved under 3037789 & 3037789C

CSA certified under 1099243.

ATEX Approved for:

II 1 G Ex ia IIC T6 under FM10ATEX0015X

IECEx Approved for:

Ex ia IIC T6 under IECExFMG10.0008X

Meets applicable CE directives.

Refer to Engineering Section for details.

Important: These solenoids are intended for use on clean, dry air or inert gas filtered to 40 micrometers or better. To prevent freezing, the dew point of the media should be at least 18°F (-8°C) below the minimum temperature to which any portion of the clean air or gas system could be exposed. Instrument air in compliance with ANSI/ISA Standard 7.0.01-1996 exceeds the above requirements and is, therefore, an acceptable medium for these valves.

Entity Parameters

V_{max} = 32 VDC C_i = 0 nF

I_{max} = 500 mA L_i = 0 mH

P_i = 1.5 W

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor		Operating Pressure Differential (psi)		Max. Fluid and Ambient Temp. °F	Brass Body		Stainless Steel Body	
				Air-Inert Gas			Catalog Number	Const. Ref.	Catalog Number	Const. Ref.
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.					
3/2 VALVES, UNIVERSAL OPERATION (Normally Closed or Normally Open) with NBR Disc – PFD_{AVG} = 4.77 x 10⁻⁴ ⑦										
1/4	1/20	.06	.06	0	130/105 ⑥	149	JIS8314B300	4	JIS8314B301	5
3/2 VALVES, NORMALLY CLOSED (Closed when de-energized) with NBR Disc or FPM, as Listed – PFD_{AVG} = 9.30 x 10⁻⁴										
1/4	5/16	1.5	1.5	⑤	130	149	JIS8316B301 ③	6	JIS8316B381V ④	6
3/8	5/16	1.8	1.8	⑤	130	149	JIS8316B302 ③	6	JIS8316B382V ④	6
3/8	5/8	4	4	⑤	130	149	JIS8316B303 ③	6	-	-
1/2	5/8	4	4	⑤	130	149	JIS8316B304 ③	6	JIS8316B384V ④	6
3/4	11/16	5.5	5.5	10	130	149	JIS8316B374 ③	7	-	-
1	1	13	13	10	130	149	JIS8316B334 ③	8	-	-
3/2 VALVES, UNIVERSAL (Normally Closed or Normally Open) "Quick Exhaust" with NBR Diaphragm and NBR Disc										
1/4	②	.06	.73	5	130	149	JIS8317B307 ①	9	JIS8317B308 ①	10
4/2 VALVES, Brass Body with NBR Disc										
Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor		Operating Pressure Differential (psi)		Max. Fluid and Ambient Temp. °F	Single Solenoid			
				Air-Inert Gas			Catalog Number	Const. Ref.		
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.					
1/4	1/4	.80	1	10	130	149	JIS8344B370 ①③	11		
3/8	3/8	1.4	2.2	10	130	149	JIS8344B372 ①③	13		
1/2	3/8	1.4	2.2	10	130	149	JIS8344B374 ①③	13		
3/4	3/4	5.2	5.6	10	130	149	JIS8344B376 ①③	15		
1	3/4	5.2	5.6	10	130	149	JIS8344B378 ①③	15		

① There are two exhaust flows in the exhaust mode (pilot and main). The pilot exhaust must be connected to the main exhaust when the air or inert gas cannot be exhausted to atmosphere.
 ② For "Quick Exhaust" valves, pressure port is 1/20", exhaust port is 1/4".
 ③ **IMPORTANT:** A Minimum Operating Pressure Differential must be maintained between the pressure and exhaust ports. Supply and exhaust piping must be full area, unrestricted. ASCO flow controls and other similar components must be installed in the cylinder lines only.
 ④ Diaphragm and main disc FKM only (pilot is low-temperature NBR).
 ⑤ Zero minimum when valve selection gasket is in external position and proper auxiliary air pressure is applied. Minimum 15 psi Operating Pressure Differential when selection gasket is in the internal position.
 ⑥ Normally closed = 130 psi. Normally open = 105 psi.
 ⑦ PFD_{AVG} is only valid when used as Normally Closed

SPECIAL SERVICE PILOT

Specifications (English units)

Body Material	Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Single Solenoid – $PFD_{AVG} = 3.3 \times 10^{-3}$				Dual Solenoid					
				Operating Pressure Differential (psi)		Max. Fluid Temp. °F	Catalog Number	Const. Ref.	Operating Pressure Differential (psi)		Max. Fluid Temp. °F	Catalog Number	Const. Ref.
				Air-Inert Gas					Air-Inert Gas				
				Min.	Max.	Min.	Max.						
3/2, 5/2, 5/3 VALVES, with NBR and PUR Seals													
Aluminum 3/2	1/4	1/4	.86	30	130	149	JIS8551B305	17	30	130	149	JIS8551B306	17
Aluminum 5/2							JIS8551B317	18				JIS8551B318	18
Aluminum 5/3 Center Closed							-	18				JIS8551B367	18
Aluminum 5/3 Center Open							-	18				JIS8551B368	18
Brass 3/2							JISF8551B307 ②	17				JIS8551B308 ②	17
Brass 5/2							JIS8551B319 ②	18				JIS8551B320 ②	18
316L Stainless Steel 3/2							JIS8551B313 ③	17				JIS8551B314 ③	17
316L Stainless Steel 5/2							JIS8551B321 ③	18				JIS8551B322 ③	18
Aluminum 3/2	1/2	1/2	3.7	30	130	149	JIS8553B305	17	30	130	149	JIS8553B306	17
Aluminum 5/2							JIS8553B317	18				JIS8553B318	18
316L Stainless Steel 3/2							JIS8553B313 ③	17				JIS8553B314 ③	17
316L Stainless Steel 5/2							JIS8553B321 ③	18				JIS8553B322 ③	18

② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

SPECIAL SERVICE PILOT

Body Material	Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Single Solenoid – $PFD_{AVG} = 3.3 \times 10^{-3}$				Dual Solenoid					
				Operating Pressure Differential (psi)		Max. Fluid Temp. °F	Catalog Number	Const. Ref.	Operating Pressure Differential (psi)		Max. Fluid Temp. °F	Catalog Number	Const. Ref.
				Air-Inert Gas					Air-Inert Gas				
				Min.	Max.	Min.	Max.						
3/2, 5/2, 5/3 VALVES, with NBR and PUR Seals, NAMUR Mount													
Aluminum 3/2, 5/2	1/4	1/4	.86	30	130	149	JIS8551B301 ①	19	30	130	149	JIS8551B302 ①	19
Aluminum 5/3 Center Closed							-	-				JIS8551B365	20
Aluminum 5/3 Center Open							-	-				JIS8551B366	20
Brass 3/2, 5/2							JIS8551B303 ②①	19				JIS8551B304 ②①	19
316L Stainless Steel 3/2, 5/2							JIS8551B309 ③	20				JIS8551B310 ③	20
Aluminum 3/2, 5/2	1/2	1/2	3.7	30	130	149	JIS8553B301	20	30	130	149	JIS8553B302	20
316L Stainless Steel 3/2, 5/2							JIS8553B309 ③	20				JIS8553B310 ③	20

① 1/8" NPT exhaust for 1/4" aluminum and brass. ② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m ³ /h)		Operating Pressure Differential (bar)		Max. Fluid and Ambient Temp. °C	Brass Body		Stainless Steel Body	
				Air-Inert Gas			Catalog Number	Const. Ref.	Catalog Number	Const. Ref.
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.					
3/2 VALVES, UNIVERSAL OPERATION (Normally Closed or Normally Open) with NBR Disc – PFD_{AVG} = 4.77 x 10⁻⁴ ⑦										
1/4	1.3	.05	.05	0	8.8/7 ⑥	65	JIS8314B300	4	JIS8314B301	5
3/2 VALVES, NORMALLY CLOSED (Closed when de-energized) with NBR Disc or FPM, as Listed – PFD_{AVG} = 9.30 x 10⁻⁴										
1/4	8	1.3	1.3	⑤	8.8	65	JIS8316B301 ③	6	JIS8316B381V ④	6
3/8	8	1.6	1.6	⑤	8.8	65	JIS8316B302 ③	6	JIS8316B382V ④	6
3/8	16	3.5	3.5	⑤	8.8	65	JIS8316B303 ③	6	-	-
1/2	16	3.5	3.5	⑤	8.8	65	JIS8316B304 ③	6	JIS8316B384V ④	6
3/4	17	4.7	4.7	0.7	8.8	65	JIS8316B374 ③	7	-	-
1	25	11.2	11.2	0.7	8.8	65	JIS8316B334 ③	8	-	-
3/2 VALVES, UNIVERSAL (Normally Closed or Normally Open) "Quick Exhaust" with NBR Diaphragm and NBR Disc										
1/4	②	.07	.63	0.3	8.8	65	JIS8317B307 ①	9	JIS8317B308 ①	10
4/2 VALVES, Brass Body with NBR Disc										
Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m ³ /h)		Operating Pressure Differential (bar)		Max. Fluid and Ambient Temp. °C	Single Solenoid			
				Air-Inert Gas			Catalog Number	Const. Ref.		
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.					
1/4	6	.69	.86	0.7	8.8	65	JIS8344B370 ①③	11		
3/8	10	1.2	1.9	0.7	8.8	65	JIS8344B372 ①③	13		
1/2	10	1.2	1.9	0.7	8.8	65	JIS8344B374 ①③	13		
3/4	19	4.5	4.8	0.7	8.8	65	JIS8344B376 ①③	15		
1	19	4.5	4.8	0.7	8.8	65	JIS8344B378 ①③	15		

① There are two exhaust flows in the exhaust mode (pilot and main). The pilot exhaust must be connected to the main exhaust when the air or inert gas cannot be exhausted to atmosphere.
 ② For "Quick Exhaust" valves, pressure port is 1.3 mm, exhaust port is 6.4 mm.
 ③ **IMPORTANT:** A Minimum Operating Pressure Differential must be maintained between the pressure and exhaust ports. Supply and exhaust piping must be full area, unrestricted. ASCO flow controls and other similar components must be installed in the cylinder lines only.
 ④ Diaphragm and main disc FKM only (pilot is low-temperature NBR).
 ⑤ Zero minimum when valve selection gasket is in external position and proper auxiliary air pressure is applied. Minimum 1.0 bar Operating Pressure Differential when selection gasket is in the internal position.
 ⑥ Normally closed = 8.8 bar / Normally open = 7 bar.
 ⑦ PFD_{AVG} is only valid when used as Normally Closed

SPECIAL SERVICE PILOT

Specifications (Metric units)

Body Material	Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Single Solenoid – PFD _{AVG} = 3.3 x 10 ⁻³					Dual Solenoid				
				Operating Pressure Differential (bar)		Max. Fluid Temp. °C	Catalog Number	Const. Ref.	Operating Pressure Differential (bar)		Max. Fluid Temp. °C	Catalog Number	Const. Ref.
				Air-Inert Gas					Air-Inert Gas				
				Min.	Max.				Min.	Max.			
3/2, 5/2, 5/3 VALVES, with NBR and PUR Seals													
Aluminum 3/2	1/4	6	.74	2	8.8	65	JIS8551B305	17	2	8.8	65	JIS8551B306	17
Aluminum 5/2							JIS8551B317	18				JIS8551B318	18
Aluminum 5/3 Center Closed							-	18				JIS8551B367	18
Aluminum 5/3 Center Open							-	18				JIS8551B368	18
Brass 3/2							JISF8551B307 ②	17				JIS8551B308 ②	17
Brass 5/2							JIS8551B319 ②	18				JIS8551B320 ②	18
316L Stainless Steel 3/2							JIS8551B313 ③	17				JIS8551B314 ③	17
316L Stainless Steel 5/2							JIS8551B321 ③	18				JIS8551B322 ③	18
Aluminum 3/2	1/2	13	3.2	2	8.8	65	JIS8553B305	17	2	8.8	65	JIS8553B306	17
Aluminum 5/2							JIS8553B317	18				JIS8553B318	18
316L Stainless Steel 3/2							JIS8553B313 ③	17				JIS8553B314 ③	17
316L Stainless Steel 5/2							JIS8553B321 ③	18				JIS8553B322 ③	18

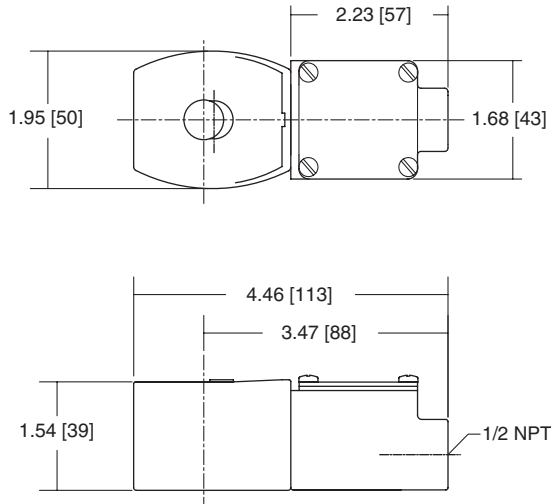
② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

Body Material	Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Single Solenoid – PFD _{AVG} = 3.3 x 10 ⁻³					Dual Solenoid				
				Operating Pressure Differential (bar)		Max. Fluid Temp. °C	Catalog Number	Const. Ref.	Operating Pressure Differential (bar)		Max. Fluid Temp. °C	Catalog Number	Const. Ref.
				Air-Inert Gas					Air-Inert Gas				
				Min.	Max.				Min.	Max.			
3/2, 5/2, 5/3 VALVES, with NBR and PUR Seals, NAMUR Mount													
Aluminum 3/2, 5/2	1/4 ①	6	.74	2	8.8	65	JIS8551B301 ①	19	2	8.8	65	JIS8551B302 ①	19
Aluminum 5/3 Center Closed							-	-				JIS8551B365	20
Aluminum 5/3 Center Open							-	-				JIS8551B366	20
Brass 3/2, 5/2							JIS8551B303 ②①	19				JIS8551B304 ②①	19
316L Stainless Steel 3/2, 5/2							JIS8551B309 ③	20				JIS8551B310 ③	20
Aluminum 3/2, 5/2	1/2	13	3.2	2	8.8	65	JIS8553B301	20	2	8.8	65	JIS8553B302	20
316L Stainless Steel 3/2, 5/2							JIS8553B309 ③	20				JIS8553B310 ③	20

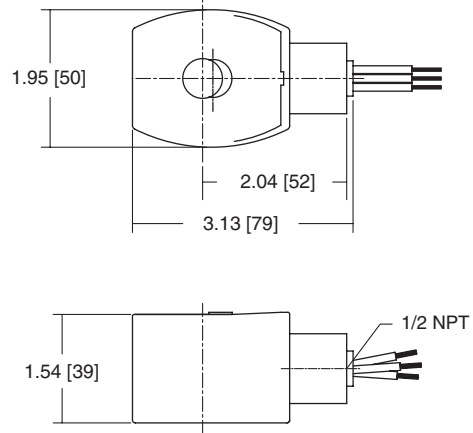
① 1/8" NPT exhaust for 1/4" aluminum and brass. ② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

Dimensions: inches (mm)

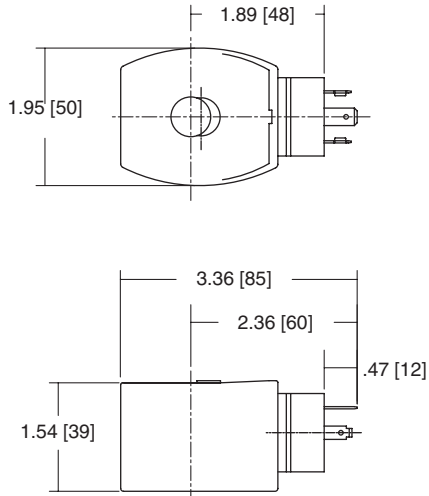
JUNCTION BOX



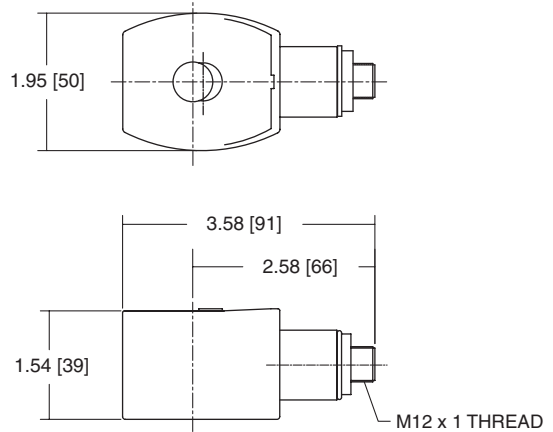
CONDUIT



DIN



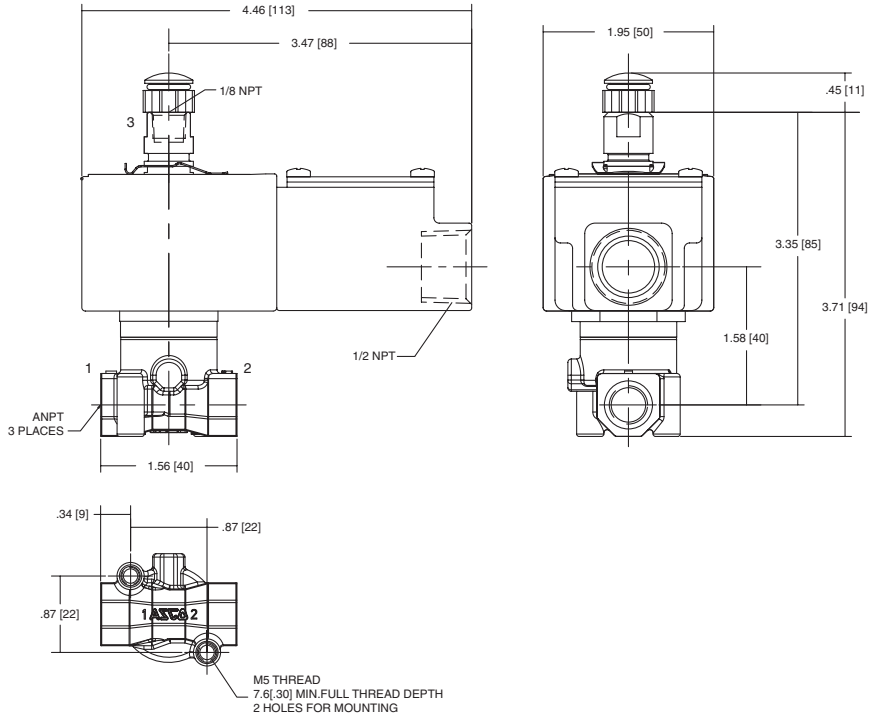
MULTIPIN



SPECIAL SERVICE
PILOT

Dimensions: inches (mm)

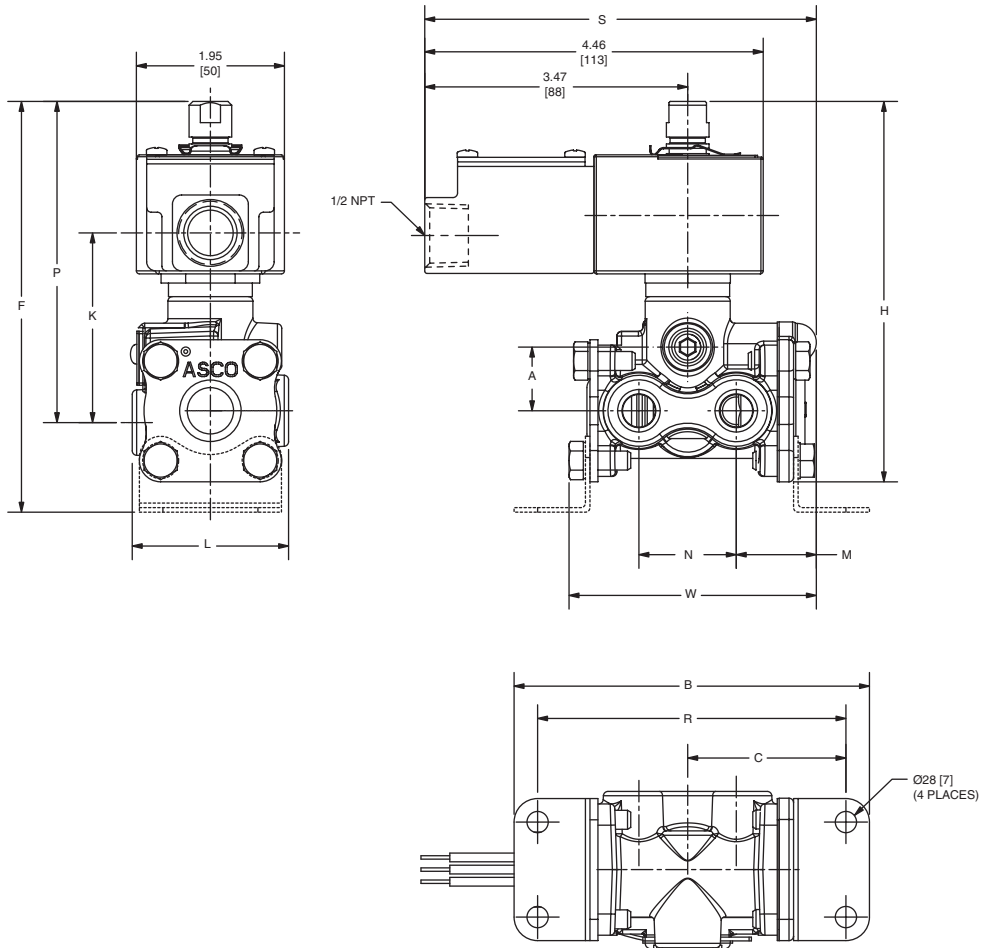
Const. Ref. 4, 5



Dimensions: inches (mm)

Catalog Number		A	B	C	F	H	K	L	M	N	P	R	S	W
JIS8316B301, 302	ins.	.84	1.68	2.08	5.41	5.01	2.47	2.60	1.06	1.28	4.23	4.06	5.16	3.26
	mm	21	119	53	137	127	63	52	27	33	107	103	131	83
JIS8316B303, 304	ins.	1.19	4.88	2.18	5.90	5.40	2.72	2.72	1.24	1.32	4.48	4.26	5.36	3.59
	mm	30	124	56	150	167	69	69	31	34	114	108	136	91
JIS8316B381, 382	ins.	1.00	4.71	2.11	5.57	5.17	2.47	2.06	1.08	1.28	4.24	4.09	5.19	3.28
	mm	25	120	54	141	131	63	52	27	33	108	104	132	83
JIS8316B384	ins.	1.11	4.88	2.18	5.98	5.48	2.58	2.72	1.24	1.37	4.34	4.26	5.37	3.59
	mm	28	124	55	152	139	66	69	31	35	110	108	136	91

Const. Ref. 6

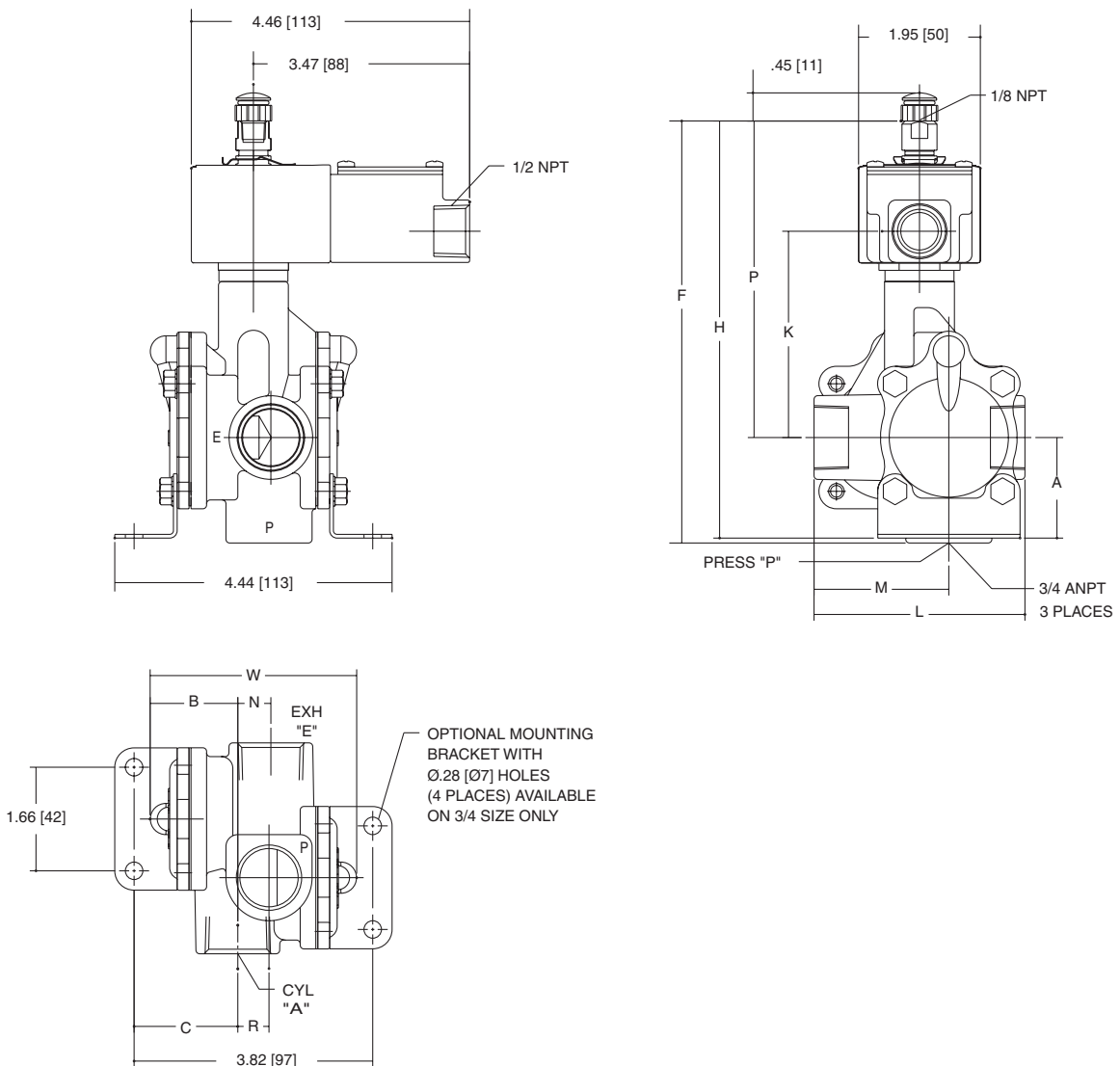


SPECIAL SERVICE
PILOT

Dimensions: inches (mm)

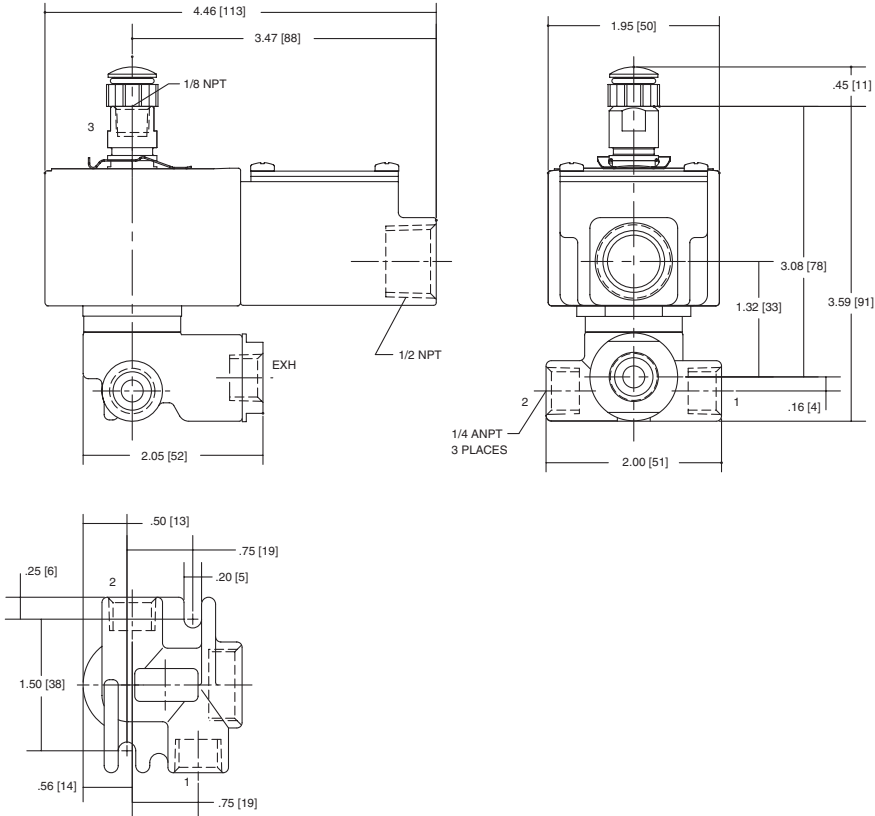
Const. Ref.		A	B	C	H	K	L	M	N	P	R	W
7	ins.	1.61	1.41	1.66	6.78	3.31	3.38	2.16	.53	5.09	.50	3.31
	mm	41	36	42	172	84	86	55	13	129	13	84
8	ins.	-	1.78	-	7.40	3.56	4.44	2.70	.87	5.34	1.74	5.31
	mm	-	45	-	188	90	113	69	22	136	44	135

Const. Ref. 7, 8



Dimensions: inches (mm)

Const. Ref. 9. 10

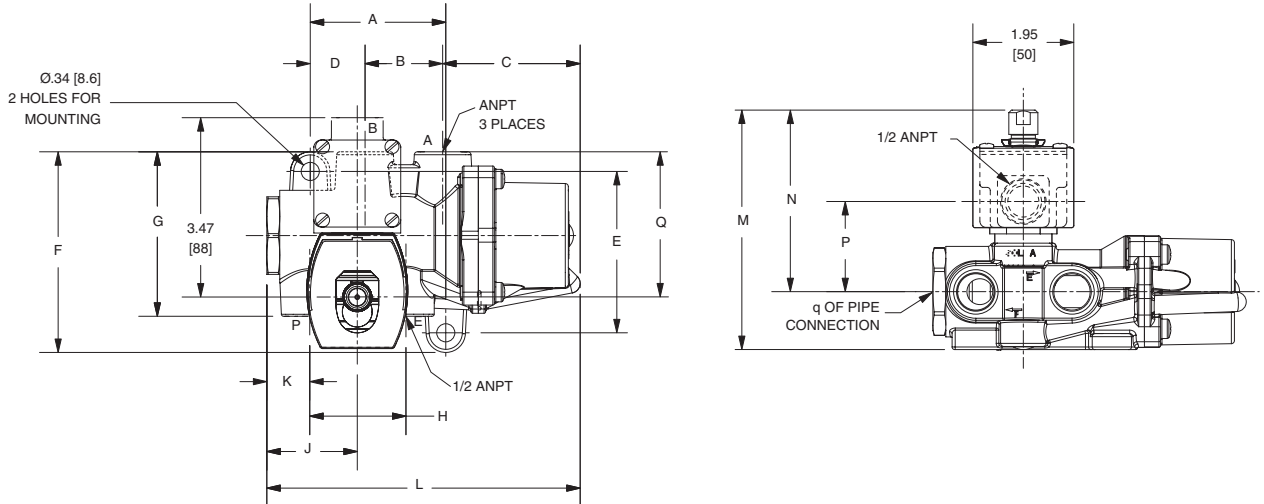


SPECIAL SERVICE
PILOT

Dimensions: inches (mm)

Catalog Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
JIS8344B370	ins.	1.88	1.03	2.15	0.72	2.41	3.21	3.13	1.41	1.36	0.72	4.71	4.65	3.70	1.93	2.22
	mm	48	26	55	18	61	82	80	36	35	18	120	118	94	49	57
JIS8344B372, 374	ins.	2.62	1.50	2.66	1.06	3.12	3.88	3.18	1.86	1.75	0.83	6.06	4.63	3.51	1.75	2.81
	mm	67	38	68	27	79	99	81	47	45	21	154	118	89	44	71
JIS8344B376, 378	ins.	3.89	2.10	3.53	1.48	3.79	4.69	4.56	2.12	2.49	1.52	8.22	5.41	3.86	2.10	3.38
	mm	99	53	90	38	96	119	116	54	63	39	209	137	98	53	86

Const. Ref. 11, 13, 15



SPECIAL SERVICE
PILOT

Dimensions: inches (mm)

Series	8551	8553
NPT	1/4	1/2
L1 ①	5.12 (132)	6.00 (153)
L2 ①	6.73 (171)	7.80 (198)
H2	4.38 (111)	4.77 (121)
H1	1.10 (28)	1.58 (40)
W	1.77 (45)	2.85 (72)

① Manual override option MH adds .250" (6.4),
MS option adds .468" (11.9) to each solenoid endcap.

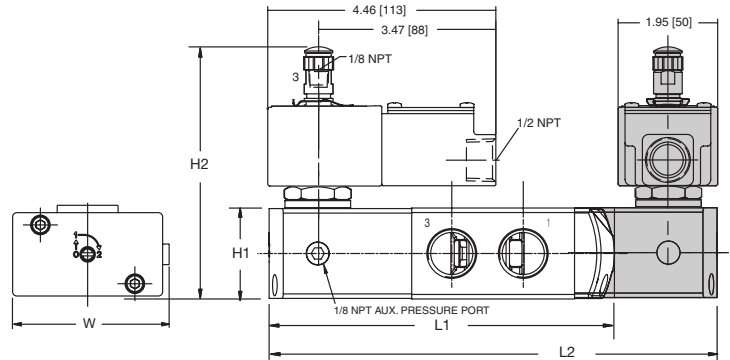
Optional Manual Operators		
Add Suffix		Description
MO		Push and turn to lock with flat head screwdriver slot
MI		Momentary push in with flat head screwdriver slot
MH		Momentary push in by hand
MS		Push and turn to lock by hand

Series	8551	8553
NPT	1/4	1/2
L1 ①	5.63 (144)	7.06 (180)
L2 ①	7.20 (183)	8.86 (225)
H2	4.38 (111)	4.77 (121)
H1	1.10 (28)	1.58 (40)
W	1.77 (45)	2.85 (72)

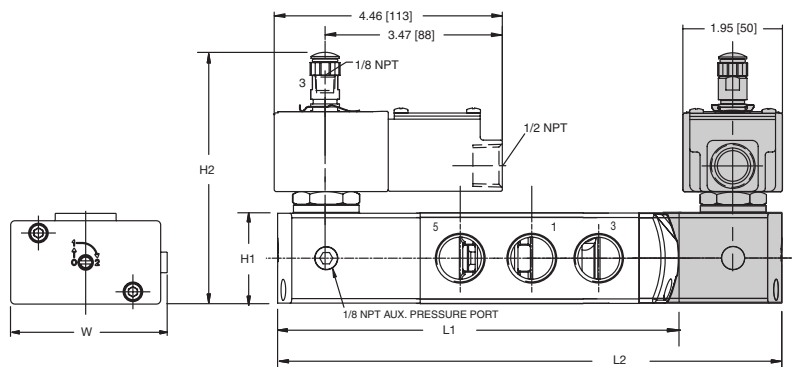
① Manual override option MH adds .250" (6.4),
MS option adds .468" (11.9) to each solenoid endcap.

Optional Manual Operators		
Add Suffix		Description
MO		Push and turn to lock with flat head screwdriver slot
MI		Momentary push in with flat head screwdriver slot
MH		Momentary push in by hand
MS		Push and turn to lock by hand

Const. Ref. 17



Const. Ref. 18



Dimensions: inches (mm)

Series	8551 (Aluminum, Brass)
NPT	1/4
L1 ①	4.96 (126)
L2 ①	6.49 (165)
H2	4.38 (111)
H1	1.57 (40)
W	1.77 (45)

① Manual override option MH adds .250" (6.4),
MS option adds .468" (11.9) to each solenoid endcap.

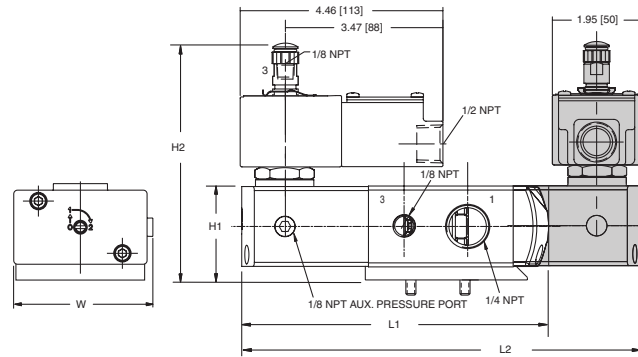
Optional Manual Operators		
Add Suffix		Description
MO		Push and turn to lock with flat head screwdriver slot
MI		Momentary push in with flat head screwdriver slot
MH		Momentary push in by hand
MS		Push and turn to lock by hand

Series	8551 (316L SS)	8551 (5/3)	8553
NPT	1/4	1/4	1/2
L1 ①	5.20 (132)	-	7.08 (180)
L2 ①	6.73 (171)	7.44 (189)	8.85 (225)
H2	4.38 (111)	4.38 (111)	4.77 (121)
H1	1.57 (40)	1.57 (40)	2.08 (53)
W	1.77 (45)	1.77 (45)	2.87 (73)

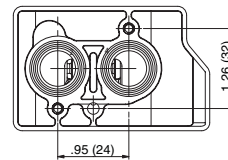
① Manual override option MH adds .250" (6.4),
MS option adds .468" (11.9) to each solenoid endcap.

Optional Manual Operators		
Add Suffix		Description
MO		Push and turn to lock with flat head screwdriver slot
MI		Momentary push in with flat head screwdriver slot
MH		Momentary push in by hand
MS		Push and turn to lock by hand

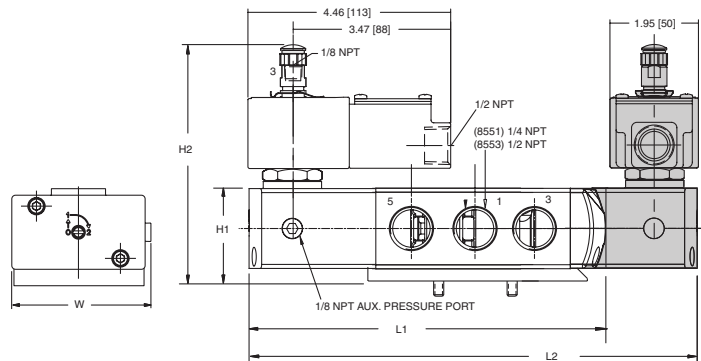
Const. Ref. 19



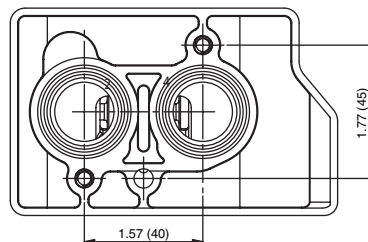
8551 NAMUR Footprint



Const. Ref. 20



8553 NAMUR Footprint



8551 NAMUR Footprint

