

ASCO™ Intrinsically Safe & Non-Incendive Field Wiring Valves

Aluminum, Brass, or Stainless Steel Bodies | 1/4" - 1" NPT

2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

Features

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

Valve Construction

Valve Parts in Contact with Fluids			
Body	Aluminum	Brass	Stainless Steel
Seals and Discs	PUR, NBR, FKM, CR, as listed		
Sleeve	430 Stainless Steel		
Core and Plugnut	430F Stainless Steel		
Core Springs	302 Stainless Steel		
Pilot Seat Cartridge (Series 316 & 344 only)	CA		
Rider Rings	PTFE		
Spring Retainer	CA		

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
JPIS	Aluminum Junction Box	4, 4X	IP66
		6, 6P	IP67
VT	5-Pin (Male M12)	NA	IP20
ISSC	DIN (Form A)	NA	IP20

Electrical

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

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

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

Ordering Information

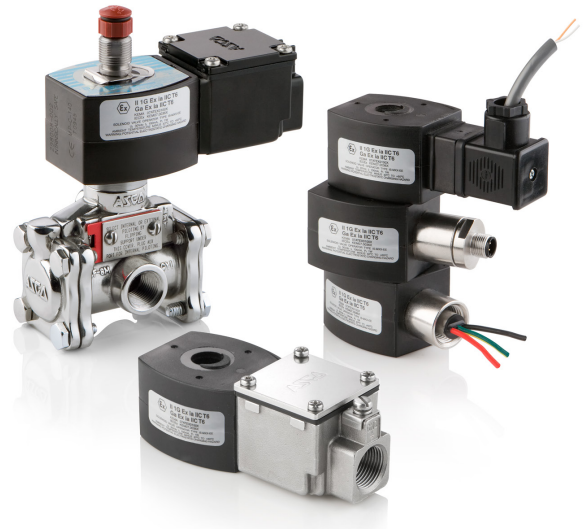
Example:

With Junction Box – JPIS8314B300

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	
8262	Brass & Stainless Steel	-40°F to 149°F (-40°C to 65°C)
8314		
8317		
8344*	Brass & Stainless Steel	-4°F to 149°F (-20°C to 65°C)
8316		
8223		
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.

Entity Parameters

$V_{max} = 32 \text{ VDC}$ $C_i = 0 \text{ nF}$ $P_i = 1.5 \text{ W}$

$I_{max} = 500 \text{ mA}$ $L_i = 0 \text{ mH}$

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.

Nominal Ambient Temp. Ranges

Series	Body Material	Normal Temperature Range	High Ambient Temp Version	
8553	Stainless Steel	-40°F to 140°F (-40°C to 60°C)	Not Available	
8551	Brass			
8553	Aluminum	-13°F to 140°F (-25°C to 60°C)		
8551		5°F to 140°F (-15°C to 60°C)		
8551	Stainless Steel	-40°F to 149°F (-40°C to 65°C)	Low Limit is the same as Normal Temperature Ratings, but High Limit is 176°F (80°C)	
8314	Brass / Stainless Steel			
8317				
8316*				-20°F to 149°F (-29°C to 65°C)
8316 (Suffix V)				32°F to 149°F (0°C to 65°C)
8344	Brass only	-4°F to 149°F (-20°C to 65°C)		
8316H334				

Note: 8553 not available in brass. *Does not include 8316H334; Includes 8316J374

Specifications English units (Metric)

Pipe Size in	Orifice Size in (mm)	Flow Factor Cv (Kv)		Operating Pressure Differential psi (bar)		Max. Fluid and Ambient Temp. °F (°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.					
2/2 VALVES, NORMALLY CLOSED, with NBR Disc										
1/4	1/20 (1.3)	.06 (.05)		0	130 (8.8)	149 (65)	JPIS8262B320	1	JPIS8262B386	1
3/8	5/16 (8)	1.5 (1.3)		10 (0.7)	130 (8.8)	149 (65)	JPIS8223B323	2	-	-
1/2	3/8 (10)	3.2 (2.7)		25 (1.7)	130 (8.8)	149 (65)	JPIS8223B303	3	JPIS8223B310	3
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 (1.3)	.06 (.05)	.06 (.05)	0	130 (8.8)/105 (7) ⑥	149 (65)	JPIS8314B300	4	JPIS8314B301	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 (8)	1.5 (1.3)	1.5 (1.3)	⑤	130 (8.8)	149 (65)	JPIS8316B301 ③	6	JPIS8316B381V ④	6
3/8	5/16 (8)	1.8 (1.6)	1.8 (1.6)	⑤	130 (8.8)	149 (65)	JPIS8316B302 ③	6	JPIS8316B382V ④	6
3/8	5/8 (16)	4 (3.5)	4 (3.5)	⑤	130 (8.8)	149 (65)	JPIS8316B303 ③	6	-	-
1/2	5/8 (16)	4 (3.5)	4 (3.5)	⑤	130 (8.8)	149 (65)	JPIS8316B304 ③	6	JPIS8316B384V ④	6
3/4	11/16 (17)	5.5 (4.7)	5.5 (4.7)	10 (0.7)	130 (8.8)	149 (65)	JPIS8316B374 ③	7	-	-
1	1 (25)	13 (11.2)	13 (11.2)	10 (0.7)	130 (8.8)	149 (65)	JPIS8316B334 ③	8	-	-
3/2 VALVES, UNIVERSAL (Normally Closed or Normally Open) "Quick Exhaust" with CR Diaphragm and NBR Disc										
1/4	②	.06 (.05)	.73 (.63)	5 (0.3)	130 (8.8)	149 (65)	JPIS8317B307 ①	9	JPIS8317B308 ①	10
4/2 VALVES, Brass Body with NBR Disc										
Pipe Size in	Orifice Size in (mm)	Cv Flow Factor		Operating Pressure Differential (psi)		Max. Fluid and Ambient Temp. °F (°C)	Single Solenoid		Dual Solenoid	
				Air-Inert Gas			Catalog Number	Const. Ref.	Catalog Number	Const. Ref.
		Pressure to Cylinder	Cylinder to Exhaust	Min.	Max.					
1/4	1/4 (6)	.80 (.69)	1 (.86)	10 (0.7)	130 (8.8)	149 (65)	JIS8344B370 ①③	11	JIS8344B344 ③	12
3/8	3/8 (10)	1.4 (1.2)	2.2 (1.9)	10 (0.7)	130 (8.8)	149 (65)	JIS8344B372 ①③	13	JIS8344B380 ③	14
1/2	3/8 (10)	1.4 (1.2)	2.2 (1.9)	10 (0.7)	130 (8.8)	149 (65)	JIS8344B374 ①③	13	JIS8344B382 ③	14
3/4	3/8 (19)	5.2 (4.5)	5.6 (4.8)	10 (0.7)	130 (8.8)	149 (65)	JIS8344B376 ①③	15	JIS8344B354 ③	16
1	3/8 (19)	5.2 (4.5)	5.6 (4.8)	10 (0.7)	130 (8.8)	149 (65)	JIS8344B378 ①③	15	JIS8344B356 ③	16

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" (1.3 mm), exhaust port is 1/4" (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 15 psi (1 bar) Operating Pressure Differential when selection gasket is in the internal position.

⑥ Normally closed = 130 psi (8.8 bar). Normally open = 105 psi (7 bar).

⑦ PFD_{AVG} is only valid when used as Normally Closed

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2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

Specifications English units (Metric)

Body Material	Pipe Size in	Orifice Size in (mm)	Flow Factor Cv (Kv)	Single Solenoid – $PFD_{AVG} = 3.3 \times 10^{-3}$					Dual Solenoid				
				Operating Pressure Differential psi (bar)		Max. Fluid Temp. °F (°C)	Catalog Number	Const. Ref.	Operating Pressure Differential psi (bar)		Max. Fluid Temp. °F (°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	1/4 (6)	.86 (.74)	30 (2)	130 (8.8)	149 (65)	JPIS8551B305	17	30 (2)	130 (8.8)	149 (65)	JPIS8551B306	17
Aluminum 5/2							JPIS8551B317	18				JPIS8551B318	18
Aluminum 5/3 Center Closed							-	18				JPIS8551B367	18
Aluminum 5/3 Center Open							-	18				JPIS8551B368	18
Brass 3/2							JPISF8551B307 ②	17				JPIS8551B308 ②	17
Brass 5/2							JPIS8551B319 ②	18				JPIS8551B320 ②	18
316L Stainless Steel 3/2							JPIS8551B313 ③	17				JPIS8551B314 ③	17
316L Stainless Steel 5/2							JPIS8551B321 ③	18				JPIS8551B322 ③	18
Aluminum 3/2							1/2	1/2 (13)				3.7 (3.2)	30 (2)
Aluminum 5/2	JPIS8553B317	18	JPIS8553B318	18									
316L Stainless Steel 3/2	JPIS8553B313 ③	17	JPIS8553B314 ③	17									
316L Stainless Steel 5/2	JPIS8553B321 ③	18	JPIS8553B322 ③	18									

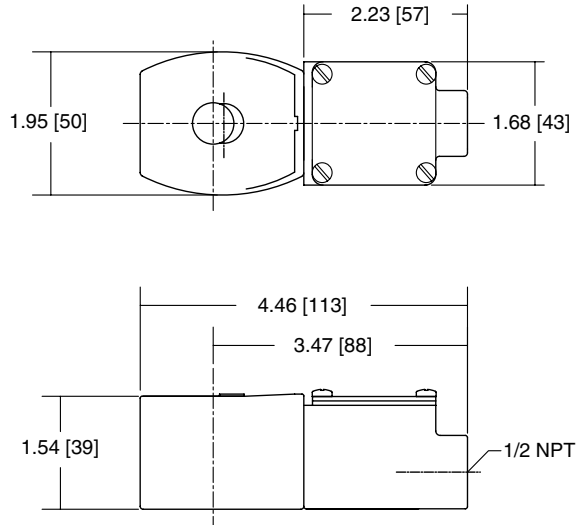
② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

Body Material	Pipe Size in	Orifice Size in (mm)	Flow Factor Cv (Kv)	Single Solenoid – $PFD_{AVG} = 3.3 \times 10^{-3}$					Dual Solenoid				
				Operating Pressure Differential psi (bar)		Max. Fluid Temp. °F (°C)	Catalog Number	Const. Ref.	Operating Pressure Differential psi (bar)		Max. Fluid Temp. °F (°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	1/4 (6)	.86 (.74)	30 (2)	130 (8.8)	149 (65)	JPIS8551B301 ①	19	30 (2)	130 (8.8)	149 (65)	JPIS8551B302 ①	19
Aluminum 5/3 Center Closed							-	-				JPIS8551B365	20
Aluminum 5/3 Center Open							-	-				JPIS8551B366	20
Brass 3/2, 5/2							JPIS8551B303 ①②	19				JPIS8551B304 ①②	19
316L Stainless Steel 3/2, 5/2							JPIS8551B309 ③	20				JPIS8551B310 ③	20
Aluminum 3/2, 5/2	1/2	1/2 (13)	3.7 (3.2)	30 (2)	130 (8.8)	149 (65)	JPIS8553B301	20	30 (2)	130 (8.8)	149 (65)	JPIS8553B302	20
316L Stainless Steel 3/2, 5/2							JPIS8553B309 ③	20				JPIS8553B310 ③	20

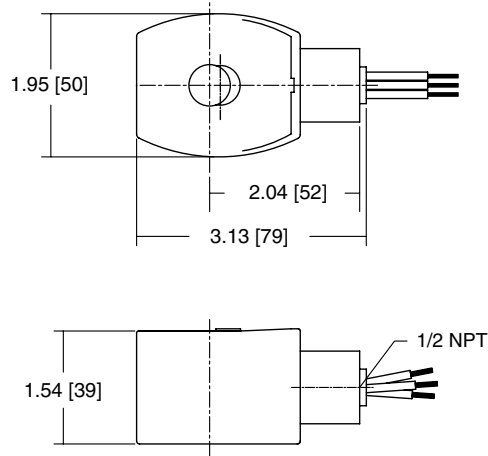
① 1/8" NPT exhaust for 1/4" aluminum and brass. ② Brass construction supplied standard with EF solenoid. ③ Stainless steel construction supplied standard with EV solenoid.

Dimensions: inches (mm)

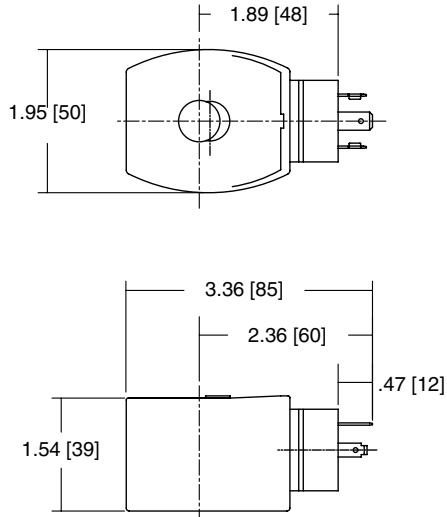
JUNCTION BOX



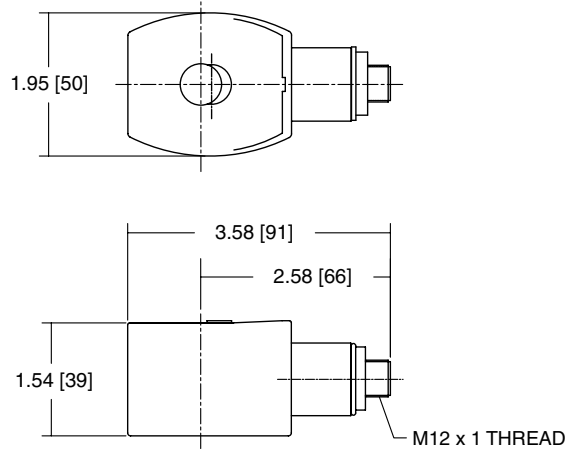
CONDUIT



DIN



MULTIPIN



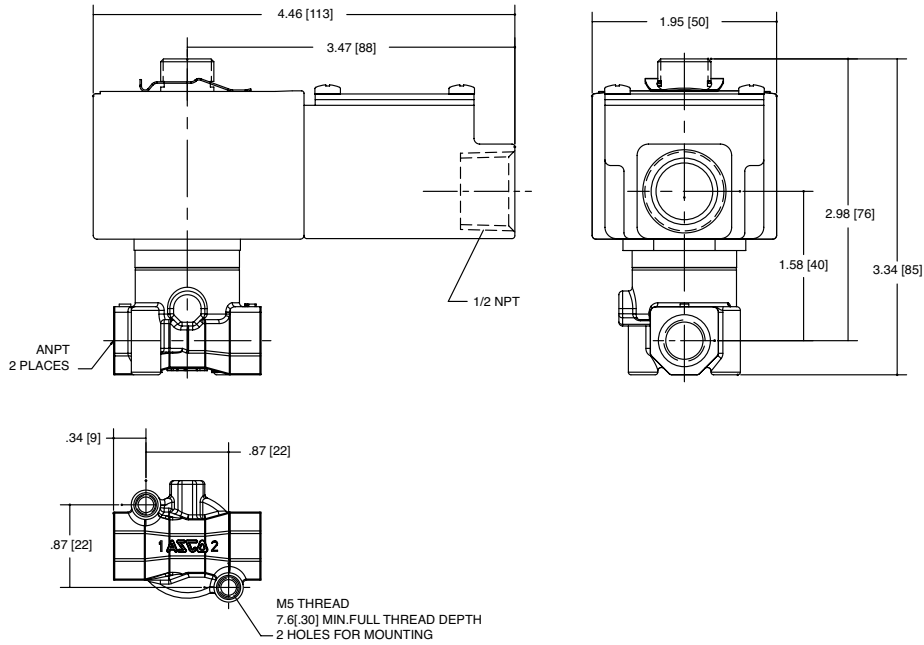
ASCO™ Intrinsicly Safe & Non-Incendive Field Wiring Valves

Aluminum, Brass, or Stainless Steel Bodies | 1/4" - 1" NPT

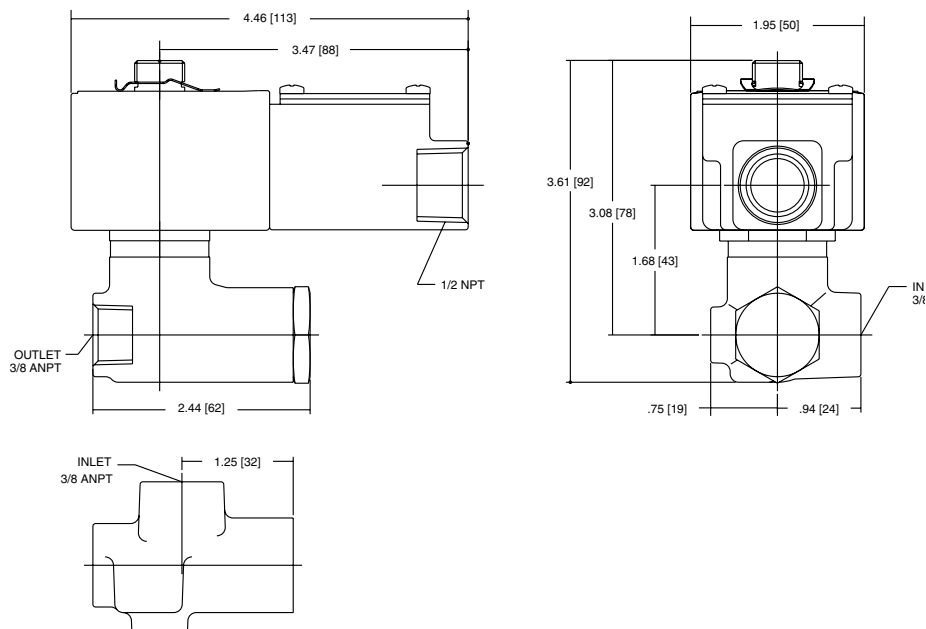
2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

Dimensions: inches (mm)

Const. Ref. 1

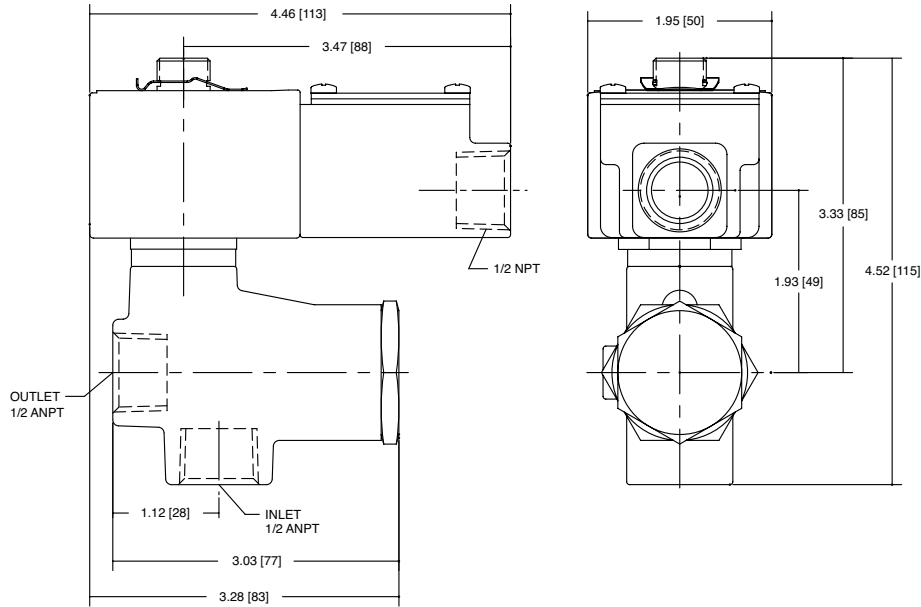


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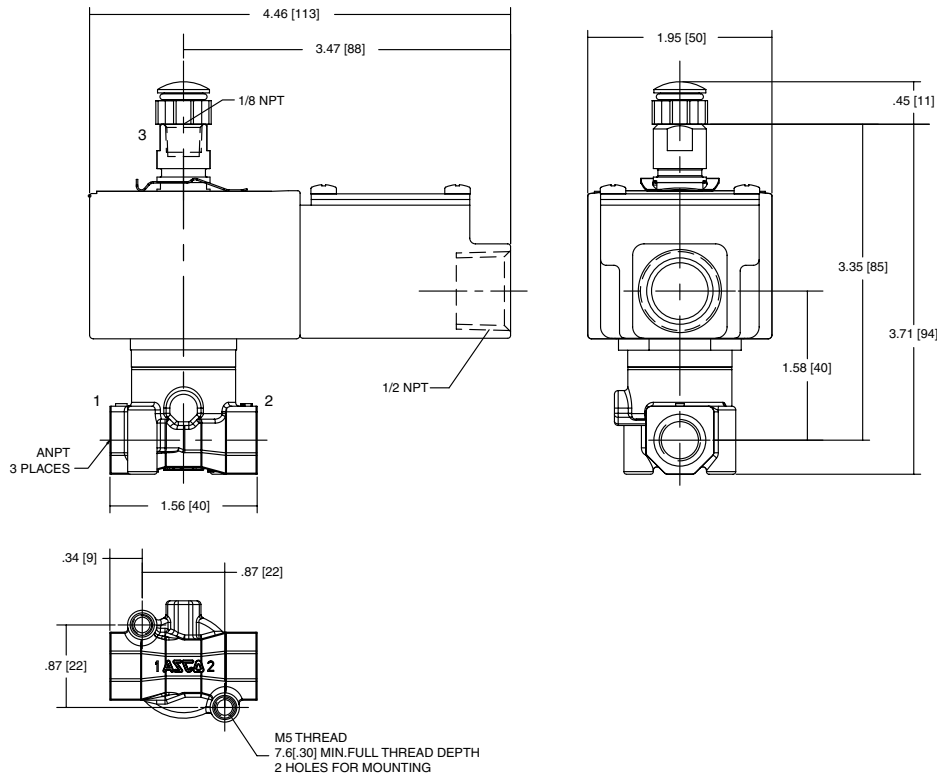


Dimensions: inches (mm)

Const. Ref. 3



Const. Ref. 4, 5



ASCO™ Intrinsically Safe & Non-Incendive Field Wiring Valves

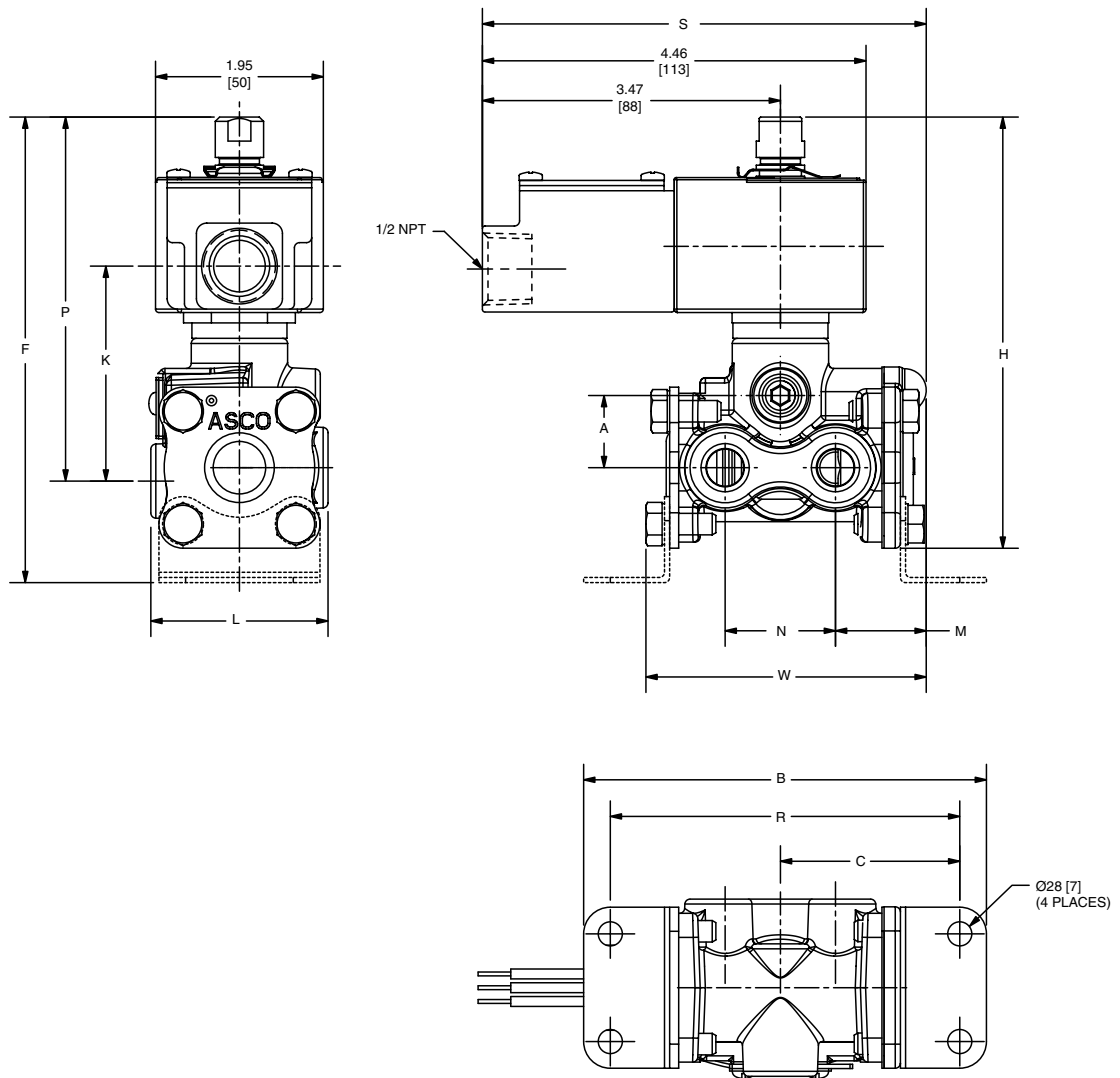
Aluminum, Brass, or Stainless Steel Bodies | 1/4" - 1" NPT

2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

Dimensions: inches (mm)

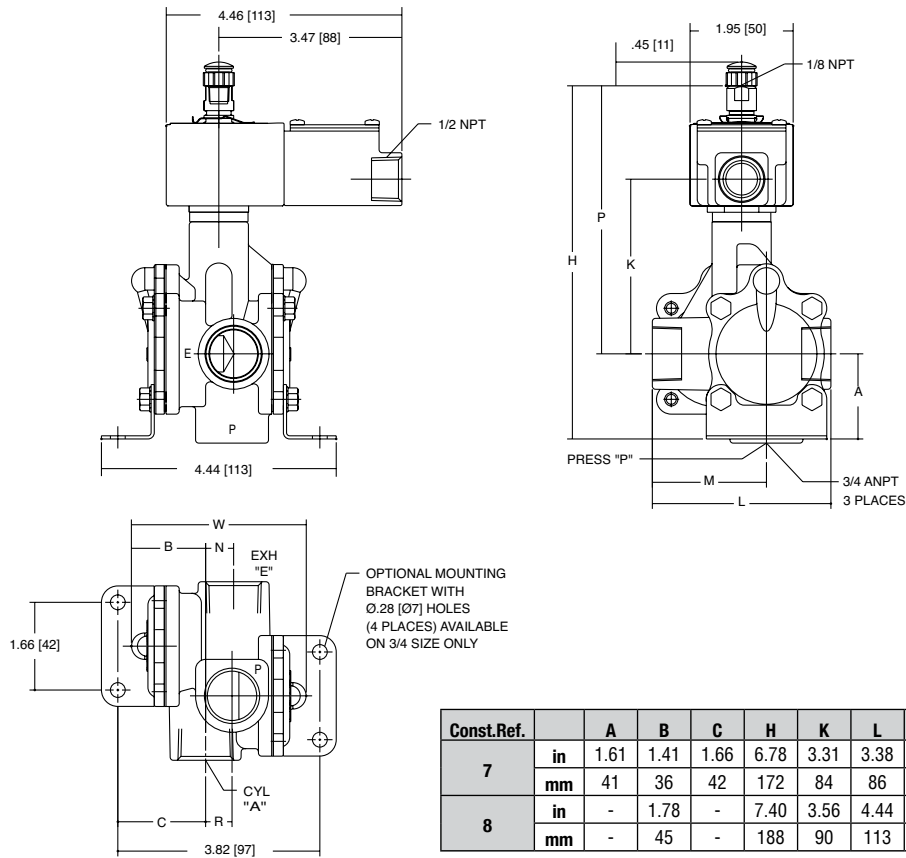
Catalog Number		A	B	C	F	H	K	L	M	N	P	R	S	W
JPIS8316B301, 302	in	.84	1.68	2.08	5.41	5.01	2.47	2.60	1.06	1.28	4.23	4.06	5.16	3.26
	mm	21	119	53	137	127	63	52	27	33	107	103	131	83
JPIS8316B303, 304	in	1.19	4.88	2.18	5.90	5.40	2.72	2.72	1.24	1.32	4.48	4.26	5.36	3.59
	mm	30	124	56	150	167	69	69	31	34	114	108	136	91
JPIS8316B381, 382	in	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
JPIS8316B384	in	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

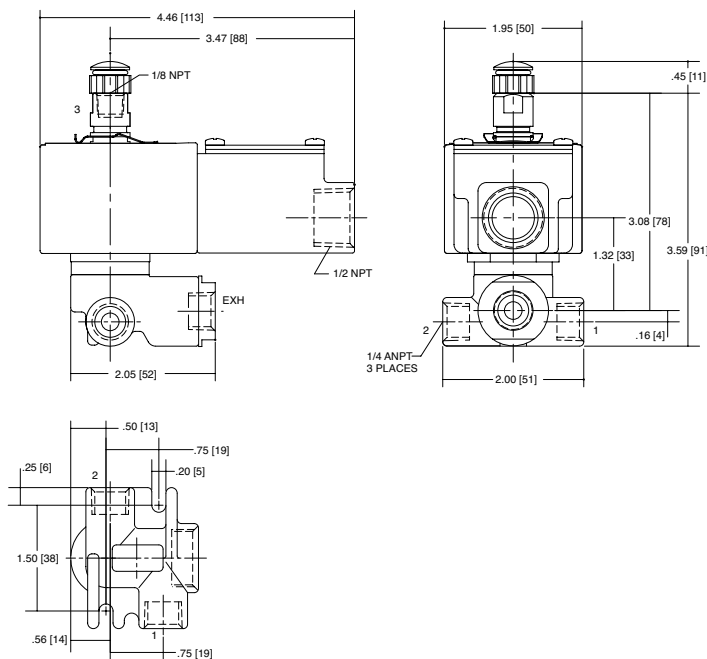


Dimensions: inches (mm)

Const. Ref. 7, 8



Const. Ref. 9, 10



ASCO™ Intrinsically Safe & Non-Incendive Field Wiring Valves

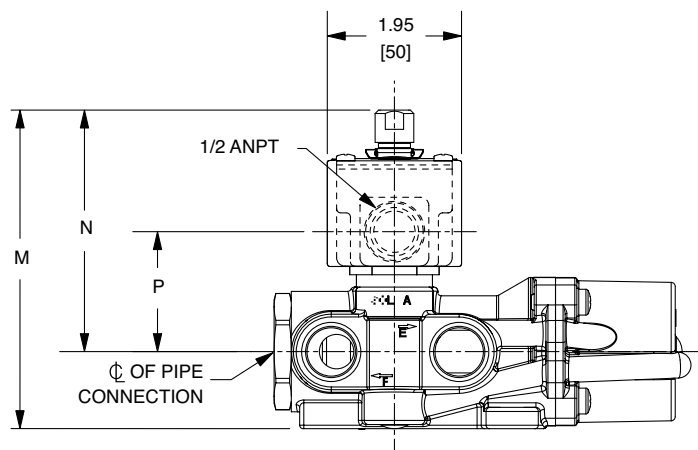
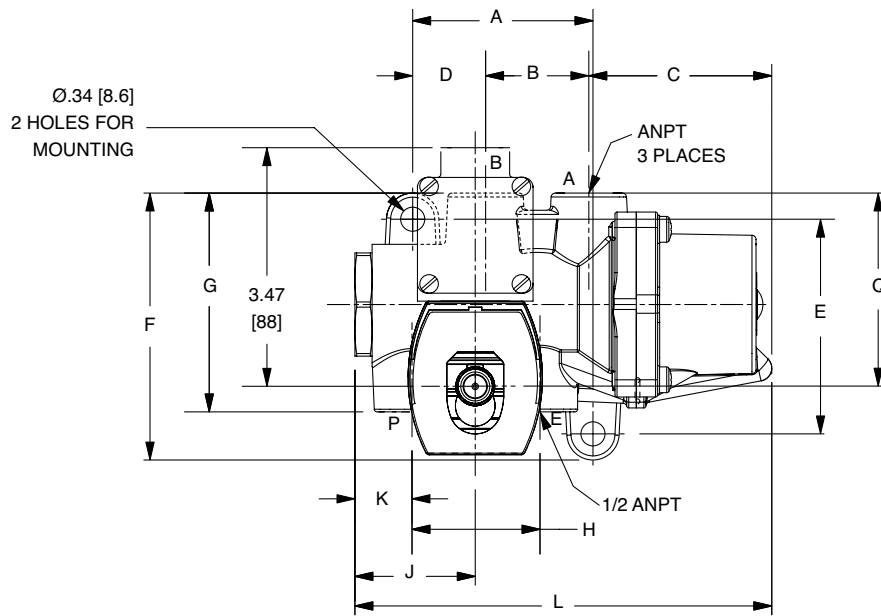
Aluminum, Brass, or Stainless Steel Bodies | 1/4" - 1" NPT

2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

Dimensions: inches (mm)

Catalog Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
JIS8344B370	in	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	in	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	in	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

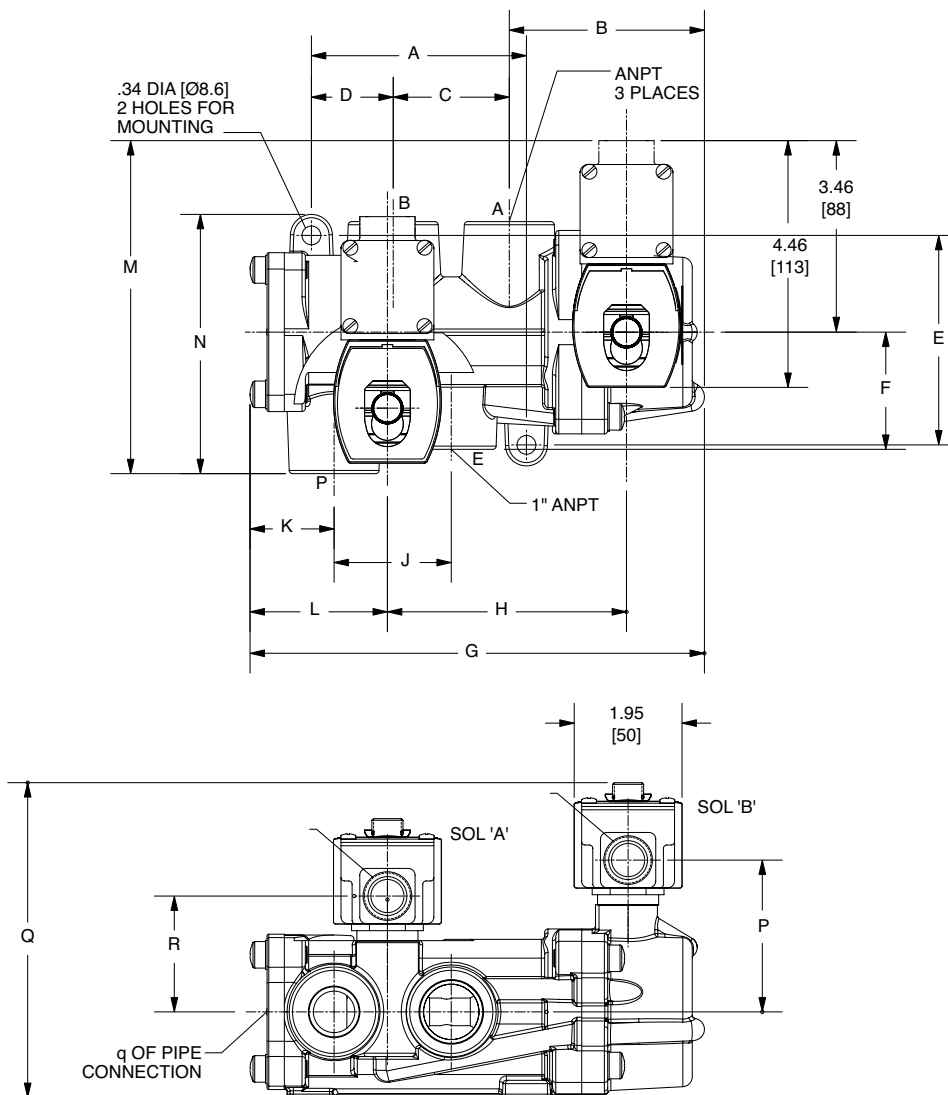
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Dimensions: inches (mm)

Catalog Number		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
JIS8344B344	in	1.88	2.16	1.03	0.75	2.41	1.69	4.91	2.61	1.41	0.72	1.36	5.35	3.13	2.36	4.46	2.02
	mm	48	55	26	19	61	43	125	66	36	18	35	136	80	60	113	51
JIS8344B354, 356	in	3.88	3.53	2.09	1.47	3.81	2.12	8.25	4.34	2.12	1.55	2.51	6.03	4.56	2.83	5.47	2.38
	mm	99	90	53	37	97	54	210	110	54	39	64	153	116	72	139	60
JIS8344B380, 382	in	2.62	2.66	1.50	1.06	3.12	1.56	6.06	3.09	1.86	0.83	1.75	5.74	3.18	2.50	4.65	2.11
	mm	67	68	38	27	79	40	154	78	47	21	45	146	81	64	118	54

Const. Ref. 12, 14, 16



ASCO™ Intrinsically Safe & Non-Incendive Field Wiring Valves





Aluminum, Brass, or Stainless Steel Bodies | 1/4" - 1" NPT

2/2, 3/2, 4/2
5/2, 5/3
SERIES
IS & NIFW

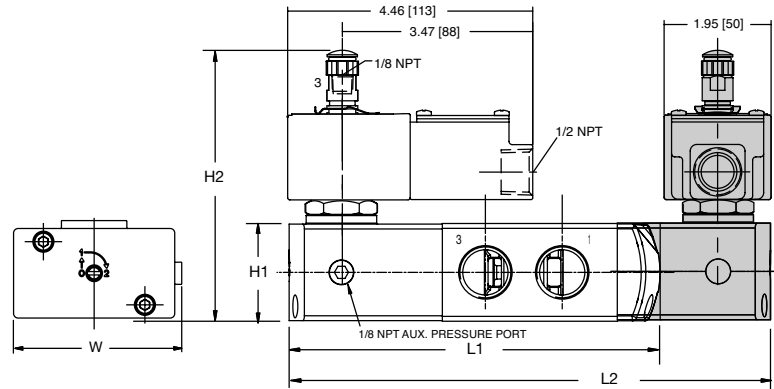
Dimensions: inches (mm)

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

Const. Ref. 17

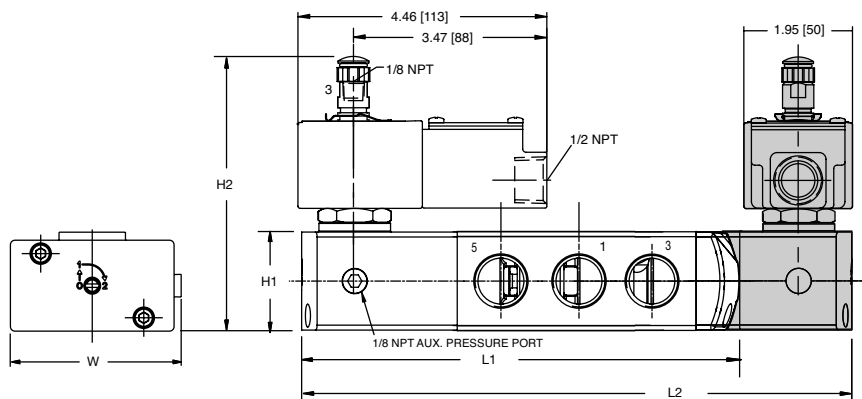


Series	8551	8553
NPT	1/4	1/2
L1 ①	5.63 (144)	7.06 (180)
L2 ①	7.20 (183)	8.86 (225)
H2	4.38 (111)	4.77 (121)
H1	1.10 (28)	1.58 (40)
W	1.77 (45)	2.85 (72)

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. 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.

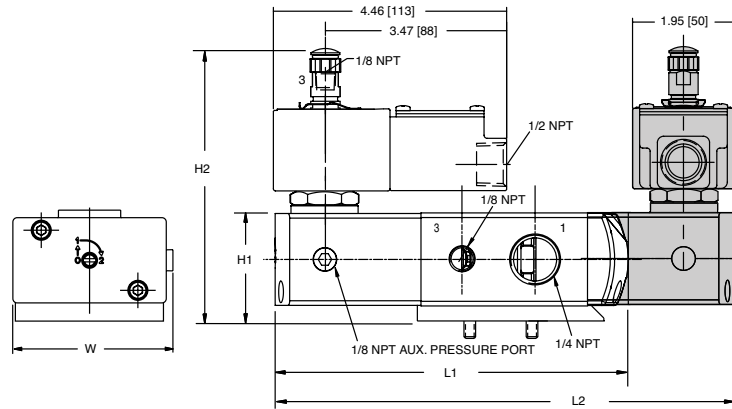
Optional Manual Operators		
Add Suffix		Description
MO		Push and turn to lock with flat head screwdriver slot
MI		Momentary push in with flat head screwdriver slot
MH		Momentary push in by hand
MS		Push and turn to lock by hand

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)

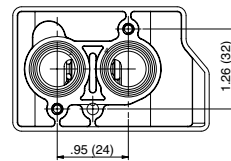
① Manual override option MH adds .250" (6.4), MS option adds .468" (11.9) to each solenoid endcap.

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

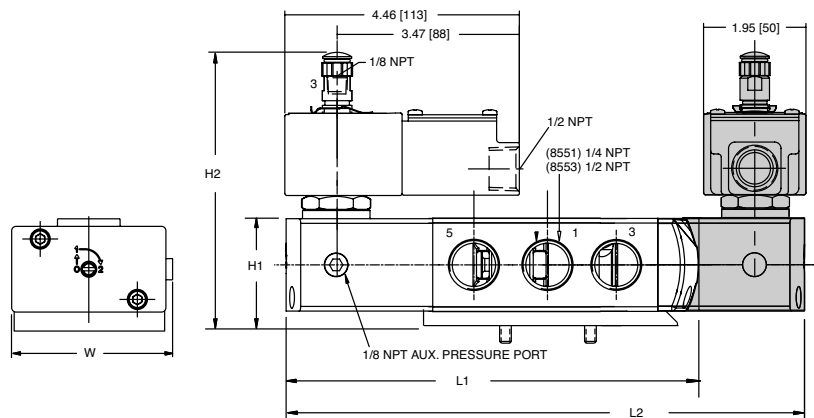
Const. Ref. 19



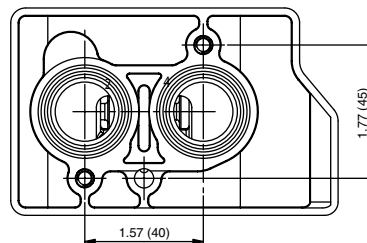
8551 NAMUR Footprint



Const. Ref. 20



8553 NAMUR Footprint



8551 NAMUR Footprint

