

Air and Inert Gas Intrinsically Safe Valves

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



Features

- Intrinsically safe solenoid enclosures to provide corrosion resistance in harsh environments
- Designed solely for installation in intrinsically safe areas, with properly approved and sized current and voltagelimiting safety barriers
- Acceptable for use in hazardous locations, as classified by the National Electrical Code: Classes I, II, and III, Division 1, including Groups A through G
- Electronically enhanced solenoids have efficient cartridge operators and nonpolarized coils
- Triple redundant diodes prevent electrical pulse from flowing back into the hazardous area
- Mountable in any position

#### **Solenoid Operators**

**WBIS:** Watertight, Type 3, 3S, 4, 4X, IP-67. Liquid Crystal Polymer (LCP) overmolded with 1/2" NPT conduit connection and screw terminals for simple wiring. The terminal block will accommodate 18 gage (AWG) wire, and grounding screw is located inside the enclosure.

**ISSC:** DIN 43650/ISO 4400, IP-65 Epoxy overmolded with Din Connector supplied, suitable to accept wiring cable diameters of 0.310 to 0.400 inches.

#### **Solenoid Construction**

Gasket Cover	NBR
Cover Screw	18-8 Stainless Steel
Cover Screw Gasket	NBR
Sleeve	430F Stainless Steel
Nameplate	Stainless Steel
Burp Cap Assembly	PA/CR

#### **Valve Construction**

Valve Parts in Cont	Valve Parts in Contact with Fluids											
Body	Aluminum	Brass	Stainless Steel									
Seals and Discs	PUR, N	IBR, FKM, CR,	as listed									
Sleeve	30	)4L Stainless S	Steel									
Core and Plugnut	430F Stainless Steel											
Core Springs	302 Stainless Steel											
Pilot Seat Cartridge (Series 8316 & 8344 only)	CA											
Rider Rings	PTFE											
Spring Retainer	CA											

#### Electrical

Nominal Wattage is 0.35 @ 24 VDC Maximum Allowable "Off" State Current to the Valves must be less than 1 mA.

Electronically Enhanced "IS" Solenoid: Maximum Capacitor Charge Time — 1 second

Minimum Time between Cycles — 1 second

Minimum Drop Current to Reset Electronic Coil — 2 mA

Nominal Temperature Rise at 24 VDC and 300 Ohms — 2°C (36°F) Maximum Recommended Wire Run (#18 Wire) — 1.5 miles from harri

Maximum Recommended Wire Run (#18 Wire) — 1.5 miles from barrier to valve **Important:** Minimum series resistance of 200 ohms required in wiring circuit if a safety barrier is not used for non-"IS" system. IS ValvesR5



#### **Ordering Information**

The LCP Intrinsically Safe solenoid enclosure is designated by the prefix "WBIS". The Epoxy Din Connector is ordered by prefix "ISSC".

Example: WBIS8314A300 ISSC8314A300 WBIS: 274445-001\* ISSC: 268976-001\*

#### Nominal Ambient Temp. Ranges

Series	Body Material	Temperature Range				
8551/8553	Aluminum	5°F to 140°F (-15°C to 60°C)				
8262						
8314	Brass &					
8317	Stainless Steel	-40°F to 140°F (-40°C to 60°C)				
8551						
8551/8553	Stainless Steel					
8316 Suffix V	Misc.	32°F to 140°F (0°C to 60°C)				
All Other	WISC.	-4°F to 140°F (-20°C to 60°C)				

#### Approvals

FM approved under J.I.3W8A8. AX (3610). CSA certified under File LR-13976. ATEX Ex II1G Ex ia IIC T6 approved IEC Ga Ex ia IIC T6 approved 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 50 micrometers or better. To prevent freezing, the dew point of the media should be at least  $18^{\circ}F$  (-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 S7.3-1975 (R1981) exceeds the above requirements and is, therefore, an acceptable medium for these valves.

#### **Maximum Entity Parameters**

	•	
Entity	Groups A-D	Groups C-D
Parameters	V max - 30 VDC	V max - 34 VDC
	I max - 100 mA	I max - 125 mA
	Capacitance = 0	Capacitance = 0
	Inductance = 0	Inductance = 0

Standard Voltage: 24 VDC only (±10%) Minimum Operating Current: 0.028 amps

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# Specifications (English units)

2/2 VALVES,	NORMALLY (	CLOSED, with	NBR Disc								
					j Pressure tial (psi)						
Pipe	Orifice			Air-Ine	ert Gas		Brass Body	1	Stainless Steel Body		
Size (ins.)	Size (ins.)	Cv F Fac	low tor	Min.	Max.	Max. Fluid and Ambient Temp. °F	Catalog Number	Const. Ref.	Catalog Number	Const Ref.	
1/4	1/16	.0	18	0	150	140	WBIS8262A320	1	WBIS8262A386	1A	
3/8	5/16	1.	.5	10	150	140	WBIS8223A323	2	-	-	
1/2	3/8	3	.2	25	150	140	WBIS8223A303	3	WBIS8223A310	3	
3/2 VALVES		•			•						
		Cv F	low		j Pressure tial (psi)						
Pipe	Orifice	Fac		Air-Ine	ert Gas		Brass Body	1	Stainless Steel	Body	
Size	Size	Pressure to	Cylinder to			Max. Fluid and		Const.		Const.	
(ins.)	(ins.)	Cylinder	Exhaust	Min.	Max.	Ambient Temp. °F	Catalog Number	Ref.	Catalog Number	Ref.	
		Pressure at a			450	140					
1/4	1/16	.08	.08	0	150	140	WBIS8314A300	4	WBIS8314A301	4A	
		ed when de-e						-	1		
1/4	5/16	1.5	1.5	6	150	140	WBIS8316A301 3	5	WBIS8316A381V (5)	8	
3/8	5/16	1.8	1.8	6	150	140	WBIS8316A302 ③	5	WBIS8316A382V (5)	8	
3/8	5/8	4	4	6	150	140	WBIS8316A303 3	6	-	-	
1/2	5/8	4	4	6	150	140	WBIS8316A304 3	6	WBIS8316A384V (5)	9	
3/4	11/16	5.5	5.5	10	150	140	WBIS8316A374 3	7	-	-	
1	1	13	13	10	150	140	WBIS8316A334 3	7A	-	-	
UNIVERSAL	OPERATION (	Normally Clos	ed or Normal	ly Open) "Qu	ick Exhaust" v	with CR Diaphragm an	d NBR Disc				
1/4	2	.08	.73	5	150	140	WBIS8317A307 ①	10	WBIS8317A308 ①	11	
4/2 VALVES,	with NBR Dis	c and Seal									
1/4	1/16	.08	.08	10	150	140	WBIS8345A301 13	12	WBIS8345A381 13	12	
4/2 VALVES,	Brass Body w	vith NBR Disc					Single Solenoid	Const. Ref.	Dual Solenoid	Const. Ref.	
1/4	1/4	.80	1	10	150	140	WBIS8344A370 13	13	WBIS8344A344 3	16	
3/8	3/8	1.4	2.2	10	150	140	WBIS8344A372 13	14	WBIS8344A380 3	17	
1/2	3/8	1.4	2.2	10	150	140	WBIS8344A374 13	14	WBIS8344A382 3	17	
3/4	3/4	5.2	5.6	10	150	140	WBIS8344A376 13	15	WBIS8344A354 3	18	
1	3/4	5.2	5.6	10	150	140	WBIS8344A378 13	15	WBIS8344A356 3	18	
exhaust mus not be exhau 2 For "Quick 3 <b>IMPORTAI</b> between the area, unrestr	t be connected sted to the atr Exhaust" valv NT: A minimum pressure and e	ves, pressure p n operating pr exhaust ports. ow controls an	exhaust when t port is 1/16", e essure differer Supply and ex	the air or ineri xhaust port is ntial must be i khaust piping	t gas can 1/4". maintained must be full	© Zero minimum who auxiliary air pressure pressure vs. mainline	in disc FKM only (pilot i en valve selection gasket is applied. See chart on pressure. Minimum 15 t is in the internal positic	t is in extern page 146 fo psi Operatin	al position and proper or auxiliary		



# Specifications (English units)

						Single f	Solenoid				Dual So	lenoid	
		'			g Pressure ntial (psi)					g Pressure ntial (psi)			
Body	Pipe Size	Orifice Size	Cv Flow	Air-Ine	ert Gas	Max. Fluid	Catalog	Const.	Air-In/	ert Gas	Max. Fluid	Catalog	Const.
Material	(ins.)	(ins.)	Factor	Min.	Max.	Temp.°F		Ref.	Min.	Max.	Temp.°F		Ref.
3/2, 5/2, 5/3 VALVES, with N	BR and F	<b>PUR Seal</b>	IS										
Aluminum 3/2		· · ·		· · ·		· ا	WBIS8551A305	19			· ·	WBIS8551A306	19
Aluminum 5/2	'	'		'		'	WBIS8551A317	20	1		1	WBIS8551A318	20
Aluminum 5/3 Center Closed	1	'		'	!	1 '	-	-	1		1	WBIS8551A367	20
Aluminum 5/3 Center Open	1/4	1/4	.86			'	-	-	1		'	WBIS8551A368	20
Brass 3/2	1/4	1/4	.00	i	!	1 1	WBIS8551A307	19	1		1	WBIS8551A308	19
Brass 5/2	1	'		30	150	140	WBIS8551A319	20	30	150	140	WBIS8551A320	20
316L Stainless Steel 3/2	'	'		30	150	140	WBIS8551A313 2	19	- 30	150	140	WBIS8551A314 2	19
316L Stainless Steel 5/2	1	'		'	!	'	WBIS8551A321 2	20	1		'	WBIS8551A322 2	20
Aluminum 3/2				1 '	!	'	WBIS8553A305	19	1		'	WBIS8553A306	19
Aluminum 5/2	1/2	1/2	3.7	'		'	WBIS8553A317	20	1		'	WBIS8553A318	20
316L Stainless Steel 3/2	1/2	1/2	3.1	'		'	WBIS8553A313 @	19	1		'	WBIS8553A314 @	19
316L Stainless Steel 5/2	'	'		'		'	WBIS8553A321 @	20	1		'	WBIS8553A322 2	20
					·						·		
						Single {	Solenoid				Dual So	lenoid	

						Single S	olenoid	_	Dual Solenoid						
	Bing Orifing Cu		Operating Pressure Differential (psi)					Operating Differen	) Pressure tial (psi)						
Body	Pipe Size	Orifice Size	Cv Flow	Air-Ine	rt Gas	Max. Fluid	Catalog	Const.	Air-Ine	ert Gas	Max. Fluid	Catalog	Const.		
Material	(ins.)	(ins.)	Factor	Min.	Max.	Temp.°F	Number	Ref.	Min.	Max.	Temp.°F	Number	Ref.		
3/2, 5/2, 5/3 VALVES, with N	BR and P	PUR Seal	s, NAMU	IR Mount											
Aluminum 3/2, 5/2							WBIS8551A301 ①	21				WBIS8551A302 ①	21		
Aluminum 5/3 Center Closed							-	-	1			WBIS8551A365	22		
Aluminum 5/3 Center Open	1/4	1/4	.86				-	-	1			WBIS8551A366	22		
Brass 3/2, 5/2				30	150	140	WBIS8551A303 ①	21	30	150	140	WBIS8551A304 ①	21		
316L Stainless Steel 3/2, 5/2							WBIS8551A309 2	22	1			WBIS8551A310 2	22		
Aluminum 3/2, 5/2	1/2	1/2	3.7				WBIS8553A301	22	1			WBIS8553A302	22		
316L Stainless Steel 3/2, 5/2	1/2	1/2	5.7				WBIS8553A309 2	22	1			WBIS8553A310 2	22		
① 1/8" NPT exhaust for 1/4" a	① 1/8" NPT exhaust for 1/4" aluminum and brass. ② Can be used for <i>dry</i> natural gas service.														



# **Specifications (Metric units)**

				Differen	Pressure tial (bar)	-				
Pipe	Orifice			Air-Ine	ert Gas		Brass Body		Stainless Steel	
Size (ins.)	Size (mm)	Kv F Factor	-	Min.	Max.	Max. Fluid and Ambient Temp. °C	Catalog Number	Const. Ref.	Catalog Number	Const. Ref.
1/4	1		17	0	10.3	60	WBIS8262A320	1	WBIS8262A386	1A
3/8	8	1.29 0.7 1		10.3	60	WBIS8223A323	2	-	-	
1/2	10	2.74		1.7	10.3	60	WBIS8223A303	3	WBIS8223A310	3
3/2 VALVES	2 VALVES									
		Kv F	Inw		Pressure tial (bar)					
Pipe	Orifice	Factor	-	Air-Ine	ert Gas		Brass Body	,	Stainless Steel	Body
Size	Size	Pressure to	Cylinder to			Max. Fluid and		Const.		Const.
(ins.)	(mm)	Cylinder Pressure at an	Exhaust	Min.	Max.	Ambient Temp. °C	Catalog Number	Ref.	Catalog Number	Ref.
1/4	2	.07	.07	0	10.3	60	WBIS8314A300	4	WBIS8314A301	4A
	-	ed when de-er		0	10.0	00	WD100314A000	-	WD100314A301	-70
1/4	8	1.29	1.29	6	10.3	60	WBIS8316A301 3	5	WBIS8316A381V (5)	8
3/8	8	1.37	1.37	6	10.3	60	WBIS8316A302 ③ 5		WBIS8316A382V (5)	8
3/8	16	3.43	3.43	6	10.3	60	WBIS8316A303 ③ 6		-	-
1/2	16	3.43	3.43	6	10.3	60	WBIS8316A304 ③ 6		WBIS8316A384V (5)	9
3/4	17	4.71	4.71	0.7	10.3	60	WBIS8316A374 3	7	-	-
1	25	11.14	11.14	0.7	10.3	60	WBIS8316A334 3	7A	-	-
UNIVERSAL	OPERATION (N	lormally Close	ed or Normally	/ Open) "Quic	k Exhaust" wi	th CR Diaphragm and	NBR Disc			
1/4	2	.07	.63	0.3	10.3	60	WBIS8317A307 ①	10	WBIS8317A308 ①	11
4/2 VALVES,	with NBR Dis	c and Seal					1			
1/4	2	.07	.07	0.7	10.3	60	WBIS8345A301 103	12	WBIS8345A381 13	12
4/2 VALVES,	Brass Body w	ith NBR Disc					Single Solenoid	Const. Ref.	Dual Solenoid	Const Ref.
1/4	6	.69	.86	0.7	10.3	60	WBIS8344A370 13	13	WBIS8344A344 3	16
3/8	10	1.20	1.89	0.7	10.3	60	WBIS8344A372 13	14	WBIS8344A380 3	17
1/2	10	1.20	1.89	0.7	10.3	60	WBIS8344A374 13	14	WBIS8344A382 3	17
3/4	19	4.46	4.80	0.7	10.3	60	WBIS8344A376 13	15	WBIS8344A354 ③	18
1     19     4.46     4.80     0.7     10.3     60     WBIS8344A378 ①③     15     WBIS8344A356 ③     18       ① There are two exhaust flows in the exhaust mode (pilot and main). The pilot     ⑤ Diaphragm and main disc FKM only (pilot is low-temperature NBR).										
<ul> <li>exhaust must be connected to the main exhaust when the air or inert gas can not be exhausted to the atmosphere.</li> <li>@ For "Quick Exhaust" valves, pressure port is 1/16", exhaust port is 1/4".</li> <li>@ 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.</li> <li>@ Ero minimum when valve selection gasket is in external position and proper auxiliary air pressure is applied. See chart on page 146 for auxiliary pressure Differential when selection gasket is in the internal position.</li> </ul>										



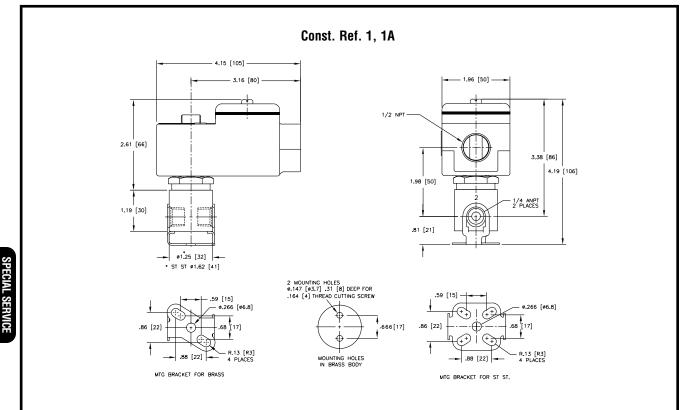
# **Specifications (Metric units)**

,	· · · ·					Single ?	Solenoid				Dual So	lenoid	,
'					g Pressure ntial (bar)					g Pressure ntial (bar)		1	
Body	Pipe Size			Max. Fluid	Catalog	Const.	Air-In/	ert Gas	Max. Fluid	Catalog	Const.		
Material	(ins.)	(mm)	Factor	Min.	Max.	Temp.°C		Ref.	Min.	Max.	Temp.°C		Ref.
3/2, 5/2, 5/3 VALVES, with NE	BR and F	'UR Seal	IS										
Aluminum 3/2	,  ,				'		WBIS8551A305	19	,,			WBIS8551A306	19
Aluminum 5/2	1 '	'	1 '	'	'	1	WBIS8551A317	20	1 '		1 7	WBIS8551A318	20
Aluminum 5/3 Center Closed	1 '	'	1 '	'	'	1	-	-	1 '		1 7	WBIS8551A367	20
Aluminum 5/3 Center Open	1/4	6	.7	'	'	r	-	-	1 '		1 7	WBIS8551A368	20
Brass 3/2	1/4		.' '	'	'	1	WBIS8551A307	19	1 '			WBIS8551A308	19
Brass 5/2	1 '	'	1 '	2	10	60	WBIS8551A319	20	2	10	60	WBIS8551A320	20
316L Stainless Steel 3/2	1 '	'	'	2			WBIS8551A313 2	19		10		WBIS8551A314 2	19
316L Stainless Steel 5/2	1 '	'	'	'	'	1	WBIS8551A321 2	20	1 '		1	WBIS8551A322 2	20
Aluminum 3/2	,	· · · · · ·		'	'	r	WBIS8553A305	19	1 '		1	WBIS8553A306	19
Aluminum 5/2	1/2	13	3.7	'	'	r	WBIS8553A317	20	1 '		1	WBIS8553A318	20
316L Stainless Steel 3/2	1/2		3.1	'	'	1	WBIS8553A313 @	19	1 '		1 7	WBIS8553A314 2	19
316L Stainless Steel 5/2	1'	'	'	'	'		WBIS8553A321 2	20	1'			WBIS8553A322 2	20
·				Single Solenoid Dual Solenoid									

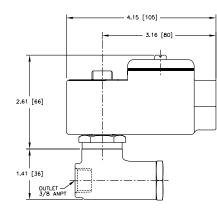
						Single S	olenoid		Dual Solenoid						
	<b>.</b> .	a			Dperating Pressure Differential (bar)		ntial (bar)				Operating Different				
Body	Pipe Size	Orifice Size	Kv Flow	Air-Ine	ert Gas	Max. Fluid	Catalog	Const.	Air-Ine	rt Gas	Max. Fluid	Catalog	Const.		
Material	(ins.)	(mm)	Factor	Min.	Max.	Temp.°C		Ref.	Min.	Max.	Temp.°C	Number	Ref.		
3/2, 5/2, 5/3 VALVES, with N	BR and P	UR Seal	s, NAMU	R Mount											
Aluminum 3/2, 5/2							WBIS8551A301 ①	21				WBIS8551A302 ①	21		
Aluminum 5/3 Center Closed							-	-				WBIS8551A365	22		
Aluminum 5/3 Center Open	1/4	6	.7				-	-				WBIS8551A366	22		
Brass 3/2, 5/2				2	10	60	WBIS8551A303 ①	21	2	10	60	WBIS8551A304 ①	21		
316L Stainless Steel 3/2, 5/2							WBIS8551A309 2	22				WBIS8551A310 2	22		
Aluminum 3/2, 5/2	1/2	13	3.7				WBIS8553A301	22				WBIS8553A302	22		
316L Stainless Steel 3/2, 5/2	1/2	13	5.7				WBIS8553A309 2	22				WBIS8553A310 2	22		
① 1/8" NPT exhaust for 1/4" a	① 1/8" NPT exhaust for 1/4" aluminum and brass. ② Can be used for <i>dry</i> natural gas service.														

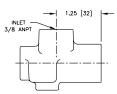


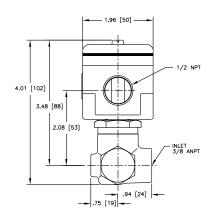
#### **Dimensions: inches (mm)**



Const. Ref. 2

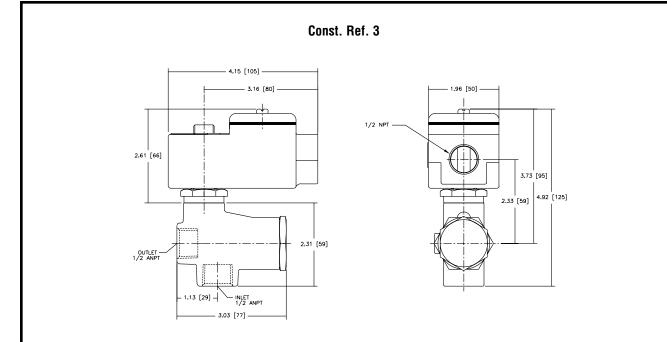




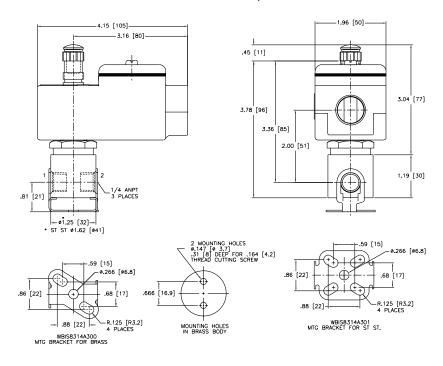




#### **Dimensions: inches (mm)**

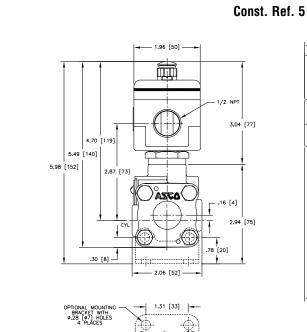


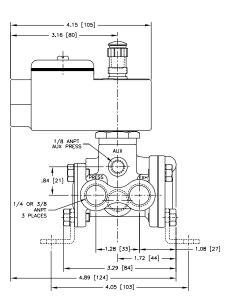
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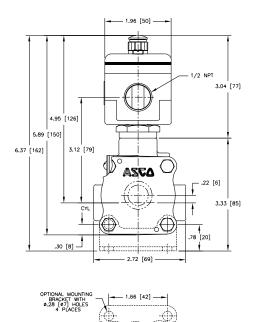


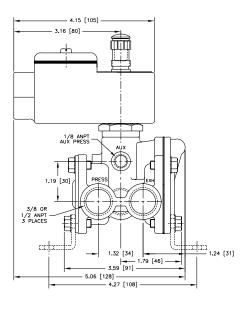
#### **Dimensions: inches (mm)**





Const. Ref. 6



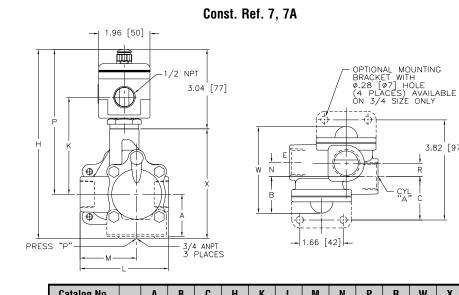


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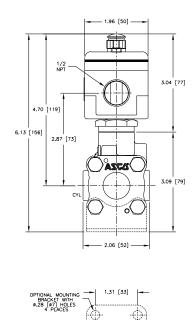
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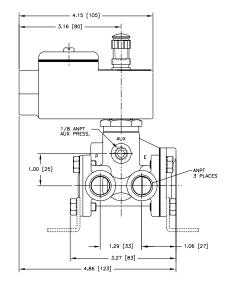
#### **Dimensions: inches (mm)**



Cata	log No.		A	В	C	Н	K	L	Μ	N	Р	R	W	Х
WRIS	B316A374	ins.	1.61	1.41	1.66	7.23	3.71	3.38	2.16	.53	5.54	.50	3.31	4.19
WDIS	0010A074	mm	41	36	42	184	94	86	55	13	141	13	84	106
WDIG	8316A334	ins.	-	1.78	-	7.85	3.96	4.44	2.81	.87	5.79	1.74	5.32	481
WDISC	03 TUA334	mm	-	45	-	199	100	113	71	22	147	44	135	122

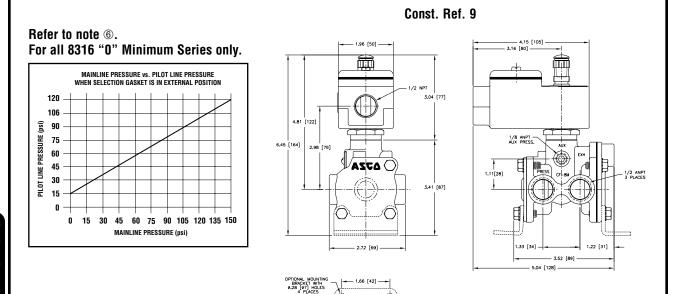
Const. Ref. 8





**ASCO**®

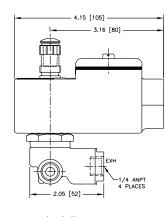
#### **Dimensions: inches (mm)**

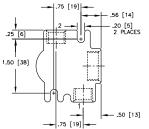


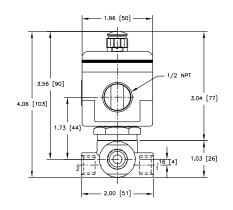
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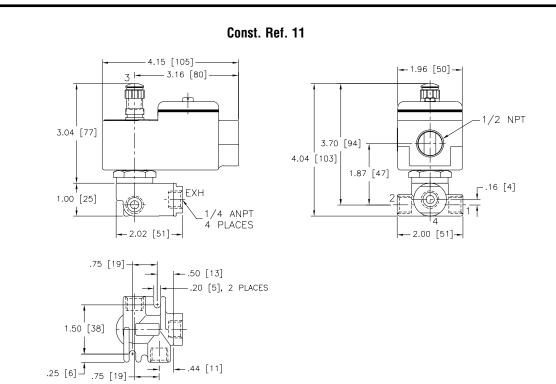




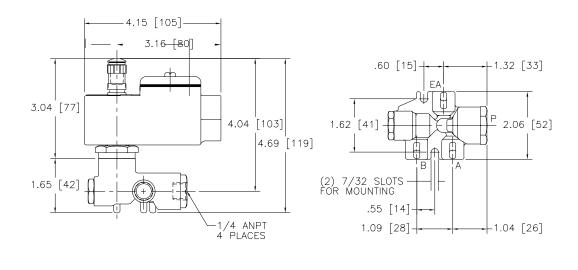




#### **Dimensions: inches (mm)**

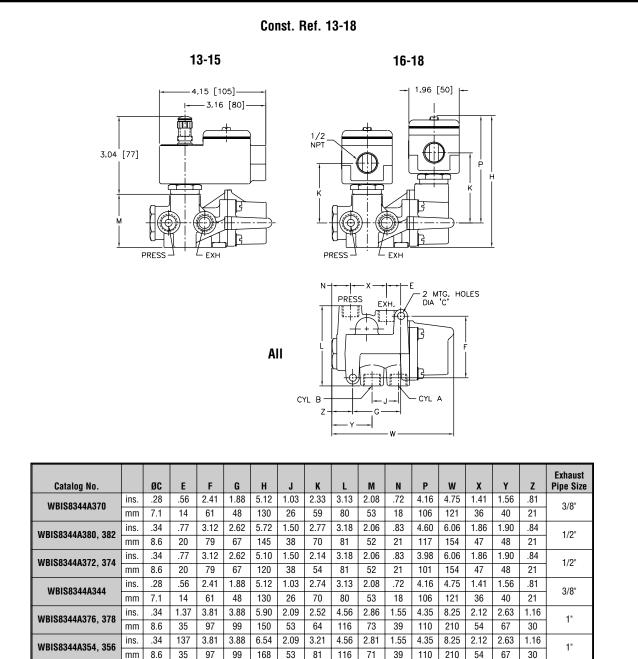


Const. Ref. 12



# ASC0°

#### **Dimensions: inches (mm)**



IMPORTANT: Valves can be mounted in any position.



### 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)

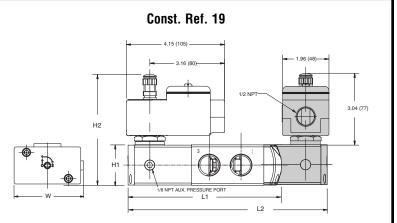
 Manual override option MH adds .250" (6.4), MS option adds .468" (11.9) to each solenoid endcap.

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

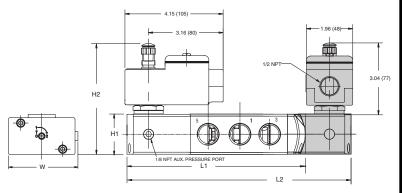
Series	8551	8553
NPT	1/4	1/2
L1 ①	5.63 (144)	7.06 (180)
L2 ①	7.20 (183)	8.86 (225)
H2	4.38 (111)	4.77 (121)
H1	1.10 (28)	1.58 (40)
W	1.77 (45)	2.85 (72)

 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	
МІ		Momentary push in with flat head screwdriver slot	
МН		Momentary push in by hand	
MS		Push and turn to lock by hand	



Const. Ref. 20





#### **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)

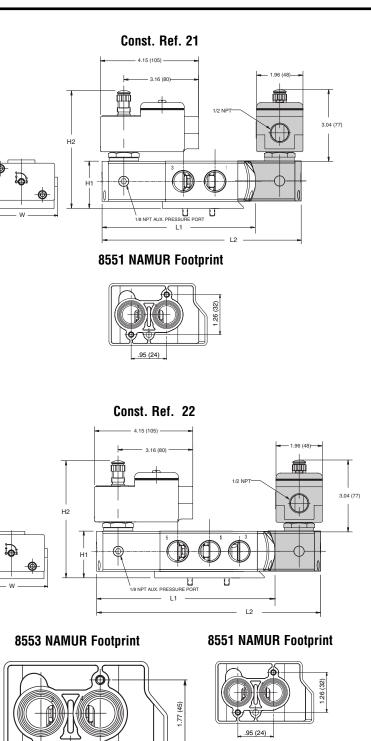
Manual override option MH adds .250" (6.4), MS option adds .468" (11.9) to each solenoid endcap.

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
МН		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)

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	$\uparrow 0 0 2$	Momentary push in with flat head screwdriver slot
МН		Momentary push in by hand
MS		Push and turn to lock by hand



1.57 (40)

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