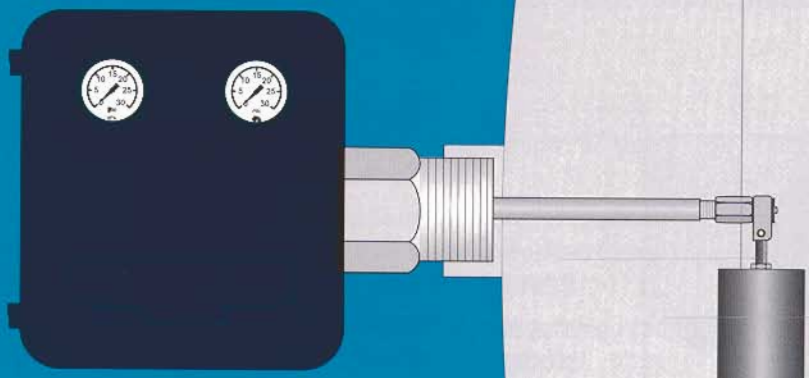
Solutions through engineered products.

NORRISEAL®

A DOVER RESOURCES COMPANY



LEVEL CONTROLLERS

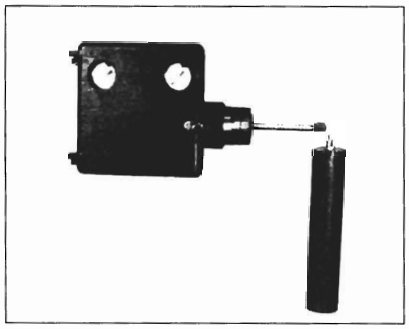
SERIES 1001, 1001A, AND 1001XL

NORRISEAL ISO 9001 CERTIFICATION NUMBER 30080

INTRODUCTION

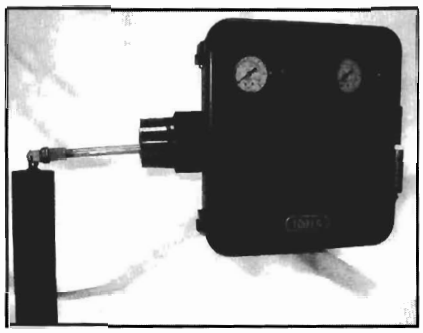
Norriseal has been a leader in providing quality level measurement devices to the petroleum market for over 30 years. In addition to the petroleum market, Norriseal level products serve the marine, steel, and industrial markets.

This brochure describes the Series 1001, the 1001A, and the 1001XL Liquid Level Controllers.
The Series 1001 and 1001A can be right hand or left hand mounted while the 1001XL is used where back mounted is preferred.



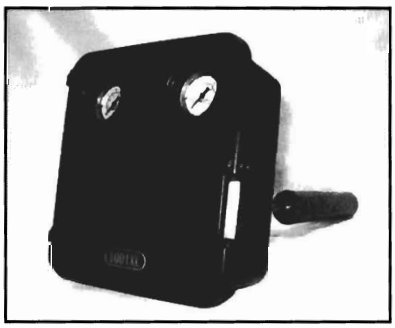
SERIES 1001

The economical Series 1001 Level Controller uses a non-weatherproof case/cover.



SERIES 1001A

The Series 1001A Level Controller uses a weatherproof case/cover and a manifold style pilot assembly.



SERIES 1001XL

The Series 1001XL Level Controller uses a back mount connection.

FEATURES

Pneumatic Controller - The controller can be equipped with one of three types of pilots; a snap pilot, throttling pilot, or relief pilot (1001A only).

Removable Door - The controller door can only be removed after opening 90°. This feature prevents the door from vibrating loose while in the closed position. A lever latch keeps a positive engagement between the case and the door.

Sealed Case (1001A & 1001XL) - An "O"-Ring gasket seals internals from outside weather and allows the harmful exhaust gases to be vented to a remote area by tubing the vent connection to an exhaust manifold.

Built-In Filter - A built-in filter in the gas supply connection reduces required maintenance of the controller's pilot.

Interface Control - A wide spring range makes the control of a liquid interface possible with the standard displacer.

Marine Service - Stainless steel internals are available.

Field Reversible Action - This adjustment determines whether rising liquid level will increase or decrease pilot output.

Right or Left Hand Mount (1001 & 1001A) - The controller may be changed for right hand or left hand mount in the field without additional parts.

Electric Controller - This option utilizes a standard electric switch; SPDT or DPDT.

Split Displacer - For liquid dump spans greater than the standard displacers can provide, a split displacer can give dump spans up to 70 feet in length.

NACE - All controllers can be configured to meet NACE MR01.75 specifications.

SNAP PILOT

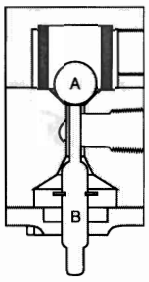
The pilot is comprised of two valves - one to admit pilot pressure, and one to exhaust pressure.

Ball "A" controls the flow of gas into the pilot and is held closed with force exerted by supply pressure on the seating area of the ball.

When the force transmitted to thrust pin B" is sufficient to overcome the force holding Ball "A" seated, "A" snaps upward allowing gas to flow past "A" and out the side port of the pilot.

The spherical end of thrust pin "B" closes the exhaust port the instant ball "A" snaps upward. The exhaust port seating area is smaller than the seating area of the supply port; therefore, the push rod must remain seated against supply pressure until force on the rod diminishes.

A simultaneous action occurs as force is removed from thrust pin "B". Pilot pressure opens the exhaust port by unseating the push rod, and supply pressure forces ball "A" to close the supply port. The difference in seating area gives this pilot Snap-Action.



Snap Pilot

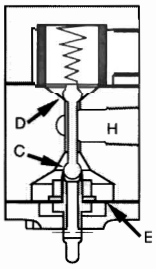
THROTTLING PILOT

Again two valves are used to admit and exhaust pressure. A diaphragm "E" used in cooperation with the valves creates a Force-Balance Pilot.

The pilot output pressure acts upon the diaphragm so that the diaphragm pushes back with the same force being applied by the push rod. These balanced forces are the reason for the term "Force-Balance."

The throttle pilot works in the same manner as the snap pilot except the output pressure is proportioned to the amount of force applied to the push rod. More force on the rod produces a proportionate increase in pilot pressure.

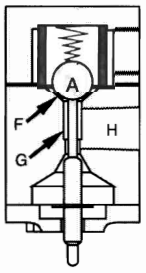
When the push rod force changes, the pilot seeks a new balance point by either exhausting the output loading at valve "C" or unseating valve "D" to increase output loading. Instrument gas does not flow while the pilot is in balance.



Throttling Pilot

RELIEF PILOT (1001A ONLY)

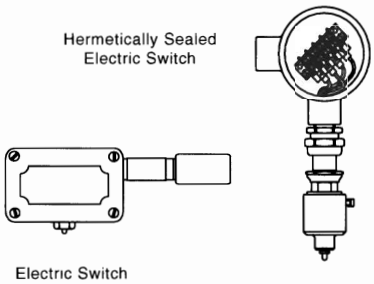
This pilot works identically to the snap pilot. The difference between the two is Seal "F" and passage "G". Seal "F" is an "O" Ring and gives a positive seal (no leak) to Ball "A". Passage "G" is larger than the passage in the snap pilot. This enlarged area permits the instrument supply air to exhaust out of the pilot at a faster rate. This pilot cannot be converted to a throttle pilot.



Relief Pilot

ELECTRIC LEVEL SWITCH

The electric level switch uses the force balance principle to open and close an electrical switch in response to rising or falling levels. Two standard switches are available, single pole double throw (SPDT) or double pole double throw (DPDT). Splash-proof, explosion-proof, and hermetically sealed enclosures are available.



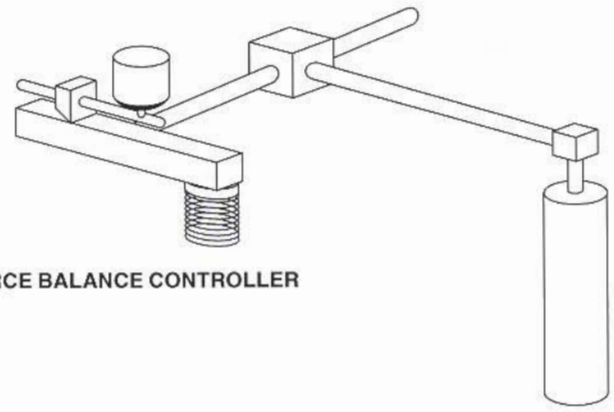
Electric Switch

* See 1600 Bulletin for Transmitter/Controller

FORCE BALANCE PRINCIPLE

The operation of the Series 1001, 1001A, and the 1001XL Level Controllers are based on the **Force Balance Principle.** A spring balances the weight of a displacement type displacer, and as the displacer is immersed into the liquid, the amount of force available is proportional to the weight of the liquid displaced. The result of this force is transmitted to the controller.

The figure in the upper right shows a schematic of the force balance controller. The downward force due to the weight of the displacer about the shaft is balanced by the tension of the spring. The weight of the displacer decreases as the liquid level rises, and the force created by the spring tension is transmitted to the pilot thrust pin by a lever and fulcrum. The pilot will convert this direct-acting force to a pneumatic or electric output signal.



FORCE BALANCE CONTROLLER

For on-off control, the snap pilot output will be equal to the supply pressure over the span of the liquid displaced. The span of the liquid level can be changed by sliding the fulcrum on a lever. Moving the fulcrum away from the pilot thrust pin increases the proportional band, and moving the fulcrum toward the pilot thrust pin decreases the proportional band. The control is direct acting when the rising level increases pilot output signal. A reverse acting control is when the rising level decreases pilot output signal.

FUNCTION OF THE ADJUSTABLE SPRING

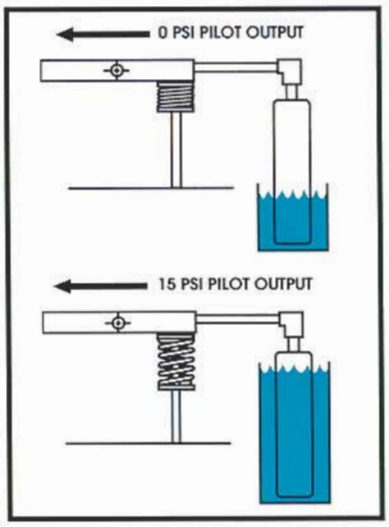
As previously mentioned, a spring is used to balance the weight of the displacer. With spring force held constant, the higher the liquid level on the displacer, the greater becomes the force available to the pilot. When spring force is reduced (by decompressing the spring), a higher level on the displacer is required to produce the same force as before.

Spring compression can be reduced to a further position where a hydrocarbon liquid level will rise above the displacer.

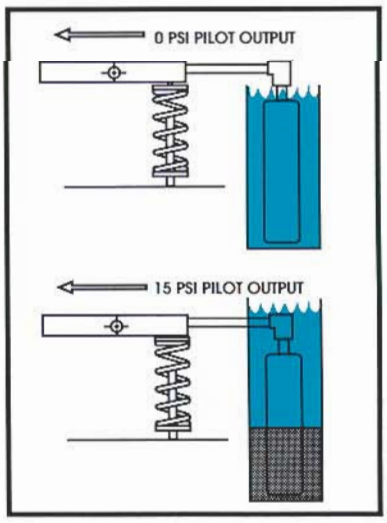
This wide spring range makes the control of a **liquid interface** possible with the standard displacer. The adjustment is usually made as the lighter liquid rises on the displacer.

After the spring is adjusted so the lighter liquid will not operate the control, there is adequate spring force in reserve to enable displacement of the heavier liquid to actuate the pilot.

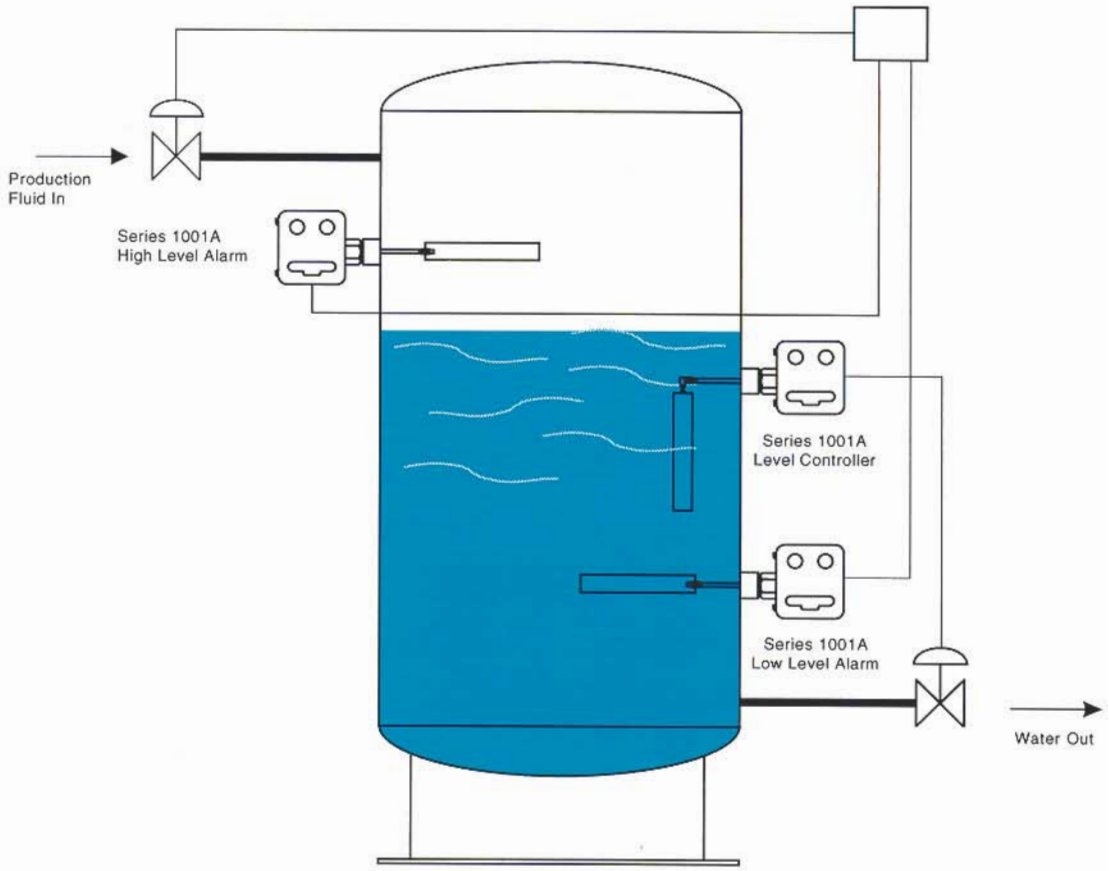
TOP LEVEL CONTROL



LIQUID INTERFACE CONTROL

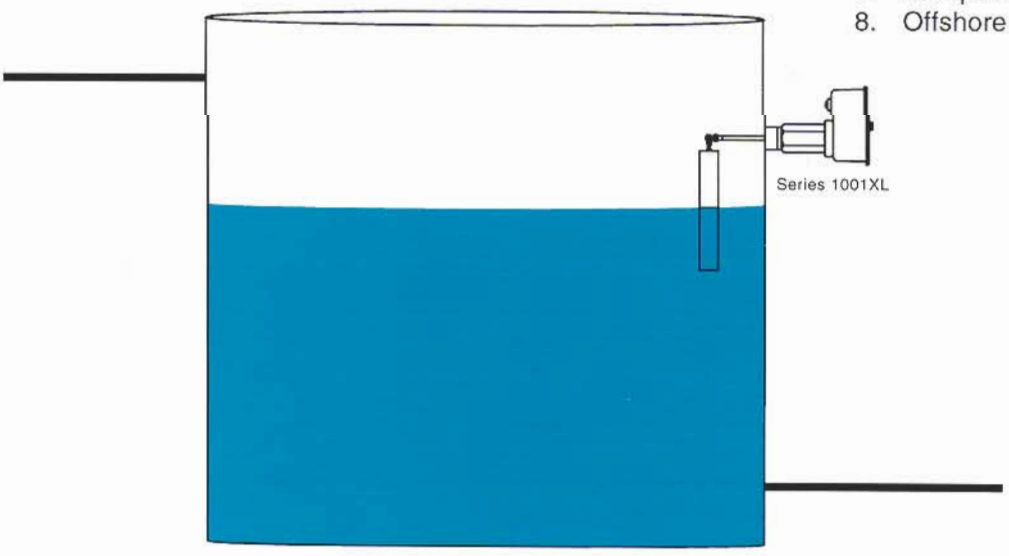


APPLICATIONS



***Common Applications Include*:**

1. Custody Transfer Measurement Systems
2. Separators
3. Dehydrators
4. Heater Treaters
5. Well Test Systems
6. Interface Detection
7. Compressor Scrubbers
8. Offshore Production Facilities



PERFORMANCE CHARACTERISTICS

Pilot - Pneumatic

Output
Proportional - Throttle ..... 3 - 15 PSIG
6 - 30 PSIG
Differential Gap - Snap ..... 0 - 20 PSIG
0 - 30 PSIG
Block & Bleed - Relief ..... 0 - 30 PSIG
0 - 50 PSIG
0 - 100 PSIG

Supply Pressure Requirement
3 - 15 PSIG, 0 - 20 PSIG ..... 20 - 30 PSIG (min)
6 - 30 PSIG, 0 - 30 PSIG ..... 35 - 40 PSIG (min)
0 - 50 PSIG ..... 60 PSIG (max)
0 - 100 PSIG ..... 100 PSIG (max)

Supply and Output
Connection ..... 1/4 inch NPT Female

Ambient Temperature ..... -40 to +180°F
-40 to +275 °F (High Temp)

Pilot Capacity
Throttle C_v 0.394
Snap C_v 0.282
Relief C_v 0.403

Proportional Band Adjustment
(Recommended adjustment for a full output pressure change over a percent of sensing element)
Throttle ..... 20 - 150%
Snap ..... 7 - 55%
Relief ..... @ 30 PSI Supply = 7-55%
@ 50 PSI Supply = 20-100%
@ 100 PSI Supply = 50-200%

Pilot - Electric - On/Off Switch

Output
Proportional Band Adjustment
(Electric - Micro Switch)
SPDT ..... 7 - 55%
DPDT ..... 20 - 150%

(Electric - Hermetically Sealed)
SPDT ..... 10 - 75%
DPDT ..... 10 - 75%

Switch Ratings
SPDT ..... 15 amps at 125, 250, or 480 V.A.C
DPDT ..... 10 amps at 125 V.A.C

Ambient Temperature ..... -40 to +160°F
(A Case Extension is used for extreme process temperatures or when body insulation is used.)

General

Repeatability ..... 1.0% of output span

Dead Band ..... 5.0% of input span

Linearity ..... 1.75% of output span

Ambient Temperature
Effect on Setpoint ..... 1.0% @ -40°F
3.0% @ +170°F

Mechanical Disturbance Effects on Setpoint 1.0%

Specific Gravity
Interface Detection 0.035
Top Level Range ..... 0.35 to 2.00

Temperature Limits
Body Process Temperature (dependent on material selection) ..... -70 to +600°F

Process Pressure Rating
Beveled - Butt Weld ..... To 6000 PSIG
Threaded (NPT) ..... To 6000 PSIG
Grooved ..... To 2500 PSIG
Flanged (RF & RTJ) .... 150 thru 2500 ANSI CLASS
Union ..... To 10,000 PSIG
Union w/Sight Glass ..... To 1500 PSIG

SPECIFICATIONS

MATERIAL

Pilot - Pneumatic

Body
- Throttle ..... Aluminum w/Aluminum Seat
- Relief ..... Aluminum w/Elastomer Seat
- Snap ..... Aluminum Seat

Gasket/Diaphragm ..... Nitrile (Standard)
Fluorocarbon (Optional)

Internal Valving ..... 303 SST

Filter Element ..... 40 micron Phenolic Resin Impregnated Felt

Screws & Nuts ..... SST

Pilot - Electric - On/Off Switch

Micro-Switch Enclosure ..... Cast Aluminum
Hermetic Switch Enclosure ..... SST
Junction Box ..... Cast Aluminum

General

Body - LLC
- 1001/1001A . . . . . ASTM A696/A105 (-20 to +600˚F)
  ASTM A276/A182 (-70 to +600˚F)
- 1001XL . . . . . ASTM A216 WCC/A105 (-20 to 600˚F)
  ASTM A216 LCC (-50 to +600˚F)
  ASTM A351 CF8M/A182 (-70 to +600˚F)

Hammer Nut (where applicable) . . . . . ASTM A105

Sight Glass . . . . . Acrylic (-20 to +200˚F)
(For Special DU/AU Union Body)

Displacers. . . . . PVC (-20 to +140˚F)
Acrylic (-20 to +200˚F)
Aluminum (-70 to +600˚F)
316 SST (-70 to +600˚F)

Displacer Arm . . . . . 303 SST (Standard)
316 SST (Optional)

Vertical Hanger . . . . . 303 SST (Standard)
(swivel for vertical displacer position)
316 SST (Optional)

Chain. . . . . 316 SST
(for vertical extension and/or split displacer)

Shaft . . . . . 303 SST (Std -70 to +600˚F)
316 SST (Opt -70 to +600˚F)

Bearing Blocks . . . . . 303 SST (Std -70 to +600˚F)
316 SST (Opt -70 to +600˚F)

Bearings . . . . . 440C SST (-70 to +600˚F)

Shaft Seals . . . . . Nitrile (-50 to +180˚F)
Nitrile Lo-Temp (-70 to +180˚F)
Fluorocarbon (-20 to +400˚F)
Aflas (-20 to +450˚F)
EPR (-70 to +250˚F)

Case & Cover . . . . . Die Cast Anodized Aluminum, with Enamel Paint

Supply & Output Gauges . . . . . Brass (Standard)
316 SST (Optional)
Brass Liquid Fill (Optional)
316 SST Liquid Fill (Optional)

Torque Bar . . . . . Aluminum (Standard)
303 SST (Marine)

Flapper Bar . . . . . 303 SST

Spring Adjusting Knob . . . . . Aluminum (Standard)
303 SST (Marine)

Fulcrum . . . . . Nylon w/SST Screw

Balancing Spring . . . . . Light - SST w/Green Marking
Medium - SST w/No Marking
Heavy - SST w/Yellow Marking
Extra Heavy - SST w/Red Marking

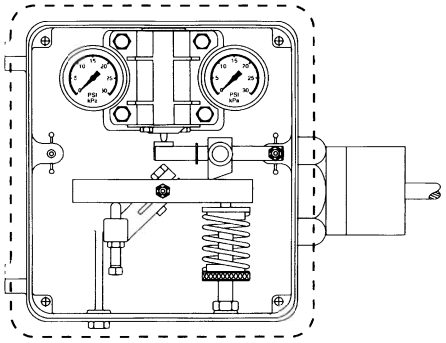
Note:
Materials that are certified compatible for NACE service are available upon request.

HOW TO SPECIFY

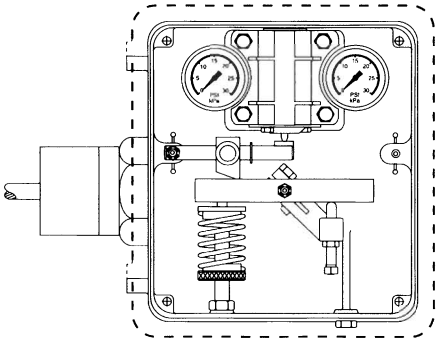
DETERMINE THE MODEL NUMBER. This specifies series and size connection, type pilot, left or right hand mount, pilot action, seals, and service condition.

REQUIRED APPLICATION INFORMATION:

A. Fluid Media
B. Process Temperature (Maximum and Minimum)
C. Process Pressure
D. Vessel Size and Diameter (Distance of connection from bottom of vessel, any obstructions that may hinder performance)
E. Body Connection Type, Size, & Rating
F. Displacer Position (Vertical or Horizontal)
G. Controller Mount (Right or Left) if applicable
H. Pilot Action
I. Area Electrical Classification if applicable
J. Top Level or Interface



RIGHT HAND MOUNT



LEFT HAND MOUNT

RIGHT HAND MOUNT VS. LEFT HAND MOUNT

The Series 1001 and Series 1001A can be configured as Right Hand Mount or Left Hand Mount. The orientation of the displacer to the controller (while facing the front side of the controller) designates the mounting style. The mounting can be adjusted in the field. The Series 1001XL is utilized when neither Right Hand or Left Hand Mount are practical.

ELECTRIC LEVEL SWITCH

The electric level switch uses the force balance principle to apply force to a standard Honeywell Micro-switch.

Two standard switches are available, single pole double throw (SPDT) or double pole double throw (DPDT). Rating for SPDT switch is 15 amps at 125, 250, or 480 volts A.C. The DPDT switch rating is 10 amps at 125 or 250 volts A.C. An explosion-proof or splash-proof enclosure is available.

EX	OP
Explosion Proof U-L listed explosion proof switch for hazardous location Class I — Groups C & D Class II — Groups E, F & G	Splash Proof Splash proof switches sealed against the splash of oil, water and other liquid of a non-corrosive nature; but are not sealed against immersion.

MODEL NUMBER CODE

Model 2 SM 60 - S R D A - A G

END CONNECTIONS	
SIZE	CODE
1.50"	1.5
2.00"	2
3.00"	3
4.00"	4
6.00"	6

END CONNECTIONS		
TYPE		CODE
Beveled Slip-On		BS
Beveled Butt Weld Sch 40		B4
Beveled Butt Weld Sch 80		B8
Beveled Butt Weld Sch 160		B1
Beveled Butt Weld Sch XXH		BX
Grooved		GV
Flanged	Raised Face	RF
	Ring Type Joint	RJ
	Special 4 Bolt	SF
Screwed Male NPT		SM
Yale Union		YU
Dover Union		DU

PRESSURE RATING		
ANSI	RATING	CODE
150	285	02
300	740	07
400	960	09
	1000	10
600	1480	14
	1500	15
	2000	20
900	2220	21
	2500	25
	3000	30
1500	3750	36
	4000	40
	5000	50
	6000	60
2500	6170	60

* BODY PRESSURE RATING SUBJECT TO SELECTION OF DISPLACER. **SEE DISPLACER CHART.**

MATERIAL - BODY/SHAFT/BLOCK			
BODY	SHAFT/ BEARING	BEARING BLOCK	CODE
A696 CS or WCC	303	303	---
410	316	316	B
Alloy-20	A-20	A-20	G
A696 CS (NACE)	316	316	N
316 (NACE)	316	316	R
316	316		S

PILOT MODE	
MODE TYPE	CODE
Electric DPDT (Ex-Proof)	D
Electric SPDT (Ex-Proof)	E
Electric DPDT (Splash Proof)	F
Pneumatic Relief (W/60 PSIG Gauge)	G
Electric SPDT (Splash Proof)	O
Electric SPDT (Hermetic Sealed)	K
Electric DPDT (Hermetic Sealed)	L
Pneumatic Snap (On-Off)	S
Pneumatic Throttle (Modulating)	T

ENCLOSURE	
CODE	TYPE
A	Standard Case (1001 Only)
G	Sealed Case/Cover Only
H	Sealed Case/Cover and Piped Exhaust
J	Sealed Case/Cover, Piped Exhaust and Special Marine Internals
K	Sealed Case/Cover and Special Marine Internals

SERVICE CONDITION	
CODE	SERVICE
A	Standard
B	Vibration

PRESSURE GAUGES	
CODE	TYPE
-	Bronze 0-30 psi (std)
H	0-60 psi
J	316 SST 0-30 psi
K	0-60 psi (1001A/1001XL)
L	Liquid Filled 0-30 psi (1001A/1001XL)
M	0-60 psi (1001A/1001XL)
N	NPF 0-30 psi (1001)

SEAL/BEARING MATERIAL			
CODE	O-RING	BEARING	TEMP (ºF)**
E	EPR	303 SST	275
F	Viton	303 SST	400
A	Buna	303 SST	180
S	Aflas	316 SST	400

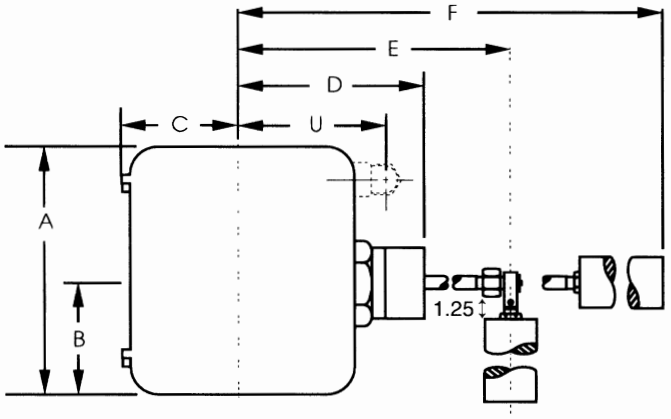
** SEAL TEMPERATURE RATING SUBJECT TO SELECTION OF DISPLACER. **SEE DISPLACER CHART.**

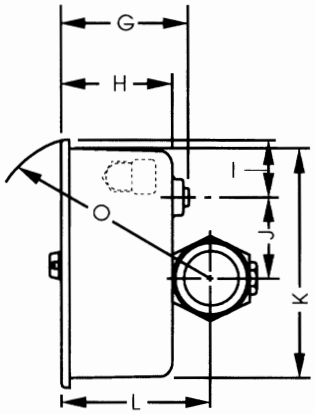
PILOT ACTION	
CODE	ACTION TYPE
D	Direct Acting
R	Reverse Acting

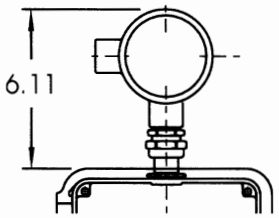
MOUNTING CASE	
CODE	MOUNTING TYPE
B	Back
L	Left Hand
R	Right Hand

DISPLACER CHART DISPLACER TEMPERATURE/PRESSURE RATING		
MATERIAL	MAX. TEMP. (ºF)	MAX. PRESSURE (PSIG)
PVC	-20 to 140	6170
Acrylic	-20 to 200	6170
Aluminum	-70 to 400	6170
SST-0	-70 to 400	720
SST-1	-70 to 400	1500
SST-2	-70 to 400	2000

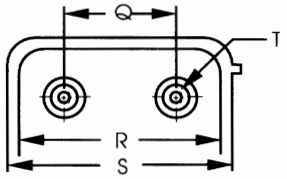
DIMENSIONS



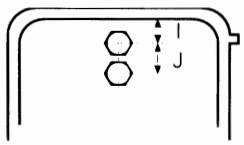




Hermetically Sealed Switch

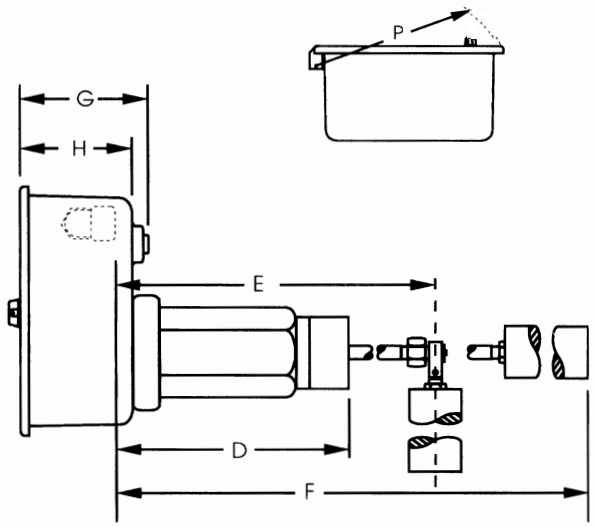


1001A/1001XL



1001

	MODEL		
	1001	1001A	1001XL
A	7.68	8.74	8.74
B	3.00	3.85	3.00
C	4.09	4.13	4.13
D	6.00	6.00	6.00
E	13.67*	13.67*	13.67*
F	24.43*	24.43*	24.44*
G	3.12	4.36	4.36
H	2.75	3.95	3.95
I	0.90	1.90	1.90
J	1.00	2.98	2.98
K	7.68	7.98	7.98
L	4.00	5.19	----
O	6.00	7.13	----
P	7.75	7.85	7.85
Q	----	4.00	4.00
R	----	7.06	7.06
S	----	8.01	8.01
T	1/4 NPT	1/4 NPT	1/4 NPT
U	4.75	4.87	5.16

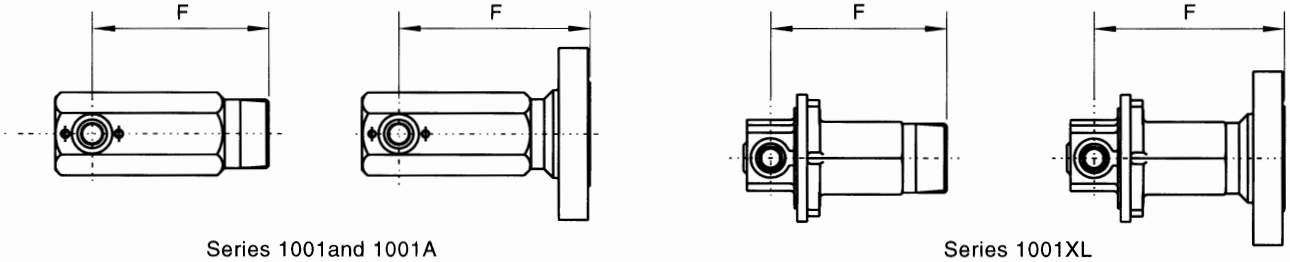


Side View of 1001XL

* Using standard 1.875 dia. X 12 inch displacer and 12.5 inch displacer arm. Length is dependent upon displacer arm and displacer.

DIMENSIONS

DIMENSION "F"				
BODY STYLES X	BODY SIZE			
	2.00	3.00	4.00	6.00
Beveled B/W SCH 40	6.00	-	-	-
SCH 80	6.00	-	-	-
SCH XXH	6.00	-	-	-
Beveled Slip-On	6.00	-	-	-
Screwed Male NPT	6.00	-	-	-
Grooved	6.00	6.88	6.94	7.00
Flanged - 4-Bolt - Special	6.88	-	-	-
- 150 RF	6.50	6.56	6.56	8.75
- 150 RTJ	6.69	6.88	6.88	8.94
- 300RF	6.81	6.75	6.88	9.19
- 300 RTJ	7.06	7.00	7.25	9.25
- 400 RF	7.19	7.13	7.38	9.75
- 400 RTJ	7.25	7.31	7.44	9.81
- 600 RF	7.19	7.13	7.50	10.13
- 600 RTJ	7.25	7.31	7.56	10.19
- 900 RF	8.00	9.63	10.13	10.56
- 900 RTJ	8.06	9.69	10.19	10.63
- 1500 RF	8.00	10.25	10.63	11.88
- 1500 RTJ	8.06	10.31	10.69	11.94
- 2500 RF	9.13	11.00	11.75	13.50
- 2500 RTJ	9.19	11.13	11.94	13.75



Series 1001and 1001A

Series 1001XL

WEIGHTS				
BODY STYLES X	BODY SIZE			
	2.00	3.00	4.00	6.00
Beveled B/W SCH 40	17	NA	NA	NA
SCH 80	17	NA	NA	NA
SCH XXH	17	NA	NA	NA
Beveled Slip-On	18	NA	NA	NA
Screwed Male NPT	18	NA	NA	NA
Grooved	18	19	20	
Flanged - 4-Bolt - Special	26	NA	NA	
- 150 RF	25	30	34	
- 150 RTJ	25	30	34	
- 300RF	27	35	45	
- 300 RTJ	27	35	45	
- 400 RF				
- 400 RTJ				
- 600 RF	29	37	55	
- 600 RTJ	29	37	55	
- 900 RF	40	51	75	
- 900 RTJ	40	51	75	
- 1500 RF	45	72	95	
- 1500 RTJ	45	72	95	
- 2500 RF	61	110	150	
- 2500 RTJ	61	110	150	

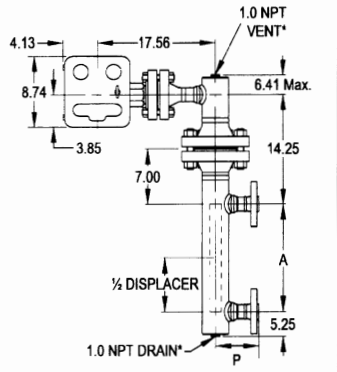
Weights are for 1001. For 1001A add 1 lb, and for 1001XL add 2 lb.

SERIES 1006 VERTICAL CHAMBERS

The Series 1001 and Series 1001A can be externally mounted using our Series 1006 Vertical or Horizontal External Chambers. These external chambers provide more stable operation for vessels with internal obstruction or considerable internal turbulance.

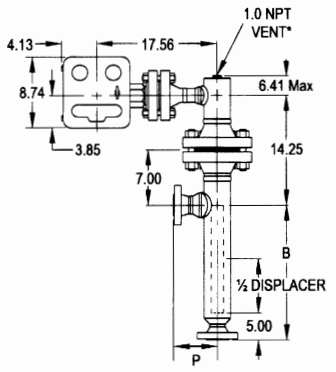
FLANGED

STYLE 'AA'



* Plug Included

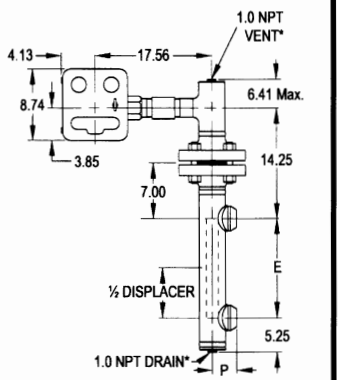
STYLE 'AB'



* Plug Included

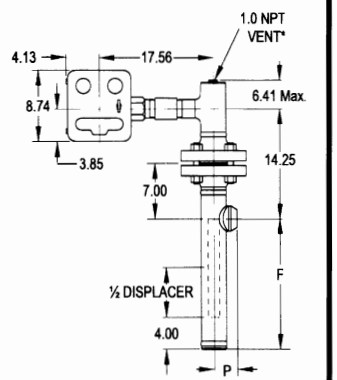
NPT

STYLE 'EE'



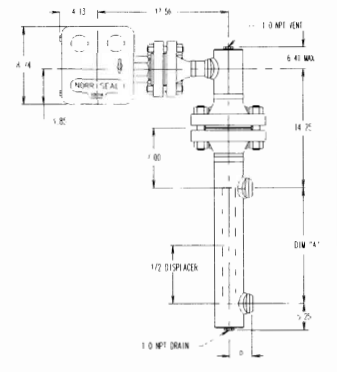
* Plug Included

STYLE 'EF'

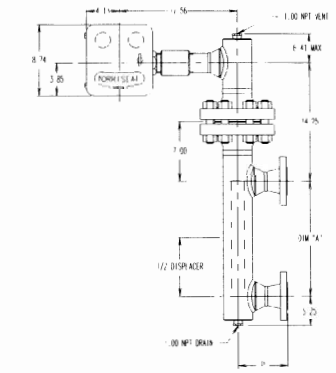


* Plug Included

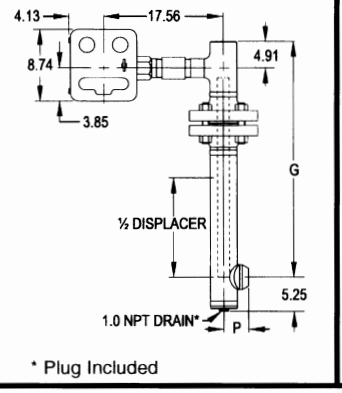
STYLE 'AE'



STYLE 'EA'

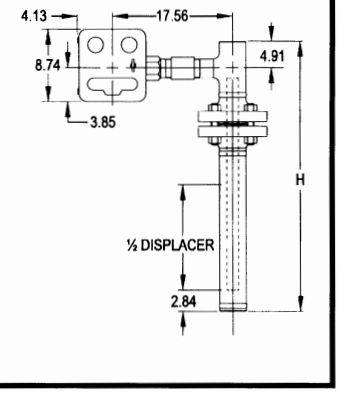


STYLE 'GG'



* Plug Included

STYLE 'GH'



** Other process connections available.*

PROCESS CONNECTIONS DIMENSIONS (INCHES)

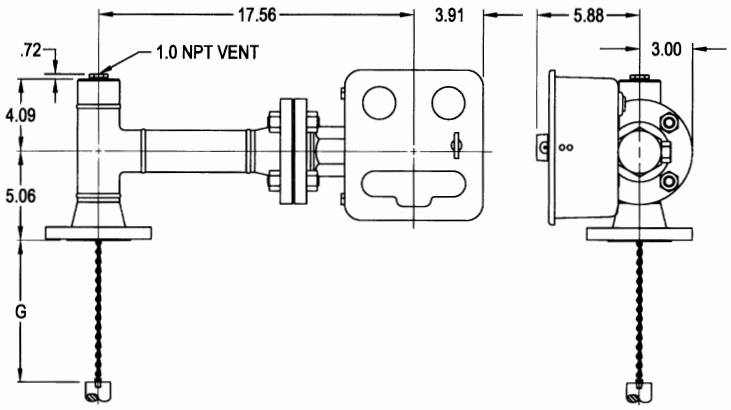
TYPE	STYLE	DISPLACER*	DIM**	DIM
Flanged	AA	14	A	14
		32		32
	AB	14	B	19
		32		37
	CC	14	C	21
		32		39
	CD	14	D	26
		32		44
Screwed	EE	14	E	14
		32		32
	EF	14	F	18
		32		36
	GG	14	G	19
		32		37
	GH	14	H	23
		32		41

PROCESS CONNECTIONS

ANSI CLASS			150	300	600
P	3.00 X 1.50 FLG	RF	5.62	5.88	6.19
		RTJ	5.88	6.12	6.19
	3.00 X 2.00 FLG	RF	5.88	6.12	6.50
		RTJ	6.12	6.44	6.56
	4.00 X 1.50 FLG	RF	6.12	6.38	6.69
		RTJ	6.38	6.62	6.69
	4.00 X 2.00 FLG	RF	6.38	6.62	7.00
		RTJ	6.62	6.94	7.06
	NPT SIZE		1.00	1.50	2.00
	3.00 X NPT		3.12	3.19	3.31
	4.00 X NPT		3.62	3.69	3.81

* Other displacer lengths available on request.

** Charted dimensions are for process connecting piping. All other dimensions may vary with respect to flange size and ANSI class.

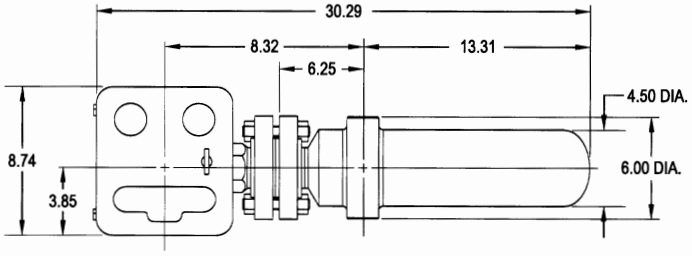


Series 1006D Dome

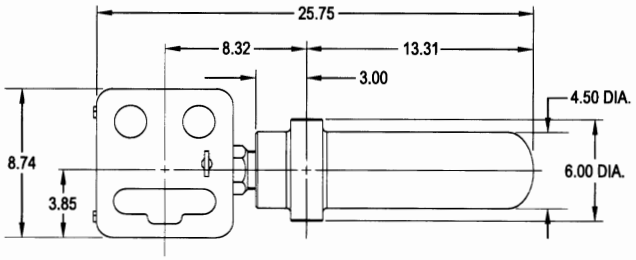
To specify a Dome Only (this is the top of the vertical chamber) add a suffix letter 'D' to the end of the Series Number. Refer to the Model Code, section Vertical Chamber Style.

Series 1006 Horizontal Chamber

(For Model Number Code, refer to page 15)



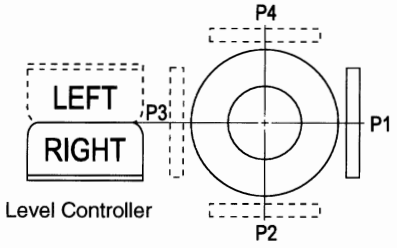
with Flanged Level Controller



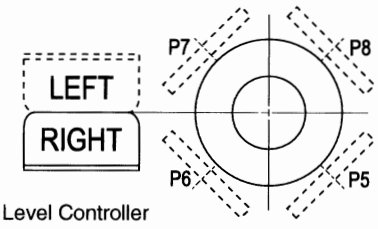
with Screwed Level Controller

Position of Process Connections

The following diagram illustrates the location of the process connections and level controller relative to Position 1 (P1) which is zero. Refer to Model Number Code, section Position Process Connection.



Level Controller



Level Controller

MODEL NUMBER CODE

The following model codes apply to the **Series 1006 Vertical Chamber with Dome** and to the **Series 1006D Dome Only**.

Model 3 A A 14 - 20 RF 14 - P1

CHAMBER/DOME PIPE SIZE	
DESCRIPTION	CODE
3.00"	3
4.00"	4

VERTICAL DOME STYLE	
DESCRIPTION	CODE
Flanged LLC W/NPT Vent	A
Flanged LLC W/Top Flanged Process Conn	C
Screwed LLC W/NPT Vent	E
Screwed LLC W/Top NPT Process Conn	G

VERTICAL CHAMBER STYLE			
TYPE PROCESS CONNECTION	TYPE LEVEL CTL CONNECTION	PROCESS CONNECTION MOUNTNG STYLE	CODE
Flanged	See Dome	Side Top-Side Btm	A
Flanged	See Dome	Side Top-Btm	B
Flanged	See Dome	None-Side Btm	C
Flanged	See Dome	None-Btm	D
Screwed	See Dome	Side Top-Side Btm	E
Screwed	See Dome	Side Top-Btm	F
Screwed	See Dome	None-Side Btm	G
Screwed	See Dome	None-Btm	H
1006D Dome Only			0

DISPLACER LENGTH	
DESCRIPTION	CODE
12.00 Inch	12
14.00 Inch	14
18.00 Inch	18
32.00 Inch	32
48.00 Inch	48
52.00 Inch	52
60.00 Inch	60
Dome Only	0

DOME/CHAMBER MATERIAL	
DESCRIPTION	CODE
Carbon Steel A105/A106	---
Carbon Steel A105/A106 Except Domestic Material	D
304 Stainless Steel	G
Carbon Steel - NACE, A333/A350 -50°F	L
Monel - NACE	M
Carbon Steel - NACE, A105/A106	N
316 L Stainless Steel - X-Ray NACE	R
316 Stainless Steel	S
316 Stainless Steel - X-Ray	T
Carbon Steel A105/A106 Except X-Ray	X
Carbon Steel A105/A106 NACE X-Ray	Y

PROCESS CONNECTION	
DESCRIPTION	CODE
0.75 Inch	07
1.00 Inch	10
1.50 Inch	15
2.00 Inch	20
2.50 Inch	25
3.00 Inch	30
4.00 Inch	40

POSITION PROCESS CONNECTION	
CODE	DESCRIPTION
P1	0 Degrees W/LLC at 180 Degrees
P2	90 Degrees W/LLC at 180 Degrees
P3	180 Degrees W/LLC at 180 Degrees
P4	270 Degrees W/LLC at 180 Degrees
P5	45 Degrees W/LLC at 180 Degrees
P6	135 Degrees W/LLC at 180 Degrees
P7	225 Degrees W/LLC at 180 Degrees
P8	315 Degrees W/LLC at 180 Degrees

STUD & GASKET MATERIAL			
CODE	STUD / NUT	GASKET	
		RF or FF	RJ
---	ASTM A193-B7/ ASTM A194-2H	316L/GRF CSTL GR	CSTL Solid
A	ASTM A193-B8M/ ASTM A194-8M	316L/GRF CSTL GR	316 SS Solid
B	ASTM A193-B7/ ASTM A194-2H	316L/GRF 316SS GR	316 SS Solid
C	ASTM A193-B7/ ASTM A194-2H	INC/GRF CSTL GR	-----
D	ASTM A193-B8M/ ASTMA194-SS8M	316L/GRF 316SS GR	316 SS Solid
L	ASTM A193-B7M/ ASTM A194-2HM	INC/GRF 316SS GR	316 SS Solid
M	ASTM B164/ Monel 400	MON/GRF 316SS GR	-----

RATING PROCESS CONNECTION		
CODE	DESCRIPTION	
02	Flanged	150
07		300
14		600
21		900
36		1500
14	Screwed	1480

NOTE:
1. Flanged - LLC & Dome/Chamber Connection Rated Same as Process Connection. Except - ANSI 150 Class Dome/Chamber Flange Connection is ANSI 300.
2. Threaded - Unless otherwise specified, Dome/Chamber Connection is ANSI 600 Class.

TYPE PROCESS CONNECTION	
CODE	DESCRIPTION
RF	Flanged - RF (Raised Face)
RJ	Flanged - RJ (Ring Type Joint)
FF	Flanged - FF (Flat Face)
GR	Grooved
B4	Buttweld - Schedule 40
B8	Buttweld - Schedule 80
B1	Buttweld - Schedule 160
BX	Buttweld - Schedule XXH (Extra Heavy)
W4	Socketweld - Schedule 40
W8	Socketweld - Schedule 80
W1	Socketweld - Schedule 160
WX	Socketweld - Schedule XXH (Extra Heavy)
SC	Screwed Female
SM	Screwed Male

Note:
Specify when Gauge Glass Connections are required. Give Size, Position, and Center to Center Dimension.

MODEL NUMBER CODE

Series 1006 Horizontal Chamber

Model 4 _ V 14 - 20 RF 14 -

CHAMBER PIPE SIZE	
DESCRIPTION	CODE
4.00"	4

HORIZONTAL DOME STYLE	
DESCRIPTION	CODE
Leave Blank	

HORIZONTAL CHAMBER STYLE			
TYPE PROCESS CONNECTION	TYPE LEVEL CTL CONNECTION	PROCESS CONNECTION MOUNTNG STYLE	CODE
Screwed	Flanged	Top-Bottom	L
Flanged	Screwed	Top-Bottom	M
Flanged	Flanged	Top-Bottom	N
Socket Weld	Flanged	Top-Bottom	S
Screwed	Screwed	Top-Bottom	V
Socket Weld	Screwed	Top-Bottom	X
Buttweld	Flanged	Top-Bottom	Y
Buttweld	Screwed	Top-Bottom	Z

DISPLACER LENGTH	
DESCRIPTION	CODE
10.00 Inch	10
12.00 Inch	12
14.00 Inch	14
Specify	XX

CHAMBER MATERIAL	
DESCRIPTION	CODE
Carbon Steel A105/A106	---
Carbon Steel A105/A106 Except Domestic Material	D
304 Stainless Steel	G
Carbon Steel - NACE, A333/A350 -50°F	L
Monel - NACE	M
Carbon Steel - NACE, A105/A106	N
316 L Stainless Steel - X-Ray NACE	R
316 Stainless Steel	S
316 Stainless Steel - X-Ray	T
Carbon Steel A105/A106 Except X-Ray	X
Carbon Steel A105/A106 NACE X-Ray	Y

STUD & GASKET MATERIAL			
CODE	STUD / NUT	GASKET	
		RF or FF	RJ
---	ASTM A193-B7/ ASTM A194-2H	316L/GRF CSTL GR	CSTL Solid
A	ASTM A193-B8M/ ASTM A194-8M	316L/GRF CSTL GR	316 SS Solid
B	ASTM A193-B7/ ASTM A194-2H	316L/GRF 316SS GR	316 SS Solid
C	ASTM A193-B7/ ASTM A194-2H	INC/GRF CSTL GR	-----
D	ASTM A193-B8M/ ASTM A194-SS8M	316L/GRF 316SS GR	316 SS Solid
L	ASTM A193-B7M/ ASTM A194-2HM	INC/GRF 316SS GR	316 SS Solid
M	ASTM B164/ Monel 400	MON/GRF 316SS GR	-----

RATING PROCESS CONNECTION		
CODE	DESCRIPTION	
02	Flanged	150
07		300
14		600
21		900
36		1500
15	Screwed	1500
20		2000
30		3000
50		5000
60		6000

TYPE PROCESS CONNECTION	
CODE	DESCRIPTION
RF	Flanged - RF (Raised Face)
RJ	Flanged - RJ (Ring Type Joint)
FF	Flanged - FF (Flat Face)
B4	Buttweld - Schedule 40
B8	Buttweld - Schedule 80
B1	Buttweld - Schedule 160
BX	Buttweld - Schedule XXH (Extra Heavy)
W4	Socketweld - Schedule 40
W8	Socketweld - Schedule 80
W1	Socketweld - Schedule 160
WX	Socketweld - Schedule XXH (Extra Heavy)
SC	Screwed Female
SM	Screwed Male

PROCESS CONNECTION	
CODE	DESCRIPTION
10	1.00 Inch
15	1.50 Inch
20	2.00 Inch

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