

Liquid Division

Mounting Solutions



INTRODUCTION:

Rosemount Analytical, Inc, Uniloc Division is pleased to offer a variety of sensor mounting options to fit many demanding process needs. Mounting tees, ball valve kits, advanced automated assemblies, and other configurations used for mounting conductivity, pH, and amperometric (dissolved oxygen, chlorine, and ozone) sensors are listed on the following pages. Please note that each mounting accessory is only valid for the stated sensors. Sensors must be purchased separately.

The mounting accessories found in this brochure can be used in a wide variety of applications commonly found in the following industries:



Pulp and Paper



Chemical



Metals and Mining



Food and Beverage



Hydrocarbon Processing



Water Treatment



Textile



Utilities














Pharmaceutical

The symbol for each industry is noted on each page if it is a mounting solution commonly used in the industry. Also, for some accessories, specific examples of the applications are noted.

The following mounting accessories are helpful for mounting sensors in ponds, pipes, and tanks and for tapping into lines. Some mounting assemblies are designed to be used with only conductivity, amperometric, or pH sensors.

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IN-LINE TEES

COMMON INDUSTRIES:



Metals & Mining Food & Beverage Hydrocarbon Processing Municipal Textile Utilities Pharmaceutical

- Used with conductivity, dissolved oxygen, chlorine, ozone, and pH sensors
- Installed directly into pipelines and slip streams in the process plant
- Compatible with various sizes of process lines.
- Adapters (offered on most tees) allow easy removal of sensors without twisting cables.
- Used in a wide variety of applications including (but not limited to):
 - * Wastewater and sour gas scrubbers lines in the Hydrocarbon Processing Industry
 - * Sanitation water lines containing ozone, chlorine, or bromine in the Pharmaceutical or Food & Beverage Industries
 - * Cooling water sample manifolds found in many industries

	IN-LINE TEE PART NUMBER				
	2002011	23567-00	915240-03	915240-04	915240-05
Tee Size	1.5 in.	1.5 in.	2.0 in.	2.0 in.	2.0 in.
Adapter Thread Size	---	1.0 in.	1.0 in.	1.0 in.	1.0 in.
Process Connection Ends	1.0 in. threads	1.5 in. socket	3/4 in. threads	1.0 in. threads	1.5 in. threads
Tee Material	CPVC, Schedule 80	CPVC, Schedule 80	PVC, Schedule 80	PVC, Schedule 80	PVC, Schedule 80
O-Ring/Gasket Material	---	Buna N	Buna N	Buna N	Buna N
Maximum Rating	150 psig (1136 kPa) @ 150°F (65°C)	65 psig (549 kPa) @ 122°F (50°C)	60 psig (514 kPa) @ 120°F (49°C)	60 psig (514 kPa) @ 120°F (49°C)	60 psig (514 kPa) @ 120°F (49°C)
Compatible pH Sensor Models	396*, 396P, 389, 399, 385+*	396*, 396P, 389, 399, 385+*	396P, 389, 399	396P, 389, 399	396P, 389, 399
Compatible Amperometric Sensor Models	499ADO, 499ACL 499AOZ	499ADO, 499ACL 499AOZ	499ADO, 499ACL 499AOZ	499ADO, 499ACL 499AOZ	499ADO, 499ACL 499AOZ
Compatible Conductivity Sensor Models	150	---	---	---	---
See Figure	1	3	2	2	2

* Sensor must use a process connector; see page 20 for connector part numbers.

INSTALLATION NOTES:

1. Sensing tip of sensor should be wetted at all times with process liquid.
2. Allow at least 3.5 in. (90 mm) head room for sensor removal.
3. To ensure proper sensor performance, sensor must be mounted at least 10 degrees above the horizontal.

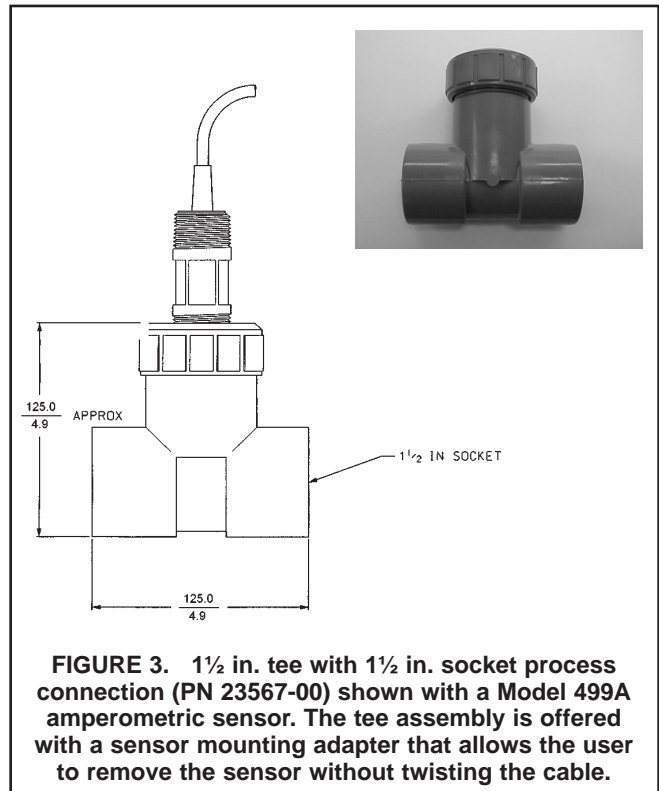
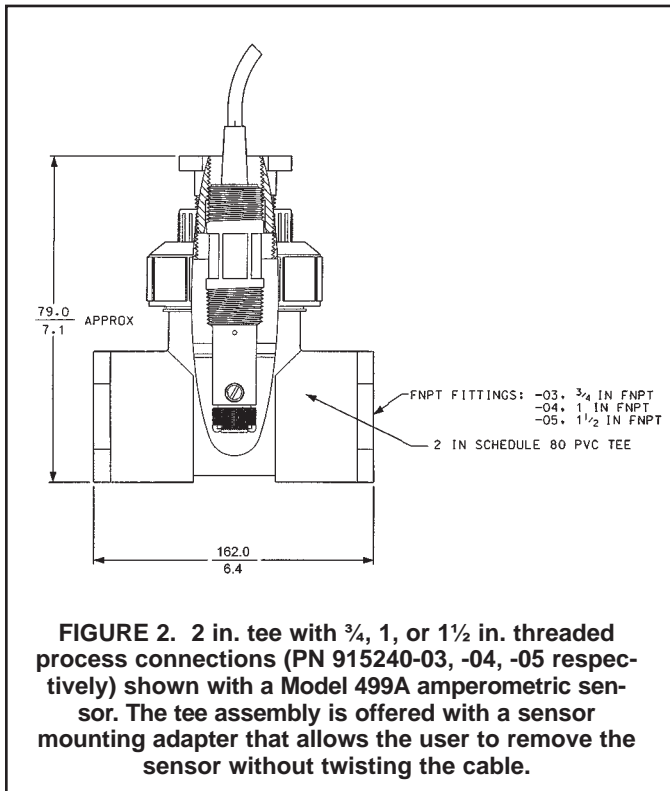
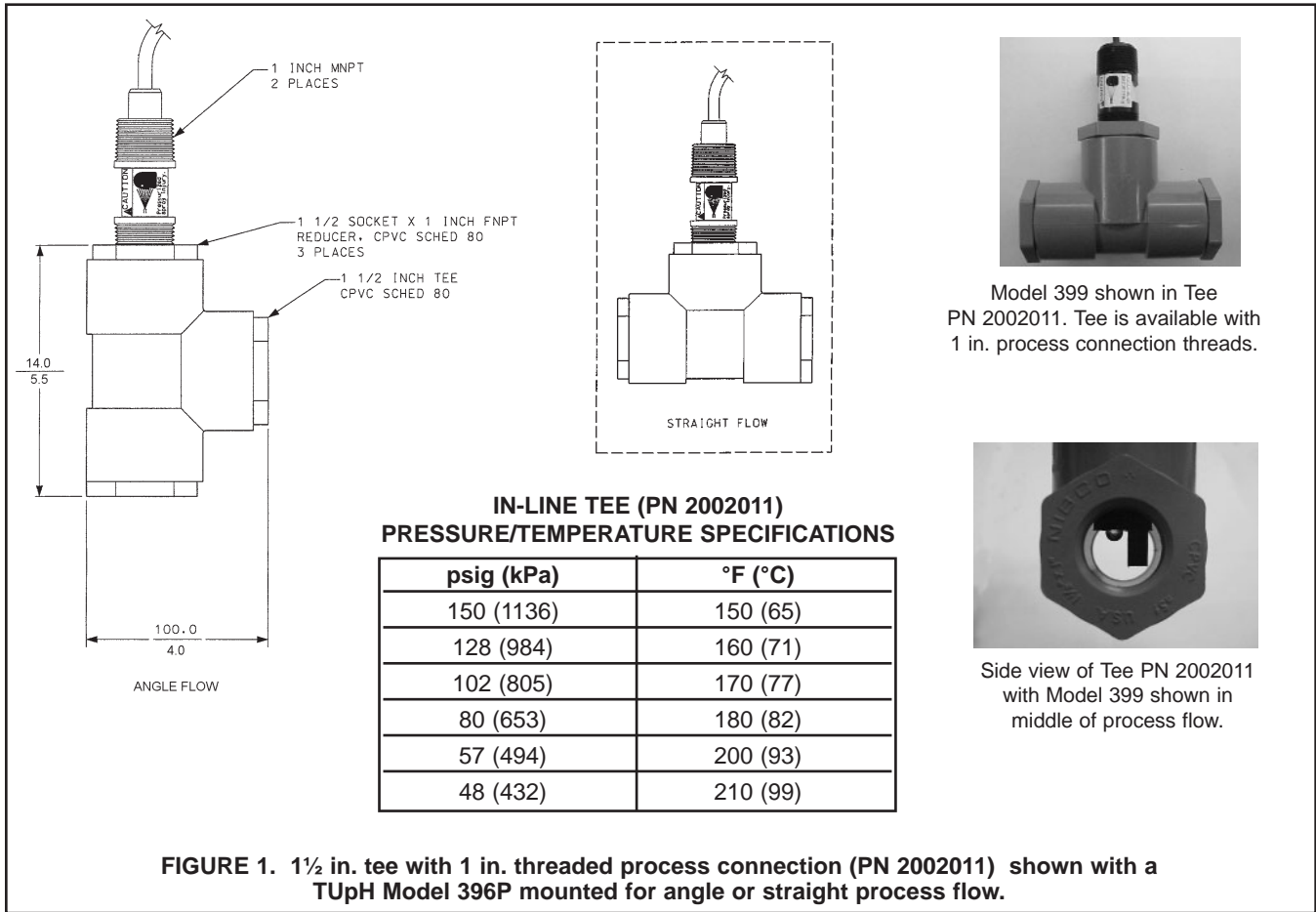


Side view of Tee PN 915240-03, -04, or -05 with Model 399 shown in middle of process flow. See Figure 2 for dimensional drawing.



Model 399 shown in Tee PN 915240-03, -04, or -05. Tee is available with 3/4 in., 1 in., or 1-1/2 in. NPT process connection threads. See Figure 2 for dimensional drawing.

IN-LINE TEES (continued)



LOW FLOW CELL:

COMMON INDUSTRIES:



Food and Beverage



Municipal



Utilities



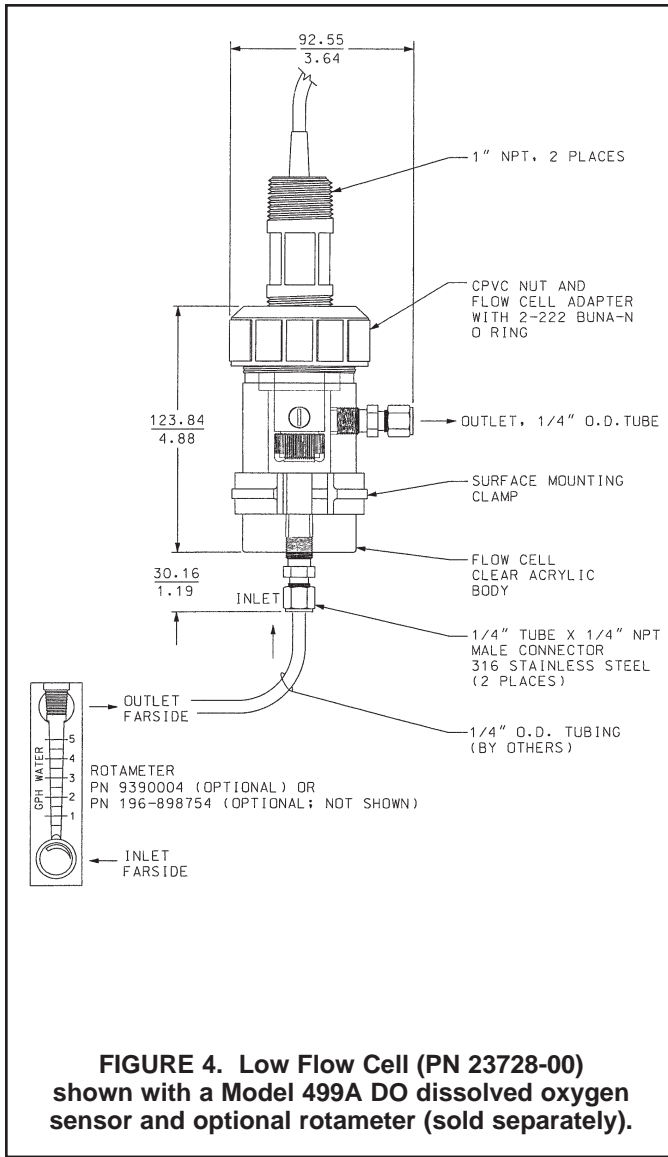
Pharmaceutical

- Used with dissolved oxygen, ozone, chlorine, and pH sensors
- Tap into existing piping and connect to 1/4" tubing
- Easy access to sensor without process shutdown
- Perfect for applications where large volumes of the process slip stream cannot be wasted to drain
- Clear, see-through plastic chamber allows visual inspection of the process stream
- Allows regulation of flow rate when used with a valved rotameter (sold separately)
- Ideal for applications such as
 - * Can and bottle sanitation using ozone, chlorine, or bromine in the Food and Beverage Industry
 - * Sanitation for Pharmaceutical applications
 - * Ultra Pure Water measurements in the Power and Semiconductor Industry
 - * Ozone contact tanks typically found in potable water plants

	Low Flow Cell Part Number 23728-00
Process Connection	1/4 inch 316 SST male tube connector
Wetted Materials	Body - Acrylic; Nut - CPVC; Fitting - 316 SST; Seals - Buna N
Maximum Temperature	122°F (50°C)
Maximum Pressure	65 psig (547 kPa)
Compatible pH Sensors	396*, 396P, 399, 389, 385+*
Compatible Amperometric Sensors	499A DO, 499A CL, 499A OZ

* Sensor must use a process connector; see page 20 for connector part numbers.

LOW FLOW CELL (continued)



Low Flow Cell

REQUIRED FLOW RATES

(Optional Rotameters sold separately):

Sensor Model	Flow Rate	Recommended Valved Rotameter
All pH sensor models	2 - 5 g/hr (7.6 - 19 L/hr)	PN 9390004 or PN 196-898754
499A CL	8 - 15 g/hr (30 - 57 L/hr)	PN196-898754
499A DO	2 - 5 g/hr (7.6 - 19 L/hr)	PN 9390004
499A OZ	2 - 5 g/hr (7.6 - 19 L/hr)	PN 9390004

VALVED ROTAMETERS (Used with the Low Flow Cell):

	PN 9390004 (see Figure 4)	PN 196-898754 (see Figure 4)
Range of Flow Regulated	0.4 - 5.0 g/hr (1.5 - 19.0 L/hr)	2.0 - 20.0 g/hr (7.6 - 76.0 L/hr)
Wetted Parts	acrylic, 316 SST, Viton	polycarbonate, 316 SST, brass, Buna N
Process Connection	1/4 inch FNPT (316 SST)	1/8 inch FNPT (brass)
Maximum Pressure	100 psig (790 kPa)	100 psig (790 kPa)
Maximum Temperature	150°F (65°C)	130°F (54°C)

THE QUIK-LOC ASSEMBLY:

COMMON INDUSTRIES:



Chemical



Metals & Mining



Hydrocarbon Processing



Textile



PEEK Adapter



**DIXON
316 SST Coupler**

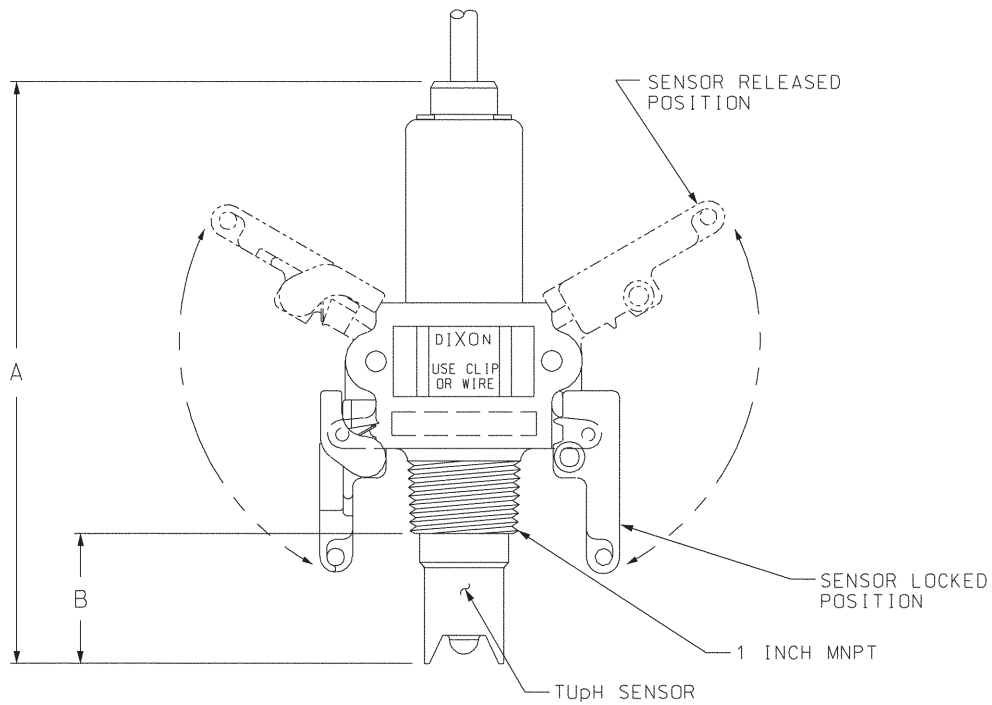


**QUIK-LOC KIT WITH
TUph MODEL 397 pH SENSOR**

- Designed for use with TUph Model 397 pH Sensor
- Unique design eliminates cable twisting
- Quick and easy sensor access by simple release of the coupler arms
- Coupler arms lock in place when sensor is in use
- Used in applications needing a quick disconnect solution:
 - * Coagulation and flocculation, waste neutralization, and scrubbers found in the Chemical Industries
 - * Waste water lines and crude overhead towers found in the Hydrocarbon Processing Industries
 - * Batch tanks typically found in the Food and Beverage Industry

	PN 23757-00	PN 23757-01
Process Connection	1 inch MNPT	1 inch MNPT
Wetted Materials	Coupler - 316 SST Gasket - EP Adapter - PEEK	Coupler - 316 SST Gasket - EP Adapter - PEEK
Temperature Rating	32 - 176°F (0 - 80°C)	32 - 176°F (0 - 80°C)
Pressure Rating	0 - 100 psig (100 - 790 kPa)	0 - 100 psig (100 - 790 kPa)
Sensor Insertion Depth	1.4 in./35 mm	2.0 in./50 mm
Compatible pH Sensor	397	397

THE QUIK-LOC ASSEMBLY (continued):



QUIK-LOC KIT	A SENSOR LENGTH	B INSERTION DEPTH
23757-00	6.15 IN. / 156 MM	1.4 IN. / 35 MM
23757-01	6.15 IN. / 156 MM	2.0 IN. / 50 MM

FIGURE 5. Quik-Loc mounting assembly (PN 23757-00, -01) shown with TUpH Model 397 pH sensor.

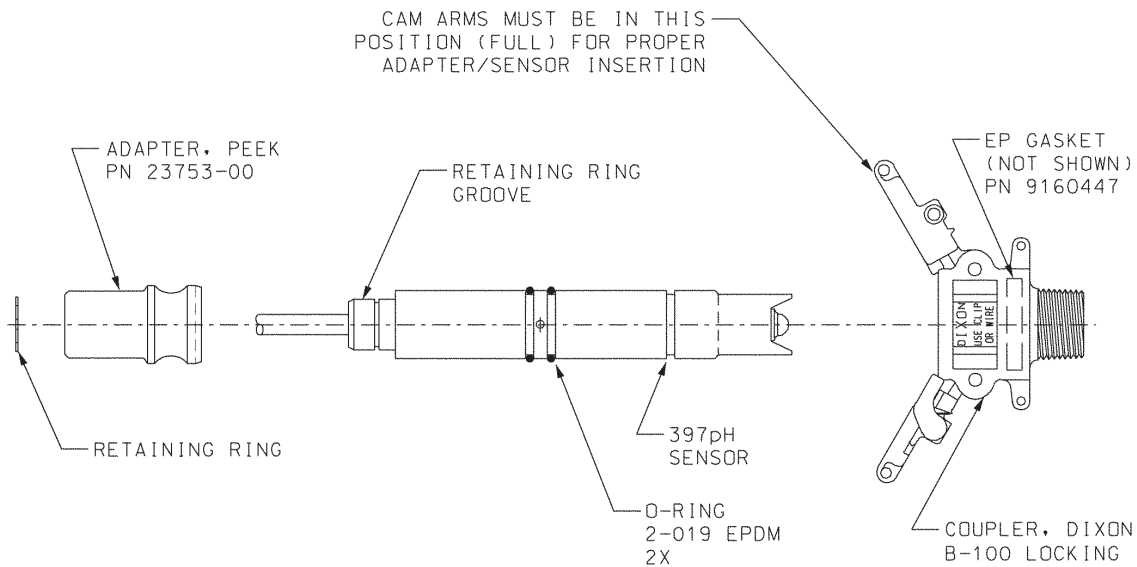


FIGURE 6. Unassembled view of the TUpH Model 397 pH sensor and the Quik-Loc assembly.

HANDRAIL MOUNTING ASSEMBLY:

COMMON INDUSTRIES:



Metals & Mining



Food & Beverage



Municipal



Textile



Utilities



Pharmaceutical

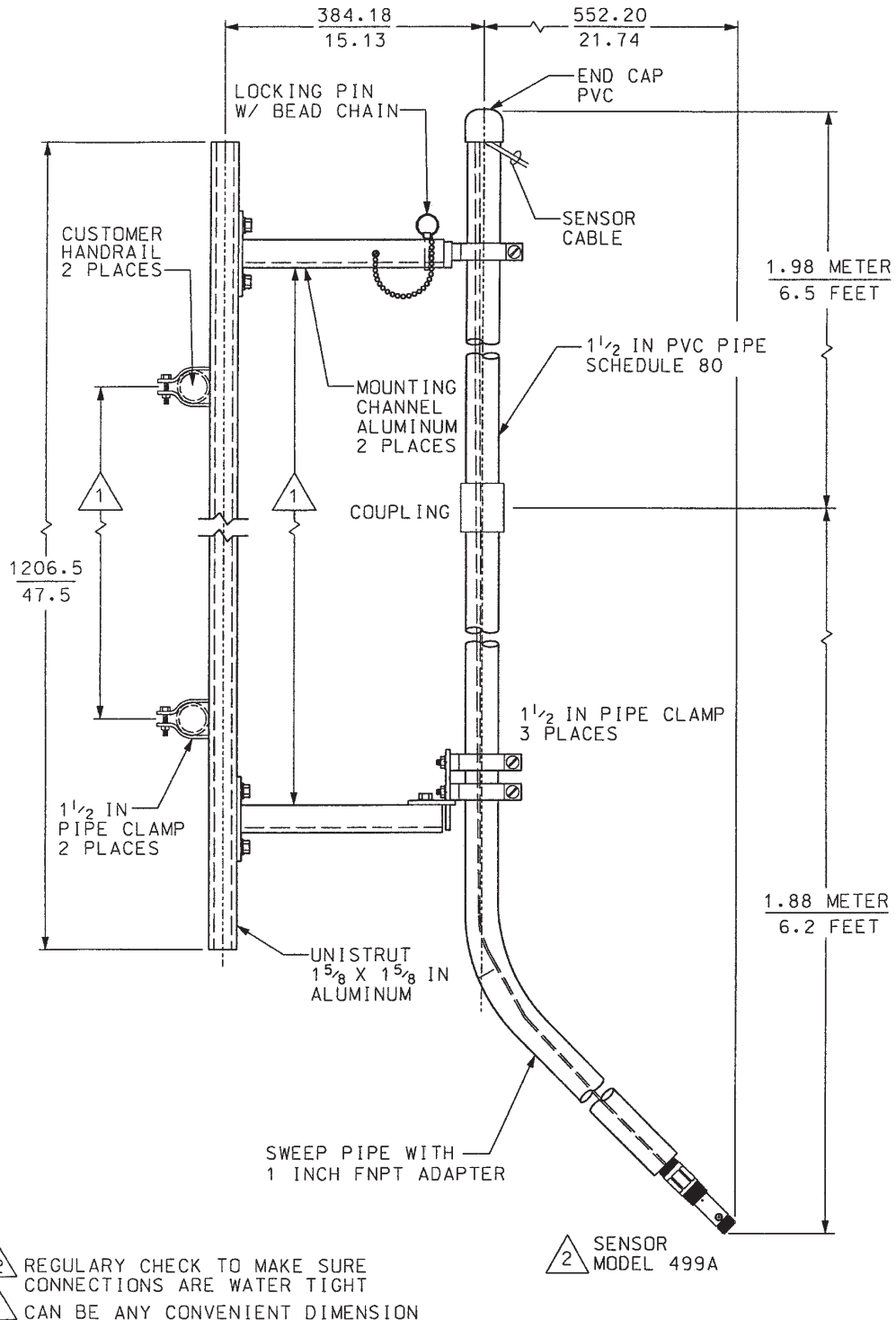
- Used with pH, dissolved oxygen, and chlorine sensors
- Excellent for use in tanks, aeration basins, or open channels where levels may vary
- Mounts easily onto handrail
- Sensor can be removed from tank or basin quickly and easily for servicing
- Assembly can be inserted to various depths
- Can be used with the Jet Spray Cleaner (see page 12) for dirty applications

	Part Number 11275-01
Process Connection	Mounting brackets for various sizes of handrails
Wetted Materials	PVC
Temperature Rating	140°F (60°C) max.
Compatible pH Sensors	396*, 396P, 399, 389, 385+*
Compatible Amperometric Sensors	499A DO**, 499A CL**, 499A OZ**
Optional Accessory	The Jet Spray Cleaner (see page 12)

* Sensor must use a process connector; see page 20 for connector part numbers.

** If used with the Handrail Mounting Assembly in a tank, remember that a correct measurement can only be made if there is a continuous flow pass the membrane of the sensor. These sensors will not operate properly in standing liquid.

HANDRAIL MOUNTING ASSEMBLY (continued):



**FIGURE 7. Handrail Mounting Assembly (PN 11275-01)
shown with Model 499A Dissolved Oxygen Sensor.**

JET SPRAY CLEANER:

COMMON INDUSTRIES:



Metals & Mining



Food & Beverage



Municipal



Textile



Utilities



Pharmaceutical

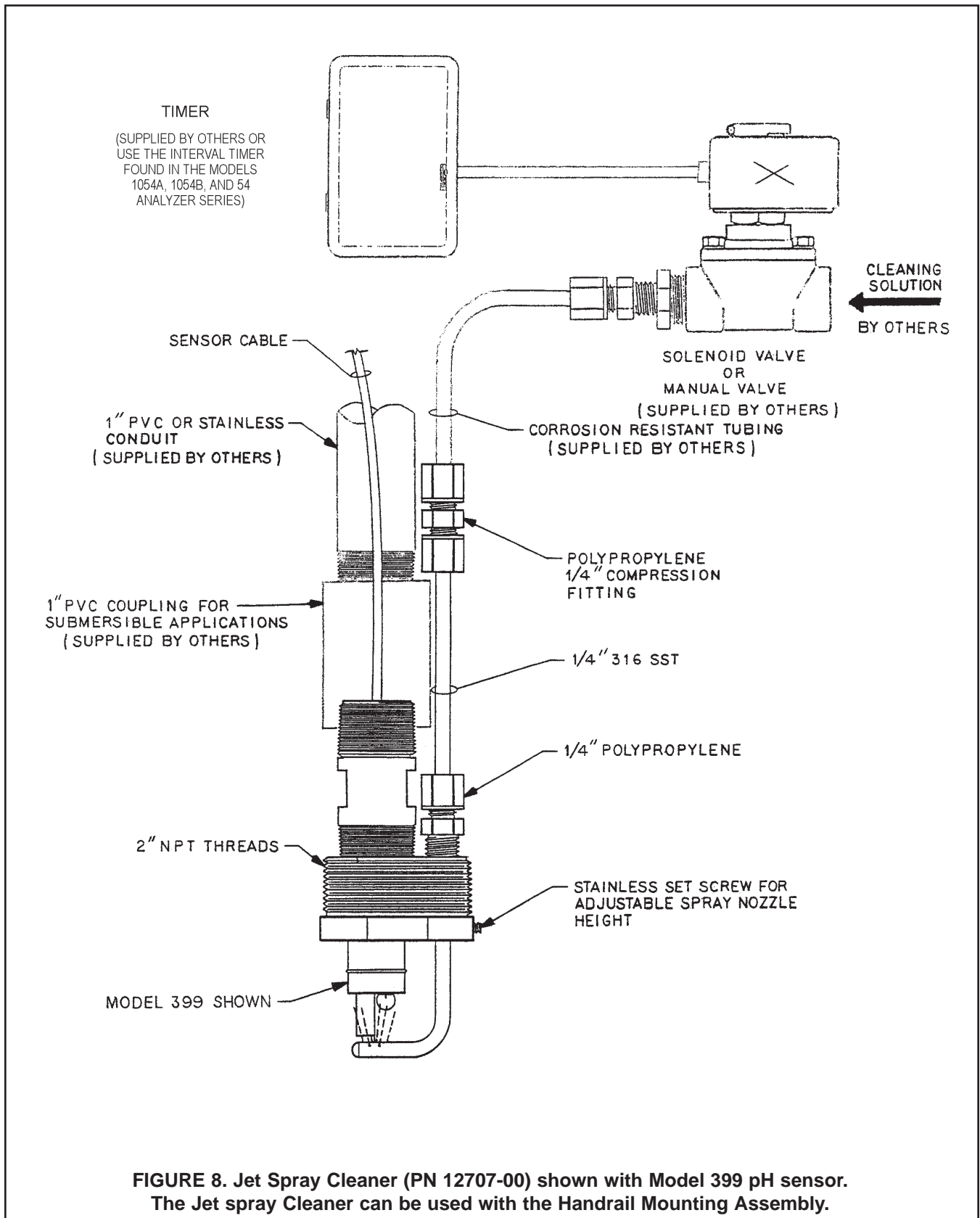


**JET SPRAY CLEANER SHOWN WITH
TUpH MODEL 396P pH SENSOR**

- Compatible with pH and amperometric sensors
- Can be used with the Handrail Mounting Assembly (see page 10)
- Cleans sensor tip using water, cleaning solutions, or compressed air
- Eliminates routine, manual maintenance
- For dirty or coating liquids typically found in waste water aeration basins or influent channels
- The cleaning spray can be controlled by a solenoid valve operated by the interval timer relay found in the Models 54, 1054A series, and 1054B series analyzers.

	Part Number 12707-00
Process Connection	2 in. NPT threads OR use sensor/conduit
Wetted Materials	316 SST, polypropylene, PVC
Compatible pH Sensors	396P, 389, 399
Compatible Amperometric Sensors	499A CL, 499A DO, 499A OZ

JET SPRAY CLEANER (continued):



MOUNTING ADAPTERS:

COMMON INDUSTRIES:



Metals & Mining



Food & Beverage



Hydrocarbon Processing



Municipal



Textile

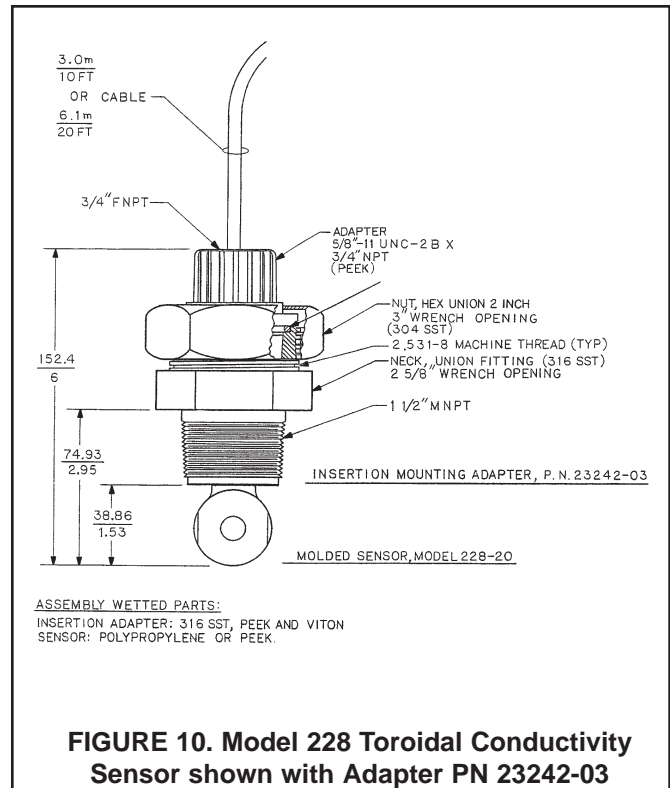
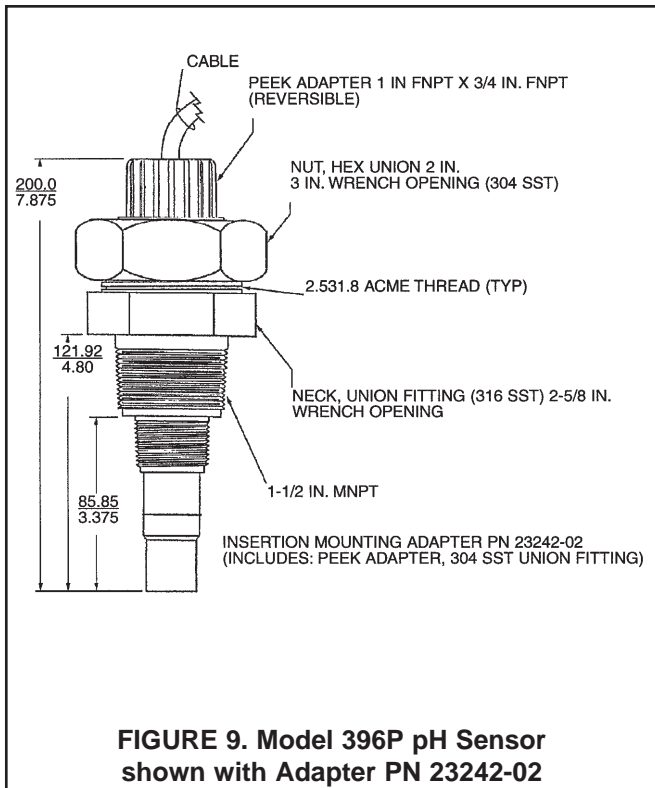


Utilities

- Used with conductivity, pH, dissolved oxygen, chlorine, and ozone sensors
- Perfect for any application with process connection thread sizes larger than sensor thread sizes; allows the sensor to mount in various process situations:
 - * Pipe Mounting Accessory mounts sensor on end of pipe for submersion into tanks and ponds
 - * Insertion Adapter is used for mounting sensor in pipe tees; sensor can be removed without cable twisting

ADAPTER	23242-02	23242-03	9330022
Materials of Construction	316 SST, PEEK, Viton	316 SST, PEEK, Viton	CPVC
Process Connection	1½ in. MNPT	1½ in. MNPT	1 in. FNPT
Sensor Adapter/Union Thread Size	1 in. x 3/4 in.	3/4 in. x 5/8-11 UNC	1 in. FNPT
Sensor Compatibility	228, 499A, 389, 396P, 399	228	396*, 396P, 389, 399, 385+*
Figure Number	9, 12	10, 12	11

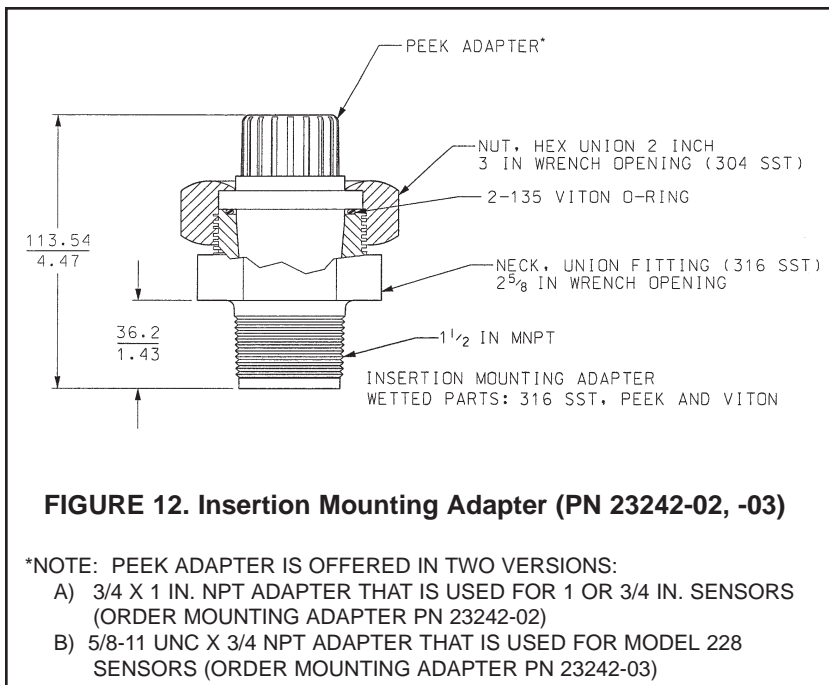
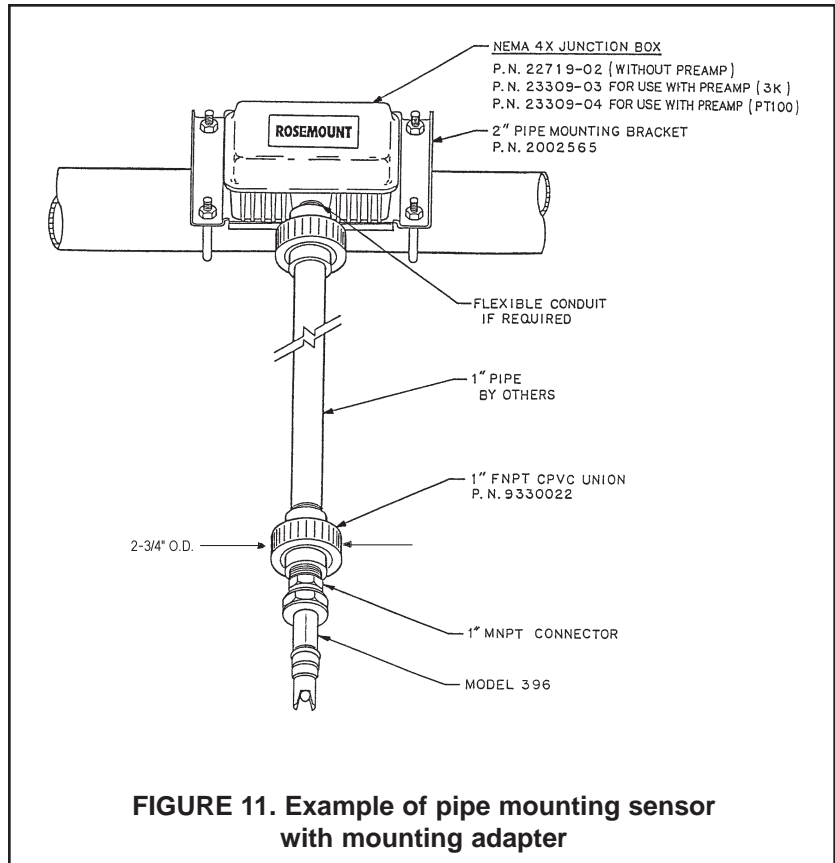
* Sensor must use process connector. See page 20 for connector part numbers.



MOUNTING ADAPTERS (continued):



The Pipe Mounting Accessory (PN 9330022) is ideal for connecting a sensor to a pipe for insertion into a pond, tank, aeration basin, or open channel.



The Insertion Adapter mounts sensors into a 1-1/2 inch NPT process pipe. Unscrewing the hex nut allows easy sensor removal without twisting the sensor cable.

BALL VALVE KITS:

COMMON INDUSTRIES:



Pharmaceutical



Pulp & Paper



Chemical



Metals & Mining



Hydrocarbon Processing



Textile



Utilities

- Used with retractable conductivity and pH sensors
- Can be installed in large pipes or tanks, with or without the use of weldalets
- Allows removal of the sensor from the process under operating conditions
- Perfect choice for process lines that cannot be shut down when sensor maintenance must be performed
- Proven in pulp and paper, chemical, and other severe process applications
- Conductivity measurements using Ball Valve Kits include:
 - * Demineralizer process water, reused evaporator condensate, and whitewater applications in the Pulp and Paper Industry
 - * Water/organic separators and demineralizer water applications typically found in the Hydrocarbon and Chemical Industries
 - * Bulk/raw ingredients in the Pharmaceutical Industry
- pH measurements using Ball Valve Kits include:
 - * Headbox, whitewater and stock prep applications in the Pulp and Paper Industry
 - * Waste neutralization, coagulation and flocculation, and scrubber applications in the Chemical Industries
 - * Hydrogenations, Hydroxylation, and bulk/raw ingredients in the Pharmaceutical Industry

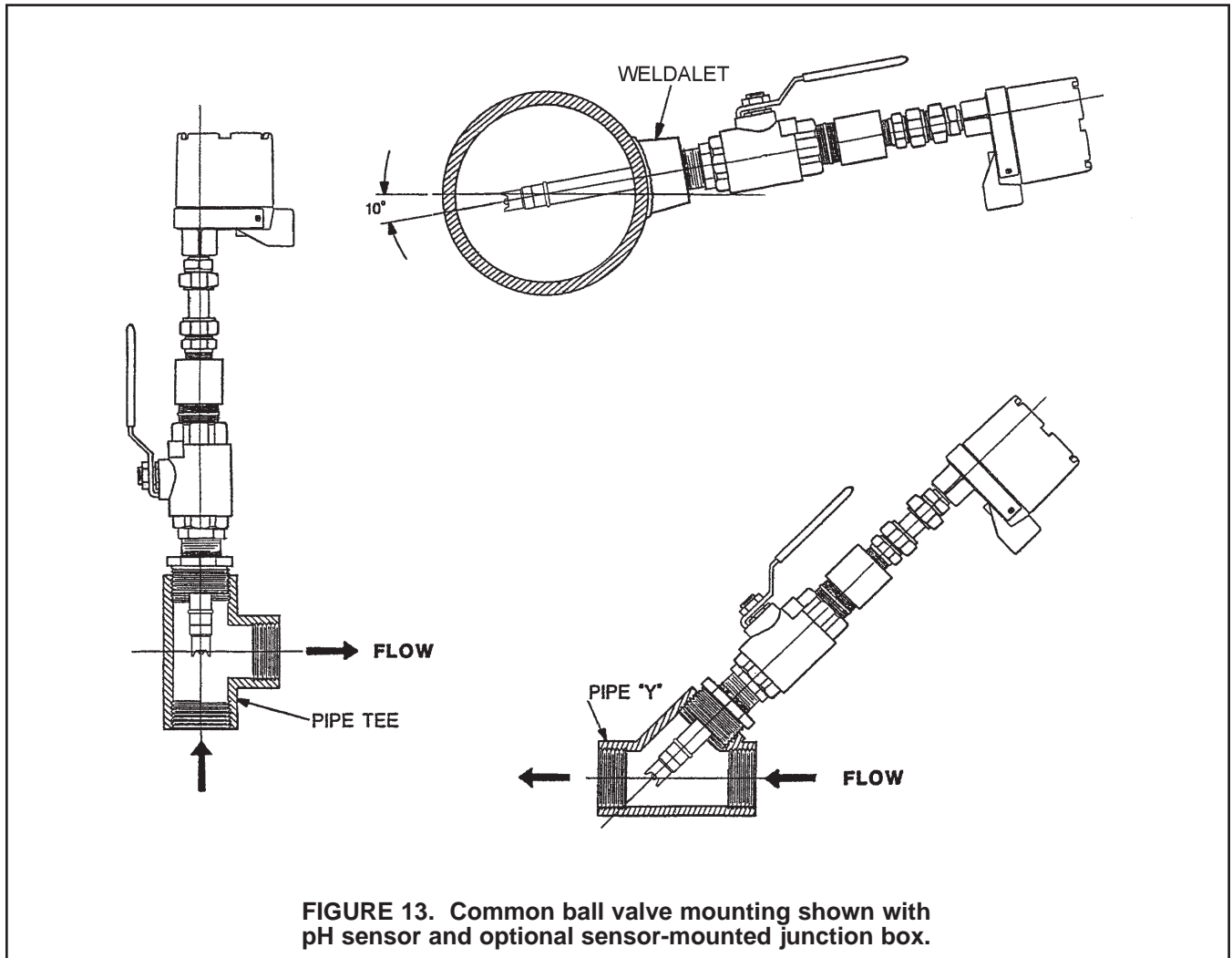
	1½ in. Ball Valve Kit (PN 23240-00)	1¼ in. Ball Valve Kit (PN 23765-00 and 23765-01)
Process Connections	1½ in. FNPT	1¼ in. MNPT
Wetted Materials	316 SST	316 SST
Temperature Rating	32 - 212°F (0 - 100°C)	32 - 212°F (0 - 100°C)
Pressure Rating	100 psig (790 kPa)	200 psig (1481 kPa)
Maximum Retraction Pressure	For 21 inch pH sensors: 64 psig (542 kPa) For 36 inch pH sensors: 35 psig (343 kPa)	64 psig (542 kPa) for all Model 400 conductivity sensors
pH Sensors	396R, 398R, 385, 385+	—
Conductivity Sensors	—	402
Other necessary parts to install sensor	Process connector*	None
Figure Number	14	15

* When using a 396R or 398R, the customer must use Process Connector (ordered separately) PN 23166-00 or 233166-01 to connect sensor to ball valve kit. Process Connector is included with the 385 and 385+ retractable sensors.

INSTALLATION NOTES:

1. All pH sensors must be mounted at least 10° above the horizontal.
2. For the best performance, all conductivity sensors should be oriented with the open end of the sensor facing the process flow with the process flowing into the sensor tip.

BALL VALVE KITS (continued)



BALL VALVE KITS (continued)

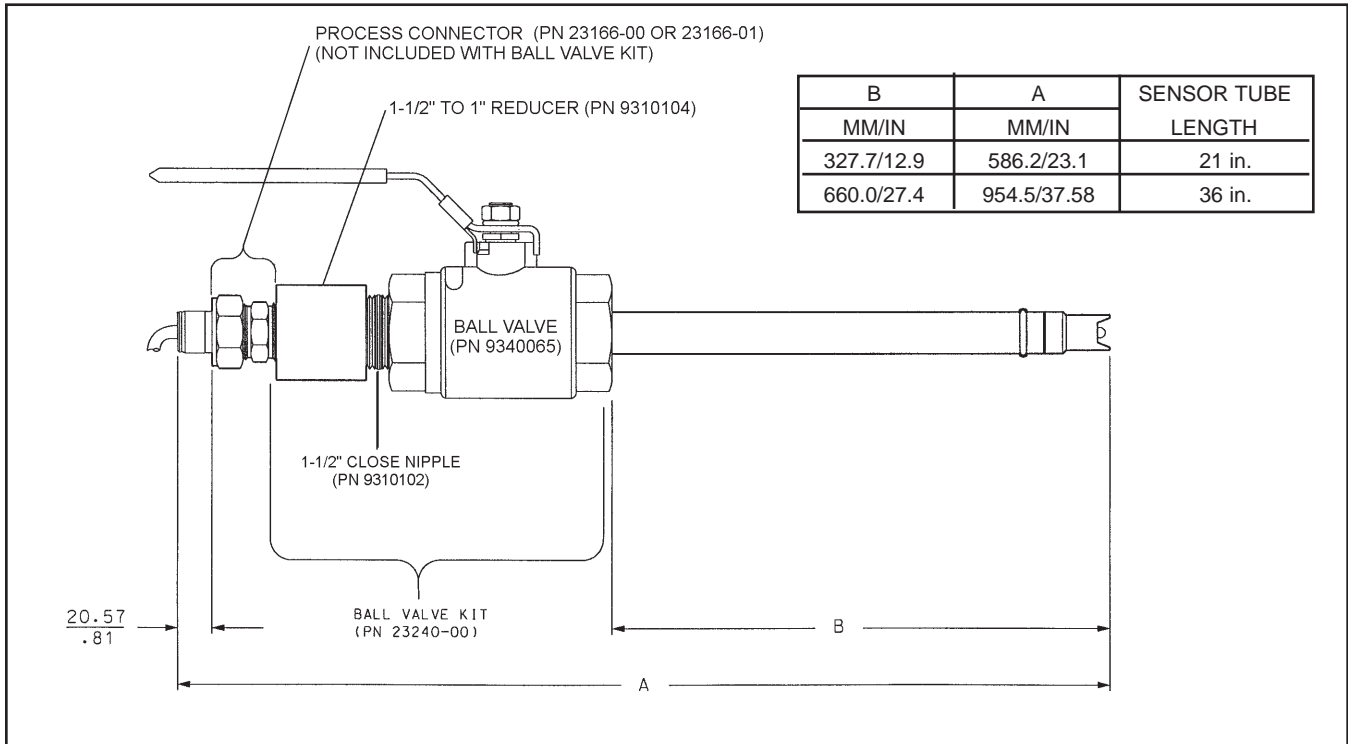


FIGURE 14. 1½ in. FNPT Ball Valve Kit (PN 23240-00) shown with process connector (sold separately) and TUPH Model 396R pH sensor.

Ball valve kit includes a 1½ in. full port ball valve, a 1½ in. to 1 in. reducer, and a 1½ in. close nipple. A process connector is required to connect sensor to the ball valve kit. See page 20 for process connector options.



Ball Valve Kit (PN 23240-00) used with Models 396R, 398R, 385, and 385+ pH retractable sensors

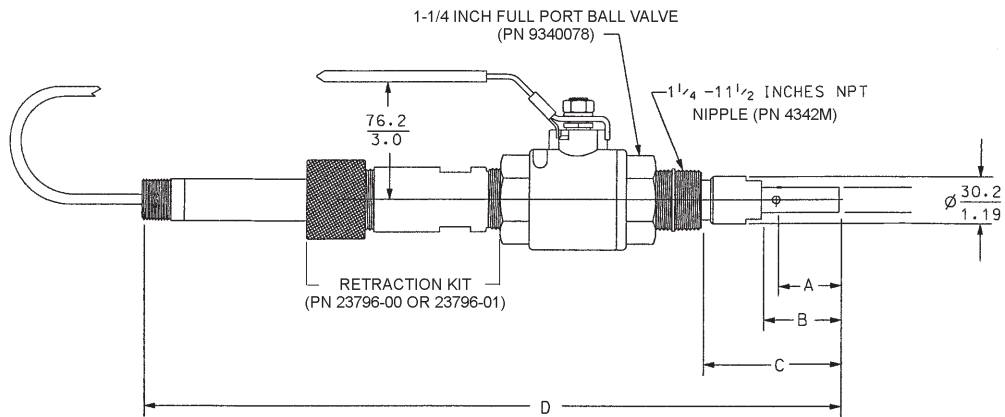


A process connector (PN 23166-00 or -01) must be used to connect the sensor to Ball Valve Kit 23240-00. Process connector can be purchased separately for use with Models 396R and 398R. The process connector is provided with Models 385 and 385+ retractable pH sensors.

BALL VALVE KITS (continued)



Ball Valve Kit PN 23765-00 (or 23765-01) used with Endurance™ Model 402 Conductivity Sensor



MODEL	BALL VALVE KIT	A		B		C (MIN - MAX)		D	
		INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
402-11	23765-00	1.59	40.4	1.98	50.3	3.21-5.34	82-136	18.13	460.5
402-12	23765-00	.687	17.4	1.11	28.2	2.34-4.47	59-114	17.33	440.2
402-13	23765-00	.667	16.9	1.13	28.7	2.36-4.49	60-114	17.33	440.2
402-14	23765-01	2.13	54.1	2.66	67.6	3.89-4.91	99-125	18.83	478.3

FIGURE 15. 1/4 in. MNPT Ball Valve Kit (PN 23765-00 or 23765-01) shown with retraction kit and Endurance Model 402 conductivity sensor.

Ball valve kit includes a 1/4 in. full port ball valve, a 1/4 in. MNPT nipple, and a retraction kit.

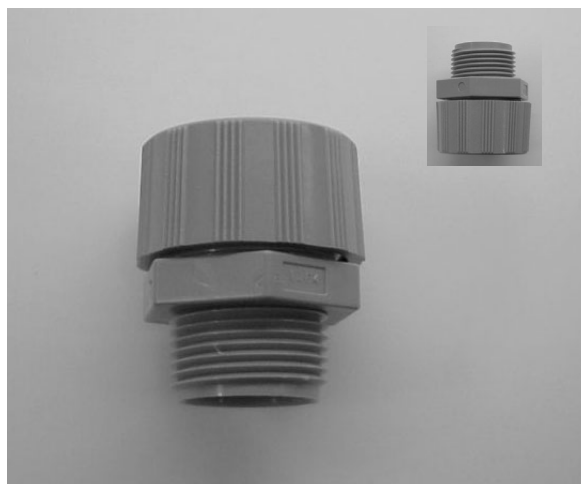
PROCESS CONNECTORS:

COMMON INDUSTRIES:



- Required for process connection of non-threaded pH sensors for direct pipe or ball valve mounting
- Compression fitting holds the sensor body in place
- Allows for variable sensor insertion depth
- Sensor cable twisting is avoided
- Necessary accessory for first time installation of retractable pH sensor to ball valve kit PN 23240-00 (included accessory with Models 385 and 385+ retractable sensors; must purchase separately with Models 385+ [non-retractable], 396R, and 398R).

	PN 23166-00	PN 23166-01	PN 9510066
Wetted Materials	316 Stainless Steel	Titanium	Nylon
Compatible Sensors	385+, 396, 398, 396R, 398R	385+, 396, 398, 396R, 398R	396, 398
O-ring Material	EPDM	EPDM	Polyethylene
Optional O-ring PN and Material	PN 9550099 Viton	PN 9550220 Kalrez	—
Process Connection Size	1 in. MNPT	1 in. MNPT	1 in. MNPT
Figure Number	17	17	16

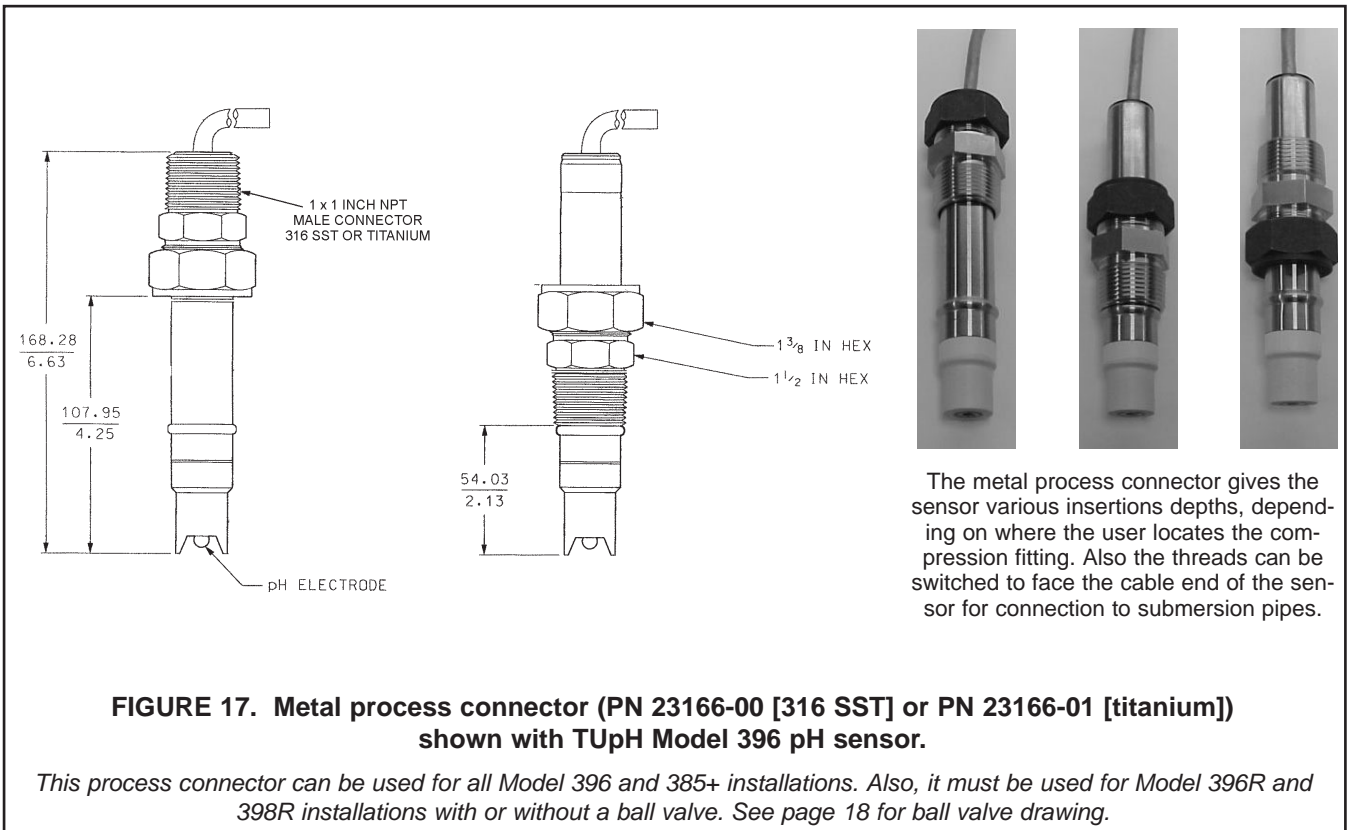
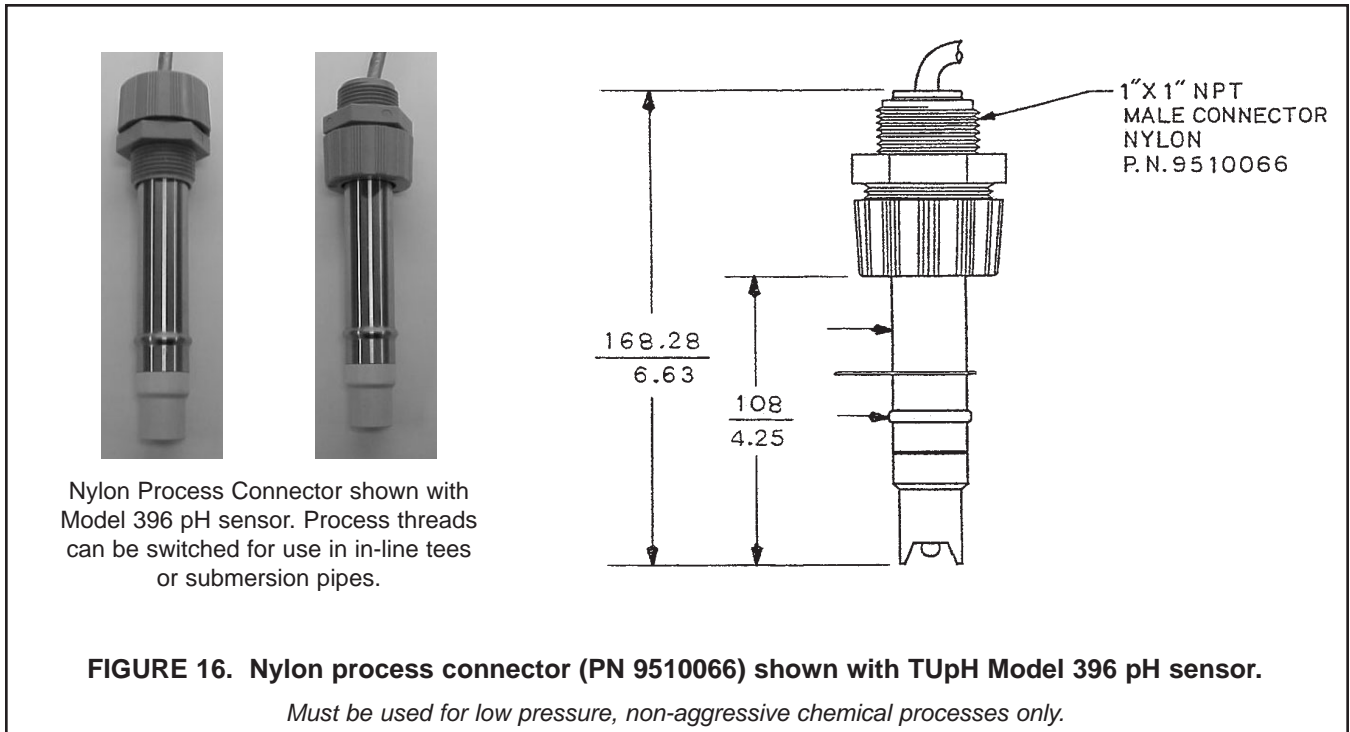


Nylon Process Connector PN 9510066
can be used for insertion or
submersion sensor connection



Metal Process Connector PN 23166-xx
(xx = 00 for 316 SST and xx = 01 for titanium)
can be used for insertion or
submersion sensor connection

PROCESS CONNECTORS:



VALVE INSERTION ASSEMBLIES:

COMMON INDUSTRIES:



Pulp & Paper



Chemical

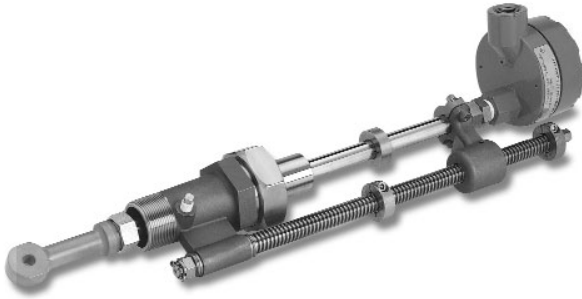


Hydrocarbon Processing

- Used with Toroidal Conductivity Sensor Model 228
- Easy insertion/retraction of sensor in process conditions up to:
 - 295 psig (2036 kPa) and 392°F (200°C) with the mechanical assembly
 - 35 psig (241 kPa) and 266°F (130°C) with the manual assembly
- Convenient isolation of sensor from process for cleaning (using flush ports) or replacement
- Choice of mechanical or manual assembly
- Used with 1 1/2 " full port ball valve (purchased separately as PN 9340065)
- Recommended for Separators and Scrubbers typically found in the Chemical and Hydrocarbon Processing Industries
- Also used in CIP solutions and concentration control for the Chemical Industry
- Excellent for use in the white liquor alkali, brown stock washing, and green liquor alkali processes found within the Pulp and Paper Industry

	PART NUMBER 23311-00	PART NUMBER 23311-01
Process Connection	1-1/2 in. MNPT	1-1/2 in. MNPT
Wetted Materials	316 SST, Teflon, EP	316 SST, Teflon, EP
Maximum Operating Temperature	392°F (200°C)	392°F (200°C)
Maximum Operating Pressure	295 psig (2036 kPa)	295 psig (2036 kPa)
Max. Insertion/Retraction Conditions	392°F (200°C) 295 psig (2036 kPa)	266°F (130°C) 35 psig (241 kPa)
Maximum Insertion Travel	8.5 in. (21.6 cm)	12 in. (30 cm)
Maximum Insertion Travel using PN 9340065 Ball Valve	6.25 in. (15.9 cm)	7.0 in. (17.8 cm)
Compatible Conductivity Sensors	228	228
Figure Number	18	19

VALVE INSERTION ASSEMBLIES (continued)



MECHANICAL ASSEMBLY SHOWN WITH MODEL 228 TOROIDAL SENSOR



MANUAL ASSEMBLY SHOWN WITH MODEL 228 TOROIDAL SENSOR

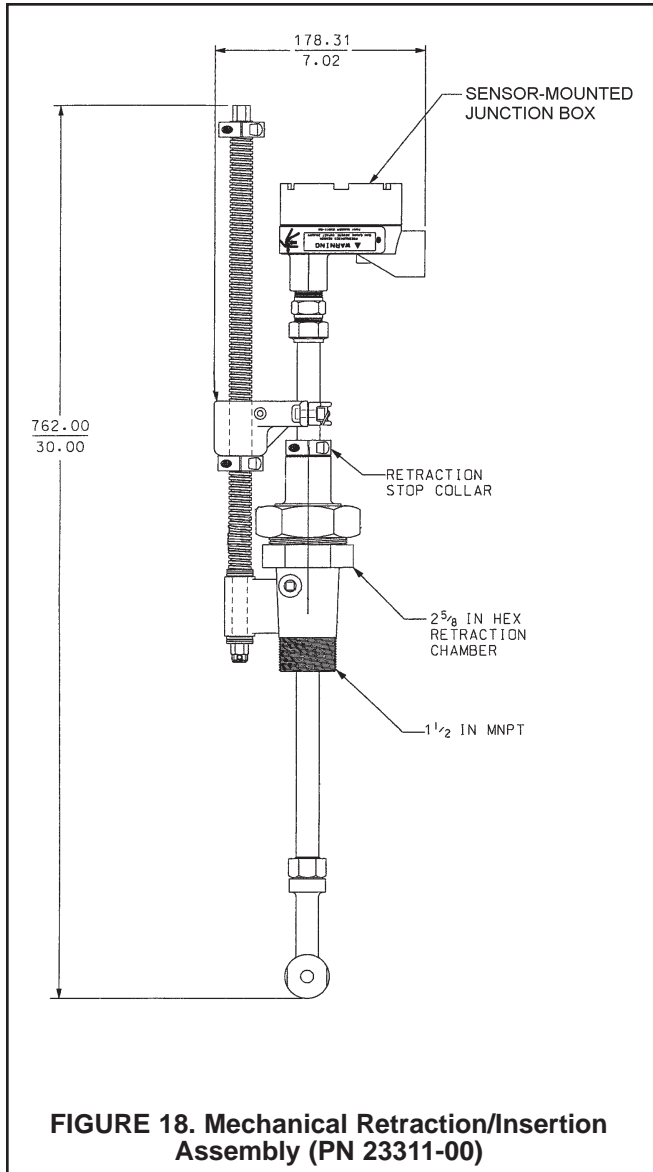


FIGURE 18. Mechanical Retraction/Insertion Assembly (PN 23311-00)

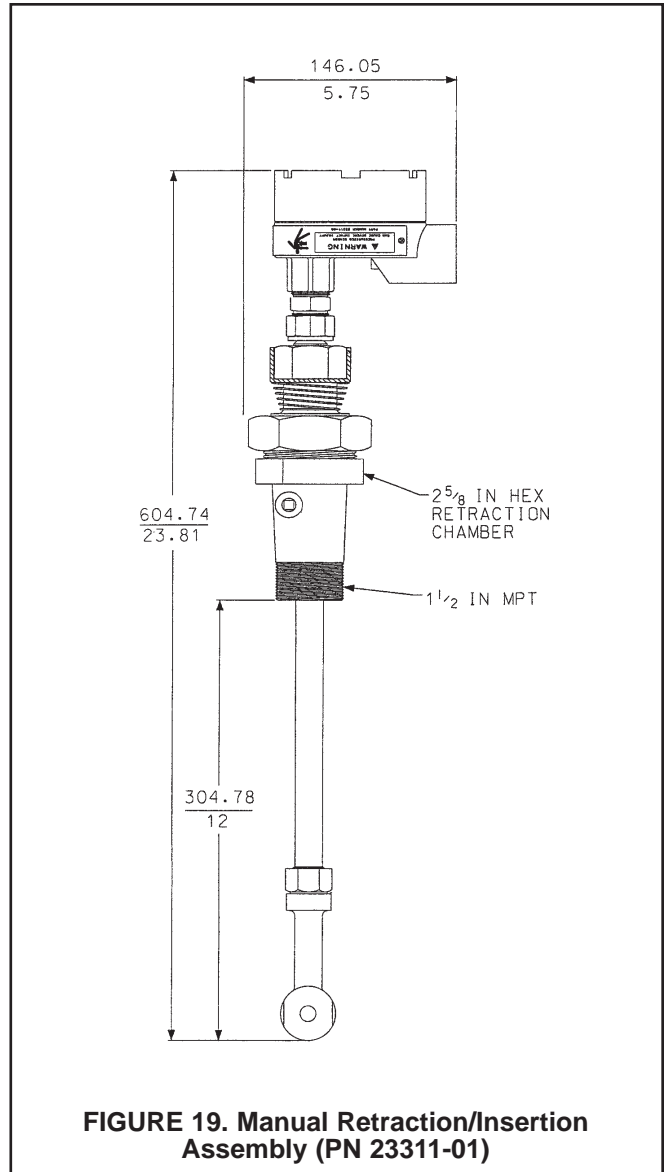


FIGURE 19. Manual Retraction/Insertion Assembly (PN 23311-01)

PASVE ROTARY RETRACTION VALVE:

COMMON INDUSTRIES:



Pulp & Paper



Mining



Chemical



Pharm



Food & Beverage



Textile

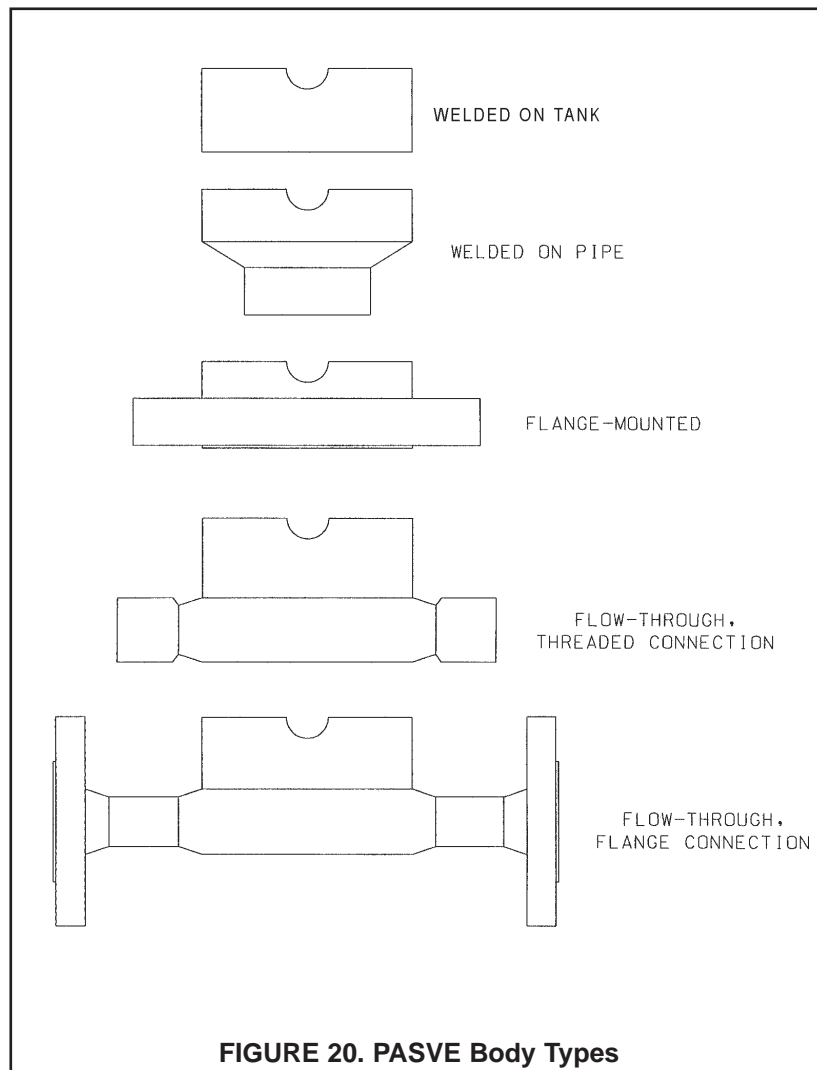
- Used with Rosemount Analytical's TU_pH Models 396 and 396P pH sensors
- Can be mounted on pipe lines, tanks, or directly in-line
 - Ideal for mounting pH sensors in Headbox, whitewater, and stock preparation lines in the Pulp and Paper Industry
 - Also used in waste neutralization, coagulation and flocculation, and scrubbers typically found in the Chemical Industry
 - Ideal for COP (clean-out-of-place) and bulk ingredients in the Pharmaceutical and Food & Beverage Industries
- Suited for on-line mounting up to 150 psig
- Excellent for use in pulp stock lines
- Also great for dirty, coating, and/or abrasive applications typically found in the Pulp and Paper, Chemical, and Mining Industries
- Patented, Unique Rotary valve design provides cleaning and calibrating without sensor removal or process shutdown
- Manual or Automatic rotation available
- Extended sensor life: Sensor can rotate into process for critical measurement, then rotate out and flushed with water until next measurement time is needed. Especially good when used in harsh processes.

	Code C	Code P	Code F	Code D	Code T
Process Connection	Welded on Tank	Welded on Pipe	Flange	Flow-through with Flanged Connection	Flow-through with Threaded Connection
Wetted Materials (Valve)	Choice of AISI 316LSST, PTFE (teflon), or Titanium	Choice of AISI 316LSST, PTFE (teflon), or Titanium	Choice of AISI 316LSST, PTFE (teflon), or Titanium	Choice of AISI 316LSST, PTFE (teflon), or Titanium	Choice of AISI 316LSST, PTFE (teflon), or Titanium
Wetted Materials (Seals)	Choice of PTFE (Teflon) or PTFE (with carbon graphite filling)	Choice of PTFE (Teflon) or PTFE (with carbon graphite filling)	Choice of PTFE (Teflon) or PTFE (with carbon graphite filling)	Choice of PTFE (Teflon) or PTFE (with carbon graphite filling)	Choice of PTFE (Teflon) or PTFE (with carbon graphite filling)
Maximum Operating Temperature	212°F (100°C)	212°F (100°C)	212°F (100°C)	212°F (100°C)	212°F (100°C)
Maximum Operating Pressure	150 psig (1136 kPa)	150 psig (1136 kPa)	150 psig (1136 kPa)	150 psig (1136 kPa)	150 psig (1136 kPa)
Cleaning Port Connections	1/4 inch	1/4 inch	1/4 inch	1/4 inch	1/4 inch
Compatible pH Sensors	396, 396P, 389	396, 396P, 389	396, 396P, 389	396, 396P, 389	396, 396P, 389
Figure Number	20, 24, 28	20, 24, 28	20, 24, 27, 28	20, 25, 26	20, 25, 26

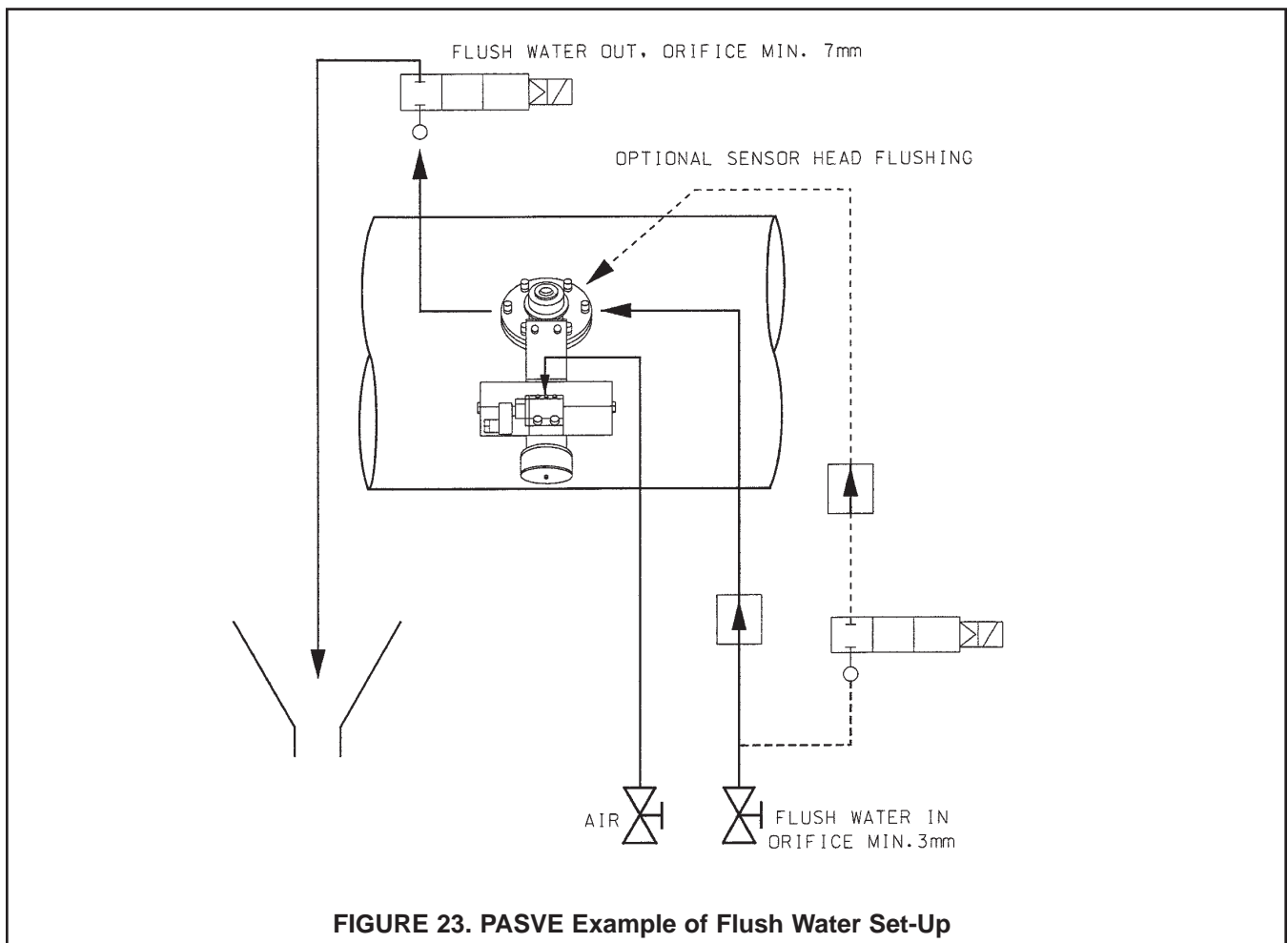
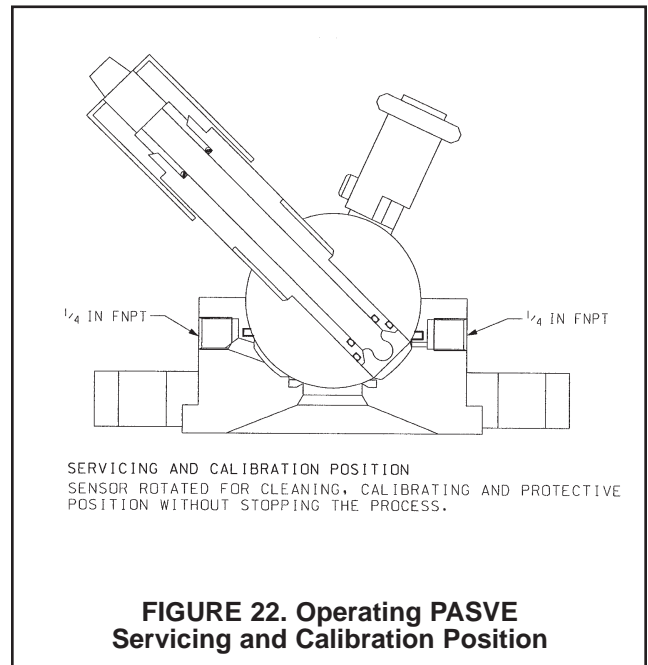
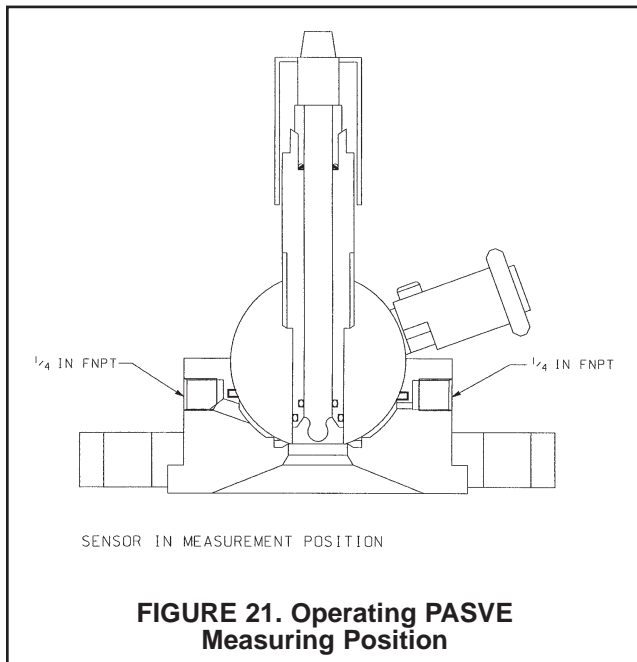
PASVE ROTARY RETRACTION VALVE (continued)



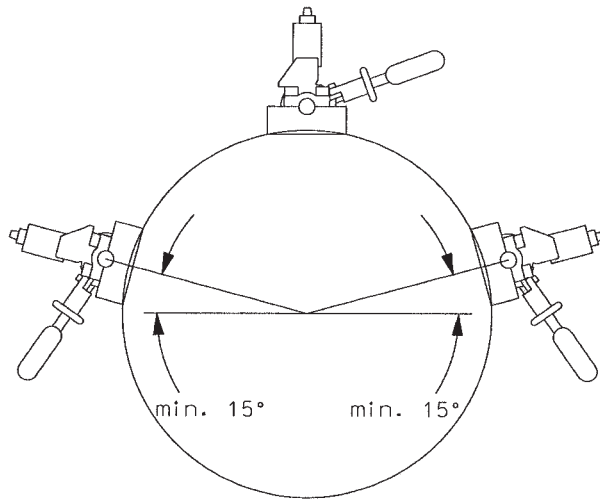
PASVE Valve, shown in welded on tank, manual operation configuration



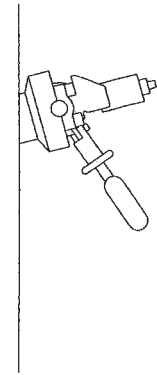
PASVE ROTARY RETRACTION VALVE (continued)



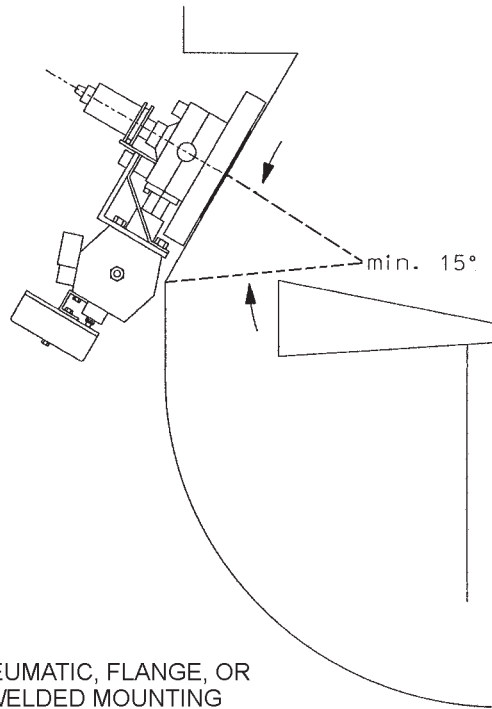
PASVE ROTARY RETRACTION VALVE (continued)



MANUALLY OPERATED, FLANGE,
OR WELDED ON TANK MOUNTING



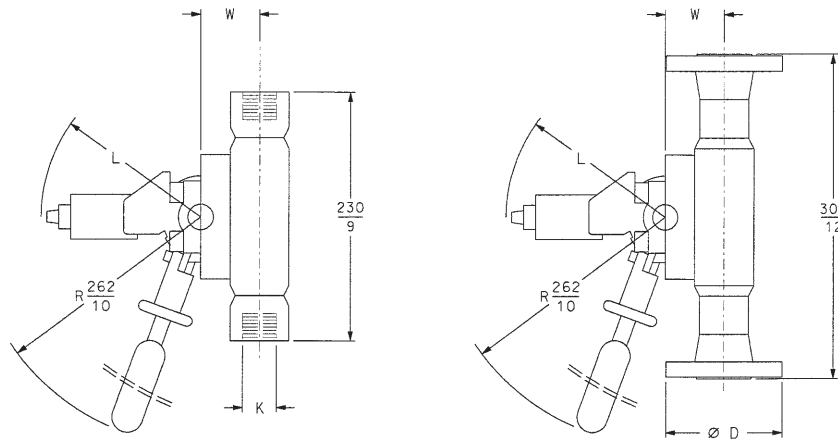
MANUALLY OPERATED,
WELDED ON PIPE MOUNTING



PNEUMATIC, FLANGE, OR
WELDED MOUNTING

FIGURE 24. PASVE pHc/P/F Recommended Flanged or Welded Mounting

PASVE ROTARY RETRACTION VALVE (continued)



PASVE pHT-(b)
(THREAD CONNECTION TO THE FLOW)

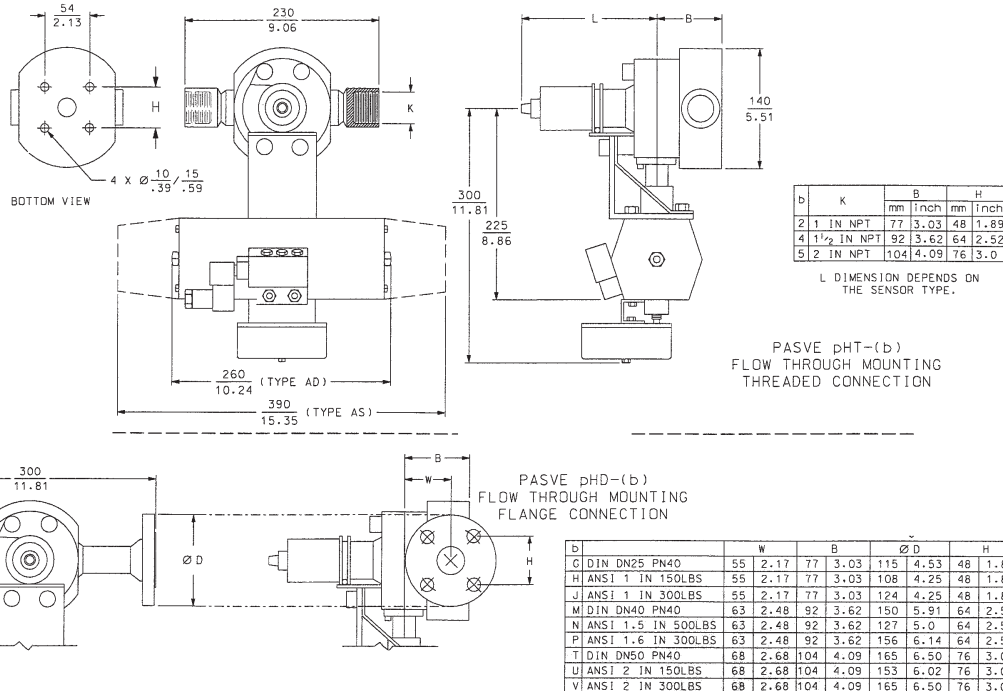
d	K	W
2	1 inch FNPT	55mm/2.17inch
4	1½ inch FNPT	63mm/2.48inch
5	2 inch FNPT	68mm/2.68inch

L DIMENSION DEPENDS ON
THE SENSOR TYPE.

PASVE pH-D-(b)
(FLANGE CONNECTION TO THE FLOW)

d	FLANGE	W	D
G	DIN DN25 PN40	55mm/2.17inch	115mm/4.53inch
H	ANSI 1 inch 150 lbs	55mm/2.17inch	108mm/4.25inch
J	ANSI 1 inch 300 lbs	55mm/2.17inch	124mm/4.88inch
M	DIN DN40 PN40	63mm/2.48inch	150mm/5.91inch
N	ANSI 1½ inch 150 lbs	63mm/2.48inch	127mm/5.00inch
P	ANSI 1½ inch 300 lbs	63mm/2.48inch	156mm/6.14inch
T	DIN DN50 PN40	68mm/2.68inch	165mm/6.50inch
U	ANSI 2 inch 150 lbs	68mm/2.68inch	153mm/6.02inch
V	ANSI 2 inch 300 lbs	68mm/2.68inch	166mm/6.54inch

**FIGURE 25. Threaded and Flanged Connection to Process Flow
PASVE pHT/D-(b) Manually Operated Dimensional Drawing.**



d	K	B	H
2	1 IN NPT	77 3.03	48 1.89
4	1½ IN NPT	92 3.62	64 2.52
5	2 IN NPT	104 4.09	76 3.0

L DIMENSION DEPENDS ON
THE SENSOR TYPE.

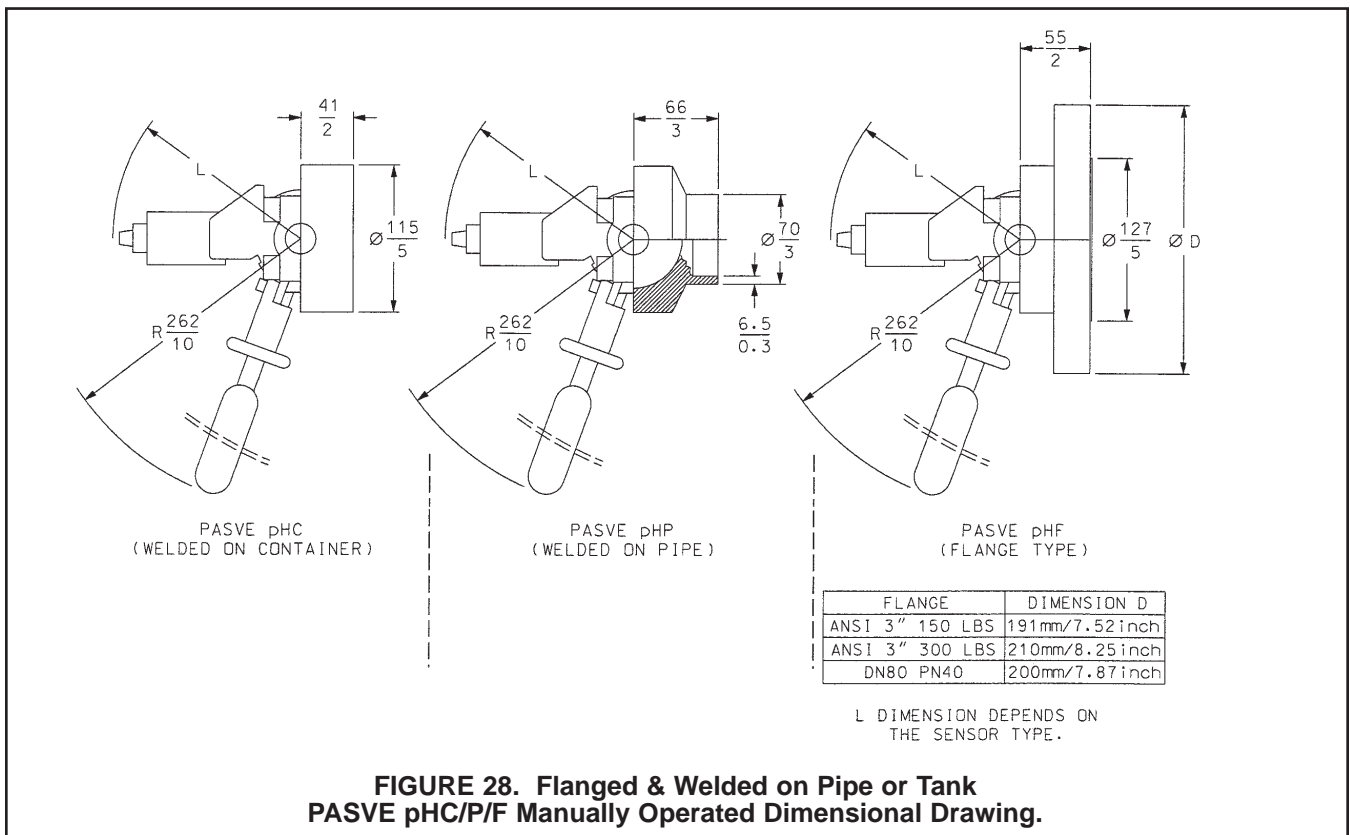
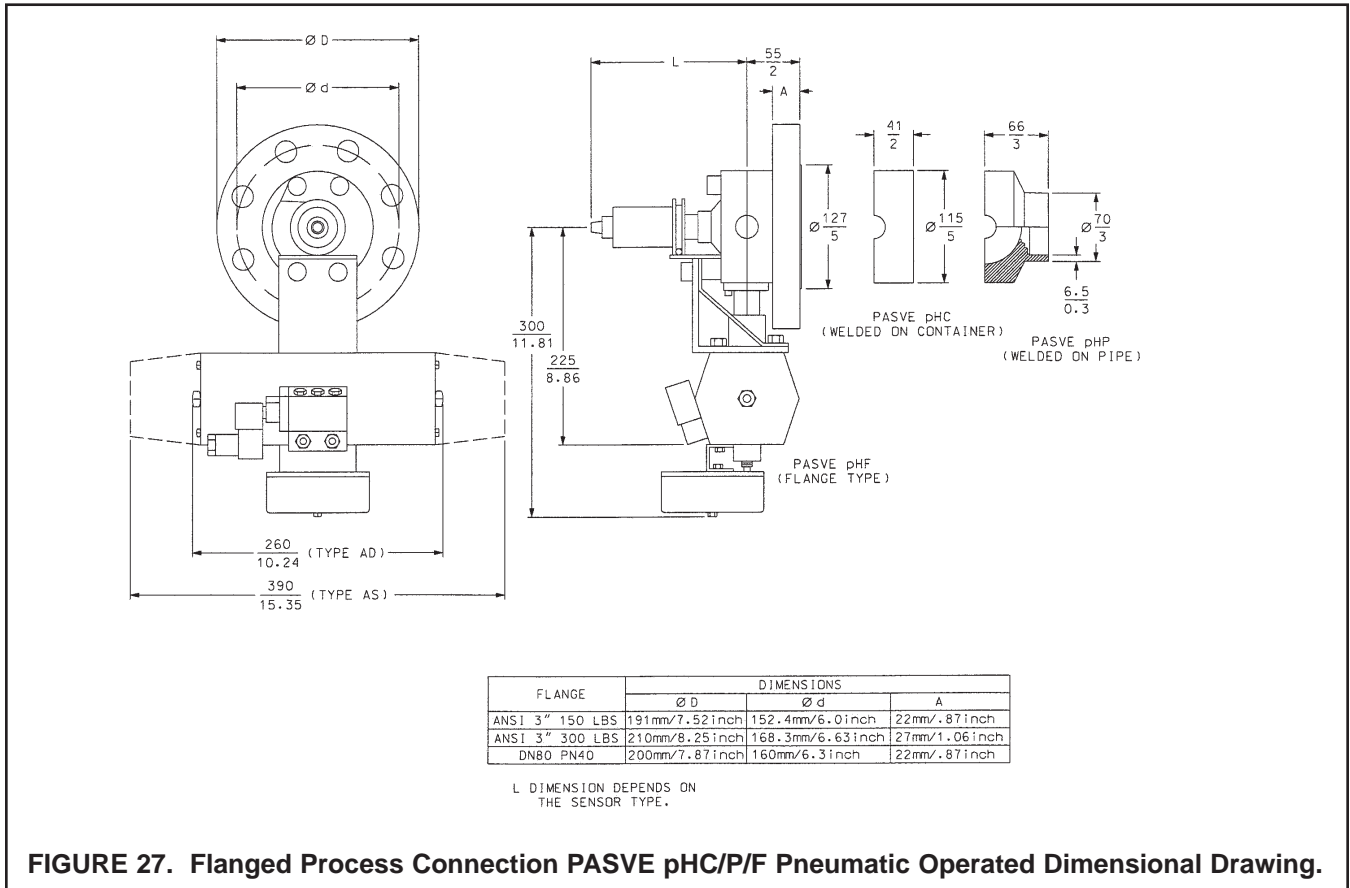
PASVE pHT-(b)
FLOW THROUGH MOUNTING
THREADED CONNECTION

PASVE pH-D-(b)
FLOW THROUGH MOUNTING
FLANGE CONNECTION

d	W	B	Ø D	H	
G	DIN DN25 PN40	55 2.17	77 3.03	115 4.53	48 1.89
H	ANSI 1 IN 150LBS	55 2.17	77 3.03	108 4.25	48 1.89
J	ANSI 1 IN 300LBS	55 2.17	77 3.03	124 4.25	48 1.89
M	DIN DN40 PN40	63 2.48	92 3.62	150 5.91	64 2.52
N	ANSI 1.5 IN 500LBS	63 2.48	92 3.62	127 5.0	64 2.52
P	ANSI 1.6 IN 300LBS	63 2.48	92 3.62	156 6.14	64 2.52
T	DIN DN50 PN40	68 2.68	104 4.09	165 6.50	76 3.0
U	ANSI 2 IN 150LBS	68 2.68	104 4.09	153 6.02	76 3.0
V	ANSI 2 IN 300LBS	68 2.68	104 4.09	165 6.50	76 3.0

**FIGURE 26. Threaded and Flanged Connection to Process Flow
PASVE pHT/D-(b) Pneumatic Operated Dimensional Drawing.**

PASVE ROTARY RETRACTION VALVE (continued)



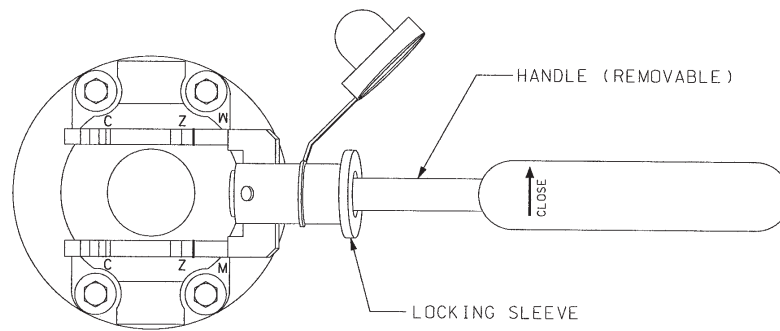
PASVE ROTARY RETRACTION VALVE (continued)

ORDERING INFORMATION

MODEL PASVE pH Automatic Rotary Valve	
CODE	MOUNTING METHODS
C	Welded on tank
P	Welded on pipe
F	Flange mounted DN 80 PN40
FA	Flange mounted 3" ANSI, 150#
FB	Flange mounted 3" ANSI, 300#
DG2	Flow through DIN25 PN40 flange connection
DM2	Flow through DIN40 PN40 flange connection
DT2	Flow through DIN50 PN40 flange connection
T22	Flow through 1" NPSF threaded connection
DH2	Flow through 1" ANSI 150# flanged connection
DJ2	Flow through 1" ANSI 300# flanged connection
DU2	Flow through 2" ANSI 150# flanged connection
DV2	Flow through 2" ANSI 300# flanged connection
T42	Flow through 1.5" NPSF threaded connection
T52	Flow through 2" NPSF threaded connection
CODE	SEALS
0	PTFE (Teflon) with graphite and carbon
1	100% PTFE (Teflon)
CODE	ELECTRODE TYPES
R10	Rosemount Analytical Model 389
R40	Rosemount Analytical Model 396
R60	Rosemount Analytical Model 396P
CODE	ACTUATOR
MD	No actuator, for manual use only
AD1	Double-action/solenoid 230 VAC 50 Hz
AD2	Double-action/solenoid 24 VDC
AD3	Double-action/solenoid 115 VAC 60 Hz
AS1	Spring-return/solenoid 230 VAC 50 Hz
AS2	Spring-return/solenoid 24 VDC
AS3	Spring-return/solenoid 115 VAC 60 Hz
CODE	SOLENOID VALVE (Selection not required with code MD)
0	Not explosion proof
1	Certified Ex m II T4
CODE	POSITION SWITCH
0IEU	None
XIEU	Standard
EIEO	DIN 19234 (NAMUR)

For availability of other material and sensor compatibility, please contact your nearest sales office.

PASVE ROTARY RETRACTION VALVE (continued)



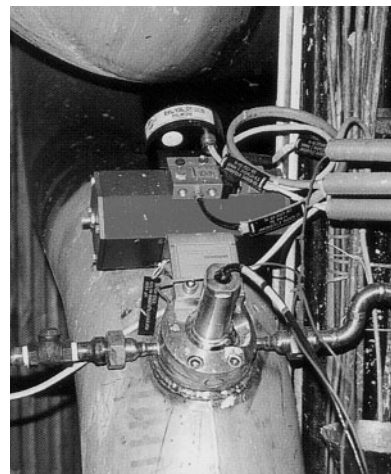
OPERATION

ROTATE THE HANDLE (RIGHT HAND-THREAD) TO RELEASE THE LOCKING.
LIFT THE LOCKING SLEEVE TO CHANGE THE OPERATING POSITION.

FIGURE 29. Operation of Manual Valve



PASVE and Model 54 in a pulp mill



Pneumatic PASVE mounted on a pipe

LINEAR RETRACTION ASSEMBLY:

MODEL PA-933 CLEANSTAR LINEAR EXTRACTION ASSEMBLY COMMON INDUSTRIES:



Pharmaceutical



Food & Beverage

Model PA-933 Cleanstar is offered with the following features:

- Ideal for use in steam sterilization cycles and processes with clean in place systems, typically found in the Pharmaceutical, Food, Brewing, and Dairy Industries
- Compact and versatile design used Model 328A pH sensor
- Linear movement for easy insertion and retraction of pH sensor
- Sensor is retracted into sealed chamber via mechanical security safety locks where it can be cleaned, calibrated, and inserted back into the process
- Process does not need to be shut down to remove sensor
- Optional pneumatic or electrical position switches available to ensure safe removal

LINEAR RETRACTION ASSEMBLY (continued)



	Model PA-933 CLEANSTAR
Wetted Materials Valve Seals	Stainless Steel 1.4571 or Hastelloy C4 Choice of FPM (Viton) or Kalrez
Process Connection	Choice of socket G1 or G1-¼ in., threaded 1 in. MNPT, or Tri-clamp 2 in.
Limit Switches	Pneumatic or inductive
Cleaning Port Connections	Inlet and outlet G ¼ in. MNPT or optional ¼ in. tube/compression
Compressed Air Requirements for Pneumatic Operation	58 to 116 psig (4 to 8 bar)
Temperature Rating	14 to 266°F (-10 to 130°C)
Maximum Pressure	Pneumatic: 86 psig (6 bar) Manual: 58 psig (4 bar)
Sensor Compatibility	Model 328A pH sensor
Figure Number	30

LINEAR RETRACTION ASSEMBLY (continued)

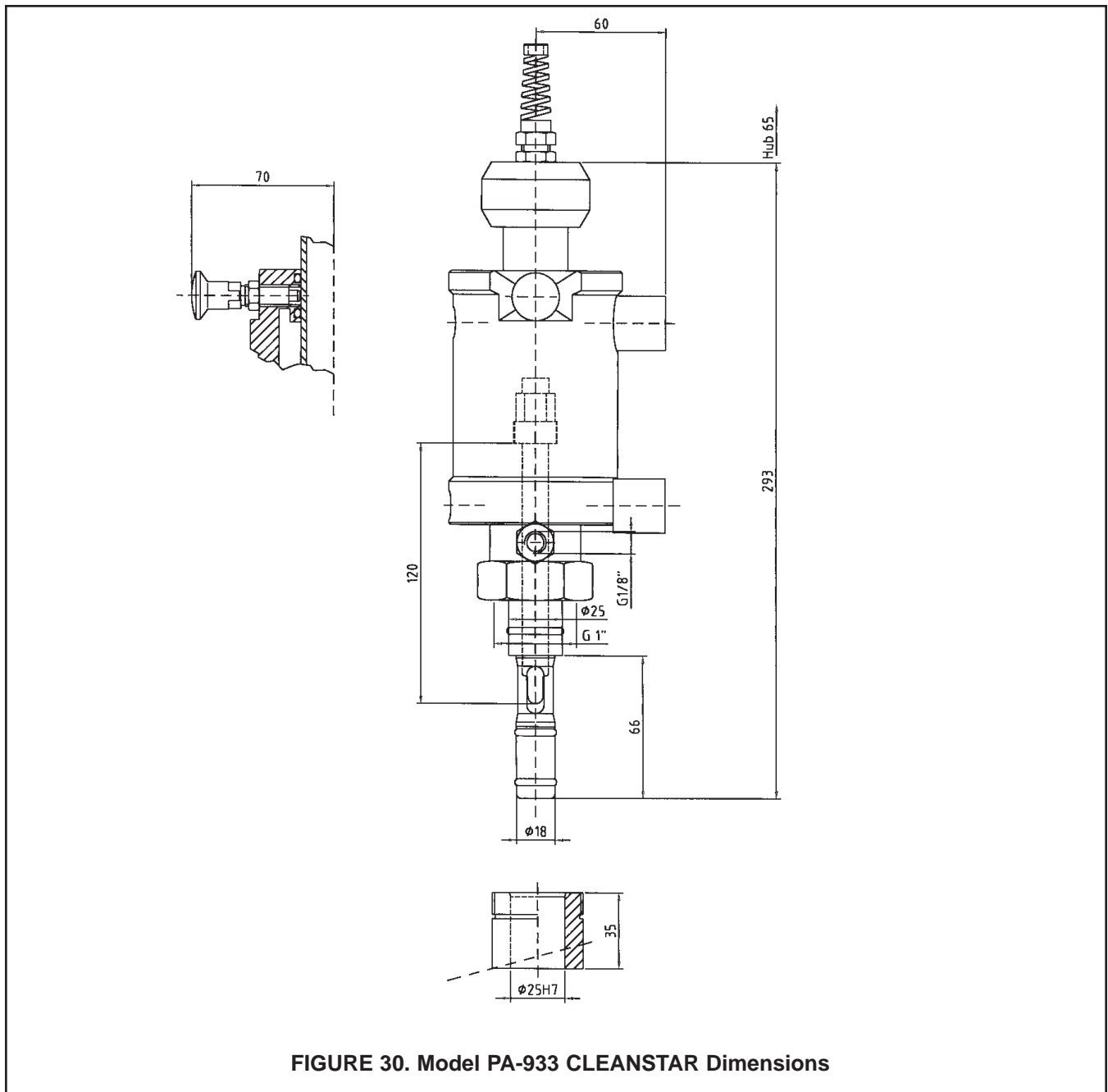


FIGURE 30. Model PA-933 CLEANSTAR Dimensions

LINEAR RETRACTION ASSEMBLY (continued)

ORDERING INFORMATION

MODEL PA-933 "Cleanstar" Linear Retraction Assembly	
CODE	ACTUATOR AND LIMIT SWITCHES
0G	Manual Actuator, no limit switch
1G	Pneumatic Actuator, no limit switch
2G	Pneumatic Actuator, 1 pneumatic limit switch
3G	Pneumatic Actuator, 2 pneumatic limit switches
4G	Pneumatic Actuator, 1 x initiator
5G	Pneumatic Actuator, 2 x initiator
CODE	HOUSING MATERIAL (wetted parts)
8	Stainless steel, 1.4571
9	Hastelloy C4
CODE	SEALS
F	FPM (Viton)
K	Kalrez
CODE	PROCESS CONNECTION
2	Threaded G 1-1/4" male fitting for 35 mm socket
4	Threaded NPT 1-1/4" male fitting for 35 mm socket
6	2" Triclamp
CODE	CLEANING SYSTEM
Y	Without rinsing connection
R	With rinsing connection 2 x G 1/4"
N	With rinsing connection 2 x NPT 1/4"

CHOOSING THE RIGHT MOUNTING SOLUTION FOR YOUR PROCESS NEEDS

The best way to choose the right mounting solution for your process is to do the following:

- 1) **Locate a place to mount the sensor.** Typical locations to mount a sensor are:
 - a) small pipelines which mount the sensor in-line using pipe tees, the Quik-Loc Assembly, process connectors, or mounting adapters
 - b) larger pipes where a ball valve kit, Papermatex, or Pasve could be used for in-line mounting
 - c) tanks, ponds, aeration basins, and open channels which could use a handrail mounting assembly (with or without the Jet Spray Cleaner)
 - d) tanks using a ball valve kit, Quik-loc assembly, or Cleanstar
 - e) in a low flow cell by tapping into an existing process with a 1/4" connection
- 2) **Determine the process connection thread size that will mount the sensor.** Typical process connection sizes are 3/4", 1", 1-1/2", and 2".
- 3) **Determine the chemical compatibility of the sensor wetted materials to the process liquid components.** In more aggressive chemicals, the sensor and mounting accessory wetted materials must be chosen carefully. Consult Rosemount Analytical Customer Support Center or Industry Specialists if there is a question about chemical compatibility - (800) 854-8257.
- 4) **Choose the correct mounting accessory for your process.** The guide below should help in understanding Rosemount Analytical's offerings of various sensor threads:

Understanding sensor process connections:

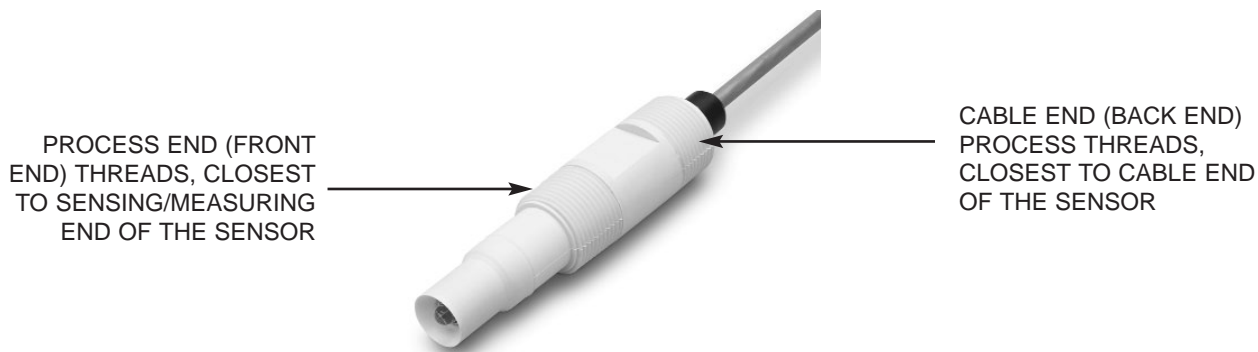


FIGURE 31. TUph Model 396P pH sensor is offered with 1 inch threads in two locations: one on the process end and one on the cable end.

Rosemount Analytical sensors are offered with wide variety of threaded process connections.

The sensor shown above is TUph Model 396P pH sensor. All sensors use similar terminology for process connection threads. Note that not all sensors are offered with front and back end threads for mounting the sensor. The following are examples of sensors using other types of sensor to process connection threads:



FIGURE 32. Model 228 Toroidal Conductivity Sensor (shown above) is offered with back end process threads only.



FIGURE 33. TUph Model 396 pH sensor (shown above) is offered without process threads. A compression fit, process connector is used on the sensor body and gives the user flexibility for insertion depths because the process connector can be tightened in various locations on the sensor body. Retractable sensors (a longer version of what is shown above) are also offered without process threads. This is so the sensor can be mounted through a ball valve.

The sensors shown in Figures 32 and 33 are much different than the first sensor (396P) shown in Figure 31. Figure 32 is a Model 228 Toroidal sensor with 3/4" threads and is also offered with 5/8" UNC threads, both sizes an industry standard for conductivity sensor threads. Figure 33 is a Model 396 pH sensor and is not offered with any threads. The Model 396 is used with a process connector which allows variable insertion depths for the sensor and easy sensor removal without twisting the cable.

The following pages contain a list of the sensors that are compatible with the mounting solutions listed in this brochure. The process thread sizes are also listed in the Sensor Compatibility Chart to aid with your choosing the correct mounting solution.

Ordering Information:














All sensors used with the accessories mentioned in this catalog must be purchased separately. Also, please note that additional accessory items must be purchased along with the stated mounting accessories in order for the complete mounting to be accomplished. Please consult your local representative for more information about sensors or consult the factory at 1-800-854-8257 (in the U.S.) or 1-949-757-8500 (outside of the U.S.). You can also visit the Rosemount Analytical, Uniloc Division, web site at <http://www.RAuniloc.com>.

SENSOR TO MOUNTING ACCESSORY COMPATIBILITY CHART

Description	Part Number	Compatible pH Sensors	Compatible Conductivity Sensors	Compatible Dissolved Oxygen, Chlorine, & Ozone Sensors
In-line Tee	23567-00	396*, 396P, 389, 399, 385+*		499ADO, 499ACL 499AOZ
In-line Tee	2002011	396*, 396P, 389, 399, 385+*	150	499ADO, 499ACL 499AOZ
In-line Tee	915240-03	396P, 389, 399		499ADO, 499ACL 499AOZ
In-line Tee	915240-04	396P, 389, 399		499ADO, 499ACL 499AOZ
In-line Tee	915240-05	396P, 389, 399		499ADO, 499ACL 499AOZ
Low Flow Cell	23728-00	396*, 396P, 389, 399, 385+*		499ADO, 499ACL 499AOZ
Quik-Loc Assembly	23757-00	397		
Quik-Loc Assembly	23757-01	397		
Handrail Mounting	11275-01	396*, 396P, 389, 399, 385+*		499ADO, 499ACL 499AOZ
Jet Spray Cleaner	12707-00	396*, 396P, 389, 399, 385+*		499ADO, 499ACL 499AOZ
Mounting Adapter	23242-02 23242-03	396*, 396P, 389, 399, 385+*	228	
Mounting Adapter	9330022	396*, 396P, 389, 399, 385+*		
Ball Valve	23240-00	396R*, 398R*, 385, 385+		
Ball Valve	23765-00		402-11, 402-12, 402-13	
Ball Valve	23765-01		402-14	
Mechanical Valve Insertion Assembly	23311-00		228	
Mechanical Valve Insertion Assembly	23311-01		228	
Rotary Retraction Valve	See PASVE Ordering Matrix	396, 396P, 389		
Linear Retraction Assembly	See CLEANSTAR Ordering Matrix	328A		
Process Connectors	23166-00 23166-01	396, 385+		
Process Connectors	9510066	396, 385+		

* Sensor process connector for connection to process must be purchased separately for first time installations.

COMPATIBLE SENSORS

	Model Number	Threaded Process Connection Size		Model Number	Threaded Process Connection Size
	396	None -to connect to process, order process connector PN 23166-00 or -01		385	Standard 1 inch process connector always shipped with sensor
	396P	1 inch, front and back end threads		385+	None -to connect to process, order process connector PN 23166-00 or -01
	396R and 398R	None -mount sensor thru ball valve and use process connector PN 23166-00 or -01		397	None -must use Quik-Loc assembly (order separately)
	389	1 inch, front and back end threads		328A	None -for use with Cleanstar assembly or can be used with mounting assembly shown
	399	1 inch, front and back end threads		150	1 inch, front and back end threads
	499A CL 499A OZ 499A DO	1 inch, front and back end threads		402	None - mount sensor through ball valve
	228	3/4 inch NPT or 5/8 inch UNC, back end threads			



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