Product Data Sheet
00813-0100-3300, Rev AA
September 2019

Rosemount™ 3300HT/3300HTVP, 3400HT/ 3400HTVP, and 3500P/3500VP

PERpH-X™ High Performance pH/ORP Sensors

A sensor design that is flexible to meet your demanding pH/ORP needs

Rosemount PERpH-X sensors are versatile sensors suited to meet a number of difficult application requirements. Thse high performance sensors are ideal for use in high temperature and high pressure processes and feature a wide array of options to solve your pH/ORP measurement needs.

ROSEMOUNT™

EMERSON™

Overview

Extended application flexibility

- Selectable reference electrolytes allow sensors to be used in a large number of applications.
- Electrolyte options include:
  - High temperature: most suitable for use in highly acidic, basic, or oxidative solutions and high temperature applications.
  - Bio-film resistant: inhibits the growth of bacteria and algae.
  - Poisoning resistant: most suitable for use in processes containing sulfides, mercaptans, and cyanides.
  - Oil resistant: aimed for use in applications where light oils and greases can foul a sensor.
  - Scaling resistant: targets applications where the precipitation of calcium magnesium salts like gypsum or water hardness coat over the electrode.
  - Metal resistant: most suitable for use in applications where chloride in the reference electrode would react with the process.

Minimal maintenance and lower total cost of ownership

- A long lasting rebuildable reference junction and electrolyte extends sensor life and allows sensors to be easily rebuilt where normally other sensors would have to be replaced.
- SMART preamplifier allows automatic recognition of pH sensors by Rosemount™ transmitters: 1066, 1057, 1056, and 56.
- pH calibration data is stored, which allows sensors to be calibrated in advance for "plug and play" installations in the field.

Versatile mounting options to meet your installation requirements

- Ryton body sensors feature 1-in. MNPT front and rear facing process threads.
- Titanium body sensors offered in 21-in. (533,4 mm) and 36-in. (914,4 mm) lengths suitable for use with retraction assemblies.

Contents

- Variopol (VP8) cable connection option, for quick cable-to-sensor release, eliminates cable twisting.

Ordering information

Rosemount™ PERpH-X™ High Performance pH/ORP sensors feature various sensor body options.

Figure 1: Rosemount 3500P pH/ORP Sensor

Sensors are available in a chemically resistant Ryton plastic body (Rosemount 3500P/3500VP) or titanium tube housing (Rosemount 3300HT/3300HTVP/3400HT/3400HTVP). Emerson constructs Rosemount 3500P/3500VP sensors with front and rear facing 1-in. MNPT threads for insertion or submersion type installations. Rosemount 3300HT/3300HTVP/3400HT/3400HTVP sensors must be used with a process connector allowing for various insertion depths. These titanium body sensors also have extended sensor length options allowing installation through a ball valve assembly. Sensors feature a Teflon reference junction and a Pt-100 resistance temperature device (RTD) for temperature compensation. Rosemount PERpH-X pH/ORP sensors are available with either an integral cable connection or Variopol (VP8) connector. Variopol cables sold separately (see Accessories).

Table 1: Rosemount 3300HT Ordering Information

Option	Description
3300HT	pH/ORP sensor - PERpH-X High Performance
Measuring electrode	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
O-ring material	
30	EPDM O-rings
31	Viton®
32	Kalrez®
Cable	
02	Without preamplifier, 15-ft. (4,6 m) cable
07	Without preamplifier, 4-ft. (1,2 m) cable
08	Without preamplifier, 10-ft. (3 m) cable
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note

The Rosemount 3300HT pH/ORP sensor is housed in a titanium tube with a replaceable reference junction and refilliable reference electrolyte. The sensor includes a Pt-100 temperature compensator. The sensor is available with a standard 15-ft. (4,6 m) cable. You can mount the sensor using a process connector, ordered separately. You can also order junction box kits with preamplifiers separately if the transmitter does not have an integral preamplifier within 15-ft. (4,6 m) of the sensor.

Table 2: Rosemount 3300HTVP Ordering Information

Option	Description
3300HTVP	pH/ORP sensor - PERpH-X High Performance with Variopol connector
Measuring electrode	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
O-ring material	
30	EPDM
31	Viton
32	Kalrez
Preamplifier option	
_	No selection
70	SMART preamplifier (for use with -10 only)
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note
The Rosemount 3300HTVP Sensor is available with an integral Variopol (VP 8.0) connector. A mating Variopol connector cable is required for use with these sensors. SMART preamplifier (-70) is the standard preamplifier option.

Table 3: Rosemount 3400HT Ordering Information

Option	Description
3400HT	pH/ORP sensor - PERpH-X High Performance Retractable
Measuring electrode	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
Sensor length	
21	21-in. (533,4 mm) titanium tube
25	36-in. (914,4 mm) titanium tube
O-ring material	
30	EPDM
31	Viton
32	Kalrez
Options	
61	9.5-in. (241,3 mm) cable without BNC (for preamplifier options)

Table 3: Rosemount 3400HT Ordering Information *(continued)*

Option	Description
62	15-ft. (4,6 m) cable without BNC
07	Without preamplifier, 4-ft. (1,2 m) cable
08	Without preamplifier, 10-ft. (3 m) cable
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note
The Rosemount 3400HT High Temperature pH/ORP Retractable Sensor is housed in a titanium tube for use with a ball valve (order separately). You can mount the sensor with a ball valve or a process connector, both ordered separately.

Table 4: Rosemount 3400HTVP Ordering Information

Option	Description
3400HTVP	pH/ORP sensor - PERpH-X Retractable/Variopol Connector
Measuring electrode	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
Sensor length	
21	21-in. (533,4 mm) titanium tube
25	36-in. (914,4 mm) titanium tube
O-ring material	
30	EPDM
31	Viton
32	Kalrez
Preamplifier option	
_	No selection
70	SMART preamplifier (for use with -10 only)
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note
The standard Rosemount 3400HTVP is offered with an integral Variopol connector.

Table 5: Rosemount 3500P Ordering Information

Option	Description
3500P	pH/ORP sensor - PERpH-X Insertion/Submersion
Electrolyte selection	
BF	Bio-film resistant
HT	High temperature
MR	Metal resistant
OR	Oil resistant
PR	Poisoning resistant
SR	Scaling resistant
Preamplifier/cable	
01	SMART integral preamplifier, 25-ft. (7,6 m) for Rosemount 1056, 1057, 1066, 56, 5081, 6081, and Xmt. (Standard preamp if used with ORP)
02	Without integral preamplifier, 15-ft. (4,6 m) cable
03	SMART preamplifier, 33-ft. (10 m) cable (standard preamp if used with ORP)
04	SMART preamplifier, 50-ft. (15,2 m) cable (standard preamp if used with ORP)
05	SMART preamplifier, 66-ft. (20 m) cable (standard preamp if used with ORP)
06	SMART preamplifier, 100-ft. (30,5 m) cable (standard preamp if used with ORP
07	Without preamplifier, 4-ft. (1,2 m) cable
08	Without preamplifier, 10-ft. (3 m) cable
Measuring electrode type	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
Reference type	
21	Double junction reference
O-ring material	
30	EPDM
31	Viton
32	Kalrez
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note
The Rosemount 3500P Sensor is a versatile sensor platform for measuring pH or ORP. The rugged Ryton body and rebuildable reference electrode with front and rear facing 1-in. MNPT threads allows use in either insertion or submersion applications.

Table 6: Rosemount 3500VP Ordering Information

Option	Description
3500P	pH/ORP sensor - PERpH-X Insertion/Submersion
Electrolyte selection	
BF	Bio-film resistant
HT	High temperature
MR	Metal resistant
OR	Oil resistant
PR	Poisoning resistant
SR	Scaling resistant
Preamplifier/cable	
01	SMART integral preamplifier, 25-ft. (7,6 m) for Rosemount 1056, 1057, 1066, 56, 5081, 6081, and Xmt. (Standard preamp if used with ORP)
02	Without integral preamplifier, 15-ft. (4,6 m) cable
Measuring electrode type	
10	GPHT hemi pH glass, 0-14 pH
12	ORP
Reference type	
21	Double junction reference
O-ring material	
30	EPDM
31	Viton
32	Kalrez
Calibration and conformance certificates - optional level	
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)
Q1	Certificate of Conformance

Note
The Rosemount 3500VP uses a mating Variopol cable (purchased separately). The sensor is offered with six different gel electrolytes to match the application.

Specifications

Table 7: Percent Linearity over pH Range

pH range	HT series
0 to 2 pH	94%
2 to 12 pH	99%
12 to 13 pH	97%
13 to 14 pH	92%

Table 8: Rosemount 3300HT/3300HTVP pH/ORP Sensor Specifications

Measurement range	
pH	0 to 14
ORP	-1500 to +1500 mV
Operating temperature	
Without preamplifier	41 to 311 °F (5 to 155 °C)
With preamplifier	Up to 212 °F (100 °C)
Storage temperature	
14 to 138 °F (-10 to 70 °C)	
Maximum process pressure	
400 psig (2859 kPa [abs])	
CRN rating	200 psig at room temperature
Wetted materials	
Titanium, Ryton, Teflon™, glass, and user-specified O-ring matieral (EPDM, Viton®, or Kalrez®)	
Reference electrode	
Double junction with replaceable process side electrolyte and Teflon junction	
Temperature sensor	
Pt-100 resistance temperature device (RTD)	
Process connections	
Must use 1-in. compression process connector (PN 23166-00 or 23166-01)	
Cable length	
4 to 15 ft. (1,2 to 4,6 m) integral cable (Rosemount 3300HT) or VP8 cable for Rosemount 3300HTVP (sold separately)	
Weight/shipping weight	
1 lb./2 lb. (0,5 kg/0,9 kg)	

Table 9: Rosemount 3400HT/3400HTVP pH/ORP Sensor Specifications

Measurement range	
pH	0 to 14
ORP	-1500 to +1500 mV

Table 9: Rosemount 3400HT/3400HTVP pH/ORP Sensor Specifications *(continued)*

Operating temperature	
Without preamplifier	41 to 311 °F (5 to 155 °C)
With preamplifier	Up to 212 °F (100 °C)
Storage temperature	
14 to 138 °F (-10 to 70 °C)	
Maximum process pressure	
400 psig (2859 kPa [abs])	
CRN rating	200 psig at room temperature
Maximum pressure at retraction or insertion	
21-in. (533,4 mm) length	64 psig (542 kPa [abs])
36-in. (914,4 mm) length	35 psig (343 kPa [abs])
Wetted materials	
Titanium, Ryton, Teflon, glass, and user-specified O-ring matieral (EPDM, Viton, or Kalrez)	
Reference electrode	
Double junction with replaceable process side electrolyte and Teflon junction	
Temperature sensor	
Pt-100 resistance temperature device (RTD)	
Process connections	
Must use 1-in. compression process connector (PN 23166-00 or 23166-01). Can be inserted through a ball valve.	
Cable length	
4 to 15 ft. (1,2 to 4,6 m) integral cable or options 9.5-in. (241,3 mm) for use with sensor head junction box (Rosemount 3400HT)	
VP8 cable for Rosemount 3400HTVP (sold separately)	
Weight/shipping weight	
1 lb./2 lb. (0,5 kg/0,9 kg)	

Table 10: Rosemount 3500P/3500VP pH/ORP Sensor Specifications

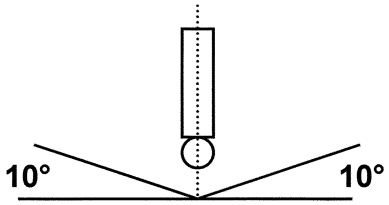
Measurement range	
pH	0 to 14
ORP	-1500 to +1500 mV
Temperature range	
41 to 248 °F (5 to 120 °C)	
Storage temperature	
14 to 122 °F (-10 to 50 °C)	
Maximum process pressure	
100 psig (790 kPa [abs])	
CRN rating	40 psig at room temperature

Table 10: Rosemount 3500P/3500VP pH/ORP Sensor Specifications *(continued)*

Wetted materials	
Titanium, Ryton, Teflon, glass, and user-specified O-ring matieral (EPDM, Viton, or Kalrez)	
Reference electrode	
Double junction with replaceable process side electrolyte and Teflon junction	
Temperature sensor	
Pt-100 resistance temperature device (RTD)	
Process connections	
1-in. MNPT front and rear facing threads	
Cable length	
Rosemount 3500P	4 to 100 ft. (1,2 to 30,5 m) integral cable. Maximum of 15 ft. (4,6 m) for sensors without a preamplifier.
Rosemount 3500VP	VP8 cable (sold separately)
VP8 cable for Rosemount 3400HTVP (sold separately)	
Weight/shipping weight	
1 lb./2 lb. (0,5 kg/0,9 kg)	

Dimensional and installation drawings

Figure 2: Proper Sensor Installation Orientation



Install sensor within 80 ° of vertical.

Figure 3: Rosemount™ 3500VP Sensor Dimensional Drawing

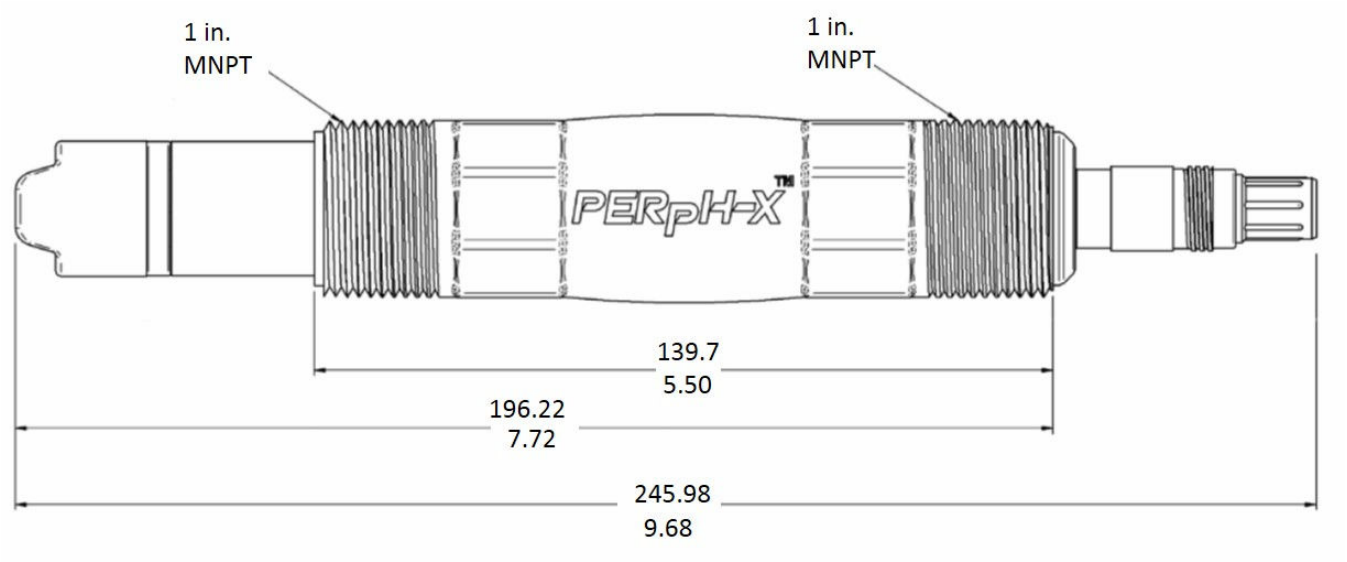
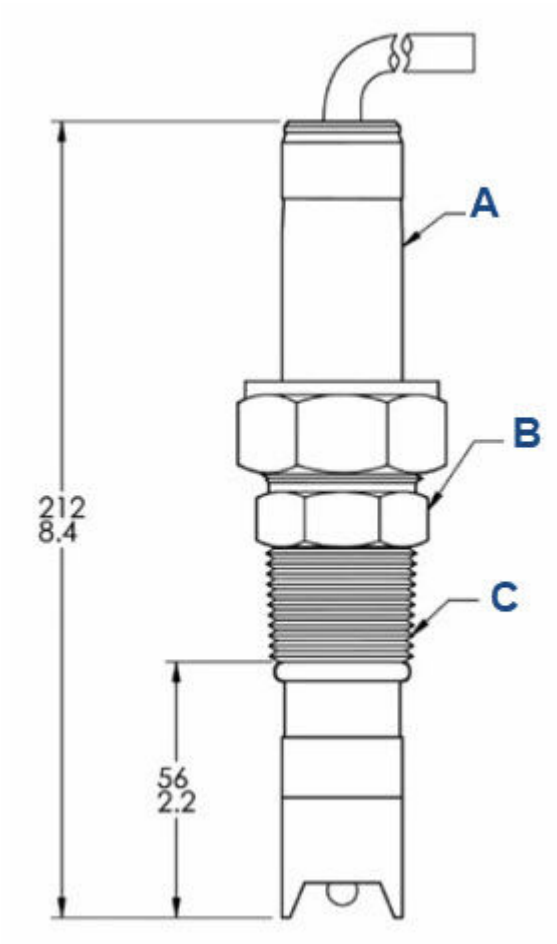
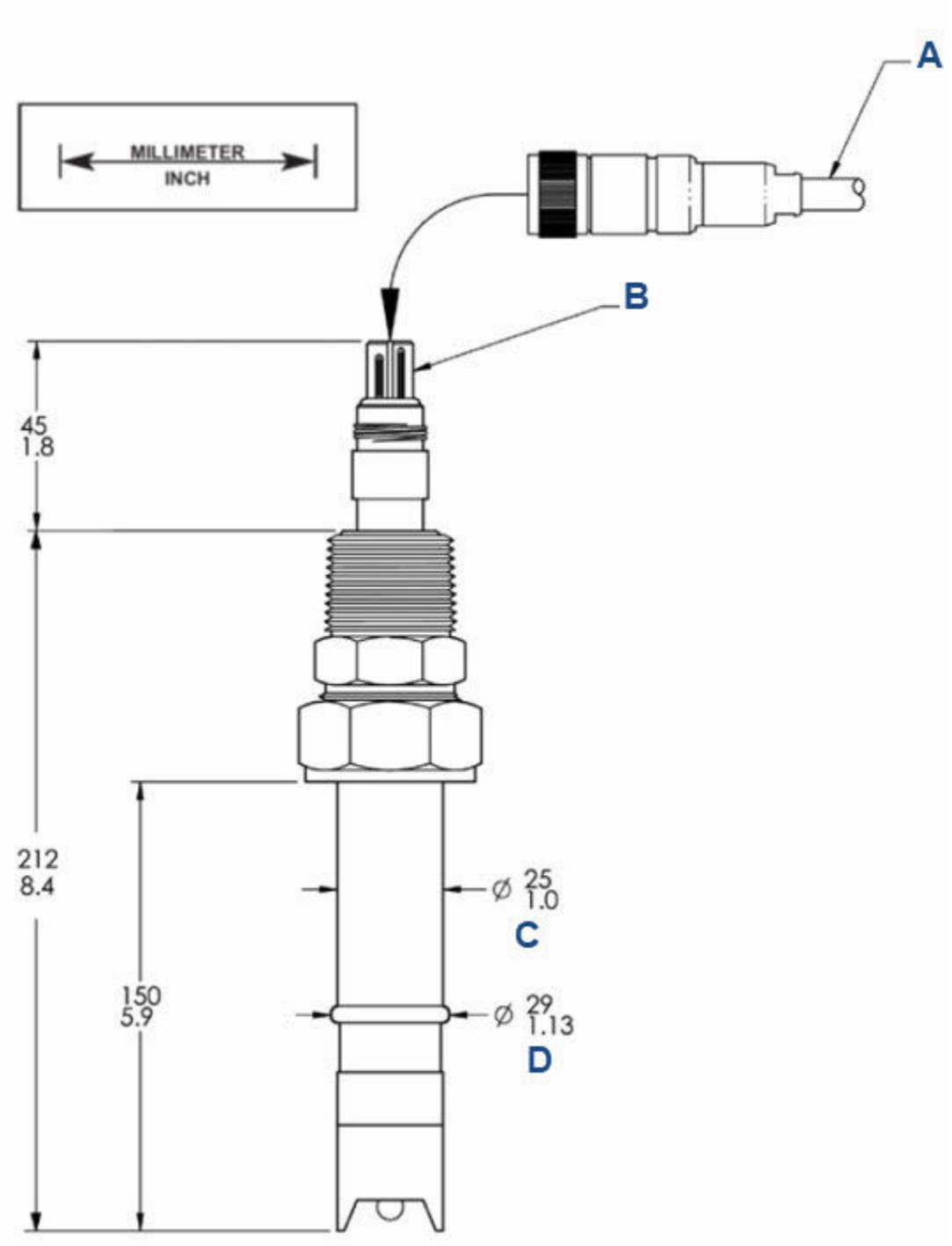


Figure 4: Rosemount 3300HT Sensor Dimensional Drawing: Standard Hemi Bulb Sensor



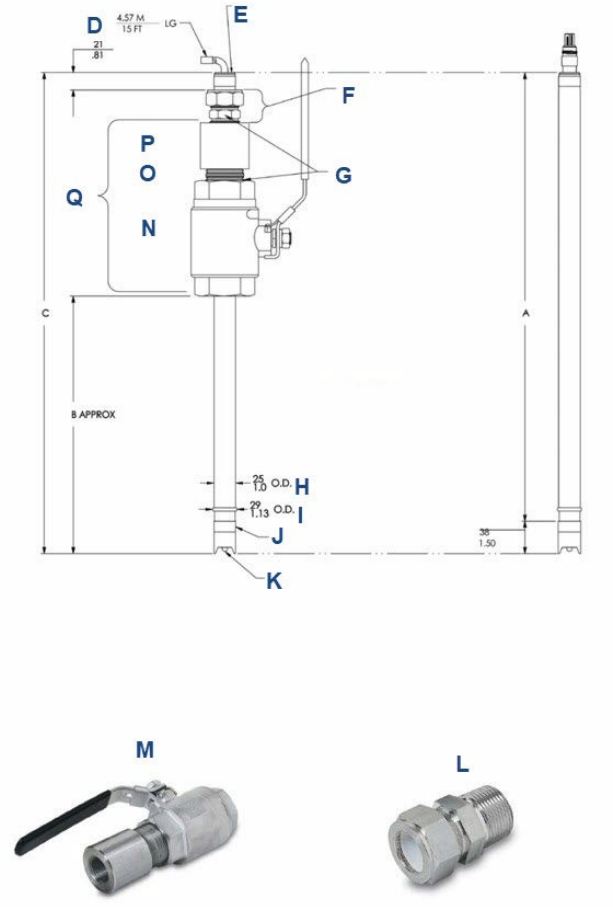
A. Sensor body
B. 1-in. swage fitting process connector assembly PN 23166-00/01
C. 1-in. NPT

Figure 5: Rosemount 3300HTVP: Standard Hemi Bulb Sensor



A. Cable with Variopol receptacle (female) connector
B. Variopol plug (male) connector
C. Sensor body
D. Retraction stop collar

Figure 6: Rosemount 3400HT Sensor Dimensional Drawing (with and without 1½-in. Ball Valve Assembly)



A. *Dimension (see Table 11).*
B. *Dimension (see Table 11).*
C. *Dimension (see Table 11).*
D. *Cable.*
E. *Cable bushing polypropylene.*
F. *1-in. x 1-in. swage fitting kit (PN 23166-00 or 23166-01) required to connect sensor directly to process or to ball valve.*
G. **⚠ CAUTION**

   Residual pressure and process may remain trapped between ball valve and male connector.

   64 psig (option 21)
   35 psig (option 25)

H. *O.D. titanium housing.*
I. *O.D. retraction stop collar.*
J. *Electrode housing Ryton.*
K. *pH electrode.*
L. *A process connector (PN 23166-00 or -01 must be used to connect the sensor to a ball valve kit 23240-00. (Process connectors sold separately).*
M. *Ball valve kit (PN 23240-00) used with extended length retractable sensor.*
N. *1½-in. FPT ball valve PN 9340065.*
O. *1½-in. MPT close nipple.*

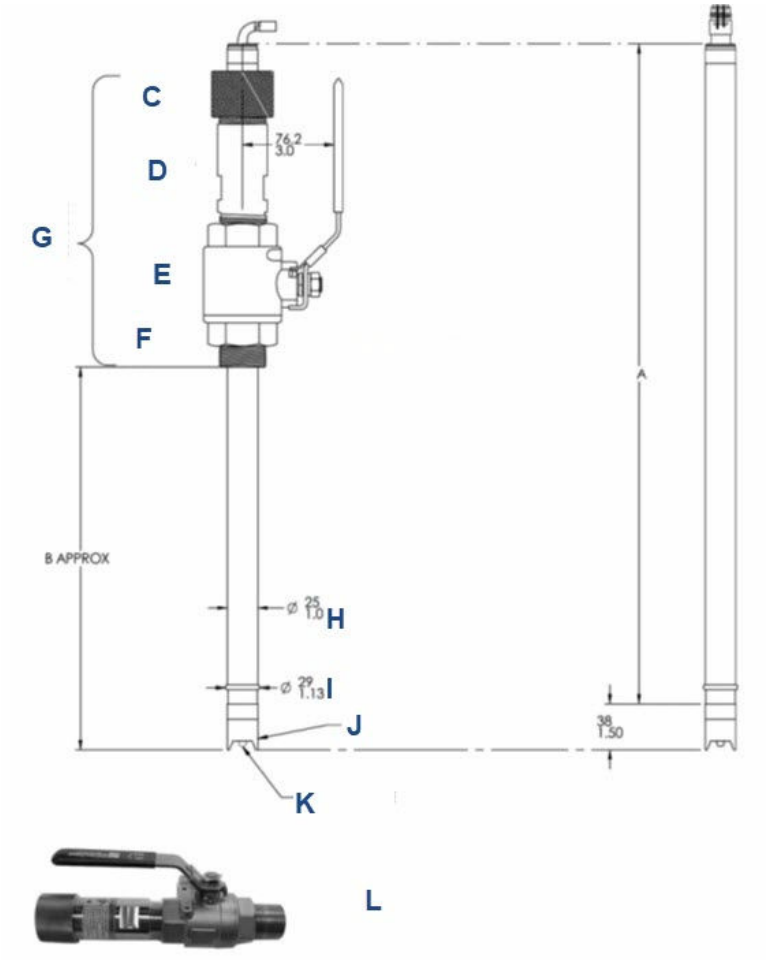
P. 1½-in. FPT reducing coupling.
Q. Ball valve kit PN 23240-00 (optional).

Table 11: Rosemount 3400HT Dimensions

Option	A (in./mm)(1)	B (in./mm)	C (in./mm)
21	21.6/549	14.0/355	23.1/587
25	36.1/917	28.5/724	37.6/955

(1) Add five inches of length to dimension A if mounting a sensor head junction box onto the sensor.

Figure 7: Rosemount 3400HTVP Dimensional Drawing (with and without 1¼-in. Ball Valve Assembly)



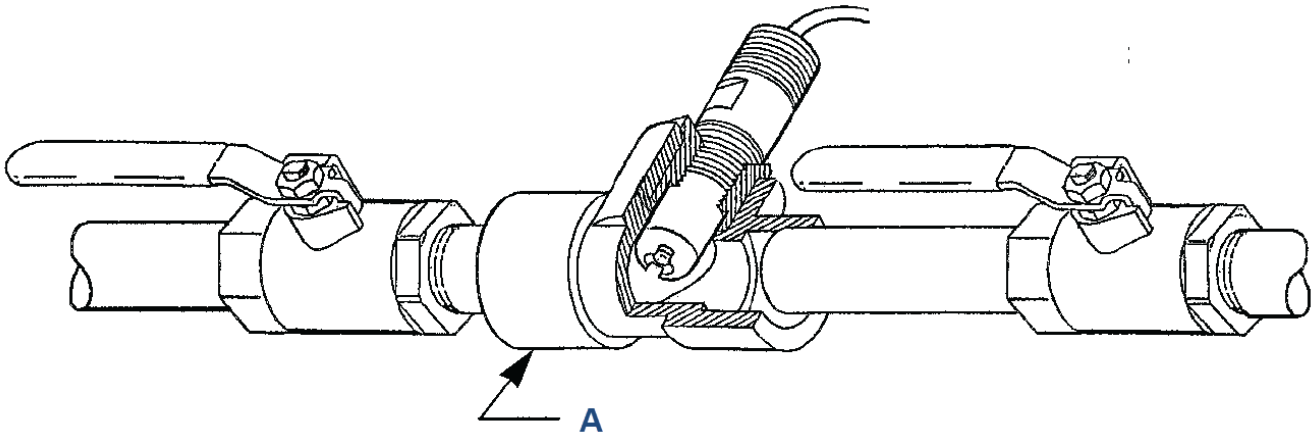
A. *Dimension (see Table 11).*
B. *Dimension (see Table 11).*
C. *Knurl retainer.*
D. *Packing adapter.*
E. *Ball valve.*
F. *1¼-in. MPT close nipple.*
G. *Ball valve kit PN 23765-00.*
H. *Housing titanium.*
I. *Retraction stop collar.*
J. *Electrode housing.*
K. *pH electrode.*
L. *Ball valve kit PN 23765-00 contains a 1¼-in. full port ball valve, 1¼-in. close nipple, and a retraction kit PN 23796-00 with carbon graphite packing for easy sensor insertion and removal.*

Table 12: Rosemount 3400HTVP Dimensions

Option	A (in./mm)(1)	B (in./mm)
21	21.6/549	12.2/310
25	36.1/917	26.7/678

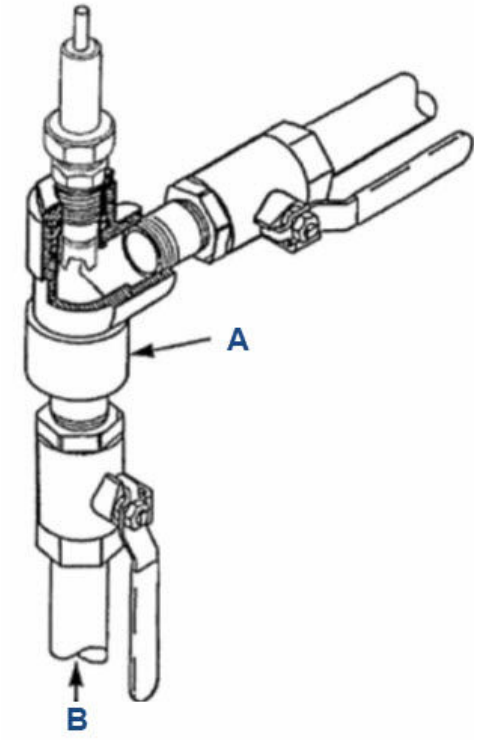
(1) Add five inches of length to dimension A if mounting a sensor head junction box onto the sensor.

Figure 8: Rosemount 3300HT/3300HTVP Straight Flow Installation



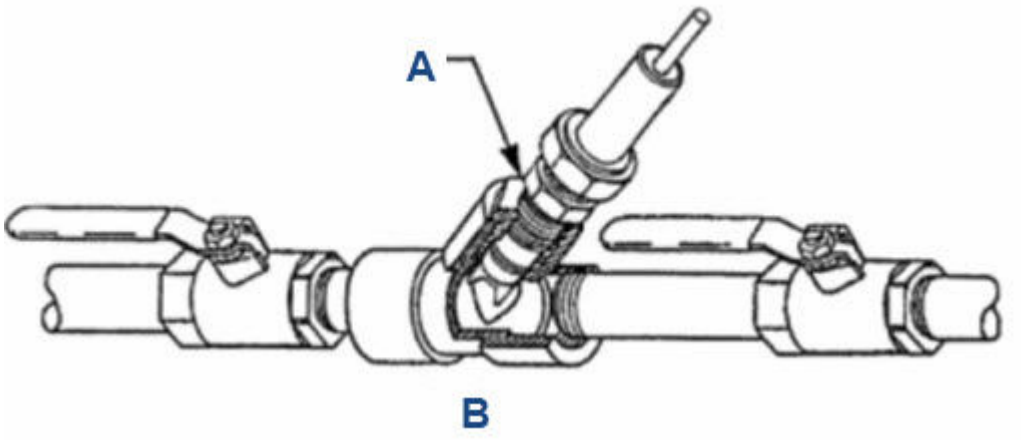
A. 1½-in. pipe tee with 1-in. threaded connections PN 2002011

Figure 9: Rosemount 3300HT/3300HTVP Angle Flow Installation



A. 1½-in. pipe tee with 1-in. threaded connections PN 2002011
B. Flow

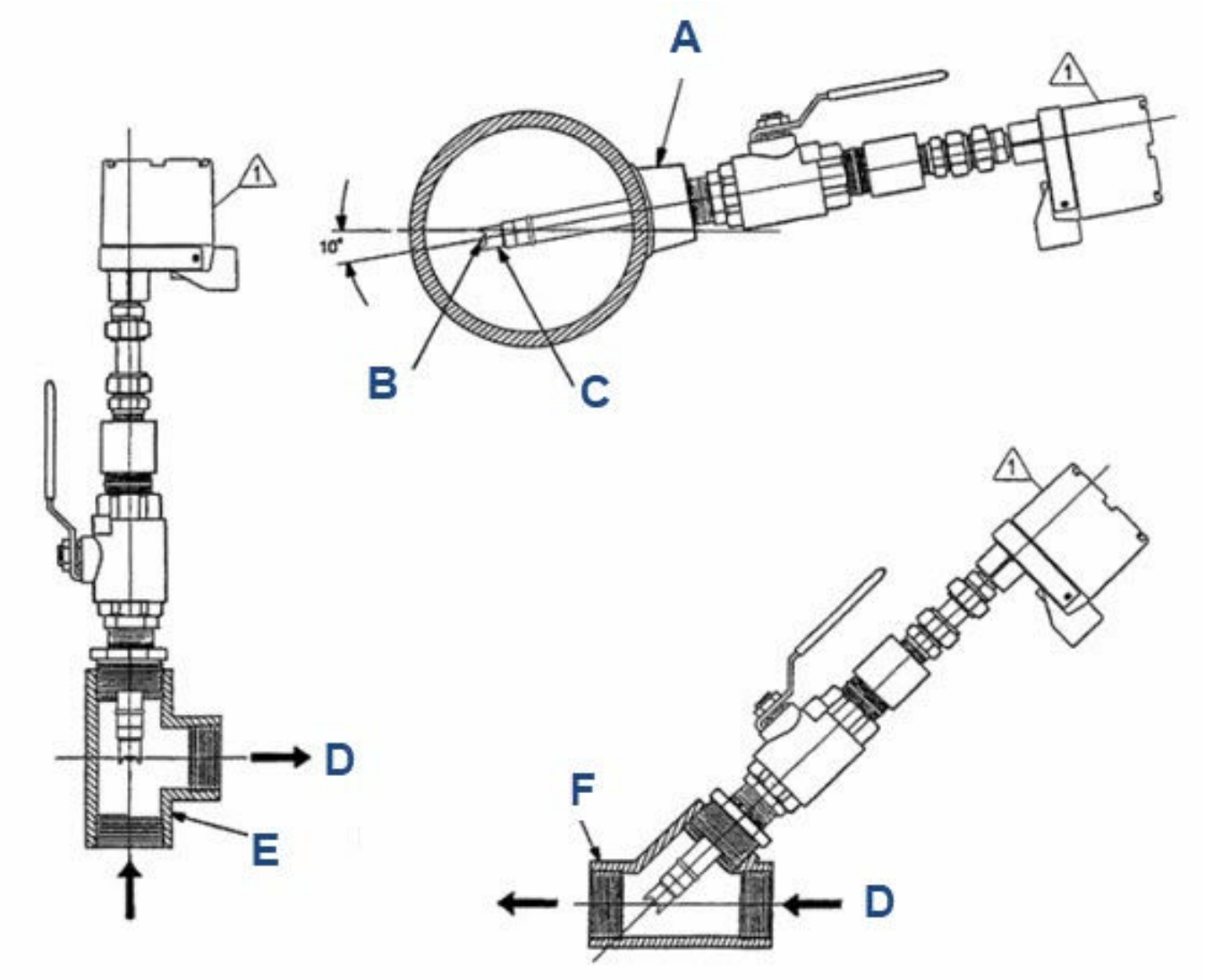
Figure 10: Rosemount 3300HT/3300HTVP Pipe "Y" Installation



A. 1½-in. x 1-in. reducing bushing
B. 1½-in. pipe "Y"

Note
Valves and fittings by others. Mount the sensor at least 10 degrees from horizontal.

Figure 11: Typical Retraction Mounting for the Rosemount 3400HT Sensor (Shown with Sensor Head Junction Box)



A. *Weldalet (1½-in. FPT)*
B. *Electrode*
C. *Electrode housing tip*
D. *Flow*
E. *Pipe tee*
F. *Pipe "Y"*

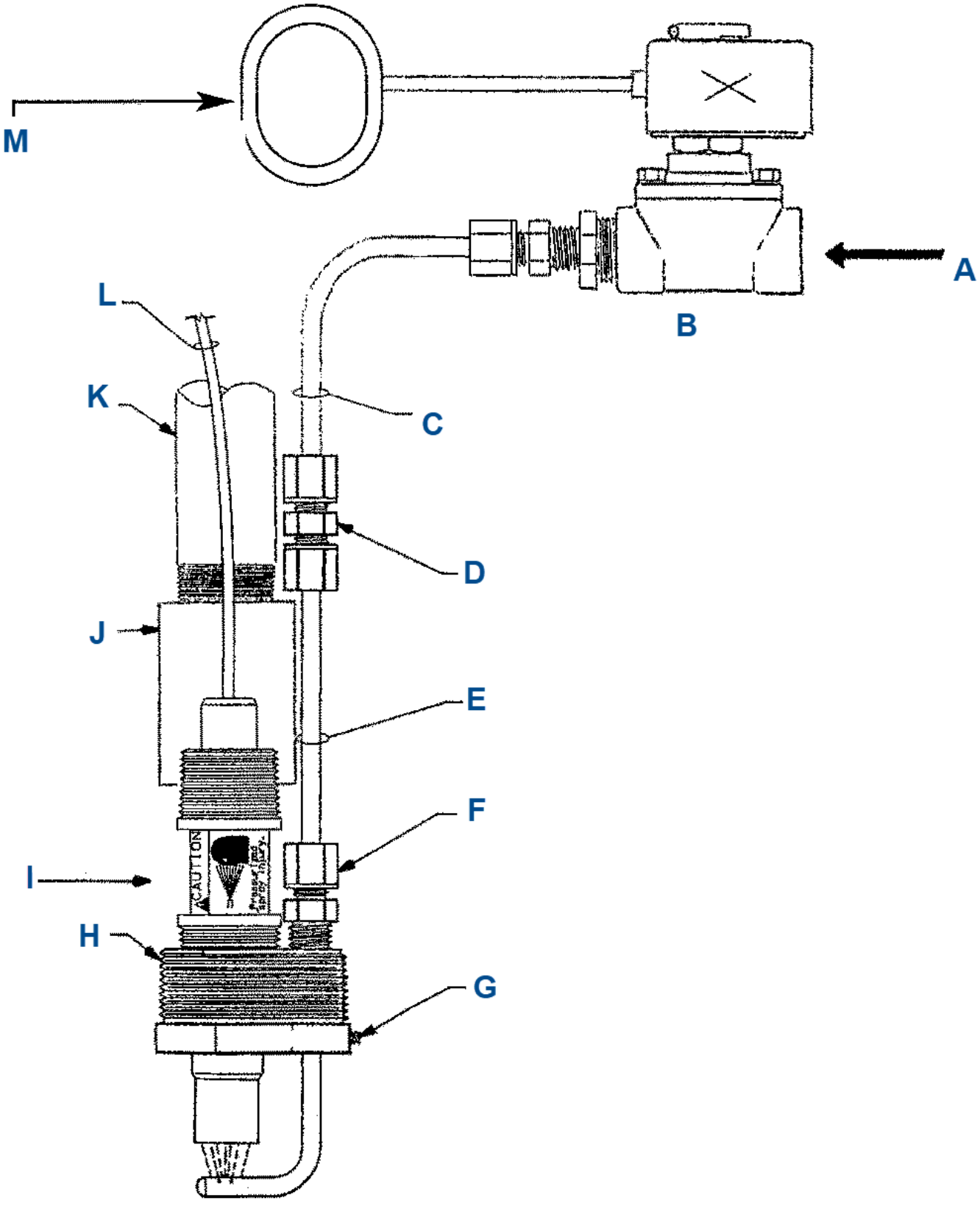
Note
Sensor must be mounted at an angle between 10 degrees and 90 degrees above the horizontal. Pipe tees and weldalets provided by customer.

Figure 12: Rosemount 3500P/3500VP Sensor with Jet Spray Cleaner (PN 12707-00) for Submersion Installations

Note

This accessory is especially useful for keeping the sensor clean in dirty ponds or tanks. You can mount it using a handrail mounting assembly or similar submersion assembly.

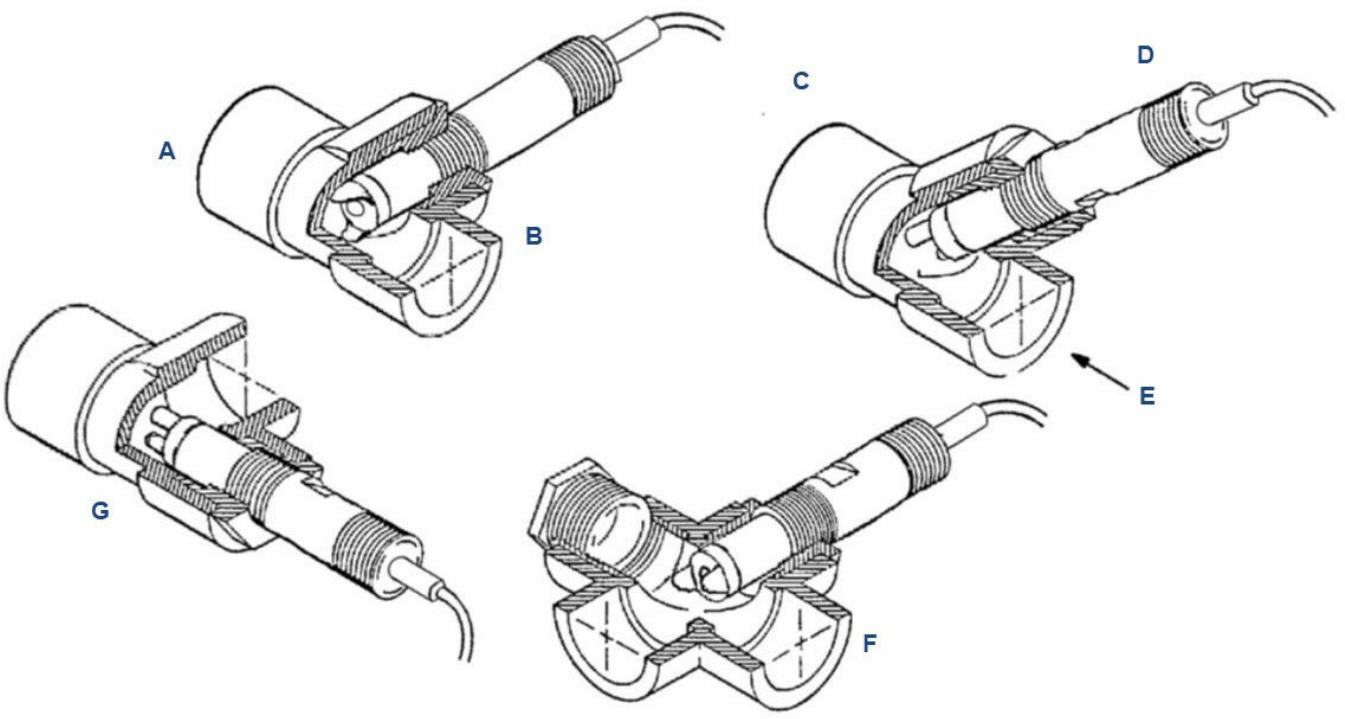
Figure 13: Jet Spray Cleaner



A. Cleaning solution by others.

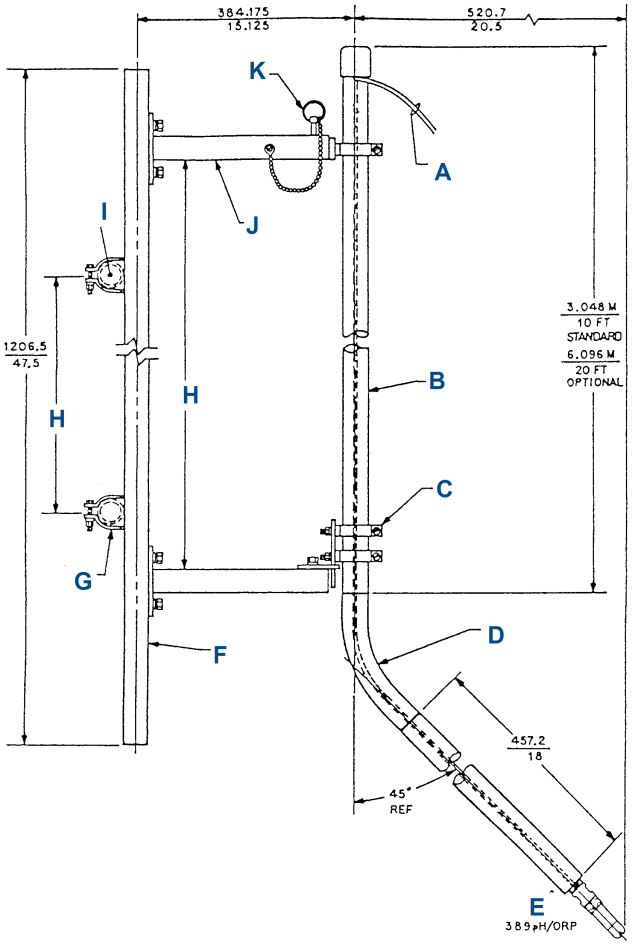
B. Solenoid valve or manual valve (supplied by others).
C. Corrosion resistant tubing (supplied by others).
D. Polypropylene ¼-in. compression fitting.
E. ¼-in. 316 stainless steel.
F. ¼-in. polypropylene.
G. Stainless set screw for adjustable spray nozzle height.
H. 2-in. NPT threads.
I. Sensor.
J. 1-in. PVC coupling for submersible applications (supplied by others).
K. 1-in. PVC or stainless conduit (supplied by others).
L. Cable.
M. Timer supplied by others or use timer feature in Rosemount instrument.

Figure 14: Rosemount 3500P Sensor Flow-through Installations



A. 1½-in. schedule 80 CPVC tee with 1-in. FNPT connections (code 16) straight flow shown.
B. Always mount sensor at least 10 degrees above horizontal.
C. 1½-in. pipe "Y".
D. 1½-in. x 1-in. reducing bushing.
E. Flow.
F. 1½-in. schedule 80 CPVC with view or cleaning port.
G. Angle flow shown.

Figure 15: Submersion Installation: Handrail Mounting Accessory (PN 11275-01)

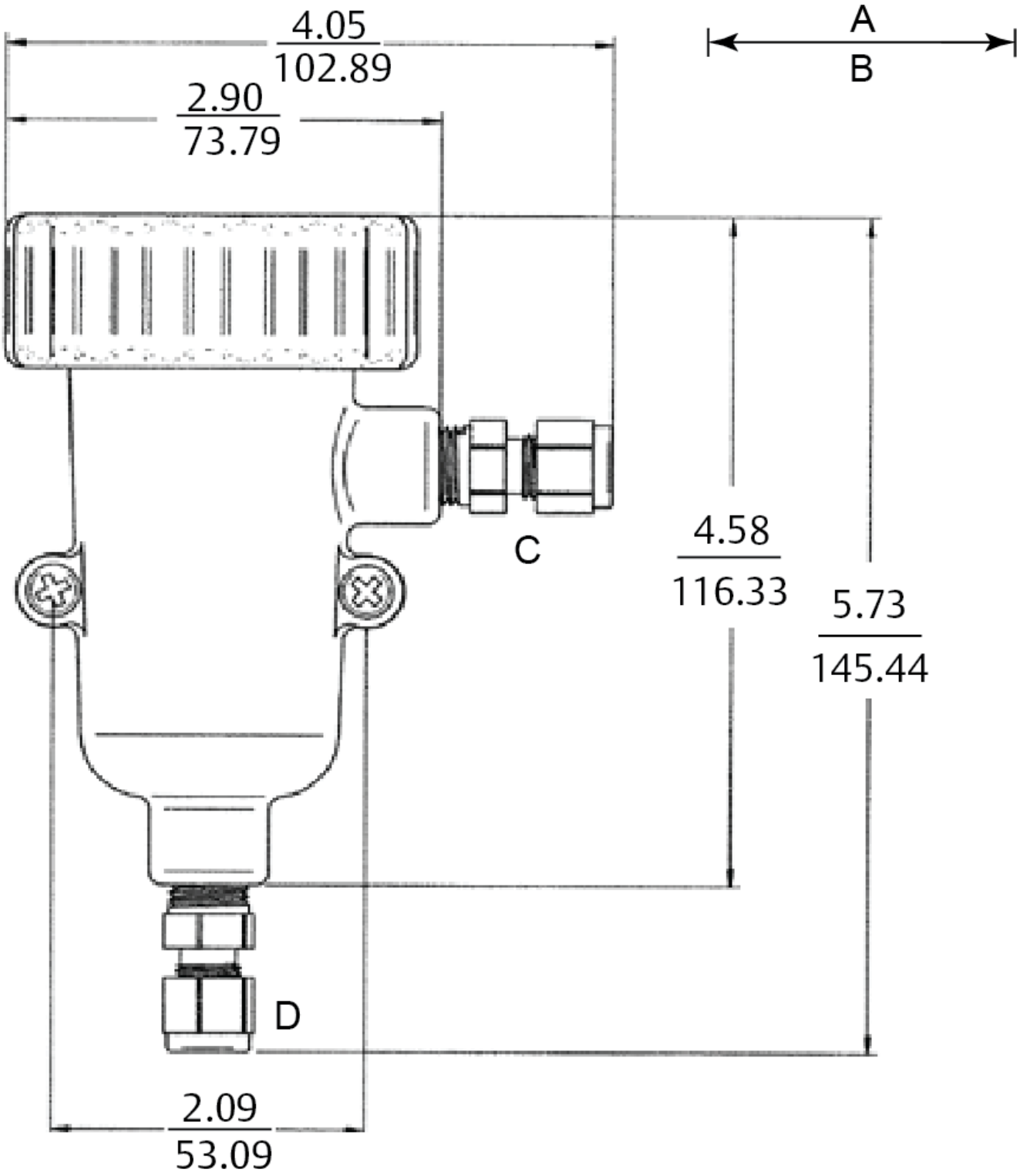


A. Sensor cable.
B. 1½-in. PVC pipe schedule 80.
C. 1½-in. pipe clamp, three places.
D. 45 degree sweep ell extension pipe.
E. Regularly check to make sure connections are water tight.
F. Unistrut 1⅝-in. x 1⅝-in. aluminum.
G. 1½-in. pipe clamp, two places.
H. Can be any convenient dimension.
I. Customer handrail, two places.
J. Mounting channel aluminum, two places.
K. Locking pin with bead chain.

Note
Unless otherwise specified.

Low flow cell specifications

Figure 16: Low Flow Cell (PN 24091-00)



A. Inches
B. Millimeters

C. Outlet
D. Inlet

Inlet and outlet connections are stainless steel and take ¼-in. OD tubing. Flow cell is polycarbonate with ¼-in. FNPT fittings.

Wetted materials	Body and nut: polyester/polycarbonate Fittings: 316 stainless steel Seals: silicone
Flow cell ratings	Temperature: 32 to 158 °F (0 to 70 °C) Maximum pressure: 90 psig (721 kPa [abs]) Flow rate: 2 to 5 gallons per hour (7,6 to 18,9 liters per hour)
Sensor threaded connection	24091-00: 1-in. NPT adapter

Accessories

Table 13: Connector Cable (Required for all First Time Installations)

Part number	Description
24281-00	15-ft. (4,6 m) VP8 cable
24281-01	25-ft. (7,6 m) VP8 cable
24281-02	2.5-ft. (0,8 m) VP8 cable
24281-03	50-ft. (15,2 m) VP8 cable
24281-04	100-ft. (30,5 m) VP8 cable
24281-05	4-ft. (1,2 m) VP8 cable
24281-06	10-ft. (3 m) VP8 cable
24281-07	20-ft. (6,1 m) VP8 cable
24281-08	30-ft. (9,1 m) VP8 cable

Table 14: Ball Valve Assembly

Part number	Description
23240-00	Ball valve assembly, 316 stainless steel, 1½-in. (process connector required)
23765-00	1¼-in. ball valve assembly

Table 15: Extension Cables (Requires a Remote Junction Box)

Part number	Description
23646-01	Extension cable, 11-conduit, shielded, prepped, per foot
9200273	Extension cable, 11-conduit, shielded, unprepped, per foot

Table 16: Mounting Assemblies

Part number	Description
11275-01	Handrail mounting assembly
12707-00	Jet spray cleaner

Table 16: Mounting Assemblies *(continued)*

Part number	Description
2002011	CPVC flow through tee, 1½-in. NPT process connection
24091-00	Cell, low flow, ¼-in. inlet and outlet
915240-03	Tee, flow-through, 2-in. PVC, ¾-in. NPT
915240-04	Tee, flow-through, 2-in. PVC, 1-in. NPT
915240-05	Tee, flow-through, 2-in. PVC, 1½-in. NPT

Table 17: O-rings for Process Connectors (Optional)

Part number	Description
23594-01	O-ring, 2-214, EPDM, 4 each with tube
9550220	O-ring, 2-214, Kalrez®, for process connector

Table 18: Process Connectors (Required for all First Time Installations)

Part number	Description
23166-00	Connector, 1-in. x 1-in. 316 stainless steel with O-ring groove
23166-01	Connector, 1-in. x 1-in. titanium with O-ring groove

Table 19: Remote Junction Boxes

Part number	Description
2002565	Mounting bracket kit
23555-00	Junction box, Rosemount 54/5081/1055/Xmt compatible preamplifier

Table 20: Sensor Head Junction Box

Part number	Description
23709-00	Junction box, sensor head with preamplifier for Rosemount 54/3081

Table 21: Other Accessories

Part number	Description
24231-00	High temperature reference kit
24231-01	Bio-film resistant reference kit
24231-02	Poisoning resistance reference kit
24231-03	Oil resistant reference kit
24231-04	Scaling resistant reference kit
24231-05	Metal resistant reference kit
24238-00	High temperature porous Teflon™ liquid junction
24238-01	Bio-film porous Teflon liquid junction
24238-02	Poisoning resistant porous Teflon liquid junction
24238-03	Oil resistant porous Teflon liquid junction

Table 21: Other Accessories *(continued)*

Part number	Description
24238-04	Scaling porous Teflon liquid junction
24238-05	Metal resistant porous Teflon liquid junction
24239-00	High temperature junction and Viton® O-ring kit
24240-00	High temperature junction and Kalrez O-ring kit
24250-00	Viton O-ring kit
24251-00	Kalrez O-ring kit
24270-00	EPDM O-ring kit
34116-00	Junction cap, Ryton
34017-00	Cap, high temperature guard pH/ORP molded PPS
9210012	Buffer solution, pH 4.01, 16 oz. (473,2 ml)
9210013	Buffer solution. pH 6.86, 16 oz. (473,2 ml)
9210014	Buffer solution, pH 9.18, 16 oz. (473,2 ml)
9210392	Reference fill gel high temperature, silica, 1 oz. (30 ml)
9210422	Metal resistant refill kit, 30 cc syringe (4-5 refills per syringe)
9210423	Oil resistant refill kit, 30 cc syringe (4-5 refills per syringe)
9210424	Scale resistant refill kit, 30 cc syringe (4-5 refills per syringe)
9210425	Poison resistant refill kit, 30 cc syringe (4-5 refills per syringe)
9210426	Bio-film refill kit, 30 cc syringe (4-5 refills per syringe)
R508-8OZ	ORP standard, 475 mV, 8 oz. (236,6 ml)

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