

Rosemount™ RBI pH/ORP Sensors



High performance pH/ORP measurements for your harsh applications

The Rosemount RBI pH/ORP Sensor features a multi-junction reference design, making it ideal for use in tough applications containing sulfides and other poisoning ions. The sensor is offered with various configurations to meet a wide variety of installation requirements.

Ordering information

The Rosemount RBI pH/ORP sensor is built with a Kynar® body and is available with two configurations: a 3/4-in. male national pipe thread (MNPT) in-line/submersion version allows the sensor to be used in pipe tees or to be submersed in a tank, and a retractable version allows variable installation through a ball valve.



High performance and robust design

- Superior chemical resistance provided by a rugged Kynar body and selectable O-ring materials (EPDM, Viton®, or Kalrez™).
- High pressure rating up to 150 psig (1,035 kPa).
- Maximize sensor life with multi-junction reference.

Ease of installation

- The in-line/submersion body features 3/4-in. NPT front and rear facing process connections for direct installation into a process sample line or connection to a 3/4-in. FNPT coupling extension pipe for submersion.
- The retractable sensor option allows for insertion installations through a ball valve.

Universal VP8 connection

- Eliminate cable twisting with Variopol (VP8) cable connector option, for quick cable to sensor release.

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Online Product Configurator

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Model

Code	Description
RBI	pH/ORP Sensor

Measurement type/electrode

A10 and A11 come with PT100 resistance temperature device (RTD) for temperature compensation. B10 has no temperature compensation.

Code	Description
A10	pH-ruggedized hemi-glass (0-14 pH)
A11	pH-ruggedized flat glass (1-14 pH)
B10	Platinum ORP

Tip configuration

Code	Description
D1	Dual notched PTFE junction, tip protection
F1	Flush, PTFE junction, no tip protection

Body type

Code	Description
546	¾-in. male national pipe thread (MNPT) in-line/submersion
547	Retractable ⁽¹⁾

(1) Sheath ordered separately (see [Accessories](#)).

Body option

Code	Description
S1	Standard body

Insertion depth

00 only available with retractable body type option (547). 05, 10, and 15 only available with ¾-in. male national pipe thread (MNPT) in-line/submersion body type option (546).

Code	Description
00	None

Code	Description
05	0.5-in. (12.7 mm)
10	1.0-in. (25.4 mm)
15	1.5-in. (38.1 mm)

O-ring

Code	Description
E	EPDM
V	Viton® ETP
K	Kalrez®

Cable configuration

Code	Description
15	15 ft. (4.6 m) cable
30	30 ft. (9.1 m) cable
VP ⁽¹⁾	Variopol connection ⁽²⁾

(1) Not compatible with 36-in. (914.4 mm) or longer RBI-547 retraction sheathes

(2) VP8 cable sold separately (see [Accessories](#)).

Lead termination

Code	Description
T2	All tinned leads
NL	No leads (use VP8 connection)

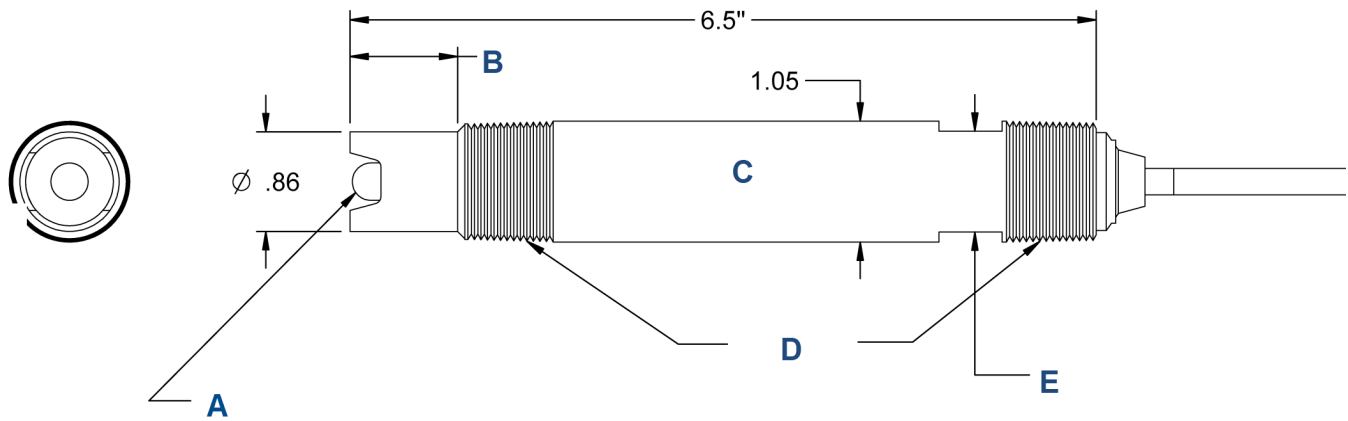
Specifications

Rosemount RBI pH/ORP Sensor Specifications

Measurement range	pH: 0 to 14 ORP: -1500 to +1500 mV
Wetted materials	Kynar [®] , titanium (retractable 547 only), porous PTFE, wood, glass, and choice of EPDM, Viton [®] , or Kalrez [®]
Maximum temperature	248 °F (120 °C) at 40 psig (276 kPa [abs])
Maximum pressure	150 psig (1,035 kPa [abs]) at 158 °F (70 °C)
Maximum insertion pressure (option 547)	65 psig (448 kPa [abs]) at 158 °F (70 °C)
Maximum retraction pressure (option 547)	40 psig (276 kPa [abs]) at 248 °F (120 °C)
Process connection	Body type 546: Forward and rear facing ¾-in. MNPT Body type 547: None, requires user-supplied 1-in. MNPT process fitting or ball valve set.

Dimensional drawings

Figure 1: In-Line Submersion Option 546 with Integral Cable Connection

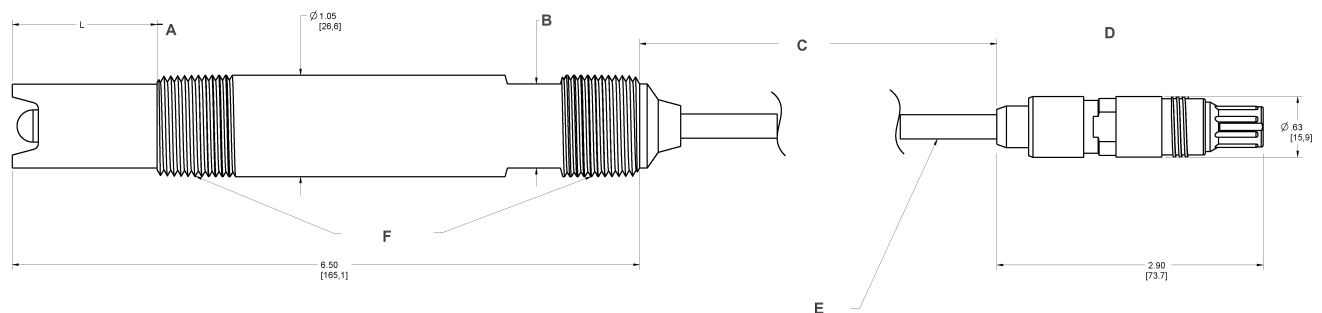


- A. Measuring electrode: choice of ruggedized hemi glass, ruggedized flat glass, or flat platinum ORP (non-glass)
Reference junction: PTFE junction flat and flash or PTFE junction with notched glass protection
- B. L - insertion depth (see Table 1)
- C. Kynar[®] body
- D. 3/4-in. MNPT
- E. 7/8-in. wrench flats

Table 1: Insertion Depth

Option	L
05	0.5-in. (12.7 mm)
10	1.0-in. (25.4 mm)
15	1.5-in. (38 mm)

Figure 2: In-Line Submersion Option 546 with Variopol Cable Connection

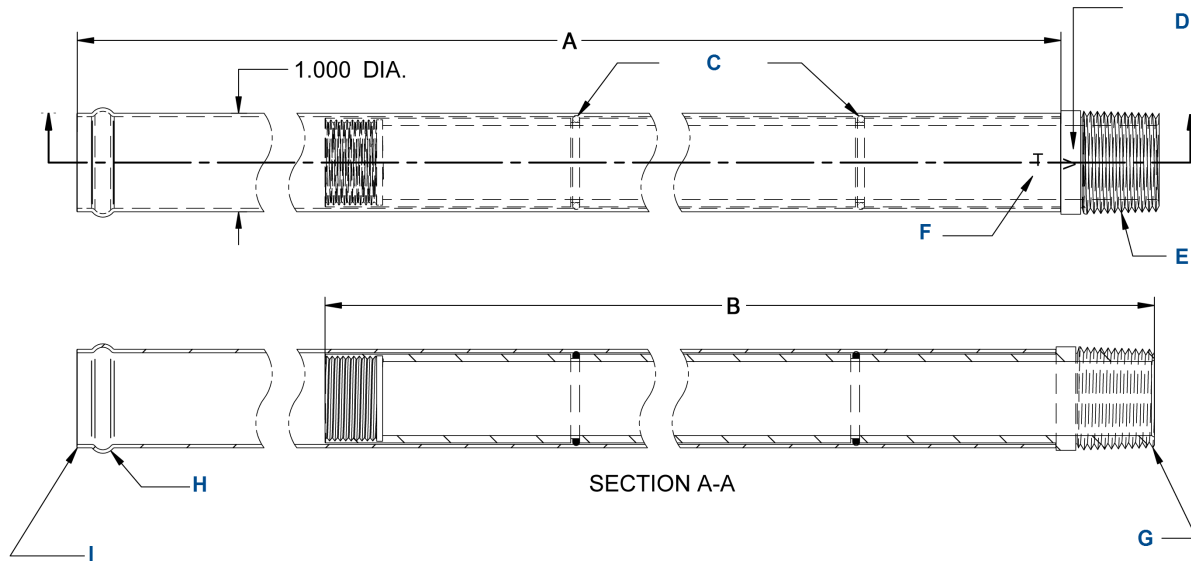


- A. Insertion depth (see Table 2)
- B. 7/8-in. flats
- C. 8-in. cable
- D. VP8 male connector
- E. 1/4-in. cable
- F. 3/4-in. MNPT thread

Table 2: Insertion Depth

Option	L
05	0.5-in. (12.7 mm)
10	1.0-in. (25.4 mm)
15	1.5-in. (38 mm)

Figure 3: Titanium Sheath Dimensions (for 547 Option)



- A. A length (see Table 3)
- B. B length (see Table 3)
- C. O-rings (see Table 3)
- D. O-ring material I.D. (V = Viton®, E = EPDM, K = Kalrez®)
- E. 3/4-in. MNPT
- F. Sheath material I.D. (T = titanium, H = Hastelloy C)
- G. Extension Kynar
- H. Swage
- I. Titanium sheath

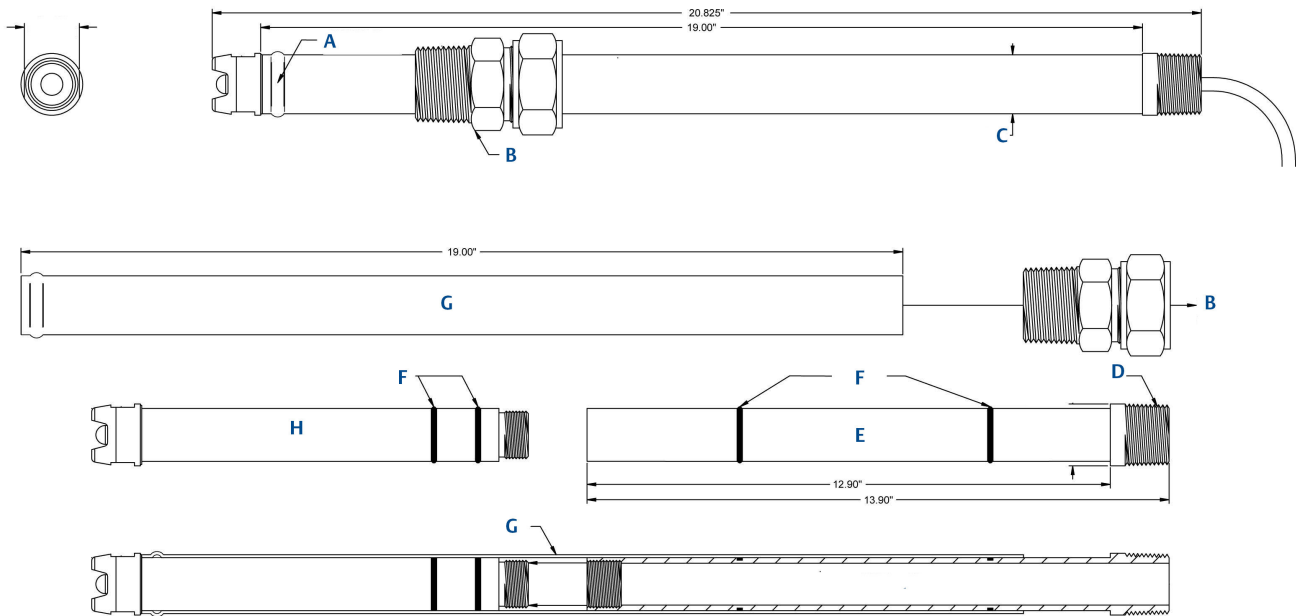
Table 3: Titanium Sheath Dimensions (for 547 Option)

Part number	Sheath materials	O-ring materials	A length	B length
RB5104-0058E	T	E	7-in. (177.8 mm)	1.9-in. (48.3 mm)
RB5104-0078E	H	E		
RB5104-0120E	T	E	19-in. (482.6 mm)	13.9-in. (353.1 mm)
RB5104-0120V	T	V		
RB5104-0320E	H	E		
RB5104-0320K	H	K		

Table 3: Titanium Sheath Dimensions (for 547 Option) (continued)

Part number	Sheath materials	O-ring materials	A length	B length
RB5104-0136E	T	E	35-in. (889 mm)	29.9-in. (759.5 mm)
RB5104-0336E	H	E		

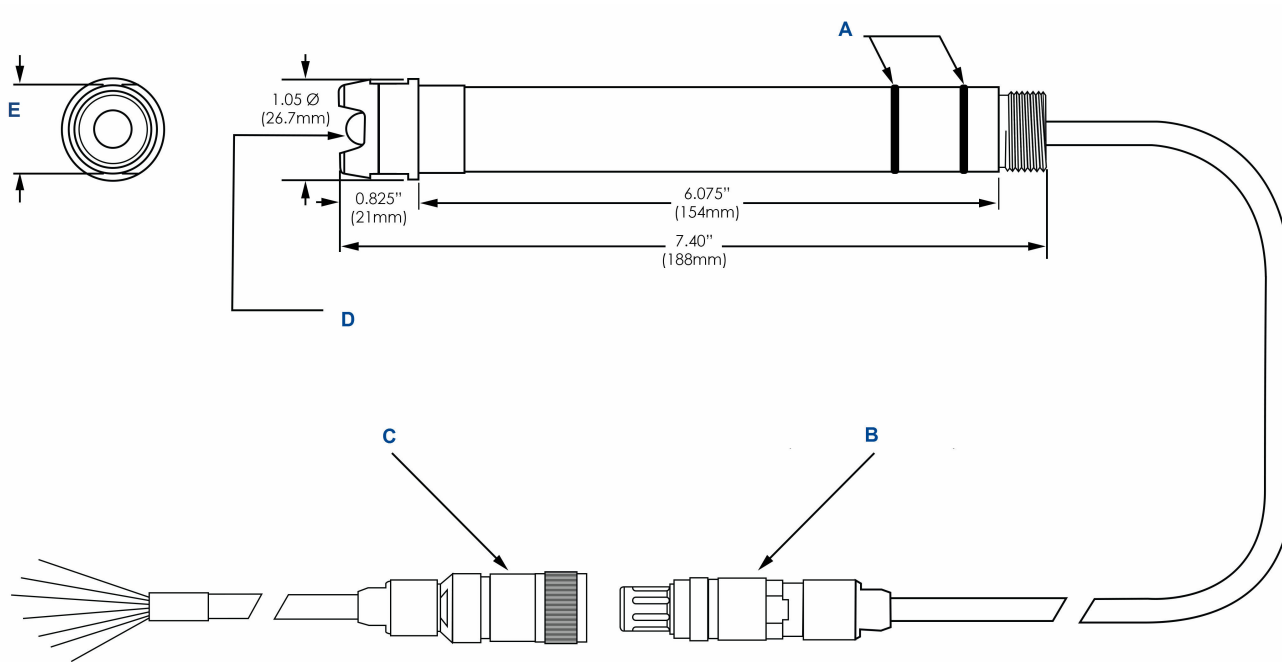
Figure 4: Retractable Body Type Sensor (547) with Integral Cable Connection and Sheath



Shown with 20-in. (508 mm) sheath (RB5104-0120E/RB5104-0120V/RB5104-0320E)

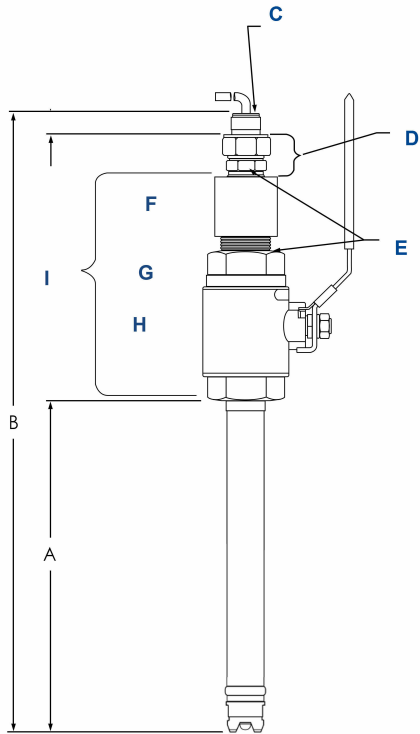
- A. Blowout safety stop
- B. Fitting sold separately
- C. 1.00-in. (25.4 mm) diameter
- D. Feed sheath through fitting sold separately
- E. 1.05-in. (26.67 mm) diameter
- F. Feed sensor wiring through sheath and extension
- G. Extension
- H. Sheath
- I. O-rings
- J. Titanium sheath
- K. O-rings
- L. Sensor

Figure 5: Retractable Option 547 with Variopol Cable Connection



- A. O-rings
- B. VP8 connector option (24 in. [609.6 mm] cable length)
- C. VP8 connector cable (part #24281-XX)
- D. Available options include: hemi or flat glass electrodes, notched or flush tip configurations
- E. 15/16-in. wrench flats

Figure 6: RBI Retractable Body Type Sensor (547) with 1½-in. Ball Valve Assembly (PN 23240-00)



When inch and metric dimensions are given, millimeters are over inches.

- A. Length (see Table 4)
- B. Length (see Table 4)
- C. Cable bushing polypropylene
- D. 1-in. x 1-in. Swage fitting kit (PN 23166-00 or 23166-01) required to connect sensor directly to ball valve
- E. See warning below
- F. 1½-in. x 1-in. FPT reducing coupling
- G. 1½-in. MPT close nipple
- H. 1½-in. FPT ball valve PN 9340065
- I. Ball valve kit (PN 23240-00) optional

⚠ WARNING

High pressure

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

Maximum pressure at retraction: 65 psig (option 546), 40 psig (option 547)

Note

Unless otherwise specified

Table 4: Length

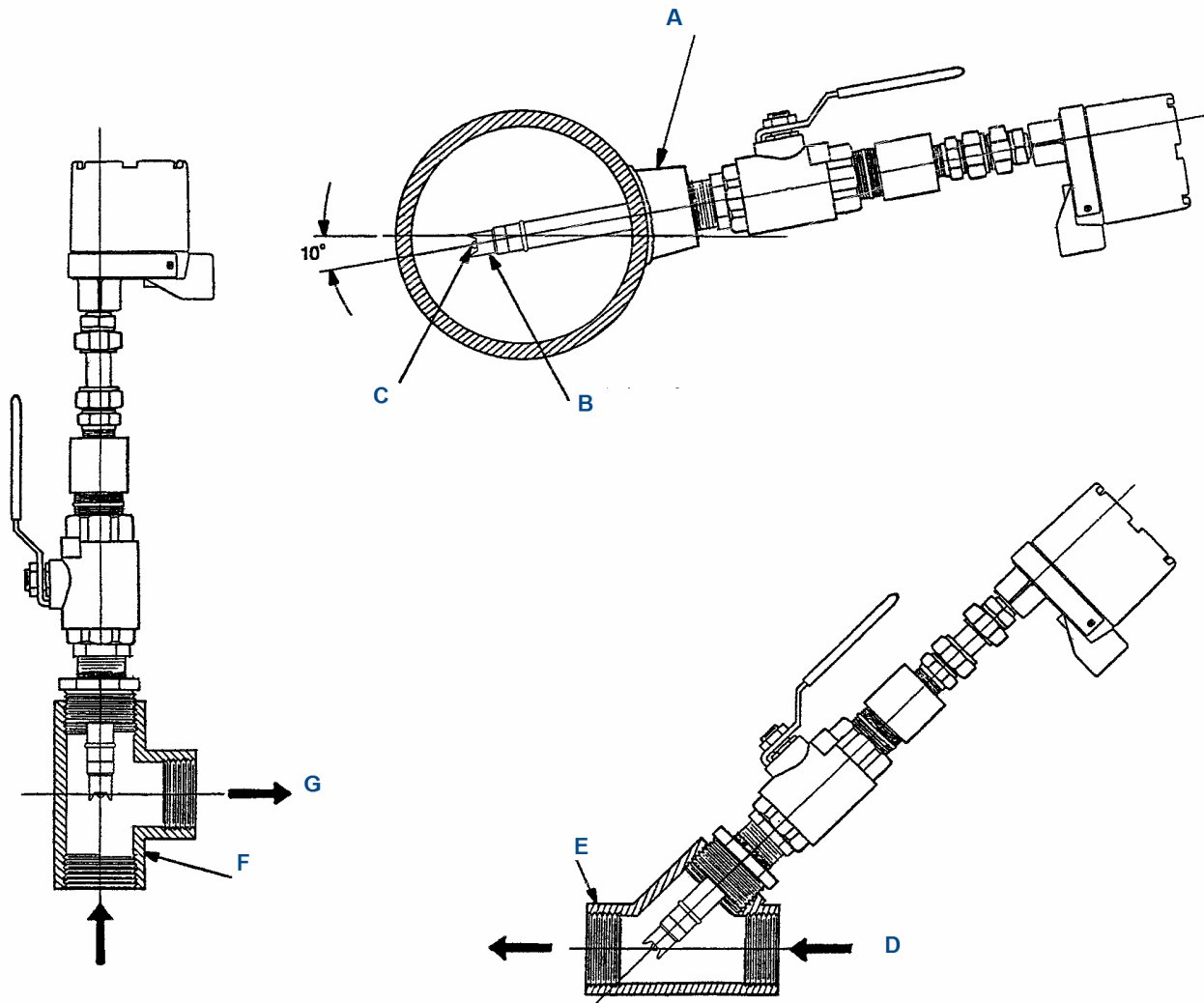
A	B
11.4-in./290 mm	20.5-in./521 mm

The 1¼-in. ball valve kit assembly (PN 23765-00) is not shown above, but is also compatible with Rosemount Retractable Body Type Sensor (547).

Note

Add five inches to length of sensor if mounting a sensor-head junction box onto the sensor.

Figure 7: Typical Mounting Details for the Retractable Body Type Sensor (547)



Note

Sensor must be mounted at an angle between 10 degrees and 90 degrees above the horizontal. Pipe tees and weldalets are customer supplied. Figure above shown with sensor head junction box PN 23709-00 (sold separately).

- A. Butt weld branch connection (1 1/2-in. FPT)
- B. Electrode housing tip
- C. Electrode
- D. Flow
- E. Pipe Y
- F. Pipe tee
- G. Flow

Accessories

Part number	Description
RB5104-0058E	8-in. (203,2 mm) titanium, Kynar®, EPDM, 547 retractable insertion sheath
RB5104-0078E	8-in. (203,2 mm) Hastelloy-C, Kynar, EPDM, 547 retractable insertion sheath
RB5104-0120E	20-in. (508 mm) titanium, Kynar, EPDM, 547 retractable insertion sheath
RB5104-0120V	20 in.(508 mm) titanium, Kynar, Viton®, 547 retractable insertion sheath
RB5104-0136E	36-in. (914,4 mm) titanium, Kynar, EPDM, 547 retractable insertion sheath
RB5104-0320E	20-in. (508 mm) Hastelloy-C, Kynar, EPDM, 547 retractable insertion sheath
RB5104-0336E	36-in. (914,4 mm) Hastelloy-C, Kynar, EPDM, 547 retractable insertion sheath
RB5104-0320K	20-in. (508 mm) Hastelloy-C, Kynar, Kalrez®, 547 retractable insertion sheath
23166-00	1-in. x 1-in. process connector, 316 stainless steel
23166-01	1-in. x 1-in. process connector, titanium
23240-00	1½-in. ball valve kit assembly, 316 stainless steel (does not include process connector)
23765-00	1¼-in. ball valve kit assembly, 316 stainless steel (does not include process connector)
24281-00	15-ft. (4,6 m) cable with mating VP8 connector
24281-01	25-ft. (7,6 m) cable with mating VP8 connector
24281-02	2.5-ft. (0,8 m) cable with mating VP8 connector
24281-05	4-ft. (1,2 m) cable with mating VP8 connector
24281-06	10-ft. (3 m) cable with mating VP8 connector
24281-07	20-ft. (6,1 m) cable with mating VP8 connector
24281-08	30-ft. (9,1 m) cable with mating VP8 connector

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