

Rosemount™ 403/403VP

Contacting Conductivity Sensors



Reliably measure conductivity with PURSense™ sensors

Rosemount 403 and 403VP contacting conductivity sensors are sanitary flange sensors commonly used in water purification systems in the food and beverage industry. These sensors are ideal for measuring electrolytic conductivity in Water-for-Injection (WFI).

Overview



Meet Sanitary and Hygienic Requirements

- Available with 1-1/2 in. and 2-in. sanitary flange process connections.
- All wetted plastics and elastomers are compliant with 21CFR177.
- All wetted surfaces have a 16 microinch (0.4 micrometer) Ra finish.
- O-rings meet USP Class VI requirements.

High Performance Design

- Available in 0.01, 0.1, and 1.0/cm cell constants.
- Internal platinum RTD for temperature compensation.
- Steam sterilizable up to 135 °C.
- Operates in pressures up to 250 psig.
- Variopol (VP6) cable connection option, for quick cable-to-sensor release, eliminates cable twisting.

Minimize Start-up and Installation Time

- A factory-measured cell constant ensures out-of-the-box accuracy and no initial calibration requirements.

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Ordering Information



The Rosemount 403 and 403VP contacting conductivity sensors are ideal for measuring electrolytic conductivity in clean water applications in the pharmaceutical and food and beverage industries. All wetted polymers are 21CFR177 (FDA) compliant, and the O-rings also meet USP Class VI requirements. All wetted surfaces have a 16 micro inch (0.4 micrometer) Ra finish. A certificate of conformance is provided with each sensor. For a copy of supplier material traceability certificates, order option -99Q8. Interconnecting VP cable is sold separately (for Rosemount 403VP).

Table 1. Rosemount 403 Contacting Conductivity Sensor ordering information

| Model | Sensor type |
|--|--|
| 403 | Contacting Conductivity Sensor |
| Cell Constant | |
| 11 | 0.01/cm |
| 12 | 0.1/cm |
| 13 | 1.0/cm |
| Flange Size | |
| 20 | 1-1/2 in. Stainless Steel Sanitary Fitting |
| 21 | 2 in. Stainless Steel Sanitary Fitting |
| Temperature Compensation | |
| _ | No Selection – Pt-1000 ⁽¹⁾ |
| 54 | Pt-100 ⁽²⁾ |
| Optional Options | |
| Insertion Length | |
| _ | No Selection – Standard Insertion Length |
| 36 | Extended Insertion Length ⁽³⁾ |
| Cable Length | |
| _ | Standard 10 ft. Integral Cable |
| 50 | 50 ft. Integral Cable |
| Special | |
| _ | No Selection – Supplier Material Traceability Certificate not Included |
| 99Q8 | Supplier Material Traceability Certificate Included |
| Typical Model Number: 403VP-11-20-_-36-99Q8 | |

- For compatibility with Rosemount 56, 1056, 1057, 1066, and 5081 Transmitters. Also compatible with legacy transmitter models 1055, 54e, 4081, 6081, and XMT.
- For compatibility with legacy transmitter models 1054, 2054, and 2081.
- Extended insertion length is 6 inches from inside face of flange to end of sensor.

Table 2. Rosemount 403VP Contacting Conductivity Sensor ordering information

| Model | Sensor type |
|--|--|
| 403VP | Contacting Conductivity Sensor |
| Cell constant | |
| 11 | 0.01/cm |
| 12 | 0.1/cm |
| 13 | 1.0/cm |
| Flange Size | |
| 20 | 1-1/2 in. Stainless Steel Sanitary Fitting |
| 21 | 2 in. Stainless Steel Sanitary Fitting |
| Temperature Compensation | |
| _ | No Selection – Pt-1000 ⁽¹⁾ |
| 54 | Pt-100 ⁽²⁾ |
| Optional Options | |
| Insertion Length | |
| _ | No Selection – Standard Insertion Length |
| 36 | Extended Insertion Length ⁽³⁾ |
| Special | |
| _ | No Selection – Supplier Material Traceability Certificate not Included |
| 99Q8 | Supplier Material Traceability Certificate Included |
| Typical Model Number: 403VP-11-20-_-36-99Q8 | |

1. For compatibility with Rosemount 56, 1056, 1057, 1066, and 5081 Transmitters. Also compatible with legacy transmitter models 1055, 54e, 4081, 6081, and XMT.
2. For compatibility with legacy transmitter models 1054, 2054, and 2081.
3. Extended insertion length is 6 inches from inside face of flange to end of sensor.

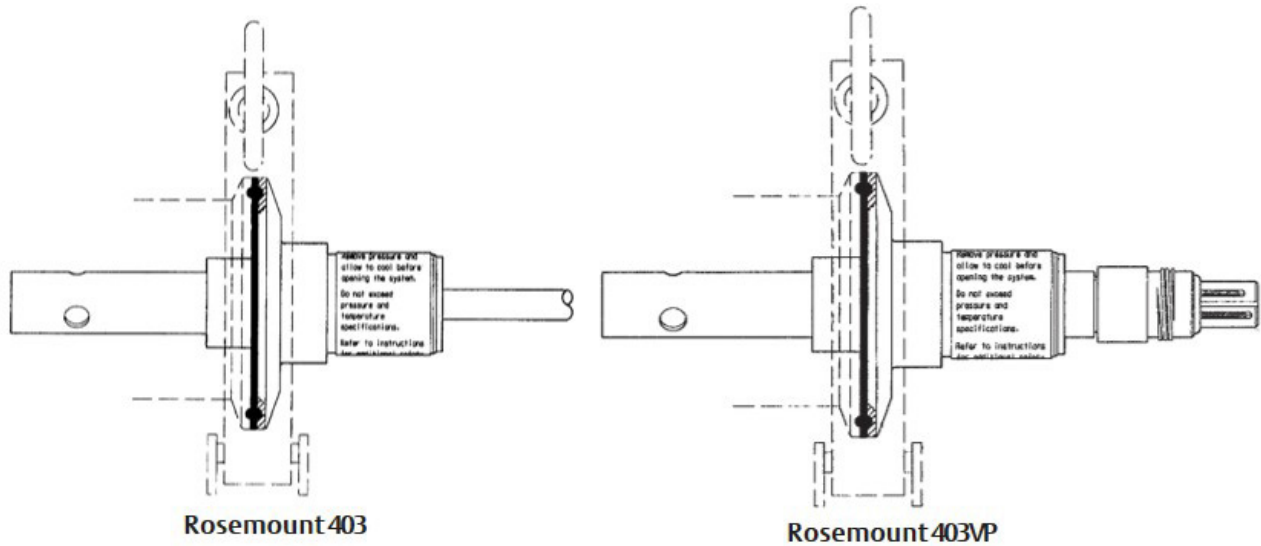
Specifications

Table 3. Rosemount 403/403VP Contacting Conductivity Sensor specifications

| | |
|--|--|
| Cell constants | |
| 0.01, 0.1 and 1.0/cm | |
| Wetted materials | |
| titanium; 316 stainless steel; PCTFE (Neoflon), compliant with 21CFR 177.1380; EP, compliant with 21CFR177.2600 and USP Class VI | |
| Surface finish | |
| All wetted surfaces have 16 micro in. (0.4 micrometer) Ra finish. | |
| Process connection | |
| 1-1/2 in. or 2-in. sanitary flange | |
| Temperature | |
| 32–221 °F (0–105 °C). Sensors are steam sterilizable to 275 °F (135 °C) | |
| Pressure | |
| 250 psig (1825 kPa abs) maximum | |
| Cable length | |
| 10 ft (3.1 m) standard; 50 ft (15.2 m) optional | |
| Weight/shipping weight | |
| 403 sensor with 10 ft (3.1 m) cable | 2 lb (1.0 kg)/3 lb (1.5 kg) |
| 403 sensor with 50 ft (15.2 m) cable | 4 lb (2.0 kg)/5 lb (2.5 kg) |
| 403VP sensor | 1 lb (0.5 kg)/2 lb (1.0 kg) (rounded up to nearest 1 lb or 0.5 kg) |

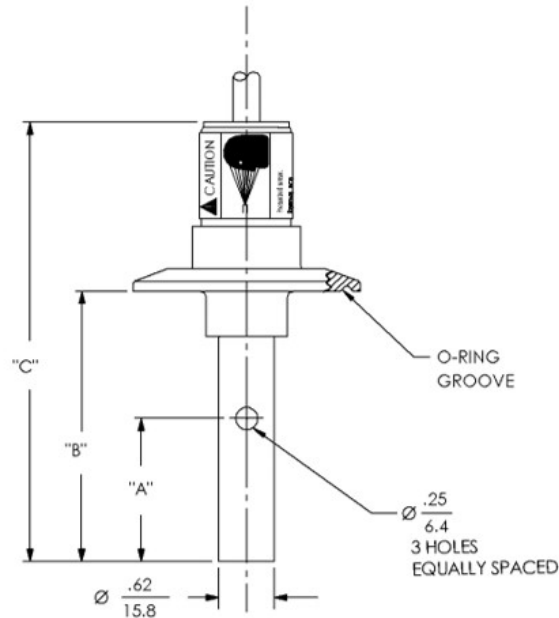
Installation Drawings

Figure 1. Rosemount 403 and 403VP Sensor Installation



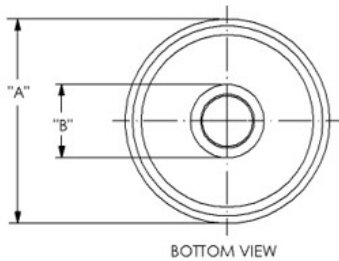
The Tri-Cover tee, clamp, and gasket are supplied by the user. Install the sensor so that it is completely submerged in the process liquid. Installation in a vertical pipe run is best. If the sensor must be installed in a horizontal pipe run, place the sensor in the 3 o'clock position.

Figure 2. Rosemount 403 Sensor Dimensional Drawings



403-11, 12, 13

| MODEL NO | "A" | | "B" | | "C" | |
|------------------------------|------|------|------|-------|------|-------|
| | INCH | MM | INCH | MM | INCH | MM |
| 403-11 standard length | 1.59 | 40.4 | 3.00 | 76.2 | 4.88 | 124.0 |
| 403-12 standard length | 0.67 | 17.0 | 1.62 | 41.1 | 3.50 | 88.9 |
| 403-13 standard length | 0.67 | 17.0 | 2.13 | 54.1 | 4.01 | 101.9 |
| 403-11 extended length (-36) | 1.59 | 40.4 | 6.00 | 152.4 | 7.88 | 200.2 |
| 403-12 extended length (-36) | 0.67 | 17.0 | 6.00 | 152.4 | 7.88 | 200.2 |
| 403-13 extended length (-36) | 0.67 | 17.0 | 6.00 | 152.4 | 7.88 | 200.2 |



| MODEL NO. | FITTING SIZE | FLANGE | | | |
|------------|--------------|--------------|------|--------------|------|
| | | "A" DIAMETER | | "B" DIAMETER | |
| | | INCH | mm | INCH | mm |
| 403-()-20 | 1 1/2 INCH | 1.98 | 50.3 | .80 | 20.3 |
| 403-()-21 | 2 INCH | 2.50 | 63.5 | .90 | 22.9 |

Figure 3. Rosemount 403VP Sensor Dimensional Drawings

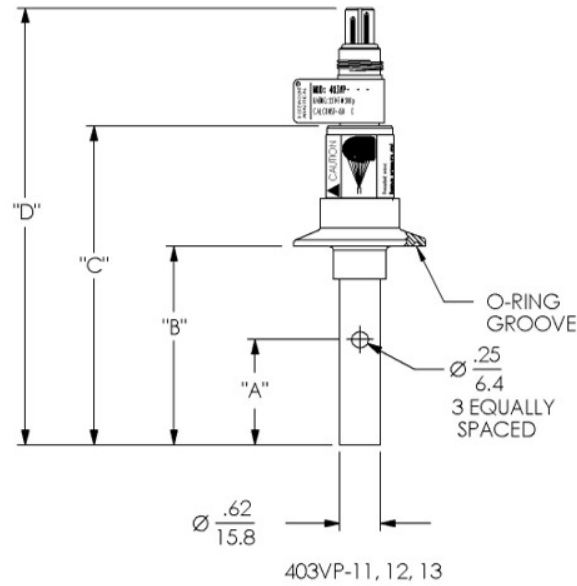


TABLE 1

| MODEL NO | "A" | | "B" | | "C" | | "D" | |
|--------------------------------|------|------|------|-------|------|-------|------|-------|
| | INCH | MM | INCH | MM | INCH | MM | INCH | MM |
| 403VP-11 standard length | 1.59 | 40.4 | 3.00 | 76.2 | 4.80 | 121.9 | 6.60 | 167.6 |
| 403VP-12 standard length | 0.67 | 17.0 | 1.62 | 41.1 | 3.44 | 87.4 | 5.24 | 133.1 |
| 403VP-13 standard length | 0.67 | 17.0 | 2.13 | 54.1 | 3.95 | 100.3 | 5.75 | 146.1 |
| 403VP-11 extended length (-36) | 1.59 | 40.4 | 6.00 | 152.4 | 7.80 | 198.1 | 9.60 | 243.8 |
| 403VP-12 extended length (-36) | 0.67 | 17.0 | 6.00 | 152.4 | 7.80 | 198.1 | 9.60 | 243.8 |
| 403VP-13 extended length (-36) | 0.67 | 17.0 | 6.00 | 152.4 | 7.80 | 198.1 | 9.60 | 243.8 |

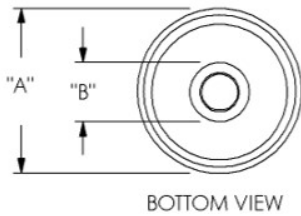


TABLE 2

| MODEL NO | FITTING SIZE | "A" FLANGE DIAMETER | | "B" FLANGE DIAMETER | |
|--------------|--------------|---------------------|------|---------------------|------|
| | | INCHES | mm | INCHES | mm |
| 403VP-()-20 | 1 1/2 INCHES | 1.98 | 50.3 | .80 | 20.3 |
| 403VP-()-21 | 2 INCHES | 2.50 | 63.5 | .90 | 22.9 |

Accessories

Table 4. Rosemount 403/403VP Sensor accessories information

| Part number | Description |
|-------------|--|
| 23550-00 | Interconnecting cable, VP 6, 2.5 ft (0.8 m) |
| 23747-04 | Interconnecting cable, VP 6, 4 ft (1.2m) |
| 23747-02 | Interconnecting cable, VP 6, 10 ft (3.0 m) |
| 23747-07 | Interconnecting cable, VP 6, 15 ft (4.6 m) |
| 23747-08 | Interconnecting cable, VP 6, 20 ft (6.1 m) |
| 23747-09 | Interconnecting cable, VP 6, 25 ft (7.6 m) |
| 23747-10 | Interconnecting cable, VP 6, 30 ft (9.1 m) |
| 23747-03 | Interconnecting cable, VP 6, 50 ft (15.2 m) |
| 23747-11 | Interconnecting cable, VP 6, 100 ft (30.5 m) |
| 23550-00 | Junction Box without Preamplifier |
| 9200275 | Interconnect Extension Cable, Unprepped (for use with Junction Box) |
| 23747-00 | Interconnect Extension Cable, Prepped (for use with Junction Box) |
| 05010781899 | Conductivity standard SS-6, 200 $\mu\text{S}/\text{cm}$, 32 oz (0.95 L) |
| 05010797875 | Conductivity standard SS-6A, 200 $\mu\text{S}/\text{cm}$, 1 gal (3.78 L) |
| 05010782468 | Conductivity standard SS-5, 1000 $\mu\text{S}/\text{cm}$, 32 oz (0.95 L) |
| 05010783002 | Conductivity standard SS-5A, 1000 $\mu\text{S}/\text{cm}$, 1 gal (3.78 L) |
| 05000705464 | Conductivity standard SS-1, 1409 $\mu\text{S}/\text{cm}$, 32 oz (0.95 L) |
| 05000709672 | Conductivity standard SS-1A, 1409 $\mu\text{S}/\text{cm}$, 1 gal (3.78 L) |
| 05010782147 | Conductivity standard SS-7, 5000 $\mu\text{S}/\text{cm}$, 32 oz (0.95 L) |
| 05010782026 | Conductivity standard SS-7A, 5000 $\mu\text{S}/\text{cm}$, 1 gal (3.78 L) |

Engineering Specification

1. The sensor shall be suitable for the determination of electrolytic conductivity in water for injection and in any water purification installation where Tri Clamp fittings are used.
2. The sensor shall be available with either 1-½ inch or 2-inch 316 stainless steel sanitary flanges.
3. Electrodes shall be titanium.
4. The insulator shall be PCTFE and shall be compliant with 21CFR177.1380.
5. The O-rings shall be EP and shall be compliant with 21CFR177.2600 and USP Class VI.
6. All wetted surfaces shall have a 16 micro inch (0.4 micrometer) Ra finish.
7. The sensor shall be available with either an integral cable or a Variopol quick disconnect fitting.
8. The sensor shall have an integral platinum RTD for temperature measurement.
9. The sensor shall be Rosemount 403 (integral cable) or 403VP (Variopol fitting) or approved equal.

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