


## Complete Lineup for Use in High-temperature, High-pressure Environments or Where Exposed to Chemicals

- The BF-1 is ideal for liquids with low specific resistance, such as wastewater.
- The BF-□(R) is used when a strong mounting is required.
- The BS-1 is used when high-temperature, high-pressure resistant is required.
- The BS-1T is used when corrosion resistance is required.

 Refer to *Safety Precautions for Electrodes and Electrode Holders*.



## Ordering Information

### ■ Electrode Holders

| Application  | Model  |
|--|--|
| <ul style="list-style-type: none"> <li>• Liquid with low specific resistance<br/>For 1-pole electrode</li> </ul>   | BF-1   |
| <ul style="list-style-type: none"> <li>• When sturdy mounting is required<br/>For 3-pole electrode<br/>For 3-pole electrode (2-wire)<br/>For 5-pole electrode<br/>For 5-pole electrode (2-wire)</li> </ul>   | BF-3<br>BF-3R<br>BF-5<br>BF-5R   |
| <ul style="list-style-type: none"> <li>• Applications where resistance to high-temperature, high-pressure is required<br/>For 1-pole electrodes, 250°C, 1.96 MPa</li> </ul>  | BS-1<br>BS-1S<br>BS-1S1<br>BS-1S2  |
| <ul style="list-style-type: none"> <li>• High-pressure application where resistance to corrosion is required<br/>For 1-pole electrode, SUS304 981 kPa<br/>For 1-pole electrode, SUS316 981 kPa<br/>For 1-pole electrode, Titanium 981 kPa<br/>For 1-pole electrode, Hastelloy B 981 kPa<br/>For 1-pole electrode, Hastelloy C 981 kPa</li> </ul> | BS-1T SUS304<br>BS-1T SUS316<br>BS-1T TITANIUM<br>BS-1T HAS B<br>BS-1T HAS C |

### ■ Accessories (Order Separately)

| Application                                 | Model  |
|---|--------|
| Protective Cover (For PS-□S and BF-3/-4/-5) | F03-11 |
| Protective Cover (For B□-1 and B□-1S)       | F03-19 |
| M18 Nut (For BS-1)                          | F03-17 |
| M18 Nut (For BS-1T)                         | F03-18 |

**Note:** Refer to *Installing an Electrode Holder on a Tank* under Level Controller Installation in the Technical Guide for Level Controllers for information on Level Controller installation. Refer to *PS-□S(R) Electrode Holder Accessories (Order Separately)* for dimensions.

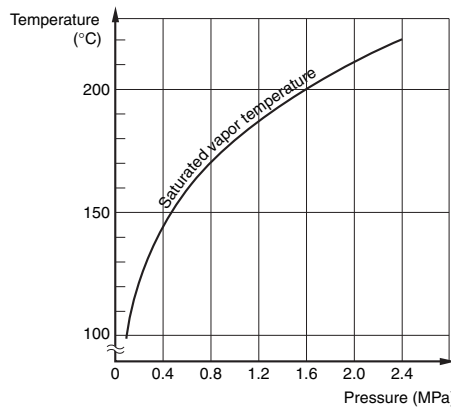
## Specifications

| Item                  | Model | BF-1   | BF-3 (R)<br>(See note 1.)                              | BF-5 (R)<br>(See note 1.) | BS-1   | BS-1T                                     |
|-----------------------|-------|--|--|---------------------------|--|---|
| No. of Electrodes     |       | 1  | 3  | 5                         | ---  | ---                                       |
| Insulator material    |       | PPS resin (Metallic section is SUS.)   |  |                           | Fluorocarbon polymer (PFA)                             |   |
| Insulation resistance |       | 100 MΩ   |  |                           |  |   |
| Operating temperature |       | Electrode section: −10 to 150°C (with no icing)<br>Terminal section: −10 to 70°C (with no icing or condensation) |  |                           | 250°C max.   | 180°C max.                                |
| Operating pressure    |       | Atmospheric pressure   |  |                           | 1.96 MPa (See note 2.)                                 | 981 kPa (See note 2.)                     |
| Applications          |       | Liquids with low specific resistance, such as wastewater and cloudy water  | General applications for purified water and wastewater |                           | Boiler water level detection or high-temperature tanks | Acid or alkaline solution level detection |

**Note:** 1. Two-wire Electrode Holders (R models) have a built-in resistance of 6.8 kΩ. They should be used with the Two-wire 61F Controllers.

2. There must be a sufficient ambient temperature in a high-pressure environment to prevent vapor leakage. Use the Electrode Holder according to the following pressure-temperature curve.

Pressure-Temperature Curve



**Example**

For a pressure of 1.6 MPa, the temperature inside the water tank must be at least 200°C.

## ■ Appearance

|                    |                                   |                    |                     |
|--------------------|-----------------------------------|--------------------|---------------------|
| <p><b>BF-1</b></p> | <p><b>BF-3(R)<br/>BF-5(R)</b></p> | <p><b>BS-1</b></p> | <p><b>BS-1T</b></p> |
|--------------------|-----------------------------------|--------------------|---------------------|

**Note:** 1. The F03-11 Protective Cover (sold separately) is available.

2.

| Model  | Material at tightening section | Screws      |
|--------|--------------------------------|-------------|
| BS-1   | Iron                           | M18 P = 1.5 |
| BS-1S  | SUS304                         | M18 P = 1.5 |
| BS-1S1 | SUS304                         | PT1/2       |
| BS-1S2 | SUS316                         | M18 P = 1.5 |

3. Clamp screws are not provided for hastelloy B, hastelloy C, or titanium Electrode Holders. When placing an order, specify the type of material from the following five: SUS304, SUS316, Hastelloy B, Hastelloy C, or Titanium.

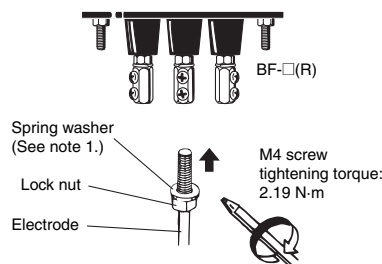
## ■ Accessories Required for Connecting Electrodes to the BF-□(R) (Order Separately)

### Electrode Shorter than 1 m

The following items are required for each pole.

- 1 F03-01 Electrode
- 1 F03-03 Lock Nut

The Electrode can be cut anywhere to a desired control level.

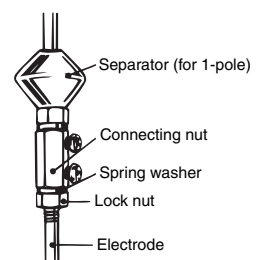


### Electrode Longer than 1 m

The following items are required for every additional meter of electrode for each pole.

- 1 F03-01 Electrode
- 1 F03-02 Connecting Nut
- 2 F03-03 Lock Nuts

Use F03-14 1P Separators to prevent the electrodes from touching each other.



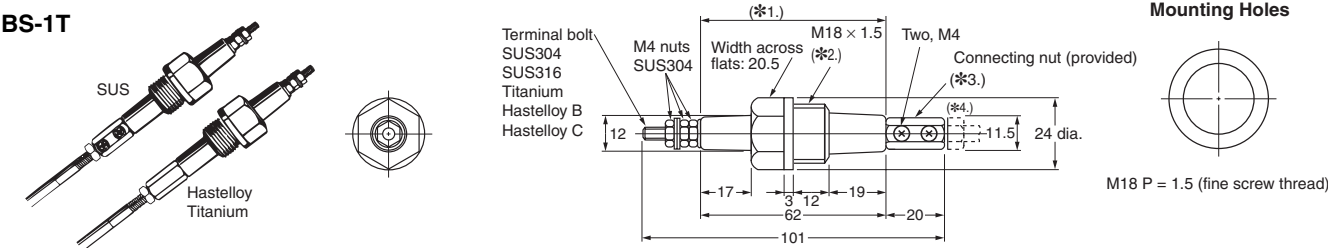
**Note:** 1. The spring washer comes with the lock nut.

Contact your OMRON representative to purchase a replacement if the spring washer wears out or is lost.

2. Refer to F03-□ for details on Electrodes, Connecting Nuts, Lock Nuts, and Separators.



BS-1T



|          |              |              |              |              |              |
|----------|--------------|--------------|--------------|--------------|--------------|
| Material | SUS304       | SUS316       | Titanium     | Hastelloy B  | Hastelloy C  |
| Weight   | Approx. 55 g | Approx. 55 g | Approx. 45 g | Approx. 65 g | Approx. 60 g |

- \*1. All of the clamping section is made of fluoro-resin.
- \*2. If it is not necessary to seal the tank inside and outside. The Electrode can be secured with F03-18 Nuts. (Refer to page 1.)
- \*3. The material of the Connecting Nuts is the same as the material of the BS-1T. Connecting Nuts made of hastelloy B, hastello C, or titanium, however, do not have the screw or screw hole labeled 2-M4 in the figure.
- \*4. The section shown with dotted lines is sold separately.

■ Safety Precautions

Refer to *Safety Precautions for All Level Controllers*.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

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- Systems, machines, and equipment that could present a risk to life or property.

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