User's
Manual

# Model PH8HS, PH8HSF
# Submersion Type Holders

IM 12B07M01-01E

vigilantplant.®

YOKOGAWA
Yokogawa Electric Corporation

IM 12B07M01-01E
4th Edition

# ◆ INTRODUCTION

**This manual covers the PH8HS, PH8HSF Submersion Type Holders. Other related items are described in the following manuals:**

| Model | Title | IM No. |
|---|---|---|
| PH8ERP | KCl Refillable type pH Sensor | IM 12B7K1-02E |
| PH8EFP | KCl Filling type pH Sensor | IM 12B7J1-01E |
| PH8EHP | pH Sensor for Pure Water | IM 12B7J2-01E |
| PH4☐,OR4☐ | pH and ORP Sensors | IM 12B10B00-01EN |
| HA405 | Solid Electrolyte (xerolyt) pH Sensor | IM 12B7E1-01E |
| HA406 | Solid Electrolyte (xerolyt) pH Sensor with Temperature Element | IM 12B07E02-01E |
| DPA405 | pH Sensor for Chemical Processes | IM 12B7H1-01E |
| DPA406 | pH Sensor for Chemical Process with Temperature Element | IM 12B07H02-01E |
| HF405 | Hydrofluoric Acid-resistive pH Sensor | IM 12B07L01-01E |
| FLXA202, FLXA21 | 2-Wire Liquid Analyzer | IM 12A01A02-01E |
| PH201G*B | Distributor | IM 19B1E4-02E |
| PH450G | pH/ORP Converter | IM 12B07C05-01E |
| PH202G, PH202S | pH/ORP Transmitter | IM 12B07D02-01E |
| PUS400G | Ultrasonic Oscillator | IM 19C1B3-01E |
| PH8USF, PH8AL | Ultrasonic Oscillator (Explosionproof Type), Alarm Box | IM 12B5U2-E |
| WTB10-PH☐ | Terminal Box | IM 19D01B01-01E |
| PH8TBG | Terminal Box | IM 12B07W01-01E |
| OR8EFG | KCl Filling type OPR Sensor | IM 12C07J01-01E |
| OR8ERG | KCl Refillable type OPR Sensor | IM 12C04K01-01E |
| OR8TBG | Terminal Box | IM 12C04W01-01E |

# ◆ For the safe use of this equipment

## ■ Safety, Protection, and Modification of the Product

- In order to protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. We assume no liability for safety if users fail to observe these instructions when operating the product.
- If this instrument is used in a manner not specified in this user's manual, the protection provided by this instrument may be impaired.
- Be sure to use the spare parts approved by Yokogawa Electric Corporation (hereafter simply referred to as YOKOGAWA) when replacing parts or consumables.
- Modification of the product is strictly prohibited.

## ■ Notes on Handling User's Manuals

- Please hand over the user's manuals to your end users so that they can keep the user's manuals on hand for convenient reference.
- Please read the information thoroughly before using the product.
- The purpose of these user's manuals is not to warrant that the product is well suited to any particular purpose but rather to describe the functional details of the product.
- No part of the user's manuals may be transferred or reproduced without prior written consent from YOKOGAWA.
- YOKOGAWA reserves the right to make improvements in the user's manuals and product at any time, without notice or obligation.
- If you have any questions, or you find mistakes or omissions in the user's manuals, please contact our sales representative or your local distributor.

## ■ Warning and Disclaimer

The product is provided on an "as is" basis. YOKOGAWA shall have neither liability nor responsibility to any person or entity with respect to any direct or indirect loss or damage arising from using the product or any defect of the product that YOKOGAWA can not predict in advance.

## ■ Signal Words

The following words are used in this manual.

**CAUTION**

This symbol gives information essential for understanding the operations and functions.

**NOTE**

This symbol indicates information that complements the present topic.

# After-sales Warranty

- Do not modify the product.
- During the warranty period, for repair under warranty consult the local sales representative or service office. Yokogawa will replace or repair any damaged parts. Before consulting for repair under warranty, provide us with the model name and serial number and a description of the problem. Any diagrams or data explaining the problem would also be appreciated.
  - If we replace the product with a new one, we won't provide you with a repair report.
  - Yokogawa warrants the product for the period stated in the pre-purchase quotation Yokogawa shall conduct defined warranty service based on its standard. When the customer site is located outside of the service area, a fee for dispatching the maintenance engineer will be charged to the customer.
  - Returned goods that have been in contact with process fluids must be decontaminated and disinfected prior to shipment. Goods should carry a certificate to this effect, for the health and safety of our employees. Material Safety Data sheets must be included for all components of the process to which the sensor have been exposed.
- In the following cases, customer will be charged repair fee regardless of warranty period.
  - Failure of components which are out of scope of warranty stated in instruction manual.
  - Failure caused by usage of software, hardware or auxiliary equipment, which Yokogawa Electric did not supply.
  - Failure due to improper or insufficient maintenance by user.
  - Failure due to modification, misuse or outside-of-specifications operation which Yokogawa does not authorize.
  - Failure due to power supply (voltage, frequency) being outside specifications or abnormal.
  - Failure caused by any usage out of scope of recommended usage.
  - Any damage from fire, earthquake, storms and floods, lightning, disturbances, riots, warfare, radiation and other natural changes.
- Yokogawa does not warrant conformance with the specific application at the user site. Yokogawa will not bear direct/indirect responsibility for damage due to a specific application.
- Yokogawa Electric will not bear responsibility when the user configures the product into systems or resells the product.
- Maintenance service and supplying repair parts will be covered for five years after the production ends. For repair for this product, please contact the nearest sales office described in this instruction manual.

# Model PH8HS, PH8HSF
# Submersion Type Holders

IM 12B07M01-01E 4th Edition

# CONTENTS

# 1. Specifications

The Model PH8HS Submersion Type Holder is designed for use in open tanks, reactors, or wastewater drains, and allows the whole sensor to be submerged with only the sensor tip exposed to the solution. Holders with ultrasonic or brush cleaning options are available. The Model PH8HSF is a version with ultrasonic cleaning for high-pressure explosionproof applications.

## 1.1 General Specifications

### 1.1.1 PH8HS Submersion Type Holder

**Applicable sensors:**

General pH Sensor PH8ERP, PH8EFP

Special pH Sensor HA405, DPA405, HF405

PH4 Sensor PH4P, PH4PT,PH4F, PH4FT,PH4C, PH4CT

General ORP Sensor OR8ERG, OR8EFG

Special ORP Sensor HA485, DPA485

OR4 Sensor OR4P, OR4C

Note: An adapter is required when using special pH/ORP sensor or PH4/OR4 sensor.
When using with special pH/ ORP sensor or PH4/OR4 sensor, this holder cannot be used outdoors due to exposure to rain or due to condensation at a high humid place.

**Mounting:** 2-inch pipe mounting vertical or horizontal, with 1 set of mounting hard bracket.

Note: Make sure the mounting pipe is firmly installed.

**Cleaning method:** Jet cleaning, brush cleaning or ultrasonic cleaning

Note: Brush cleaning and ultrasonic cleaning cannot be used when using special pH/ORP sensor or PH4/OR4 sensor.

**Material:**

Holder; Polypropylene or stainless steel(equivalent to SUS316)

O-ring; Fluoro rubber (FKM) or Perfluoroelastomer (FFKM)

Mounting bracket: Stainless steel (equivalent to SUS304)

Cleaning unit (wetted parts);

| | |
|---|---|
| Ultrasonic; | Stainless steel (equivalent to SUS316), titanium or Hastelloy C |
| Jet; | Polypropylene |
| Brush; | Polypropylene, titanium(shaft), Rulon® (bearings) |

**Weight:**

| | |
|---|---|
| Holder; | Approx. 0.5 to 5 kg (polypropylene) |
| | Approx. 1.5 to 11.5 kg (stainless steel) |
| Mounting bracket; | Approx. 1 kg/set |
| Flange; | Approx. 0.5 to 1.8 kg (polypropylene) |
| | Approx. 2.9 to 15.6 kg (stainless steel) |

**Temperature range:**

| | |
|---|---|
| No Cleaning; | -5 to 100°C |
| With Cleaning; | -5 to 80°C |

Note: The temperature range may be limited by the specifications of the sensor.

**Flow rate: 2 m/s or less**

Note: The flow speed may be limited by the specifications of the sensor.

**Measuring pressure:** Submersion depth 3m max.

Note: The pressure may be limited by the specifications of he sensor.

**Utility required for cleaning unit:**

| Type | Pressure (kPa) | Flow Rate |
|---|---|---|
| Water jet | 200 to 400 + Liquid pressure | 5 to 20 l/min |
| Water brush | 100 to 250 + Liquid pressure | 20 to 30 l/min |
| Air jet | 200 to 400 + Liquid pressure | 100 to 300 Nl/min |
| Air brush | 100 to 250 + Liquid pressure | 300 to 600 Nl/min |

Note 1: Pressure and flow rate must be simultaneously satisfied at the holder inlet port.
Note 2: A large braid-reinforced tube of ø22 x ø15 is recommended for supply due to the flow rate.

## 1.1.2 PH8HSF (Explosionproof Type)

The holder is used only when using Ultrasonic cleaning system in the explosionproof area.

Use PH8HF when using no cleaning, jet cleaning or brush cleaning.

**Applicable sensors:**

General pH Sensor PH8ERP, PH8EFP

General ORP Sensor OR8ERG, OR8EFG

**Mounting:**

2-inch pipe mounting vertical or horizontal, with 1 set of mounting bracket.

Note: Make sure the mounting pipe is firmly installed.

**Cleaning method:** Ultrasonic cleaning

**Material:**

Holder; Polypropylene or stainless steel (equivalent to SUS316)

Flange; Polypropylene or stainless steel (equivalent to SUS316)

O-ring; Fluoro rubber (FKM) or Perfluoroelastomer (FFKM)

Mounting bracket; Stainless steel (equivalent to SUS304)

Cleaning unit (wetted parts):

Ultrasonic; Stainless steel (equivalent to SUS316), titanium or Hastelloy C

**Construction:** TIIS flameproof type (for d2G4 gas)

**Cable entrance port of terminal box;** G 3/4

**Weight:**

Holder; Approx. 2.2 to 3.2 kg (polypropylene)

Approx. 3.3 to 5.7 kg (stainless steel)

Mounting bracket; Approx. 1 kg/set

Flange; Approx. 1.5 kg (polypropylene)

Approx. 15 kg (stainless steel)

**Temperature range:** -5 to 80°C

Note: The temperature may be limited by the specifications of the sensor.

**Flow rate:** 2 m/s or less

Note: The flow speed may be limited by the specifications of the sensor

**Pressure:** Submersion depth 3 m max.

Note: The pressure may be limited by the specifications of the sensorr

# 1.2 Model and Suffix codes

## 1.2.1 Submersion Type Holder PH8HS

| Model | Suffix Code | Option Code | Description |
|---|---|---|---|
| **PH8HS** | ---------- | ---------- | Submersion type holder |
| Material | **-PP** | ---------- | Polypropylene |
| | **-S3** | ---------- | Stainless steel |
| Pipe length | **-10** | ---------- | 1.0m |
| | **-15** | ---------- | 1.5m |
| | **-20** | ---------- | 2.0m |
| | **-25** | ---------- | 2.5m |
| | **-30** | ---------- | 3.0m |
| pH Measuring System | **-T** | ---------- | Always -T |
| Cleaning System | **-NN** | ---------- | None |
| | **-S3** | ---------- | For ultrasonic cleaning (Transducer: SUS316) (*1) |
| | **-TN** | ---------- | For ultrasonic cleaning (Transducer: Titanium) (*2) |
| | **-HC** | ---------- | For ultrasonic cleaning (Transducer: Hastelloy C) (*3) |
| | **-JT** | ---------- | For jet cleaning. The solenoid valve must be specified separately. |
| | **-BR** | ---------- | For brush cleaning. The solenoid valve must be specified separately. |
| Cable Length for Ultrasonic Cleaning | **-NN** | ---------- | None |
| | **-C3** | ---------- | 3m |
| | **-C5** | ---------- | 5m |
| | **-C6** | ---------- | 7m |
| | **-C7** | ---------- | 10m |
| | **-C8** | ---------- | 15m |
| | **-C9** | ---------- | 20m |
| | **-JP** | ---------- | Rc1/2 |
| Connector for Jet or Brush Cleaning | **-NP** | ---------- | 1/2 NPT |
| Style Code | ***A** | ---------- | Style A |
| Option Mounting Bracket(*5) | | **/MS1** | Mounting bracket : 1 set |
| | | **/MS2** | Mounting bracket : 2 sets |
| | | **/MS3** | Stainless steel mounting bracket : 1 set |
| | | **/MS4** | Stainless steel mounting bracket : 2 sets |
| Special Mounting | | **/F1** | With flange (Without Cleaning System) |
| | | **/F2** | With flange (With Cleaning System) |
| O-ring | | **/PF** | Perfluoroelastomer (FFKM) (*4) |

*1: General purpose (Normal pH3 to 14)
*2: For salt water
*3: For acid (Normal pH0 to 4)
*4: Choose Perfluoroelastomer (FFKM) when this holder is used in organic solvent, high alkali or high temperature alkali.
*5: The required number of mounting bracket sets depends on the installation location and flow rate. In general, one set is sufficient for pipe lengths of 1 meter, and otherwise two sets are required.

## 1.2.2 Submersion Type Holder (Explosionproof Type) PH8HSF

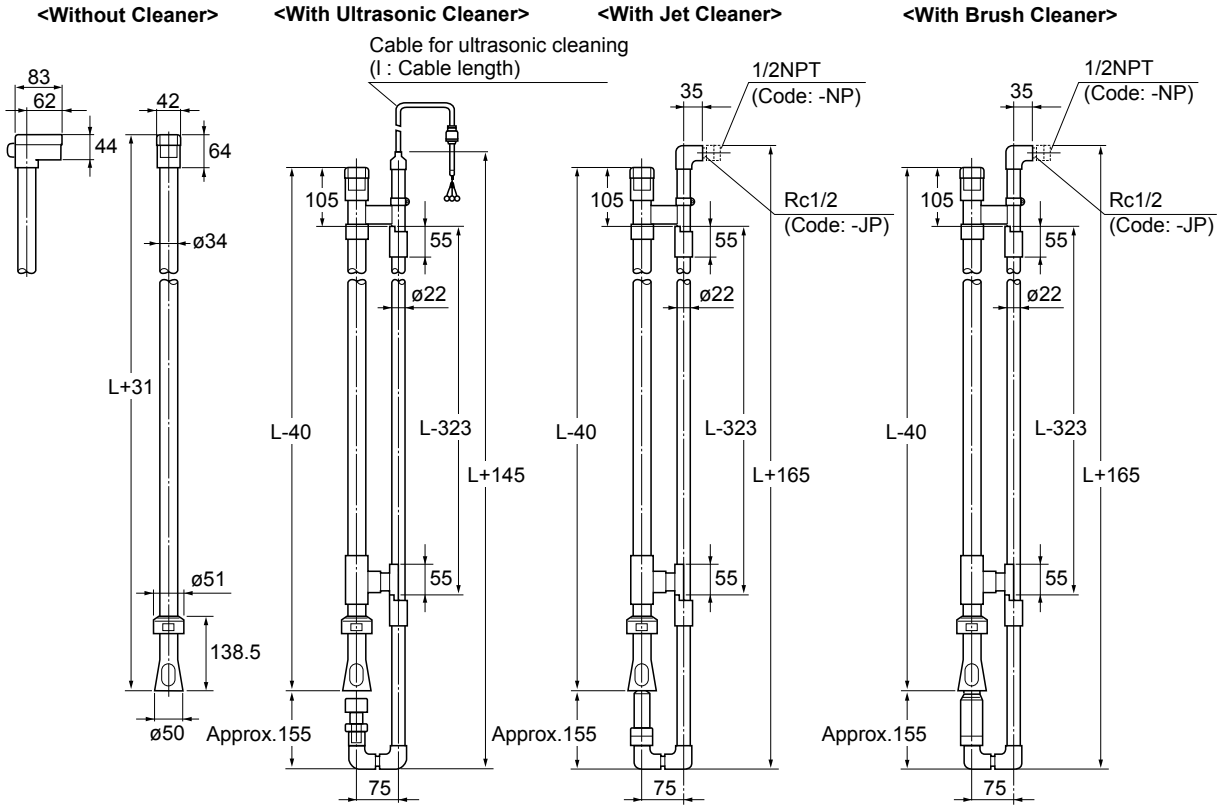
| Model | Suffix Code | Option Code | Description |
|---|---|---|---|
| **PH8HSF** | ---------- | ---------- | Submersion type holder |
| Material | **-PP** | ---------- | Polypropylene |
| | **-S3** | ---------- | Stainless steel |
| Pipe length | **-10** | ---------- | 1.0m |
| | **-15** | ---------- | 1.5m |
| | **-20** | ---------- | 2.0m |
| pH Measuring System | **-T** | ---------- | Always -T |
| Cleaning System (*4) (Ultrasonic cleaning only) | **-S3** | ---------- | SUS316 Transducer (*1) |
| | **-TN** | ---------- | Titanium Transducer (*2) |
| | **-HC** | ---------- | Hastelloy C Transducer (*3) |
| Explosion Protection | **-JS** | ---------- | TIIS Flameproof (d2G4) |
| Style Code | ***A** | ---------- | Style A |
| Option | Mounting Bracket | **/MS1** | Mounting bracket : 1 set (*6) |
| | | **/MS2** | Mounting bracket : 2 sets (*6) |
| | | **/MS3** | Stainless steel mounting bracket : 1 set (*6) |
| | | **/MS4** | Stainless steel mounting bracket : 2 sets (*6) |
| | Special Mounting | **/F** | With flange (JIS 10K 200 FF) |
| | Flameproof Packing | **/PG2** | Adaptor 3/4 inch |
| | Tag Plate | **/SCT** | Stainless steel tag plate |
| | O-ring | **/PF** | Perfluoroelastomer (FFKM) (*5) |

*1: General purpose (Normal pH3 to 14)
*2: For salt water
*3: For acid (Normal pH0 to 4)
*4: Use PH8HS for no cleaning, Jet cleaning or brush cleaning.
*5: Choose Perfluoroelastomer (FFKM) when this holder is used in organic solvent, high alkali or high temperature alkali.
*6: The required number of mounting bracket sets depends on the installation location and flow rate. In general, one set is sufficient for pipe lengths of 1 meter, and otherwise two sets are required.

# 1.3 External Dimensions

## 1. Submersion Type Holder, Polypropylene PH8HS-PP

UNIT: mm




| Specification of Holder (Model and Code) | Cable Length (l) (Code : C□) | Weight (Approx.) Nominal Holder Length (L) 1000mm [Code : -10] | 1500mm [Code : -15] | 2000mm [Code : -20] | 2500mm [Code : -25] | 3000mm [Code : -30] |
|---|---|---|---|---|---|---|
| Without Cleaner PH8HS-PP-□□-□-NN-NN | | 0.5 kg | 0.65 kg | 0.8 kg | 1.0 kg | 1.1 k g |
| With Ultrasonic Cleaner PH8HS-PP-□□-□-S3-C | 3m (C3) | 1.7 kg | 2.2 kg | 2.7 kg | 3.2 kg | 3.7 kg |
| PH8HS-PP-□□-□-TN-C | 5m (C5) | 1.8 kg | 2.3 kg | 2.8 kg | 3.3 kg | 3.8 kg |
| PH8HS-PP-□□-□-HC-C | 7m (C6) | 1.9 kg | 2.4 kg | 2.9 kg | 3.4 kg | 3.9 kg |
| | 10m (C7) | 2.1 kg | 2.6 kg | 3.1 kg | 3.6 kg | 4.1 kg |
| | 15m (C8) | 2.5 kg | 3.0 kg | 3.5 kg | 4.0 kg | 4.5 kg |
| | 20m (C9) | 2.9 kg | 3.4 kg | 3.9 kg | 4.4 kg | 4.9 kg |
| With Jet Cleaner PH8HS-PP-□□-□-JT-P | | 1.6 kg | 2.1 kg | 2.6 kg | 3.1 kg | 3.6 kg |
| With Brush Cleaner PH8HS-PP-□□-□-BR-P | | 1.6 kg | 2.1 kg | 2.6 kg | 3.1 kg | 3.6 kg |

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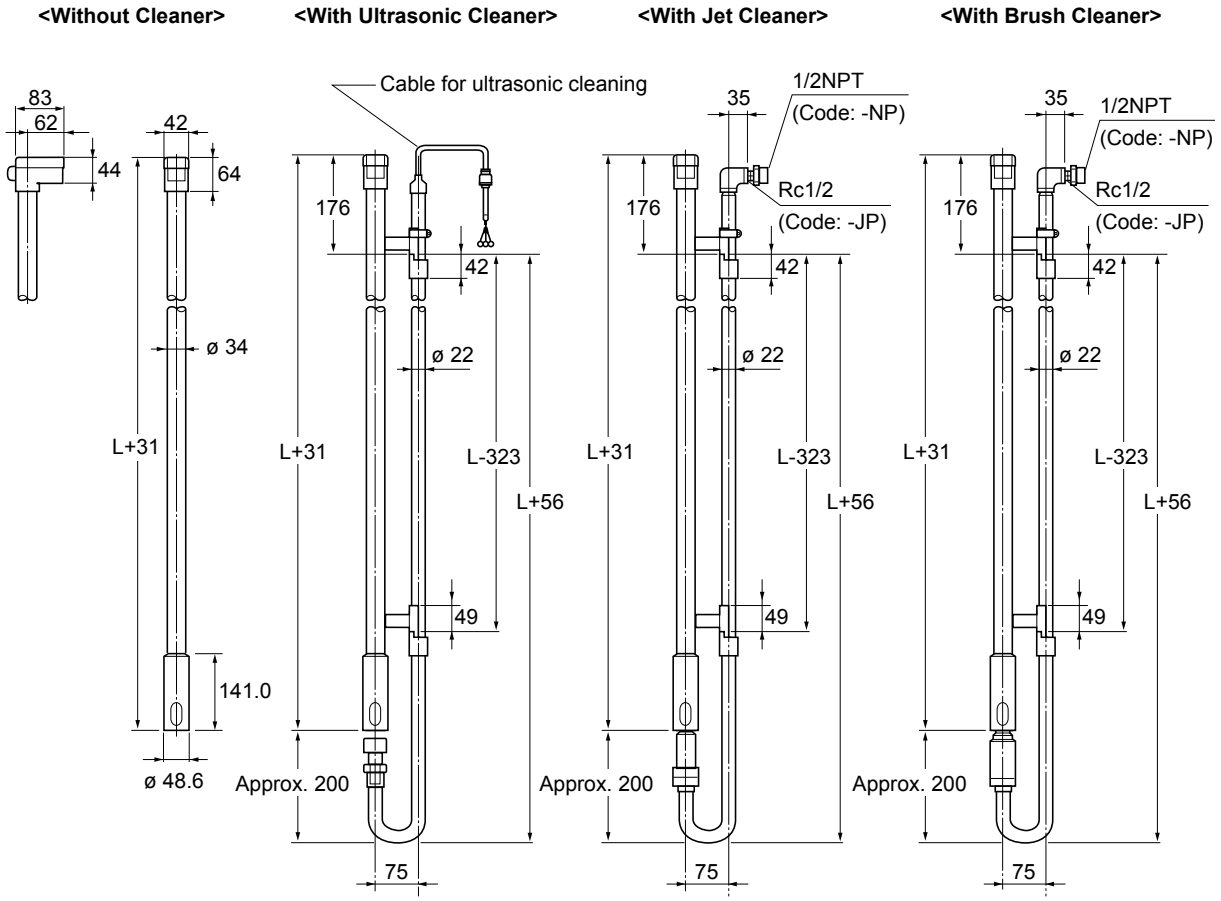
**Figure 1.1 Submersion Holder (1)**

## 2. Submersion Type Holder, Stainless Steel PH8HS-S3

UNIT: mm




| Specification of Holder (Model and Code) | Weight (Approx.) | | | | |
|---|---|---|---|---|---|
| | Nominal Holder Length (L) | | | | |
| | 1000mm [Code : -10] | 1500mm [Code : -15] | 2000mm [Code : -20] | 2500mm [Code : -25] | 3000mm [Code : -30] |
| Without Cleaner PH8HS-S3-☐☐-☐-NN | 1.5 kg | 2.3 kg | 3.1 kg | 3.9 kg | 4.7 kg |
| With Non-Explosionproof Ultrasonic Cleaner PH8HS-S3-☐☐-☐-S3, TN, HC | 2.7 kg | 3.9 kg | 5.1 kg | 6.3 kg | 7.5 kg |
| With Jet Cleaner PH8HS-S3-☐☐-☐-JT | 2.5 kg | 3.6 kg | 4.7 kg | 5.8 kg | 6.9 kg |
| With Brush Cleaner PH8HS-S3-☐☐-☐-BR | 2.5 kg | 3.6 kg | 4.7 kg | 5.8 kg | 6.9 kg |

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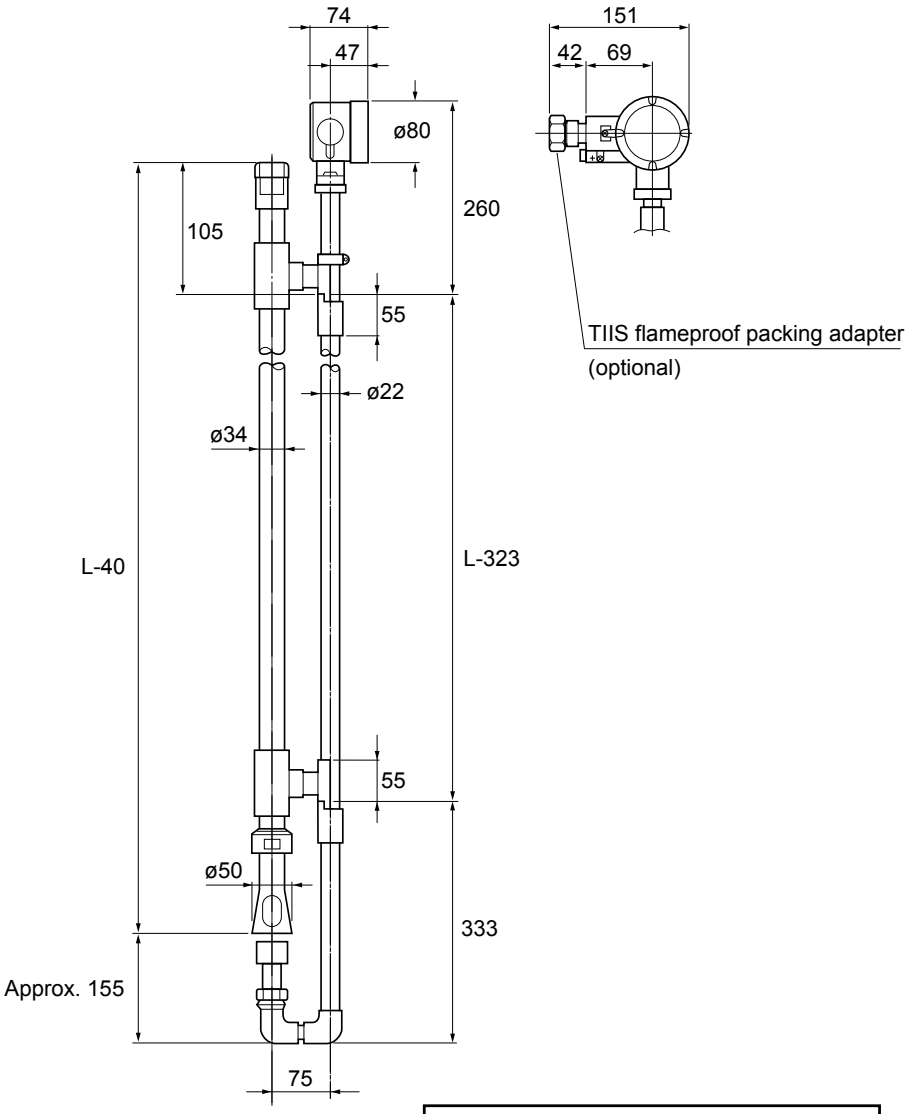
**Figure 1.2 Submersion Holder (2)**

### 3. Submersion Type Holder (Explosionproof Type), Polypropylene PH8HSF-PP

UNIT: mm




| Specification of Holder (Model and Code) | Weight (Approx.) | | |
|---|---|---|---|
| | Nominal Holder Length (L) | | |
| | 1000mm [Code: -10] | 1500mm [Code: -15] | 2000mm [Code: -20] |
| With Ultrasonic Cleaner PH8HSF-PP-□□-T-S3, TN, HC | 2.2 kg | 2.7 kg | 3.2 kg |

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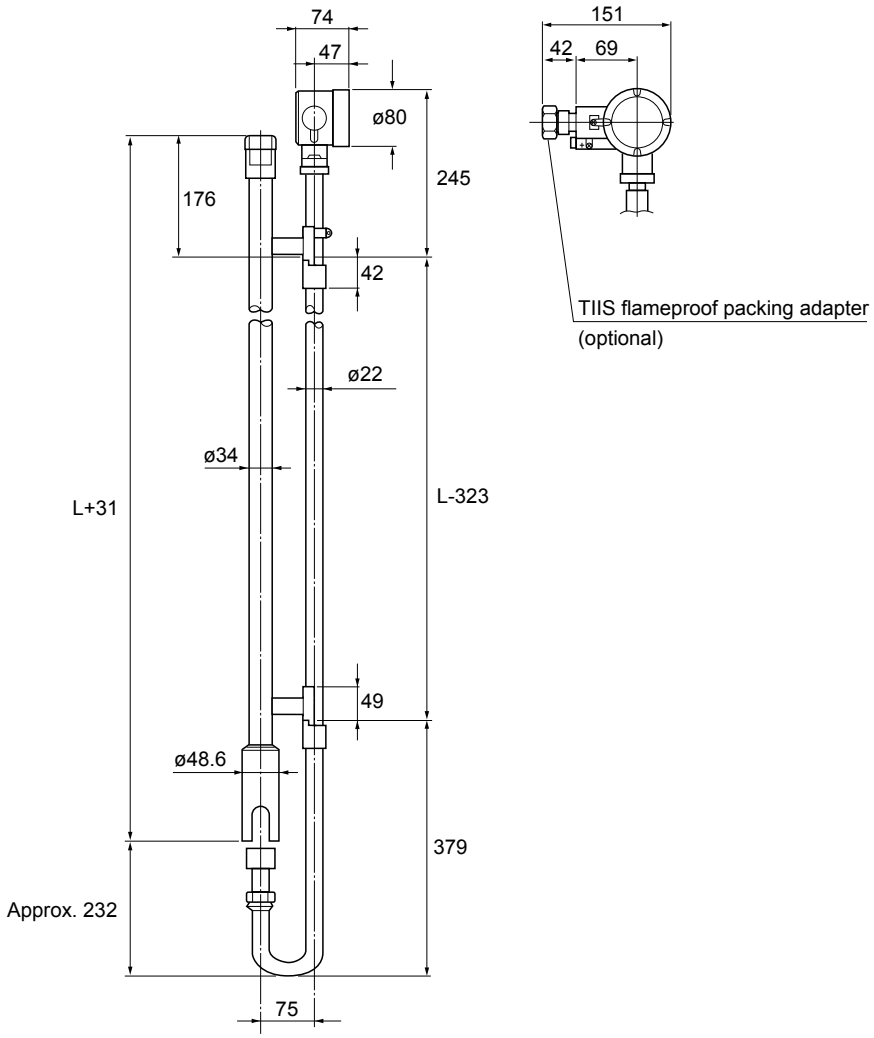
**Figure 1.3 Submersion Holder (3)**

**UNIT: mm**

### Stainless Steel PH8HSF-S3




L = Normal holder length (Standard: 1000 mm, 1500 mm, 2000 mm)

| Specification of Holder (Model and Code) | Weight (Approx.) | | |
|---|---|---|---|
| | Nominal Holder Length (L) | | |
| | 1000mm [Code : -10] | 1500mm [Code : -15] | 2000mm [Code : -20] |
| With Flameproof Ultrasonic Cleaner PH8HSF-S3-□□-T-S3, TN, HC | 3.3 kg | 4.5 kg | 5.7 kg |

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**Figure 1.4 Submersion Holder (4)**

## 4. Mounting Bracket for Submersion Type Holder, /MS1: 1 set, /MS2: 2 sets

UNIT: mm

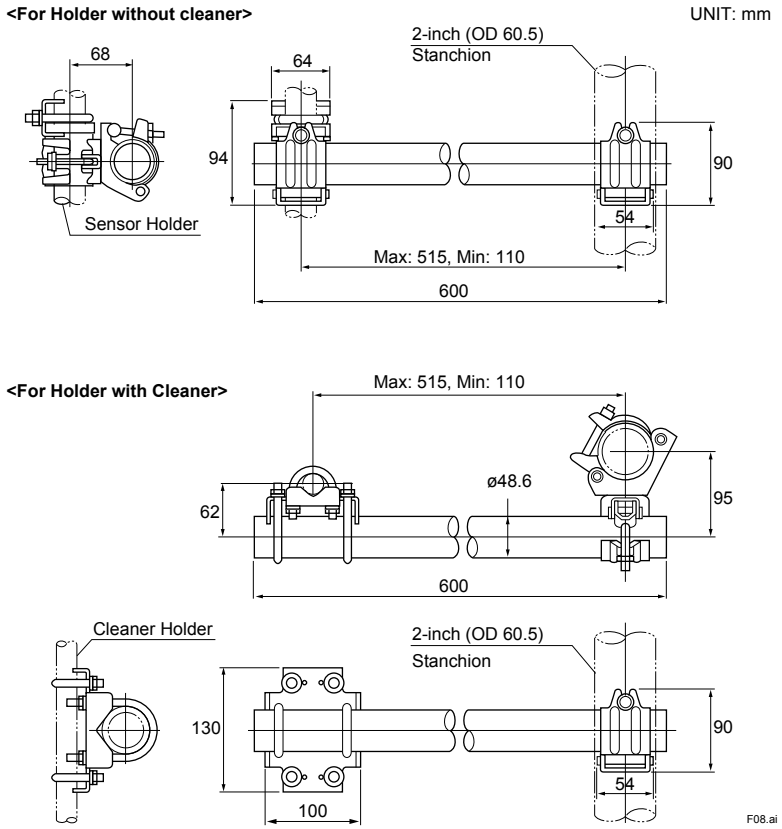



**Figure 1.5 Mounting Bracket (1)** **Weight: Approx. 1kg**

## 5. Stainless Steel Mounting Bracket for Submersion Type Holder, /MS3: 1 set, /MS4: 2 sets

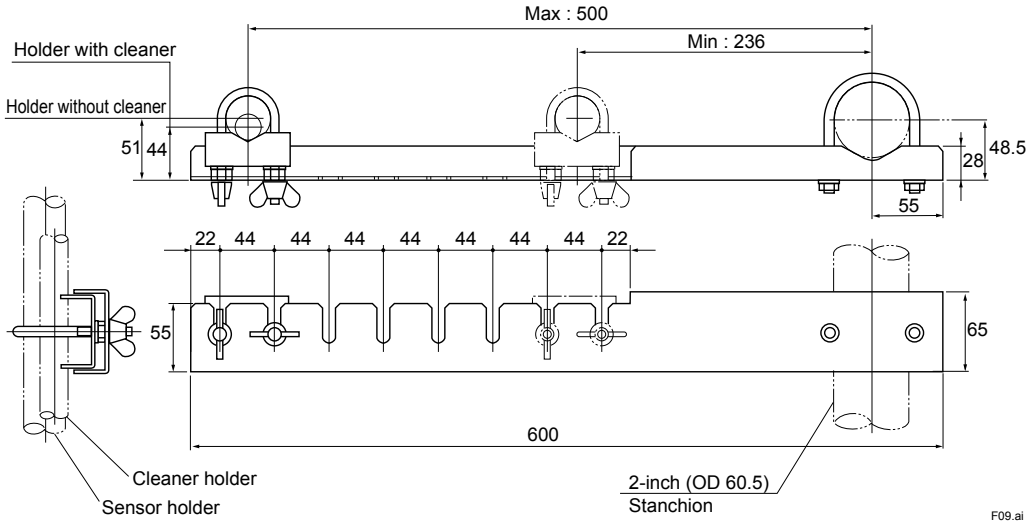


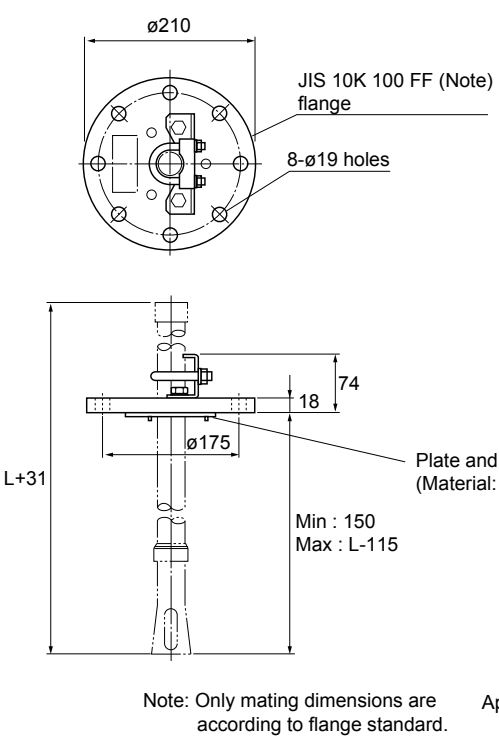

**Figure 1.6 Mounting Bracket (2)** **Weight: Approx. 1kg**

## 6. Flange Mounting

UNIT: mm

### /F1: Flange of holder without cleaner

**- Material: Polypropylene -**



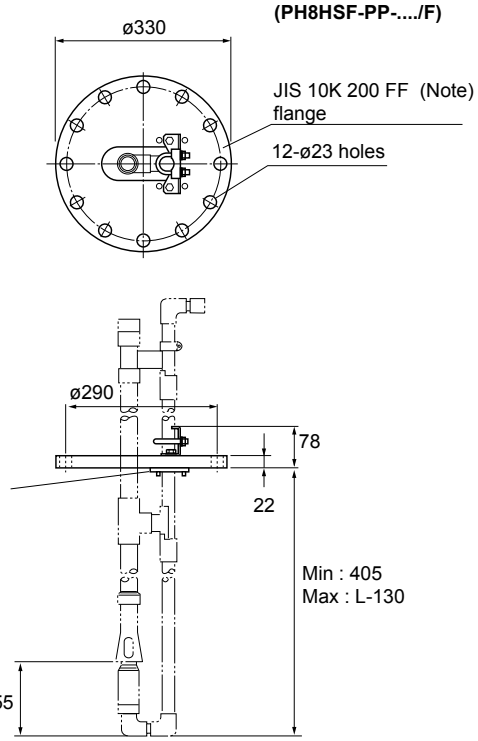

Note: Only mating dimensions are according to flange standard.

Flange weight: Approx. 1 kg

### /F2: Flange of holder with cleaner

**- Material: Polypropylene -**

**(PH8HSF-PP-..../F)**




Flange weight: Approx. 1.5 kg

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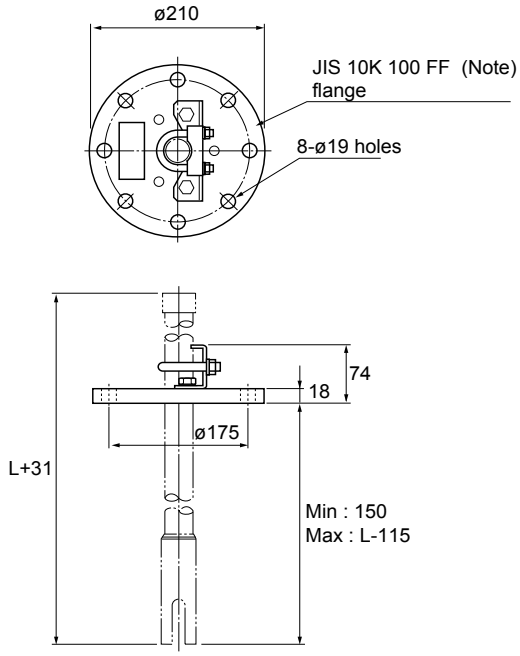
### /F1: Flange of holder without cleaner

**- Material: SUS316 Stainless steel -**



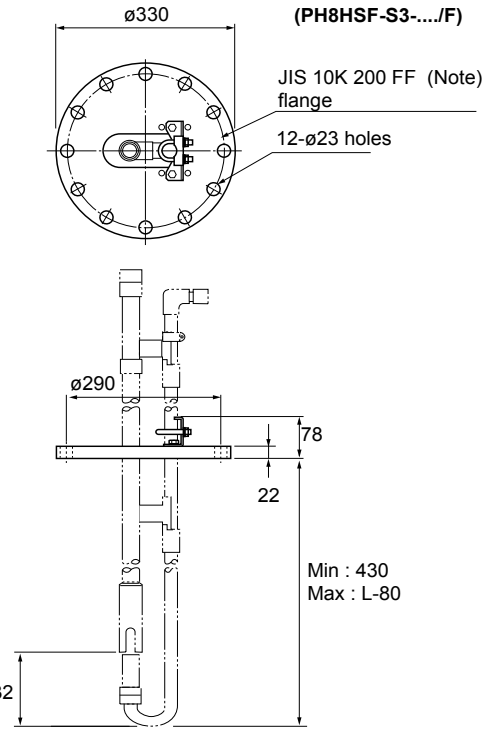

Note: Only mating dimensions are according to flange standard.

Flange weight: Approx. 5 kg

### /F2: Flange of holder with cleaner

**- Material: SUS316 Stainless steel -**

**(PH8HSF-S3-..../F)**




Flange weight: Approx. 15 kg

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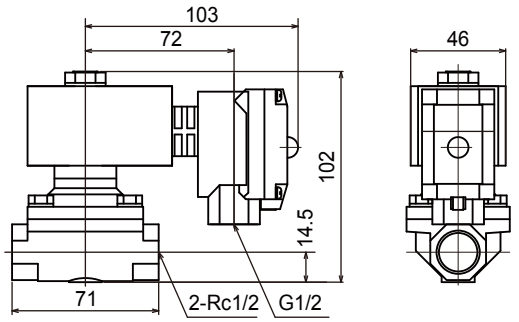
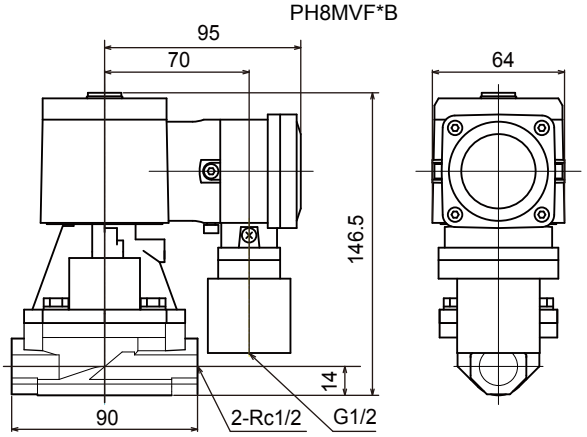
## 7. Solenoid Valve

UNIT: mm

General Purpose Solenoid Valve
PH8MV*D




Explosionproof Solenoid Valve
PH8MVF*B




Cautions on Installation of Solenoid Valve for Jet / Brush Cleaning

1. Do not allow a sample solution to flow backward into the solenoid valve or to be replaced with the driving fluid. For this take relevant measures; e.g. install a check valve to prevent inverse pressure between the inlet and outlet of the solenoid valve, or install the solenoid valve higher than the holder, especially when using the air jet/brush cleaning system.
2. Make sure to avoid the risk of corrosion of the solenoid body (bronze) and seal (nitrile rubber) by vapor or gaseous components generated from a sample solution, especially when using the air jet/brush cleaning system.

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# 2. Installation, Piping and Wiring

## 2.1 Installing the Holder

### 2.1.1 Shipping and Checking the Specifications

When shipping the PH8HS (or PH8HSF) Submersion Holders, they should be suitably packed to avoid possible damage in transit. When you receive them, unpack them and check for visible signs of damage.

### 2.1.2 Selecting the Holder Installation Site

Install the submersion type holder so the sensor is mounted in the correct position.

Install the holder in a site where: a typical measurement value is obtained and the holder can be easily maintained.

Avoid an area where the measurement value varies significantly as this can cause indicator hunting. When selecting the holder installation site, first check that the solution temperature and flow velocity meet the sensor and holder specifications, and also consider ease of maintenance.

CAUTION

Installation Location of Holders
The holder should be used in a place that is as vibration free as possible.
Using the holder in a place where it is affected by vibration, may result in damage to the holder.

### 2.1.3 Installation Procedure

**Pipe Mounting Submersion Type Holder**

The submersion type holder can be installed on a rigid vertical 2-inch pipe (*1) vertically and mount a 40 mm arm pipe perpendicularly on as shown in Figure 2.1. Mount the holder assembly on the arm pipe so the sensor can be submerged in the measurement solution correctly.

For the holder with cleaner (*2), install the cleaner holder on the arm pipe using a clamp. The holder assembly should be mounted on the arm pipe.

Notes:

(*1) If there is a rigid vertical 2-inch pipe near the submersion type holder installation site, mount a 40 mm arm pipe perpendicular to it.

(2*) Do not submerge the holder assembly in the solution without sensor. If the holder assembly is likely to become submerged in the solution, remove it from the stanchion. The cleaner holder may be left on the pipe.

**Flange Mounting Holder**

The flange mounting submersion type holder is normally used with a fixed flange. A flange to mate with the holder flange should be provided by the user. When the mounting a submersion type holder, no gasket is required between the flange. All bolts are not required, so determine the number of bolts according to the condition of holder installation.

Observe Note (*2) above when installing the submersion type holder.

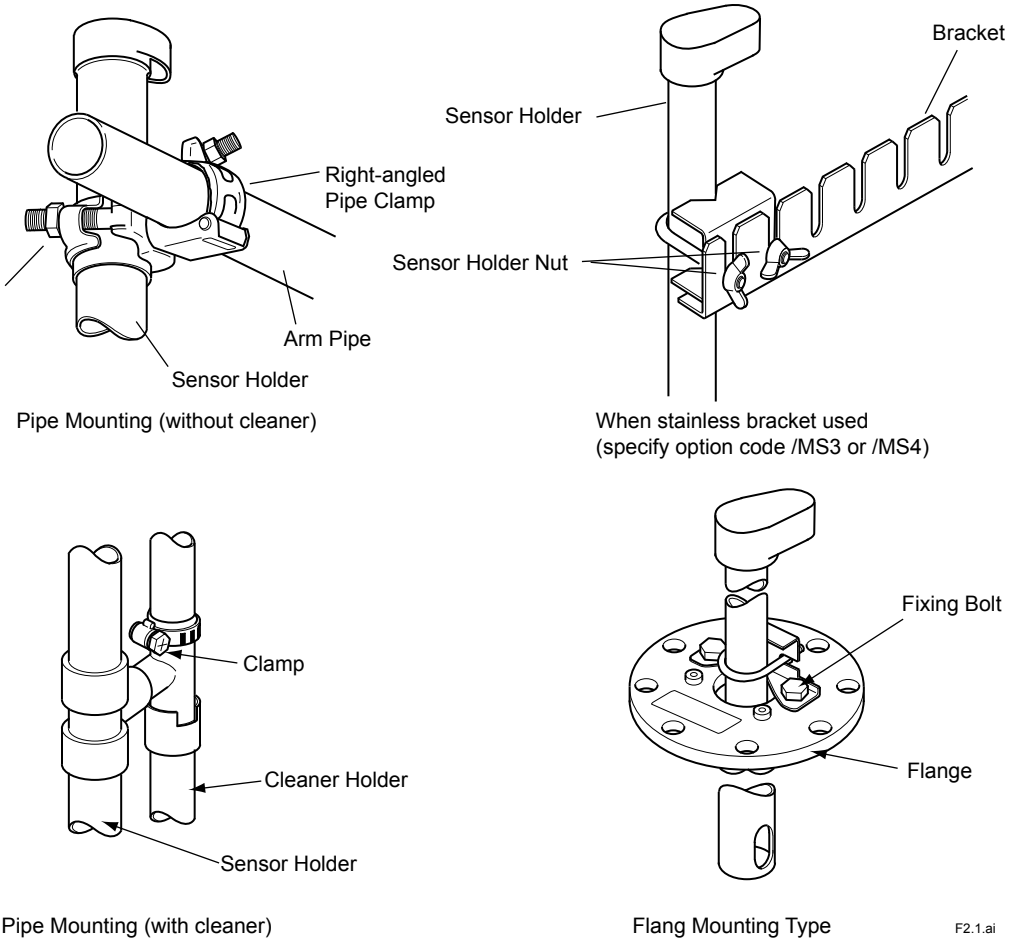


**Figure 2.1 Sensor Holder Replaceable Parts**

# 2.2 Mounting the Sensor

For the sensor installation, refer to the relevant section of the sensor.

# 2.3 Cleaner Piping

This section applies only to the submersion type holder with cleaner.

## 2.3.1 Piping Precautions

(1) Provide a slight slack in a flexible tubing between the cleaner and a mating device to allow ease of maintenance.

(2) Determine the cleaner pipe size to allow sufficient flow and pressure. Use 15 mm pipe for air cleaning piping. If the water/jet cleaner pipe or water/brush cleaner pipe is subject to freezing temperature during winter, cover it with a suitable insulation material.

(3) Use a normally-open (opens when relay is energized) 15 mm diameter solenoid valve for the cleaning line. The solenoid valve supplied by Yokogawa meets the following specifications.

**[Model PH8MV Solenoid Valve]**

Pilot kick operated, 2-port valve. Open when energized.

**Fluid:** Normal tap water, industrial water, or air.

**Operating Pressure:** 0 to 1 MPa

**Forward (reverse) Pressure Resistance:** 2 MPa

**Fluid Temperature:** Water; 5 to 60°C, Air; -10 to 60°C

**Cv:** 4.5

**Process Connection:** Rc 1/2

**Power Supply:** 100/110/200/220 V AC, 50/60 Hz

**Power Consumption:** 10 W

**Construction:** IP53

**Material:** Body; Bronze
Sealing; Nitrile rubber

**Ambient Temperature:** Maximum 50°C

**Cable Inlet Connection:** G 1/2

**Weight:** Approx. 0.9 kg

**[Model PH8MVF Explosionproof Solenoid Valve]**

Pilot kick operated, 2-port valve. Open when energized.

**Fluid:** Normal tap water, industrial water, or air.

**Operating Pressure:** 0.05 to 1 MPa

**Forward (reverse) Pressure Resistance**: 1.5 MPa

**Fluid Temperature:** Water; 5 to 60°C, Air; -10 to 60°C

**Cv:** 4.5

**Process Connection:** Rc 1/2

**Power Supply:** 100V AC, 50/60 Hz., 110V AC, 60 Hz
200V AC, 50/60 Hz., 220V AC, 60 Hz

**Power Consumption:** 10 W

**Construction:** TIIS flameproof (for d2G4 gas)

**Material:** Body; Bronze
Seal; Nitrile rubber

**Ambient Temperature:** Maximum 50°C

**Valve Seat Leakage:** 300 Nml/min. (At air pressure 50 to 700 kPa )

**Cable Inlet Connection:** G 1/2 (Flameproof packing adaptor)

**Mounting Position:** Vertical mounting with coil in top

**Weight:** Approx. 1.9 kg

## 2.3.2 Piping Procedure

(1) Air piping examples

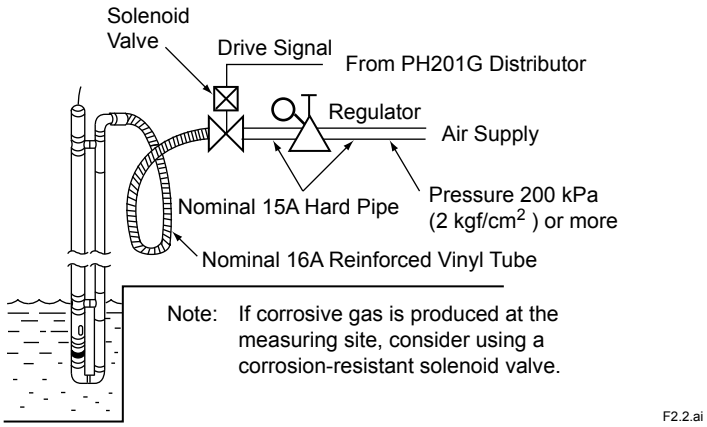


**Figure 2.2 Typical Brush/Jet Cleaner Air Piping**

(2) Industrial water piping examples

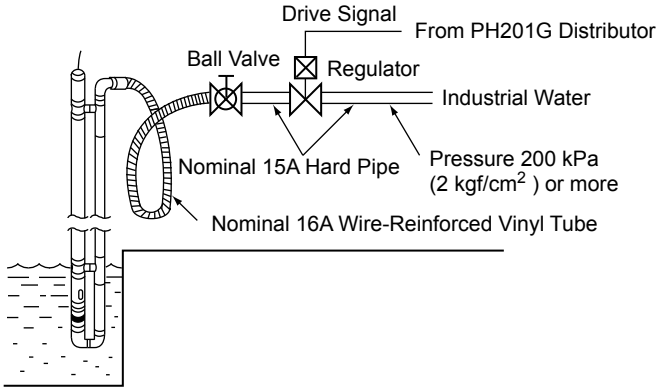


**Figure 2.3 Industrial Water Piping for Typical Brush/Jet Cleaner**

(3) Tap water piping examples

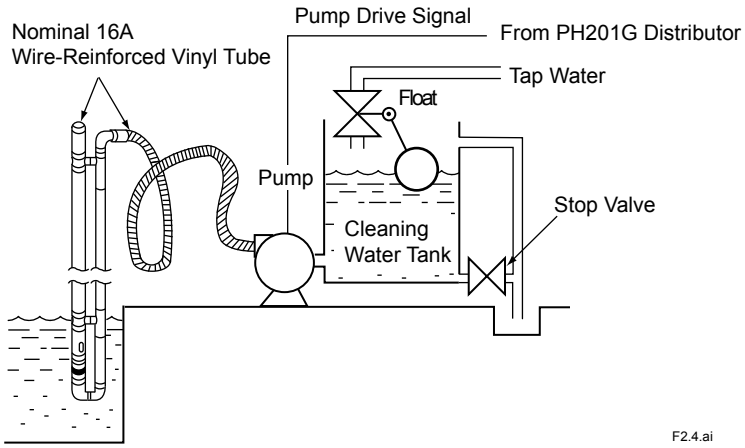


**Figure 2.4 Tap Water Piping for Typical Brush/Jet Cleaner**

## 2.3.3 Installation of PH8PU1 Washer Pump and Water Tank

The PH8PU1 Washer Pump and Tank are used to provide water jet and brush cleaning in drinking water applications. For details, refer to the separate IM 19C1E1-01E on PH8PU1 Washer Pump and Tank.

# 2.4 Wiring

This section describes the wiring between the ultrasonic oscillator and cleaner, and between the solenoid valve, pump, and PH201G distributor. For the sensor wiring, refer to the chapter describing the sensor.

For the non-explosionproof ultrasonic oscillator, connect the cable from the cleaner directly to the terminals inside the PUS400G Ultrasonic Oscillator.

For details of PUS400G, refer to the separate IM 19C1B3-01E.

For the explosionproof ultrasonic oscillator, connect the cable from the cleaner directly to the terminals inside the PH8USF Ultrasonic Oscillator and PH8AL Alarm Box.

For detailsof PH8USF, PH8AL, refer to the separate IM 12B5U2-E.

## 2.4.1 Solenoid Valve Circuit Wiring

This is the wiring for the water jet or brush cleaning.

The wash timer in the Intelligent pH transmitter outputs a contact signal via the PH201G Distributor. You should wire this contact to operate the solenoid valve. If you are using the PH8PU1 Washer Pump and Tank, then the wiring is described in Sec. 2.5.3.

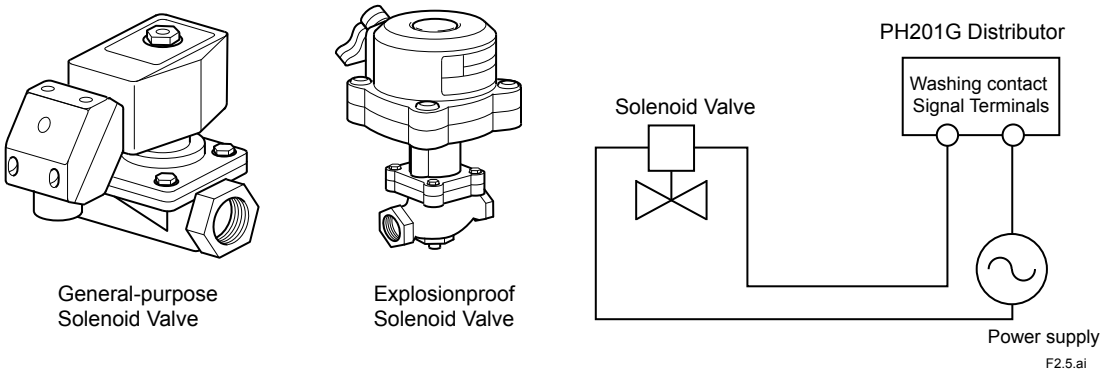


**Figure 2.5 Wiring the Solenoid Valve Circuit**

**[Non-explosionproof solenoid valve]**

Use a 2-conductor vinyl-sheathed cable with an outer diameter of 10 to 12 mm for the wiring.

**[Explosionproof solenoid valve]**

When the PH8MVF explosionproof solenoid valve is used, use tapped (screw-in) explosionproof conduit for wiring.

## 2.4.2 Wiring for PH8PU1 Washer Pump and Tank

Figure 2.6 shows the internal and external wiring for the PH8PU1 Washer Pump and Tank.

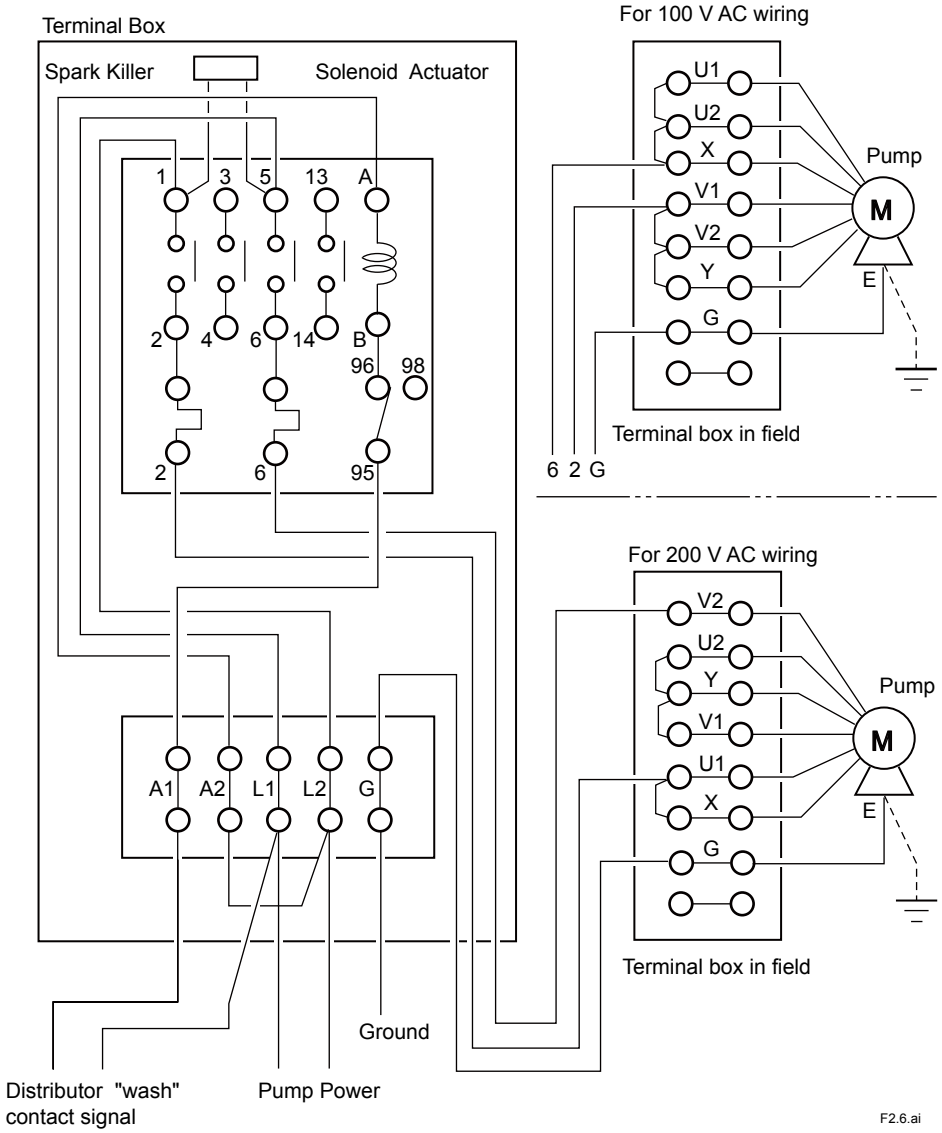


**Figure 2.6 Internal and external wiring for the PH8PU1 Washer Pump and Tank**

As shown in the figure, connect terminals "A1" and "L1" from the PH201G distributor to terminals A1 and L1 in the terminal box, and connect the power supply to operate the pump between terminals L1 and L2. Also connect together terminals A2 and L2 as shown in the figure. Be sure to ground the ground terminal G.

# 3. Maintenance/Inspection

## 3.1 Checking the O-ring that Seals Wetted Parts

The O-ring used in the wetted parts of the submersion type holder is made of a chemical-resistant fluorocarbon rubber which is not effected by corrosive liquids. Thus, it normally does not require any special checks other than the preventive maintenance procedure described in Sec. 3.1.2. However, if the O-ring should be damaged, replace it immediately to prevent future problems.

### 3.1.1 pH Sensor O-ring

When removing the sensor to the holder after maintenance, check that the surface of O-ring is free from corrosion. If corrosion is present, remove it completely or the sealing effect be lost and the measuring solution enters the holder. The solution can corrode the cable and KCl supply tube. If they become corroded, dismount the sensor from the holder and check if the O-ring is free from corrosion.

If the O-ring loses its sealing effect, replace it with a new one. When installing a new O-ring, remove the cable from the terminal board and pass it through the O-ring before reinstalling the sensor. See Figure 3.1.

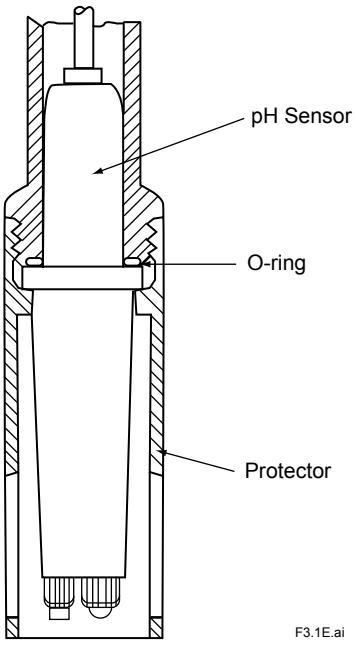


**Figure 3.1 pH Sensor Mounting O-ring**

### 3.1.2 Cleaner Mounting O-ring

This procedure applies to the submersion type holder with ultrasonic cleaner.

If the measurement solution enters the holder where the cable is stored, the internal holder parts may be corroded and must be replaced. To prevent this, check them periodically. However, if the O-ring has not been damaged by the measurement solution, the internal holder parts need not to be checked. As preventive maintenance, it is recommended that the O-ring be replaced every two years. To replace the O-ring in the explosionproof ultrasonic cleaner, refer to Sec. 3.2.3.

# 3.2 Checking the Cleaning Element

This section applies to the flow-through type holder with cleaning element. Check the cleaning element to maintain the flow-through type holder in good operating condition.

## 3.2.1 Jet Cleaning Element

If the cleaner does not clean the sensor electrode, check if the sensor nozzles are clogged. Use a 0.8 mm diameter wire to remove any material clogging the sensor nozzles.

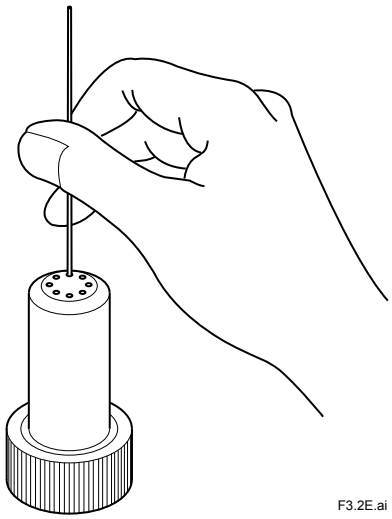


**Figure 3.2 Cleaning the Nozzle Holes**

## 3.2.2 Cleaning the Brush

If the electrode becomes dirty, the brush may be excessively worn. When the brush is worn out, replace it. Insert a screwdriver into the cleaner hole to prevent the rotor from turning, and then turn the brush assembly counterclockwise. The brush can be easily removed from the rotor. See Figure 3.3. When mounting a new brush, reverse the disassembly procedure.

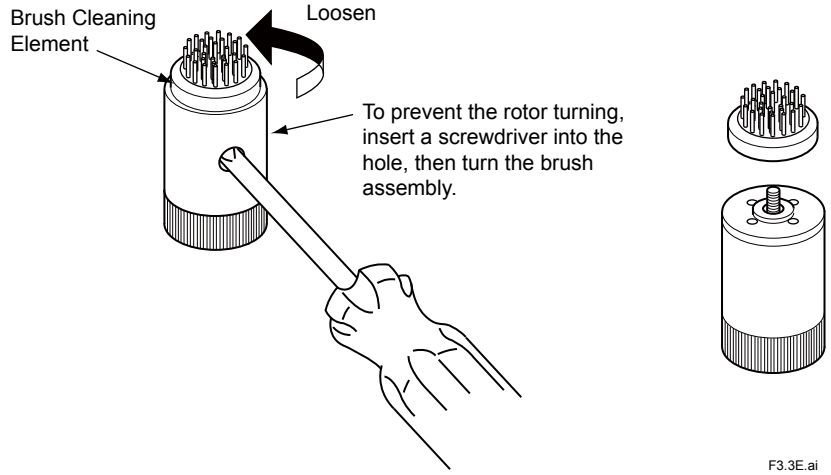


**Figure 3.3 Disassembling the Brush**

### 3.2.3 Ultrasonic Cleaning Element

For several weeks after starting the operation, check the ultrasonic cleaning element for corrosion. If corroded, replace it with the type most suitable for the measurement solution, selecting from among the element materials: SUS316 stainless steel, titanium and Hastelloy C. If a corroded element is not replaced, the solution may enter the ultrasonic element and cause problems. If this occurs, replace the cleaning element immediately.

**[Non-explosionproof ultrasonic cleaning element]**

(1) To remove a defective ultrasonic cleaning element, unscrew the cleaning element mounting screw, so the cleaning element holder can be removed from the screw connector. Move the cleaning element out until the connector appears, and disconnect the vibrator leadwire connector from the holder side connector. See Figure 3.4.

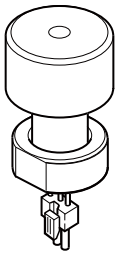


**Figure 3.4 Non-Explosionproof Cleaning Element**

(2) Check that there is no corrosion around the O-ring sealed surface. It is recommended that the O-ring be replaced whenever the element cleaned.

(3) Mounting a new ultrasonic cleaning element. After attaching the connector, rotate the cleaning element two to three turns and store the cable inside the holder. Secure the cleaning element mounting screw. Check the cleaning element material by the marking on the surface of the vibrator element; H for Hastelloy, T for titanium, none for SUS316 stainless steel.

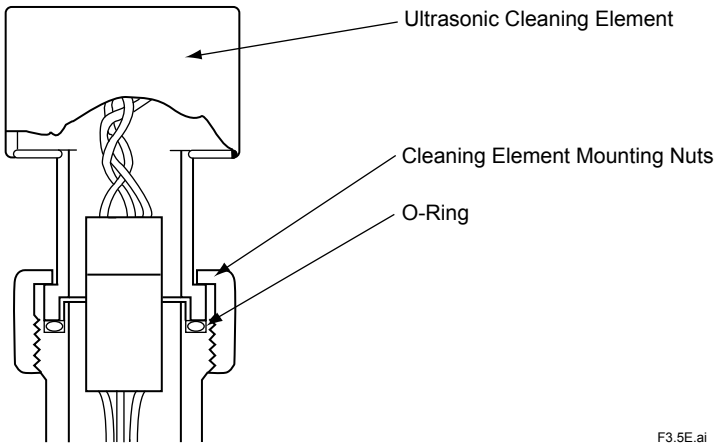


**Figure 3.5 Non-Explosionproof Ultrasonic Cleaning Element**

**[Replace the explosionproof cleaning element]**

For replacing the ultrasonic cleaning element, consults with Yokogawa service personnel.

### 3.2.4 Maintenance of PH8PU1 Washer Pump and Tank

For details, refer to the separate IM 19C1E1-01E.

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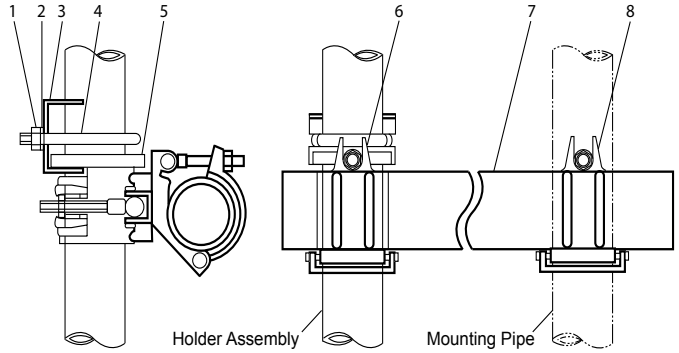
# Customer Maintenance Parts List

## Model PH8HS Submersion type Holder (Non-Explosionproof type, excluding chemical cleaning type)

### Pipe Mounting Kit (Option code: /MS1, /MS2)



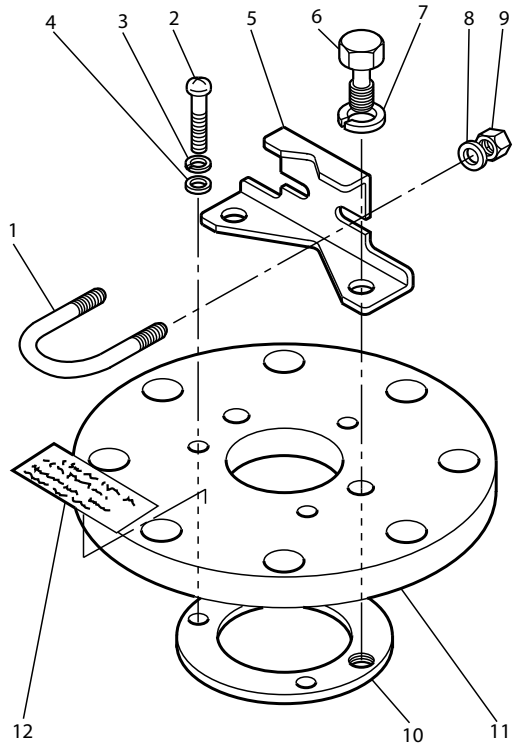

| Item | Part No. | Option code /MS1 Qty | Option code /MS2 Qty | Description |
|---|---|---|---|---|
| 1 | Y9801BU | 2 | 4 | Nut |
| 2 | Y9400WU | 2 | 4 | Washer |
| 3 | K9145LM | 1 | 2 | Bracket |
| 4 | L9800JF | 1 | 2 | U-Bolt |

Option code /MS3, MS4, see page 4

| Item | Part No. | Option code /MS1 Qty | Option code /MS2 Qty | Description |
|---|---|---|---|---|
| 5 | K9145LL | 1 | 2 | Spacer |
| 6 | L9813VN | 1 | 2 | Clamp |
| 7 | K9144AM | 1 | 2 | Pipe |
| 8 | L9813VP | 1 | 2 | Clamp |

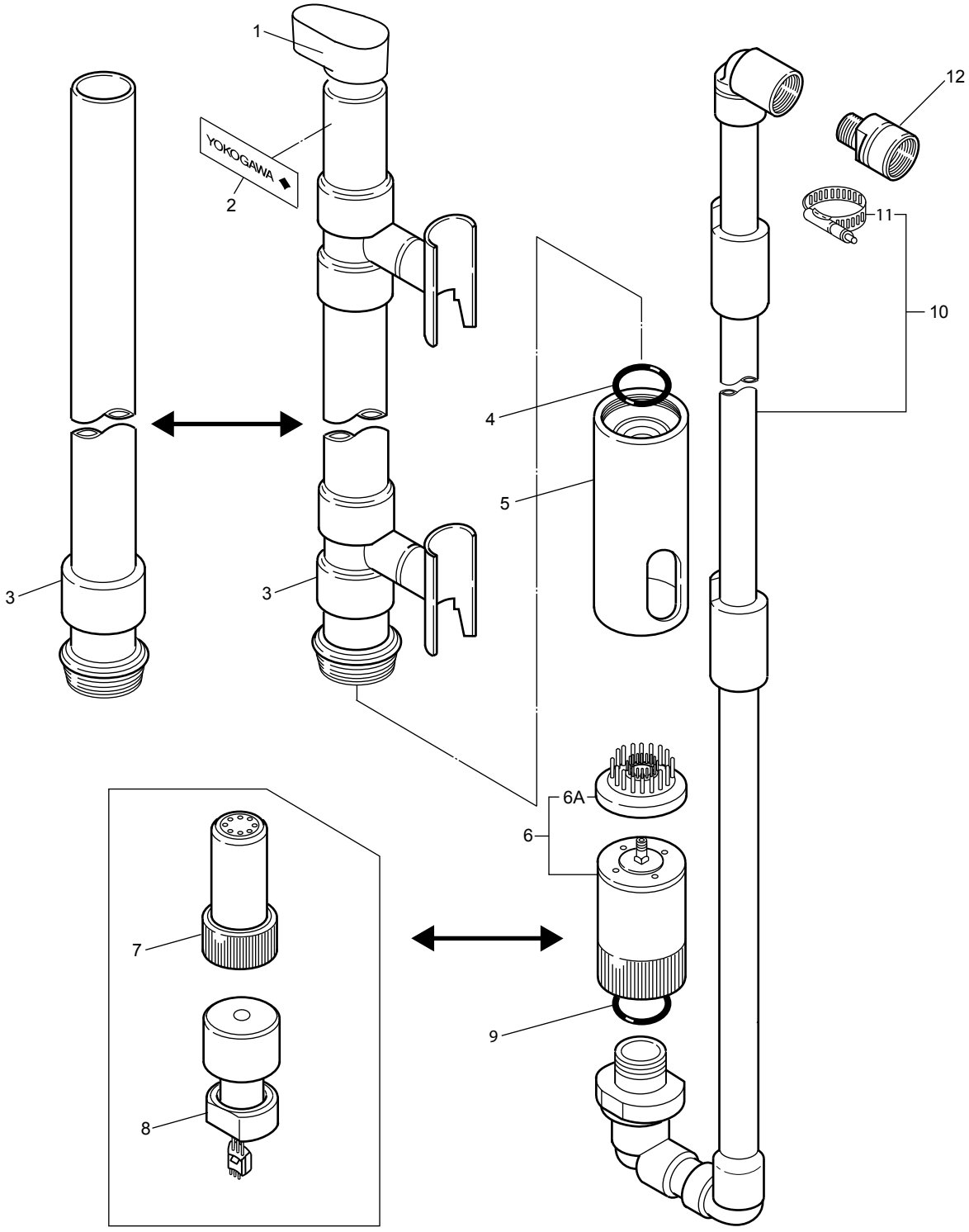
Set P/N: K9145LK for Option code /MS1 for without cleaning
K9145LH for Option code /MS1 for with cleaning.

### General Flange Mounting Kit (Option code: /F1, /F2)




| Item | Part No. | Model PH8HS-PP Qty | PH8HS-S3 Qty | Description |
|---|---|---|---|---|
| 1 | L9800JF | 1 | 1 | U-Bolt (for without cleaner) |
| | L9800JG | 1 | 1 | U-Bolt (for with cleaner) |
| 2 | Y9635HU | 3 or 4 | | Pan H . Screw, M6 × 35 |
| 3 | Y9600SU | 3 or 4 | | Spring Washer |
| 4 | Y9601WU | 3 or 4 | | Washer |
| 5 | K9144SB | 1 | 1 | Bracket |
| 6 | L9800AW | 2 | | Bolt (for without cleaner) |
| | L9800AU | | 2 | Bolt (for without cleaner) |
| | L9800AY | 2 | | Bolt (for with cleaner) |
| | L9800AV | | 2 | Bolt (for with cleaner) |
| 7 | Y9120SU | 2 | 2 | Spring washer |
| 8 | Y9800WU | 2 | 2 | Washer |
| 9 | Y9801BU | 2 | 2 | Nut |
| 10 | K9144SE | 1 | | Plate (for without cleaner) |
| | K9144SD | 2 | | Plate (for with cleaner) |
| 11 | Below | | | Flange |
| | K9144TM | 1 | | For without cleaner (JIS 10K 100 FF) |
| | K9144TN | | 1 | For without cleaner (JIS 10K 100 FF) |
| | K9144TA | 1 | | For with cleaner (JIS 10K 200 FF) |
| | K9144TB | | 1 | For with cleaner (JIS 10K 200 FF) |
| 12 | K9144SH | 1 | 1 | Sheet |

## Holder with Ultrasonic, Jet or Brush cleaning of pipe mounting type




For the parts information of holder with chemical cleaning type , see CMPL 12B07M01-05E.

| Item | Part No. | Qty Model PH8HS-PP | Qty PH8HS-S3 | Description |
|---|---|---|---|---|
| 1 | K9144NB | 1 | 1 | Cap |
| 2 | – | 1 | 1 | Nameplate |
| 3 | – | 1 | 1 | Holder Assembly (see Table 1) |
| 4 | – | | | O-Ring |
| | K9142QV | 1 | 1 | Fluoro rubber (FKM) |
| | K9319RF | 1 | 1 | for /PF option |
| 5 | K9144LA | 1 | | Cap Assembly |
| | K9144LB | | 1 | Cap Assembly |
| 6 | K9143KA | 1 | 1 | Brush Assembly (for brush cleaning) |
| 6A | K9143KM | 1 | 1 | Brush |
| 7 | K9143JN | 1 | 1 | Nozzle (for jet cleaning) |
| 8 | Below | 1 | 1 | Vibrator |
| | K9143QA | | | For Ultrasonic Cleaning (transducer: stainless steel) |
| | K9143QB | | | For Ultrasonic Cleaning (transducer: Titanium) |
| | K9143QC | | | For Ultrasonic Cleaning (transducer: Hastelloy C) |
| 9 | – | | | O-Ring |
| | K9142QT | 1 | 1 | Fluoro rubber (FKM) for Ultrasonic Cleaning |
| | K9319RD | 1 | 1 | /PF option for Ultrasonic Cleaning |
| | K9142QU | 1 | 1 | Fluoro rubber (FKM) for Jet Cleaning or Brush Cleaning |
| | K9319RS | 1 | 1 | /PF option for Jet Cleaning or Brush Cleaning |
| 10 | – | 1 | 1 | Wash Holder Assembly (see Table 2, 3) |
| 11 | L9813WA | 1 | | Clamp |
| 12 | K9115RS | 1 | | Connector } For Jet or Brush Cleaning |
| | L9832AT | | 1 | Connector } (1/2 NPT Female) |

Table.1 Item 3 Holder Part Number

| Pipe Length | With Cleaner | | Pipe Length | Without Cleaner | |
|---|---|---|---|---|---|
| | Material | | | Material | |
| | Polypropylene | Stainless Steel | | Polypropylene | Stainless Steel |
| 1.0 m | K9144GA | K9144GN | 1.0 m | K9144HA | K9144HN |
| 1.5 m | K9144GE | K9144GS | 1.5 m | K9144HE | K9144HS |
| 2.0 m | K9144GJ | K9144GW | 2.0 m | K9144HJ | K9144HW |
| 2.5 m | K9144GK | K9144GY | 2.5 m | K9144HK | K9144HY |
| 3.0 m | K9144GL | K9144GX | 3.0 m | K9144HL | K9144HX |

Table.2 Item 10 Wash Holder Assembly Part Number for Jet or Brush Cleaning

| Pipe Length | Wash Holder Assembly Part No. ( Item 10 ) | |
|---|---|---|
| | Material | |
| | Polypropylene | Stainless Steel |
| 1.0 m | K9144EA | K9144EN |
| 1.5 m | K9144EE | K9144ES |
| 2.0 m | K9144EJ | K9144EW |
| 2.5 m | K9144EK | K9144EY |
| 3.0 m | K9144EL | K9144EX |

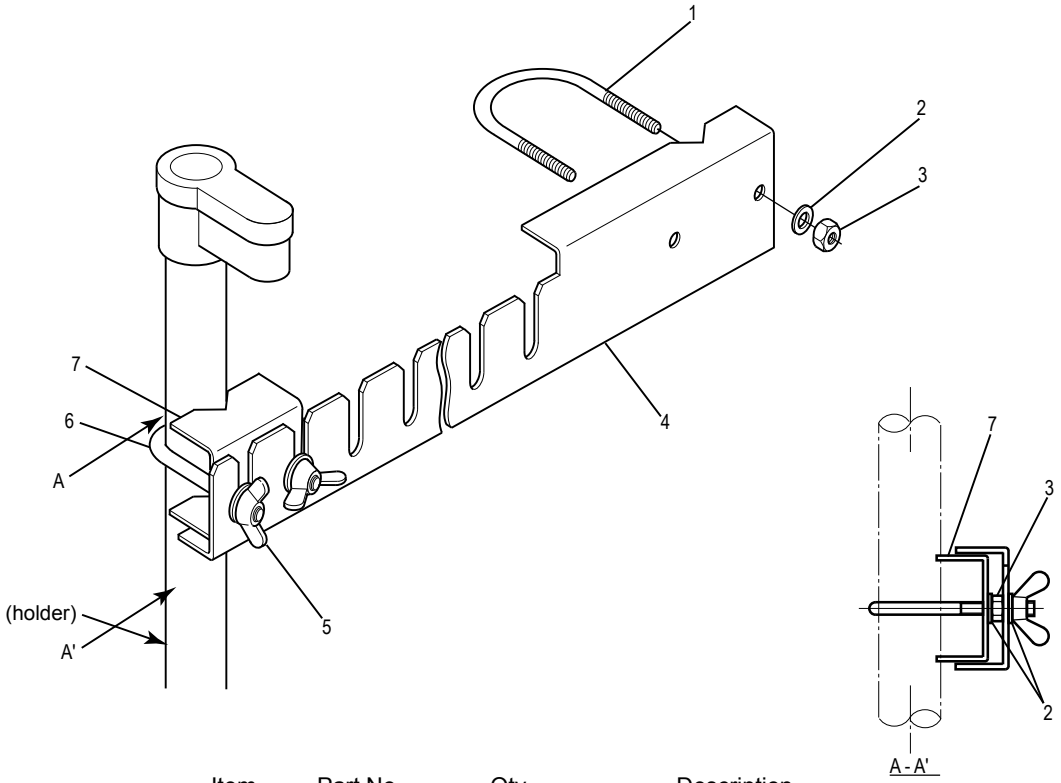
(Note)

Jet or Brush Cleaner Pipe Conduit is Rc1/2.

Table.3 Item 10 Wash Holder Assembly Part Number for Ultrasonic Cleaning

| Pipe Length | Ultrasonic Cleaner Cable Length | Part No. | |
|---|---|---|---|
| | | Material | |
| | | Polypropylene | Stainless Steel |
| 1.0 m | 3 m | K9144CA | K9144CN |
| | 5 m | K9144CB | K9144CP |
| 1.5 m | 3 m | K9144CE | K9144CS |
| | 5 m | K9144CF | K9144CT |
| 2.0 m | 3 m | K9144CJ | K9144CW |
| | 5 m | K9144CK | K9144CX |
| 2.5 m | 7 m | K9144JN | K9144KJ |
| | 10 m | K9144JP | K9144KK |
| 3.0 m | 7 m | K9144JS | K9144KN |
| | 10 m | K9144JT | K9144KP |

Option Code : /MS3, /MS4
Mounting Hardware
/MS3 ····· 1 set
/MS4 ····· 2 sets

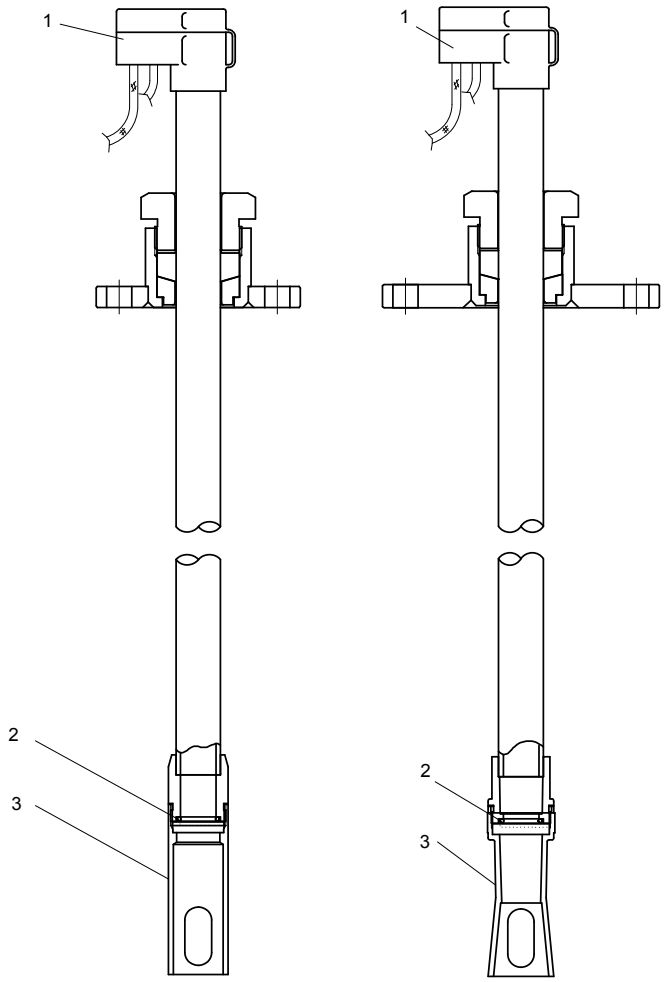



| Item | Part No. | Qty | Description |
|---|---|---|---|
| 1 | L9800JJ | 1 | U-Bolt |
| 2 | Y9800WU | 6 | Washer |
| 3 | Y9801BU | 4 | Nut |
| 4 | K9145LU | 1 | Bracket |
| 5 | L9800PV | 2 | Nut |
| 6 | K9145LW | 1 | U-Bolt |
| 7 | K9145LV | 1 | Bracket |

Set part No. K9145LT for option code /MS3

## Movable Sealing Flange Mounting type without cleaning (Material: PP)

PH8HS-PP-□□-R-NN-NN*A/F305P PH8HS-PP-□□-R-NN-NN*A/F310P

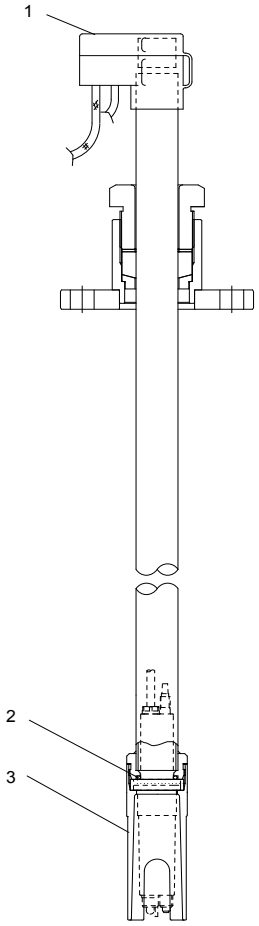



| Item | Part No. | Qty | Description |
|---|---|---|---|
| 1 | K9144NB | 1 | Cap |
| 2 | —— | | O-Ring |
| | K9142QV | 1 | Fluoro rubber (FKM) |
| | K9319RF | 1 | for /PF option |
| 3 | K9673KY | 1 | Cap |

| Item | Part No. | Qty | Description |
|---|---|---|---|
| 1 | K9144NB | 1 | Cap |
| 2 | —— | | O-Ring |
| | K9142QV | 1 | Fluoro rubber (FKM) |
| | K9319RF | 1 | for /PF option |
| 3 | K9144LA | 1 | Cap |

## Movable Sealing Flange Mounting type without cleaning (Material: SUS)

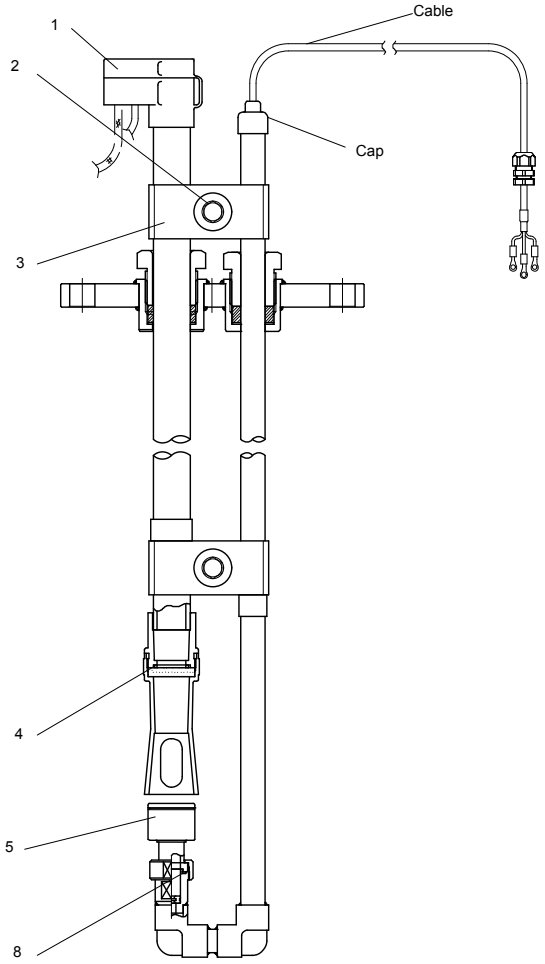
PH8HS-S3-☐☐-R-NN-NN*A/F305S
PH8HS-S3-☐☐-R-NN-NN*A/F310S




| Item | Part No. | Qty | Description |
|---|---|---|---|
| 1 | K9144NB | 1 | Cap |
| 2 | —— | | O-Ring |
| | K9142QV | 1 | Fluoro rubber (FKM) |
| | K9319RF | 1 | for /PF option |
| 3 | K9144LB | 1 | Cap |

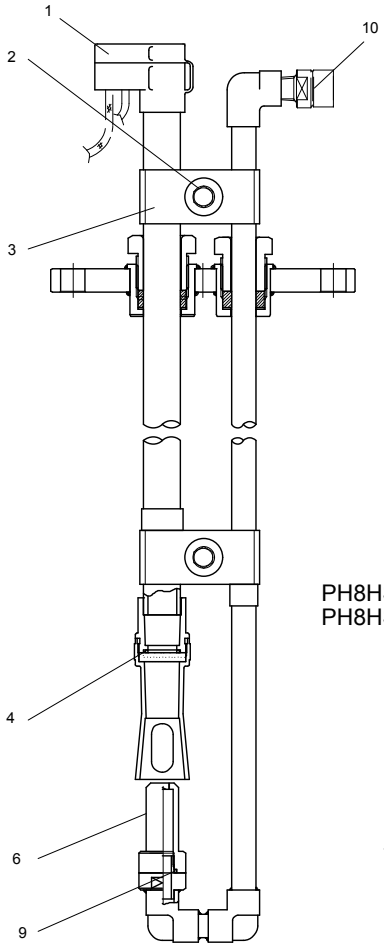
# Movable Sealing Flange Mounting type with Ultrasonic, Jet or Brush cleaning (Material: PP)

PH8HS-PP-S3-R-□□*A/F415P
PH8HS-PP-S3-R-□□*A/F420P



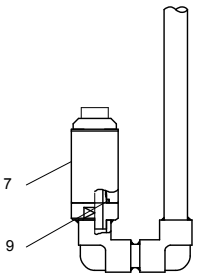

Ultrasonic Cleaning

PH8HS-PP-JT-R-□□*A/F415P
PH8HS-PP-JT-R-□□*A/F420P




Jet Cleaning

PH8HS-PP-BR-R-□□*A/F415P
PH8HS-PP-BR-R-□□*A/F420P



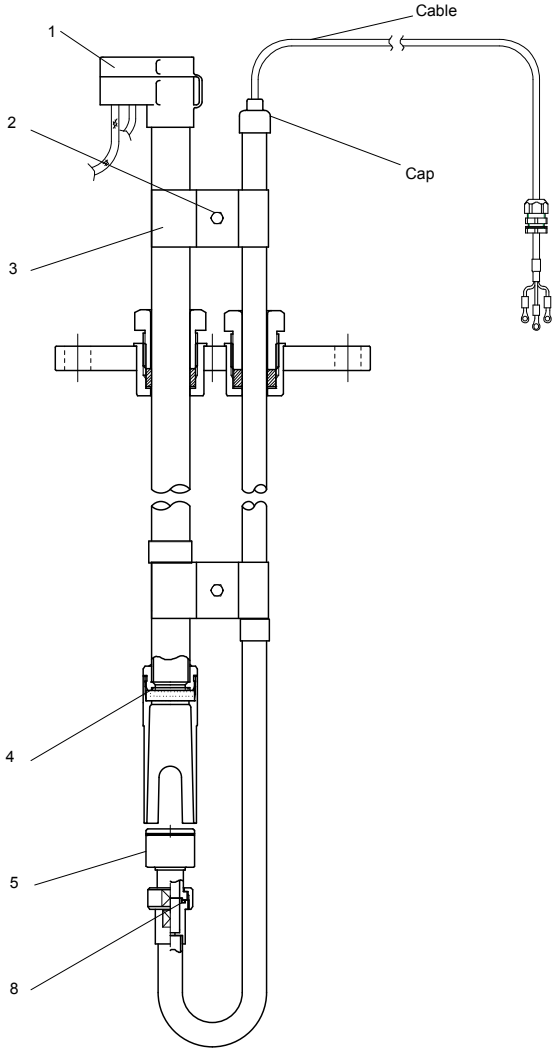

Brush Cleaning

| Item | Part No. | Cleanin type | Qty | | | Description |
|---|---|---|---|---|---|---|
| | | Ultrasonic | Jet | Brush | | |
| 1 | K9144NB | 1 | 1 | 1 | | Cap |
| 2 | L9800AH | 2 | 2 | 2 | | Screw |
| | L9800LQ | 4 | 4 | 4 | | Washer |
| | K9021PB | 2 | 2 | 2 | | Nut |
| 3 | K9673HS | 2 | 2 | 2 | | Bracket |
| | K9673HT | 2 | 2 | 2 | | Bracket |
| 4 | —— | | | | | O-Ring |
| | K9142QV | 1 | 1 | 1 | | Fluoro rubber (FKM) |
| | K9319R | 1 | 1 | 1 | | for /PF option |
| 5 | —— | | | | | Vibrator Assembly |
| | K9143QA | 1 | | | | for suffix code -S3 |
| | K9143QB | 1 | | | | for suffix code -TN |
| | K9143QC | 1 | | | | for suffix code -HC |

| Item | Part No. | Cleanin type | Qty | | | Description |
|---|---|---|---|---|---|---|
| | | Ultrasonic | Jet | Brush | | |
| 6 | K9143JN | | 1 | | | Nozzel Assembly |
| 7 | K9143KA | | | 1 | | Brush Assembly |
| 8 | —— | | | | | O-Ring |
| | K9142QT | 1 | | | | Fluoro rubber (FKM) |
| | K9319RD | 1 | | | | for /PF option |
| 9 | —— | | | | | O-Ring |
| | K9142QU | | 1 | 1 | | Fluoro rubber (FKM) |
| | K9319RS | | 1 | 1 | | for /PF option |
| 10 | K9115RS | | 1 | 1 | | Connector (for suffix code -NP) |

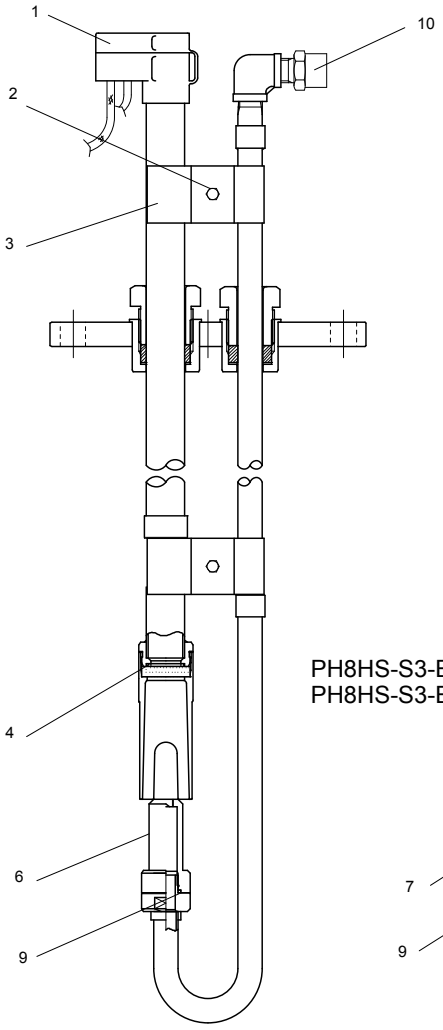
# Movable Sealing Flange Mounting type with Ultrasonic, Jet or Brush cleaning (Material: SUS)

PH8HS-S3-□□-R-□□*A/F415S
PH8HS-S3-□□-R-□□*A/F420S



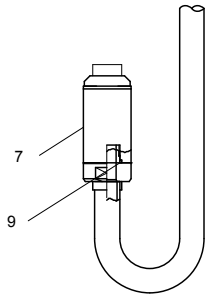

Ultrasonic Cleaning

PH8HS-S3-JT-R-□□*A/F415S
PH8HS-S3-JT-R-□□*A/F420S




Jet Cleaning

PH8HS-S3-BR-R-□□*A/F415S
PH8HS-S3-BR-R-□□*A/F420S




Brush Cleaning

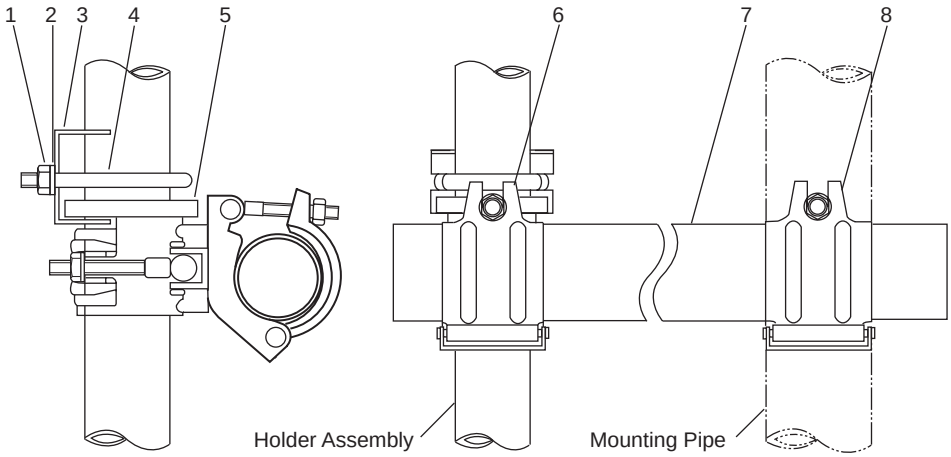
| Item | Part No. | Cleanin type Ultrasonic | Qty Jet | Qty Brush | Description |
|---|---|---|---|---|---|
| 1 | K9144NB | 1 | 1 | 1 | Cap |
| 2 | Y9614NU | 2 | 2 | 2 | Bolt |
| 3 | K9673GN | 2 | 2 | 2 | Bracket |
| | K9673GP | 2 | 2 | 2 | Bracket |
| 4 | —— | | | | O-Ring |
| | K9142QV | 1 | 1 | 1 | Fluoro rubber (FKM) |
| | K9319RF | 1 | 1 | 1 | for /PF option |
| 5 | —— | | | | Vibrator Assembly |
| | K9143QA | 1 | | | for suffix code -S3 |
| | K9143QB | 1 | | | for suffix code -TN |
| | K9143QC | 1 | | | for suffix code -HC |

| Item | Part No. | Cleanin type Ultrasonic | Qty Jet | Qty Brush | Description |
|---|---|---|---|---|---|
| 6 | K9143JN | | 1 | | Nozzel Assembly |
| 7 | K9143KA | | | 1 | Brush Assembly |
| 8 | —— | | | | O-Ring |
| | K9142QT | 1 | | | Fluoro rubber (FKM) |
| | K9319RD | 1 | | | for /PF option |
| 9 | —— | | | | O-Ring |
| | K9142QU | | 1 | 1 | Fluoro rubber (FKM) |
| | K9319RS | | 1 | 1 | for /PF option |
| 10 | L9832AT | | 1 | 1 | Connector (for suffix code -NP) |

# Customer Maintenance Parts List

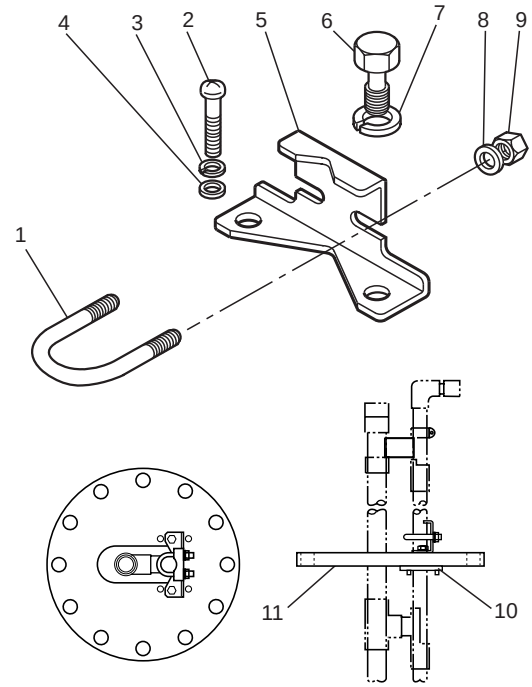
## Model PH8HSF
## Submersion type Holder
## (Explosionproof type)

Pipe Mounting Kit (Option code: /MS1, /MS2)



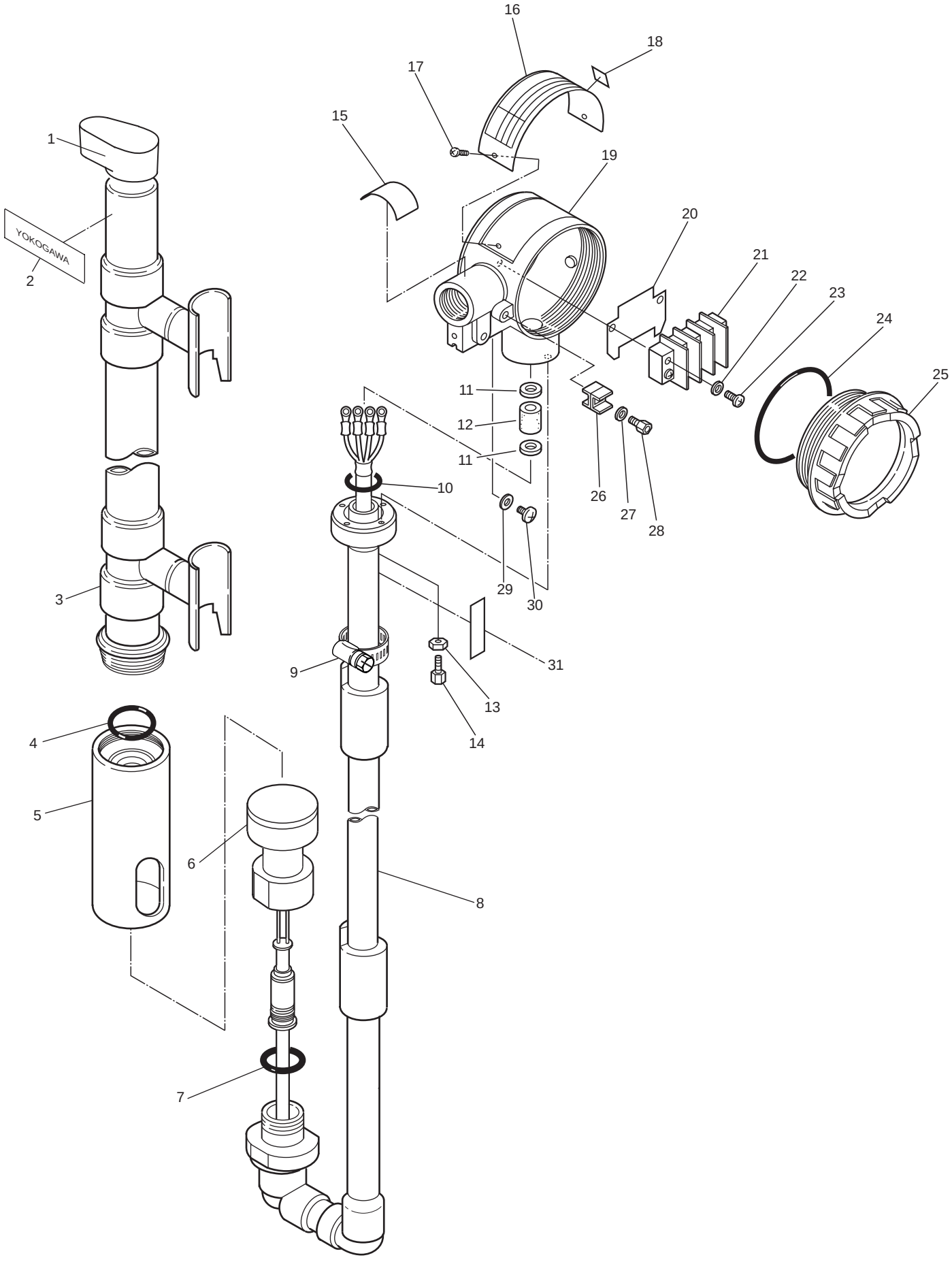

| Item | Part No. | Option code Qty /MS1 | /MS2 | Description |
|---|---|---|---|---|
| 1 | Y9801BU | 2 | 4 | Nut |
| 2 | Y9400WU | 2 | 4 | Washer |
| 3 | K9145LM | 1 | 2 | Bracket |
| 4 | L9800JF | 1 | 2 | U-Bolt |
| 5 | K9145LL | 1 | 2 | Spacer |
| 6 | L9813VN | 1 | 2 | Clamp |
| 7 | K9144AM | 1 | 2 | Pipe |
| 8 | L9813VP | 1 | 2 | Clamp |

Flange Mounting Kit (Option code: /F)




| Item | Part No. | Model PH8HSF-PP | Qty PH8HSF-S3 | Description |
|---|---|---|---|---|
| 1 | L9800JG | 1 | 1 | U-Bolt (for with cleaner) |
| 2 | Y9635HU | 4 | | Pan H . Screw, M6 × 35 |
| 3 | Y9600SU | 4 | | Spring Washer |
| 4 | Y9601WU | 4 | | Washer |
| 5 | K9144SB | 1 | 1 | Bracket |
| 6 | Below | | | Bolt |
| | L9800AY | 2 | | |
| | L9800AV | | 2 | |
| 7 | Y9120SU | 2 | 2 | Spring washer |
| 8 | Y9800WU | 2 | 2 | Washer |
| 9 | Y9801BU | 2 | 2 | Nut |
| 10 | K9144SD | 2 | | Plate |
| 11 | Below | | | Flange |
| | K9144TA | 1 | | (equivalent to JIS 10K 200 FF) |
| | K9144TB | | 1 | (equivalent to JIS 10K 200 FF) |

YOKOGAWA
Yokogawa Electric Corporation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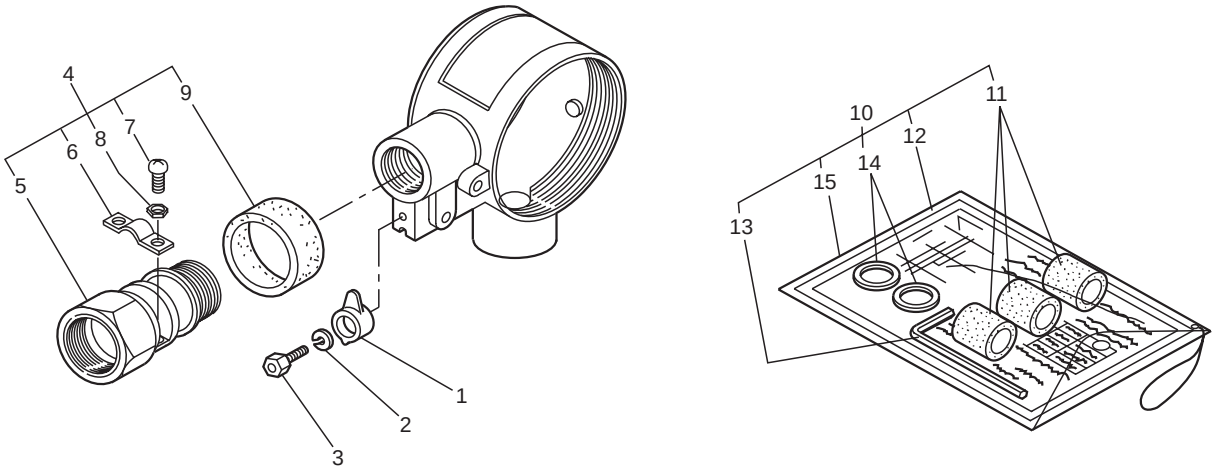
| Item | Part No. | Model / Qty PH8HSF-PP | Qty PH8HSF-S3 | Description |
|---|---|---|---|---|
| 1 | K9144NB | 1 | 1 | Cap |
| 2 | – | 1 | 1 | Nameplate |
| 3 | Below | | | Holder Assembly |
| | K9144GA | 1 | | 1.0 m } For PH8HSF-PP |
| | K9144GE | 1 | | 1.5 m } For PH8HSF-PP |
| | K9144GJ | 1 | | 2.0 m } For PH8HSF-PP |
| | K9144GN | | 1 | 1.0 m } For PH8HSF-S3 |
| | – | | 1 | 1.5 m } For PH8HSF-S3 |
| | – | | 1 | 2.0 m } For PH8HSF-S3 |
| 4 | – | | | O-Ring |
| | K9142QV | 1 | 1 | Viton® |
| | K9319RF | 1 | 1 | for /PF option |
| 5 | K9144LA | 1 | | Cap Assembly |
| | K9144LB | | 1 | Cap Assembly |
| 6 | Below | | | Vibrator Assembly |
| | K9143SA | 1 | 1 | Transducer: Stainless Steel |
| | K9143SB | 1 | 1 | Transducer: Titanium |
| | K9143SC | 1 | 1 | Transducer: Hastelloy C |
| 7 | – | | | O-Ring |
| | – | 1 | 1 | Viton® |
| | – | 1 | 1 | for /PF option |
| 8 | Below | | | Pipe Assembly |
| | – | 1 | | 1.0 m } For PH8HSF-PP |
| | – | 1 | | 1.5 m } For PH8HSF-PP |
| | – | 1 | | 2.0 m } For PH8HSF-PP |
| | – | | 1 | 1.0 m } For PH8HSF-S3 |
| | – | | 1 | 1.5 m } For PH8HSF-S3 |
| | – | | 1 | 2.0 m } For PH8HSF-S3 |
| 9 | L9813WA | 1 | | Clamp |
| 10 | – | 1 | 1 | O-Ring |
| 11 | – | 2 | 2 | Washer |
| 12 | – | 1 | 1 | Gasket |
| 13 | | 4 | 4 | Washer |
| 14 | – | 4 | | Bolt |
| | – | | 4 | Bolt |
| | – | 1 | 1 | Gland Assembly |
| 15 | – | 1 | 1 | Sheet |
| 16 | – | 1 | 1 | Nameplate |
| 17 | F9202FY | 2 | 2 | Screw |
| 18 | – | 1 | 1 | Label |
| 19 | – | 1 | 1 | Case |
| 20 | – | 1 | 1 | Nameplate |
| 21 | – | 1 | 1 | Terminal |
| 22 | – | 1 | 1 | Washer |
| 23 | Y9416LB | 2 | 2 | B.H. Screw, M4 x 16 |
| 24 | G9303AK | 1 | 1 | O-Ring |
| 25 | F9281AJ | 1 | 1 | Case |
| 26 | F9273WE | 1 | 1 | Bracket Assembly |
| 27 | Y9400SU | 1 | 1 | Washer |
| 28 | Y9410ZU | 1 | 1 | Bolt |
| 29 | Y9500SU | 1 | 1 | Washer |
| 30 | – | 1 | 1 | B.H. Screw, M5×6 |
| 31 | – | 1 | 1 | Tag Plate |




| Item | Part No. | Qty | Description |
|---|---|---|---|
| 1 | F9203SB | 1 | Clamp |
| 2 | Y9400SU | 1 | Washer |
| 3 | Y9410ZU | 1 | Bolt |
| 4 | - | 1 | Gland Assembly |
| 5 | - | 1 | Gland |
| | | | |
| 6 | F9203QJ | 1 | Clamp |
| 7 | Y9412JB | 2 | Pan H.Screw, M4×12 |
| 8 | Y9400SP | 2 | Washer |
| 9 | L9811CP | 1 | Cover |
| 10 | - | 1 | Packing Set |
| | | | |
| 11 | - | 1 | Gasket (for cable diameter 10.0 to 10.7 mm) |
| | F9203WW | 1 | Gasket (for cable diameter 10.8 to 11.4 mm) |
| | F9203WX | 1 | Gasket (for cable diameter 11.5 to 12.0 mm) |
| 12 | - | 1 | Instruction Card |
| 13 | E9135GY | 1 | Allen Wrench |
| | | | |
| 14 | F9203XD | 2 | Washer |
| 15 | X9930CK | 1 | Vinyl Bag |

# Revision Information

- Title : Model PH8HS, PH8HSF Submersion Type Holders
- Manual No. : IM 12B07M01-01E

**Nov. 2015/4rd Edition**

Revision by the version up of GS.; List of related items: Addition PH4☐,OR4☐, FLXA202. Deletion DPAS405,PH400G,PH100 and PH8PU1; Some revision name of materials; Page 1-1 Addition of PH4/OR4 detector to Applicable sensors. Some revision of flange material, some of PH8HS and PH8HSF. Page 1-10 Some revision of solenoid valve of PH8MV and PH8MVF; Page 2-3 Some revision of specification of PH8MV and PH8MVF; CMPL 12B05M01-03E revised to 7th edition because some revision of page 3, P/N correction for Item 10 of Table 2. Some revision of page 3 on CMPL 12B05M01-04E 4th edition (P/N deletion for explosion-proof type).

**Oct. 2011/3rd Edition Page layout changed by InDesign**

p.1-1, Some addition of Caution on use, and some correction of jet cleaning unit material; p.1-4, Some of Section 1.2.2 PH8HSF MS-code modified; p.1-8, Some of flange mounting dimensions and weight modified; p.2-5, Section number are corrected in Section 2.5; p.2-6, Subsection number is corrected in Section 2.4.3; p.3-4 to p.3-7 Deletion of procedure for [Replace the explosionproof cleaning element]; CMPL 12B05M01-03E revised to 6th edition because some revision of P/N on page 1; Some revision of P/N on page 1 for CMPL 12B05M01-04E.

**Dec. 2005/2nd Edition**

Some error correction.

**Dec. 2004/1st Edition**

Newly published.

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