

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

PH8HF

FLOW THROUGH SENSOR HOLDER

Used with the applicable PH8HF configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: PH8HF manufacturer technical reference

Model PH8HF, PH8HFF Flow-Through Type Holder

IM 12B07N01-01E



INTRODUCTION

This manual covers the PH8HF, PH8HFF Flow-Through Type Holder. 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
FLXA202,FLXA21	2-Wire Liquid Analyzer	IM 12A01A02-01E
PH201G*B	Distributor	IM 19B1E4-02E
FLXA402	4-Wire Converter	IM 12A01F01-02EN IM 12A01F02-01EN etc.
PH450G	pH/ORP Converter	IM 12B07C05-01E
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.

1. Specifications

The Model PH8HF□ flow-through type holder is used:

- To connect two pipes and provide a “flow-through” path between them.
- To mount a pH sensor; the sensor measures the pH of liquid flowing through the holder.

Holder versions with or without cleaning for the pH sensor - ultrasonic cleaning or air/water jet cleaning - are available.

1.1 General Specifications

1.1.1 PH8HF Flow-through Type Holder

Applicable sensors:

General pH Sensor PH8ERP, PH8EFP

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

General ORP Sensor OR8ERG, OR8EFG

OR4 Sensor OR4P, OR4C

Note: An adapter is required when using PH4/OR4 sensor.

When using with 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 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. 0.4 to 1.7 kg (polypropylene)

Approx. 3 to 6.1 kg (stainless steel)

Mounting bracket; Approx. 0.5 kg

Temperature range:

No Cleaning: -5 to 80 °C (polypropylene)

-5 to 105 °C (stainless steel)

With Cleaning: -5 to 80 °C

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

Flow rate: 3 to 11 L/min

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

Pressure: Atmospheric pressure to 500 kPa

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

Utility required for cleaning unit: 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 NI/min
Air brush	150 to 250 + Liquid pressure	300 to 600 NI/min

Note 1: Pressure and flow rate must be simultaneously satisfied at the holder inlet port.

Note 2: A large braid-reinforced tube of $\phi 22 \times \phi 15$ is recommended for supply due to the flow rate.

1.1.2 PH8HFF (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)

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. 3 to 3.2 kg (polypropylene)

Approx. 5.6 to 7.6 kg (stainless steel)

Mounting bracket; Approx. 0.5 kg

Temperature range: -5 to 80°C

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

Flow rate: 3 to 11 L/min

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

Pressure: Atmospheric pressure to 500 kPa

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

1.2 Model and Suffix codes

1.2.1 Flow-Through Type Holder PH8HF

Model	Suffix Code	Option Code	Description
PH8HF	.....	.....	Flow-through type holder
Material (*7)	-PP -S3 -PV -TN	..... ..... ..... .....	Polypropylene (Refer to note below for selection) Stainless steel Heat-resistant PVC Titanium
Process Connection	-JPT -NPT -J10 -A15	..... ..... ..... .....	Rc1 1 NPT female thread JIS 10K 25 FF (*6) ANSI Class 150 1 FF flange (for polypropylene holder -PP) (*6) ANSI Class 150 1 RF flange with serration (for SUS316 holder -S3)
pH Measuring System	-T	.....	Always -T
Cleaning System	-NN -S3 -TN -HC -JT -BR	..... ..... ..... ..... ..... .....	None For ultrasonic cleaning (Transducer: SUS316) (*1) For ultrasonic cleaning (Transducer: Titanium) (*2) For ultrasonic cleaning (Transducer: Hastelloy C) (*3) For jet cleaning. The solenoid valve must be specified separately For brush cleaning. The solenoid valve must be specified separately
Cable Length for Ultrasonic Cleaning	-NN -C1 -C3 -C6 -C7 -C8 -C9	..... ..... ..... ..... ..... ..... .....	None 1m 3m 7m 10m 15m 20m
Connector for Jet or Brush Cleaning	-JP -NP	..... .....	Rc1/2 1/2 NPT
Style Code	*A	.....	Style A
Option	Special Mounting O-ring	/MF1 /PF	Mounting bracket (stainless steel) (*5) Perfluoroelastomer (FFKM) (*4)

*1: General purpose (Normal pH 3 to 14)

*2: For salt water

*3: For acid (Normal pH 0 to 4)

*4: Choose Perfluoroelastomer (FFKM) when this holder is used in organic solvent, high alkali or high temperature alkali.

*5: Mounting bracket is generally not required when the stainless steel holder is installed in-line in a pipe

It is required where the holder is installed in a sampling rack (in which case the U-bolt included in /MF1 is not used).

*6: Only mating dimensions are according to flange standard.

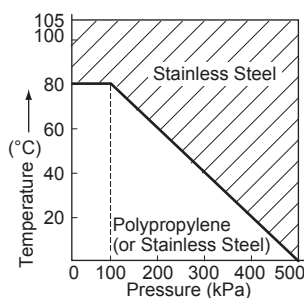
*7: Criteria for material selection (-PP or -S3)

In general, polypropylene is recommended from the viewpoint of chemical resistance.

However stainless steel is recommended in any of the following cases:

- The liquid contains organic reagent, oxidizing agents, etc., which can attack polypropylene.
- The temperature/pressure correlation of the process condition falls within the hatched area of the diagram shown right.
- The use of polypropylene is not reasonable from a viewpoint of strength or past experience.

For stainless steel, normally a 3 to 14 pH value is recommended.



1.2.2 Flow-Through Type Holder (Explosionproof Type) PH8HFF

[Style: S2]

Model	Suffix Code	Option Code	Description
PH8HFF	.....	.....	Flow-through type holder
Material (*7)	-PP -S3	..... .....	Polypropylene (Refer to note below for selection) Stainless steel
Process Connection	-JPT -NPT -J10 -A15	..... ..... ..... .....	Rc1 1 NPT female thread JIS 10K 25 FF flange ANSI Class 150 1 FF flange equivalent (for polypropylene holder -PP) ANSI Class 150 1 RF Flange with serration (for SUS316 holder -S3)
pH Measuring System	-T	.....	Always -T
Cleaning System (*4) (Ultrasonic cleaning only)	-S3 -TN -HC	..... ..... .....	(SUS316 transducer) (*1) (Titanium transducer) (*2) (Hastelloy C transducer) (*3)
Explosion Protection	-JS	.....	TIIS Flameproof (d2G4)
Style Code	*A	.....	Style A
Option	Special Mounting Flameproof Packing Tag Plate O-ring	/MF1 /PG2 /SCT /PF	Mounting bracket (stainless steel) (*6) JIS flameproof packing adapter 3/4 inch Stainless steel tag plate Perfluoroelastomer (FFKM) (*5)

*1: General purpose (Normal pH 3 to 14)

*2: For salt water

*3: For acid (Normal pH 0 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: Mounting bracket is generally not required when the stainless steel holder is installed in-line in a pipe. It is required where the holder is installed in a sampling rack (in which case the U-bolt included in /MF1 is not used).

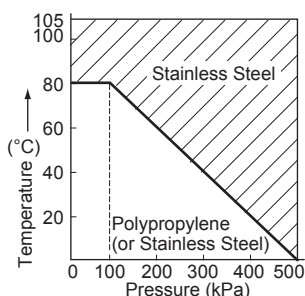
*7: Criteria for material selection (-PP or -S3)

In general, polypropylene is recommended from the viewpoint of chemical resistance.

However stainless steel is recommended in any of the following cases:

- The liquid contains organic reagent, oxidizing agents, etc., which can attack polypropylene.
- The temperature/pressure correlation of the process condition falls within the hatched area of the diagram shown right.
- The use of polypropylene is not reasonable from a viewpoint of strength or past experience.

For stainless steel, normally a 3 to 14 pH value is recommended.



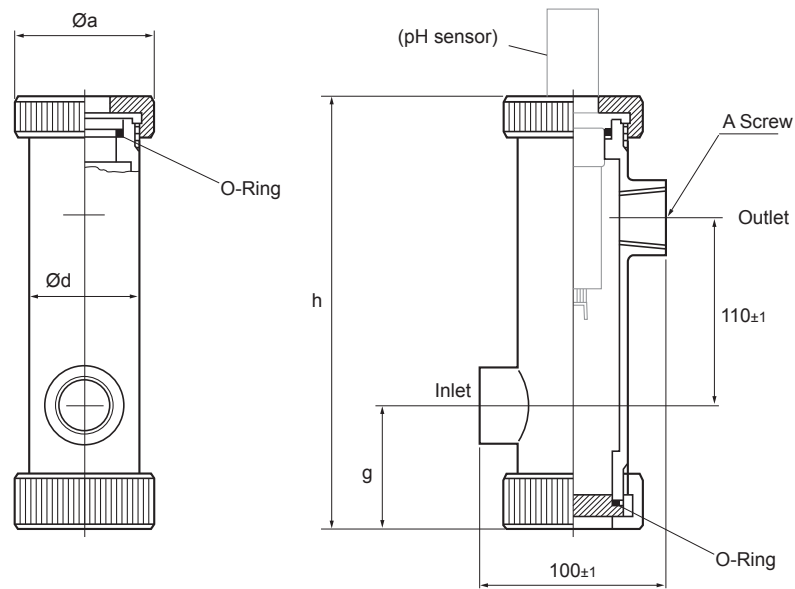
CAUTION

Select the material of wetted parts with careful consideration of process characteristics. Inappropriate selection may cause leakage of process fluids, which greatly affects facilities. Considerable care must be taken particularly in the case of strongly corrosive process fluid such as hydrochloric acid, sulfuric acid, hydrogen sulfide, and sodium hypochlorite. If you have any questions about the wetted part construction of the product, be sure to contact Yokogawa.

1.3 External Dimensions

1. PH8HF - PP - □PT - T - NN - NN, PH8HF - S3 - □PT - T - NN - NN

UNIT: mm



Model and Code	A Screw	a	d	g	h	Weight
PH8HF-PP-JPT-T-NN-NN	Rc1	80	Approx. 60	Approx. 70	Approx. 250	Approx. 0.4kg
PH8HF-PP-NPT-T-NN-NN	1NPT	80	Approx. 60	Approx. 70	Approx. 250	Approx. 0.4kg
PH8HF-S3-JPT-T-NN-NN	Rc1	70	Approx. 60	Approx. 70	Approx. 243	Approx. 3kg
PH8HF-S3-NPT-T-NN-NN	1NPT	70	Approx. 60	Approx. 70	Approx. 243	Approx. 3kg

□ Mounting Bracket (Option Code : /MF1)

Weight : Approx. 0.5 kg

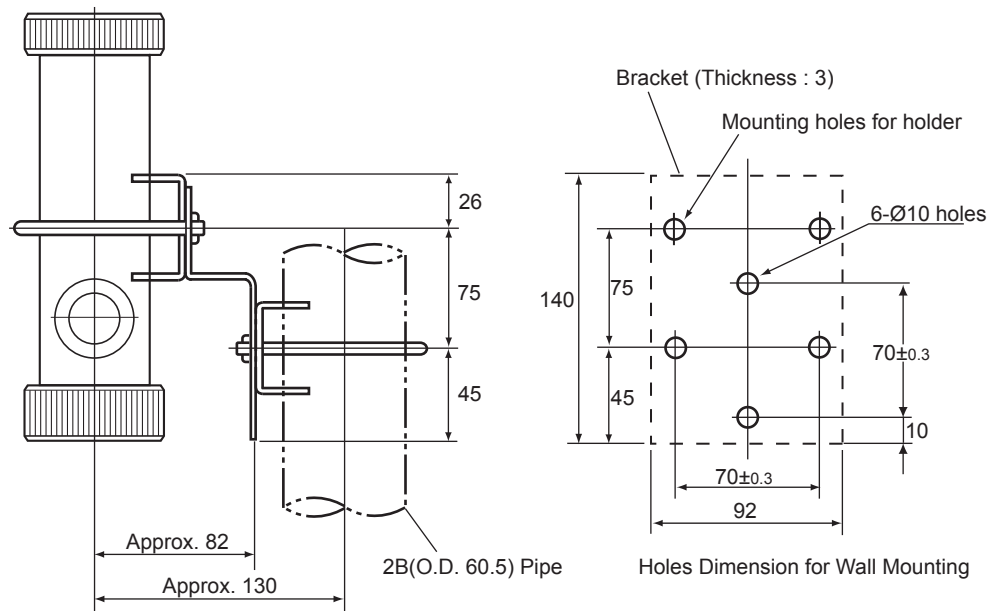
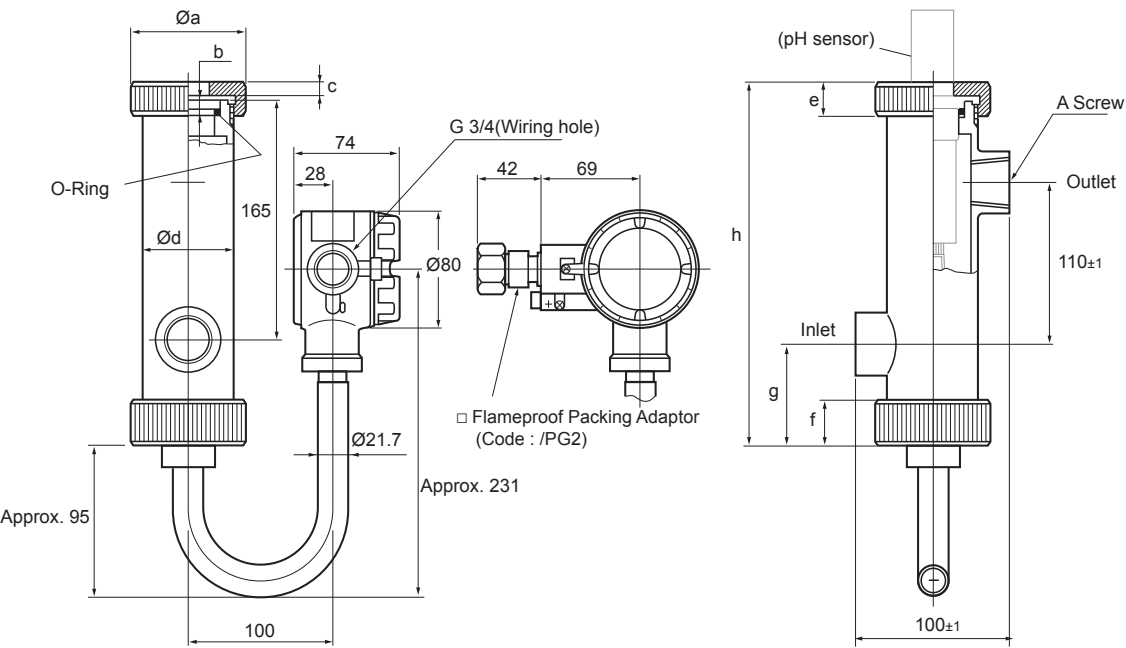


Figure 1.1 Flow-Through Type Holder

3. PH8HFF - □□ - □PT - T - □□ - JS

UNIT: mm



Model and Code	A Screw	a	b	c	d	e	f	g	h	Weight
PH8HFF-PP-JPT-T-□□-JS	Rc1	80	9	11	60	25	30	70	Approx. 250	Approx. 3kg
PH8HFF-S3-JPT-T-□□-JS	Rc1	70	10	6	60.5	26	26	69	Approx. 245	Approx. 5.6kg
PH8HFF-PP-NPT-T-□□-JS	1NPT	80	9	11	60	25	30	70	Approx. 250	Approx. 3kg
PH8HFF-S3-NPT-T-□□-JS	1NPT	70	10	6	60.5	26	26	69	Approx. 245	Approx. 5.6kg

□ Mounting Bracket (Option Code : /MF1) Weight : Approx. 0.5 kg

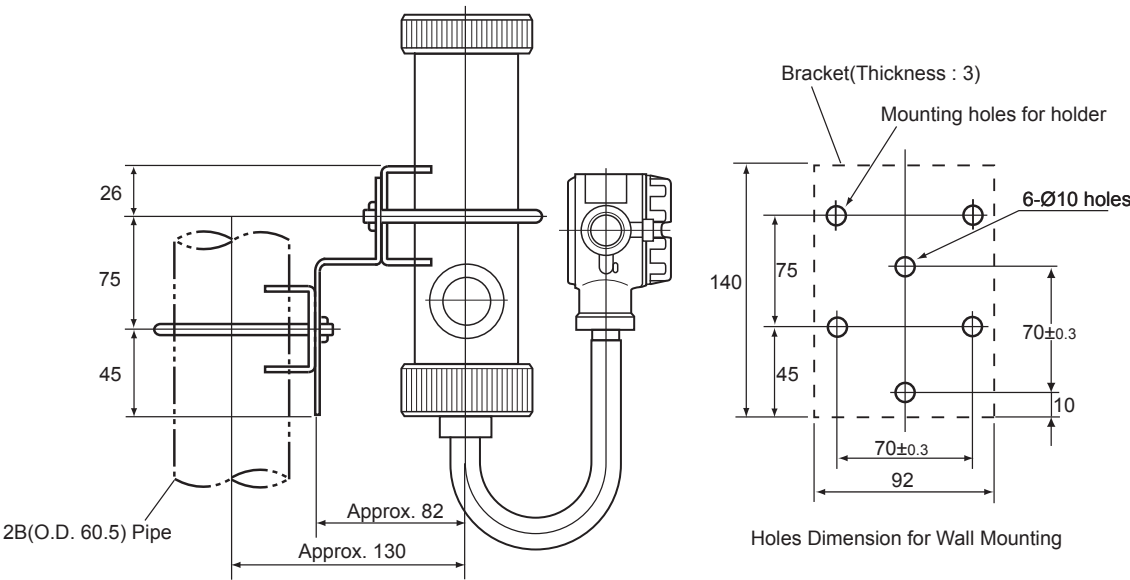
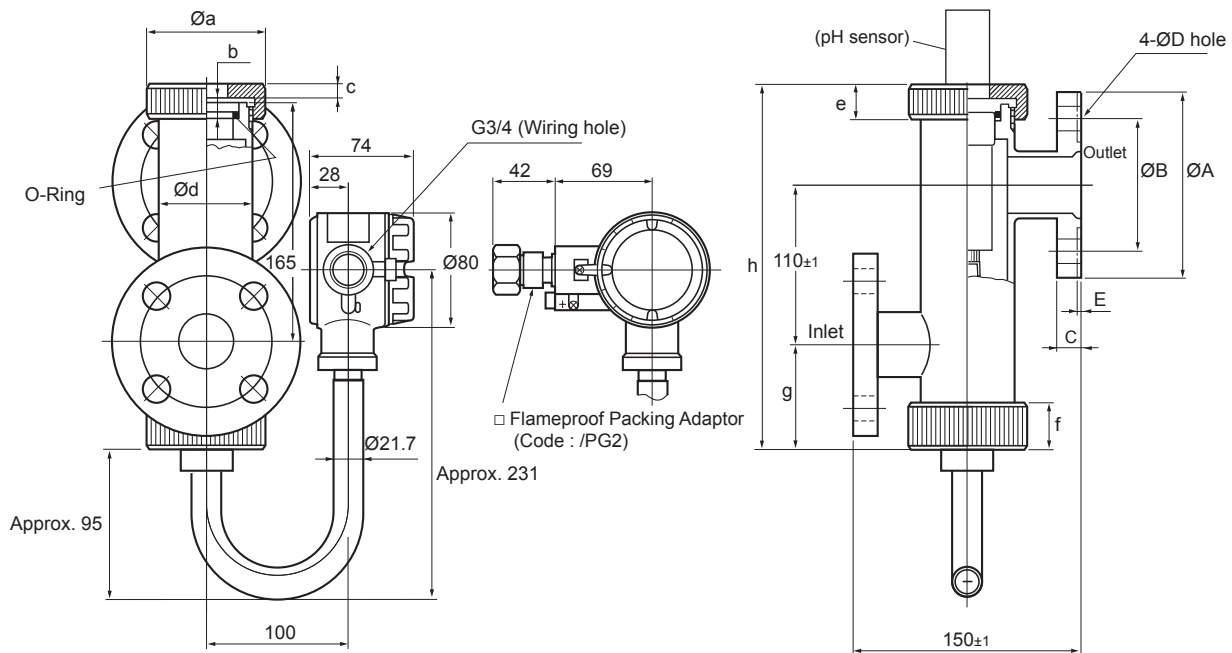


Figure 1.3 Flow-Through Type Holder (with Fameproof type Ultrasonic Cleaner)

4. PH8HFF - □□ - □1□ - T - □□ - JS

UNIT: mm



Model and Code	A	B	C	D	E	a	b	c	d	e	f	g	h	Weight
PH8HFF-PP-J10-T-□□-JS	125	90	14	19	-	80	9	11	60	25	30	70	Approx. 250	Approx. 3.2kg
PH8HFF-S3-J10-T-□□-JS	125	90	14	19	-	70	10	6	60.5	26	26	69	Approx. 245	Approx. 7.6kg
PH8HFF-PP-A15-T-□□-JS	108	79.4	14.2	15.7	-	80	9	11	60	25	30	70	Approx. 250	Approx. 3.2kg
PH8HFF-S3-A15-T-□□-JS	108	79.2	14.2	15.7	2	70	10	6	60.5	26	26	69	Approx. 245	Approx. 7.6kg

□ Mounting Bracket (Option Code : /MF1)

Weight : Approx. 0.5 kg

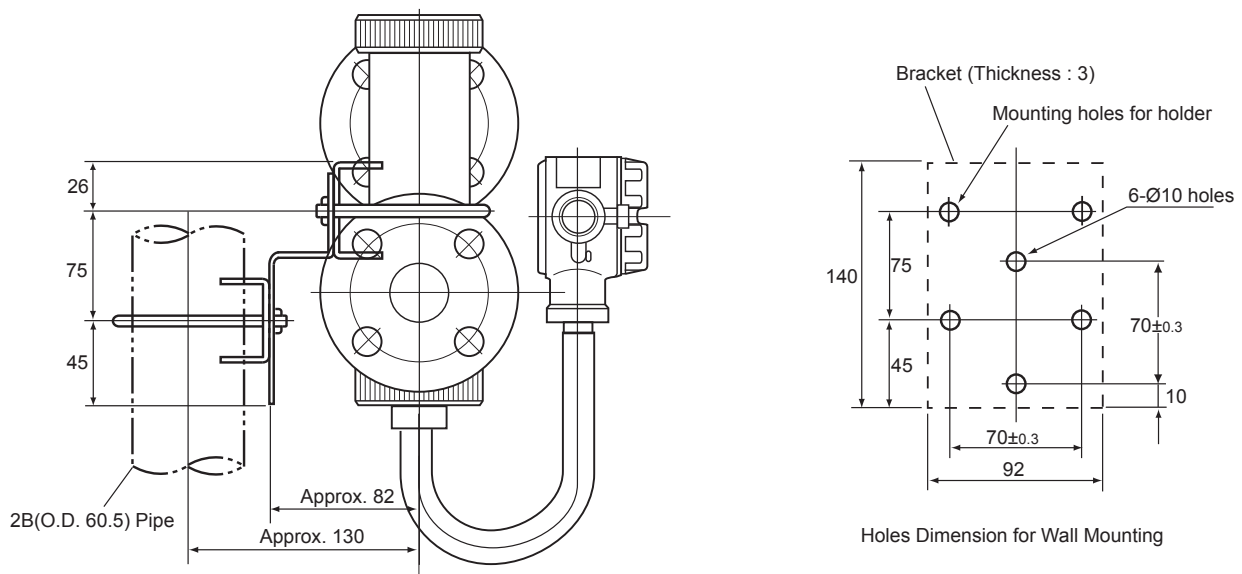
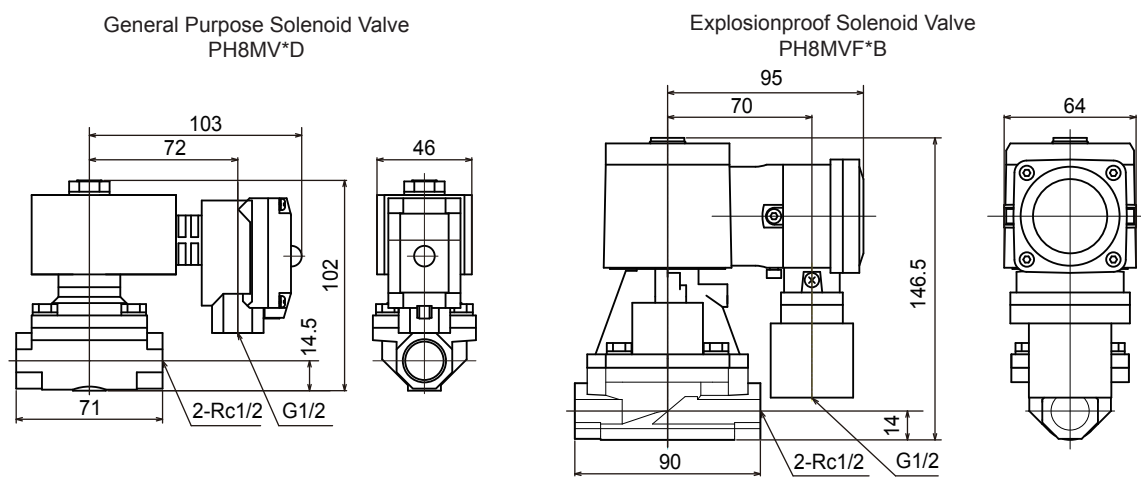


Figure 1.4 Flow-Through Type Holder (with Flameproof type Ultrasonic Cleaner)

5. Solenoid Valve

UNIT: mm



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.

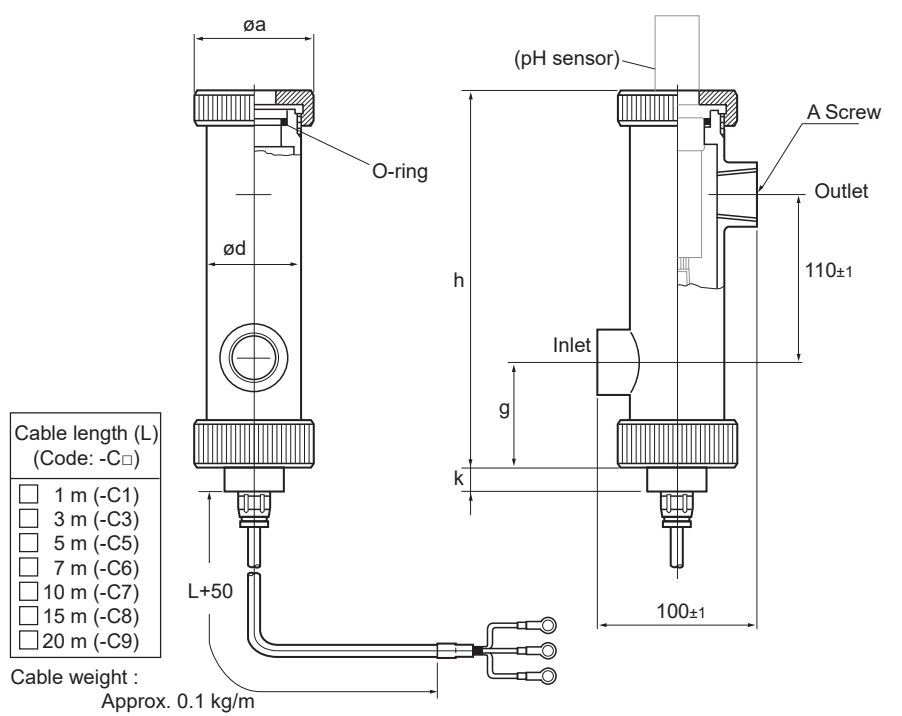
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Figure 1.5 Solenoid Valve for Jet & Brush Cleaning

Drawings

PH8HF-□□-□PT-T-□□-C□
Flow-Through Type Holder
(Screw connection, Ultrasonic cleaning)
[Style: S2]

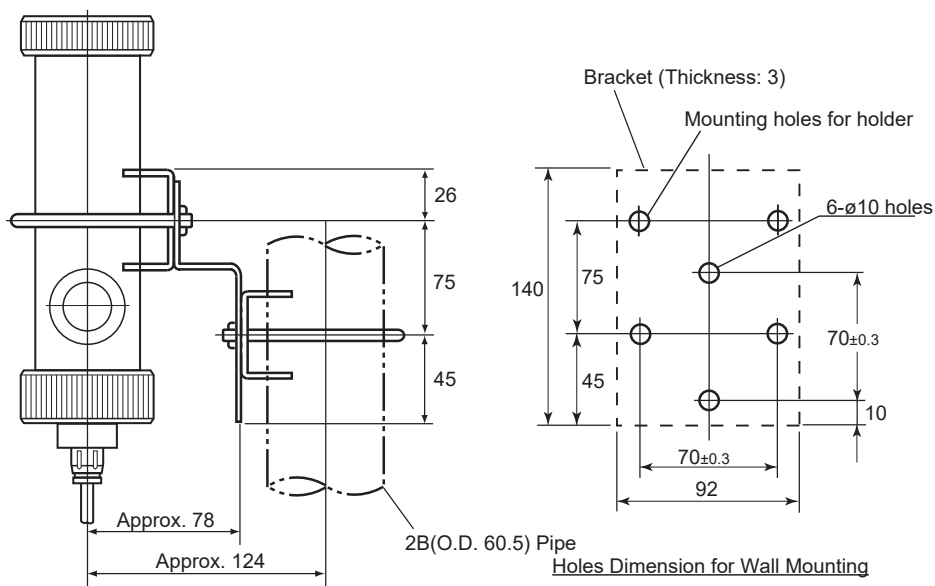
Unit: mm



Model and Code	A Screw	ϕa	ϕd	g	h	k	Weight
PH8HF-PP-JPT-T-□□-C□	Rc1	80	Approx. 60	Approx. 70	Approx. 250	15	Approx. 1.5 kg
PH8HF-S3-JPT-T-□□-C□	Rc1	70	Approx. 60	Approx. 70	Approx. 245	17	Approx. 4.1 kg
PH8HF-PP-NPT-T-□□-C□	1NPT	80	Approx. 60	Approx. 70	Approx. 250	15	Approx. 1.5 kg
PH8HF-S3-NPT-T-□□-C□	1NPT	70	Approx. 60	Approx. 70	Approx. 245	17	Approx. 4.1 kg

☐ Stainless Steel Mounting Bracket (Option Code : /MF1)

Weight : Approx. 0.5 kg



Unless otherwise specified, differences in the dimensions are specified as: General tolerance = $\pm$ (Criteria of tolerance class IT18 in JIS B0401-1998)/2.