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CM2-PTG100-2001

Pressure Transmitter
Bravo light PTG60_/70_

User's Manual

Azbil Corporation

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Safety Precautions

Introduction

For the safe operation of this product, it is indispensable to install and operate it according to the prescribed procedures and to perform periodic maintenance. Be sure to read and understand the safety precautions given in this operation manual before beginning installation, operation and maintenance.

Inspection

- When this product is delivered to you, inspect it to ensure that no damage has been sustained in transport. Before this product is shipped from the factory, it is subjected to various tests based on a rigorous quality control program. If you find any deficiency or defect with respect to quality or specifications, please inform us using the model name and product No.

- An identification plate is affixed to this product. Please ensure immediately that it is affixed to the product delivered to you.

- Make sure that all items shown below are included in the delivered shipment:
  (1) Main body of the transmitter
  (2) Packing sets for wiring (for JIS explosion proof type): 1packing, 2 washers
  (3) Blind conduit plug (standard accessory)
  (4) Gasket (if process connection uses a male screw)
  (5) 1 hexagonal wrench (standard accessory)
  (6) 2-inch pipe/wall mounting hardware set (option)
  (7) Unit seal (for products equipped with a digital indicator, option)
  (8) Operation manual

Handling Precautions

The following symbols are shown in this operation manual so that the user can use this product safely. Follow the instructions provided under the symbols.

⚠Warning This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the user.

⚠Caution This symbol indicates a potentially hazardous situation which, if not avoided, could result in minor injury to the user or damage to physical property.

For safe operation of this product, please follow the following safety instructions. Yamatake-Honeywell will not assume any liability for damages arising from failure to follow these safety instructions.

⚠Warning

- Perform wiring work with the power source to this product disconnected. Otherwise, electric shock may result.
- Do not energize this product while the cover is open in an explosion-protected area. Energizing this product with the cover open may cause an explosion.

Installation Precautions (General Precautions)

- Installation, connection, inspection and maintenance work must be performed by experienced personnel having mastered knowledge and techniques related to the system and this product.
- Ensure that this product can be used with other equipment, specifically with respect to the compatibility of specifications. Excessive pressure may be generated if the range is inappropriate, causing damage to this product.
- Do not use a transceiver within an the area of 2 meters around this product, or around the cable used to connect this product. Using a transceiver within this 2-meter area will result in this product malfunctioning.
- Mistakes in wiring must be avoided. Mistaken connections may result in equipment failure.
- Ensure that the crimp contacts on the terminal wires do not touch the adjacent terminals.
- If this product has functional trouble, its electrical output may become abnormal, causing an abnormal response. If equipment safety will be impaired in such a situation, this product should be used with appropriate consideration given to failsafe design, including separation of the controller from the limiter, use of a duplex system, and redundancy design.
- Do not remove seals affixed to welds and to positions for grounding cables until all pipes are installed.
- The transmitter intends to be used in an environment existing at locations characterized by a separate power network, in most cases supplied from a high or medium voltage transformer, dedicated for the supply of installations feeding manufacturing or similar plants with one or more of the following conditions:
  - frequent switching of heavy inductive or capacitive loads;
  - high currents and associated magnetic fields;
  - presence of Industrial, Scientific and Medical (ISM) equipment (for example, welding machines)

Installation Precautions (for JIS explosion -proof type)

- Installation and connection should be performed following guidelines for industrial safety research and technology "Guide to Industrial Explosion-proof Electrical Equipment for Users" (published by Industrial Safety Institute of the Ministry of Labor, Japan.) or equivalent national standards.
- This structure of this product is qualified as a special pressure-resistant explosion-proof structure (Exds II CT4). It must be installed in a location where the requirements for this structure can be met.
- Use a grounding cable and the set of packings for wiring that are supplied as optional parts with this product. Using any other parts will void the explosion-proof qualification of this product.
- After the wires are connected, please close the cover and tighten the set-screws that hold the cover in place. One requirement for the explosion-proof structure is that the cover must be locked.

Contents

1. Descriptions of Parts

Descriptions of parts

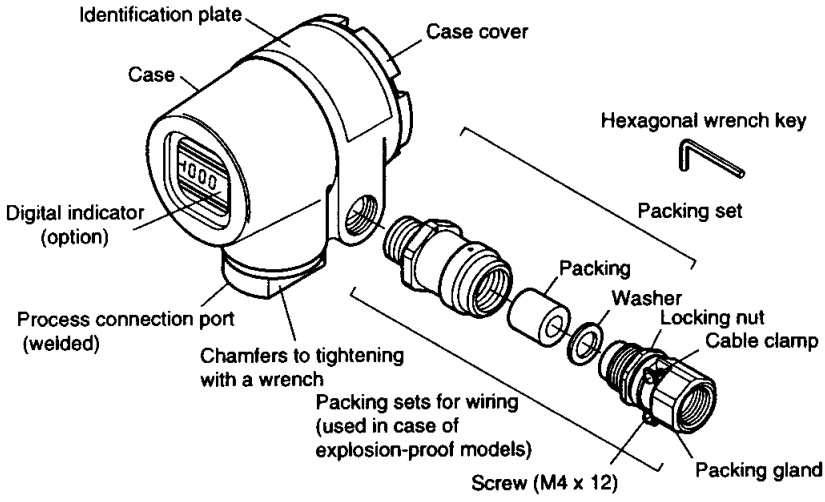


Fig. 1-1 General view (front view)

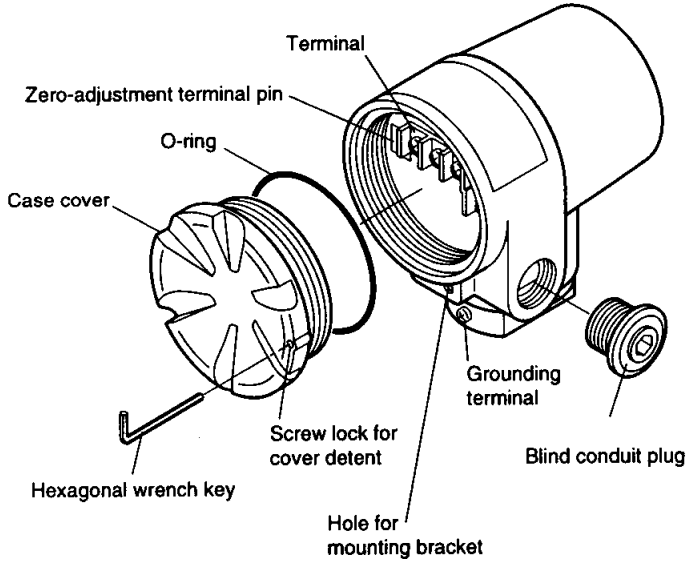
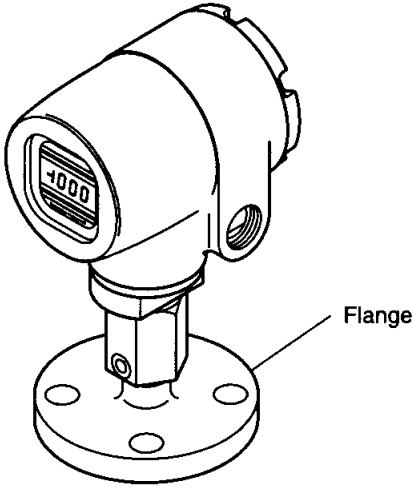
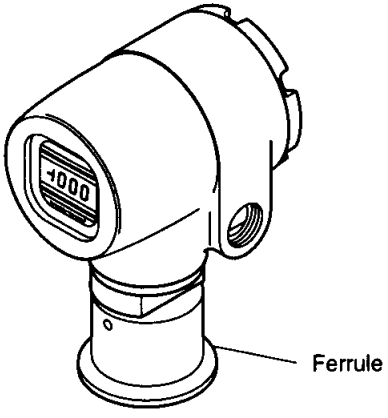


Fig. 1-2 General view (rear view)

Description of parts (For flange mount type;PTG□0F)



(for ferrule(sanitary) mount type;PTG□0S)



Descriptions of parts (for screw connection type)

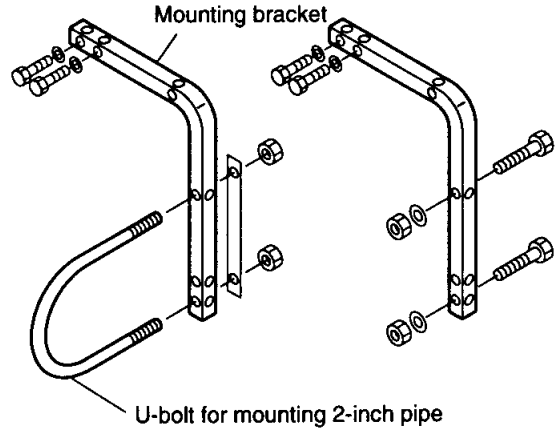


Fig. 1-3 Mounting bracket (option)

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2. Installation

Installation Precautions

2.1 Installation of screwed type transmitters (PIG□0G)

Safety Precautions

⚠ Caution

- After the transmitter is installed, do not use it as a foothold or for other improper purposes. Doing so may cause damage to equipment and personal injury.
- Hitting the glass portion of the indicator with a tool may break the glass and cause personal injury. Caution must be exercised (for products equipped with digital indicators).
- Be careful when installing the transmitter if the process fluid temperature is high. The heat of the fluid and/or the heat radiated from the piping may cause the transmitter body to become heated high.

Installation Precautions

- When installing the transmitter, position and secure the gasket so that it does not protrude from where the transmitter is connected to the process (where an adapter flange is coupled to a connecting pipe). If the gasket sticks out, liquid leakage or output error may result.
- Do not use the transmitter under any operating conditions not specified in the equipment specifications (i.e., rated pressure, connection standard, rated temperature, rated vibration and rated humidity). Using this product under incorrect operating conditions may cause damage to this product and cause leakage or major accident.
- Perform wiring work in hazardous area by following work methods specified in the explosion-protection guidelines.
- Connect the transmitter to a good ground. If it is not grounded or if the ground is inadequate, output error will occur. Not grounding the transmitter is a violation of regulations. Be careful of your footing during installation and always wear safety shoes.
- This product can be installed directly on the pipe (direct mounting), on a 2-inch pipe using the mounting bracket (optional part), or on a wall.

Installation Precautions

- Connecting pipe arrangement
  Piping conditions differ depending on the process.
  Liquid: Establish a tap alongside the line and install the transmitter next to or beneath the tap to allow gas to return to the inside of the process line.
  Gas: Establish a tap on top of or alongside the line and install the transmitter next to or above the tap to allow liquid to return to the inside of the process line.
  Steam: Establish a tap alongside the process line and install the transmitter beneath that tap to allow condensate to return through the connecting pipe.

Handling Precautions

- Securely wind sealing tape around the joint of the connecting pipe to prevent process leaking.
- Using wrenches, securely tighten the wetted part and connecting pipe of the transmitter. In so doing, use the wrenches to hold the parallel chamfers at the wetted part. Do not tighten by holding the case of this productas this may cause damage to the transmitter. Avoid holding the case when tightening without a wrench.(See Fig. 2-1.)
- If this product is mounted with its front side facing down, water, dirt and other sediment will pool in the wetted part and degrade measurement accuracy. Therefore, avoid installing the transmitter with the front side facing down.
- If the temperature of the measured process exceeds 110°C (230°F), install a siphon or take other measures to prevent the temperature at the wetted part from exceeding 110°C (230°F).
- Install the transmitter in a location where liquid to be measured will not freeze.
  If the transmitter must be installed in a location where liquid to be measured may freeze, take measures to keep it warm or to apply heat to prevent freezing.
- Install the transmitter in a location where there will be no impact pressure or excessive pressure (such as water hammering) and where no vibration or impacts will occur.
- During filling the connecting pipe with liquid, 10 MPa or an equivalent pressure may be applied. If this product is screwed into a connecting pipe during filling, critical damage to the transmitter may result. (See Fig. 2-2.)

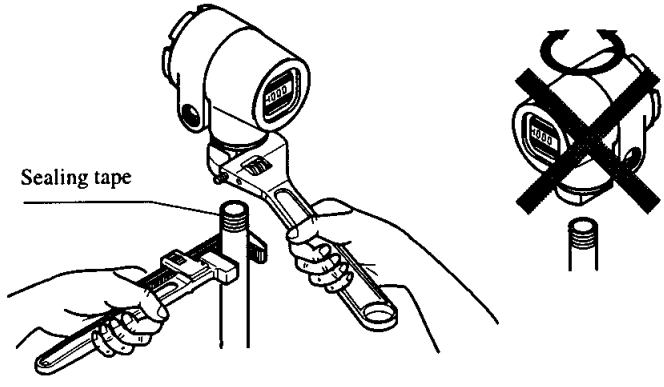

Fig. 2-1 Installation precaution 1

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Handling Precautions *(continued)*

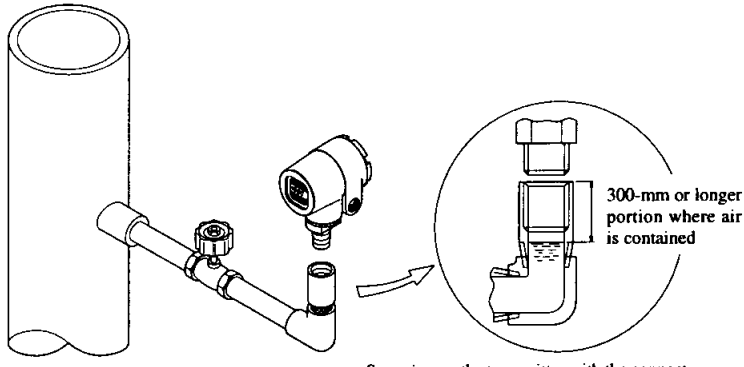


Fig. 2-2 Installation precaution 2

Direct mounting on the Process Line

Handling Precautions

- When mounting this product directly on the process line, full consideration must be given to the weight of this product, the temperature at the wetted part and vibration.
- The method chosen for connecting the connecting pipe must be appropriate for the particular process.

Fig. 2-3 shows one example of the direct mounting method.

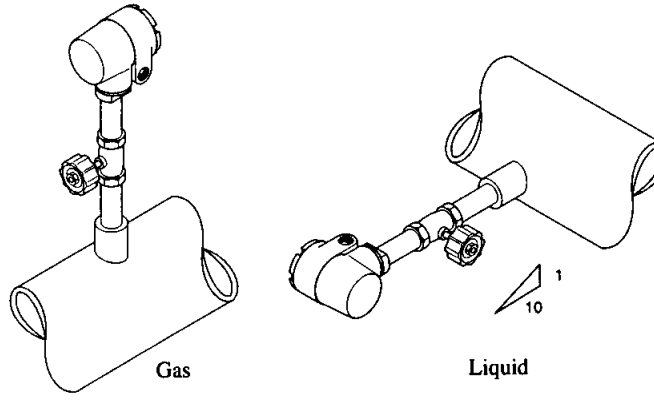


Fig. 2-3 Example of the direct mounting method

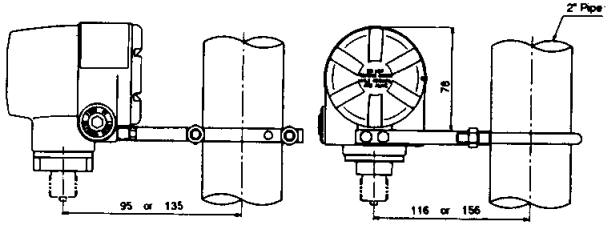
Installing the Transmitter Using the Mounting Bracket

Installing the Transmitter Using the Mounting Bracket

Mounting Bracket is supplied with the transmitter. If you require additional mounting hardware, it is sold separately. For further information, refer to 7, Parts list. With the supplied mounting Bracket, this product can be installed on a 2-inch pipe or on a panel.

Fig. 2-4 shows one example of installing the transmitter using the mounting Bracket.

Installing the transmitter on a 2-inch pipe



Installing the transmitter on a panel

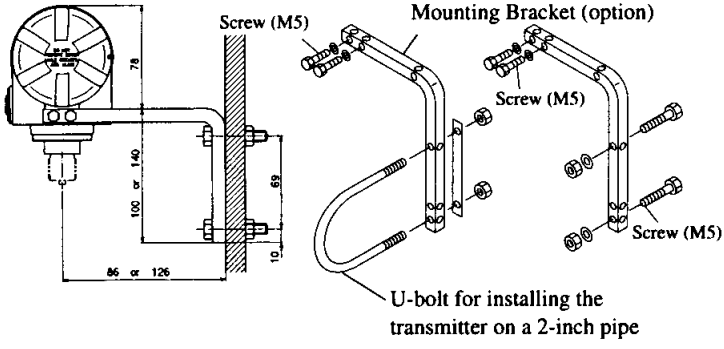


Fig. 2-4 Example of installing the transmitter using the mounting Bracket

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Installing the Transmitter Using the Mounting Bracket *(continued)*

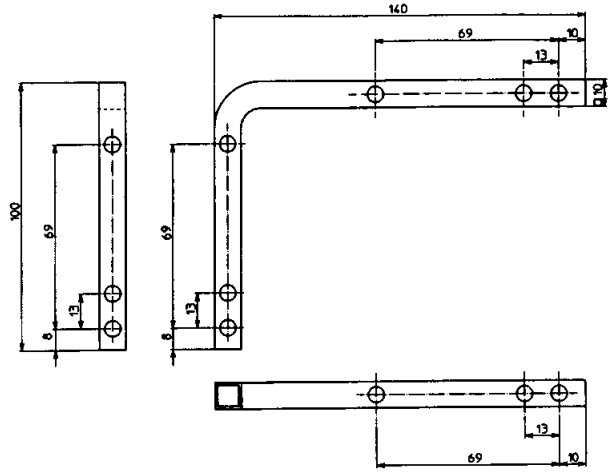

Fig. 2-5 Dimensions of the mounting Bracket

2.2 Installation of flange mount type transmitters(PTG□0F)

Safety Precautions

⚠ Caution

- After the transmitter is installed, do not use it as a foothold or for other improper purposes. Doing so may cause damage to equipment and personal injury.
- Hitting the glass portion of the indicator with a tool may break the glass and cause personal injury. Caution must be exercised (for products equipped with digital indicators)
- Be careful when installing the transmitter if the process process temperature is high. The heat of the fluid and/or the heat radiated from the piping may cause the transmitter body to become heated high.
- Fasten the flange with the torque as specified to prevent process leakage from the flange connection.
  (Refer to Appendix 2 for the details of the torque specification.)

Installation Precautions

- When installing the transmitter, position and secure the gasket so that it does not protrude from where the transmitter is connected to the process (where an adapter flange is coupled to a connecting pipe). If the gasket sticks out, liquid leakage or output error may result.
- Do not use the transmitter under any operating conditions not specified in the equipment specifications (i.e., rated pressure, connection standard, rated temperature, rated vibration and rated humidity). Using this product under incorrect operating conditions may cause damage to this product and cause leakage or major accident.
- Perform wiring work in hazardous area by following work methods specified in the explosion-protection guidelines.
- Connect the transmitter to a good ground. If it is not grounded or if the ground is inadequate, output error will occur. Not grounding the transmitter is a violation of regulation. Be careful of your footing during installation and always wear safety shoes.
- This product can be installed directly on the nozzle of the pipe (direct mounting).

Precautions for Handling

- Mounting procedure
  The mounting procedure is different depending upon the state of the process.
  - Liquid: Mount the nozzle in the pipe side and install the transmitter sideways to or downside of the nozzle so that no deposit is produced and the gas generated returns to the process piping.
  - Gas: Mount the nozzle in the top or the side of the process pipe and install the transmitter side by side with or the upper side of the nozzle so that the process liquid returns to the process piping.
  - Steam: Mount the nozzle in the pipe side and install the transmitter at the downside of the nozzle so that the condensed water is reserved in the conduit piping.
- Weld or wind with sealing tape the piping joint surely so that no process leakage occurs.
- Deposit such as water or dusts would be reserved at the wet part if the transmitter is installed faced-down. This results in incorrect measurement.
- When measuring process fluid with its temperature above 110–C, use a siphon so that the temperature of the wet part of the transmitter does not exceed 110–C.
- Install the transmitter where the process may freeze.
  Take a measure for thermal insulation if it is feared that the process may freeze.
- Install the transmitter where any shock or excessive pressure like water hammer does not occur, preferably, where the transmitter suffers less vibration or shock.

Mounting of flange mount type transmitters

Mounting Precautions
- Mount the transmitter considering its weight, the temperature at its wetted part and possible vibration.
- Connect the conduit to satisfy the process requirements.

Example of Mounting Figure 2.4 below shows a mounting example of a flanged type transmitter.

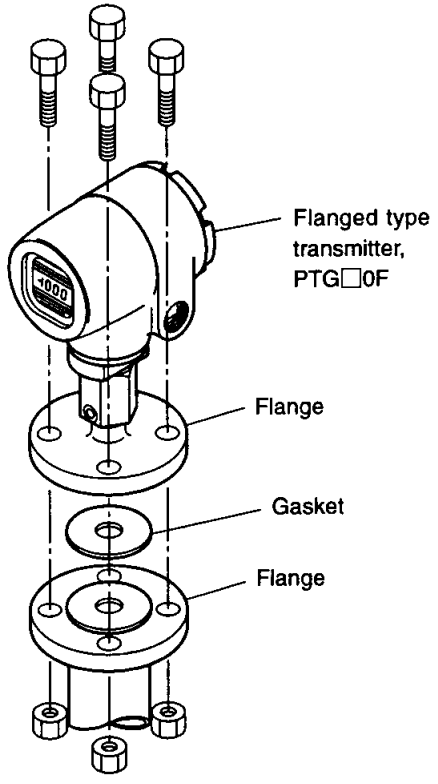

Fig. 2.6 Example of Mounting Flanged type Transmitter

2.3 Installation of sanitary type transmitters (PTG□0S)

Safety Precautions

⚠ Caution

- After the transmitter is installed, do not use it as a foothold or for other improper purposes. Doing so may cause damage to equipment and personal injury.
- Hitting the glass portion of the indicator with a tool may break the glass and cause personal injury. Caution must be exercised (for products equipped with digital indicators)
- Be careful when installing the transmitter if the process temperature is high. The heat of the process and/or the heat radiated from the piping may cause the transmitter body to become heated high.

Installation Precautions

- When installing the transmitter, position and secure the gasket so that it does not protrude from where the transmitter is connected to the process (where the transmitter is connected with Ferrule flange). If the gasket sticks out, process leakage or output error may result.
- Do not use the transmitter under any operating conditions not specified in the equipment specifications (i.e., rated pressure, connection standard, rated temperature, rated vibration and rated humidity). Using this product under incorrect operating conditions may cause damage to this product and cause leakage or major accident.
- Perform wiring work in hazardous area by following work methods specified in the explosion-protection guidelines.
- Connect the transmitter to a good ground. If it is not grounded or if the ground is inadequate, output error will occur. Not grounding the transmitter is a violation of regulation. Be careful of your footing during installation and always wear safety shoes.
- Mounting procedure

  The mounting procedure is different depending upon the state of the process.

  Liquid: Mount the nozzle in the pipe side and install the transmitter sideways to or downside of the nozzle so that no deposit is produced and the gas generated returns to the process piping.

  Gas: Mount the nozzle in the top or the side of the process pipe and install the transmitter side by side with or the upper side of the nozzle so that the process returns to the process piping.

  Steam: Mount the nozzle in the pipe side and install the transmitter at the downside of the nozzle so that the condensed water is reserved in the conduit piping.

Precautions for Handling

- Weld or wind with sealing tape the piping joint surely so that no process leakage occurs.
- Deposit such as water or dusts would be reserved at the wet part if the transmitter is installed faced-down. This results in incorrect measurement.
- When measuring process with its temperature above 110–C, use a siphon so that the temperature of the wet part of the transmitter does not exceed 110–C.
- Install the transmitter where the process may freeze.
  Take a measure for thermal insulation if it is feared that the process may freeze.

Mounting of sanitary type transmitters

Mounting Precautions

- Mount the transmitter considering its weight, the temperature at its wet part and possible vibration.

Example of Mounting

Figure 2.5 below shows a mounting example of a sanitary type transmitter.

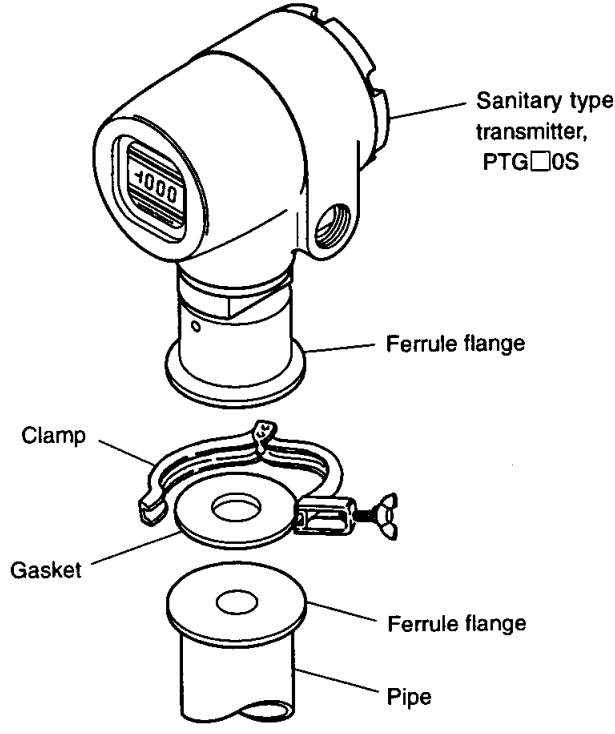

Fig. 2.5 Example of Mounting Sanitary type Transmitter

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3. Wiring

Wiring Precautions

⚠ Caution

- Performing wiring work with wet hands or while the wiring is energized may result in electric shock to personnel. Please perform wiring work with dry hands, always wear gloves and be sure to disconnect the power to the product before performing work.

- Perform the wiring work correctly while carefully checking the specifications. Incorrect wiring will cause equipment damage or malfunction.
- Use the power supply properly based on the specifications. Connecting a different power supply will cause equipment damage.
- This product is designed based on a two-wire wiring system. The power supply line also functions as a signal line. The wires are routed through the conduit hole on the side face of the transmitter and one connected to the terminals. The conduit connection is stopped up using a sealing agent or by fitting a sealing plug, so that water cannot leak into the oscillator case. The wires to be connected to the terminals must be drawn in from below the position where the connection port is located.
- Grounding wire
  The transmitter has two grounding terminals: one at the terminal and the other on the outside face. Either terminal can be used. The grounding terminal must be connected to a class 3 ground (grounding resistance 100Ω or less) or better ground.

For JIS Explosion-proof Wiring

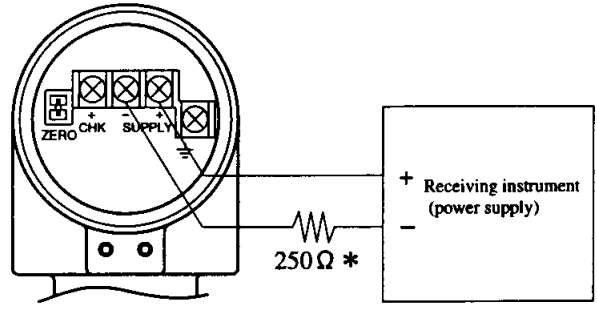
The model (PTG70□) conforming to the Japan Industrial Standard (JIS) explosion-proof regulations is optionally available, and is qualified an explosion-proof structure (Exds II CT4).

⚠Warning

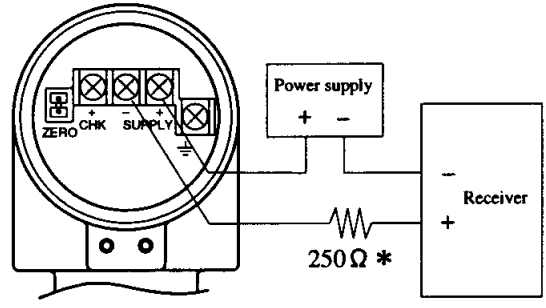
- Be sure to perform wiring work with the power turned off. If the power is turned on, electric shock to personnel may result.
- Turning on the power in an explosion-protected area while the cover is open may result in an explosion.

- Be sure to use the grounding cable and set of pressure packings shipped with the transmitter. Using a cable or packing other than the ones shipped with the product will void the explosion-proof qualification of the transmitter.
- After the wires are connected, be sure to close the cover and tighten the screw lock that hold the cover detent in place. One requirement for an explosion-proof structure is that the cover must be locked.
- Installation and connection are to follow the guidelines for industrial safety research and technology "Guide to Industrial Explosion-proof Electrical Equipment for Users" (published by Industrial Safety Institute of the Ministry of Labor, Japan) or equivalent.

Wiring Diagram



a. Connection to a receiving instrument with a built-in power supply



b. Connection to a receiving instrument that uses an external power supply

Note: *) A load resistance of more than 250Ω is required when the S-SFC II is used for communication.

Fig. 3-1 Wiring diagram

Power Supply and External Load Resistance

External load resistance should be determined in relation to the voltage of the power supply so that both fall inside the diagonally-shaded area.
External load resistance is the total resistance connected to the output terminals of the transmitter, which includes the resistance in the cables forming the loop, the internal resistance in instruments connected between the transmitter and the power supply, etc.
The abscissa axis shown in the figure is the voltage of the transmitter's power supply and the ordinate axis is the external load resistance.

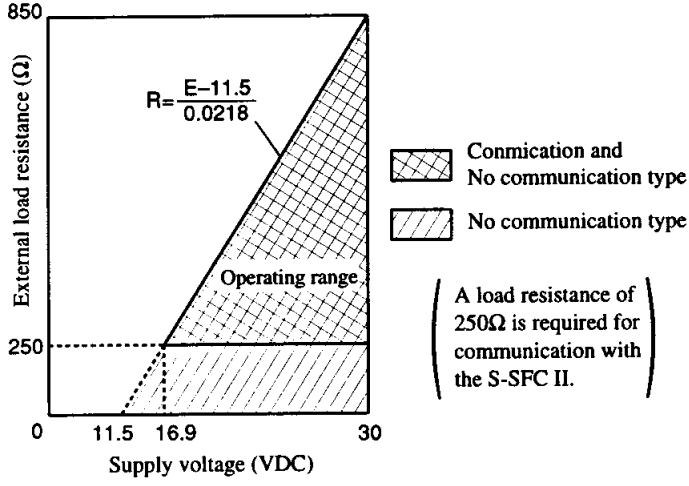


Fig. 3-2 Relationship between power supply voltage and external load resistance

4. Calibration

No span interference will occur when using this product after its zero-point calibration is complete. That is, only zero-point adjustment is needed for a complete calibration.

Zero Adjustment

Caution: Zero adjustment must be performed in non hazard area.

Calibration procedure

1. Connect the power supply to the transmitter.
2. Apply the pressure at which you the output from the transmitter is to be 0%. In order to set this 0% output to 0 kPaG, release any gas or liquid from the wetted part and leave it open to atmospheric pressure.
3. This product has two zero adjustment terminal pins.
   Using a flat-bladed screwdriver, allow the two terminal pins to contact each other simultaneously (for about one second). (For products equipped with a built-in digital indicator, when two terminal pins contact each other the code"ZERO" will appear on the indicator.)
4. Step 3 above completes zero adjustment.

Test terminal

When checking the output from the transmitter during maintenance, connect an amperemeter to the "CHK+" terminal and to "-" of the transmitter's "SUPPLY" terminal.

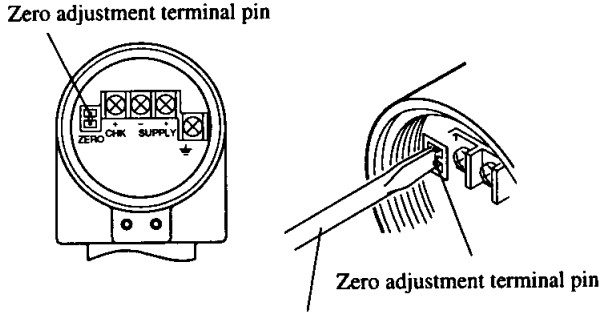


Fig. 4-1 Zero adjustment

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5. Maintenance and Troubleshooting

Maintenance Precautions

⚠Warning

- If this product must be disconnected from the process for the purposes of maintenance, careful attention must be paid to residual measured material and to residual pressure. This warning is to inform you of the risk of personal injury that may result from the generation of gas or blowout of liquid.
- When draining this product through a vent hole, check the direction of the gas or liquid being drained through a vent hole. This precautionary check is necessary to protect you from exposure to the gas or liquid being drained. Scalding or other harmful physical effects may result from exposure to gas or liquid.
- While this product is in operation in an explosion-proof area, opening the cover of the equipment may result in an explosion. Ensure that the cover is kept closed during operation.

- This product is manufactured and shipped under Yamatake-Honeywell's rigorous quality control system. Do not modify this product. Doing so will cause critical damage to the product.

Maintenance

Check the points shown below, on a periodic basis:

- Has the case, cover or grounding cable been damaged?
- Are the grounding cable, cover or cover-detent screws loose ?
- Are the terminal screws loose?
- Is there any deterioration in the O-rings fitted to the set-screws holding the cover in position?
- Is there any leakage in the connection pipes?

Troubleshooting

If this product does not function or if it malfunctions, release gas or liquid from the product, leave it open to the atmosphere, and check the following items:

- Are there any loose or broken wires?
- Are the readings correct for power source voltage and load resistance?
- Is there any extraneous matter in the wetted part?
- Is any dirt or debris clogging the connecting pipe? Is the gate valve fully open?

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6. Variable Range Type

6.1 Operation by S-SFC II

Functions of the S-SFC II

Overview

Using the S-SFC II, you can communicate with the transmitter via a signal line. Starting measurement, reading measured data, setting (changing) measurement conditions, and ending measurement can all be performed using the S-SFC II. All communications with the transmitter are shown in the data display window and can be printed out as required.

Descriptions of Parts

Descriptions of Parts

Fig. 6-1 shows the structure of the S-SFC II and describes its parts. The S-SFC II model shown in this figure has a printer. By removing the printer section from the structure, you can visualize the appearance of the S-SFC II model without a printer.

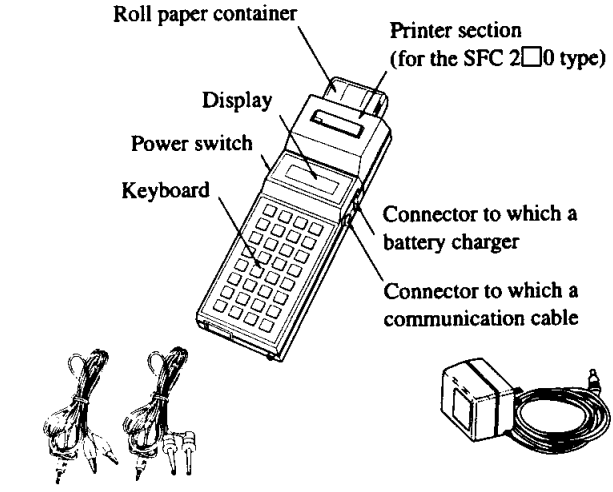


Fig. 6-1 Descriptions of S-SFC II parts

S-SFC II Keyboard

Fig. 6-2 shows the keyboard of the S-SFC II.

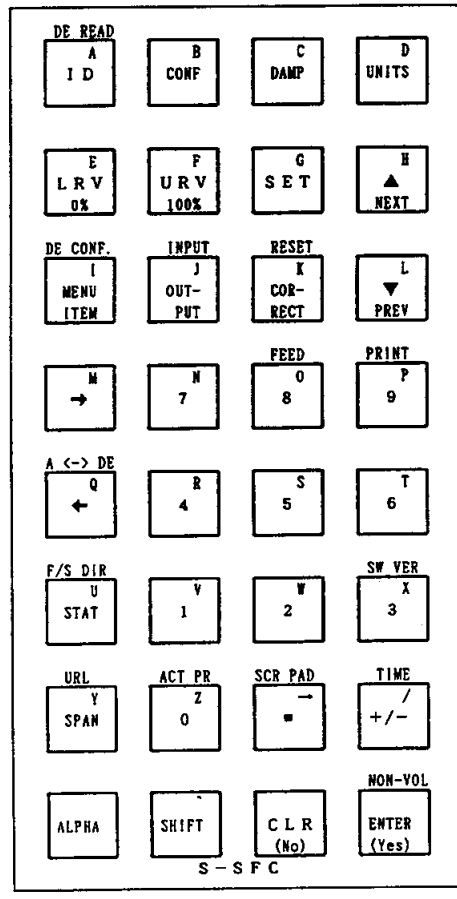


Fig. 6-2 S-SFC II Keyboard

How to Connect the S-SFC II to a transmitter

Fig. 6-3 shows where and how the S-SFC II is connected to the transmitter. Connect the communication cable of the S-SFC II to the correct transmitter terminal as shown in Fig. 6-3.

Red wire: Supply+ terminal

Black wire: Supply– terminal

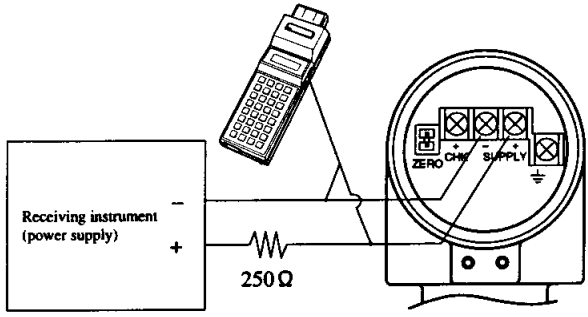


Fig. 6-3 Descriptions of S-SFC II parts

Rules for Interaction with the Screen

The S-SFC II can be operated interactively, that is, you can respond to prompts and get information from the transmitter, via the keypad. The rules shown below must be followed to operate the S-SFC II in an interactive manner:

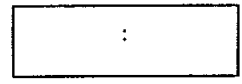
- If you want to respond "Yes," to a question on the screen, press the [ENTER] key. Pressing the [ENTER] key on the special-function screen will bring you to the next level in the communication hierarchy.

- If your response to a questionon the screen is "No," press the [CLR] key. Pressing the [CLR] key on the special-function screen will bring you back to the previous level in the communication hierarchy. Pressing and holding down the [CLR] key will return you to the initial screen.

- When selecting a different function in the same hierarchy, press either the [▲ NEXT] key or the [▼ PREV] key.

Caution

If a ":" mark shown below appears in the eighth digit at the top of the S-SFC II screen, immediately discontinue operation of the S-SFC II and recharge its battery. If you ignore this mark and continue operation, the S-SFC II battery will be overdischarged, and that battery will be damaged and no longer chargeable.



Displaying and Changing Settings

Overview

Parameters That Can Be Displayed and Changed

By operating the S-SFC II, you can display and change the parameters shown below.

Note: These parameters can be displayed and changed during measurement.

○ : can be displayed or changed

– : cannot be displayed or changed

Parameter	Display	Change
Tag number	○	○
Lower-limit value of range setting	○	○
Upper-limit value of range setting	○	○
Span of range setting	○	*
Units of measurement	○	○
Damping-time constant	○	○
Direction of output overshoot during abnormality	○	–
PROM number	○	–
Software version	○	–
Temperature at the sensor	○	–

- Although this parameter cannot be changed directly, LRV or URV operation causes this parameter to change accordingly.

Starting Communication

⚠Warning

- Before starting communication with the transmitter via the S-SFC II, switch over the process control loop to manual control.
- If communication with the transmitter begins while the process control loop is still in the auto control mode, abrupt changes in output may occur and the operating status may become dangerous.

Procedure

The procedure for starting communication with this product by operating the S-SFC II is as follows:

Step	Description	S-SFC II screen
1	Check to make sure that the process is in the manual control mode.	Nothing is displayed
2	By referring to Fig. 3-1, connect the S-SFC II to this product.	
3	Set the power switch of the S-SFC II to ON and press the key.	LOOP IN MANUAL? PRESS ID
4	Press the key. Notes: • "DSTJ" is an abbreviation commonly used inside Yamatake-Honeywell to indicate a pressure/differential pressure tronsmitter. Because this product and a DSTJ 3000 (the trade name that is used in Japan instead of ST 3000) use the same communication system, "DSTJ" is displayed on the screen. • The tag number is set at xxxxxxxx when the transmitter is delivered to the customer.	DSTJ TAG NO. LIN GP XXXXXXXX

Displaying and Changing the Tag Number

Procedure

Display or change the tag number by the following procedure. This example is for the case of changing FIT-1234 to ABC-5678.

Step	Description	S-SFC II screen
1	Press the [D] key. Branching: • If you will not change the tag number, press the [CLR] key to end this procedure. • If you want to change the tag number, proceed to step 3.	DSTJ TAG NO. LIN GP FIT-1234
2	Press keys [ALPHA], [D], [ECHO] and [CHAR] in that order. Note: • If the wrong key is pressed, move the cursor backward by pressing the [ALPHA] key and the [←C] key and then press the [ALPHA] key again. Then restart the input.	DSTJ TAG NO. LIN GP ABC
3	Press the [ALPHA] keys and then the [+/-] key.	DSTJ TAG NO. LIN GP ABC–
4	Press keys [5], [6], [7] and [8] in that order.	DSTJ TAG NO. LIN GP ABC–5678

(To be Continued on the next page)

Procedure
(continued)

Step	Description	S-SFC II screen
5	Press the [ENTER] key. Branching: Pressing the [CLR] key and before pressing the [ENTER] key will take you back to the previously set tag number.	DSTJ TAG NO. WORKING... DSTJ TAG NO. LIN GP ABC-5678
6	Press the [SHIFT] key and then the [ENTER] key. Result: • Data has been stored in the transmitter.	SHIFT- DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

Displaying the Input Pressure Value

Procedure

Display the pressure value applied to the transmitter by the following procedure:

Step	Description	S-SFC II screen
1	Press the SHIFT and OUT/PV keys. Result: • In this example, the pressure is 4 MPa.	INPUT FIT-1234 4.000 MPa

Displaying the Transmitted Output (%)

Procedure

Display the output transmitted by the transmitter by the following procedure.

Step	Description	S-SFC II screen
1	Press the OUT/PV key. Result: • In this example, the output is 50%.	OUTPUT FIT-1234 50.00%

Displaying or Changing the Upper- and Lower-limit Values for Range Setting

Overview

Display or change the upper- and lower-limit values for range setting and the pressure corresponding to the desired span by the following procedure.
The following case is described here as an example:

- Lower-limit value : 0 MPa changed to 2 MPa
- Upper-limit value : 5 MPa changed to 7.5 MPa
- Span : 5 MPa changed to 5.5 MPa

Notes:

- Span is automatically determined by the difference between upper- and lower-limit values. The span is displayed but cannot be changed directly.
- When changing the upper- and lower-limit values for range setting, be sure to change the lower-limit value first and then an upper-limit value.

Displaying the Set Range

Displaying the Set Range

Step	Description	S-SFC II screen
1	• Press the [LRV] key to display the lower-limit value.	LRV FIT-1234 0.0000 MPa
	• Press the [URV] key to display the upper-limit value.	URV FIT-1234 5.000 MPa
	• Press the [SPAN] key to display the span.	SPAN FIT-1234 5.000 MPa
2	Branching: • If the displayed data does not need to be changed, press the [CLR] key to end the procedure. • If the displayed data needs to be changed, proceed to the procedure for changing the set range, which is described on the next page.	DSTJ FIT-1234 READY...

Changing the Set Range

Changing the Set Range

Step	Description	S-SFC II screen
1	Press the [LRV/%] key to change the lower-limit value.	LRV FIT-1234 0.0000 MPa
2	Press the numeric key, [2].	LRV FIT-1234 2 MPa
3	Press the [ENTER] key. Result: • The lower-limit value has been set to 2 MPa.	LRV FIT-1234 WORKING... LRV FIT-1234 2.000 MPa
4	When changing the upper-limit value, press the [URV] key.	URV FIT-1234 5.000 MPa
5	Press the numeric keys, [7], [.] and [5] in that order.	LRV FIT-1234 7.5 MPa
6	Press the [ENTER] key. Result: • The upper-limit value has been set to 7.5 MPa.	LRV FIT-1234 WORKING... LRV FIT-1234 7.500 MPa
7	Press the [SHIFT] and [ENTER] keys in that order. Result: • The data has been stored in the transmitter.	SHIFT DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

Displaying or Changing the Unit of Measurement for Pressure

Units of Measurement That Can Be Selected

Available units of measurement are as follows. By pressing the [ ] key, you can display them in the order shown below.

- kPa → Mpa → hPa → Pa → mbar → bar → inH_2O → inHg → PSI → mmH_2O → mH_2O → kg/cm^2 → g/cm^2 → mmHg → kPa (return)
  (When the S-SFC II uses the SI units by default)

Procedure

Display or change the unit of measurement by the following procedure. Here we describe the procedure for displaying the unit of measurement when case kPa is to be set.

Step	Description	S-SFC II screen
1	Press the UNITS key.	UNIT FIT-1234 kPa
2	If you want to use a different unit of measurement, press either the NEXT key or UNITS key repeatedly until the desired unit is displayed on the screen. Pressing the PREV key once will bring you back to the previous unit of measurement.	

Displaying or Changing the Damping Time Constant

Overview

In some cases, pulsating pressure differences cause the output from the transmitter to be unstable, depending on the conditions of the fluid flowing in a process. This makes the measured values difficult to read. In this case, by using a larger damping time constant, minute fluctuations in the measured pressure values can be eliminated and the output can be stabilized.

Damping Time Constants That Can Be Selected

The damping time constants that can be selected are as follows. Pressing the keys shown in the procedure described below allows you to display each damping time constant in either the forward or backward direction. The actual response time will be delayed by about 0.4 seconds from the displayed value (time loss). The unit is "seconds."

- 0.00 → 0.16 → 0.32 → 0.48 → 1.00 → 2.00 → 4.00 → 8.00 → 16.00 → 32.00

Procedure

Display or change the damping time constant by performing the following procedure. Here we describe the case where 1 seconds is already set.

Note:
If the damping time constant needs to be changed, first select a value larger than the currently set value and see how the output fluctuates.

Step	Description	S-SFC II screen
1	Press the [DAMP] key.	DAMP FIT-1234 1.0 sec
2	To change the damping time constant, press either the [▲ NEXT] key or [▼ PREV] key repeatedly until the desired value appears on the screen. Branching and result: • When the [▲ NEXT] key is pressed, the display shown at the right appears on the screen. • When the [▼ PREV] key is pressed, the display shown at the right appears on the screen.	DAMPING FIT-1234 WORKING... DAMP FIT-1234 2.0 sec DAMP FIT-1234 0.48 sec
3	First press the [SHIFT] key and then press the [ENTER] key. Result: The data has been stored in the transmitter.	SHIFT- DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

Displaying the Direction of Output Overshooting When An Abnormal Condition Occurs.

Dealing with Abnormal Conditions

There are three different burnout functions for signaling abnormal conditions in a pressure transmitter :

- Non-burnout method : The pressure gauge outputs an abnormal value.
- Burnout up method : The pressure gauge is forced to overshoot to its upper limit, no matter what value is inputted.
- Burnout down method : The pressure gauge is forced to overshoot to its lower limit, no matter what value is inputted.

This product is designed to use the non-burnout method. Even if an abnormal condition occurs in the pressure gauge, the abnormal status can be displayed by operating the S-SFC II, providing full information on the abnormal status. If the abnormal condition recovers to normal, the normal value is automatically outputted.

Note:
If abnormal conditions are encountered, a message is displayed in the data display window of the S-SFC II, regardless of whether the product has the burnout function or not.

Procedure

Confirm the direction of output overshooting in the event of burnout by performing the following procedure.

Step	Description	S-SFC II screen
1	Press the [SHIFT] key.	SHIFT
2	Press the [STAT] key. • If the non-burnout method is used, "NON-B/O " will appear.	F/SAFE F/SAFE NON-B/O
3	Press the [CLR] key.	DSTJ FIT-1234 READY...

Displaying the Manufacturing Number (PROM NO.)

Overview

Although the manufacturing number of this product (PROM NO.) is shown on the identification plate, you can also check it by operating the S-SFC II.

Procedure

Check the manufacturing number (PROM NO.) by the following procedure. Here we describe the case where the manufacturing number is 2000000000.

Step	Description	S-SFC II screen
1	Press the [CONF] key.	DSTJ CONFIG CONFORM?
2	Press the [▼1 PREV] key twice.	DSTJ CONFIG PROM NO?
3	Press the [ENTER] key.	PROM NO. 2000000000
4	After checking the manufacturing number (PROM NO.), press the [CLR] key twice.	DSTJ FIT-1234 READY...

Displaying the Temperature of Sensor

Procedure

Check the temperature at the sensor section by performing the following procedure. Here we describe the case where the temperature at the sensor section is 27°C.

Step	Description	S-SFC II screen
1	Press the CONF key.	DSTJ CONFIG CONFORM?
2	Press the PREV key three times.	DSTJ CONFIG SENSOR TEMP?
3	Press the ENTER key. Result: • The temperature at the sensor section is displayed.	SENSOR TEMP WORKING... SENSOR TEMP T=27°C
4	After checking the temperature, press the CLR key twice.	DSTJ FIT-1234 READY...

Displaying the Software Version

Procedure

Check the software version by the following procedure. Here we describe the case where the software version is 7.1.

S-SFCII : 7.1

PTG7□0 : E.1

Step	Description	S-SFC II screen
1	Press the [SHIFT] key.	SHIFT-
2	Press the [3] key. Branching and result: • If the S-SFC II is not in communication with the transmitters, the display shown at right will appear. • If the S-SFC II is in communication with the transmitter, the display shown at the right will appear.	VERSION SFC=7.1 VERSION FIT-1234 SFC=7.1 XMTR=E.1
3	After checking the software version, press the [CLR] key.	DSTJ FIT-1234 READY...

Printing Function (Option)

Printing functions

There are two kinds of printing function, operated using different keys.

- Maintenance printing
  Using the maintenance printing function, you can print out the data stored in the transmitter (tag number, damping time constant, output range, pressure, output value, etc.).

- Action printing
  Using the action printing function, you can print the responses of the transmitter each time you operate the S-SFC II keys.

Recording Form Feed

Feed in the recording form by the following procedure.

Step	Description	S-SFC II screen
1	Press the [SHIFT] and [PRINT 0] keys in that order. Result: • Each time you press the [PRINT 0] key, the recording form will be fed by one line.	PRINTER FEED
2	Press the [CLR ESC] key to clear the recording form feed function. Result: • "PRINTER FEED" disappears and the display reverts to the initial screen.	DSTJ FIT-1234 READY...

Printing Function: Printing Out Data Stored in the Transmitter (Maintenance Printing)

When to Print Out Data Stored In the Transmitter

This printing function is used to record the settings of this the transmitters and the status of functional problems (specifically, to print the tag number, damping time constant, output range, pressure, output value, results of self-diagnosis and other data.)

Procedure

Print out the data stored in the transmitter by the following procedure.

Step	Description	S-SFC II screen
1	Press the [CLR ESC] key.	DSTJ FIT-1234 READY...
2	Press the [SHIFT] key.	SHIFT-
3	Press the [PRINT 9 P] key. Result: • Printing starts.	WORKING... PRINTING DSTJ FIT-1234 READY...

Example of Maintenance Printing

Fig. 6-4 shows how the data is printed out and what each line means.

Example of data printout	Meaning
'97-08-01 02:22	Date, time
TAG No. FIT 1234	Tag number
TYPE : GAUG. PRESSURE	Type of transmitter
ANA/DE : ANALOG XMTR	Output signal mode
FORM : LINEAR	Output signal form
PROM # : 2174925012	PROM number
SW VER : E.1	Software version
DAMP : 0.00 sec	Damping time constant
SPAN : 4.000 MPa	Span
LRV : 0.0000 MPa	Measured value that can produce 0% output
URV : 4.000 MPa	Measured value that can produce 100% output
URL : 10 MPa	Maximum value of range setting
F/SAFE : NON-B/O	Direction of burnout
DISPLAY	Setting of digital indicator (option)
CONF : LINEAR	(Note: Data are printed out even if it does not have a digital indicator.)
TYPE : ENG UNIT	
EULO : 10.000	
EUHO : 90.00	
INPUT : 0.0012 MPa	Transmitter input pressure
OUTPUT : 0.02 %	Transmitter output (%)
SV : T = 24℃	Detection temperature of temperature sensor
STATUS CHECK = OK	Results of self-diagnosis

Fig. 6-4 Example of maintenance printing

Printing Function: Printing Responses Continuously (Action Printing)

When to Print Out Responses

This printing function is used to continuously print out data on the responses of the transmitter each time the S-SFC II keys are used. If data needs to be kept as a record, the action printing function (continuous printing) may be used.

Procedure

Execute this printing function by the following procedure.
Note: This procedure can be performed during measurement.

Step	Description	S-SFC II screen
1	Press the [CLR] key.	DSTJ FIT-1234 READY...
2	Press the [SHIFT] and [0] keys in that order.	DSTJ FIT-1234 ACTION PRINT?
3	Press the [ENTER] key. Result: What is shown below is printed. * ACTION PRINT * START TAG NO. 001XXXXX (tag number) '97.04.19 11:52 (date and time)	
4	From this step onward, the responses of the transmitter will be printed out each time the keys on the S-SFC II are operated.	
5	To end this printing function, press the [SHIFT] and [0] keys in that order.	DSTJ FIT-1234 ACTION PRINT?
6	Press the [CLR] key. Result: * Action print *end this message is printed out and printing ends.	

Example of Action Printing

Pressing the keys as shown at left would produce the print output shown at right.

[ ] key	Example of data printout
Key	
Key	
Key	* ACTION PRINT*START
	TAG. NO. FIT-1234
	'94.04.19 12:04
Key	DAMP FIT-1234
	0.0 sec
Key	SPAN FIT-1234 4.000 MPa
Key	LRV FIT-1234 0.0000 MPa
Key	
Key	
Key	* ACTION PRINT*END

Fig. 6-5 Example of action printing

Output Mode

Setting the Output Mode

Overview

This product can be set so it will output a constant current in the range of 4 mA (0%) to 20 mA (100%). The setting of the constant current is performed in the output mode. This function is convenient for executing a loop check.

Procedure

Set the constant current source mode by performing the following procedure. Here we describe the case where the output is fixed at 50% (12 mA).

Step	Description	S-SFC II screen
1	Press the OUTPUT key.	OUTPUT FIT-1234 WORKING...
	Result: • The current Output is displayed.	OUTPUT FIT-1234 10.00 %
2	Press the numeric keys 5 and 0 in that order.	OUTPUT FIT-1234 50 %
3	Press the ENTER key.	OUTPUT FIT-1234 WORKING...
	Result: • This product outputs 12 mA (50%). Note: • The # mark indicates the constant current source mode.	OUTPUT FIT-1234 50 % #

Canceling the Output Mode

Procedure

Cancel the output mode by the following procedure.

Step	Description	S-SFC II screen
1	Press the [OUTPUT] key. Result: • The current output is displayed.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 50.00 % #
2	Press the [CLR] key. Result: • The constant current source mode has been cancelled. Note: • Check to ensure that the # mark disappears.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 READY...

Checking the Display Format (Linear Output) of the Indicator (Option)

Procedure

Check the display format of the transmitter using the following procedure.

Step	Description	S-SFC II screen
1	Press the [CONF] key.	DSTJ TAG NO. CONFORM?
2	Press the [▲ NEXT] key.	DSTJ CONFIG DISPLAY?
3	Press the [ENTER] key.	DISPLAY CONF LINEAR
4	Press the [SHIFT] and [CLR] keys in that order.	SHIFT- ↓ DSTJ FIT-1234 READY...

Checking and Changing the Display Format (actual graduation display, % display) of the Indicator

Overview

The indicator can be set to either actual graduations display or % display. Here we describe the procedure for checking and changing the display format.

Procedure

Check the display format of the indicator using the following procedure.

Step	Description	S-SFC II screen
1	Press keys [CONF], [▲H NEXT], [ENTER] and [▲H NEXT]. You can now check the currently set display format (either actual graduations display or % display).	DISPLAY TYPE % (0.0) or DISPLAY TYPE ENG. UNIT (3.5 FIG)
2	Branching: • If the currently set display mode needs to be changed, press the [SHIFT] and [ENTER] keys and proceed to step 3. • If the currently set display mode does not need to be changed, press the [CLR] key twice.	
3	Press the [ENTER] key. • The display format of the SFC has been changed. (The display format of this product is not changed.)	DISPLAY TYPE ENTERED IN SFC
4	Press the [CLR] and [ENTER] keys in that order. • The display format of the product has been changed.	DISPLAY DOWNLOAD DATA? DISPLAY DATA LOADED
5	Press the [CLR] key twice.	DSTJ FIT-1234 READY...

Checking or Changing the Upper- and Lower-limit Values of the Process Amount Shown on an Indicator

Overview

The upper- and lower-limit values of the process amount can be set on the indicator.

Procedure

Set the upper- and lower-limit values of the process amount on the indicator using the following procedure.

Step	Description	S-SFC II screen
1	Press the [CONF], [▲H NEXT], [ENTER], and [▲H NEXT] keys. • Check to make sure that the scale on the indicator is calibrated in the specified engineering units.	DISPLAY TYPE ENG.UNIT(3.5 FIG)
2	Press the [▲H NEXT] key. • In steps 4 and 5, enter a lower-limit value of -10.0 for the engineering unit.	EULO(at 0%) 0.0000
3	Press the [+/-], [1], [0], [.], and [0] keys in that order.	EULO(at 0%) -10.0
4	Press the [ENTER] key. • One lower-limit value for the engineering unit (-10.0) has been entered.	EULO(at 0%) ENTERED IN SFC ↓ EULO(at 0%) -10.0
5	Press the [▲H NEXT] key. • In steps 7 and 8, enter an upper-limit value of 50.0 for the engineering unit.	EUHI(at 100%)

(To be continued on the next page)

(continued)

Step	Description	S-SFC II screen
6	Press the [6], [0], [-] and [0] keys in that order.	EUHI(at 100%) 50.00
7	Press the [ENTER] key. • The upper-limit value for the engineering unit (50.0) has been entered.	EUHI(at 100%) ENTERED IN SFC ↓ EUHI(at 100%) 50.00
8	Press the keys [▲ NEXT] and [ENTER]. • The upper- and lower-limit values for the engineering unit have been changed to the specified values.	DISPLAY DOWNLOAD DATA? DISPLAY WORKING... ↓ DISPLAY DATA LOADED!
9	Press the [SHIFT] and [CLR] keys in that order.	↓
10	Press keys [SHIFT] and [ENTER] in that order. • The data has been stored in the transmitter.	SHIFT- DSTJ FIT-1234 WORKING... ↓ DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

6.2 Calibration by S-SFC II

Calibrating the Output Signal

Procedure

Calibrate the output signal by the following procedure. First, set the output to 0% (100%) and then calibrate it so that the current on an amperemeter reads 4 mA (20 mA).

Step	Description	S-SFC II screen
1	Press the [NEXT OUT 2 PWR] key. Result: • The current output is displayed on the screen.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 0.00 %
2	Press the [ACT_PR 0 2] key. (if the output is set at 100%, press keys [1], [ACT_PR 0 2] and [ACT_PR 0 2].)	OUTPUT FIT-1234 0 %
3	Press the [SCAN-HOLD ENTER Read] key. Result: • The transmitter is now in the 4-mA (20-mA) constant current source mode.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 0.00 % #
4	Check the amperemeter to make sure that the reading on the amperemeter is 4 mA (20 mA).	
5	Press the [NEXT OUT 2 PWR] key.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 0.00 % #

(To be continued on the next page)

(continued)

Step	Description	S-SFC II screen
6	Press the [SHIFT / ZERO / SET] key. Result and branching: • If the reading on the amperemeter is 4 mA (20 mA), proceed to step 9. • If the reading on the amperemeter is less than 4 mA (20 mA), proceed to step 7. • If the reading on the amperemeter is greater than 4 mA (20 mA), proceed to step 8.	OUTPUT FIT-1234 CORRECT DAC ZER#
7	Press the [▲ INCR] key. • After pressing the key once, check the reading on the amperemeter. • Press the key repeatedly until the reading becomes 4 mA (20 mA). • When the reading becomes 4 mA (20 mA), proceed to step 9.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 INCREASED 4mA# OUTPUT FIT-1234 CORRECT DAC ZER#
8	Press the [▼ DECR] key. • After pressing the key once, check the reading on the amperemeter. • Press the key repeatedly until the reading becomes 4 mA (20 mA).	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 DECREASED 4mA# OUTPUT FIT-1234 CORRECT DAC ZER#
9	Go to "Storing Calibrated Values and Cancelling the Constant Current Source Mode" on page 6-33.	

Storing Calibrated Values and Cancelling the Constant Current Source Mode

Procedure

Store calibrated values and cancel the constant current source mode by the following procedure.

Step	Description	S-SFC II screen
1	Press the [CLR] key.	FIT-1234 READY...
2	Press keys [SHIFT] and [ENTER]. Result: * Data storage has been completed.	DSTJ TAG NO. WORKING... DSTJ FIT-1234 DATA NONVOLATIL#
3	Press the [OUT-2] key. Result: • The display on the right is shown on the screen, indicating that the current output is 0% (100%).	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 0.00 % #
4	Press the [CLR] key. Result: • The # mark disappears, indicating that the constant current source mode has been cancelled.	OUTPUT FIT-1234 WORKING... OUTPUT FIT-1234 READY...

Calibrating the Set Range by Inputting the Actual Pressure

Overview

This section describes how to calibrate upper- and lower-limit values for the set range by inputting a reference pressure into the transmitter using the S-SFC II.
Calibrate the lower-limit value first and then the upper-limit value.

Calibration Devices

The calibration devices shown below are usually required:

- Reference pressure generator : A generator capable of producing pressure over a range of measurement close to that of the transmitter to be tested
- Accuracy : ±0.05%FS or ±0.1% (whichever is larger)
- Power supply : 24 VDC
- Standard resistor : 250Ω ±0.005%
- Voltmeter : Digital voltmeter (10-VDC range) with an accuracy of ±0.02% rdg + 1dgt
- S-SFC II

Requirements for Calibration

Caution:
When conducting actual-pressure calibration, the following requirements must be satisfied:

- The calibration must be conducted in a testing laboratory where there is no wind. If there is wind, pressure will be applied to the pressure receiving part on the side open to the atmospheric pressure, causing the measurement accuracy to drop.
- The standard temperature is 23°C and the standard humidity is 65%. Room temperatures from 15°C to 35°C and room humidity from 45% to 75% are acceptable if measurement at that temperature and humidity will not influence the results of measurement.
- It is best if the accuracy of the measuring instruments be four times greater than that of the transmitter.

Assembling the Calibration Devices

The calibration devices are to be assembled as shown below:

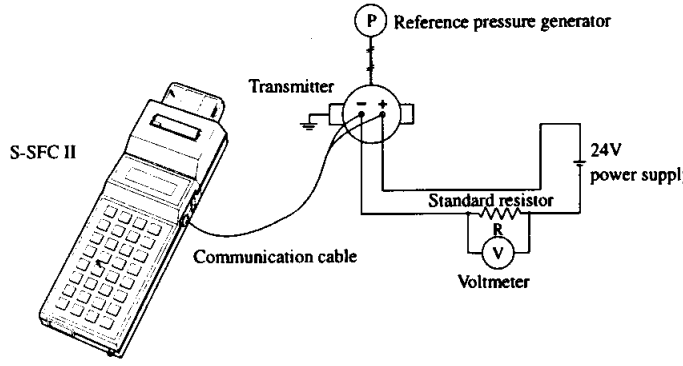


Fig. 6-6 Wiring and piping for the calibration devices

Calibrating the Lower-limit Value

Procedure

Calibrate the lower-limit value of actual pressure using the following procedure. This procedure starts where normal communication between the S-SFC II and the transmitter has been achieved.
In this procedure, 2MPa is defined as the lower-limit value.

Step	Description	S-SFC II screen
1	Press the key.	DSTJ TAG NO. LIN GP FIT-1234
2	Apply pressure so that the pressure reading on the reference pressure generator's pressure gauge reads 2 MPa.	
3	Press the key. • The lower-limit value that the transmitter has stored in memory is displayed.	LRV FIT-1234 2 MPa
4	Press the key.	LRV FIT-1234 CORRECT LRV?
5	Press the key twice. Result: • The lower-limit value is calibrated to the current input pressure of this product.	LRV FIT-1234 ARE YOU SURE!? LRV FIT-1234 WORKING... LRV FIT-1234 LRV CORRECTED

(To be continued on the next page)

(continued)

Step	Description	S-SFC II screen
6	Press the [LRV/4mA] key. • The display shown at the right appears on the screen, allowing confirmation of the lower-limit value stored in the transmitterís memory.	LRV FIT-1234 2 MPa
7	Press the [SHIFT] and [ENTER/Read] keys in that order. Result: • The calibrated lower-limit value is written into the transmitter.	SHIFT- DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

Calibrating the Upper-limit Value

Procedure

Calibrate the upper-limit value by the following procedure.
In this procedure, 10MPa is defined as the upper-limit value.

Step	Description	S-SFC II screen
1	Press the key.	DSTJ TAG NO. LIN GP FIT-1234
2	Apply pressure so that the pressure on the reference pressure generator's pressure gauge reads 10 MPa.	
3	Press the key. • The upper-limit value that the transmitter has stored in memory appears on the screen. (In this procedure, 10 MPa is defined as the upper-limit value.)	URV FIT-1234 10 MPa
4	Press the key.	URV FIT-1234 CORRECT URV?
5	Press the key twice. Result: • The upper-limit value is calibrated to the current input pressure of this product.	URV FIT-1234 ARE YOU SURE!? URV FIT-1234 WORKING... URV FIT-1234 URV CORRECTED
6	Press the key. • The display at right appears on the screen, allowing confirmation of the upper-limit value stored in the transmitterís memory.	URV FIT-1234 10 MPa

(To be continued on the next page)

(continued)

Step	Description	S-SFC II screen
7	Press the [SHIFT] and [ENTER] keys in that order. Result: • The calibrated upper-limit value is stored in the transmitter.	SHIFT- DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATILE DSTJ FIT-1234 READY...

Erasing Calibrated Data

Procedure

Perform the following procedure to make calibrated or entered values revert to the values pertaining before calibration or data entry.

Step	Description	S-SFC II screen
1	Press the keys [SHIFT] and [RESET] in that order.	SHIFT- DSTJ FIT-1234 RESET CORRECTS?
2	Press the [ENTER] key. Result: • About 2 seconds later, the display at right appears on the screen and the calibrated data will revert to the data stored at the time of delivery of the transmitter to the customer.	DSTJ FIT-1234 CORRECTS RESET# DSTJ FIT-1234 READY... #

Erasing the # Mark

Overview

The # mark appears when the calibrated or entered value has been reset to the initial value. This mark should be erased by performing the following procedure. When performing this procedure, actual pressure values are to be used. Therefore, input the actual pressure into the transmitter by referring to "Calibrating the Set Range by Inputting an Actual Pressure."

Setting the Lower-limit Value for Actual Pressure

Set the lower-limit value for actual pressure by performing the following procedure.

Step	Description	S-SFC II screen
1	Set the actual pressure inputted into this product to 0 MPa.	DSTJ FIT-1234 READY... #
2	Press the [LRV 0 SET] key.	LRV FIT-1234 0.0000 MPa #
3	Press the [SET] key.	LRV FIT-1234 SET LRV? #
4	Press the [ENTER] key. Result: • The lower-limit value is stored and displayed.	LRV FIT-1234 WORKING... LRV FIT-1234 0.0 MPa #

Calibrating the Lower-limit Value of the Actual Pressure

Calibrate the lower-limit value of the actual pressure by performing the following procedure.

Step	Description	S-SFC II screen
1	Press the key.	LRV FIT-1234 0.0 MPa #
2	Press the key.	LRV FIT-1234 SET LRV? #
3	Press the key.	LRV FIT-1234 ARE YOU SURE? #
4	Press the key. Result: • The lower-limit value has been calibrated.	LRV FIT-1234 WORKING... LRV FIT-1234 CORRECTED #
5	Press the keys and in that order. Result: * Data is written to memory.	SHIFT- DSTJ FIT-1234 WORKING... DSTJ FIT-1234 DATA NONVOLATIL# DSTJ FIT-1234 READY...
6	Turn off the power to the transmitter and then turn it on again.	

(To be continued on the next page)

Calibrating the Lower-limit Value of the Actual Pressure *(continued)*

Step	Description	S-SFC II screen
7	Press the ID key.	DSTJ FIT-1234 WORKING... DSTJ TAG NO. LIN DP FIT-1234
8	Press the STAT key. The # mark has disappeared.	DSTJ FIT-1234 WORKING... DSTJ FIT-1234 STATUS CHECK=OK

6.3 Self-diagnostic Messages from the S-SFC II

Troubleshooting and Verification of Normal Functioning

Verification of Normal Functioning and Self-diagnosis

Using the S-SFC II, you can verify that the transmitter is operating normally. If the transmitter has functional trouble, follow the self-diagnostic messages provided by the S-SFC II. If abnormal conditions are encountered in the transmitter, in the process, in the S-SFC II or in the communication system during measurement, follow the self-diagnostic messages.

Procedure for Verifying Normal Functioning

When verifying normal functioning, connect the S-SFC II to the product and perform the following procedure.

Step	Description	S-SFC II screen
1	Press the STAT key. Result and branching: • When the STATUS CHECK=OK message appears, the process of verifying normal functioning ends. • When a message other than STATUS CHECK=OK appears, take appropriate action by referring to the instructions given on the next and following pages. Proceed to step 2.	DSTJ FIT-1234 WORKING...
2	Result and branching: • Take appropriate action by referring to the messages given on the next and following pages. • If there is more than one message, each individual message will be displayed for 2 seconds.	DSTJ FIT-1234 STATUS CHECK=OK DSTJ FIT-1234 READY

If Abnormal Conditions Are Encountered during Communication

Message and Action

If the CRITICAL STATUS message is displayed during communication, take the action shown below.

Message	Action
DSTJ FIT-1234 CRITICAL STATUS PRESS STATUS!	• Press the STAT key. Deal with the conditions encountered by following the displayed messages. Note: • Even if the CRITICAL STATUS message is displayed, three keys, and and are still operable. • After taking action, press the STAT key to check that the SELF-DIAGNOSIS RESULT OK message is displayed.
:	The battery power is becoming low. Follow the instruction given in the S-SFC II operation manual (CM2-SFC100-2001).
	• Press the STAT key. Deal with encountered conditions by following the displayed messages. If minor trouble is encountered • When trouble has been eliminated, the # mark will disappear. • When the # mark disappears, press the STAT key to display the SELF-DIAGNOSIS RESULT OK message.

Self-diagnostic Message

Message

When abnormal conditions are encountered, press the STAT key and a self-diagnostic message will appear. The meaning of this message and the action to take are as follows.

If the abnormal condition seems to have occurred in the process, S-SFC II or communication system:

Message	Description, cause	Action to take
NO XMTR RESPONSE	• Receiving instrument does not respond.	• Reperform the procedure for starting communication. • Press the STAT key and look at the message. • Check the connection of the loop and S-SFC II.

If the abnormal condition seems to have occurred in the transmitter:

Message	Description, cause	Action to take
MDU/DAC COMP FLT	MDU/DAC Fault	Contact the supplier or manufacturer shown at the back of the operation manual.
ROM FAULT	ROM Fault	Contact the supplier or manufacturer shown at the back of the operation manual.

If abnormal conditions seem to have occurred in the S-SFC II or a communication system:

Message	Description, cause	Action to take
FAILED COMM CHK	Preface to a trouble message	
HI RES/LO VOLT	• Extra-high loop resistance • Extra-low voltage of a power supply	• Adjust loop resistance. • Increase the voltage of the power supply.
ILLEGAL RESPONSE	Improper communication	Check the connection, wiring and power supplies.
LOW LOOP RES	Extra-low loop resistance value	Adjust the resistance value.
PRINTER FAIL !	Printer failure	Contact the supplier or manufacturer shown in the back of the operation manual.
SFC FAULT	S-SFC II Fault	• Reperform the procedure for starting communication. • If the same message is visible, contact the supplier or manufacturer shown at the back of the operation manual.

If an operational mistake seems to have been made:

Message	Description, cause	Action to take
CORRECT LRV?	Was the correct value entered to set the range to 0%?	Verify the entered value. If a wrong value was entered, correct it.
CORRECT URV?	What value was entered to set the range to 100%?	Verify the entered value. If a wrong value was entered, correct it.
CORRECT RESET #	Calibration must be performed again.	Calibrate the upper- and lower-limit values of the range.
ENTRY>SENS RNG	The set value is greater than 1.5 times the upper-limit value of the range shown on a pressure gauge	After checking the value by pressing the [SET] key, enter the correct value.
EXCESS SPAN COR#	Excessive span calibration	Calibrate the upper-limit value of the range.
EXCESS ZERO COR#	Excessive zero calibration	Calibrate the lower-limit value of the range.
EXCESSIVE OUTPUT	Output value required in the constant current source mode is greater than output range(-1.25% to 105%)	After checking the value by pressing the [SET] key, enter the correct value.

(To be continued on the next page)

(continued)

Message	Description, cause	Action to take
INVALID REQUEST	Operational mistake during the operation of the S-SFC II	Check the S-SFC II operation procedure.
NOT SUPPORT	Do not use the key(s) that were pressed.	Press the correct keys.

Insulation Resistance Test, Voltage Withstand Test

Precautions

Generally, insulation resistance and voltage withstand tests should not need to be conducted. If these tests are conducted, the built-in varistor for surge voltage absorption may be damaged. If these tests are absolutely necessary owing to unavoidable circumstances, they must be conducted carefully by following the specified test procedures.

Test Procedure

1. Remove the external wires from the transmitter.
2. Short-circuit the + and - SUPPLY terminals.
3. Tests must be conducted between these short-circuited terminals and the ground terminals.
4. Voltage to be applied and judgment criteria are shown, as follows. In order to prevent damage to instruments, voltages higher than the voltage values shown below must not be applied.

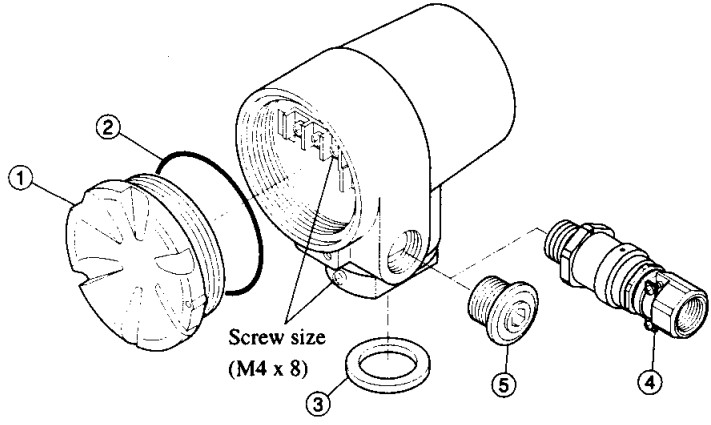
Judgment Criteria

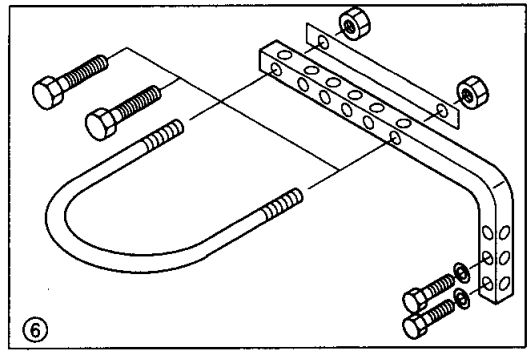
Voltage to be applied and judgment criteria are as follows.

Test	Judgment criteria
Insulation resistance test	More than 2 x $10^7\Omega$ at an applied voltage of 25VDC (25°C±5°C, less than 60% RH)
Voltage withstand test	50 VAC, 1 minute, current set at 2 mA

7. Resale Parts

Resale Parts





Number	Part description	Part number	Quantity to use per unit	Unit quantity for resale
1	Case cover (with an O-ring)	80370406-001	1	1EA
2	O-ring	80020935-842	1	1-F
3	Gasket (for male screw)	80370122-001	1	1-F
	Gasket (for male screw)	80370122-002		
4	Pressure packing set	80370411-001	1	1EA
5	Plug (with an O-ring)	80381081-002	1	1EA
6	Mounting hardware	80370404-001	1	1EA
7	Unit seal set	80370187-001	1	1-F

"1-F" is equal to "10EA"

Fig. 7-1 Exploded view

MEMO

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