

**Single Pipe Density,
Tapless Venturi,
Flow Nozzle,
Orifice Flange Assembly**

User's Manual

NOTICE

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1 : Attention on Safe

- Please use this “operation manual” correctly on reading well before using a product.
- Usage of this product, it is for preventing beforehand the human harm and the property damage of notes which were shown here. Moreover, in order to show the magnitude of the harm and damage which are assumed to be generated by the mistaken handling, and the grade of stringency, it has classified into two, a “warning” and “cautions.” All are the important contents related safely. Please be sure to follow that.



CAUTION

When warning handling is mistaken, the contents it is assumed to be that the condition of risk of a user getting death or seriously injured arises are shown.



WARNING

When cautions handling is mistaken, the contents it is assumed to be that the condition of risk of a user getting slightly injured or only a property damage occurring arises are shown.

1. This user's manual are described the operation for following products.
 - Single pipe density meter (Model NZ99)
 - Tapless venturi (Model NZ11)
 - Flow-nozzle
 - Orifice flange assembly

Herein after These are described to be sensors.

2. About each above mentioned sensor, if a structure becomes large-sized, it may become the weight of 20 kg or more. In this case, the certified person in heavy load handling needs to conduct or handle it, and please perform transfer, packing, etc. of the above mentioned product. The summary of the weight for every body size is as in the following listing.

	Single pipe density meter (Model NZ99)								
Nominal size (in.)	50	80	100	150	200	250	300	350	400
Weight (kg)	18	24	29	47	65	86	108	160	196

	Tapless venturi (Model NZ11)								
Nominal size (in.)	50	80	100	150	200	250	300	350	400
Weight (kg)	17	19	23	42	65	99	129	171	213

	Flow-nozzle								
Nominal size (in.)	50	80	100	150	200	250	300	350	400
Weight (kg)	1	3	6	20	48	94	160	-	-

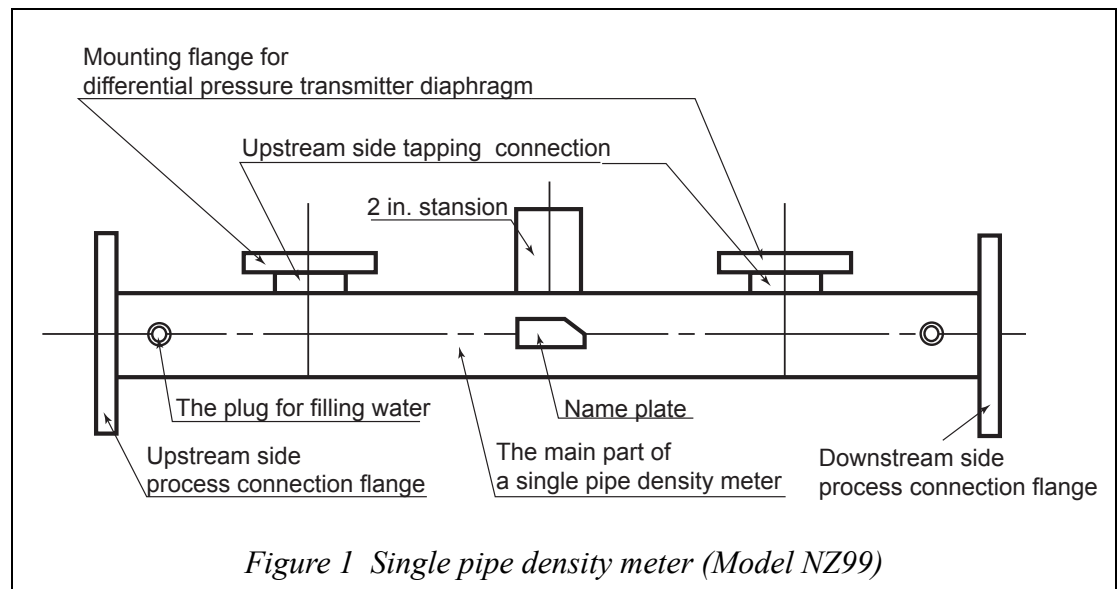
	Orifice flange assembly								
Nominal size (in.)	50	80	100	150	200	250	300	350	400
Weight (kg)	15	25	41	80	125	210	250	300	-

2 : Name of Parts

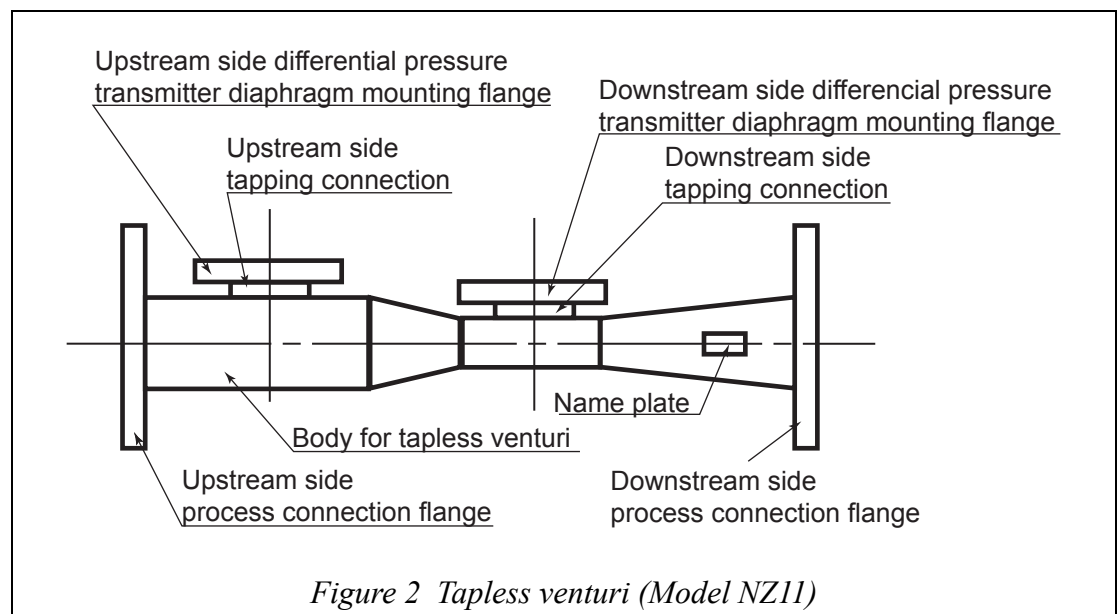
Please read well before use it about the name and term of a single pipe density meter Sensor and a flow type sensor (herein after “sensor”).

In addition, in the case of an orifice or a flow nozzle, there is a impulse pipe which connects a differential pressure transmitter to it etc., but since it is out of scope of our company, so it is not describe in here.

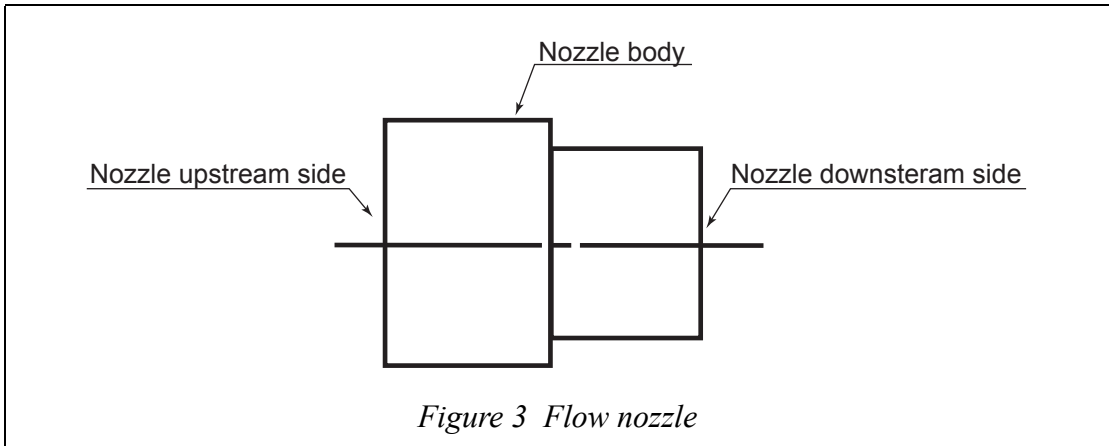
Single pipe density meter (Model NZ99)



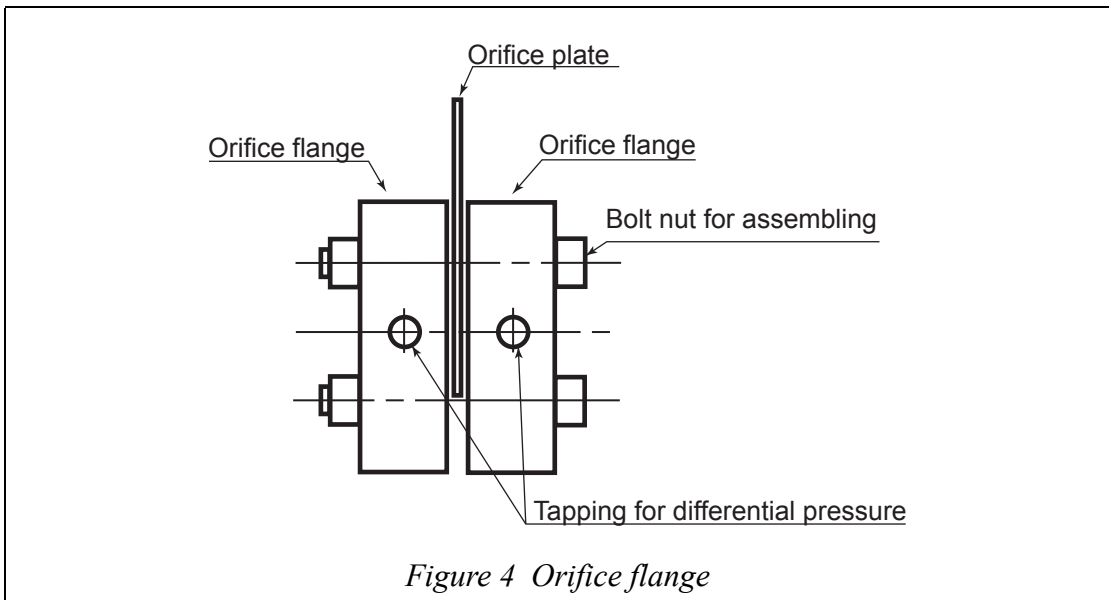
Tapless venturi (Model NZ11)



Flow nozzle



Orifice flange



3 : Confirm specification of Sensor and storage

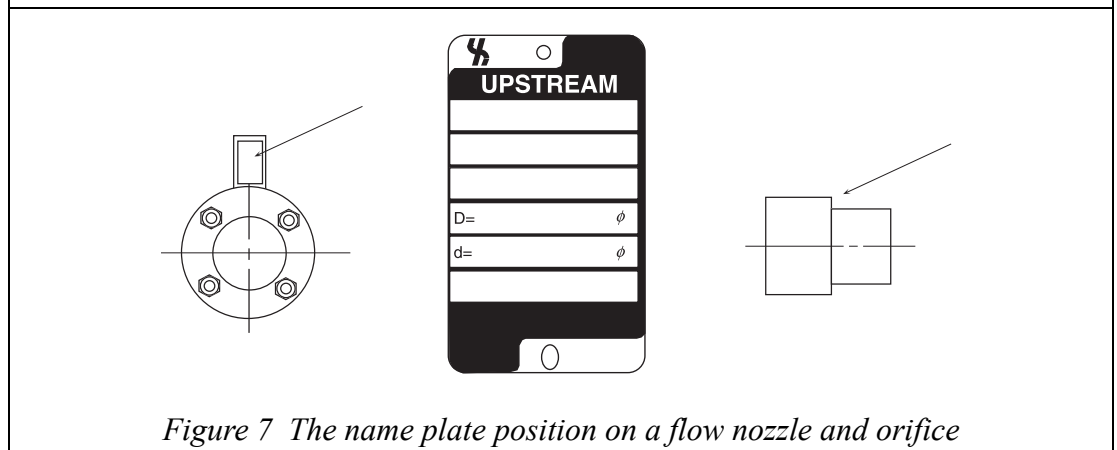
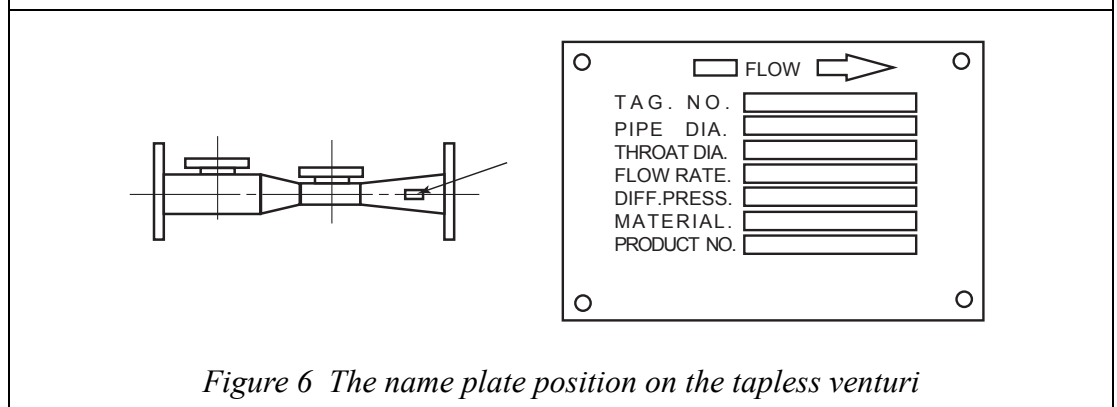
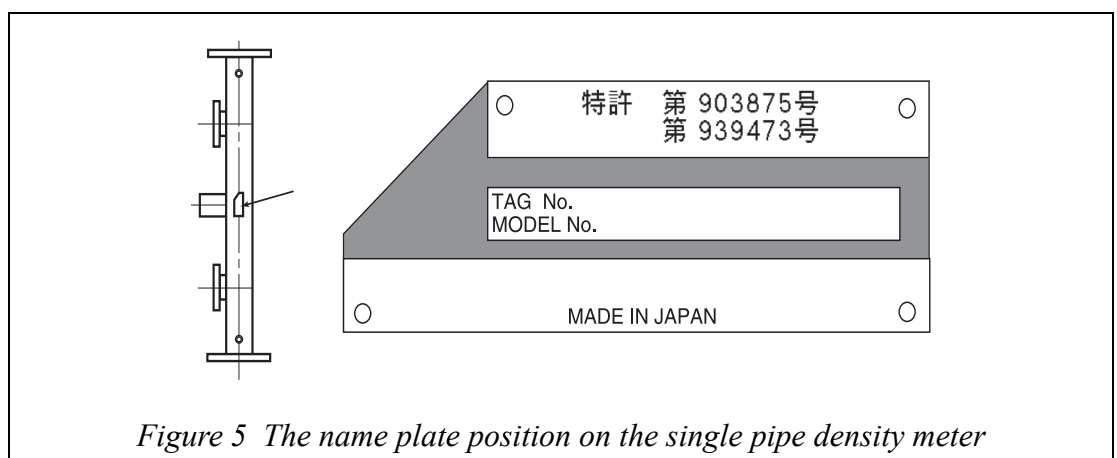
Unpacking

A sensor is a precision mechanical equipment. In order to prevent an accident and damage, please handle carefully. Please confirm whether in the unpacking, the following are contained.

- The sensor and attached parts which were purchased

Specification confirm

Please verify check that fluid conditions, and TAG No. and product Specification model number to be used have. The nameplate for a product is equipped at the location shown in the following figure.



Attention about storage

Please keep the following notes when the purchased sensor is stored.

- Please store the sensor packed up with the carton box in indoor under conditioned normal temperature and humidity.
- As a rule when the sensor packed up with the wooden frame is also stored in indoor under conditioned normal temperature and humidity, in case of store it at outdoor, cover with the polyethylene sheet for goods after a unpacking and a Specification Confirm to prevent the rain water permeation.
- Store of the sensor used once should follow the following procedure.
 - (1) The fluid which adheres or remains inside the body of a sensor is flushed and dried.
 - (2) A rust protection is performed when there is a possibility that the sensor section may rust.
 - (3) Please protect with a flange cap etc. so that a crack does not reach a piping connection part such as a flange face, welding face.

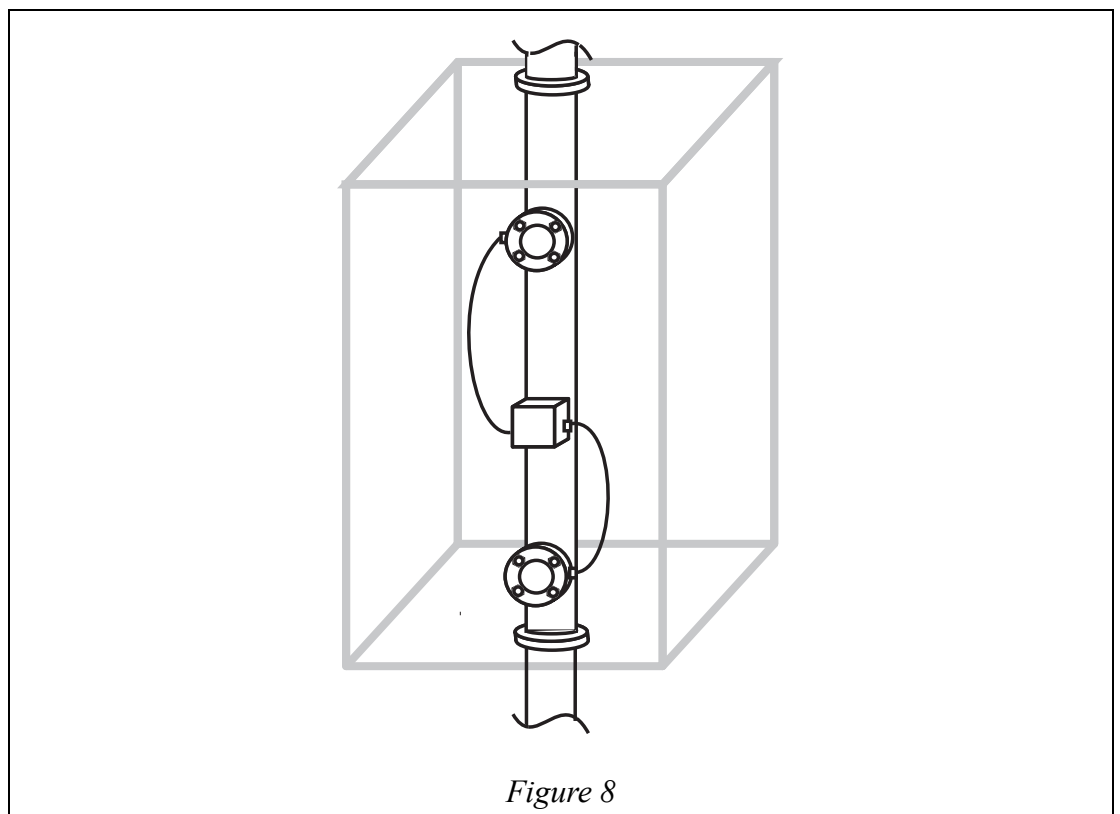
4 : Installation

Installation environment

Please take care the following points for the installation of a purchased sensor.

CAUTIONS

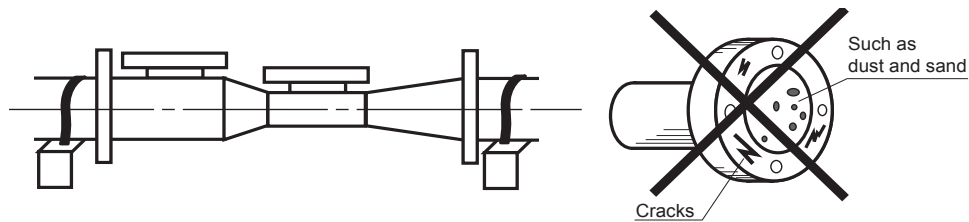
- Please arrange the space for installation of a sensor which can perform operation and a Maintenance easily and safely.
- By the weight of a sensor, and operation, piping should take into consideration the support to the sensor itself, or support of order piping not to receive excessive loading.
- Please arrange a fence and a cover around to the sensor which is faced and installed in transit, if there is a possibility that an outsider may contact.
- Please do not install to a place with the danger of submersion by rain water etc., being buried by snow coverage, and a freeze.
- When a sensor faces from radiant heat, please arrange the a Varier board etc. to protect it.
- In the case of damage from salt water or a corrosive atmosphere, please implement the cure against corrosive protection.
- In maintain a sensor, in order to prevent an unexpected accident, Please be sure to wear safety goggles, a custody glove, safety shoes, etc. as a protector.



The Confirm before installation, please keep the following notes.

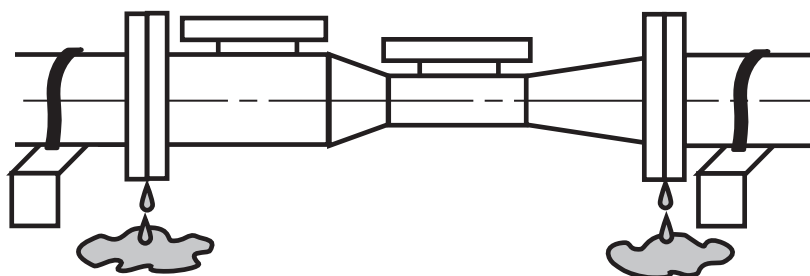
CAUTIONS

- Please confirm that there is no damage (the body section and accessories) in a sensor.
- Please confirm that there is no damage on by the side of a piping connection flange or welding piping.
- Please confirm that the temperature depression after welding When the piping side is performing flange welding etc.
- A piping side flange should bevel the edge section.
- Please also carry out foreign material abatement of the dust, the sand, the welding spatter, etc. inside piping, and cleaning inside a sensor. Mixing of a foreign material is damage on the diaphragm section of a differential pressure transmitter, and It becomes the degradation factor for constant measurement accuracy of a density or a flow rate.
- Please confirm that the support to piping before and after installation of a sensor should come out enough. The weight of a sensor is added and it becomes the cause of the leakage from a flange connection.



WARNING

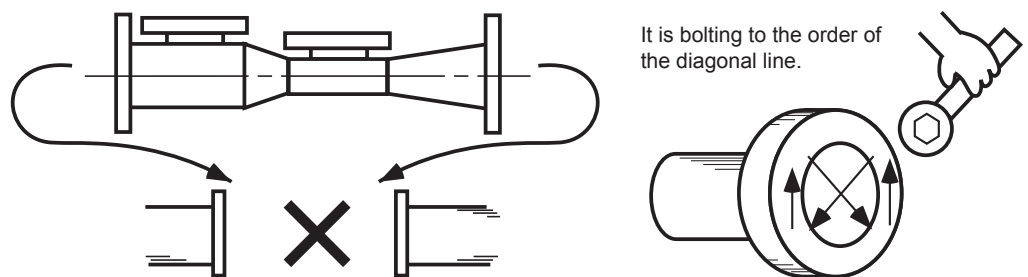
A possibility of becoming the big causality of an accident by demagog or leakage the sensor of those other than a rated pressure or connection standard.



Installation work

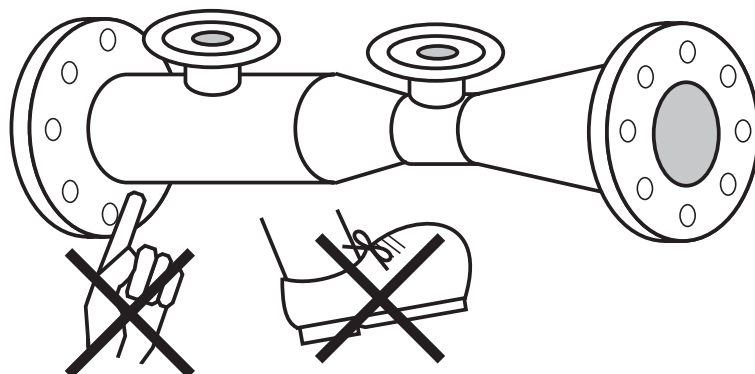
⚠ CAUTION

- When the piping installation before and after a sensor is completed, please confirm that the centering of piping has come out correctly. Uncentering of piping gives distortion to a sensor and causes fluid leakage from a connection faces (gasket section).
- Please confirm that center to center dimension of piping flanges is suitable dimension to the gasket thickness plus the center to center dimension of a sensor.
- When you install a piping flange with a sensor with a bolt nut, please bind tight in order of the diagonal line and do not carry out unbalanced bind tight. There is a possibility of becoming the cause of leakage of a fluid.
- The bolt nut for piping flanges should be used suitable one to corresponding to a flange rating standard the gasket for piping flanges. There is a possibility of becoming the causality of external disclosure of a fluid.
- Please use the new gasket for piping flanges corresponding to the quality, and temperature and a flow and pressure requirement of a fluid. It becomes the causality of external disclosure of a fluid by gasket fracture etc.



⚠ WARNING

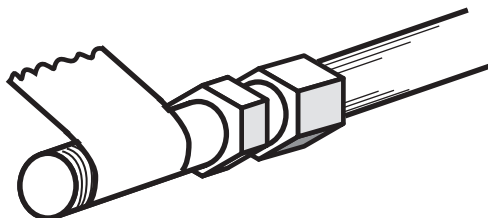
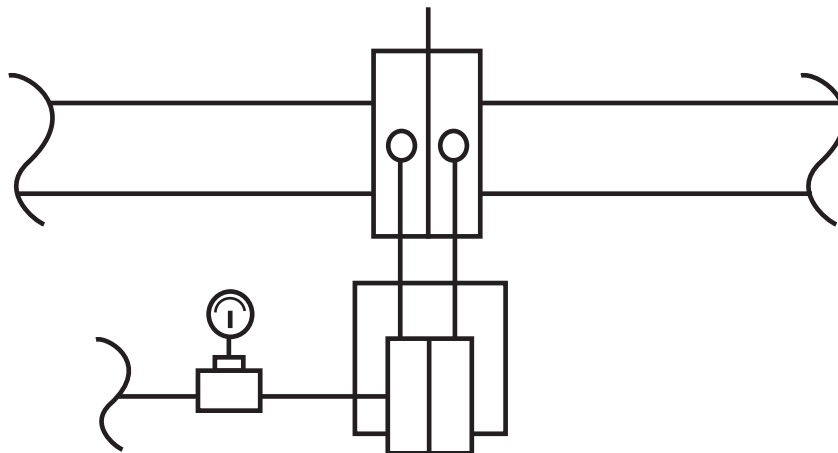
- In case you install a sensor in piping, please insert neither a hand nor a leg by any means between the bottom of the main part of a sensor, or a flange. There is a possibility of getting injured in a Disconnect of a finger or a leg.
- Please replace the remains fluid in existing piping to washing or a safe fluid on the occasion of maintenance or the sensor installation after modification. There is a possibility of the accident resulting in injury or death by the remains fluid.



Air piping and an electrical work

CAUTION

- Please design air piping as a diameter selection which does not cause a pressure drop at the time of operation of a differential pressure transmitter.
- The bend section of air piping should have enough allowance (Use the special tool for bending works) and should band together with parallel running pipings.
- In accordance with an electric equipment technical standard, electrical-work qualified personnel should perform wiring work.
- The connection of a cable should choose a cable gland packing which suited outer diameter of the cable in according to facility conditions.
- Please do not use a seal tape for air piping. the piece of a tape is getting it blocked, there is a possibility of becoming the trouble cause that operation of a differential pressure transmitter.
- Wiring work should avoid and perform rainy weather and the condition of high humidity. Permeation of the moisture to the inside of a connector or a terminal box generates rust cause and a short circuit.
- The seal section of a cable screw or the conduit tube needs to carry out certainly, and must not have permeation of moisture.

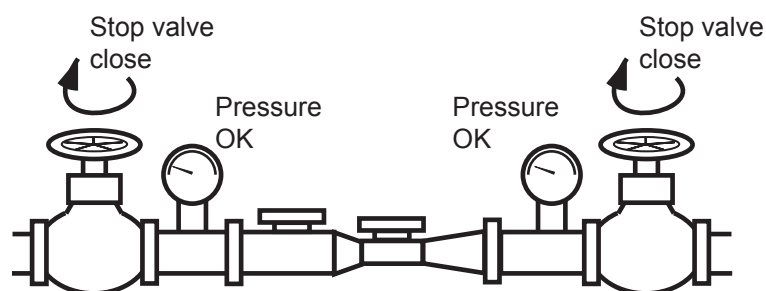


5 : Decomposition Assembly

Decomposition

WARNING

- When you remove a sensor, please confirm that the pressure in piping has fallen to atmospheric pressure strength, and start work. There is a possibility of the accident resulting in injury or death by jet of a fluid.
- In case you remove a sensor, please washing and displacement in a sensor. There is a possibility of the accident resulting in injury or death by the remains fluid for piping.



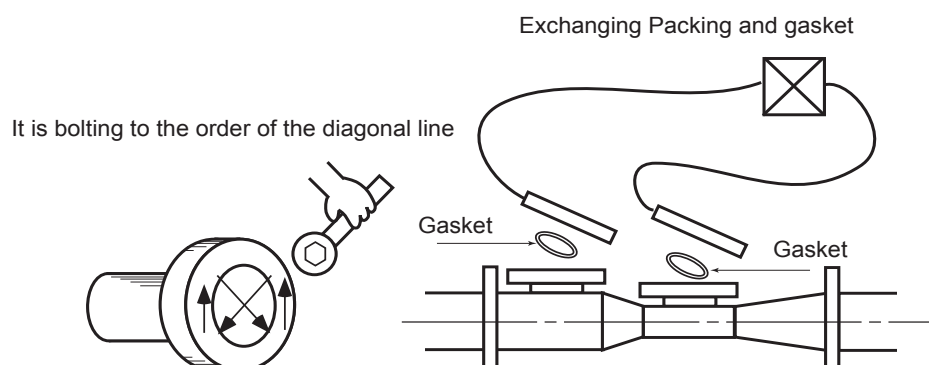
Assembly

CAUTIONS

- Please bind bolting of the bolt nut for piping flanges tight with torque uniform by turns on the diagonal line.
- Please use new packing and a new gasket in the case of main part section attachment. Reusing of the old packing and gasket become causes of fluid leakage.

WARNING

The blemish and corrosion of a bolt nut should cause a sensor section fluid leak, and since there is possibility of a accident resulting in injury or death, please exchange them for a new one.



6 : Maintenance Check Up

A Maintenance check up should keep the following notes.

WARNING

- When the leakage of a fluid is discovered from a sensor, please do not approach a sensor until the safety is confirmed. Depending on the description of a fluid, there is a possibility of a big accident or a accident resulting in injury or death.
- Please process appropriately the old parts generated in removal and a Maintenance of a sensor as an industrial waste. If it burns easily or disposes, it will become the causality of environment pollution.

1. Single pipe density meter, flow nozzle, orifice

- (1) When removing a diaphragm after measuring, high temperature liquids (black liquor etc.).

Single pipe density meter (a flow nozzle, orifice)

When the close of the stop valve of the upstream and remove the diaphragm of a differential pressure transmitter, it is a possibility to remain high temperature steam in the piping. Please confirm and remove safely as a grade loosened a little, without removing all diaphragm bolts, looking at a situation. When a pressure is low, please remove a diaphragm after rounding off by waste close etc. and stopping the steamy blow down.

- (2) 2 in. pipe stanchion for differential pressure transmitter.

It is not manufactured so that a heavy load may be attached. Please do not install except a differential pressure transmitter. A worker must not ride on this 2 in. pipe stanchion. There is possibility of instrument damage or a accident resulting in injury or death.

- (3) 1½ in. plug

- Even if it removes a plug, mud may be got blocked and inner liquid may not flow out. If it pokes at the nose of cam of a driver etc. and mud is removed, muddy water will blow off suddenly. The specific gravity of muddy water is heavy, a plug cannot reinstalled. Please install and fully open a ball valve etc. remove mud, if it blows off, will be close a ball valve carefully etc. and deal with it.
- Please do not look into a plug with the naked eye. Muddy water may blow out suddenly.

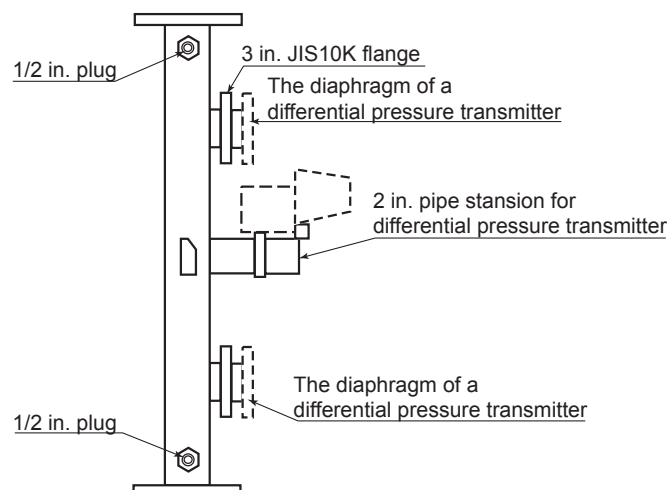


Figure 9

2. Tap Less Flowmeter

- (1) When removing a diaphragm after measuring high temperature liquids (black liquor etc.).

When the close of the stop valve of the upstream and remove the diaphragm of a differential pressure transmitter, it is a possibility to remain high temperature steam in the piping. Please confirm and remove safely as a grade loosened a little, without removing all diaphragm bolts, looking at a situation.

When a pressure is low, please remove a diaphragm after rounding off by waste close etc. and stopping the steamy blowdown.

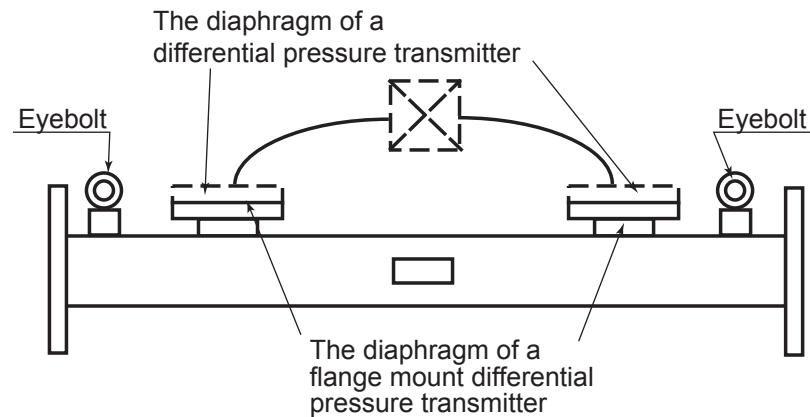


Figure 10

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