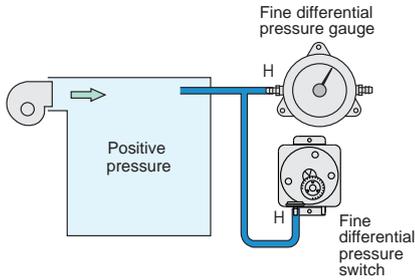
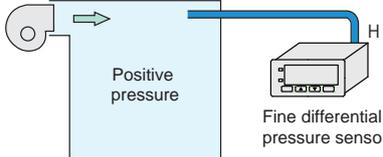
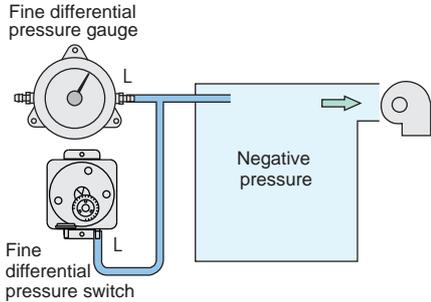
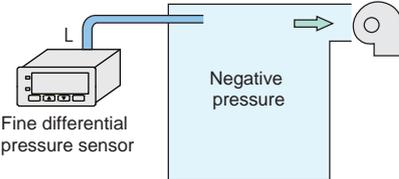


## Use example

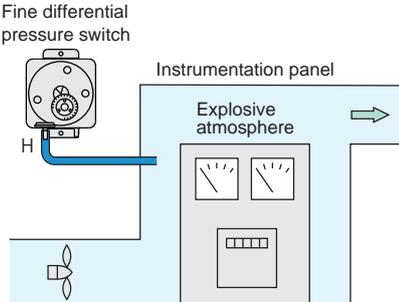
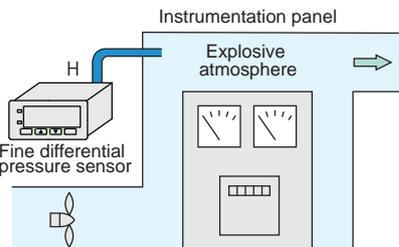
### Static pressure measurement

#### ◆ Measurement of static air Monitoring of pressure inside room and alarm issuance

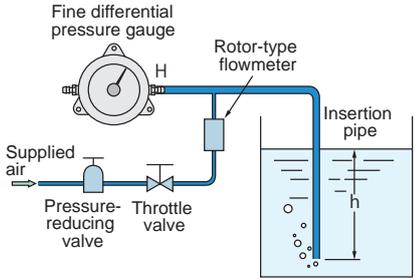
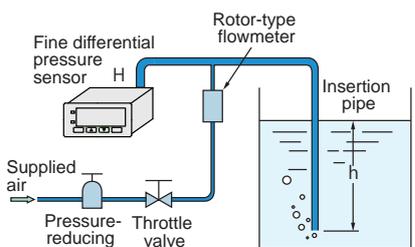
H: high pressure side L: low pressure side

|  |  |  |
|--|--|--|
| <p><b>(1) Example of use in clean room</b></p> <p>The instrument is used to monitor the positive pressure in a clean room. By keeping the clean room under positive pressure, inflow of air from the outside is prevented.</p>                                     |  <p>The diagram shows a clean room under positive pressure. A fine differential pressure gauge is connected to the room (H) and the outside (L). A fine differential pressure switch is also connected to the same points.</p>  |  <p>The diagram shows a clean room under positive pressure. A fine differential pressure sensor is connected to the room (H) and the outside (L).</p> |
| <p><b>(2) Example of use at factory that handles hazardous substances</b></p> <p>The instrument is used to monitor negative pressure. By keeping the inside of the factory under negative pressure, leakage of air in the factory to the outside is prevented.</p> |  <p>The diagram shows a factory under negative pressure. A fine differential pressure gauge is connected to the outside (L) and the factory (H). A fine differential pressure switch is also connected to the same points.</p> |  <p>The diagram shows a factory under negative pressure. A fine differential pressure sensor is connected to the outside (L) and the factory (H).</p> |

#### ◆ For internal pressure explosion-proof

|   |  |  |
|---|--|--|
| <p>When devices are used in an explosive atmosphere, they are used after clean air is supplied for a certain time until the pressure stipulated by the relevant law or regulation is reached.</p> |  <p>The diagram shows an instrumentation panel in an explosive atmosphere. A fine differential pressure switch is connected to the atmosphere (H) and a clean air supply (L).</p> |  <p>The diagram shows an instrumentation panel in an explosive atmosphere. A fine differential pressure sensor is connected to the atmosphere (H) and a clean air supply (L).</p> |
|---|--|--|

#### ◆ Liquid level gauge (air purge type)

|   |   |  |
|---|---|--|
| <p>A pipe is inserted into a tank, and a tiny amount of air is released from the tip of the pipe. At this point, as the pressure inside the pipe reaches [liquid level height × specific gravity of liquid], it is possible to know the liquid level height if the specific gravity of the liquid is known.</p> |  <p>The diagram shows a tank with an insertion pipe. A fine differential pressure gauge is connected to the pipe (H) and a clean air supply (L). A rotor-type flowmeter is also connected to the pipe.</p> |  <p>The diagram shows a tank with an insertion pipe. A fine differential pressure sensor is connected to the pipe (H) and a clean air supply (L). A rotor-type flowmeter is also connected to the pipe.</p> |
|---|---|--|



Select the base, piping material, and other components in accordance with the use environment.

# Application

## Use example

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

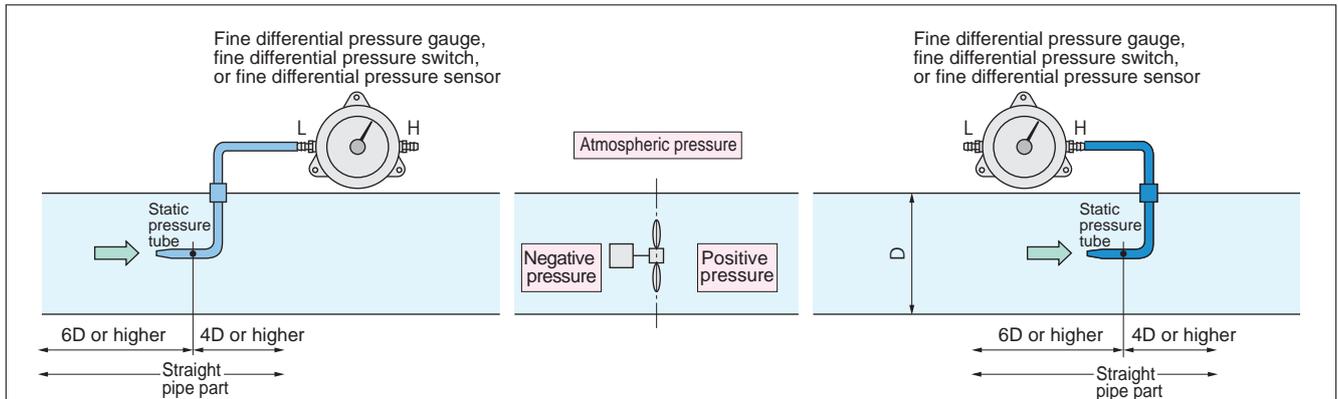
Application

Precautions

Maintenance

### Static pressure measurement

◆ Measurement of flowing air Monitoring of ventilation/exhaust device and alarm issuance H: high pressure side L: low pressure side



In measurements of static pressure inside a normal duct, because of turbulence, it may become difficult to read the value on a fine differential pressure gauge as the pointer pulsates, or the measurement value is subject to error. Therefore, be sure to attach a static pressure pipe to the straight pipe part with a determined length. Because the static pressure in the duct becomes positive pressure and negative pressure before and after the fan, be sure to connect pipes by paying attention to the polarities of the bases (high-pressure side, low-pressure side) of the fine differential pressure gauge, fine differential pressure switch, and fine differential pressure sensor.

|  |  |   |
|--|--|---|
| <p><b>(1) For prevention of burn accidents from an electric heater</b></p> <p>When the fan in an electric heater stops during energization of the heater, the fine differential pressure switch is activated to stop all devices and prevents temperature rises and fusing of the heater.</p>  | <p>Fine differential pressure switch</p> <p>H</p>  | <p>Fine differential pressure sensor</p> <p>H</p> |
| <p><b>(2) For monitoring of flue exhaust/burner air supply</b></p> <p>The fine differential pressure switch detects incomplete combustion due to insufficient exhaust and combustion stoppage due to a failure of the air blower, and issues an alarm.</p>   | <p>Fine differential pressure gauge</p> <p>H</p> <p>Fine differential pressure switch</p> <p>L</p> | <p>Fine differential pressure sensor</p> <p>H</p> |
| <p><b>(3) For control of airflow rate in drying furnaces and tunnel ceramic kilns</b></p> <p>To keep hot airflow in an optimum condition, the airflow is monitored via the fine differential pressure switch, and once the airflow condition worsens, an alarm is issued, or the hot airflow is shut off, and the device is stopped.</p> | <p>Fine differential pressure gauge</p> <p>L</p> <p>Fine differential pressure switch</p> <p>H</p> | <p>Fine differential pressure sensor</p> <p>L</p> |

Select the base, piping material, and other components in accordance with the use environment. The dimensions on the upstream side and those on the downstream side differ depending on the duct shape. For details, refer to page 108.

## Use example

### Measurement of airflow rate and airflow speed

#### ◆ Example of use for detecting airflow rate in ducts

H: high pressure side L: low pressure side

|   |  |  |
|---|--|--|
| <p><b>(1) For Pitot tubes (overall/static pressure pipe)</b></p> <p>When the airflow speed is faster than 2 m/s, it is possible to detect the dynamic pressure by installing an overall/static pressure pipe and obtain the airflow speed by a calculation formula (refer to page107). When the maximum airflow speed at the center of the duct is obtained, it is possible to obtain the airflow rate by the formula [Maximum airflow speed × Duct cross section area × 0.9].</p>    |  |  |
| <p><b>(2) For Pitot tubes (static pressure pipe + total pressure pipe)</b></p> <p>To obtain airflow rate/airflow speed simply and at a low cost, use the static pressure pipe and total pressure pipe as shown in the figure on the right.</p>  |  |  |
| <p><b>(3) For orifices</b></p> <p>A device that throttles a conduit in which air flows by means of a circular plate with a round hole is called an orifice. Narrowly throttling the conduit increases the flow speed and reduces the static pressure. At this point, by measuring the differential pressure before and after the orifice, the airflow rate is calculated.<br/>*We do not handle orifices.</p>   |  |  |
| <p><b>(4) For composite Pitot tubes</b></p> <p>By equally dividing a duct cross section, installing a single Pitot tube at the center of each division, and by gathering the total pressures and static pressures, respectively, of those Pitot tubes, it is possible to extract the average total pressure and average static pressure at the same time.<br/>*We do not handle composite Pitot tubes.<br/>For details, make an inquiry to the composite Pitot tube manufacturer.</p> |  |  |



Select the base, piping material, and other components in accordance with the use environment. The dimensions on the upstream side and those on the downstream side differ depending on the duct shape. For details, refer to page 108.

# Application

## Use example

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

Application

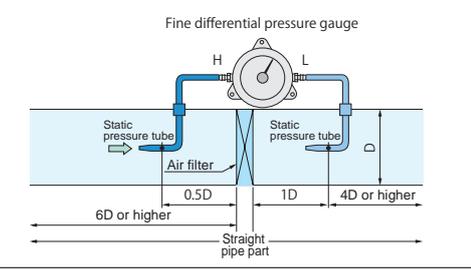
Precautions

Maintenance

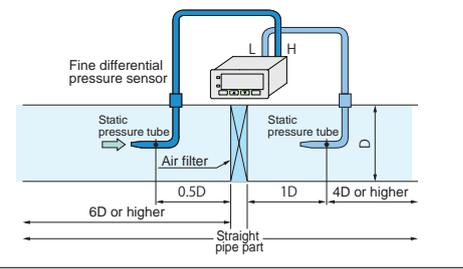
### Measurement of pressure loss

#### ◆ For detection of clogging of filters

By installing two static pressure tubes, one each before and after the filter, and measuring the pressure loss, it is possible to know the degree of clogging of the filter. Generally, a pressure range with its maximum value ranging from 300 Pa to 1000 Pa is used.

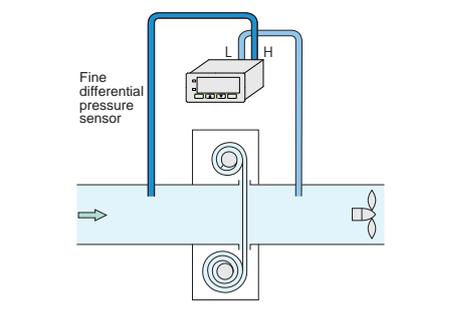
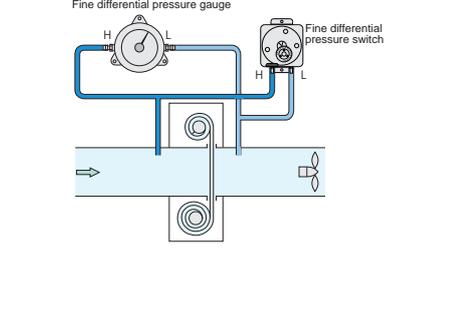


H: high pressure side L: low pressure side



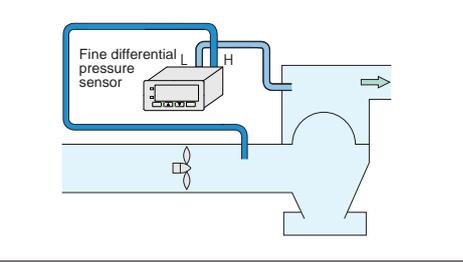
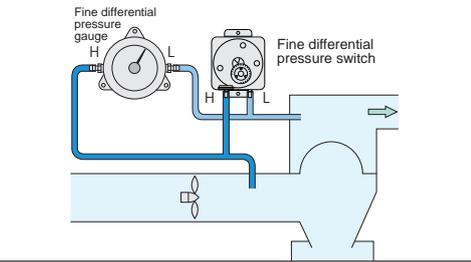
#### ◆ For transmission of the drive signal of automatic filters

When the filter is clogged and the airflow rate decreases, the fine differential pressure switch is switched. Switching of the fine differential pressure switch energizes and starts the filter winding motor to feed a new filter.



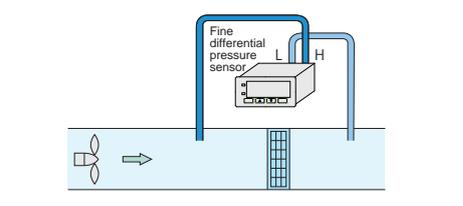
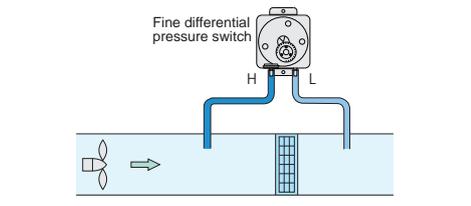
#### ◆ For bug filter dust collectors

The fine differential pressure switch detects the dust collection amount in accordance with the clogging condition of the bug filter and the cycle, and operates the aeration device to clean the bug filter.



#### ◆ For detection of the defrosting cycle of cooling coil

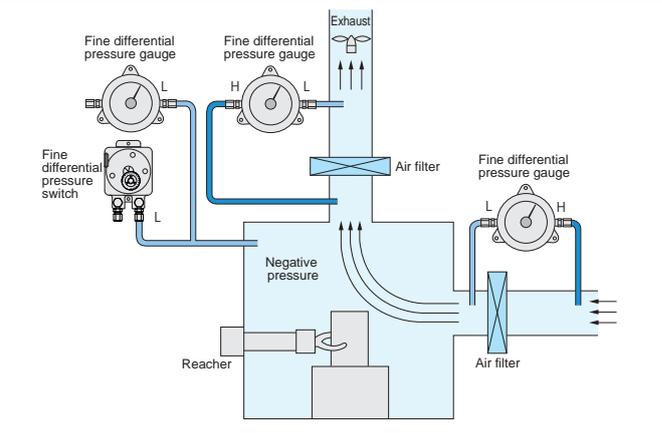
In the cooling operation, to prevent attachment of frost on the cooling coil and decrease of its function, the fine differential pressure switch detects the frost attachment amount and issues a defrosting operation instruction.



### Measurement of static pressure and pressure loss

#### ◆ For glove boxes

Instruments are used to control the inner pressure, and the target object in the glove box is handled by means of a reacher. (The figure on the right illustrates a use example in which the pressure in the box interior is set to a negative pressure to prevent leakage from the inside.)



**Caution** Select the base, piping material, and other components in accordance with the use environment. The dimensions on the upstream side and those on the downstream side differ depending on the duct shape. For details, refer to page 108.

## Warranty

### Warranty period

The warranty period for our product is one (1) year from delivery to the location specified by the orderer who makes a direct transaction with us.

### Scope of warranty

If any failure or defect attributable to us becomes clear during the above warranty period, we will repair the product or supply a substitute product free of charge. However, even during the warranty period, we will exclude the product from the scope of the warranty if the failure or defect corresponds to any of the following:

- (1) The failure or defect was caused by an unreasonable condition, environment, handling, or usage not mentioned in the instruction manual, specifications, and our product catalog.
- (2) The failure or defect was caused by a factor other than our product.
- (3) The failure or defect was caused by a modification or repair conducted by a party other than us.
- (4) The failure or defect was caused by an event that could not be foreseen at the scientific and technical levels at the time of product shipment from us.
- (5) The failure or defect was caused by an external factor not attributable to us, such as acts of God and disasters.

Please note that the warranty mentioned here means the warranty for our individual product, and damage provoked by a failure or defect of the product is excluded from the scope of the warranty.

\*This warranty is valid only in Japan.

## Application and usage

Our products are designed and manufactured as general-purpose instruments for general industries.

Therefore, our products are not intended for the following uses, and our products used in such a manner are outside the scope of application.

- (1) Equipment that is anticipated to greatly affect lives and properties, such as nuclear power generation, aviation, railways, marine vessels, vehicles, and medical devices
- (2) Utilities that include electricity, gas, and service water
- (3) Use in outdoor locations and under similar conditions or environments other than those stipulated in the instruction manual
- (4) Usage to which considerable safety consideration and attention equivalent to (1) and (2) above need to be given

## Service

### Scope of service

Because the product price does not include service expenses, such as the dispatch of engineers, we will separately charge for the expenses in the following cases:

- (1) Instruction for installation and adjustment and a witnessed test run
- (2) Maintenance inspection, adjustments, and repairs
- (3) Technical guidance and technical education
- (4) Witnessed inspections of products at our factory

<<Note>> The product specifications and information in this catalog are subject to change without prior notice for product improvement or other reasons.

● For order placement, contact

General agent



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Manufacturer



**Yamamoto Electric Works Co., Ltd.**

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