

Pressure Switches

Type Z



The actual results prove of reliability.

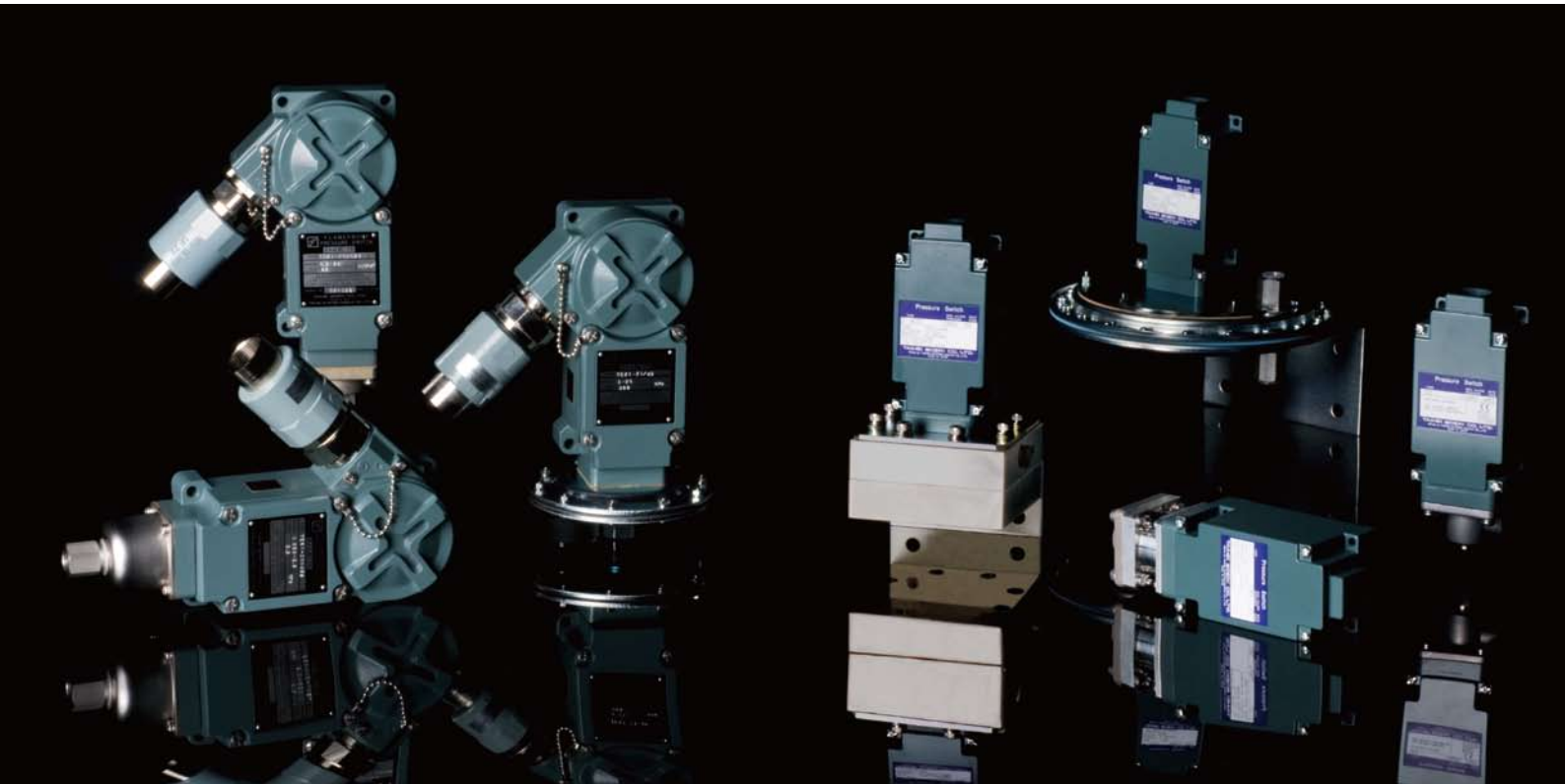
A Total Supplier of Pressure Switches

Taihei Boeki Co., Ltd.



QEC25000 ISO 9001: 2015
Design and manufacturing of pressure switch





High-performance Pressure
Switches supported
by the original technology
of Taihei Boeki

Z Family

Taihei Boeki has always moved through with the history of pressure switches of Japan. The type Z pressure switches were originated by Taihei Boeki, which have been developed with its long time study respecting to various requirements of customers. Utilizing its original technology and establishing simple design structure, improvement of the reliability, compact size and price-reduction have been realized at the same time.

The Z family fully lined up with the “Z series” that is, so to say, a standard of pressure switches, the “New Z series” featuring high proof pressure and extremely small differential, and the “TEX-Z series” for explosion-proof applications, has become reliable brand boasting the sales result of more than 700,000 units since its first release in 1980.



Z Series

Diaphragm / Piston Type

Pressure Switches



New Z Series

Diaphragm Actuated Small Differential
and High Proof Pressure Type

Pressure Switches and
Differential Pressure Switches



TEX-Z Series

Explosion-proof (ExdIICT6)

Pressure Switches and
Differential Pressure Switches





Z Series

| Name of Product | Pressure Switches (Diaphragm Actuator) | Pressure Switches (Piston Actuator) | Pressure Switches (Piston Actuator) |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Model | TCZ□□ TCZ□□□F TCZ□□□K | TDZ□□ TDZ□□□F TDZ□□□K | Z□□□PM Z□□□PMW |
| Appearance |  |  |  |
| Pressure Range | 0.005-1.8 MPa 0.05-18 kgf/cm ² | 0.1-63.5 MPa 1-635 kgf/cm ² | 1-50 MPa 10-500 kgf/cm ² |
| Pressure Medium | Air, Water, Oil, Gases, Steam | Oil | Water, Steam, Oil |
| Actuator | Diaphragm | Piston | Piston |
| Material of the Pressure Sensing Element | Nitrile Rubber | Cylinder : Brass (Nickel plated), SUS303 Piston : Brass, SUS420F | SUS420F · SUS316 |
| Micro Switch | SPDT (1a, 1b) In addition to a standard type, a micro-load type (for 24VDC) and a sealed type (environment resistance) are also available. | | SPDT(1c) DPDT is also available. |
| Applicable Standards | CCC approved* and CE approved** * Except with the pilot lamps ** Except an outside adjustable type and a sealed type | | CCC approved |
| Remarks | An outside adjustable type (model "K") and a fixed differential type (model "F") are also available. | | Differential is not adjustable. |

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New Z Series

| Pressure Switches (Small differential, high proof pressure) | Differential Pressure Switches (Small differential, high proof pressure) | Differential Pressure Switches (Small differential, high proof pressure) | |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Z□□□D Z□□□DW | Z□□□DD Z□□□DDW Z□□□DDEX Z□□□DDWEX | Z1/4DD Z1/4DDW | Z1/30DD |
|  |  |  |  |
| 0.002-28 MPa 0.02-280 kgf/cm ² | 0.002-21 MPa 0.02-210 kgf/cm ² | 0.0005-6.6 MPa 0.005-66 kgf/cm ² | 0-46 kPa 0-0.46 kgf/cm ² |
| Air, Water, Oil, Gases, Steam | | | |
| Diaphragm | | | |
| SUS316L | Polyimide, SUS316 | | Nitrile Rubber, Aluminum |
| SPDT(1c) DPDT is also available. | | | SPDT(1c) only |
| CCC approved | | | |
| Differential is not adjustable. | Dead band is not adjustable. | | |

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Reference Chart of The Z Family Products





TEX-Z Series

| Name of Product | Standard Type (Diaphragm Actuator) | Micro-Pressure Switches (Diaphragm Actuator) | Standard Type (Piston Actuator) |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Model | TEX□-Z□□□D | TEX□-Z1/4D | TEX□-Z□□□P |
| Appearance |  |  |  |
| Pressure Range | 0.005-1.8 MPa 0.05-18 kgf/cm ² | 3-25 kPa 0.03-0.25 kgf/cm ² | 0.1-63.5 MPa 1-635 kgf/cm ² |
| Pressure Medium | Air, Water, Oil, Gases, Steam | | Oil |
| Actuator | Diaphragm | | Piston |
| Material of the Pressure Sensing Element | Nitrile Rubber | | Cylinder : Brass (Nickel plated), SUS303 Piston : Brass, SUS420F |
| Micro Switch | SPDT (1a, 1b) In addition to a standard type, a micro-load type (for 24VDC) and a sealed type (environment resistance) are also available. | | |
| Applicable Standards | ExdIICT6 (explosion-proof class) approved | | |
| Remarks | | | |

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| Standard Type (Bellows Actuator) | Compound Vacuum Pressure Switches | Pressure Switches (Small differential, high proof pressure) | Differential Pressure Switches (Small differential, high proof pressure) |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| TEX□-Z□□□BS | TEX□-Z□□□BR | TEX-Z□□□DH | TEX-Z□□□DD TEX-Z□□□DDEX |
|  |  |  |  |
| 0.005-11.5 MPa 0.05-115 kgf/cm ² | 80kPaVac-900kPa 600mmHgV-9kgf/cm ² | 0.002-28MPa 0.02-280kgf/cm ² | 0.0005-21MPa 0.005-210kgf/cm ² |
| Air, Water, Oil, Gases, Steam | | | |
| Bellows | | Diaphragm | |
| SUS316L | Phosphor Bronze | SUS316L | Polyimide, SUS316 |
| SPDT (1a, 1b) In addition to a standard type, a micro-load type (for 24VDC) and a sealed type (environment resistance) are also available. | | SPDT(1c) only | |
| ExdIICT6 (explosion-proof class) approved | | | |
| | | Differential is not adjustable. | Dead band is not adjustable. |
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General-purpose Pressure Switches

Z Series



A standard of pressure switches brought forth by the original technology of Taihei Boeki.

The Z series are compact, high-performance and high general purpose pressure switches.

■ High reliability and outstanding cost performance

Adopted a simple and robust original-structure generated from the long-time research and development of Taihei Boeki, the Z series pressure switches have realized compatibility of high reliability and outstanding cost performance.

An adjustable differential type, an outside adjustable type, or a fixed differential type can be selected in accordance with your applications.

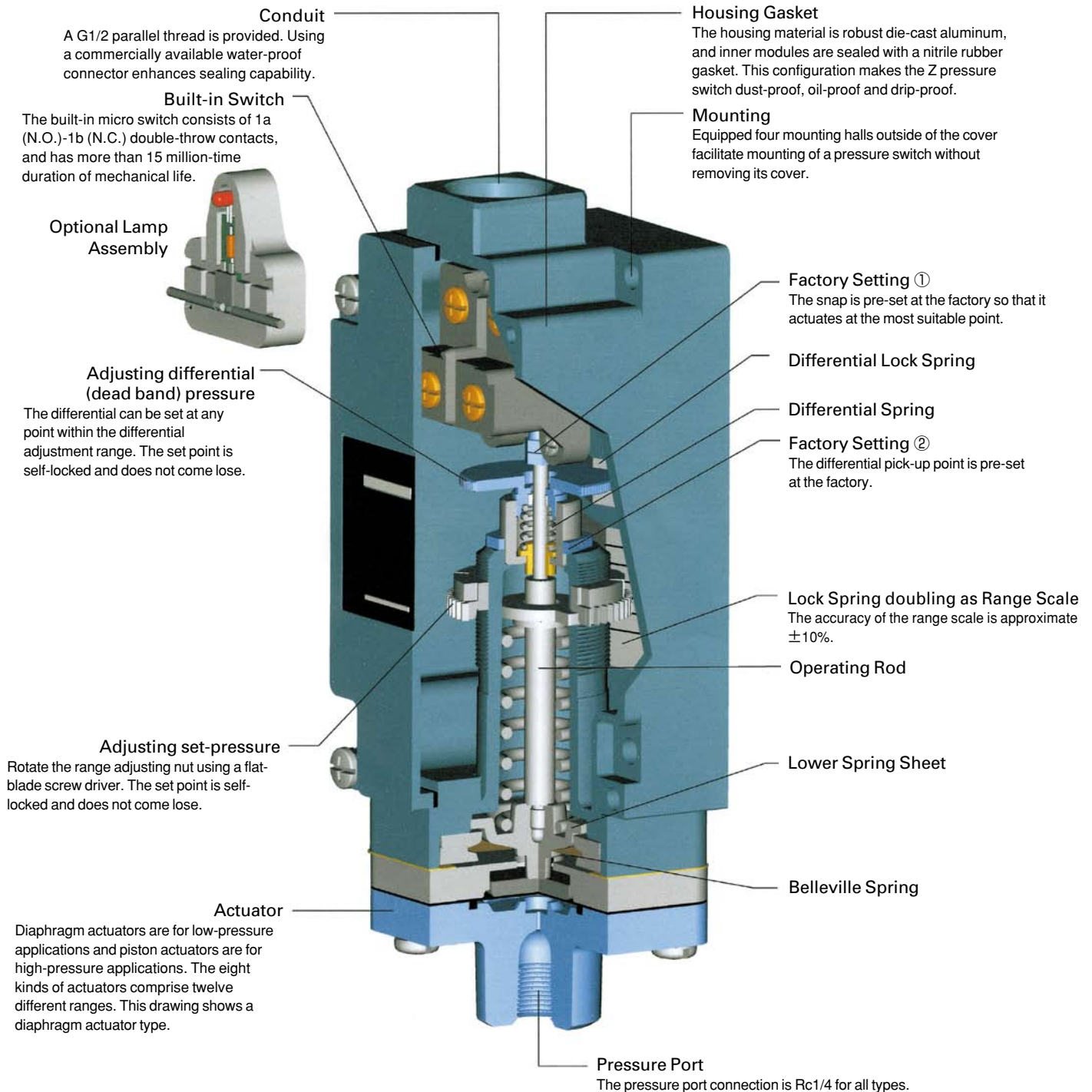
■ A diaphragm or a piston has been adopted as the actuator.

A diaphragm actuator for low pressure applications and a piston actuator for high pressure applications have been adopted respectively. The piston actuator has adopted a sealed piston configuration sealed with an O-ring and a cup seal.

■ Slim and compact design

An external appearance of the Z series is exceptionally slim and compact. The common design of all types gives good impression of uniformity. And, all encapsulated module parts in the housing realize user-friendly operation and safety.

Structural Drawing of the Z Series



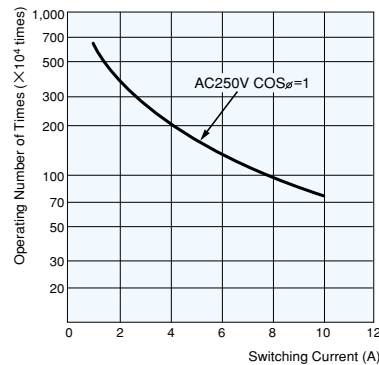
Specifications

- Operating Ambient Temperature : $-10 \sim +80^{\circ}\text{C}$
- Operating Ambient Humidity : Less than or equal to 95%RH
- Allowable Operating Frequency : 120 cycles /minute
- Enclosure Type : IP65 (Outside Adjustable Type is excluded)
- Insulation Resistance : Between discontinuous terminals, and between each terminal and non-charging metal; Over 100MΩ (at DC500V)
- Withstand Voltage : Between discontinuous terminals; 1000VAC, 50/60Hz, 1 minute
Between each terminal and non-charging metal, and ground; 2200VAC 50/60Hz, 1minute
- Contact Resistance : Less than or equal to 25 Ω (initial value)
- Surge Dumper Orifice : Diaphragm actuator $\phi 1.5 \times 1.5$
Piston actuator $\phi 0.8 \times 1.5$
(Except TDZ-1 that has no orifice)
- Electrical Lifetime : Refer to the electrical lifetime curve in the diagram shown below.
- Repeatability : $\pm 0.5\%$ of max range
Z350PM(W) and Z500PM(W) are $\pm 1\%$ of max range

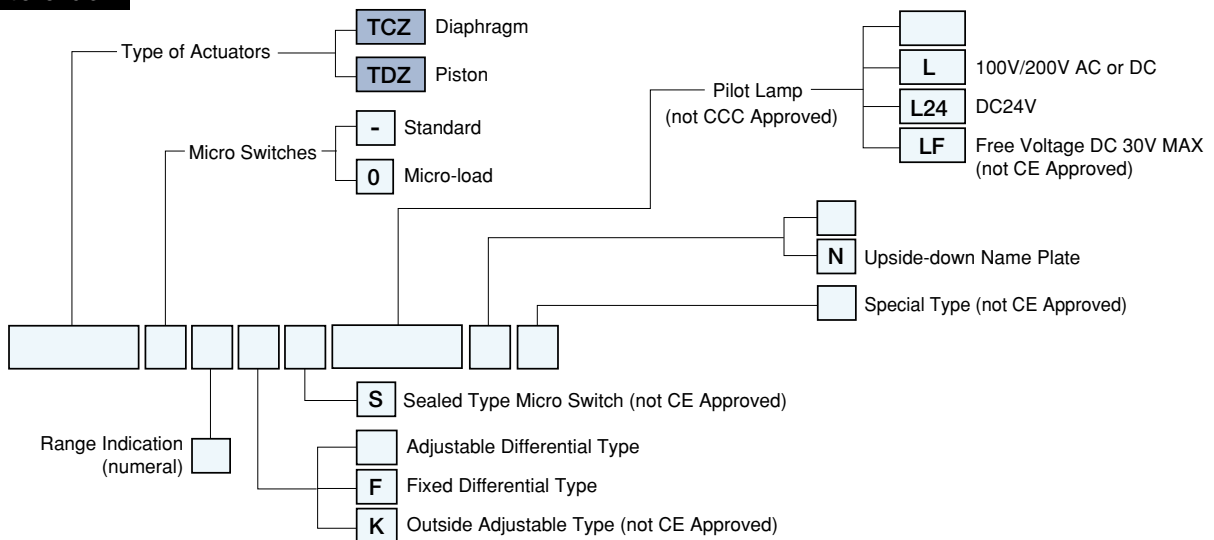
- Material of the Pressure : TCZ-5、1、2
- Sensing Element Diaphragm Nitrile rubber (Buna-N)
- (Models with "F" or "K" Flange Die-cast aluminum option are the same.)
- O-ring Nitrile rubber (Buna-N)
- : TDZ-1
- Cylinder Brass (nickel plated)
- Piston Brass
- O-ring Nitrile rubber (Buna-N)
- Cup SealTeflon*
- : TDZ-3、4、7、13、34、47
- Cylinder Brass (nickel plated)
- Piston SUS420F
- Bushing Brass
- O-ring Nitrile rubber (Buna-N)
- Cup SealTeflon*
- : TDZ-8、78
- Cylinder SUS303
- Piston SUS420F
- Bushing Brass
- O-ring Nitrile rubber (Buna-N)
- Cup SealTeflon*
- : Z350PM(W), Z500PM(W)
- Cylinder SUS316
- Piston SUS420F
- O-ring Viton

* Teflon is the registered trademark of DuPont.

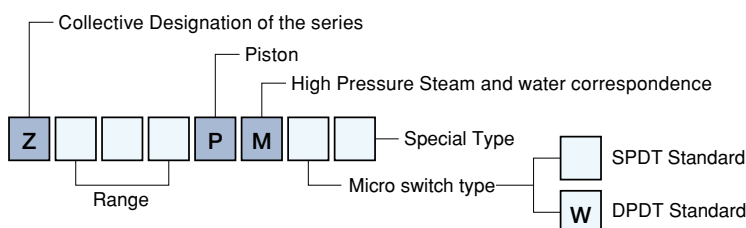
Electrical Lifetime Curve



How to order



* An outside adjustable type (symbol "K"), a sealed micro switch type (symbol "S"), a switch equipped with a free-voltage pilot lamp (symbol "LF"), and a pressure switch with custom specifications are not CE approved.
* CCC approved products is not available for the with pilot lamps.



When CCC approved is needed, add appendix of-C to the end of model number.
Example : An approved of TCZ-1 TCZ-1-C

Pressure Switches (Diaphragm Actuator)

TCZ□□□/TCZ□□□F



Features

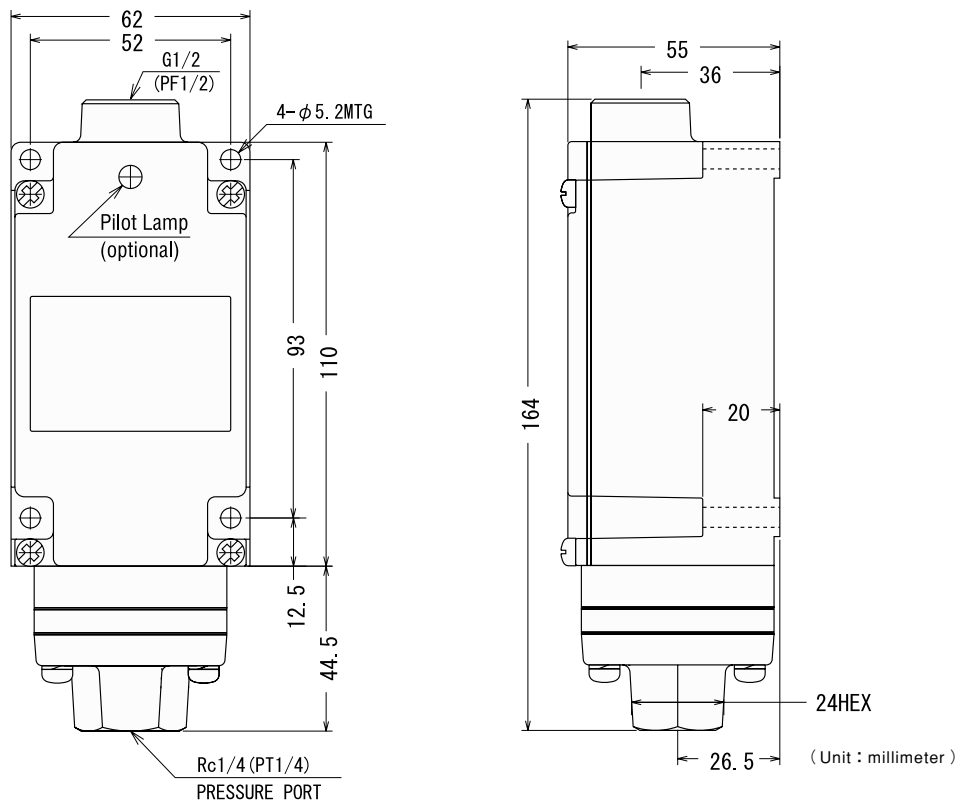
- The pressure switches have adopted a nitrile rubber diaphragm as the pressure sensing element.
- The pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- The pressure switches are applicable to pressure ranging from 0.005 to 1.8MPa.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24V DC), and a sealed type (environment resistance).
- A fixed differential type (symbol “F”) is also available.
- CCC and CE approved.
(Please note that CE approved switches is not available for the sealed type. CCC certified products is not available for the with pilot lamps.)

| | Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) Add to the Range Value MPa (kgf/cm ²) | | | Proof Pressure MPa (kgf/cm ²) |
|------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|-----------------------------|----------------------------------------------|
| | | | Lower Range MIN. - MAX. | Middle Range MIN. - MAX. | Higher range MIN. - MAX. | |
| Adjustable Differential (Dead Band) Type | TCZ-5 | 0.005-0.52 (0.05-5.2) | 0.02-0.1 (0.2-1) | 0.02-0.11 (0.2-1.1) | 0.03-0.12 (0.3-1.2) | 1.8 (18) |
| | TCZ-1 | 0.005-1 (0.05-10) | 0.03-0.2 (0.3-2) | 0.04-0.21 (0.4-2.1) | 0.05-0.22 (0.5-2.2) | 3 (30) |
| | TCZ-2 | 0.02 - 1.8 (0.2-18) | 0.08-0.39 (0.8-3.9) | 0.08-0.4 (0.8-4) | 0.12-0.42 (1.2-4.2) | 4 (40) |
| Fixed Differential (Dead Band) Type | TCZ-5F | 0.005-0.52 (0.05-5.2) | 0.02 (0.2) | 0.03 (0.3) | 0.03 (0.3) | 1.8 (18) |
| | TCZ-1F | 0.005-1 (0.05-10) | 0.03 (0.3) | 0.04 (0.4) | 0.05 (0.5) | 3 (30) |
| | TCZ-2F | 0.02 - 1.8 (0.2-18) | 0.08 (0.8) | 0.1 (1.0) | 0.12 (1.2) | 4 (40) |

- The differential (dead band) becomes larger to a certain extent in accordance with increase of the pressure. The above chart shows the differential adjustable range related to the pressure ranges divided into three stages.
- Select a type of your pressure switch so that it can be used within the middle of the range as much as possible.
- The differential (dead band) of Min. of adjustable differential type and fixed differential type indicates value at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.

TCZ-5 (F)
 TCZ-1 (F)
 TCZ-2 (F)

Mass : approx. 0.7kg



Pressure Switches (Piston Actuator)

TDZ□□□□/TDZ□□□□F



Features

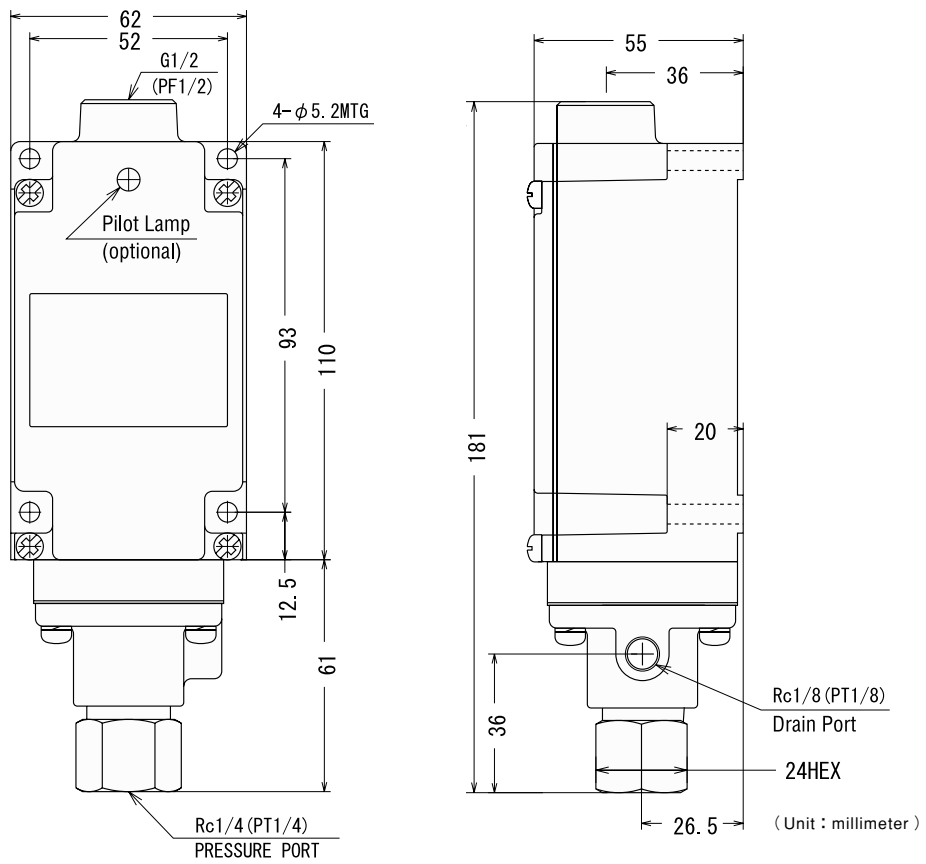
- The pressure switches have adopted a brass (nickel plated) or SUS420F piston as the pressure sensing element.
- An O-ring and a Teflon cup seal have been adopted as a seal of the piston, and this configuration realizes long-time duration of the pressure switches.
- The pressure switches are applicable to pressure ranging from 0.1 to 63.5MPa.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24V DC), and a sealed type (environment resistance).
- A fixed differential type (symbol “F”) is also available.
- CCC and CE approved.
(Please note that CE approved switches is not available for the sealed type. CCC certified products is not available for the with pilot lamps.)

| | Models | Range | | Differential (Dead Band) | | | Proof Pressure | | | | |
|---------------------------------------------------|---------|-------------|----------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|----------|---------|---------|
| | | MIN. - MAX. | MPa (kgf/cm ²) | Lower Range MIN. - MAX. | Middle Range MIN. - MAX. | Higher range MIN. - MAX. | MPa (kgf/cm ²) | MPa (kgf/cm ²) | | | |
| Adjustable Differential (Dead Band) Type | TDZ-1 | 0.1-3.2 | (1-32) | 0.2-0.7 | (2-7) | 0.2-0.7 | (2-7) | 0.25-0.8 | (2.5-8) | 10 | (100) |
| | TDZ-3 | 0.2-7 | (2-70) | 0.25-1.3 | (2.5-13) | 0.28-1.4 | (2.8-14) | 0.3-1.5 | (3-15) | 35 | (350) |
| | TDZ-4 | 0.5-20.5 | (5-205) | 0.6-3.8 | (6-38) | 0.7-4 | (7-40) | 1.2-4.2 | (12-42) | 70 | (700) |
| | TDZ-7 | 1-40 | (10-400) | 1.4-7.8 | (14-78) | 1.5-8 | (15-80) | 1.8-8.5 | (18-85) | 70 | (700) |
| | TDZ-8 | 2-63.5 | (20-635) | 2-11 | (20-110) | 2.5-12 | (25-120) | 3-12 | (30-120) | 120 | (1,200) |
| | TDZ-13 | 0.2-3.5 | (2-35) | 0.25-1.3 | (2.5-13) | 0.3-1.4 | (3-14) | 0.35-1.5 | (3.5-15) | 35 | (350) |
| | TDZ-34 | 0.5-10 | (5-100) | 0.6-3.8 | (6-38) | 0.7-3.8 | (7-38) | 1.2-4 | (12-40) | 70 | (700) |
| | TDZ-47 | 1-20 | (10-200) | 1.4-7.5 | (14-75) | 1.5-8 | (15-80) | 1.8-8.5 | (18-85) | 70 | (700) |
| TDZ-78 | 2-30 | (20-300) | 2-11 | (20-110) | 2.5-12 | (25-120) | 3.5-12 | (35-120) | 120 | (1,200) | |
| Fixed Differential (Dead Band) Type | TDZ-1F | 0.1-3.2 | (1-32) | 0.2 | (2) | 0.25 | (2.5) | 0.3 | (3) | 10 | (100) |
| | TDZ-3F | 0.2-7 | (2-70) | 0.25 | (2.5) | 0.28 | (2.8) | 0.3 | (3) | 35 | (350) |
| | TDZ-4F | 0.5-20.5 | (5-205) | 0.7 | (7) | 0.8 | (8) | 1.2 | (12) | 70 | (700) |
| | TDZ-7F | 1-40 | (10-400) | 1.4 | (14) | 1.5 | (15) | 1.8 | (18) | 70 | (700) |
| | TDZ-8F | 2-63.5 | (20-635) | 2 | (20) | 2.5 | (25) | 3 | (30) | 120 | (1,200) |
| | TDZ-13F | 0.2-3.5 | (2-35) | 0.3 | (3) | 0.33 | (3.3) | 0.35 | (3.5) | 35 | (350) |
| | TDZ-34F | 0.5-10 | (5-100) | 0.7 | (7) | 0.8 | (8) | 1.2 | (12) | 70 | (700) |
| | TDZ-47F | 1-20 | (10-200) | 1.4 | (14) | 1.5 | (15) | 1.8 | (18) | 70 | (700) |
| TDZ-78F | 2-30 | (20-300) | 2.5 | (25) | 2.8 | (28) | 3 | (30) | 120 | (1,200) | |

- The differential (dead band) becomes larger to a certain extent in accordance with increase of the pressure. The above chart shows the differential adjustable range related to the pressure ranges divided into three stages.
- Select a type of your pressure switch so that it can be used within the middle of the range as much as possible.
- The differential (dead band) of Min. of adjustable differential type and fixed differential type indicates value at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.
- A PT1/8 drain port is equipped on the side of the body so that the pressure switch is used with piping for drains beforehand, in an environment that will not allow even a small amount of seepage. The drain port must be opened to the atmospheric pressure.

TDZ-1 (F) / TDZ-3 (F)
 TDZ-4 (F) / TDZ-7 (F)
 TDZ-8 (F) / TDZ-13 (F)
 TDZ-34 (F) / TDZ-47 (F)
 TDZ-78 (F)

Mass : approx. 0.7kg



Pressure Switches (Outside Adjustable type) (Diaphragm Actuator / Piston Actuator)

TCZ□□□K / TDZ□□□K



Features

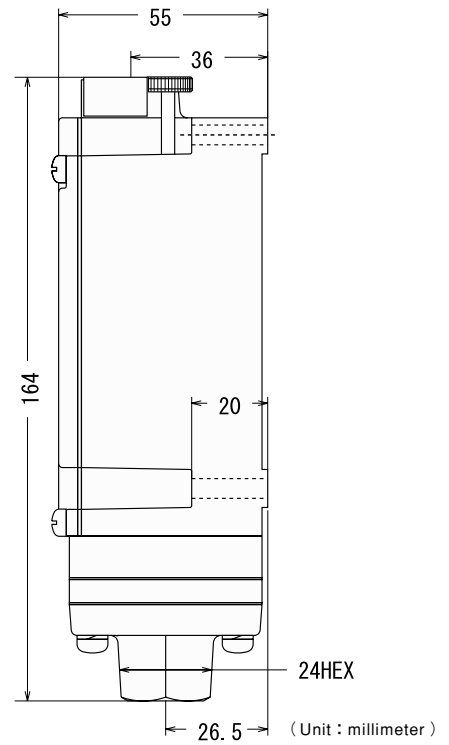
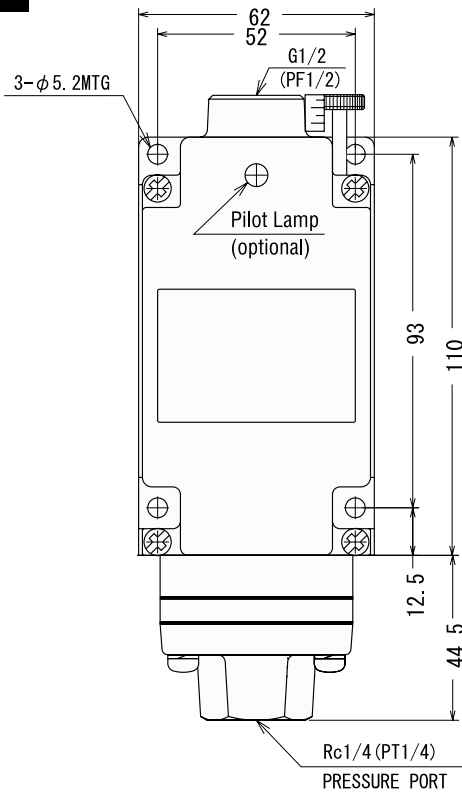
- Working pressure can be adjusted at fixed width by external handle. The adjustable pressure is based on setting by range adjust nut.
- It can't adjust full range by external handle.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- CCC approved (except with the pilot lamps).

| | Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Outside Adjustable Range MPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) Add to the Range Value (Central Value of Middle Range) MPa (kgf/cm ²) | | | Proof Pressure MPa (kgf/cm ²) |
|--------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------|--------------|----------------------------------------------|
| | | | | Lower Range | Middle Range | Higher range | |
| Diaphragm Actuator | TCZ-5K | 0.005-0.52 (0.05-5.2) | 0-0.11 (0-1.1) | 0.03 (0.3) | 0.04 (0.4) | 0.05 (0.5) | 1.8 (18) |
| | TCZ-1K | 0.005-1 (0.05-10) | 0-0.21 (0-2.1) | 0.05 (0.5) | 0.08 (0.8) | 0.09 (0.9) | 3 (30) |
| | TCZ-2K | 0.02-1.8 (0.2-18) | 0-0.42 (0-4.2) | 0.12 (1.2) | 0.16 (1.6) | 0.18 (1.8) | 4 (40) |
| Piston Actuator | TDZ-1K | 0.1-3.2 (1-32) | 0-0.7 (0-7) | 0.25 (2.5) | 0.3 (3) | 0.35 (3.5) | 10 (100) |
| | TDZ-3K | 0.2-7 (2-70) | 0-1.4 (0-14) | 0.3 (3) | 0.4 (4) | 0.5 (5) | 35 (350) |
| | TDZ-4K | 0.5-20.5 (5-205) | 0-4 (0-40) | 0.8 (8) | 1.1 (11) | 1.3 (13) | 70 (700) |
| | TDZ-7K | 1-40 (10-400) | 0-8 (0-80) | 1.6 (16) | 2 (20) | 2.2 (22) | 70 (700) |
| | TDZ-8K | 2-63.5 (20-635) | 0-12 (0-120) | 3 (30) | 3.5 (35) | 4 (40) | 120 (1,200) |

- The differential (dead band) is not adjustable.
- The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.
- Select a type of your pressure switch so that it can be used within the middle of the range as much as possible.
- A PT1/8 drain port is equipped on the side of the body so that the pressure switch is used with piping for drains beforehand, in an environment that will not allow even a small amount of see page. The drain port must be opened to the atmospheric pressure (piston actuator only).

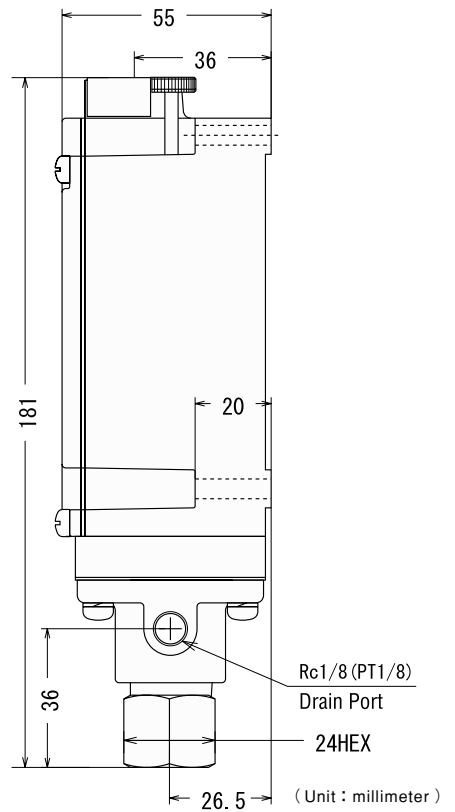
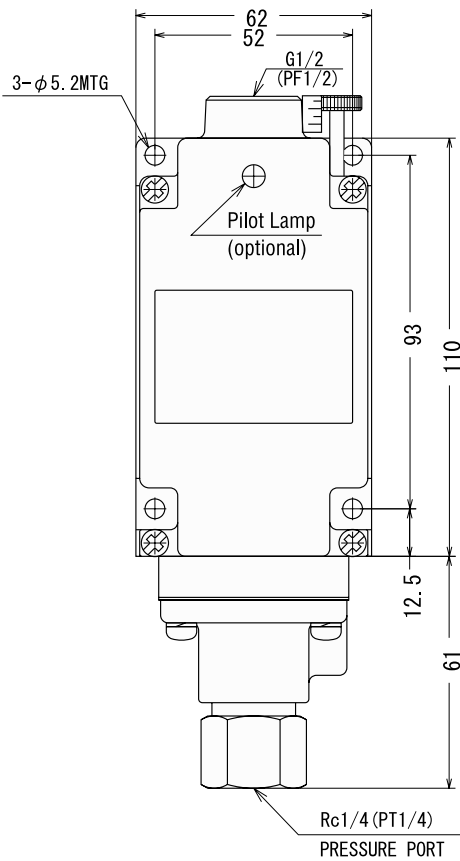
TCZ-5K
TCZ-1K
TCZ-2K

Mass : approx. 0.8kg



TDZ-1K
TDZ-3K
TDZ-4K
TDZ-7K
TDZ-8K

Mass : approx. 0.8kg



Pressure Switch (Piston Actuator) (Available for high pressure steam and water)

Z□□□PM/Z□□□PMW



Features

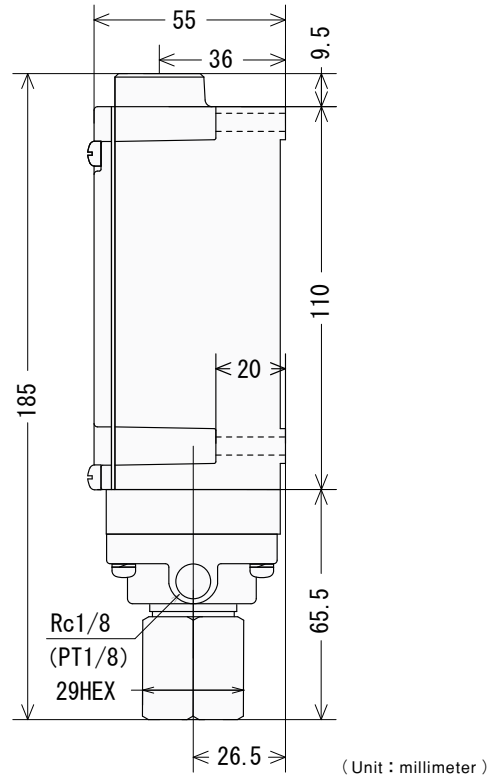
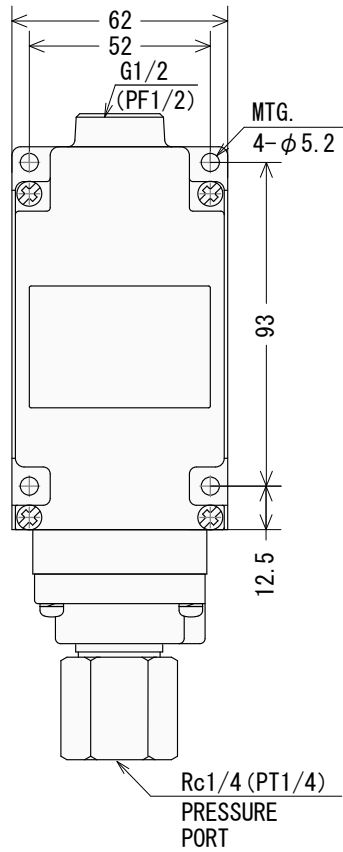
- The medium besides the oil pressure can also use the high-pressure steam and water by the specific technology.
- The sealing material is Viton, a piston made of SUS316 is adopted.
- The pressure switches are applicable to pressure from 1 to 50 MPa ranges.
- In addition to a SPDT standard micro switch, a DPDT micro switch is also available.
- CCC approved.

| | Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) MPa (kgf/cm ²) MIN. - MAX. | Rated Pressure Maximum Pressure in Continuous Use MPa (kgf/cm ²) | Proof Pressure MPa (kgf/cm ²) |
|------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| SPDT | Z350PM | 1-35 (10-350) | 1.5-2 (15-20) | 40 (400) | 70 (700) |
| | Z500PM | 2-50 (20-500) | 2-2.5 (20-25) | 63 (630) | 100 (1,000) |
| DPDT | Z350PMW | 1-35 (10-350) | 1.8-2.5 (18-25) | 40 (400) | 70 (700) |
| | Z500PMW | 2-50 (20-500) | 2.5-3.0 (25-30) | 63 (630) | 100 (1,000) |

- The differential (dead band) is not adjustable. It is fixed within the range of indicated value.
- The differential (dead band) indicates value at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.

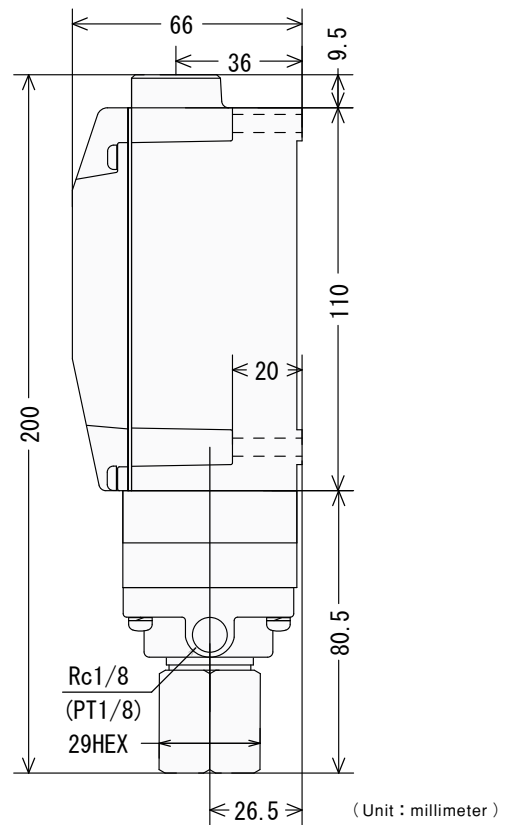
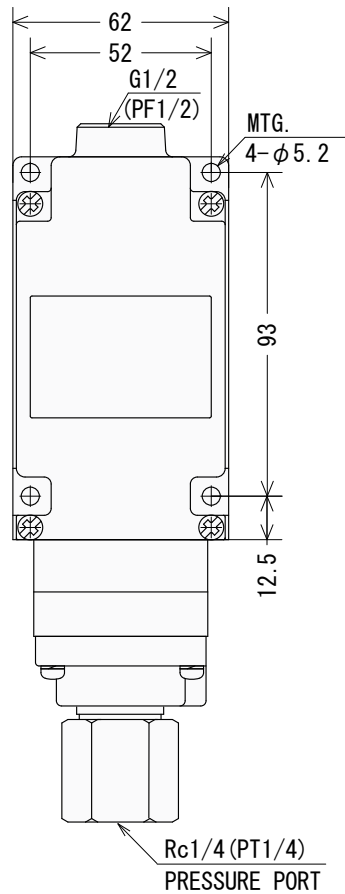
Z350PM
Z500PM

Mass : approx. 0.8kg



Z350PMW
Z500PMW

Mass : approx. 0.9kg



Diaphragm (Stainless Steel or Polyimide) Type Pressure Switches

New Z Series



**Inheriting the mechanism of the Z series,
the New Z series are pressure switches
that realize high proof pressure and
extremely small differential (dead band)
at the same time.**

■ Highly reliable basic configuration

Inheriting the distinguished original configuration of the Z series, the New Z series are pressure switches and differential pressure switches that realize high proof pressure and extremely small differential by adopting a stainless steel or a polyimide diaphragm.

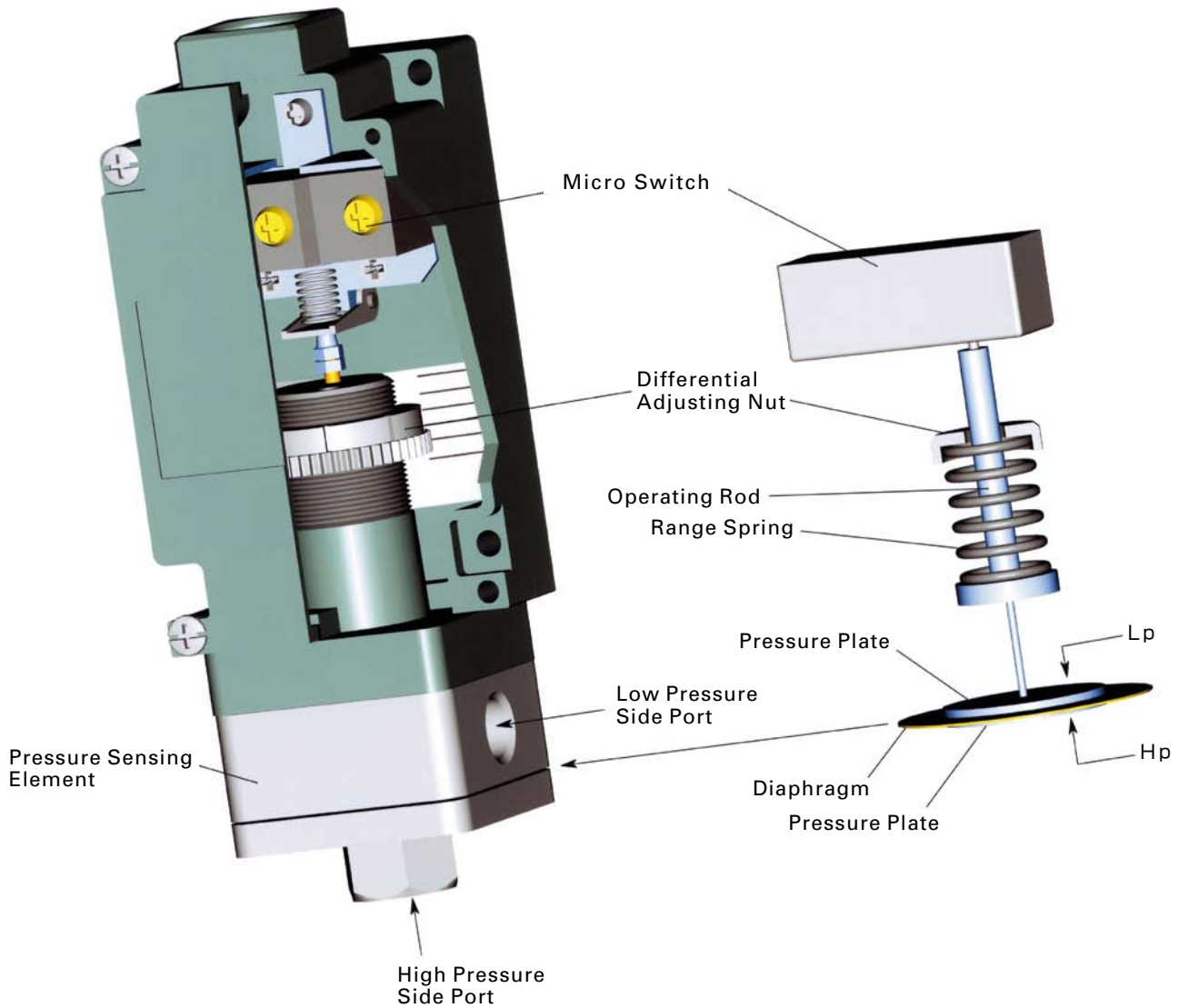
■ The pressure switchers having characteristic features of high proof pressure and extremely small differential (dead band)

The pressure switches have adopted a stainless steel diaphragm, and have characteristic features of high proof pressure and extremely small differential (dead band). They can be used for such pressure media as high pressure water or steam up to the maximum range of 28MPa.

■ A polyimide diaphragm has been adopted to the differential pressure switches.

The differential pressure switches that have adopted a polyimide diaphragm allow you to set very small differential pressure even though your system pressure is high.

Structural Drawing of the New Z Differential Pressure Switch



Operating mechanism of the New Z series differential pressure switch

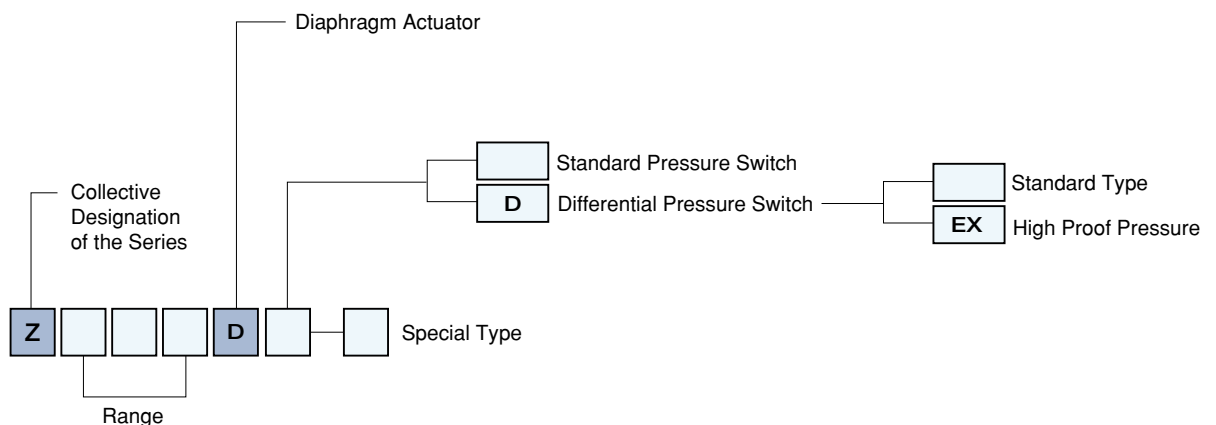
When differential pressure ($H_p - L_p$) between higher pressure and lower pressure is applied to the diaphragm, its force received by the pressure plate is transmitted to the operating rod that is regulated by the range spring. The force, then, actuates the on-off micro switch. The differential pressure can be adjusted with the differential adjusting nut.

Specifications

| | |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Housing Material : Die-cast Aluminum | |
| Painting Color : 7.5BG4/1.5 | |
| Gasket Material : Nitrile Rubber (Buna N) | |
| Enclosure Type : IP65 | |
| Pressure Port : Rc1/4 (PT1/4) | |
| Conduit : G1/2 (PF1/2) | |
| Operating Ambient Temperature : -20°C~+80°C (no condensation) | |
| Allowable Operating Frequency : 120 cycles / minute | |
| Insulation Resistance : Between discontinuous terminals, and between each terminal and non-charging metal; Over 100M Ω (at DC500V) | |
| Withstand Voltage : Between each terminal and non-charging metal, and ground; 2000VAC 50/60Hz, 1 minute | |
| Allowable Medium Temperature : SUS316(L) | -20~+200°C |
| Polyimide | -20~+200°C |
| Nitrile Rubber | -10~+80°C |
| (Provided the temperature shall be within the range that will not effect on the switch mechanism.) | |
| Micro Switch : SPDT | M4 |
| Earth Terminal : M3 | |
| Repeatability : Standard Pressure Switch | ±1% of Max range |
| Differential Pressure Switch | ±1% of Max differential |
| Material of the Pressure : Z1.7D、005D、025D、035D、070D、120D、280D | |
| Sensing Element Diaphragm | SUS316L |
| Diaphragm Flange | SUS316 L |
| Pressure Port | SUS316 |
| O-ring | Viton* |
| : Z2.5DD、005DD、012DD、020DD、□□□DDEX、1/4DD | |
| Diaphragm | Polyimide |
| Diaphragm Flange | SUS316 |
| Pressure Plate | SUS316 |
| Pressure Port | SUS316 |
| O-ring | Viton* |
| : Z1/30DD | |
| Diaphragm | Nitrile Rubber (Buna N) |
| Cavity | Steel (chrome plated) |
| Pressure Plate | Aluminum |
| Pressure Port | SUS303 |
| Assembly Screw | Steel (chrome plated) |
| Gasket | Non-asbestos Joint Sheet |
| O-ring | Viton* |

* Viton is the registered trademark of DuPont.

How to order



When CCC approved is needed, add appendix of-C to the end of model number.
Example : An approved of Z005D Z005D-C

Pressure Switches (Diaphragm Actuator)

Z□□□D/Z□□□DW



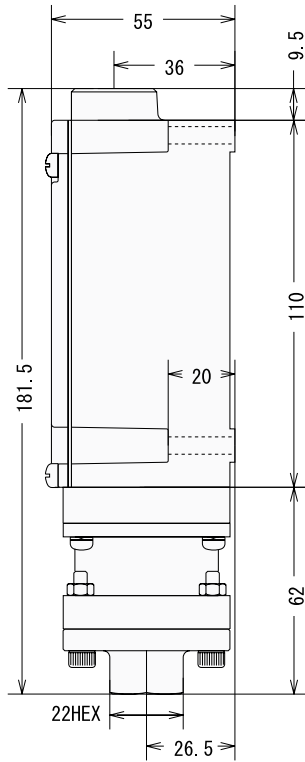
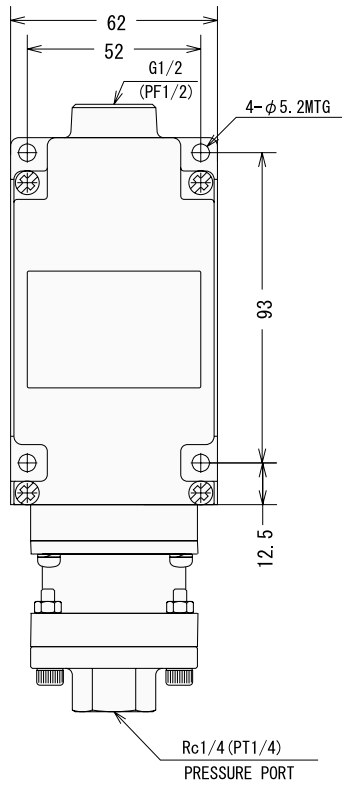
Features

- The pressure switches adapt to high pressure and extremely small differential (dead band) at the same time.
- The switches adapt up to the maximum range of 28MPa.
- A SUS316L diaphragm is adopted as a pressure sensing element.
- The diaphragm actuated pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- In addition to a SPDT standard micro switch, a DPDT micro switch is also available.
- CCC approved.

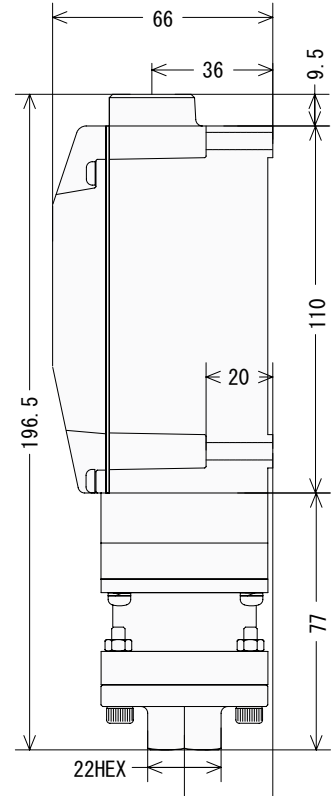
| Type of the Micro Switches | Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) Add to the Range Value (Central Value of Middle Range) MPa (kgf/cm ²) | Rated Pressure Maximum Pressure in Continuous Use MPa (kgf/cm ²) | Proof Pressure MPa (kgf/cm ²) |
|----------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| SPDT | Z1.7D | 0.002-0.17 (0.02-1.7) | 0.003 (0.03) | 2.3 (23) | 3.5 (35) |
| | Z005D | 0.005-0.5 (0.05-5) | 0.005 (0.05) | 2.3 (23) | 3.5 (35) |
| | Z025D | 0.02-2.5 (0.2-25) | 0.025 (0.25) | 7 (70) | 12 (120) |
| | Z035D | 0.05-3.5 (0.5-35) | 0.05 (0.5) | 10 (100) | 41 (410) |
| | Z070D | 0.1-7 (1-70) | 0.12 (1.2) | 12 (120) | 41 (410) |
| | Z120D | 0.2-12 (2-120) | 0.2 (2) | 15 (150) | 41 (410) |
| | Z280D | 0.2-28 (2-280) | 0.7 (7) | 35 (350) | 42 (420) |
| DPDT | Z1.7DW | 0.002-0.17 (0.02-1.7) | 0.0045 (0.045) | 2.3 (23) | 3.5 (35) |
| | Z005DW | 0.005-0.5 (0.05-5) | 0.0075 (0.075) | 2.3 (23) | 3.5 (35) |
| | Z025DW | 0.02-2.5 (0.2-25) | 0.04 (0.4) | 7 (70) | 12 (120) |
| | Z035DW | 0.05-3.5 (0.5-35) | 0.075 (0.75) | 10 (100) | 41 (410) |
| | Z070DW | 0.1-7 (1-70) | 0.18 (1.8) | 12 (120) | 41 (410) |
| | Z120DW | 0.2-12 (2-120) | 0.3 (3) | 15 (150) | 41 (410) |
| | Z280DW | 0.2-28 (2-280) | 1 (10) | 35 (350) | 42 (420) |

- The differential (dead band) is not adjustable.
- The differential (dead band) indicates value at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.
- Only "C" contact micro switch is available.

Z1.7D
Z005D
Z025D



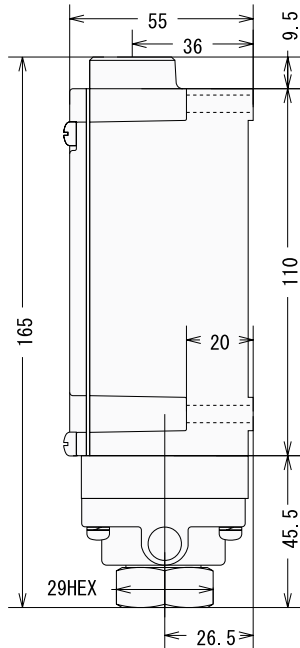
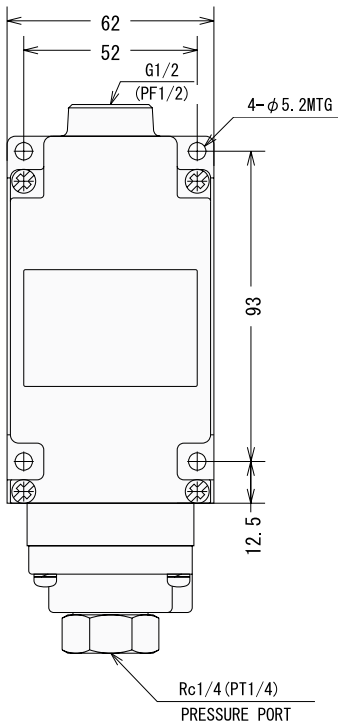
Mass : approx. 0.9kg
※ Please note : Total length of DPDT is longer than SPDT.



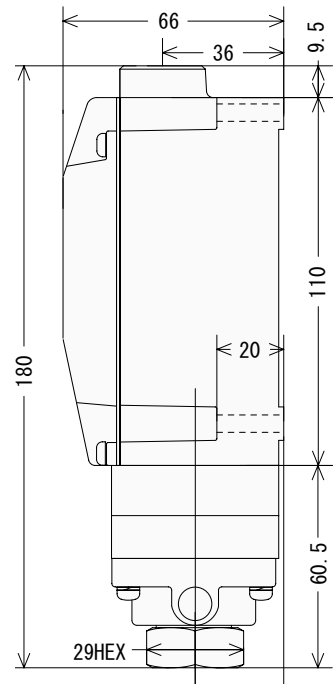
a side view of DPDT

(Unit : millimeter)

Z035D
Z070D
Z120D
Z280D



Mass : approx. 0.7kg
※ Please note : Total length of DPDT is longer than SPDT.



a side view of DPDT

(Unit : millimeter)

Differential Pressure Switches (Diaphragm Actuator)

Z□□□DD / Z□□□DDW / Z□□□DDEX / Z□□□DDWEX



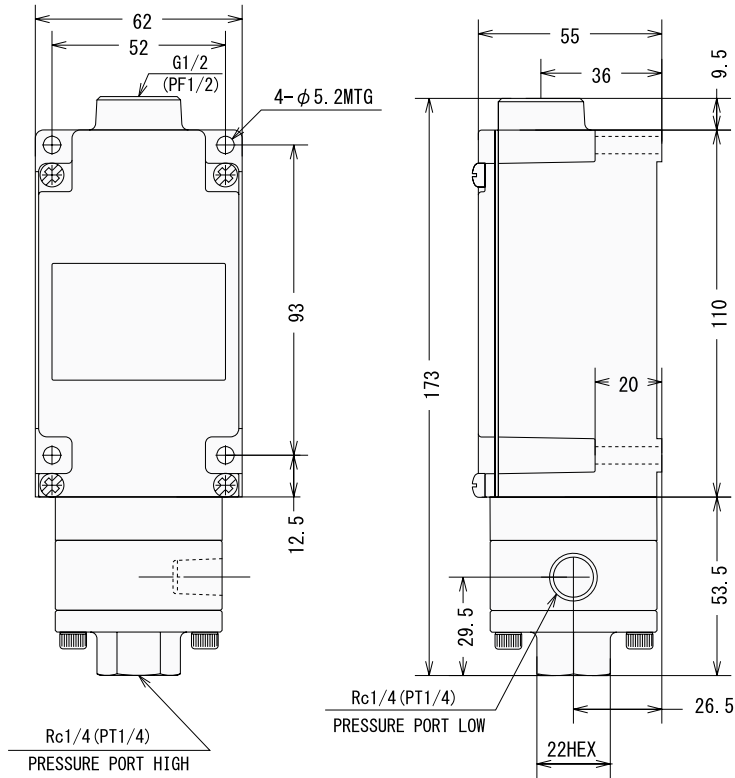
Features

- The differential pressure switches adapt to high pressure and extremely small dead band at the same time.
- The switches adapt up to the maximum range of 21MPa. The adjustable differential range is 0.002 to 3.5MPa.
- A polyimide diaphragm is adopted as a pressure sensing element.
- To realize the high proof pressure and the small dead band at the same time, the stroke and the clearance have been made smaller. (It is recommended to use an approx. 20μm filter for the both higher pressure side and lower pressure side.)
- The diaphragm actuated pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- CCC approved.

| Type of the Micro Switches | Models | Range MPa (kgf/cm ²) | | Sensitivity (Dead Band) The switch is activated on increasing pressure difference. MPa (kgf/cm ²) | | Range of Adjustable Difference The switch is reset on decreasing pressure difference. MPa (kgf/cm ²) | | Proof Pressure MPa (kgf/cm ²) | |
|----------------------------|-----------|-------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------|-------|
| | | MIN. | - MAX. | | | MIN. | - MAX. | | |
| SPDT | Z2.5DD | 0.002 | 2 (0.02-20) | 0.005 | (0.05) | 0.002 | 0.25 (0.02-2.5) | 3.5 | (35) |
| | Z005DD | 0.005 | 2 (0.05-20) | 0.01 | (0.1) | 0.005 | 0.5 (0.05-5) | 3.5 | (35) |
| | Z012DD | 0.005 | 2 (0.05-20) | 0.05 | (0.5) | 0.005 | 1.2 (0.05-12) | 3.5 | (35) |
| | Z020DD | 0.005 | 2 (0.05-20) | 0.07 | (0.7) | 0.005 | 2 (0.05-20) | 3.5 | (35) |
| | Z2.5DDEX | 0.002 | 21 (0.02-210) | 0.005 | (0.05) | 0.002 | 0.25 (0.02-2.5) | 35 | (350) |
| | Z005DDEX | 0.005 | 21 (0.05-210) | 0.01 | (0.1) | 0.005 | 0.5 (0.05-5) | 35 | (350) |
| | Z012DDEX | 0.005 | 21 (0.05-210) | 0.05 | (0.5) | 0.005 | 1.2 (0.05-12) | 35 | (350) |
| DPDT | Z035DDEX | 0.005 | 21 (0.05-210) | 0.07 | (0.7) | 0.005 | 3.5 (0.05-35) | 35 | (350) |
| | Z2.5DDW | 0.002 | 2 (0.02-20) | 0.0075 | (0.075) | 0.002 | 0.25 (0.02-2.5) | 3.5 | (35) |
| | Z005DDW | 0.005 | 2 (0.05-20) | 0.015 | (0.15) | 0.005 | 0.5 (0.05-5) | 3.5 | (35) |
| | Z012DDW | 0.005 | 2 (0.05-20) | 0.08 | (0.8) | 0.005 | 1.2 (0.05-12) | 3.5 | (35) |
| | Z020DDW | 0.005 | 2 (0.05-20) | 0.1 | (1) | 0.005 | 2 (0.05-20) | 3.5 | (35) |
| | Z2.5DDWEX | 0.002 | 21 (0.02-210) | 0.0075 | (0.075) | 0.002 | 0.25 (0.02-2.5) | 35 | (350) |
| | Z005DDWEX | 0.005 | 21 (0.05-210) | 0.015 | (0.15) | 0.005 | 0.5 (0.05-5) | 35 | (350) |
| Z012DDWEX | 0.005 | 21 (0.05-210) | 0.08 | (0.8) | 0.005 | 1.2 (0.05-12) | 35 | (350) | |
| Z035DDWEX | 0.005 | 21 (0.05-210) | 0.1 | (1) | 0.005 | 3.5 (0.05-35) | 35 | (350) | |

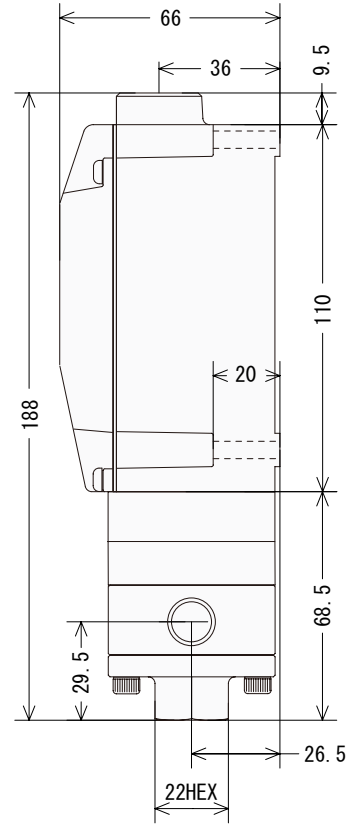
- The sensitivity (dead band) is not adjustable.
- The sensitivity (dead band) indicates value at the middle of the range of adjustable difference. The sensitivity (dead band) becomes smaller than the indicated value within the lower range of adjustable difference, and larger within the higher range of adjustable difference.
- Only "C" contact micro switch is available.

Z2.5DD
Z005DD
Z012DD
Z020DD



Mass : approx. 0.9kg

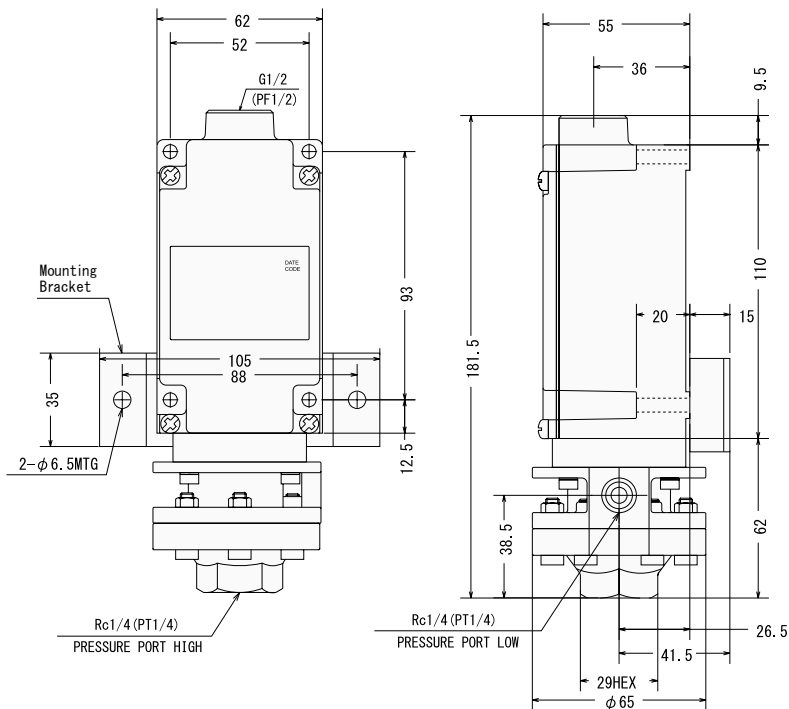
※ Please note : Total length of DPDT is longer than SPDT.



a side view of DPDT

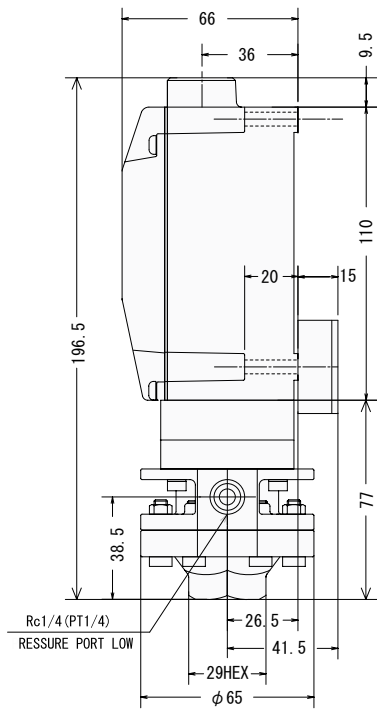
(Unit : millimeter)

Z2.5DDEX
Z005DDEX
Z012DDEX
Z035DDEX



Mass : approx. 1.3kg

※ Please note : Total length of DPDT is longer than SPDT.



a side view of DPDT

(Unit : millimeter)

Differential Pressure Switches (Diaphragm Actuator)

Z1/4DD/Z1/4DDW



Features

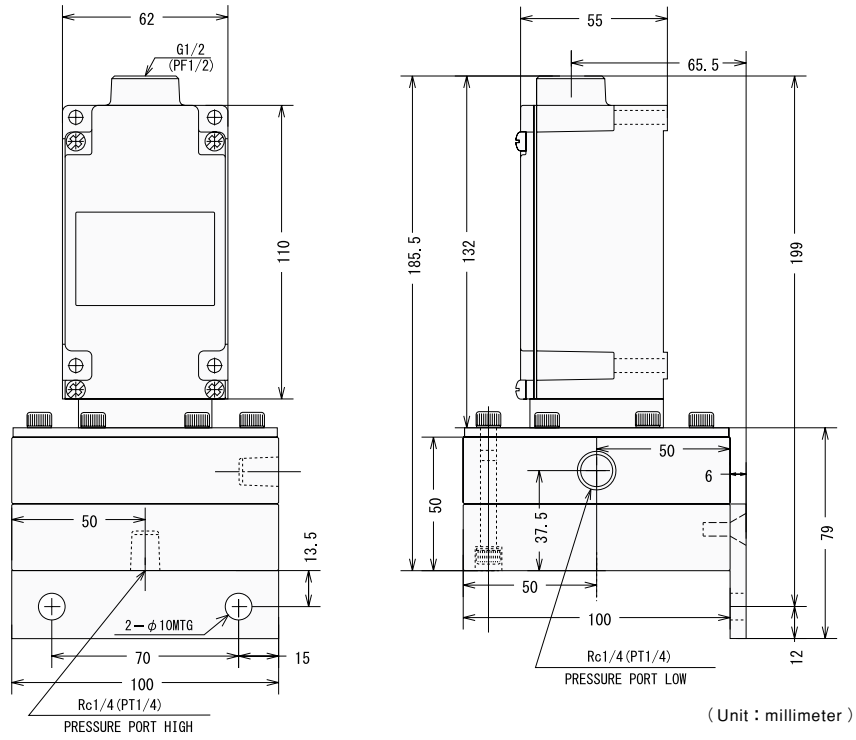
- This differential pressure switch especially specializes in extremely small differential pressure.
- The differential pressure switch adapts to the differential range of 0.0005 to 0.025MPa.
- A polyimide diaphragm is adopted as a pressure sensing element.
- To realize the high proof pressure and the extremely small dead band at the same time, stroke and clearance have been made smaller. (It is recommended to use an approx. 20 μ m filter for the both higher pressure side and lower side pressure side.)
- The diaphragm actuated pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- CCC approved.

| Type of the Micro Switches | Models | Range MPa (kgf/cm ²) MIN. - MAX. | Sensitivity (Dead Band) The switch is activated on increasing pressure difference. MPa (kgf/cm ²) | Range of Adjustable Difference The switch is reset on decreasing pressure difference. MPa (kgf/cm ²) MIN. - MAX. | Proof Pressure MPa (kgf/cm ²) |
|----------------------------|---------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| SPDT | Z1/4DD | 0.0005-6.6 (0.005-66) | 0.0005 (0.005) | 0.0005-0.025 (0.005-0.25) | 10 (100) |
| DPDT | Z1/4DDW | 0.0005-6.6 (0.005-66) | 0.00075 (0.0075) | 0.0005-0.025 (0.005-0.25) | 10 (100) |

- The sensitivity (dead band) is not adjustable.
- The sensitivity (dead band) indicates value at the middle of the range of adjustable difference. The sensitivity (dead band) becomes smaller than the indicated value within the lower range of adjustable difference, and larger within the higher range of adjustable difference.
- Only "C" contact micro switch is available.

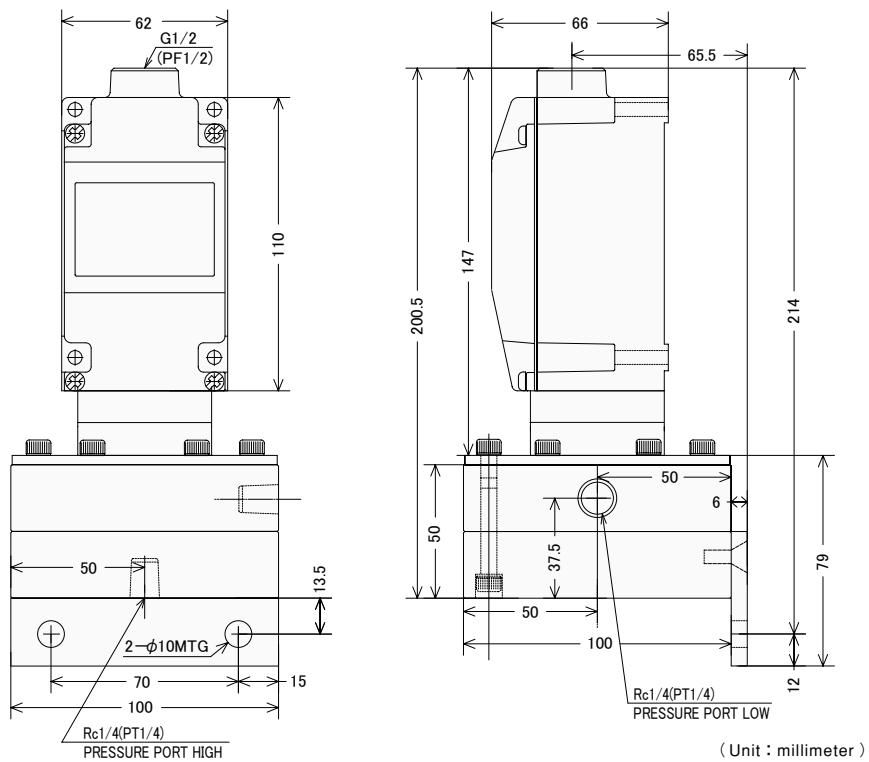
Z1/4DD

Mass : approx. 4.7kg



Z1/4DDW

Mass : approx. 4.8kg



Differential Pressure Switches (Diaphragm Actuator)

Z1/30DD



Features

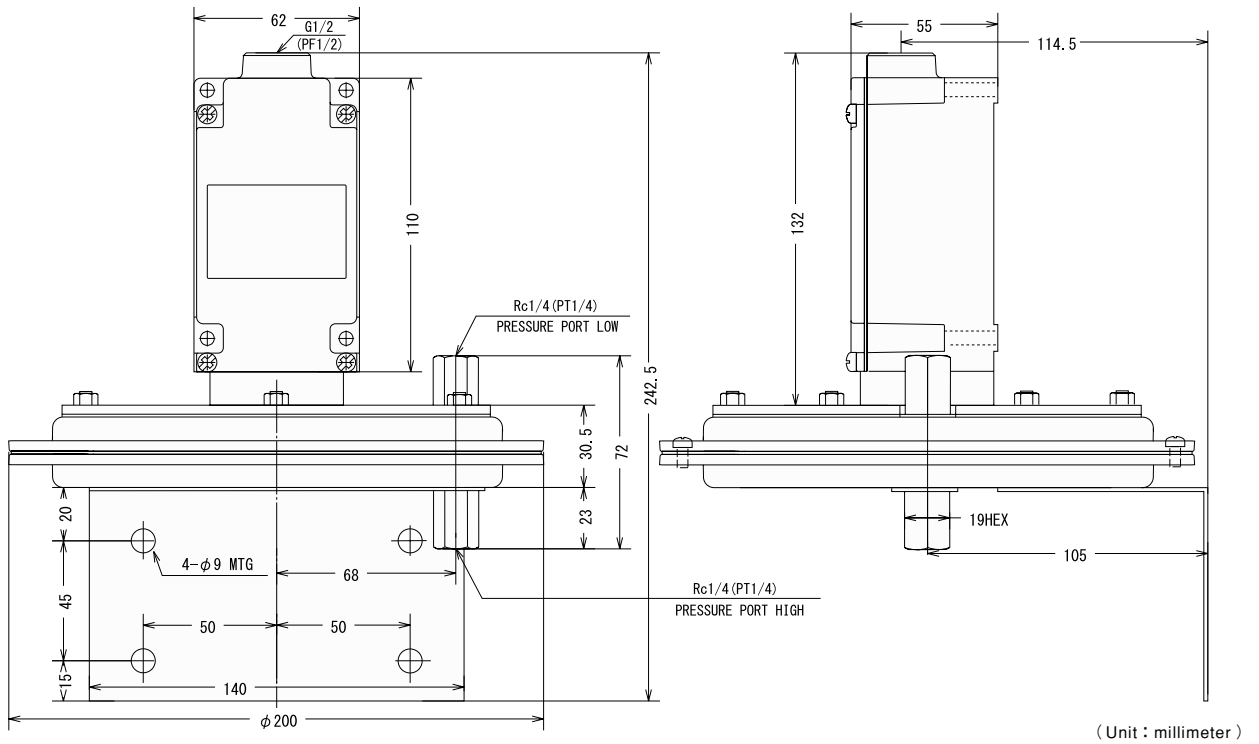
- The differential pressure switch enables you to set its operating point at extremely small differential pressure under high normal operation pressure.
- The differential pressure switch can be used up to its proof pressure of 69kPa. The adjustable differential pressure range is 0 to 3kPa.
- A nitrile rubber diaphragm is adopted as a pressure sensing element.
- To realize the high proof pressure and the small dead band at the same time, the stroke and the clearance have been made smaller. (It is recommended to use an approx. 20 μ m filter for the both higher pressure side and lower pressure side.)
- The diaphragm actuated pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- CCC approved.

| Type of the Micro Switches | Models | Range kPa (kgf/cm ²) MIN. - MAX. | Sensitivity (Dead Band) The switch is activated on increasing pressure difference. kPa (kgf/cm ²) | Range of Adjustable Difference The switch is reset on decreasing pressure difference. kPa (kgf/cm ²) MIN. - MAX. | Proof Pressure kPa (kgf/cm ²) |
|----------------------------|---------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| SPDT | Z1/30DD | 0-46 (0-0.46) | 0.07 (0.0007) | 0-3 (0-0.03) | 69 (0.69) |

- The sensitivity (dead band) is not adjustable.
- The sensitivity (dead band) indicates value at the middle of the range of adjustable difference. The sensitivity (dead band) becomes smaller than the indicated value within the lower range of adjustable difference, and larger within the higher range of adjustable difference.
- Use flexible tubing so that any external force or stress is not applied to the diaphragm flange.
- Only "C" contact micro switch is available.

Z1/30DD

Mass : approx. 2.7kg



Explosion-proof Pressure Switches

TEX-Z Series



The explosion-proof pressure switches have adopted a pressure-proof type cable gland at the conduit connection port. This particular configuration makes the explosion-proof pressure switches conforming to the IEC standard.

Explosion-proof Class: ExdIICT6

The explosion-proof pressure switches conform to the IEC standard.

The explosion-proof class is ExdIICT6.

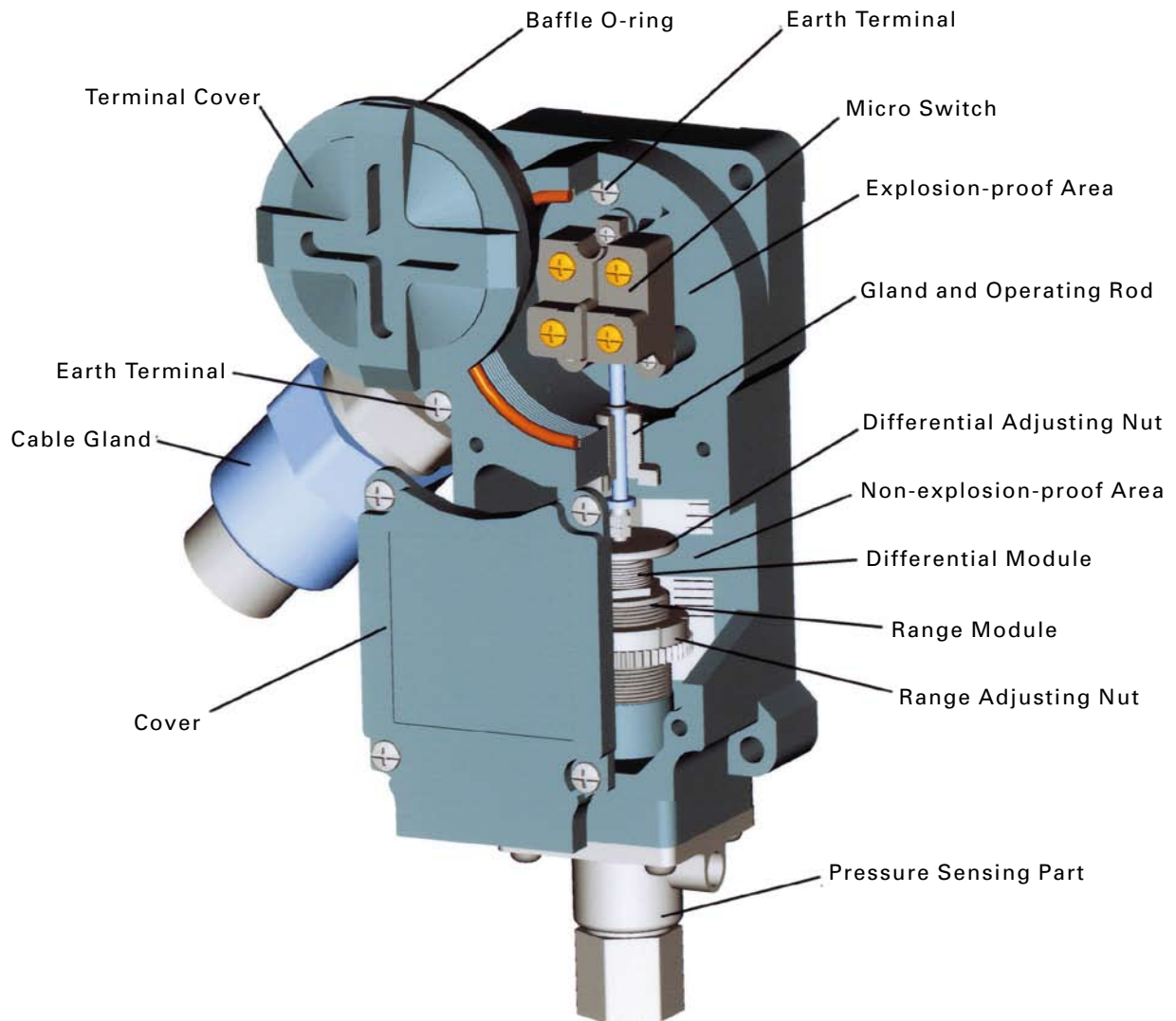
- A reference chart of gases (ambient atmosphere) in which the TEX-Z type can be used.

Since the explosion-proof configuration of the TEX-Z conforms to ExdIICT6 standard, the switches can be used in hazardous locations where explosive gases (flammable gases and vapor of flammable liquid) exist.

[Example of classification of explosive gases being compatible with a group of explosion-proof electric devices and the temperature grade]

| | | Temperature Grade | | | | | |
|-----------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------|---------------|
| | | T1 | T2 | T3 | T4 | T5 | T6 |
| G R O U P | IIA | Acetone Ammonia Carbon Monoxide Ethane Ethyl Methyl Ketone O-xylene Chlorobenzene Acetic Acid Ethyl Acetate Styrene Toluene Propane Benzene Methanol Methane | Ethanol Ethyl Benzene Acetyl Chloride Vinyl Chloride Vinyl Acetate Butyl Acetate Propyl Acetate Cyclopentane Dimethylamine 1-butanol Butane Propylamine Propylene Ethyl Methacrylate Methyl Methacrylate | Ethyl Cyclohexane Ethyl Cyclopentane Butyl Chloride Octane Cyclohexanol Cyclohexane Decane Hexane Heptane Pentane Methylcyclohexane Gasoline Kerosene Petroleum Naphtha Oil of Turpentine | Acetaldehyde | | Ethyl Nitrite |
| | IIB | Acrylic Nitrile Hydrogen Cyanide Cyclopropane Coke Oven Gas | Ethyl Acrylate Methyl Acrylate Ethylene Ethylene Oxide 1,3-butadiene Furane | Acrylic Aldehyde Crotonaldehyde Dimethyl Ether Tetrahydrofurane | Ethyl Methyl Ether Diethyl Ether Dibutyl Ether Nitric Acid Isopropyl Tetrafluoroethylene | | |
| | IIC | Hydrogen | Acetylene | | | Carbon Disulfide | Ethyl Nitrate |

Structural Drawing of the TEX-Z



How to set

Pressure setting can be done easily.

When you set the operating pressure on falling pressure, put a flat blade screw driver longitudinally in the slit of the range adjusting nut, then rotate the nut with it. When viewing from the front, rotating the nut clockwise will make the set pressure high. Dead band (difference between ON and OFF) can be adjusted by rotating the differential adjusting nut. This means setting the operating pressure on rising. When viewing from the front, rotating the nut clockwise will make the differential large.

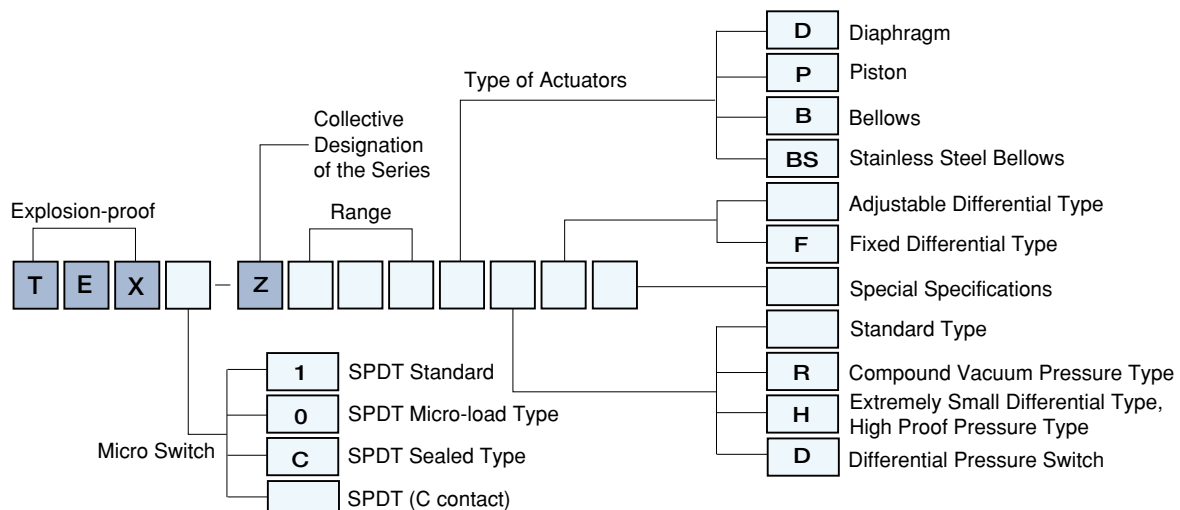
Note) Differential of the fixed differential type can not be adjusted.

Specifications

| | |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Housing Material : Die-cast Aluminum | Material of the Pressure : TEX1-Z005D、010D、018D |
| Painting Color : 7.5BG4/1.5 | Sensing Element Diaphragm Nitrile Rubber (Buna N) |
| Explosion-proof class : Exd II CT6 | Flange Die-cast Aluminum |
| Pressure Port : Rc1/4 (PT1/4) | O-ring Nitrile Rubber (Buna N) |
| Conduit : G3/4 (PF3/4) | : TEX1-Z1/4D |
| Operating Ambient Temperature : -10~+40°C | Diaphragm Nitrile Rubber (Buna N) |
| Allowable Operating Frequency : 120 cycles / minute | Housing Brass (nickel plated) |
| Insulation Resistance : Between discontinuous terminals, and between each terminal and non-charging metal; Over 100M Ω (at DC500V) | O-ring Nitrile Rubber (Buna N) |
| Withstand Voltage : Between discontinuous terminals; 1000VAC, 50/60Hz, 1 minute | : TEX1-Z032P |
| Micro Switch Terminal Screw : M4 | Cylinder Brass (nickel plated) |
| Earth Terminal Screw : M4 | Piston Brass |
| Orifice of the Pressure Sensing Part : Diaphragm Actuator (Standard Pressure Switch) ... φ 1.5 | O-ring Nitrile Rubber (Buna N) |
| Diaphragm Actuator (Micro Differential Pressure Switch) ... Nil | : TEX1-Z070P, 210P, 400P |
| Piston Actuator φ 0.8 | Cylinder Brass (nickel plated) |
| Bellows Actuator φ 1.5 | Piston SUS420F |
| Allowable Medium Temperature : SUS316 -20 to +200°C | Bushing Brass |
| Polyimide -20 to +200°C | O-ring Nitrile Rubber (Buna N) |
| Piston Actuator -10 to +80°C | Cup Seal Teflon* |
| Diaphragm Actuator -10 to +80°C | : TEX1-Z635P |
| Phosphor Bronze Bellows -40 to +120°C | Cylinder SUS303 |
| Stainless Steel Bellows -40 to +250°C | Piston SUS420F |
| (Provided the temperature shall be within the range that will not effect on the switch mechanism.) | Bushing Brass |
| Repeatability : Standard Pressure Switch ... ±1% of Max range | O-ring Nitrile Rubber (Buna N) |
| Differential Pressure Switch ... ±1% of Max differential | Cup Seal Teflon* |
| | : TEX1-Z002BS, 006BS, 010BS, 025BS, 050BS, 115BS |
| | Bellows SUS316L |
| | Housing SUS316 |
| | : TEX1-Z001BR, 005BR, 009BR |
| | Bellows Phosphor Bronze |
| | Housing Steel (nickel plated) |
| | : TEX-Z1-7DH, 005DH, 025DH, 035DH, 070DH, 120DH, 280DH |
| | Diaphragm SUS316L |
| | Flange SUS316 |
| | Pressure Plate SUS316 |
| | Pressure Port SUS316 |
| | O-ring Viton* |
| | : TEX-Z1/4DD, 2.5DD, 005DD, 012DD, 020DD, □□□DDEX |
| | Diaphragm Polyimide |
| | Flange SUS316 |
| | Pressure Plate SUS316 |
| | Pressure Port SUS316 |
| | O-ring Viton* |

* Teflon and Viton are the registered trademarks of Du Pont.

How to order



Explosion-proof Pressure Switches (Diaphragm Actuator)

TEX□-Z□□□□D



Features

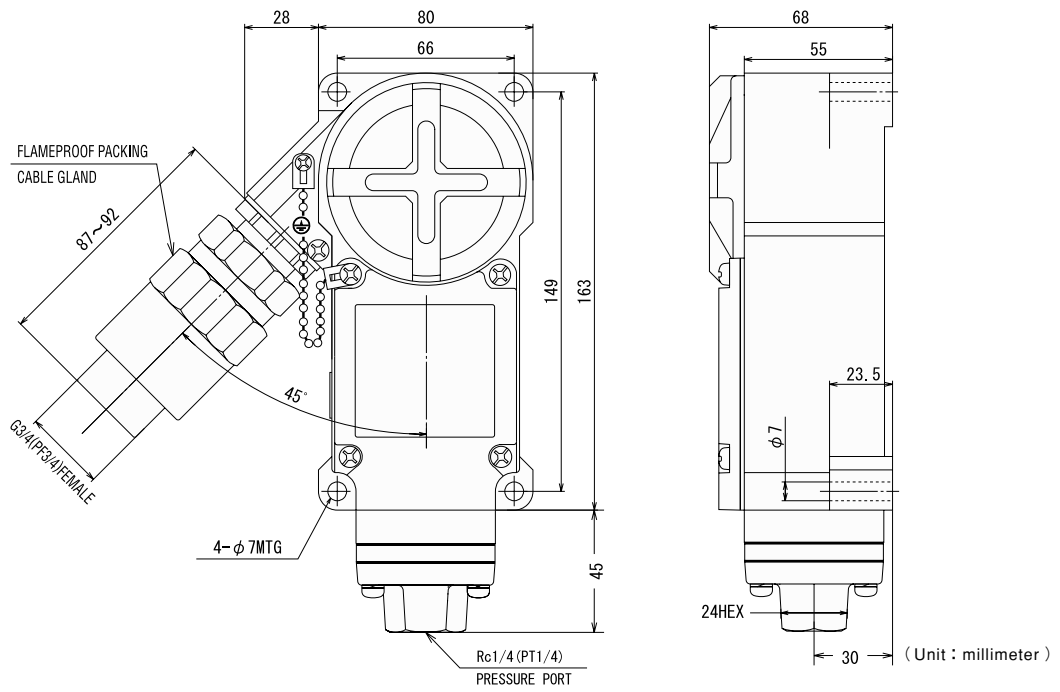
- The explosion-proof pressure switches have adopted a nitrile rubber diaphragm as the pressure sensing element.
- The pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- The pressure switches are applicable to pressure ranging from 0.005 to 1.8MPa.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- ExdIICT6 (explosion-proof class) approved.

| Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) Add to the Range Value MPa (kgf/cm ²) | | | Rated Pressure Maximum Pressure in Continuous Use MPa (kgf/cm ²) | Proof Pressure MPa (kgf/cm ²) |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|-----------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| | | Lower Range MIN. - MAX. | Middle Range MIN. - MAX. | Higher Range MIN. - MAX. | | |
| TEX1-Z005D | 0.005-0.5 (0.05-5) | 0.03-0.1 (0.3-1) | 0.03-0.11 (0.3-1.1) | 0.04-0.12 (0.4-1.2) | 0.5 (5) | 1.8 (18) |
| TEX1-Z010D | 0.005-1 (0.05-10) | 0.04-0.2 (0.4-2) | 0.05-0.21 (0.5-2.1) | 0.1-0.22 (1-2.2) | 1 (10) | 3 (30) |
| TEX1-Z018D | 0.02-1.8 (0.2-18) | 0.09-0.39 (0.9-3.9) | 0.12-0.4 (1.2-4) | 0.2-0.42 (2-4.2) | 1.8 (18) | 4 (40) |

- Beside the adjustable differential (dead band) type, the fixed differential type (symbol “F”) is available.
- The differential (dead band) becomes larger to a certain extent in accordance with increase of the pressure. The above chart shows the differential adjustable range related to the pressure ranges divided into three stages.
- The minimum (MIN.) differential (dead band) indicates values at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated values within the lower range, and larger range within the higher range.
- The differential (dead band) of the fixed differential type is less than or equal to the minimum value of the adjustable differential (dead band) type.
- Select a type of your pressure switch so that it can be used within the middle of the range as much as possible.

TEX1-Z005D
TEX1-Z010D
TEX1-Z018D

Mass : approx. 1.9kg



Explosion-proof Pressure Switches (Diaphragm Actuator)

TEX□-Z1/4D



Features

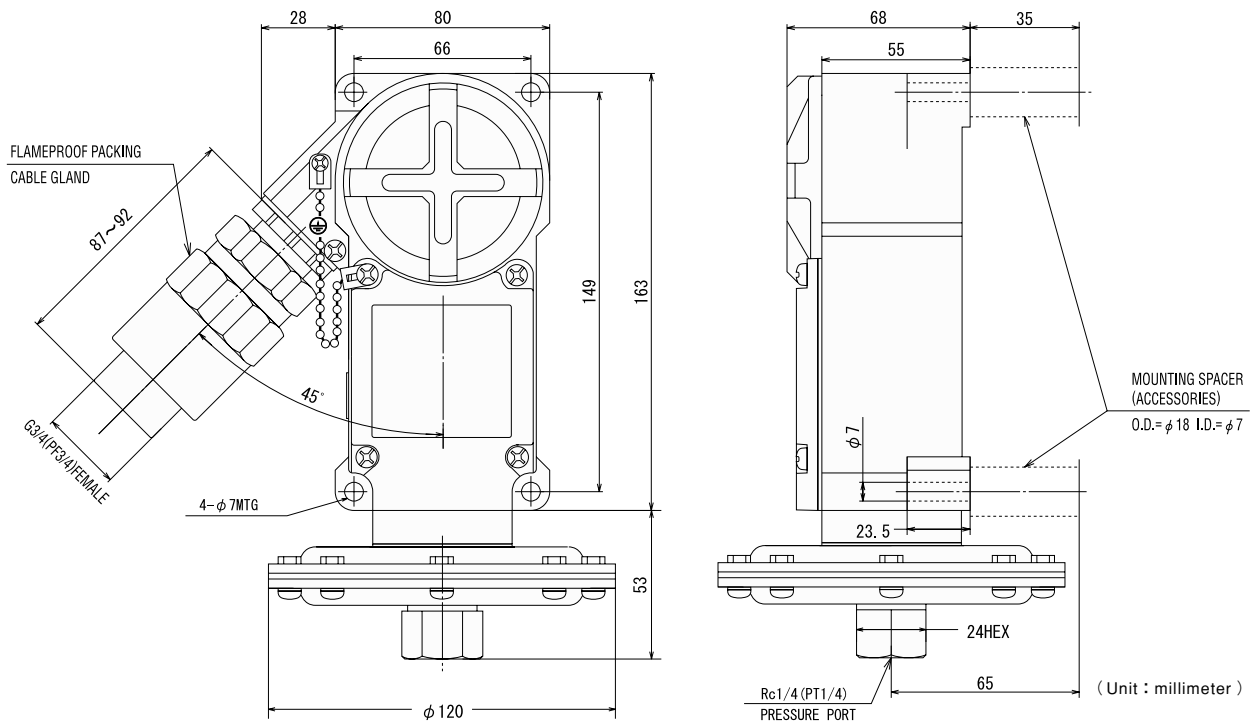
- The explosion-proof pressure switch can be used within very low pressure range of 3 to 25kPa.
- The pressure switches have adopted a nitrile rubber diaphragm as the pressure sensing element.
- The pressure switch can be used for various pressure medium such as air, water, oil, gases and steam.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- ExdIICT6 (explosion-proof class) approved.

| Model | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. kPa (kgf/cm ²) MIN. - MAX. | Differential (Dead Band) Add to the Range Value kPa (kgf/cm ²) MIN. - MAX. | Rated Pressure Maximum Pressure in Continuous Use kPa (kgf/cm ²) | Proof Pressure kPa (kgf/cm ²) |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| TEX1-Z1/4D | 3-25 (0.03-0.25) | 2.5-8 (0.025-0.08) | 25 (0.25) | 300 (3) |

- Fixed differential (dead band) type (“F”) is available.
- The minimum (MIN.) differential (dead band) indicates values at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.
- The differential (dead band) of the fixed differential type (“F”) is less than or equal to the minimum value of the adjustable differential (dead band) models.

TEX1-Z1/4D

Mass : approx. 2.8kg



Explosion-proof Pressure Switches (piston actuator)

TEX□-Z□□□P



Features

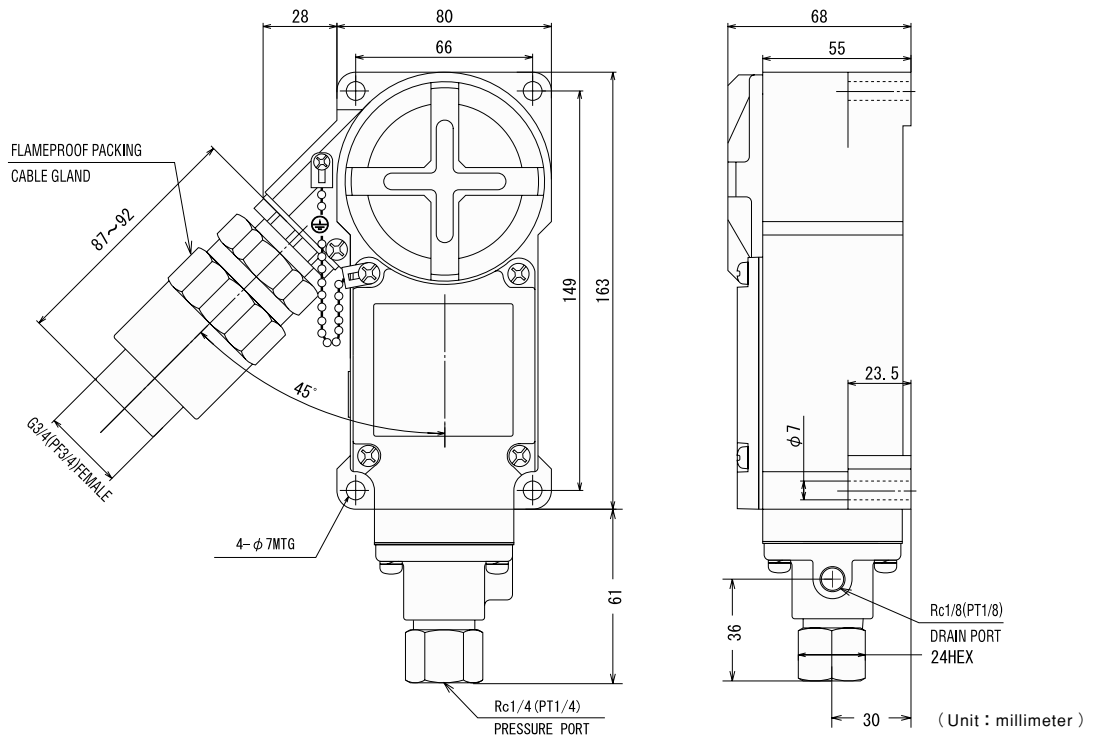
- The explosion-proof pressure switches have adopted a brass (nickel plated) or SUS420F piston as the pressure sensing element.
- An O-ring and Teflon cup seal have been adopted as a seal of the piston, and this configuration realizes long-time duration of the pressure switches.
- The pressure switches are applicable to pressure ranging from 0.1 to 63.5MPa.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- ExdIICT6 (explosion-proof class) approved.

| Models | Range | | Differential (Dead Band) | | | Proof Pressure MPa (kgf/cm ²) |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|-----------------------------|-----------------------------|----------------------------------------------|
| | MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | | Add to the Range Value MPa (kgf/cm ²) | | | |
| | | | Lower Range MIN. - MAX. | Middle Range MIN. - MAX. | Higher Range MIN. - MAX. | |
| TEX1-Z032P | 0.1-3.2 (1-32) | | 0.2-0.6 (2-6) | 0.2-0.6 (2-6) | 0.25-0.7 (2.5-7) | 10 (100) |
| TEX1-Z070P | 0.2-7 (2-70) | | 0.25-1.3 (2.5-13) | 0.28-1.4 (2.8-14) | 0.3-1.5 (3-15) | 35 (350) |
| TEX1-Z210P | 0.5-20.5 (5-205) | | 0.6-3.8 (6-38) | 0.7-4 (7-40) | 1.2-4.2 (12-42) | 70 (700) |
| TEX1-Z400P | 1-40 (10-400) | | 1.4-7.8 (14-78) | 1.5-8 (15-80) | 1.8-8.5 (18-85) | 70 (700) |
| TEX1-Z635P | 2-63.5 (20-635) | | 2-11 (20-110) | 2.5-12 (25-120) | 3-12 (30-120) | 120 (1,200) |

- Beside the adjustable differential (dead band) type, the fixed differential type (symbol "F") is available.
- The differential (dead band) becomes larger to a certain extent in accordance with increase of the pressure. The above chart shows the differential adjustable range related to the pressure ranges divided into three stages.
- The minimum (MIN.) differential (dead band) indicates values at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated values within the lower range, and larger range within the higher range.
- The differential (dead band) of the fixed differential type is less than or equal to the minimum value of the adjustable differential (dead band) type.
- The differential (dead band) of the fixed differential type is less than or equal to the minimum value of the adjustable differential (dead band) type.
- A PT1/8 drain port is equipped on the side of the body so that the pressure switch is used with piping for drains beforehand, in an environment that will not allow even a small amount see page. The drain port must be opened to the atmospheric pressure.
- Select a type of your pressure switch so that it can be used within the middle of the range as much as possible.

TEX1-Z032P
 TEX1-Z070P
 TEX1-Z210P
 TEX1-Z400P
 TEX1-Z635P

Mass : approx. 1.9kg



Explosion-proof Pressure Switches (Bellows Actuator)

TEX□-Z□□□BS



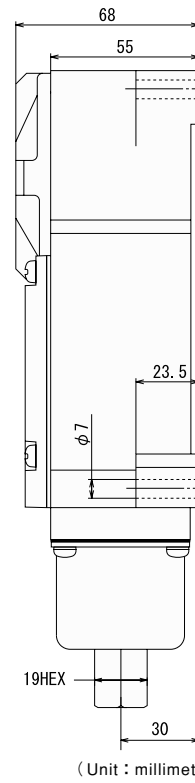
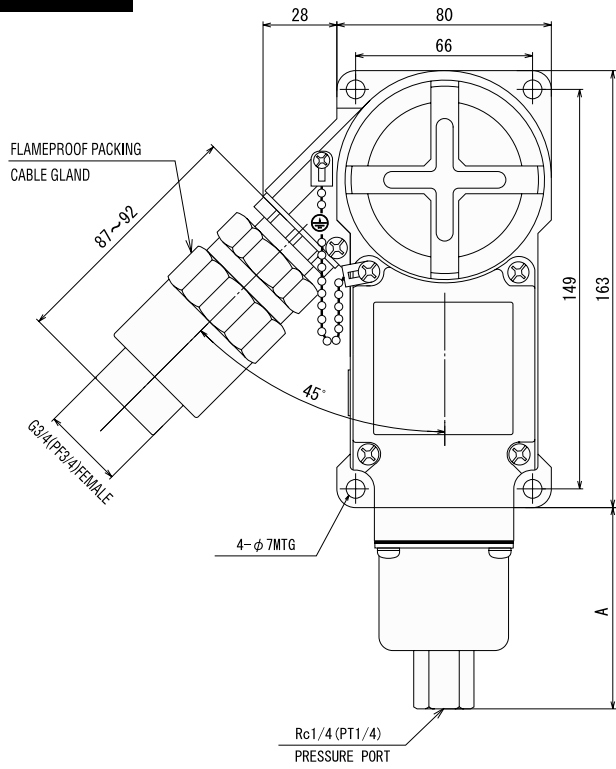
Features

- The explosion-proof pressure switches have adopted a SUS316L bellows actuator as the pressure sensing element.
- The pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- The pressure switches are applicable to pressure ranging from 0.005 to 11.5MPa.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- ExdIICT6 (explosion-proof class) approved.

| Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential Add to the Range Value MPa (kgf/cm ²) MIN. - MAX. | Rated Pressure Maximum Pressure in Continuous Use MPa (kgf/cm ²) | Proof Pressure MPa (kgf/cm ²) |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| TEX1-Z002BS | 0.005-0.2 (0.05-2) | 0.008-0.04 (0.08-0.4) | 0.2 (2) | 0.3 (3) |
| TEX1-Z006BS | 0.005-0.6 (0.05-6) | 0.03-0.1 (0.3-1) | 0.6 (6) | 0.9 (9) |
| TEX1-Z010BS | 0.005-1 (0.05-10) | 0.06-0.2 (0.6-2.1) | 1 (10) | 2 (20) |
| TEX1-Z025BS | 0.03-2.5 (0.3-25) | 0.17-0.5 (1.7-5) | 2.5 (25) | 4.2 (42) |
| TEX1-Z050BS | 0.1-5 (1-50) | 0.5-0.9 (5-9) | 5 (50) | 14 (140) |
| TEX1-Z115BS | 0.2-11.5 (2-115) | 1.2-1.8 (12-18) | 11.5 (115) | 17.5 (175) |

- Beside the adjustable differential (dead band) type, the fixed differential type (symbol "F") is available.
- The minimum (MIN.) differential (dead band) indicates values at the middle of the pressure range.
The differential (dead band) becomes smaller than the indicated value within the lower range, and larger range within the higher range.
- The differential (dead band) of the fixed differential type ("F") is less than or equal to the minimum value of the adjustable differential (dead band) type.
- The bellows type pressure switches can be used for various pressure medium such as air, water, oil, gases and steam. However, when you use a bellows type pressure switch for such application as water or oil, you should restrain possible pulsation or surge pressure in your system at minimum.
It is recommended to use a damper for an application of which surge pressure is high.
- Normal operating pressure should be below the rated pressure.
- Life duration of bellows is largely influenced by amplitude of setting pressure and fluctuation range of pressure applied to the bellows. It does not always correspond to number of times of a pressure switch actuation. Check high and low setting points, rated pressure and proof pressure value of a pressure switch, so that you select an appropriate model that meets your application.
- The larger number of pressure cycles applied to a bellows is, shorter life duration of it.
Note that metal fatigue of a bellows accumulates according to pressure cycles even if they do not actuate a pressure switch.

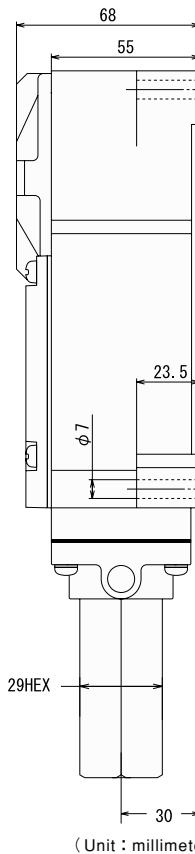
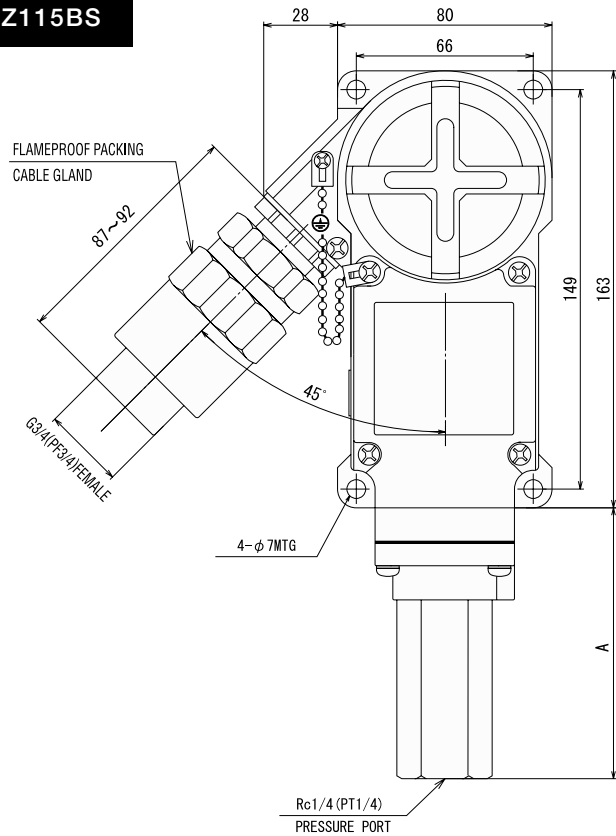
TEX1-Z002BS
TEX1-Z006BS
TEX1-Z010BS



| TYPE | A | Mass (kg) |
|-------------|-----|-------------|
| TEX1-Z002BS | 100 | approx. 2.0 |
| TEX1-Z006BS | 74 | approx. 1.9 |
| TEX1-Z010BS | 74 | approx. 1.9 |

(Unit : millimeter)

TEX1-Z025BS
TEX1-Z050BS
TEX1-Z115BS



| TYPE | A | Mass (kg) |
|-------------|-----|-------------|
| TEX1-Z025BS | 85 | approx. 2.0 |
| TEX1-Z050BS | 104 | approx. 2.1 |
| TEX1-Z115BS | 93 | approx. 2.1 |

(Unit : millimeter)

Explosion-proof Type Compound Vacuum Pressure Switches (Bellows Actuator)

TEX□-Z□□□BR



Features

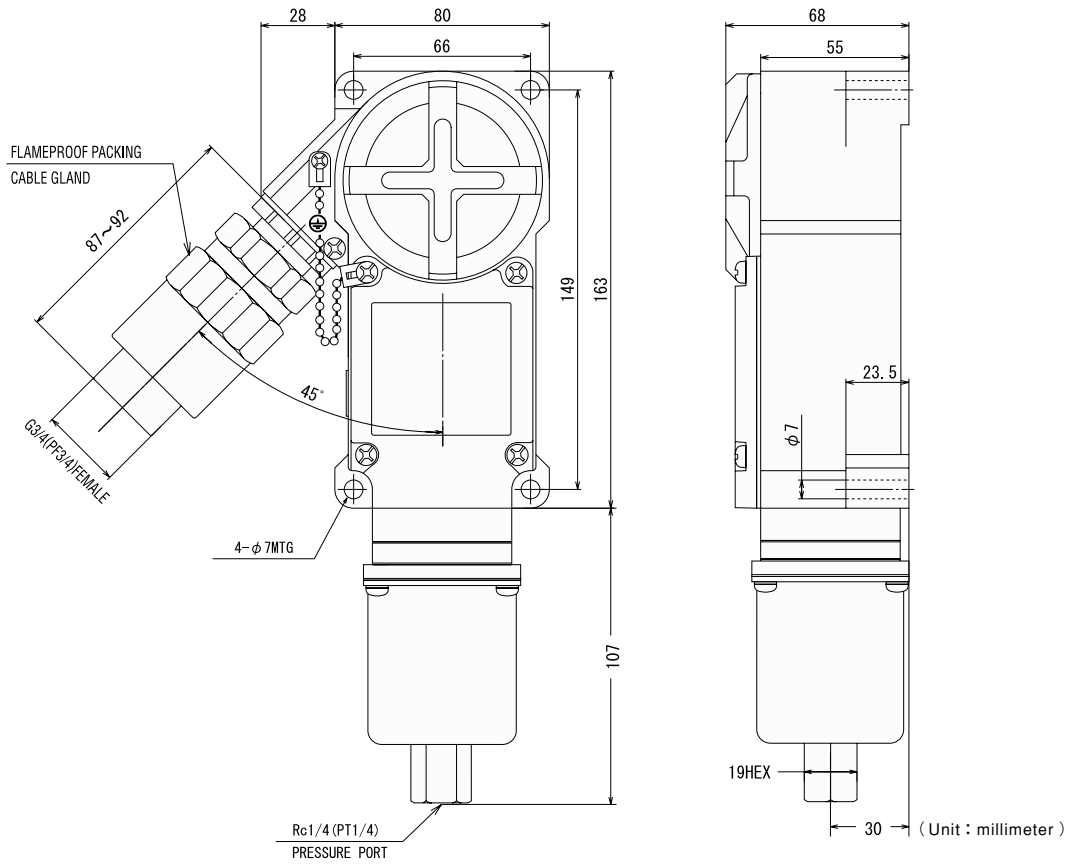
- The explosion-proof type compound vacuum pressure switches can be used within vacuum to positive pressure range. They can be set within vacuum pressure range only, from vacuum to positive pressure range or within positive pressure range only.
- Setting at the atmospheric pressure (gauge pressure = 0) can also be done.
- The pressure switches have adopted a phosphor bronze bellows actuator as the pressure sensing element.
- The pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- The micro switch is selectable from a SPDT standard rating type, a micro-load type (for 24VDC), and a sealed type (environment resistance).
- ExdIICT6 (explosion-proof class) approved.

| Models | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MIN. - MAX. | Differential Add to the Range Value kPa (kgf/cm ²) MIN. - MAX. | Rated Pressure Maximum Pressure in Continuous Use | Proof Pressure kPa (kgf/cm ²) |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------|
| TEX1-Z001BR | 80kPaVac-100kPa (600mmHgV-1kgf/cm ²) | 10-40 (0.1-0.4) | 100kPaVac-100kPa (760mmHgV-1kgf/cm ²) | 300 (3) |
| TEX1-Z005BR | 73kPaVac-500kPa (550mmHgV-5kgf/cm ²) | 20-100 (0.2-1) | 100kPaVac-500kPa (760mmHgV-5kgf/cm ²) | 900 (9) |
| TEX1-Z009BR | 67kPaVac-900kPa (500mmHgV-9kgf/cm ²) | 40-200 (0.4-2) | 100kPaVac-900kPa (760mmHgV-9kgf/cm ²) | 2000 (20) |

- Beside the adjustable differential (dead band) type, the fixed differential type (symbol "F") is available.
- The minimum (MIN.) differential (dead band) indicates values at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger range within the higher range.
- The differential (dead band) of the fixed differential type ("F") is less than or equal to the minimum value of the adjustable differential (dead band) type.
- The bellows type pressure switches can be used for various pressure medium such as air, water, oil, gases and steam. However, when you use a bellows type pressure switch for such application as water or oil, you should restrain possible pulsation or surge pressure in your system at minimum. It is recommended to use a damper for an application of which surge pressure is high.
- Normal operating pressure should be below the rated pressure.
- Life duration of bellows is largely influenced by amplitude of setting pressure and fluctuation range of pressure applied to the bellows. It does not always correspond to number of times of a pressure switch actuation. Check high and low setting points, rated pressure and proof pressure value of a pressure switch, so that you select an appropriate model that meets your application.
- The larger number of pressure cycles applied to a bellows is, shorter life duration of it.
Note that metal fatigue of a bellows accumulates according to pressure cycles even if they do not actuate a pressure switch.

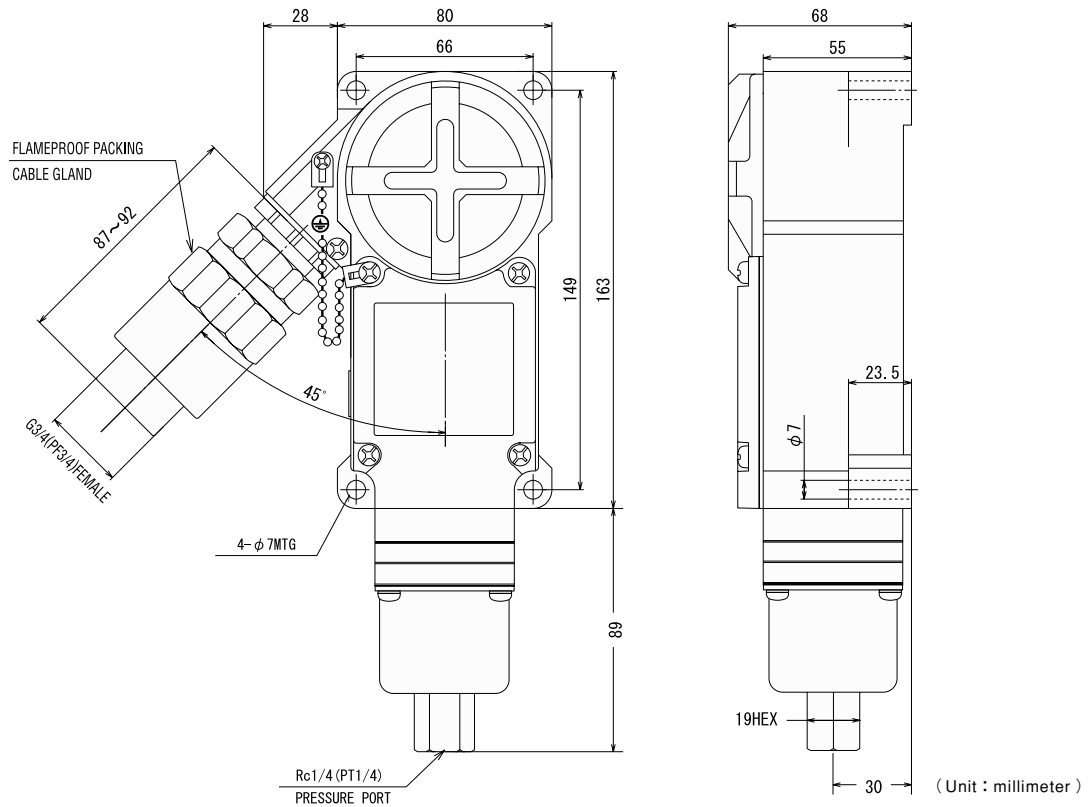
TEX1-Z001BR

Mass : approx. 2.3kg



TEX1-Z005BR TEX1-Z009BR

Mass : approx. 2.1kg



Explosion-proof Pressure Switches (Diaphragm Actuator)

TEX-Z□□□DH



Features

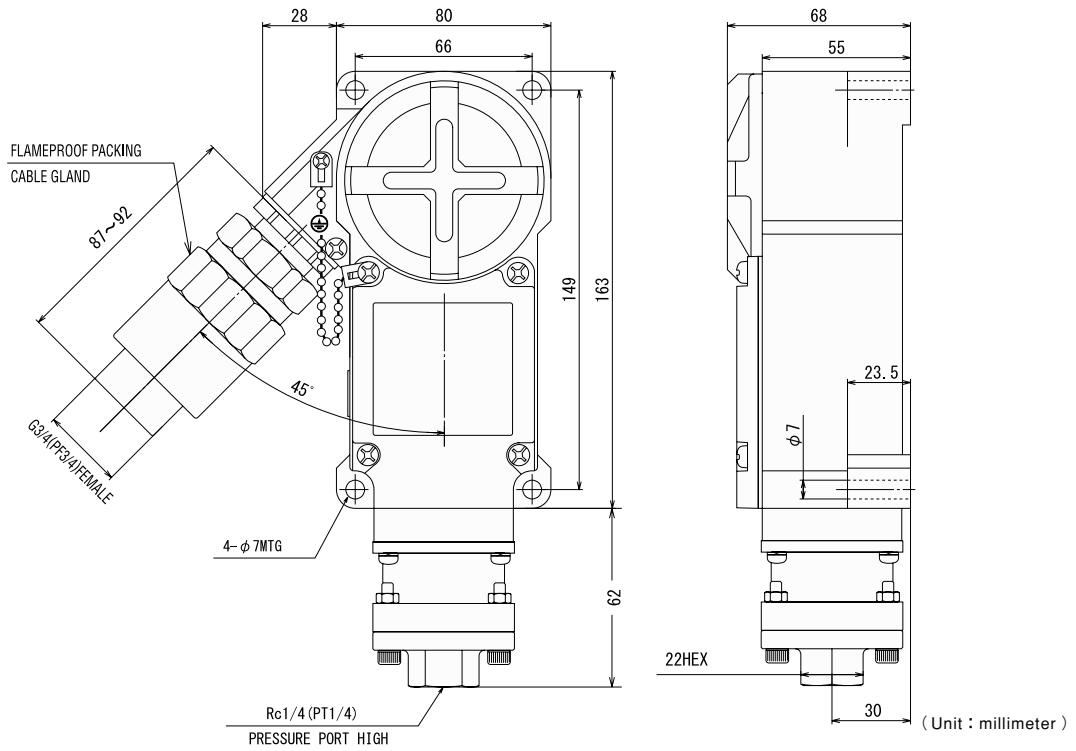
- The explosion-proof pressure switches adapt to small differential.
- The switches adapt up to the maximum range of 28MPa. The adjustable differential range is 0.004 to 1MPa.
- A SUS316L diaphragm is adopted as the pressure sensing element.
- The pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- ExdIICT6 (explosion-proof class) approved.

| Model | Range MIN. : Minimum setting point of falling pressure. MAX. : Maximum setting point of rising pressure. MPa (kgf/cm ²) MIN. - MAX. | Differential Add to the Range Value MPa (kgf/cm ²) | Rated Pressure Maximum Pressure in Continuous Use MPa (kgf/cm ²) | Proof Pressure MPa (kgf/cm ²) |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------|
| TEX-Z1.7DH | 0.002-0.17 (0.02-1.7) | 0.004 (0.04) | 2.3 (23) | 3.5 (35) |
| TEX-Z005DH | 0.005-0.5 (0.05-5) | 0.006 (0.06) | 2.3 (23) | 3.5 (35) |
| TEX-Z025DH | 0.02-2.5 (0.2-25) | 0.03 (0.3) | 7 (70) | 12 (120) |
| TEX-Z035DH | 0.05-3.5 (0.5-35) | 0.06 (0.6) | 10 (100) | 41 (410) |
| TEX-Z070DH | 0.1-7 (1-70) | 0.15 (1.5) | 12 (120) | 41 (410) |
| TEX-Z120DH | 0.2-12 (2-120) | 0.3 (3) | 15 (150) | 41 (410) |
| TEX-Z280DH | 0.2-28 (2-280) | 1 (10) | 35 (350) | 42 (420) |

- The differential (dead band) is not adjustable.
- The differential (dead band) indicates value at the middle of the pressure range. The differential (dead band) becomes smaller than the indicated value within the lower range, and larger within the higher range.
- Only "C" contact micro switch is available.

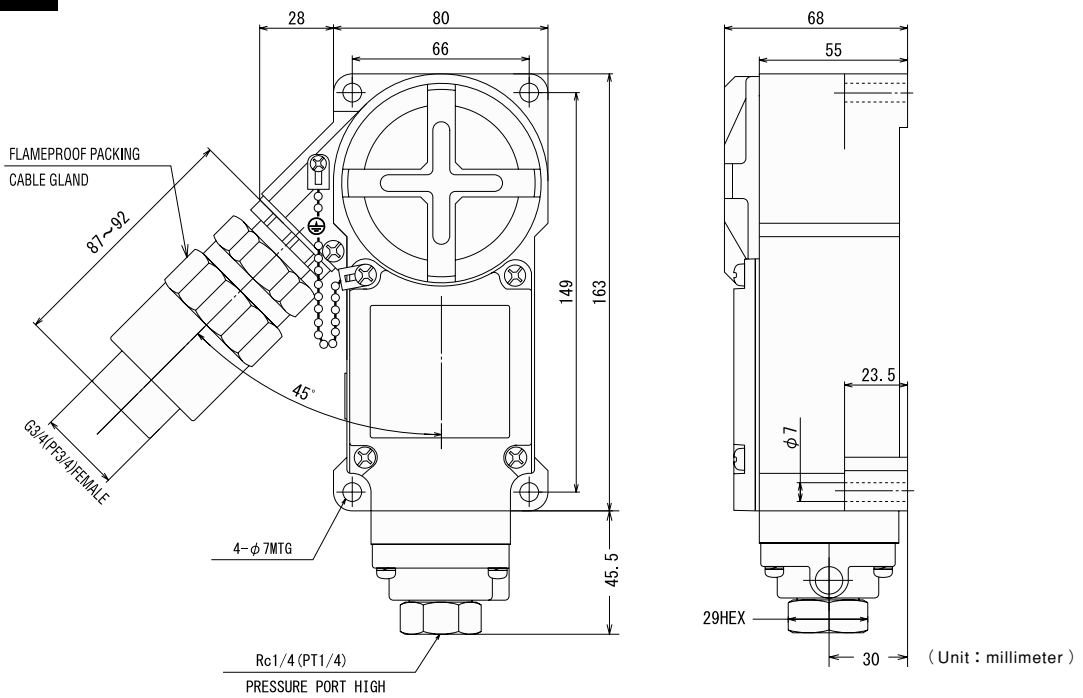
TEX-Z1.7DH
TEX-Z005DH
TEX-Z025DH

Mass : approx. 2.1kg



TEX-Z035DH
TEX-Z070DH
TEX-Z120DH
TEX-Z280DH

Mass : approx. 1.9kg



Explosion-proof Differential Pressure Switches (Diaphragm Actuator)

TEX-Z□□□DD/TEX-Z□□□DDEX



Features

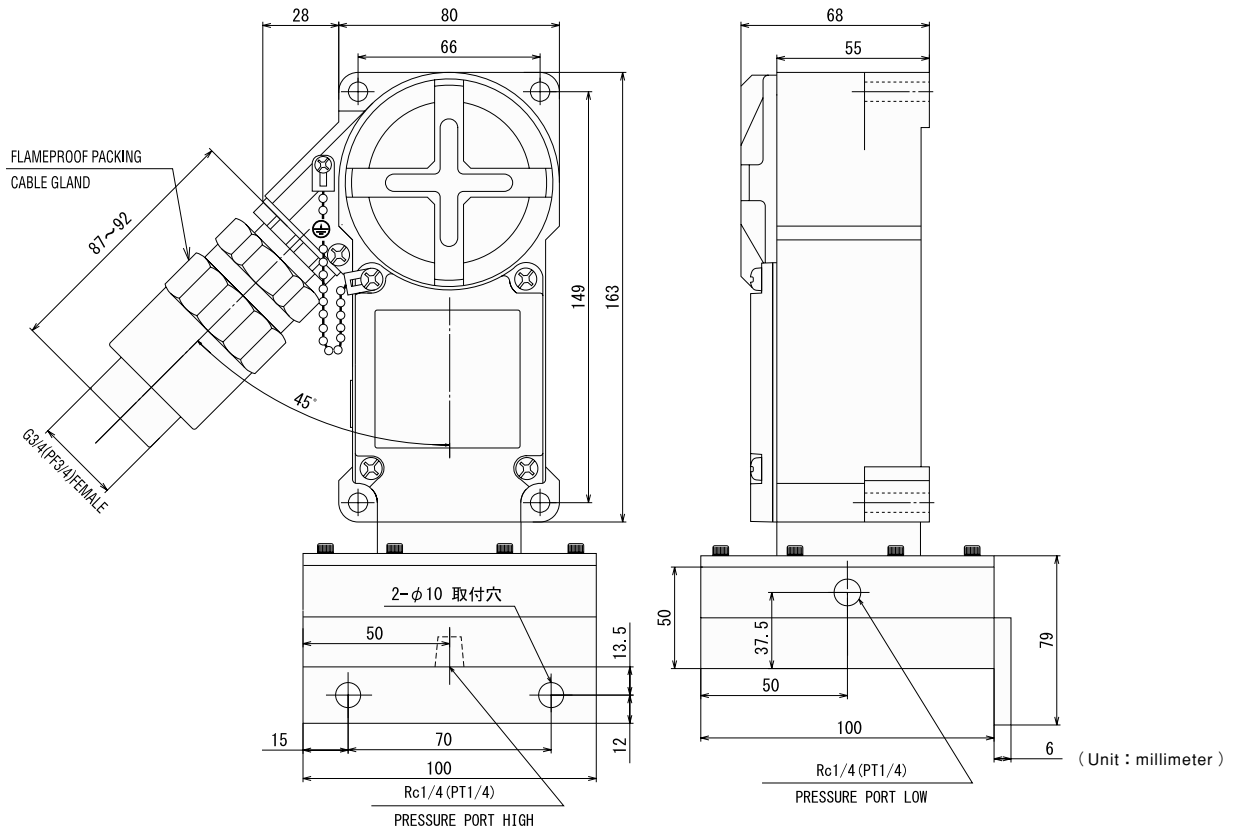
- This explosion-proof differential pressure switch especially specializes in extremely small differential pressure.
- The differential pressure switches conform to the differential setting range of 0.0005 to 3.5MPa.
- The switches adapt up to the maximum range of 21MPa.
- A polyimide diaphragm is adopted as a pressure sensing element.
- To realize the high proof pressure and the extremely small dead band at the same time, the stroke and clearance have been made smaller. (It is recommended to use an approx. 20μm filter for the both higher pressure side and lower side pressure side.)
- The differential pressure switches can be used for various pressure medium such as air, water, oil, gases and steam.
- ExdIICT6 (explosion-proof class) approved.

| Model | Range MPa (kgf/cm ²) MIN. - MAX. | Sensitivity (Dead Band) The switch is activated on increasing pressure difference. MPa (kgf/cm ²) | Range of Adjustable Difference The switch is reset on decreasing pressure difference. MPa (kgf/cm ²) MIN. - MAX. | Proof Pressure MPa (kgf/cm ²) |
|--------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| TEX-Z1/4DD | 0.0005-6.6 (0.005-66) | 0.0006 (0.006) | 0.0005-0.025 (0.005-0.25) | 10 (100) |
| TEX-Z2.5DD | 0.002-2 (0.02-20) | 0.006 (0.06) | 0.002-0.25 (0.02-2.5) | 3.5 (35) |
| TEX-Z005DD | 0.005-2 (0.05-20) | 0.02 (0.2) | 0.005-0.5 (0.05-5) | 3.5 (35) |
| TEX-Z012DD | 0.005-2 (0.05-20) | 0.06 (0.6) | 0.005-1.2 (0.05-12) | 3.5 (35) |
| TEX-Z020DD | 0.005-2 (0.05-20) | 0.1 (1) | 0.005-2 (0.05-20) | 3.5 (35) |
| TEX-Z2.5DDEX | 0.002-21 (0.02-210) | 0.006 (0.06) | 0.002-0.25 (0.02-2.5) | 35 (350) |
| TEX-Z005DDEX | 0.005-21 (0.05-210) | 0.02 (0.2) | 0.005-0.5 (0.05-5) | 35 (350) |
| TEX-Z012DDEX | 0.005-21 (0.05-210) | 0.06 (0.6) | 0.005-1.2 (0.05-12) | 35 (350) |
| TEX-Z035DDEX | 0.005-21 (0.05-210) | 0.1 (1) | 0.005-3.5 (0.05-35) | 35 (350) |

- The sensitivity (dead band) is not adjustable.
- The sensitivity (dead band) indicates value at the middle of the range of adjusting difference. The sensitivity (dead band) becomes smaller than the indicated value within the lower range of adjusting difference, and larger within the higher range of adjusting difference.
- Only “C” contact micro switch is available.

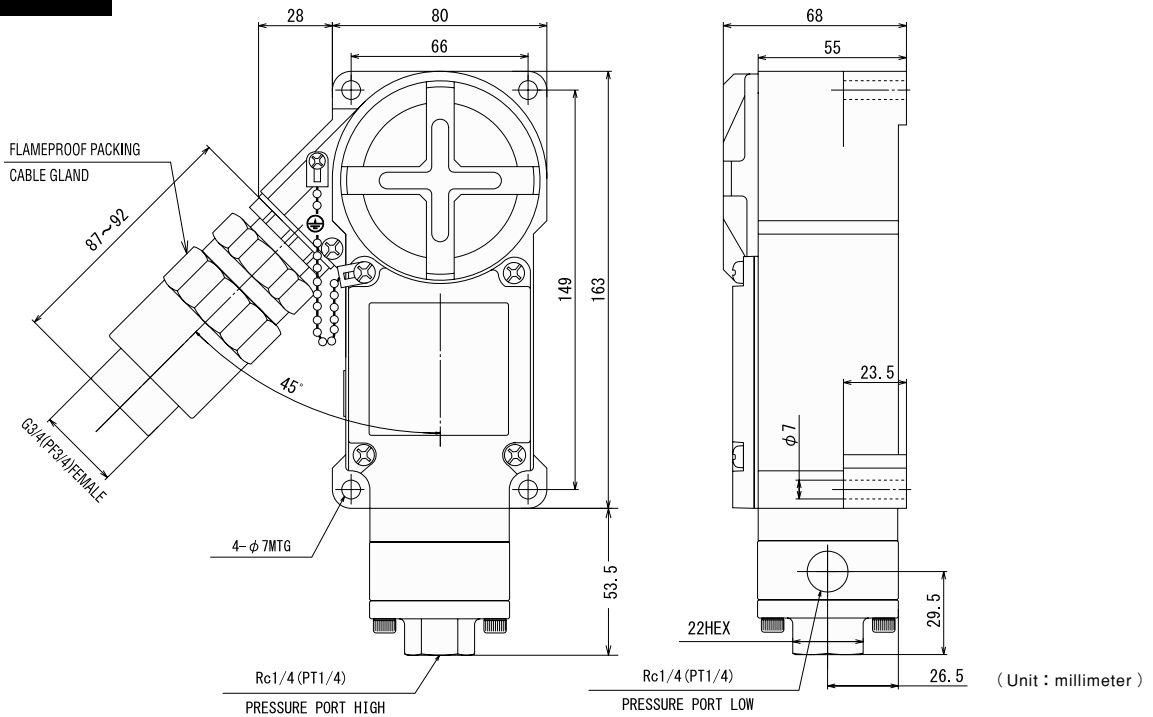
TEX-Z1/4DD

Mass : approx. 6.0kg



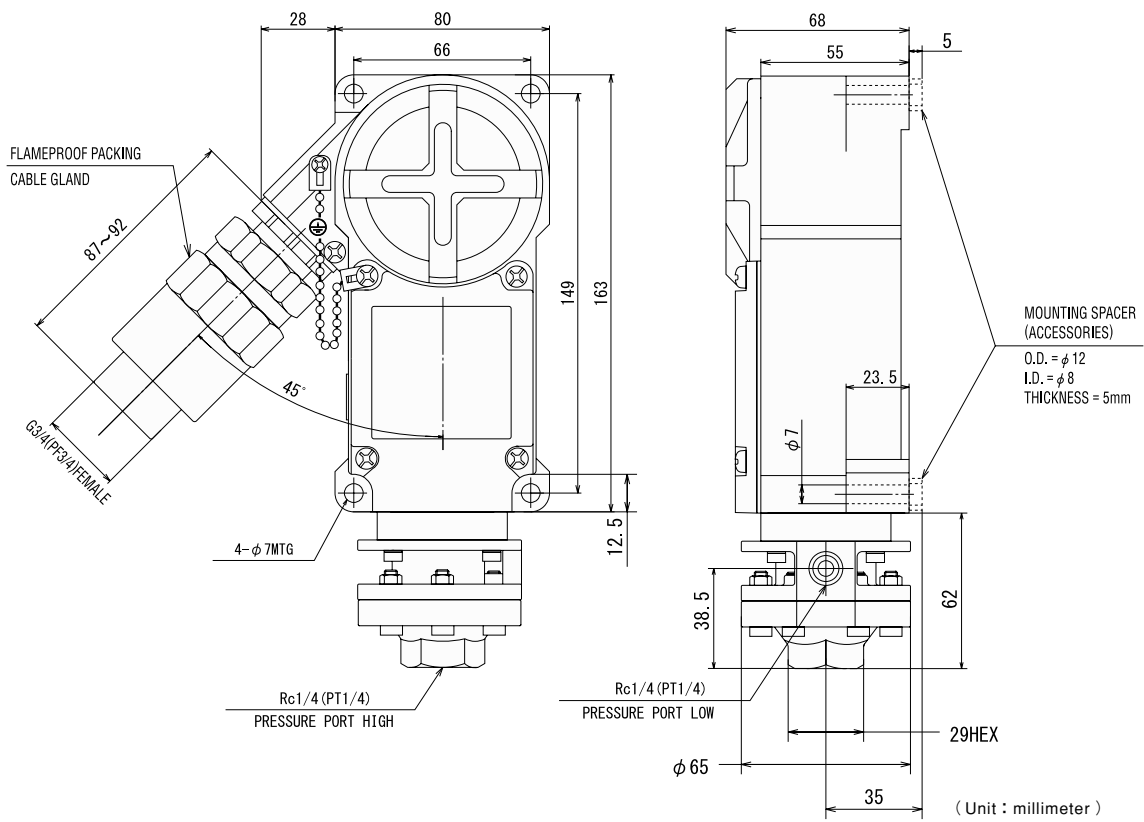
TEX-Z2.5DD TEX-Z005DD TEX-Z012DD TEX-Z020DD

Mass : approx. 2.1kg



TEX-Z2.5DDEX
TEX-Z005DDEX
TEX-Z012DDEX
TEX-Z035DDEX

Mass : approx. 2.5kg



Furnished Accessories

■ Pressure-proof packing type cable gland (UF322)

Pressure-proof packing

| Applicable cable size (nominal) | Part Number |
|---------------------------------|-------------|
| 10~13 | 322-13 |
| 13~15 | 322-15 |

The above two kinds of packing are furnished.

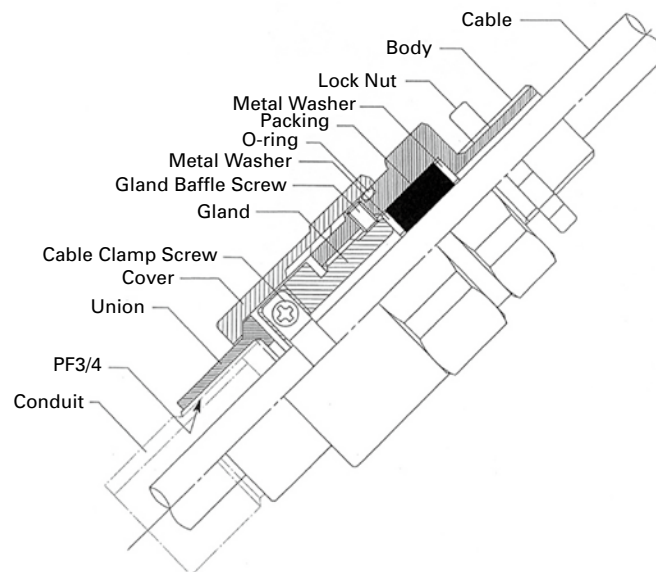
■ Hex wrench for the cable gland

■ Tool for opening and closing the terminal cover

Pressure-proof packing type cable gland (UF322)

The TEX-Z series pressure switches become to be explosion-proof configuration by using the pressure-proof packing type cable gland at their conduit opening.

- It is mandatory to use the pressure-proof packing type cable gland, and to install the pressure switch in the correct manner.
- Use the furnished cable gland for the pressure-proof packing cable gland.
- Refer to the instruction manual for the correct installation of the pressure-proof packing cable gland.



Electrical Rating of Micro Switches

SPDT Standard Type

| Contact Structure SPDT | Voltage (V) | Resistance Load (A) | | Lamp Load (A) | | Inductive Load (A) | | Motor Load (A) | |
|---------------------------|----------------|---------------------|------|---------------|------|--------------------|------|----------------|------|
| | | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. |
| | AC 125 | 10 | 10 | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 250 | 10 | 10 | 2 | 1 | 10 | 3 | 1.5 | |
| | 480 | 10 | 10 | 1.5 | 0.8 | 3 | 1.5 | 0.8 | |
| | 600* | 3 | 1 | 1 | 0.5 | 1.5 | 1 | 0.5 | |
| | DC 8 | 10 | | 6 | 3 | 10 | 6 | | |
| | 14 | 10 | | 6 | 3 | 10 | 6 | | |
| | 30 | 6 | | 4 | 3 | 6 | 4 | | |
| | 125 | 0.8 | | 0.2 | 0.2 | 0.8 | 0.2 | | |
| | 250 | 0.4 | | 0.1 | 0.1 | 0.4 | 0.1 | | |

* A CE approved switch is rated up to 480VAC. Voltage rating 600VAC is not CE approved.

SPDT Micro Load Type

| Contact Structure SPDT | Rating | | Recommended Range of Load |
|---------------------------|--------|--------|---------------------------|
| | 125V | AC0.1A | DC5-30V |
| | 30V | DC0.1A | 0.5-100mA |

SPDT (C contact): Standard Type

| Contact Structure SPDT | Voltage (V) | Resistance Load (A) | | Lamp Load (A) | | Inductive Load (A) | | Motor Load (A) | |
|---------------------------|----------------|---------------------|------|---------------|------|--------------------|------|----------------|------|
| | | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. |
| | AC 125 | 10 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 250 | 10 | | 2.5 | 1.25 | 10 | 3 | 1.5 | |
| | DC 8 | 15 | | 3 | 1.5 | 15 | 5 | 2.5 | |
| | 14 | 15 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 30 | 2 | | 2 | 1.4 | 1 | 1 | 1 | |
| | 125 | 0.4 | | 0.4 | 0.4 | 0.03 | 0.03 | 0.03 | |
| | 250 | 0.2 | | 0.2 | 0.2 | 0.02 | 0.02 | 0.02 | |

SPDT (C contact): Explosion-proof type

| Contact Structure SPDT | Voltage (V) | Resistance Load (A) | | Lamp Load (A) | | Inductive Load (A) | | Motor Load (A) | |
|---------------------------|----------------|---------------------|------|---------------|------|--------------------|------|----------------|------|
| | | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. |
| | AC 125 | 10 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 250 | 10 | | 2 | 1 | 10 | 3 | 1.5 | |
| | DC 8 | 10 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 14 | 10 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 30 | 2 | | 2 | 1.4 | 1 | 1 | 1 | |
| | 125 | 0.4 | | 0.2 | 0.2 | 0.03 | 0.03 | 0.03 | |
| | 250 | 0.2 | | 0.1 | 0.1 | 0.02 | 0.02 | 0.02 | |

DPDT (C contact)

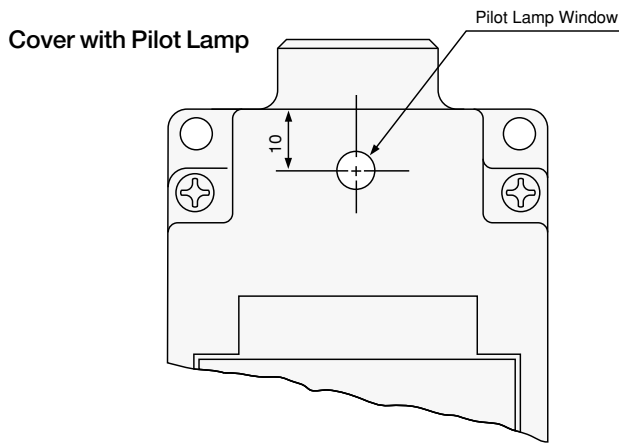
| Contact Structure DPDT | Voltage (V) | Resistance Load (A) | | Lamp Load (A) | | Inductive Load (A) | | Motor Load (A) | |
|---------------------------|----------------|---------------------|------|---------------|------|--------------------|------|----------------|------|
| | | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. | N.C. | N.O. |
| | AC 125 | 10 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 250 | 10 | | 2.5 | 1.25 | 10 | 3 | 1.5 | |
| | DC 8 | 15 | | 3 | 1.5 | 15 | 5 | 2.5 | |
| | 14 | 15 | | 3 | 1.5 | 10 | 5 | 2.5 | |
| | 30 | 2 | | 2 | 1.4 | 1 | 1 | 1 | |
| | 125 | 0.4 | | 0.4 | 0.4 | 0.03 | 0.03 | 0.03 | |
| | 250 | 0.2 | | 0.2 | 0.2 | 0.02 | 0.02 | 0.02 | |

① The above tables show steady-state current.

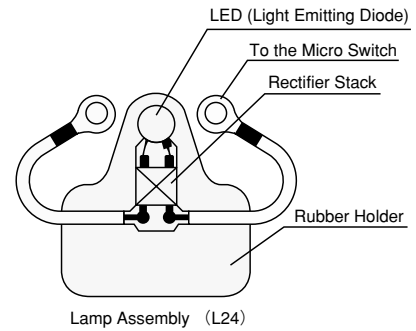
② Inductive Load : Alternating current-phase factor is 0.4 or more, direct current-time constant is below 7 ms.

③ Lamp Load : Having decuple inrush current.

④ Motor Load : Having sextuple inrush current.

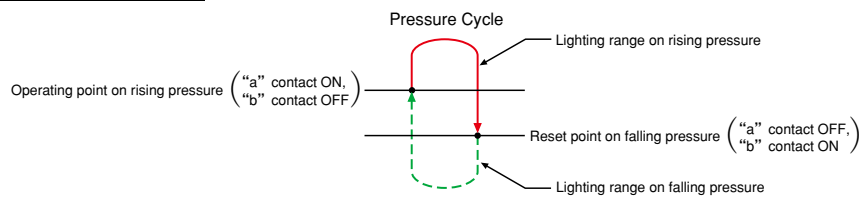


Rubber Lamp Holder



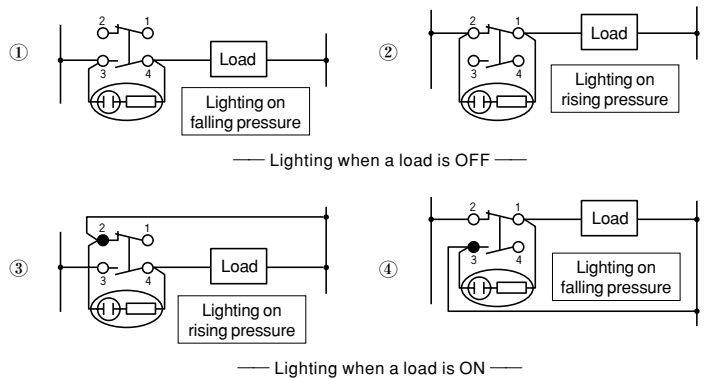
Put the holder on the built-in micro switch after wiring, and then close the cover. When ordering a pressure switch with a pilot lamp, suffix a concerned symbol. (Ex. TDZ-4L)

Operation Indicating Pilot Lamp



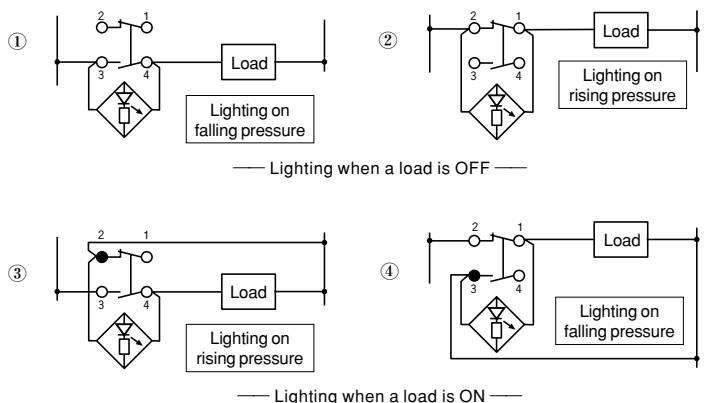
Symbol L

Voltage : 100/200V AC, DC
 Carry current : Approx. 0.5 mA at 100V
 Approx. 1.6 mA at 200V
 Lamp : Neon lamp
 Built-in Resistor



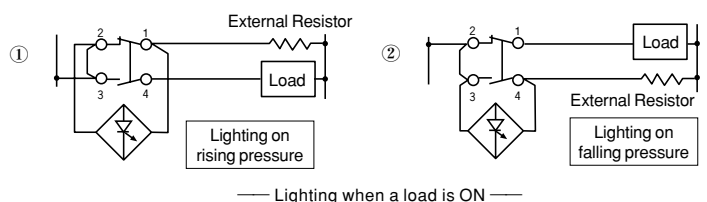
Symbol L24

Voltage : 24V DC
 Carry current : ① ② Approx. 1.8 mA
 ③ ④ Approx. 2.3 mA
 Lamp : LED (Light Emitting Diode)
 Built-in Stack and Resistor
 Red emission

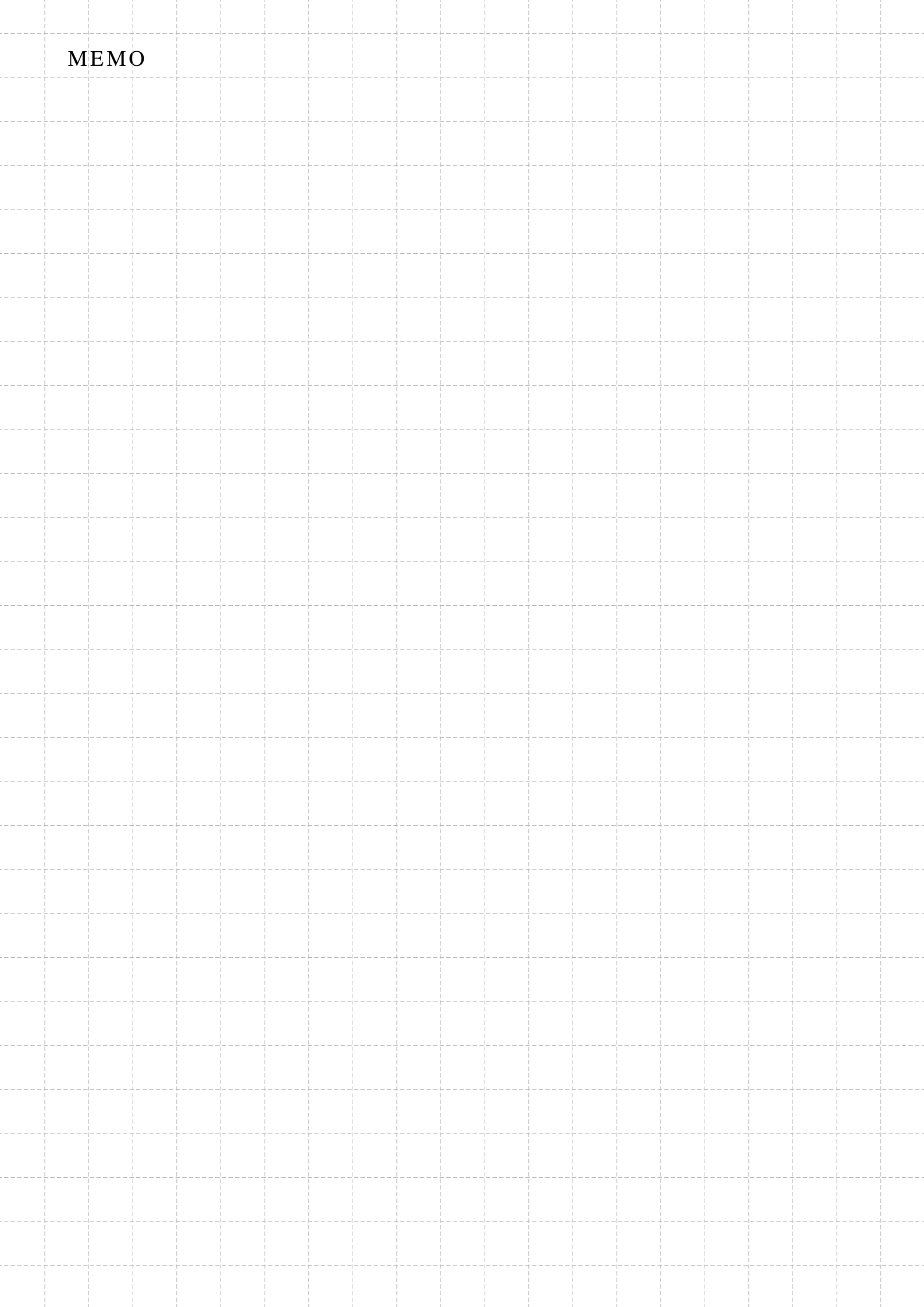


Symbol LF

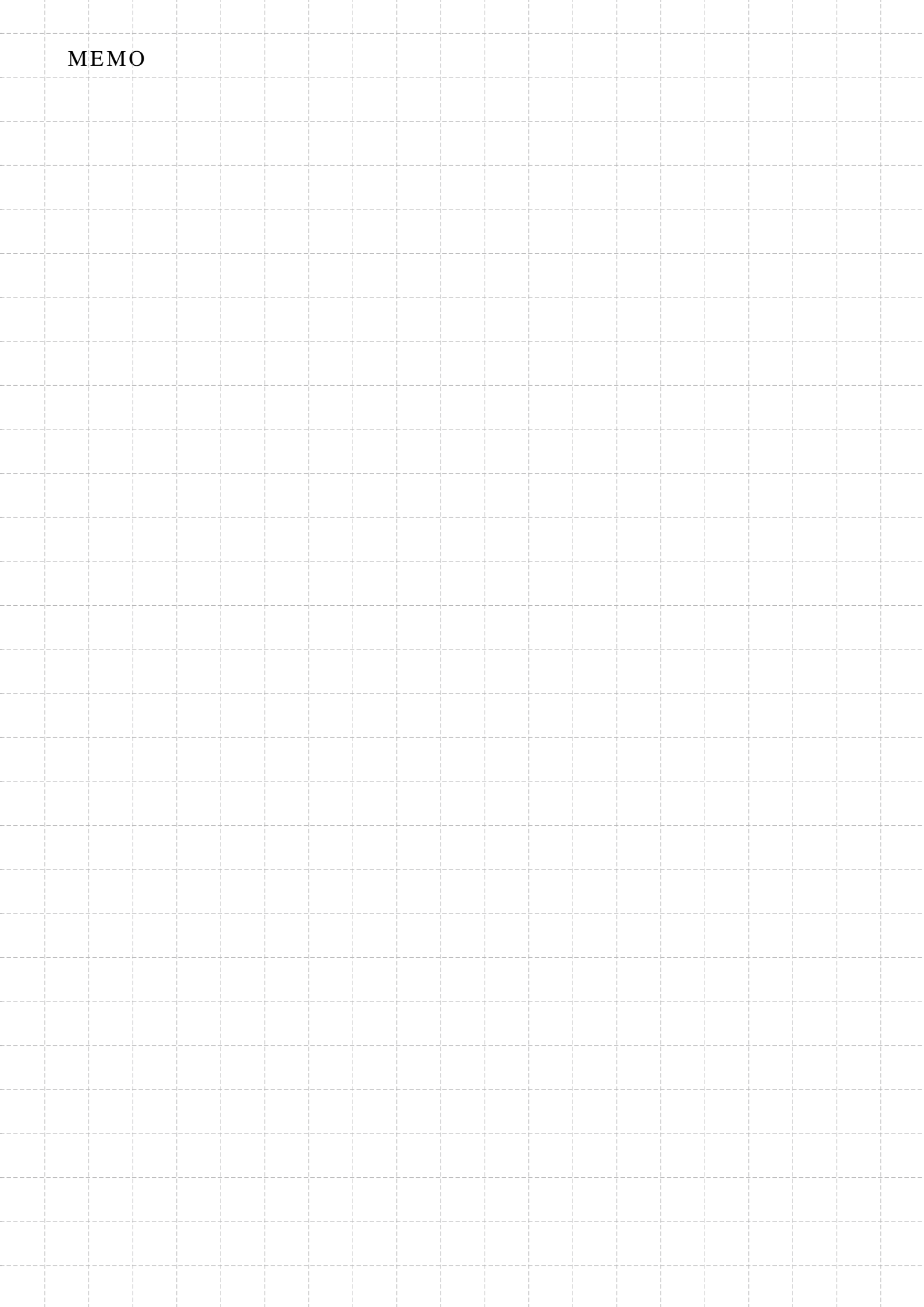
Voltage : Free voltage (DC30V Max)
 Lamp : LED (Light Emitting Diode)
 Built-in Stack
 Red emission
 Mounting an external resistor :
 When an external resistor is mounted, calculate the carry current through the LED from each voltage so that it shall be within range of 10 to 15 mA.



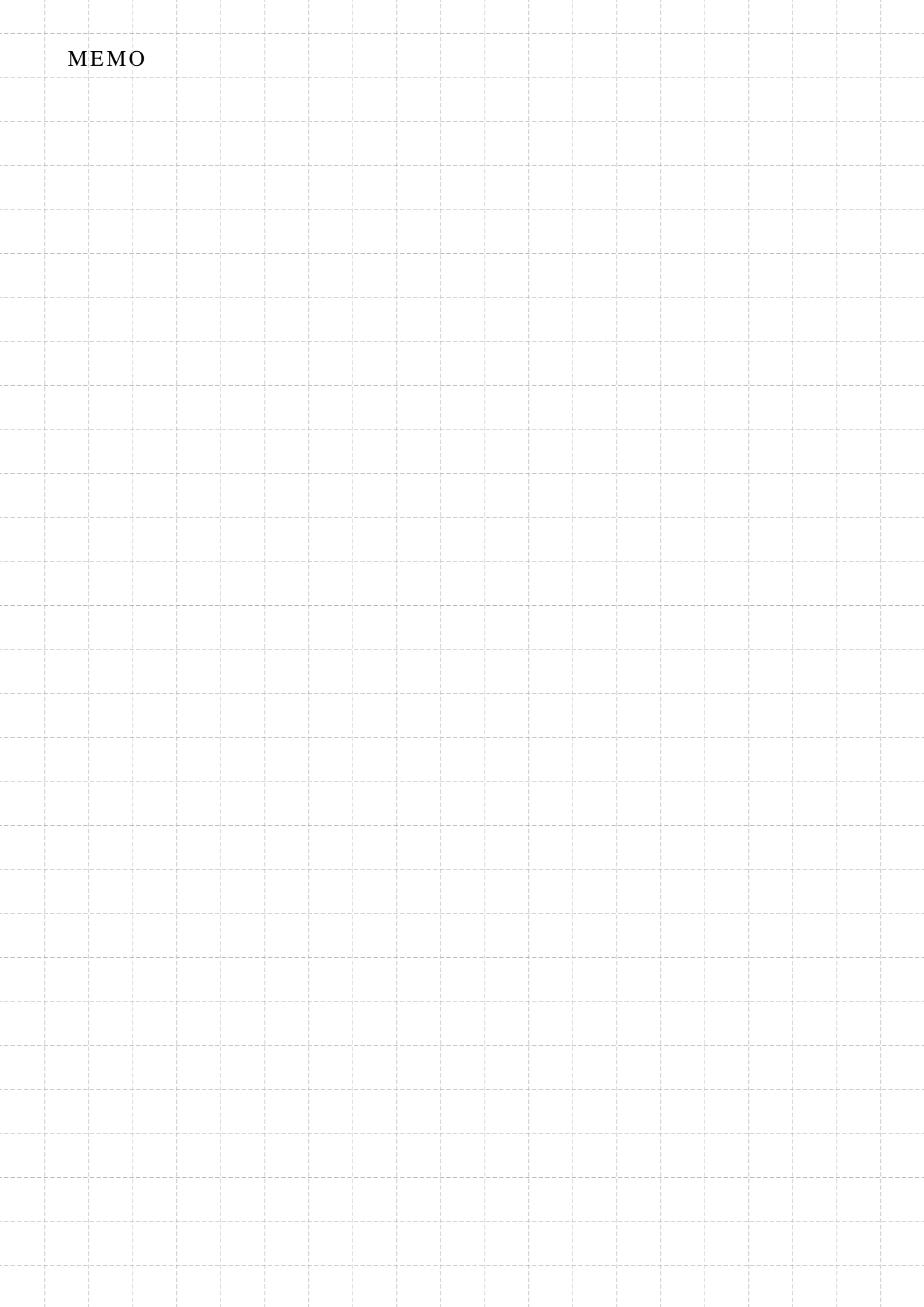
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