

Field Mount type P/I Converter

Model KUX60G (Waterproof)
Model KUX70G (Explosion-proof)

User's Manual



Azbil Corporation

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Thank you for purchasing the Azbil Corporation's Model KUX60G/70G field mount P/I converter.

The model KUX60G/70G offers high performance and is provided with highly reliable P/I converters with a microprocessor incorporated in each one.

Safety

About this manual

Correct installation and periodic maintenance are essential for the safe use of this instrument. Carefully read the safety precautions described in this instruction manual and have a thorough understanding of it before starting installation or maintenance.

Upon receiving the product, check to see if it has the correct specifications or if it has sustained any damage during delivery. This instrument is shipped after being tested according to a strict quality control program. If you find any omissions in aspects of quality or specifications, inform us of the unit's model number and product number written on its identification plate.

The identification plate is attached to the Product.

WARNING

A warning alerts the user of a potentially hazardous situation that may result in death or serious injury in the event of improper handling.

CAUTION

A caution warns the user of a potentially hazardous situation that may result in light to moderate injuries or only in property damage in the event of improper handling or operation.

For correct and safe use of the instrument, be sure to observe the cautions described in the following pages. Azbil Corporation will not be responsible for any damage that is a result of handling of the product without heeding these cautions.

Safety precautions

Cautions on installation

WARNING

-
- Do not use the instrument beyond the rated pressure, connection specifications or the rated temperature specified for the instrument. This may result in a serious accident due to damage to the unit.
 - Wiring in an explosion-proof area should be performed according to the procedures specified in the explosion-proof guideline.
-

CAUTION

-
- After installation, do not use this instrument as a step or foothold. This may damage the instrument or may result in physical injury
 - Perform installation correctly. Insufficient installation or no installation may result in output errors or violate applicable regulations.
-

Cautions on wiring

WARNING

Do not perform wiring with wet hands or with the power turned on. This may result in electrical shock. Work with dry hands or wear gloves with the power to the unit turned off power.

CAUTION

-
- Carefully check the specifications and perform wiring correctly. Incorrect wiring may damage the instrument or cause the unit to malfunction.
 - Use a power supply that conforms to the specifications. Using a wrong power supply may damage the instrument.
-

Cautions on maintenance

WARNING

-
- When removing this instrument from the process for maintenance, be especially careful of residual pressure or any residual fluid remaining in the process line or in the instrument.
 - When carrying out venting or draining, check the direction of the venting or draining and take precautions to prevent it from coming into contact with the human body. Failure to do so may result in burns or physical injury.
 - If the instrument is used in an explosion-proof area, do not leave the Product uncovered to avoid sparks or ignition.
-

CAUTION

This instrument is shipped under strict product control by Azbil Corporation. Do not modify the instrument under any circumstances as this could result in permanent damage to the instrument.

Cautions on use of communication devices

CAUTION

Using a transceiver, cellular phone, pager, etc. near this instrument may prevent the instrument from functioning correctly depending on the transmission frequency being used. Observe the following precautions.

- Check beforehand the distance at which the communication device will not affect the correct operation of this instrument. Always use the communication device at a greater distance than this.
 - Use the communication device after putting the cover on the Product.
-

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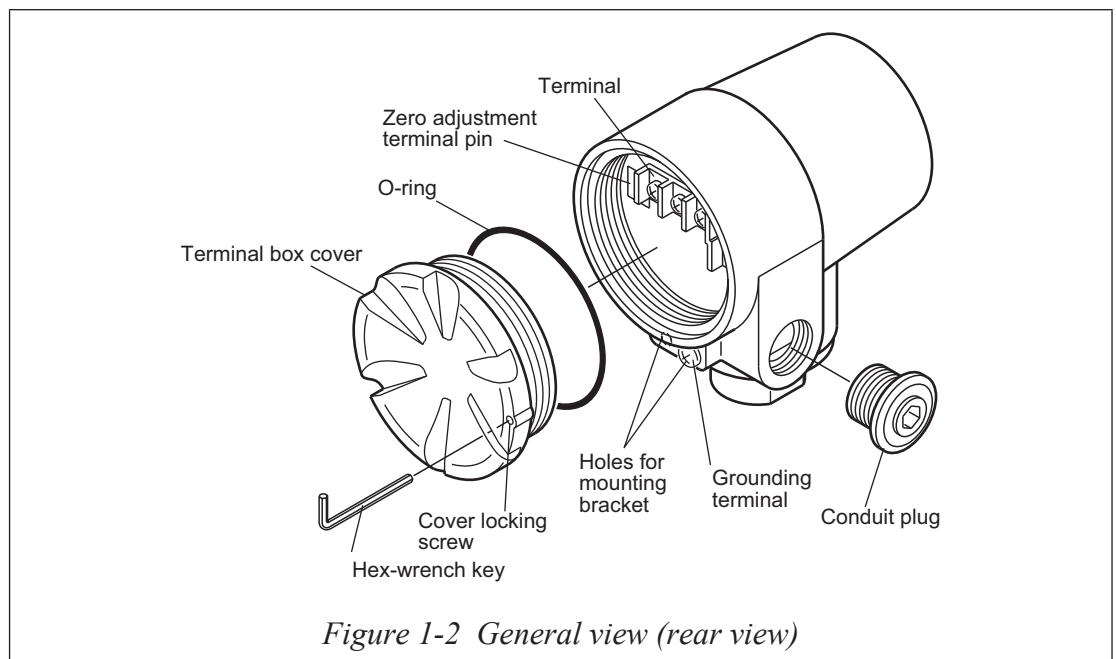
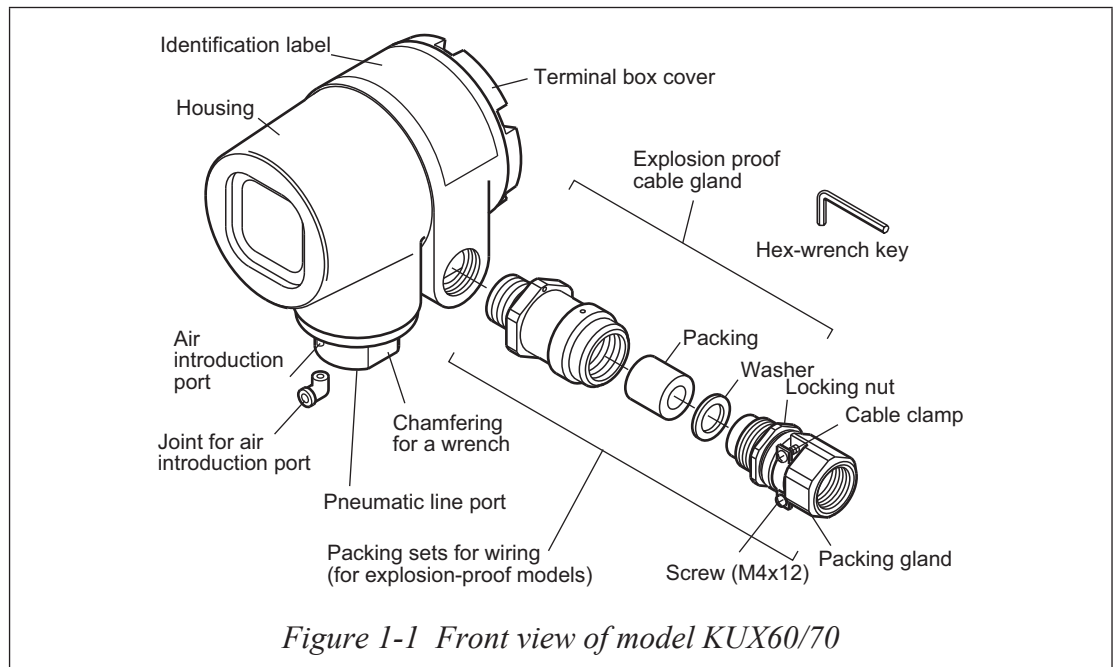
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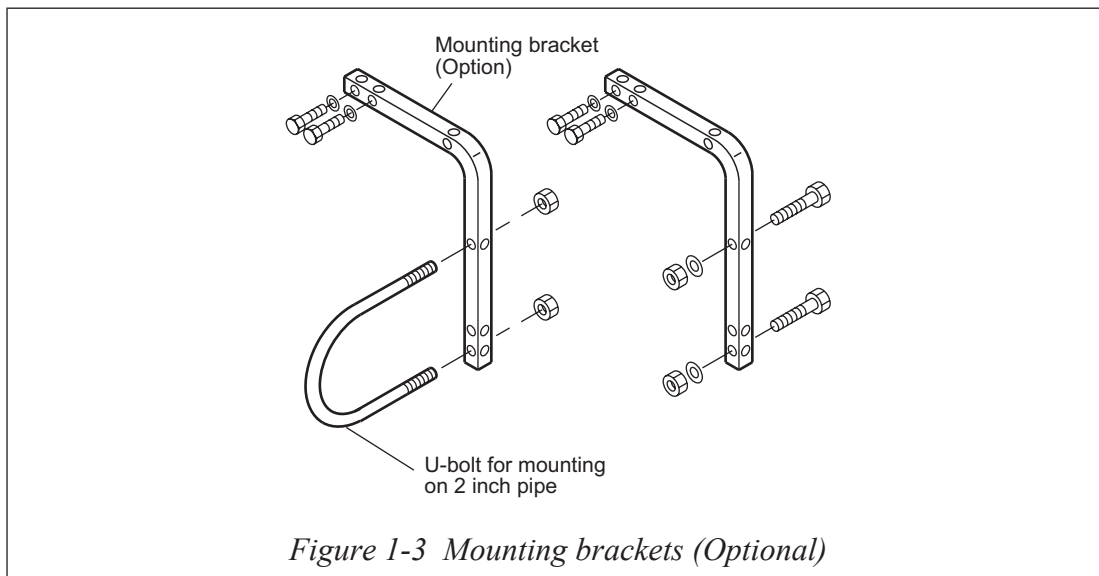
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Chapter 1 : Description of parts

1-1 : Description of parts

Figure 1-1 and Figure 1-2 show expanded front and rear views of the KUX60/70 P/I converter.





Chapter 2 : Installation

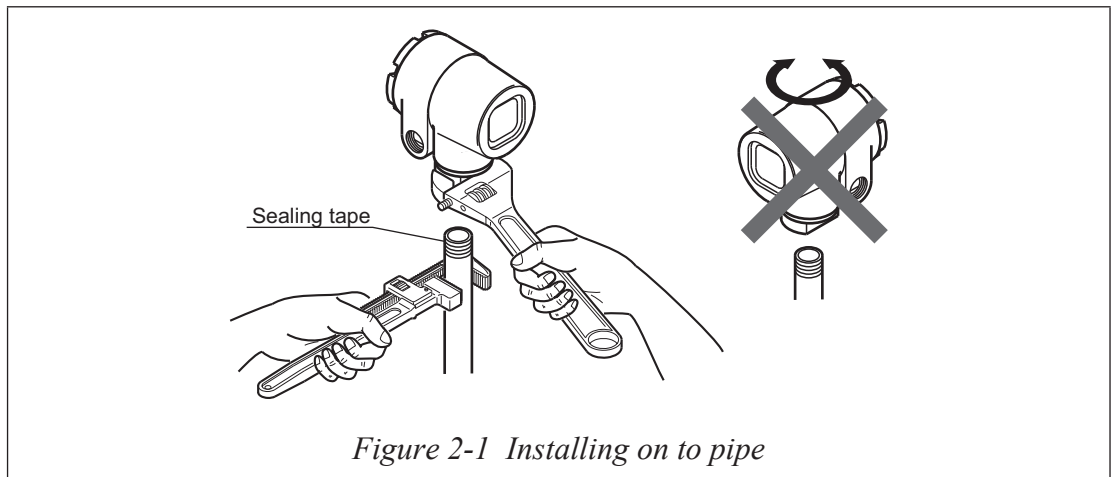
2-1 : Precautions

CAUTION

Once the model KUX60/70 converter is installed, do not use it as foot-hold or any other improper purpose. Doing so may damage the equipment and could result in personal injury.

- When installing the converter, position and secure the gasket in order to avoid any leakage from where the converter is connected to the pneumatic signal line. If gasket protrudes out, output errors may result.
- Do not use the converter under any other operating conditions than those specified in the product specifications. Using this product under incorrect operating conditions may result in damage to the product or leakage that could lead to a major accident.
- Wiring work in a hazardous area should be performed carefully by following the procedures specified in explosion-protection guidelines.

2-2 : Installation to pipe



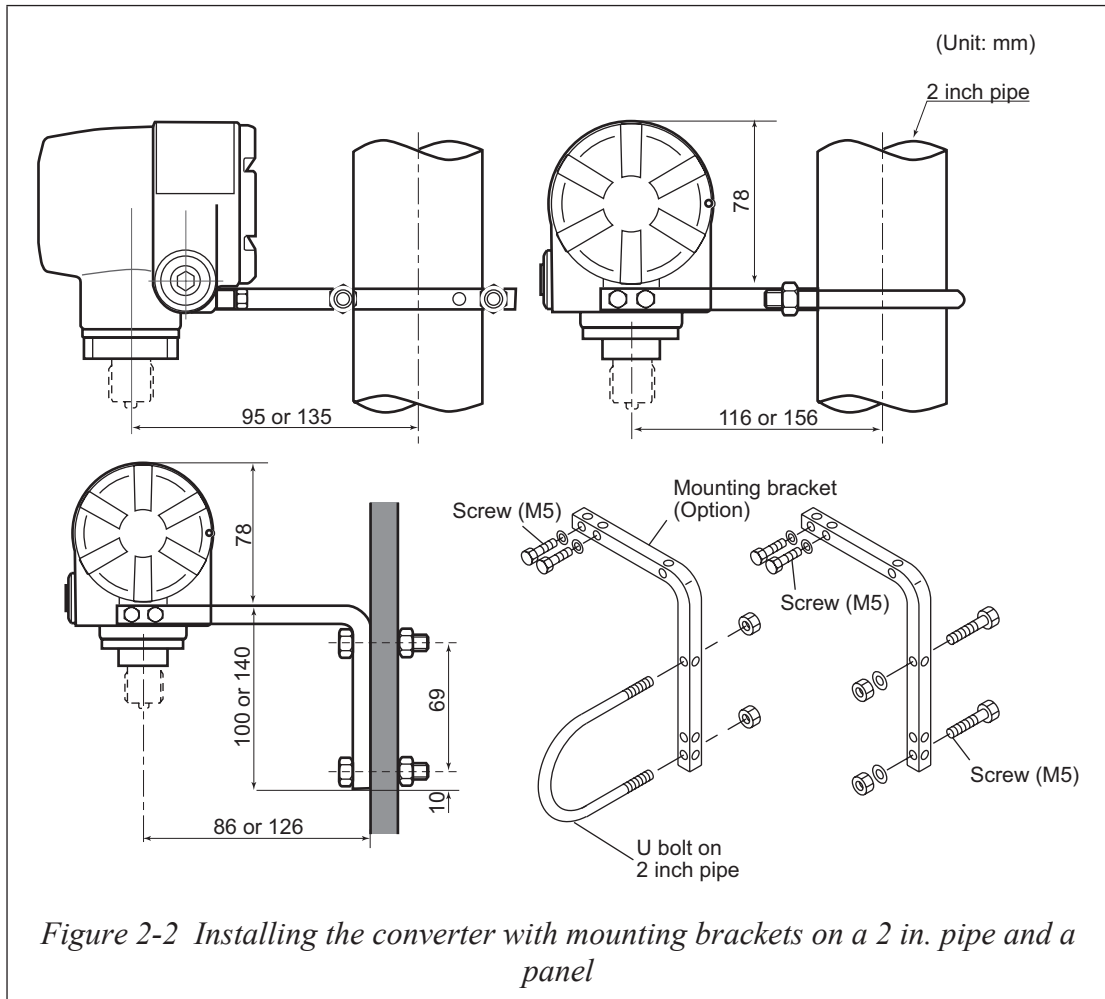
- Securely wrap sealing tape around the joint of the connecting pipe to prevent leakage. Using a wrench, securely tighten the pneumatic line port of the converter to the connecting pipe. When doing so, use a wrench to hold the chamfering part. Do not tighten by holding the housing of the product as this may damage the converter. Avoid holding the housing when tightening without a wrench (See Figure 2-1).
- Install the converter in a location where there will be no excessive impact or vibration.

- When mounting the converter directly onto the pneumatic signal pipe, full consideration must be given to its weight and vibration.

2-3 : Piping

Mounting brackets are supplied with the converter as an option. With the mounting bracket, the converter can be installed on a 2 inch pipe or a panel.

Figure 2-2 illustrates examples of installing the converter with mounting brackets. Figure 2-3 gives the dimensions of the mounting bracket.



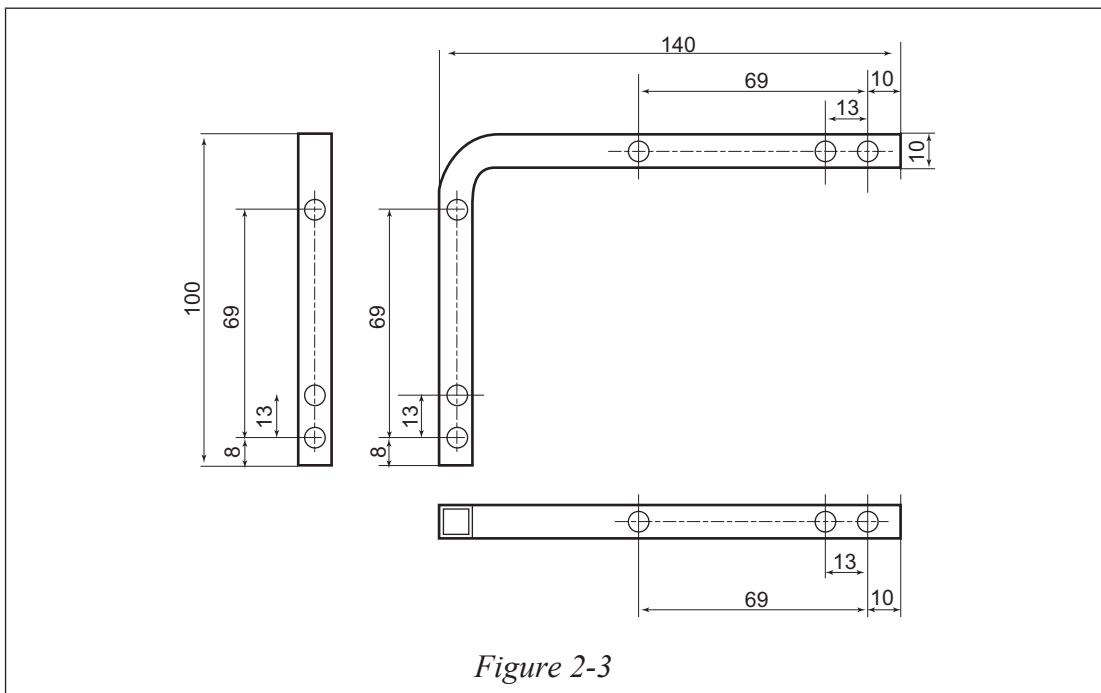


Figure 2-3

Chapter 3 : Wiring

3-1 : Precautions

CAUTION

-
- Performing wiring with wet hands or with its power turned on may result in electrical shock to personnel. Always perform wiring work with dry hands, always wear gloves and turn the power to the converter off before performing wiring work.
 - Turning on the power in an explosion-protected area while the housing is open can induce explosion.
-
- Perform the wiring work correctly while carefully following the specifications. Incorrect wiring will cause damage to or result in malfunction of the product.
 - Use the power supply properly based on the specifications. Incorrect power supply will damage the product.
 - This instrument is designed based on a two-wire system. The power supply line also functions as a signal line. The wires are routed through the conduit hole on the side face of the converter and are connected to the terminals. The conduit end is potted with sealing agent or capped with a sealing plug so the water cannot permeate into the housing. The connecting wires to the terminals must be drawn in below the position of where the connection port is located.
 - The converter has two grounding terminals: one at the terminal and the other on the outside face. Either terminal may be used. The grounding terminal must be connected to a ground having a resistance of 100Ω or less.

3-2 : Power supply

Power supply to the converter should be between 11.5V DC and 30V DC.

Chapter 4 : Maintenance

4-1 : Maintenance

CAUTION

-
- If the converter is disconnected from the pipe for maintenance purposes, securely shut off the pneumatic line to the product. Personal injury could result from the blowout of air.
 - Do not open the housing cover while it is operating in hazardous area. Opening the cover may induce an explosion.
-

Check the following on periodic basis:

- Has the housing, cover or grounding cable been damaged?
- Are the grounding cable, cover or housing locking screw loose?
- Are the terminal screws loose?
- Is there any deterioration in the O-rings?
- Is there any leakage from the connection pipes?

Chapter 5 : Spare parts

5-1 : Spare parts

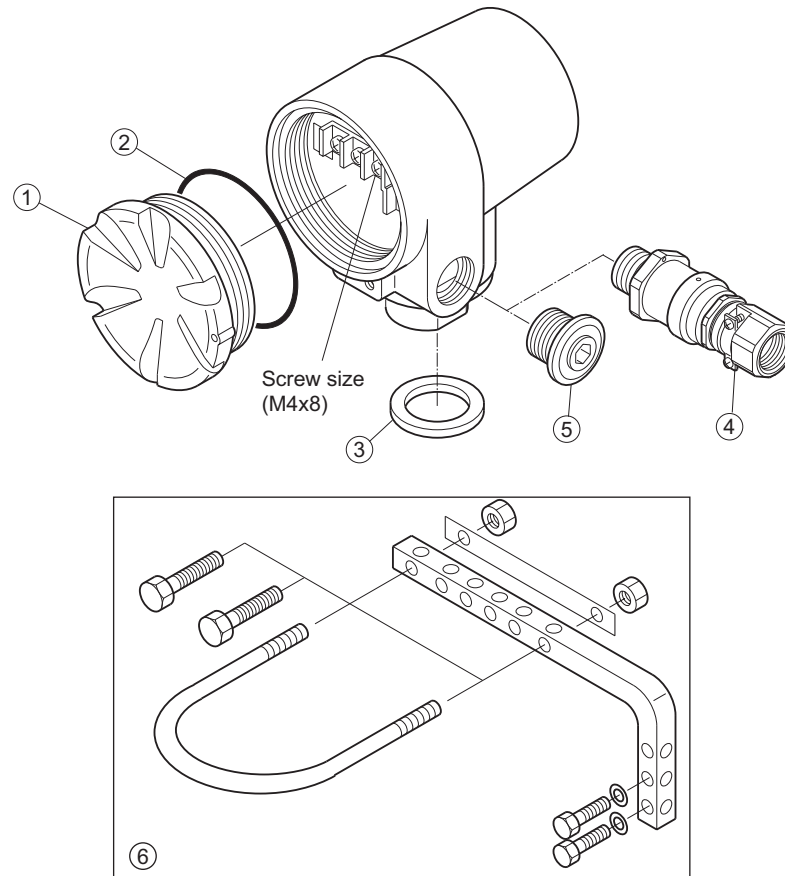


Figure 5-1

Table 5-1: Spare parts

No.	Part description	Part No.	Qty. to use per unit	Unit qty. for resale
1	Case cover (with an O-ring)	80370406-001	1	1EA
2	O-ring	80020935-842	1	1-F
4	Gland packing set	80373094-001	1	1EA
5	Plug (with an O-ring)	80387115-002	1	1EA
6	Mounting bracket	80370404-001	1	1EA

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

Terms and Conditions

We would like to express our appreciation for your purchase and use of Azbil Corporation's products.

You are required to acknowledge and agree upon the following terms and conditions for your purchase of Azbil Corporation's products (system products, field instruments, control valves, and control products), unless otherwise stated in any separate document, including, without limitation, estimation sheets, written agreements, catalogs, specifications and instruction manuals.

1. Warranty period and warranty scope

1.1 Warranty period

Azbil Corporation's products shall be warranted for one (1) year from the date of your purchase of the said products or the delivery of the said products to a place designated by you.

1.2 Warranty scope

In the event that Azbil Corporation's product has any failure attributable to azbil during the aforementioned warranty period, Azbil Corporation shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place. Notwithstanding the foregoing, any failure falling under one of the following shall not be covered under this warranty:

- (1) Failure caused by your improper use of azbil product (noncompliance with conditions, environment of use, precautions, etc. set forth in catalogs, specifications, instruction manuals, etc.);
- (2) Failure caused for other reasons than Azbil Corporation's product;
- (3) Failure caused by any modification or repair made by any person other than Azbil Corporation or Azbil Corporation's subcontractors;
- (4) Failure caused by your use of Azbil Corporation's product in a manner not conforming to the intended usage of that product;
- (5) Failure that the state-of-the-art at the time of Azbil Corporation's shipment did not allow Azbil Corporation to predict; or
- (6) Failure that arose from any reason not attributable to Azbil Corporation, including, without limitation, acts of God, disasters, and actions taken by a third party.

Please note that the term "warranty" as used herein refers to equipment-only-warranty, and Azbil Corporation shall not be liable for any damages, including direct, indirect, special, incidental or consequential damages in connection with or arising out of Azbil Corporation's products.

2. Ascertainment of suitability

You are required to ascertain the suitability of Azbil Corporation's product in case of your use of the same with your machinery, equipment, etc. (hereinafter referred to as "Equipment") on your own responsibility, taking the following matters into consideration:

- (1) Regulations and standards or laws that your Equipment is to comply with.
- (2) Examples of application described in any documents provided by Azbil Corporation are for your reference purpose only, and you are required to check the functions and safety of your Equipment prior to your use.
- (3) Measures to be taken to secure the required level of the reliability and safety of your Equipment in your use

Although azbil is constantly making efforts to improve the quality and reliability of Azbil Corporation's products, there exists a possibility that parts and machinery may break down. You are required to provide your Equipment with safety design such as fool-proof design,*1 and fail-safe design*2 (anti-flame propagation design, etc.), whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth. Furthermore, fault avoidance,*3 fault tolerance,*4 or the like should be incorporated so that the said Equipment can satisfy the level of reliability and safety required for your use.

*1. A design that is safe even if the user makes an error.

*2. A design that is safe even if the device fails.

*3. Avoidance of device failure by using highly reliable components, etc.

*4. The use of redundancy.

3. Precautions and restrictions on application

3.1 Restrictions on application

Please follow the table below for use in nuclear power or radiation-related equipment.

	Nuclear power quality*5 required	Nuclear power quality*5 not required
Within a radiation controlled area*6	Cannot be used (except for limit switches for nuclear power*7)	Cannot be used (except for limit switches for nuclear power*7)
Outside a radiation controlled area*6	Cannot be used (except for limit switches for nuclear power*7)	Can be used

*5. Nuclear power quality: compliance with JEAG 4121 required

*6. Radiation controlled area: an area governed by the requirements of article 3 of "Rules on the Prevention of Harm from Ionizing Radiation," article 2 2 4 of "Regulations on Installation and Operation of Nuclear Reactors for Practical Power Generation," article 4 of "Determining the Quantity, etc., of Radiation-Emitting Isotopes," etc.

*7. Limit switch for nuclear power: a limit switch designed, manufactured and sold according to IEEE 382 and JEAG 4121.

Any Azbil Corporation's products shall not be used for/with medical equipment.

The products are for industrial use. Do not allow general consumers to install or use any Azbil Corporation's product. However, azbil products can be incorporated into products used by general consumers. If you intend to use a product for that purpose, please contact one of our sales representatives.

3.2 Precautions on application

you are required to conduct a consultation with our sales representative and understand detail specifications, cautions for operation, and so forth by reference to catalogs, specifications, instruction manual, etc. in case that you intend to use azbil product for any purposes specified in (1) through (6) below. Moreover, you are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design, fault avoidance, fault tolerance, and other kinds of protection/safety circuit design on your own responsibility to ensure reliability and safety, whereby preventing problems caused by failure or nonconformity.

- (1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals
- (2) For use of specific purposes, such as:
 - * Nuclear energy/radiation related facilities
[When used outside a radiation controlled area and where nuclear power quality is not required]
[When the limit switch for nuclear power is used]
 - * Machinery or equipment for space/sea bottom
 - * Transportation equipment
[Railway, aircraft, vessels, vehicle equipment, etc.]
 - * Antidisaster/crime-prevention equipment
 - * Burning appliances
 - * Electrothermal equipment
 - * Amusement facilities
 - * Facilities/applications associated directly with billing
- (3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability
- (4) Facilities that are to comply with regulations of governmental/public agencies or specific industries
- (5) Machinery or equipment that may affect human lives, human bodies or properties
- (6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety

4. Precautions against long-term use

Use of Azbil Corporation's products, including switches, which contain electronic components, over a prolonged period may degrade insulation or increase contact-resistance and may result in heat generation or any other similar problem causing such product or switch to develop safety hazards such as smoking, ignition, and electrification. Although acceleration of the above situation varies depending on the conditions or environment of use of the products, you are required not to use any Azbil Corporation's products for a period exceeding ten (10) years unless otherwise stated in specifications or instruction manuals.

5. Recommendation for renewal

Mechanical components, such as relays and switches, used for Azbil Corporation's products will reach the end of their life due to wear by repetitious open/close operations.

In addition, electronic components such as electrolytic capacitors will reach the end of their life due to aged deterioration based on the conditions or environment in which such electronic components are used. Although acceleration of the above situation varies depending on the conditions or environment of use, the number of open/close operations of relays, etc. as prescribed in specifications or instruction manuals, or depending on the design margin of your machine or equipment, you are required to renew any Azbil Corporation's products every 5 to 10 years unless otherwise specified in specifications or instruction manuals. System products, field instruments (sensors such as pressure/flow/level sensors, regulating valves, etc.) will reach the end of their life due to aged deterioration of parts. For those parts that will reach the end of their life due to aged deterioration, recommended replacement cycles are prescribed. You are required to replace parts based on such recommended replacement cycles.

6. Other precautions

Prior to your use of Azbil Corporation's products, you are required to understand and comply with specifications (e.g., conditions and environment of use), precautions, warnings/cautions/notices as set forth in the technical documents prepared for individual Azbil Corporation's products, such as catalogs, specifications, and instruction manuals to ensure the quality, reliability, and safety of those products.

7. Changes to specifications

Please note that the descriptions contained in any documents provided by azbil are subject to change without notice for improvement or for any other reason. For inquires or information on specifications as you may need to check, please contact our branch offices or sales offices, or your local sales agents.

8. Discontinuance of the supply of products/parts

Please note that the production of any Azbil Corporation's product may be discontinued without notice. After manufacturing is discontinued, we may not be able to provide replacement products even within the warranty period.

For repairable products, we will, in principle, undertake repairs for five (5) years after the discontinuance of those products. In some cases, however, we cannot undertake such repairs for reasons, such as the absence of repair parts. For system products, field instruments, we may not be able to undertake parts replacement for similar reasons.

9. Scope of services

Prices of Azbil Corporation's products do not include any charges for services such as engineer dispatch service. Accordingly, a separate fee will be charged in any of the following cases:

- (1) Installation, adjustment, guidance, and attendance at a test run
- (2) Maintenance, inspection, adjustment, and repair
- (3) Technical guidance and technical education
- (4) Special test or special inspection of a product under the conditions specified by you

Please note that we cannot provide any services as set forth above in a nuclear energy controlled area (radiation controlled area) or at a place where the level of exposure to radiation is equivalent to that in a nuclear energy controlled area.

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