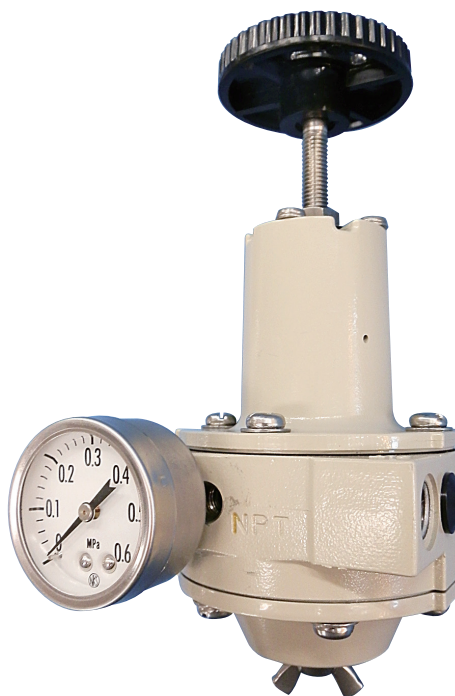


**Pressure Regulator
with Air Filter (Airset)**
Model: KZ03
User's Manual



Azbil Corporation

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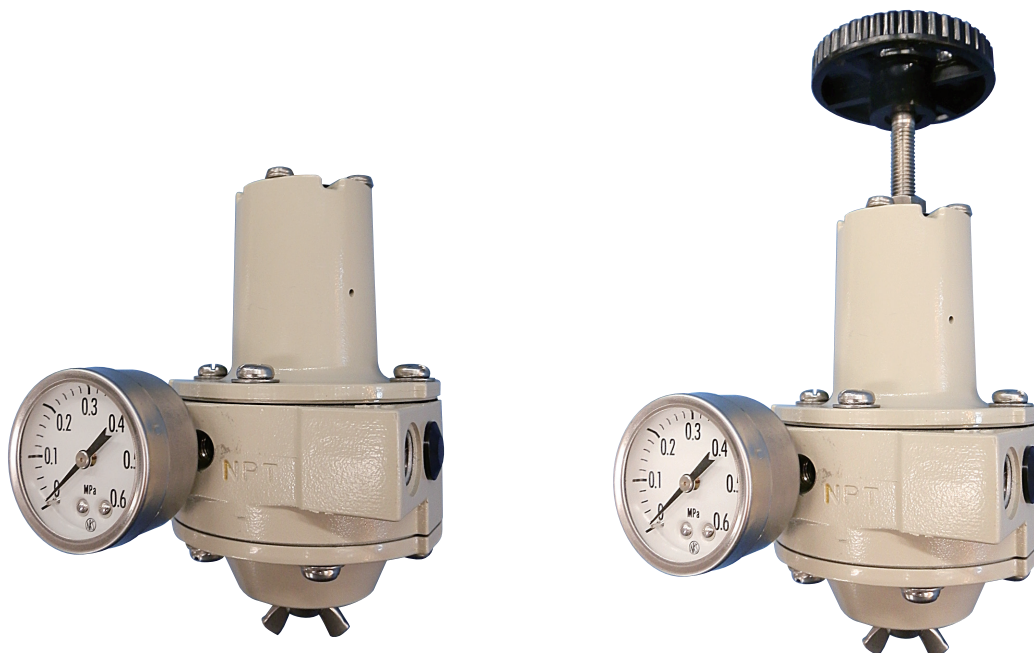
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1 : Description

The Type KZ03 pressure regulator with air filter filters the supply air and regulates the output pressure for various pneumatic equipment.



KZ03-1 140 kPa (image with optional gauge)

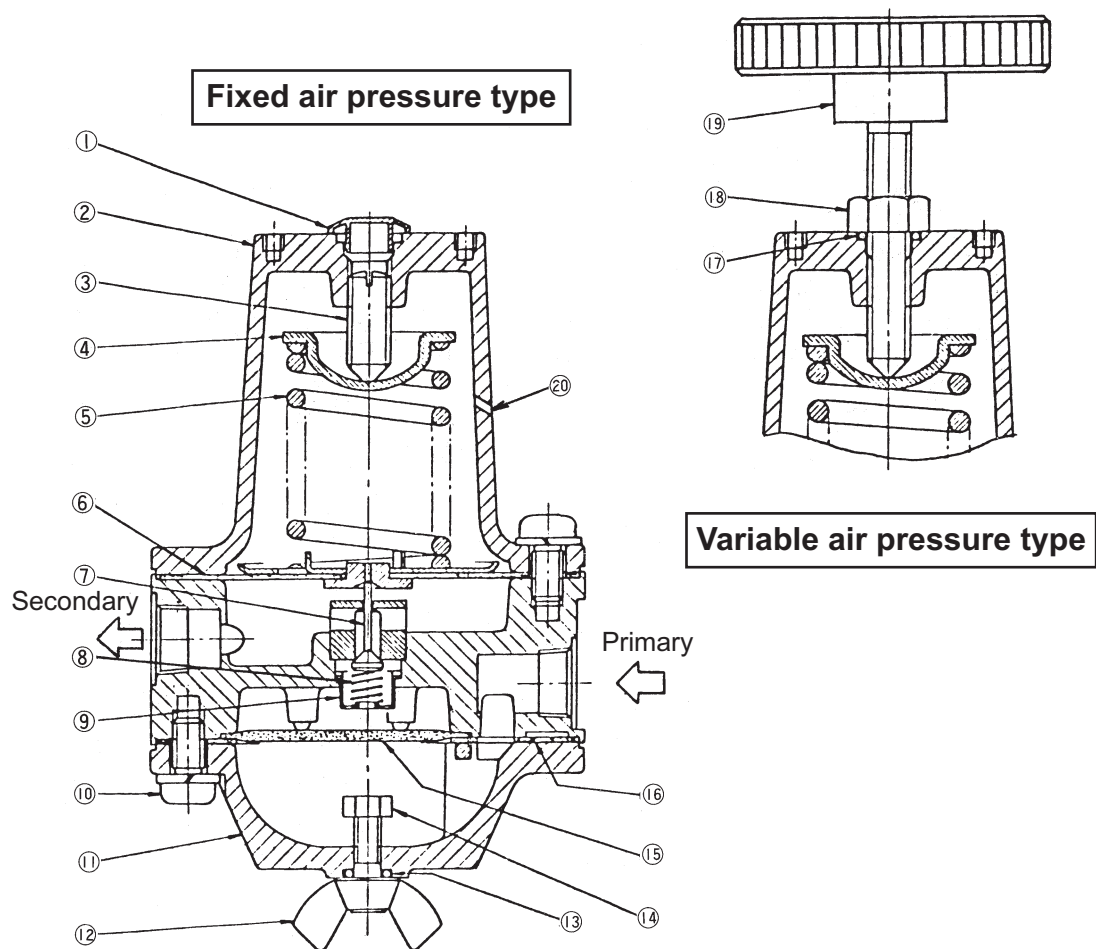
KZ03-2 for Variable output (Max. 400 kPa)
KZ03-3 for Variable output (Max. 700 kPa)

~Note *The number “7” is stamped with permanent ink on the body of KZ03-3 to tell apart from KZ03-2*

2 : Operational Principal (Refer to the illustrations on page 2)

The air supply from the primary air intake goes through the filter (15), filtrating foreign materials. The air keeps flowing to the secondary air side until the secondary pressure balances off with the set spring (15) and shuts off the poppet valve [7]. If the secondary pressure goes up higher than the set pressure, the diaphragm [6] will rise, let the extra air escape through the gap between the poppet and the seat ring to the bleeding hole.

3 : Structure



No.	Parts	Material	Qty.
1	Cap	Nylon 6	1
2	Bonnet	Aluminum diecast	1
3	Setscrew	Stainless steel rod	1
4	Spring support	SPCC	1
5	Adjustment spring	Piano string SWPB	1
6	Diaphragm	BunnaN coated Tetrin cloth *1 Copper Alloyed sheet C3713P Copper Alloyed rod C3604B D	1
7	Poppet	Alloyed steel rod C3604B D	1
8	Poppet spring	piano string SWPA	1
9	Poppet spring receiver	Stainless steel sheet SUS304	1
10	Screw with washer	Stainless steel sheet SUS304	10

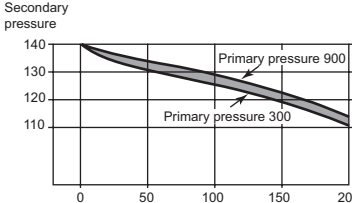
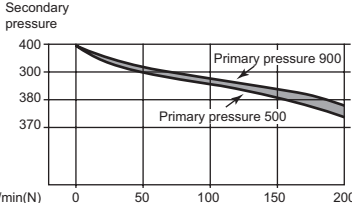
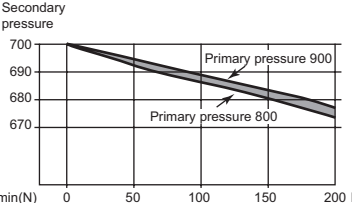
No.	Parts	Material	Qty.
11	Filter cover	Aluminum diecast ADC12 Stainless steel rod SUS304	1
12	Wing bolt	Stainless steel rod SUS305	1
13	O-ring	BunnaN	1
14	Hex nut	Stainless steel SUS304	1
15	Filter	Sponge Bel-ita *2 A-3230	1
16	Gasket	NBR	1
17	O-ring	BunnaN	1
18	Hex nut	Stainless steel SUS304	1
19	Set Knob	ABS resin Stainless steel rod SUS304	
20	Bleeding Hole	---	

*1. fluorine rubber for high temperature model

*2. Option: 3μ stainless steel fiber

4 : Standard Specifications

The Pressure Regulators with Air Filter control the air pressure so each point of use off the air line is supplied with constant air pressure.

Type		KZ03-1	KZ03-2	KZ03-3
Primary pressure (kPa)		Secondary pressure + more than 50 (970 max.)		
Secondary pressure (kPa)		140 ± 4 (constant)	12 - 400 (variable)	12 - 700 (variable)
Characteristics				
Pressure characteristic	Change in secondary pressure (kPa)	For every 200 - 970 primary pressure: 140±4	For every 450 - 970 primary pressure: 400±4	For every 800 - 970 primary pressure: 700±4
Flow characteristic (kPa)	1) KZ03-1 (primary pressure 300 - 900)  2) KZ03-2 (primary pressure 500 - 900)  3) KZ03-3 (primary pressure 800 - 900) 			
Amt. of air consumption		0.951 l/min(N) or less		
Materials		Filter..... 3 μm Sponge (optional 3 μm stainless steel fiber) Case..... Aluminum die-cast External screw and wing bolt (for drain) w/o drain: stainless		
Temp. of environ.		-30 to +80°C (-20 to 176°F)		
Air pressure connection		Rc1/4 or 1/4NPT internal screw		
Draining capacity		22 cm ³		
Weight		0.7 kg		

5 : Maintenance

- 1) Loosen the wing bolt (12) periodically to drain
- 2) When the air filter becomes dirty, replace it with a new one. Do not attempt to wash it with water and detergent.

6 : Model Selection

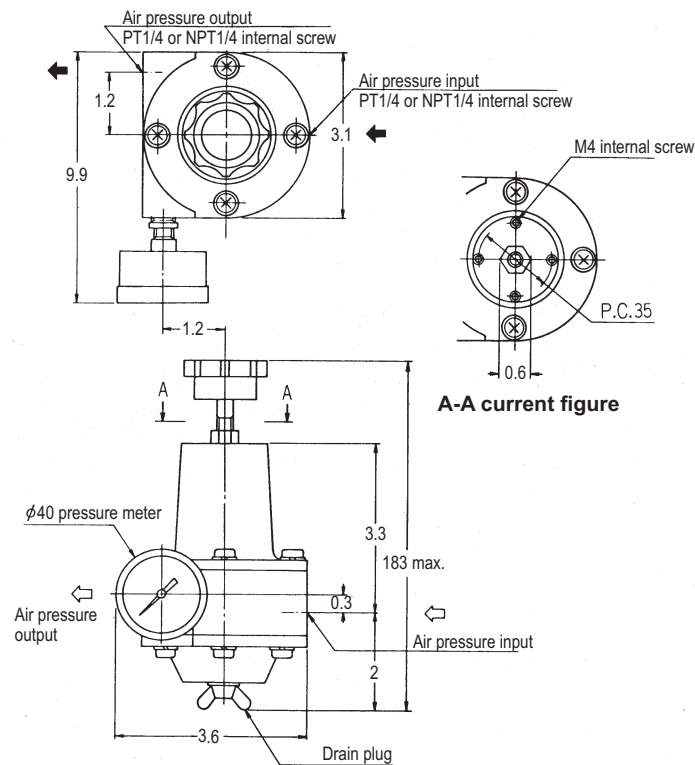
Model	Selection specification		Optional selection	Selection condition, specification of pressure gauge, others
KZ03	-I	II	-III, -IV	

Model	Set pressure	Piping	Pressure gauge	
KZ03				
	-1			Available supply pressure (Ps): $P_s = 140 \pm 4$ kPa
	-2			Available supply pressure (Ps): $P_s \leq 400$ kPa (with pressure adjustment wheel)
	-3			Available supply pressure (Ps): $400 < P_s \leq 700$ kPa (with pressure adjustment wheel)
		A		Rc1/4 inch (internal)
		B		1/4 inch NPT thread (internal)

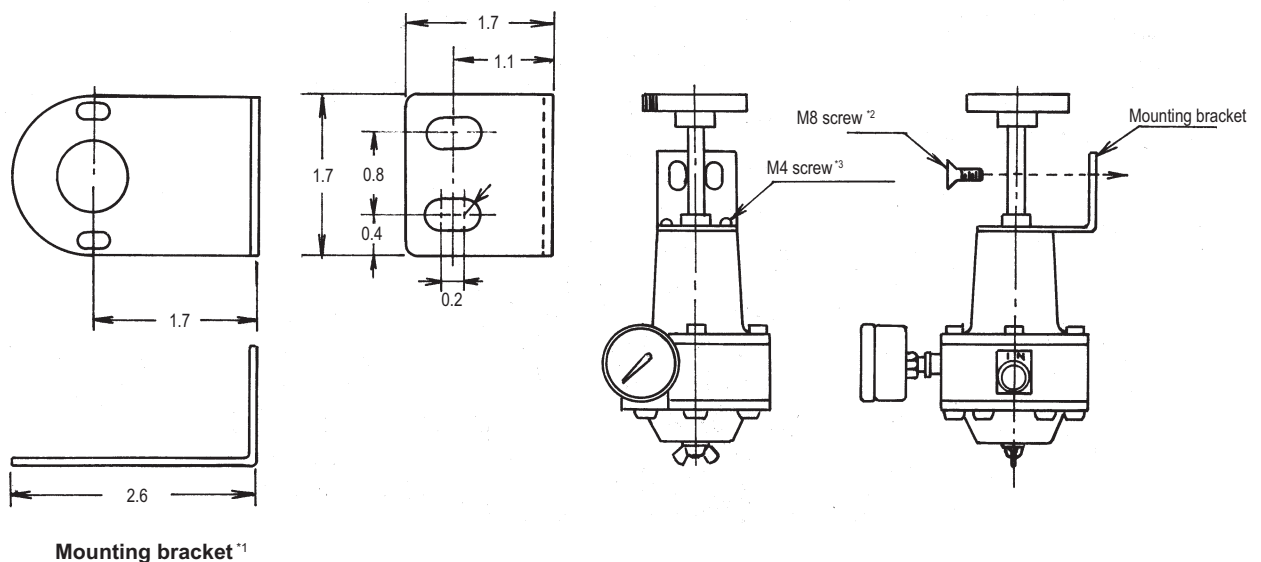
-XX		Without pressure gauge		
		1½ inch (40 mm) with pressure gauge (scale)		
		Primary maximum scale & unit	Secondly unit	Recommended supply pressure
-1A	2	kgf/cm ²	none	$P_s \leq 1.5$ kgf/cm ²
-1B	4			$1.5 < P_s \leq 3.0$ kgf/cm ²
-1N	6			$3.0 < P_s \leq 4.5$ kgf/cm ²
-1C	10			$4.5 < P_s \leq 7.0$ kgf/cm ²
-1D	30	psi	none	$P_s \leq 22$ psi
-1E	60			$22 < P_s \leq 45$ psi
-1P	100			$45 < P_s \leq 65$ psi
-1F	150			$65 < P_s \leq 100$ psi
-1G	2	bar	none	$P_s \leq 1.5$ bar
-1H	4			$1.5 < P_s \leq 3.0$ bar
-1Q	6			$3.0 < P_s \leq 4.5$ bar
-1J	10			$4.5 < P_s \leq 7.0$ bar
-1K	200	kPa	none	$P_s \leq 150$ kPa
-1L	400			$150 < P_s \leq 300$ kPa
-1R	600			$300 < P_s \leq 450$ kPa
-1M	1000			$450 < P_s \leq 700$ kPa
-1S	0.2	MPa	none	$P_s \leq 0.15$ MPa
-1T	0.4			$0.15 < P_s \leq 0.3$ MPa
-1U	0.6			$0.3 < P_s \leq 0.45$ MPa
-1V	1			$0.45 < P_s \leq 0.7$ MPa
-2A	2	kgf/cm ²	kPa	$P_s \leq 1.5$ kgf/cm ²
-2B	4			$1.5 < P_s \leq 3.0$ kgf/cm ²
-2N	6			$3.0 < P_s \leq 4.5$ kgf/cm ²
-2C	10			$4.5 < P_s \leq 7.0$ kgf/cm ²
-3A	2	kgf/cm ²	MPa	$P_s \leq 1.5$ kgf/cm ²
-3B	4			$1.5 < P_s \leq 3.0$ kgf/cm ²
-3N	6			$3.0 < P_s \leq 4.5$ kgf/cm ²
-3C	10			$4.5 < P_s \leq 7.0$ kgf/cm ²
-4K	200	kPa	kgf/cm ²	$P_s \leq 150$ kPa
-4L	400			$150 < P_s \leq 300$ kPa
-4R	600			$300 < P_s \leq 450$ kPa
-4M	1000			$450 < P_s \leq 700$ kPa
-5S	0.2	MPa	kgf/cm ²	$P_s \leq 0.15$ MPa
-5T	0.4			$0.15 < P_s \leq 0.3$ MPa
-5U	0.6			$0.3 < P_s \leq 0.45$ MPa
-5V	1			$0.45 < P_s \leq 0.7$ MPa

7 : Dimensions and Installation

Install this device vertically (with the drain plug facing down).



Note: The diagram includes a variable handle and $\phi 40$ pressure meter.



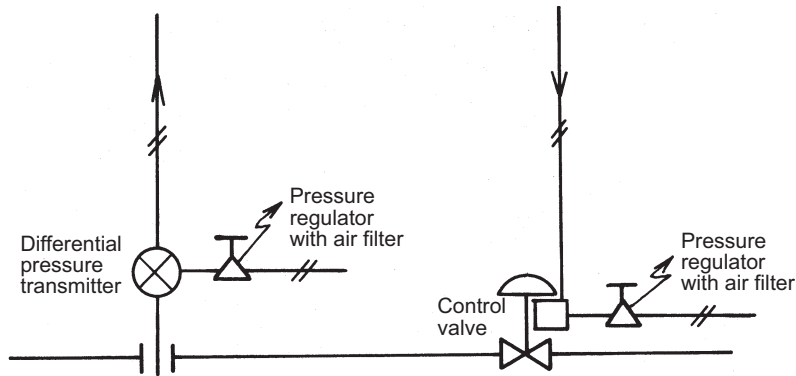
*1: Mounting bracket (parts no. 80330401-001) is not a standard accessory. Please specify for its inclusion if needed.

*2: You must supply the screws(M8) to your panel.

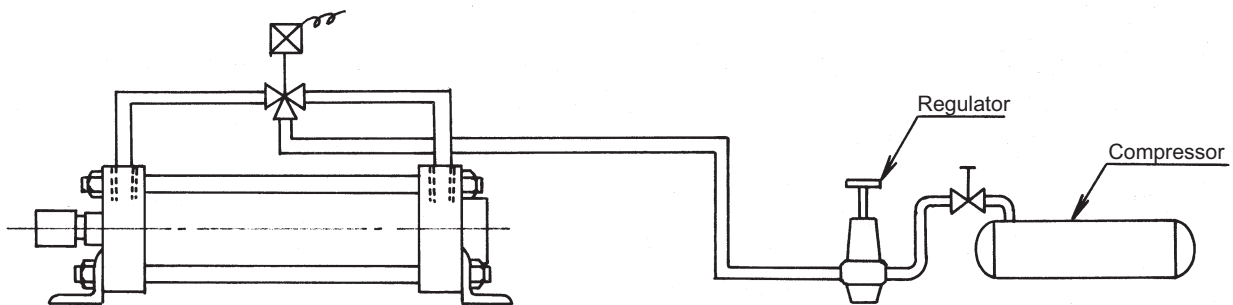
*3: KZ03-2, KZ03-3 models come with the screws (M4) to the filtered pressure regulator.

8 : Applications

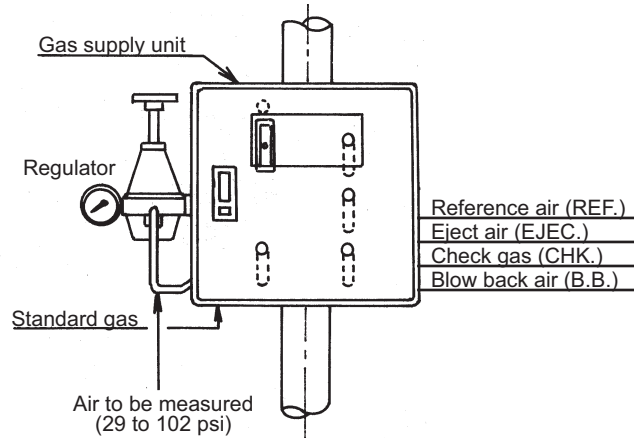
1. Supplying air to field instruments and valve etc. (process control)



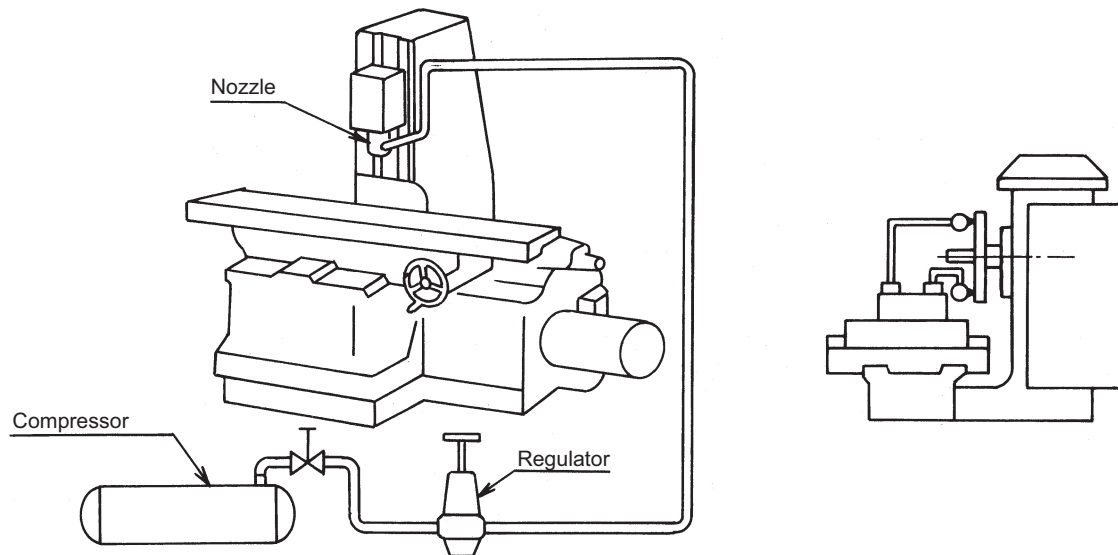
2. Operate air pressure cylinder compressor, motor, etc.



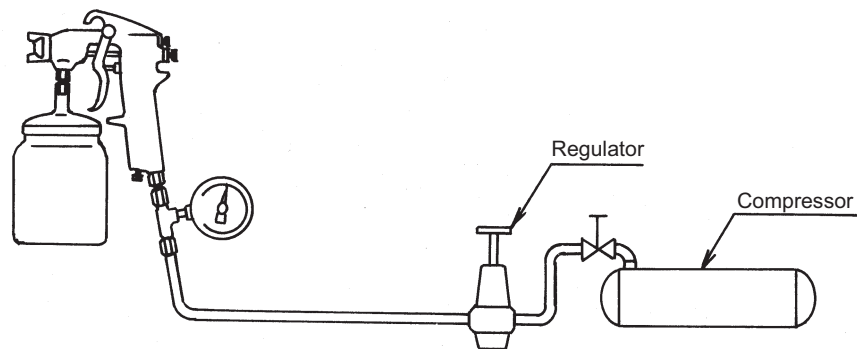
3. Supplying gas to gas analyzer



4. Discarding of chips, parts cleaning, air chucking



5. Spray gun



6. Other

Air driver, nut runner, wire wrapping, etc. of auto assembly machine, and train car-door closer

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 inquiries 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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