

**For Gas Supplier
and Gas Equipment Installers**

INTEGRATED TYPE AUTOMATIC CHANGEOVER REGULATOR

INSTRUCTION MANUAL







This instruction manual describes the correct way of operating and handling regulators. It is intended for distributors of liquefied petroleum gas (LP gas) as well as workers who carry out gas pipe fitting.

To ensure that customers are able to use LP gas comfortably and safely, please observe all the relevant laws and regulations and read this manual carefully. Make sure that the LP gas system is perfectly safe by complying with these instructions.

After you have read the manual, be sure to keep it handy, so you can consult it whenever you need to.

This product must only be fitted by persons with the necessary competence in relation to the type of gas used

What the symbols in this manual stand for:

 WARNING	Incorrect handling can often lead to a grave result, such as death or a serious injury.		Be sure to comply with the following.
 CAUTION	Incorrect handling can often lead to injury to humans and/or damage to property, such as to a house or furniture.		This means prohibited action
			Do not disassemble.
			Keep away from fire.

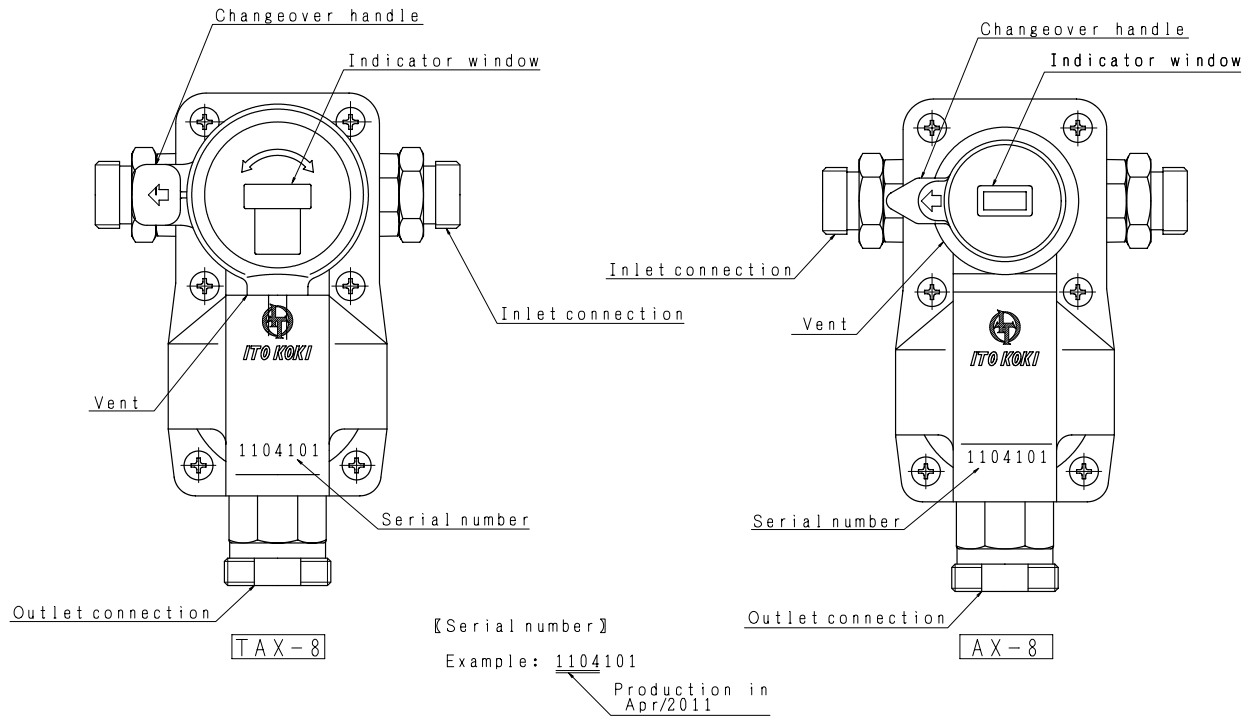
1 The products explained

This Automatic Changeover Regulator regulates the pressure of liquefied petroleum gas. This integrated two-stage regulator combines a first-stage regulator and a second-stage regulator into a single unit. The product regulates highly pressurized LP gas by reducing its pressure and supplies the combustion devices with gas at the correct pressure. In addition, in the event that the LP gas supplied from the service side fails to maintain the correct supply pressure, the regulator's automatic changeover function automatically makes the reserve side supply supplementary gas.

Moreover, the TAXS series regulators contain a switch interlocked with the signal's "Red" display, which activates when the gas supply from the reserve side begins. This mechanism sends a signal to an appropriate automatic notification device to say that the reserve side is now operating and therefore the supply side has been emptied.

Choose the regulator having the capacity that is suited to the LP gas consumption of the equipment.

Part names



Product specifications

Model	(T)AX-6	(T)AX-8	(T)AX-10	(T)AX-20	(T)AX-30	(T)AX-50
Type of Gas	Propane					
Inlet Pressure Range	1 ~ 16 bar					
Outlet Pressure	37 mbar					
Capacity	6 kg/h (4.32m ³ /h)	8 kg/h (3.24m ³ /h)	10 kg/h (7.20m ³ /h)	20 kg/h (14.4m ³ /h)	30 kg/h (21.6m ³ /h)	50 kg/h (36.0m ³ /h)
Operating Temperature	Between -20 ~ 50					
Inlet Connection	M21.8 × 1.814-L.H.	Rc1/2	Rc1/2	Rc1/2	Rc1/2	Rc3/4
Outlet Connection	Rp 1/2	Rc3/4	Rc3/4	Rc1	Rc1	Rc1

:BS EN13786 2004+A1 2008

Specifications (feature of the embedded switch of the model TAXS which features a signal transmitting function)

Model	Signal self-holding type *Note	
Actuating Method	Pressure detection using a diaphragm, a permanent magnet and a reed switch	
Reset Method	Manual resetting in conjunction with switching handle	
Signal Output	No-voltage a-contact	
Contact Point Specification	Max On/Off Allowable Voltage	DC-100V
	Max On/Off Allowable Current	DC-0.25A
	Contact Resistance	1Ω less than
	Lead Wire	VCTF 0.5mm ² (2C)×100cm

*Note: Signals from the models with the signal transmitting function (TAX) are self-holding in order to prevent chattering. Once the signal indicates "Red", it does not turn back to "White" unless it is reset. (To reset the signal, use the changeover handle.)

2 For safety



! This regulator is designed for use with LP gas only. Never use it with any other kind of gas, since such use can damage the regulator's functions. Use only with gas type noted on the product data plate. This regulator must only be used in vapour phase, it must never be used with liquid phase.

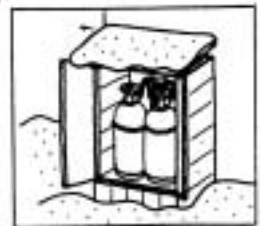
⊘ The regulator has been assembled with precision at our plant. Any disassembling and/or modification of the regulator could result in an accident. Never attempt to disassemble or modify the regulator.

⊘ Shock to the regulator can result in gas leakage and other accidents. Never hit it, strike it with an object, drop a heavy object onto it, or apply any other shock to it.

! If you install the regulator in a place susceptible to snow damage, be sure to protect it by installing it inside a protective cabinet, etc.

⊘ This regulator has a safety valve that lets gas out in the event the gas pressure rises above the normal level. Be sure to install it, therefore, in an outdoor location away from any external sources of ignition.

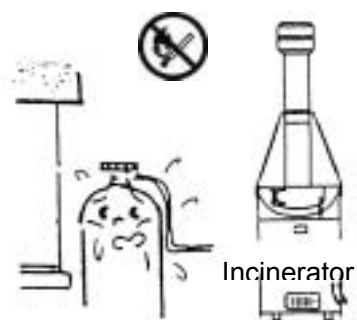
(Please secure the isolation distance according to related regulations in the installation country)



3 Installation work



- ❗ When installing the regulator, be sure to observe the relevant laws and regulations of the country where it is used.
- 🚫 Never install the regulator close to any external sources of ignition.
- 🚫 Do not install the regulator in an environment where it could be exposed to harmful gases, such as ammonia, ozone, sulfurous acid, etc.
- ❗ The automatic change-over should preferably installed outdoors (see local legislation) and be protected from rain and snow and from all other agents (i.e. snow, dust).
- ❗ Before connecting the regulator to a pipe, etc., be sure to remove any foreign substances (such as fine chips, cutting oil, dust, etc.) completely from the screw threads, to prevent gas leakage and other accidents.
- ❗ When connecting the regulator to a pipe, etc., never apply a pipe wrench directly to the main body of the regulator. To screw a pipe, etc. onto the regulator, use a spanner or an adjustable wrench and apply the appropriate level of force.
- ❗ When connecting the low-pressure section, be sure to apply LP gas-resistant sealant specifically formulated for low pressure sealing (non-drying).
- 🚫 Do not apply sealant and sealing tape together, since this can lead to excessive force being applied to the regulator's connecting section, thereby damaging it.



Remove any foreign substances

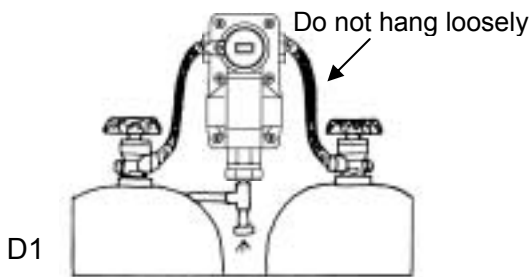


Use a spanner.



Do not tighten with a pipe wrench

❗ Install the regulator as shown in Diagram D1 on P. 2.



❗ The outlet of the regulator must always be facing downwards
The regulator must always be installed above the cylinders

For a regulator with the signal transmitting function



To connect an automatic notification device (a no-voltage “a”-contact terminal) or another device to such a regulator, follow the steps below:

⊘ Do not use any electrical device which has specifications incompatible with those of the embedded switch.

❗ (1) **Where the regulator is installed in a non-hazardous place:**

- 1) If you need to extend the lead wire accompanying the regulator, use vinyl cab-tire round-section cable (0.5mm² or more x 2 cores).
- 2) To connect a cable, make the connection secure by using a pressure-bonding sleeve, a terminal block, or some other suitable means. Also, take appropriate measures to prevent rainwater, etc. from entering; for instance, by covering the connection with vinyl tape, using a terminal box, etc.

❗ (2) **Where the regulator is installed in a hazardous place*:**

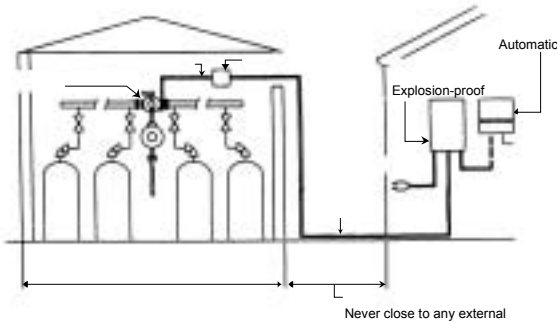
- 1) If the installation site represents a hazard, such as a storage area for gas cylinders, to connect the regulator to an electrical device like an automatic notification device, first install an intrinsically safe, explosion-proof relay device in a non-hazardous place nearby and make the regulator-device connection via this relay device. (See the installation sample shown in P. 6.)
- 2) For wiring, use insulated cable, like a 0.5mm² or more x 2-core shielded wire.
- 3) The lead wire and the wires must be connected inside a connection box (terminal box).

4) To prevent damage from the outside and protect the wiring from electrostatic induction, ensure that the wiring is not close to or in contact with any high-voltage wire. Furthermore, enclose the wires within metal tubes, etc. for protection.

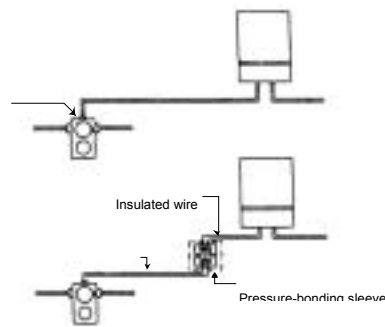
5) For other details, please refer to related regulations in the installation country.



Installation in a hazardous place



Installation in a non-hazardous place

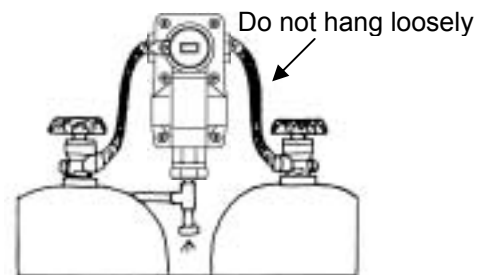


4 Air-tightness test and operation check



❗ After installation of the regulator is complete, be sure to conduct an air-tightness test for the gas piping and confirm there is no gas leakage.

❗ To begin using the gas, first slowly open the inlet side cylinder valves and then the outlet valve. "Rushed" opening/closing of a valve can damage it. Be sure to open or close a valve slowly.



⊘ Then, confirm there are no external sources of ignition in the vicinity. Next, use LP gas to purge inactive gas from the piping.

❗ Let a single burner combust the gas. While the burner is doing this, close the valve on the cylinder of the service side to shut off the gas supply. Then, confirm that the indicator window (signal) turns red. Also, operate the changeover handle alternately to confirm that gas is automatically supplied from the reserve side. If this automatic supply works, the regulator's auto-changeover function is operating normally. In the case of the TAX series, in particular, repeat closing and opening the valve on the cylinder of the service side to confirm that the signal remains red, as this indicates that the self-holding function is operating normally.

- ❗ Turn the changeover handle until it clicks. If the changeover handle is not sufficiently turned, the TAX series in particular, the embedded switch cannot be turned ON and it stops sending a signal.
- ❗ Also confirm that the gas ignited in the burner burns normally and that gas replacement is taking place normally. Thus, confirm that the regulator is functioning appropriately and correctly.
- ❗ Stop using the gas and confirm the lockup pressure is 50mbar or less.
- ❗ Confirm that the changeover works correctly, the indicator's display is correct, and the switch works properly (conduction).

Indicator window	State of supply	Transmitting function (state of switch)
_____	Being supplied by the service side cylinder pointed to by changeover handle.	OFF
RED	Being supplied by the reserve cylinder opposite to the Handle Point.	ON

5 Maintenance and repair



- ❗ Before you replace a cylinder, check the changeover handle to confirm which side is currently in service.
- ❗ Turn the changeover handle to switch the reserve side over to the service side. Then, take the cylinder off the former service side and replace it with a new filled cylinder.
Secure the new cylinder's position and orientation. Then, check the condition and placement of the washer in the hose nut and then connect the high-pressure hose to the cylinder .
- ❗ Checking for gas leakage with gas leakage detecting liquid or soapy water
*Never check for leakage with a naked flame.
- ❗ When replacing a cylinder, be careful to prevent any sand, fine particles, moisture, etc. from entering the cylinder.
- ❗ After replacing a cylinder, confirm that the changeover handle is in the correct position, the display of the service side and reserve side is normal, etc., and use soapy water or gas leakage detecting liquid to confirm that no gas is leaking from any of the connecting sections of the regulator and the cylinders.
- ❗ If there is a possibility that rainwater, snow, etc. could enter the regulator vent and then freeze, apply some means of protection (vinyl wrap, etc.) to prevent this.

- ❗ The operating life of the regulator is about ten years.
Please exchange it for the new regulator within ten years period from the manufacturing date
- ❗ If the regulator is found to be abnormal in any way, replace it with a new one to ensure safe operation.
- ❗ When replacing a cylinder, confirm that the regulator has no corrosion, cracks, loose screw, damage, etc. that can affect use.



To prevent gas leakage, follow all the instructions below:

- ⊘ Never use this valve for any kind of gas other than LP gas.
- ⊘ Never disassemble or modify it.
- ⊘ If the handle has become stiff, do not hit it with a hammer, etc. in attempt to make it turn.
- ⊘ Be careful not to let flame and/or heat radiation raise the temperature of the valve.



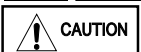
Safety instructions:

- ❗ This gas valve must always be used in either “fully open” or “fully closed” mode.
- ❗ When you are not using gas for a long period, close the gas valve handle.
- ❗ Keep this valve away from any other object to prevent it from being closed by accident.
- ❗ In the event gas leakage or any other abnormality is detected, stop using the gas immediately and contact your gas supplier.

The number of cylinders used with this regulator may be subject to local safety laws and regulations please refer to them.

Note: In the UK the Gas safety and Use Regulations 1998 requires the device to incorporate an OPSO (Over Pressure Shut Off) for any domestic installation with 4 or more cylinders.

6 **Quality assurance**



The guarantee is valid for one and two years following date of manufacture.

Our guarantee, however, does not cover any failures ascribable to acts of God listed below:

Fire, earthquake, any action taken by a third party, any other accidents, the customer’s handling the product incorrectly whether this is due to negligence or intentional, erroneous use, any use under abnormal conditions. We cannot be held responsible for any damage caused by any of the factors above.

We cannot be held responsible for any damage (loss of profits, interruption of business operations) accompanying the use or non-use of this product.

We cannot be held responsible for any damage arising from any use not described in this instruction manual.

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Note : Specifications and appearance of the product described here may be changed without prior notice.

 ***ITO KOKI CO.,LTD.***