

INSTALLATION AND MAINTENANCE MANUAL

AUTOMATIC CHANGE-OVER LPG REGULATOR

**MODEL: KAL-20A, KAL-30A,
HE-20A, HE-30A, HEK-20A, & HEK-30A**

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INTRODUCTION

Thank you for choosing our KAL series, HE series, and HEK series Automatic Change-over LPG Regulator. Read and follow this Installation and Maintenance Manual (herein after it is called the Manual) carefully and use our Automatic Change-over LPG Regulator (herein after it is called the Product) safely.

For your information, ⊘ means prohibition and ⚠ means warning or caution .

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ABOUT THE PRODUCT

The Product has a function to start LPG supply from the standby-side cylinders automatically in the case the using-side cylinders cannot keep the pressure. A regulator with communicator can send information of the use of standby-side cylinders through built-in no voltage contact.



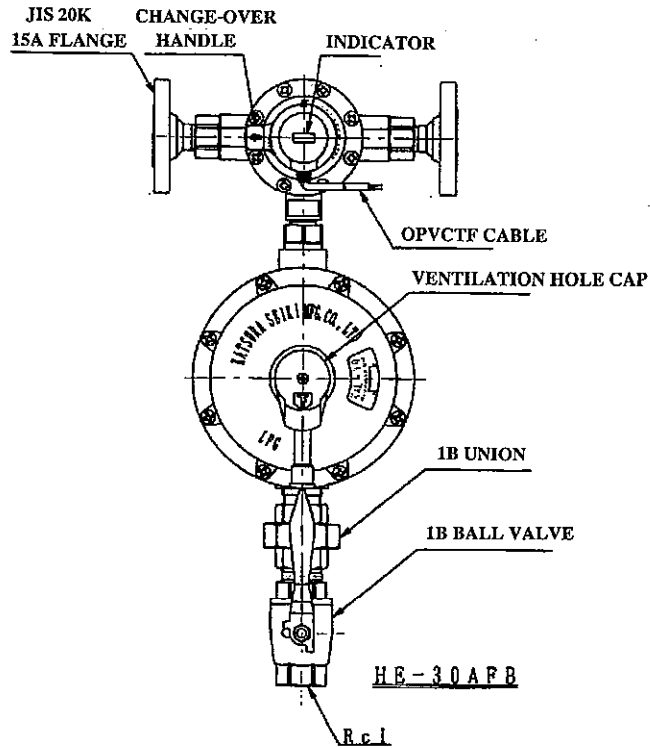
The Product has passed the examination of Japan L.P.Gas Instrument Inspection Association (LIA).



Use of the Product, which has the capacity of 1.5 times of the maximum consumption, is recommended.

Model No.	KAL		HE		HEK	
	-20AU	-30AU	-20AU	-30AU	-20AU	-30AU
	-20AB	-30AB	-20AB	-30AB	-20AB	-30AB
	-20AFU	-30AFU	-20AFU	-30AFU	-20AFU	-30AFU
	-20AFB	-30AFB	-20AFB	-30AFB	-20AFB	-30AFB
Applicable Gas	LPG Vapor					
Inlet Connections	Rc 1/2 or JIS 20K 15A Flanges					
Outlet Connection	Rc 3/4	Rc 1	Rc 3/4	Rc 1	Rc 3/4	Rc 1
	Low pressure union or ball valve					
Inlet Pressure	0.10 - 1.56 MPa					
Capacity (C3H8)	20 kg/h	30 kg/h	20 kg/h	30 kg/h	20 kg/h	30 kg/h
Outlet Pressure	2.55 - 3.30 kPa					
Lock-up Pressure	3.5 kPa or less					
Inlet Airtightness Pressure	1.56 MPa or more					
Outlet Airtightness Pressure	5.50 kPa or more					
Pressure to activate Relief Valve	5.60 - 8.40 kPa					
Pressure to Inactivate Relief Valve	5.04 - 8.40 kPa					
Built-in communicator	Contact	No voltage "a type-normal open" contact (indicator: white means OFF, red means ON)				
		No keeping type			Self keeping type	
	Max. working voltage	DC 30V or less				
	Max. on/off current	0.3 A				
	Max. on/off capacity	10 W				
	Withstand voltage	DC 150V, 1 min., Leak current: 1mA or less				
	Insulating resistance	5 MΩ or more (with DC 500V)				
	Contact resistance	2 Ω or less (when the contact is on)				
	Contact durability	2000 times (with DC 24V, 0.2 A)				
Accessory cable	OPVCTF (0.5mm ²) 2 cores					

* "F" in the model number means that inlet connections are flanged and "B" in the model number means that outlet connection is a ball valve.



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FOR SAFETY

2-1. Dos and don'ts



The Product can be used for LPG vapor only. Do not use the Product for other gas.



Do not take the Product apart or make over.



Do not drop the Product. Do not give an impact to the Product.



The Product installed at place that has snow damage, thunderbolt, falling object, and/or long periods of direct sunlight shall be protected by suitable equipment, such as a cylinder-house.



The Product has a built-in relief valve. Install the Product outdoor at least 2 m far from fire.



Use HEC-1 for the installation of the Product at a hazardous area which requires explosion-proof structure.



Extreme extension of the accessory cable may cause damage to the contact due to the floating current.



Apply of overvoltage or overcurrent, and connecting of load extremely generates surge voltage (inductive load), inrush current (lamp load), may cause damage to the contact of communicator.

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INSTALLATION



Authorized installer must install the Product.



Do not install the Product at the environment, such as the place near fire, directly burned, or get radiant heat.



Do not install the Product at the environment, such as the place may be influenced by harmful gases. (ammonia, sulfurous acid gas, etc.)



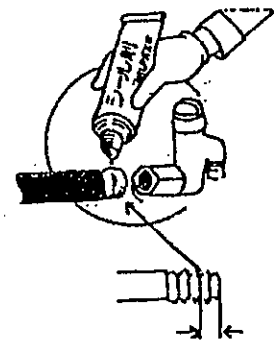
Use the gasket, bolt, nut, and washer, which are supplied with the Product, for the connections of the inlet flanges (15A). Tighten the flanges equally. Before connecting inlet flanges of the Product with manifold, the flanges of manifold shall be adjusted and fixed at the position that their bolt-holes are suitable for the bolt-holes of inlet flanges. The inlet flanges of the Product must not be revolved.



Use the special adapter for integrated manifold sold separately to connect the inlets of the screw typed Product to the manifold with appropriate force. Apply LPG proof sealing tape or agent on the threads of the pipe. Do not apply the sealing tape or agent for 2 threads from the end of the pipe. Make sure that sealing tape or agent does not get into the piping.



Before connecting the pipe into the outlet of the Product, make sure that a foreign material, such as scale and dust, of the inside and threads of pipe has been removed perfectly. Apply LPG proof and nondrying sealing agent on the entire circumference threads of the pipe. Do not apply the sealing agent for 2 threads from the end of the pipe. Make sure that sealing agent does not get into the piping.



LEAVE 2 THREADS



Valve and drain valve shall be installed at the outlet of the Product.

How to connect the communicator's cable

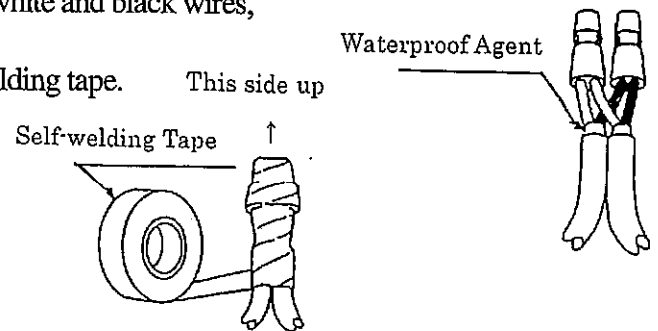
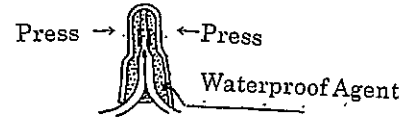


Before connecting the cable, read a manual of the connecting device and get necessary information about a contact of the connecting device. The cable of the Product does not have a polar character.



The cable is 2 m in length and can be extended with a cable sold separately. The below-mentioned procedures show how to extend the cable.

- Connect the white wire and black wire of the cable with the same color wire of the extension cable. Bind the wire ends with connection binder.
- Slightly pull the connecting point of cables to confirm that wires are connected perfectly.
- Apply waterproof agent into the connection binders, white and black wires, and outer layer of the cables.
- Cover the connection binders and cables with self-welding tape.



How to make an examination of the installed Product



Use inactive gas, such as nitrogen and do leak test as specified by law. No leakage must be confirmed.



After finishing leak test successfully, confirm that there is no fire around and purge the air inside piping.



After opening the both sides (using-side and standby-side) of cylinder-valves, open the outlet valve of the Product slowly and start LPG consumption. Keep burning a combustion appliance which is installed at downstream of the Product and close the all using-side cylinder-valves. Confirm that the color of indicator changed to red and LPG supply from the standby-side cylinders has automatically started. Turn the change-over handle 180 degrees and run through the same procedures to confirm the change-over function of the Product.

For the Product with communicator, the resistance between the ends of the cable shall be checked. At the above-mentioned examination, when LPG is supplied by the using-side cylinders, contact shall be OFF (the resistance between the ends of the cable is 1 M Ω or more). It will be ON (the resistance between the ends of the cable is 2 M Ω or less) when LPG supply has been started from the standby-side cylinders and the color of indicator of the Product changed to red.



Confirm that the outlet pressure of the Product is stable in the range of 2.55 - 3.30 kPa. Confirm that the inlet pressure of combustion appliance, which is installed at downstream of the Product and has the maximum combustion capacity among the installed ones, is 2.00 kPa or more and stable.

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MAINTENANCE



If the color of indicator of the Product is red, LPG in the using-side cylinders is getting empty. Turn the change-over handle of the Product 180 degrees and confirm that the indicator color has been changed from red to white. After closing the connecting-valves of the manifold, replace them to the refilled cylinders.



After the replacement of the cylinders, the position of the change-over handle and the pointing of using-side and standby-side shall be confirmed. Then do the leak test for the connections of the Product, manifold, high-pressure hoses, and cylinder-valves.



Do not stack objects around the Product and cylinders.



Do not move a cylinder that high-pressure hose is connected with. Otherwise it may be cause of leak.



The Product shall be replaced with a new one every 7 years from the date of production. However, the life of the Product depends on the conditions of operation and environment of the installation place. Note: Katsura Co., Ltd. does not guarantee the life of Product to be 7 years.

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WARRANTY PERIOD



Warranty period of the Product is 1 year from the manufacturer's shipment. The defective product found in the warranty period and confirmed as the defect in manufacturing will be replaced with new one. The replacing one will be sent by the manufacturer's cost.