



LP GAS REGULATOR

- Automatic Liquid Changeover Device
- Using Manual (Compact Type HLA-301A)



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Automatic Liquid Changeover Device

HLX-301A
Regulator

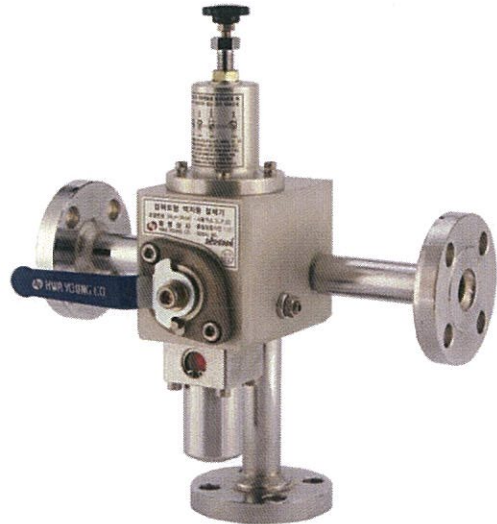
HLX-301A Device is for *Liquefied Petroleum Gas*.

Automatic Liquid Changeover Device is automatically executes changeover function from the service side to reserve side for two separated **LPG** supply lines which is equipped with Vaporizer.

Service side and reserve side is divided with attached convert handle and changeover function is worked at desired changeover pressure by diaphragm operation.

Using 3way valves, there is no deterioration caused by metal abrasion.

Compact and light design allows easy installation and can be used low gas consumption place.



Specifications

Model	HLX-301A
Service	Liquefied Petroleum Gas (LPG : Liquid Condition)
Max. Capacity	300 Kg/hr
Inlet Pressure Range	(Changeover Pressure + ΔP) \sim 1.56 MPa (15.6 kgf/cm ²)
Setting Changeover Pressure	0.05 \sim 0.2 MPa (0.5 \sim 2.0 kgf/cm ²)
Internal Pressure	3 MPa (30 kgf/cm ²)
Inlet / Outlet Connections	20K-20A Flange
Inlet / Outlet Length	315mm X 170mm
Weight	9.1kg

※ About inlet pressure ΔP , please refer to below table.

Capacity (Kg/hr)	100↓	100~150	150~200	200~250	250↑
ΔP	0.03 MPa (0.3 kgf/cm ²)	0.07 MPa (0.7 kgf/cm ²)	0.11 MPa (1.1kgf/cm ²)	0.14 MPa (1.1kgf/cm ²)	0.18 MPa (1.1kgf/cm ²)

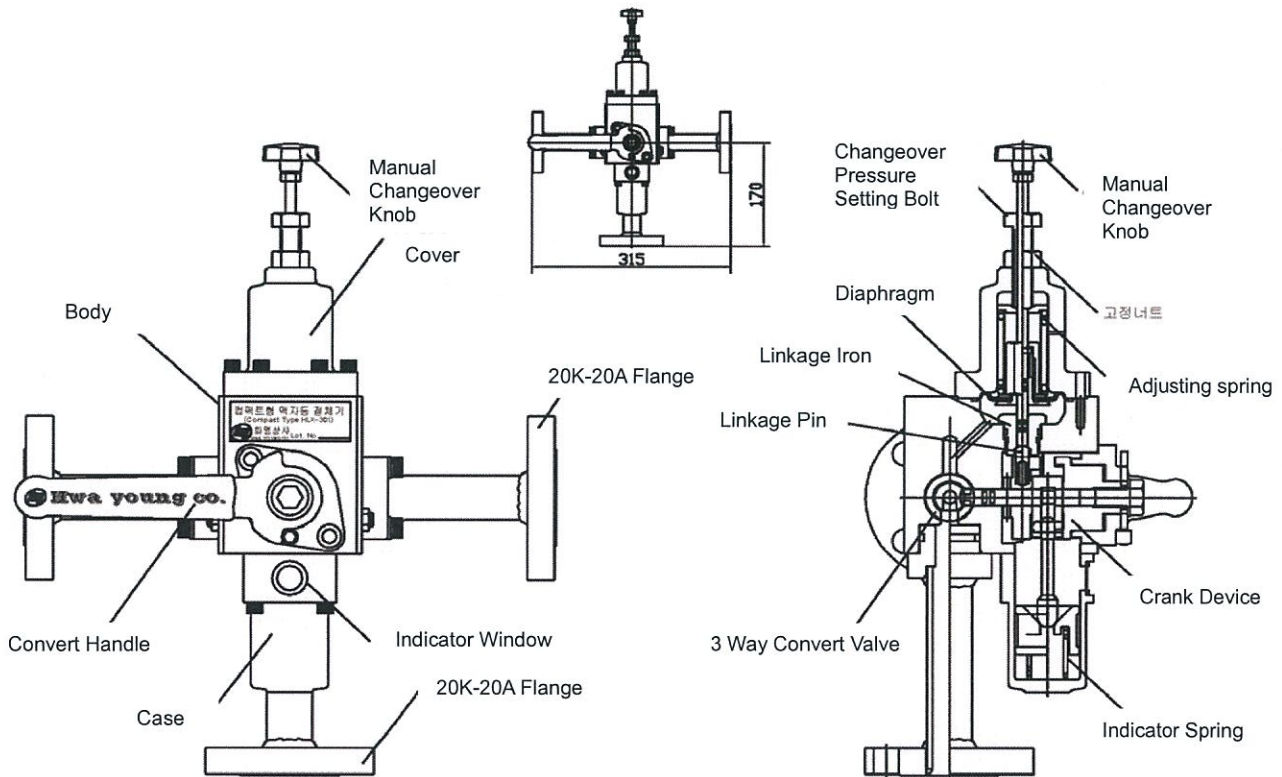
Example) In case of changeover pressure 0.05MPa, Capacity 190 kg/hr
 $0.05+0.11 = 0.16$ MPa (Changeover Pressure + ΔP) Thus, Inlet Pressure Range is 0.16 \sim 1.56 MPa

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Construction & Operation

HLX-301A Automatic Changeover Device Construction Drawing

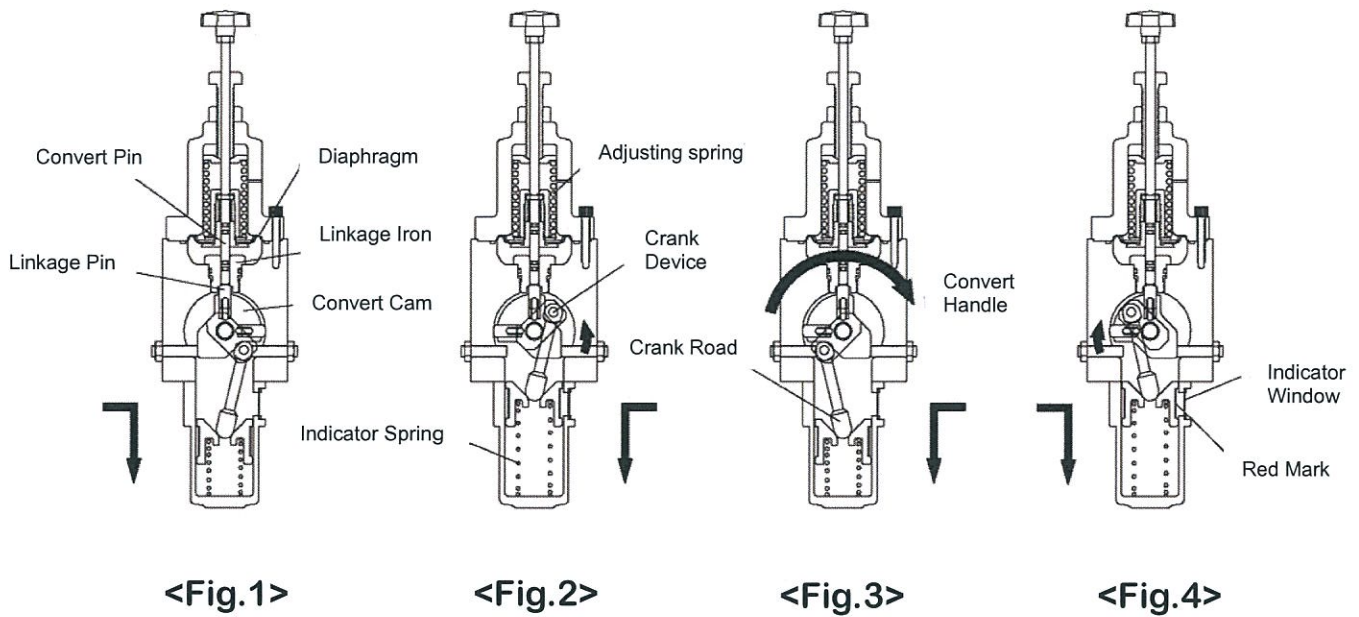


Operation

1. Compact type HLX-301A in no deterioration caused by metal abrasion with 3 way convert valve and suit for low capacity place.
2. When service side pressure is higher than changeover pressure, service side pressure push up diaphragm and linkage pin is inserted to inside of linkage iron groove. And then, convert cam become lock-up condition (Service side using condition. Figure 1).
3. When service side pressure is lower than changeover pressure, diaphragm move down caused by spring loading and convert pin and release lock-up condition. Reserve side gas supply is started with 3way valve movement with crank device and indicator spring working.
At this moment, indicator marks red color (Changeover condition. Figure 2, 4) Locknut
4. When replacing empty gas cylinder, first, it must be changed convert handle direction to reserve side from service side. At this moment, it must be checked indicator red color is disappear.

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Caution

Handling

1. This is exclusively used for LP gas. It is advised not to use for other than LP Gas because it can degrade the original function.
2. This is precisely assembled. Thus, never disassemble or remold without permission.
3. Don't apply impact such as throw or fall down during delivery or installation.
4. Don't put on heavy load to HLX-301A or don't keep moist place etc.

WARNING

To avoid personal injury or property damage due to explosion or damage to device or downstream components during startup, release downstream pressure to prevent an overpressure condition on the diaphragm of the device.

In order to avoid an overpressure condition and possible equipment damage, pressure gauge should always be used to monitor pressure during startup.

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Installing Caution

1. Only personnel qualified through training and experience should install, operate, or maintain this device.
2. Installing place should be well ventilated and not effect snow, rain, direct ray of the sun etc.
3. Don't install near fire, flame, or radiant heat.
4. Don't install at a place which is susceptible to harmful gas such as ammonia, sulfuric acid gas etc.
5. When connecting the inlet part to pipe system, please note that piping system (high pressure assembly pipe) is not inclined. When connecting inlet & outlet part of HLX-301A to pipe system, don't apply excess force to HLX-301A inlet & outlet parts.
6. Remove other materials such as scraps, cutting, oil, and dirt's from the thread in order to prevent gas leakage.

Using Caution

1. When replacing empty gas cylinder, it must be closed high pressure connecting valve.
2. Don't move gas cylinder as high pressure hose is connected to gas cylinder.
3. Don't pile up stuff around installing site for safety.

Start up (Leakage test)

Startup

1. Slowly open the upstream shutoff valve.
2. Slowly open the downstream shutoff valve.
3. Installing is completed, be sure to perform a pneumatic test and check gas leakage.
4. Checking vaporizer and related equipment working are normal first.
5. Connecting pipe system to burner and release air inside of pipe after checking flammables around install site.
6. Confirm HLA-301A changeover function is working normally according to below using method.

Using Method

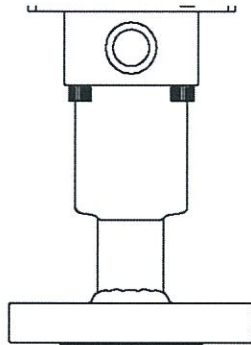
Using

1. Connecting liquid situation gas cylinder to HLX-301A both side connect.
2. Slowly open the cylinder valve which is opposed direction against convert handle direction. This because pressure is applying to inside of HLX-301A slowly. And then, slowly open another cylinder valve.
3. Even though gas is inflow to inside of HLX-301A, red mark on indicator is not disappearing. HLX-301A Red mark on indicator is not appear unless convert handle is switch manually.
4. Turn the convert handle 180 degree and check red mark is disappearing.
5. Whenever changeover function is operated, such kind of handling is required. So, always check red mark disappears when changeover function works.
6. Furnish gas to burner and see gas supply is normal. And then, checking gas is inflow from service side (convert handle direction). And, closing service side valve.
7. Service side valve is closed; changeover function is working with noise such kind of "Tung" as gas is flowing from reserve side. At this time, checking red mark is disappear and turn the convert handle

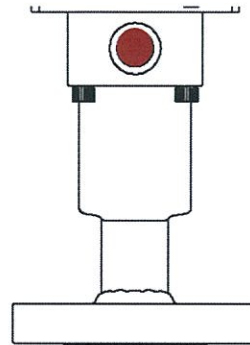
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180 degree and opens the closed valve. Closed another valve and check red mark is disappearing again. This is to check changeover function operation. This test must to be done service times.



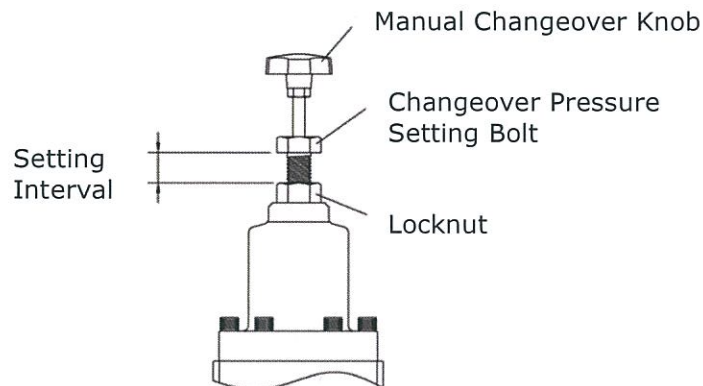
A. Service side supplying situation
(Ready Changeover Function)



B. Reserve side supplying situation
(Red Mark)

Setting changeover pressure

1. Compact type HLX-301A is diaphragm operation type. It could be adjusted changeover pressure with 3 way valve.
2. Compact type HLX-301A changeover pressure setting range is 0.05~0.2 MPa (0.5~2 kgf/cm²) and it can be adjusted setting pressure according to below setting interval.



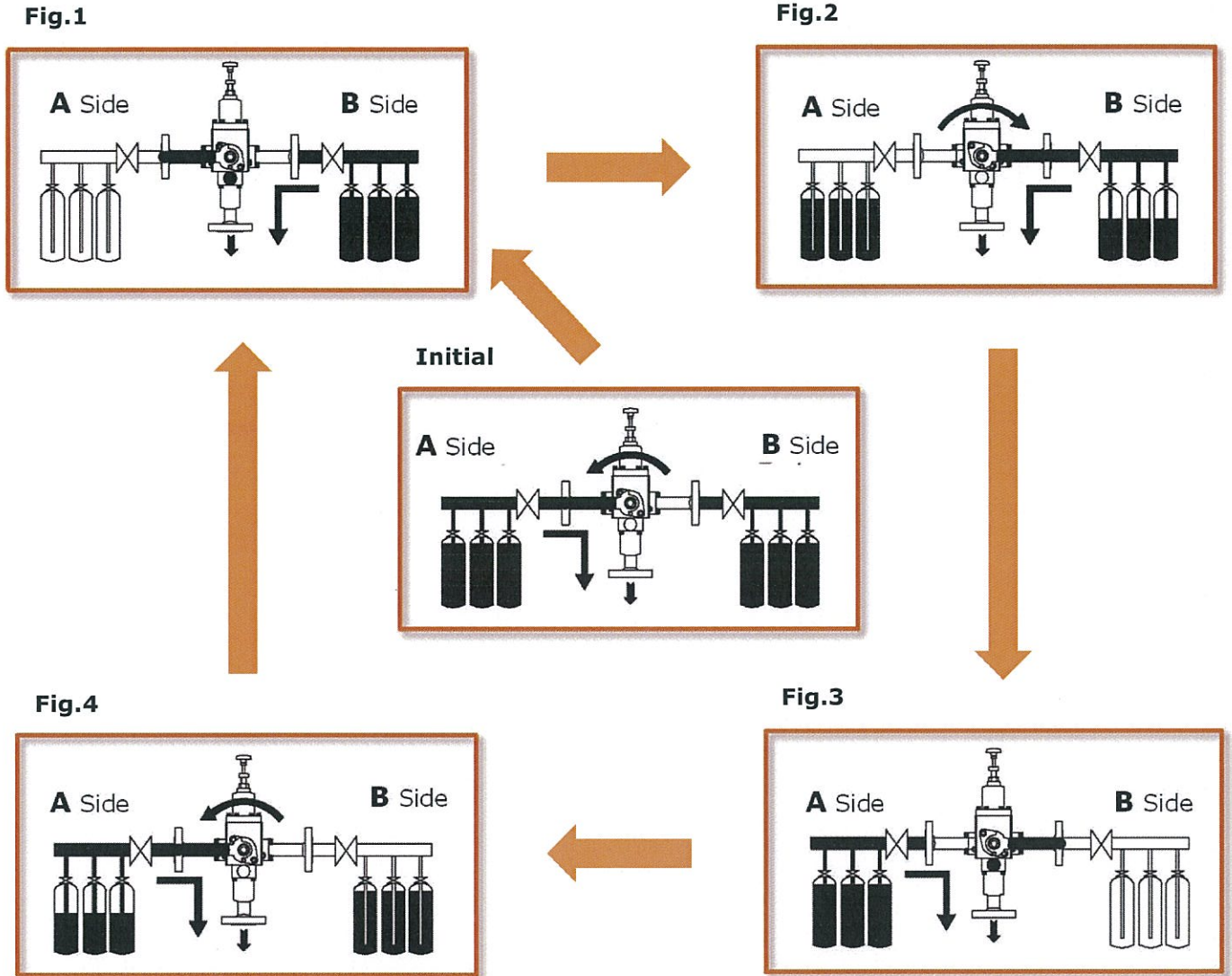
※ About inlet pressure ΔP , please refer to below table.

Setting Interval	21mm	16mm	12mm	7mm
Setting Changeover Pressure	0.05 MPa (0.5 kgf/cm ²)	0.1 MPa (1 kgf/cm ²)	0.15 MPa (1.5kgf/cm ²)	0.2 MPa (2kgf/cm ²)

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Changeover Method (Changeover Operation Cycle)



► A side is Service side, B side is Reserve side

Figure 1 A side pressure is lower than setting changeover pressure, changeover function is operated. then, gas is inflow from B side (indicator color is changing to red from colorless)

Figure 2 gas is inflow from B side. Turn the convert handle 180degree to B side and closing A side cylinder valve. Then, replace empty cylinder (indicator color is changing to colorless from red)

Figure 3 B side pressure is lower than setting changeover pressure, changeover function is operated, And gas is inflow from A side (indicator color is changing to colorless from red)

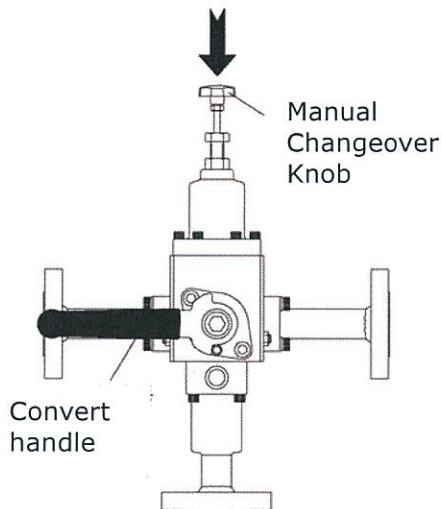
Figure 4 gas is inflow from A side. Turn the convert handle 180 degree to the B side and closing B side cylinder valve. Then, replace empty cylinder (indicator color is changing to red from colorless)

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Manual Changeover Method

1. When user wants to manual changeover function, it could be used.
2. If auto changeover function in not worked, it could be used.
3. Compact type HLX-301A manual changeover function method is as follows.



If you want to manual changeover operation, beat manual changeover knob with your hand lightly (check the indicator color-Red)

WARNING

Don't continued push manual changeover knob or using tool such kind of hammer etc.