



# **YENEN Differential Valve Installation and Operation Manual**

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The following symbols are used throughout this manual to alert you to important safety hazards and precautions:



Notice: indicates a special comment or instruction.



Warning: Indicates the presence of a hazard that can cause severe personal injury or property damage if not observed carefully.



This manual provides instructions and guidelines. The remarks and warnings inform the operator of the hazards involved in working with Yenen differential valves.

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Reading these instructions and preventing hazardous situations is strictly in the hands of the operator of the equipment. Neglecting this responsibility is not within the control of Yenen.

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## 1. About this manual

This manual provides instructions and guidelines. The remarks and warnings inform the operator of the hazards involved in working with Yenen differential valves.

Reading these instructions and preventing hazardous situations is strictly in the hands of the operator of the equipment. Neglecting this responsibility is not within the control of Yenen.

This installation and operation manual is intended for LPG dispenser makers and field service personnel. It provides basic understanding of installing and maintaining Yenen differential valves. It is not all inclusive. Therefore operators of Yenen LPG valves should both be trained and authorized by Yenen or should have prior dispenser assembly and service experience.

This instruction applies for product codes: 20200090, 20202590, 20202690, 20202790.

## 2. Safety precautions



Only trained and qualified personnel familiar with handling liquids under pressure, such as LPG, may service Yenen equipment.



ALWAYS disconnect and lock power supply before starting to service the hydraulic parts.

- Make sure that all necessary safety precautions have been taken. Make sure that proper ventilation, fire prevention, evacuation and fire procedures are provided.
- Provide easy access to fire extinguishers. Understand and adapt all local safety codes.
- Read this manual as well as other available literature and drawings.
- Use protective clothing to prevent cold burns.

In the event of a gas leak:

1. Stop the leak by closing the nearest valve or shut-off device.
2. Use protective clothing to prevent cold burns.
3. Prevent accidental ignition.
4. Beware that LPG is heavier than air and therefore seeks lower level.
5. Evacuate all people from the danger zone.
6. Ensure that the area is safe before resuming the operation. If in doubt, notify the local fire department.

In the event of a gas fire:

1. Stop the leak if it is within safe reach.
2. Notify the local fire department if it is a large fire that cannot be controlled safely.
3. In case of a small, contained fire, use the appropriate extinguisher. If in doubt, notify the local fire department.

## 3. Checking the diaphragm

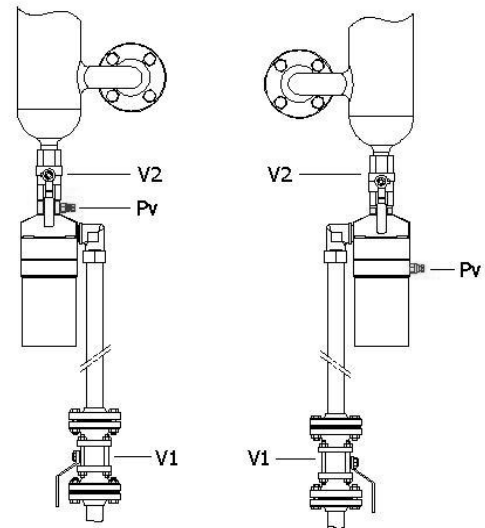
1. Without connecting the suspicious nozzle to a vehicle or internal maintenance receptacle, activate the dispenser.
2. After roughly ten (10) seconds deactivate the dispenser. If the hose was (partly) empty, it has been filled now.
3. Repeat step 1: activate the dispenser without connecting the suspicious nozzle to a vehicle or internal maintenance receptacle.
4. The meter shaft should not rotate and the display should not show any volume being dispensed.

If LPG is being delivered with the nozzle not connected than this indicates an 'internal' leak through the differential valve. Read the replacement instructions in section 3.

## 4. Instructions

### 4.1 Relief LPG from the hydraulic system.

1. Observe the safety precautions from section 1.
2. Disconnect and lock power supply.
3. Close ball valve V1 (pressure line) and the ball valve to the vapor return line.
4. Open Pv to vent the LPG to the atmosphere. If local regulations do not permit venting to the atmosphere then LPG must be flushed back to the storage tank using pressurized nitrogen.
5. Remove the differential valve from the hydraulic system. While unbolting the differential valve, some LPG may still be present and vaporize.



Drawing 1

### 4.2 Replacement of the diaphragm

6. Fix the differential valve on a bench vise – see photo 1. If a vise is not available then do not remove the differential valve from the hydraulic system – only remove the 8 mm tubing connecting the vapor return line on top of the valve – photo 3 & 4.
7. Open the differential valve – photo 2.



Photo 1



Photo 2

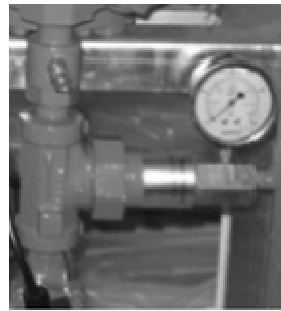
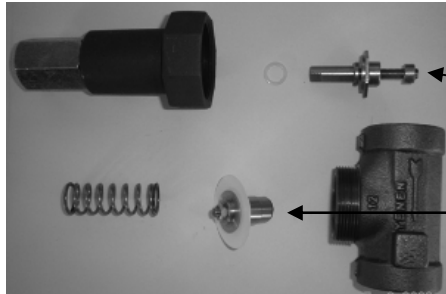


Photo 3



Photo 4

## 8. Arrange the internal parts



The adjustment shaft sets the opening tension. This should not be adjusted.

Piston assembly (available as spare part kit 35006090)

Photo 5



If a replacement kit has been ordered through Yenen then step 9 – 12 is not required as the replacement kit contains a new piston assembly. Continue with step 13.

9. Carefully fix the piston assembly between softeners to prevent denting or other damage to the piston – photo 6.
10. With an M6 wrench, slowly untie the nut (08200390) – photo 6 – and take out the brass washer (20201090).
11. Remove diaphragm and place a new diaphragm (20201190) – photo 7 – side is not important.
12. Position the brass washer and nut on the piston and use an M6 wrench to fasten the nut (tightening torque 1.5 kgfm) – photo 8.
13. Apply a liquid sealant compound suitable for LPG (e.g. Loxeal 58.11 or equivalent) around the nut – photo 9.



Photo 6



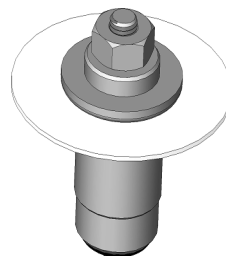
Photo 7



Photo 8



Photo 9



Drawing 2: differential valve replacement kit – piston assembly (35006090)

14. Carefully reassemble the differential valve.
15. If a pressure gauge is mounted on the valve, make sure that it faces forward and is visible after reinstallation in the dispenser.
16. Fasten the nut with two wrenches, such that the upper body does not rotate while tightening the nut – see photo 10.  
Apply not more than 6.5 kgfm torque.



Should the upper body rotate during the reassembly then the diaphragm can be damaged.

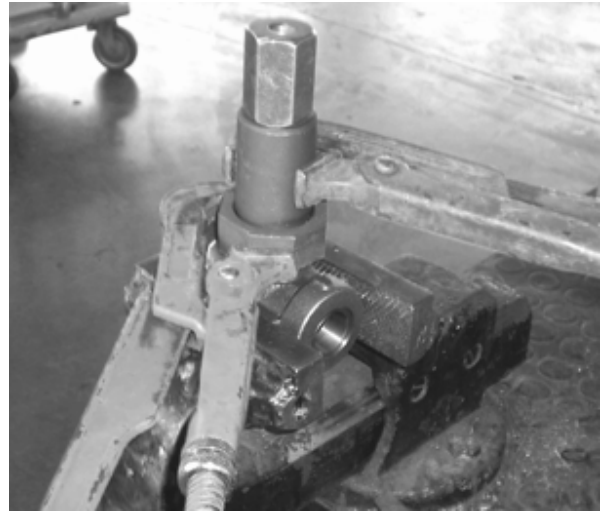


Photo 10

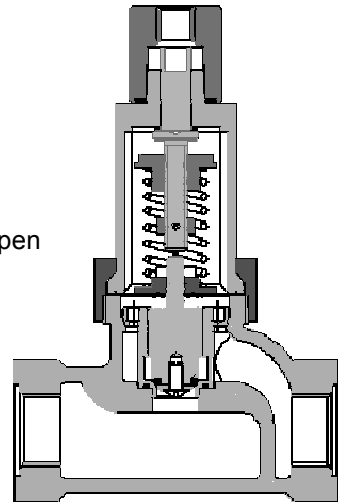
### 3.2 Re-install the differential valve and check for leaks

17. Reinstall the differential valve in the dispenser.



Take note of the arrow on the differential valve (body) indicating the direction of the flow – drawing 3.

18. Connect piping and open the ball valve of the vapor return line first. Next, open the ball valve on the liquid line slowly.
19. Prepare a soap solution and check all connections for leaks.



## **5. Rules to consider during transportation and shipping**

- Differential valves should not be removed from its packing during transportation and storage packaging.
- Be careful about the directional arrows on the box during the transportation.
- Do not place heavy objects on the package.
- Differential valves must be protected from water and moisture during transportation.

## Appendix A – DOs and DON'Ts

### DOs and DON'Ts CHECK LIST

# DO...

- **DO** discuss the project and procedures with station manager or operator before performing service on a dispenser.
- **DO** evaluate the hazards at the working area and use your safety training and experience in determining any precautions to be implemented.
- **DO** locate and be familiar with fire extinguishers in the area prior to beginning any LPG related work on the forecourt.
- **DO** be aware of vapors and other hazardous conditions.
- **DO** disconnect and lock power before starting to service the meter and other hydraulic parts.
- **DO** know the associated hazardous location classifications.
- **DO** use safety cones, barricades, barrier tape or a vehicle to isolate work area and protect the technician.
- **DO** wear appropriate safety clothing including brightly colored vests, goggles and gloves.
- **DO** be aware of and monitor your work area surroundings.
- **DO** connect the nozzles on dispenser carefully.
- **DO** take totalizer readings and record it in coordination with station manager or operator.



# DON'T...

- **DON'T** allow unauthorized individuals near the dispenser or work area when degassing and disassembling of the dispensers.
- **DON'T** leave dispenser doors open after maintenance is complete.
- **DON'T** allow smoking, flame or spark-producing devices near the work area.
- **DON'T** place tools or equipment outside the barricaded work area.
- **DON'T** remove safety cones, barricades, barrier tape or the service vehicle until work is completed.
- **DON'T** leave the station unless the station manager or operator signed the report.



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