

■ Installation, Operation & Maintenance Manual

For Modentic V-Port Ball Valves

Caution:

Please read these instructions carefully and completely before installation. With the correct installation and maintenance, Modentic valves offer you a long, trouble-free service. The most important thing is to keep off the injury to the personnel and the damage to the equipment.

Safety Precautions:

1. Ball valves are pressure equipment; therefore the appropriate safety measures have to be taken into account.
2. Any alterations on the valves and the documents without prior approval from Modentic with formal documentation are not permitted and might result in the huge danger.
3. All valves are designed for use within the limits specified herein and described on the valve body. Exceeding these specified limits is to be considered misuse and can lead to serious injuries and/or damage to the installation and environment.
4. When personnel are maintaining a valve, proper eye, head and whole body protection, and protective clothing should always be utilized. The most important thing is to keep off the injury to the personnel and the damage to the equipment.
5. All of the valves should arrive in the open position at the installation site.
6. There is the possibility that the (dangerous) pressurized fluid or gas could be trapped in the cavity of the valve, make sure this is released safely by partly opening the valve.
7. When the valves are operated on low or elevated temperature, operating personnel must take special care to avoid injuries.
8. The valve body rating can be higher than the seat rating. Valve surface temperature may become extremely hot or cold due to the ambient or operating conditions. Prevent any type of direct contact with the valve that may harm the workers.
9. Valves and accessories must not be used as a sole support of piping or human weight.
10. Safety accessories such as safety relief (overpressure) valves are the responsibility of the system designer.
11. Do not lift the valve by its hand-lever as these levers are not designed to take the load of the whole valve and may cause the lever to break off or be disconnected from the valve, resulting in possible valve damage or a person's injury.
12. It is the user/system designer's responsibility to use insulation in high temperature applications.
13. Do not disassemble actuator with pressure loaded or warranty will be invalid for inappropriate disassembling.

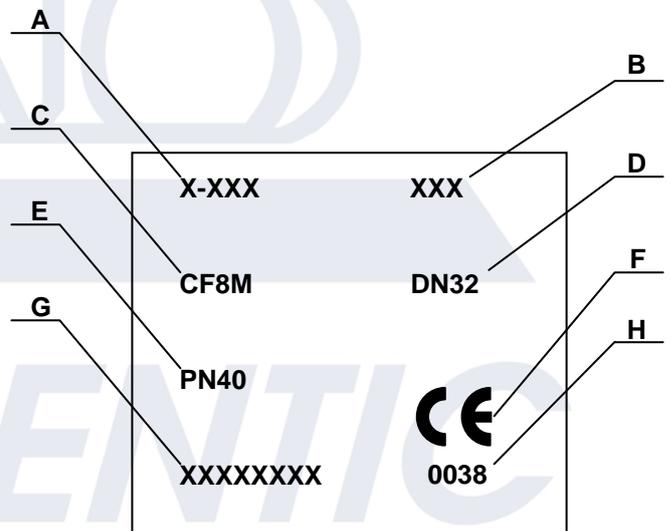
General:

1. Valve pressure varies under different models, sizes, working temperatures, and the materials of the main parts. Please verify the application within the limits specified herein and as described on the valve body or name plate from Modentic.
2. Any ball valve is a pressure containing part of the installation with an operational function, maintenance personnel must take this into consideration, therefore the appropriate safety measures have to be taken into account, it is necessary to wear the protective equipments and take appropriate precautions to safeguard against possible injury.
3. Always use Modentic recommended spare parts for maintenance and replacement.
4. Valve Marking:

All the marking information should be cast on the body, or on a metal plate which is spot-welded to the body.

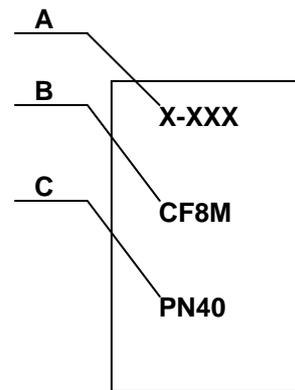
PED VALVES MARKING

| MARK | DESCRIPTION |
|--|---------------------------------------|
| A | TYPE NO. |
| B | YEAR OF MANUFACTURE |
| C | MATERIAL |
| D | SIZE |
| E | PRESSURE |
| F | CE. MARK |
| G | TEMPERATURE |
| H | TUV RHEINLAND / BERLIN-BRANDENBURG |
| HEAT NO. CAST ON THE BODY AND CAP MD LOGO CAST ON THE BODY OR ON THE NAMEPLATE | |



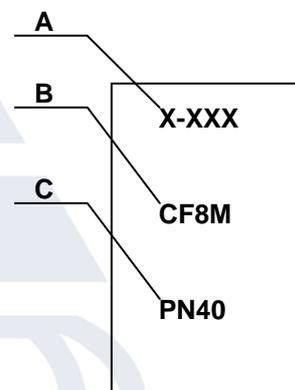
PED(SEP) VALVES MARKING UNDER DN25

| MARK | DESCRIPTION |
|--|-------------|
| A | SIZE |
| B | MATERIAL |
| C | PRESSURE |
| HEAT NO. CAST ON THE BODY AND CAP MD LOGO CAST ON THE BODY OR ON THE NAMEPLATE | |



OUTSIDE THE EU COUNTRIES NON-PED VALVES MARKING

| MARK | DESCRIPTION |
|--|-------------|
| A | SIZE |
| B | MATERIAL |
| C | PRESSURE |
| HEAT NO. CAST ON THE BODY AND CAP MD LOGO CAST ON THE BODY OR ON THE NAMEPLATE | |



Limitation:

1. Valves are not to be used in safety functions such as safety loops or separating incompatible fluids.
2. In-line service only, not recommended for end of line service.
3. Do not use for slurries or fluids containing solids that can build up in valve cavities.
4. To provide an optimum service, the valve should be operated only in its fully open or fully closed position.
5. For a single acting actuator, a normal-open actuator will go back to open position when the pressure source is gone and vice versa.
6. For a double acting actuator, the actuator will stop at end position when the pressure source is gone.

Storage:

All valves are packed in strong cardboards (plastic bags for smaller sizes) to avoid any possible damage during transportation. If the items are not for immediate use, please follow the precautions:

1. Keep the valves in complete open position. Never leave the valve in the partially open position.
2. The valves should be appropriately protected and stored against dust, dirt, mud, wet and sea water.
3. Carbon steel valves have a "Black oxide" and the dipped finish. This nontoxic process is performed to retard rusting during storage. It is not a substitute for paint or other means of protective coating to be applied to the valve once installed. For stainless steel valves, as their natural finish, it is no need to have any additional protection once installed.

Installation:

1. Valve pressure varies under different valve series, sizes, application temperatures and the material of the main parts. Please verify the application within the limits and as described on the valve body or nameplate from Modentic.
2. Prior to the installation, check the valve as well as the connecting parts to make sure they are free from dirt and burrs. And it might be necessary to flush the valve, valve cavity and the pipes to remove the accumulated dirt and burrs.
3. Prior to the installation, the valves should be installed with the ball in full open position to ensure that the seat rings are not damaged during installing.
4. Manually operated valves, may be installed on pipes at any angle horizontally, vertically, etc. It is however recommended to consider facilitating maintenance and operation of the valve.
5. V-port valves are designed as unidirectional flow type. The arrow on the valve body helps to identify the flow direction. Install the valve in the pipeline so that the flow direction of the pipe corresponds to that marked on the valve.
6. **Installation with flanged connection**
 - a. Check companion of flanges are dimensionally compatible with the flanges on the valve body and make sure sealing surfaces are free of grease, dirt etc.
 - b. Prepare the suitable gasket for flanges connection and put that between the connecting flanges.
 - c. Connect the flanges with the appropriate size bolts and heavy hex nuts which confirm to comparison standard.
 - d. Tight flange bolts as recommended by gasket manufacturer and standard.
 - e. Following installation, execute leak and operating tests.
7. **Installation with threaded connection**
 - a. Check specification of threads on mating pipe.

- b. Apply joint compound to the male end of joint only.
- c. Use suitable sealing material.
- d. Use wrench and apply force on the hexagon end of the valve only. Apply force to other area of valve may seriously damage the valve.
- e. Following installation, carry out leak and operating tests.

8. **Installation with socket weld connection**

- a. It should be tightly closed before welding or installation to prevent damage to the seating surfaces and stem caused by thermal expansion during the socket welding process.
 - b. Prior to welding, end caps must be removed to prevent seat or gasket from being damaged by the overheating while welding.
 - c. Weld the end caps on the pipe stub. Be careful for the welded part, it may be super heat for minutes before completely cool down.
 - d. Prior to assembly the body back to the end caps, clean both end caps carefully. Any particle left could damage the ball surface or the valve port which would lead to leakage.
 - e. Tightened the body bolts evenly, check the valve for proper operation.
 - f. Following installation, perform leak and operating tests.
9. Stress caused in the valve by pipeline vibration can be reduced by supporting the pipeline properly. Reduced vibration also helps ensure correct functioning of the positioner.
10. Install the valve in such a way that extensive stresses in any direction on the valve are avoided.
11. Always do leak test to the system before using.

Operation:

- 1. Modentec ball valves of this series are 1/4 turn-operated valve, if the valve lever or handle is turned according to 90 degrees clockwise, the valve will be fully closed.
- 2. Note that the valve handle also serves as a ball orifice position indicator. If the valve handle is parallel to the pipe, the valve is opened. While a perpendicular handle indicates a closed valve. For lever operation, follow the indicator on the top side of the lever to open or close the valve.
- 3. Clockwise rotation of the valve shaft closes the ball in the valve. The ball is the closure member of the valve. As the ball rotates, a V-shaped notch in the ball forms a variable orifice with the circular seat in the body.
- 4. Extending the lever or handle from the ball valve is to be considered misuse and can cause serious injuries and damages to the valve and equipment.
- 5. When the valves are operated on low or elevated temperature operating, personnel must take special care to avoid injuries.
- 6. The valve body rating can be higher than the seat rating. Valve surface temperature may become extremely hot or cold due to the ambient or operating conditions. Prevent

any type of direct contact with the valve that may harm the workers.

7. For gearbox operation, follow the indicator on the handle to open or close the valve. Note that the gearbox is chosen in according to the torque, do not replace the gearbox with different specification.
8. For operations and wiring of Pneumatic Actuator, refer to the installation and maintenance instructions of the pneumatic actuator attached to the valve.
9. For operations and wiring of Electric Actuator, refer to the installation and maintenance instructions of the electric actuator attached to the valve.
10. For operations and wiring of Positioner, refer to the installation and maintenance instructions of the positioner attached to the valve.

Maintenance:

1. Periodical checks and maintenance are required to keep valves in good working condition.
2. Life of the valve can be maximized if the valve is used within the rated range, in accordance with pressure, temperature, and corrosion data.
3. Before making the maintenance, always advise the maintenance personnel that the proper eye, head and whole body protection always be utilized.
4. Before making the maintenance, always make sure the pressure is released safely by partly opening the valve.
5. Prior to the maintenance, flush the valves and the pipe lines attached and make sure that no (dangerous) residues are left. Ensure that the installation, together with pressure containing parts is depressurized and secured.
6. There is a possibility that a dangerous pressurized fluid or gas is trapped in the valve cavity, release this safely by partly opening the ball valve.
7. It is impossible to predict the frequency of the maintenance interval. The maintenance interval is dependant upon several factors which are not foreseeable by the manufacturer.
8. It is important to recognize stem and seat leakage and this is not to be left unattended.
9. For gearbox operation, there is no maintenance required for the gearbox under normal operating conditions. If it is necessary to temporarily remove the gearbox for overhaul, the gearbox baseplate may be removed. But the baseplate must be sealed by silicone sealant for re-assembly unless fitted with O-rings.
10. If the gear-operated mechanism indicator does not correctly indicate whether the valve is completely open or shut, adjust the opening with the adjustment screw.

User's note:

1. End-users have the responsibility to check the wall thickness in regular intervals due to wear/ tear/ corrosion of the fluid in order to ensure the wall thickness is not below the minimum safety thickness allowed in the standard.
2. The most important thing is to keep off the injury to the personal and the damage to the equipment.