

BALANCED DIRECT ACTING PRESSURE REDUCING VALVE

INTRODUCTION

This specification covers the design, manufacture, and testing of 1/2" (15 mm), 3/4 in. (20 mm), 1 in. (25 mm), 1-1/4 in. (32 mm), 1-1/2" (40 mm), 2" (50 mm) and 2-1/2" (65 mm) Direct Acting Pressure Reducing Valves.

PART 1 - GENERAL

1. Standard products - use the same manufacturer for multiple units of same type.
2. "Tying" of equipment into packages for the purpose of thwarting competition shall be considered to be in non-compliance with these specifications.
3. Manufacturers shall price items under different subsections or sections separately.

PART 2 - PRODUCTS

2.01 BALANCED DIRECT ACTING PRESSURE REDUCING VALVE

A. FUNCTION

The Balanced Direct Acting Pressure Reducing valve shall automatically reduce a higher inlet pressure to a steady lower downstream pressure. This valve is an accurate pressure regulator capable of maintaining a constant downstream pressure (+/- 2 PSI), regardless of upstream pressure fluctuations. All flow conditions from zero flow to full flow shall be handled in a stable manner. The valve shall close drop tight when the downstream pressure rises to the set point of the spring setting. No pressure "creep" or leakage will be tolerated.

The Balanced Direct Acting Pressure Reducing Valve shall be of the high capacity, balanced, single seat design. The self-contained pressure reducing valve shall include a diaphragm assembly, all internal seals, spring, spring guide, adjustment nut, stem and stainless steel seat. The diaphragm assembly shall be fully guided. The design of the diaphragm shall be such that any stem travel will not cause any stretching or fatigue.

The spring shall be integrally installed within the valve. Accurate and easy to adjust. Adjusting screw can be easily set in the field to achieve the desired set-point. Adjustment screw shall have locking jam nut. Threaded plastic cap shall protect adjusting screw and jam nut. Provision shall be provided for the securing of the plastic protecting cap with a seal wire to discourage unauthorized changes to the setting.

Disassembly and re-assembly of the CRD-L Pressure Reducing Valve shall be easily accomplished in the field for maintenance and repairs. The valve shall be serviceable without removing it from pipeline.

Valve body shall include 1/8" FNPT tapping's to install a pressure gauge to monitor the downstream pressure.

B. MATERIALS

1. Material Specification for the Direct Acting Pressure Reducing Valve as follows:

| <u>Component</u> | <u>Material</u> |
|---------------------------------|--|
| Body & Cover | Cast Bronze Low Lead Bronze CuZn21Si3P (standard) <i>316 Stainless Steel (option)</i> |
| Disc | EPDM (standard) |
| Diaphragm | Nylon Reinforced Buna-N |
| O-Rings | Buna-N |
| Internal Trim Components | Stainless Steel |
| Yoke, holder, retainer | Stainless Steel |
| Retainer, Outer | Stainless Steel |
| Screw, Adjusting, | Stainless Steel |
| Nut, Locking | Stainless Steel |
| Washer, Diaphragm | Stainless Steel |
| Seat | Stainless Steel |
| Screws, Cap, Cover | Stainless Steel |
| Spring, Guide | Stainless Steel |
| Cap, Adjusting Screw | ABS – Thermoplastic |
| Union & Union Tail Piece | MNPT, Brass (Standard) |
| Pressure Rating | 400 PSI Maximum Inlet (25 Bar) |
| Minimum Differential Pressure | 14.5 PSI |
| Maximum Differential Pressure | 150 PSID (10 Bar) |
| Adjustment Ranges | 15 to 65 psi (1.3 – 4.4 Bar) (Standard) 25 to 100 psi (1.7 – 6.8 Bar) (Optional) 80 to 150 psi (5.5 – 10.3 Bar) (Optional) |
| Temperature Range | Water to 140°F (70° C) Maximum |
| Any other wetted metallic parts | Stainless Steel; Bronze Low Lead |

C. MANUFACTURE

1. Main Assembly:

- a. The Balanced Direct Acting Pressure Reducing Valve shall be of the high capacity, balanced, single seat design. The self-contained pressure reducing valve shall include a diaphragm assembly, all internal seals, spring, spring guide, adjustment nut, stem and stainless steel seat. The diaphragm assembly shall be fully guided. The design of the diaphragm shall be such that any stem travel will not cause any stretching or fatigue.

2. End Connections:

- a. Direct Acting Pressure Reducing Valve shall be constructed with dual union tailpieces, MNPT Threaded at both the inlet and the outlet ends.

3. Gauge Connections:

- a. 1/8" FNPT tapings shall be included with the valve to make it possible to install a pressure gauge to monitor the downstream pressure.

4. Factory Assembly:

- a. Each Direct Acting Pressure Reducing Valve shall be factory assembled.
- b. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008.
- c. The factory assembly shall include the complete pressure reducing valve.

- d. During factory assembly the valve manufacture shall make all necessary adjustments and correct any defects.
5. Factory Testing:
- a. Each Direct Acting Pressure Reducing Valve shall be factory tested.
 - b. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008
 - c. Tests shall conform to approved test procedures.
 - d. The standard factory tests shall include valve body and cover porosity test (applying shop air at 90 psi minimum); plus an operational and seat leak test. All air pressure tests shall be applied for a minimum of 15 minutes. No visible leakage will be permitted through the pressure reducing valve seat, the pressure boundary walls of the valve body, valve cover and the body-cover joint.
6. Nameplates:
- a. Each Direct Acting Pressure Reducing Valve shall be provided with an identifying nameplate.
 - b. Nameplates shall be mounted in the most practical position possible, typically on the side of the valve body.
 - c. Nameplates shall be brass and a minimum of 3/32" thick, 1/2" high and 2" long.
 - d. Pertinent data shall be etched or stamped into the nameplate. Data shall include size, valve catalog number, stock number and manufacturing date code.

D. PRODUCT DATA

- 1. The following information shall be provided:
 - a. Valve manufacturer's technical product data.
 - b. Valve manufacturer's Installation, Operation and Maintenance manual (IOM).
- 2. The Direct Acting Pressure Reducing valve manufacturer shall provide a computerized sizing software program / analysis. Sizing program shall follow industry standards for single or parallel pressure regulators to prevent under and oversizing. Sizing program shall allow for a wide range of flow requirements to avoid cavitation and noise. Sizing program shall determine if a reducing pressure in stages (multiple valves) is necessary. Sizing program shall determine the correct number of valves (stages) required, valve size(s), pressure setting values, and flow characteristics to ensure overall system design and optimization.

PART 3 - EXECUTION

A. PACKAGING, SHIPPING AND HANDLING

- 1. Packing and Shipping
 - a. Direct Acting Pressure Reducing valves specified herein shall be factory packaged and tagged in a manner that will protect the equipment from damage and facilitate the final assembly in the field.

- b. Care shall be taken in loading, transporting and unloading to protect the pressure reducing valves from damage. Equipment shall not be dropped. All pressure reducing valves shall be examined before installation and no piece shall be installed which is found to be defective. Any damage(s) shall be repaired.

B. FIELD TESTING

1. A direct factory representative shall be made available by the equipment supplier for start-up service, inspection and necessary adjustments.

The Direct Acting Pressure Reducing Valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment provided the valve is installed and used in accordance with all applicable instructions.

The valve shall be **CLA-VAL Company Model No. CRD-L**, Balanced Direct Acting Pressure Reducing Valve, as manufactured by Cla-Val Co., Costa Mesa, CA 92627-4416.

END OF SECTION