

The Defender™

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Apollo Valves/Conbraco Industries, Inc. has developed a new backflow preventer line called the Defender™ 4D series. The valve will initially be available in sizes 2½”- 10” and will be manufactured at the company’s South Carolina facilities.

The Defender™ series is offered in double check assembly (4D-100), reduced pressure principle assembly (4D-200), double check detector (4D-600) and reduced pressure detector assembly (4D-700) variations. The backflow bodies feature grooved connections, allowing assemblies with a wide shut-off variety of gate valves or monitored butterfly valves for fire protection installations.

Defender™ double check and reduced pressure assemblies provide superior backflow protection in high quality, lead-free assemblies. Check modules, test cocks, and relief valve components are made of 300 series stainless steel. The Defender’s™ epoxy coated, ductile iron valve bodies incorporate optimized flow paths and remain rigid even in the most demanding service conditions. The Defender™ series’ body cover uses an easily removable grooved cover coupling, making maintenance of the checks a breeze.

Removal of the cover coupling reveals an access area that allows each check module to be removed without disturbing the other. The check assemblies are securely held in place by a series

of threaded studs and nuts, requiring only a standard socket and ratchet for removal. The face sealing o-rings on the check assemblies permit the modules to be easily lifted out once the fasteners are removed. Reinstallation is especially easy because of the face sealing check module.

The Defender’s™ centrally-guided, poppet style check modules are patented. Three tripod arranged compression springs produce a maximum closing load on the sealing disc while in the closed position. As water begins flowing through the check module, the springs immediately begin to fold inward, reducing the opening load. This innovative feature optimizes flow and produces no spike in the head-loss curve. The poppet style seal closure is preferable to a swing check type because it is less likely to trap fouling debris and provides 360° equal pressure on the seat disc. This is especially true in heavy spring applications, such as the first check of a reduced pressure principle valve. Since loads are more uniform across the sealing surface, seat disc wear from long term cycling is also minimized when a poppet style check is utilized.

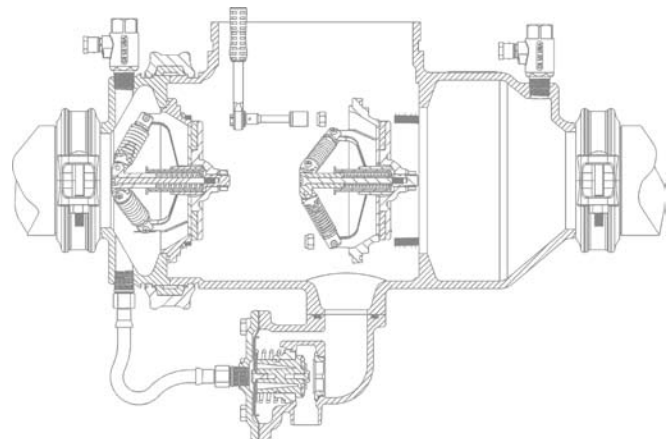
Another patented feature of the Defender’s™ check module is its built-in ability to “over stroke” when exposed to high flow. As the spring tripod folds inward and the sealing disc poppet opens, the springs reach a median point where the poppet load is reduced to zero. The two piece poppet stem then begins to slide and allows the poppet to stroke open even further. This longer poppet stroke offers less resistance to the water by creating a smoother, less convoluted flow path. As flow demand decreases, a return spring located inside the stem brings the sealing disc back to a biased closed position, allowing the check to fully close in the no flow condition.

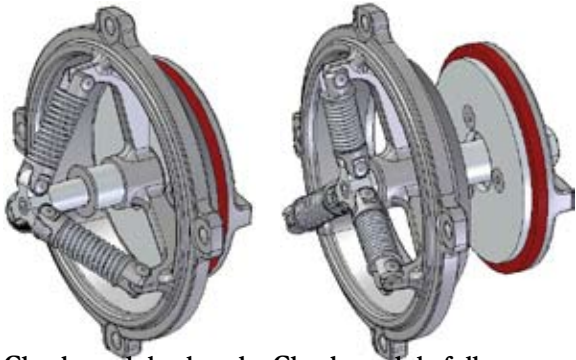


**Apollo 4D-100 Series
Double Check Assembly**



**Apollo 4D-200 Series
Reduced Pressure Assembly**





Check module closed Check module fully open

The Defender™ reduced pressure assembly uses a separate 316 stainless steel relief valve module that is attached with only two screws. During maintenance, the module can be fully removed or can be disassembled while still attached to the backflow body, whichever is more convenient. The relief valve used on the

4D-200 and 4D-700 series is a time proven conventional design with a flat gasket diaphragm. The Defender's™ diaphragms are cut from calendared rolls instead of being molded, producing a more uniform and robust seal. Flat gasket diaphragms have been used for many years in backflow applications and are known for their durability.

The Defender™ series comes standard with red silicone rubber seat discs. The silicone rubber resists attack by all commonly used water system chemical disinfectants such as chlorine and chloramines. Silicone is also resistant to hard water mineral erosion prevalent in some parts of the country.

The Defender™ 4D series backflow devices are designed to meet all the latest, most stringent, backflow codes. This series of backflow devices are an excellent choice for those water purveyors, engineers, technicians and plumbers who demand a high quality, domestically produced product. For years of reliable use and exceptional ease of testing and maintenance, specify the Defender™ for your next backflow installation. ●