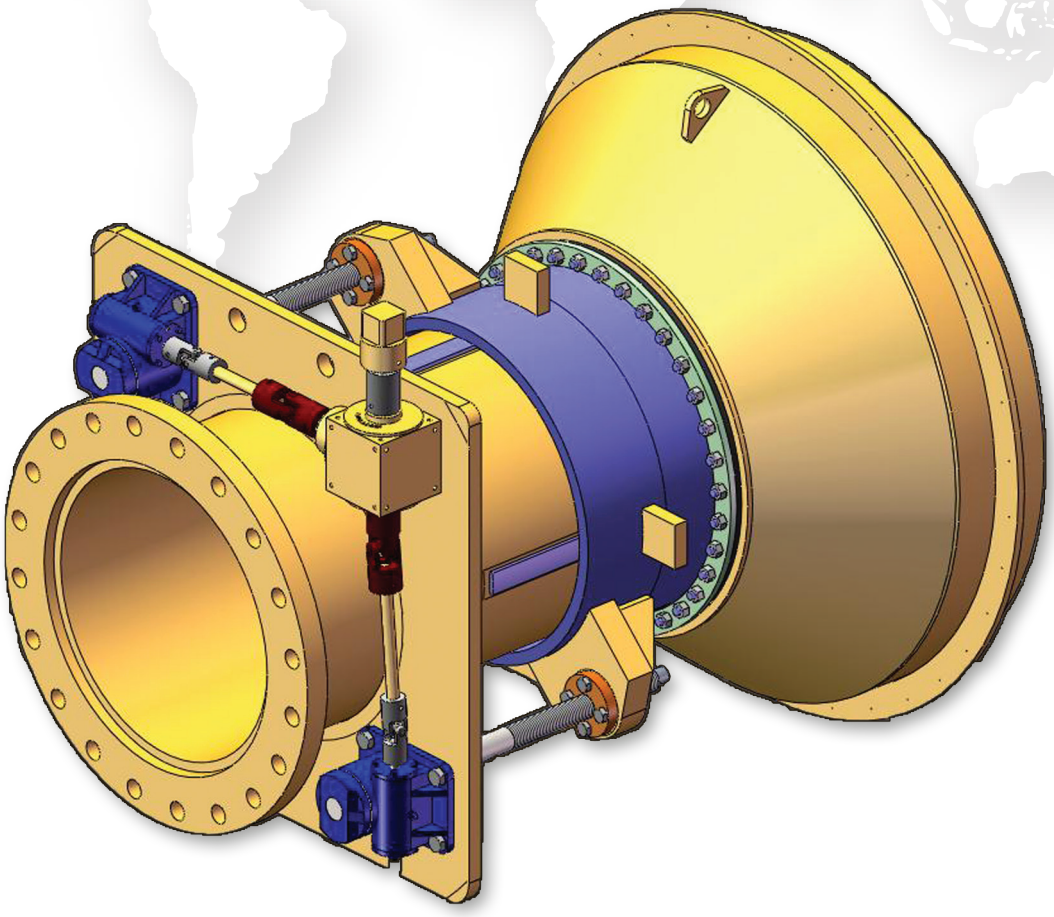
PRATT®

Fixed Cone Valve



Engineering Creative Solutions
for Fluid Systems Since 1901

PRATT®

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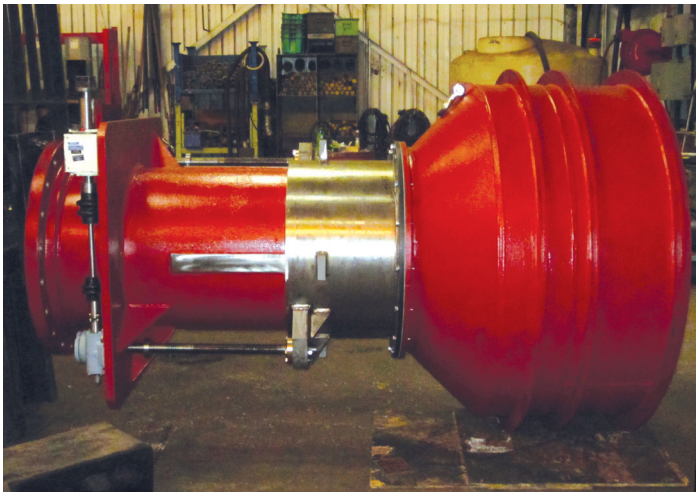
Pratt® Fixed Cone Valve

Introduction to Energy Dissipating Valves

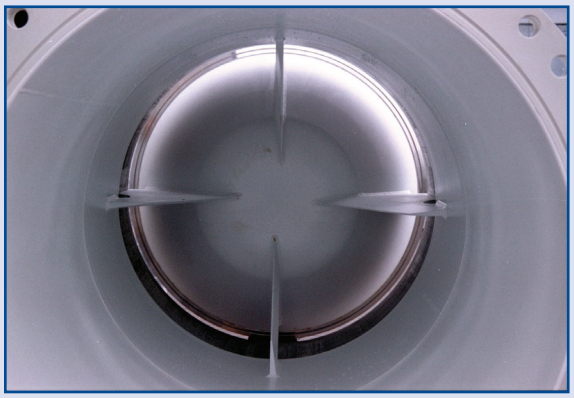
Over the years, Henry Pratt Company has maintained a commitment to product innovation by designing water control valves that improve our clients' processes and reduce their operation and maintenance costs. Our products are developed to meet and surpass even the most difficult specifications.

By adding sleeve valves, fixed cone valves, and energy dissipaters to our product line, we continue to expand our offering to those customers who require specialty valves for applications where there is zero back pressure, cavitation or high flow rates.

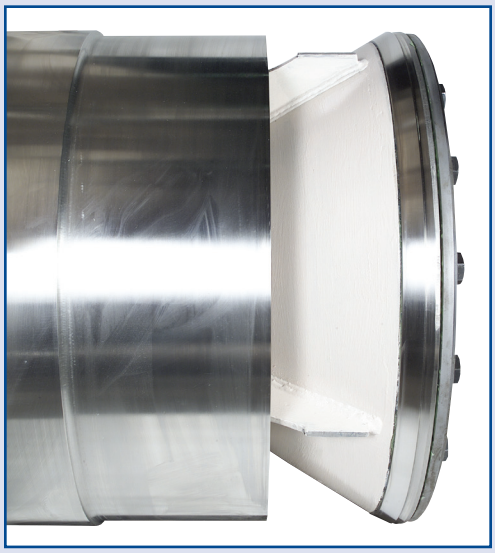


Fixed Cone Valve with hood

Scope of the Line: Pratt® Model 117 Fixed Cone Valve



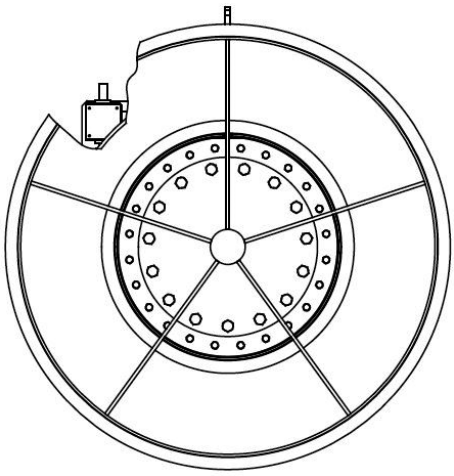
Contoured ribs on the internal of Model 117

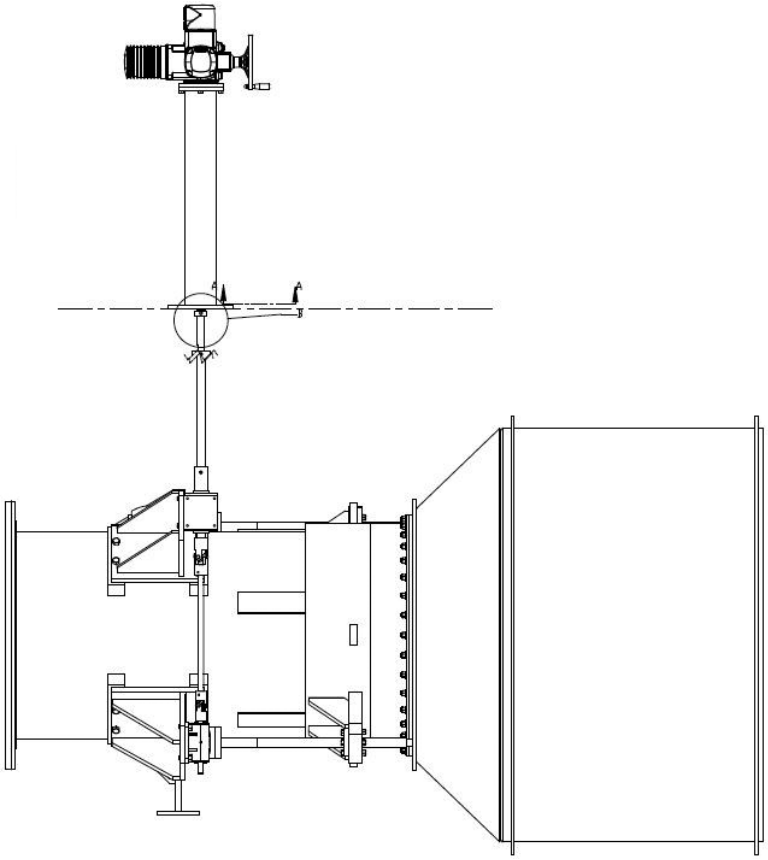


Metal-to-metal seat without hood

- Available in sizes 6 inches and larger
- Welded steel or stainless steel construction
- Nitronic 60 drip tight seat
- Contoured ribs with Nitronic 60 overlay
- Epoxy coated interior
- Available with or without hood

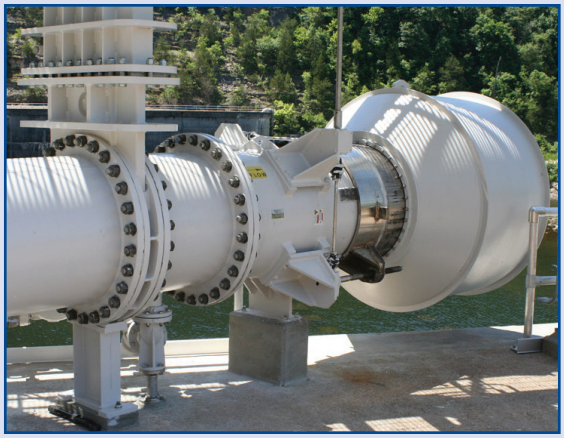
Design Details:
Pratt® Model 117 Fixed Cone Valve





Features and Benefits:
Pratt® Model 117 Fixed Cone Valve

Feature	Benefit
Nitronic 60 stainless steel seat	▪ Self-aligning ▪ Gall, abrasion, and erosion resistant
Contoured cone and rib design	▪ Provides vibration free operation ▪ Prevents pressure fluctuations
Circular flow pattern	▪ Uniform flow pattern without turndown limitations
Optional hood	▪ Offers flow discharge into confined areas ▪ Can be secured to the fixed cone or outlet structure
Ease of maintenance	▪ Can be performed while the valve is in line



30" Fixed Cone Valve with Hood

Cone Valve Applications

The Pratt® Model 117 Fixed Cone Valve is used to regulate flow from dams and reservoirs. It is a free discharge valve that is commonly used as a turbine bypass valve, reservoir drain, or continuous discharge flow control valve.

The Model 117 has a fixed cone with contoured ribs that eliminate the vibration problems associated with other fixed cone designs. Flow is controlled by movement of an external stainless steel gate which has a drip tight metal-to-metal shut off against the Nitronic 60 seat.

When discharging into the atmosphere, the jet spreads out in a wide cone angle and breaks up into a fine spray. If containment of the jet is desired, a hood can be installed which concentrates the flow.

Sizing a Pratt® Model 117 Fixed Cone Valve

To determine the valve size it is necessary to calculate the desired flow rate. The flow rate can be calculated as follows:

$$Q = C_d \times (2gH)^{1/2} \times A$$

Q	=	Flow (cfs)
C_d	=	Discharge Coefficient (.86 max)
A	=	Cross-sectional Area of the pipe ID (square feet)
g	=	32.17 ft/s^2
H	=	Upstream Head (feet)

Line velocity is calculated as follows:

$$V = Q \times 183.3/D^2$$

V	=	Flow Velocity (f/s)
D	=	Pipe Diameter (inches)

— For velocities 0-50 fps maximum epoxy coated carbon steel construction is provided
— For velocities 51-100 fps maximum stainless steel construction is provided

Suggested Specification for Fixed Cone Valves

Free discharging fixed cone valve

General Specifications

The fixed cone valve shall be Pratt® Model 117 as manufactured by the Henry Pratt Company or approved equal.

Valve Body

The body shall have an inlet flange for mounting the valve into the pipe system. The flange shall conform to AWWA C-207 and the class shall be determined by design pressure. The body shall have a mounting flange used as a support leg for the valve and as a mounting bracket for valve actuator or cylinder. The body shall have nitronic 60 wear strips to prevent galling between the body and gate. The body shall house a rubber seal to prevent upstream leakage between the body and the gate. The valve shall be designed such that the seal shall be replaceable without removal or disassembly of the valve. All pressure retaining components shall be made from carbon steel ASTM A-516 GR 70 while structural components shall be made from carbon steel ASTM A-36. The fixed cone shall be inline and concentric with valve body. The cone shall be attached to the body by ribs welded to the inside of valve body an upstream side of cone. The ribs shall be contoured to provide vibration free operation and prevent pressure fluctuations. Cone and ribs shall be made from carbon steel ASTM A-516 GR 70. Tight shutoff shall be achieved by floating seat held in place by Silastic J. The floating seat shall be designed to provide self alignment. Seat shall be replaceable without removing valve from the pipeline. Seats welded to or bolted to the cone shall not be acceptable. Seat shall be made from nitronic 60.

Valve (Sleeve) Gate

The gate shall be used to control flow rate and pressure. The gate, in its fully closed position, shall provide shutoff with its downstream edge making contact with the metal seat ring on the cone. In the fully open position the gate shall be completely retracted in the upstream direction while the cone diverts the water flow into a radially discharging conical expanding spray. Stroke length shall be determined by the valve manufacturer. The gate shall be made from ASTM A-351 GR CF8, if centrifugally cast, or ASTM A-240 Type 304, if rolled plate. Gate can be actuated by means of twin lever arms or twin screws. For the lever arm design, operation can be achieved by means of electric motor or hydraulic cylinder. For twin screw design, only electric motor operation is acceptable.

Hoods

The hood shall be used to contain the exit flow. The hood shall be bolted to the cone. The hood shall be removable without removal of valve from line. Hoods welded to the cone or attached to gate shall not be acceptable. Where possible the hood shall be designed with a 2:1 ratio (hood diameter to line diameter). Hood shall be made from ASTM A-516 GR 70.

Actuation

Fixed cone valves can be actuated using either electric motors, hydraulic cylinders or manual actuators. The chosen method shall be sized to perform the function for which it is required. Actuators shall conform to AWWA C540.

Testing

The valve shall be hydrostatically tested at two times working (rated) pressure for 30 minutes and shall show no sign of leakage at the welded areas or through the body. The body and gate (sleeve) seat when in the closed position shall be drip tight.

Painting

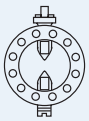
Before coatings are applied, blast clean all unmachined areas to SSPC-SP10 standards. Coat surfaces with two coats of high solids epoxy paint or the engineer's recommended coatings.

Design

The valve shall be designed as a free discharging fixed cone valve capable of operating throughout its range without cavitation or vibration. The valve shall be metal-to-metal seated achieving drip tight shut off.

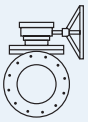
Notes

PRATT® PRODUCT GUIDE

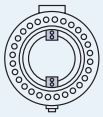


Model
2FII

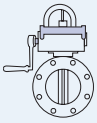
Monoflange
MKII



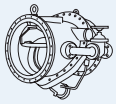
Plug
Valve



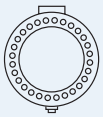
Triton®
XR70



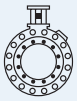
Indicating Butterfly Valve
UL & FM approved



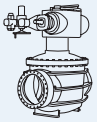
Tilting Disc
Check Valve



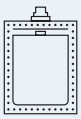
Triton®
XL



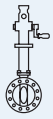
N-Stamp Nuclear
Butterfly Valve



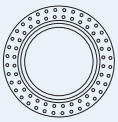
Cone
Valve



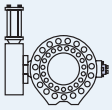
Rectangular



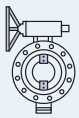
PIVA Post Indicating Valve Assembly
UL & FM approved



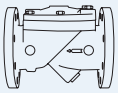
Sleeve
Valve



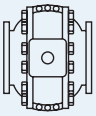
Rubber Seated
Ball Valve



Triton®
HP250

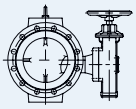


Check
Valve



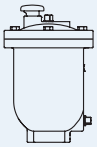
Metal Seated
Ball Valve

Control
Systems



Plunger Valve

PRATT®



Air Valve

Mueller Co.
Reliable Connections™

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