



# Hydra CSX Series

## Adjustable Disc Throttling Valve



**\*\*Patent Pending**

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## Adjustable Disc Throttling Valve

Hydroplex valves are quarter-turn adjustable disc throttling valves consisting of two diamond-polished concentric discs, each with two matching orifices. One disc is stationary in the valve and the other rotates to adjust the flow path. This unique trim is specifically designed for precision control of liquids and gases in severe service applications. The valve consists of minimal wear components and meets ANSI class IV shut off. These features result in an extremely durable design with easy field maintenance, increased service life, and reduced operational costs. The CSX cartridge design allows for trim change **without** disturbing the process piping or actuator. The design flexibility allows field conversions from manual to automated under pressurized conditions. The patented multistage option allows this valve to handle extreme pressure drops and minimize freezing. The adjustable discs and optional wear sleeve are abrasion resistant and direct the flow to the centerline of the piping which greatly extends the service life of the throttling valve.

### APPLICATIONS

- Gas Lift / Plunger Lift
- Fluid Injection / Flow Control
- Manifold Pressure Control
- Gas & Condensate Production
- Separator Letdown
- Surface Pump Start-up Bypass
- ESP Backpressure Control

### ASSEMBLY DIMENSIONS

Size	Dimensions (in.)	Connection
2"	8.625	NPTF
2"	9.75	CL600 RFF SCH 80

\*Consult factory for other sizes and arrangements

1. Carbon Steel Body
2. Stem
3. Thrust Bearing
4. Tungsten Control Disc
5. Fixed Orifice Bean (Optional)
6. Wear Sleeve (Optional)
7. Cartridge Assembly
8. SCADA Accessible 1/4" Threaded Port for Pressure Sensor or Gauge
9. Wear Disc
10. Actuator Mounting\*
11. Auxilliary Injection Port\*

\*(Optional - Not Shown)

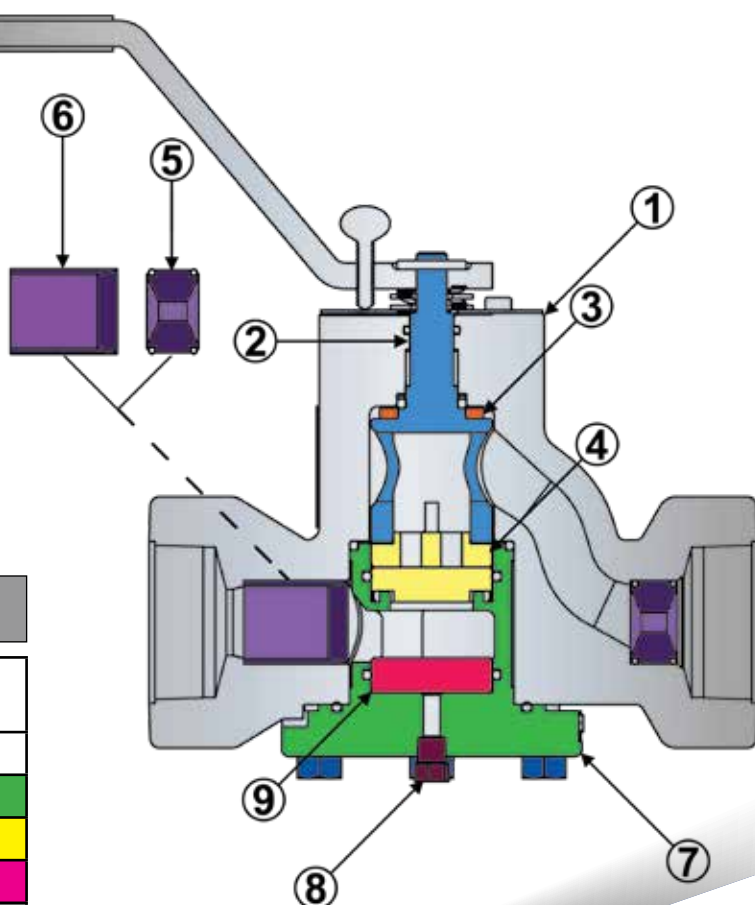
### TUNGSTEN CABIDE TRIM OPTIONS

Orifices	Cv	64th inch Equiv. Dia.	Hole Geometry
2 ea. - 1/8"	0.74	11.3	Round
2 ea. - 1/4"	2.95	22.6	Round
2 ea. - 3/8"	6.63	33.9	Round
2 ea. - 1/2"	11.78	45.3	Round
2 ea. - 3/4"	22.31	62.3	Pie

Note: Generally, under high pressure drops, the valves would be set at:

Not less than 40% open for liquids.

Not less than 30% open for gas.



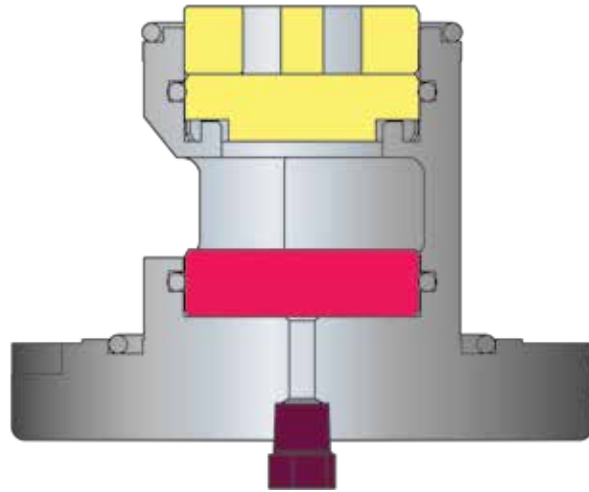
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## CARTRIDGE ASSEMBLY

The Hydroplex cartridge assembly allows for valve service and trim change in-place. Field service can be performed without removing the valve or valve/actuator assembly from the production line. The application of a pressure sensor/gauge in the 1/4" pressure port will notify the operator of impending maintenance requirements.

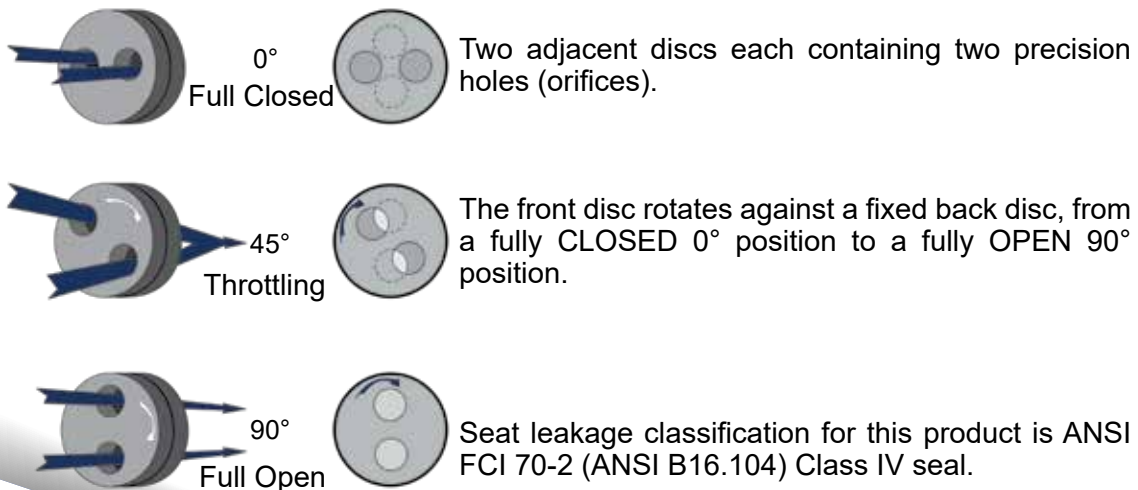
The most significant benefit of this design is that the valve body will not wear out under normal operating conditions. All potential wear components are contained in the cartridge, protecting the body from high velocity fluids and solids. The valve can be rebuilt to like new condition in the field.

\*Note: Valve must be isolated and depressurized prior to cartridge removal.



## PRINCIPLE OF OPERATION

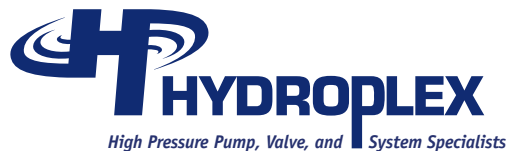
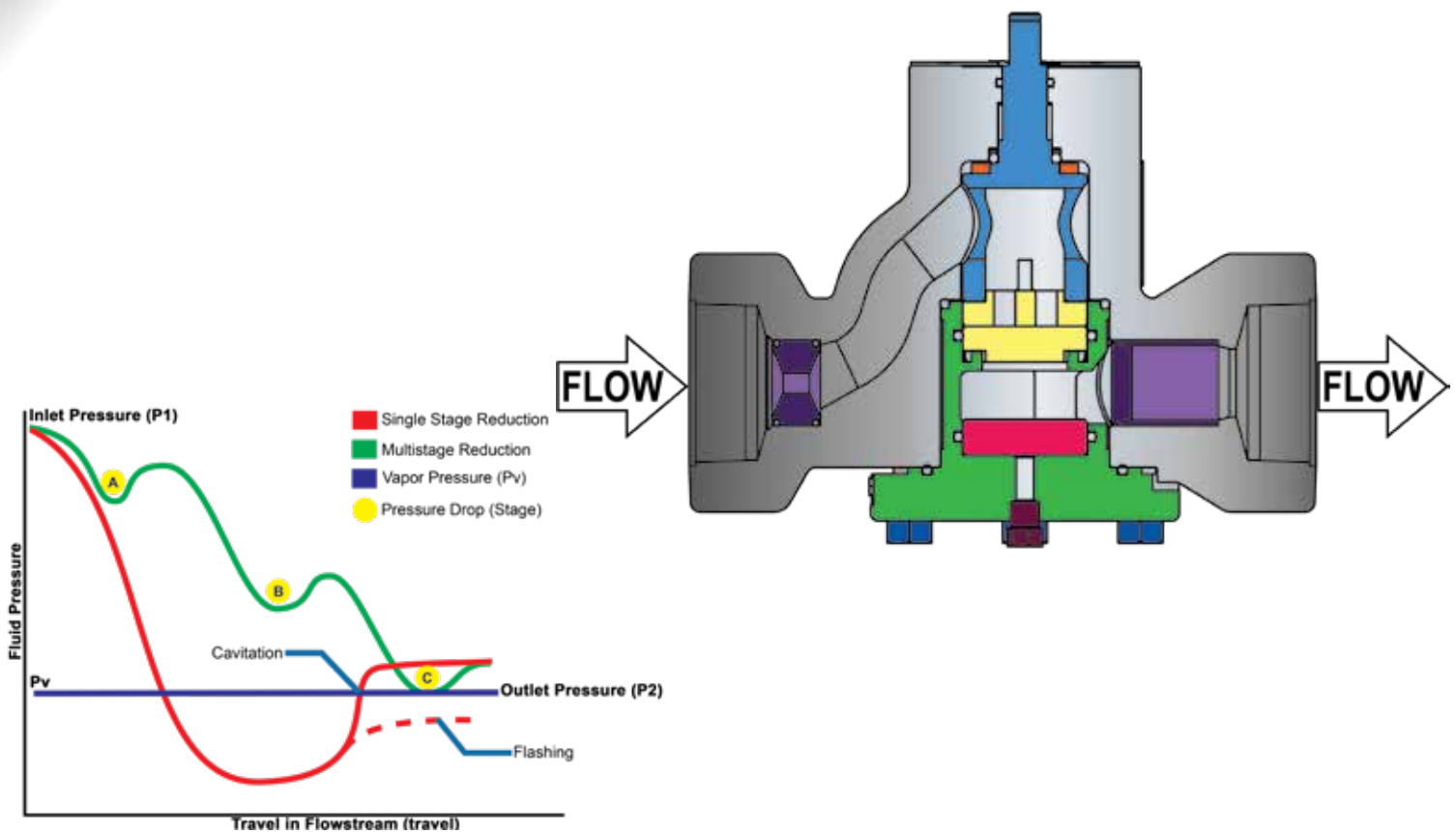
Seat leakage classification for this product is ANSI FCI 70-2 (ANSI B16.104) Class IV seal. The unique property of the adjustable disc format separates sealing surface from control surface and maintains a more reliable longer lasting seal.



## OPTIONAL MULTISTAGE THROTTLING ASSEMBLY

Multistage pressure drop assemblies are recommended to reduce potential damage due to severe flow conditions. We can engineer a multi-stage solution for you when accurate flow conditions are provided. This solution is primarily used in high pressure drop scenarios to reduce fluid velocity, which is a major factor in erosion, vibration, and excessive noise. Our engineered multistage valve can reduce cavitation and flashing in liquid service, as well as reduce freezing in wet gas services due to the Joule-Thomson effect.

We are here to help you select the trim for all conditions, especially in extreme conditions where the pressure drop across the valve would exceed 50% of absolute upstream pressure. The images below show one of our multi-stage assemblies and how our valve reduces the risk of damage by being able to take the pressure drop over multiple smaller stages instead of the trim set only.



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