HYDROPLEX

High Pressure Pump, Valve, and System Specialists

MINIMAX

Throttling Valve

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Hydra MiniMax Throttling Valve

Hydroplex MiniMax is designed as quarter-turn, twin-disc throttling valves featuring two concentric discs that are diamond-polished, each with a pair of matching orifices. The configuration includes one fixed disc and another that rotates to modulate the flow path. This specialized trim is engineered for precise management of fluids and gases in demanding service conditions. The valve's construction involves a minimal number of components prone to wear and achieves an ANSI class IV closure. These characteristics contribute to a robust design that simplifies field servicing, extends operational lifespan, and lowers running expenses. Additionally, the valve's adaptable design permits on-site modifications from manual to automated operation, even when the system is pressurized.

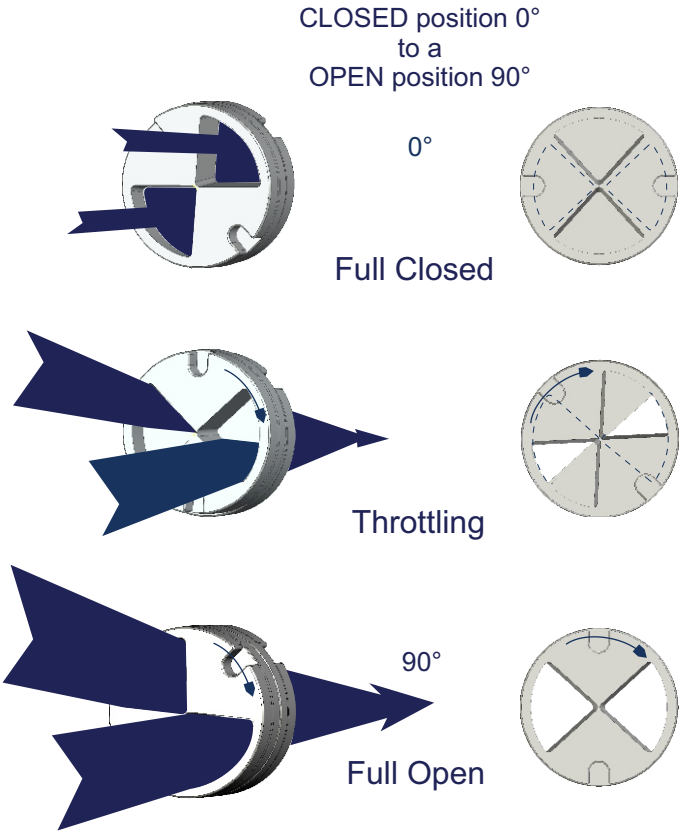
Principle of Operation

The valve features two adjacent twin discs, each equipped with two precision orifices that can be either round hole or pie-shaped.

When the valve is in the fully closed position, the orifices are positioned 90 degrees out of alignment, forming an ANSI Class IV seal.

When the valve is in the throttling position, the orifices align with each other, forming a precision orifice that supports the flow or pressure requirements of the process. It is advised that for sustained operation, the opening should not be less than 30% for gas and 40% for liquid service.

When the valve is in the full open position, the orifices align with each other, facilitating the maximum rated flow through the valve

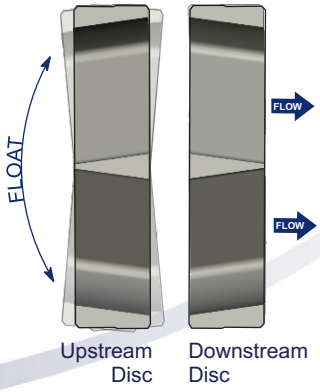


ANSI Class IV Seal

The control discs are lapped to within two light-bands of flatness (+/- 0.00002") to achieve a positive shut-off and maintain precise control.

The upstream disc as a result of differential pressure floats against the downstream disc creating a mated interface and assures a positive Class IV seal.

Additionally, the differential pressure across the disc stabilizes the control surface and eliminates trim noise and vibration.



***Patent Pending**

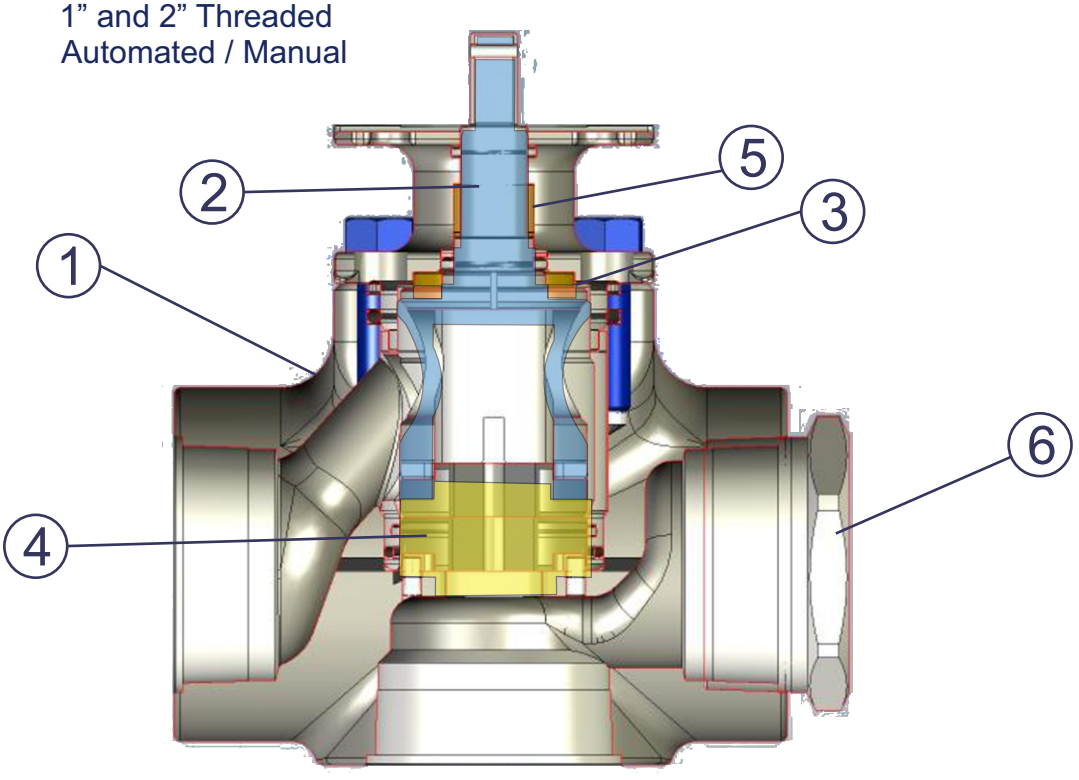
Hydra MiniMax Throttling Valve

The Hydra MiniMax throttling valve is a highly adaptable control valve engineered to meet a wide range of pressure and flow control requirements, both complex and simple. Its robust modular design ensures durability and straightforward maintenance. The valve's convertible nature makes it easy to specify.

All valve and trim parts are designed for a perfect fit, enabling swift configuration to accommodate specific process requirements of the user. The end plug is convertible with both angle body 90degree and inline setups. The valve trim and stem are fully guided, ensuring stability, reducing vibration, and decreasing mechanical noise. The disc's free-floating design enhances valve shut-off capabilities, providing superior performance. The Twin Disc system is capable of handling full pressure drops. The valve's simple construction also allows for easy and fast maintenance without the need for specialized tools.

Valve Parts Description And Purpose

Configuration: Inline or Angle Body Field
configurable **Pressure:** 3000 PSI
Nominal Size: 2 Inch
Material Construction: Carbon Steel (WCB)
End Connections: 1" and 2" Threaded
Operation: Automated / Manual



Key	Description	Purpose
1	Body	Pressure containment housing for trim and end connections
2	Turning Fork	Adjustment of disc to control fluid
3	Thrust Bearing	Support bearing for upthrust on turning fork
4	Control Discs Set	Fluid Control Element
5	Stem Bushing	Turning fork alignment and wear prevention
6	Plug	Outlet Configuration

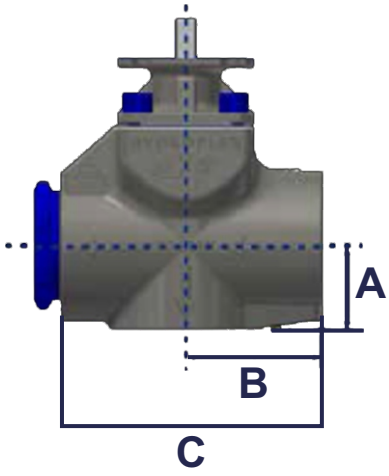
Hydra MiniMax Throttling Valve

Optional Features

Actuation for automated control

MiniMax Assembly Dimensions

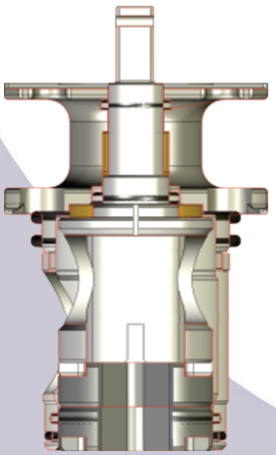
Size Connection		A	B	C
1”	FNPT	2.657	3.820	7.450
2”	FNPT	1.837	3.00	5.750



Cartridge Assembly

The MiniMax cartridge assembly is designed for convenient in-place valve servicing and trim replacement. Field service can be conducted without the need to detach the valve from the production line.

A A key advantage of this design is the valve body’s longevity under normal operating conditions. The cartridge houses all components susceptible to wear, shielding the body from the erosive impact of high-velocity fluids and particles. Consequently, the valve can be restored to a condition akin



Major Component Standard** Materials

Description	Material
Body	ASTM A216 WCB CS
O-Rings	PC Buna N
Backup Ring	PTFE
Control Discs	Tungsten Carbide
Turning Fork	17.4 H 1150 Stainless
Steel Bolts	A193 Grade 8 zinc plated and PTFE coated
Cartridge	ASTM A216 WCB CS

Tungsten Carbide Trim Options

Orifices	Cv	64th inch Equiv. Dia.	Hole Geometry
1.75 Inch Diameter Disc			
2 ea. - 1/8”	0.74	11.3	Round
2 ea. - 3/16”	1.66	16.97	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

Applications

Well Site Automation
Blow Down and Dump Valve
Heater Choke
Pump Bypass
Gas Lift Injection Control
Plunger Lift
Pressure Maintenance Disposal Well
Pump Startup
Water Injection
Enhanced Oil Recovery
Throttling Valve
High DP Valve
Remote Control for directional drilling Manual and Automated Applications

Hydra MiniMax Throttling Valve

Automation

The MiniMax Twin Disc Throttling valves are specifically engineered for the regulation of water, oil, or natural gas flows. These valves can be enhanced with electric actuators to avert the atmospheric venting of control gas, a prevalent problem with diaphragm-operated control valves. This advanced design not only promotes environmental conservation but also offers marked improvements in both dependability and accuracy over pneumatic systems that utilize potentially contaminated natural gas sources.

Equipped with an electric actuator, the MiniMax valve is designed for energy efficiency, operating effectively at 12 or 24VDC with a low current draw during activation. It is compatible with a variety of control signals, such as 4-20 mA, 1-5V, or a dry contact, and functions across a temperature spectrum of -20°C to 70°C (-4°F to 158°F). With the ability to manage

The assembly is highly responsive full open to full closed in seconds. In the power failure mode valve can be configured to open, close or remain in position. No power is required to maintain the selected mode.

Torque Rating

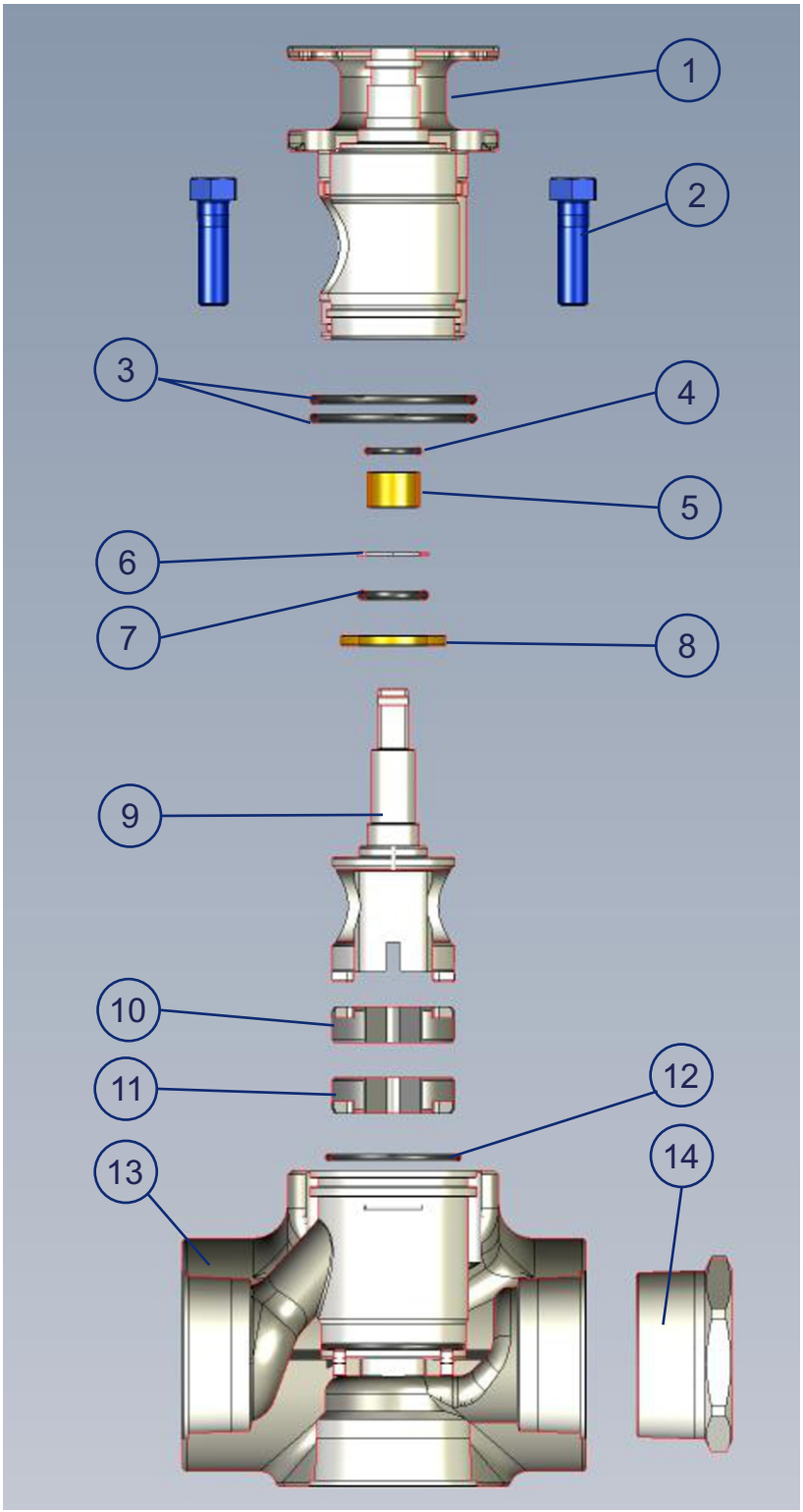
Differential Pressure	Operating Torque
1,000 lbs.	160 in.-lbf
2,000 lbs.	210 in.-lbf
3,000 lbs.	270 in.-lbf

The Hydra MiniMax valve offers a seamless transition from manual to automated operation in the field, without the need for service interruption. It features a Direct Mount ISO F07 pad and an ISO stem, which are compatible with most electric and pneumatic actuation systems. The conversion process is straightforward: simply remove the handle, place the actuator on top, and secure it with the four mounting bolts. Additionally, the valve's low torque requirements minimize power consumption, making it an excellent choice for low voltage applications, including those powered by solar energy.

***Patent Pending**

MiniMax Exploded View

#	DESCRIPTION
1	BONNET
2	BOLTS (4)
3	O-RING
4	O-RING
5	BUSHING
6	BACKUP RING
7	O-RING
8	THRUST BEARING
9	TURNING FORK
10	CONTROL DISC
11	CONTROL DISC
12	O-RING
13	BODY
14	PLUG



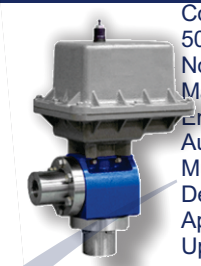
VALVE SUMMARY

HYDROPLEX

HCI THROTTLING VALVE

Configuration: Inline Segmented Body Thru port Pressure:
5000 PSI
Nominal Size: 2 Inch
Material Construction: 316 Stainless Steel (Bar)
End Connections: 1” and 2” Threaded / 1”, 2” and 3” Flanged Operation:
Manual / Automated
ultiStage Construction: 1 or 2 Stages
esign Function: Fluid Maintenance (WOG)
Application: Oil / Gas Production and Injection Location:
Upstream gathering system

HCA THROTTLING VALVE



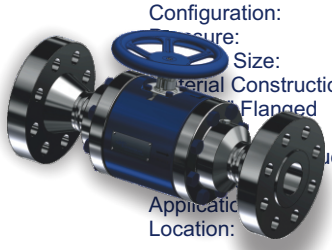
Configuration: Angle 90 degree body highly configurable Pressure:
5000 PSI
Nominal Size: 2 Inch
Material Construction: 316 Stainless Steel (CF8M cast)
End Connections: 1” and 2” Threaded / 1”, 2” and 3” Flanged Operation:
Automated / Manual
MultiStage Construction: 1, 2 or 3 Stage
Design Function: Fluid Maintenance (WOG)
Application: Oil / Gas Production and Injection Location:
Upstream gathering system

HCY THROTTLING VALVE

5000 PSI
Nominal Size: 2 Inch
Material Construction: 316 Stainless Steel (CF8M cast)
End Connections: 1” and 2” Threaded / 1”, 2” and 3” Flanged Operation:
Automated / Manual
MultiStage Construction: 1, 2 or 3 Stage
Design Function: Fluid Maintenance (WOG)
Application: Oil / Gas Production and Injection Location:
Upstream gathering system

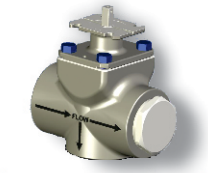
Configuration: Inline Globe Style body
Pressure: 5000 PSI
Nominal Size: 2 Inch
Material Construction: Carbon Steel (WCB cast)
End Connections: 1” and 2” Threaded / 2” Flanged
Operation: Automated / Manual
MultiStage Construction: 1, 2 or 3 Stage
Design Function: Fluid Maintenance (WOG)
Application: Oil / Gas Production and Injection
Location: Upstream gathering system Gaslift and Plunger Lift

HYDRAMAX CHOKE VALVE



Configuration: Inline Segmented EXO Body
ure: 5000 PSI
Size: 3 Inch
erial Construction: Carbon Steel (Bar) Body / 316 Stainless Steel (Bar) Wetted End Connections:
Flanged
Automated / Manual
uction: 1, 2 or 3 Stage
Fluid Maintenance (WOG)
Applicatio Oil / Gas Production and Injection
Location: Upstream gathering system, pump pressure maintenance
Midstream Plant and Facility fluid control

MINIMAX THROTTLING / DUMP VALVE



Configuration: Inline or Angle Body Field configurable
Pressure: 3000 PSI
Nominal Size: 2 Inch
Material Construction: Carbon Steel (WCB cast)
End Connections: 1” and 2” Threaded
Operation: Automated / Manual
Design Function: Fluid Maintenance (WOG)
Application: Oil / Gas Production and Injection
Location: Upstream gathering system, Separator let down

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