Magnum Gate Valves and Other Valves

Invention, Unique Design and Extraordinary Craftsmanship
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WOM’s Magnum Gate Valve provides sealing reliability that is unmatched in the industry. The patented design has been proven in hundreds of well control applications during drilling, testing, production, in onshore, offshore and subsea.

The key to Magnum’s superior bi-directional sealing is the “Dual-Seal™” system. This unique “Thru-Conduit” design provides both upstream and downstream sealing, creating pressure-energized balance between the slab gate and the seat assemblies. The “Dual-Seal™” seats expand against the floating gate when subject to line pressure to form a positive metal-to-metal seal.

The body cavity is exposed to line pressure only during valve opening and closing, ensuring better lubricant retention, less exposure to line contaminants and longer service life with less maintenance.

**Advantages of the Magnum Design**

**Gate in the CLOSED Position**
Primary Upstream Seal presses against the gate to provide a seal and avoid intrusion into the body cavity.

**Zero Leak**
The heart of this bidirectional valve is the MAGNUM “Sure Seal”. This simple gate/seat assembly eliminates gate guides, seat skirts and springs. Instead, line pressure expands the seat assembly against the floating gate forming a true upstream seal.

**Gate in the CLOSED Position**
If the Primary Upstream Seal fails, the Secondary Downstream Seal takes over to avoid intrusion into the thru-bore.

**Gate in the OPEN Position**
Primary Upstream & Downstream Seals press against the gate to provide a seal and avoid intrusion into the body cavity and thru-bore.

**Longer Life**
Protection against line ladens will lengthen a valve’s service life. WOM’s extensive metallurgy expertise insures material selection will be suitable even for harsh CO2or H2S applications.
Magnum Gate Valve Unique Features:

- Available in sizes ranging from 1-13/16” to 9”
- Working pressure ratings of 2,000 to 20,000 psi
- Full Bore, Through-Conduit Seal
- Bi-Directional Sealing
  - Primary (Upstream) Seal
  - Secondary (Downstream) Seal
- Lower Torque
  - Floating Gate with T-Slot
  - Centralized stem threads
  - Superior finish on gates and seats
  - Balanced forces on gate and seats
- Longer Life of Gate and Seals
  - Minimal exposure to contaminants
  - Minimal lubricant loss
- Elastomer Assist Metal-to-Metal Seal or Non-Elastomeric Seals
- Differential Avoids Pressure Lock
- Extended Service Life with Minimum Maintenance Requirements

T-SLOT GATE BENEFITS

Low Torque
An independent stem nut allows the gate to float, maintaining contact with the seats without binding on the stem. Better retention of lubricant in the body cavity reduces build-up of contaminants which can increase torque.
**Magnum Gate Valve Components**

**Typical MAGNUM Gate Valve Bill of Material**

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*Recommended Spare Parts.

Note: One (1) set of spares are recommended per four (4) valves.
# Magnum Gate Valve Specifications

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<th>NOMINAL BORE SIZE</th>
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* Gear Operated Valves
Gate Valve Standard Trims

**Standard Trim (AA)**
For general non-corrosive oil and gas service such as manifolds, Christmas trees, flowlines and other applications.

**Stainless Trim (BB)**
For general corrosive oil and gas service with limited CO2 and no H2S present. The applications require chrome stainless steel internal parts and limited corrosion on internal body surfaces is acceptable.

**Full Stainless Trim (CC)**
For general corrosive oil and gas service with extreme CO2 and no H2S present. For applications where resistance to corrosion due to CO2 is required.

**Super Trim (DD)**
For general sour oil and gas service with H2S and CO2. For applications where resistance to sulphide stress cracking is required due to H2S conditions.

**Stainless Super Trim (EE)**
For corrosive and sour oil and gas service where resistance to both sulphide stress cracking and weight loss corrosion are required due to H2S and CO2.

**Full Stainless Super Trim (FF)**
For sour gas and oil when CO2 content exceeds the H2S content. Intended to provide resistance to the metal loss type of corrosion usually associated with CO2 plus resistance to Hydrogen Sulfide embrittlement.

**Special Super Trim (HH)**
For extremely high concentrations of H2S and CO2 applications.
## Gate Valve Standard Trim Chart

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<th>Material Class</th>
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<th>Bonnet</th>
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### Notes:
- This Chart is based on API 6A 20th Edition & Nace MR 0175 Second Edition
- All Sub-Sea valve Stems shall be Inconel.
- For -50°F Temperature, there is no change with the valve materials
- Materials shown are for reference purposes only and are subject to change.
- Special trims and materials are available, such as duplex stainless steel for bodies and bonnets, Inconel HF for gates and seats, and Inconel for stems.
- Abbreviations: SS-Stainless Steel; QPQ-Quench Polish Quench; HF-Stellite/Colmonoy, W/HF-Hard Facing.
- -75°F (-59°C) available upon request.
- Wire-line and fire safe valves available upon request.
- High temperature (450°F) (232°C) valves available upon request.
- QPQ Seats have an option of Colmonoy Hard-Facing.
- Alternate material for Stems-Inconel 725
- Alternate material for HH Trims-Duplex SS
- * Trim DD-0.5 & EE-0.5 is only for use in Mud Valves, Pump Savers, Standpipe Manifolds, & Cement Manifolds
- For EE/FF (0.5 to NL) Trims:
  - Use 410 Gates & Inconel Skirted Seats with #4 Colmonoy for (3-1/16"-15K, 20K), (4-1/16"-10K, 15K), (5 1/8"-10K), (6", 6-1/8, 6-3/8", 7-1/16", 7-3/8"-10K)
  - Use Inconel Gates & Inconel Seats for (4-1/16"-20K): Select Inconel 718 for EE/FF (1.5,360,NL) (P+U), Select Inconel 725 for EE/FF-NL (P+X)
The field-proven and versatile Model 200M Gate Valve provides the reliability and interchangeability necessary for a wide range of demanding flow control applications, including Manifolds and Christmas trees.

**Features and Benefits**

- Available in sizes 1 13/16" - 7 1/16"
- Working pressure ratings from 2,000 psi-15,000 psi
- Forged body and bonnet for the highest mechanical integrity
- Bi-directional flow design offers versatility and increased service life
- Full bore, Through-Conduit Seal
- Grease injection fitting located in bonnet, eliminating body penetration
- Bearing cap grease fitting allows positive bearing lubrication
- Available in standard flange ends, butt weld ends and block body configurations
- Can be equipped with pneumatic or hydraulic actuators
- The 200M Gate Valve has been API 6A fire tested to 450°F and can be fitted for HPHT service
## Model 200M Gate Valve Specifications

### 200M Gate Valve Specification

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>PRESSURE RATING psf</th>
<th>NOMINAL BORE SIZE</th>
<th>END TO END 'A'</th>
<th>CENTERLINE TO TOP 'B'</th>
<th>CENTERLINE TO BOTTOM 'C'</th>
<th>HANDWHEEL DIAMETER 'D'</th>
<th>BONNET DIAMETER 'E'</th>
<th>FLANGE RING JOINT</th>
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Magnum Mud Gate Valve

Magnum Mud Gate Valves are specially designed for mud, cement, fracturing and water service to handle high and fluctuating pressure and abrasives. WOM mud valves are forged bodied and through conduit.

Unlike other mud gate valves, the Magnum Mud Gate Valve with skirted seats, seals “Thru-Conduit” in both “Full-Open” and “Full-Closed” positions. “Thru-Conduit” sealing eliminates the turbulence experienced in the paddle gate mud valve design. Unlike the paddle gate mud valve, the Magnum Mud Gate Valve with added seat skirts, prevents contaminants from entering the gate valve body cavity.
Magnum Mud Gate Valve

Features and Benefits

- Available in sizes 1 13/16”- 5”
- Working pressure ratings of 3,000-15,000 psi
- Features WOM’s patented Magnum Dual Seal™ system
- Skirted seat assembly prevents contaminants from entering the valve body cavity
- Hardfacing of components ensures better protection highly corrosive, erosive and abrasive conditions
- Thru-Conduit seal eliminates the turbulence experienced in paddle gate mud valves
- Can be easily serviced in-line and all internal components can be inspected and replaced
- Body cavity is exposed to line pressure only during valve opening and closing
- Better lubricant retention, less exposure to line contaminants and longer service life than comparable valves
- Fewer replacement parts reduce spare parts inventory
- Available in standard flange ends, hammer union, hub, threaded, or butt weld ends
- Adaptable to all types of WOM actuators and pressure control equipment
- Meet and exceed API 6A and 6D Standards and ISO quality requirements
WOM’s Line Pressure Operated Surface Safety Gate Valves (LPOSSV) are ideal where control pressure is not available. The system consists of a surface safety gate valve, high pressure pilot, low pressure pilot and a velocity check valve.

**Features and Benefits**

- Available in sizes 1 13/16” – 7 1/16”
- Working pressure ratings of 2,000-20,000 psi
- Ideal for single point protection
- Self-operating system which uses line pressure as control pressure to activate the actuator
- High and low pressure pilots sense line pressure continuously. Abnormal pressure changes cause the pilots to exhaust control pressure from the safety valve, closing the valve
- Centralized stem threads and T-nut combined with T-slot gate reduce the overall torque needed to cycle the valve
- Colmonoy 4,5 & 75, Tungsten Carbide, Stellite and other HF materials are available
- Compatible with elastomer-assist metal-to metal seals or non-elastomeric seals
Typical Magnum Gate Valve Applications

Wellheads

Choke & Kill Manifolds

Flowheads

Cement Manifolds

Standpipe Manifolds
The Magnum Subsea Gate Valve and Actuator are designed for deepwater applications. The Magnum Subsea Actuator design has been tested to a water depth of 13,200 and meets all specifications for subsea wellhead and Christmas tree applications. In additional testing, the actuator has been cycled 5,000 times at full working pressure, providing reliability and safety in the most demanding subsea operations.

**Features and Benefits**

- Available in sizes ranging from 2 1/16” through 7 3/8” and working pressures up to 15,000 psi
- Designed, built and tested to API 6A and 17D
- Magnum Subsea Valve design tested to a water depth of 13,200 feet
- Anti-explosive decompression seals and energized non-elastomeric lip seals
- Metal to metal seal-seat to gate
- Magnum “Dual-Seal” seat design seals upstream and downstream
- With Magnum “Dual-Seal” seat design seals “thru-conduit”, bonnet can be removed and replaced while the valve is in working condition. This will minimize the maintenance time and inventory cost for customers
- Gate and seat faces are hard faced with Colmonoy 4, 5 & 75 and polished to 1-2 RMS. This is for wear resistance and low operating torque. Tungsten Carbide, Stellite and other HF material are also available
- Cladding of “all wetted parts” is available
- “T” Slot stem and gate connection allows the gate to “Float” between seats without misaligning the stem under pressure

The Magnum Subsea Gate Valve is available as Dual Block in sizes up to 7 1/16” and in working pressure up to 20,000 psi.
Magnum Subsea Gate Valve
with Fail-Safe Actuator

Single forged unitized top cap and cylinder for simple in-line maintenance

Actuator body completely contains compressed spring

Quick disconnect mechanism allows fast removal without disturbing body/bonnet connection. Provides immediate access to stem packing

Factory preset drift eliminates need for field adjustment

“T” slot stem and gate connection allow gate to “float” between seats without misaligning the stem

Gate and seat faces are hard-faced and polished for wear resistance and low operating torque

Full bore through-conduit flow in full open position

Magnum “Sure-Seal” mechanism is pressure-energized for upstream/downstream sealing, equalizing line pressure on both sides of the gate
WOM’s Other Dependable Valves

Model WV 200 Gate Valve

Features and Benefits

- Available in sizes 2-1/16” - 3-1/8”
- Available in working pressure rating of 5,000 psi
- Single piece, floating slab gate reduces deflection and binding at high pressure
- Material construction forged body and bonnet
- Bi-directional sealing
- Metal-to-metal sealing gate/seat, seat/body and body/bonnet interfaces
- Low torque requirements to reduce operator fatigue
- Cost efficient gate valve that provides reliable down stream sealing capability

Check Valves

Designed for the prevention of back flow in high pressure and/or high temperature mud lines, choke & kill manifolds, Christmas trees injection and kill lines.

Features and Benefits

- Available in sizes 1-13/16” through 4-1/16” (Larger sizes available upon request)
- Available in working pressure ratings of 3,000-20,000 psi
- Check Valves can be configured with flanged, butt weld, hub type, or a combination of end connections to suit customer’s specifications.
Model 600 Mud Valve

The Model 600 Mud Valve was designed for corrosive CO2 injection and waterflood applications in the enhanced oil recovery market. It is commonly used for applications such as high pressure mixing lines, standpipe manifolds, wellheads, production manifolds and production gathering systems.

- Available in sizes 1-13/16" - 5-1/18"
- Available in working pressures from 5,000 psi and 7,500 psi
- Floating slab gate design
- Heavy duty roller bearings
- Seat assembly engineered with “lock shell” ensures accurate seat alignment
- Available with threaded, welded and flanged end connections
- Rising stem design with visual position indicator lens
- Replaceable stem packing

Features and Benefits
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