

# Engineered valves for isolation, protection & process control

























# Engineered valves for isolation, protection & process control

#### A proven track record

Weir has extensive references and a proven track record in the supply of valves across a number of key industries.

Our valves are industry renowned brands, each with an established reputation for quality engineering and reliability.

#### Valve testing

All pressure containing items are hydrostatically tested, seat leakage tested and functionally tested.

We can also perform gas, packing emission, cryogenic and advanced functional testing, as well as seismic testing for nuclear applications.

#### **Material testing**

- Non-destructive examination by radiography, ultrasonics, magnetic particle and liquid penetrant.
- Chemical analysis by computer controlled direct reading emission spectrometer.
- Mechanical testing for tensile properties at ambient and elevated temperatures, bend and hardness testing. Charpy testing at ambient, elevated and sub-zero temperatures.

#### **Aftermarket solutions**

Our valve aftermarket solutions are based on our engineering heritage, applying our OEM knowledge and expertise to maintenance strategies, life extensions and upgrade projects.

# ATWOOD & MORRILL®

Engineered Isolation & Check Valves

**BATLEY VALVE®**High Performance Butterfly Valves

**BLAKEBOROUGH®** 

Control & Severe Service Valves

**HOPKINSONS®**Parallel Slide Gate & Globe Va

MAC VALVES®

Ball & Rotary Gate Valves

SARASIN-RSBD™

Pressure Safety Device

**SEBIM**™

**TRICENTRIC®** 

Triple Offset Butterfly Valves

WEIR POWER & INDUSTRIAL SERVICES®

#### **Quality assurance**

Weir is qualified to industry standards and working practices including:

- ASME BPVC Section III (N and NPT Stamp)
- ASME BPVC Section VIII (UV Stamp)
- NQA-1 Quality system
- 10CFR50 App. B
- 10CFR21
- RCC-E
- RCC-M
- CSA Z299
- OTT 87
- Performance testing and qualification to: ASME QME-1

ASME B16.41

**IEEE 323** 

**IEEE 344** 

**IEEE 382** 

- ISO 9001:2008
- ISO 14001
- ISO 17025
- PED 97/23/CE
- API Q1 TO API LICENCES:

API 6D (6D-0182)

API 6A (64-0445)

- TUV-AD MERKBLATT WRD HP 0
- ATEX 94/9/CE
- Lean manufacturing practices



















#### Health, safety and the environment

The Weir Group's policy on health and safety requires that all our companies take a proactive responsible attitude to the protection of their employees' health and safety. The driving force behind our performance continues to be our emphasis on behaviour, networking and sharing of best practice, and the active involvement of senior management to promote and audit safety programmes.

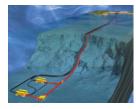
All our locations fully integrate environmental management into their operational systems and procedures. Weir's proactive approach ensures that these processes reduce our environmental impact year on year.













# Butterfly valves -Exceptional seating for demanding applications

#### TRICENTRIC®

#### **Triple offset butterfly valves**

#### **Industries**

- Power: Nuclear
- Power: Conventional
- Oil & Gas
- Petrochemicals
- Desalination

#### **Applications**

- Isolation & control
- High temperature
- Cryogenics
- Extraction steam isolation
- Oil & Gas isolation & control
- Nuclear containment
- Service water
- Condensate
- Circulating water

#### **Features**

- Triple offset metal seat design
- Long life seats
- Bi-directional tight sealing
- API 598 Zero leakage

#### **Design standard**

ASME B16.34, ASME Section III

#### **Pressure classes**

ASME 150 - 600

#### Sizes

3" - 60" (80mm - 1500mm)

#### **Materials**

Cast carbon, alloy or stainless steel, AL6XN

#### **Body type**

Wafer, Lugged, Flanged

Triple offset metal seated butterfly valve



# **Butterfly valves - Tight shut-off and process control**

#### **BATLEY VALVE®**

#### **Anti-cavitation disc**

#### **Industries**

- Power
- Oil & Gas
- Petrochemicals
- Desalination

#### **Applications**

- Brine blowdown control
- Overboard dump
- Firewater ring main

#### **Features**

- Swing through or Hyperseal designs
- Anti-cavitation cowel to prevent cavitation at reduced valve openings
- Can be fitted with a downstream baffle to aid cavitation control

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 2500

#### **Sizes**

4" - 64" (100mm - 1600mm)

#### **Materials**

Carbon steels, alloy steels, stainless steels, titanium, copper & nickel alloys

#### **Body type**

Wafer, Lugged, Double Flanged

#### **BATLEY VALVE®**

#### **Steadseal**

#### **Industries**

- Power
- Oil & Gas
- Water treatment

#### **Applications**

- Coke oven gas
- Seawater coolant
- Discharge isolation

#### **Features**

- Low cost option for low temperature water sealing
- Rubber seal located on the valve disc
- Single & double offset shaft design

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 600

#### **Sizes**

6" - 80" (150mm - 2000mm)

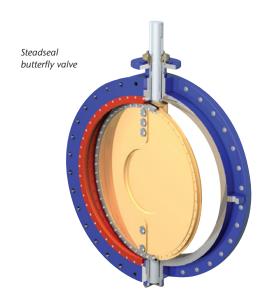
#### **Materials**

Carbon steels, alloy steels, stainless steels, titanium, copper & nickel alloys

#### **Body type**

Wafer, Lugged, Flanged, Butt Welded





# **Butterfly valves - Tight shut-off and process control**

#### **BATLEY VALVE®**

#### Hyperseal/Metalseal

#### **Industries**

- Power
- Oil & Gas
- Petrochemicals
- Desalination

#### **Applications**

- Geothermal systems
- Brine control
- LNG/Cryogenics

#### **Features**

- Single & double offset shaft design
- Seal clamped into valve body
- Resilient seated, metal seated, firesafe & swingthrough options
- Used for temperatures up to 220°C in Hyperseal design, 900°C in Metalseal design

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 900

#### **Sizes**

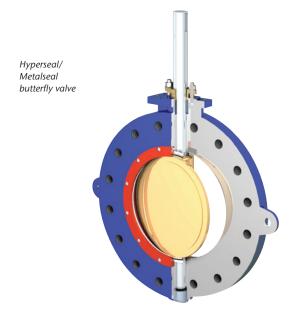
3" - 64" (80mm - 1600mm)

#### **Materials**

Carbon steels, alloy steels, stainless steels, titanium, copper & nickel alloys

#### **Body type**

Wafer, Lugged, Flanged, Butt Welded



#### **BATLEY VALVE®**

#### **Rubber lined**

#### **Industries**

- Power
- Oil & Gas
- Petrochemicals
- Desalination

#### **Applications**

- Cooling water isolation
- Flue gas isolation
- Jetty loading

#### **Features**

- Designed as a low cost solution for controlling low temperature corrosive fluids
- Body & shaft material are fully isolated from the process fluid
- Suitable for isolation & control
- Fully bonded rubber lining to allow for higher velocity & pressure differentials

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 300

#### **Sizes**

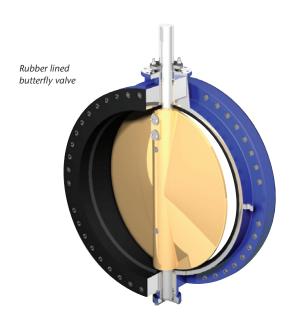
3" - 64" (80mm - 1600mm)

#### **Materials**

Carbon steels, alloy steels, stainless steels, titanium, copper & nickel alloys

#### **Body type**

Wafer, Lugged, Flanged, Clamped



# Control and choke valves - High performance and reliability

#### WEIR CONTROL & CHOKE VALVES

#### **General service control valves**

#### **Industries**

- Power
- Oil & Gas
- Petrochemicals
- Desalination

#### **Applications**

- General service control
- Power station control applications
- Oil & Gas control applications
- Arduous service
- Cryogenics

#### **Features**

- Single & multi-stage pressure drop
- Severe service trims
- Cage valves are used to reduce/eliminate the effects of cavitation/flashing/noise

#### **Design standard**

ASME Section III, ASME B16.34, RCC-M

#### **Pressure classes**

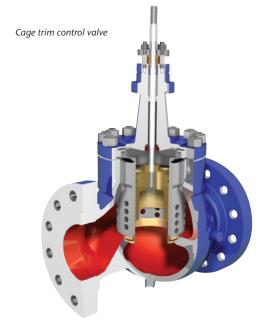
ASME 150 - 4500

#### **Sizes**

½" - 36" (15mm - 900mm)

#### **Materials**

Carbon steels, alloy steels, stainless or any other specified materials



#### WEIR CONTROL & CHOKE VALVES

# X-Stream™ severe service control valves

#### **Industries**

- Power
- Oil & Gas
- Petrochemicals

#### **Applications**

- Severe service application
- High pressure letdown
- Cavitation control
- Noise control

#### Feature

- Designed to handle high pressure drops
- Elimination of noise
- Flow path designed to prevent blockage through flow contamination
- Patented trim
- Trim exit velocity control

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

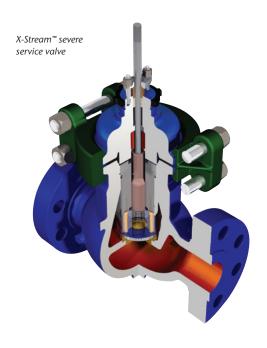
ASME 150 - 4500

#### **Sizes**

3" - 36" (80mm - 900mm)

#### **Materials**

Any commercially available steel



# Control and choke valves - High performance and reliability

#### WEIR CONTROL & CHOKE VALVES

#### **Choke valves**

#### **Industries**

Oil & Gas

#### **Applications**

- Used on severe service choke applications
- Production systems
- Gas lift application
- Injection

#### **Features**

- Erosion prevention due to special flow paths & hardened materials
- Individual design to suit the specific application
- Bi-directional

#### **Design standard**

ASME B16.34 &/or API ratings

#### **Pressure classes**

ASME 150, 300, 1500 & 4500 API 3000, 5000, 10000 & 15000

#### **Sizes**

1" - 16" (25mm - 400mm)

#### **Materials**

High grade cast or forged, usually 60k material

#### WEIR CONTROL & CHOKE VALVES

#### **Desuperheaters**

#### **Industries**

- Power
- Process gas

#### **Applications**

- Combined pressure & temperature control
- Steam temperature control
- Cryogenic temperature control

#### Feature

- Superior atomisation through multinozzle injection
- ☐ High rangeability
- Can be supplied as a combined unit for pressure/temperature control

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

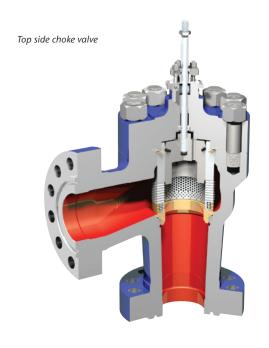
ASME 150 - 2500

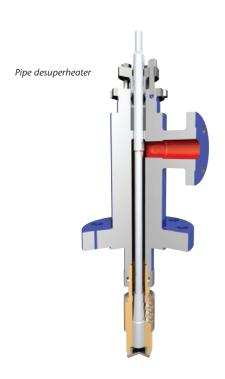
#### **Sizes**

1" - 36" (25mm - 900mm)

#### **Materials**

Cast carbon, alloy or stainless steel





#### SEBIM™

# Pilot operated safety relief valves for nuclear

#### **Industries**

Power: Nuclear

Submarines: Nuclear

#### **Applications**

All nuclear reactor types

High & low pressure overpressure protection

Steam generator safety valves

■ Main steam safety valves

Other nuclear reactor applications

#### **Features**

Excellent stability across steam, gas, liquid & two-phase conditions

Proven & accurate repeatability & reliability

Reduced maintenance

Leak tightness up to the set pressure

Accuracy better than 1%

Low or high pressure in-situ testing during operation

Option of remote opening/closing

#### **Design standard**

RCC-M, ASME Section III, NP-068-05, OTT 87

#### **Pressure classes**

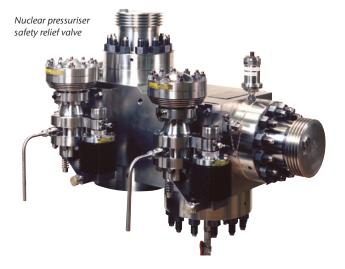
ASME 150 - 2500 or customised

#### **Sizes**

1/2" - 34" (DN15 - DN850)

#### **Materials**

Cast or forged stainless steel or carbon steel - special material on request



#### SARASIN-RSBD™

#### **Atmospheric relief valves**

#### **Industries**

Power

#### **Applications**

Condenser equipment

#### **Features**

Elastomer or plastic seat

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

**ASME 150** 

#### Sizes

6" - 30" (150mm - 300mm)

#### **Materials**

Cast carbon

#### **Body type**

Flanged

Atmospheric relief valve



#### SARASIN-RSBD™

#### **Spring loaded safety relief valves**

#### **Industries**

- Oil & Gas
- Petrochemicals
- Power: Nuclear
- Power: Conventional
- General industry

#### **Applications**

- Oil & Gas processes
- LNG processes
- Steam processes

#### **Features**

- Full lift
- Semi or full nozzle design
- Metal of soft seat
- Cast or forged body

#### **Design standard**

ASME Section VIII, API STD 526, ASME B16.34, ISO 4126

#### **Pressure classes**

ASME 150 - 2500

#### **Sizes**

½" - 12" (15mm - 300mm)

#### **Materials**

Carbon, alloy or stainless steel

## **Body type**

Flanged, Threaded, Welded

#### SARASIN-RSBD™

#### **Spring loaded safety valves**

#### **Industries**

- Power: Nuclear
- Power: Conventional
- Petrochemicals

#### **Applications**

- Boiler
- Steam utility

#### **Features**

- Operating pressure up to 95% of the set pressure
- Side rods design allows ease of maintenance
- Electronic valve tester adaptor on the rod flange

#### **Design standard**

ASME Section I & VIII, ASME B16.34, ISO 4126

#### **Pressure classes**

ASME 150 - 4500

#### **Sizes**

1" - 10" (25mm - 250mm)

#### **Materials**

Cast carbon, alloy or stainless steel

#### **Body type**

Flanged, Welded





#### SARASIN-RSBD™

#### Pilot operated safety relief valves

#### **Industries**

- Oil & Gas
- Petrochemicals
- Power: Conventional
- General industry

#### **Applications**

- Oil & Gas processes
- LNG processes
- Steam processes

#### **Features**

- Semi or full nozzle design
- Metal of soft seat
- Cast or forged body
- Non-flowing pop or modulating action
- Operating pressure up to 95% of the set pressure
- Available from ½" for small flow or remote control discharge valve

#### **Design standard**

ASME Section VIII, API STD 526 ASME B16.34, ISO 4126

#### **Pressure classes**

ASME 150 - 2500

#### **Sizes**

1/2" - 12" (15mm - 300mm)

#### **Materials**

Carbon, alloy or stainless steel

#### **Body type**

Flanged, Threaded, Welded

#### SARASIN-RSBD™

#### Pilot operated safety valves

#### **Industries**

- Power: Conventional
- Oil & Gas
- Petrochemicals

#### **Applications**

- Oil & Gas processes
- Steam processes

#### **Features**

- Full metal design (no elastomer) for very high temperatures
- Up to 180 barg of steam
- Industrial application of nuclear design (very safe)
- Non-flowing pop action

#### **Design standard**

ASME Section VIII, API STD 526 ASME B16.34, ISO 4126

#### **Pressure classes**

ASME 150 - 2500

#### **Sizes**

1" - 8" (25mm - 200mm)

#### **Materials**

Cast carbon, alloy or stainless steel

#### **Body type**

Flanged, Welded





#### SARASIN-RSBD™

#### **Changeover valves**

#### **Industries**

- Oil & Gas
- Petrochemicals
- Power: Conventional
- General industry

#### **Applications**

- Process equipment overpressure protection
- Process piping overpressure protection
- Gas storage overpressure protection

#### **Features**

- Standard or low pressure loss design
- ☐ Cast or forged body

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 2500

#### **Sizes**

½" - 10" (15mm - 250mm)

#### **Materials**

Carbon, alloy or stainless steel

#### **Body type**

Flanged

#### SARASIN-RSBD™

#### **Tank blanketing valves**

#### **Industries**

- Oil & Gas
- Petrochemicals

#### **Applications**

Storage tanks

#### **Features**

Product protects inside the storage chamber

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

**ASME 150** 

#### **Sizes**

½" & 1" (15mm & 25mm)

#### **Materials**

Stainless steel

#### **Body type**

Flanged, Threaded







# **Check valves - Exceptional protection from flow reversal**

#### **ATWOOD & MORRILL®**

#### FREE FLOW REVERSE CURRENT VALVES®

#### **Industries**

Power generation

#### **Applications**

- Steam turbine protection
- Extraction steam non-return
- Bleeder trip & bled steam non-return

#### **Features**

- Free swinging disc allows independent movement of the disc with assured closure upon loss or reversal of flow
- Inclined seat design optimises performance with low pressure drop & fast closure
- Self-aligning disc & disc arm assures repeatable tight sealing

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 1500

#### **Sizes**

3" - 44" (80mm - 1100mm)

#### **Materials**

Carbon steel, alloy steel or stainless steel

#### ATWOOD & MORRILL®

#### **Boiler feed check valves**

#### **Industries**

Power generation

#### **Applications**

- Boiler feed pump discharge
- Condensate pump discharge
- Heater drains
- Main steam
- High pressure feedwater

#### **Features**

- "Double protection" including positive closure & power assisted closure
- Streamlined flow design minimises pressure drop
- Fast closing design minimises water hammer

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 900 - 2500

#### **Sizes**

4" - 24" (100mm - 600mm)

#### **Materials**

Cast carbon, alloy or stainless steel



Boiler feed check valve



# **Check valves - Exceptional protection from flow reversal**

#### ATWOOD & MORRILL®

#### **Compressor check valves**

#### **Industries**

Refineries & petrochemical plants

#### **Applications**

- Fluid catalytic cracking air blower discharge
- Compressor discharge & process application
- Fluids: Hydrocarbon (cracked gas), Ethylene, Propylene, other process fluids

#### **Features**

- Tight sealing pressure
- Low pressure drop
- Power assisted
- Quick closure

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 & 300

#### **Sizes**

8" - 72" (200mm - 1800mm)

#### **Materials**

Cast carbon, alloy or stainless steel

#### **HOPKINSONS®**

#### Feed heater bypass valves

#### **Industries**

- Power: Nuclear
- Power: Conventional

#### **Application**

 Automatically open to maintain feed flow if the feed heater has to be isolated during fault conditions

#### **Features**

- Recognised industry standard for extraction steam turbine protection
- Positive, tight seating, fast closure, low pressure drop

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 900 - 2500 (Equivalent metric ratings)

#### **Sizes**

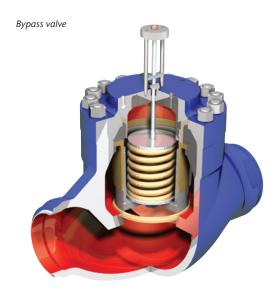
1" - 36" (25mm - 900mm)

#### **Materials**

Cast carbon, alloy or stainless steel

Compressor check valve





# **Globe valves - Designed for tight shut-off**

#### ATWOOD & MORRILL®

#### Wye globe valves

#### **Industries**

Power: Nuclear

Power: Conventional

Refining & petrochemicals

#### **Applications**

Boiler feedwater pump

Nuclear isolation

Economiser inlet & stop

Feedwater heater isolation

■ Main steam stop & non-return

Main steam isolation

#### **Features**

- Optimum performance under a wide range of operating conditions & environments
- Y pattern for lower pressure loss
- Bevelled seats for tight seating
- Large seat bore for reduced pressure drop
- Patented thermal compensation device relieves the thrust load built up in the valve stem as the internal temperature rises
- Prevents failure of valve stem, actuator or both

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 900 - 2500

#### Sizos

6" - 24" (150mm - 600mm)

#### **Materials**

Cast carbon, alloy or stainless steel





#### ATWOOD & MORRILL®

#### 3-Way valves

#### **Industries**

Power generation

#### **Applications**

- High pressure feedwater heater bypass
- Low pressure feedwater heater bypass
- Dual safety valve installations
- Continuous process
- HRSG Economiser

#### **Features**

- Allows two different flow patterns from the same valve
- Simplifies piping layout
- Eliminates one motor operator connection
- Significant installation & maintenance cost savings

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150, 300, 1500 & 2500

#### Size

6" - 24" (150 - 600mm)

#### **Materials**

Cast carbon, alloy or stainless steel



# **Globe valves - Designed for tight shut-off**

#### **HOPKINSONS®**

#### **Globe valves**

### Industries

- Power
- Oil & Gas
- Petrochemicals

#### **Applications**

- Boiler feedwater pump
- Economiser inlet & stop
- Feedwater heater isolation
- Main steam stop & non-return
- Main steam isolation

#### **Features**

- Simplicity of construction
- Flanged, socket & butt weld
- Bonnetless design on sizes up to 2" (50mm)
- Pressure seal cover joints for higher pressures

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 150 - 4500

#### Sizes

½" - 16" (15mm - 400mm)

#### **Materials**

Cast carbon, alloy or stainless steel

#### HOPKINSONS®

#### **Drain valves**

#### **Industries**

- Power: Nuclear
- Power: Conventional

#### **Applications**

Power station drain systems

#### **Features**

- Floating ball design
- Stem can be re-packed in-situ
- Stem is one piece construction
- Resistant to high superheat temperatures

#### **Design standard**

**ASME B16.34** 

#### **Pressure classes**

ASME 900 - 3100

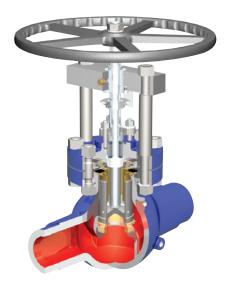
#### Sizes

½" - 2" (15mm - 50mm)

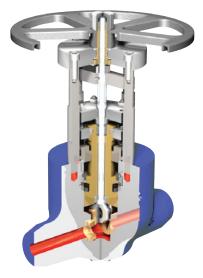
#### **Materials**

Cast carbon, alloy or stainless steel

Hopkinsons globe valve



High performance martyr drain valve



# **Gate valves - Freedom from sticking and binding**

#### **HOPKINSONS®**

#### Parallel slide isolation valves

#### **Industries**

Power: Nuclear

Power: Conventional

Petrochemicals

#### **Applications**

Power station drain systems

General purpose stop valve

■ Main steam & feedwater isolation

■ Feedwater heater protection

Feed pump leak-off

#### **Features**

Isolation without thermal binding

Bi-directional operation

Position seated - stops on limit not torque

■ Wide, flat seating surface

☐ Minimum pressure drop across the valve

#### **Design standard**

ASME Section III, ASME B16.34, RCC-M

#### **Pressure classes**

ASME 150 - 4500

#### **Sizes**

½" - 36" (15mm - 900mm)

#### **Materials**

Carbon steels, alloy or stainless steel

#### MAC VALVES®

#### **Rotary gate valves**

#### **Industries**

Oil & Gas - Subsea

#### **Applications**

Control of MEG dosage

#### **Features**

- Adaptable for isolation, chemical injection & control/choke throttling
- No displaced volume or cavity: valve does not block due to debris or hydrates
- Straight through design: no bends to cause flow instability
- Gate design means increased capacity
- Valve is a sealed unit with virtually no atmospheric leakage
- Virtually zero hysteresis

#### **Pressure classes**

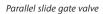
API 3000, 5000, 10000 & 15000

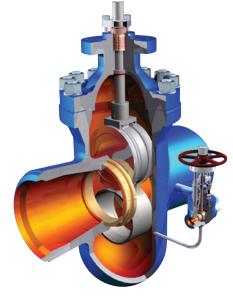
#### **Sizes**

1" - 6" (25mm - 150mm)

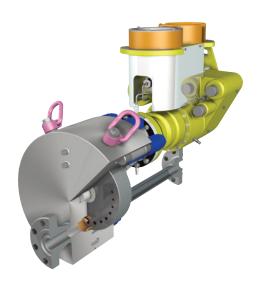
#### **Materials**

Any commercially available steel





#### Rotary gate valve



# Valve & actuator services - Professional maintenance, repair, testing & upgrade

Weir's valve and aftermarket solutions are based on our OEM engineering and design heritage. Because of our OEM expertise, we have complete working knowledge of valve design and operation - as well as a full system understanding. This enables us to provide the optimum level of service based on the current condition of your valve, with the know-how to work on our own and other OEM equipment.

Our valve aftermarket services include:

- Outage and shutdown management
- Control valve service solutions
- In-situ valve seat replacement
- Actuation service solutions
- Online safety valve testing and analysis
- Diagnostic testing
- Spare parts support
- Customised training

The core of any effective valve service program is the skill and experience of the technicians and supervisors who come to your site

#### **Benefits**

- Extensive references and proven track record
- Detailed and full system understanding
- Reliability-centred maintenance
- Reverse engineering capability
- Up-to-date nuclear security badging for Weir valve technicians









# **Product applications**

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Triple offset butterfly valve	•	•	•	•		•	•	•	•	•	-	•	•	•	•	•
Isolation butterfly valve	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Control butterfly valve	•	•	•	•	•	•	•	•	•		-	•	•	•		•
Globe angle control valve	•	•	•	•	•	•	•	•	•	•	•	•		•		•
Choke valve			•			•	•		•							•
Desuperheater valve								•				•		•		•
Nuclear pilot operated safety relief valve								•								•
Pilot operated safety relief valve	•	•	•	•		•	•	•	•	•	•	•	•	•		•
Spring loaded safety relief valve	•	•	•	•		•	•	•	•	•	•	•	•	•		•
Power operated check valve		•				•	•	•		•		•		•		•
Swing check valve								•		•	•	•		•		•
Globe valve								•		•	•	•		•		•
Parallel slide gate valve		•		•		•		•		•	•	•		•		•
Rotary gate valve									•						•	

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