

Valve automation center



**Shut Off Valve
Control Valve
Motor Operated Valve
Line Break Valve
Manual Valve
Valves Accessories**

**Company Profile
& Product Overview 2017**



32

Years Experience

Introduction

Badran Company has started his activity in the field of industrial automation based on manufacturing of Pneumatic components in 1985 and thanks to his intelligent management and experienced technical staff, continued in field of industrial valve automation from 2000.

Meanwhile, he has obtained certificate quality management system based on ISO 9001 and Handled selling our product for different projects such as petrochemical Desalting plant, refinery, water and wastewater, power plant,...And is still keeping forward, applying most to-date science to expand his activity inline of industry promotion.



Index

| | |
|-----------------------------|-------|
| Approval | 3 |
| Projects | 4 |
| Shut off / On Off valve | 6 |
| Control valve | 7-11 |
| MOV | 12 |
| Actuator | 13-19 |
| Control Panel & accessories | 20-26 |
| Manual valve | 27-35 |
| Fire Proof Jacket | 36 |

APPROVAL SERVICE & APPLICATION



Badran engineers are committed to building on their many years of experience and technical expertise to ensure customers are provided with designed to give accurate, reliable and control of process component and valve automation center.

Badran Products are used for the following applications:

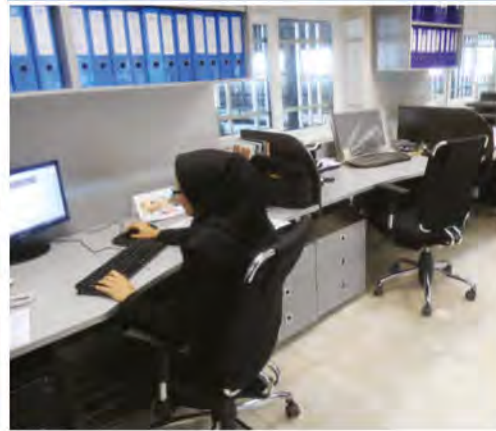
- Oil and Gas Production
- Gas Processing
- Petroleum Refining
- Pipelines
- Refinery
- Petrochemical and Chemical Plants
- Mine
- Power plant
- Industrial Plants
- Water and wastewater
- Platform
- Desalting plant
- Pulp and Paper



Design



Technical support










Manufacture



After-sale service



PROJECTS

| Power Plant | Chemical & Petrochemical | Refineries | Platform | Storage Tank | Oil & desalting plants | Gas utilities | Water & Waste treatment |
|---|---|---|--|---|---|--|--|
|  |  |  |  |  |  |  |  |
| Iranshahr Sabzehvar Golgohar Sirjan Parand Samangan Tous Assaluyeh West Karoun Sanandaj Damavand Bessat Isfahan2 Shazand Mobarakeh Gilan Paresar Qeshm Kahnoj Yazd | Tondgoyan Mahabad Lorestan Bandar Emam Abadan Mobin Maroun Kavian Shiraz Jam Navid Zar Chimi Farsa Chimi Jam Polypropylene Laleh | Tehran Persian golf Isfahan Abadan Tabriz | Sowrosh Hendijan Nowrouz Abozar ILam | Omidyeh Bessat | Gachsaran3 Maroun Karoun Rag Sefid Haftkel Naft Sefid | NGL Siri South pars phases: 13 14 15 & 16 17 & 18 19 20 & 21 22,23,24 NGL3200 Kangan | South pars phase19 Azadegan Yadavaran East Anzali Sari Darkhovein Bojnord South pars phases: 15 & 16 |

PRODUCTS OVERVIEW

Shut off / On-off valve



ESDV-BDV-SDV-XV
Pneumatic - Hydraulic
LBV - GOV

Control valve



Globe valve
Butterfly valve
Cage Ball valve

Motor Operated Valve (MOV)



On-off & Control application
With Ball, Butterfly
Gate & Globe

Actuator



Pneumatic/Gas Direct
Rack & Pinion / Scotch Yoke
Hydraulic Electrical Actuator
Electro hydraulic

Control Panel



Pneumatic Control System
Hydraulic Control System
ESDV, BDV, XV Application
Quick Acting
HIPPS System

Valve accessories



Solenoid valve / Switch box
Filter regulator / Positioner
Lockup valve & ...

Manual valve



Ball valve / Butterfly valve
Gate valve /Globe valve
Check valve

Fire Proof Jacket



Certified flexible
Antifire Protection
Thermal Insulation

SHUT OFF / ON OFF VALVE (ESDV-BDV-SDV-XV- HIPPS)

■ Valve type:

-Ball valve ■ Type: Top Entry – Side Entry (bolted or welded body) - Rising stem ball valves (Orbit Type)
Trunnion or Floating - Full or Reduced bore – Flanged or Weld Ends Threaded
Threaded Welded 3 Pieces / Compact Body Flanged – Cast Iron / Split body / 3-ways Threaded-Flanged
Underground valves for Gas

- **Material:** Forged – Cast Body and all kind of material on Request
- **Pressure Rating:** ANSI class 150#, 300#, 600#, 900#, 1500#, 2500#. API 2000 / 3000 / 5000 / 10000
- **Seat type:** Soft / Metal / Primary Metal Secondary Soft – Single or Double Piston Effect (on Trunnion valves)
- **Size:** 1/2" up to 56"

-Butterfly ■ Type: Eccentric/ concentric / high performance Wafer / Lug / Flanged / Double flanged /
Double flanged eccentric / Single offset, double & triple offset

- **Material:** Cast Iron – Carbon steel – Stainless steel - Aluminum Bronze - PVC and All kind of Material
- **Pressure Rating:** PN10, 16, 25, 40, 64, ANSI class 150#, 300#, 600#, 900#, 1500 #.
- **Seat type:** Rubber line / PTFE line / Metal seat
- **Size:** 1/2" up to 80

■ **Leakage:** IV , V , VI

■ **Actuator Type :** Pneumatic Rack & Pinion or Scotch yoke , Hydraulic, Gas direct, GOV, LBV system
Single or Double Rotary & Linear actuator / Electrical fail safe

■ **Instrument type& pressure:** Pneumatic(up to 12bar) / Sweet or Sour Gas (up to 100 bar)/
Hydraulic (up to 200bar)/Power (voltage from 24 VDC to 690 VAC 3~)

■ **End Connections :** SW, BW, RF, RTJ

■ **Certification:** API6D, 6F, SIL2/3/4, ATEX for electrical part, CE, Fire Safe, Anti blowout



SHUT OFF VALVE

CONTROL GLOBE VALVE



- **Quick change 2-way Globe valve (Body Size& Rating: 1/2" to 12" - ANSI 150 to 4500#)**
- **Cage Guided 2-way Globe valve (Body Size& Rating: 1" to 20" - ANSI 150 to 4500#)**
- **Severe Service Control valve (Body Size& Rating: 2" to 20" - ANSI 150 to 4500#)**
- **Bellows Seal type Globe valve (Body Size& Rating: 1/2" to 20" - ANSI 150 to 600#)**
- **Cryogenic Globe & Angle valve (Body Size& Rating: 1/2" to 20" - ANSI 150 to 4500#)**

General Specification

- **Body Type:** Globe – Angle - forged straight through and Angle – 3 Way - Jacket type
- **Bonnet type:** Standard, Extension, Bellows, Cryogenic, Jacket Type
- **Trim Option:** Single, Micro (small flow), Cage guided, Anti-cavitation, Low noise, Multi disc stack
- **Fluid Temperature:** -100 ~ 550 ° C
- **End Connection:** Flanged (R.F, F.F, RTJ), Butt Weld, Socket Weld, screwed
- **Valve Material:** A216 WCB, WC6, WC9, A351-CF8M, CF8, CF3, CF3M etc.
- **Rangeability:** 25 : 1, 30 : 1, 50 : 1, 100 : 1, 300 : 1
- **Flow Characteristic:** Equal %, Modified Equal%, Linear, Modified Linear, Quick Open
- **Leakage:** Metal Seat ASME CLASS IV, V - Soft Seat ASME CLASS VI (Bubble Tight)
- **Actuator Combination:** Pneumatic diaphragm actuator, Cylinder actuator, Electrical, Hydraulic actuator

Control Butterfly valve

■ Valve type:

-Rubber Lined butterfly valves- Soft seated

- **Type:** Wafer (Size: DN32 to DN1400 , Rating: PN10-16-25-40-class150#)
- Lug (Size: DN32 to DN1400 , Rating: PN10-16-25-40-class150#)
- Flanged (Size: DN100 to DN1400 , Rating: PN10-16-25-40-class150#)
- Double Flanged (Size: DN50 to DN 3000 , Rating: PN10-16-25-40-class150#)

-Metal seated Butterfly valves

- **Type:** Wafer - Lug – Flanged - Double Flanged
(Size: DN50 to DN1200 , Rating: PN10-16-25-40-class150# & #300)

■ **Construction Design:** Central Line concentric – Double Eccentric – Triple Eccentric

■ **Temperature:** Soft seat from -50 ° C to +220 ° C – Metal seat from -100 ° C to +360 ° C

■ **Leakage:** For Metal seat Class V tightness PN10/16/25/40 – For Soft seat Class VI tightness PN10/16/25/40

■ **Actuator Type :** Pneumatic Rack & Pinion or Scotch yoke , Hydraulic
Single or Double Rotary & Linear actuator / Electrical fail safe

■ **Instrument type& pressure:** Pneumatic(up to 12bar) / Hydraulic (up to 200bar)
Power (voltage from24 VDC to 690 VAC 3~)

■ **Certification:** ATEX - Fire Safe – Fire fighting



CONTROL CAGE BALL VALVE

Valve Information:

The research for innovative solutions to handle fluids under different conditions with only one valve was the most ambitious challenge of the Valpres research and development department: one trim capable to handle the control of fluids both in the liquid and in the gaseous state. Valpres "VP" patented solution provides technical benefits and high performances in all process conditions. The VP-L trim, (for liquids) has the feature to better manage moderate and severe cavitation while the VP-G trim (for gas and steam) offers excellent results in reducing the noise. These standard trims are able to manage the process even under difficult conditions and severe service. Furthermore, the same basic geometry is used with both liquids and gases allowing product standardization. The principle of curved plates (Fig. 1) provides excellent throttling performance in terms of FL, sigma and XT coefficients without sacrificing the maximum capacity of the valve. Also the minimum flow rates have been carefully evaluated by technicians and engineers to ensure the best Rangeability. The Valpres trim are designed to be installed both on floating and Trunnion ball valves. VP valves can be designed full or reduced bore according to process conditions.

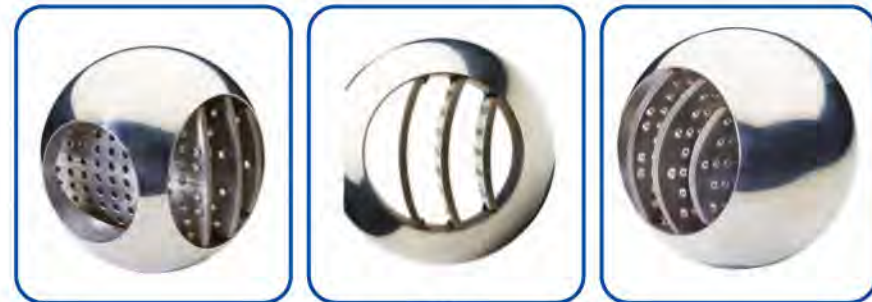


Fig. 1

CONTROL CAGE BALL VALVE

VP valves are sized according to IEC 60534 and ISA75 international sizing equations. Customized calculations and CFD can be adopted for special applications. Valve sizing is performed with latest generation VALPSIZE™ 1.0 sizing tool.

- Noise is evaluated according to customized IEC and VDMA equations.
 - Venturi outlet closures can be adopted to better control velocity profiles in steam/gas applications.
 - Valve body construction and flanges can be manufactured according to customer specifications Floating and Trunnion control ball valves include the same standard features that are implemented in the on-off valves.
 - Materials: solid metal alloys can be adopted as well as weld overlays in Corrosion Resistant Alloys (CRA).
 - Metal to metal seal contact is available as a standard solution, leakage rate Class V. Soft seated valves are for clean fluids and tight shut off applications.
 - Special plates design and high peak frequencies allow standard noise reduction up to 20dB(A) thanks to velocity control (Fig. 2).
 - Liquid Recovery Factor up to 0.96 thanks to special plates design and multiple pressure drop stage (Fig. 3).
 - Real Rangeability up to 300:1 with standard trim. Customized trim can be adopted to increase the Rangeability to 500:1 and above.
 - Resistors can be installed to increase valve's performances when required 30dB(A) noise reduction can be reached with combined solutions.
 - High Inherent Cv value (i.e. VP-L ND100 with Cv=500 vs globe valve ND100 with Cv=160-200: this implies that an 8" globe valve is required to compare the capacity) (Fig. 4).
 - VP's are intrinsically self-cleaning trim and they are suitable to handle 2-phase fluids, pulp, flashing liquids and dirty fluids.
 - Cryogenic and high temperature design is available on request.
 - VP 2 design (also patented) is for special and very severe applications.
 - VP are also available with V-Shaped ball in the following standard design (Fig. 6). Customized V-Shape balls are available upon request to better respond to the required process conditions. Various type of liquids, gasses and steam can be controlled by these performing valves.
- Soft seats are standard. Metal to metal seats are available for high temperatures and dirty or slurry conditions.
- Rangeability is greater than 500 (see CV-curve, Fig. 5) and this solution is well suitable if combined with VP-L and FGV-G anti-cavitation and low-noise trims for floating and Trunnion mounted control ball valves.



Fig. 2 - CFD showing the velocity reduction inside the trim.

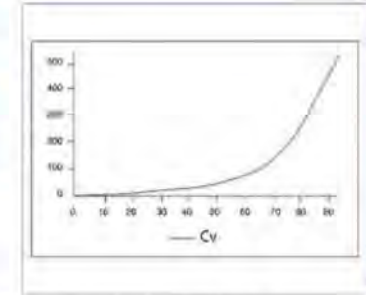


Fig. 4 - CV curve of a DN100 valve with FGV trim.

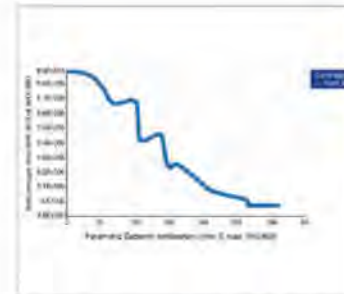


Fig. 3 - Step-wise pressure drop curve inside the body cavity

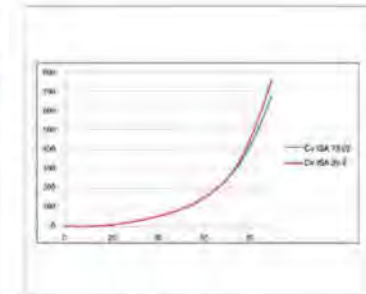


Fig. 5 - CV curve of a DN 100 valve with 90° V-ball.



Fig. 6

CONTROL CAGE BALL VALVE

Patterns customized on process parameters are available, as well as on pressure classes not mentioned on the present standard table.

Actuation package

Badran double acting (DA) and spring return (SR) pneumatic actuators - up to 3.300Nm/2,435Lb-in (SR) and 5.500Nm/4,060Lb-in (DA)

are available with a wide range of positioners for precise throttling control.

Badran electric actuators are offered for valves , allowing for dependable throttling control in systems

where compressed air is not available.



Available range

| Trunnion | | | Floating | | | |
|---|---------|--------|---------------------------|---------|--------|--------|
| Rating 150/300/600 (higher rating on request) | | | Rating 150/300 (PN 16/40) | | | |
| | L -Trim | G-Trim | | L -Trim | G-Trim | V-ball |
| 2" | • | • | 1" | • | • | • |
| 3" | • | • | 1 ½" | • | • | • |
| 4" | • | • | 2" | • | • | • |
| 6" | • | • | 3" | • | • | • |
| 8" | • | • | 4" | • | • | • |
| 10" | • | • | 6" | • | • | • |
| 12" | • | • | | | | |
| 14" | • | • | | | | |
| 16" | • | • | | | | |
| 18" | • | • | | | | |
| 20" | • | • | | | | |
| 24" | • | • | | | | |
| 30" | • | • | | | | |
| 36" | • | • | | | | |
| 42" | • | • | | | | |



MOTOR OPERATED VALVE (MOV)



■ **Application:** On-off valve application (S2) - Control valve application (S4)

■ **Valve type:**

-**Ball:**

- **Type:** Top entry – Side Entry (bolted or welded body) - Rising stem ball valves (Orbit Type) Trunnion or Floating – Full or Reduced bore – Flanged or Weld Ends Threaded / Threaded -Welded 3 Pieces / Compact Body Flanged – Cast Iron / Split body / 3-ways Threaded-Flanged / Underground valves for Gas
- **Material:** Forged – Cast Body and all kind of material
- **Pressure Rating:** ANSI class 150#, 300#, 600#, 900#, 1500#, 2500#. API 2000 / 3000 / 5000 / 10000
- **Seat type:** Soft / Metal / Primary Metal Secondary Soft – Single or Double Piston Effect (on Trunnion valves)
- **Size:** 1/2 " up to 56"

-**Butterfly:**

- **Type:** Eccentric/ concentric / high performance (Wafer / Lug / Flanged / Double flanged / Double flanged ,eccentric / Single offset double & triple offset)
- **Material:** Cast Iron – Carbon steel – Stainless steel - Aluminum Bronze - PVC and All kind of Material on request
- **Pressure Rating:** PN10, 16, 25, 40, 64, ANSI class 150#, 300#, 600#, 900#, 1500 #.
- **Seat type:** Rubber line / PTFE line / Metal seat
- **Size:** 1/2 " up to 80"

-**Globe:**

- **Type:** Quick change 2-way Globe valve (Body Size& Rating: 1/2" to 12" - ANSI 150 to 4500#)
Cage Guided 2-way Globe valve (Body Size& Rating: 1" to 20" - ANSI 150 to 4500#)
Severe Service Control valve (Body Size& Rating: 2" to 20" - ANSI 150 to 4500#)
Bellows Seal type Globe valve (Body Size& Rating: 1/2" to 20" - ANSI 150 to 600#)
Cryogenic Globe & Angle valve (Body Size& Rating: 1/2" to 20" - ANSI 150 to 4500#)
- **Leakage:** IV , V , VI
- **Actuator Type :** Electrical compact & smart actuator CM series / Electrical standard actuator (AB series)
Electrical fail safe actuator (FS series)
- **Power:** voltage from 24 VDC to 400 VAC & 690 VAC 3
- **End Connections :** SW, BW, RF, RTJ
- **Certification:** API6D, 6F, SIL2/3/4, ATEX for electrical part, CE, Fire Safe, Anti blowout



PNEUMATIC RACK & PINION ACTUATORS (Single and Double Acting)

Torque up to 7358 Nm

Hard anodized Aluminum & Stainless Steel 316

- **Type:** Pneumatic Rack & Pinion (Single & Double acting)
- **Body manufactured from extruded Aluminum uni 6060:**
 - Hard coat anodized as standard finish 45-50 (micron)
 - Good wear resistance
 - High corrosion resistance
 - Special finished nickel plating or PTFE coated upon request
- **Concentering spring sets:**
 - Standard coating painted
 - Spring sets to suit different air pressure / torque requirement
 - Same body dimension for SR/DA
- **Die cast aluminum end caps:**
 - Standard polyester powder coated
 - Upon request nickel plated or PTFE coated for corrosive environment
- **External connection:**
 - Top of pinion according to Namur norm
 - Solenoid valve connection according to Namur norm
 - Bottom of pinion according to ISO 5211-DIN 3337
- **Nominal Values:**
 - Pressure rating Max 8 bar
 - Temperature range (standard: -20 °C, +85 °C) (high: -20 °C , +150 °C) (Low: -40 °C , +85 °C)
 - Fully tasted on manufacture 100%
- **Pinion made in steel:**
 - Nickel plate for standard version against internal and external corrosion
 - Stainless steel for corrosive environments upon request.
 - Anti blowout design
- **Cam for limit position adjustment 0°- 90°:**
 - Stainless steel
 - Adjustment for open and close position $\pm 5^\circ$
- **Seals:**
 - NBR standard version
 - Viton high temperature version
 - Silicone low temperature version



PNEUMATIC / HYDRUALIC SCOTCH YOKE ACTUATOR (heavy duty service) (Single and Double Acting)

■ **Body manufactured from Carbon steel**

■ **10 different sizes from F10 (500 Nm) up to F60 (250.000 Nm).**

- 1 Internal O-rings to ensure water ingress protection
- 2 Namur standard for all sizes for assembly of switch boxes and positioner
- 3 Threaded parts in front and the back side of the body for easy assembly of pneumatic control panel
- 4 Rolled is used, reducing the friction between the yoke arm and pin, minimizing the wear.
- 4 Vent check valve releases over pressure at the center body while preventing the ingress of gas, corrosive elements and water.
- 5 Replaceable bearings Protect the sliding and rotating components, suitable for either dry or lubricated working conditions.
- 6 PTFE thrust bar prevents yoke pin axial movement, transferring axial loads directly to the drive module case
- 7 Yoke connects the piston rod with the guide block, compensating for side load deflection and reducing wear on rod, bearings and seals.
- 8 Pneumatic cylinder: The inner surface of cylinder is coated by PTFE, to prevent resistance and self-lubricating
- 9 Piston Seals: Double sealing, with o ring and dynamic ring to prevent metal to metal contact between piston and cylinder
- 10 Spring Module: Safe spring lock, prevents spring module detachment from the drive module
- 11 Spring Module: Internal hydraulic cylinder for manual pump override.

■ **Hydraulic pressure :** Up to 135bar (1958 psig)

■ **Pneumatic pressure :** Up to 8 bar (116 psig)

■ **Torque output :** Up to 250.000 Nm (185.000 ft lb)

■ **Temperature ranges :** -Standard -20°C , +80°C

-Low Temperature -40°C to +80°C

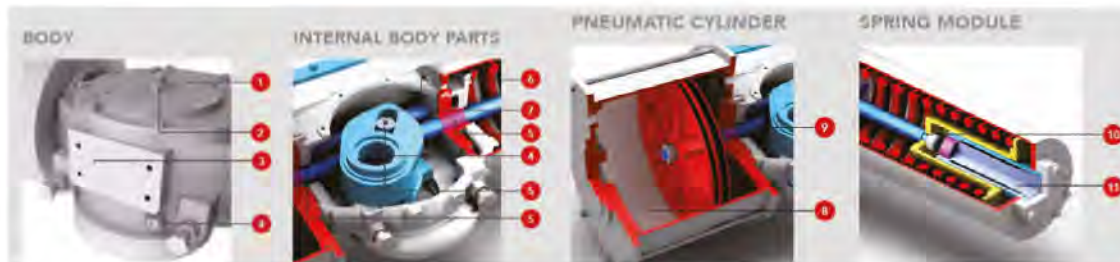
-Extreme Low Temperature -60°C to +80°C

-High Temperature -20°C to 120°C

-Other range of Temp under request

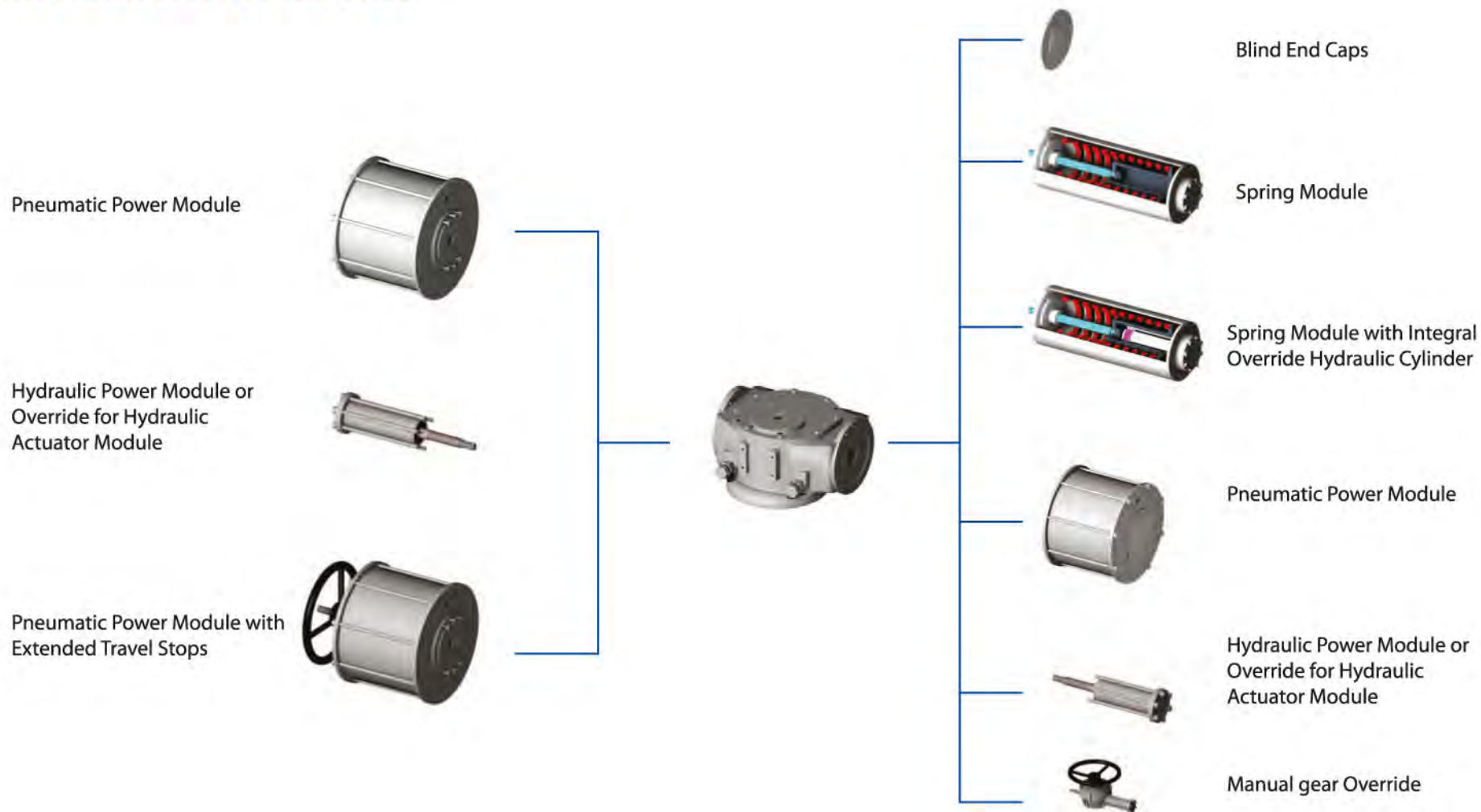
Ingress Protection Rating

IP65 (IP67 available on demand)



PNEUMATIC / HYDRULIC SCOTCH YOKE ACTUATOR (heavy duty service) (Single and Double Acting)

CHARACTERISTICS & FEATURES



ELECTRICAL COMPACT & SMART ACTUATOR CM SERIES



Regardless of application, valve type or area of use, the CM Series of actuators may also be used in conjunction with additional gear mechanisms. The interface to the valve conforms with ASME/ISO standards and meets every need. Alternatively, any customer requirement can be fulfilled or adapted to existing valve fittings.

Key Features:

- Actuators for on-off (S2) and modulating (S4) control
- ATEX compliant, explosion-proof actuators
- Voltages from 24 V DC to 400V AC 3~
- As Rotary actuators: up to 62 Nm, with gearboxes: up to 500 Nm
- As semi-Rotary actuators: up to 15,000Nm
- As linear actuators: up to 25kN and 200mm stroke
- Adjustable speed / Positioning time



CM- ROTARY ACTUATOR WITH TURN-THROUGH LEVER GEAR MECHANISM

Torques up to 2,800 Nm
Example: butterfly valves, dampers up to DN 500
Positioning times from 27 s up to 900 s for 270° swivel angle



CM-ROTARY DRIVE WITH WORM GEAR MECHANISM

Torques up to 25,000 Nm
Example: butterfly valves, ball valves, dampers up to DN 1,000 Positioning times from 7 s to 900 s



CM-ROTARY ACTUATOR WITH BEVEL GEAR OR HELICAL GEAR MECHANISM

Torques up to 550 Nm
Example: gate valves up to DN 400
Output speed: from 0.4 RPM to 18 RPM



CM ROTARY ACTUATOR

Torques up to 128 Nm
Example: gate valves up to DN 200
Output speed: from 2.5 RPM to 72 RPM



CM ROTARY ACTUATOR WITH LINEAR UNIT

Positioning forces up to 45 kN
Strokes to 500 mm
Example: valves up to DN 200
Positioning speeds from 1.17 mm to 6 mm/s

ELECTRICAL STANDARD ACTUATOR AB SERIES – DURABLE AND RELIABLE



The AB series is BADRAN's traditional product and is being used with great success worldwide. After numerous refinements in recent years, it is now established on the market as a durable and reliable product. Proven technology in combination with innovative aspects put this actuator series in a class of its own.

Key Features:

- Actuators for on-off (S2) and modulating (S4) control
- ATEX compliant, explosion-proof actuators
- Voltages from 24 V DC to 690 V AC 3~
- As multi turn actuators up to 5,000 Nm, with gearboxes: up to 43,000 Nm
- As part-turn actuators up to 300,000 Nm
- As linear actuators up to 400 kN and 500 mm stroke
- Positioning times from 3 seconds or 40 mm/sec.

MULTI-TURN ACTUATOR WITH GEARBOX
E CSC + IS6



MULTI-TURN ACTUATOR
AB18 A CSC



LINEAR ACTUATOR
AB40 A CSC+L300-18



PART-TURN ACTUATOR 90°
AB8 E CSC + IW6-140



PART-TURN ACTUATOR 120°
AB18 X CSC + SF87



ELECTRICAL FAIL SAFE ACTUATOR FS SERIES INNOVATIVE AND SAFE



From the overall production process standpoint, Failsafe actuators represent a major challenge for Badran. Greatest responsibility, reliability, and flexibility come together in the making of these actuators. The technology is based on an electric actuator with a purely mechanical safety function. In the event of a power outage or triggering of the safety function, the actuator moves into a preset position so that no hazards are posed to humans or the environment. According to an externally-conducted FMEDA (Failure Modes, Effects and Diagnostic Coverage Analysis), the Failsafe actuator achieves a safety integrity level of 3.

Failsafe actuators are generally adapted to customer requirements in terms of actuating force (operating torque), travel distances, and positioning time characteristics in normal and failsafe operation.

Key Features:

- Actuators for on-off (S2) and modulating control (S4)
- ATEX compliant, explosion-proof actuators
- Voltages from 24 V DC to 400V AC 3~
- As Part turn actuators: up to 32,000 Nm
- As linear actuators: up to 190kN and 230mm stroke
- Adjustable speed / time



REGEL FAILSAFE 90° LINEAR



FAILSAFE 90°



REGEL FAILSAFE LINEAR



FAILSAFE LINEAR



REGEL
FAILSAFE LINEAR

GENERAL PURPOSE ELECTRICAL ACTUATOR

Economical Electric actuators are suitable for the automation of ball and butterfly valves for the industrial and construction sector. The usage of electronic components of last generation, together with precise mechanic, fruit of careful research and development, enables high performance and long-term reliability of the product.

The range has been manufactured with following characteristics:

- The housing of the actuators provides a V0 self-extinguish class techno-polymer material.
- Voltage range: 12VDC, 24VDC, 100-240VAC
- The kinematics is made by steel and techno-polymer gear wheels, sustained by hardened steel pinions, mounted on self-lubricating bushes and inserted in a strong structure of die-cast aluminum .
- The connection part of the actuators with the valves, is made by a die-casted and painted aluminum with a dual drilling interface as per the ISO5211-DIN 3337 Standard.
- The electronic circuit adjusts automatically the motor speed depending on the mechanical charge variations in order to drive the cycle always in the same time.
- The whole range of actuators is provided with an electronic safety system for the torque control (torque limiter).
- The whole range of actuators is standard provided of heater actives with the powered actuator.
- The whole range of actuators can be supplied with positioner, programmable in standard (4-20 mA or -10V) reverse (20-4 mA or 10-0V) mode.
- All electric actuators can be equipped with Rotary potentiometer rated (5K Ω).
- All electric actuators (except model with 12VAC/DC power supply), can be equipped with battery backup for emergency control.
- Optional middle position operation available for all version.



CONTROL PANEL

Badran produce high integrity actuator control system Assembly in 316SS panel or cabinet. Tailor made to customer specifications or designed for customer by our in house design team. Utilizing pneumatic components specified by client or suggested by us. Compact design in modular construction is also available lighter, stronger and more compact than panel mounting. It offers a significant reduction in total installed cost in both panel and cabinet mounted assemblies.

- Pneumatic Control System
- Hydraulic Control System
- ESDV, BDV, XV Application
- Quick Acting
- HIPPS System
- Partial Stroke Test Devices
- Direct Gas and Gas Hydraulic Control Unit
- Smart Valve Monitoring System
- Pneumatic Positioner
- Valve Position Monitoring
- Damper System
- Backup Tank/Accumulator for emergency



SOLENOID VALVE

■ Valve type:

- Two way direct acting solenoid valves : 1/4" to 1"
- Two way solenoid valve (servo assisted) – (diaphragm / piston type) 3/8" to 2"
- Two way solenoid valve (servo assisted) for high-pressures : 3/8" only
- Manual reset solenoid valves
- Three way direct acting solenoid valves
- Three way redundant configuration direct acting solenoid valves
- Namur convertible three / five way
- Five way solenoid valve (two and three positions) Threaded port

■ **Size:** 3/8", 3/4", 1/4", 1/2", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4"

■ **Standard Voltage:** 12, 24, 48, 110, 115, 125, 220, 240 Volt AC/DC - Single & Double coil.

■ **End connection:** NPT, GAS, Thread

■ **Body Material :** Stainless steel , Aluminum, Brass, Nickel plated brass.

■ **Temperature class:** T6/T5 (t.amb -20 ~ +40 °C) - T5/T4 (t.amb -20 ~ +60 °C) - T5/T4 (t.amb -60 ~ +60 °C)

■ **Cable entry threaded:** M20*1.5, M25*1.5 , 1/2"NPT

■ **Protection:** IP65, 66, 67, 68 Exd, Exia & Safe area

■ **Certification:** SIL3 , ATEX IP67, IECEx IP67, EAC Ex IP67



AIR FILTER REGULATOR - AIR SET

- Maintain stable outlet pressure
- Relief function - discharge pressure of outlet pressure is higher than set pressure
- Filter available with 4 different mesh sizes; 50 μ , 25 μ , 5 μ .
- Light weight and compact size
- Hand wheel lockable, with optional key locking.
- Pressure gauge can be fitted on either side.
- Filter section metal bowls or Plastic bowls (polycarbonate), optionally with bowls guards
- Manually operated-, built-in fully automatic , semi- automatic or built-on fully automatic drain valves.
- Max supply pressure: 0 to 17bar (Metal) & 0 to 16bar (Plastic)
- Body Material: Stainless steel 316 / Aluminum Die-casting
- Air connection size: 3/8", 3/4", 1/4", 1/2", 1", 1 1/2" , 2"
- Ambient Temperature: - 20 ~ +70 °C / - 20 ~ +120 °c / - 40 ~ +70 °c



POSITIONER

- **Type:** Smart Positioner
 - Electro Pneumatic Positioner
 - Pneumatic Pneumatic Positioner
- **Supply Pressure:** 0.14~ 0.7 MPa (1.4~ 7 bar)
- **Body Material:** Stainless steel 316 – Aluminum die-casting
- **Operating Temperature:** -30 °C ~ +120 °C
- Smart Valve Positioner accurately controls valve stroke, according to input signal of 4~20mA being delivered from controller.
- Auto calibration
- Auto/Manual switch
- HART communication
- LCD display
- PID control
- 4 buttons for local control
- Feedback signal
- Limit switch
- Double & Single acting
- **Lever Type:** Rotary & Linear
- **Protection class:** IP66
- **Explosion Protection type:** ATEX / IECEx (Exia II C T5/T6) / Exd



LIMIT SWITCH BOX



قطعات کنترل سیالات

بادان



■ Type SRX

CF8M (316) Stainless Steel Valve Position Monitor available with dual Certified ATEX / IECEx II 2 G / Ex ia IIC T4/6 or II 2 GD / Ex d IIB T4/6 variants providing a high integrity system with protection from corrosive or environmental attack typically found offshore and in onshore process plants.

The IP66 enclosure has a bolt-on cover and top mounted high visibility open / close position indicator, ideally suited for hazardous area locations. For Exia applications only, Epoxy Coated Anodized Aluminum version also available

Hazardous: 17,40,42,43,52,53,56,59,70 Ex ia IIC T4/5/6 14,16,17,25,40,42,43,52,53,55,56,58,59,70 Ex d IIB T6



■ Type IQ

CF8M (316) Stainless Steel Valve Position Monitor dual Certified ATEX / IECEx II 2 GD / Ex d IIC T6 suitable for zone 1 & 2 hazardous locations and extreme service

environments typically found in the offshore, petrochemical and chemical industries.

The IP67 enclosure has a screw-on cover and is supplied with a high visibility open / close position indicator all designed to minimize the total size of the automated

valve package.

Hazardous: 14,16,17,25,40,42,43,52,53,55,56,58,59,70,92,93,94,95,96,97 Ex d IIC T4/6



■ Type SRA

Epoxy Coated anodized aluminum Valve Position Monitor dual Certified ATEX / IECEx II 2 GD / Ex d IIB+H2 T4/6 or Ex d IIC T4/6 providing a system suited for zone 1 & 2 hazardous area locations typically found in the onshore process industries.

The IP66 enclosure has a bolt-on cover and top mounted high visibility open / close position indicator.

Hazardous 14,16,17,25,40,42,43,52,53,55,56,58,59,70 Ex d IIB+H2 T4/6 or Ex d IIC T4/6



■ Type AQ

Epoxy Coated anodized aluminum or CF8M (316) Stainless Steel Valve Position Monitor Certified ATEX II 2 G / Ex ia IIC T4/6 for zone 0, 1 & 2 suitable for hazardous locations typically found in the offshore and onshore process industries.

The IP67 enclosure has a screw-on cover and is supplied with a high visibility open / close position indicator all designed to minimize the total size of the automated valve package

Hazardous 17,40,42,43,52,53,56,59,70 Ex ia IIC T4/5/6

Non-hazardous 14,16,17,25,40,42,43,52,53,55,56,58,59,70,92,93,94,95,96,97

LIMIT SWITCH BOX



■ Type SLR

Polycarbonate Valve Position Monitor available in non-hazardous and ATEX / IECEx II 2 GD / Ex ia IIC T4/6 Ex ia versions providing a competitive and technically viable solution to the general and process industries. The IP67 enclosure design comes with a unique quick access lockable cover allowing for reduced installation costs and space requirements whilst ensuring rugged reliability in the most testing environments.

Non-hazardous 14,16,17,25,40,42,43,70,92,93,94,95,96,97 Hazardous 17,40,42,43,70 Ex ia IIC T4/6



■ Type DQ

CF8M (316) Stainless Steel Valve Position Monitor dual Certified ATEX / IECEx II 2 GD / Ex emb IIC T4/6 suitable for zone 1 & 2 hazardous locations typically found in the offshore and onshore process industries.

The IP67 enclosure has a screw-on cover and is supplied with a high visibility open / close position indicator all designed to minimize the total size of the automated valve package.

Hazardous : 25,58 Ex emb IIC T4/6



■ Type SQ

Epoxy Coated anodized aluminum Valve Position Monitor Certified ATEX II 2 G / Ex d IIC T5 and provides a system suitable for zone 1 & 2 hazardous area locations typically found in the onshore process industries. The IP67 enclosure has a screw-on cover and is supplied with a high visibility open / close position indicator all designed to minimize the total size of the automated valve package.

Hazardous : 16,17,25,40,42,55,70,96 Ex d IIC T5



■ Type VSD

CF8M (316) or CF3M (316L) Stainless Steel Valve Controller dual Certified ATEX / IECEx II 2 GD / Ex d (ia) IIC T6 suitable for zone 1 & 2 hazardous locations is an integrated valve information device for emergency shutdown (ESD) valves. Combining valve position monitoring and partial stroke test (PST) functionality, the type VSD unit is an information hub for the ESD valve, enabling plant operators to verify the capabilities of the most critical valves in their installations without having to significantly modify existing operating methodologies.

Hazardous : 01,14,16,17,25,40,42,43,70 Ex d (ia) IIC T4/6

LIMIT SWITCH BOX



Bus Communication

Using either an electronic communication board or VCT Dual Module which integrates solid state position sensing, communication electronics, power outputs, auxiliary inputs and wire termination into a single compact package, all mechanical platforms listed can be connected on a bus communication network. Systems can be supplied to operate with the most popular bus protocols providing significant cost savings for installation and maintenance downtime when compared with conventional analogue systems.

Non-hazardous

01,70,92,93,94,95,96,97

Hazardous

70

Ex ia IIC T4/5/6

01,70,92,93,94,95,96,97

Ex ia IIB or IIC T4/5/6

| Type AQ | ● (70) | ● (70,93*, 94*) | ● (70) | ● (95*) | ● (92*) | ● (96*,97*) |
|-----------------|-------------|-----------------|--------|---------|---------|-------------|
| Type IQ | ● (70) | ● (70,93,94) | ● (70) | ● (95) | ● (92) | ● (96,97) |
| Type SQ | - | - | - | - | - | ● (96) |
| Type SRA | ● (70) | - | - | - | - | - |
| Type SLR | ● (70) | ● (93*,94*) | - | ● (95*) | ● (92*) | ● (96*,97*) |
| Type SRX | ● (70) | - | - | - | - | - |
| Type VSD | ● (01 ,70) | ● (01) | - | ● (01) | - | - |

● Bus protocol available * Non-hazardous

MANUAL BUTTERFLY VALVE

- **Wafer type :**
Size DN32 to DN1400
Working pressure: PN10/16/150LBs
- **Lug type:**
Size DN32 to DN1400
Working pressure: PN10/16/150LBs
- **Flanged :**
Size DN100 to DN2000
Working pressure: PN10/16/150LBs
- **Double Flanged**
Size: DN40 to DN1400
Working pressure: PN10/16/150LBs
- **Double Eccentric Double Flanged**
Size: DN50 to DN2000
Working pressure: PN10/16/25/40/125LBs/150LBs
- **Rubber Lined Double Eccentric Double Flanged**
Size: DN80 to DN2400
Working pressure: PN10/16/25/40/125LBs/150LBs
- **High Performance (PTFE-PTFE Two Pieces Body)**
Size: DN40 to DN600
Working pressure: PN10/16/150LBs
- **High Performance (PTFE-CF8M Two Pieces Body)**
Size: DN40 to DN300
Working pressure: PN10/16/150LBs
- **Top Flange:** ISO5211
- **Material:** All kinds of Material body & disc on request



MANUAL BUTTERFLY VALVE

■ Concentric Soft Seated

Concentric design with replaceable soft seat.

Type: Wafer, Lug, Flanged, Double flanged, Grooved

Pressure Rating: PN6, PN10, PN16, PN25, class 150 lbs, API605

Temperature Rating: -40 °C a 160 °C

Size: DN32 (1 ¼") a DN3000 (120")

Material: • Wide range of materials for bodies, discs and shafts: ductile iron, WCB, stainless steel, bronze, bronze-aluminum, duplex, super duplex, Monel K500, CK3MCuN, CA15, LCC, LCB...

• There is a wide range of materials in stock depending on the application, from the most common EPDM or NBR, to different types of Silicone, Hypalon, Nordel, Viton, etc.

Note: Double Flanged type is always assembled with vulcanized seat.

■ High temperature metal concentric

Concentric design to work at very high temperatures, where 100% tightness is not required.

Type: Wafer, Lug, Flanged

Temperature Rating: -190 °C - 850 °C

Size: DN40 (1 ½") - DN1200 (48")

98% tightness

Design and manufacture of heat diffusers to avoid damages in the actuators

Material:

• **Body:** ductile iron, WCB, stainless steel, CA-15, Alloy 30

• **Disc:** ductile iron, stainless steel, bronze, aluminum,...

• **Shaft:** AISI 316, 304, 420, Monel, Duplex, Super duplex,...



■ Concentric PTFE

Concentric design with replaceable PTFE seat.

Type: Wafer, Lug

Pressure Rating: PN6, PN10, PN16, class 150 lbs,

Temperature Rating: -25 °C - 200 °C

Size: DN32 (1 ¼")- DN300 (12")

Split body design

Polished disc option

Material:

• **Body:** GJS500.7 + Rilsan / CF-8M

• **Disc:** CF8-M / CF8-M + PTFE

• **Shaft:** AISI 316, 17-4PH, duplex

• **Seat:** PTFE



MANUAL BUTTERFLY VALVE

■ Colossus

Double and triple eccentric high performance design.
Interchangeable seat of RPTFE, AISI 316L or AISI 316 + graphite, depending on the model.

Type: Wafer, Lug, Flanged

Pressure Rating: PN10, PN16, PN25, 150#, 300#

Temperature Rating: Soft seat(-50°C +220°C)-Metal (-100°C+360°C)

Size: DN40 (1 ½") – DN600 (24")

Class VI tightness, 0% leakage for soft seat

Fire-safe option: R-PTFE + F-316L for soft seat

Material:

- **Body:** GJS500.7 + Rilsan / CF-8M
- **Disc:** CF8-M / CF8-M + PTFE
- **Shaft:** AISI 316, 17-4PH, duplex
- **Seat:** PTFE

■ Double eccentric double flanged

Double eccentric design with soft seat retained in the disc.

Pressure Rating: PN10, PN16, PN25, 150#

Temperature Rating: -40 °C a 160 °C

Size: DN400(16") a DN1600 (64")

100% tightness in the preferential direction of flow

Two pieces shaft

Low pressure drop

Facet to face: Series 13, series 14



Flanged type



Wafer type



Lug type

MANUAL BALL VALVE

Mfr code: 700000

Type: Full bore Stainless steel AISI 316 – F/F threading

Pressure Rating: PN140/105/64/25

Temperature Rating: -20 °C +160 °C

Size: 1/8" to 4"

Material: Stainless steel AISI 316

Mfr code: 703000

Type: Full bore - F/F threading

Pressure Rating: PN64

Temperature Rating: -20 °C +160 °C

Size: 1/2" to 2"

Material: Stainless steel AISI 316 CF8M

ISO 5211 pad direct, Antistatic Device.

Mfr code: 705000

Type: Full bore– F/F threading

Pressure Rating: PN64

Temperature Rating: -10 °C +160 °C

Size: 1/4" to 2"

Material: Carbon steel ASTM A105-WCB – Ball AISI304 and stem

Mfr code: 709000 Stainless Steel-709100 carbon steel

Type: Barstock ball valve monobloc type,full bore, F/F threading

Pressure Rating: class 800 lbs

Temperature Rating: -20 °C +160 °C

Size: 1/4" to 2"

Material: Stainless steel AISI 316 and Carbon steel ASTM A105

Fire Safe, Antistatic Device.

Mfr code: 706600/706010 full bore – 707600/707010 Reduce bore

Type: Fully welded & underground full bore /Reduce Floating/Trunnion for natural gas, elongated stem for installation underground level, BW ends. In according to UNI9734 and EN13774 with square for manual operator connector.

Pressure Rating: PN20

Temperature Rating: -10° C +120 °C

Size: 1" to 12"

Material: ASTM A105/WCB

Mfr code: 710000 Stainless Steel-713000 carbon steel

Type: Three piece, Full bore (Radiamont)

Pressure Rating: PN16/25/40/64

Temperature Rating: -20 °C +160 °C

Size: 1/4" to 4"

Material: Stainless steel & Carbon steel

Mfr code: 72000(304 CF8) -721000(316CF8M) 720006(Stainless Steel)-720009(carbon steel)

Type: Wafer Full bore Flanged

Pressure Rating: PN16 – ANSI 150

Temperature Rating: -20 °C +160 °C

Size: 1/2" to 8"

Material: Stainless steel & Carbon Steel

Mfr code: 720078/720212(Stainless Steel) 720008/720232 (Carbon Steel)

Type: Wafer Full bore Flanged

Pressure Rating: PN40 & ANSI 300

Temperature Rating: -20 °C +160 °C

Size: 1/2" to 8"

Material: Stainless steel& Carbon Steel

MANUAL BALL VALVE



- **Mfr code: 720301(Stainless Steel) 72302(Carbon Steel) 720750 (suitable for solvents) - 722000**

Type: Wafer Full bore Flanged

Pressure Rating: PN16

Temperature Rating: -10 °C +160 °C

Size: 1/2" to 8"

Material: Stainless Steel-Carbon steel ASTM A105

Fire Safe, Antistatic Device.

- **Mfr code: 760200 Stainless Steel-760150 carbon steel**

Type: Split Body Flanged , full bore, EN 558 basic series 27 & ANSI B16 10.face to face dimension

Pressure Rating: ANSI 600

Temperature Rating: -20° C +160° C

Size: 1/2" to 4"

Material: Stainless steel & Carbon steel A352 LF2

Fire Safe, Antistatic Device.



- **Mfr code: available for all valve**

Type: Wafer Flanged with Jacket , Full bore

Pressure Rating: PN16 & G3/4" ISO228

Size: 1/2" to 6"

Material: Stainless steel& Carbon Steel

- **Mfr code: 772000(T)-775000(L)**

Type: Three way reduced bore, four seals, female threads.

Pressure Rating: PN63

Temperature Rating: -20° C + 160° C

Size: 1/4" to 2"

Material: stainless steel AISI 316-CF8M



- **Mfr code: 760000 -760005 760040 -761030 Stainless Steel 760001-762000-760041-761031 Carbon Steel**

Type: Split Body Flanged , full bore, EN 558 basic series 27 & ANSI B16 10.face to face dimension

Pressure Rating: PN10-16-40-ANSI150 & 300

Temperature Rating: -10 °C +160 °C

Size: 1" to 12"

Material: stainless steel AISI 316-CF8M and carbon steel

Fire Safe, Antistatic Device.

- **Mfr code: 776007L/776010T(Stainless Steel) 776000L/776001T(Carbon Steel)**

Type: Three way flanged PN16 diverter , "L" and "T" port, with two seats, reduced port.

Pressure Rating: PN16

Temperature Rating: -20° C +160° C

Size: 1/2" to 6"

Material: Stainless steel& Carbon Steel



MANUAL VALVE - BALL OIL & GAS DIVISION

Available sizes and pressure classes are listed in the tables below.

The materials used for construction are in accordance to the customer specifications (carbon steels, austenitic, duplex, nickel alloys) and non-metallic materials (thermoplastics and elastomers) are carefully chosen to ensure the best performances

Operating temperatures:

-40°C - +200°C (-40°F - +392°F) Standard Range

-196°C - +420°C (-321°F - +788°F) Special Range

Construction standards: API 6D Design, ASME-ANSI B16.34 /

NACE MR0175-last edition /

Fire safe to API 6FA/API 607/ISO 10497 – Testing to API 598

Main Characteristics:

Forged or cast components / Bolted body design / Soft seated or metal seated

Flanged ends / Self Relieving and Double Piston effect seats / Double block and bleed

Available materials: Carbon Steels, Stainless Steels, Duplex, Nickel Alloys

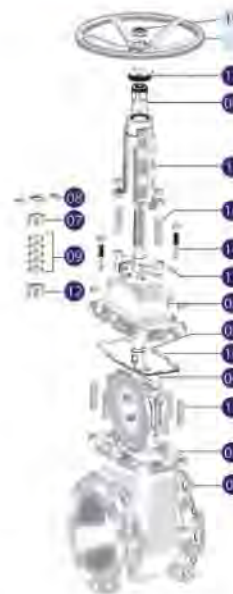


| Size rating | 150 | 300 | 600 | 900 | 1500 | 2500 |
|-------------|-----|-----|-----|-----|------|------|
| 1"1/2 | • | • | • | • | • | • |
| 2" | • | • | • | • | • | • |
| 3" | • | • | • | • | • | • |
| 4" | • | • | • | • | • | • |
| 6" | • | • | • | • | • | • |
| 8" | • | • | • | • | • | • |
| 10" | • | • | • | • | • | • |
| 12" | • | • | • | • | • | • |
| 14" | • | • | • | • | • | |
| 16" | • | • | • | • | • | |
| 18" | • | • | • | • | • | |
| 20" | • | • | • | • | • | |
| 24" | • | • | • | • | • | |
| 30" | • | • | • | • | | |
| 36" | • | • | • | • | | |
| 42" | • | • | • | | | |

| Size rating | API 2000 | API 3000 | API 5000 | API 10000 |
|-------------|----------|----------|----------|-----------|
| 1.13/16" | • | • | • | • |
| 2.1/16" | • | • | • | • |
| 2.9/16" | • | • | • | • |
| 3.1/16" | | | • | • |
| 3.1/8" | • | • | | |
| 4.1/16" | • | • | • | • |
| 5.1/8" | • | • | • | • |
| 7.1/16" | • | • | • | • |

MANUAL GATE VALVE

- **Size Range:** 2" to 48" – class 150 / 2" to 36" – class 300 / 2" to 32" – class 600
- **End Connection:** Flange End – ASME B16.5 / Butt Weld – ASME B16.25 / RTJ & Etc.
- **Face to Face:** ASME B16.10
- **Testing Standard:** API 598 & Design Standard: API 600
- **The standard:** flange facing is RF with smooth finish on the gasket surface. Other end connections & details available on request.
- **Material: Shell:** WCB, WC1, WC6, WC9, LCB, LCC, C5, C12, CF3, CF8, CF3MCF8, CF8M, CD4MCu, Hastelloy, Inconel Duplex Stainless Steel
Trim: 13%Cr Steel, SS304, 304L, 316, 316L, 321, 347, F51, Monel
- **Operation:** Hand wheel operated, Gear Operated, Pneumatic, Hydraulic, Chain wheel, electric Actuator
- 1. Body:** Body is cast with integral flanges meeting operating conditions. Bore as per API 600 & Precision machined body permits unobstructed flow, erosion and minimized pressure drop.
- 2. Bonnet:** Bonnet is as cast with Integral yoke up to size 8". All bonnets are precision machined with exacting tolerance as the body for exact alignment of the stem and wedge center. Body bonnet joints are fine machined for flat face or tongue & groove joint depending upon the pressure rating.
- 3. Seat Ring:** Renewable seats are hard faced and machined to minimize wear. The seat rings are seal welded to the body. Integral Seat is provided for Austenitic Stainless Steel valves. High Quality deposits of Stellite 6 & other hard facing alloys are assured by use of controlled preheating and automatic plasma arc facing and controlled cooling process.
- 4. Wedge:** One piece flexible wedge, with low stem to wedge contact, provides accurate alignment of mating surfaces. The flexibility compensates for seat distortion and ideal for processes with large temperature fluctuations. Solid wedge are also available on request for various processes. Differential hardness of 50 BHN is maintained between wedge and seat ring.
- 5. Stem:** Non rotating stem with precision ACME threads are machined and burnished to mirror finish to 0.8 microns for low torque. The Tee-head connections prevents lateral strain on the stem.



- 6. Stem Nut:** Precision machined stem nut engage the stem for accurate control of wedge position.
- 7. Gland:** Two piece gland for ease of alignment and exerts even pressure on the packing without binding the stem.
- 8. Gland Flange**
- 9. Packing:** Die Molded Grafoil rings with top and bottom braided rings provides ultimate sealing for wide range of service. Assures long packing life and avoids pitting on stem.
- 10. Gasket:** Spiral wound metallic gasket with Grafoil
- 11. Yoke:** Integral up to 8" for better alignment and fewer parts
- 12. Back Seat bush:** Precision Machined bush helps for replacement of packing at open position.
- 13. Retainer**
- 14. Eye Bolt & nut:** Swing type eye bolt for ease in replacement of packing.
- 15. Body Stud & nut**
- 16. Yoke Stud & Nut**
- 17. Solid Groove pin**
- 18. Hand Wheel:** Hand wheel are standard up to 10". Gear operator can also be given on request
- 19. Hand Wheel Nut**

MANUAL GOLBE VALVE

- **Size Range:** 2" to 24" – class 150 / 2" to 16" – class 300 / 2" to 16" – class 600
- **End Connection:** Flange End – ASME B16.5 / Butt Weld – ASME B16.25 / RTJ & Etc.
- **Face to Face:** ASME B16.10
- **Testing Standard:** BS EN 12266-1 & Design Standard: BS1873
- **The standard** flange facing is RF with smooth finish on the gasket surface.
Other end connections & details available on request.
- **Material: Shell:** WCB, WC1, WC6, WC9, LCB, LCC, C5, C12, CF3, CF8, CF3M, CF8, CF8M, CF8C, CD4MCu, Hastelloy, Inconel Duplex Stainless Steel
Trim: 13%Cr Steel, SS304, 304L, 316, 316L, 321, 347, F51, Monel

Operation: Hand wheel operated, Gear Operated, Pneumatic, Hydraulic, Chain wheel, electric Actuator

1. Body: Body is cast with integral flanges meeting operating conditions with reinforcement to reduce stress. Flanged end and Butt weld end are available with ASME specification.

2. Bonnet: Bonnet is as cast with integral yoke for better alignment and fewer parts. All bonnets are precision machines with exacting tolerance as the body for exact alignment of the stem and disc center.

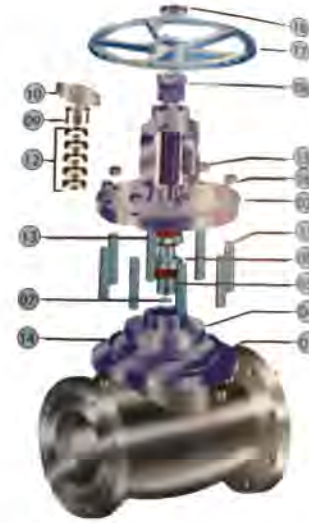
3. Seat Ring: Renewable seats are hard faced and machined to minimize wear. The seat rings are seal welded to the body. Integral Seat is provided for Austenitic Stainless Steel valves. High Quality deposits of Stellite 6 & other hard facing alloys are assured by use of controlled preheating and automatic plasma arc facing and controlled cooling process.

4. Disc: Disc is Ground and lapped to mirror finish. Differential hardness difference of 50 BHN is maintained between disc and seat.

5. Stem: Rotating stem with precision ACME threads are machined and burnished to mirror finish to 0.8 microns for low torque. Stem has long engagement with stem nut for accurate sealing.

6. Disc Nut: Disc nut secures stem to the disc. It permits the disc to rotate about the stem axis and aid in tight sealing for trouble free service compensating for disc wear.

7. Thrust Washer: Hard Thrust washer prevents galling.



8. Stem Nut : Precision machined stem nut engage the stem for accurate control of wedge position.

9. Gland: Two piece gland for ease of alignment and exerts even pressure on the packing without binding the stem.

10. Gland Flange

11. Body Stud Nut

12. Packing: Die Molded Grafoil rings with top and bottom braided rings provides ultimate sealing for wide range of service. Assures long packing life and avoids pitting on stem.

13. Back Seat bush: Precision Machined bush helps for replacement of packing at open position.

14. Gasket: Spiral wound metallic gasket with Grafoil enclosed in tongue and groove arrangement.

15. Eye Bolt & nut : Swing type eye bolt for ease in replacement of packing

16. Solid Groove pin

17. Hand Wheel: Hand wheel are standard up to 10". Gear operator can also be given on request

18. Hand Wheel Nut

MANUAL SWING CHECK VALVE

■ **Size Range:** 2" to 24" – class 150 / 2" to 16" – class 300 / 2" to 16" – class 600

■ **End Connection:** Flange End – ASME B16.5 / Butt Weld – ASME B16.25 / RTJ & Etc.

■ **Face to Face:** ASME B16.10

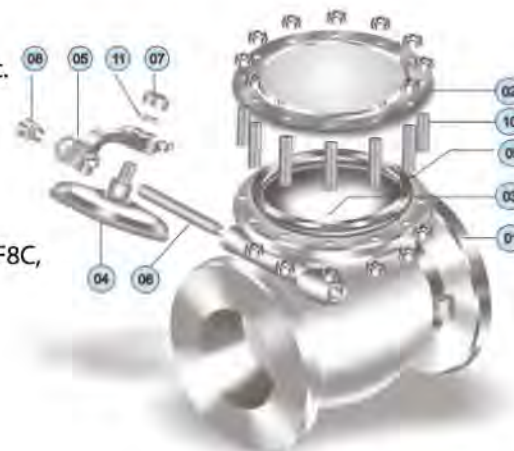
■ **Testing Standard:** BS EN 12266-1 & Design Standard: BS1873

The standard flange facing is RF with smooth finish on the gasket surface.

Other end connections & details available on request.

■ **Material: Shell:** WCB, WC1, WC6, WC9, LCB, LCC, C5, C12, CF3, CF8, CF3M, CF8, CF8M, CF8C, CD4MCu, Hastelloy, Inconel Duplex Stainless Steel

Trim: 13%Cr Steel, SS304, 304L, 316, 316L, 321, 347, F51, Monel



1. Body: Body is cast with integral flanges meeting operating conditions with rigid construction and reinforcement to reduce stress. Flanged end and Butt weld end are available with ASME specifications.
2. Cover: Cover permits easy access to hinge and disc arrangement without removing the valve from the line.
3. Seat Ring: Renewable seat is hard faced and machined to minimize wear. The seat ring is seal welded to the body. Integral Seat is provided for Austenitic Stainless steel valves.
4. Disc: Disc is Ground and lapped to mirror finish. It is designed to close on its self weight. It is free to rotate in the hinge compensates for the seat wear Differential hardness difference of 50 BHN is maintained between disc and seat.
5. Hinge: Hinge is mounted in the body.
6. Hinge Pin
7. Disc Nut: Disc nut secures disc to the hinge. It permits the disc to rotate about its axis and aid in tight sealing
8. Pin plug
9. Gasket
10. Body stud & nut
11. Disc washer

Swing Check valves are adequate for all service media. Valves can also be supplied with counter weights and dash pot arrangement depending upon the condition and request.

FIRE PROOFING JACKET

UL 1709 and Bureau Veritas, pool fire type, hydrocarbon resistance at 1100 °C
Jet Fire – 120' at 1200°C following rules ISO 22899-1 with Lloyd's Register certificate

Blast Test for over pressure at 1,82 bar, with Lloyd's Register certificate

The main characteristic of our protections is that they are shaped on valve or actuator size, allowing this way an easy assembling and disassembling with small overall dimensions and thicknesses that can change according to the time of fire resistance required .

The range of fire proofing jacket is designed for an effective fireproof protections:

- Electrical, penumatic and hydraulic actuators.
- Check and Control Valves . ESDV
- Flange Couplings
- Cable Trays
- Command and Control panel
- Tank
- All element in critical areas of the plant



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**Shut Off Valve
Control Valve
Motor Operated Valve
Line Break Valve
Manual Valve
Valves Accessories**