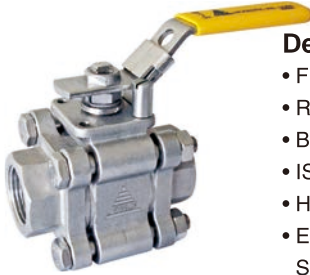




THREE PIECES BALL VALVES

V-155



Design Feature

- Full port : 1/4" – 2-1/2" (DN8-DN65)
- Reduced port : 3/8" – 2-1/2" (DN10-DN65)
- Blow-out proof stem , Anti-static design
- ISO 5211 mounting flange
- Handle with locking device
- End connection : Thread end, Socket weld, Butt weld end

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE
Working Pressure	1/4"- 1" 2000 psi (PN 140)
	1-1/4" – 2" 1500 psi (PN100)
	2-1/2" 1000 psi (PN 63)

V-255



Design Feature

- Full port : 1/4" – 2" (DN8-DN50)
- Reduced port : 1/2" – 2-1/2" (DN15-DN65)
- Blow-out proof stem, Anti-static design
- ISO 5211 mounting flange
- Handle with locking device
- End connection : Thread end, Socket weld, Butt weld end

Body	ASTM A351 Gr.CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE
Working Pressure	1/4"- 1" 2000 psi (PN 140)
	1-1/4"- 2" 1500 psi (PN100)

V-355



Design Feature

- Blow-out proof stem, Anti-static design
- Direct mounting type
- End connection : Thread end, Socket weld, Butt weld end
- Handle with locking device

Full Port • 1/4" – 4" (DN8 - DN100)
Reduced Port • 1/2" – 4" (DN15 - DN100)

Body	ASTM A351 Gr. CF8M (1.4408)
Ball / Stem	CF8M / SS316
Seat	RTFE
Working Pressure	1/4"- 1" 2000psi (PN 140)
	1-1/4" – 2" 1500 psi (PN 100)
	2-1/2" – 4" 1000 psi (PN 63)



FORGED BALL VALVES

V-114H



Design Feature

- Reduced Bore / 1 PIECE design
- 1/4" - 2" (DN8-DN50)
- Blow-out proof stem
- Design per ANSI B16.34
- End connection : Threaded end

Body / Stem	ASTM A105N
Ball / Stem	CF8M / SS316
Seat	PTFE
Temperature Range	-4 to 356 °F (-20 to 180 °C)
Working Pressure (CWP)	2000 psi (PN140) for 1/4"-1"
	1500 psi (PN100) for 1-1/4"-2"

V-755



Design Feature

- Reduced Bore / 3 PIECES design
- 1/4"-2" (DN 8-DN 50)
- Blow-out-proof stem design
- Forged Steel components
- Four Point ISO 5211 mounting Pad Bolt Circle
- Available carbon and Stainless Steel construction
- End Connection: Threaded, Socket weld, Butt weld

Body	ASTM A105 / F316
Ball / Stem	CF8M / SS 316
Seat	RTFE (15% glass fiber filled)
Working pressure	1500 psi
Temperature Range	-4 to 356 °F (-20 to 480 °C)

V-616



Design Feature

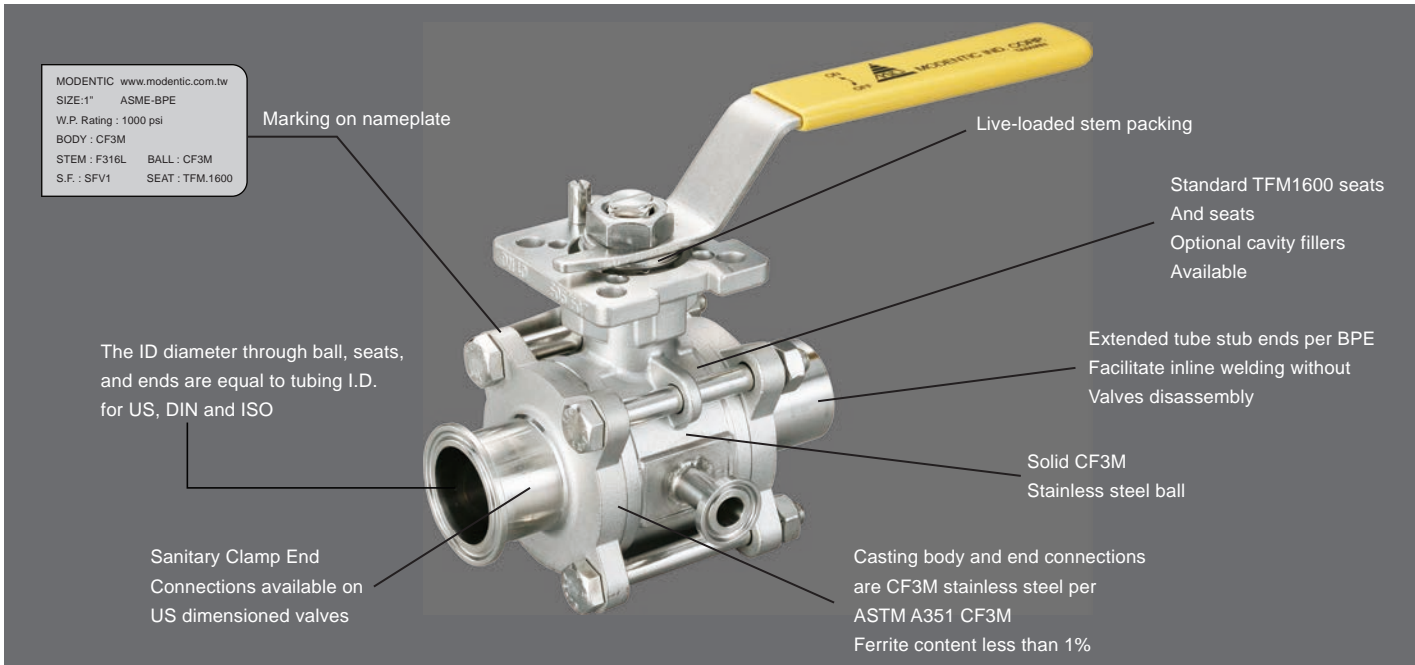
- 2 PIECES design
- Blow-out proof stem
- End connection : Threaded end

Full Bore • 1/4" – 3/8" (DN8 - DN10)
Reduced Bore • 1/2" – 2" (DN15 - DN50)

Body	ASTM A105N
Ball	SS316 / CF8M
Stem / Seat	SS316 / MG241
End Connections	-4 to 356 °F (-20 to 180 °C)
Working Pressure (CWP)	2000 psi (PN140) for 1/4" - 1"
	1500 psi (PN100) for 1-1/4" - 2"



We Offer Both Cast Ball Valves & Forged Ball Valves.



Metallic Materials of construction

Available in both forged and cast pieces of stainless steel, all wetted metallic surfaces of clean ball valves are constructed from stainless steel, which are capable of withstanding the temperature, pressure, and chemical corrosiveness assuring the purity and integrity of the products. In addition to SS316L and CF3M; higher grade materials are available upon request, such as AL-6XN, Nickel Alloys, Stainless steel Duplex.

• Low Ferrite content

Because ferrite in process piping promotes roughing, especially in the weld, so users should always choose the equipment with low ferrite, Modentic controls ferrite <1% for SS316L forged valves; and ferrite <3% for CF3M cast valves.

• Tube connection feature to facilitate automatic orbital welding

- ◆ ASME BPE compliant extended tube so that welding can be performed without valve disassembled, tangent lengths furnished to standard ASME/BPE table DT-4.
- ◆ Sulfur content on tube ends 0.005%~.0.017% to ensure consistent weldability. Chemical composition for automatic weld end furnished to ASME BPE-Part DT-3.

• Hygienic Clamp end in accordance with US dimensions

• Tube bore design

To minimize the pressure drops and to facilitate the drainability, the concept of uninterrupted flow tube bore feature is designed throughout the flow path tube bore feature is designed throughout the flow path including ball, seats and end connections.

• Seat & Seals

All nonmetallic material chosen are FDA 21 CFR 177/USP23 Class VI compliant-ASME/BPE SD-3.4.2; Design according to SD-3.6.1, SG-4.1.1.6, SG-4.1.1.8

*** Cavity filler seats are available upon request (not recommended for steam service)**

• Surface Finish

This is one of the major characteristic addressed to high purity equipment. ASME/BPE provide criteria of product contact surface finished for bioprocessing equipment the standard internal surface finish for Modentic high purity ball valves are mechanical polished to Ra20(0.5um), ASME/BPE SFV1; finer grade of surface treatment can be accomplished by electro-polished to achieve SF4 Ra15(0.38µm).

The reading of the surface finish will be always a major report in our MTR.

• Temperature rating : -40°C~180°C (-40°F~356°F)

• Pressure rating:

- ◆ 1/2”~2” 1000psi PN63
- ◆ 2-1/2”~4”720psi PN40
- ◆ Steams puressure of 150 psig at 350°F

• Purge port (Upon the users' request)

For C.I.P. or S.I.P. application, valves have body and end piece bosses for ports.

Purge port type and size are provided as per following

- ◆ Valve size 1-1/2” and less 1/4” female compression fitting
- ◆ Valve size 2” and upper 1/2” female compression fitting

• ISO 5211 Intergral Actuator Mounting pad design

• Packing

Modentic high purity ball valves are finally tested and packed in a clean environment. Each valves is protected with end caps, and sealed in a transparent plastic bag.

Benefits of forged valves

- ◆ Lower Porosity and smoother Surfaces that can reduce surface contamination
- ◆ Stronger corrosion resistance

Benefits of cast valves

- ◆ Lower cost
- ◆ Small batches of production acceptable

Automation Ball Valves

Modentic helps you to mount automation devices for your ball valves, include actuators, limit switch box; positioner.....for the need specific to the application.

•) Table Sf-5 Acceptance Criteria For Interior Surface Finishes of Valve Bodies

Anomaly of Indication	Acceptance Criteria
Cluster of pits	No more than 4 pits per each 1/2 in.x 1/2in. Inspection window. The cumulative total of all relevant pits shall not exceed 0.040in.
Demarcation	If <5% of the total area when visually inspected and Ra max. is met.
Dents	None accepted.
Grit lines	If Ra max. is met.
Nicks	If depth <0.010 in.
Pits	If diameter <0.020 in. and bottom is shiny. Pits <0.003 in. diameter are irrelevant and acceptable.
Porosity	If diameter <0.010 in. and bottom is shiny.
Scratched	If lenth <0.25in., depth<0.003in., and Ra max. is met.
Surface cracks	None accepted.
Surface inclusions	If Ra max. is met and there is no liquid penetrant indication.
Surface residuals	None accepted, visual inspection.
Surface roughness (Ra)	See Table SF-6.
Weld slag	None accepted.

Adupted from ASME/BPE-2005

•) Table Sf-6 RA Reading for Valves

Mechanically Polished [Note (1)]		
Surface Designation ASME BPE	Ra, Max.	
	μ-in.	μm
SF1	20	0.51
SF2	25	0.64
SF3	30	0.76
Mechanically Polished and Electropolished		
Surface Designation ASME BPE	Ra, Max.	
	μ-in.	μm
SF4	15	0.38
SF5	20	0.51
SF6	25	0.64

GENERAL NOTES:

- (a) All Ra reading are taken across the lay, wherever possible.
- (b) No Single Ra reading shall exceed the Ra max. value in this table.
- (c) Other Ra reading are available if agreed upon between owner/suer and manufacturer, not to exceed values in this table.

NOTE:

(1) Or any other finishing methos that meets the Ra max.

Adupted from ASME/BPE-2005

•) Surface Roughness for Grit Finishes(Ra.)

Abrasive grit No.	μ-in.	μm
500	4 to 10	0.10 to 0.25
320	6 to 15	0.15 to 0.38
240	8 to 20	0.20 to 0.51
180	25 max	0.64 max
120	45 max	1.14 max
60	140 max	3.56 max

GRIT:

Measure the number of scarches per liner inch of abrasive pad. Higher numbers indicate a smoother finish.

RMS: Defined as Root Mean Square roughness, this method measure a smple for peaks and valleys. Lower number indicate a smoother finish.

Ra:Know as the Arithmetic Mean, this measurement represents the average value of all peaks and valleys. Lower numbers indicate a smooth finish.



BAR / FORGED SS316L

MD-955EB / TC

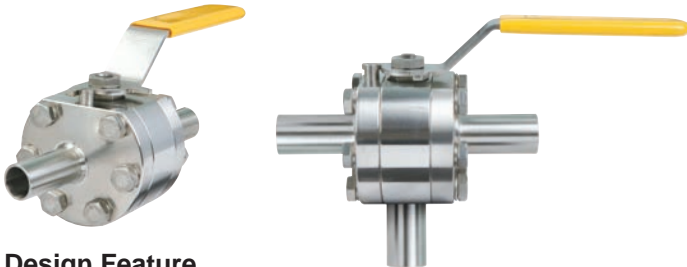


Design Feature

- Tube Bore
- 1/2" – 2" (DN15 - DN50)
- Blow-out proof stem
- Design per ANSI B16.34 / BPE
- ISO 5211 mounting flange
- End connections : Clamp end BPE / ISO / DIN Ext. Tube end
- Working pressure : 1500 psi

Body	ANSI 316L
Ball / Stem	CF3M / SS 316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)

MD-938 • MD-968



Design Feature

- Tube Bore
- 1/2" – 2" (DN15 - DN50)
- Blow-out proof stem
- Design per ANSI B16.34 / BPE
- ISO 5211 mounting flange
- End connections : BPE / ISO / DIN Ext. Tube end
- Working pressure : 1500 psi

Body	ANSI 316L
Ball / Stem	CF3M / SS316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)

MD-918EB / TC



Design Feature

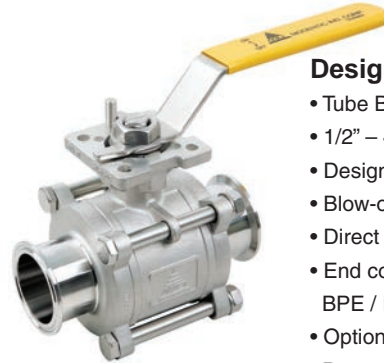
- Tube Bore
- 1/2" – 2" (DN15 - DN50)
- Blow-out proof stem
- Design per ANSI B16.34 / BPE
- End connections : Clamp end BPE / ISO / DIN Ext. Tube end

Body	ASTM A182 Gr. F316L
Ball / Stem	CF3M / SS316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)
Working Pressure	1000 psi



CAST CF3M With Ferrite content less than 3% sulfur content 0.005-0.017%

MD-928EB / TC

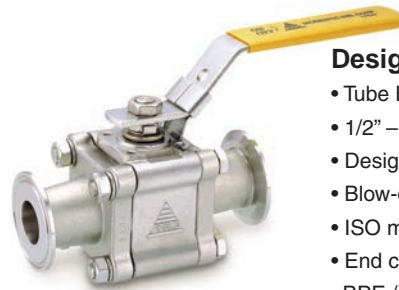


Design Feature

- Tube Bore
- 1/2" – 4" (DN15 - DN100)
- Design per ANSI B16.34 / BPE
- Blow-out proof stem
- Direct mounting
- End connections : Clamp end BPE / ISO / DIN Ext. Tube end
- Option : Cavity seat, Extended stem Pourge port

Body	ASTM A351 Gr.CF3M
Ball / Stem	ASTM A351 Gr.CF3M / SS316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)
Working Pressure	1000 psi for 1/2" - 2" 720 psi for 2-1/2" - 4"

V-255EB / TC



Design Feature

- Tube Bore
- 1/2" – 2" (DN15 - DN50)
- Design per ANSI B16.34 / BPE
- Blow-out proof stem
- ISO mounting flange
- End connections : Clamp end/ BPE / ISO / DIN Ext. Tube end
- Option : Cavity seat, Extended stem, Pourge port

Body	ASTM A351 Gr.CF3M
Ball / Stem	ASTM A351 Gr.CF3M / SS316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)
Working Pressure	1000 psi for 1/2" - 2"

K-384EB / TC



Design Feature

- Tube Bore, L / T port
- 1/2" – 3" (DN15 - DN80)
- Design per ANSI B16.34 / BPE
- Blow-out proof stem
- Direct monting
- End connections : Clamp end/ BPE / ISO / DIN Ext. Tube end

Body	ASTM A351 Gr.CF3M
Ball / Stem	ASTM A351 Gr.CF3M / SS316L
Seat	TFM1600
Temperature Range	-40 to 356 °F (-40 to 180 °C)
Working Pressure	1000 psi for 1/2" - 1" 720 psi for 1-1/2" - 3"



API 602 FORGED GATE • GLOBE • CHECK VALVES

Other materials are available upon request

FGT-800 / 1500 • BOLTED BONNET
PGT-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Gate valve
- 1/2" – 2" (DN15 - DN50)
- Rising stem, non rising handwheel
- O.S. & Yoke, solid wedge
- Reduced port
- ASME B16.34 Class 800/1500/2500
- Option :
 - 1.Welded bonnet type for class 800/1500
 - 2.Full port

Body	ASTM A105N
Disc / Stem	ASTM A182 F6 / ASTM A276 410
End connections	Socket weld, NPT thread, Butt weld end

FGTF-150 / 300 / 600 • BOLTED BONNET
PGTF-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Gate valve
- 1/2" – 2" (DN15 - DN50)
- Rising stem, non rising handwheel
- O.S. & Yoke, solid wedge
- Integral flange design
- Reduced port
- Option :
 - 1.Welded bonnet type for class 150/300/600
 - 2.Full port

Body	ASTM A105N
Disc / Stem	ASTM A182 F6 / ASTM A276 410
Face to Face	ASME B16.10 Class 150/300/600 RF
Flange Dia.	ASME B16.5 Class 150/300/600 RF

FGB-800 / 1500 • BOLTED BONNET
PGB-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Globe valve
- 1/2" – 2" (DN15 - DN50)
- Rising stem, rising handwheel
- O.S. & Yoke, Plug disc
- Reduced port
- ASME B16.34 Class 800/1500/2500
- Option :
 - 1.Welded bonnet type for class 800/1500
 - 2.Full port

Body	ASTM A105N
Disc / Stem	ASTM A182 F6 / ASTM A276 410
End connections	Socket weld, NPT thread, Butt weld end

FGBF-150 / 300 / 600 • BOLTED BONNET
PGBF-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Globe valve
- 1/2" – 2" (DN15 - DN50)
- Rising stem, rising handwheel
- O.S. & Yoke, Plug disc
- Integral flange design
- Reduced port
- Option :
 - 1.Welded bonnet type for class 150/300/600
 - 2.Full port

Body	ASTM A105N
Disc / Stem	ASTM A182 F6 / ASTM A276 410
Face to Face	ASME B16.10 Class 150/300/600 RF
Flange Dia.	ASME B16.5 Class 150/300/600 RF

FPC-800 / 1500 • BOLTED BONNET
PPC-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Check valve
- 1/2" – 2" (DN15 - DN50)
- Piston type
- Reduced port
- ASME B16.34 Class 800/1500/2500
- Option :
 1. Welded bonnet type for class 800/1500
 2. Swing type (FSC- 800 / 1500)
 - 3.Full port

Body	ASTM A105N
Disc	ASTM A182 F6
End connections	Socket weld, NPT thread, Butt weld end

FPCF-150 / 300 / 600 • BOLTED BONNET
PPCF-1500 / 2500 • PRESSURE SEAL



Design Feature

- Forged Check valve
- 1/2" – 2" (DN15 - DN50)
- Piston type
- Integral flange design
- Reduced port
- Option :
 1. Welded bonnet type
 2. Swing type (FSF- 800 / 1500)
 - 3.Full port

Body	ASTM A105N
Disc	ASTM A182 F6
Face to Face	ASME B16.10 Class 150/300/600 RF
Flange Dia.	ASME B16.5 Class 150/300/600 RF