

**Fig No:MD-928TC Tube Bore
1/2" - 4" DN15 ~ DN100**



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 welds, 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 wt. % 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 including ball, seats and end connections.

Seats & Seals

All nonmetallic material chosen are FDA 21CFR 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 finishes 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 SFV4 Ra15(μm 0.38).

Temperature rating:

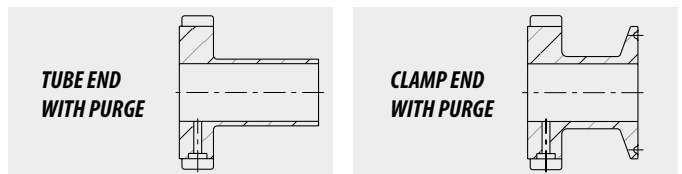
-57°C ~ 180°C (-70°F ~ 356°F)

Pressure rating:

- ◆ 1/2"~2" 1000 psi PN63
- ◆ 2-1/2"~4" 720 psi 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 ports 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 valve 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.



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Surface Measurement

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

Anomaly or 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.
Scratches	If length < 0.25 in., depth < 0.003 in., 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.

Adopted from ASME / BPE - 2005

•) Table Sf-6 RA Readings for Valves

Mechanically Polished [Note (1)]			
Surface Designation ASME BPE		Ra, Max.	
		μ-in.	μm
SFV 1		20	0.51
SFV 2		25	0.64
SFV 3		30	0.76

Mechanically Polished and Electropolished			
Surface Designation ASME BPE		Ra, Max.	
		μ-in.	μm
SFV 4		15	0.38
SFV 5		20	0.51
SFV 6		25	0.64

Adopted from ASME / BPE - 2005

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 readings are available if agreed upon between owner / user and manufacturer, not to exceed values in this table.

NOTE:

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

•) Surface Roughness for Grit Finishes (Ra.)

Abrasive grit No.	Ra, Max.	
	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

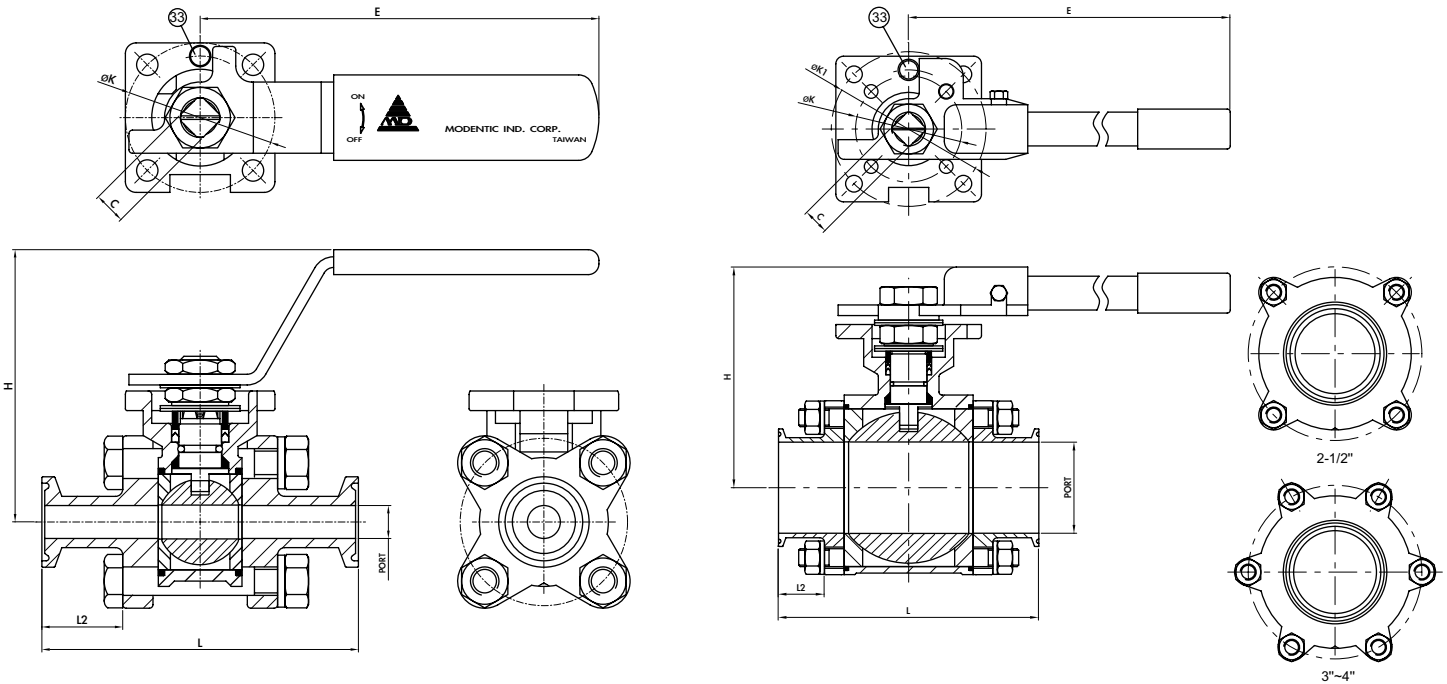
GRIT:

Measures the number of scratches per liner inch of abrasive pad. Higher numbers indicate a smoother finish.

RMS: Defined as Root Mean Square roughness, this method measure a sample for peaks and valleys. Lower numbers 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.

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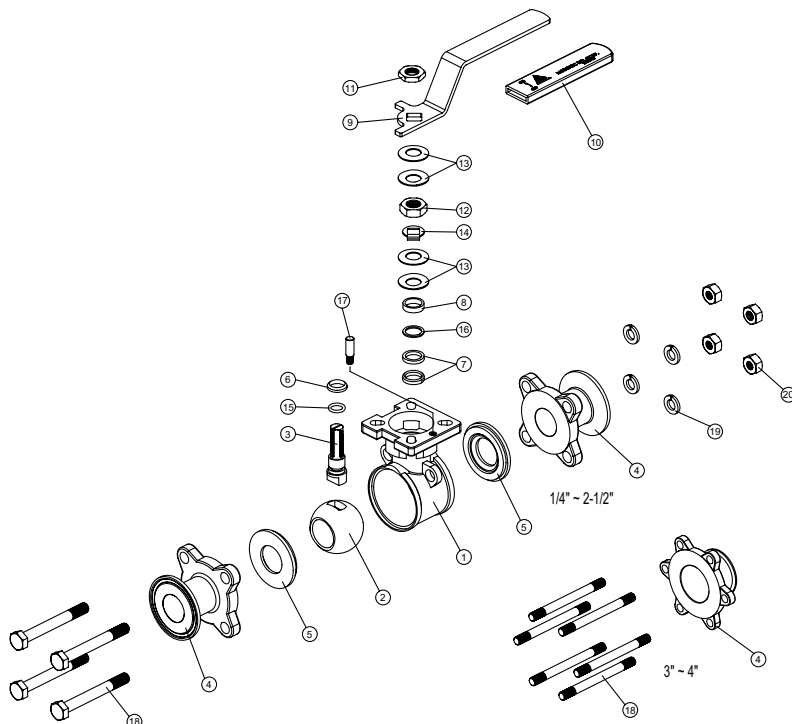


US/3A Dimensioned valves in mm

Size	PORT	L	L2	E	H	C	K	K1
1/2"	9.40	88.90	22.70	112.00	76.50	9.00	42.00	-
3/4"	15.80	101.40	26.80	112.00	80.50	9.00	42.00	-
1"	22.10	120.00	32.50	133.50	93.20	11.00	-	50.00
1-1/2"	34.80	139.80	32.40	202.00	115.20	14.00	50.00	70.00
2"	47.50	158.90	35.20	202.00	123.70	14.00	50.00	70.00

US/3A Dimensioned valves in mm

Size	PORT	L	L2	E	H	C	K	K1
2-1/2"	60.20	171.60	30.30	363.50	145.50	17.00	70.00	102.00
3"	72.90	228.60	49.30	363.50	150.00	17.00	70.00	102.00
4"	97.50	254.10	50.30	399.00	194.60	22.00	-	125.00



MATERIALS LIST

No.	Part Name	Material
1	BODY	CF3M
4	BALL	CF3M
5	STEM	SS316L
9	END CAP	CF3M
11	BODY SEAL	TFM 1600
12	SEAT	TFM 1600
13	THRUST WASHER	TFM 1600
14	STEM PACKING	TFM 1600
15	GLAND BUSH	SS304
19	HANDLE(1/2"-2")	SS304
19	HANDLE(2-1/2"-4")	CARBON STEEL
20	STOP CAECH	SS304
21	HANDLE COVER	PLASTIC
22	NUT	SS304
29	BELLEVILLE WASHER	SS301
30	TAB WASHER	SS304
31	STEM O-RING	VITON (P20)
32	PACKING FOLLOWER	15% RTFE
33	LEVER STOP	SS304
35	STUD	SS304
36	BOLT WASHER	SS304
37	BOLT NUT	SS304
50	HANDLE ADAPTER	SS304