



Forged Ball Valve

Model 4900:

ISO 17292, API 6D, API 607

Size - 1/2" to 2" (15mm to 50mm)

Rating - Class 800 to Class 2500

Full Bore Design

Reduced Bore Design

Three Piece Design

Forged Steel Valves

Socket Weld Design

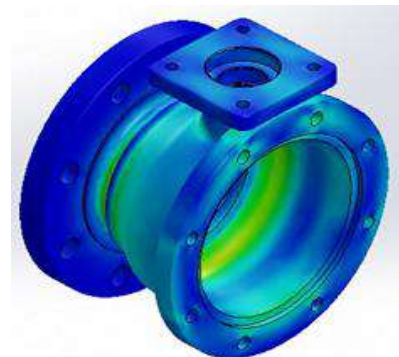
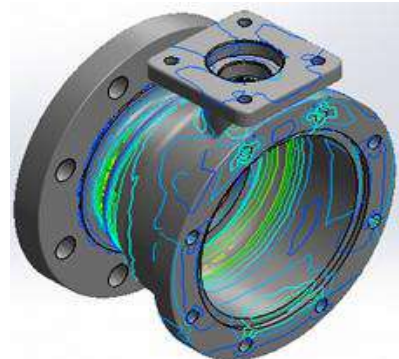
Butt-Weld Design

Screwed (F-NPT) Design

Contents:

Company Overview	01
Quality Policy	02
Features of Forged Ball Valve	03
General Assembly Drawings	04
Material of Construction	05
Dimensions of Forged Ball Valve	06
How to Order	07 - 08

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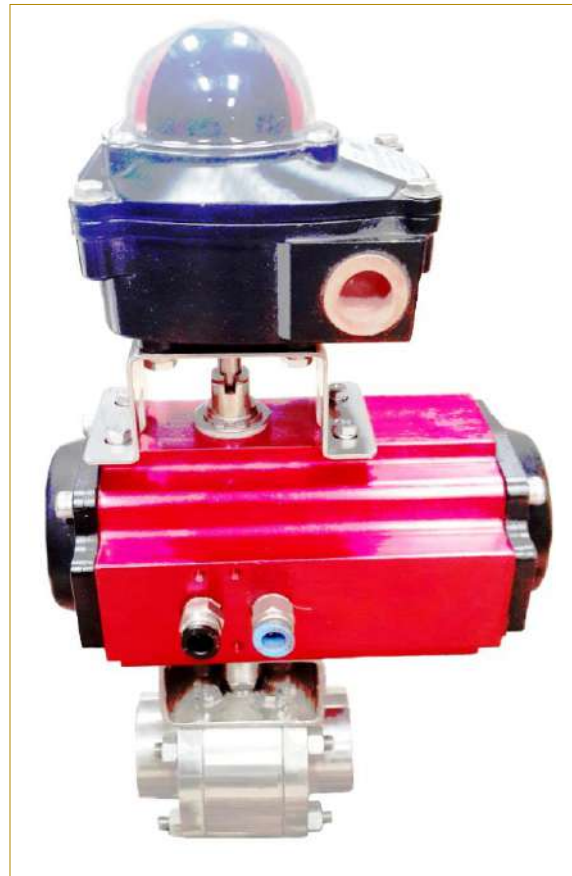
“INVACO” (Industrial Valve Company) founded and promoted by the technocrats having experience of 18 years in National and International valve industry. INVACO PRIVATE LIMITED (Industrial Valve Company) is registered experience company in Design, Development, Fabrication & Manufacturing of Industrial Valves. Our mission is to produce high quality and reliable Valves to our national & international clients / customers. Our proactive approach to technical issues enables to understand and implement cost-effective solutions to our valuable customers.

“INVACO” (Industrial Valve Company) committed to excellence by manufacturing top quality valves to exceed customer’s needs with low cost, on-time delivery & providing finest service in industry. “INVACO” manufacture Ball valves (Floating & Trunnion Mounted), Butterfly Valves (Damper, Sleeved, Double offset & Triple Offset), Gate Valves, Globe Valves , Check Valves, Strainers, Flap Valves, Dismantling Joints, Flange Adaptor, Flange Couplings & Sluice Gate / Penstock for Oil & Gas, Petrochemicals, Refineries, Power Plants, Water Treatment Plants, Chemical, Paper & Pulp, Sugar, Steel, Pharma, Pipeline Transmission and other process industries.

“INVACO” (Industrial Valve Company) is specialized in design, manufacturing & testing of FORGED & CAST Steel Floating Ball Valves. All valves are designed as per ISO 17292, API 6D, ASME B16.34 and fire safe as per API 607 / API 6FA follows ISO 9001:2015 Quality Management Systems. INVACO, manufacture ball valve size from 1/2” to 2” (15mm to 50mm) with pressure range from Class 150 to Class 2500 and equivalent EN pressure ratings. Ball valves produced from FORGED & CAST materials like A105N, LF2, F6A, F304L, F316L, F22, F51, F52, F53, F55, WCB, WCC, WC6, LCB, LCC, CA15, CF8, CF8M, CF3, CF3M, 4A,5A, 6A, Aluminum Bronze, Incoloy (825 , 925) , Inconel (625, 718 & 750) , Monel (K400, K500), Alloy 20, Hast Alloy and other special materials.

INVACO aims to produced a zero defect valves for long life and reliable services. Making continual improvements aims towards to minimize the Total Ownership Cost for valued customers. Also aim to established sales and services of valves & actuators worldwide.

This catalog provides basic information of Forged Ball valves. Every effort has been made to maintain technical accuracies however INVACO has reserve rights to make any change in design and materials without prior notice.



At “INVACO”, we established this comprehensive Quality Management System to implement a strategy of continual improvement and compliance with the requirements of the ISO 9001:2015 Quality Assurance standard and other industrial valves standards by:

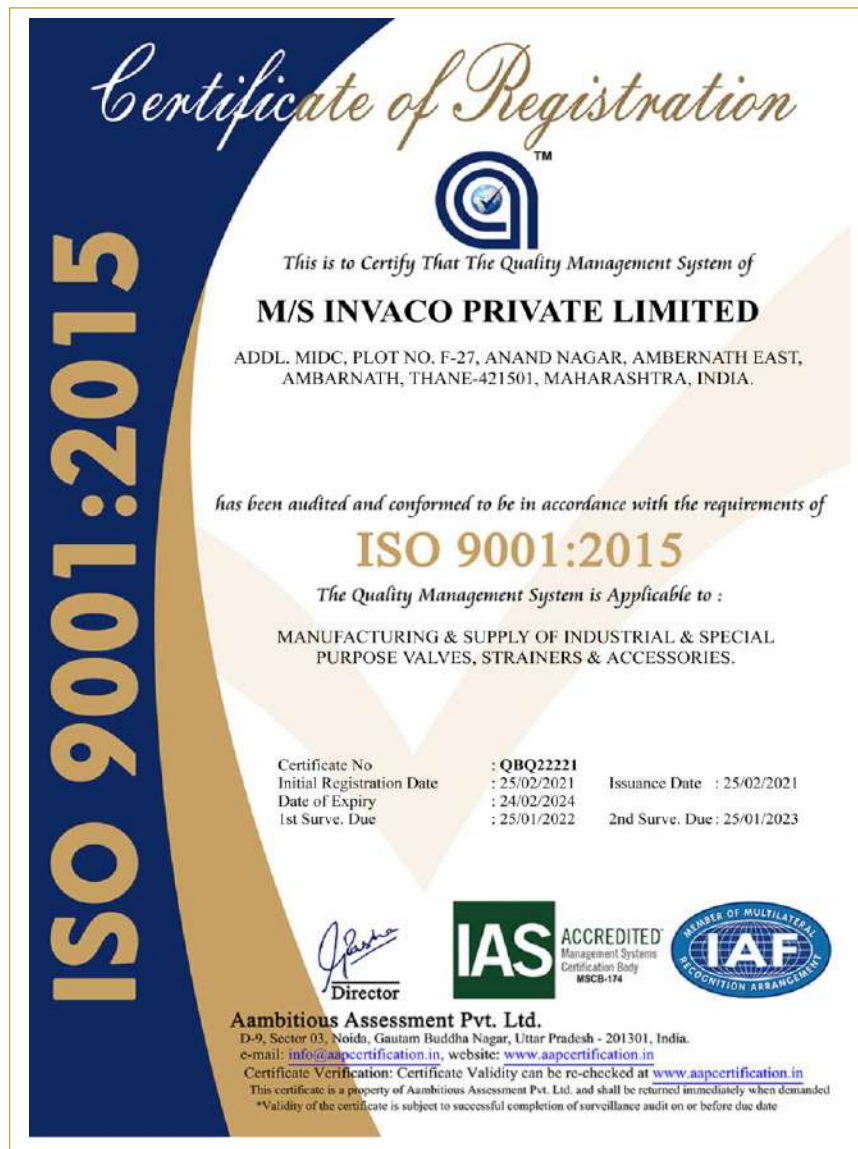
Customer Focused:

- Make commitments we fully understand and believe we can meet and deliver.
- Meet all commitments to customers on time.
- Satisfy our customer’s needs and exceed their expectations.

Performance Driven:

- Verify that our products and services meet customer requirements.
- Monitor benchmark and continuously improve our business, products, and services, organization and employee’s performance.

Entire “INVACO” stick to the spirit and intent of this policy to ensure customer satisfaction is achieved at all respects and times.



Features of Forged Ball Valve (Model – 4900)



Quality Standards:-

Design Standards	- ISO 17292 / API 6D / ASME B16.34 / MESG SPE 77-100,110,130,300,302,312
Testing Standards	- API 598 / EN 12266 / ISO 5208 / BS 6755
End to End Standards	- Maker's Standard
Socket Weld End	- ASME B16.11.
Butt-Weld	- ASME B 16.25
Screwed End (F- NPT)	- ASME B 1.20.1
Actuator Mounting	- ISO 5211
Fugitive Emission Test	- MESG SPE 77 - 312 / ISO 15848
Cryogenic Services	- BS 6364, MSS SP 134
Valve Marking	- MSS SP 25 / ASME B 16.34
Visual Inspection	- MSS SP 55
Material Testing	- NDE / NACE MR 01- 75 / NACE MR 01- 03 Compliance available.

Key Features:-

- Size :- 1/2" to 2" (15mm to 50mm)
- 3Pc Design , Full Bore / Reduced Bore
- Soft , Metal & Fire Safe Design
- Anti – Static Design
- Manual, Electrical/Pneumatic/Hydraulic Act
- Rating:- 800# to 2500# & Equiv. DIN Rating
- Forging Body with Solid Ball.
- Blow Out Proof Stem
- Extended Bonnet & Extended Stem
- Pup Piece Available

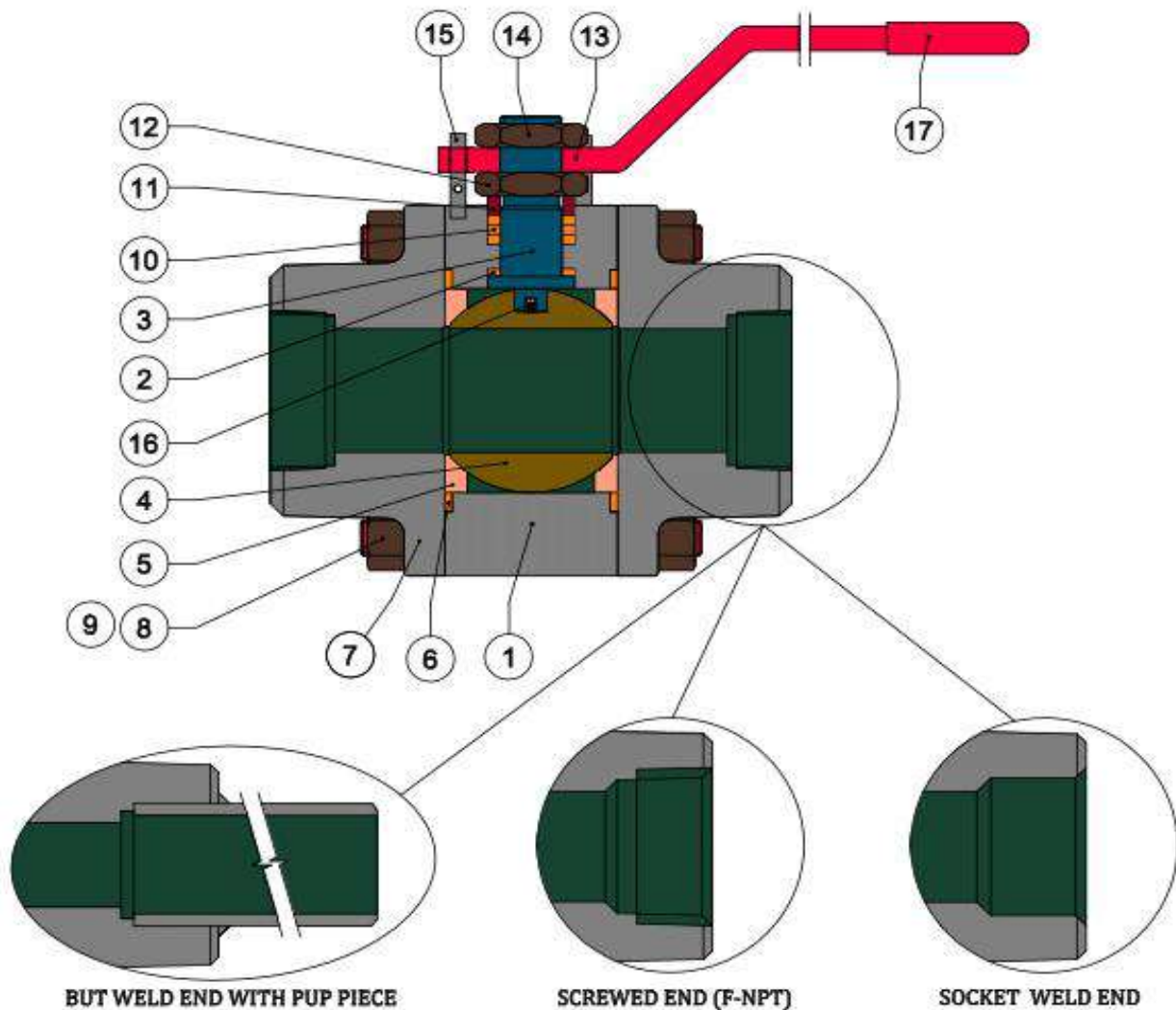
Materials - Carbon Steel, Low Temperature Carbon Steel, Stainless Steel, Duplex, Super Duplex, Incoloy, Inconel, Monel, Aluminum Bronze, Hastalloy, Titanium and other materials.

Applications - Offshore / Onshore Oil & Gas, Chemical, Petrochemical & Allied Process, Power Plant, Water Treatment Plant, Liquefied Natural Gas, Sugar, Paper & Pulp, Steel, Piping & Process Industries

GA Drawing for 3Pc Forged Ball Valve (Model – 4900)

Sr. No.	PART LIST	
1	BODY	10 GLAND PACKING
2	THRUST WASHER	11 GLAND
3	STEM	12 GLAND NUT
4	BALL	13 LEVER
5	SEAT RING	14 LEVER NUT
6	BODY GASKET	15 LOCK PIN
7	SIDE CONN. / ADAPTER	16 ANTI-STATIC DEVICE
8	STUD	17 LEVER SLEEVE
9	NUT	

SPARE PART LIST		
FOR STARTUP		FOR MAINTENANCE
		5 SEAT RING
6	BODY GASKET	
10	GLAND PACKING	

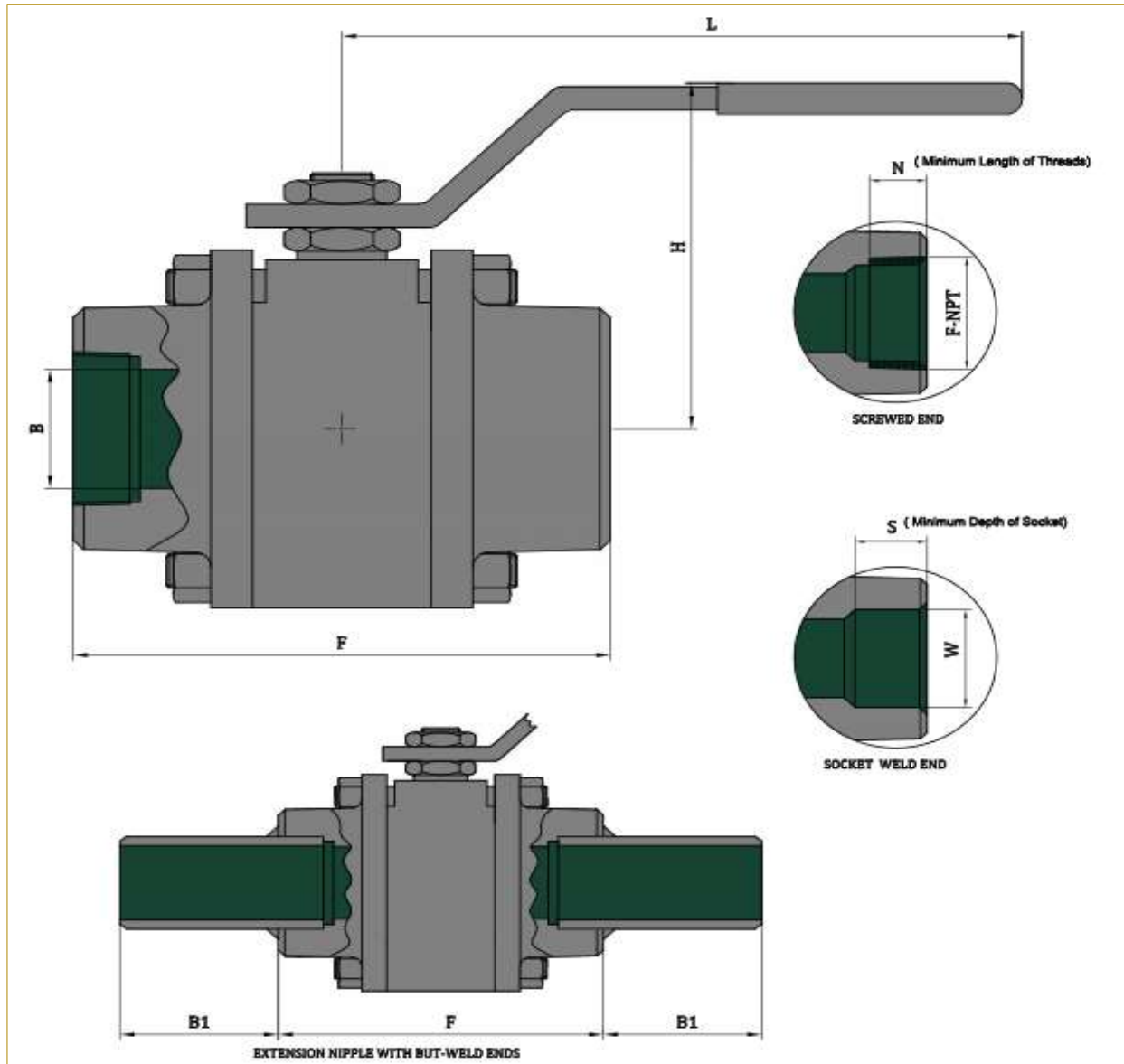


Material of Construction for 3Pc Forged Ball Valve (Model – 4900)

Bill of Material for 3Pc FORGED Ball Valve						
Sr. No.	Part	Carbon Steel	Low Temp. Carbon Steel	Stainless Steel	Duplex	Nickel Alloys
1	Body	A105N	A350 Gr. LF2	A182 Gr. F316, F304	A182 Gr. F51,F53,F55	Inconel 625, 750, 825/Monel
2	Thrust Washer	PTFE / Brass				
3	Stem	F304/F316/17-4PH			F51, F53, F55	Inconel 625, 750, 825/Monel
4	Ball	F304/F316/17-4PH			F51, F53, F55	Inconel 625, 750, 825/Monel
5	Seat Ring	PTFE / RPTFE / Devlon / Peek / Nylon				
6	Body Gasket	PTFE / Graphite				
7	Adaptor	A105N	A350 Gr. LF2	A182 Gr. F316, F304	A182 Gr. F51,F53,F55	Inconel 625, 750, 825/Monel
8	Stud	A193 Gr. B7 / B7M	A320 Gr. L7 / L7M	A193 Gr B8 / B8M		
9	Nut	A194 Gr. 2H / 2HM	A194 Gr. 4 / 7 /7M	A194 Gr. 8 / 8MA		
10	Gland Packing	PTFE / Graphite				
11	Gland	A105N/ F304/F316	LF2/ F316	F304, F316	F51, F53, F55	Inconel 625, 750, 825/Monel
12	Gland Nut	A194 Gr. 2H / 2HM	A194 Gr. 4 / 7 /7M	A194 Gr. 8 / 8MA		
13	Lever	Carbon Steel			Stainless Steel	
14	Lever Nut	A194 Gr. 2H / 2HM	A194 Gr. 4 / 7 /7M	A194 Gr. 8 / 8MA		
15	Lock Pin	A105N/ F304/F316	LF2/ F316	F304, F316	F51, F53, F55	Inconel 625, 750, 825/Monel
16	Anti-Static	Standard (Stainless Steel)				
17	Lever Sleeve	PVC				

Note:- "INVACO" reserve right to change Material & Design anytime without prior notice.

Dimensions for 3Pc Forged Ball Valve (Model – 4900)



SIZE		BORE	F (mm)	H (mm)	L (mm)	SOCKET WELD		SCREWED (F-NPT)		BUT WELD (mm)
in	mm	B (mm)				W(mm)	S(mm)	F-NPT	N (mm)	B1 (mm)
½"	15	13	75	67	140	21.8	9.5	½"	13.6	Standard B1= 100mm. Nipple Weld = Sche. 40, 80 & 160
¾"	20	19	85	72.5	140	27.2	12.5	¾"	13.9	
1"	25	25	90	83.5	200	33.9	12.5	1"	17.3	
1½"	40	38	120	117	255	48.8	12.5	1½"	18.4	
2"	50	49	135	141	255	61.2	16	2"	19.2	

NOTE:- All dimensions are in "mm" unless & otherwise specified.
"INVACO" reserve right to change the information any time without prior notice.

How to Order Forge Ball Valve (Model – 4900)

Valve Type	Size	Pressure Rating	End. Conn.	Body Material	Ball Material	Stem	Seat Ring	Seal Ring	Operation	Special
A	B	C	D	E	F	G	H	I	J	K

A- Valve Type

Code	Valve Type	Series	Code	Valve Type	Series
01	2 PCs Trunnion Mounted Full Bore	TF - 4000	08	3 PCs Floating Reduced Bore Socket Weld	SWR - 4900
02	2 PCs Trunnion Mounted Reduced Bore	TR - 4000	09	3 PCs Floating Full Bore Screwed (F - NPT)	SCF - 4900
03	3 PCs Trunnion Mounted Full Bore	THF - 4000	10	3 PCs Floating Reduced Bore Screwed (F-NPT)	SCR - 4900
04	3 PCs Trunnion Mounted Reduced Bore	THR - 4000	11	3 PCs Floating Full Bore But Weld	BWF - 4900
05	2 PCs Floating Full Bore	F - 4500	12	3 PCs Floating Reduced Bore But Weld	BWR - 4900
06	2 PCs Floating Reduced Bore	R - 4500	13	1 PCs Floating Full Bore	F - 4800
07	3 PCs Floating Full Bore Socket Weld	SWF - 4900	14	1 PCs Floating Reduced Bore	R - 4800

B - Size

NPS	½"	¾"	1"	1.1/2"	2"	2.1/2"	3"	4"	5"	6"	8"	10"	12"
DN	15	20	25	40	50	65	80	100	125	150	200	250	300
Code	1A	2A	01	3A	02	4A	03	04	05	06	08	10	12
NPS	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"	40"
DN	350	400	450	500	550	600	650	700	750	800	850	900	1000
Code	14	16	18	20	22	24	26	28	30	32	34	36	40

Note:- For higher size code use respective NPS (inch) as Code

C - Rating

Class	125	150	300	400	600	800	900	1500	2500	PN 2.5	PN6	PN10	PN16
Code	01	02	03	04	05	06	07	08	09	10	11	12	13
Class	PN 25	PN 40	PN 63	PN 100	PN 160	PN 320	1000 PSI	2000 psi	3000 psi	5000 psi	10000 psi	15000 psi	20000 psi
Code	14	15	16	17	18	19	20	21	22	23	24	25	26

D - End Connection

Class	Type	Class	Type	Class	Type	Class	Type
A	Raised Face (RF)	D	But Weld	G	Hub	J	But Weld x RTJ
B	Flat Face (FF)	E	Socket Weld	H	Socket X Screw	K	Wafer
C	Ring Type Joint (RTJ)	F	Screwed	I	But Weld x RF	L	Other



E - Body / Adaptor Material

Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
01	WCB	10	CF3M	19	C95500	28	F304L	37	Incoloy825
02	WCC	11	CK3MCuN	20	C95800	29	F316L	38	Incoloy925
03	LCB	12	CN7M	21	C62300	30	17 - 4PH	39	Monel K400
04	LCC	13	4A	22	A105	31	F11	40	Monel K500
05	WC6	14	5A	23	A105N	32	F51	41	Inconel 600
06	CA15	15	6A	24	LF2	33	F53	42	Inconel 625
07	CF8	16	M35-1	25	F6a	34	F55	43	Hastalloy C276
08	CF8M	17	CW6MC	26	F304	35	F44	44	904L
09	CF3	18	CW12MW	27	F316	36	Incoloy800	45	Other

F - Ball Material

Code	Material	Code	Material	Code	Material	Code	Material
01	CF8	10	M35-1	19	304L	28	Incoloy825
02	CF8M	11	CW6MC	20	316L	29	Incoloy925
03	CF3	12	CW12MW	21	17-4PH	30	Monel K400
04	CF3M	13	C95500	22	F11	31	Monel K500
05	CK3MCuN	14	C95800	23	F51	32	Inconel 600
06	CN7M	15	C62300	24	F53	33	Inconel 625
07	4A	16	A105(ENP)	25	F55	34	Hastalloy C276
08	5A	17	304	26	F44	35	904L
09	6A	18	316	27	Incoloy800	36	Other

G - Stem Material

Code	Material	Code	Material
A	A105N	I	F53
B	410	J	F55
C	F6A	K	F44
D	F304/F304L	L	Incoloy 825
E	F316/F316L	M	Inconel 625
F	17-4PH	N	Monel
G	F11	O	904L
H	F51	P	Other

H - Seat Ring

Code	Material
A	PTFE
B	RPTFE
C	DEVLON
D	PEEK
E	NYLON
F	DERLIN
G	EPDM
H	Other

I-Seal Ring

Code	Material
A	EPDM
B	VITON - B
C	VITON-AED
D	NBR / BUNA N
E	HNBR
F	Other

Example: - 1" x 800#, 3Pc Floating Full Bore, Socket End, Body/Adaptor - F316, Ball & Stem - F316, Seat Ring - PTFE, Lever.

CODE: - 07 01 06 E 29 20 E A B

J - Operations

Code	Operations	Code	Special Req.
A	Bare Stem	A	Extended Bonnet
B	Lever	B	Extended Stem
C	Gear	C	Cryogenic
D	Electrical Act'r	D	Other
E	Pneumatic Act'r	E	

K - Special



Forged Ball Valve



Model - 4900

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Your Local INVACO Representative -

We are 70 Km away from Mumbai International Airport.