

# FLOATING BALL VALVES

Single Piece / Two Piece / Three Piece



*Virgo... Lifeline to Your Process*

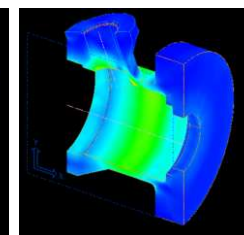
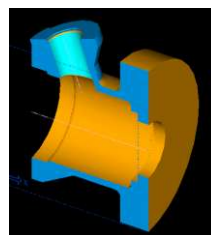
Inspired by the mission of offering world-class solutions in the area of Flow Control, a group of experienced engineers with decades of cumulative experience in design and manufacture of industrial Valves, decided to start business back in 1986.

Virgo Engineers, though started off as Valve automation system designers and manufacturers, soon, reverse integrated into manufacture of Ball Valves, Butterfly Valves and automation accessories. Over a short period of time, Virgo has gained a position of prominence in the field of process control valves and automation systems in varied applications in Chemical, Petrochemical, Oil & Gas, Fertilizer, Pharmaceutical & HVAC industries.

Virgo Valves are designed by using the latest techniques such as the CAD and Finite Element Analysis. State-of-the-art manufacturing technologies, modern quality management methods and competent ERP systems ensure efficient production processes resulting in consistently high quality standards over large quantities of valves.

High quality benchmarks set by Virgo for itself are evident by the ready acceptance of its products in markets all around the world.

This catalog will illustrate in detail Virgo's technical competence and experience in the area of Ball Valves.



## Soft Seated Ball Valve Range

TYPE	END CONNECTION	PORT	ASME CLASS	SIZE													
				1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"	
SINGLE PIECE	FLANGED	REDUCED	150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
TWO PIECE	FLANGED	FULL / REDUCED	150 / 300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		FULL / REDUCED	600	✓	✓	✓		✓	✓		✓	✓	✓*				
THREE PIECE	SOCKET WELD / SCREWED	FULL/REDUCED	400 / 800	✓	✓	✓	✓	✓	✓	✓							
SINGLE PIECE / FULL JACKETED	FLANGED	FULL	150	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			
TWO PIECE / PARTIAL JACKETED	FLANGED	FULL	150					✓	✓	✓	✓	✓	✓	✓			
3-WAY L PORT	FLANGED	FULL	150 / 300	✓	✓	✓		✓	✓			✓	✓	✓	✓		
3-WAY T PORT	FLANGED	FULL	150 / 300	✓	✓	✓		✓	✓			✓	✓	✓			

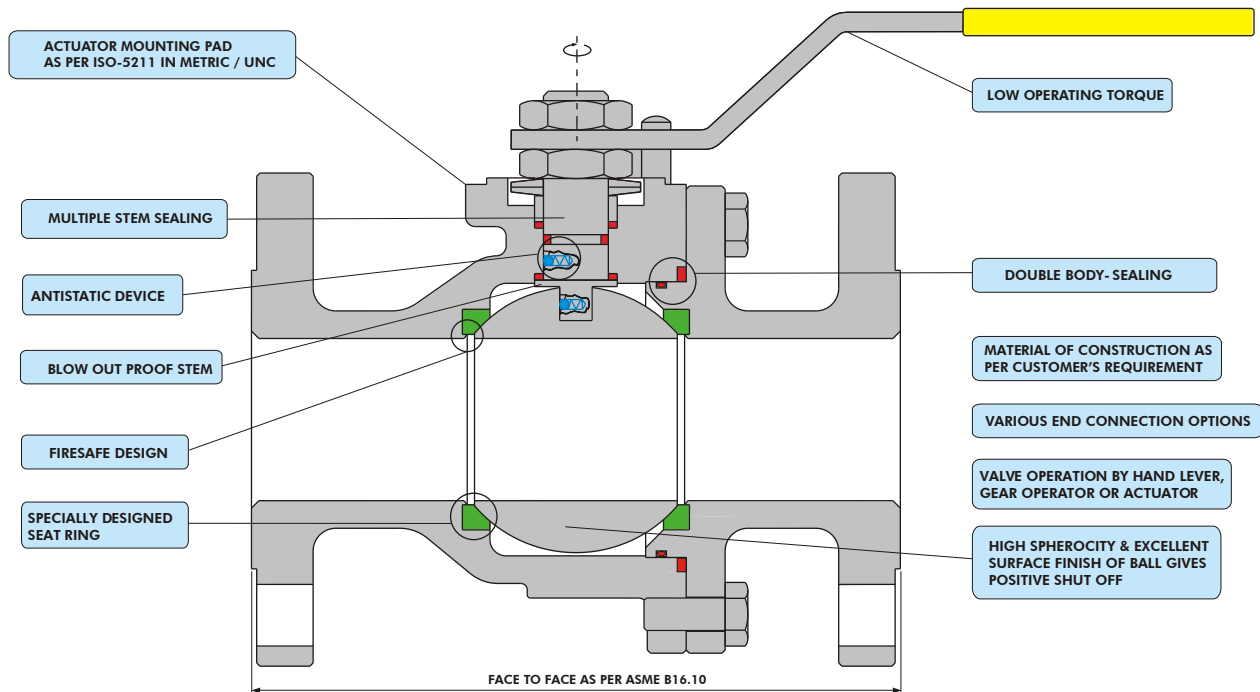
\* RB only

## Design & Testing Standards

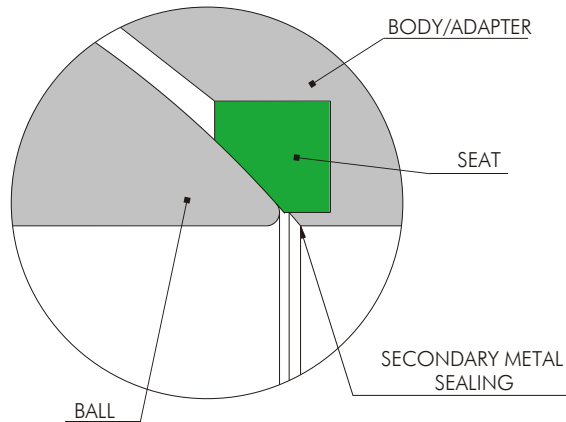
- Virgo valves are designed and manufactured as per ASME B 16.34, API 6D & BS 5351. These standards cover Pressure - Temperature ratings, minimum shell thickness, bore diameter for each size/class
- NACE MR 01-75 compliant
- Castings inspection as per MSS-SP 53, 54, 55, 59, 93 & 94
- Actuator mounting pad on the valve is as per ISO 5211
- Fugitive emission qualification as per TA - Luft / US clean air act and MESG
- Other applicable standards :
  - Face to Face : ASME B 16.10 / API 6D
  - Flange dimensions : ASME B 16.5
  - Butt welded valve ends : ASME B 16.25
  - Pressure tests : API 598 / BS 6755 Part I / API 6D
  - Fire safety : API 607 / API 6FA / BS 6755 Part II

**Quality Systems/Certifications** - ISO 9001-2000, API 6D -Q1, PED and GOST.

## Two Piece Soft Seated Ball Valve

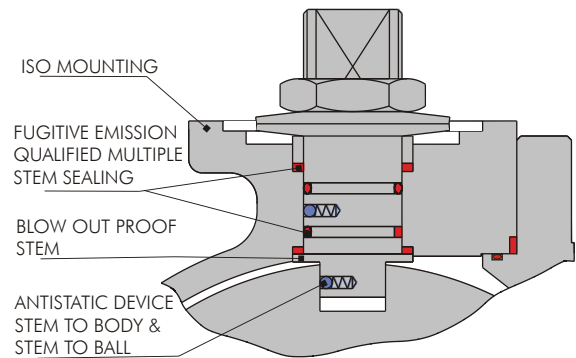


## Fire Safe Design Details



- Fire safe conformance to API 607 (Edition IV) / API 6FA / BS -6755 Part II assures highest standard of safety.
- Certified by customer's inspectors and independent certifying authorities.

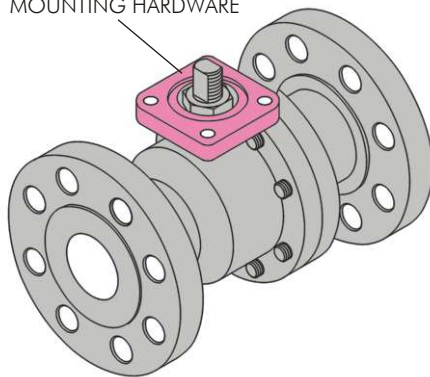
## Multi - Seal Stem



- Antistatic devices are built in the valve stem to ensure electrical continuity between ball, stem and body. Thus providing greater safety while handling volatile media.
  - Higher size ball valves are designed with stem bearing to absorb radial loading on the stem.
  - Multiple stem sealing ensures high degree of sealing.
- Note : For sizes upto 1" one Antistatic device is provided*

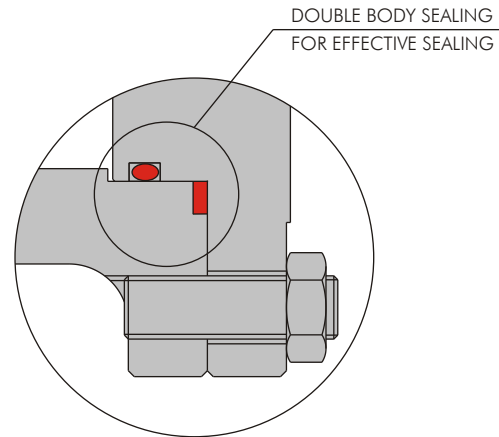
## Iso Pad Details

READY FOR MOUNTING WITH STANDARD MOUNTING HARDWARE



- Virgo valves incorporate ISO - 5211 top pad which simplifies actuator / gear operator mounting.

## Double Body Sealing



- Double body sealing ensures positive body - joint sealing against pipeline stresses.

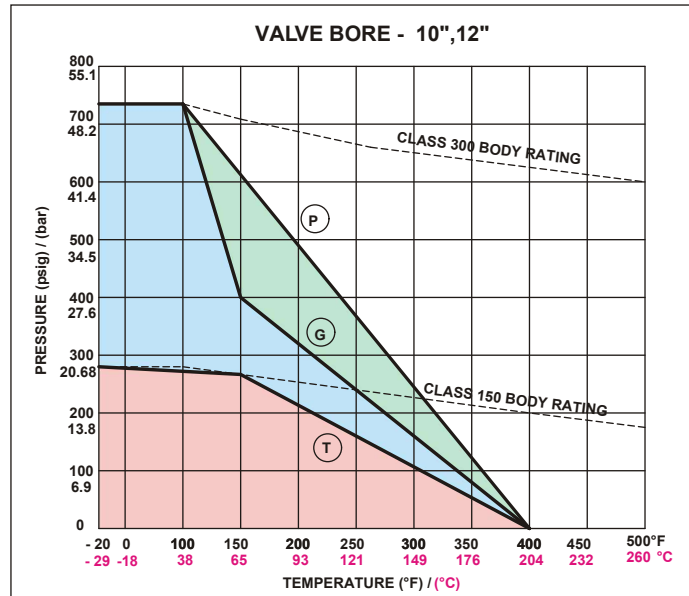
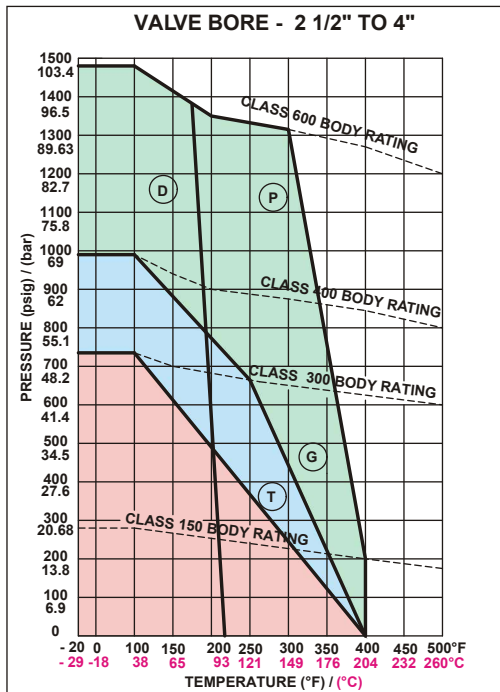
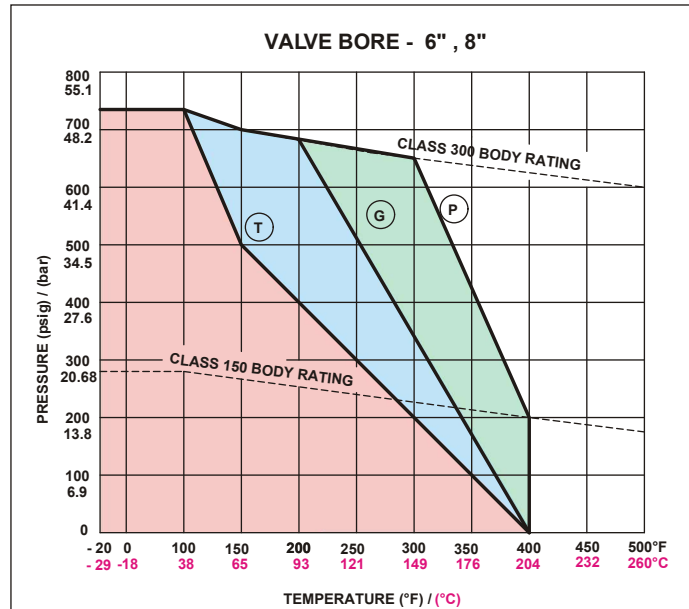
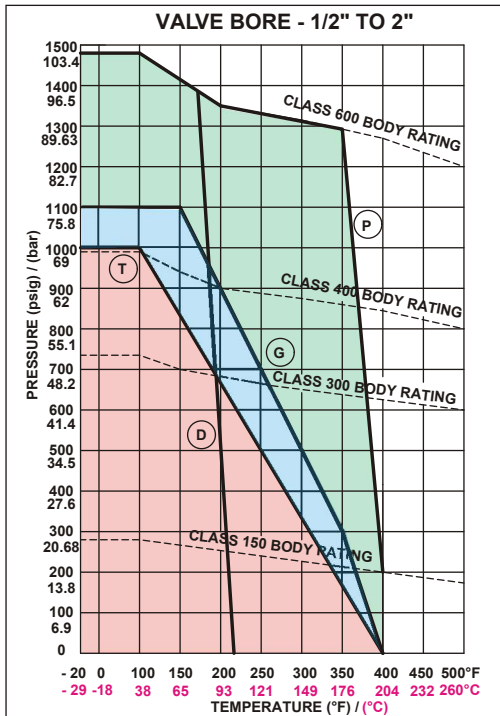
## Corrosion Protection and Painting

All castings are shot blasted and are subjected to de-watering oil coats. Carbon steel valves are Zinc phosphated and internally lacquered before final assembly.

Valves are thoroughly cleaned and primer coated with Epoxy zinc Phosphate primer, followed by a final coat of Epoxy blue shade applied in semi gloss finish.

Valves are shipped in vapor corrosion impregnated paper bags with desiccant pouches to prevent corrosion due to saline environment.

# Pressure - Temperature Ratings



### TEMPERATURE LIMITS:

	Material	Lower Limit F / °C	Upper Limit F / °C
BODY	WCB	-20 -29	1000 538
	LCB	-50 -46	650 343
	CF8	-425 -254	1500 816
	CF8M	-425 -254	1500 816
SEAT	DELRIN (D)	-50 -46	Refer Graph
	V-PTFE (T)	-50 -46	Refer Graph
	REINFORCED PTFE (G)	-50 -46	Refer Graph
	PEEK (P)**	-50 -46	Refer Graph

\* Respective alphabet in bracket represents Curve on Graph

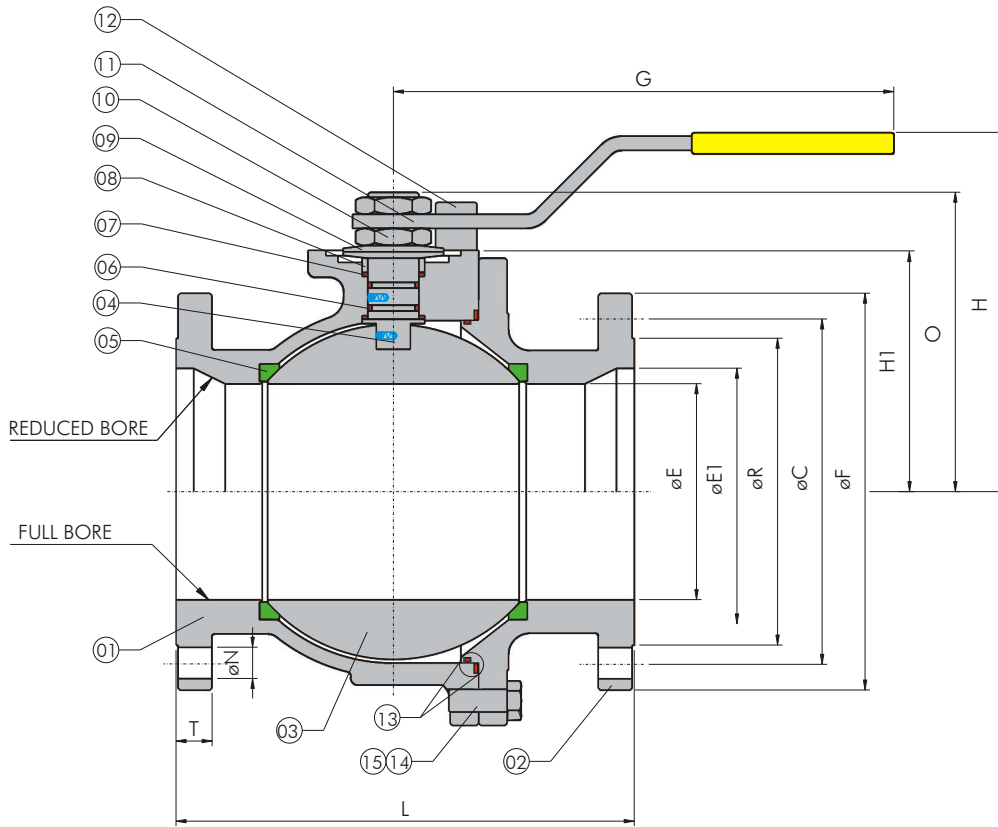
\*\* For application above 400° F consult Virgo Engineers Ltd.

Note:-

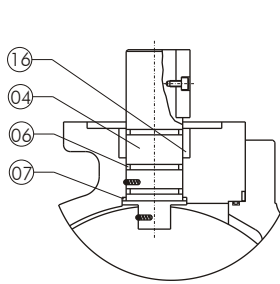
These ratings are a guide for general service. Please consult VIRGO Engineers Ltd. for specific recommendations.

Pressure-Temperature seat ratings of valves are as given in the graph for Body material ASTM A216 Gr. WCB. With the exception of Body Seat rings and Primary soft seals, all valve components are capable of withstanding the Pressure-Temperature rating as specified in ANSI B 16.34, BS 1560 part II, BS 4504:Part I or BS 5351 as applicable.

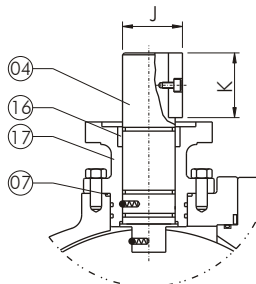
## Two Piece Soft Seated Floating Ball Valve



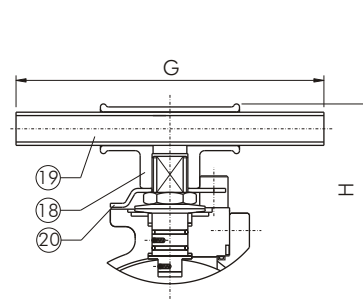
ITEM	PART NAME
01	BODY
02	BODY ADAPTER
03	BALL
04	STEM
05	SEAT
06	'O' RING
07	GASKET
08	SPACER
09	CUP SPRING
10	STEM NUT
11	HANDLE
12	STOP PIN
13	BODY SEAL
14	STUD
15	NUT
16	STEM BUSH
17	STEM HOUSING
18	HANDLE COUPLER
19	PIPE
20	STOP & LOCK PLATE
21	GEAR BOX



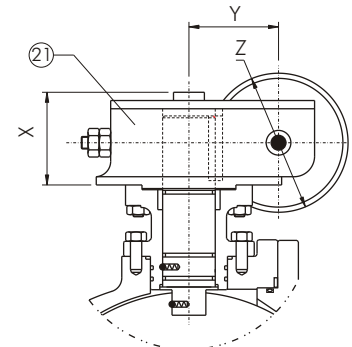
STEM ASSEMBLY DETAILS  
FOR 6" FB-300# &  
8"-150# & 300#



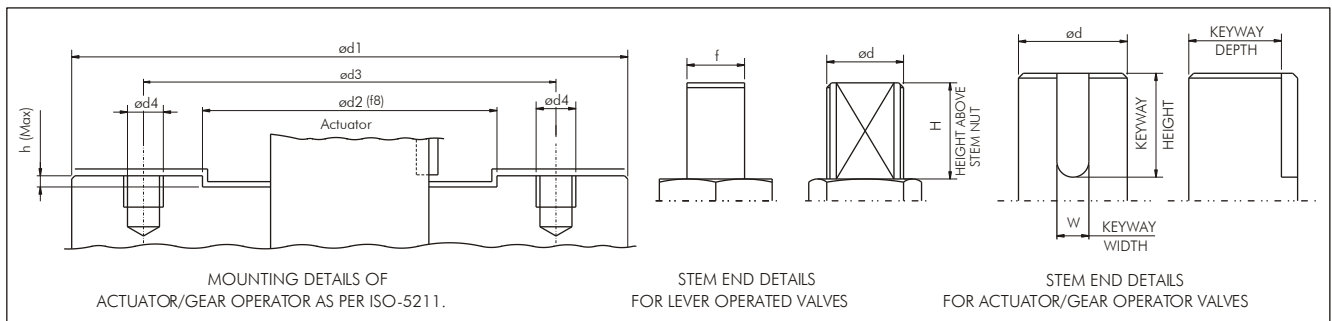
STEM ASSEMBLY DETAILS  
FOR 10" & 12"



FOR 6" FB CLASS-150



DIRECT MOUNTING GEAR BOX  
6" FB CLASS 300 & ABOVE



Note : 6" FB # 150 shall be gear operated for API 6D valves.

# Dimensional Details - 2 Piece Soft Seated Floating Ball Valve



## Dimensions (mm)

SIZE DN	15	20	25	40	50	65	80	100	150	200	250	300
---------	----	----	----	----	----	----	----	-----	-----	-----	-----	-----

CLASS	ASME 150 FULL BORE								(SP)/(LP)	(SP*)/(LP)	(LP)	(LP)
E	14	19	25	38	50	62	76	102	152	198/203	254	305
L	108.0	117.0	127.0	165.0	178	190.0	203	229	267/394	292/457	533.4	609.6
H	93	98	127	147	178	185	220	245	273	-	-	-
G	180	180	210	210	290	290	400	450	990	-	-	-
F	89	98.0	108.0	127.0	152.0	178	190	229	279.5	343.0	406.4	482.5
C	60.3	69.8	79.4	98.4	120.6	139.7	152.4	190.5	241.3	298.5	362.0	431.8
R	35	43	51	73	92	105	127	157	216	270	324	381
T	11.1	13	11.2	14.3	16.0	17.5	19.5	23.8	25.4	28.6	30.5	31.8
N	16	16	16	16	19	19	19	19	22	22	26	25.4
NO OF HOLES	4	4	4	4	4	4	4	8	8	8	12	12
O	50.5	55.5	66.5	92	105	114.5	138	160	222	266/274	370	504
H1	38	42	48	63	72.5	81.5	98	120	170	211.5/219	309	410.5
K	-	-	-	-	-	-	-	-	-	53	60	91
X	-	-	-	-	-	-	-	-	-	122	147	185
Y	-	-	-	-	-	-	-	-	-	131	116	225
Z	-	-	-	-	-	-	-	-	-	400	500	500
ISO 5211 MTG	F05	F05	F05	F05	F07	F07	F10	F10	F12	F14	F16	F25
WT(Kg)	2.0	2.6	3.6	6.0	10	16	20	38	70/92	140/150	250	382
GEAR BOX WT (Kg)	-	-	-	-	-	-	-	-	-	20	35	35
NO OF TURNS	-	-	-	-	-	-	-	-	-	15.00	11.25	18.75
TORQUE (Nm)	5	8	12	25	30	46	70	145	350	800	1200	2000
J x W	-	-	-	-	-	-	-	-	-	47 x 12	71.5 x 22	85.5 x 22

CLASS	ASME 300 FULL BORE								(SP/LP)	(LP)	(LP)	
E	14	19	25	38	50	62	76	102	152	203	254	305
L	140.5	152.0	165.0	190.0	216	241.0	283	305	403.4	419.0/502	568.4	648
H	93	98	127	147	178	185	220	245	-	-	-	-
G	180	180	210	210	290	290	450	450	-	-	-	-
F	95	117	124	156	165	190.5	210	254	318	381	444.5	520.7
C	66.7	83	89	114	127	149.2	168	200	270	330	387.3	451
R	35.0	43	51	73.0	92	105	127.0	157.0	216	270.0	324	381.0
T	14.3	15.8	17.5	20.6	22.4	25.4	28.6	32	36.5	41.3	47.8	51
N	16	19	19	22	19	22	22	22	22	25	28.5	32
NO OF HOLES	4	4	4	4	8	8	8	8	12	12	16	16
O	50.5	55.5	66.5	92	105	114.5	138	160	235.5	274	370	512
H1	38	42	48	63	72.5	83	98	120	180.5	219	309	418
K	-	-	-	-	-	-	-	-	53	53	60	91
X	-	-	-	-	-	-	-	-	115	122	171	185
Y	-	-	-	-	-	-	-	-	84	131	185	225
Z	-	-	-	-	-	-	-	-	400	400	500	600
ISO 5211 MTG	F05	F05	F05	F05	F07	F07	F10	F10	F14	F14	F16	F25
WT(Kg)	2.7	3.6	5	9.5	15	25	32	52	115	185/195	322	550
GEAR BOX WT (Kg)	-	-	-	-	-	-	-	-	20	20	35	45
NO OF TURNS	-	-	-	-	-	-	-	-	10.25	15	14	18.75
TORQUE (Nm)	8	9	16	35	44	64	110	180	550	1000	2100	3100
J X W	-	-	-	-	-	-	-	-	47 x 12	47 x 12	71.5 x 22	85.5 x 22

CLASS	ASME 150 REDUCED BORE								(SP)	(SP)	(SP)	(LP)
E	9	14	19	32	38	50	62	76	102	152	203	254
E1	14	19	25	38	50	62	76	102	152	203	254	305
L	108.0	117.0	127.0	165.0	178.0	190.0	203.0	229	267	292	330.0	609.5
H	60	93	98	127	147	178	185	220	245	273	-	-
G	104	180	180	210	210	290	290	450	450	990	-	-
F	89	98.0	108.0	127.0	152.0	178.0	190.0	229	279.5	343	406.4	482.5
C	60.3	69.8	79.4	98.4	120.6	139.7	152.4	190.5	241.3	298.5	362.0	431.8
R	35	43	51	73	92	105	127	157	216	270	324	381
T	11.2	13	11.2	14.3	16	17.5	19.5	23.8	25.4	28.6	30.5	31.8
N	16	16	16	16	19	19	19	19	22	22	26	25.4
NO OF HOLES	4	4	4	4	4	4	4	8	8	8	12	12
O	30.0	50.5	55.5	72.5	92.0	105.0	114.5	138.0	160	222	274.0	370
H1	20	38	42	52.3	63	72.5	81.5	98	120	170	219	309
K	-	-	-	-	-	-	-	-	-	-	53	60
X	-	-	-	-	-	-	-	-	-	-	122	170
Y	-	-	-	-	-	-	-	-	-	-	131	180
Z	-	-	-	-	-	-	-	-	-	-	400	500
ISO 5211 MTG	F03	F05	F05	F05	F05	F07	F07	F10	F10	F12	F14	F16
WT(Kg)	1.3	2.3	2.8	4.0	8.1	13.5	17.4	28.1	44.2	79	145	325
GEAR BOX WT (Kg)	-	-	-	-	-	-	-	-	-	-	20	35
NO OF TURNS	-	-	-	-	-	-	-	-	-	-	15	11
TORQUE (Nm)	4	5	8	20	25	30	46	70	145	350	800	1200
J X W	-	-	-	-	-	-	-	-	-	-	47 x 12	71.5 x 22

\* Complies to BS 5351 only





# Dimensional Details, Valve Operation

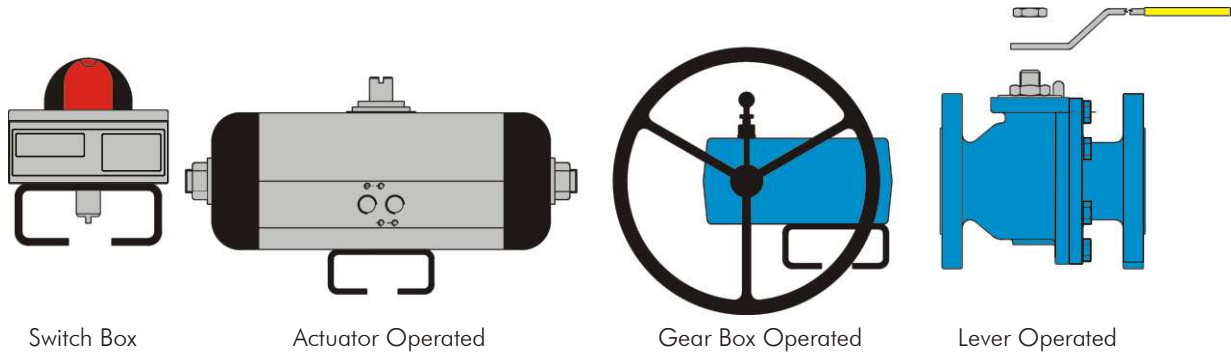


SIZE	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	6"(SP)	8"(SP)	10"(SP)	12"(LP)
<b>CLASS ASME 150 REDUCED BORE</b>												
E	0.35	0.55	0.75	1.26	1.50	1.97	2.44	2.99	4.02	5.98	7.99	10.00
E1	0.55	0.75	0.98	1.50	1.97	2.44	2.99	4.02	5.98	7.99	10.00	12.00
L	4.25	4.61	5.00	6.50	7.00	7.50	7.99	9.02	10.51	11.50	13.00	24.00
H	2.36	3.66	3.86	5.00	6.50	7.01	7.28	8.66	9.65	10.75	-	-
G	4.09	7.09	7.09	8.27	8.27	11.42	11.42	17.72	17.72	38.98	-	-
F	3.50	3.86	4.25	5.00	5.98	7.00	7.48	9.02	11.00	13.50	16.00	19.00
C	2.37	2.75	3.13	3.87	4.75	5.50	6.00	7.50	9.50	11.75	14.25	17.00
R	1.38	1.69	2.00	2.87	3.62	4.12	5.00	6.19	8.50	10.62	12.76	15.00
T	0.44	0.51	0.44	0.56	0.62	0.69	0.75	0.94	1.00	1.13	1.20	1.25
N	0.62	0.62	0.62	0.62	0.75	0.75	0.75	0.75	0.88	0.88	1.02	1.00
<b>NO. OF HOLES</b>	4	4	4	4	4	4	4	8	8	8	12	12
O	1.18	1.99	2.19	2.85	3.63	4.14	4.48	5.44	6.28	8.73	10.79	14.57
H1	0.79	1.50	1.65	2.06	2.48	2.85	3.21	3.86	4.72	6.69	8.62	12.17
K	-	-	-	-	-	-	-	-	-	-	2.09	2.36
X	-	-	-	-	-	-	-	-	-	-	4.80	5.79
Y	-	-	-	-	-	-	-	-	-	-	5.16	4.57
Z	-	-	-	-	-	-	-	-	-	-	15.75	19.69
<b>ISO5211 MTG</b>	F03	F05	F05	F05	F05	F07	F07	F10	F10	F12	F14	F16
<b>WT(lbs)</b>	2.9	5.07	6.2	8.8	17.86	29.76	38.36	61.95	97.44	174.2	319.67	716.5
<b>GEAR BOX WT (lbs)</b>	-	-	-	-	-	-	-	-	-	-	44	77.2
<b>NO OF TURNS</b>	-	-	-	-	-	-	-	-	-	-	15.00	11.25
<b>TORQUE (in-lbs)</b>	36	44	71	106	221	266	407	620	1283	3098	7080	10621
<b>J x W</b>	-	-	-	-	-	-	-	-	-	-	1.85x0.47	2.81x0.87

CLASS	ASME 300 REDUCED BORE										(SP)	(SP)	(SP)		
E	0.35	0.55	0.75	1.26	1.50	1.97	2.44	2.99	4.02	5.98	7.99	10.00			
E1	0.55	0.75	0.98	1.50	1.97	2.44	2.99	4.02	5.98	7.94	10.00	12.00			
L	5.53	5.98	6.50	7.48	8.50	9.50	11.14	12.00	15.88	16.50	18.00	19.75			
H	2.36	3.66	3.86	5.00	5.79	7.01	7.28	8.66	9.65	-	-	-			
G	4.09	7.09	7.09	8.27	8.27	11.42	11.42	17.72	17.72	-	-	-			
F	3.75	4.62	4.88	6.14	6.50	7.50	8.25	10.00	12.50	15.00	17.50	20.50			
C	2.63	3.25	3.50	4.50	5.00	5.88	6.62	7.88	10.62	13.00	15.25	17.75			
R	1.38	1.69	2.00	2.88	3.62	4.12	5.00	6.18	8.50	10.62	12.76	15.00			
T	0.56	0.62	0.69	0.81	0.88	1.00	1.13	1.26	1.44	1.63	1.88	2.01			
N	0.62	0.75	0.75	0.88	0.75	0.88	0.88	0.88	0.88	1.00	1.12	1.25			
<b>NO. OF HOLES</b>	4	4	4	4	8	8	8	8	12	12	16	16			
O	1.18	1.99	2.19	2.85	3.63	4.14	4.48	5.44	6.28	9.27	10.79	14.57			
H1	0.79	1.58	1.65	2.06	2.48	2.85	3.33	3.86	4.72	7.11	8.62	12.17			
K	-	-	-	-	-	-	-	-	-	2.09	2.09	2.36			
X	-	-	-	-	-	-	-	-	-	4.53	4.80	6.73			
Y	-	-	-	-	-	-	-	-	-	3.31	5.16	7.28			
Z	-	-	-	-	-	-	-	-	-	15.75	15.75	19.69			
<b>ISO5211 MTG</b>	F03	F05	F05	F05	F05	F07	F07	F10	F10	F14	F14	F16			
<b>WT(lbs)</b>	3.97	7.28	9.26	18.5	25.57	44	48.5	83.78	191.8	314.16	432.1	914.92			
<b>GEAR BOX WT (lbs)</b>	-	-	-	-	-	-	-	-	-	44	44	77.2			
<b>NO OF TURNS</b>	-	-	-	-	-	-	-	-	-	10.25	15.00	14.00			
<b>TORQUE (in-lbs)</b>	53	71	80	142	310	390	567	974	1593	4868	8851	18587			
<b>J x W</b>	-	-	-	-	-	-	-	-	-	1.85x0.47	1.85x0.47	2.81x0.87			

## Valve Operation :

Virgo offers an option of operating the valve by hand lever, gear operator or actuator. Length of lever and diameter of handwheel (maximum 31-1/2") of gear operator are designed to keep operating force less than 80 lb. All valves have a stopper for fully opened and closed position alongwith indicator to show position of ball port.





# Operator Mounting Details

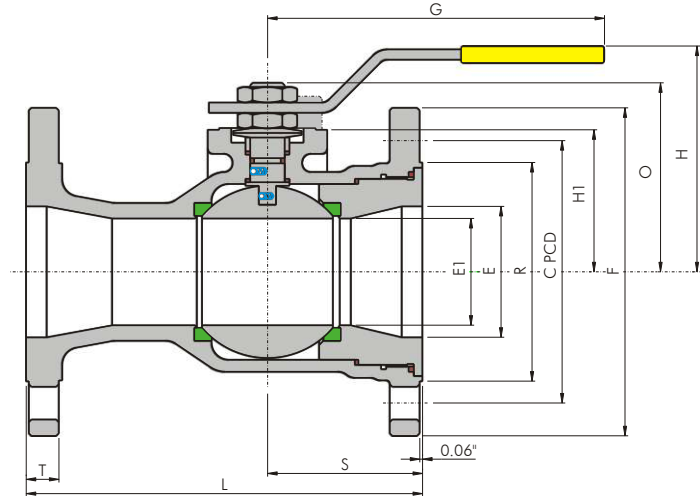
## Dimensions (mm)

SIZE	ISO PAD DETAILS												
	ISO 5211 FLANGE	d1	d2-f8	d3	d4	h-max	no. of studs	DIA. (d)	A/F(f)	HEIGHT ABOVE STEM NUT(H)	KEYWAY DEPTH	KEYWAY WIDTH	KEYWAY LENGTH
<b>Class 150/300</b>		mm	mm	mm	UNC	mm		mm	mm	mm	mm	mm	mm
DN15FB	F05	65	35	50	1/4"	3	4	12	8	8.8	-	-	-
DN20 FB	F05	65	35	50	1/4"	3	4	12	8	8.8	-	-	-
DN25 FB	F05	65	35	50	1/4"	3	4	16	10	11.7	-	-	-
DN40FB	F05	65	35	50	1/4"	3	4	16	10	19.3	-	-	-
DN50 FB	F07	90	55	70	5/16"	3	4	20	14	22.8	-	-	-
DN65FB	F07	90	55	70	5/16"	3	4	20	14	22.8	-	-	-
DN80 FB	F10	125	70	102	3/8"	3	4	28	20	27.8	-	-	-
DN100 FB	F10	125	70	102	3/8"	3	4	28	20	27.8	-	-	-
DN150FB#150	F12	150	85	125	1/2"	8.5	4	36	24	35.0	-	-	-
DN150FB#300	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN200FB#150	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN200FB#300	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN250FB#150	F16	210	130	165	3/4"	6	4	66	-	-	57	22	60
DN250FB#300	F16	210	130	165	3/4"	6	4	66	-	-	57	22	60
DN300FB#150	F25	300	200	254	5/8"	6	8	80	-	-	72	22	91
DN300FB#300	F25	300	200	254	5/8"	6	8	80	-	-	72	22	91
DN15 RB	F03	46	-	36	UNC 10	-	4	8	4	6.6	-	-	-
DN20 RB	F05	65	35	50	1/4"	3	4	12	8	8.8	-	-	-
DN25 RB	F05	65	35	50	1/4"	3	4	12	8	8.8	-	-	-
DN40RB	F05	65	35	50	1/4"	3	4	16	10	12.9	-	-	-
DN50 RB	F05	65	35	50	1/4"	3	4	16	10	19.3	-	-	-
DN65RB	F07	90	55	70	5/16"	3	4	20	14	22.8	-	-	-
DN80 RB	F07	90	55	70	5/16"	3	4	20	14	22.8	-	-	-
DN100 RB	F10	125	70	102	3/8"	3	4	28	20	27.8	-	-	-
DN150 RB	F10	125	70	102	3/8"	3	4	28	20	27.8	-	-	-
DN200RB#150	F12	150	85	125	1/2"	8.5	4	36	24	35.0	-	-	-
DN200RB#300	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN250RB#150	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN250RB#300	F14	175	100	140	5/8"	5	4	42	-	-	37	12	53
DN300RB#150	F16	210	130	165	3/4"	6	4	66	-	-	57	22	60
DN300RB#300	F16	210	130	165	3/4"	6	4	66	-	-	57	22	60

## Dimensions (inches)

Class 150/300		inch	inch	inch	UNC	inch		inch	inch	inch	inch	inch	inch
1/2"FB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.47	0.31	0.35	-	-	-
3/4" FB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.47	0.31	0.35	-	-	-
1" FB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.63	0.39	0.46	-	-	-
1-1/2"FB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.63	0.39	0.76	-	-	-
2" FB	F07	3.54	2.17	2.76	5/16"	0.12	4.00	0.79	0.55	0.90	-	-	-
2-1/2"FB	F07	3.54	2.17	2.76	5/16"	0.12	4.00	0.79	0.55	0.90	-	-	-
3" FB	F10	4.92	2.76	4.02	3/8"	0.12	4.00	1.10	0.79	1.09	-	-	-
4" FB	F10	4.92	2.76	4.02	3/8"	0.12	4.00	1.10	0.79	1.09	-	-	-
6" FB #150	F12	5.91	3.35	4.92	1/2"	0.34	4.00	1.42	0.94	1.38	-	-	-
6" FB #300	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
8" FB #150	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
8" FB #300	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
10" FB #150	F16	8.27	5.12	6.50	3/4"	0.24	4.00	2.60	-	-	2.25	0.87	2.36
10" FB #300	F16	8.27	5.12	6.50	3/4"	0.24	4.00	2.60	-	-	2.25	0.87	2.36
12"FB #150	F25	11.81	7.87	10.00	5/8"	0.24	8.00	3.15	-	-	2.82	0.87	3.58
12" FB #300	F25	11.81	7.87	10.00	5/8"	0.24	8.00	3.15	-	-	2.82	0.87	3.58
1/2" RB	F03	1.81	-	1.42	UNC 10	-	4.00	0.31	0.16	0.26	-	-	-
3/4"RB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.47	0.31	0.35	-	-	-
1" RB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.47	0.31	0.35	-	-	-
1-1/2" RB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.63	0.39	0.51	-	-	-
2" RB	F05	2.56	1.38	1.97	1/4"	0.12	4.00	0.63	0.39	0.76	-	-	-
2-1/2" RB	F07	3.54	2.17	2.76	5/16"	0.12	4.00	0.79	0.55	0.90	-	-	-
3" RB	F07	3.54	2.17	2.76	5/16"	0.12	4.00	0.79	0.55	0.90	-	-	-
4" RB	F10	4.92	2.76	4.02	3/8"	0.12	4.00	1.10	0.79	1.09	-	-	-
6"RB	F10	4.92	2.76	4.02	3/8"	0.12	4.00	1.10	0.79	1.09	-	-	-
8" RB 150	F12	5.91	3.35	4.92	1/2"	0.34	4.00	1.42	0.94	1.38	-	-	-
8" RB #300	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
10" RB #150	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
10" RB #300	F14	6.89	3.94	5.51	5/8"	0.20	4.00	1.65	-	-	1.44	0.47	2.09
12" RB #150	F16	8.27	5.12	6.50	3/4"	0.24	4.00	2.60	-	-	2.25	0.87	2.36
12" RB #300	F16	8.27	5.12	6.50	3/4"	0.24	4.00	2.60	-	-	2.25	0.87	2.36

# Single Piece Ball Valve 150# - General Assembly



## Dimensions (mm)

SIZE	DN15	DN20	DN25	DN40	DN50	DN65	DN80	DN100
CLASS	ASME 150 REDUCED BORE							
E1	9	14	19	25	38	50	62	76
E	14	19	25	38	50	62	76	102
L	108	117	127	165	178	190	203	229
H	52	63	96	133	147	176	185.5	219.5
G	110	130	180	210	210	290	290	450
F	89	98	108	127	152	178	190.5	229
C	60.5	69.8	79.4	98.4	120.7	139.7	152.4	190
R	35	43	51	73	92	105	127	157
T	11.1	12.7	14.3	17.5	19	22.2	23.8	23.8
N	16	16	16	16	19	19	19	19
NO OF HOLES	4	4	4	4	4	4	4	8
O	33	46	56.5	66.5	92	105	114	138
H1	18	25	38	46	60	66	87.5	90
WT(Kg)	6.45	7.64	8.24	10.81	13.89	19.05	25.79	32.74
TORQUE (Nm)	4	5	8	20	25	30	46	70

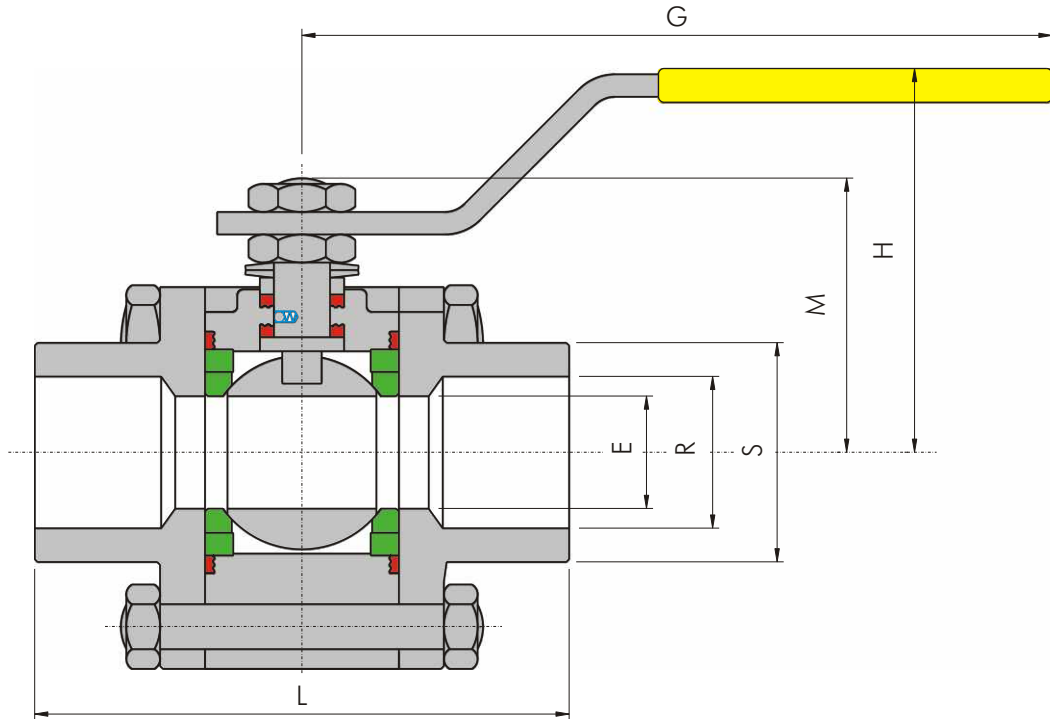
## Dimensions (inches)

SIZE	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"
CLASS	ASME 150 REDUCED BORE							
E1	0.35	0.55	0.75	1.25	1.50	1.97	2.44	3.00
E	0.55	0.75	1.00	1.50	1.97	2.44	3.00	4.00
L	4.25	4.62	5.00	6.50	7.00	7.48	8.00	9.00
H	2.03	2.47	3.77	5.25	5.80	6.94	7.30	8.64
G	4.33	5.12	7.09	8.27	8.27	11.42	11.42	17.72
F	3.50	3.86	4.25	5.00	6.00	7.00	7.50	9.00
C	2.38	2.75	3.13	3.87	4.75	5.50	6.00	7.48
R	1.38	1.69	2.00	2.88	3.62	4.12	5.00	6.19
T	0.44	0.50	0.56	0.69	0.75	0.88	0.94	0.94
N	0.62	0.62	0.62	0.62	0.75	0.75	0.75	0.75
NO. OF HOLES	4.00	4.00	4.00	4.00	4.00	4.00	4.00	8.00
O	1.29	1.81	2.22	2.62	3.64	4.13	4.49	5.43
H1	0.71	0.98	1.50	1.81	2.36	2.60	3.21	3.54
WT(lbs)	14.33	16.98	18.30	24.03	30.86	42.33	57.32	72.75
TORQUE (in-lbs)	36	44	71	106	221	266	407	620



One piece design feature eliminates any possible leakage to atmosphere through unnecessary joint faces. Insert holds the internal assembly in position and is shouldered into place. This creates a positive metal to metal sealing between body and insert, thus eliminating leakage through flange.

# Three Piece Ball Valve 400 # - General Assembly



## Dimensions (mm)

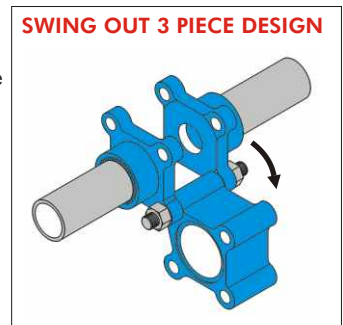
SIZE	DN15		DN20		DN25		DN32		DN40		DN50	
	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB
CLASS	ASME 400 FULL BORE / REDUCED BORE											
E	14	9	19	14	25	19	32	25	38	32	50	38
R	21.8	21.8	27.4	27.4	34.1	34.1	42.7	42.7	49.0	49.0	61.0	61.0
S	30.0	30.0	36.0	36.0	46.0	45.0	56	56	60.5	60.5	74	74
L	66.5	66.5	80.5	80.5	95.5	95.5	111.5	111.5	103.5	103.5	124.5	124.5
G	120	105	120	120	200	120	200	200	250	200	250	250
H	73	58	83	73	83.5	83	88	83.5	108.0	88.0	118.0	108.0
M	42.5	29.5	47.0	42.5	56.4	47.0	61.5	56.4	70.5	61.5	85.5	70.5
WT(Kg)SCRD	0.915	0.565	1.345	1.075	2.275	1.525	3.4	2.35	4.665	3.245	7.525	4.875
WT(Kg)SW	0.875	0.555	1.335	1.025	2.235	1.485	3.35	2.125	4.575	3.025	7.325	4.765
TORQUE(Nm)	8	6	9	8	16	9	25	16	35	25	44	35

## Dimensions (inches)

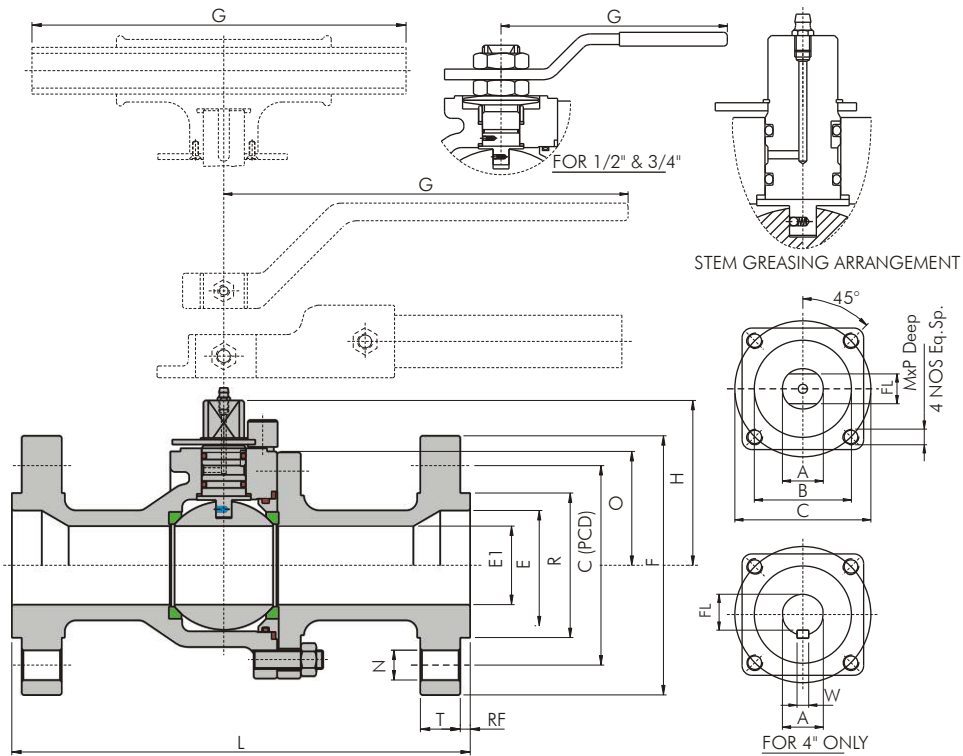
SIZE	1/2"		3/4"		1"		1-1/4"		1-1/2"		2"	
	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB
CLASS	ASME 400 FULL BORE / REDUCED BORE											
E	0.55	0.35	0.75	0.55	0.984	0.75	1.25	1.00	1.50	1.25	1.97	1.50
R	0.86	0.86	1.08	1.08	1.34	1.34	1.68	1.68	1.93	1.93	2.40	2.40
S	1.18	1.18	1.42	1.42	1.81	1.77	2.20	2.20	2.38	2.38	2.91	2.91
L	2.62	2.62	3.17	3.17	3.76	3.76	4.37	4.37	4.07	4.07	4.88	4.51
G	4.72	4.13	4.72	4.72	7.87	5.12	7.87	7.87	9.84	7.87	9.84	9.84
H	2.87	2.28	3.27	2.87	3.29	4.72	3.46	3.29	4.25	3.46	4.65	4.25
M	1.67	1.16	1.85	1.67	2.22	3.27	2.42	2.22	2.78	2.42	3.37	2.78
WT(lbs)SCRD	2.013	1.243	2.959	2.365	5.005	3.355	7.48	5.17	10.263	7.139	16.555	10.725
WT(lbs)SW	1.925	1.221	2.937	2.255	4.917	3.267	7.37	4.675	10.065	6.655	16.115	10.483
TORQUE(in-lbs)	71	53	80	71	142	80	221	142	310	142	390	310



Three-piece design is compact and is available with a variety of pipe ends like screwed, socket weld or butt weld. It uses bottom entry stem. Also it has a fully enclosed bolting. It combines superior performance characteristics with fast and economical in-line maintenance because of swing out design feature as illustrated. It is simple for installation and easy for maintenance; and also seats, seals and ball can be replaced quickly without disturbing pipe alignment.



# Two Piece Ball Valve 600# - General Assembly



Dimensions (mm)

CLASS	ASME 600 FULL BORE / REDUCED BORE												
	DN15		DN20		DN25		DN40		DN50		DN80		DN100
SIZE	FB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB
E x E1	14	19	14	25	19	38	25	50	38	76	50	102	76
L	165.0	190.5	190.5	216.0	216.0	241.3	241.3	292.0	292.0	355.6	355.6	432.0	432.0
H	67.0	67.0	67.0	66.0	67.0	91.0	66.0	106.0	91.0	147.0	106.0	184.0	147.0
G	212.0	212.0	212.0	205.0	212.0	275.0	205.0	455.0	275.0	692.0	455.0	990.0	692.0
F	95.3	117.6	117.6	124.0	124.0	155.4	155.4	165.0	165.0	209.6	209.6	273.0	273.0
C	66.5	83.0	83.0	89.0	89.0	114.3	114.3	127.0	127.0	168.0	168.0	216.0	216.0
R	35.0	43.0	43.0	51.0	51.0	73.0	73.0	92.0	92.0	127.0	127.0	157.0	157.0
T	14.2	15.7	15.7	17.5	17.5	22.4	22.4	25.4	25.4	32.0	32.0	38.0	38.0
N	16.0	19.0	19.0	19.0	19.0	22.0	22.0	19.0	19.0	22.0	22.0	25.4	25.4
NO. OF HOLES	4	4	4	4	4	4	4	8	8	8	8	8	8
O	48.0	48.0	48.0	48.0	48.0	63.0	48.0	72.5	63.0	108.0	72.5	125.0	108.0
ISO 5211 MTG	F05	F05	F05	F05	F05	F05	F05	F07	F05	F10	F07	F14	F10
A	16.0	16.0	16.0	20.0	16.0	24.0	20.0	26.0	24.0	34.0	26.0	42.0	34.0
B	35.0	35.0	35.0	35.0	35.0	35.0	35.0	55.0	35.0	70.0	55.0	100.0	70.0
D	50.0	50.0	50.0	50.0	50.0	50.0	50.0	70.0	50.0	102.0	70.0	140.0	102.0
FL	10.0	10.0	10.0	14.0	10.0	18.0	14.0	20.0	18.0	26.4	20.0	37.0	26.4
M UNC x P	1/4" x 10	1/4" x 10	1/4" x 10	1/4" x 8.0	1/4" x 10	1/4" x 8.0	1/4" x 8.0	5/16" x 13.0	1/4" x 8.0	3/8" x 15.0	5/16" x 13.0	5/8" x 18.0	3/8" x 15.0
WT(Kg)	4.2	4.5	-	6.8	-	12.7	-	17.0	16.0	39.0	-	80.0	60.0
TORQUE (Nm)	26	30	26	66	30	100	66	134	100	304	134	500	304

NOTE : RF FOR 600# = 6.4 mm. FOR 4" SIZE W x K= 12 x 55

Dimensions (inches)

CLASS	ASME 600 FULL BORE / REDUCED BORE												
	1/2"		3/4"		1"		1-1/2"		2"		3"		4"
SIZE	FB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB	FB	RB
E x E1	0.55	0.75	0.55	0.98	0.75	1.50	0.98	1.97	1.50	2.99	1.97	4.02	2.99
L	6.5	7.5	7.5	8.5	8.5	9.5	9.5	11.5	11.5	14.0	14.0	17.0	17.0
H	2.64	2.64	2.64	2.61	2.64	3.58	2.61	4.17	3.58	5.77	4.17	7.24	5.77
G	8.35	8.35	8.35	8.07	8.35	10.8	8.07	17.91	10.8	27.24	17.91	38.98	27.09
F	3.75	4.63	4.63	4.88	4.88	6.12	6.12	6.50	6.50	8.25	8.25	10.75	10.75
C	2.62	3.27	3.27	3.50	3.50	4.50	4.50	5.00	5.00	6.62	6.62	8.50	8.50
R	1.38	1.69	1.69	2.00	2.00	2.88	2.88	3.62	3.62	5.00	5.00	6.18	6.18
T	0.56	0.62	0.62	0.69	0.69	0.88	0.88	1.00	1.00	1.26	1.26	1.50	1.50
N	0.63	0.75	0.75	0.75	0.75	0.88	0.88	0.75	0.75	0.88	0.88	1.00	1.00
NO. OF HOLES	4	4	4	4	4	4	4	8	8	8	8	8	8
O	1.89	1.89	1.89	1.89	1.89	2.48	1.89	2.85	2.48	4.25	2.85	4.92	4.25
ISO 5211 MTG	F05	F05	F05	F05	F05	F05	F05	F07	F05	F10	F07	F14	F10
A	0.63	0.63	0.63	0.79	0.63	0.94	0.79	1.02	0.94	1.34	1.02	1.65	1.34
B	1.38	1.38	1.38	1.38	1.38	1.38	1.38	2.17	1.38	2.76	2.17	3.94	2.76
D	1.97	1.97	1.97	1.97	1.97	1.97	1.97	2.76	1.97	4.02	2.76	5.51	4.02
FL	0.39	0.39	0.39	0.55	0.55	0.71	0.55	0.79	0.71	1.04	0.79	1.46	1.04
M UNC x P	1/4" x 0.39	1/4" x 0.39	1/4" x 0.39	1/4" x 0.31	1/4" x 0.39	1/4" x 0.31	1/4" x 0.31	5/16" x 0.51	1/4" x 0.31	3/8" x 0.59	5/16" x 0.51	5/8" x 0.71	3/8" x 0.59
WT(lbs)	9.26	9.92	-	14.99	-	28	-	35.27	-	86.0	-	176.4	132
TORQUE (in-lbs)	230	266	230	584	584	885	266	1186	885	2691	1186	4425	2691

NOTE : RF FOR 600# = 0.25". FOR 4" SIZE W x K= 0.47 X 2.17"

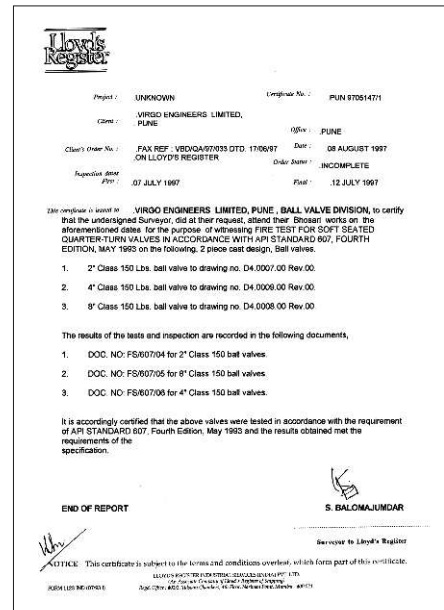
## Material of Construction

PART	MATERIAL OPTIONS
BODY	ASTM - A 216 WCB / A351 CF8 / A 351 CF8M / A 351 CF3 / A 351 CF3M / A 352 LCB / A 217 CA15
BODY ADAPTER	ASTM - A 216 WCB / A351 CF8 / A 351 CF8M / A 351 CF3 / A 351 CF3M / A 352 LCB / A 217 CA15
BALL	ASTM - A 351 CF8 / A 351 CF8M / A 351 CF3 / A 351 CF3M / A 217 CA15
STEM	ASTM - A479 SS304 / A479 SS316 / A479 SS304L / A479 SS316L / A182 F304 / A182 F316 / A182 F410
SEAT	VIRGIN PTFE / RPTFE / NYLON / PEEK / DELRIN / PCTFE/DEVLON
O RING	VITON
STEM GASKET	VIRGIN PTFE / RPTFE / GRAPHITE
SPACER	ASTM - A 479 SS316
CUP SPRING	ASTM - A 479 SS304 / 50 Cr V4
STEM NUT	ASTM - A 194 Gr.7/ A194 Gr.7M / A 194 Gr.8/ A 194 Gr.8M / A 194 Gr.2H / A 194 Gr.2HM
HANDLE	MS (ZINC PLATED) / SS304 / SS316
STOP PIN	ASTM - A 479 SS316 / MS
BODY GASKET	VIRGIN PTFE / RPTFE / GRAPHITE
STUDS / BOLTS	ASTM - A 320 Gr.L7 / A320 Gr.L7M/ A 193 Gr.B8 / A 193 Gr.B8M / A 193 Gr.B7 / A 193 Gr.B7M
NUT	ASTM - A 194 Gr.7/ A194 Gr.7M / A 194 Gr.8 / A 194 Gr.8M / A 194 2H / A 194 Gr.2HM
STEM BUSH	PHOSPHOR BRONZE
STEM HOUSING	ASTM - A 216 WCB / A351 CF8 / A 351 CF8M / A 351 CF3 / A 351 CF3M / A 352 LCB / A 217 CA15

- Materials not listed above can be offered on request

## Fire Test

Virgo Ball Valves have been designed to meet the requirements of API 607 (Edition IV) / API 6 FA / BS 6755 - Part II. Fire safe tests have been witnessed and certified by Lloyd's Register.



SR.NO	TYPE OF VALVE	SIZE	RATING	STANDARD
1	SOFT SEATED SINGLE PIECE DESIGN	1/2" TO 3"	150#, 300#	API 607 (Edition IV)
2	SOFT SEATED TWO PIECE DESIGN	1/2" TO 12" 3/4" TO 12"	150#, 300#, 600# 150#, 300#, 600#	API 6FA / BS 6755 PART-II API 607 (Edition IV)
3	SOFT SEATED THREE PIECE DESIGN	1/2", 3/4" 1" TO 2"	400#, 600#, 800# 400#, 600#, 800#	API 607 (Edition IV) BS 6755 PART - II

# Product Selection Code



Design	Construction	End Connection	Rating	Bore	Body	Ball	Seat/Seat Insert	Fire Safety	Operation	Pattern	Special Req.
S	1 2 3	RF RS FF FS RT SW SN BS NP BW DN BT	1 2 3 4 5 6 7 8 9	F R	C 1 L 4 6 3 5 A O	C 1 L 4 6 3 5 A O	T G C F B N D P E L	F S	B G L A	SP LP	XX

## Design

S - Floating ball Valve

## Construction

- 1 - Single Piece
- 2 - Two Piece
- 3 - Three Piece

## End connection & finish

- RF - Flanged raised face serrated
- RS - Flanged raised face smooth
- FF - Flanged flat face serrated
- FS - Flanged flat face smooth
- RT - Flanged RTJ
- SW - Socket weld
- SN - Socket weld with 4" nipple extension
- BS - Screwed BSP
- NP - Screwed NPT
- BW - Butt weld
- DN - DIN
- BT - Screwed BSPT

## Rating

- 1 - 150# / PN16
- 2 - 1500#
- 3 - 300# / PN40
- 4 - 400# / PN64
- 5 - 2500#
- 6 - 600#
- 8 - 800#
- 9 - 900#

## Bore

- F - Full Bore
- R - Reduced Bore

## Body

- C - WCB
- 1 - A105
- L - LCB / LCC
- 4 - CF8/SS304
- 6 - CF8M / SS316
- 3 - CF3 / SS304L
- 5 - CF3M / SS316L
- A - CA 15 / SS410
- O - Other than above

## Ball

- C - WCB
- 1 - A105
- L - LCB
- 4 - CF8/SS304
- 6 - CF8M / SS316
- 3 - CF3 / SS304L
- 5 - CF3M / SS316L
- A - CA 15 / SS410
- O - Other than above

## Seat / Seat insert

- T - PTFE
- G - GFT
- C - CFT
- F - CGFT
- B - BFT
- N - Nylon
- D - Delrin
- P - PEEK
- E - PCTFE
- L - DEVLON

## Fire safety

- F - Fire safeS
- S - Non fire safe

## Operation

- B - Bare stem
- G - Gear operated
- L - Handlever
- A - Actuated

## Pattern

- SP - Short pattern
- LP - Long Pattern

## Special

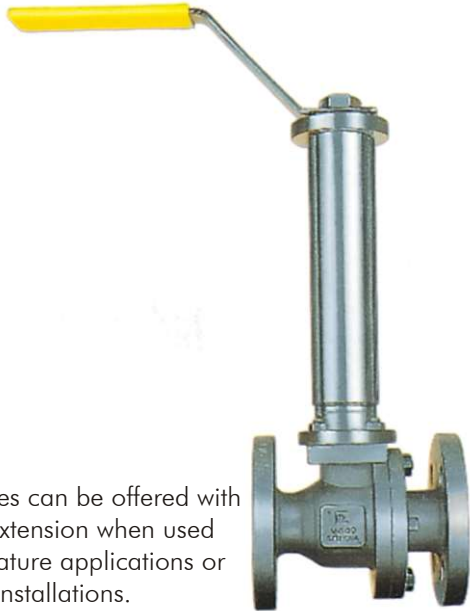
- XX - Special Requirements to be specified

## EXAMPLE

S	2	RF	1	F	C	6	T	S	L	SP	XX
---	---	----	---	---	---	---	---	---	---	----	----

This code stands for Floating ball valve, Two piece with flanged raised face serrated end connection, 150#, full bore, WCB body, CF8M/SS 316 ball, PTFE seat, Non fire safe, Hand-lever operation, short pattern and with special req. to be specified.

## EXTENDED STEM



Virgo Ball Valves can be offered with suitable stem extension when used for low temperature applications or under ground installations.

## THREE WAY BALL VALVE

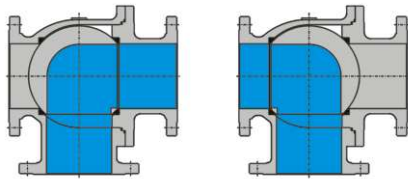


## PARTIAL / FULL JACKETED BALL VALVE

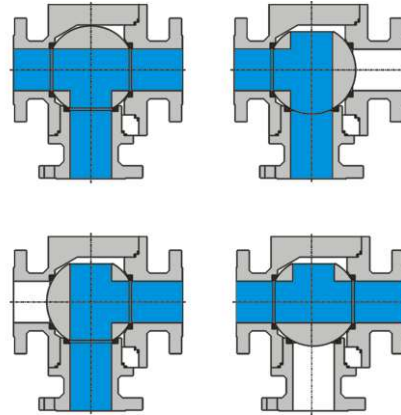


Jacketed chamber is fabricated and tested for service pressure

## FLOW PATH DIAGRAM FOR MULTI-PORT VALVES



Three way L-port configuration



Three way T-port configuration

### Notice :

1. The descriptions of all the products contained in this catalogue are general in nature and the products are subject to Virgo's Standard Warranty and other terms and conditions as contained in the applicable contract for such products.
2. We reserve the right to change or modify Product Design or construct without prior notice and without any obligation to make such modification / change on products previously or subsequently sold.
3. 'Virgo' is a trademark of Virgo Engineers Inc.
4. All Virgo Valves are designed and manufactured using good workmanship and materials and they meet all applicable industry standards. Virgo is very anxious to avoid injuries and property damage that might result from wrong application of the product. Proper Valve selection for a given application is imperative. Examples of misapplication or misuse of a Valve include but are not limited to any service or application in which the pressure - temperature rating is exceeded or in a chemical service that is incompatible with valve materials, use of undersized valve and actuator, use of extremely fast valve application and /or continuous valve cycling on standard valves, making modification to the product in any kind, failure to use caution in operating at high temperature, high pressure or highly hazardous services and failure to maintain valves as recommended.