

A new generation of ball valves with fugitive emission control and ISO mounting pad.

Features

- Superior valve design at a competitive price
- Fugitive emissions control for flammable and non-flammable applications
- Machined ISO actuator mounting pad
- Pure white E-seat (PTFE / PFA Copolymer) seal relieves concern over product contamination.
- Positive alignment of split body
- Fire test certified to API 607 5th Edition
- Reinforced PTFE bearing and packing rings reduce wear.
- Lower operating torque for ease of operation and reduced actuator cost.
- Positive position indication
- Blowout-proof stem
- NACE MR-01-75 is available.
- Locking device is available.
- Static electricity grounding device
- Various seat types are available.

In addition to standard E-seat, various seats are available in following variety. Each seat option will meet a wide range of performance, suitable for many applications.

PTFE / PFA Copolymer ; E-seat (standard)*

PEEK-seat (option)

Gratite®-seat (option)

Metaltite®-seat (option)

*Please refer to the Pressure-Temperature rating on page7



General applications

Pulp and paper, reactive monomers, oil and gas production, steam, hot gases, toxic and lethal, fire-safe and flammables

Option

- Stem extension
- For cryogenic, oxygen and vacuum services
- CE Marking PED 97 / 23 / EC
- CE Marking ATEX 94 / 9 / EC
- Special painting
- Special tests
 - X-ray (RT)
 - Liquid penetrant (PT)
 - Positive Material Identification (PMI)

Model / Sizes : Full bore

EB11, EB12

15mm to 200mm (1/2" to 8")

: Reduced bore

EB21, EB22

150mm to 250mm (6" to 10")

Pressure rating : ASME Class 150, 300

JIS 10K, 20K (JPI also available)

Temperature : -29°C to 270°C (Depending on options -196°C to 500°C is available)

Seat leakage : Zero leakage (E-seat)

KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore

ISO5211 Actuator Mounting Pad:

Machined "automation pad" allows precise mounting of actuator ; mounting bolts independent from stem-packing gland bolts. Exact alignment reduces torque requirements and prevents out-of-line wear.

Radial Thrust Bearings:

Radial loading absorbed and friction from axial stem loading reduced. Dual thrust bearings support stem for extended cycle life and superior thermal characteristics.

Blow-out Proof Stem and Primary Stem Seal:

Stem shoulder is integral part of stem, retained internally to prevent stem blowout from pressure in body cavity. Primary stem seal prevents leakage to atmosphere, also serves as low-torque bearing.

Precise, Smooth Ball:

Ball sphericity and surface finish are key factors in attaining long valve life, low operating torque and superb pressure-holding capacity.

Rigid Split Body:

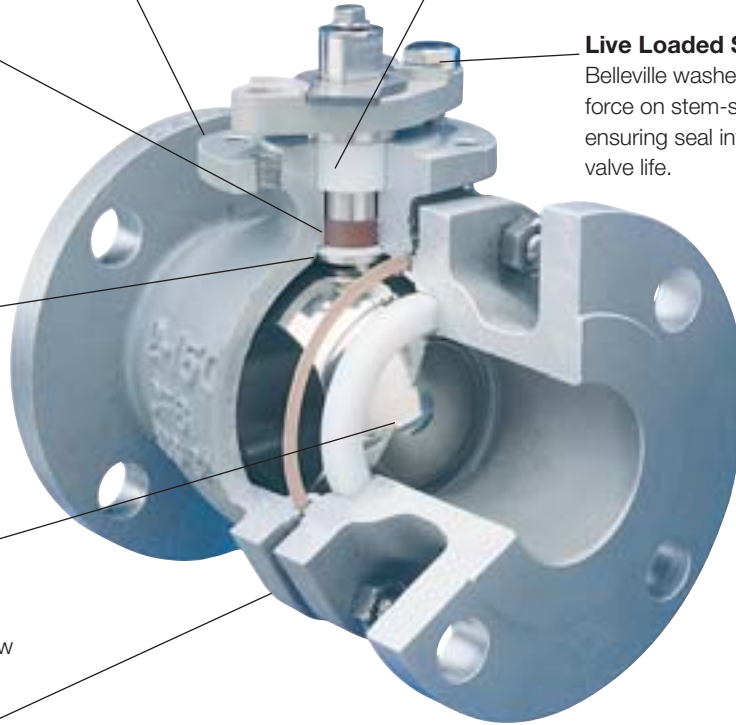
Designed with extra bolts to assure positive alignment and maximum protection against bending stresses in the piping and forces produced by thermal distortion ; designed with secondary metal to metal seal in the event of fire.

Fugitive Emissions Control:

Multiple layers of adjustable PTFE chevron packing rings for standard models ; while graphite braided / die-formed seals are used for models tested to API 607 4th edition.

Live Loaded Spring:

Belleville washer keeps constant force on stem-seal packing, ensuring seal integrity and extended valve life.



Cast Bleed-Port Boss:

Provision can be made for drain bleed port when required. (Not shown)

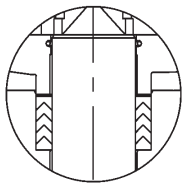
Anti-Static Grounding:

Special retaining spring provides positive ground for use with volatile or flammable liquids. (Not shown)

Standard Primary Containment Seals for Fugitive Emission Control

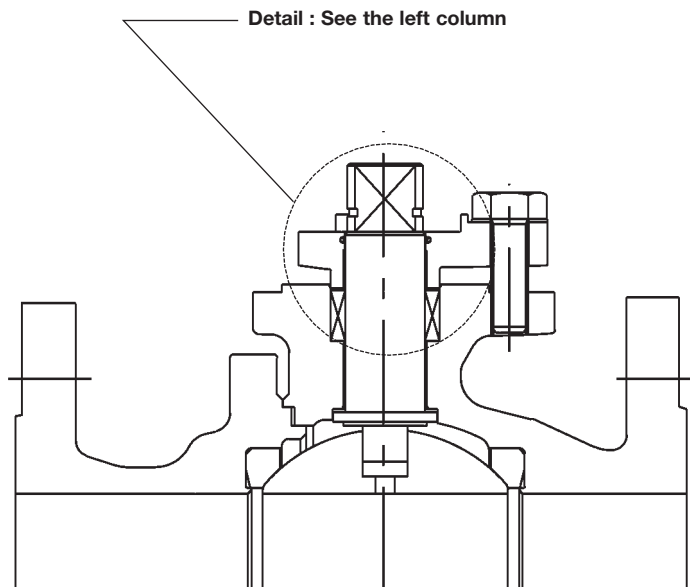
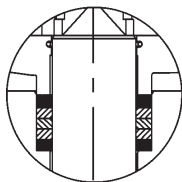
Standard Seals

Superior quality multi-layered, adjustable chevron packing rings as stem seals.



Fire tested (option)

Die-formed carbon fiber seals, sandwiched by braided graphite rings. Fire safe in design, minimising leakage in the event of fire. Fire tested to API 607 5th edition.

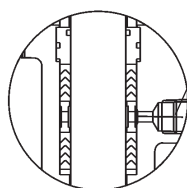


Standard bonnet

Optional Secondary Containment Seals for Fugitive Emission Control / Toxic and Lethal Applications

Chevron PTFE packing (option)

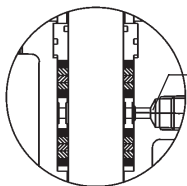
Double packing gland elastomer seal with a lantern ring. If media leaks through primary seal, it can be detected & stopped by pressure injection.



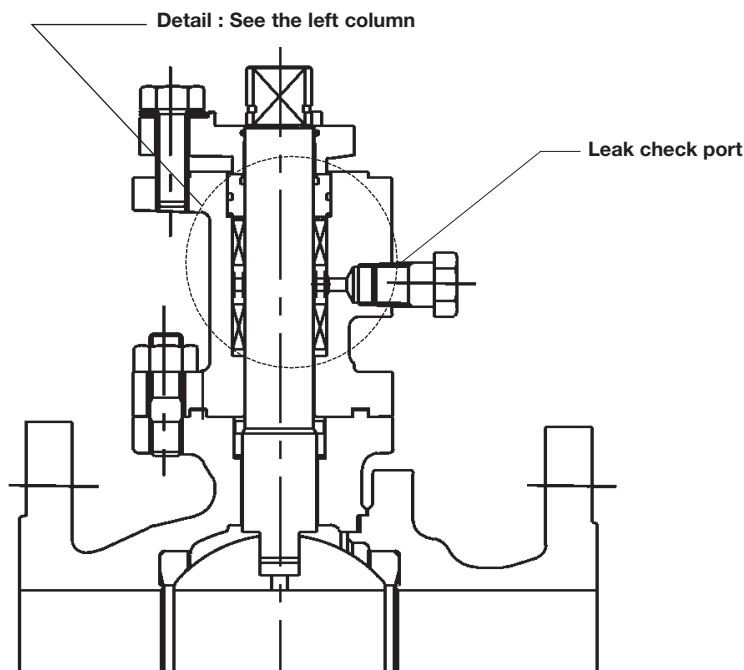
Leak check port

Flammable services (option)

Double packing gland graphite seal and lantern ring.



Leak check port



Extended bonnet

KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore

The OM-2 is available in three basic types of seats : soft, Gratite® and Metaltite®. Each offering a range of performance suitable for many applications.

Soft Seat

Choose from two soft seat materials : The standard E-Seat PTFE / PFA copolymer or PEEK. Each type of seat is retained in the same manner and is machined with a protective lip, designed to eliminate seat deformation and cold flow. This same lip acts as a secondary back-up seal, which forms a metal to metal contact in the event the primary soft seal is burnt in a fire (see details, right).

The E-Seat offers process purity, strength, integrity, low permeability and high resiliency. It is composed of a unique molecularly enhanced copolymer of PTFE and PFA. It offers a full range of properties formerly requiring two separate materials. The E-seat provides pressure and temperature capabilities previously available only with glass or carbon fiber-reinforced PTFE. In high-temperature operations, the seat remains white, eliminating the problem of color contamination associated with seats made from darker reinforced materials. The E-seat is excellent on a wide variety of applications but is particularly recommended for use on styrene and butadiene, where low permeability is a required performance factor; and on low-pressure steam, where flaking of virgin PTFE is a problem. It is also recommended for use on food and beverage, pharmaceutical and biotech, paper, clean gas and any other applications where product purity and the lack of foreign fillers are critical to process media integrity.

The Popcorn Factor : The photo (A) shows a virgin PTFE seat after the attack by a reactive monomer (in this case, styrene). The material's molecular matrix was penetrated by the vapor pressure of the uninhibited monomers, resulting in a polymeric reaction, commonly known as "popcorn polymerization". This reaction can totally destroy the seat material.

The photo (B) shows the results of the E-seat copolymer tested by KTM. Using butadiene, generally considered the worst-case scenario due to its small molecular size, the test ran for two years at 0.84 MPa and 82°C. The seats experienced minimum distortion and, after the two-year period, did not leak in service. Pressure tests after removal, at 1.1 times of design pressure, also showed no leakage. The photo shows two of the tested seats and a new seat in the middle for comparison.

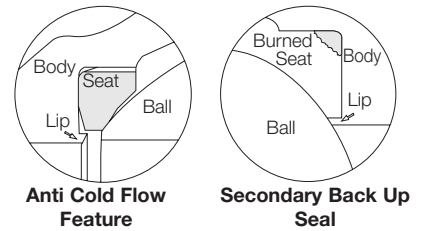


Photo (A)



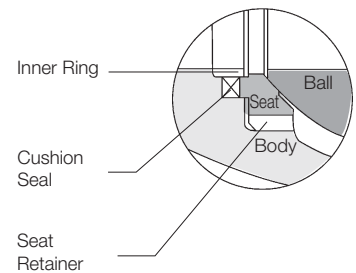
Photo (B)

Gratite® Seat

A proprietary product for high-temperature, high-pressure, flammable and corrosive critical-process applications, the KTM Gratite® seat offers superior performance and reliability. Gratite® is a bonded composite of hard graphite material. The cushion seal provides resiliency during thermal expansion-contraction. The result is a seat with physical properties that are far superior to conventional ball valve seats of carbon graphite construction.

- More economical than Stellite
- High resistance to thermal shock

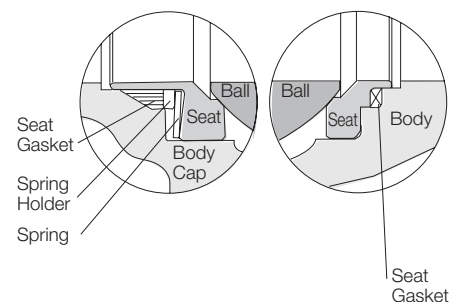
Gratite® is a registered trademark of Tyco Flow Control Japan Co., LTD.



Metaltit® Seat

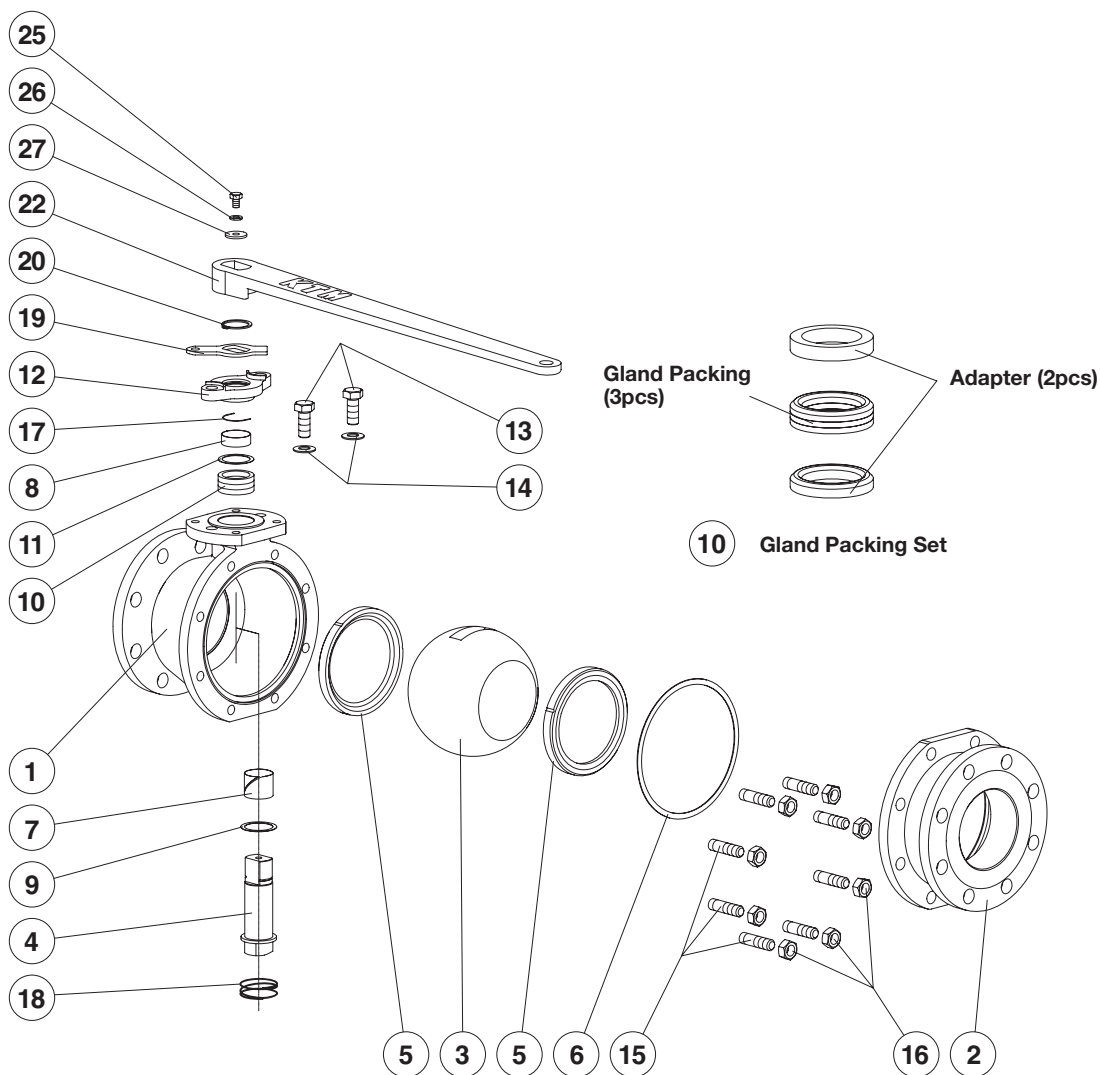
KTM utilizes proprietary processes with special lapping technologies to provide a higher-quality product with a superior level of performance. Suitable for temperature range up to 500°C, the Metaltite® metal seat provides high performance solutions to many difficult and bidirectional applications. Precision lapping of the ball-to-seat fit result in superior interfacing and a tight shut-off conforming to FCI 70-2 Class V and Class VI (option). Available with two different ball coatings: Hard chrome or Nickel alloy overlay. Durable stellite stainless seats are highly corrosion and erosion resistant. PTFE or soft carbon stem seals are available.

Metaltite® is a registered trademark of Tyco Flow Control Japan Co., LTD.



KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore



Standards

Design : ASME B16.34
 Face to face : ASME B16.10, JIS B2002
 End connection : ASME B16.5, JIS B2220
 Testing : ASME B16.34, API 598,
 API 6D
 Fire test : API 607 5th edition
 Quality Assurance : ISO 9001

Parts List and materials of construction materials

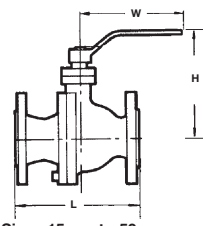
No.	Parts Name	Trim Code	Materials			Qty
			62.1E	31.1E	32.1E	
1	Body		WCB	CF8	CF8M	1
2	Body Cap		WCB	CF8	CF8M	1
3	Ball		CF8	CF8	CF8M	1
4	Stem		A276 (TP) 304	A276 (TP) 304	A276 (TP) 316	1
5	Seat		PTFE / PFA Copolymer	PTFE / PFA Copolymer	PTFE / PFA Copolymer	2
6	Gasket		R-PTFE	R-PTFE	R-PTFE	1
7	Stem Bearing		R-PTFE	R-PTFE	R-PTFE	1
8	Stem Bearing		PTFE	PTFE	PTFE	1
9	Thrust Bearing		PTFE	PTFE	PTFE	1
10	Gland Packing Set		PTFE	PTFE	PTFE	1 set
11	Packing Washer		316SS	316SS	316SS	1
12	Gland Flange		CF8	CF8	CF8	1
13	Gland Bolt		A193 (G) B8	A193 (G) B8	A193 (G) B8	2
14	Live Loading Spring		SUS304	SUS304	SUS304	2
15	Stud		A193 (G) B7	A193 (G) B8	A194 (G) 8	4-12
16	Nut		A194 (G) 2H	A193 (G) B8	A194 (G) 8	4-12
17	Spring		316SS	316SS	316SS	1
18	Spring (65mm and larger)		316SS	316SS	316SS	1
19	Stopper		304SS	304SS	304SS	1
20	Snap Ring (C-Type)		304SS	304SS	304SS	1
22	Handle		SS400Zn / FCD450	SS400Zn / FCD450	SS400Zn / FCD450	1
25	Hexagon Bolt		304SS	304SS	304SS	1
26	Spring Washer		304SS	304SS	304SS	1
27	Plate Washer		304SS	304SS	304SS	1

• The material parts vary slightly depending on the valve size, but the basic structures are identical. Other materials are also available. Please consult for the details.

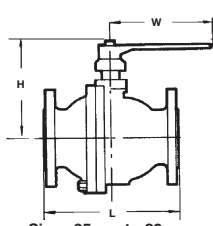
KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore

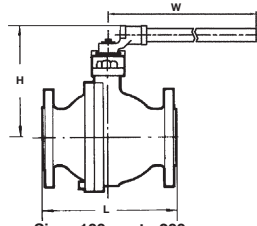
D : Outside diameter
 C : Bolt circle diameter
 G : Raised face diameter
 T : Flange thickness
 N : Number of bolts
 h : Bolt hole size
 d : Bore diameter
 d1 : Ball bore



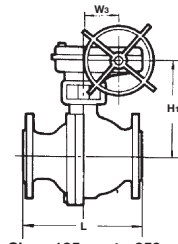
Sizes 15mm to 50mm
(1/2" to 2")



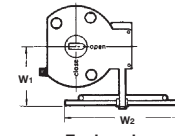
Sizes 65mm to 80mm
(2 1/2" to 3")



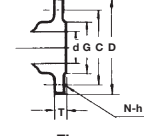
Sizes 100mm to 200
(4 1/2" to 8")



Sizes 125mm to 250mm
(5" to 10")
Gear Operated



Enclosed
Gear Operator



Flange
Ends

ASME Class 150 / JIS 10K Dimensions (mm)

Valve Size (mm)	EB11 Full bore									EB21 Reduced bore									JIS 10K Flange Dimensions					
	Bore (d)	L	H	H ₁	W	W ₁	W ₂	W ₃	weight (Kg)	Ball bore (d ₁)	L	H	H ₁	W	W ₁	W ₂	W ₃	weight (Kg)	D	C	G	T	N	h
15	13	108	81	-	130	-	-	-	2.3	-	-	-	-	-	-	-	-	-	95	70	51	12	4	15
20	19	117	85	-	130	-	-	-	3.0	-	-	-	-	-	-	-	-	-	100	75	56	14	4	15
25	25	127	98	-	160	-	-	-	4.6	-	-	-	-	-	-	-	-	-	125	90	67	14	4	19
40	38	165	124	-	230	-	-	-	7.8	-	-	-	-	-	-	-	-	-	140	105	81	16	4	19
50	51	178	135	-	230	-	-	-	11.0	-	-	-	-	-	-	-	-	-	155	120	96	16	4	19
65	64	190	165	-	400	-	-	-	20.0	-	-	-	-	-	-	-	-	-	175	140	116	18	4	19
80	76	203	174	-	400	-	-	-	24.0	-	-	-	-	-	-	-	-	-	185	150	126	18	8	19
100	102	229	240	-	715	-	-	-	34.0	-	-	-	-	-	-	-	-	-	210	175	151	18	8	19
125	127	356	310	312	1,140	85	450	240	50.0	-	-	-	-	-	-	-	-	-	250	210	182	20	8	23
150	152	394	330	332	1,140	85	450	240	69.0	127	267	310	312	1,140	85	450	240	55	280	240	212	22	8	23
200	203	457	405	415	1,510	116	600	350	108.0	152	292	330	332	1,140	85	450	240	83	330	290	262	22	12	23
250	-	-	-	-	-	-	-	-	-	203	330	405	415	1,510	116	600	350	122	400	355	324	24	12	25

ASME Class 300 / JIS 20K Dimensions (mm)

Valve Size (mm)	EB12 Full bore									EB22 Reduced bore									JIS 20K Flange Dimensions					
	Bore (d)	L	H	H ₁	W	W ₁	W ₂	W ₃	weight (Kg)	Ball bore (d ₁)	L	H	H ₁	W	W ₁	W ₂	W ₃	weight (Kg)	D	C	G	T	N	h
15	13	140	81	-	130	-	-	-	2.5	-	-	-	-	-	-	-	-	-	95	70	51	14	4	15
20	19	152	85	-	130	-	-	-	3.2	-	-	-	-	-	-	-	-	-	100	75	56	16	4	15
25	25	165	98	-	160	-	-	-	5.0	-	-	-	-	-	-	-	-	-	125	90	67	16	4	19
40	38	190	124	-	230	-	-	-	11.0	-	-	-	-	-	-	-	-	-	140	105	81	18	4	19
50	51	216	135	-	230	-	-	-	15.0	-	-	-	-	-	-	-	-	-	155	120	96	18	8	19
65	64	241	165	-	400	-	-	-	24.0	-	-	-	-	-	-	-	-	-	175	140	116	20	8	19
80	76	283	174	-	400	-	-	-	36.0	-	-	-	-	-	-	-	-	-	200	160	132	22	8	23
100	102	305	240	-	650	-	-	-	42.0	-	-	-	-	-	-	-	-	-	225	185	160	24	8	23
125	127	381	310	312	1,140	85	450	240	60.0	-	-	-	-	-	-	-	-	-	270	225	195	26	8	25
150	152	403	330	332	1,140	85	450	240	106.0	127	403	310	312	1,140	85	450	240	67	305	260	230	28	12	25
200	203	502	405	415	1,410	116	600	350	122.0	152	419	330	332	1,140	85	450	240	95	350	305	275	30	12	25
250	-	-	-	-	-	-	-	-	-	203	457	405	415	1,510	116	600	350	144	430	380	345	34	12	27

- Weights for 150mm, 200mm and 250mm indicate lever operator.
- For gear operated, add 14kg for 150mm (Reduced bore 200mm) and 35kg for 200mm (Reduced bore 250mm).
- Face to face dimensions for EB21 size 150mm to 250mm and EB22 size 200mm, 250mm are complied with ASME B16.10 short pattern.

Flange Dimensions

Valve Size (mm)	ASME Class 150						ASME Class 300					
	D	C	G	T	N	h	D	C	G	T	N	h
15	89	60.5	35	11.2	4	16	95	66.5	35	14.3	4	16
20	98	70.0	43	11.2	4	16	117	82.5	43	15.9	4	19
25	108	79.5	51	11.2	4	16	124	89.0	51	17.5	4	19
40	127	98.5	73	14.3	4	16	156	114.5	73	20.7	4	22
50	152	120.5	92	15.9	4	19	165	127.0	92	22.3	8	19
65	178	139.5	105	17.5	4	19	190	149.0	105	25.4	8	22
80	190	152.5	127	19.1	4	19	210	168.0	127	28.6	8	22
100	229	190.5	157	23.9	8	19	254	200.0	157	31.8	8	22
125	254	216.0	186	23.9	8	22	279	235.0	186	35.0	8	22
150	279	241.5	216	25.4	8	22	318	270.0	216	36.6	12	22
200	343	298.5	270	28.6	8	22	381	330.0	270	41.3	12	25
250	406	362.0	324	30.2	12	25	444	387.5	324	47.7	16	29

*RF : 1.6mm height

Cv Values

Valve Size (mm)	Full bore	Reduced bore
15	26	-
20	50	-
25	94	-
40	260	-
50	480	-
65	750	-
80	1,300	-
100	2,300	-
125	3,800	-
150	5,400	1,800
200	10,000	2,500
250	-	4,500

KTM OM-2 Split Body Floating Ball Valves

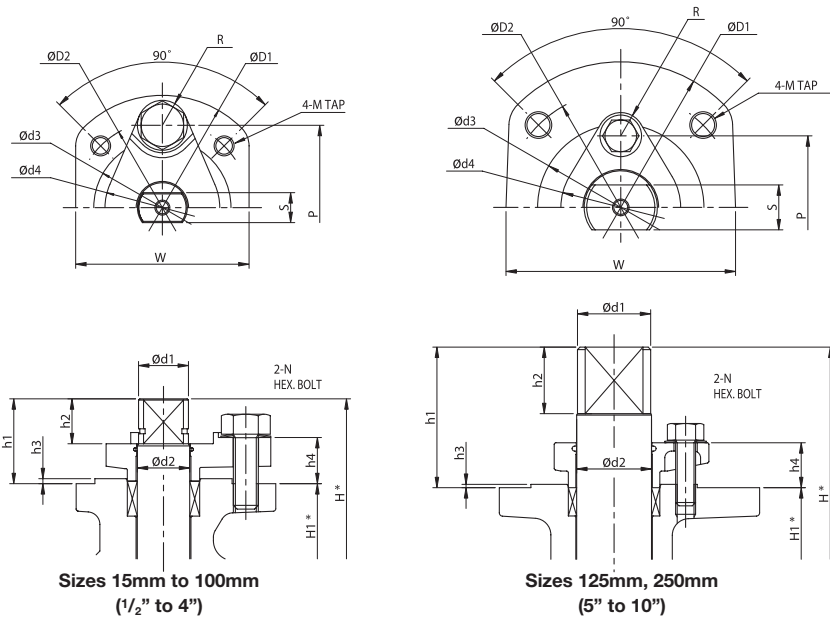
Full bore and reduced bore

Torque (N-m)

Size (mm)	Differential Pressure (MPa)					
	0	1	2	3	4	5
15	5.5	5.5	5.5	5.6	5.8	6.6
20	7.0	7.0	7.1	7.2	7.6	8.5
25	9.0	9.0	9.4	10.0	10.5	12.0
40	15.5	16.0	17.0	17.5	20.0	25.0
50	22.0	22.5	24.0	27.0	32.0	40.0
65	40.0	41.0	45.0	51.0	60.5	70.0
80	60.0	69.0	78.0	89.0	100.0	115.0
100	110.0	125.0	145.0	160.0	185.0	210.0
125	200.0	230.0	265.0	310.0	350.0	380.0
150	310.0	380.0	450.0	540.0	580.0	620.0
200	500.0	720.0	960.0	1,220.0	1,450.0	1,600.0

E-seat / PTFE Gland Packing

- Above-mentioned torque table's value does not contain the safety rate.
- When you select the actuator, please multiply the safety rate corresponding to the necessity.



* H and H1 are from valve centre

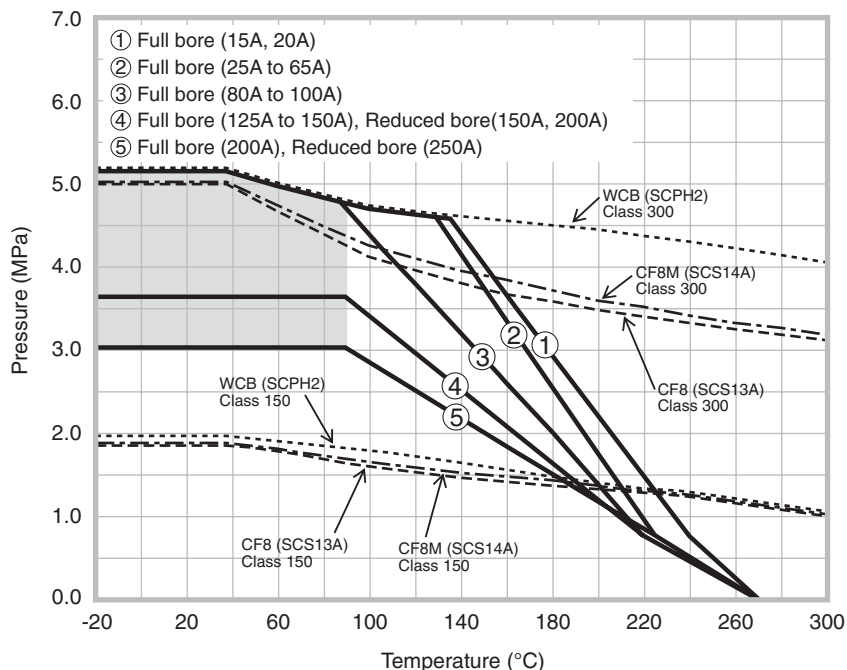
Gland Dimensions (mm)

Valve Size (mm)	Full bore	Reduced bore	d1		d2		d3		d4	D1	D2	h1	h2	h3	h4	H	H1	M	N	P	R	S		W
			Max.	Min.	Max.	Min.	Max.	Min.														Max.	Min.	
15	-	-	9.95	9.85	11.00	10.96	30.00	29.90	28	55	42	22.0	11	2	14.0	59.0	37	M6	M6	40	6	6.93	6.88	42.7
20	-	-	9.95	9.85	11.00	10.96	30.00	29.90	28	55	42	22.0	11	2	14.0	63.0	41	M6	M6	40	6	6.93	6.88	42.7
25	-	-	13.95	13.85	15.00	14.96	35.00	34.91	33	65	50	26.5	14	2	15.5	75.5	49	M6	M8	48	8	7.92	7.86	50.4
40	-	-	19.95	19.85	21.00	20.95	55.00	54.90	46	90	70	33.5	18	2	18.5	102.5	69	M8	M10	66	10	11.91	11.84	70.0
50	-	-	19.95	19.85	21.00	20.95	55.00	54.90	46	90	70	33.5	18	2	18.5	112.5	79	M8	M10	66	10	11.91	11.84	70.0
65	-	-	26.95	26.85	28.00	27.95	70.00	69.88	66	125	102	50.5	31	2	22.0	154.5	104	M10	M14	86	13	16.91	16.84	100.0
80	-	-	26.95	26.85	28.00	27.95	70.00	69.88	66	125	102	50.5	31	2	22.0	163.5	113	M10	M14	86	13	16.91	16.84	100.0
100	-	-	33.95	33.85	35.00	34.94	70.00	69.88	66	125	102	50.5	31	2	22.0	189.0	138	M10	M14	86	13	21.90	21.81	100.0
125	150	43.95	43.85	45.00	44.94	100.00	99.86	72	175	140	84.5	40	2	27.0	252.0	168	M16	M12	86	14	26.90	26.81	138.0	
150	200	43.95	43.85	45.00	44.94	100.00	99.86	72	175	140	84.5	40	2	27.0	272.5	188	M16	M12	86	14	26.90	26.81	138.0	
200	250	52.95	52.85	54.00	53.93	130.00	129.84	90	210	165	107.0	53	2	33.0	355.0	248	M20	M14	104	16	35.88	35.78	170.0	

Pressure - Temperature Rating (E-Seat)

KTM Seat Ratings : The pressure and temperature limits of various KTM seat materials are available upon request. Below is an example of E-seat (PTFE / PFA Copolymer) used for valve sizes from 15mm to 250mm (1/2" to 10"). Seat ratings for High-Temperature valves with Gratiite® seats are identical to ASME body ratings.

- If continuous service condition is in shaded area for 125mm to 200mm, trunnion type KTM Ball Valve is recommended.
- Maximum pressure
ASME Class 150 : 1.4MPa / 120°C
ASME Class 300 : 3.4MPa / 120°C
- Standard E-gasket (Reinforced PTFE) is used for body gasket. For temperatures exceeding 230°C, Y-gasket (graphite) must be used.

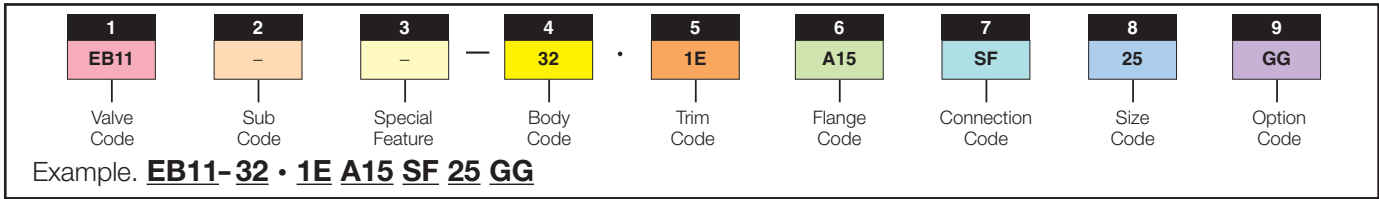


- Solid line — indicate trim rating.
- Dashed lines indicate body ratings.
- WCB
- CF8
- CF8M
- Materials in parentheses indicate equivalent JIS material

KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore

KTM Model Coding System



1	Valve Code	Class	Description
		ASME	JIS
EB11	150	10K	Full bore, Floating type 15mm to 200mm
EB12	300	20K	Full bore, Floating type 15mm to 200mm
EB21	150	10K	Reduced bore, Floating type 150mm to 250mm
EB22	300	20K	Reduced bore, Floating type 150mm to 250mm

2	Sub Code	Description
Blank		Soft Seat
M		Metaltite® sea
G		Gratite® seat

3	Special Features	Description
Blank		No Special Feature
E		Extension Bonnet

4	Body Code	Description
		JIS
31		SCS13A (304SS)
32		SCS14A (316SS)
50		SCPL1
55		-
		ASTM
		CF8 (304SS)
		CF8M (316SS)
		LCB
		LCC

5	Trim Code	Description
		Soft Seat Ball Valve
	Ball	Seat
1E	SCS13A*1 or SCS14A*2	PTFE / PFA copolymer
5E*1	SCS14A	PTFE / PFA copolymer
KR	SCS13A*1 or SCS14A*2	PEEK
KC	SCS13A*1 or SCS14A*2	PEEK
		Packing
		PTFE
		R-PTFE
		Graphite
		Graphite
		Stem
		304*11 or 316*2
		316
		329J1
		329J1
		Metaltite® Seat Ball Valve
	Ball	Seat
AY	SCS13A+HCr*1 or SCS14A+HCr*2	316 Stelited
BY	SCS13A+SFNI*1 or SCS14A+SFNI*2	316 Stelited
AG	SCS13A+HCr*1 or SCS14A+HCr*2	316 Stelited
BG	SCS13A+SFNI*1 or SCS14A+SFNI*2	316 Stelited
BX	SCS13A+SFNI*1 or SCS14A+SFNI*2	316 Stelited
		Packing
		R-PTFE
		Graphite
		Graphite
		Stem
		329J1
		329J1
		Gratite® Seat Ball Valve
	Ball	Seat
CC	SCS13A*1 or SCS14A*2	Hard Graphite
		Packing
		Graphite
		Stem
		329J1

*1: For Body Code 31 and 62 only
*2: For Body Code 32 only
HCr: Hard chromium plating
SFNI: Electro less Nickel Plating

6	Flange Code	Description
		ASME
A15		ASME Class 150
A30		ASME Class 300
		JIS
J10		JIS 10K
J20		JIS 20K
		(JPI also available)

7	Connection Code	Description
Blank		Raised Face
SF		Smooth Finish 125 to 250 AARH

8	Size Code	mm	Inch
15	15	1/2	
20	20	3/4	
25	25	1	
40	40	1 1/2	
50	50	2	
65	65	2 1/2	
80	80	3	
100	100	4	
125	125	5	
150	150	6	
200	200	8	
250	250	10	

9	Option Code	Description
		Soft Seated Valve (PTFE / PFA Copolymer)
Blank		No additional option
GG		Packing / Gasket--Graphite
E1		For -30°C to -50°C Extension Bonnet
E2		For -51°C to -70°C Extension Bonnet
E3		For -71°C to -104°C Extension Bonnet
E5		For -105°C to -196°C Extension Bonnet
		Metaltite® Seat & Gratite® Seat Ball Valve
Blank		No additional option