

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

Various seat types available

The OM-2 range of ball valves is available in:

- Soft Seat as standard (E-Seat: PTFE / PFA copolymer)
- Gratiite Seat
- Metal Seat

Each seat option will meet a wide range of performance, suitable for many applications.

Features

- Superior valve design at a competitive price
- Fugitive emissions control for flammable and non-flammable applications
- Machined ISO actuator mounting pad
- ZERO leakage with standard E-Seat
- Pure white E-Seat seal relieves concern over product contamination
- Positive alignment of split body
- Fire tested to API 607 4th Edition
- Secondary back up seal
- Blowout-proof stem
- Static electricity grounding device
- Sphericity tolerance of the ball is unsurpassed
- Reinforced PTFE bearing and packing rings reduce friction
- Lower operating torque for ease of operation and reduced actuator cost
- Positive position indication
- Locking device

Special options

- Stem extension
- Special painting
- For cryogenic, chlorine oxygen and vacuum services

Standards

Design	: ASME B16.34, BS 5351
Face to face	: ASME B16.10
End connection	: ASME B16.5
Testing	: API 598, API 6D, BS 5146 Part 2
Fire test	: API 6FA, API 607 4 th edition, BS 6755 Part 2
Quality Assurance	: ISO 9001



General applications

- Pulp and Paper
- Reactive Monomers
- Oil and Gas Production
- Steam
- Hot Gases
- Toxic and Lethal
- Fire-safe and Flammables

Special tests

- Liquid penetrant (PT)
- X-ray (RT)

Technical data

Model/Sizes	: EB11, EB12 Full bore 15mm to 200mm (1/2" to 8")
Pressure rating	: ASME Class 150, 300
Temperature	: -196°C to 500°C

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.

Cast Bleed-Port Boss:

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

Anti-Static Grounding:

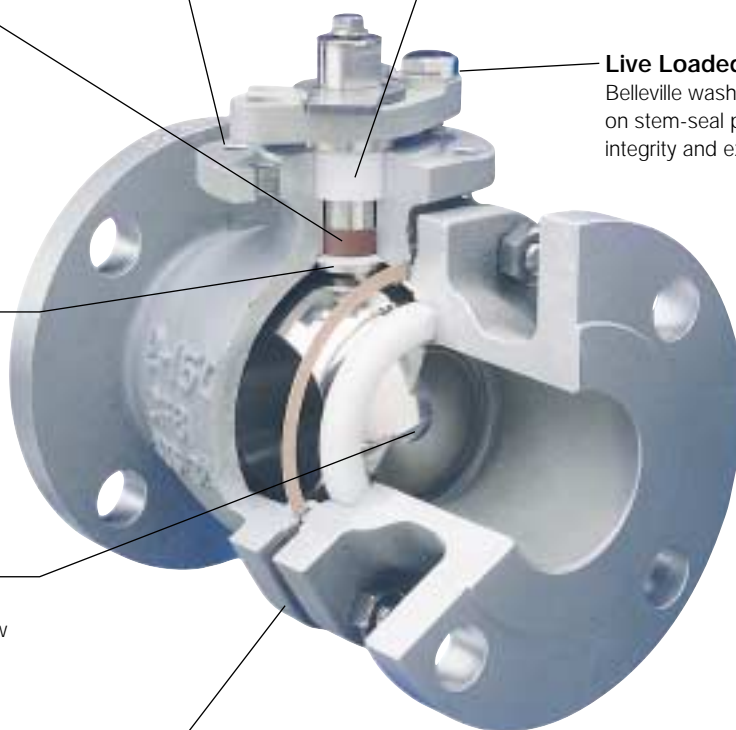
Special retaining spring provides positive ground for use with volatile or flammable liquids. (Not shown)

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:

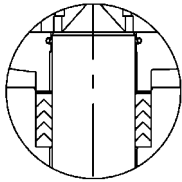
Belleville washer keeps constant force on stem-seal packing, ensuring seal integrity and extended valve life.



Standard Primary Containment Seals for Fugitive Emission Control

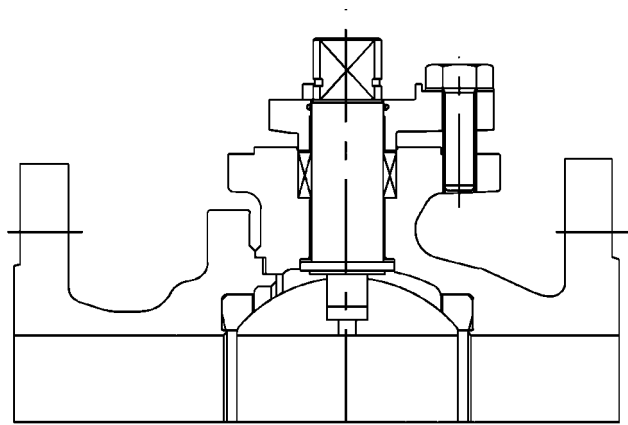
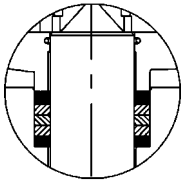
Standard Seals

Superior quality multi-layered, adjustable chevron packing rings as stem seals. Fire safe in design, minimising leakage in the event of fire.



Fire tested (option)

Die-formed carbon fiber seals, sandwiched by braided graphite rings. Fire tested to API 607 4th edition.

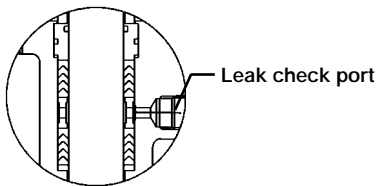


Standard bonnet

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

Chevron PTFE packing (option)

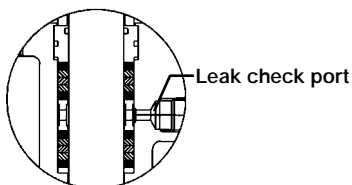
Double packing gland elastomer seal with a lantern ring. If media leaks through primary seal, it can be detected & stopped by pressure injection.



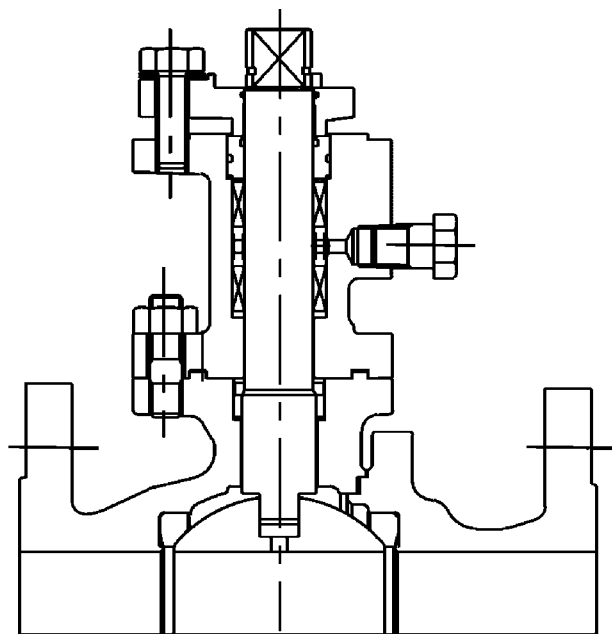
Leak check port

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, carbon (gratite) and metal. Each offering a range of performance suitable for many applications.

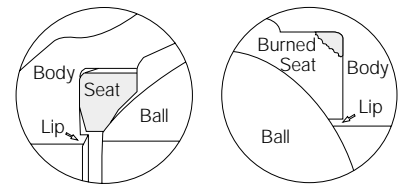
Soft Seat

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 on the right (top) 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 second photograph 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.



Anti Cold Flow Feature

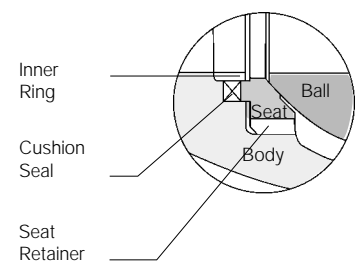
Secondary Back Up Seal



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.

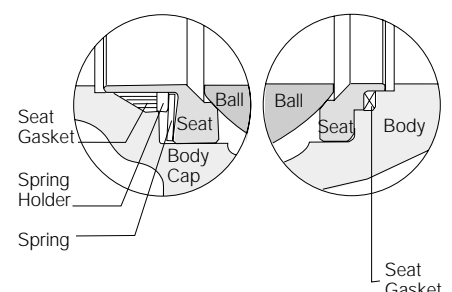
- More economical than Stellite
- High resistance to thermal shock



Gratite is a registered trademark of Tyco Valves and Controls.

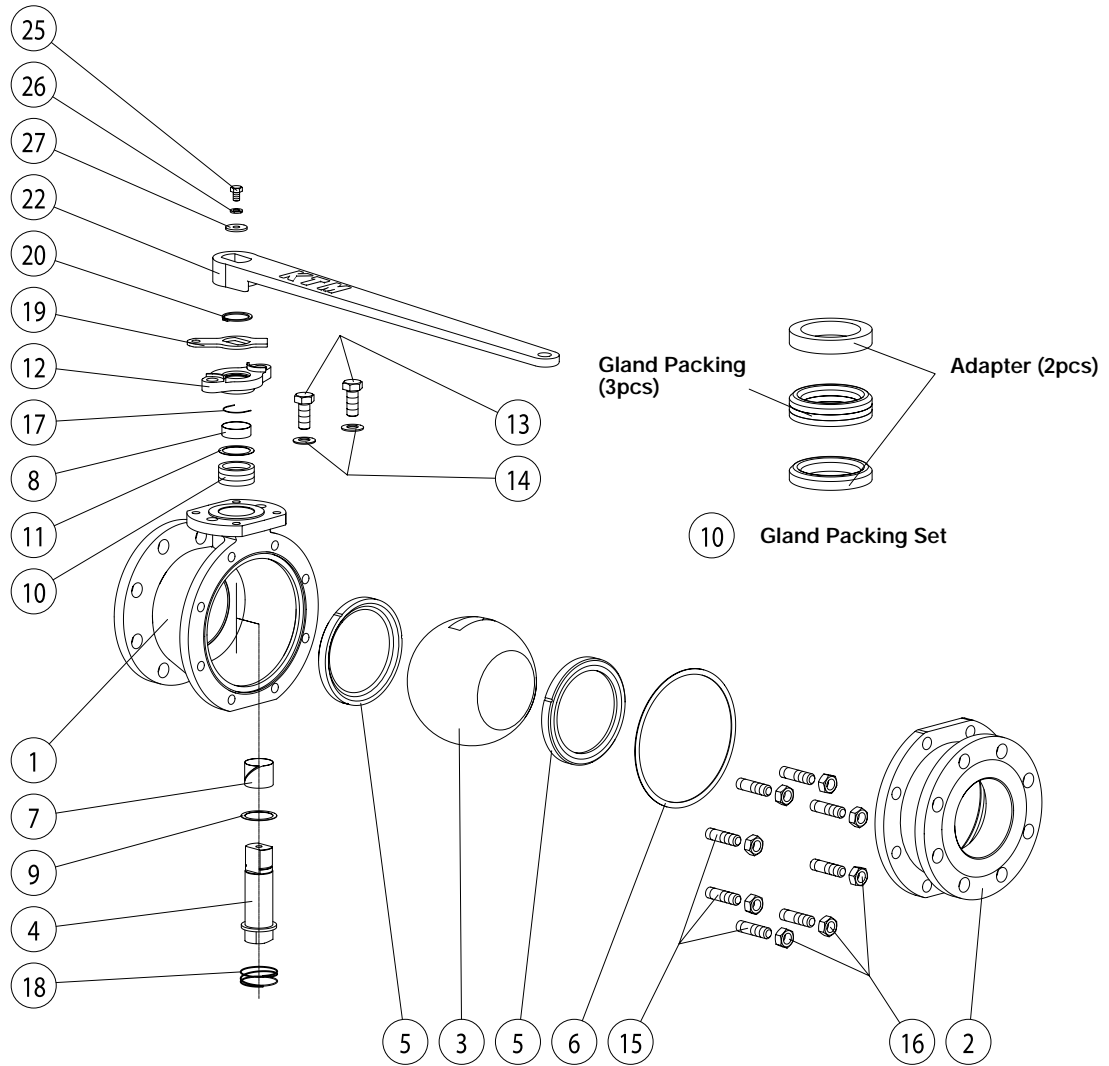
Mettaltite™ Metal Seat

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.



KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore



Parts List and materials of construction materials*2

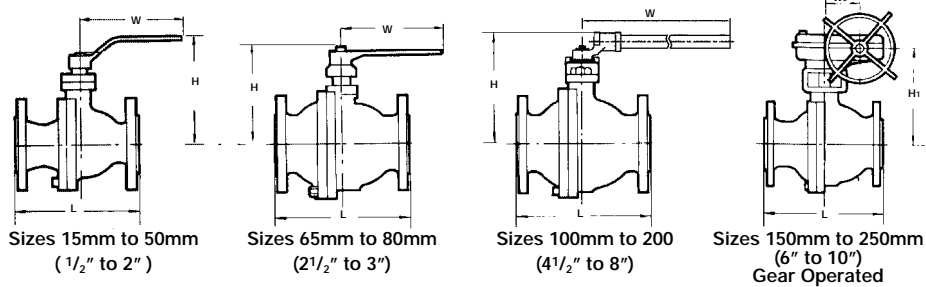
No.	Parts Name	Qty	Material		Material		Material	
			Model Code / 63.1E JIS	Equivalent to ASTM Code	Model Code / 31.1E JIS	Equivalent to ASTM Code	Model Code / 32.1E JIS	Equivalent to ASTM Code
1	Body	1	SCPH2	A216 (G) WCB	SCS13A	A351 (G) CF8	SCS14A	A351 (G) CFM8
2	Body Cap	1	SCPH2	A216 (G) WCB	SCS13A	A351 (G) CF8	SCS14A	A351 (G) CFM8
3	Ball	1	SCS13A	A351 (G) CF8	SCS13A	A351 (G) CF8	SCS14A	A351 (G) CFM8
4	Stem	1	SCS304	A276 (TP) 304	SUS304	A276 (TP) 304	SUS316	A276 (TP) 316
5	Seat	2	PTFE+PFA	PTFE+PFA	PTFE+PFA	PTFE+PFA		
6	Gasket	1		R-PTFE		R-PTFE		R-PTFE
7	Stem Bearing	1		R-PTFE		R-PTFE		R-PTFE
8	Stem Bearing	1		PTFE		PTFE		PTFE
9	Thrust Bearing	1		PTFE		PTFE		PTFE
10	Gland Packing	1		PTFE		PTFE		PTFE
11	Packing Washer	1 set	SUS316	316SS	SUS316	316SS	SUS316	316SS
12	Gland Flange	1	SCS13A	304SS	SCS13A	304SS	SCS13A	304SS
13	Gland Bolt	2	SUS304	A193 (G) B8	SUS304	A193 (G) B8	SUS304	A193 (G) B8
14	Live Loading Spring	2	SUS304	304SS	SUS304	304SS	SUS304	304SS
15	Stud	4-12	SNB7	A193 (G) B7	A193 (G) B8		A193 (G) B8	
16	Nut	4-12	S45C	A194 (G) 2H	A194 (G) 8	A194 (G) 8		
17	Spring	1	SUS304	304SS	SUS304	SUS304	SUS304	304SS
18	Spring	1	SUS316	316SS	SUS316	316SS	SUS316	316SS
19	Stopper	1	SUS304	304SS	SUS304	SUS304	SUS304	SUS304
20	Snap Ring (C-Type)	1	SUS304	304SS	SUS304	SUS304	SUS304	SUS304
22	Handle	1	SS400Zn/FCD450		SS400Zn/FCD450		SS400Zn/FCD450	
25	Hexagon Bolt	1	SUS304	304SS	SUS304	304SS	SUS304	SUS304
26	Spring Washer	1	SUS304	304SS	SUS304	304SS	SUS304	SUS304
27	Plate Washer	1	SUS304	304SS	SUS304	304SS	SUS304	SUS304

Notes: *1 65mm and larger

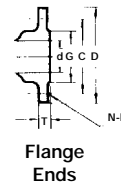
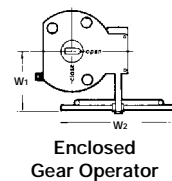
*2 15mm-50mm: C-S Zn / 65mm and larger: Ductile Iron

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



ASME Class 150 JIS 10K Dimensions (mm)

Valve Size (mm)	EB11 Full Bore									Flange Dimensions					
	Bore (d)	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	89	60.5	35	11.2	4	16
20	19	117	85	-	130	-	-	-	3.0	98	70.0	43	11.2	4	16
25	25	127	98	-	160	-	-	-	4.6	108	79.5	51	11.2	4	16
40	38	165	124	-	230	-	-	-	7.8	127	98.5	73	14.3	4	16
50	51	178	135	-	230	-	-	-	11	152	120.5	92	15.9	4	19
65	64	190	165	-	400	-	-	-	20	178	139.5	105	17.5	4	19
80	76	203	174	-	400	-	-	-	24	190	152.5	127	19.1	4	19
100	102	229	240	-	715	-	-	-	34	229	190.5	157	23.9	8	19
150	152	394	330	332	1,140	85	450	240	69	279	241.5	216	25.4	8	22
200	203	457	405	415	1,510	116	600	350	108	343	298.5	270	28.6	8	22
250	-	-	-	-	-	-	-	-	-	406	362.0	324	30.2	12	25

Weights for 150mm, 200mm and 250mm are lever-operated valves. For gear operated, add 14kg for 150mm and 35kg for 200mm.

ASME Class 300 / JIS 10K Dimensions (mm)

Valve Size (mm)	EB12 Full Bore									Flange Dimensions					
	Bore (d)	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	66.5	35	14.3	4	16
20	19	152	85	-	130	-	-	-	3.2	117	82.5	43	15.9	4	19
25	25	165	98	-	160	-	-	-	5	124	89.0	51	17.5	4	19
40	38	190	124	-	230	-	-	-	11	156	114.5	73	20.7	4	19
50	51	216	135	-	230	-	-	-	15	165	127.0	92	22.3	8	22
65	64	241	165	-	400	-	-	-	24	190	149.0	105	25.4	8	22
80	76	283	174	-	400	-	-	-	36	210	168.0	127	28.6	8	22
100	102	305	240	-	650	-	-	-	42	254	200.0	157	31.8	8	22
150	152	403	330	332	1,050	85	450	240	106	318	270.0	216	36.6	12	22
200	203	502	405	415	1,410	116	600	350	122	381	330.0	270	41.3	12	25
250	-	-	-	-	-	-	-	-	-	444	387.5	324	47.7	16	29

Weights for 150mm, 200mm and 250mm are lever-operated valves. For gear operated, add 14kg for 150mm and 35kg for 200mm.

Torque (N-m)

Differential Pressure (MPa)

PTFE Gland Packing

Size (mm)	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
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

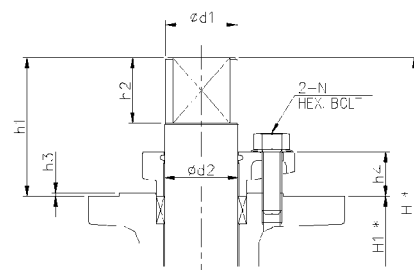
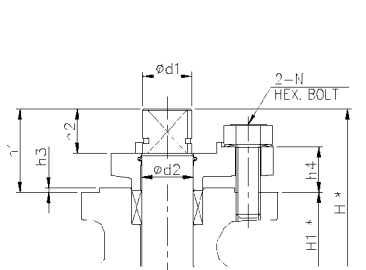
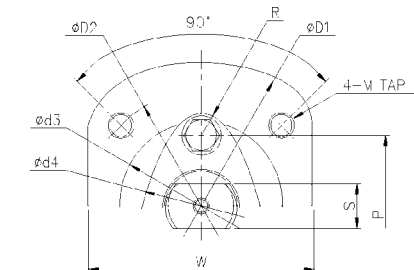
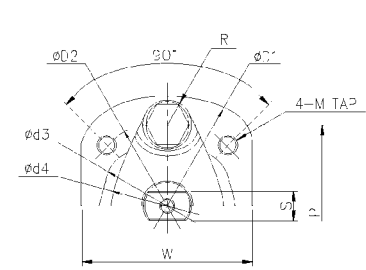
Cv Values

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

Seat material: E-seat

KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore



Sizes 15mm to 100mm
(1/2" to 4")

Sizes 125mm to 200mm
(5" to 8")

* H and H₁ are from valve centre

Gland Dimensions (mm)

Valve Size (mm)		d ₁		d ₂		d ₃		d ₄	D ₁	D ₂	h ₁	h ₂	h ₃	h ₄	H	H ₁	M	N	P	R	S		W
Full bore	Reduced bore	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

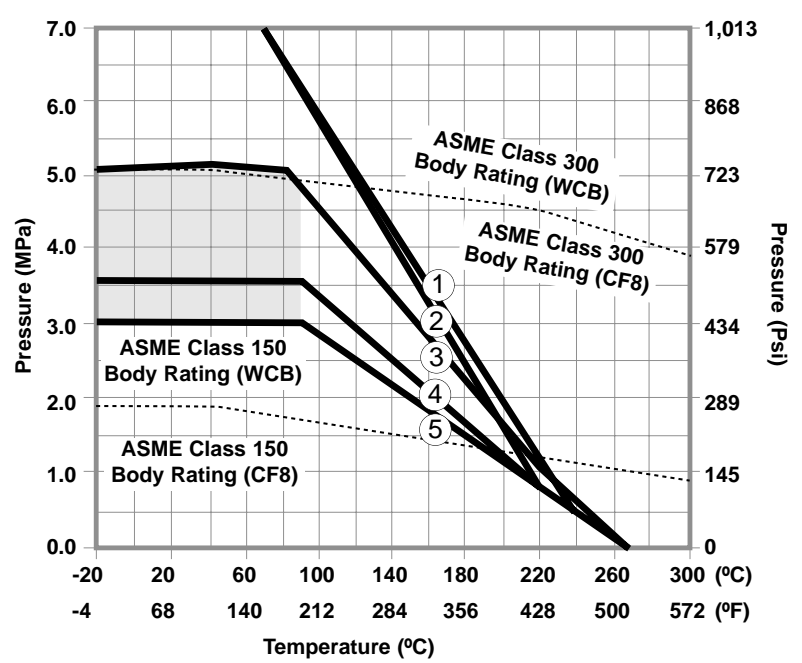
Pressure - Temperature Rating (E-Seat)

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

Note : 1. If continuous service condition is in shaded area for 150mm and 200mm, trunnion type KTM Ball Valve is recommended.

2. Body ratings shown in the chart conforms to carbon steel (ASME B16.5 group 1.1 materials).

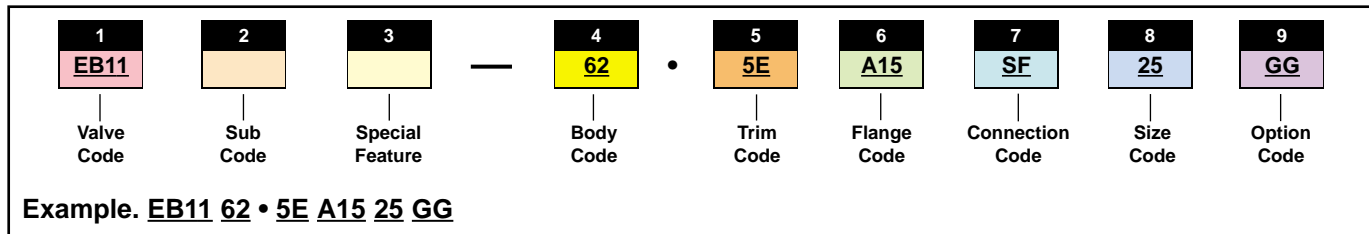
- ① 15mm to 20mm (1/2" to 3/4" FB)
- ② 25mm to 65mm (1" to 2 1/2" FB)
- ③ 80mm to 100mm (3" to 4" FB)
- ④ 125mm to 150mm (5" to 6" FB)
- ⑤ 150mm to 200mm (6" to 8" FB)
- ⑤ 200mm (8" FB)
- 250mm (10" FB)



KTM OM-2 Split Body Floating Ball Valves

Full bore and reduced bore

KTM Model Coding System



1			
Valve Code	Class	Description	
	<u>ASME</u>	<u>JIS</u>	
EB11	150	10K	Full bore, Floating type 15mm to 200mm
EB12	300	20K	Full bore, Floating type 15mm to 200mm

6	
Flange Code	Description
<u>ASME</u>	
A15	ASME Class 150
A30	ASME Class 300
<u>JIS</u>	
J10	JIS 10K
J20	JIS 20K

2	
Sub Code	Description
Blank	Soft Seat
M	Metal Seat only
G	Gratite Seat only

Refer to each catalogues or Metal Seated valves Gratite Seated valves

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

3	
Special Features	Description
Blank	No Special Feature
E	Extension onnect

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

4		
Body Code	Material	
	<u>JIS</u>	<u>ASTM</u>
31	SCS13A (304)	CF8 (304)
32	SCS14A (316)	CF8M (316)
62	SCPH2	WCB

5					
Trim Code	Ball	Seat	Packing Stem		
	<u>JIS</u>	<u>ASTM</u>			
1E	SCS13A ¹ or SCS14A ²	CF8 ¹ or CF8M ²	E ³	PTFE	304 ¹ or 316 ²
5E ¹	SCS14A	CF8M	E ³	PTFE	316
R	SCS13A ¹ or SCS14A ²	CF8 ¹ or CF8M ²	PEEK	R-PTFE	329J1
C	SCS13A ¹ or SCS14A ²	CF8 ¹ or CF8M ²	PEEK	Graphite	329J1

¹ Trim Code is included Ball, Seat, Packing and Stem
¹ For Body Code 31 and 62 only
² For Body Code 32 only
³ PTFE/PFA Copolymer
 HC: Hard chromium plating
 SFNI: Nickel alloy overlay

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Option Code	Description
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