

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT)

A single KTM 3-way ball valve replaces several 2-way valves, saving valuable space and simplifying piping



FEATURES

- Positive alignment of body.
- Blow-out proof stem for safety.
- Sphericity tolerance of the ball is unsurpassed.
- Multiple layers of adjustable PTFE chevron packing rings for standard model enable excellent fugitive emission control.
- Positive position indication.
- Locking device capable.
- Heavy duty body construction.
- Machined ISO 5211 top mounting flange.
- Live load springs keep constant force on stem-seal packing, ensuring seal integrity and extended valve life.
- Dual shaft bearings for high cycle life operation.
- Higher C_v values and less cost for diverting which can be normally done with multiple installation of valves.

2 seats feature

- OM2 compatible, co-polymer E-seat as standard.
- Machined firesafe lip for metal touch to ball in case of fire. It also eliminates possibility of seat deformation.
- Lower operating torque, easing operation and reducing actuator cost.

4 seats feature

- Equipped with 4 seats so that each port can be used as an inlet.
- Available with L-port and T-port for variety of applications.
- E-seat as standard for MB11 and MB21.

GENERAL APPLICATION

Diverting or mixing fluids.

TECHNICAL DATA

2 seats (L-port)

Model: NB11 / NB12 / NB21 / NB22
 Full bore: DN 40 - 200 (NPS 1½ - 8)
 (NB11 / NB12)
 Reduced bore: DN 125 - 250 (NPS 5 - 10)
 (NB21 / NB22)
 Pressure rating: ASME Class 150, 300
 JIS 10K, 20K
 Temperature: -29°C - 270°C (-20°F - 518°F)
 (Option: up to 500°C/932°F)

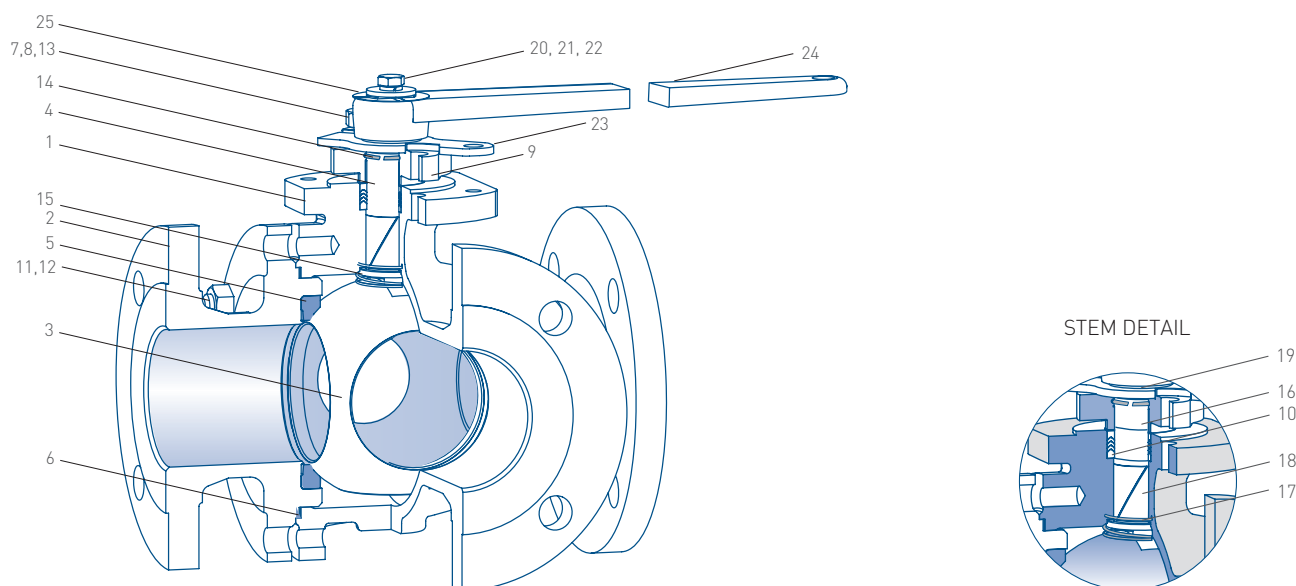
4 seats (L and T-port)

Model: MB11 / MB12 / MB21 / MB22
 Full bore: DN 15 - 200 (NPS ½ - 8)
 (MB11 / MB12)
 Reduced bore: DN 125 - 200 (NPS 5 - 8)
 (MB21 / MB22)
 Pressure rating: ASME Class 150, 300
 JIS 10K, 20K
 Temperature: -29°C to 150°C (-20°F - 302°F)

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT)

2-SEATS (L-PORT) NB11, NB12, FULL BORE / NB21, NB22 REDUCED BORE



Note: The illustration shows body construction of 3-way ball valve, Model NB11 in DN 80 (NPS 3)

PARTS LIST

No.	Description	Material
1	Body	CF8M, CF8, or WCB
2	Body cap	CF8M, CF8, or WCB
3	Ball	CF8M or CF8
4	Shaft	316 S/S or 304 S/S
5	Seat	E-seat as standard (T or G seat for options)
6	Gasket	R-PTFE
7	Gland bolt	A193 (G) B8
8	Washer	316 S/S
9	Gland flange	CF8
10	Gland packing	PTFE
11	Stud	A193 (G) B8 or A193 (G) B7
12	Nut	A194 (G) 8 or A194 (G) 2H
13	Live loading spring	304 S/S
14	Anti-static spring	316L S/S
15	Anti-static spring	316L S/S
16	Gland bearing	PTFE
17	Thrust bearing	PTFE
18	Shaft bearing	R-PTFE
19	Snap ring	304 SS
20	Spring washer	304 S/S
21	Bolt	304 S/S
22	Washer	304 S/S
23	Stopper	304 S/S
24	Handle	Carbon steel
25	Indicator	304 S/S

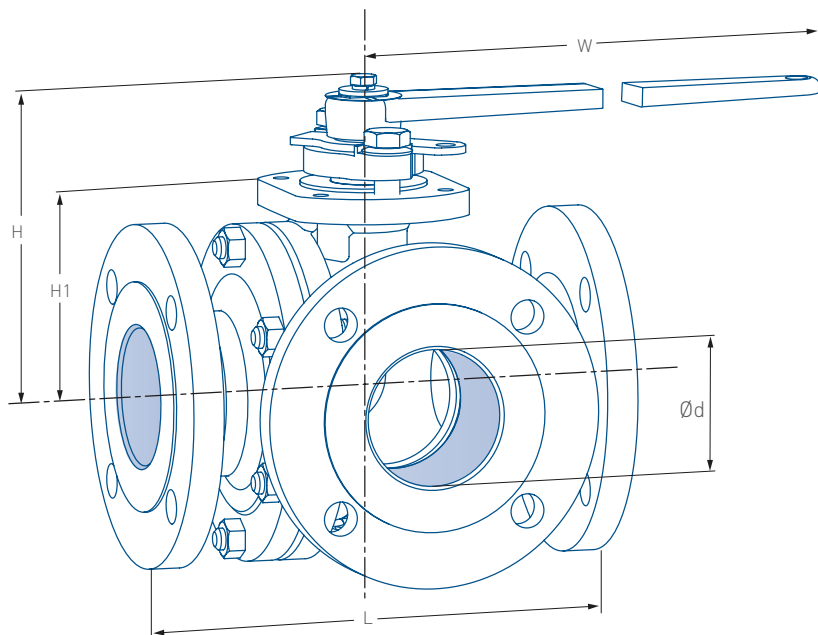
OPTIONS

- NACE MR-01-75
- Gratite seat for high temp. service (2 seats)
- Extension bonnet for low temp. service (2 seats)
- CE Marking PED 97 / 23 / EC
- Special tests
 - X-ray (RT)
 - Liquid penetrant (PT)
 - Positive Material Identification (PMI)

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - METRIC

2-SEATS (L-PORT) NB11, NB12, FULL BORE / NB21, NB22 REDUCED BORE



ASME CLASS 150 / JIS 10K DIMENSIONS - NB11 AND NB21

DN	Full bore - NB11					Reduced bore - NB21					
	Ød	L	H	W	H1	Ød	Ødo	L	H	W	H1
40	38	210	103	230	69	-	-	-	-	-	-
50	51	220	113	230	79	-	-	-	-	-	-
65	64	250	155	400	104	-	-	-	-	-	-
80	76	260	164	400	113	-	-	-	-	-	-
100	102	330	189	715	138	-	-	-	-	-	-
125	127	370	311	1050	168	102	127	370	189	685	138
150	152	430	331	1050	188	127	152	430	311	1050	168
200	203	540	414	1510	248	152	200	540	331	1050	188
250	-	-	-	-	-	203	251	670	414	1410	248

ASME CLASS 300/ JIS 20K DIMENSIONS - NB12 AND NB22

DN	Full bore - NB12					Reduced bore - NB22					
	Ød	L	H	W	H1	Ød	Ødo	L	H	W	H1
40	38	220	103	230	69	-	-	-	-	-	-
50	51	240	113	230	79	-	-	-	-	-	-
65	64	270	155	400	104	-	-	-	-	-	-
80	76	290	164	400	113	-	-	-	-	-	-
100	102	350	189	715	138	-	-	-	-	-	-
125	127	410	311	1050	168	102	127	410	189	685	138
150	152	460	331	1050	188	127	152	460	311	1050	168
200	203	570	414	1510	248	152	200	570	331	1050	188
250	-	-	-	-	-	203	251	720	414	1410	248

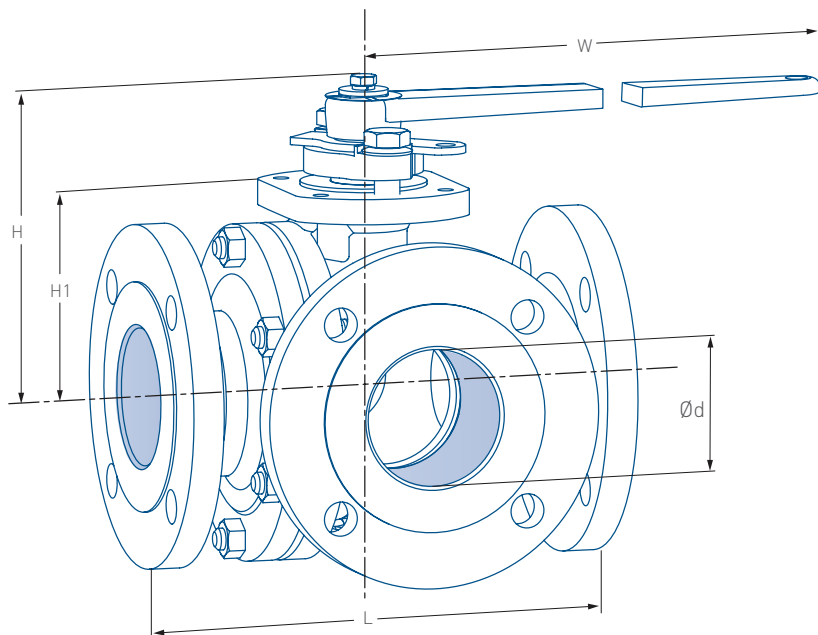
NOTE

Ødo = bore opening diameter on reduced bore valves

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - IMPERIAL

2-SEATS (L-PORT) NB11, NB12, FULL BORE / NB21, NB22 REDUCED BORE



ASME CLASS 150 / JIS 10K DIMENSIONS - NB11 AND NB21

NPS	Full bore - NB11					Reduced bore - NB21					
	Ød	L	H	W	H1	Ød	Ødo	L	H	W	H1
1½	1.50	8.27	4.04	9.06	2.72	-	-	-	-	-	-
2	2.00	8.66	4.43	9.06	3.11	-	-	-	-	-	-
2½	2.52	9.84	6.08	15.75	4.09	-	-	-	-	-	-
3	3.00	10.24	6.44	15.75	4.45	-	-	-	-	-	-
4	4.02	12.99	7.44	26.97	5.43	-	-	-	-	-	-
5	5.00	14.57	12.22	41.34	6.61	4.02	5.00	14.57	7.44	26.97	5.43
6	5.98	16.93	13.00	41.34	7.40	5.00	5.98	16.93	12.22	41.34	6.61
8	8.00	21.26	16.30	55.51	9.76	5.98	7.87	21.26	13.00	41.34	7.40
10	-	-	-	-	-	8.00	9.88	26.38	16.30	55.51	9.76

ASME CLASS 300/ JIS 20K DIMENSIONS - NB12 AND NB22

NPS	Full bore - NB12					Reduced bore - NB22					
	Ød	L	H	W	H1	Ød	Ødo	L	H	W	H1
1½	1.50	8.66	4.04	9.06	2.72	-	-	-	-	-	-
2	2.00	9.45	4.43	9.06	3.11	-	-	-	-	-	-
2½	2.52	10.63	6.08	15.75	4.09	-	-	-	-	-	-
3	3.00	11.42	6.44	15.75	4.45	-	-	-	-	-	-
4	4.02	13.78	7.44	26.97	5.43	-	-	-	-	-	-
5	5.00	16.14	12.22	41.34	6.61	4.02	5.00	16.14	7.44	26.97	5.43
6	5.98	18.11	13.00	41.34	7.40	5.00	5.98	18.11	12.22	41.34	6.61
8	8.00	22.44	16.30	55.51	9.76	5.98	7.87	22.44	13.00	41.34	7.40
10	-	-	-	-	-	8.00	9.88	28.35	16.30	55.51	9.76

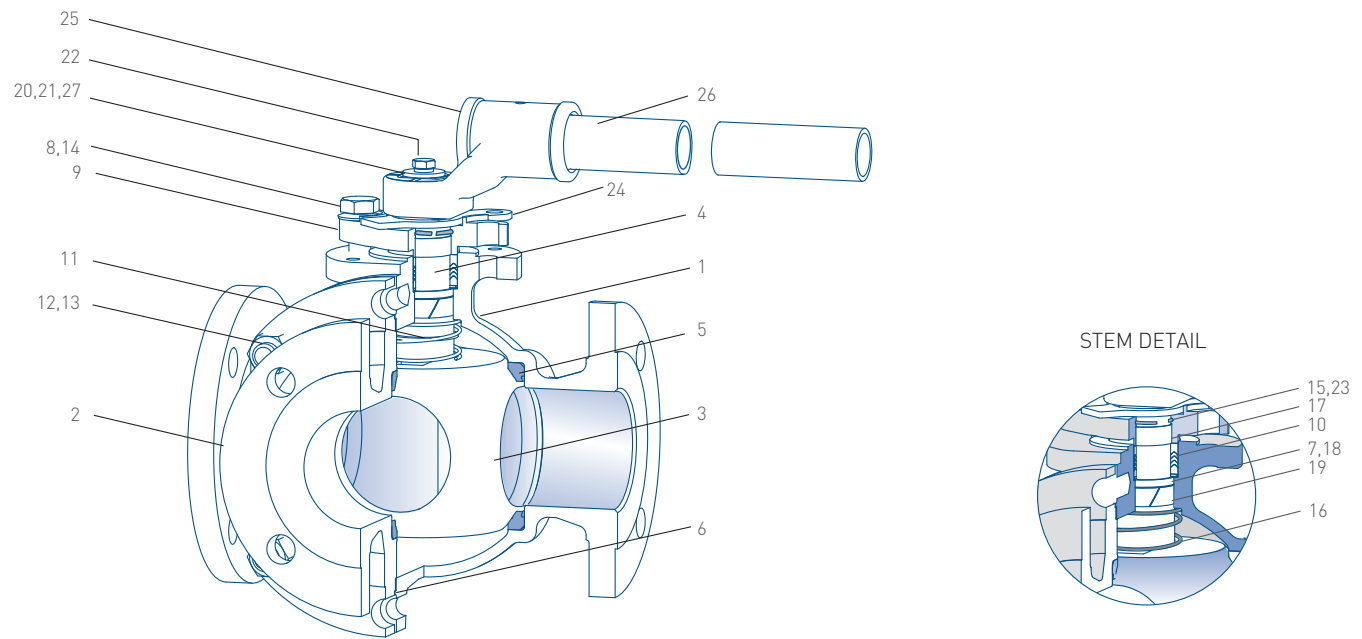
NOTE

Ødo = bore opening diameter on reduced bore valves

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT)

4-SEATS (L AND T-PORT) MB11, MB12 FULL BORE / MB21, MB22 REDUCED BORE



Note: The illustration shows body construction of 3-way ball valve, Model MB11 in DN 80 (NPS 3)

PARTS LIST

No.	Description	Material
1	Body	CF8M, CF8, or WCB
2	Body cap	CF8M, CF8, or WCB
3	Ball	CF8M or CF8
4	Stem	316 S/S or 304 S/S
5	Seat	E-seat as standard (G-seat an option)
6	Gasket	PTFE
7	Thrust washer	316 S/S
8	Gland bolt	A193 (G) B8
9	Gland flange	CF8
10	Gland packing	PTFE
11	Snap ring	304 S/S
12	Stud	A193 (G) B8 or A193 (G) B7
13	Nut	A194 (G) 8 or A194 (G) 2H
14	Live loading spring	304 S/S
15	Anti-static spring	316L S/S
16	Anti-static spring	316L S/S
17	Gland bearing	PTFE
18	Thrust bearing	PTFE
19	Shaft bearing	R-PTFE
20	Washer	304 S/S
21	Spring washer	304 S/S
22	Bolt	304 S/S
23	Snap ring	304 S/S
24	Stopper	304 S/S
25	Handle head	Carbon steel
26	Handle/pipe	Carbon steel
27	Indicator	304 S/S

NOTE

Please consult us for 4 seats ASME Class 300 valves [MB12 and MB22]

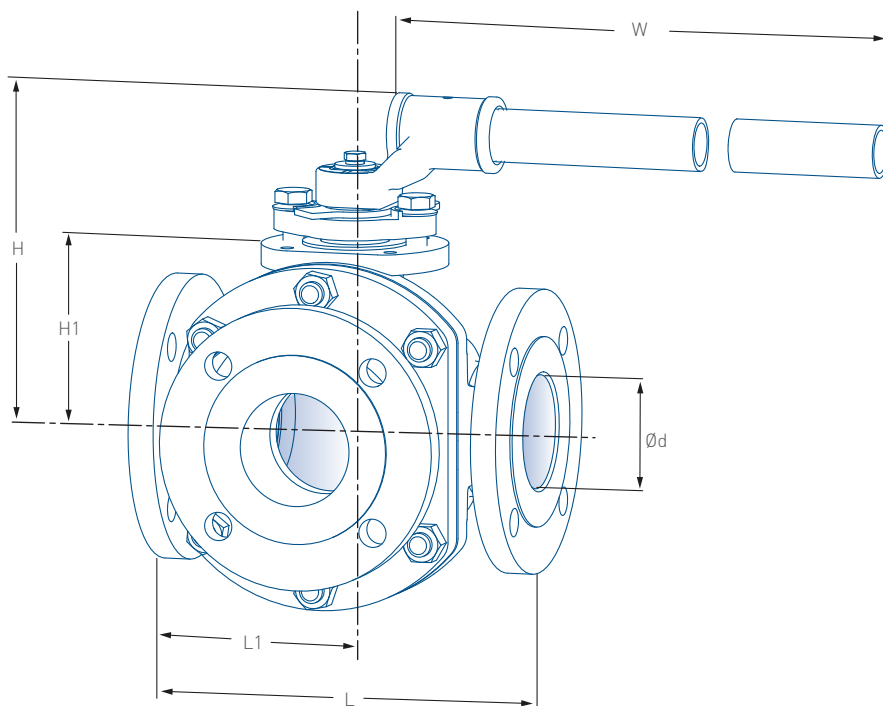
OPTIONS

- NACE MR-01-75
- CE Marking PED 97 / 23 / EC
- Special tests
 - X-ray (RT)
 - Liquid penetrant (PT)
 - Positive Material Identification (PMI)

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - METRIC

4 - SEATS (L AND T - PORT) MB11 FULL BORE / MB21 REDUCED BORE



ASME CLASS 150 / JIS 10K DIMENSIONS - MB11 AND MB21

DN	Full bore - MB11						Reduced bore - MB21						
	Ød	L	L1	H	W	H1	Ød	Ødo	L	L1	H	W	H1
15	13	140	25	94	160	46	-	-	-	-	-	-	-
20	19	150	30	108	230	52	-	-	-	-	-	-	-
25	25	160	34	110	230	55	-	-	-	-	-	-	-
40	38	210	51	158	400	97	-	-	-	-	-	-	-
50	51	220	63	164	400	103	-	-	-	-	-	-	-
65	64	250	74	215	715	113	-	-	-	-	-	-	-
80	76	260	87	224	715	122	-	-	-	-	-	-	-
100	102	330	106	304	1050	161	-	-	-	-	-	-	-
125	127	430	151	327	1050	184	102	127	370	108	304	1050	161
150	152	510	167	314	-	223	127	152	430	151	327	1050	184
200	203	580	211	400	-	282	152	203	500	167	-	-	223

NOTE

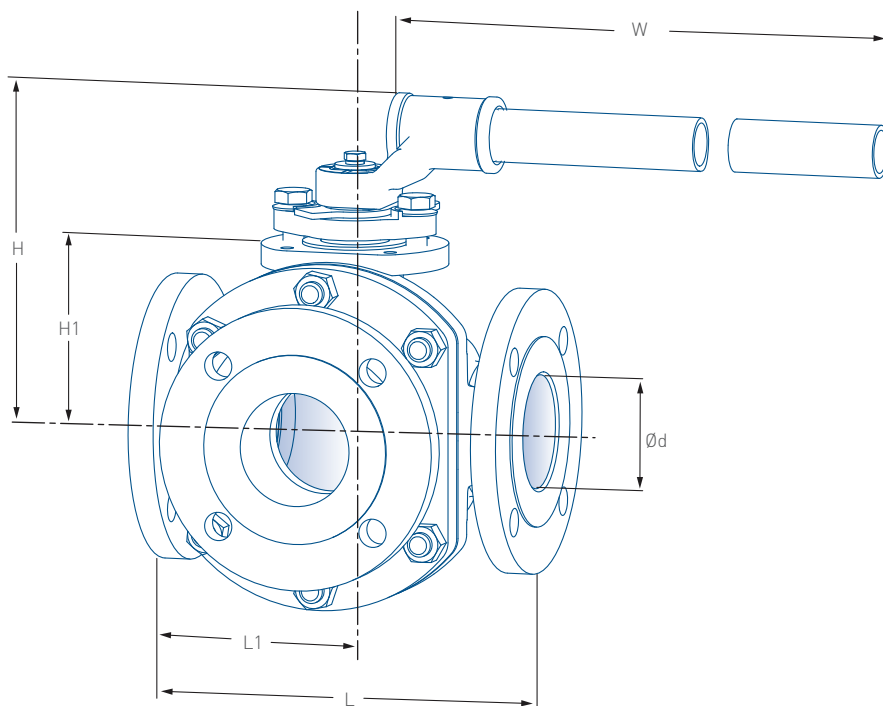
Ødo = bore opening diameter on reduced bore valves

Please consult us for 4 seats ASME Class 300 valves (MB12 and MB22)

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - IMPERIAL

4 - SEATS (L AND T - PORT) MB11 FULL BORE / MB21 REDUCED BORE



ASME CLASS 150 / JIS 10K DIMENSIONS - MB11 AND MB21

NPS	Full bore - MB11						Reduced bore - MB21						
	Ød	L	L1	H	W	H1	Ød	Ødo	L	L1	H	W	H1
½	0.51	5.51	0.98	3.70	6.30	1.81	-	-	-	-	-	-	-
¾	0.75	5.91	1.18	4.23	9.06	2.05	-	-	-	-	-	-	-
1	0.98	6.30	1.34	4.33	9.06	2.15	-	-	-	-	-	-	-
1½	1.50	8.27	2.01	6.20	15.75	3.82	-	-	-	-	-	-	-
2	2.01	8.66	2.46	6.44	15.75	4.06	-	-	-	-	-	-	-
2½	2.52	9.84	2.91	8.46	26.97	4.45	-	-	-	-	-	-	-
3	3.00	10.24	3.43	8.82	26.97	4.78	-	-	-	-	-	-	-
4	4.02	13.00	4.17	11.97	41.34	6.34	-	-	-	-	-	-	-
5	5.00	16.93	5.94	12.85	41.34	7.24	4.02	5.00	14.57	4.25	11.97	41.34	6.34
6	5.98	20.08	6.57	12.36	-	8.78	5.00	5.98	16.93	5.94	12.87	41.34	7.24
8	8.00	22.83	8.31	15.75	-	11.08	5.98	8.00	19.69	6.57	-	-	8.78

NOTE

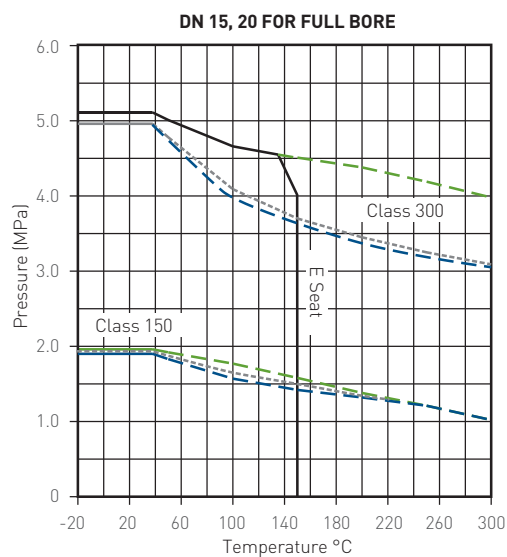
Ødo = bore opening diameter on reduced bore valves

Please consult us for 4 seats ASME Class 300 valves (MB12 and MB22)

KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - METRIC

PRESSURE-TEMPERATURE RATINGS



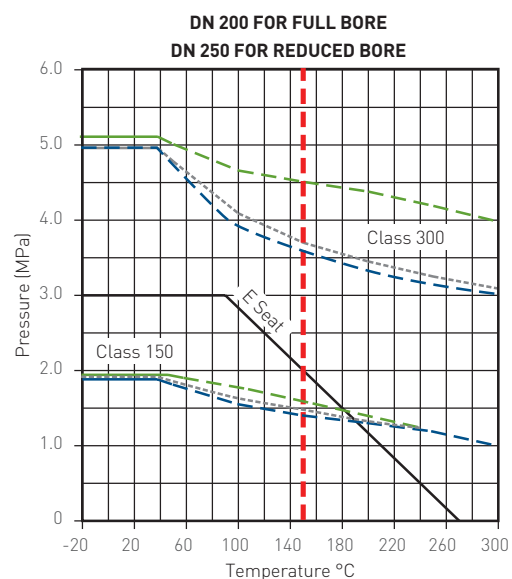
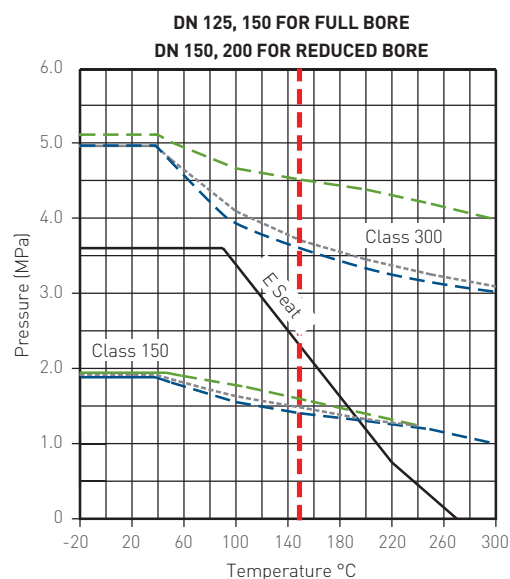
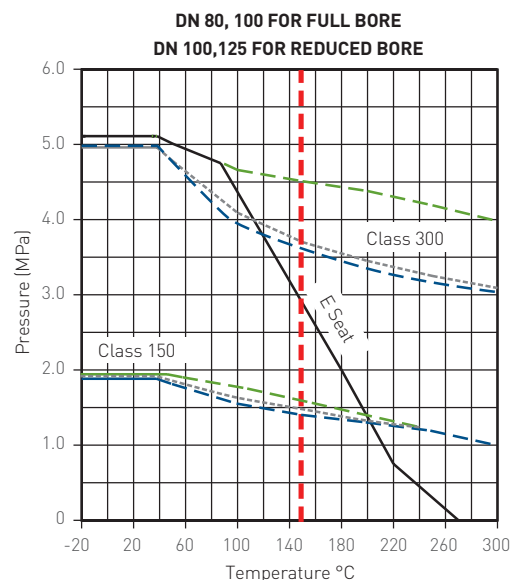
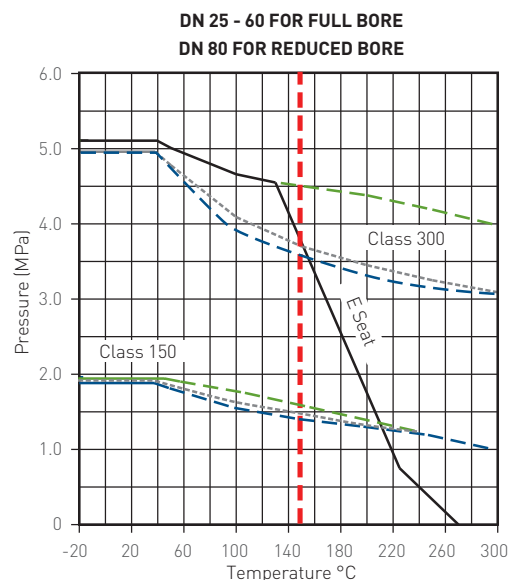
LEGEND:

Dashed lines indicate body ratings.

- WCB
- CF8M
- CF8
- 4-seats - Upper limit 150°C (302°F)

NOTE

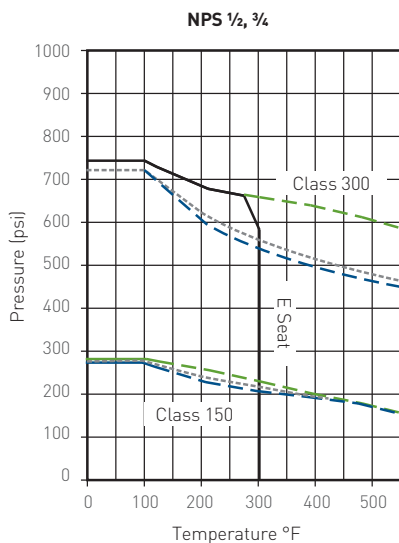
E seat is PTFE/PFA copolymer seat
 Seat ratings for Gratite seated valves are identical to ASME body ratings
 Please consult us for 4 seats ASME Class 300 valves (MB12 and MB22)



KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT) - IMPERIAL

PRESSURE-TEMPERATURE RATINGS



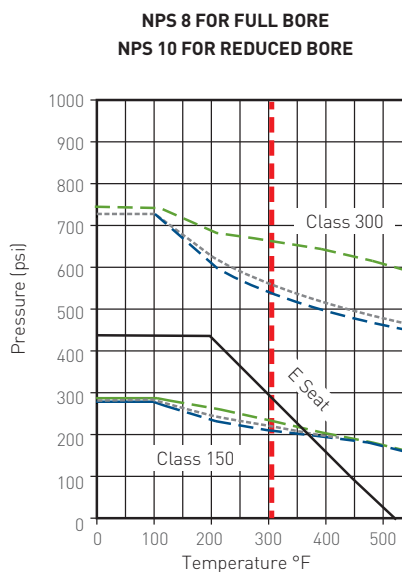
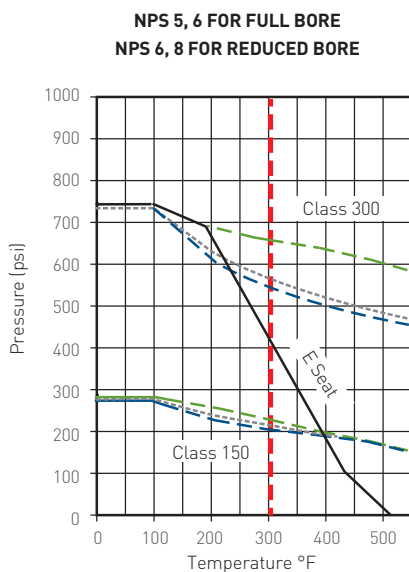
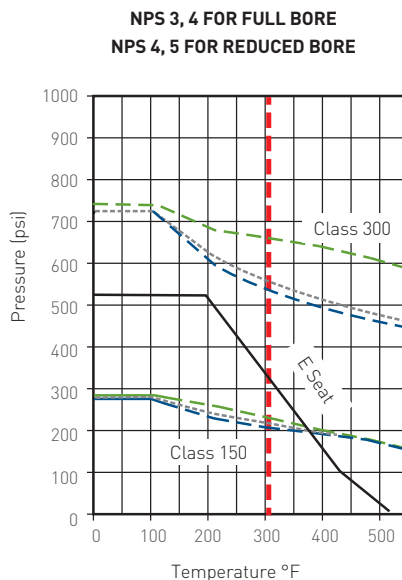
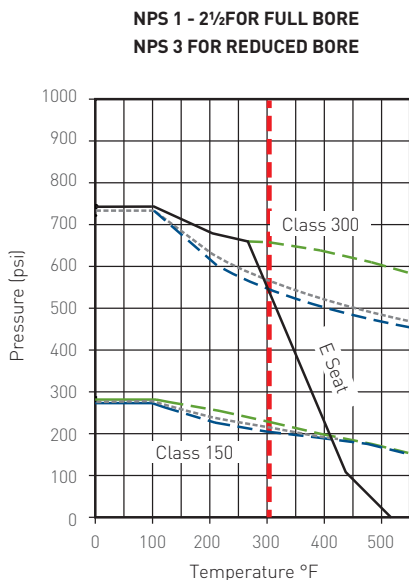
LEGEND:

Dashed lines indicate body ratings.

- WCB
- CF8M
- CF8
- 4-seats - Upper limit 302°F

NOTE

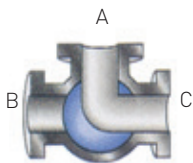
E seat is PTFE/PFA copolymer seat
 Seat ratings for Gratiite seated valves are identical to ASME body ratings
 Please consult us for 4 seats ASME Class 300 valves (MB12 and MB22)



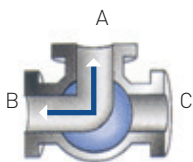
KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT)

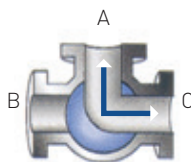
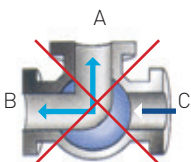
OPERATION FORM L-PORT (NB11, NB12, NB21, NB22 AND MB11, MB21)



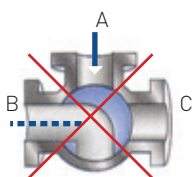
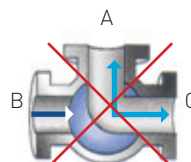
- A, B, C indicate the three supply ports.
- Quarter turn and L-port construction allow for the following two flow patterns. (Pattern 1 and Pattern 2)



PATTERN 1



PATTERN 2



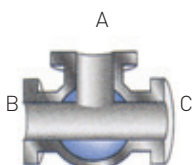
PATTERN 3

- Pattern 1 and Pattern 2 are standard flow directions for L-port valve.
- Arrows  indicate pressure higher than 0 MPa. For vacuum use please inquire separately.
- Straight flow from B to C and C to B is not possible. (The operation rotates 90°.)
- Crossed out  forms cannot be used.
- Leakage occurs on the flow channel side if the pressure of arrow  is higher than the flow channel  side.

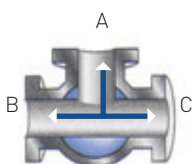
NOTES

1. As for 2-seats (NB), Shut-off function is not available at the center port (A) because the seat is not installed there. Please pay attention to the direction of the flow channel when using it. In Pattern 3, the fluid pass through both flow channel A to B and B to A.
2. Please consult us for 4-seats ASME Class 300 and JIS 20K valves (MB12/MB22)

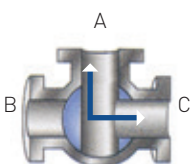
OPERATION FORM T-PORT (MB11, MB21)



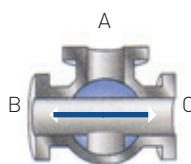
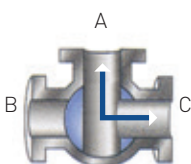
- A, B, C indicate the three supply ports.
- T-port available for below four patterns.



PATTERN 1



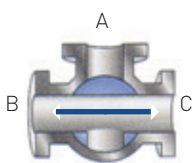
PATTERN 2



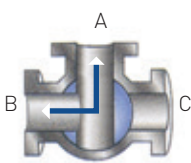
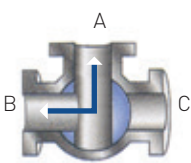
- Pattern 1 and Pattern 2 are standard flow directions for a 4-seat (T-port) valve.
- Arrows  indicate pressure higher than 0 MPa. For vacuum use please inquire separately.
- Crossed out  forms cannot be used.
- Leakage occurs on the flow channel side if the pressure of arrow  is higher than the flow channel  side.

NOTE

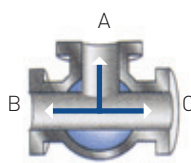
Please consult us for 4-seats ASME Class 300 and JIS 20K valves (MB12/MB22)



PATTERN 3



PATTERN 4



KTM MODEL NB / MB THREE-WAY BALL VALVES

2-SEATS (L-PORT) AND 4-SEATS (L AND T-PORT)

SELECTION GUIDE

Example			NB11							L	32	IE	A15	RF	25	GG
Valve code	ASME	JIS	Description													
NB11	150	10K	FB, DN 40 - 200 (NPS 1½ - 8)													
NB12	300	20K	FB, DN 40 - 200 (NPS 1½ - 8)													
NB21	150	10K	RB, DN 125 - 250 (NPS 5 - 10)													
NB22	300	20K	RB, DN 125 - 250 (NPS 5 - 10)													
MB11	150	10K	FB, DN 15 - 300 (NPS ½ - 8)													
MB12	300	20K	FB, DN 15 - 200 (NPS ½ - 8)													
MB21	150	10K	RB, DN 125 - 200 (NPS 5 - 8)													
MB22	300	20K	RB, DN 150 - 200 (NPS 5 - 8)													
Sub code	Description															
Blank	Soft seat															
G	Gratite seat															
Special feature	Description															
L	L-port															
T	T-port (For 4-seats only)															
Body code	ASME	JIS														
31	CF8	SCS13A														
32	CF8M	SCS14A														
62	WCB	SCPH2														
Trim code																
Soft seat	ASME Ball	JIS Ball					Seat			Packing		Stem				
1E	CF8 ^[1] / CF8M ^[2]	SCS13A ^[1] / SCS14A ^[2]					PTFE/PFA Copolymer			PTFE		304 ^[1] / 316 ^[2]				
5E ^[1]	CF8M	SCS14A					PTFE/PFA Copolymer			PTFE		316				
Gratite seat																
CC	CF8 ^[1] / CF8M ^[2]	SCS13A ^[1] / SCS14A ^[2]					Graphite			329J1						
Flange code																
ASME	Description					JIS		Description								
A15	ASME Class 150					J10		JIS 10K								
A30	ASME Class 300					J20		JIS 20K								
Connection code																
Code	Description															
RF	Raised face (125 to 250 AARH)															
Size code																
Code	15	20	25	40	50	65	80	100	125	150	200	250				
DN	15	20	25	40	50	65	80	100	125	150	200	250				
NPS	½	¾	1	1½	2	2½	3	4	5	6	8	10				
Option code																
Code	Description															
Blank	No additional option															
GG	Graphite packing and gasket															

NOTES

FB = Full bore

RB = Reduced bore

1. Body code 31 and 62

2. For body code 32 only

Please consult us for 4 seats ASME Class 300 valves (MB12 and MB22)