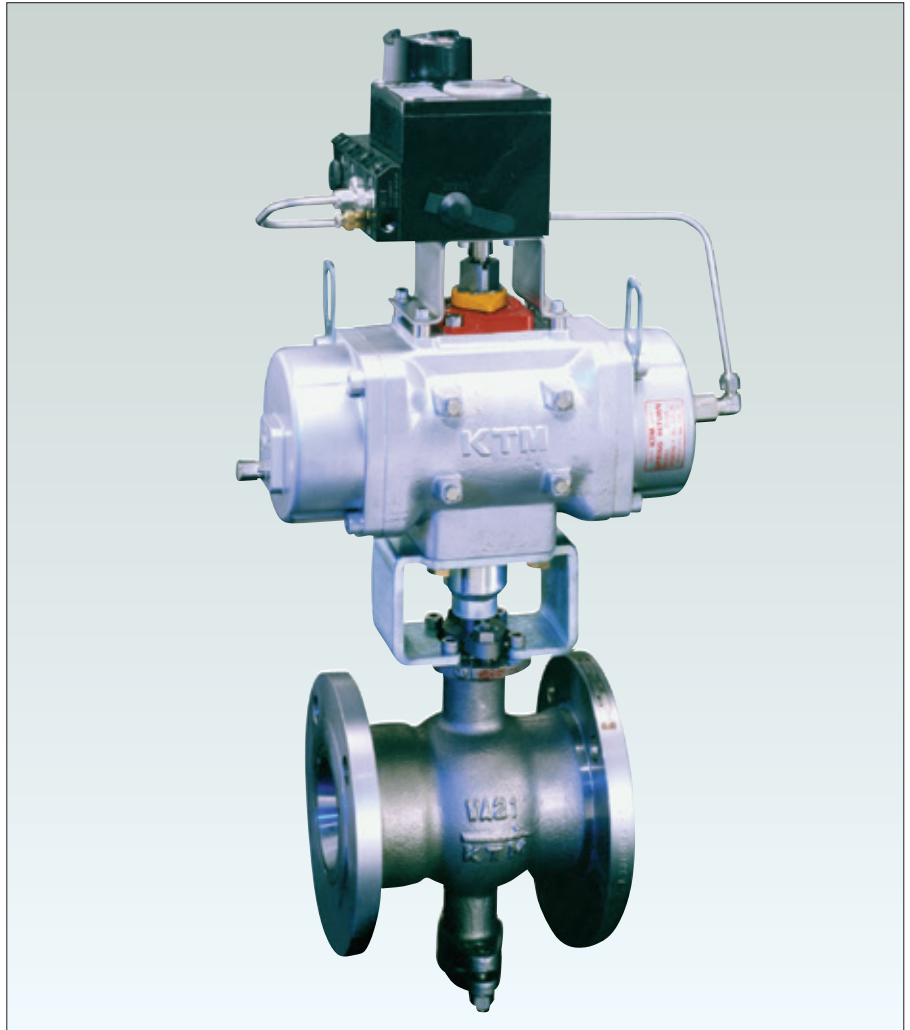


KTM

Enhanced, proven design offers both control and block valve functions

Features

- Unique dual-V ball features a secondary (Small) V-notch allowing extremely small, accurate flow rates
- The primary (Large) V-notch provides straight through and non-clogging flow
- Dual-V ball allows rate changes and controls fluids with a rangeability in 250:1
- Equal percent flow characteristic
- Rotary-valve design provides shearing action between the V-notch ball and the seat, promoting a smooth, non-clogging operation
- Spring loaded stellite metal seat
- ANSI / FCI 70-2 Class V
- Unibody design protect from the effect of piping stress
- Minimum body cavity reduces build-up
- Fugitive emissions control for flammable and non-flammable applications
- Available in flangeless or flanged construction
- Multiple, adjustable ring packing allows easy adjustment without valve disassembly or actuator removal
- ISO mounting pad is available as optional
- Positive position indication



General applications

Slurry and viscous fluids, powder (option) and pellet, sludge in water treatment and pollution control processes, chips and fibers in pulp and paper process, flow control in pipeline and transmissions, pressure control in oil and gas

Options

- Special tests
 - X-ray test (RT)
 - Liquid penetrant test (PT)
 - Positive material identification (PMI)

Technical data

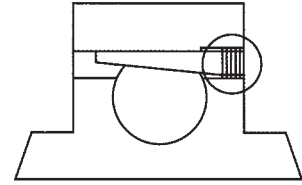
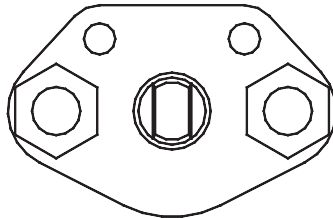
Models	: WA20, WA21, WA22
Sizes	: DN 25 to DN 200
Pressure rating	: JIS 10K, 20K / ASME Class 150, 300 (JPI available)
Face to face	: Flanged type ASME B16.10 (short pattern) : Flangeless type ISA 75.04
End connection	: JIS B2220 : ASME B16.5 RF
Temperature	: -20°C to 270°C
Seat leakage	: ANSI / FCI 70-2 Class V

KTM Dual-V High Performance Control Ball Valves

Series WA Sizes DN 25-200 Class 150 and 300

Integral mounting pad

Machined 'actuator pad' allows precise mounting of actuator. Mounting bolts are independent from the shaft-packing gland bolts. This exact alignment reduces torque and prevents out-of-line wear on the shaft and packing (option).

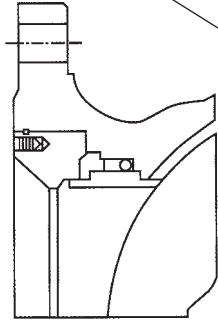


Shaft to disc connection

A tapered pin connection is used to ensure accurate control of flow, which also results in a high resolution of 250:1.

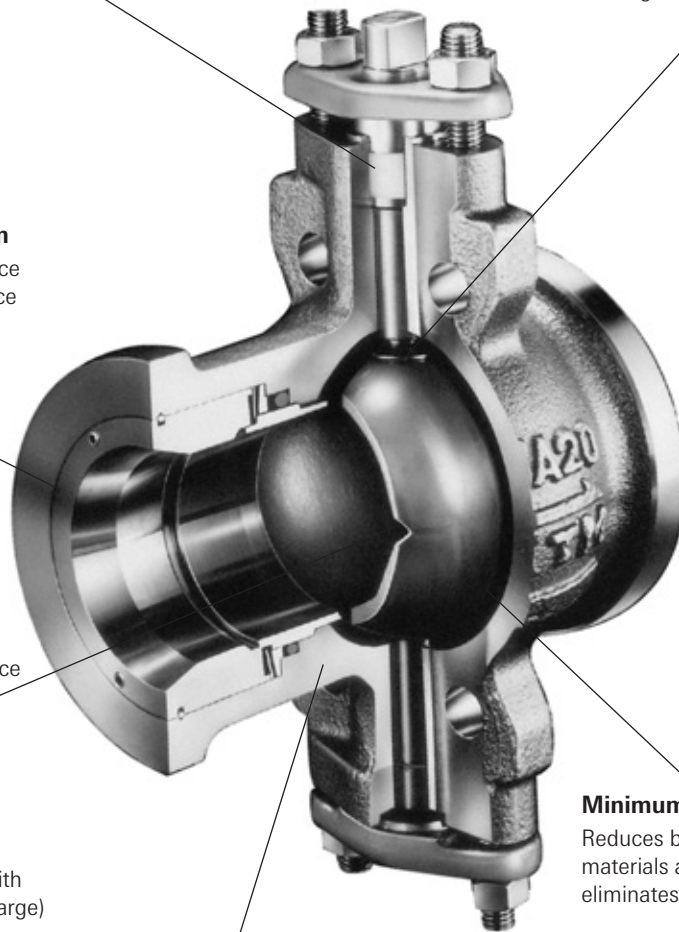
Fugitive emissions control packages

Available for both flammable and non-flammable service.



Positive locking, end cap retention

Wire-ring with three point locking device assures tight fit and makes maintenance easier.



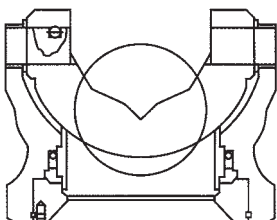
Note: DN 15 to DN 100 valve illustrated

Versatile end-connection

The Unibody design is available in flangeless or flanged construction and meets ISA S-75.04 and ASME B16.10 (Short pattern) face-to-face dimensions.

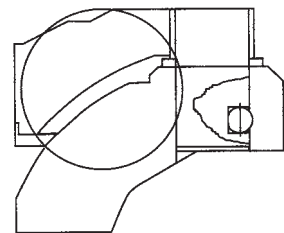
Unique dual-V ball

A secondary (Small) V-notch allows extremely small, accurate flow rates with the additional benefit of the primary (Large) V-ball providing straight through, non-clogging flow which, if necessary, will shear slurries and fibers.



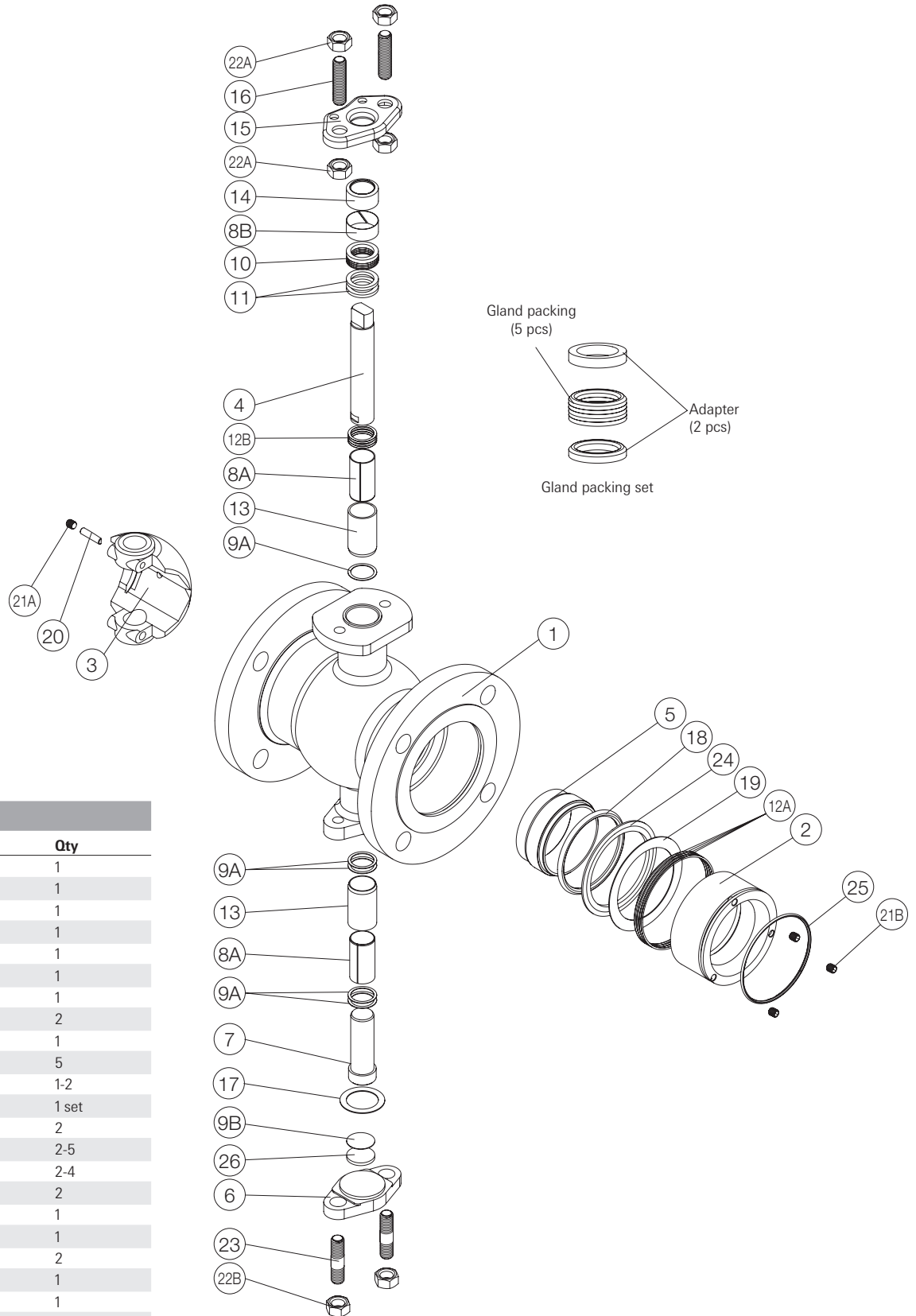
Minimum body cavity

Reduces build-up of transition process materials and the segmented V-ball eliminates freeze-up.



Unibody design

This proven structural design enhances piping integrity by reducing stress and additionally eliminates potential leak paths.



Parts list

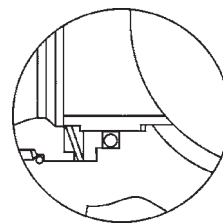
No.	Parts name	Qty
1	Body	1
2	Body cap	1
3	Disk	1
4	Shaft	1
5	Seat	1
6	Lower cover	1
7	Lower shaft	1
8A	Shaft bearing	2
8B	Shaft bearing	1
9A	Thrust bearing	5
9B	Thrust bearing	1-2
10	Gland packing	1 set
11	Thrust washer	2
12A	Shim	2-5
12B	Shim	2-4
13	Bearing holder	2
14	Gland	1
15	Gland flange	1
16	Gland bolt	2
17	Gasket	1
18	Seal ring	1
19	Spring	1
20	Taper pin	1
21A	Set screw	1
21B	Set screw	3
22A	Nut	4
22B	Nut	2-4
23	Stud	2-4
24	Stopper	1
25	Locking ring	1
26	Thrust washer	1

KTM Dual-V High Performance Control Ball Valves

Series WA Sizes DN 25-200 Class 150 and 300

Seat design

The precision finished heavy duty 'V' ball surface and spring supported, stellite metal seat combination provides excellent sealing performance with low torque. It also offers the additional benefit of exceptional wear and pressure drop performance over a wide range of media - steam, gas, liquid, fiber and slurry applications.



Seat leakage: FCI 70-2 Class V
Spring loaded stellite seat

Available trims

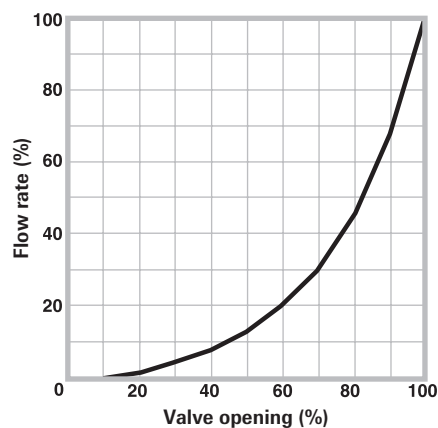
Application	General purpose	Abrasion resistant	Corrosion resistant	Corrosion & abrasion resistant	Abrasion & high temp resistant
Trim combination	AV	BV	AT	BT	BP
Operating temp	-20°C to 150°C		-20°C to 200°C		-20°C to 270°C
Body material	CF8 (SCS13A), CF8M (SCS14A)				
V-ball material	CF8M (SCS14A)+ HCr*	CF8M (SCS14A)+ SFNi*	CF8M (SCS14A)+ HCr*	CF8M (SCS14A)+ SFNi*	
Seat material	316 SS + Stellite				
Seat seal material	FKM O-ring		PTFE seal-ring		PEEK seal-ring
Shaft bearing	Metal-backed PTFE			Stellite bushing	
Packing	PTFE			Graphite	

* HCr: Hard chromium plating SFNi: Nickel alloy overlay
• Material in parentheses indicate equivalent JIS material.

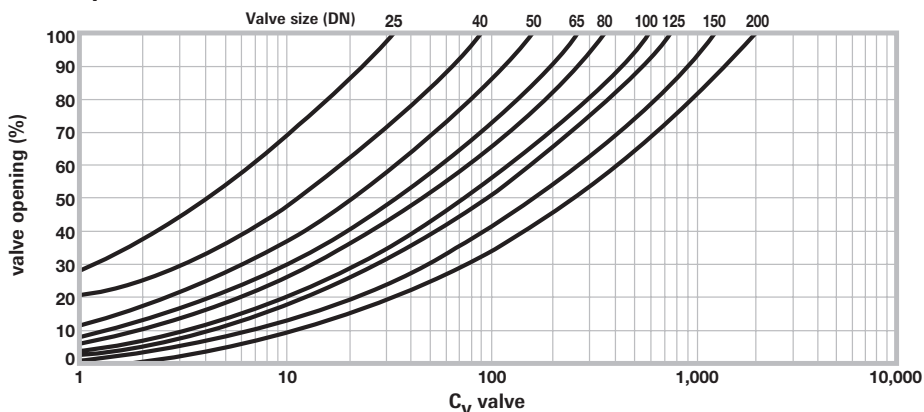
C_v values

Valve size (DN)	Valve opening (%)									
	10	20	30	40	50	60	70	80	90	100
25	0.16	0.33	1.2	2.3	4.1	6.6	10.2	15.8	23.4	33
40	0.45	0.90	3.2	6.3	11.3	18.0	27.9	43.2	63.9	90
50	0.83	2.50	5.8	11.6	20.6	33.0	51.2	79.2	117.0	165
65	1.40	4.10	9.6	19.3	34.4	55.0	85.3	132.0	195.0	275
80	1.80	5.50	12.8	25.6	45.6	73.0	113.0	175.0	259.0	365
100	3.00	9.00	21.0	42.0	75.0	120.0	186.0	288.0	426.0	600
125	3.80	11.40	26.6	53.2	95.0	152.0	236.0	365.0	540.0	760
150	6.50	19.50	45.5	91.0	163.0	260.0	403.0	624.0	923.0	1,300
200	10.40	31.40	72.8	146.0	260.0	416.0	645.0	998.0	1,480.0	2,080

Inherent flow characteristics

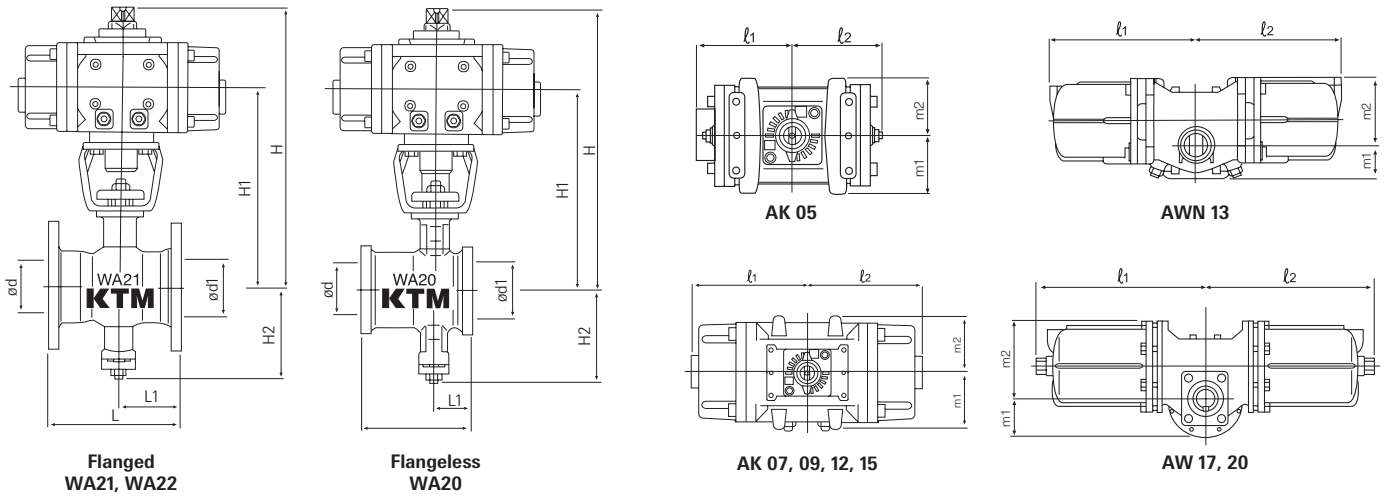


C_v valve curve



KTM Dual-V High Performance Control Ball Valves

Series WA Sizes DN 25-200 Class 150 and 300

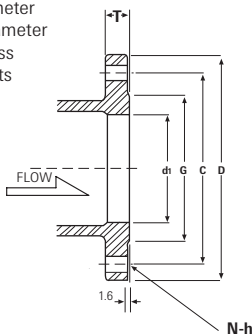


Dimensions (WA21, WA22, WA20)

Valve size (DN)	Cylinder actuator	ød	ød1*	Flange		Flangeless		H	H1	H2	Cylinder for Double Acting			
				L	L1	L	L1				ℓ	ℓ2	m1	m2
25	AK05	25	44	127	61	102	36	251	162	72	84.5	80.5	50	50
	AK07							251	162	72	115.5	115.5	50	50
	AK09							277	178	72	131.5	131.5	60	60
40	AK05	38	52	165	91	114	40	272	183	90	84.5	80.5	50	50
	AK07							272	183	90	115.5	115.5	50	50
	AK09							298	199	90	131.5	131.5	60	60
	AK12							356	236	90	157	157	77	75
50	AK05	51	66	178	98	124	44	282	193	110	84.5	80.5	50	50
	AK07							282	193	110	115.5	115.5	50	50
	AK09							308	209	110	131.5	131.5	60	60
	AK12							366	246	110	157	157	77	75
	AK15							395	260	110	195	195	94	90
65	AK07	64	80	190	100	143	53	310	221	131	115.5	115.5	50	50
	AK09							336	237	131	131.5	131.5	60	60
	AK12							386	266	131	157	157	77	75
	AK15							436	301	131	195	195	94	90
80	AK07	76	84	203	95	165	57	331	232	139	115.5	115.5	50	50
	AK09							347	248	139	131.5	131.5	60	60
	AK12							397	277	139	157	157	77	75
	AK15							426	291	139	195	195	94	90
100	AK09	102	104	229	112	194	77	372	273	149	131.5	131.5	60	60
	AK12							427	307	149	157	157	77	75
	AK15							456	321	149	195	195	94	90
	AWN13							479	322	149	285.5	285.5	66	132
	AK12							442	322	162	157	157	77	75
125	AK15	127	130	254	127	213	78	471	336	162	195	195	94	90
	AWN13							494	337	162	285.5	285.5	66	132
	AK15							491	356	181	195	195	94	90
150	AWN13	152	160	267	133.5	229	99	542	385	181	285.5	285.5	66	132
	AW17							636	427	181	377.5	377.5	95	176
	AWN13							547	417	220	285.5	285.5	66	132
200	AW17	203	203	292	146	243	106	668	459	220	377.5	377.5	95	176
	AW20							746	502	220	530	530	115	232
	AK15							491	356	181	195	195	94	90

Flange dimensions (mm)

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



Valve size (DN)	ASME class 150							ASME class 300						
	D	C	G	T	N	h	D	C	G	T	N	h		
25	108	79.5	60*	11.2	4	16	124	89.0	60*	17.5	4	19		
40	127	98.5	81*	14.3	4	16	156	114.5	81*	20.7	4	22		
50	152	120.5	96*	15.9	4	19	165	127.0	96*	22.3	8	19		
65	178	139.5	116*	17.5	4	19	190	149.0	116*	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		

* These dimensions differ from ASME standard. For JIS, the flange dimensions are same as JIS standard.

KTM Dual-V High Performance Control Ball Valves

Series WA Sizes DN 25-200 Class 150 and 300

Ordering instructions

WA21	R	-	32	•	AV	A15	RF	25	GG
Body style	Special feature	Body material	Trim material	Pressure class	Connection	Valve size (DN)	Option		

Example WA21 R - 32 • AV A15 RF 25 GG

Body style: Reduced bore, DN 25 to DN 200. **Special feature:** Reverse action. **Body material:** JIS: SCS14A (316SS), ASTM: CF8M (316SS). **Ball material:** JIS: SCS14A with HCr, ASTM: CF8M with HCr. **Seat material:** 316SS with stellite. **Packing material:** PTFE / FKM o-ring. **Shaft material:** 329J1 SS. **Pressure class:** ASME Class 150. **Connection:** Raised face 125 to 250 AARH. **Valve size:** DN 25. **Option:** Packing / Gasket-graphite.

Code	Body style		
	ASME	JIS	
WA20	150/300	10K/20K	Reduced bore, Flangeless, DN 25 to 200
WA21	150	10K	Reduced bore, DN 25 to DN 200
WA22	300	20K	Reduced bore, DN 25 to DN 200

Code	Sub code
Blank	Metal seat

Code	Special feature
Blank	No special feature
D	Direct action
R	Reverse action

Code	Body material	
	JIS	ASTM
31	SCS13A (304SS)	CF8 (304SS)
32	SCS14A (316SS)	CF8M (316SS)

Code	Trim material				
	Ball	Seat	Packing	Shaft	
	JIS	ASTM			
AV	SCS14A with HCr	CF8M with HCr	316SS with stellite	PTFE / FKM o-ring	329J1 SS
AT	SCS14A with HCr	CF8M with HCr	316SS with stellite	PTFE / PTFE seal-ring	329J1 SS
BV	SCS14A with SFNi	CF8M with SFNi	316SS with stellite	PTFE / FKM o-ring	329J1 SS
BT	SCS14A with SFNi	CF8M with SFNi	316SS with stellite	PTFE / PTFE seal-ring	329J1 SS
BP	SCS14A with SFNi	CF8M with SFNi	316SS with stellite	Graphite / PTFE seal-ring	329J1 SS

HCr : Hard chromium plating

SFNi : Electroless nickel plating

Code	Pressure class
A15	ASME Class 150
A30	ASME Class 300
J10	JIS 10K
J20	JIS 20K

(JPI also available)

Code	Connection
RF	Raised face 125 to 250 AARH
SM	Smooth finish 63 to 125 AARH

Code	Size (DN)
25	25
40	40
50	50
65	65
80	80
100	100
125	125
150	150
200	200

Code	Option
Blank	No additional option
B1	Buffing (All wetted parts)
GG	Packing / Gasket-graphite

Body styles

Dual-V high performance control ball valves

Code	Body style	Bore	Connection	Pressure class	Sizes
WA20	Trunnian ball 1 pce body	Reduced bore	Raised face or smooth finish	ASME 150/300, JIS 10K/20K	DN 25-200
WA21	Trunnian ball 1 pce body	Reduced bore	Raised face or smooth finish	ASME 150, JIS 10K	DN 25-200
WA22	Trunnian ball 1 pce body	Reduced bore	Raised face or smooth finish	ASME 300, JIS 20K	DN 25-200