Neles™ trunnion mounted ball valves ASME Class 600

Series XH

We have over 50 years experience of trunnion mounted ball valves. Based on this experience we have designed this ball valve to comply with latest product specifications and performance standards.

Valve performance complies with ISO 15848 fugitive emissions providing sustainable valve performance. Enhanced reliability and cycle life to meet the industry target extended maintenance interval.

The trunnion mounted XH valve can be used for safety, high cycle shut-off and throttling service with high pressure differentials. The modular design incorporates two large, low-friction trunnion bearings, with the spring-loaded seat in continuous contact with the ball surface.



Applications

- Chemical and petrochemical plants.
- Oil and gas production.
- Power plants.
- Natural gas.
- Crude oil.
- Coal gasification
- Hydrocarbons.
- Polymers.
- Catalyst handling.
- Liquids, gas and steam.
- High temperature services.
- Control and shut-off.

Trunnion mounted

- Low operating torque.
- Fully rated seats.
- Smooth control.
- Double block & bleed.
- Quick operations.
- High cycle capability.
- Full bore
- Maximum Cv per nominal size.
- Cylindrical flow path allows low flow resistance.
- Full bore design for API requirements.

Pressure classes

- ASME Class 600 / EN PN 63, 100

Increased safety

- Live-loaded construction as standard.
- Fire tested API 607 & ISO 10497, with selected constructions and seat designs.
- Spiral wound body joint gasket.
- Anti-blowout shaft.
- Anti-static with selected constructions.

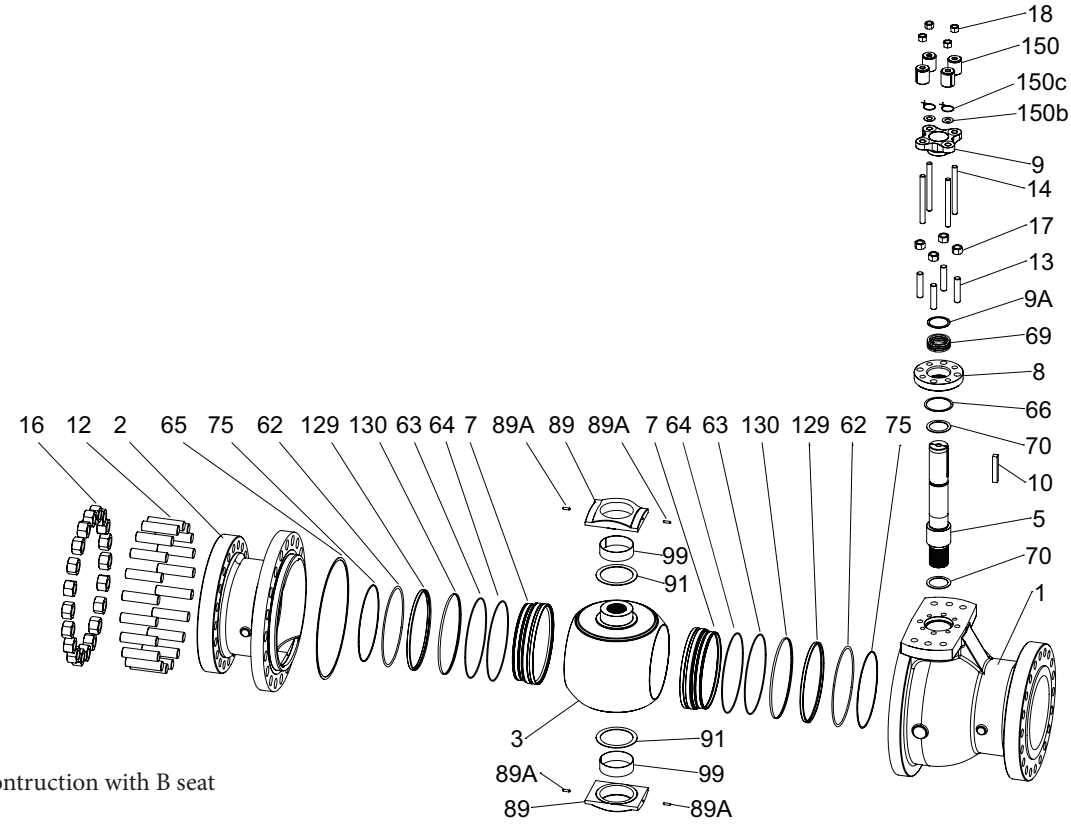
Tightness

- Durable two-way ISO 5208 Rate C or FCI 70.2 class V tightness as standard with spring-loaded metal seats.
- Available with improved tightness rates up to FCI Class V/API 598.

Minimized emissions

- Live-loaded gland packing.
  - ISO 15848 with graphite packing.
- Side entry, two-piece bolted body.
  - Uninterrupted circular spiral wound body gasket.
  - No bending forces to gland packing.

Exploded view



Valve contruction with B seat

Parts list (B-seat)

Item	Part description	Stainless steel	Carbon steel WCB
1	BODY	Stainless Steel CF8M	Carbon steel WCB
2	BODY CAP	Stainless Steel CF8M	Carbon steel WCB
3	BALL	Stainless Steel AISI 316 / CF8M	Stainless Steel AISI 316 / CF8M
5	SHAFT	Stainless Steel 17-4PH / XM-19	Stainless Steel 17-4PH / XM-19
7	(B-seat)	Stainless steel AISI 316 + cobalt based alloy / Stainless steel AISI 316 + CrC / TC2	Stainless steel AISI 316 + cobalt based alloy / Stainless steel AISI 316 + CrC / TC2
8	BONNET	Stainless Steel CF8M	Stainless Steel CF8M
9	GLAND	Stainless Steel CF8M	Stainless Steel CF8M
9A	ANTI-EXTRUSION RING	Stainless Steel AISI 316	Stainless Steel AISI 316
10	KEY	Stainless Steel AISI 329 / UNS S31803	Stainless Steel AISI 329 / UNS S31803
12	STUD	ASTM A 193 gr. B8M	ASTM A 320 gr. L7M
13	STUD	ASTM A 193 gr. B8M	ASTM A 320 gr. L7M
14	STUD	ASTM A 193 gr. B8M	ASTM A 320 gr. L7M
16	HEXAGON NUT	ASTM A 193 gr. 8M	ASTM A 320 gr. 7M
17	HEXAGON NUT	ASTM A 193 gr. 8M	ASTM A 320 gr. 7M
18	HEXAGON NUT	ASTM A 193 gr. 8M	ASTM A 320 gr. 7M
19	IDENTIFICATION PLATE	AISI 316	AISI 316
62	SPRING	UNS N06625	UNS N06625
63	BRAIDED SEAL SQUARE	Graphite	Graphite
64	BACK-UP RING	PTFE	PTFE
65	BODY SEAL SPIRAL WOUND	Stainless steel AISI 316 + PTFE / graphite	Stainless steel AISI 316 + PTFE / graphite
66	SHEET RING	Graphite / PTFE	Graphite / PTFE
69	PACKING RING/V-RING SET	Graphite / PTFE	Graphite / PTFE
70	THRUST BEARING	AISI 316 + PTFE / Coated metal	AISI 316 + PTFE / Coated metal
75	BRAIDED SEAL SQUARE	Graphite	Graphite
89	TRUNNION PLATE	Stainless steel CF8M	Stainless steel CA15
89A	PIN	A564 gr. 630 H1150D / ASTM A479 gr. XM-19	A564 gr. 630 H1150D / ASTM A479 gr. XM-19
91	THRUST BEARING	AISI 316 + PTFE / Coated metal	AISI 316 + PTFE / Coated metal
99	TRUNNION BEARING	AISI 316 + PTFE / Coated metal	AISI 316 + PTFE / Coated metal
129	SUPPORT RING	AISI 316	AISI 316
130	BACK SEAL	Graphite	Graphite
150	DISC SPRING SET	AISI 303 / 50CrV4 + ENP	AISI 303 / 50CrV4 + ENP
150B	WASHER	AISI 304	AISI 304
150C	ANTI-STATIC SPRING	DIN 17224-1.4310	DIN 17224-1.4310

Technical specification

Product type
Full bore trunnion mounted ball valve.
Side entry, two-piece bolted body.
Flanged.

Pressure ratings
ASME Class 600 / EN PN63, 100

Size range
6”...24” / DN 150 - 600.

Standard temperature range
-50 …+425 °C, consult factory for higher temperature applications

Design standard
API 608 and API 6D compliance on request.

Valve body	ASME B16.34.
Valve flanges	ASME B16.5.
Face-to-face	ASME B16.10 long pattern.
Actuator mounting	ISO 5211.

Standard materials

Body	ASTM A216 gr. WCB ASTM A351 gr. CF8M.
Ball	CF8M/AISI 316 + Hard chrome or other coating options with metal seats.
Bearings	RPTFE or AISI 316 + hard facing.
Seats	AISI 316 + cobalt based alloy or other coating options.
Seals/gaskets	PTFE or Graphite.
Body gaskets	Spiral wound with PTFE or graphite filler.
Gland packing	Graphite or PTFE with live loaded construction.
Bolting	B8M/8M with stainless steel body. L7M/7M with carbon steel body.

Standard options
High temperature linkages.
High temperature design.
Hard chrome or carbide ball coating.
Q-TRIM design (6”...24”)
Q2-TRIM design (6”...24”)
Safety level SIL-3 capable.
NACE MR 0103 and MR 0175.
ATEX on request.
CE marked for PED as standard.

Material and test certification
EN10204-3.1 material certificates for body and bonnet.

Fire testing
API 607 & ISO 10497, with B and G seats. (1X22EN)

Valve testing
Each valve is tested for body integrity and seat tightness.
The body test pressure is 1,5 x pressure class. The seat test is done according to selected standard. Test medium is corrosion inhibited water or air depending on standard.

Standard tightness
ISO 5208 Rate C or Class V for metal seats.
Optional API 598 and ISO 5208 Rate B or FCI 70.2 Class VI
Other tightness rates upon request.

Actuator selection

XH series valve can be equipped with the following Neles brand actuator types:

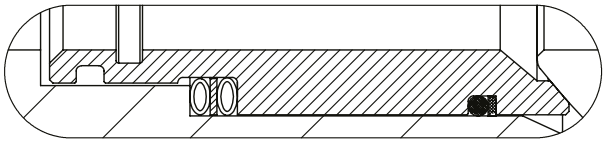
B1C/B1J	Pneumatic double acting or spring return actuator with ISO 5211 mounting face.
N1	Spring return scotch yoke actuator with ISO 5211 mounting face.

When selecting other actuators, please contact your local Valmet representative.

For the correct actuator selection in on-off service, you need to know the following process data:
- valve size and seat type
- supply pressure for the actuator
- maximum shut-off pressure across the valve

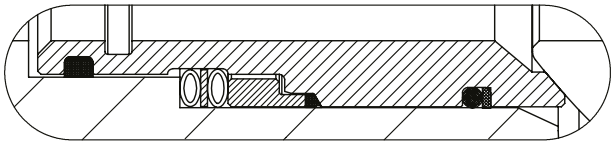
Standard seat constructions and materials

S Metal seat



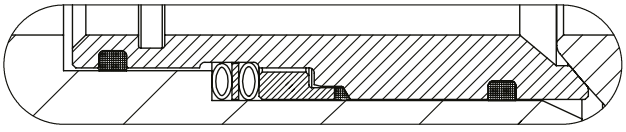
Ball seat:	Stainless steel + hard facing
Seat seal:	FKM O-ring
Spring:	Inconel 625
Temp. range:	-30 °C... +200 °C

B Solids proof metal seat



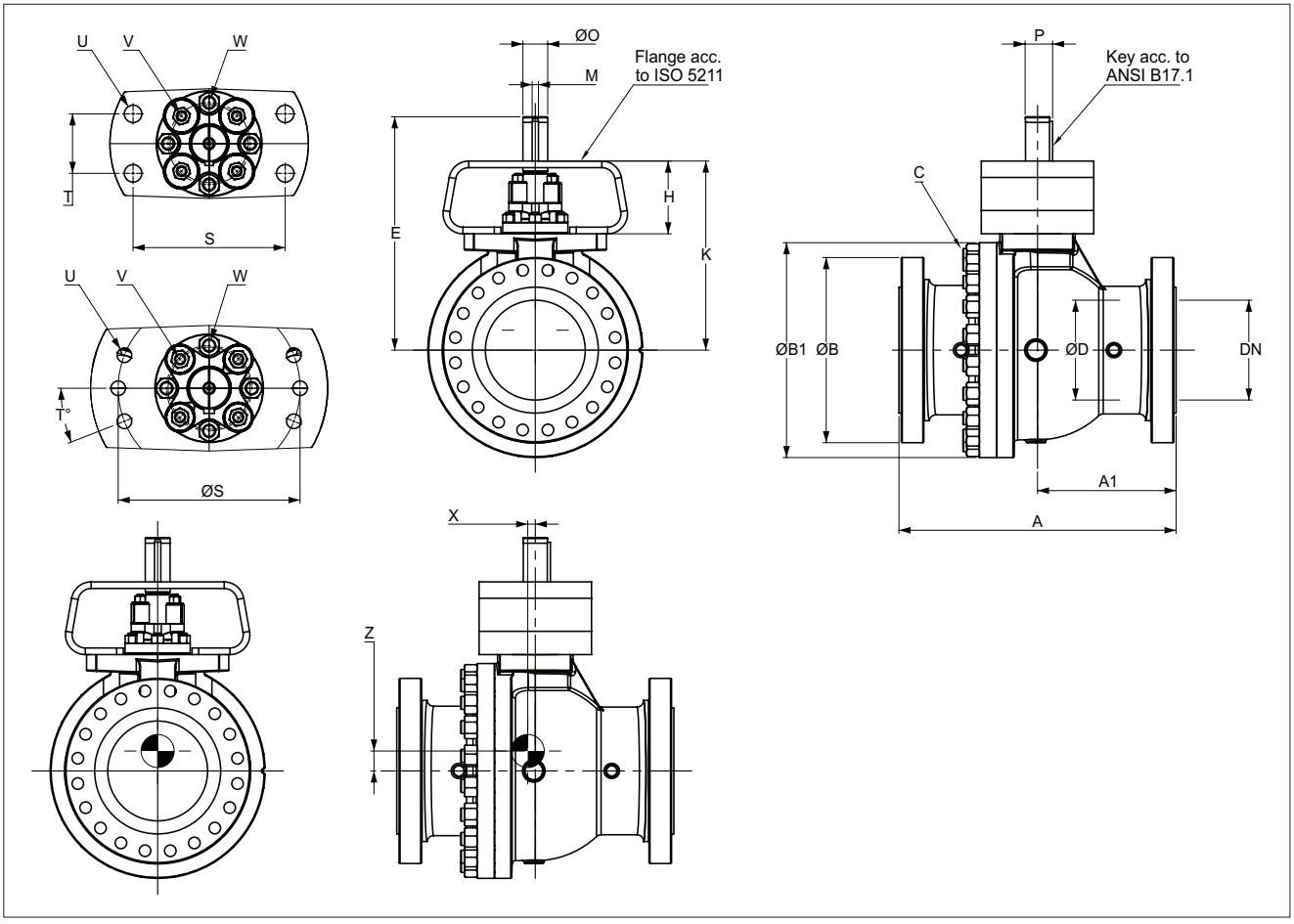
Ball seat:	Stainless steel + hard facing
Seat seal:	Graphite, FKM O-ring
Spring:	Inconel 625
Temp. range:	-30 °C... +200 °C
Note:	For temperature higher than +200 °C, please contact product center. Fire safe API 607 design.

G High temperature solids proof seat



Ball seat:	Stainless steel + hard facing
Seat seal:	Graphite
Spring:	Inconel 625
Temp. range:	-50 °C... +425 °C
Note:	For temperature higher than +425 °C, please contact product center. Fire safe API 607 design.

Dimensions and weights



Size		Dimensions in mm																					
NPS	DN	ØD	A (RF)	A (RTJ)	A1 (RF)	A1 (RTJ)	ØB	ØB1	E	K	H	M	ØO	P	S	T	U	V	W	C	Weight kg	X	Z
6	150	151	559	562	279.5	281	355	390	475	395	180	12.7	45	50.4	230	90	M24	M16	M16	M33	229.7	23	26
8	200	202	660	663	330	331.5	420	472	536	446	180	12.7	55	60.6	230	90	M30	M16	M20	M33	362.6	21	29
10	250	252	787	790	393.5	395	510	570	597	485	180	15.875	65	71.875	230	90	M30	M16	M20	M39	603.6	26	23
12	300	303	838	841	419	420.5	560	650	706	572	220	19.05	75	83.15	330	21.3	M30	M20	M24	M39	821.9	25	34
14	350	334	889	892	444.5	446	605	716	752	606	220	22.225	85	94.625	330	21.3	M30	M20	M24	M42	1123	36	28
16	400	385	991	994	495.5	497	685	804	843	687	250	22.225	95	104.825	400	23.6	M36	M20	M30	M48	1599	42	37
18	450	436	1092	1095	546	547.5	745	888	1031	826	330	31.75	120	133.75	500	24.8	M42	M24	M33	M52	2221	50	54
20	500	487	1194	1200	597	600	815	995	1069	864	330	31.75	120	133.75	500	24.8	M42	M24	M33	M52	2870	53	44
24	600	589	1397	1407	698.5	703.5	940	1172	1281	1031	380	38.1	150	166.6	550	24.7	M48	M30	M33	M64	4548	57	59

Size		Dimensions in inch																					
NPS	DN	ØD	A (RF)	A (RTJ)	A1 (RF)	A1 (RTJ)	ØB	ØB1	E	K	H	M	ØO	P	S	T	U	V	W	C	Weight, lbs	X	Z
6	150	5.94	22.01	22.13	11.00	11.06	13.98	15.35	18.70	15.55	7.09	0.50	1.77	1.98	9.06	3.54	M24	M16	M16	M33	505	0.91	1.02
8	200	7.95	25.98	26.10	12.99	13.05	16.54	18.58	21.10	17.56	7.09	0.50	2.17	2.39	9.06	3.54	M30	M16	M20	M33	798	0.83	1.14
10	250	9.92	30.98	31.10	15.49	15.55	20.08	22.44	23.50	19.09	7.09	0.63	2.56	2.83	9.06	3.54	M30	M16	M20	M39	1328	1.02	0.91
12	300	11.93	32.99	33.11	16.50	16.56	22.05	25.59	27.80	22.52	8.66	0.75	2.95	3.27	12.99	21.3	M30	M20	M24	M39	1808	0.98	1.34
14	350	13.15	35.00	35.12	17.50	17.56	23.82	28.19	29.61	23.86	8.66	0.88	3.35	3.73	12.99	21.3	M30	M20	M24	M42	2471	1.43	1.09
16	400	15.16	39.02	39.13	19.51	19.57	26.97	31.65	33.19	27.05	9.84	0.88	3.74	4.13	15.75	23.6	M36	M20	M30	M48	3518	1.65	1.44
18	450	17.17	42.99	43.11	21.50	21.56	29.33	34.96	40.59	32.52	12.99	1.25	4.72	5.27	19.69	24.8	M42	M24	M33	M52	4886	1.96	2.14
20	500	19.17	47.01	47.24	23.50	23.62	32.09	39.17	42.09	34.02	12.99	1.25	4.72	5.27	19.69	24.8	M42	M24	M33	M52	6314	2.10	1.74
24	600	23.19	55.00	55.39	27.50	27.70	37.01	46.14	50.43	40.59	14.96	1.50	5.91	6.56	21.65	24.7	M48	M30	M33	M64	10005	2.24	2.32

Modular ball valves, series XH, trunnion valves

Trunnion mounted, Neles™ ball valve, series XH ASME class 600, EN PN 100												
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
XH	06	F	W	TA	J2	PJ	S	A	B	F	A	

1. sign	VALVE SERIES & STYLE & FACE-TO-FACE
	Flanged
XH	Full bore, trunnion bearings, f-to-f ASME B 16.10, table 3, long pattern, ASME Class 600, EN PN 63 - 100

2. sign	ASME VALVES, NPS Pressure class availability, Class 600
06	6”
08	8”
10	10”
12	12”
14	14"
16	16"
18	18"
20	20"
24	24"
	EN VALVES, DN Pressure class availability, EN PN 63 - 100
150	150
200	200
250	250
300	300
350	350
400	400
450	450
500	500
600	600

3. sign	PRESSURE CLASS
F	ASME class 600
N	PN 63
P	PN 100

4. sign	END CONNECTION STYLE
	ASME rated flanges:
W	Raised face, ASME B 16.5 (Ra 3.2-6.3), standard
Z	Ring joint, ASME B 16.5
Y	Special form or surface, to be specified, e.g. weld ends
	EN flanges:
C	EN 1092-1 Type B1 (Ra 3.2 – 12.5).

5. sign	CONSTRUCTION & APPLICATION
TA	Standard construction. Double seated. Live loaded packing.
TE	TE Single seated. Otherwise standard.
TQ	Q-Trim construction. Otherwise standard.
EQ	Single seated. Q-Trim construction
EM	Single seated. QLM-Trim construction
2G	Q2G-trim for gas application, single seated, otherwise standard.
2H	Q2GH-trim for gas application, single seated, otherwise standard.

6. sign	BODY MATERIALS, FORGINGS / CASTINGS		
	STANDARD materials		
J2	ASTM A216 gr WCB	S6	ASTM A351 gr CF8M (SS)
	NON-STANDARD materials		
J1	ASTM A216 gr WCC	S1	ASTM A351 gr CF3M (SS)
J4	ASTM A217 gr WC6	S8	ASTM A351 gr CF8C(SS)
J8	ASTM A352 gr LCC		

7. sign	BALL / COATING & STEM MATERIAL
	XH, STANDARD materials
PJ	316SS / Hard chrome & 17-4PH
PX	316SS / Chrome carbide & 17-4PH
PV	316SS / Tungsten carbide & 17-4PH

8. sign	SEAT AND BACK SEAL TYPES / SPRING MATERIALS SEAT CONSTRUCTIONS ARE SHOWN ON PAGE 9			
	Seat type	Back seal type	Spring	Back-up ring
S	Metal, general service	O-ring	Inconel 625	PTFE
B	Metal, solids proof	Graphite + O-ring	Inconel 625	PTFE
G	Metal, high temperature	Graphite	Inconel 625	----

9. sign	SEAT MATERIAL	
	Metal seats	
	Seat material	Coating
A	316SS	Cobalt based alloy
B	316SS	Chrome Carbide, CrC-LF
V	316SS	Tungsten Carbide, TC2

10. sign	BEARING AND SEAL MATERIALS				
	Trunnion bearing	Packings	Body gaskets	O-rings	Thrust bearing
A	RPTFE	V-rings	PTFE	FKM	RPTFE
B	RPTFE	Graphite	Graphite	FKM	RPTFE
C	Metal	V-rings	PTFE	FKM	Metal
D	Metal	Graphite	Graphite	FKM	Metal

11. sign	BOLTING MATERIALS	
	Bolting material with unified (XH) threads	
	Studs	Nuts
D *	B8M	8M
F **	L7M	7M

*) Bolting materials for stainless steel body
**) Bolting materials for carbon and low alloy steel body

12. sign	MODEL CODE
A	XH model code A

13. sign	Option / Modifier
D	Drain plug on the body
B	Bleeder valve

Note: Other sizes, class, end connections, materials, construction, seals, etc. are available on request. Please contact nearest Valmet sales office for support. For chemical resistance chart of metallic valve parts refer Valmet publication T101-1EN, and for non-metallic valve parts refer T101-3EN.

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