

NELES® METAL SEATED BALL VALVES, FULL BORE, CLASS 600, SERIES XU

Metso's Neles® series XU is a seat supported modular ball valve. Neles X series valves incorporate robust stem to ball connection. This assures valves are delivering solid long lasting performance in high cycle isolation and control applications. Application based seat selection assures valves are capable of delivering long lasting tightness even in most demanding applications including abrasive fluids and solids handling. Valve modularity widens the options in material selections to meet application specific requirements. Valve series meets modern industry requirements concerning safety and emissions.



Applications

- Chemical and petrochemical plants.
- Oil and gas production.
- Hydrocarbons.
- Liquids.
- Water.
- Power plants.
- Suitable for steam control applications.

DESIGN FEATURES

Size range

- DN 25, 40, 50, 80, 100 / 1", 1 1/2", 2", 3", 4".

Pressure classes

- ASME Class 600.
- PN 63 & PN 100.

Tightness

- Separate ball and shaft assure low pressure tightness even with metal seats.

Safety

- V-ring gland packing ensures long maintenance free operation and low emission level.
- Spiral wound body joint gasket.
- Live-loaded construction.
- Fire tested BS 6755/API 607.
- Anti-static.

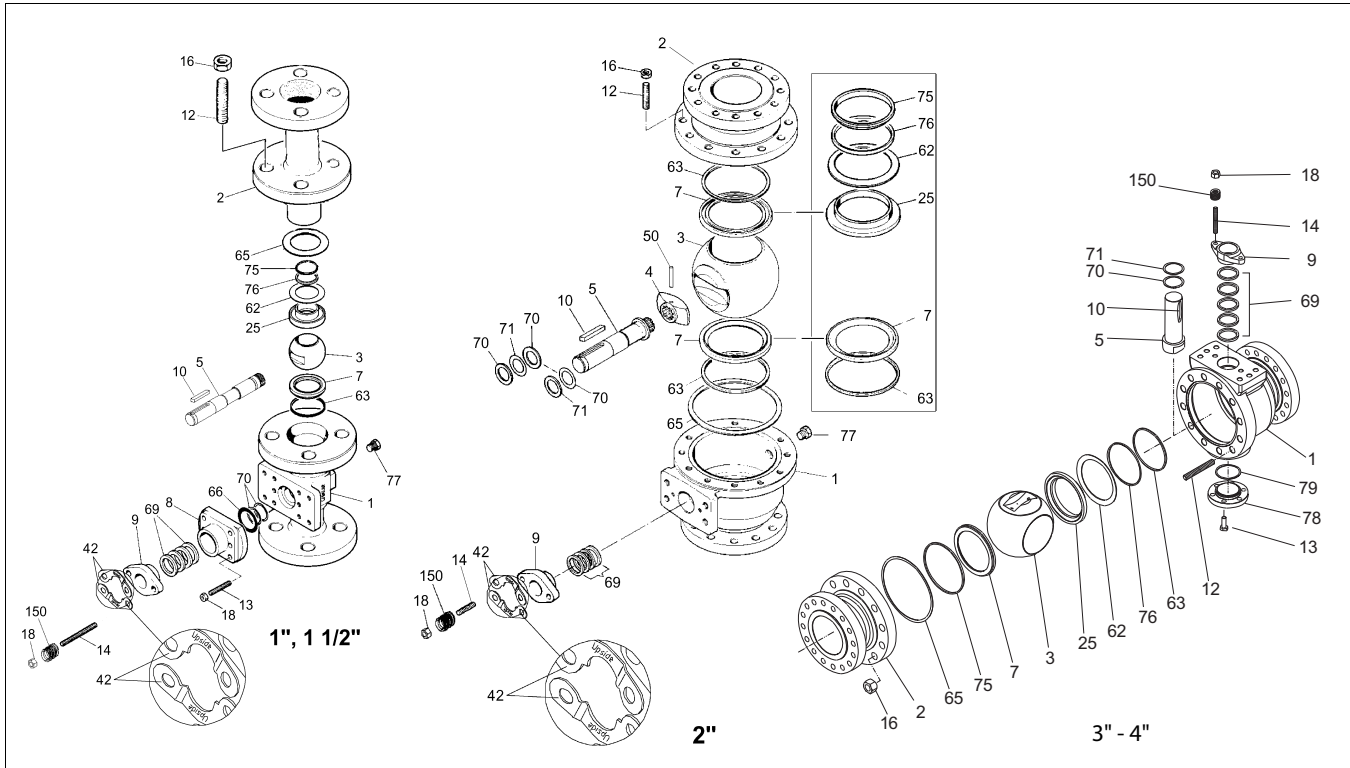
Full bore

- High C_v per nominal size.
- Straight ball opening offers low flow resistance.

Minimized emissions

- Uninterrupted circular spiral wound body gasket.
- No bending forces to gland packing.
- Live-loaded gland packing.
 - TA-Luft
 - Clean Air Act

EXPLODED VIEW



PARTS LIST

Item	Part description	Material	
1	Body	Stainless steel ASTM A 351 gr. CF8M (1.4408)	Carbon steel ASTM A 216 gr. WCB (1.0619)
2	Body cap	Stainless steel ASTM A 351 gr. CF8M (1.4408)	Carbon steel ASTM A 216 gr. WCB (1.0619)
3	Ball	Type 316	
4	Spline driver 2"	Stainless steel ASTM A 351 gr. CF8M (1.4581)	
5	Stem	ASTM A479 gr. XM-19 (1.3964)	
7	Seat	Stainless steel + cobalt based alloy	
8	Stem retainer 1" - 1 1/2"	Stainless steel ASTM A 351 gr. CF8M (1.4581)	Carbon steel ASTM A 216 gr. WCB (1.0619)
9	Gland	Stainless steel ASTM A 351 gr. CF8M (1.4581)	
10	Key	Stainless steel AISI 329	
12	Stud	ASTM A 193 gr. B8	ASTM A 320 gr. L7M (21 CrMo V 57)
13	Stud 1" - 1 1/2"	ASTM A 193 gr. B8	ASTM A 320 gr. L7M (21 CrMo V 57)
14	Stud	ASTM A 193 gr. B8	ASTM A 320 gr. L7M (21 CrMo V 57)
16	Hexagon nut	ASTM A 194 gr. 8	ASTM A 194 gr. 2HM (24 CrMo 5)
17	Hexagon nut 1" - 1 1/2"	ASTM A 194 gr. 8	ASTM A 194 gr. 2HM (24 CrMo 5)
18	Hexagon nut	ASTM A 194 gr. 8	ASTM A 194 gr. 2HM (24 CrMo 5)
25	Seat	Stainless steel + cobalt based alloy	
36	Anti-static spring 2"	Alloy 825 (2.4858)	
42	Retainer Plate	316L/1.4435	
50	Locking	ASTM A479 gr. XM-19 (1.3964)	
62	Seat spring	Alloy 825 (2.4858)	
63	Back seal	PTFE or graphite	
65	Body gasket	Stainless steel AISI 316 (1.4436) + PTFE or graphite filler spiral wound	
66	Gasket 1"-1 1/2"	PTFE or graphite	
69	Packing	PTFE or graphite	
70	Thrust bearing	PTFE or cobalt based alloy	
71	Stem	Graphite or cobalt based alloy	
75	Seat seal	Graphite	
76	Back-up ring	Stainless steel AISI 316 (1.4436)	
77	Drain plug	Type 316	
78	Bottom flange	Stainless steel ASTM A 351 gr. CF8M (1.4408)	Carbon steel ASTM A 216 gr. WCB (1.0619)
79	Bottom cap gasket	PTFE or graphite	
150	Disc sprig set	Electroless nickel plated sprig steel (EN 10083 - 1.8159)	

TECHNICAL SPECIFICATION

Product type

Full bore, seat supported ball valve.
Separate ball and shaft.
Split body design.
Flanged.

Pressure ratings

ASME Class 600.
PN 63 & PN 100.

Size range

DN 25, 40, 50, 80, 100 / 1", 1 1/2", 2", 3", 4".

Temperature range

-50 °C...+450 °C (+600 °C) / -58...+840 °F (+1110 °F).

Design standards

Valve body ASME B16.34, BS 5351.
Valve joint ASME B16.34.
Flanges ASME 600
PN 63, 100
Face-to-face ASME B16.10 table 3, long pattern.

Standard materials

Body halves: ASTM A351 gr. CF8M, ASTM A216 gr. WCB, 1.4408/1.0619.
Ball: ASTM A351 gr. CF8M/AISI 316 (1.4408) + hard chrome or other special coating with metal seats.
Bearings: PTFE or cobalt based alloy.
Seats: stainless steel + cobalt based alloy
Seals/gaskets: PTFE, graphite.
Body gasket: Spiral wound with PTFE or graphite filler.
Gland packing: PTFE (V-rings), graphite.

Bolting

B8/8 (A2 - 70) with stainless steel body.
L7M/2HM (21 CrMoV 57 / 24 CrMo 5) with carbon steel body.

Certification

EN 10204-3.1 material certificates for body and bonnet.
Tightness test certificate.

Standard options

Oxygen construction for gaseous oxygen service.
Cobalt based alloy or NiBo ball coating.
Shaft extension.
Fire tested acc. to API 607.
NACE MR-0103, NACE MR 0175 available on request.
Anti-static.
Cryogenic version
(temperatures below -50 °C / -60 °F)

Actuator mounting

ISO 5211.

Valve testing

Each valve is tested for body integrity and seat tightness.
The body test pressure is 1.5 x PN. The seat test pressure for metal seated valves is 1.1 x PN. The test medium is inhibited water. Air test upon request.

Valve tightness

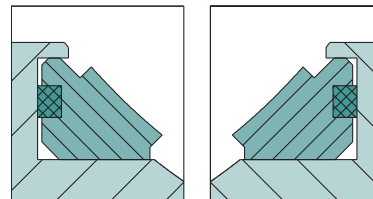
Metal seats:
ISO 5208 Rate C, standard.
ANSI FCI Class V
Other tightness rates upon request.

C_v (K_v) -values and resistance coefficients

Valve size DN / inch	XU			XU with Q-TRIM	
	C _v 90°	K _v 90°	ξ 90°	C _v 90°	K _v 90°
25 / 1"	105	91	0.08	–	–
40 / 1 1/2"	250	220	0.07	–	–
50 / 2"	490	425	0.06	84	73
80 / 3"	1160	1000	0.05	245	210
100 / 4"	2200	1900	0.05	530	460

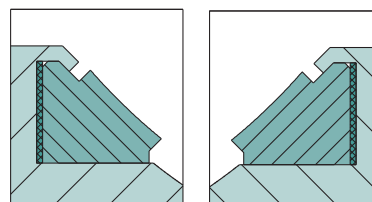
STANDARD SEAT OPTIONS

Scraping general seat, S (only in size 2")



Ball seat: Stainless steel + hard facing
Seat seal: PTFE
Temp. range: -50 °C... +230 °C / -58 °F...+450 °F

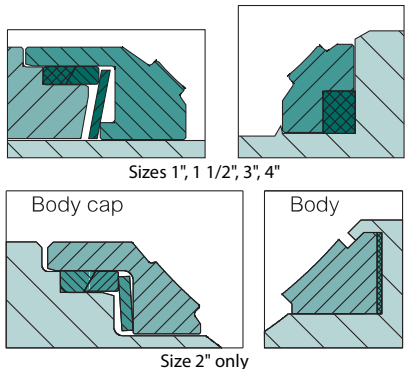
Scraping locked seat, K (only in size 2")



Ball seat: Stainless steel + hard facing
Seat seal: PTFE
Temp. range: -50 °C... +260 °C / -58 °F...+500 °F

STANDARD SEAT OPTIONS

High temperature seat, H



Sizes 1", 1 1/2", 3", 4"

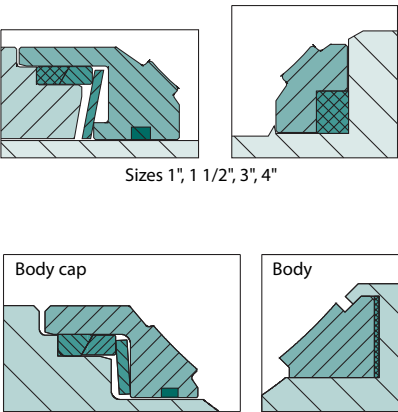
Body cap

Body

Size 2" only

Ball seat: Stainless steel + hard facing
 Seat seal: Graphite
 Spring: INCOLOY 825
 Temp. range: -200 °C... +450 °C / -330 °F... +840 °F
 (+600 °C/+1110 °F with NiBo or carbide coated ball)

Dust proof seat, G



Sizes 1", 1 1/2", 3", 4"

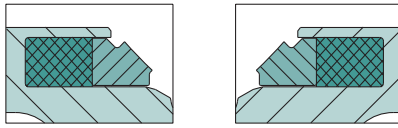
Body cap

Body

Size 2" only

Ball seat: SS steel + hard facing
 Seat seal: Graphite
 Spring: INCOLOY 825
 Temp. range: -50 °C... +450 °C up to +600 °C with carbide or NiBo coated ball

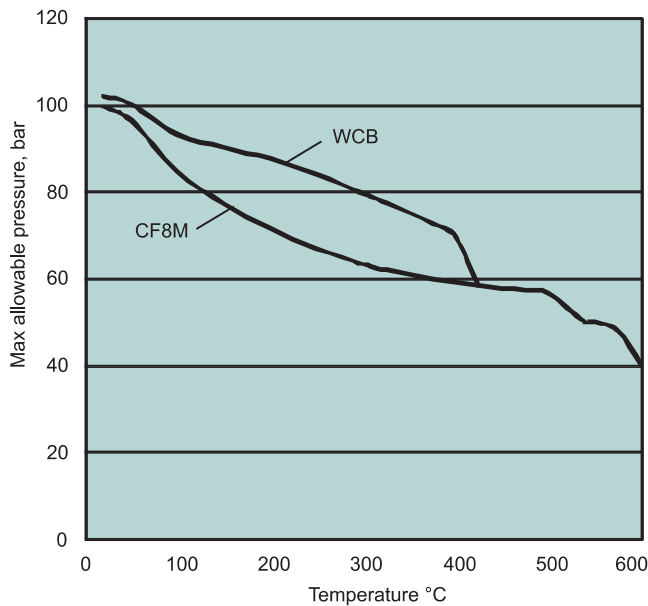
Solids proof seat, J



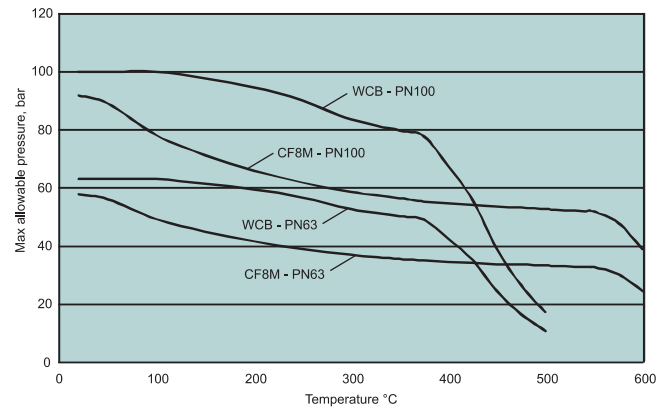
Ball seat: SS steel + hard facing
 Seat seal: Graphite
 Temp. range: Range: -50 °C... +600 °C

NOTE: Available only with carbide or NiBo coated ball.
 Max. Δp 30 bar. Please consult Metso representative for details.

VALVE BODY RATINGS ASME 600



VALVE BODY RATINGS PN 63 / PN 100



ACTUATOR SELECTION

XU-valve can be equipped with the following Metso actuator types:

B1C/B1J Pneumatic double acting or spring return actuator.

Actuators available for size range DN 25 - 100 / 1"-4" B1C/B1J actuators have an ISO 5211 mounting face.

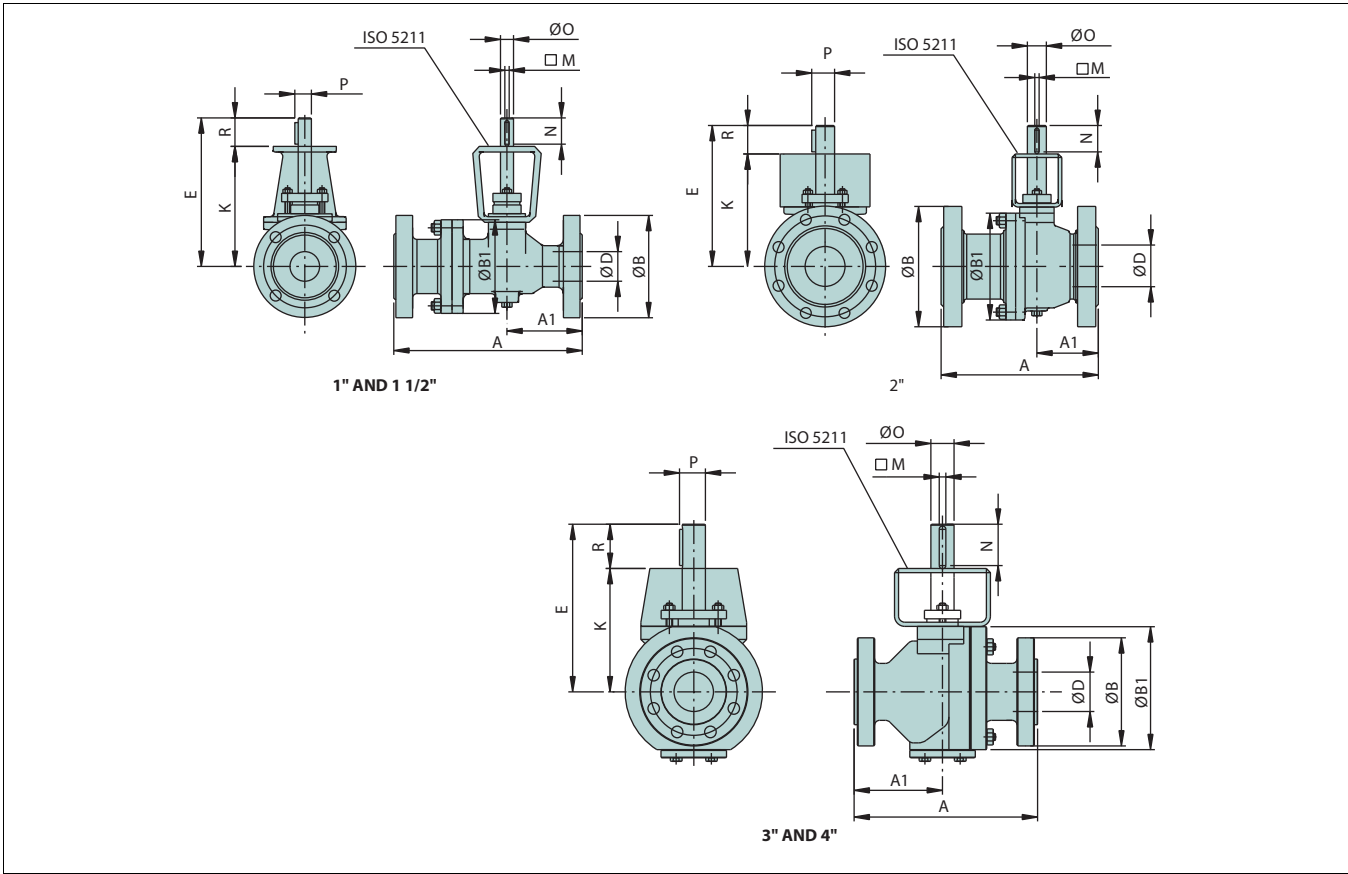
M Gear operator for valve sizes DN 25 - 100 / 1"-4".

When selecting other than Metso actuators, please contact your local representative.

For the correct actuator selection you need to know the following process data:

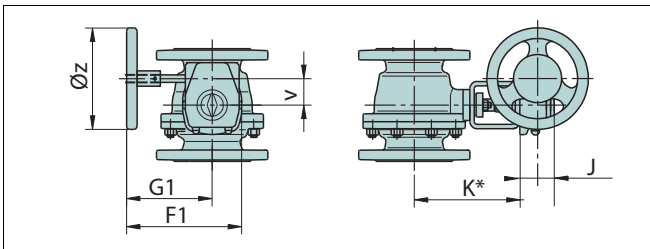
- valve size and seat type
- supply pressure for the actuator
- maximum operating differential pressure over the valve in closed position.

DIMENSIONS

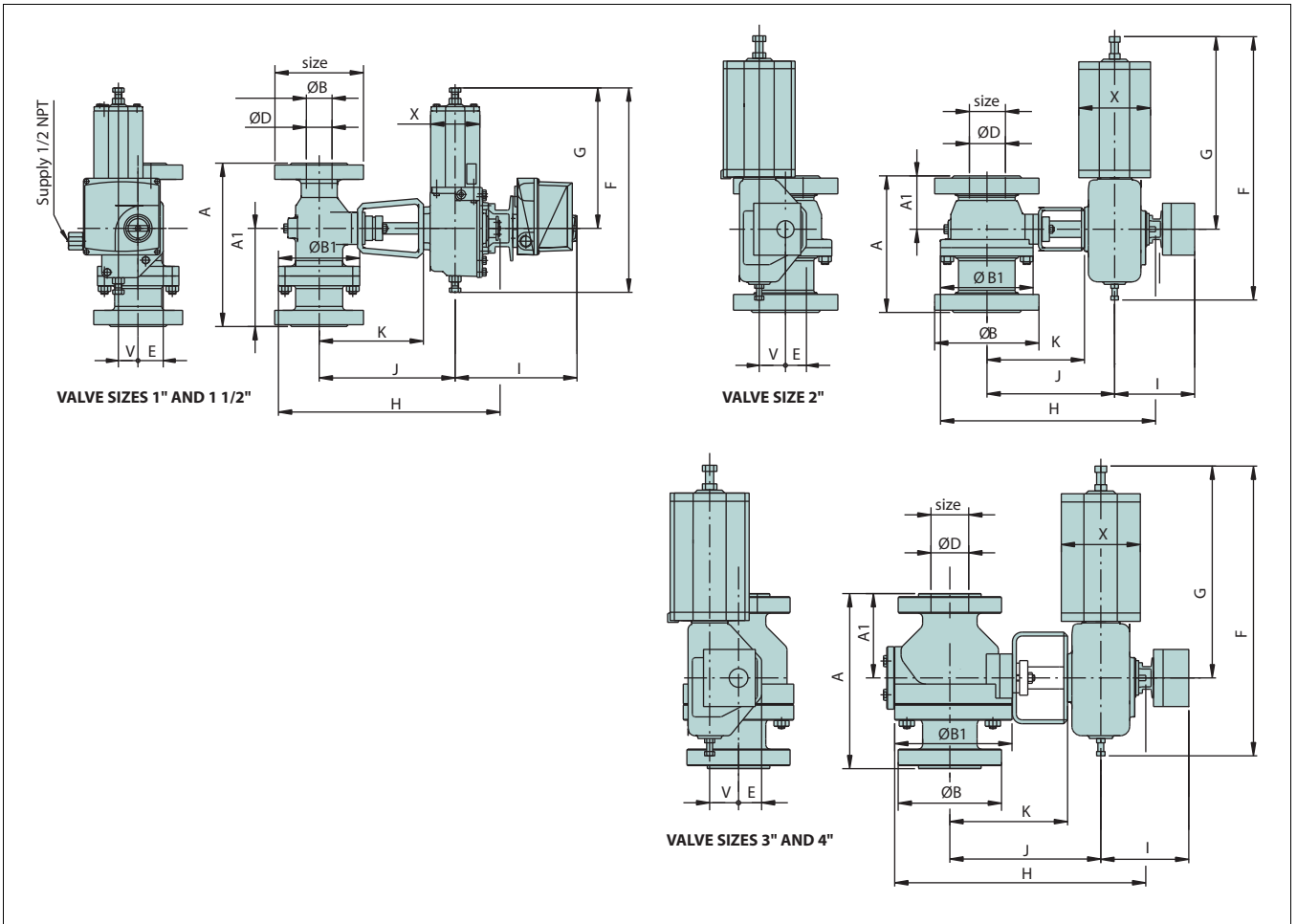


TYPE	SIZE	ISO FLANGE	Dimensions in mm (inch)												NPTF U1	kg (lbs)
			A	A1	ØB	ØB1	ØD	E	K	M	N	ØO	P	R		
XU_F	1	F07	216 (8.50)	79 (3.11)	125 (4.88)	119 (4.69)	25.4 (1)	170 (6.69)	145 (5.71)	4.76 (0.19)	25 (0.98)	15 (0.59)	17 (0.67)	25 (0.98)	1/4	17 (37)
	1 1/2	F07, F10	241 (9.49)	86 (3.39)	155 (6.12)	148 (5.83)	38.1 (1.5)	202 (7.95)	172 (6.77)	4.76 (0.19)	35 (1.38)	20 (0.79)	22.2 (0.87)	30 (1.18)	1/4	26 (57)
	2	F07, F10, F12, F14	292 (11.50)	98 (3.86)	165 (6.50)	153 (6.02)	50.8 (2)	215 (8.46)	168 (6.61)	6.35 (0.25)	46 (1.81)	25 (0.98)	27.8 (1.09)	47 (1.85)	1/2	35 (77)
	3	F14, F16	356 (14.02)	172 (6.77)	210 (8.25)	239 (9.41)	76.2 (3)	327 (12.87)	246 (9.69)	12.70 (0.5)	80 (3.15)	45 (1.77)	50.4 (1.98)	81 (3.19)	-	64 (141)
	4	F14, F16, F25	432 (17.01)	213 (8.39)	275 (10.75)	294 (11.57)	101.6 (4)	383 (15.08)	292 (11.50)	12.70 (0.5)	90 (3.54)	55 (2.16)	60.6 (2.39)	91 (3.58)	-	141 (311)

VALVE + M-SERIES GEAR OPERATOR



Actuator size	Dimensions, mm					kg
	F1	G1	J	V	ØZ	
M07	235	184	65	52	160	3.8
M10	238	187	65	52	200	4.4
M12	307	238	88	71	315	10.1
M14	385	285	93	86	400	18.2
M15	456	346	102	105	500	26.2
M16	530	387	124	130	600	36.8



B1C ACTUATOR

Valve	Size DN	Actuator	Dimensions in mm														NPTF	NPT	kg
			A	A1	ØB	ØB1	ØD	E	F	G	H	I	J	K	V	X			
XU01F	25	B1CU6	216	79	125	119	25.4	46	395	270	343	215	203	145	36	90	1/4	1/4	23
XU1HF	40	B1CU9	241	86	155	148	38.1	50	450	315	386	215	231	172	43	110	1/4	1/4	38
		B1CU11	241	86	155	148	38.1	50	535	375	410	225	237	172	51	135	1/4	3/8	44
XU02F	50	B1CU11	292	98	165	153	50.8	50	535	375	409	225	233	168	51	135	1/2	3/8	53
		B1CU13	292	98	165	153	50.8	65	640	445	435	245	249	168	65	175	1/2	3/8	68
XU03F	80	B1CU13	356	172	210	239	76.2	65	640	445	556	245	327	246	65	175	-	3/8	97
		B1CU17	356	172	210	239	76.2	70	785	555	588	260	342	246	78	215	-	1/2	120
XU04F	100	B1CU20	432	213	275	294	101.6	80	880	590	701	280	407	292	97	215	-	1/2	216
		B1CU25	432	213	275	294	101.6	110	1075	725	743	300	430	292	121	265	-	1/2	274

B1J/B1JA ACTUATOR

Valve	Size DN	Actuator	A	A1	ØB	ØB1	ØD	E	F	G	H	I	J	K	V	X	NPTF	NPT	kg
XU01F	25	B1JU/B1JUA6	216	79	125	119	25.4	50	485	368	336	215	204	145	36	110	1/4	3/8	32
		B1JU/B1JAU8	216	79	125	119	25.4	50	555	420	336	215	204	145	43	135	1/4	3/8	36
XU1HF	40	B1JU/B1JAU10	241	86	155	148	38.1	50	640	480	391	225	237	172	51	175	1/4	3/8	58
XU02F	50	B1JU/B1JAU12	292	98	165	153	50.8	65	815	620	420	245	249	168	65	215	1/2	1/2	94
XU03F	80	B1JU/B1JAU16	356	172	210	239	76.2	70	990	760	573	260	342	246	78	265	-	1/2	166
		B1JU/B1JAU20	356	172	210	239	76.2	80	1230	940	606	280	361	246	97	395	-	3/4	241
XU04F	100	B1JU/B1JAU20	432	213	275	294	101.6	80	1230	940	679	280	407	292	97	395	-	3/4	318
		B1JU/B1JAU25	432	213	275	294	101.6	110	1490	1140	739	300	430	292	121	505	-	3/4	493

HOW TO ORDER

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
XU	02	F	W	TA	S6	SJ	S	A	A	D

1.	VALVE SERIES & STYLE, FACE-TO-FACE LENGTH
XU	Full bore, seat supported, face-to-face length according to ASME B16.10, Table 3, long pattern.

2.	SIZE		2.
	DN	NPS	
025	25 mm	1"	01
040	40 mm	1 1/2"	1H
050	50 mm	2"	02
080	80 mm	3"	03
100	100 mm	4"	04

3.	PRESSURE RATING, FLANGES, FLANGE DRILLING
F	ASME Class 600
N	PN 63
P	PN 100

4.	END CONNECTION STYLE
W	ASME B 16.5 raised face, Standard (Ra 3.2 - 6.3).
C	EN 1092-1 Type B1 (Ra 3.2 - 12.5)

5.	CONSTRUCTION & APPLICATION
TA	Standard construction. Live loaded packing.
TZ	BAM tested non-metallic parts, for oxygen service. Double seated. Metal bearings; cobalt based alloy. Live loaded graphite packing. Temperature range -50...+200 °C. Max pressure per body rating. Oxygen cleaning acc. to Metso internal procedure T-2115 included

6.	BODY MATERIAL & BODY RELATED PARTS MATERIAL		
	Body and body cap	Stem retainer	Gland
S6	CF8M	CF8M	CF8M
J2	WCB	WCB	CF8M
J5	C5	C5	CF8M

NOTE! Stem retainer is used only in sizes 1" and 1 1/2".

7.	BALL / COATING & STEM MATERIAL
SJ	316SS / Hard Chrome & XM-19
RX	316SS / Chrome carbide & XM-19
RR	316SS / WC-CO & XM-19
SL	316SS / NiBo & XM-19

8.	SEAT TYPE, BACK SEALS AND SPRING MATERIAL		
	Seat type	Back seal	Spring
S	Metal, S	PTFE	-
K	Metal, K (locked)	PTFE	-
H	Metal, H	Graphite	Incoloy 825
G	Metal, H	Graphite	Incoloy 825
J	Metal	Graphite	-

9.	SEAT AND COATING MATERIAL	
	Seat material	Coating
A	316 Stainless Steel	Cobalt based hard facing
B	316 Stainless Steel	CrC-LF
R	316 Stainless Steel	Tungsten carbide, WC-CO

10.	GASKET, PACKING & BEARING MATERIAL		
	Body gasket	Packing	Thrust bearing
A	PTFE	PTFE V-rings	Filled PTFE
B	Graphite	Graphite	Filled PTFE
C	PTFE	PTFE V-rings	Cobalt based alloy
D	Graphite	Graphite	Cobalt based alloy

11.	BOLTING MATERIALS	
	Bolting material ASME valves	
	Studs	Nuts
D *	B8M	8M
F **	L7M	2HM
A ***	B7	2H

* Bolting materials for stainless steel body

** Bolting materials for carbon and low alloy steel body

*** Bolting materials for carbon and low alloy steel body in USA only.

NOTE: Other options available on application, consult factory.

Subject to change without prior notice.

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www.metso.com/valves

