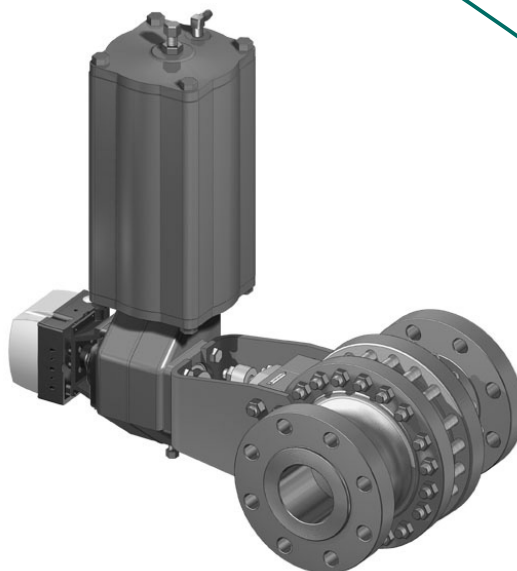


## TRUNNION MOUNTED NELES BALL VALVE – SERIES D

The D series ball valve is of Neles famous quarter turn and unique Stemball design. Valve offers features and benefits allowing end user to improve the safety in his plant, and improve reliability and productivity in his processes.

D series ball valves are in compliance with latest industry product standards and emission proofing. D series valves have live loaded low emission packing as standard. D series ball valves have been certified to be used in safety systems up to and including SIL 3 in accordance to IEC 61508. Valves are offering superior cycle life and valve tightness under severe operating conditions based on material and coating selection for closing members, allowing maintenance free operation for extended process maintenance intervals, and avoiding unscheduled shutdowns.

Valve offers high rangeability in control service, and seat designs are allowing successful use of valve in services where impurities and solids are present.



### Trunnion mounted

- Good controllability
- Low friction and operating torque
- Large low friction bearings for long cycle life

### Metal seats

- Spring loaded seats for continuous contact with ball
- Durable tightness with extend selection of hard facings for different applications and fluids
- Two way tight with double seated design
- Double Block and Bleed seat design

### Control service

- Excellent control characteristics
- Equal percentage inherent characteristic
- Full ball and two throttling stages reduces cavitation and noise
- Self flushing low noise anti-cavitation Q-trim.
- High rangeability

### ESD service

- D series valves are certified to be used safety systems up to and including SIL 3.
- Full ESD package from single source supplier; valve, actuator and automated PST device VG9000 series. All components are certified to be used up to SIL 3.
- Allowing on-line condition monitoring and diagnostics of Safety Valve assembly
- Valve design makes it suitable to solids and fibrous fluids

### APPLICATIONS

- ESD service (SIL certified up to SIL 3)
- De-pressurizing and blow-down service
- Modulating control with Q-trim for low noise and anti-cavitation
- Cryogenic
- High temperature
- High cycle and switching service (mol sieve and dryer sequence service)
- Chemical and Petrochemical plants
- Oil and gas production
- Power plant
- Service fluids ; Hydrocarbons, steam, natural gas, crude oil and water

### DESIGN FEATURES

#### Size range

- NPS 02" – 36" (DN 50 – 900)

#### Pressure classes

- ASME Class 150, 300 and 600

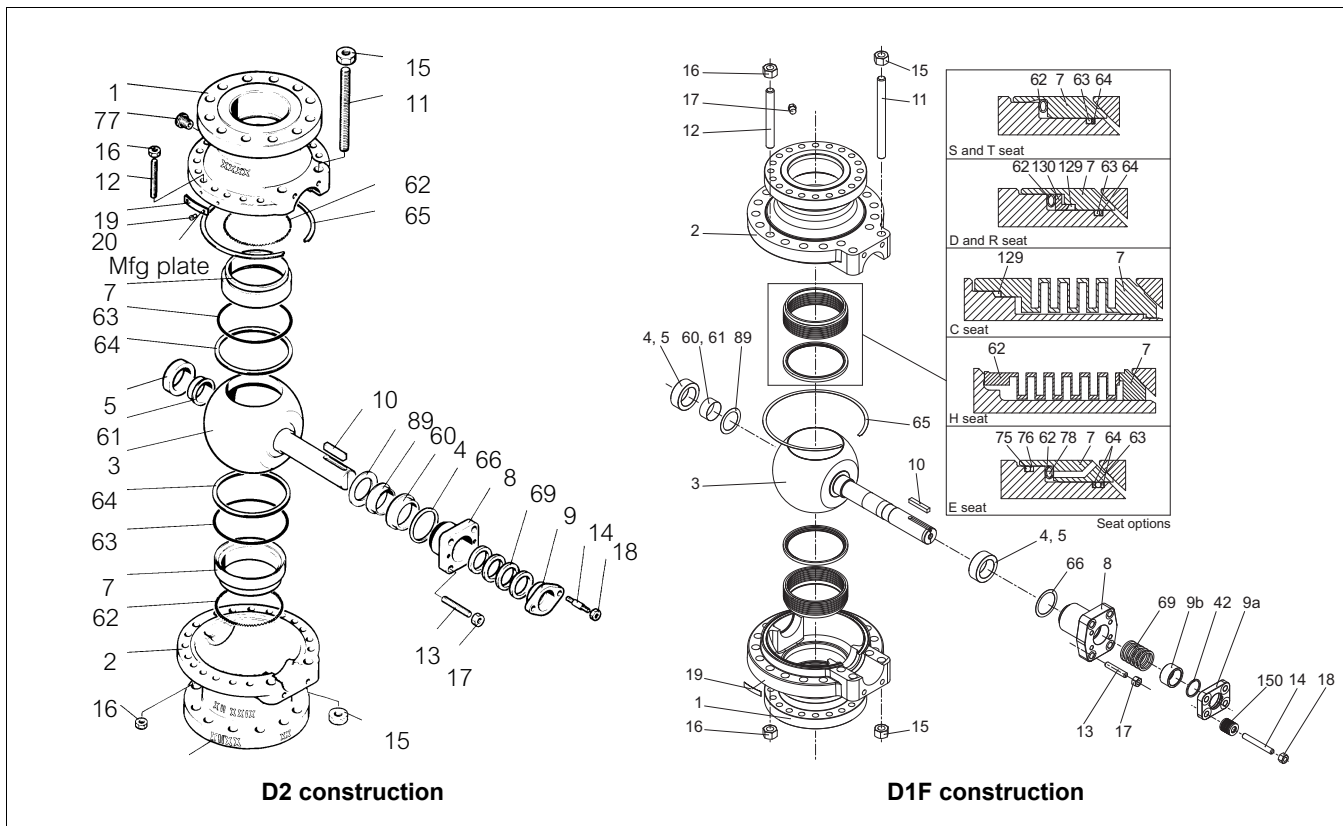
#### Body design

- Full bore and reduced bore

#### Stemball

- Ball and stem of one piece
- No-dead band , no hysteresis in throttling service
- Reliable operation and excellent response even with high differential pressure

**EXPLODED VIEW**



**PARTS LIST**

Item	Part description	Material
1	Body half (female)	Stainless steel, ASTM A 351 gr. CF8M / Carbon steel, ASTM A 216 gr. WCB
2	Body half (male)	Stainless steel, ASTM A 351 gr. CF8M / Carbon steel, ASTM A 216 gr. WCB
3	Ball	Stainless steel, ASTM A 351 gr. CF8M + Hard chrome
4	Thrust bearing	Stainless steel, AISI 316 (Cobalt based alloy bushing in high temperature construction)
5	Trunnion bearing	Stainless steel, AISI 316 (Cobalt based alloy bushing in high temperature construction)
7	Seat	Stainless steel, AISI 316 + Cobalt based alloy
8	Bonnet	Stainless steel, ASTM A 351 gr. CF8M / Carbon steel, ASTM A 216 gr. WCB
9a	Gland	Stainless steel, ASTM A 351 gr. CF8M
9b	Compression sleeve	Stainless steel, ASTM A 351 gr. CF8M
10	Key	Stainless steel, AISI 329
11	Stud	ASTM A 193 gr. B8M / ASTM A 320 gr. L7M
12	Hexagon screw or 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
15	Hexagon nut	ASTM A 194 gr. 8M / ASTM A 194 gr. 2HM
16	Hexagon nut	ASTM A 194 gr. 8M / ASTM A 194 gr. 2HM
17	Hexagon nut	ASTM A 194 gr. 8M / ASTM A 194 gr. 2HM
18	Hexagon nut	ASTM A 194 gr. 8M / ASTM A 194 gr. 2HM
19	Identification plate	Stainless steel, AISI 304
20	Rivet	Stainless steel, AISI 316
42	Retainer ring	ASTM A 479 gr. XM-19
60	Bearing	PTFE on stainless steel net, standard construction
61	Bearing	PTFE on stainless steel net, standard construction
62	Spring/ bellow	Special alloy UNS N07750, in standard construction / gr. 660 / F6NM in high temperature construction
63	O-ring	Viton GF
64	Back-up ring	Polytetrafluoroethylene (PTFE)
65	Gasket	Graphite
66	Gasket	Graphite
69	Gland packing	Graphite + PTFE
77	Plug	Stainless steel, AISI 316
89	Thrust bearing	PTFE on stainless steel net
150	Disc spring set	EN10088-1.8159 + ENP

## TECHNICAL SPECIFICATION

### Product type

Full or reduced bore, trunnion mounted ball valve.  
Ball and stem are integrally cast.  
Split body design.  
Flanged.

### Pressure ratings

ASME Class 150, 300 and 600.

### Size range, full bore

DN 300 ... 900 / 12" - 36" in ASME Class 150.  
DN 100 ... 900 / 4" - 36" in ASME Class 300.  
DN 50 ... 600 / 2" - 24" in ASME Class 600.

### Size range, reduced bore

DN 250 ... 600 / 10" - 24" in ASME Class 150.  
DN 200 ... 600 / 8" - 24" in ASME Class 300.  
DN 80 ... 600 / 3" - 24" in ASME Class 600.  
Larger sizes on request.

### Temperature range

-200 °C ... +450 °C (+600 °C)  
-330 °F ... +840 °F (+1100 °F).

### Design standards

Valve body	ASME B16.34.
Valve body joint	ASME VIII. DIV. 1 APPX 2.
Valve flanges	ASME B16.5.
Face-to-face	ASME B16.10.

### Standard materials

Body	ASTM A351 gr. CF8M. ASTM A216 gr. WCB.
Ball	ASTM A351 gr. CF8M + hard chrome or other special coating with metal seats.
Bearings	SS 316 + PTFE net or Cobalt based alloy
Seats	AISI 316 + Cobalt based alloy. AISI 316 + PTFE insert.
Seals/gaskets	PTFE, graphite.

### Standard bearing construction

Large, low friction bearings.  
SS 316 + PTFE net or Cobalt based alloy.

### Bolting

B8M/8M with stainless steel body.  
L7M/2H or 2MH with carbon steel body.

### Standard options

Cryogenic design.  
Bonnet extension.  
Degreasing.  
High temperature design.  
Carbide hard facing or NiBo ball coating.  
Noise/cavitation reduction ball insert; Q-trim design.  
Fire safety BS 6755/API 607 (on selected seat designs).  
NACE MR-01-03 or MR-01-75.

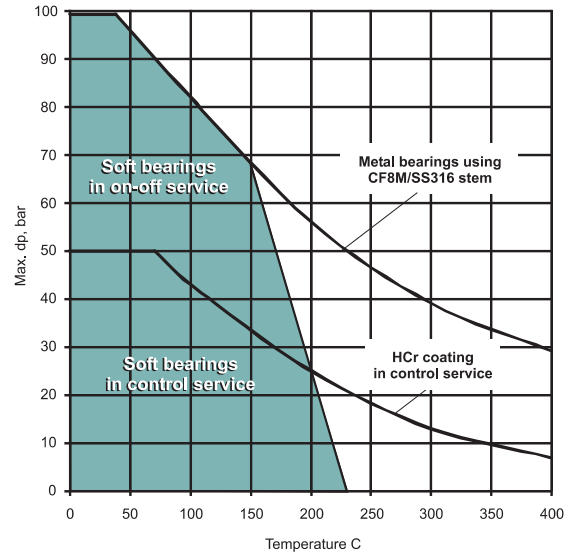
### Material and test certification

EN 10204-3.1 material certificates for body, ball and bonnet.

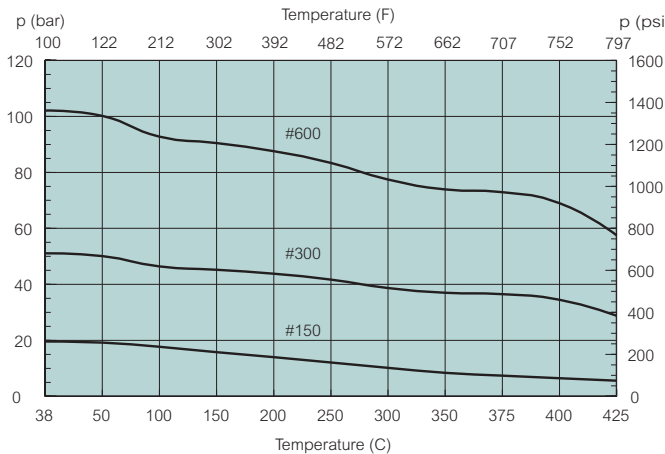
### Valve tightness

ANSI/FCI 70-2 class V for metal seats.  
ANSI/FCI 70-2 class VI for soft seats  
ISO 5208 rate C or D for metal seats.  
ISO 5208 rate B for soft seats.  
Other tightness rates upon request.

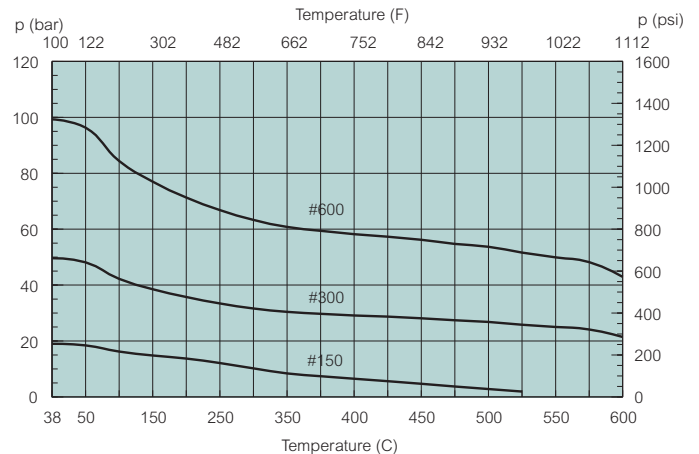
### Maximum allowable differential pressure curves



### Maximum pressure/Temperature limitations on valve body according to ASME B16.34



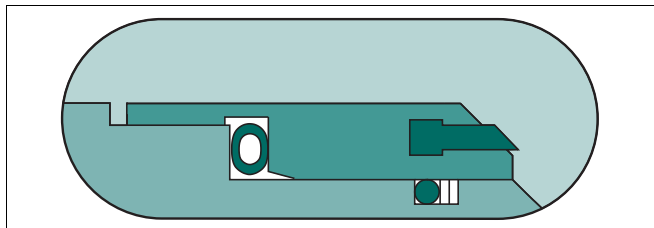
Material ASTM A216 gr. WCB.



Material ASTM A351 gr. CF8M.

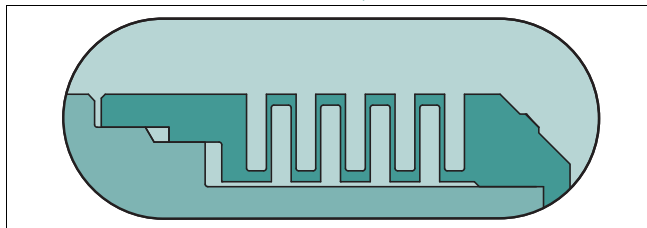
**STANDARD SEAT SELECTION FOR D SERIES VALVES**

**Soft seat design, seat code T**



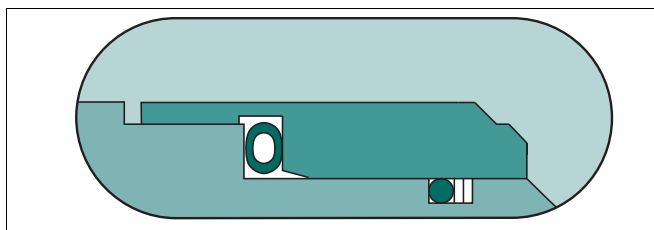
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + PTFE + C25 % insert  
 O-ring: Viton GF  
 Spring: UNS N07750  
 Temperature range: -30 °C ... +200 °C / -22 °F ... +390 °F  
 The standard PTFE-seated design is most suitable for shut-off service, for temperatures up to +200 °C/+390 °F and when pressure drop is relatively low and medium does not contain wearing particles.

**Low and high temperature on-off and control metal seat, seat code C**



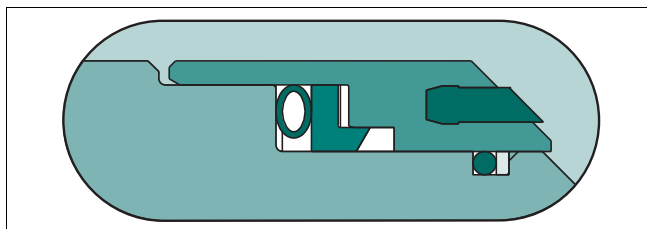
Size range: DN 50 ... 600 / 2" ... 24"  
 Seat seal: Graphite  
 Bellows seat material: gr. 660/F6NM + hard facing  
 Temperature range: -200 °C ... +400 °C (+600 °C) / -330 °F ... +750 °F (+1110 °F)  
 The Cobalt based alloy seat is preloaded with a bellows ring made of special stainless steel. The bellows acts as a spring and seal, and also increases the seat pressure at higher pressure differentials. Designed for demanding applications containing impurities. Alternative bellows spring materials are available for temperatures up to +600 °C/ +1110 °F. The bellows seat design is choice for cryogenic service.

**Metal seated design, seat code S**



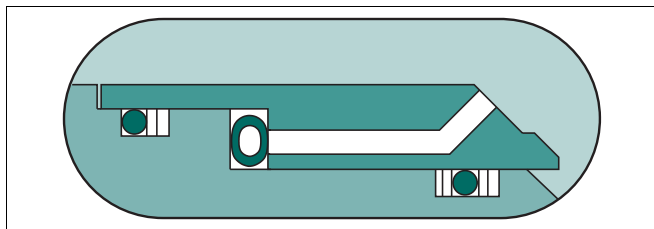
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + Cobalt based alloy.  
 O-ring: Viton GF  
 Spring: UNS N07750  
 Temperature range: -30 °C ... +200 °C / -22 °F ... +390 °F  
 The metal seat is most suitable for high pressure drop applications and for fluids containing impurities.

**Fire safe soft seat design, seat code D**



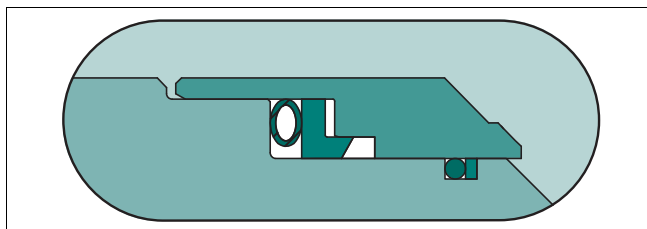
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + PTFE + C25 % insert  
 Seat seal : Viton GF / graphite  
 Spring: UNS N07750  
 Temperature range: -30 °C ... +200 °C / -22 °F ... +390 °F  
 The fire safe PTFE-seated design is most suitable for shut-off service, for temperatures up to +200 °C/+390 °F and when pressure drop is relatively low and medium does not contain wearing particles.

**Control metal seat design, seat code E**



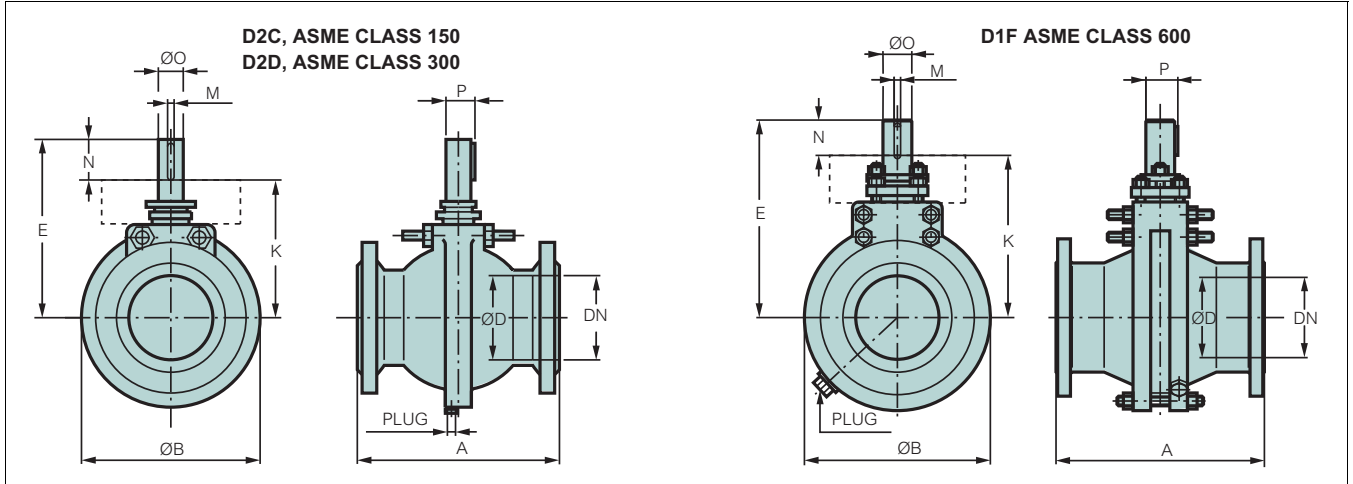
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + Cobalt based alloy.  
 O-ring: Viton GF  
 Spring: UNS N07750  
 Temperature range: -30 °C ... +200 °C / -22 °F ... +390 °F  
 The control metal seat features the ejector seat principle providing non-contact in control service. This seat design is intended for demanding control applications.

**Fire safe on-off metal seated design, seat code R**



Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + Cobalt based alloy.  
 Seat seal : Viton GF / graphite  
 Spring: UNS N07750  
 Temperature range: -30 °C ... +200 °C / -22 °F ... +390 °F  
 The fire safe metal seat is most suitable for high pressure drop applications and for fluids containing impurities.

**DIMENSIONS AND WEIGHTS**



**D2C, ASME CLASS 150**

Type	Dimensions, mm										Cv 90°	ζ 90°	Mounting face	Plug NPTF	kg
	DN	A	ØB	ØD	E	K	M	N	ØO	P					
D2C 12	300	610	596	304	586	430	22.22	156	95	104.8	22400	0.04	F16, F25, F30	1	420
D2C 14	350	686	668	337	650	494	22.22	156	95/105	104.8	28300	0.04	F16, F25, F30	1	550
D2C 16	400	762	744	387	715	559	22.22	156	95/120	104.8	37700	0.04	F16, F25, F30	1	720
D2C 18	450	864	814	440	890	734	22.22	156	95/120	104.8	48000	0.03	F16, F25, F30	1	1300
D2C 20	500	914	904	490	950	770	25.40	180	95/105	116.1	59500	0.03	F16, F25, F30, F35	1	1500
D2C 24	600	1067	1084	590	1125	920	31.75	205	95/120	133.8	86300	0.03	F25, F30, F35, F40	1	2300
D2C 28	700	1244	1245	692	1266	1041	31.75	225	105/135	149	118000	0.03	F30, F35, F40	1	3800
D2C 30	750	1295	1318	740	1325	1075	38.10	250	150	166.6	136000	0.03	F30, F35, F40	1	4400
D2C 36	900	1524	1560	880	1580	1300	38.10	280	165	181.8	192000	0.03	F40, F48	1	6500

Type	Dimensions, inch										Cv 90°	ζ 90°	Mounting face	Plug NPTF	lb
	Size	A	ØB	ØD	E	K	M	N	ØO	P					
D2C 12	12	24.02	23.46	11.97	23.07	16.93	0.87	6.14	3.74	4.13	22400	0.04	F16, F25, F30	1	924
D2C 14	14	27.01	26.30	13.27	25.59	19.45	0.87	6.14	3.74/4.13	4.13	28300	0.04	F16, F25, F30	1	1210
D2C 16	16	30.00	29.29	15.24	28.15	22.01	0.87	6.14	3.74/4.72	4.13	37700	0.04	F16, F25, F30	1	1584
D2C 18	18	34.02	32.05	17.32	35.04	29.02	0.87	6.14	3.74/4.72	4.13	48000	0.03	F16, F25, F30	1	2860
D2C 20	20	35.98	35.59	19.29	37.40	30.31	1.00	7.09	3.74/4.13	4.57	59500	0.03	F16, F25, F30, F35	1	3300
D2C 24	24	42.01	42.68	23.23	44.29	36.22	1.25	8.07	3.74/4.72	5.27	86300	0.03	F25, F30, F35, F40	1	5060
D2C 28	28	48.98	49.02	27.24	49.84	40.98	1.25	8.86	4.13/5.31	5.87	118000	0.03	F30, F35, F40	1	8360
D2C 30	30	50.98	51.89	29.13	52.17	42.32	1.50	9.84	5.91	6.56	136000	0.03	F30, F35, F40	1	9680
D2C 36	36	60.00	61.42	34.65	62.20	51.18	1.50	11.02	6.50	7.16	192000	0.03	F40, F48	1	14300

Valve-actuator assembly dimensions:  
See K-dimension from drawing, mounting face from table and actuator dimensions from related actuator bulletin.

**D2D, ASME CLASS 300**

Type	Dimensions, mm										Cv 90°	ζ 90°	Mounting face	Plug NPTF	kg
	DN	A	ØB	ØD	E	K	M	N	ØO	P					
D2D 04	100	305	262	100	264	196	9.52	68	40	44.2	2120	0.05	F10, F12, F14	1/2	60
D2D 06	150	403	368	152	345	255	12.70	90	55	60.6	5100	0.05	F12, F14, F16	3/4	140
D2D 08	200	502	454	202	424	305	19.05	119	70	78.2	9300	0.04	F14, F16, F25	3/4	240
D2D 10	250	568	558	254	514	368	22.22	146	85	94.6	15200	0.04	F16, F25, F30	1	380
D2D 12	300	648	630	304	586	430	22.22	156	95	104.8	22400	0.04	F16, F25, F30, F35	1	590
D2D 14	350	762	706	337	650	470	25.40	180	105	116.2	28300	0.04	F25, F30, F35	1	770
D2D 16	400	838	792	387	715	510	31.75	205	120	133.8	37700	0.04	F25, F30, F35	1	1050
D2D 18	450	914	884	440	890	734	22.22	156	95	104.8	48000	0.03	F25, F30, F35	1	1250
D2D 20	500	991	966	490	950	770	25.40	180	105	116.2	59500	0.03	F25, F30, F35, F40	1	1950
D2D 24	600	1143	1130	590	1125	920	31.75	205	120	133.8	86300	0.03	F30, F35, F40	1	3100
D2D 28	700	1346	1340	690	1266	1041	31.75	225	135	149	118000	0.03	F35, F40	1	5250
D2D 30	750	1397	1414	740	1325	1075	38.10	250	150	166.6	136000	0.03	F35, F40, F48	1	5500
D2D 32	800	1524	1490	785	1430	1180	38.10	250	150	166.6	151000	0.03	F35, F40	1	6700
D2D 36	900	1727	1684	880	1580	1300	38.10	280	165	181.8	192000	0.03	F40, F48	1	8700

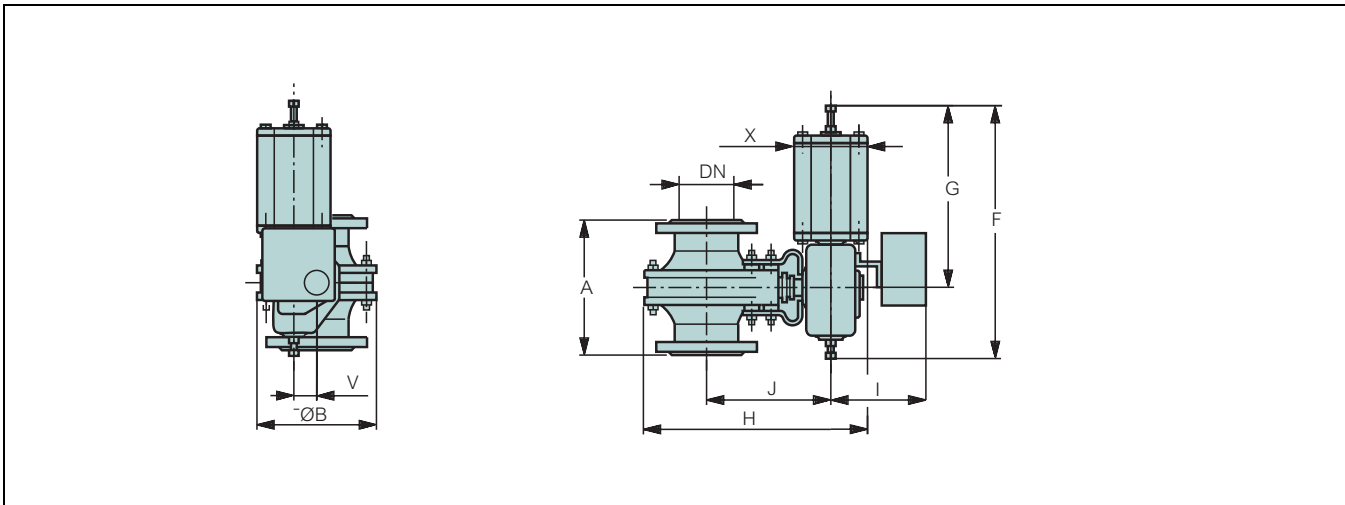
Type	Dimensions, inch										Cv 90°	ζ 90°	Mounting face	Plug NPTF	lb
	Size	A	ØB	ØD	E	K	M	N	ØO	P					
D2D 4	4	12.01	10.31	3.94	10.39	7.72	0.37	2.68	1.57	1.74	2120	0.05	F10, F12, F14	1/2	132
D2D 6	6	15.87	14.49	5.98	13.58	10.04	0.50	3.54	2.17	2.39	5100	0.05	F12, F14, F16	3/4	308
D2D 8	8	19.76	17.87	7.95	16.69	12.01	0.75	4.69	2.76	3.08	9300	0.04	F14, F16, F25	3/4	528
D2D 10	10	22.36	21.97	10.00	20.24	14.49	0.87	5.75	3.35	3.72	15200	0.04	F16, F25, F30	1	836
D2D 12	12	25.51	24.80	11.97	23.07	16.93	0.87	6.14	3.74	4.13	22400	0.04	F16, F25, F30, F35	1	1298
D2D 14	14	30.00	27.80	13.27	25.59	18.50	1.00	7.09	4.13	4.57	28300	0.04	F25, F30, F35	1	1694
D2D 16	16	32.99	31.18	15.24	28.15	20.08	1.25	8.07	4.72	5.27	37700	0.04	F25, F30, F35	1	2310
D2D 18	18	35.98	34.80	17.32	35.04	28.90	0.87	6.14	3.74	4.13	48000	0.03	F25, F30, F35	1	2750
D2D 20	20	39.02	38.03	19.29	37.40	30.31	1.00	7.09	4.13	4.57	59500	0.03	F25, F30, F35, F40	1	4290
D2D 24	24	45.00	44.49	23.23	44.29	36.22	1.25	8.07	4.72	5.27	86300	0.03	F30, F35, F40	1	6820
D2D 28	28	52.99	52.76	27.17	49.84	40.98	1.25	8.86	5.31	5.87	118000	0.03	F35, F40	1	11550
D2D 30	30	55.00	55.67	29.13	52.17	42.32	1.50	9.84	5.91	6.56	136000	0.03	F35, F40, F48	1	12100
D2D 32	32	60.00	58.66	30.90	56.30	46.46	1.50	9.84	5.91	6.56	151000	0.03	F35, F40	1	14740
D2D 36	36	68.00	66.30	34.65	62.20	51.18	1.50	11.02	6.50	7.16	192000	0.03	F40, F48	1	19140

**D1F, ASME CLASS 600**

Type	Dimensions, mm										Cv 90°	ζ 90°	Mounting face	Plug NPTF	kg
	DN	A	ØB	ØD	E	K	M	N	ØO	P					
D1F 02	50	292	206	50	305	300	6.35	46	25	27.8	480	0.06	F07, F10, F12, F14	1/2	35
D1F 03	80	356	262	77	375	340	9.52	58	35	39.1	1200	0.05	F12, F14, F16	1/2	60
D1F 04	100	432	314	100	427	387	9.52	68	40	44.2	2120	0.05	F14, F16, F25	1/2	120
D1F 06	150	559	404	152	540	485	12.70	90	55	60.6	5100	0.05	F14, F16, F25, F30	3/4	280
D1F 08	200	660	507	202	645	575	19.05	119	70	78.2	9300	0.04	F14, F16, F25, F30	3/4	380
D1F 10	250	787	610	254	765	680	22.22	146	85	94.6	15200	0.04	F16, F25, F30, F35	1	690
D1F 12	300	838	748	302	890	795	22.22	156	95	104.8	22400	0.04	F25, F30, F35, F40	1	1134
D1F 14	350	889	824	340	970	865	25.40	180	105	116.1	28300	0.04	F25, F30, F35, F40	1	1500
D1F 16	400	991	954	390	1068	948	31.75	205	120	133.8	37700	0.04	F30, F35, F40	1	2500
D1F 18	450	1092	1090	440	1200	1065	31.75	225	135	149.0	48000	0.03	F30, F35, F40	1	3300
D1F 20	500	1194	1176	490	1355	1205	38.10	250	150	166.6	59500	0.03	F35, F40, F48	1	3880
D1F 24	600	1397	1224	591	1440	1275	38.10	280	165	181.8	86300	0.03	F35, F40, F48	1	6500

Type	Dimensions, inch										Cv 90°	ζ 90°	Mounting face	Plug NPTF	lb
	Size	A	ØB	ØD	E	K	M	N	ØO	P					
D1F 2	2	11.50	8.11	1.97	12.01	11.81	0.25	1.81	0.98	1.09	480	0.06	F07, F10, F12, F14	1/2	77
D1F 3	3	14.02	10.31	3.03	14.76	13.39	0.37	2.28	1.38	1.54	1200	0.05	F12, F14, F16	1/2	132
D1F 4	4	17.01	12.36	3.94	16.81	15.24	0.37	2.68	1.57	1.74	2120	0.05	F14, F16, F25	1/2	264
D1F 6	6	22.01	15.91	5.98	21.26	19.09	0.50	3.54	2.17	2.39	5100	0.05	F14, F16, F25, F30	3/4	616
D1F 8	8	25.98	19.96	7.95	25.39	22.64	0.75	4.69	2.76	3.08	9300	0.04	F14, F16, F25, F30	3/4	836
D1F 10	10	30.98	24.02	10.00	30.12	26.77	0.87	5.75	3.35	3.72	15200	0.04	F16, F25, F30, F35	1	1518
D1F 12	12	32.99	29.45	11.89	35.04	31.30	0.87	6.14	3.74	4.13	22400	0.04	F25, F30, F35, F40	1	2495
D1F 14	14	35.00	32.44	13.39	38.19	34.06	1.00	7.09	4.13	4.57	28300	0.04	F25, F30, F35, F40	1	3300
D1F 16	16	39.02	37.56	15.35	42.05	37.32	1.25	8.07	4.72	5.27	37700	0.04	F30, F35, F40	1	5500
D1F 18	18	42.99	42.91	17.32	47.24	41.93	1.25	8.86	5.31	5.87	48000	0.03	F30, F35, F40	1	7260
D1F 20	20	47.01	46.30	19.29	53.35	47.44	1.50	9.84	5.91	6.56	59500	0.03	F35, F40, F48	1	8536
D1F 24	24	55.00	48.19	23.27	56.69	50.20	1.50	11.02	6.50	7.16	86300	0.03	F35, F40, F48	1	14300

Valve-actuator assembly dimensions:  
See K-dimension from drawing, mounting face from table and actuator dimensions from related actuator bulletin.

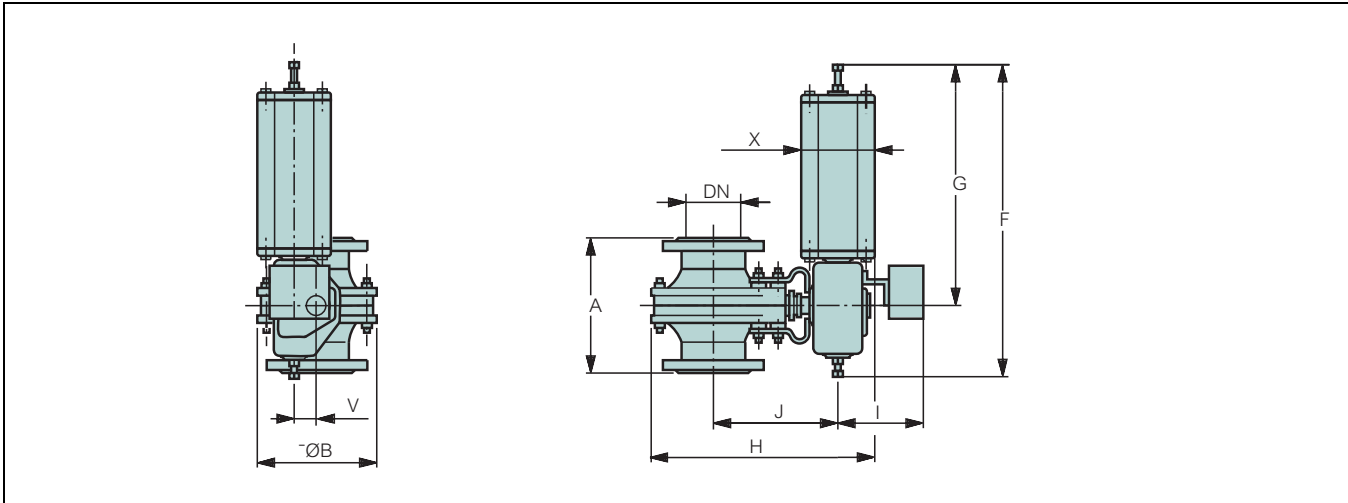


**D2C + BC**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D2C 12 - BC25	300	610	596	1040	710	1045	310	582	121	265	1/2	560
D2C 12 - BC32	300	610	596	1330	910	1120	350	620	153	395	3/4	680
D2C 14 - BC25	350	686	668	1040	710	1145	310	645	121	265	1/2	690
D2C 14 - BC32	350	686	668	1330	910	1205	350	667	153	395	3/4	820
D2C 14 - BC40	350	686	668	1660	1150	1310	370	721	194	505	3/4	1015
D2C 16 - BC32	400	762	744	1330	910	1310	350	734	153	395	3/4	1340
D2C 16 - BC40	400	762	744	1660	1150	1390	370	764	194	505	3/4	1185
D2C 18 - BC40	450	864	814	1660	1150	1620	370	961	194	505	3/4	1775
D2C 18 - BC50	450	864	814	1970	1350	1735	415	1021	242	610	1	2160
D2C 20 - BC40	500	914	904	1660	1150	1700	370	995	194	505	3/4	1975
D2C 20 - BC50	500	914	904	1970	1350	1820	415	1063	242	610	1	2360
D2C 24 - BC40	600	1067	1084	1660	1150	1940	370	1145	194	505	3/4	2795
D2C 24 - BC50	600	1067	1084	1970	1350	2045	415	1195	242	610	1	3180
D2C 28 - BC50	700	1244	1245	1970	1350	2330	415	1401	242	610	1	4680

**D2D + BC**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D2D 04 - BC13	100	305	262	645	445	510	235	285	65	175	3/8	96
D2D 04 - BC17	100	305	262	770	545	540	255	300	78	215	1/2	120
D2D 04 - BC20	100	305	262	840	575	580	270	319	97	215	1/2	140
D2D 06 - BC17	150	403	368	770	545	660	255	364	78	215	1/2	200
D2D 06 - BC20	150	403	368	840	575	695	270	383	97	215	1/2	220
D2D 08 - BC20	200	502	454	840	575	795	270	440	97	215	1/2	320
D2D 08 - BC25	200	502	454	1040	710	855	310	463	121	265	1/2	380
D2D 10 - BC25	250	568	558	1040	710	975	310	530	121	265	1/2	520
D2D 10 - BC32	250	568	558	1330	910	1050	350	567	153	395	3/4	645
D2D 12 - BC25	300	648	630	1040	710	1060	310	583	121	265	1/2	730
D2D 12 - BC32	300	648	630	1330	910	1135	350	620	153	395	3/4	855
D2D 14 - BC25	350	762	706	1040	710	1165	310	649	121	265	1/2	915
D2D 14 - BC32	350	762	706	1330	910	1225	350	671	153	395	3/4	1040
D2D 14 - BC40	350	762	706	1660	1150	1330	370	721	194	505	3/4	1255
D2D 16 - BC32	400	838	792	1330	910	1335	350	736	153	395	3/4	1330
D2D 16 - BC40	400	838	792	1660	1150	1415	370	764	194	505	3/4	1525
D2D 18 - BC40	450	914	884	1660	1150	1675	370	977	194	505	3/4	1735
D2D 18 - BC50	450	914	884	1970	1350	1770	415	1021	242	610	1	2130
D2D 20 - BC40	500	991	966	1660	1150	1755	370	1019	194	505	3/4	2435
D2D 20 - BC50	500	991	966	1970	1350	1855	415	1063	242	610	1	2840
D2D 24 - BC40	600	1143	1130	1660	1150	1985	370	1145	194	505	3/4	3600
D2D 24 - BC50	600	1143	1130	1970	1350	2090	415	1195	242	610	1	3990
D2D 28 - BC50	700	1346	1340	1970	1350	2230	415	1336	242	610	1	6140
D2D 30 - BC50	750	1397	1414	1970	1350	2390	415	1375	242	610	1	6410



**D1F + BC**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D1F 02 - BC9	50	292	206	455	315	505	220	325	43	110	1/4	47
D1F 02 - BC11	50	292	206	540	375	510	225	324	51	135	3/8	52
D1F 02 - BC13	50	292	206	635	445	545	235	347	65	175	3/8	68
D1F 02 - BC17	50	292	206	770	545	575	255	362	78	215	1/2	91
D1F 03 - BC13	80	356	262	635	445	630	235	404	65	175	3/8	94
D1F 03 - BC17	80	356	262	770	545	660	255	419	78	215	1/2	120
D1F 03 - BC20	80	56	262	840	575	695	270	438	97	215	1/2	140
D1F 04 - BC13	100	432	314	635	445	700	235	448	65	175	3/8	155
D1F 04 - BC17	100	432	314	770	545	730	255	463	78	215	1/2	180
D1F 04 - BC20	100	432	314	840	575	765	270	482	97	215	1/2	200
D1F 04 - BC25	100	432	314	1040	710	825	310	505	121	265	1/2	255
D1F 06 - BC17	150	559	404	770	545	870	255	554	78	215	1/2	340
D1F 06 - BC20	150	559	404	840	575	915	270	573	97	215	1/2	360
D1F 06 - BC25	150	559	404	1040	710	960	310	596	121	265	1/2	415
D1F06 - BC32	150	559	404	1330	910	1035	350	633	153	395	3/4	535
D1F 08 - BC20	200	660	507	840	575	1030	270	655	97	215	1/2	470
D1F 08 - BC25	200	660	507	1040	710	1090	310	678	121	265	1/2	525
D1F 08 - BC32	200	660	507	1330	910	1165	350	715	153	395	3/4	645
D1F 08 - BC40	200	660	507	1660	1150	1270	370	765	194	505	3/4	840
D1F 10 - BC25	250	787	610	1040	710	1245	310	775	121	265	1/2	835
D1F 10 - BC32	250	787	610	1330	910	1320	350	812	153	395	3/4	960
D1F 10 - BC40	250	787	610	660	1150	1420	370	862	194	505	3/4	1155
D1F 12 - BC32	300	838	748	1330	910	1498	350	923	153	395	3/4	1410
D1F 12 - BC40	300	838	748	1660	1150	1603	370	973	194	505	3/4	1605
D1F 12 - BC50	300	838	748	1970	1350	1703	415	1023	242	610	1	1990
D1F 14 - BC32	350	889	824	1330	910	1600	350	987	153	395	3/4	1890
D1F 14 - BC40	350	889	824	1660	1150	1705	370	1037	194	505	3/4	2085
D1F 14 - BC50	350	889	824	1970	1350	1805	415	1087	242	610	1	2470
D1F 16 - BC40	400	991	954	1660	1150	1850	370	1113	194	505	3/4	2980
D1F 16 - BC50	400	991	954	1970	1350	1945	415	1163	242	610	1	3370
D1F 18 - BC40	450	1092	1090	1660	1150	2025	370	1223	194	505	3/4	3820
D1F 18 - BC50	450	1092	1090	1970	1350	2125	415	1273	242	610	1	4210
D1F 20 - BC50	500	1194	1176	1970	1350	2300	415	1404	242	610	1	4810
D1F 24 - BC50	600	1397	1402	1970	1350	2385	415	1465	242	610	1	7360

**D2C + BJ**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D2C 12 - BJ25	300	610	596	1530	1200	1135	310	582	121	505	3/4	770
D2C 12 - BJ32	300	610	596	1830	410	190	350	620	153	540	1	1085
D2C 14 - BJ25	350	686	668	1530	1200	1235	310	645	121	505	3/4	900
D2C 14 - BJ32	350	686	668	1830	1410	1275	350	667	153	540	1	1220
D2C 16 - BJ32	400	762	744	1830	1410	1380	350	734	153	540	1	1390
D2C 18 - BJ32	450	864	814	1830	1410	1590	350	911	153	540	1	1970
D2C 20 - BJ32	500	914	904	1830	1410	1670	350	945	153	540	1	2170
D2C 24 - BJ32	600	1067	1084	1830	1410	1900	350	1095	153	540	1	2970
D2C 28 - BJ32	700	1244	1245	1830	1410	2195	350	1301	153	540	1	4470

**D2D + BJ**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D2D 04 - BJ16	100	305	262	990	760	565	255	300	78	265	1/2	160
D2D 04 - BJ20	100	305	262	1200	935	650	270	319	97	395	3/4	235
D2D 06 - BJ16	150	403	368	990	760	685	255	364	78	265	1/2	240
D2D 06 - BJ20	150	403	368	1200	935	765	270	383	97	395	3/4	315
D2D 08 - BJ20	200	502	454	1200	935	865	270	440	97	395	3/4	415
D2D 08 - BJ25	200	502	454	1530	1200	945	310	463	121	505	3/4	590
D2D 10 - BJ25	250	568	558	1530	1200	1065	310	530	121	505	3/4	730
D2D 10 - BJ32	250	568	558	1830	1410	1120	350	567	153	540	1	1050
D2D 12 - BJ32	300	648	630	1830	1410	1205	350	620	153	540	1	1260
D2D 14 - BJ32	350	762	706	1830	1410	1295	350	671	153	540	1	1440
D2D 16 - BJ32	400	838	792	1830	1410	1405	530	736	153	540	1	1720
D2D 18 - BJ32	450	914	884	1830	1410	1635	350	921	153	540	1	1920

**D1F + BJ**

Type	Dimensions, mm										UNC	kg
	DN	A	B	F	G	H	I	J	V	X		
D1F 02 - BJ10	50	292	206	650	490	525	225	331	51	175	3/8	65
D1F 02 - BJ12	50	292	206	800	620	560	235	347	65	215	1/2	92
D1F 02 - BJ16	50	292	206	990	760	600	255	362	78	265	1/2	135
D1F 03 - BJ12	80	356	262	800	620	645	235	404	65	215	1/2	120
D1F 03 - BJ16	80	356	262	990	760	685	255	419	78	265	1/2	160
D1F 03 - BJ20	80	356	262	1200	935	770	270	438	97	395	3/4	235
D1F 04 - BJ12	100	432	314	800	620	715	235	448	65	215	1/2	180
D1F 04 - BJ16	100	432	314	990	760	815	255	463	78	265	1/2	220
D1F 04 - BJ20	100	432	314	1200	935	840	270	482	97	395	3/4	295
D1F 06 - BJ20	150	559	404	1200	935	975	270	573	97	395	3/4	455
D1F 06 - BJ25	150	559	404	1530	1200	1055	310	596	121	505	3/4	630
D1F 06 - BJ32	150	559	404	1830	1410	1105	350	633	153	540	1	950
D1F 08 - BJ25	200	660	507	1530	1200	1180	310	678	121	505	3/4	730
D1F 08 - BJ32	200	660	507	1830	1410	1235	350	715	153	540	1	1050
D1F 10 - BJ25	250	787	610	1530	1200	1335	310	775	121	505	3/4	1040
D1F 10 - BJ32	250	787	610	1830	1410	1390	350	812	153	540	1	1360
D1F 12 - BJ32	300	838	748	1830	1410	1568	350	923	153	540	1	1805
D1F 14 - BJ32	350	889	824	1830	1410	1670	350	987	153	540	1	2170

## HOW TO ORDER

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	
D1	F	E	06	D	A	E	02	G	/	-	P

1.	SERIES
<b>D</b>	Center split body, trunnion mounted, bonnet
<b>D2, D1(F)</b>	Full bore, flanged
<b>D3</b>	Full bore, weld ends
<b>D4</b>	Reduced bore, weld ends
<b>D5</b>	Reduced bore, flanged

2.	PRESSURE RATING
<b>C</b>	ASME class 150
<b>D</b>	ASME class 300
<b>F</b>	ASME class 600

3.	CONSTRUCTION
<b>A</b>	General construction, PTFE bearings, 2 seats, temperature range: -50 °C to +230 °C.
<b>B</b>	Single seated, one-way tight, metal bearings, temperature range: -50 °C to +450/600 °C
<b>E</b>	Single seated, one-way tight, PTFE bearings, temperature range: -50 °C to +230 °C
<b>H</b>	High-temperature construction, metal bearings, 2 seats, temperature range: -50 °C to +450/600 °C
<b>C</b>	Cryogenic construction, PTFE bearings, temperature range: -200 °C to +230 °C
<b>Y</b>	Special construction

4.	SIZE (in)
<b>D1F</b>	02, 03, 04, 06, 08, 10, 12, 14, 16, 18, 20, 24
<b>D2D</b>	04, 06, 08, 10, 12, 14, 16, 18, 20, 24, 28*, 30*, 32*, 36*
<b>D2C</b>	10, 12, 14, 16, 18, 20, 24, 28*, 30*, 36*

\*) Flanges acc. to ASME B16.47 series A in sizes 26" or larger. Flanges in sizes up to NPS 24" are acc. to ASME B 16.5.

5.	BODY	BOLTING
	STANDARD MATERIALS	
<b>A</b>	CF8M	A4-80 / B8M
<b>D</b>	WCB	L7M / 2HM
<b>Y</b>	Special	

6.	BALL
<b>A</b>	CF8M / AISI 316 + Chrome
<b>D</b>	CF8M / AISI 316 + NiBo, only size ≤ 18**
<b>H</b>	CA6NM + Chrome
<b>H3</b>	CA6NM + CrC, general service up to + 425 °C
<b>R2</b>	CF8M / AISI 316 + (W/Cr)C, corrosive liquids/ wet conditions
<b>R3</b>	CF8M / AISI 316 + CrC, high temperature
<b>Y</b>	Special

7.	SEAT TYPE
<b>T</b>	Soft seat
<b>D</b>	Soft seat, fire safe
<b>S</b>	Metal seat
<b>E</b>	Metal seat
<b>C</b>	Bellows seat
<b>K</b>	Solids Proof metal seat
<b>R</b>	Fire safe metal seat

8.	STANDARD MATERIAL				
	Seat seal	Body gasket	Gland packing	Wound spring or bellows spring	
<b>02</b>	Viton GF	Graphite	Graphite	W	X-750
<b>03</b>		Graphite Graphite	Graphite Graphite	B W	W.no.1.4418 X-750
<b>18</b>	Graphite	Graphite	Graphite	B	gr. 660/ F6NM
NON-STANDARD MATERIALS					
<b>63</b>	Viton GF, graphite	Graphite	Graphite	W	X-750

9.	PACKING CONSTRUCTION CODE**
<b>G</b>	Live loaded packing
<b>-</b>	Non-live loaded packing

\*\*) Live loading standard in class 600 series (use "G" as standard)  
Non-live loading standard in class 150 and 300 (use "-" as standard)

10.	FLANGE FACING
<b>-</b>	ASME B16.5 raised face Ra 3.2-6.3 or EN 1092-1 Type B1 (Ra 3.2-12.5) up to PN 40, type B2 in PN 63, 100
<b>05</b>	Ring Joint

11.	FLANGE
<b>-</b>	Acc. to valve pressure rating, without sign (standard)
<b>C</b>	ASME class 150***
<b>D</b>	ASME class 300***
<b>F</b>	ASME class 600***
<b>J</b>	EN PN 10
<b>K</b>	EN PN 16
<b>L</b>	EN PN 25
<b>M</b>	EN PN 40
<b>N</b>	EN PN 63
<b>P</b>	EN PN 100
<b>R</b>	JIS 10K
<b>S</b>	JIS 16K
<b>T</b>	JIS 20K
<b>U</b>	JIS 30K
<b>W</b>	JIS 40K
<b>Y</b>	Special

\*\*\*) Flange acc. to ASME B16.47 series A in sizes 26" or larger. Flange in sizes up to NPS 24" are acc. to ASME B 16.5

Subject to change without prior notice.

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[www.metso.com/valves](http://www.metso.com/valves)

