

NELES FINETROL® ECCENTRIC ROTARY PLUG CONTROL VALVE, SERIES FC AND FG

Finetrol® eccentric rotary plug valves are economical high-performance control valves designed to provide the best possible control accuracy and wide rangeability with the all inherent benefits of rotary control valves. Standard units are equipped with spring-diaphragm actuators and ND9000® intelligent valve controllers for precise flow control, extended operational life and performance monitoring on-line.



FEATURES

Versatility: wide application range

- Finetrol valves are suitable for liquid, gas, steam and slurry applications.
- Choice of body lengths to directly replace both globe style and rotary style valves with a one-piece body construction.
- All actuator mounting directions can be used
- Temperature limits -80 °C ... +425 ° / -110 °F...+800 °F with the standard construction. Cryogenic version -200 °C / -390 °F.
- Full conformity to both ASME and EN standard requirements.
- Fulfils NACE MR0103-2003 requirements.

Accurate control

- The plug shape of the Finetrol valve is engineered to offer a constant gain expanded to a full 90° rotation.
- Optimum flow characteristic through plug shape, instead of positioner cams, provides control valve dynamic performance and control loop stability.
- Plug shape provides balanced dynamic torque.
- High rangeability minimizes need for reduced C_v-trim and trim changes.

Safety

- SIL 3 certified
- Fire-tested and certified.
- Anti-blowout feature is achieved by enlarged stem diameter.
- Valve turns clockwise to close.
- Rugged one-piece-body construction minimizes potential leak paths and makes the valve insensitive to pipe stress.

Environmental design

- Live loaded standard packing and rotary operation reduces emissions dramatically compared to sliding stem valves
- ISO 15848-1 Class BH certified with endurance class CC-3 (100 000 mechanical cycles). Standard packing construction meets the Clean Air Act, TA-Luft and SPE 77/312 requirements.

Low cost of ownership

- Large diameter shafts and heavy duty bearings.
- Heavy duty reliable actuators.
- Predictive maintenance and asset management features.

Noise/cavitation abatement

- Patented Q-Trim®: rotating attenuator design provides up to 18 dB (A) noise attenuation, self-flushing for impure fluids, high C_v and wide rangeability.
- Q-Trim + valve outlet attenuator plate construction extends Q-Trim performance for high pressure drop ratios and provides extra noise attenuation, up to 23 dB (A).

Easy maintenance

- Seat can be removed without valve disassembly.
- Spiral groove joint between seat and the valve body guarantees perfect alignment of seat without feeler gauges or lapping.
- Heavy square threads between valve body and seat ensures easy seat removal. (rusting and jamming prevented).
- No pins, retaining bolts or shims.
- Valve assembly is simple and self-aligning.

TECHNICAL SPECIFICATION

Product type Eccentric rotary plug valve, flanged
Sizes **DN** 25, 40, 50, 80, 100, 150, 200, 250
Inch 1, 1 1/2, 2, 3, 4, 6, 8, 10
Pressure ratings ASME Class 150-600 / PN10-100.
End connections See table 1. on page 3.
Face-to-face
Design FC: ASME/ISA S75.04 = IEC/DIN 534-3-2
Design FG: ASME/ISA S75.03 (Globe valve length)
Maximum shut-off pressure
 See table 2. on page 3.
 See page 6 for maximum pressure drops available with different actuators.
Shut-off classification Class VI with soft seat (1"~6")
 Class IV with metal seat per ANSI FCI 70-2. (0.01 % of valve rated capacity).
Materials See page 5.
Temperature range Metal seat: -200...+425 °C
 See table 3. on page 3.
 Soft seat: -50...+260 °C
Trim style Quarter turn eccentric rotary plug.

Flow characteristic Inherent linear characteristics. Please use the valve selection and sizing tool to verify the installed gain and flow characteristics according to the process data.
Flow direction FTO = FLOW TO OPEN. Flow through seat ring and past the plug. Standard flow direction.
 FTC = FLOW TO CLOSE. Flow past the plug and through the seat ring. Recommended for erosive and flashing services.
Flow capacity See table below.
Valve plug rotation Clockwise to close.

OPTIONS

Q-trim

Sizes	DN	50,	80,	100,	150,	200,	250
	Inch	2,	3,	4,	6,	8,	10

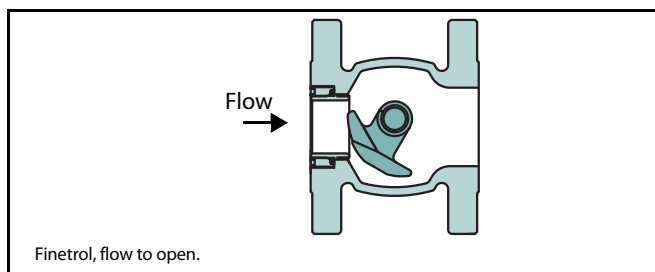
Q-Trim + valve outlet plate (design FG only)

Sizes	DN	50,	80,	100,	150,	200,	250
	Inch	2,	3,	4,	6,	8,	10

Plates on valve outlet

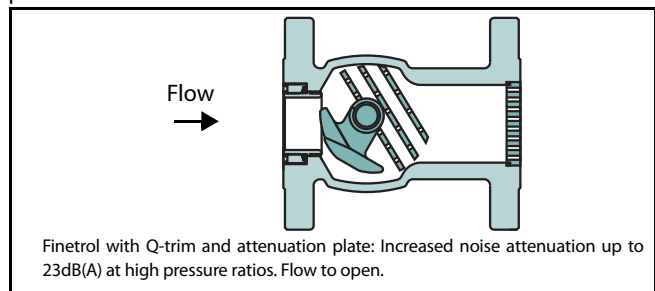
- Attenuator plate = standard plate used in gas applications.
- Q2 plate = advanced noise attenuation plate for gas application including 3 capacity options.
- Baffle plate = customized plate used in liquid applications.

Reduced Cv trim One reduction (50 %)/size is available on standard metal seated valve.



NOISE ATTENUATION

Q-Trim attenuator plates rotate with the plug. Fixed attenuator plate also available.



FLOW DIRECTION RECOMMENDATION

Flow to open direction produces typically 2-4 dB (A) lower noise level.

Application/Construction	Flow to open	Flow to close
General	x	(x)
Erosive	-	x
Vacuum after valve	-	x
Noise attenuating trims	x	-
High temperature	x	(x)
Flashing	-	x

Flow direction is marked on each FINETROL valve by a flow direction arrow.
 X = recommended.
 (X) = optional

MAXIMUM C_v-VALUES

Valve size DN Size/red"	Valve size inch Size/red	90° ROTATION										
		Standard Metal Seat				Soft seat		Q trim with metal seat		Q trim with soft seat	Q trim +attenuator	
		FTO		FTC		FTO	FTC	FTO		FTO	FTO	
		Cv100 %	CvR100 %	Cv100 %	CvR100 %	Cv100 %	Cv100 %	Cv100 %	CvR100 %	Cv100 %	Cv100 %	Cv100 % Soft seat
25	1	14,5	7,9	16,5	7,9	7,5	8	-	-	-	-	-
40	1 1/2	31	15,5	39	15,5	17,5	22	-	-	-	-	-
50	2	52	26	62	26	35	40	31	22	25	22	19
80	3	137	66	155	66	105	120	84	56	75	54	49
100	4	239	120	265	120	195	220	144	95	130	94	85
150	6	520	260	575	260	440	480	310	210	290	208	195
200	8	870	440	1050	440	730	880	540	350	490	366	335
250	10	1330	680	1540	680	1100	1250	840	550	760	538	490

C_v R = 50 % reduced C_v seat.

FTO = Flow to open

FTC = Flow to close

PRESSURE RATINGS AND FLANGE COMPATIBILITY

Size inch	ASME			Size DN	DIN					
	Flanged				Flanged					
	Class 150 ¹	Class 300	Class 600		PN 10 ²	PN 16 ²	PN 25 ²	PN 40 ²	PN 63 ³	PN100 ³
1	x	x	x ⁵	25	x	x	x	x	x	x
1 1/2	x	x	x	40	x	x	x	x	x	x
2	x	x	x ⁴	50	x	x	x	x	x	x
3	x	x	x ⁴	80	x	x	x	x	x ⁴	x ⁴
4	x	x	x ⁴	100	x	x	x	x	x ⁵	x ⁵
6	x	x	x ⁴	150	x	x	x	x	x ⁴	x ⁴
8	x	x	x ⁴	200	x	x	x	x	x ⁴	x ⁴
10	x	x	x ⁴	250	x	x	x	x	x ⁴	x ⁴

x = available

¹ In ASME 150 valve, the flange drilling is according to class 150, while flange thickness according to ASME 300

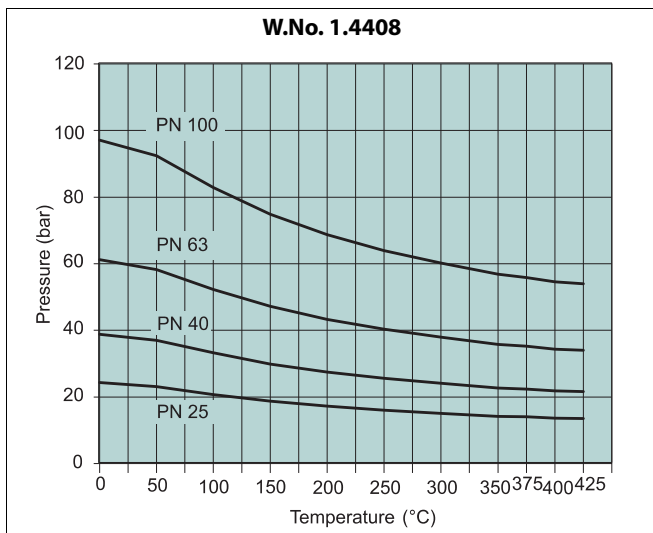
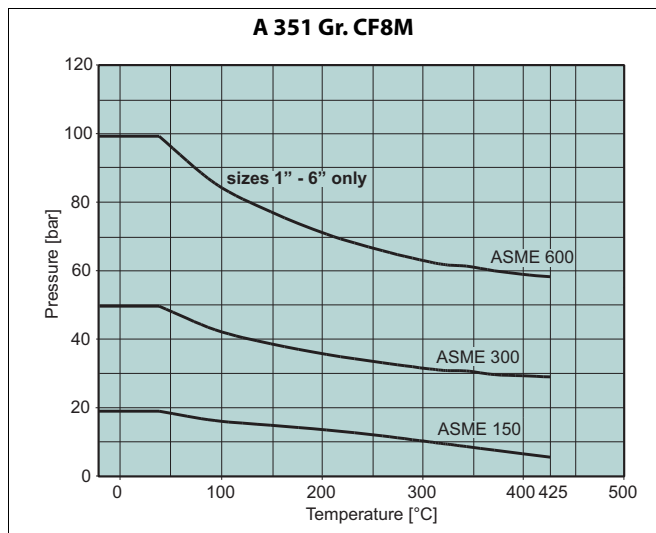
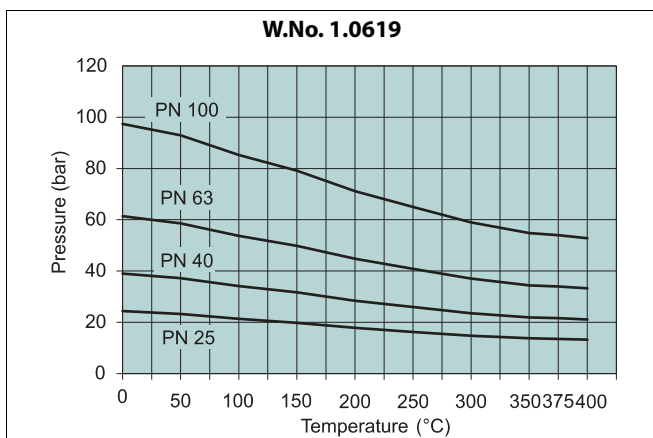
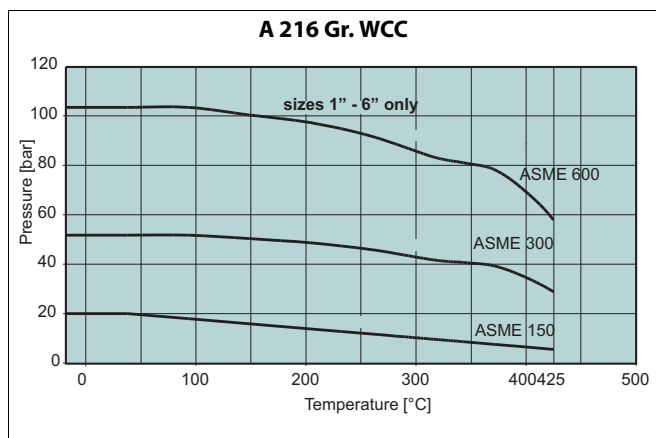
² ASME class 300 flange thickness.

³ ASME class 600 flange thickness.

⁴ 2 threaded flange drillings in the valve neck area.

⁵ All flange wholes are threaded drillings

MAXIMUM PRESSURE/TEMPERATURE RATINGS



Note: For applications involving cavitation, impurities or excessive noise, contact Metso for max Δp.

TEMPERATURE RANGES

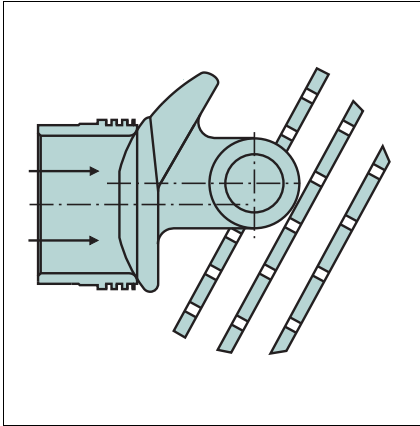
	Metal seat valve		Soft seat valve	
WCC/1.0619 body	-29 ... +425 °C*	-20 ... +800 °F*	-29 ... +260 °C*	-20 ... +500 °F*
CF8M/1.4408 body	-80 ... +425 °C*	-110 ... +800 °F*	-50 ... +260 °C*	-58 ... +500 °F*
CF8M Low temperature/cryo	-200 °C (min)**	-328 °F**	N/A	N/A

Graphite (PTFE lubricated) packing is recommended above 250 °C / 480 °F and for firesafe applications.

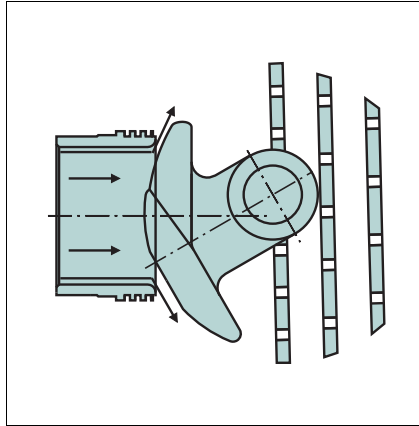
* Standard construction, no extension pipe needed.

** Extension pipe needed.

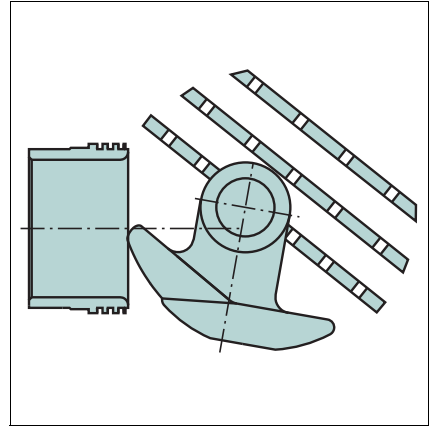
OPERATING PRINCIPLE OF THE FINETROL WITH Q-TRIM



0 degree rotation / Closed position

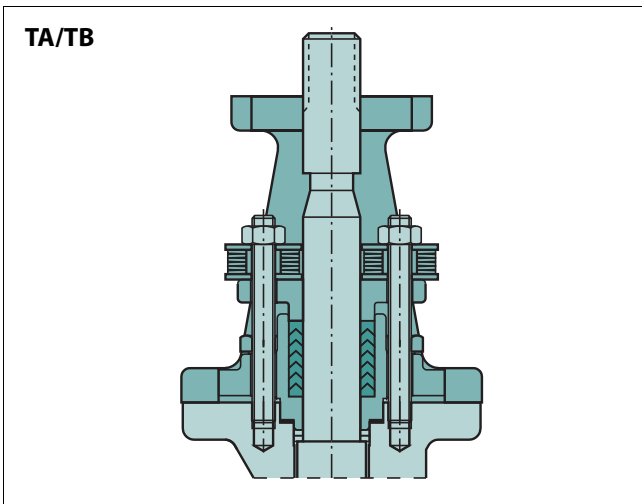


30 degree rotation showing effect of patented balanced eccentric rotary plug design

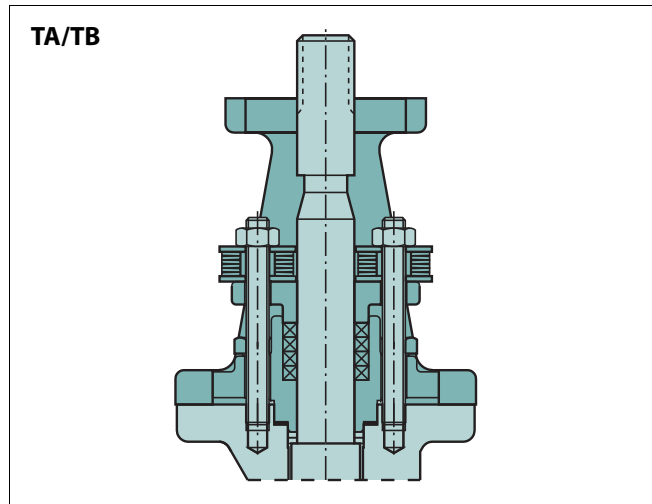


Open position / 80 degree rotation

STANDARD BONNET CONSTRUCTIONS



Live-loaded PTFE / V-ring construction.
TA-Luft certified. Standard construction.

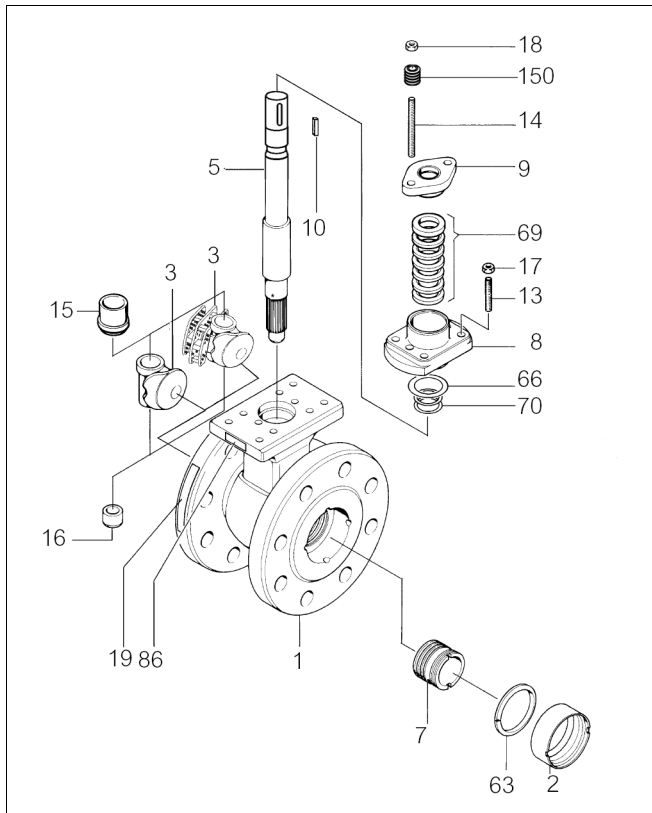


Live-loaded graphite (PTFE lubricated) construction. TA-Luft & ISO 15848-1 certified. Standard construction for high temperature applications (+250 °C to +425 °C / +482 °F to +797 °F).

BILL OF MATERIAL

Part	Description	Material
1	Body	Carbon steel (WCC) / stainless steel (CF8M)
2	Insert	Stainless steel
3	Plug	Stainless steel + cobalt based hard facing
5	Stem	Stainless steel 17-4 PH Nitrated
7	Seat	Metal seat: Stainless steel XM-19/stainless steel+cobalt based hard facing Soft seat: Stainless steel + Xtreme
8	Bonnet	Carbon steel (WCC) / stainless steel (CF8M)
9	Gland	Stainless steel (CF8M)
10	Key	SS 142324
13	Stud	Carbon steel / stainless steel
14	Stud	Carbon steel / stainless steel
15	Upper bearing	Stainless steel 17-4 PH Nitrated
16	Lower bearing	Stainless steel 17-4 PH Nitrated
17	Hexagon nut	Carbon steel / stainless steel
18	Hexagon nut	Carbon steel / stainless steel
19	Identification plate	Stainless steel
63	Back seal	Graphite
66	Bonnet seal	Graphite
69	Gland packing	PTFE / graphite+PTFE
70	Thrust bearing	Cobalt based alloy
86	Flow direction arrow	Aluminium
150	Disc spring set	SIS 2324 & CrMO steel + ENP

EXPLODED VIEW



ACTUATORS

Series Quadra-Powr X
 Type Pneumatic rotary spring-diaphragm actuator
 Temperature range -29 to +66 °C / -20 to + 150 °F
 Bulletin reference 6QPX20

Series B1
 Type Pneumatic rotary cylinder actuator
 Temperature range -40 to +120 °C / -40 to +250 °F
 Bulletin reference 6B20, 6B21

POSITIONERS

Intelligent valve controller ND9000
 Input 4 - 20 mA or 0 - 100 %
 Split range 4 - 12 mA, 12 - 20 mA
 Temperature range -40 to + 85 °C / -40 to +185 °F
 Communication HART, Profibus PA, FOUNDATION fieldbus
 Bulletin reference 7ND9120, 7ND9320

Electropneumatic positioner, NE 700
 Input 4 - 20 mA, 0 - 20 mA
 Split range 4 - 12 mA, 12 - 20 mA
 Temperature range -25 to +85 °C / -15 to +185 °F
 Bulletin reference 7NENP20

Pneumatic positioner, NP 700
 Input 0.2 - 1 bar, 20 - 200 kPa, 3 - 15 psi
 Split range 0.2 - 0.6 bar, 0.6 bar - 1 bar, 3 - 9 psi, 9 - 15 psi
 Temperature range -40 to +90 °C / -40 to +200 °F
 Bulletin reference 7NENP20

SELECTION OF QUADRA-POWR X ACTUATORS

Maximum differential pressure, bar

100 % Cv, S-seat 17-4PH shaft

Valve size DN	Actuator size	Spring code	Available drive size	FLOW TO OPEN						FLOW TO CLOSE					
				Spring to close			Spring to open			Spring to close			Spring to open		
				Supply pressure, bar			Supply pressure, bar			Supply pressure, bar			Supply pressure, bar		
				2,8	4,1	5,5	2,8	4,1	5,5	2,8	4,1	5,5	2,8	4,1	5,5
25	1	C	15	-	98	98	-	98	100	-	100	100	-	79	79
40	1	C	15	-	59	59	-	59	100	-	76	100	-	51	51
50	2	B	20	37	37	37	-	75	100	34	62	91	26	26	26
	2	C	20	-	56	56	-	50	96	-	54	84	-	39	39
	2	D	20	-	-	71	-	-	71	-	-	74	-	-	50
80	3	C	35	-	100	100	-	97	100	-	100	100	-	79	79
	3	C	35	-	36	36	-	31	61	-	36	56	-	26	26
	3	D	35	-	-	45	-	-	45	-	-	49	-	-	33
100	4	B	40	48	48	48	41	99	100	47	86	100	35	35	35
	4	C	40	-	72	72	-	63	100	-	72	100	-	52	52
	4	C	40	-	31	31	-	27	52	-	30	47	-	22	22
150	4	D	40	-	-	39	-	-	38	-	-	41	-	-	27
	5	B	40	41	41	41	35	84	100	39	71	100	29	29	29
	5	C	40	-	62	62	-	54	100	-	60	94	-	44	44
	5	D	40	-	-	76	-	-	77	-	-	82	-	-	54
150	5	B	40	17	17	17	15	35	55	17	31	45	13	13	13
	5	C	40	-	26	26	-	23	44	-	26	41	-	19	19
	5	D	40	-	-	32	-	-	32	-	-	36	-	-	24

Maximum differential pressure, psi

Valve size inch	Actuator size	Spring code	Available drive size	FLOW TO OPEN						FLOW TO CLOSE					
				Spring to close			Spring to open			Spring to close			Spring to open		
				Supply pressure, psi			Supply pressure, psi			Supply pressure, psi			Supply pressure, psi		
				40	60	80	40	60	80	40	60	80	40	60	80
1	1	C	15	-	1429	1429	-	1429	1450	-	1450	1450	-	1153	1153
1.5	1	C	15	-	851	851	-	851	1450	-	1104	1450	-	736	736
2	2	B	20	539	539	539	-	1083	1450	492	902	1313	373	373	373
	2	C	20	-	808	808	-	729	1394	-	784	1220	-	560	560
	2	D	20	-	-	1036	-	-	1036	-	-	1072	-	-	718
3	3	C	35	-	1450	1450	-	1413	1450	-	1450	1450	-	1151	1151
	3	C	35	-	521	521	-	455	882	-	521	809	-	381	381
	3	D	35	-	-	652	-	-	648	-	-	712	-	-	477
4	4	B	40	699	699	699	597	1438	1450	677	1243	1450	504	504	504
	4	C	40	-	1049	1049	-	917	1450	-	1040	1450	-	756	756
	4	C	40	-	448	448	-	392	759	-	436	678	-	317	317
6	4	D	40	-	-	564	-	-	558	-	-	591	-	-	398
	5	B	40	590	590	590	507	1214	1450	562	1029	1450	419	419	419
	5	C	40	-	895	895	-	789	1450	-	875	1358	-	635	635
	5	D	40	-	-	1108	-	-	1124	-	-	1196	-	-	787
6	5	B	40	245	245	245	211	505	799	246	451	655	183	183	183
	5	C	40	-	372	372	-	328	633	-	383	595	-	278	278
	5	D	40	-	-	461	-	-	468	-	-	523	-	-	344

Differential pressure capability considering also velocity, noise and cavitation shall be analysed separately with Nelprof® Control Valve Selection Software case-by-case.

Maximum differential pressure, bar

50 % Cv, R-seat 17-4PH shaft

Valve size DN	Actuator size	Spring code	Available drive size	FLOW TO OPEN						FLOW TO CLOSE					
				Spring to close			Spring to open			Spring to close			Spring to open		
				Supply pressure, bar			Supply pressure, bar			Supply pressure, bar			Supply pressure, bar		
				2,8	4,1	5,5	2,8	4,1	5,5	2,8	4,1	5,5	2,8	4,1	5,5
25	1	C	15	-	100	100	-	100	100	-	100	100	-	99	99
40	1	C	15	-	88	88	-	88	100	-	100	100	-	72	72
50	2	B	20	62	62	62	-	100	100	53	97	100	40	40	40
	2	C	20	-	93	93	-	84	100	-	84	100	-	60	60
	2	D	20	-	-	100	-	-	100	-	-	100	-	-	77
80	3	C	35	-	100	100	-	100	100	-	100	100	-	100	100
	3	C	35	-	60	60	-	52	100	-	57	89	-	42	42
	3	D	35	-	-	75	-	-	75	-	-	78	-	-	52
80	4	B	40	80	80	80	69	100	100	74	100	100	55	55	55
	4	C	40	-	100	100	-	100	100	-	100	100	-	83	83
100	4	C	40	-	51	51	-	45	86	-	47	73	-	34	34
	4	D	40	-	-	64	-	-	64	-	-	64	-	-	43
	5	B	40	67	67	67	58	100	100	61	100	100	45	45	45
	5	C	40	-	100	100	-	90	100	-	94	100	-	69	69
150	5	D	40	-	-	100	-	-	100	-	-	100	-	-	85
	5	B	40	30	30	30	26	60	60	29	54	60	22	22	22
	5	C	40	-	46	46	-	40	60	-	46	60	-	33	33
	5	D	40	-	-	56	-	-	57	-	-	60	-	-	41

Maximum differential pressure, psi

Valve size inch	Actuator size	Spring code	Available drive size	FLOW TO OPEN						FLOW TO CLOSE					
				Spring to close			Spring to open			Spring to close			Spring to open		
				Supply pressure, psi			Supply pressure, psi			Supply pressure, psi			Supply pressure, psi		
				40	60	80	40	60	80	40	60	80	40	60	80
1	1	C	15	-	1450	1450	-	1450	1450	-	1450	1450	-	1436	1436
1.5	1	C	15	-	1270	1270	-	1270	1450	-	1450	1450	-	1047	1047
2	2	B	20	897	897	897	-	1450	1450	766	1405	1450	581	581	581
	2	C	20	-	1344	1344	-	1212	1450	-	1221	1450	-	873	873
	2	D	20	-	-	1450	-	-	1450	-	-	1450	-	-	1118
3	3	C	35	-	1450	1450	-	1450	1450	-	1450	1450	-	1450	1450
	3	C	35	-	869	869	-	759	1450	-	830	1289	-	606	606
	3	D	35	-	-	1088	-	-	1082	-	-	1135	-	-	759
4	4	B	40	1167	1167	1167	997	1450	1450	1079	1450	1450	803	803	803
	4	C	40	-	1450	1450	-	1450	1450	-	1450	1450	-	1204	1204
	4	C	40	-	740	740	-	647	1253	-	681	1061	-	495	495
4	4	D	40	-	-	931	-	-	922	-	-	925	-	-	623
	5	B	40	974	974	974	838	1450	1450	880	1450	1450	655	655	655
	5	C	40	-	1450	1450	-	1302	1450	-	1368	1450	-	994	994
	5	D	40	-	-	1450	-	-	1450	-	-	1450	-	-	1230
6	5	B	40	436	436	436	375	870	870	426	779	870	317	317	317
	5	C	40	-	661	661	-	583	870	-	662	870	-	481	481
	5	D	40	-	-	818	-	-	830	-	-	870	-	-	595

Differential pressure capability considering also velocity, noise and cavitation shall be analysed separately with Nelprof® Control Valve Selection Software case-by-case.

SELECTION OF B-SERIES ACTUATORS

Maximum differential pressure, bar/psi

100 % Cv, S-seat 17-4PH shaft

Valve size	Actuator size	FLOW TO OPEN			FLOW TO CLOSE		
		Supply pressure, bar			Supply pressure, bar		
DN	B1C	4	5	6	4	5	6
25	6	100	100	100	100	100	100
40	6	100	100	100	80	100	100
50	6	53	66	79	35	44	52
	9	100	100	100	73	91	100
80	9	36	45	54	24	30	36
	11	66	82	99	44	56	67
100	11	28	35	42	19	23	28
	13	59	73	88	39	48	58
150	13	24	31	37	17	21	25
	17	46	57	60	32	40	48
200	17	21	26	31	14	18	22
	20	25	32	38	18	22	26
250	20	15	18	22	10	13	15
	25	28	30	30	20	25	30

Valve size	Actuator size	FLOW TO OPEN			FLOW TO CLOSE		
		Supply pressure, psi			Supply pressure, psi		
Inch	B1C	58	73	87	58	73	87
1	6	1450	1450	1450	1450	1450	1450
1,5	6	1450	1450	1450	1165	1448	1450
2	6	775	963	1152	508	631	755
	9	1450	1450	1450	1064	1324	1450
3	9	522	650	781	351	438	526
	11	956	1195	1435	644	805	966
4	11	408	510	613	270	337	405
	13	851	1064	1278	562	703	844
6	13	354	443	532	246	308	370
	17	665	832	870	462	578	693
8	17	300	375	450	208	260	312
	20	366	457	549	254	317	381
10	20	211	264	317	149	186	223
	25	408	435	435	287	359	430

50 % Cv, R-seat 17-4PH shaft

Valve size	Actuator size	FLOW TO OPEN			FLOW TO CLOSE		
		Supply pressure, bar			Supply pressure, bar		
DN	B1C	4	5	6	4	5	6
25	6	100	100	100	100	100	100
40	6	100	100	100	100	100	100
50	6	89	100	100	55	68	81
	9	100	100	100	100	100	100
80	9	60	75	90	39	48	58
	11	100	100	100	71	88	100
100	11	46	58	70	29	36	44
	13	97	100	100	61	76	91
150	13	43	54	60	29	37	44
	17	60	60	60	55	60	60
200	17	38	47	50	25	32	38
	20	46	50	50	31	39	47
250	20	27	30	30	19	23	28
	25	30	30	30	30	30	30

Valve size	Actuator size	FLOW TO OPEN			FLOW TO CLOSE		
		Supply pressure, psi			Supply pressure, psi		
Inch	B1C	58	73	87	58	73	87
1	6	1450	1450	1450	1450	1450	1450
1,5	6	1450	1450	1450	1450	1450	1450
2	6	1289	1450	1450	791	983	1175
	9	1450	1450	1450	1450	1450	1450
3	9	871	1085	1304	560	697	838
	11	1450	1450	1450	1026	1283	1450
4	11	674	843	1012	422	527	633
	13	1406	1450	1450	879	1099	1321
6	13	629	786	870	425	532	639
	17	870	870	870	799	870	870
8	17	547	683	725	369	461	553
	20	667	725	725	450	562	675
10	20	392	435	435	271	339	407
	25	435	435	435	435	435	435

100 % Cv, S-seat 17-4PH shaft

Valve size	Actuator size	FLOW TO OPEN						FLOW TO CLOSE					
		B1J, spring to close Supply pressure, bar			B1JA, spring to open Supply pressure, bar			B1J, spring to close Supply pressure, bar			B1JA, spring to open Supply pressure, bar		
DN	B1J	4	5	6	4	5	6	4	5	6	4	5	6
25	6	100	100	100	100	100	100	100	100	100	100	100	100
40	6	55	55	55	45	90	100	65	95	100	50	50	50
50	6	7	7	7	42	78	100	18	32	43	13	13	13
25	8	100	100	100	100	100	100	100	100	100	100	100	100
40	8	100	100	100	100	100	100	100	100	100	100	100	100
50	8	71	71	71	49	100	100	88	100	100	55	55	55
80	10	43	43	43	32	78	100	56	78	100	34	34	34
100	12	38	38	38	25	64	89	46	64	82	29	29	29
150	16	30	30	30	21	50	60	38	53	60	24	24	24
200	20	26	26	26	20	46	50	34	48	50	21	21	21
250	25	30	30	30	23	30	30	30	30	30	24	24	24

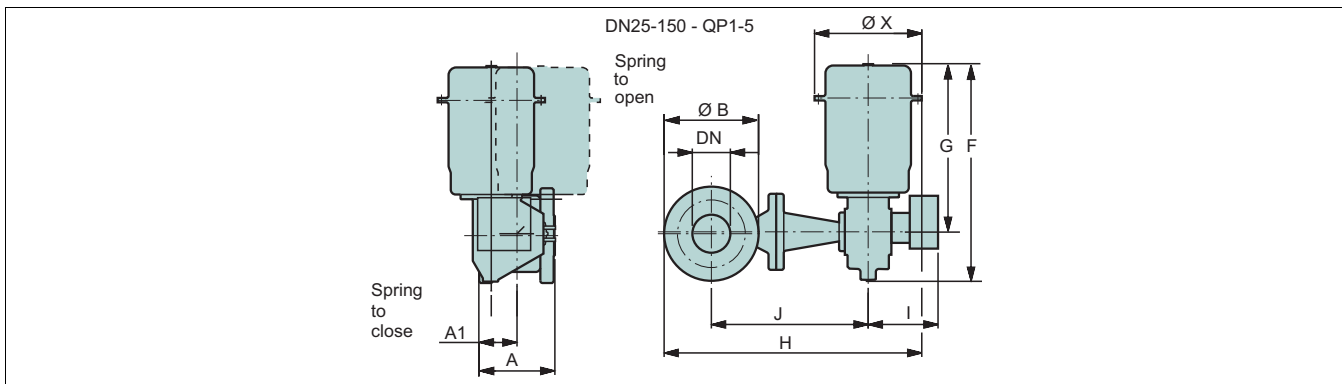
Valve size	Actuator size	FLOW TO OPEN						FLOW TO CLOSE					
		B1J, spring to close Supply pressure, psi			B1JA, spring to open Supply pressure, psi			B1J, spring to close Supply pressure, psi			B1JA, spring to open Supply pressure, psi		
Inch	B1J	58	73	87	58	73	87	58	73	87	58	73	87
1	6	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
1,5	6	797,5	797,5	797,5	652,5	1305	1450	942,5	1377,5	1450	725	725	725
2	6	101,5	101,5	101,5	609	1131	1450	261	464	623,5	188,5	188,5	188,5
1	8	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
1,5	8	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
2	8	1036	1036	1036	714	1450	1450	1276	1450	1450	791	791	791
3	10	630	630	630	469	1135	1450	816	1134	1449	494	494	494
4	12	555	555	555	368	927	1297	664	926	1187	426	426	426
6	16	431	431	431	306	731	870	551	768	870	348	348	348
8	20	375	375	375	286	672	725	500	693	725	302	302	302
10	25	432	432	432	337	435	435	435	435	435	353	353	353

50 % Cv, R-seat 17-4PH shaft

Valve size	Actuator size	FLOW TO OPEN						FLOW TO CLOSE					
		B1J, spring to close Supply pressure, bar			B1JA, spring to open Supply pressure, bar			B1J, spring to close Supply pressure, bar			B1JA, spring to open Supply pressure, bar		
DN	B1J	4	5	6	4	5	6	4	5	6	4	5	6
25	6	100	100	100	88	100	100	100	100	100	100	100	100
40	6	55	55	55	45	88	100	65	95	100	50	50	50
50	6	7	7	7	1	22	42	18	31	43	13	13	13
25	8	100	100	100	100	100	100	100	100	100	100	100	100
40	8	100	100	100	100	100	100	100	100	100	100	100	100
50	8	100	100	100	77	100	100	100	100	100	85	85	85
80	10	72	72	72	52	100	100	90	100	100	54	54	54
100	12	63	63	63	40	100	100	72	100	100	46	46	46
150	16	53	53	53	36	60	60	60	60	60	42	42	42
200	20	47	47	47	35	50	50	50	50	50	37	37	37
250	25	30	30	30	30	30	30	30	30	30	30	30	30

Valve size	Actuator size	FLOW TO OPEN						FLOW TO CLOSE					
		B1J, spring to close Supply pressure, psi			B1JA, spring to open Supply pressure, psi			B1J, spring to close Supply pressure, psi			B1JA, spring to open Supply pressure, psi		
Inch	B1J	58	73	87	58	73	87	58	73	87	58	73	87
1	8	1450	1450	1450	1276	1450	1450	1450	1450	1450	1450	1450	1450
1,5	8	797,5	797,5	797,5	652,5	1276	1450	942,5	1377,5	1450	725	725	725
2	8	101,5	101,5	101,5	14,5	319	609	261	449,5	623,5	188,5	188,5	188,5
1	8	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
1,5	8	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
2	8	1450	1450	1450	1111	1450	1450	1450	1450	1450	1232	1232	1232
3	10	1051	1051	1051	748	1450	1450	1301	1450	1450	788	788	788
4	12	917	917	917	575	1450	1450	1038	1448	1450	666	666	666
6	16	766	766	766	529	870	870	870	870	870	602	602	602
8	20	683	683	683	507	725	725	725	725	725	535	535	535
10	25	435	435	435	435	435	435	435	435	435	435	435	435

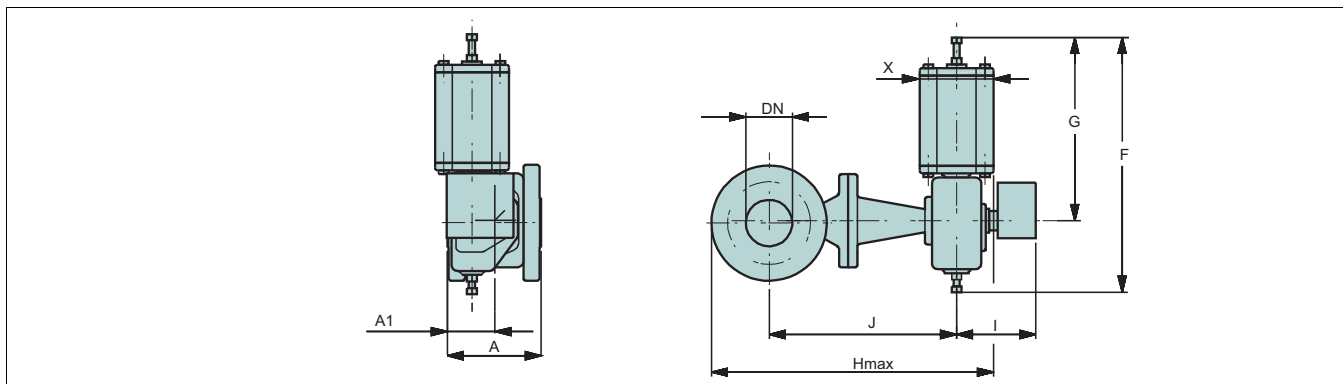
DIMENSIONAL DRAWINGS, ACTUATOR QUADRA-POWR, DIMENSIONS IN mm (inch)



DN	Actuator size	A1	J	Jcryo	I	G	F	øX
25 (1)	QP1	51 (2.01)	235 (9.25)	464 (18.27)	205 (8.07)	280 (11.02)	332 (13.07)	213 (8.39)
25 (1)	QP2	51 (2.01)	244 (9.61)	473 (18.62)	215 (8.46)	339 (13.35)	430 (16.93)	228 (8.98)
40 (1 1/2)	QP1	57 (2.24)	250 (9.84)	479 (18.86)	205 (8.07)	280 (11.02)	332 (13.07)	213 (8.39)
40 (1 1/2)	QP2	57 (2.24)	259 (10.20)	488 (19.21)	215 (8.46)	339 (13.35)	430 (16.93)	228 (8.98)
50 (2)	QP2	62 (2.44)	269 (10.59)	482 (18.98)	215 (8.46)	339 (13.35)	430 (16.93)	228 (8.98)
50 (2)	QP3	62 (2.44)	273 (10.75)	486 (19.13)	220 (8.66)	396 (15.59)	515 (20.28)	274 (10.79)
80 (3)	QP3	82.5 (3.25)	309 (12.17)	628 (24.72)	220 (8.66)	396 (15.59)	515 (20.28)	274 (10.79)
80 (3)	QP4	82.5 (3.25)	315 (12.40)	634 (24.96)	225 (8.86)	445 (17.52)	585 (23.03)	320 (12.60)
100 (4)	QP4	97 (3.82)	387 (15.24)	676 (26.61)	225 (8.86)	445 (17.52)	585 (23.03)	320 (12.60)
100 (4)	QP5	97 (3.82)	402 (15.83)	691 (27.20)	240 (9.45)	558 (21.97)	718 (28.27)	382 (15.04)
150 (6)	QP5	114.5 (4.51)	442 (17.40)	731 (28.78)	240 (9.45)	558 (21.97)	718 (28.27)	382 (15.04)

VALVE AND ACTUATOR SIZE		Normal face-to-face, series FC				Globe face-to-face, series FG			
		ASME/ISA S75.04				ASME/ISA S75.03			
DN	QP	A	Ø B	H	Kg / lbs	A	Ø B	H	Kg / lbs
ASME 150									
25 (1)	1	102 (4.00)	124 (4.88)	405 (15.94)	18.5 / 41	184 (7.25)	108 (4.25)	395 (15.55)	19.5 / 43
25 (1)	2	102 (4.00)	124 (4.88)	420 (16.54)	26.5 / 59	184 (7.25)	108 (4.25)	410 (16.14)	27.5 / 61
40 (1 1/2)	1	114 (4.50)	156 (6.14)	435 (17.13)	21 / 47	222 (8.75)	127 (5.00)	420 (16.54)	22 / 49
40 (1 1/2)	2	114 (4.50)	156 (6.14)	455 (17.91)	29 / 64	222 (8.75)	127 (5.00)	440 (17.32)	30 / 66
50 (2)	2	124 (4.88)	165 (6.50)	470 (18.50)	35 / 77	254 (10.00)	153 (6.02)	460 (18.11)	39 / 86
50 (2)	3	124 (4.88)	165 (6.50)	495 (19.49)	51 / 113	254 (10.00)	153 (6.02)	485 (19.09)	53 / 117
80 (3)	3	165 (6.50)	200 (7.87)	555 (21.85)	55 / 121	298 (11.75)	191 (7.52)	545 (21.46)	60 / 132
80 (3)	4	165 (6.50)	200 (7.87)	580 (22.83)	77 / 170	298 (11.75)	191 (7.52)	570 (22.44)	81 / 179
100 (4)	4	194 (7.62)	235 (9.25)	675 (26.57)	89 / 196	352 (13.88)	229 (9.02)	665 (26.18)	96 / 212
100 (4)	5	194 (7.62)	235 (9.25)	720 (28.35)	138 / 304	352 (13.88)	229 (9.02)	710 (27.95)	146 / 322
150 (6)	5	229 (9.00)	318 (12.52)	795 (31.30)	154 / 339	451 (17.75)	280 (11.02)	775 (30.51)	170 / 374
ASME 300									
25 (1)	1	102 (4.00)	124 (4.88)	405 (15.94)	19 / 42	197 (7.75)	124 (4.88)	405 (15.94)	20 / 44
25 (1)	2	102 (4.00)	124 (4.88)	420 (16.54)	27 / 60	197 (7.75)	124 (4.88)	420 (16.54)	28 / 62
40 (1 1/2)	1	114 (4.50)	156 (6.14)	435 (17.13)	22 / 49	235 (9.25)	156 (6.14)	435 (17.13)	23 / 51
40 (1 1/2)	2	114 (4.50)	156 (6.14)	455 (17.91)	30 / 66	235 (9.25)	156 (6.14)	455 (17.91)	31 / 69
50 (2)	2	124 (4.88)	165 (6.50)	470 (18.50)	37 / 82	267 (10.50)	165 (6.50)	470 (18.50)	40 / 88
50 (2)	3	124 (4.88)	165 (6.50)	495 (19.49)	52 / 115	267 (10.50)	165 (6.50)	495 (19.49)	54 / 119
80 (3)	3	165 (6.50)	210 (8.27)	555 (21.85)	57 / 126	318 (12.50)	210 (8.27)	555 (21.85)	62 / 137
80 (3)	4	165 (6.50)	210 (8.27)	580 (22.83)	79 / 174	318 (12.50)	210 (8.27)	580 (22.83)	83 / 137
100 (4)	4	194 (7.62)	254 (10.00)	675 (26.57)	94 / 207	368 (14.50)	254 (10.00)	675 (26.57)	101 / 223
100 (4)	5	194 (7.62)	254 (10.00)	720 (28.35)	143 / 315	368 (14.50)	254 (10.00)	720 (28.35)	151 / 333
150 (6)	5	229 (9.00)	318 (12.52)	795 (31.30)	165 / 363	473 (18.62)	318 (12.52)	795 (31.30)	181 / 399
ASME 600									
25 (1)	1	102 (4.00)	124 (4.88)	405 (15.94)	19.5 / 41	210 (8.25)	124 (4.88)	405 (15.94)	20.5 / 46
25 (1)	2	102 (4.00)	124 (4.88)	420 (16.54)	27.5 / 61	210 (8.25)	124 (4.88)	420 (16.54)	28.5 / 63
40 (1 1/2)	1	114 (4.50)	156 (6.14)	435 (17.13)	22.5 / 50	251 (9.88)	156 (6.14)	435 (17.13)	23.5 / 52
40 (1 1/2)	2	114 (4.50)	156 (6.14)	455 (17.91)	30.5 / 68	251 (9.88)	156 (6.14)	455 (17.91)	31.5 / 70
50 (2)	2	124 (4.88)	165 (6.50)	470 (18.50)	38 / 84	286 (11.25)	165 (6.50)	470 (18.50)	41 / 91
50 (2)	3	124 (4.88)	165 (6.50)	495 (19.49)	53 / 117	286 (11.25)	165 (6.50)	495 (19.49)	55 / 121
80 (3)	3	165 (6.50)	210 (8.27)	555 (21.85)	59 / 130	337 (13.25)	210 (8.27)	555 (21.85)	64 / 141
80 (3)	4	165 (6.50)	210 (8.27)	580 (22.83)	81 / 179	337 (13.25)	210 (8.27)	580 (22.83)	85 / 187
100 (4)	4	194 (7.62)	274 (10.79)	685 (26.97)	99 / 218	394 (15.50)	274 (10.79)	685 (26.97)	106 / 234
100 (4)	5	194 (7.62)	274 (10.79)	730 (28.74)	148 / 326	394 (15.50)	274 (10.79)	730 (28.74)	156 / 344
150 (6)	5	229 (9.00)	356 (14.02)	815 (32.09)	180 / 396	508 (20.00)	356 (14.02)	815 (32.09)	196 / 432

DIMENSIONAL DRAWINGS, OPTIONAL ACTUATOR B1C/B1J, DIMENSIONS IN mm (inch)



DN	B1C	A1	H max	J	Jcryo	I	G	F	X
25 (1)	6	51 (2.01)	362 (14.25)	250 (9.84)	479 (18.86)	200 (7.87)	260 (10.24)	400 (15.75)	90 (3.54)
40 (1 1/2)	6	57 (2.24)	393 (15.47)	265 (10.43)	494 (19.45)	200 (7.87)	260 (10.24)	400 (15.75)	90 (3.54)
50 (2)	6	62 (2.44)	408 (16.06)	275 (10.83)	488 (19.21)	200 (7.87)	260 (10.24)	400 (15.75)	90 (3.54)
50 (2)	9	62 (2.44)	434 (17.09)	276 (10.87)	489 (19.25)	225 (8.86)	315 (12.40)	455 (17.91)	110 (4.33)
80 (3)	9	82.5 (3.25)	492 (19.37)	312 (12.28)	631 (24.84)	225 (8.86)	315 (12.40)	455 (17.91)	110 (4.33)
80 (3)	11	82.5 (3.25)	503 (19.80)	318 (12.52)	637 (25.08)	230 (9.06)	375 (14.76)	540 (21.26)	135 (5.31)
100 (4)	11	97 (3.82)	607 (23.90)	390 (15.35)	679 (26.73)	230 (9.06)	375 (14.76)	540 (21.26)	135 (5.31)
100 (4)	13	97 (3.82)	638 (25.12)	406 (15.98)	695 (27.36)	245 (9.65)	445 (17.52)	635 (25.00)	175 (6.89)
150 (6)	13	114.5 (4.51)	719 (28.31)	446 (17.56)	735 (28.94)	245 (9.65)	445 (17.52)	635 (25.00)	175 (6.89)
150 (6)	17	114.5 (4.51)	749 (29.49)	461 (18.15)	750 (29.53)	260 (10.24)	545 (21.46)	770 (30.31)	215 (8.46)
200 (8)	17	121.5 (4.78)	889 (35.00)	565 (22.24)	836 (32.91)	260 (10.24)	545 (21.46)	770 (30.31)	215 (8.46)
200 (8)	20	121.5 (4.78)	923 (36.34)	565 (22.24)	836 (32.91)	275 (10.83)	575 (22.64)	840 (33.07)	215 (8.46)
250 (10)	20	148.5 (5.85)	1008 (39.69)	634 (24.96)	905 (35.63)	275 (10.83)	575 (22.64)	840 (33.07)	215 (8.46)
250 (10)	25	148.5 (5.85)	1066 (41.97)	634 (24.96)	905 (35.63)	310 (12.20)	710 (27.95)	1040 (40.94)	265 (10.43)
DN	B1J/B1JA	A1	H max	J	Jcryo	I	G	F	X
25 (1)	6	51 (2.01)	375.5(14.78)	251 (9.88)	480 (18.90)	225 (8.86)	368(14.49)	485(19.09)	110(4.33)
40 (1 1/2)	6	57 (2.24)	406.5(16.00)	266 (10.47)	495 (19.49)	225 (8.86)	368(14.49)	485(19.09)	110(4.33)
50 (2)	6	62 (2.44)	421.5(16.59)	276 (10.87)	489 (19.25)	225 (8.86)	368(14.49)	485(19.09)	110(4.33)
25 (1)	8	51 (2.01)	388 (15.28)	251 (9.88)	480 (18.90)	225 (8.86)	420 (16.54)	560 (22.05)	135 (5.31)
40 (1 1/2)	8	57 (2.24)	419 (16.50)	266 (10.47)	495 (19.49)	225 (8.86)	420 (16.54)	560 (22.05)	135 (5.31)
50 (2)	8	62 (2.44)	434 (17.09)	276 (10.87)	489 (19.25)	225 (8.86)	420 (16.54)	560 (22.05)	135 (5.31)
80 (3)	10	82.5 (3.25)	511 (20.12)	318 (12.52)	637 (25.08)	230 (9.06)	490 (19.29)	650 (25.59)	175 (6.89)
100 (4)	12	97 (3.82)	651 (25.63)	406 (15.98)	695 (27.36)	245 (9.65)	620 (24.41)	800 (31.50)	215 (8.46)
150 (6)	16	114.5 (4.51)	772 (30.39)	461 (18.15)	750 (29.53)	260 (10.24)	760 (29.92)	990 (38.98)	265 (10.43)
200 (8)	20	121.5 (4.78)	996 (39.21)	565 (22.24)	836 (32.91)	275 (10.83)	935 (36.81)	1200 (47.24)	395 (15.55)
250 (10)	25	148.5 (5.85)	1159 (45.63)	634 (24.96)	905 (35.63)	310 (12.20)	1200 (47.24)	1530 (60.24)	505 (19.88)

VALVE AND ACTUATOR SIZE		ASME						DIN	
		Normal face-to-face, series FC		Globe face-to-face, series FG				Normal face-to-face, series FC	
		ASME/ISA S75.04		ASME/ISA S75.03			Kg / lbs	IEC/DIN 534-3-2	
		DN	B1C	A	Kg / lbs	150		300	600
25 (1)	6	102 (4.02)	12 / 27	184 (7.24)	197 (7.76)	210 (8.27)	13 / 29	102 (4.02)	12 / 27
40 (1 1/2)	6	114 (4.49)	16 / 36	222 (8.74)	235 (9.25)	251 (9.88)	17 / 38	114 (4.49)	16 / 36
50 (2)	6	124 (4.88)	23 / 51	254 (10.00)	267 (10.51)	286 (11.26)	25 / 55	124 (4.88)	23 / 51
50 (2)	9	124 (4.88)	28 / 62	254 (10.00)	267 (10.51)	286 (11.26)	30 / 66	124 (4.88)	28 / 62
80 (3)	9	165 (6.50)	34 / 75	298 (11.73)	318 (12.52)	337 (13.27)	38 / 84	165 (6.50)	34 / 75
80 (3)	11	165 (6.50)	40 / 88	298 (11.73)	318 (12.52)	337 (13.27)	44 / 97	165 (6.50)	40 / 88
100 (4)	11	194 (7.64)	54 / 119	352 (13.86)	368 (14.49)	394 (15.51)	62 / 137	194 (7.64)	54 / 119
100 (4)	13	194 (7.64)	70 / 154	352 (13.86)	368 (14.49)	394 (15.51)	78 / 172	194 (7.64)	70 / 154
150 (6)	13	229 (9.02)	94 / 207	451 (17.76)	473 (18.62)	508 (20.00)	110 / 242	229 (9.02)	94 / 207
150 (6)	17	229 (9.02)	117 / 258	451 (17.76)	473 (18.62)	508 (20.00)	133 / 293	229 (9.02)	117 / 258
200 (8)	17	243 (9.57)	175 / 385	568* (22.36*)	568 (22.36)	610 (24.02)	210 / 462	-	-
200 (8)	20	243 (9.57)	200 / 440	568* (22.36*)	568 (22.36)	610 (24.02)	240 / 528	-	-
250 (10)	20	297 (11.69)	230 / 506	708* (27.87*)	708 (27.87)	752 (29.61)	275 / 605	-	-
250 (10)	25	297 (11.69)	290 / 638	708* (27.87*)	708 (27.87)	752 (29.61)	340 / 748	-	-
DN	B1J/B1JA	A	Kg / lbs	A			Kg / lbs	A	Kg / lbs
25 (1)	8	102 (4.02)	25 / 55	184 (7.24)	197 (7.76)	210 (8.27)	26 / 58	102 (4.02)	25 / 55
40 (1 1/2)	8	114 (4.49)	28 / 62	222 (8.74)	235 (9.25)	251 (9.88)	29 / 64	114 (4.49)	28 / 62
50 (2)	8	124 (4.88)	35 / 77	254 (10.00)	267 (10.51)	286 (11.26)	37 / 83	124 (4.88)	35 / 77
80 (3)	10	165 (6.50)	54 / 119	298 (11.73)	318 (12.52)	337 (13.27)	58 / 128	165 (6.50)	54 / 119
100 (4)	12	194 (7.64)	97 / 214	352 (13.86)	368 (14.49)	394 (15.51)	105 / 231	194 (7.64)	97 / 214
150 (6)	16	229 (9.02)	163 / 359	451 (17.76)	473 (18.62)	508 (20.00)	179 / 394	229 (9.02)	163 / 359
200 (8)	20	243 (9.57)	310 / 682	568* (22.36*)	568 (22.36)	610 (24.02)	360 / 792	-	-
250 (10)	25	297 (11.69)	500 / 1100	708* (27.87*)	708 (27.87)	752 (29.61)	550 / 1210	-	-

*) Class 150 face-to-face according to class 300.

HOW TO ORDER

To specify a control valve, make a selection from designation shown below. These codes create a complete valve model number. An extensive number of options and variations are available. For options not shown, or to enter an order, contact your local Metso sales representative.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
FC	04	D	W	TA	S6	KB	SGT	D	A

ASME/ISA VALVES

1. sign	Valve series & style, face-to-face length
FC	Finetrol rotary control valve, flanged face-to-face acc. to ASME/ISA S75.04
FG	Finetrol rotary control valve, flanged, face-to-face acc. to ASME/ISA S75.03 (globe valve face-to-face)

2. sign	Connection size
01	1"
1H	1 1/2"
02	2"
03	3"
04	4"
06	6"
08	8"
10	10"

3. sign	Pressure ratings, flanges, flange drilling
C	ASME class 150*
D	ASME class 300
F	ASME class 600

* For 8" and 10" flange drillings with threads

4. sign	End connection style
W	ASME B16.5, 0.06" Raised face, Smooth finish (Ra 3.2-6.3 / AARH 125-250)

PN VALVES

1. sign	Valve series & style, face-to-face length
FC	Finetrol rotary control valve, flanged face-to-face acc. to IEC/DIN 534-3-2

2. sign	Size
025	25 mm
040	40 mm
050	50 mm
080	80 mm
100	100 mm
150	150 mm
200	200 mm
250	250 mm

3. sign	Pressure ratings, flanges, flange drilling
K	PN 16*
L	PN 25*
M	PN 40
N	PN 63
P	PN100

* For 200 mm and 250 mm flange drillings with threads.

4. sign	End connection style
C	DIN 2526 form C, Raised face, standard Rz 40-160 (Ra 10-40)

ALL FINETROL VALVES

5. sign	Application and / or construction
TA	General and Fire Safe, Live loaded single packing, FTO, TA-Luft tested and certified by TÜV.
TB	General and Fire Safe, Live loaded single packing, FTC, TA-Luft tested and certified by TÜV.
QT	Q-trim FTO, Live loaded single packing

ASME/ISA VALVES

6. sign	Body	Insert	Bonnet	Gland
S6	CF8M / 1.4408	316SS / 1.4436	CF8M / 1.4408	316SS / 1.4436
J1	WCC / 1.0619	316SS / 1.4436	WCC / 1.0619	316SS / 1.4436

ALL FINETROL VALVES

7.	PLUG, STEM AND BEARINGS MATERIAL AND STEM TYPE			
	Plug	Coating	Stem Material / Type	Bearing
KB	CF8M / 1.4581	Cobalt based hard facing	17-4PH, Nitrated Keyway	17-4PH, Nitrated

ALL FINETROL VALVES

8. sign	SEAT AND SEAT MATERIAL AND CONSTRUCTION				
	Seat type	Seat material	Back seal	Packings	Bonnet seal
SGT	S, C _v 100 %	1"-4": XM-19, 6"-10": 316 + cobalt based hard facing	Graphite	V-ring PTFE	Graphite
SGG	S, C _v 100 %	1"-4": XM-19, 6"-10": 316 + cobalt based hard facing	Graphite	Graphite	Graphite
RGT	R, C _v 50 %	1"-4": XM-19, 6"-10": 316 + cobalt based hard facing	Graphite	V-ring PTFE	Graphite
RGG	R, C _v 50 %	1"-4": XM-19, 6"-10": 316 + cobalt based hard facing	Graphite	Graphite	Graphite
TTT	T, C _v 100 %	316+Xtreme	PTFE	V-ring PTFE	Graphite
TTG	T, C _v 100 %	316+Xtreme	PTFE	Graphite	Graphite

9. sign	Studs	Nuts
D*	B8M	8M
F**	L7M	2HM

10. sign	Actuator mounting face
A	Standard (not applicable with series FG)
-	Special

* Bolting material for stainless steel body.

** Bolting material for carbon steel body.

ACTUATORS, POSITIONERS

For Quadra-Powr® actuators see bulletin 6 QPX 20

For B-series actuators see bulletin 6 B 20

For ND-positioners see bulletin 7 ND90 21

For NE/NP-positioners see bulletin 7 NE/NP 20.

Codes for Finetrol in Nelprof control valve selection software: FI - FTO, FI - FTC, Q - FI, PQ - FI

Subject to change without prior notice.

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