

Neles™ full bore flanged 4-way ball valves Series Y4

The series Y4 flanged ball valve is a full-port 4-way switching valve capable of handling severe services and temperatures to 1000°F (538°C). Uniquely designed for delayed coker service, where the switching operation is essential to keep the process flowing, the Y4 utilizes a scraper-lip seat design to remove deposits from the ball, and is supplied with flanged purge connections for continuous flushing and cleaning of the valve and seat cavities.

The Y4 is constructed with a bottom inlet port, and three separate outlet ports. It is available in 8" through 16" (DN 200 – 400) sizes in ASME Class 300, 600 and 900 configurations.



Features

Full bore design

- Full-port design allows for high flow capacity, resists plugging, and facilitates cleaning.

Self cleaning seats

- Scraper profile seats are mechanically loaded to maintain constant contact with the ball, and remove deposits from the ball surface.

Seat-supported stem-ball

- Single-piece ball and stem with large stem diameter increases strength for high-torque applications.

Purge connections

- Purge connections keep critical areas flushed and free of coke accumulation that could hinder operation.

Top-entry construction

- Top-entry design facilitates maintenance.

Easy to automate

- Valves are available with a variety of electric or manual gear operators and a range of accessories including relays, limit switches, overrides, etc.

Tight shutoff

- Valves are seat-tested to API-598 gas test at 80 psig.

Live-loaded packing option

- A live-loaded packing option utilizes stacked disc springs to maintain a constant pressure on the packing for stricter emissions control.

Specifications

Port type:	Full
Number of ports:	1 Inlet; 3 Outlet
Pressure class:	ASME Class 300, 600 and 900
End connections:	Ring type joint flange facing
Temperature range:	To 1000°F / 538°C
Valve body rating:	ASME B16.34
Max. differential pressure:	100 psi / 6.9 bar*
Size range:	8" through 16" / DN 200 – 400
Body materials:	C5 or C12 Chrome Moly

* For higher pressures and temperatures please consult factory.

Flow data

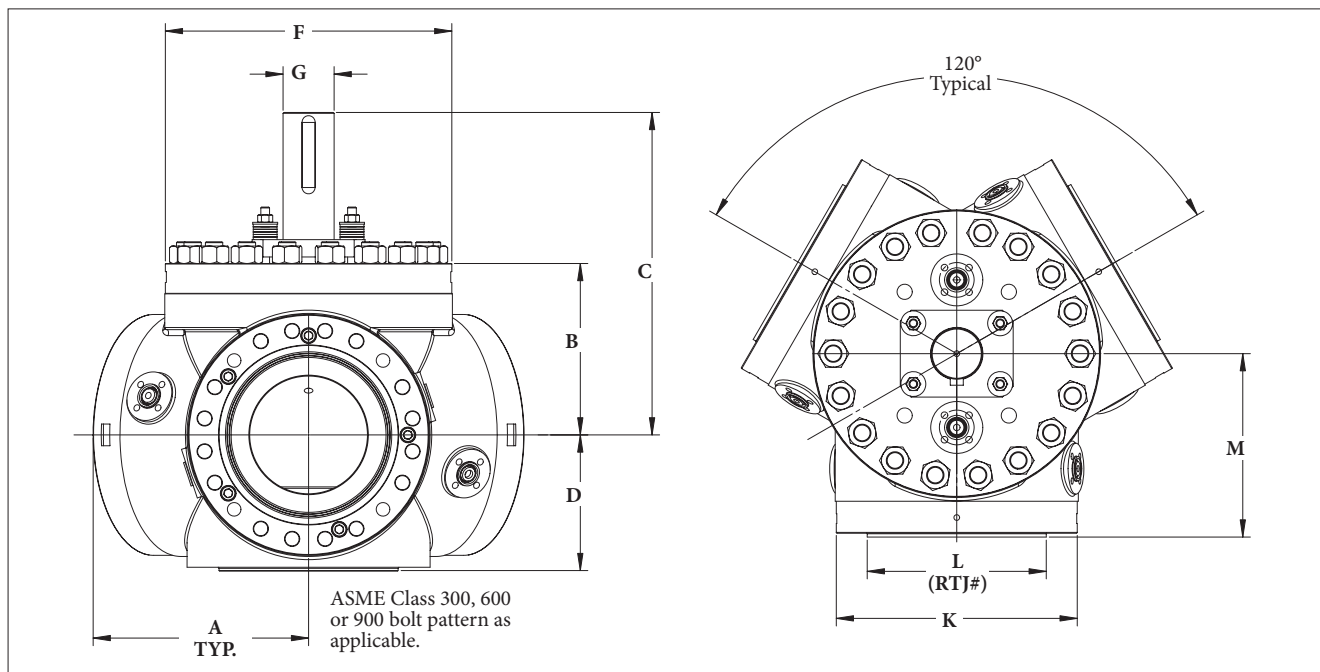
The table below provides flow coefficients for series Y4 valves. C_v and K_v values represent the flow of water at +60°F / +16°C through the valve in U.S. gallons per minute or cubic meters per hour at a pressure drop of 1 psi/ 1 kg/cm².

Valve size		C_v	K_v
Inches	mm		
8	200	3405	2418
10	250	5388	4617
12	300	7838	6716
14	350	8873	7603
16	400	9904	8487

Actuator selection

The table below provides operating torque requirements for Series Y4 valves. Torques are based on services with maximum differential pressures of 100 psi (6.9 bar), and maximum temperatures of 1000°F (538°C). An actuator should be selected that provides torque output greater than the applicable torque values shown in the table. For services with higher temperatures or pressures, please consult the factory.

Valve size		Required torque	
Inches	mm	Ft•Lbs	N•m
8	200	4000	5424
10	250	7200	9763
12	300	12000	16272
14	350	17600	23862
16	400	24600	33353



Series Y4B (Class 300)

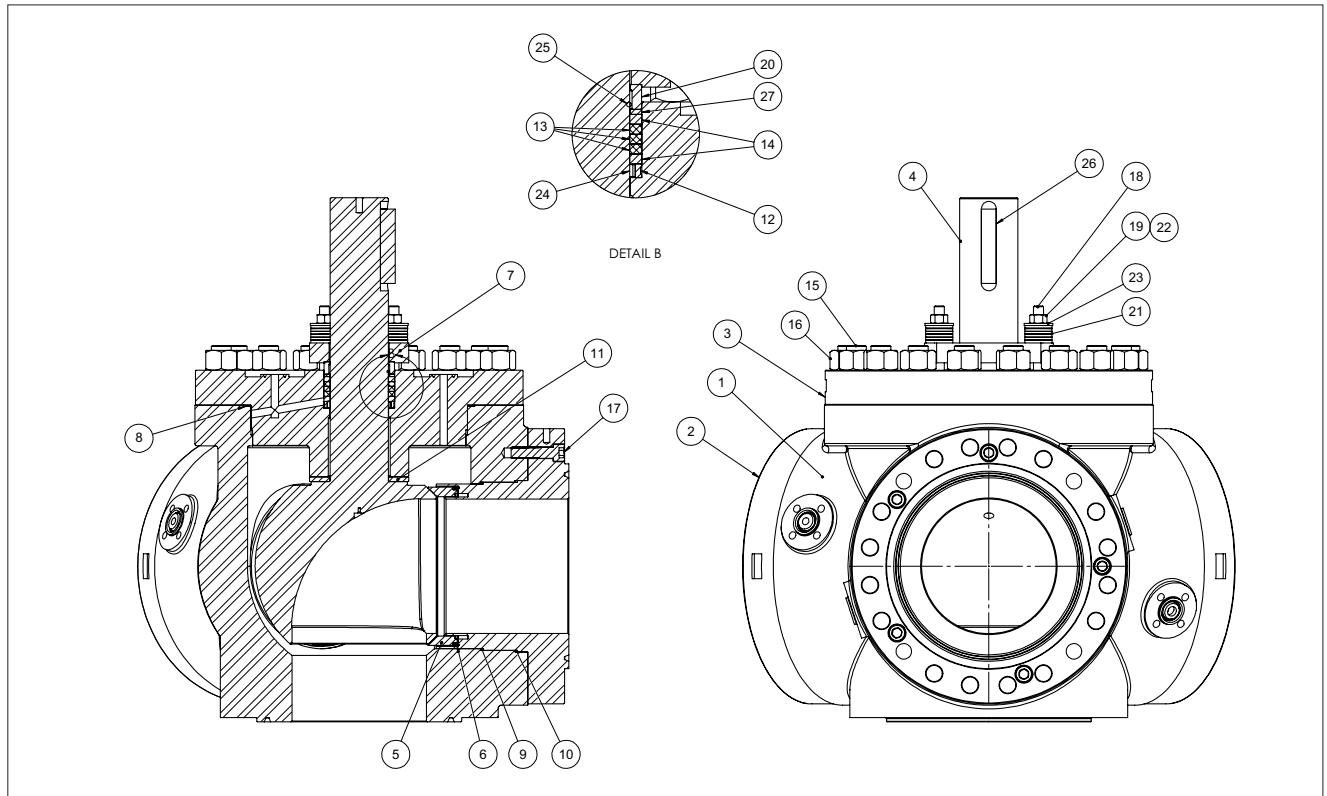
Approximate dimensions, inches (mm)											
Valve size	A	B	C	D	E	F	G	K	L	M	Approx. weight (lbs [kg])
8 (200)	14.2 (360)	11.4 (290)	24.5 (622)	8.8 (224)	8.0 (203)	18.0 (457)	3.74 (95)	16.5 (419)	RTJ#49	12.0 (305)	1650 (748)
10 (250)	17.6 (447)	13.0 (330)	24.25 (616)	10.4 (264)	10.0 (254)	20.8 (528)	3.74 (95)	20.8 (528)	RTJ#53	14.9 (378)	2800 (1270)

Series Y4C (Class 600)

Approximate dimensions, inches (mm)											
Valve size	A	B	C	D	E	F	G	K	L	M	Approx. weight (lbs [kg])
8 (200)	14.2 (360)	11.4 (290)	24.5 (622)	8.8 (224)	8.0 (203)	18.0 (457)	3.74 (95)	16.5 (419)	RTJ#49	12.0 (305)	1650 (748)
10 (250)	17.6 (447)	13.0 (330)	24.25 (616)	10.4 (264)	10.0 (254)	20.8 (528)	3.74 (95)	20.8 (528)	RTJ#53	14.9 (378)	2800 (1270)
12 (300)	14.7 (373)	13.0 (330)	28.0 (711)	12.5 (318)	12.0 (305)	25.7 (653)	5.25 (133)	18.9 (480)	RTJ#57	13.7 (348)	5000 (2268)
14 (350)	23.2 (589.3)	17.4 (443)	50.9 (1292)	14.7 (373)	13.4 (340)	30.3 (770)	7.50 (191)	24.0 (610)	RTJ#61	20.23 (514)	5600 (2540)

Series Y4D (Class 900)

Approximate dimensions, inches (mm)											
Valve size	A	B	C	D	E	F	G	K	L	M	Approx. weight (lbs [kg])
16 (400)	24.7 (627)	19.75 (502)	37.15 (944)	15.7 (399)	13.56 (344)	33.0 (838)	5.88 (149)	27.75 (705)	RTJ#66	21.13 (537)	7900 (3580)



Bill of materials and parts list

Part no.	Part name	Material
1	Body	ASTM A217 Gr C5 or C12 Chrome-Moly
2	Insert	ASTM A217 Gr C5 or C12 Chrome-Moly
3	Cover	ASTM A217 Gr C5 or C12 Chrome-Moly
4	Stem ball	ASTM A487 Gr CA6NM (HC or HVOF)
5	Seat	Stellite®
6	Seal	Inconel®
7	Gland follower	ASTM A217 Gr C5 or C12 Chrome-Moly
8	Cover seal	Graphite / Flexitallic®
9	Inner insert seal	Graphite or Graphite / Flexitallic®
10	Outer insert seal	Graphite or Graphite / Flexitallic®
11	Thrust bearing	Stellite
12	Lantern ring	Chrome-Moly
13	Gland packing	Graphite DM Ring
14	Gland packing	Braided Graphite
15	Stud	ASTM A193 Gr B16
16	Hex nut	ASTM A194 Gr 2HM
17	Socket head capscrew	ASTM A193 Gr B16
18	Stud	ASTM A193 Gr B16
19	Hex nut	ASTM A194 Gr 2HM / Gr 7
20	Comp. ring	ASTM A-387 GR. 9 CL. 2
21	Disc spring	N077178
22	Guide bushing	410 Stainless Steel
23	Washer	410 Stainless Steel
24	Ball retaining clip	Stellite®
25	Retaining ring	X-750
26	Key	ASTM A-564 GR. 630 H1150M
27	Comp. ring lower	ASTM A-397 Gr. 9 Cl. 2

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 Inconel is a registered trademark of Inco.
 Flexitallic is a registered trademark of The Flexitallic Group

WARNING:

As the use of the valve is application specific, a number of factors should be taken into account when selecting a valve for a given application. Therefore, some of the situations in which the valves are used are outside the scope of this manual. If you have any questions concerning the use, application or compatibility of the valve with the intended service, contact Valmet for more information.

How to order

The Series Y4 ball valve code is made of catalog numbers that fully describe variations of the valve.
To specify, make a selection from each of the boxes shown below.

Example:

1	2	3	4	5	6	7	8	9
Y4	C	H	08	U	H	D	03	-

1	Valve series
Y4	4-way switching valve

2	Pressure class
B	ASME Class 300
C	ASME Class 600
G	ASME Class 900
Y	Special

3	Construction
H	High temperature (to +1000 °F / +538 °C).

4	Valve size
08	8" / 200 mm
10	10" / 250 mm
12	12" / 300 mm
14	14" / 350 mm
16	16" / 400 mm

5	Body material
M	ASTM A217 Gr C5 Chrome-Moly
U	ASTM A217 Gr C12 Chrome-Moly

6	Ball material
H	ASTM A487 Gr CA6NM hard chrome plated
Y	Special

7	Seat/Seat seal
D	Stellite/Inconel 718

8	Seals
03	Graphite

9	Model
-	-

Subject to change without prior notice.

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