

# Neles™ trunnion mounted ball valve

## Series D

Neles series D is a trunnion mounted ball valve for demanding on/off and control applications. Valve series incorporates several decade experience of metal-to-metal seat technology, application based seat selection and overall robust construction.

Equipped with Neles B1 series actuator and VG9000™ intelligent safety solenoid the valve assembly delivers high availability in demanding safety valve applications upto SIL 3.

For control applications valves can be equipped with top of the line rotary valve noise attenuation trim options - including the new Q2-trim™ for gas applications.

Valves are well suited in various of oil and gas, refining, petrochemical and chemical industries - conforming to today's demanding requires of safety and emissions.

### APPLICATIONS

- ESD / ESV service (upto SIL 3)
- HIPPS
- De-pressurizing and blow down service
- Low noise and anti-cavitation
- Cryogenic service
- High temperature service
- High cycle and switching service
- Oxygen construction for gaseous oxygen service
- Molecular sieves
- Solids handling
- Chemical and petrochemical plants
- Oil and gas production
- Steam
- Natural gas, LNG, LPG
- Power plant

### DESIGN FEATURES

#### Size range

- NPS 02" – 36" (DN 50 – 900)

#### Pressure classes

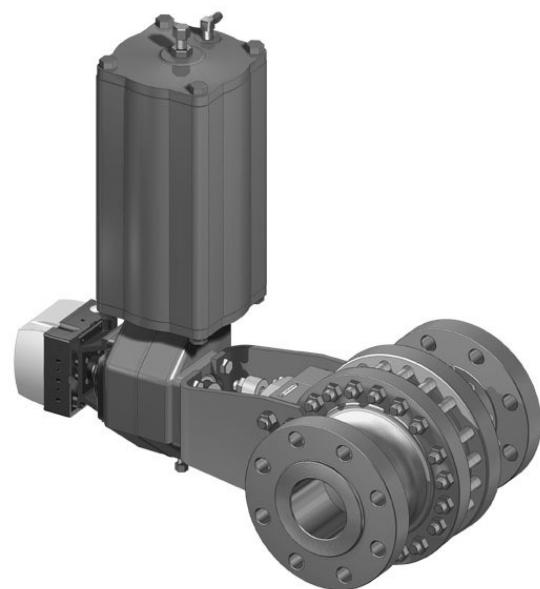
- ASME Class 150, 300 and 600

#### 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



#### 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 extensive selection of hard facings for different applications and fluids
- Two way tight with double seated design
- Double Block and Bleed seat design

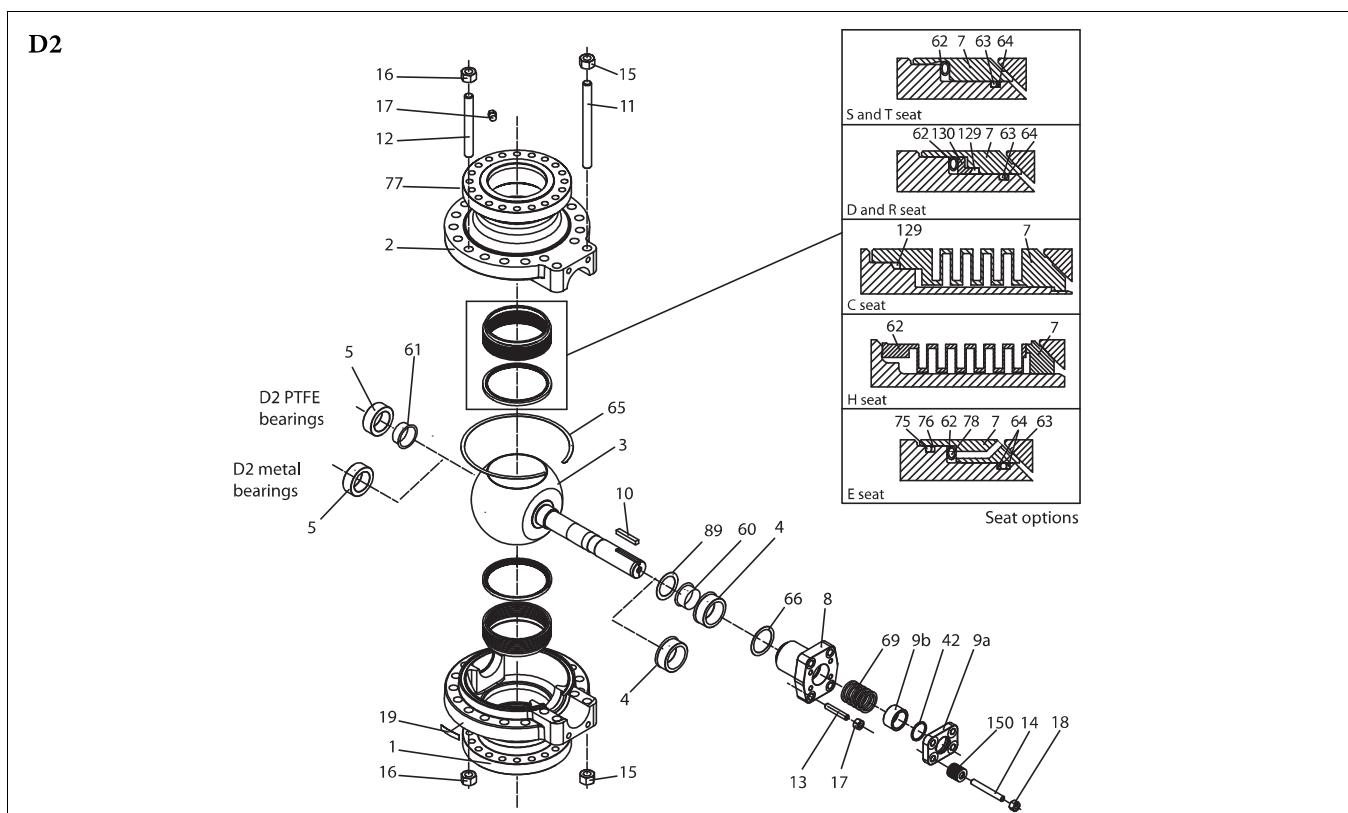
#### Control service

- 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 noise reduction Q2-trim for gas applications
- 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.
- Possibility of on-line condition monitoring and diagnostics of safety valve assembly
- Valve design makes it suitable for solids and fibrous fluids

## Exploded views and lists of parts

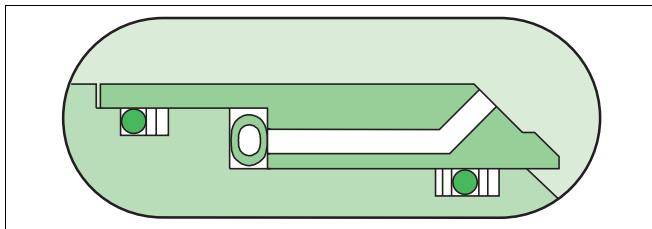


Item	Part description	Material
1	Body half (female)	Stainless steel, ASTM A 351 gr. CF8M
2	Body half (male)	Stainless steel, ASTM A 351 gr. CF8M
3	Ball	Stainless steel, ASTM A 351 gr. CF8M + Hard chrome
4	Trunnion bearing	Stainless steel, AISI 316 (Cobalt based alloy bushing in high temperature construction)
5	Trunnion bearing	Stainless steel, AISI 316 (Cobalt based alloy bushing in high temperature construction)
7	Ball seat	Stainless steel, AISI 316 + Cobalt based alloy
8	Bonnet	Stainless steel, ASTM A 351 gr. CF8M
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
12	Stud	ASTM A 193 gr. B8M
13	Stud	ASTM A 193 gr. B8M
14	Stud	ASTM A 193 gr. B8M
15	Hexagon nut	ASTM A 194 gr. 8M
16	Hexagon nut	ASTM A 194 gr. 8M
17	Hexagon nut	ASTM A 194 gr. 8M
18	Hexagon nut	ASTM A 194 gr. 8M
19	Identification plate	Stainless steel, AISI 304
42	Retainer ring	ASTM A 479 gr. XM-19
60*	Bearing strip	PTFE on stainless steel net, standard construction
61*	Bearing strip	PTFE on stainless steel net, standard construction
62	Spring	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	Seal strip	Graphite
66	Sheet ring	Graphite
69	Packing ring	Graphite
75	O-ring	Viton GF
76	Back-up ring	PTFE
77	Hexagon plug	Stainless steel, AISI 316
78	Spring pin	Stainless steel
89*	Thrust bearing	PTFE on stainless steel net
129	Back seal	Graphite
130	Set ring	Stainless steel, AISI 316
150	Disc spring set	EN10088-1.8159 + ENP

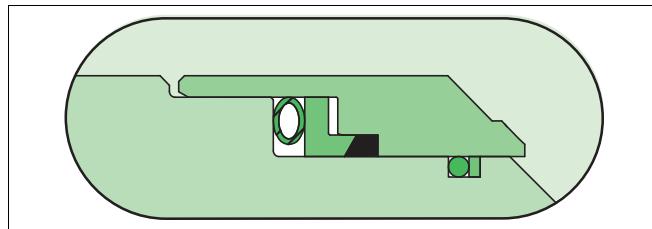
Note: \* Only in PTFE bearing construction.



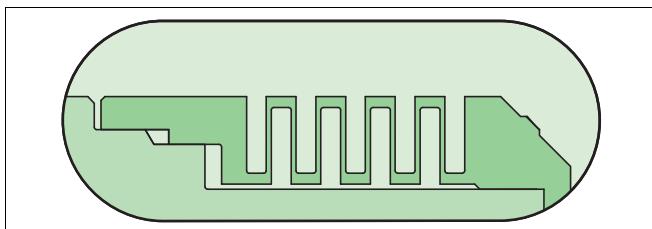


**Control metal seat design, seat code E**

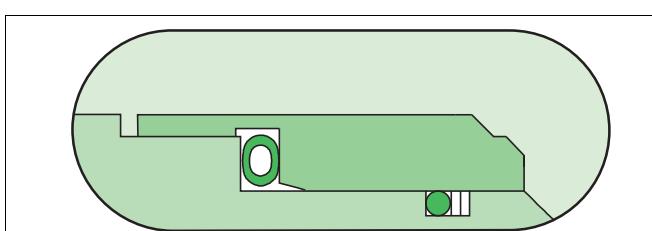
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + Cobalt based alloy.  
 O-ring: Viton GF  
 Spring: UNS N07750  
 Temperature range: -30 ... +200 °C / -22 ... +390 °F.  
 The control metal seat features the ejector seat principle providing non-contact in control service.  
 This seat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

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

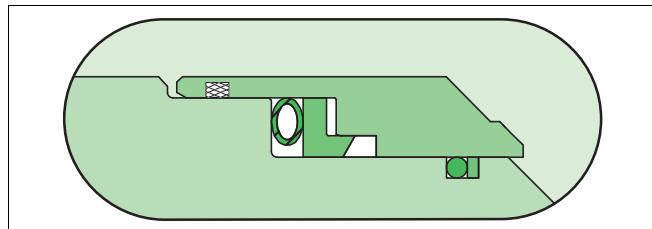
Size range: DN 50 ... 900 / 2" ... 36"  
 Seat material: AISI 316 + Cobalt based alloy.  
 Seat seal: Viton GF / graphite  
 Spring: UNS N07750  
 Temperature range: -30 ... +200 °C / -22... +390 °F.  
 The fire safe metal seat is most suitable for high pressure drop applications and for fluids containing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

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

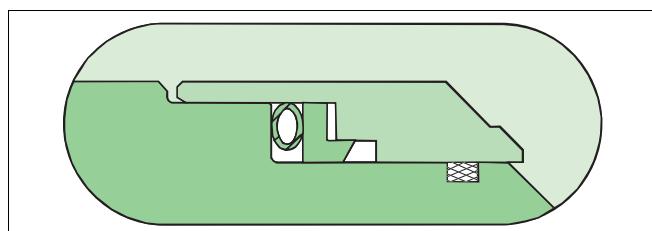
Size range: DN 50 ... 600 / 2" ... 24"  
 Seat seal: Graphite  
 Bellows seat material: gr. 660/F6NM + hard facing  
 Temperature range: -200 ... +400 °C (+600 °C) /  
 -330 ... +750 °F (+1110 °F).  
 The Cobalt based alloy seat is preloaded with a bellows ring made of special stainless steel. The bellows 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 the 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 ... +200 °C / -22 ... +390 °F.  
 The metal seat is most suitable for high pressure drop applications and for fluids containing impurities.

**Solids proof metal seat, seat code K**

Ball seat: Stainless steel + hard facing.  
 Seat seal: Viton GF / graphite  
 Spring: UNS N07750  
 Temperature range: -30 ... +200 °C / -22 ... +390 °F.

**High temperature solids proof metal seat, seat code K**

Ball seat: Stainless steel + hard facing.  
 Seat seal: Graphite/graphite  
 Spring: INCONEL® 625.  
 Temp. range: -50 ... +450 °C / -60 ... +840 °F









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