NCBV Series

Non contact top entry ball valve

Description

Ringo Válvulas NCBV non contact top entry ball valves series are designed and produced according to API 6D/ ISO 14313, API 6A, API 6DSS / ISO 14723, BS5351, ASME B16.34 and other international standards as well as customer specifications on request.

These valves are built of a single piece body with a bolted bonnet. This design is a robust construction that provides a good performance, smooth operation, minimum pressure loss, high Cv values and also allows bonnet disassembly on site to perform inspection, maintenance or repair without removing the valve body from the pipeline.

The Top-entry valve types have a major application when a frequent maintenance must be carried out and the valve cannot be easily removed from the pipe. In this valve series, all the internals can be easily dismounted by loosening the bonnet of the valve and removing the ball, the seat-holder and the shaft.

Valves can be supplied manual operated or with any kind of operator for ESDV, SDV, BDV, MOV, GOV or LBV functions (electric drive, pneumatic, hydraulic, electro hydraulic or pneumo-hydraulic actuator)

Manufacturing range:

Valve Size-pressure rating

	SIZE - API 6D VALVES																	
RATING	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	36"	40"
150#																		
300#																		
600#																		
900#																		
1500#																		
2500#																		

Remark: Class 4500# and other special sizes/ratings are available on request.

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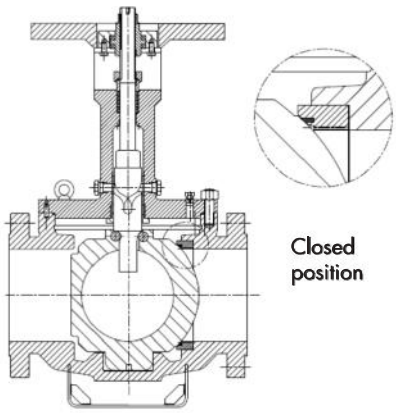
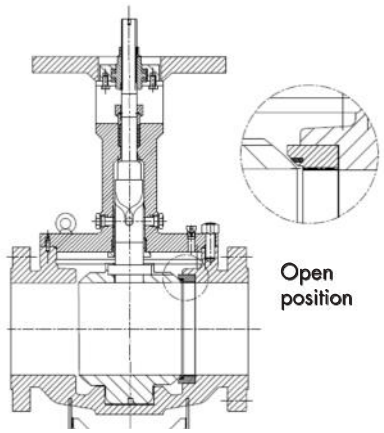
Design characteristics range

Design Temperature	Up to 850°C
Connection types	Flanged: RF, RTJ, FF according to ASME B16.5, B16.47 BW according to ASME B16.25 SW according to ASME B16.11 NPT according to ASME 1.20.1 HUB ends (supplied with or without clamps) Other connections according to NORSOK, GOST, DIN are available on request DIN are available on request

Working Principle

NCBV Ball Valves have a ball which is supported by a bottom trunnion. When the bore is oriented to the pipeline direction, valve is in the open position, allowing the fluid pass through. The stem start moving down and due to the channels machined on it in spiral it turns 90° forcing the ball to turn the same. Then the channels are machined straight and the stem cannot turn moving only down.
In this situation due to an angled surface, the stem pushes the ball that pivots on the bottom trunnion and contacts the seat. Ball only contacts the seat in this position then there is not friction during the rest of the stroke.





Ringo Válvulas can supply NCBV ball valves in two configurations:

- Full Bore: Size of the trim is the same of the pipeline. In this case valve is suitable for pigging. Special large bores for particular PIG dimensions are available on request.
- Reduced bore: Size of the trim is smaller than the pipeline size. Number of reduced sizes is according to API 6D unless otherwise is agreed for the particular job.

Ringo can supply two different ball valves seat configuration: soft or metal seats.

A) Soft seats

The seat assembly consists in an outer metallic seat carrier with a soft seat insert.
The soft insert is located into a groove in the metallic seat carrier.

MATERIAL	TEMPERATURE	PRESSURE
PTFE (VIRGIN OR FILLED)	From -100°C to +220°C	Up to 300#
DEVLON V API	From -100°C to +150°C	From 300# up to 900#
PEEK	From -100°C to +260°C	From 900# up to 2500#
KELF	From -250°C to +150°C	Up to 900#
VITON	From -20°C to + 200°C	Up to 600#

B) Metal seats:

When there is presence of solid particles in the fluid that could damage the soft seat insert or for either high temperature services or high pressures, where soft insert cannot withstand it. Seats consist of a metallic ring where surface in contact with the ball is hardfaced with Tungsten Carbide, Chromium Carbide, Stellite etc., achieving a hardness up to 74 HRC (Tungsten Carbide). This makes the design long durable and reliable and able to achieve classes C & D leakage class metal seated.

MATERIAL	TEMPERATURE	HARDNESS
STELLITE	< 500°C (932°F)	36-45 HRC
TUNGSTEN CARBIDE	< 540°C (1004°F)	70-74 HRC
CHROMIUM CARBIDE	< 850°C (1562°F)	65-68 HRC

Materials

Body and trim materials

Ringo Válvulas ball valves are supplied with all material types to fulfill all the different combinations of service fluid, design pressure and temperature. Valves can be supplied either forged or casted based on customer specifications. Following materials are under the scope of supply of Ringo:

- Carbon Steel valves
- Low temperature carbon steel
- High temperature alloy steel
- Stainless Steel Valves
- Super Austenitic Stainless Steel
- Duplex Stainless Steel
- Super Duplex Stainless Steel
- Ni Alloy
- Titanium
- Aluminum bronze

NCBV can be supplied also with CRA´s cladding (such as stainless steel, monel or Inconel) on dynamic and/or static sealing areas as well as full cladding for all wetted parts. See below a table with the main guidelines of material selection:

SERVICE	TEMPERATURE	BODY MATERIAL	TRIM MATERIAL
General Purpose	-29° to 150°	A105	A105+ENP
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Moderate Corrosive	-29° to 150°	A105	316SS or 321SS
Low Temperature	-46° to 150°	LF2	LF2+ENP
High Corrosive	-29° to 150°	F316/F321/F51	F316/F321/F51
Sour service	-29° to 150°	A105	A105+ENP
Offshore	-29° to 150°	F51	F51
Seawater	-29° to 150°	F44	F44
Cryogenic	-196° to 150°	F316/F321	F316/F321
High Temperature	-29° to 650°	F91/F9/F11/F22	F6A Cl 2
High Temperature/ Corrosive Service	-29° to 850°	Inconel 625	Inconel 625

The above table is indicative and intended only for information.

Actuation

Ringo Válvulas covers all the possibilities regarding ball valves actuation. Valves can be supplied with the following operator types:

- Manual: handwheel, gear operated
- Electrical actuator
- Pneumatic actuator
- Gas Over Oil actuator
- Direct Gas actuator
- Hydraulic actuator
- Electro-hydraulic actuator

Bare shaft with ISO 5210 flange for actuator coupling suitable either for actuator to be assembled by customer or actuator to be supplied by customer and assembled, regulated and tested by Ringo.