



Application

Ball valves are isolating valves for transportation of the following fluids: gas, water, petroleum and petroleum products, and other fluids by agreement.

DN	200 - 1400	NPS	8 - 56
PN	16 - 400	Class	150 - 2500

Service temperature

Ambient temperature: -60 °C to +80 °C
Service fluid temperature: -46 °C to +220 °C

Technical description

Construction of valve body

The body consists of three parts made of wrought semi-finished products, individual parts are connected:
- in a dismantlable way by means of a bolted joint
- in an indivisible way by means of a welded joint

Construction of the ball

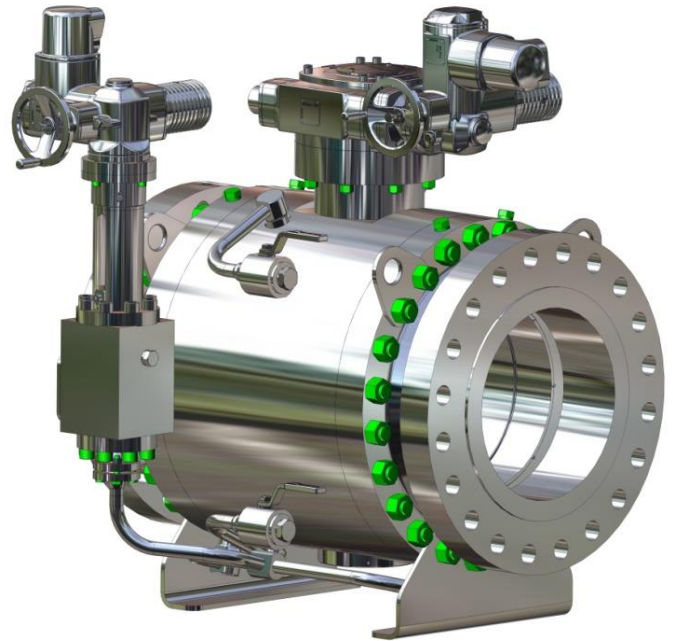
- up to DN 400: ball is a forging made of 13%Cr steel, hardness 300 HB
- bigger DN values: ball is a forging made of carbon material, seating surfaces are covered with any suitable weld overlay

Construction of the seats

Seats are forgings made of 13%Cr steel, hardness 250 HB

Non-standard configuration of the ball and the seats

This construction allows to meet the specific requirements of the customer for function of the valve. For instance, replacement of the downstream seat from the piping without removing the ball valve from the piping.



Operation of ball valves with retractable seats

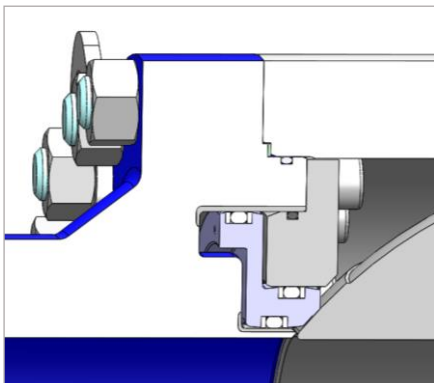
Rules to be followed:

- the ball can be turned (opened/closed), the ball valve can be opened only with seats „retracted” from the ball
- in CLOSED position, seats „moved” to the ball
- in OPEN position, seats „moved” to the ball or „retracted” from the ball

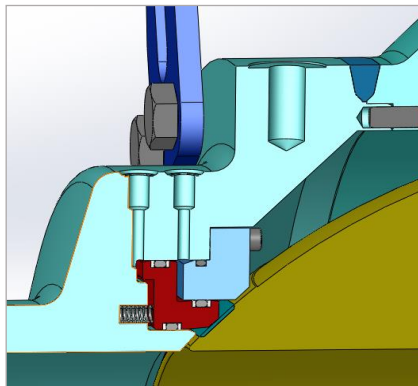
Operation

- manual
- operation by electric actuator
- operation by hydropneumatic actuator (gas-over-oil)
- operation by lever with counterweight and hydraulic cylinder

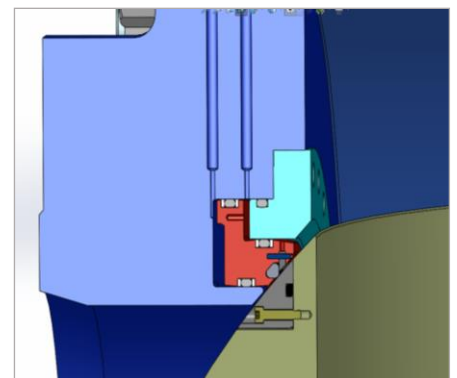
Standard design to DN 400, ball and seat, metal-to-metal seated



Standard design over DN 400, ball with weld overlay and seat, metal-to-metal seated



Non-standard design



Possible ball valve accessories

- draining
- venting
- sealant injection to stem
- stem extension
- relief safety valve in the ball for liquid fluids
- underground set
- relief device
- pup pieces

Testing

As required by the customer, according to API, ASME, EN or other standards.

- pressure tests
- functional and operability tests
- non-destructive tests and examinations

The scope of testing is specified by requirements of the customer.

Inspection certificates according to EN 10204, type 3.1 or 3.2.

Connection to the piping

- flanged ends (RF, RTJ) according to ASME B16.5, ASME B16.47 or EN 1092-1, GOST 12815-80, etc.
- butt-welding ends (BW) according to ASME B16.25 or EN 12 627
- flanged ends with counterflanges, bolting material and sealing elements
- butt-welding ends with pup pieces
- combined with one flanged end and one welding end

Face-to-face and end-to-end dimensions

- API Spec. 6D/ISO 14313
- ASME B16.10
- EN 12982 (butt-welding ends)
- EN 558-1 (flanged ends)
- Non-standard configurations agreed between manufacturer and customer

Minimum valve bore

- full bore according to API Spec. 6D/ISO 14313
- reduced bore according to API Spec. 6D/ISO 14313 with bore reduction as required by the customer

Installation

- possibility of installation into any piping (horizontal, inclined, vertical), rules applicable to installation of the operating device shall be followed
- possibility of buried installation, in a shaft, or normal above ground installation
- ball valves equipped with a foundation plate and lifting eyes as a standard

Material

The selection of materials of individual components depends on service conditions (fluid, pressure, temperature). For pressure-containing parts within the meaning of definition in API 6D, materials according to this standard with inspection certificates 3.1, by request with inspection certificates 3.2 according to EN 10204. For other parts, materials and inspection certificates according to manufacturer's standard or customer's specification.

Advantages

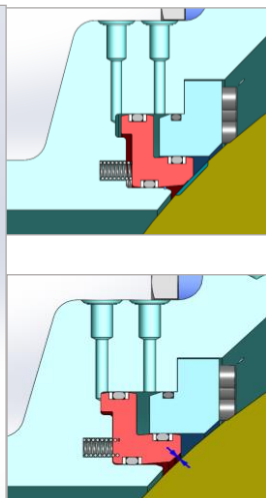
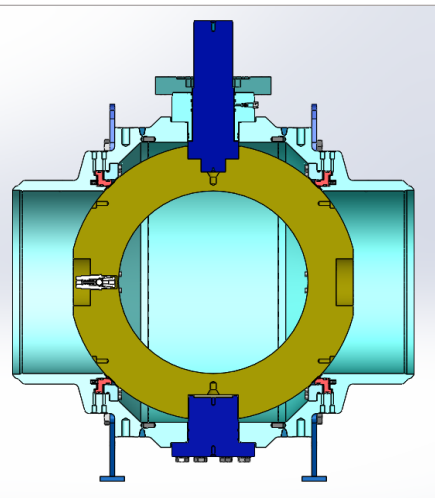
The new design eliminates FRICTION when the ball is turning. The seats are „retracted“ from the ball when the ball is turning.

This solution brings:

- higher thrust of the seats with respect to the ball
- wider seating surface
- zero leakage
- low operating torques
- high reliability and high performance
- elimination of the risk of wear due to friction
- elimination of the risk of wear due to fluid flow
- possibility of using smaller actuators

A ball valve with retractable seats and metal-to-metal seating surfaces is able to provide leakage rate A according to API 6D.

Design of a ball valve with retractable metal-to-metal seats
CLOSED position



Design of a ball valve with retractable metal-to-metal seats
OPEN position

