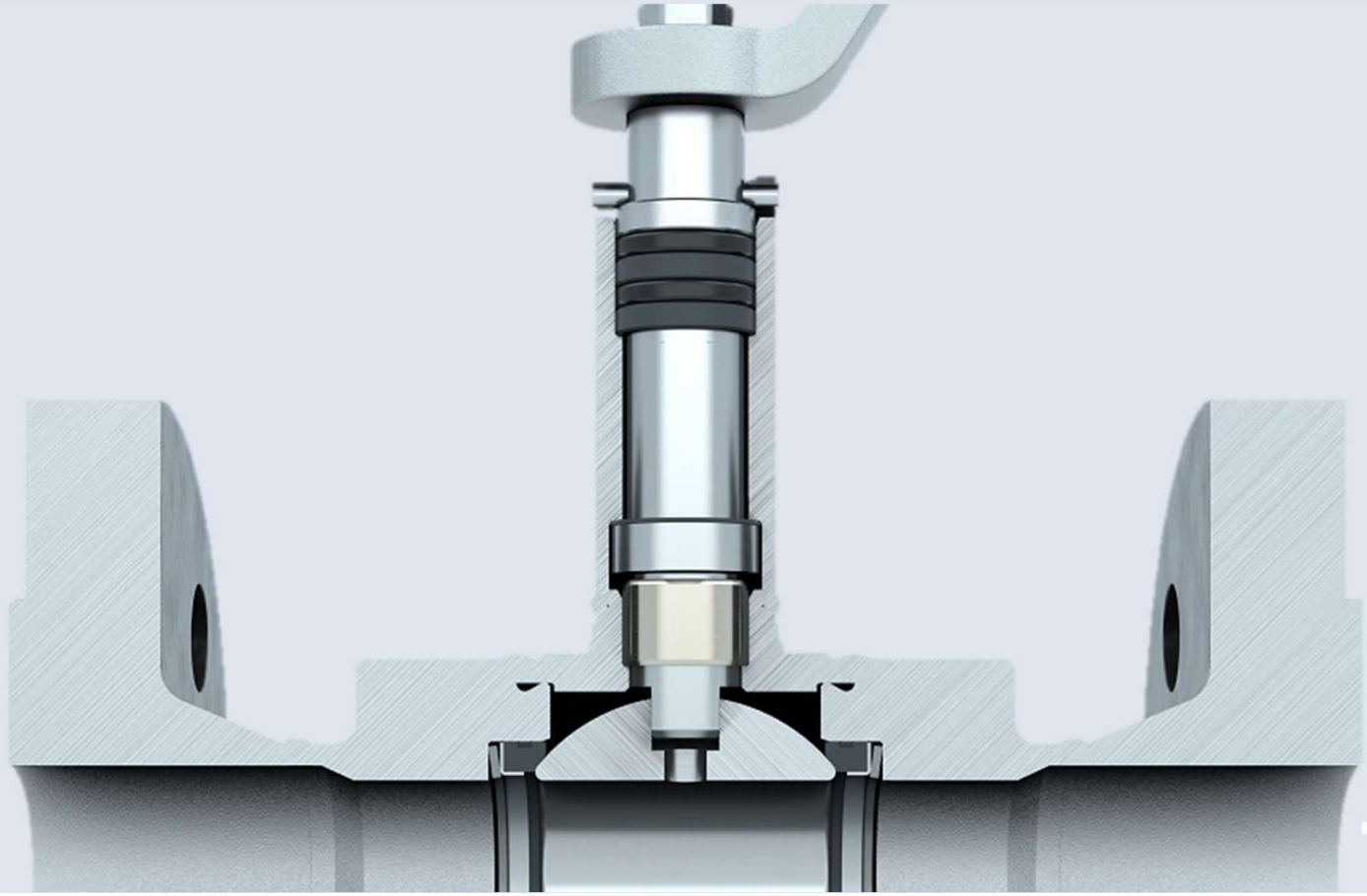
KHO MONOBALL BALL VALVE:



MONOBALL KHO

Design overview Monoball KHO - Standard

The Monoball KHO standard designs:

- Size range DN15 – DN125
- Fully welded
- Connections: Flanges, weld ends or flange /weld end
- Pressure classes PN16 and 40
- Operation with hand lever
- Floating ball
- Full and reduced bore
- Temperature range -5°C to +200°C

Construction Monoball KHO:

- Pre - stressed sealing elements with belleville washer
- Tripple shaft sealing, beginning with DN80 4-fold sealing
- Robust body carbon steel casted
- Operating shaft and ball stainless steel
- Blow out safe stem
- KACP coating until DN50, Black painting RAL9017 beginning with DN65
- EN488:2019 and EHP003 certified, meets requirements of AGFW FW401 – part5

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MONOBALL KHO DN15 - 125

Monoball KHO flanged ends:

- » Flanges acc. EN1092-1
- » Body length acc. EN558-1, GR1
- » Pressure classes PN16 and 40
- » Solid ball in stainless steel until DN65
- » Hollow ball with guiding tube in stainless steel from DN80 to DN125
- » Leakage rate A acc. EN12266-1, P10, P11 and P12

Monoball KHO weld ends:

- » Weld ends acc. AGFW FW401 – part 5
- » Body length acc. manufacturer standard
- » Pressure classes PN16 and 40
- » Solid ball in stainless steel until DN65
- » Hollow ball with guiding tube in stainless steel from DN80 to DN125
- » Leakage rate A acc. EN12266-1, P10, P11 and P12

Monoball KHO flanged / weld end:

- » Weld end acc. AGFW FW401 – part 5, flange acc. EN1092-1
- » Body length acc. manufacturer standard
- » Pressure classes PN16 and 40
- » Solid ball in stainless steel until DN65
- » Hollow ball with guiding tube in stainless steel from DN80 to DN125
- » Leakage rate A acc. EN12266-1, P10, P11 and P12

MONOBALL KHO

The Monoball KHO design with ISO TOP flange:

- Size range DN80 – DN125,
- Body carbon steel, fully welded
- Floating ball
- Flanges acc. EN1092-1
- Weld ends acc. AGFW FW401 – part 5
- Body length acc. manufacturer standard
- Pressure classes PN16 and 40
- Hollow ball with guiding tube in stainless steel from DN80 to DN125
- Certified acc. EN488:2019 and EHP003
- With ISO TOP flange acc. EN ISO5211
- Full and reduced bore
- Leakage rate A acc. EN12266-1, P10, P11 and P12

The Monoball KHO design weld / threaded end:

- Size range DN15, 20R15, 25R20
- Body carbon steel
- Floating ball
- Threaded end acc. ISO 228-1 with cap and chain
- Weld end acc. AGFW FW401 – part 5
- Body length acc. manufacturer standard
- Pressure class 40
- Solid ball stainless steel
- Fully welded
- Certified acc. EN488:2019 and EHP003
- Full and reduced bore
- Leakage rate A acc. EN12266-1, P10, P11 and P12
- Temperature range -5°C to +200°C

MONOBALL KHO

Design overview Monoball KHO – Underground design

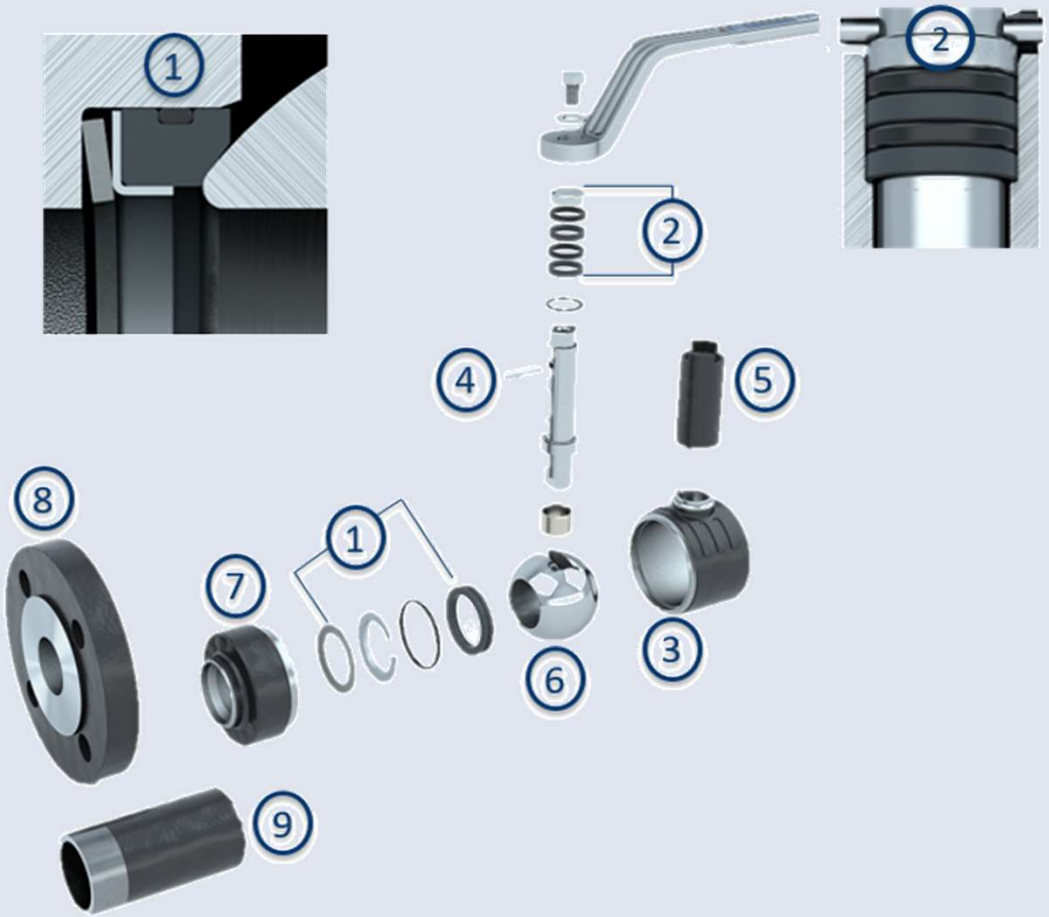
The Monoball KHO underground design:

- Size range DN25 – DN125 operation with socket key
- Size range DN150 – DN250 → 2024
- Body carbon steel
- Floating ball
- Pressure class PN25/40
- Connection: weld ends
- Full bore
- Temperature range -5°C to +200°C

Construction Monoball KHO:

- Pre - stressed sealing elements with stainless steel belleville washer
- Tripple shaft sealing
- Robust housing out of casting material
- Operating shaft stainless steel
- Blow out safe stem
- Fully welded
- HDPE Isolation on demand
- With pipe extension 1500 and 1800mm depending on line size
- EN488:2019 and EHP003 certified, meets requirements of AGFW FW401 – part5

CONSTRUCTION



Construction Monoball KHO:

- (1) Sealing system on the ball
- (2) Stem sealing
- (3) Middle piece body
- (4) Operating stem
- (5) Dome pipe
- (6) Stainless steel ball
- (7) Body piece
- (8) Flange end
- (9) Weld end

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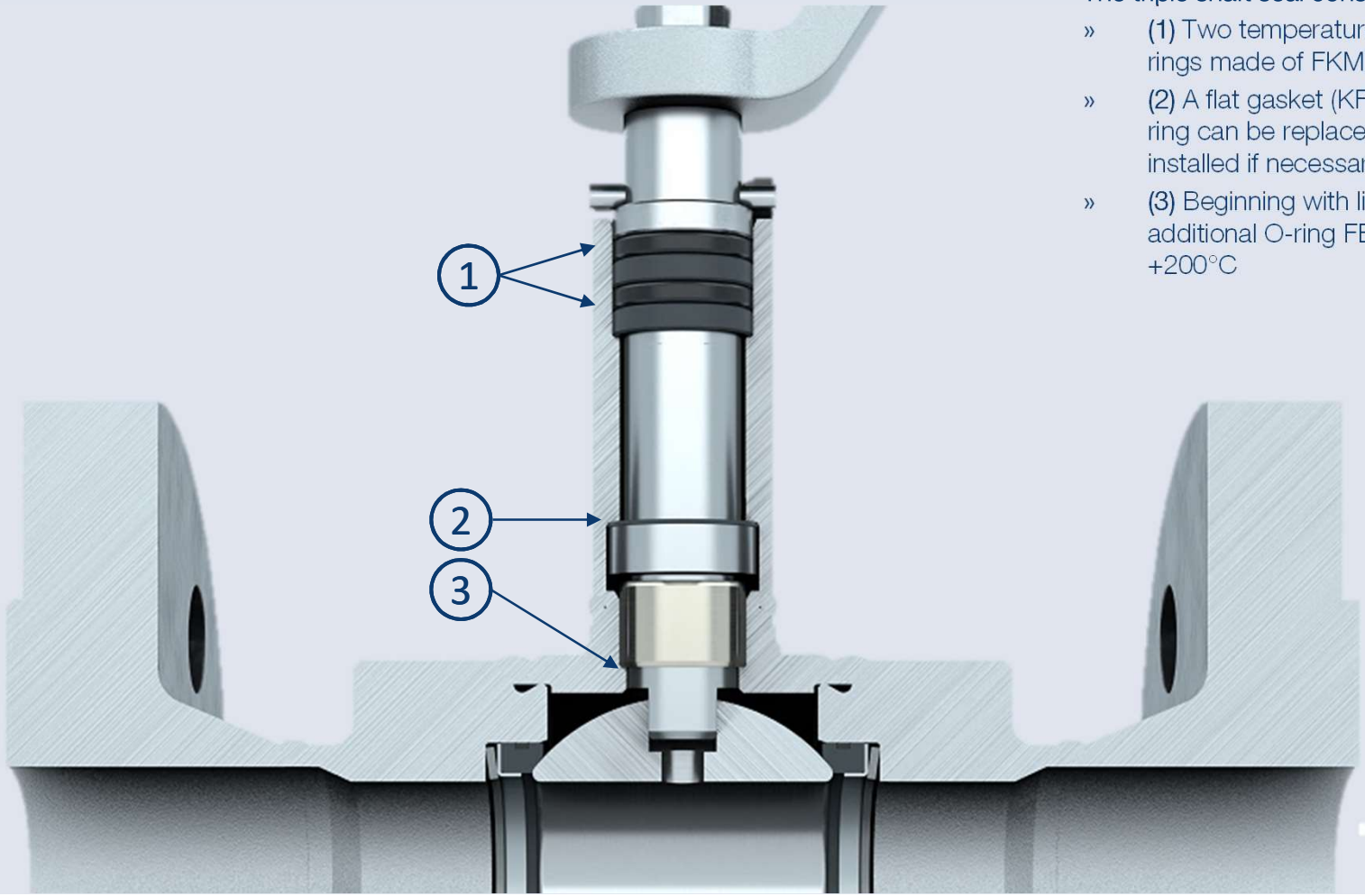
STEM SEALING



The triple shaft seal consists of:

- (1) Two temperature-resistant O-rings made of FKM up to +200°C
- (2) A flat gasket (KFC-25) - Top O-ring can be replaced when installed if necessary
- (3) Beginning with line size DN80, additional O-ring FEPM up to +200°C

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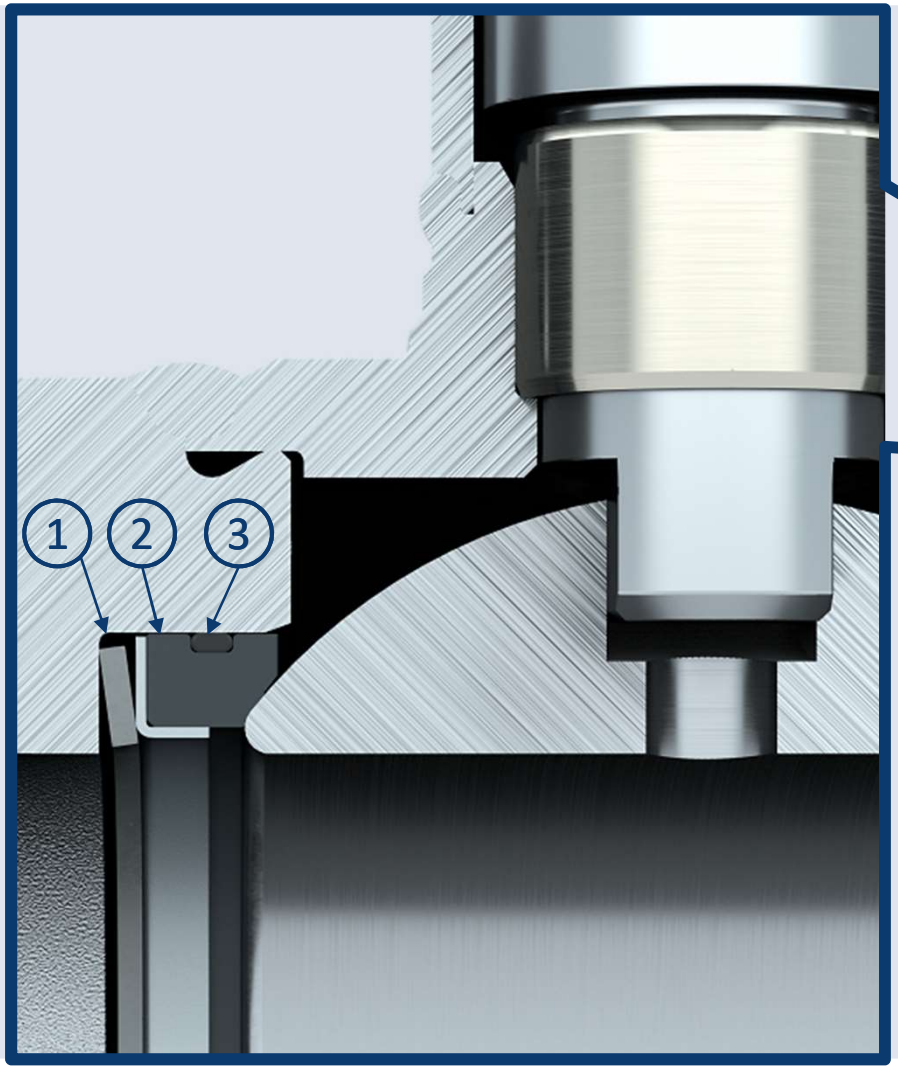
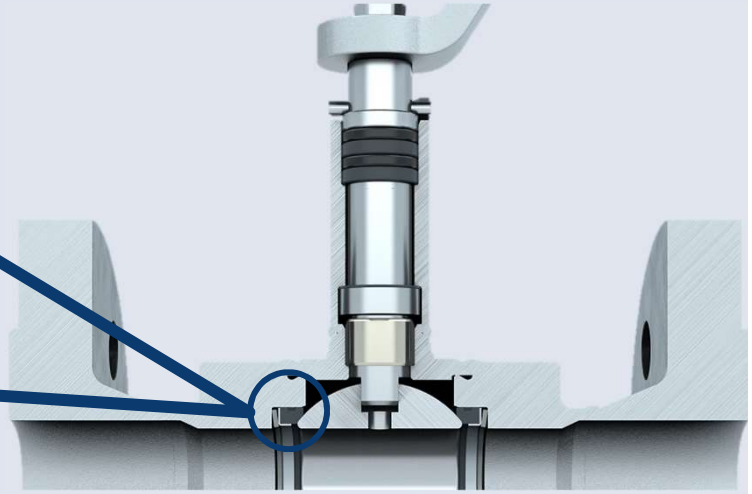
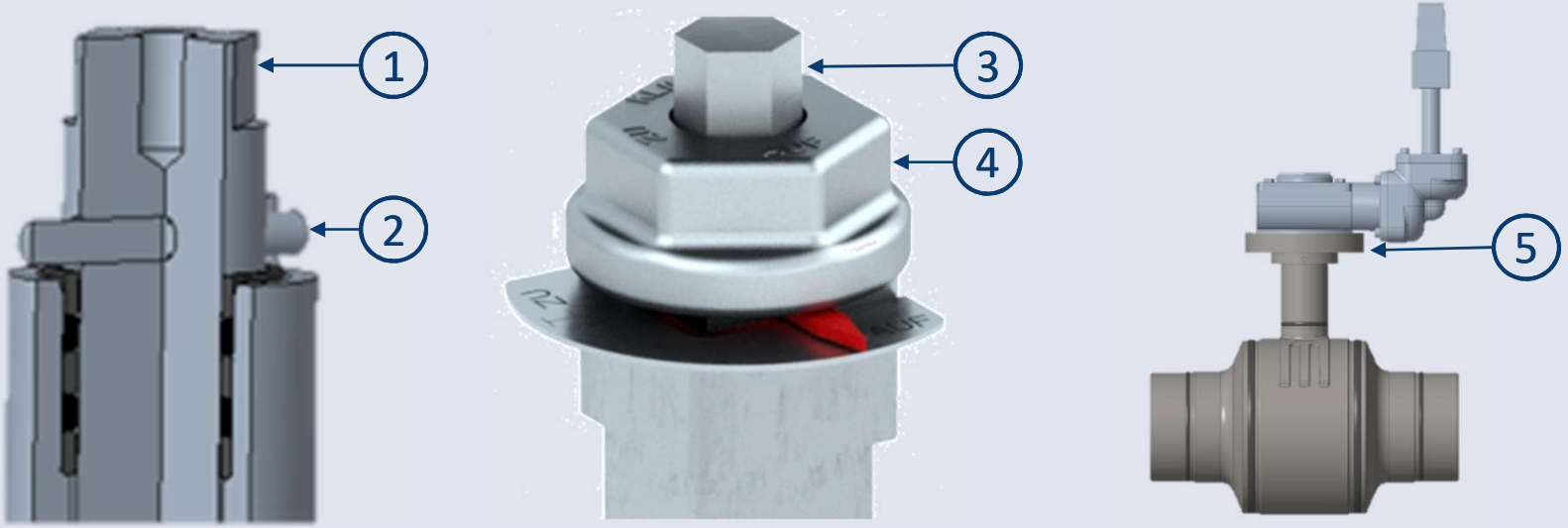
SEALING SYSTEM





- (1) Belleville washer applies constant contact pressure on the ball
- (2) Seal ring PTFE with reinforced graphite -5°C to +200°C
- (3) An integrated "backup O-ring" AFLAS in the sealing seat prevents medium from entering the ball valve dead space
- The system is resistant to temperature and pressure fluctuations

SHAFT END AND STOPP



(1) Versions with hand lever → square end

(2) Valve stopp by a robust pin → the stopp pin simultaneously shows the position (OPEN/CLOSED)

(3) Underground versions up to DN80 with hexagonal end and counter support (4) to accommodate a mobile slip-on gear

(5) If a mechanical gearbox is installed, the KHO is equipped with a ISO TOP flange

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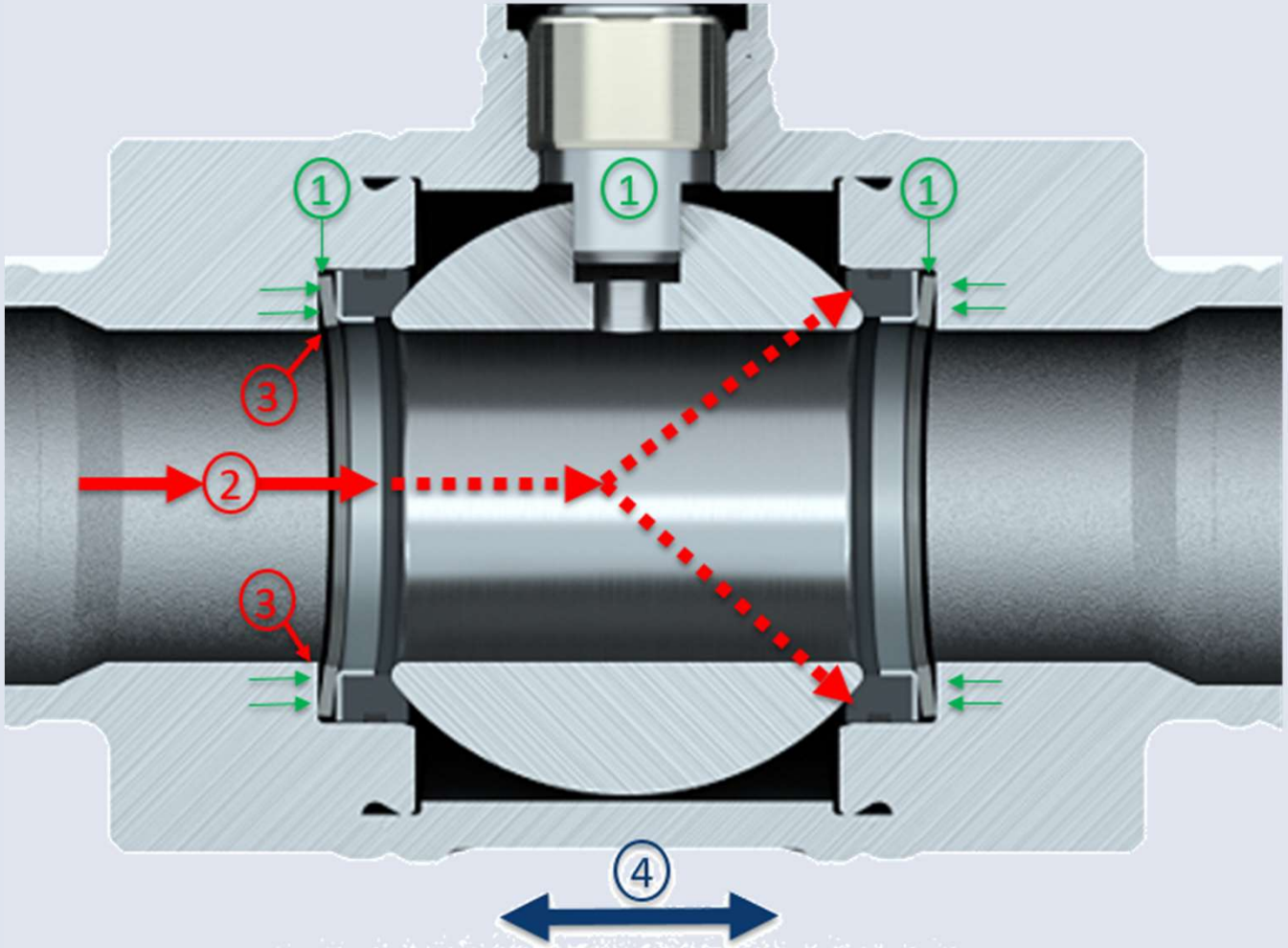
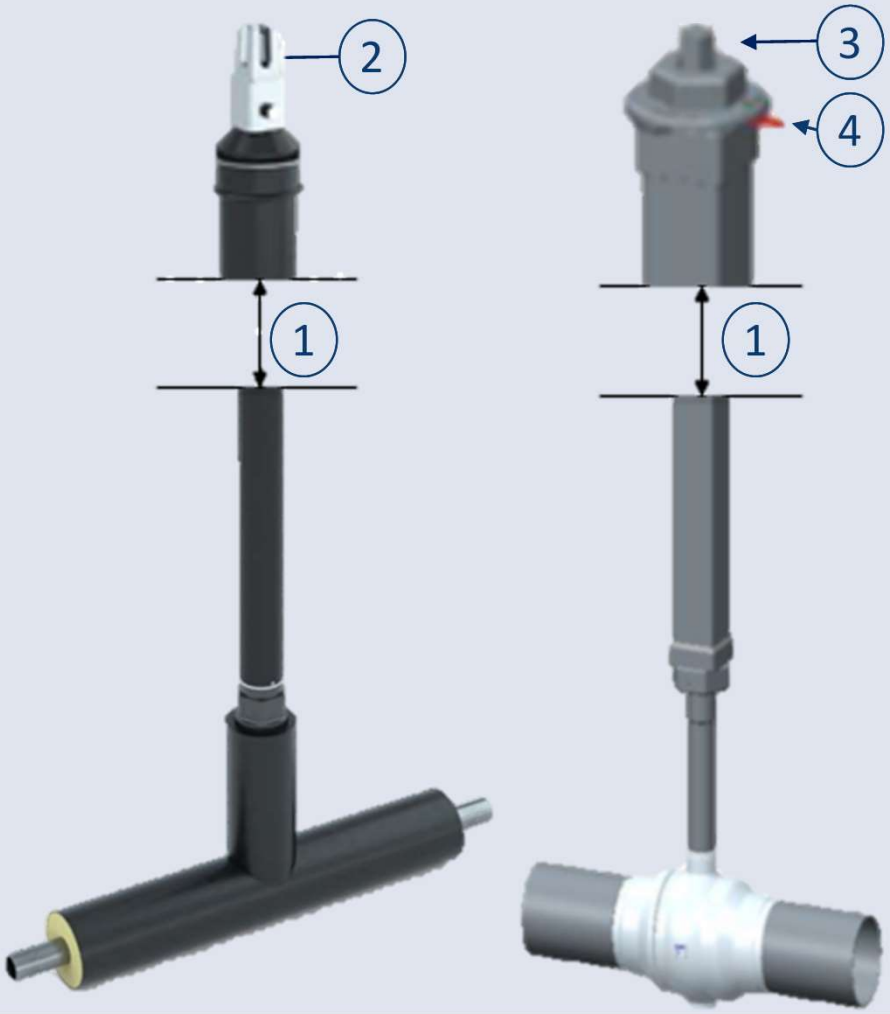
FUNCTION



- (1) Function due to floating ball principle – the ball is only guided from the stem. Contact force of the seal rings will be guaranteed by belleville washers behind the seal systems.
- (2) First, the media press on the ball and moves it in the downstream seal ring and ensures tightness on the outlet side of the valve.
- (3) The contact force of the upstream seal system on the ball will be increased from the media pressure and ensures tightness on the inlet side.
- (4) Due to the function principle of the seal system, bi – directional flow is possible.

SHAFT EXTENSION



- (1) Underground installation extension in length 1000mm and 2000mm available. The extension can be shortened on site to the required length
- The shaft end is designed as conical square (2) or optionally as hexagon end (3)
- (4) A position indicator shows the OPEN/CLOSED position of the installed valve

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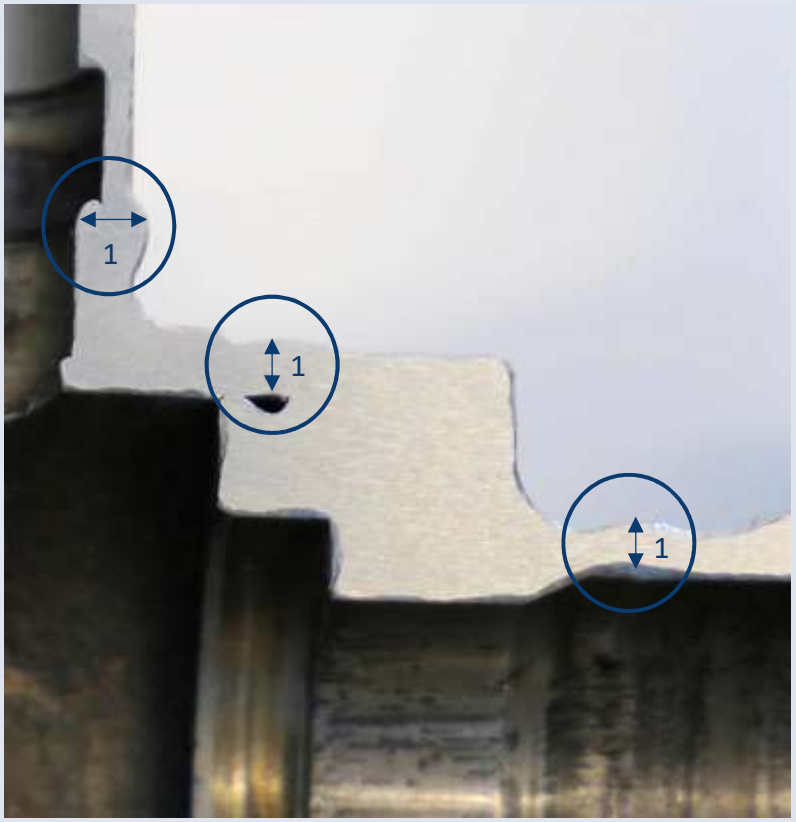
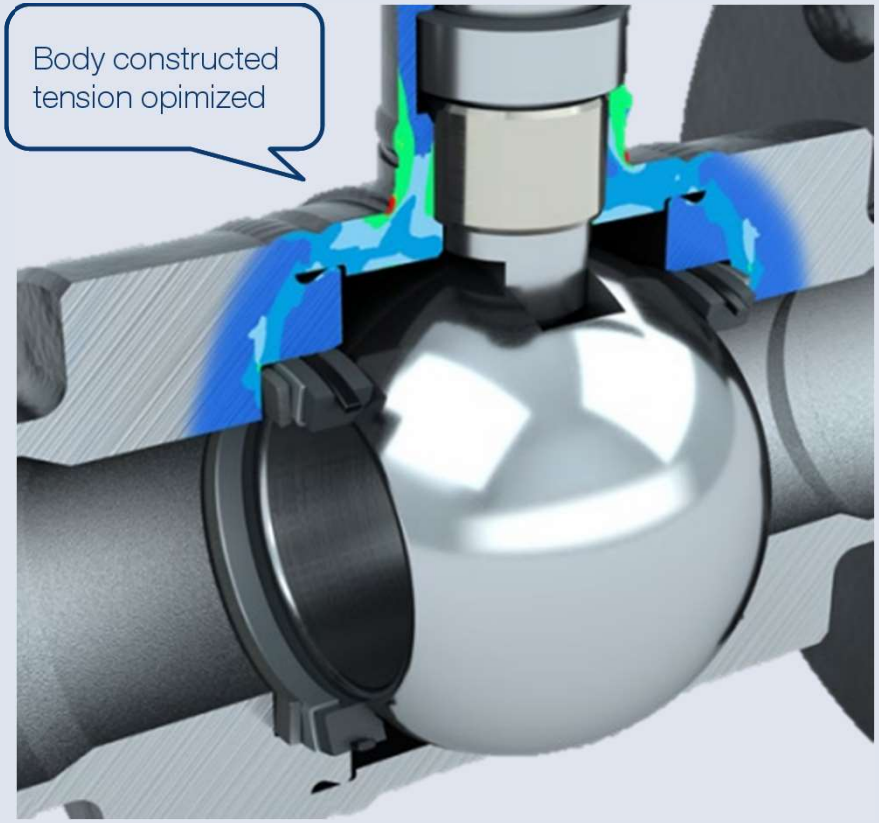
WELDING SEAMS & TENSION





(1) Each body weld seam is completely welded through the entire cross-section which minimizes the possibility of crack corrosion

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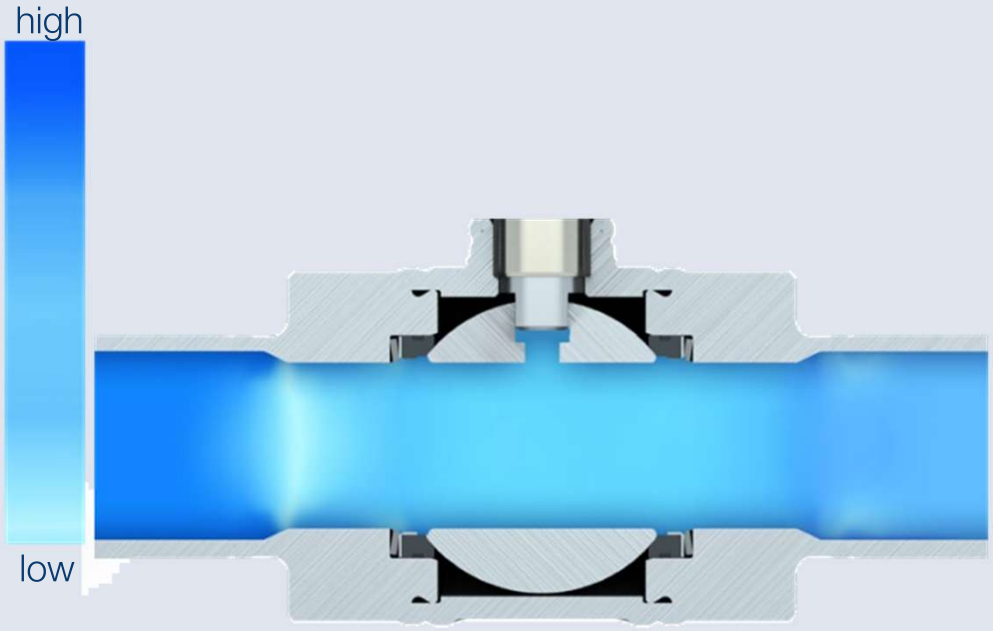
PRESSURE DROP & BALL



District heating systems require a minimisation of pressure losses in order to prevent additional pump performance in piping systems.

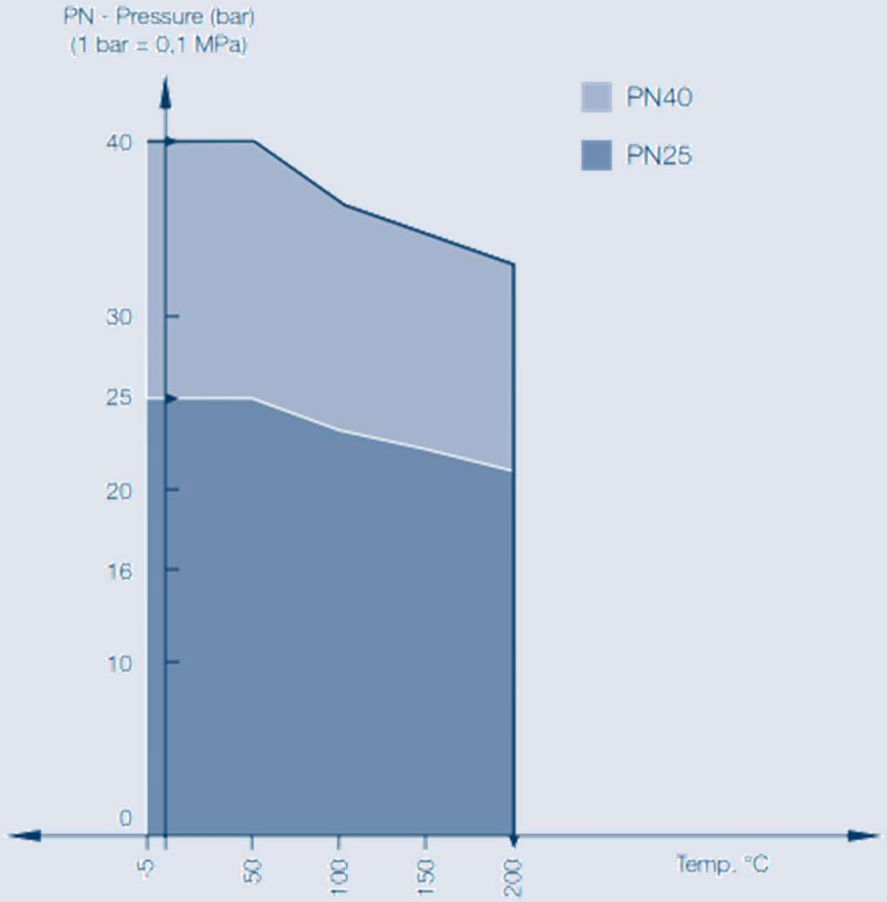
Full bore valves with a straight inner geometry shows the lowest pressure losses.

- Ball with full, cylindrical bore
- Until DN65 solid ball stainless steel 1.4401 or 1.4408
- DN80 upwards hollow ball with guided tube stainless steel AISI304L

KHO FEATURE VIDEO

P/T DIAGRAM

Pressure and temperature range



Torques

Nominal diameter DN	Differential pressure	Torque
mm	bar	Nm
15 / 20R15	40	8
20 / 25R20	40	12
25 / 32R25	40	20
32 / 40R32	40	28
40 / 50R40	40	42
50 / 65R50	40	60
65 / 80R65	40	110
80 / 100R80	40	190
100 / 125R100	40	320
125 / 150R125	40	490

For standard computations, KLINGER Fluid Control recommends the factor 1.5, i.e. using plus 50 %.

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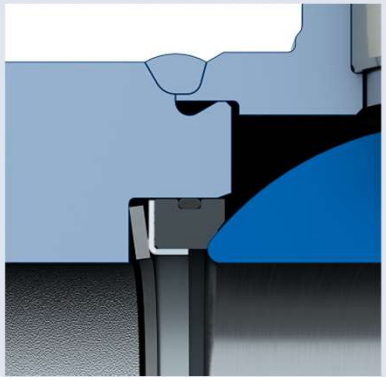
TEST LABORATORY EN488:2019

KLINGER Monoball® KHO ball valves will be tested in our plant own testing rig in accordance to the requirments of the standard EN 488:2019 & EHP003 and is certified and audited from TUEV Austria.

ADVANTAGES

(1) Sealing elements:
» Design is elastic, robust, reliable and insensitive to impurities and pressure shocks → high lifetime.
» Bi- directional flow.
(2) Stem sealing:
» Triple stem sealing ensures maximum safety.
» Top O- ring can be changed inline.
(3) Ball:
» Standard ball made of stainless steel 1.4401 /1.4408 / AISI 304L→ high resistance to chemical media and mechanical loads.
» The ball has a cylindrical passage which ensures laminar flow without turbulences.
» Larger ball ensures higher sealing surface of the seal ring.
» Ensures low pressure drop and lower pumping energy.
(4) Body:
» Compact casted body→ Insensitive to pipeline forces and tension optimised construction.
» Dome connection is of the middle piece is casted – no welding seam directly on the middle piece for the dome pipe.
» Each body welding seam is completely welded through the entire cross section → no possibility of crack corrosion.
(5) Quality
» Certified acc. EN488:2019 and EHP003.
» Maintenance free and long service life.
» Fully isolated solutions available.

1



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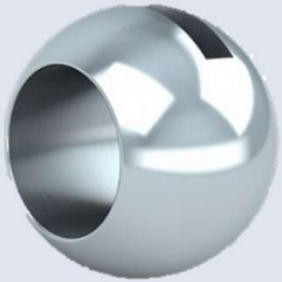

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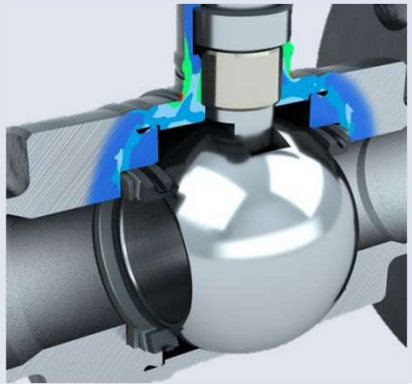

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NEW MODEL CODE:

KHO S 150 P1 AN DA1 EL1 SV1

Type	Conn.	DN	PN	Version	Special 1	Special 2	Special 3
KHO	S	15	P1 – PN16	FW – bare stem	DA1 – Isolation Row 1 + Alarmsys. + Body extension 1500mm	ISO – Iso top flange	SV1 – W. 1 service valve (ELE 1)
	F	to	P2 – PN40	H - Lever	DA2 – Isolation Row 2 + Alarmsys. + Body extension 1500mm	GH – Gear w. hand wheel	SV2 – W. 2 service valves (ELE 2)
	SF	250		AN - Actuator	DA3 – Isolation Row 3 + Alarmsys. + Body extension 1500mm	GW – Gear + angle gear	
	SG	20R15		GE - Gear	BL – Body extension to 1500mm	AU – AUMA (GS / SQ)	
	U*	to				EL1 – Drain / vent SE/IG w. screw conn.	
	KMR**	300R250				EL2 – Drain / vent SE/AG w. screw conn.	
	KK(1)					EL3 – Drain / vent SE/FL w. blind flg.	
	ELE(2)						

* U = Underground version without isolation
** KMR = Underground version with isolation
(1) Version with cap and chain
(2) Drain and vent valve
Body always in carbon steel 1.0619
O – rings on stem always FKM and KFC
Sealing system always PTFE + carbon