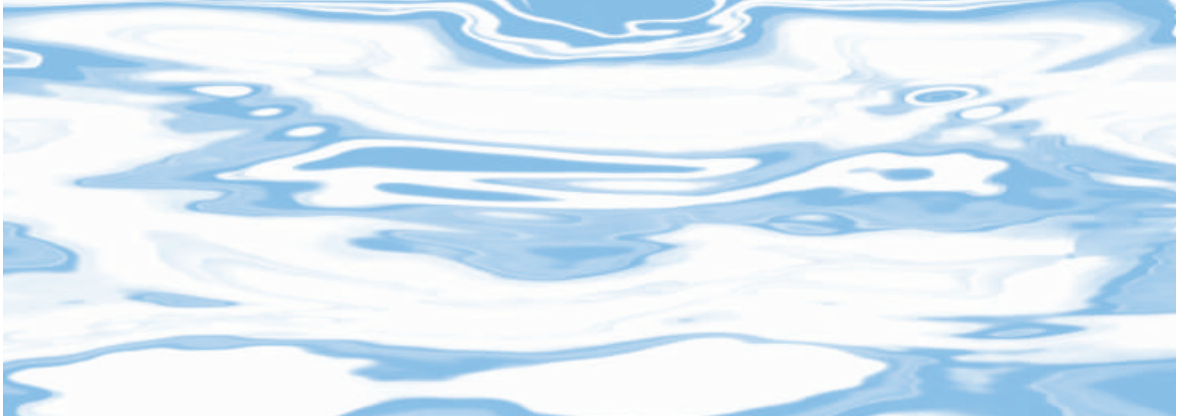


Edition 2009

Product Range





About Us

For more than a century, Klinger plays a major keyrole whenever a flow of media has to be controlled. Today, Klinger Fluid Control keeps up a worldwide acting distribution network.

A strong commitment to product developments, outstanding quality, constant improvement of working processes and reliable customer support are the solid basis for our long-time success.

The Klinger Fluid Control GmbH is a center of competence for the construction, production, testing and distribution of valves and borosilicate gauge glasses. Located in Gumpoldskirchen (Austria) Klinger Fluid Control is member of the worldwide operating Klinger Group.

The founder of the company, Richard Klinger, was one of the famous Austrian inventors in the 19th century. The development of the reflexion glass, was one of his first great inventions in the year 1886. Seven years later, the production started in Gumpoldskirchen. Since then, the history of the whole Klinger Group is related with numerous important inventions in the field of industrial valves and sealing materials: The invention and trademark protection of KLINGER-it (1899) - the famous sealing material made of rubber and asbest which revolutionised the sealing technology, the patent of the first piston valve (1921/22), the product launch of Klinger Ballostar® ball valves (1968), the development of the 3-piece ball valve Klinger Ballostar® KHA (1996) and the product launch of the split body ball valves type Ballostar® KHE (2004) to name just a few milestones that influenced the whole industry.

Annually more than 100.000 valves are manufactured in the factory in Gumpoldskirchen.

The experience, knowledge and facilities of our development department guarantees innovative, customer oriented products with high standards of quality, which is proofed by many international certificates and approvals (see fact box and following product pages). Constant improvements of production technologies are increasing the quality and availability of our products to meet the demands of the market of today and in the future.

Fact box

Quality certificates and approvals (excerpt)

- The "ISO 9001: 2008" certificate confirms that Klinger Fluid Control has successfully established and applied a quality system for design, production and sale of industrial valves and gauge glasses which assures the compliance with standards.
- The Manufacturer Approvals AD-Mbl. HP0 and TRB 801 Nr. 45 in connection with EN ISO 3834-2 confirms that the KlingerFluid Control production facility in Gumpoldskirchen has the equipment to guarantee appropriate production and quality inspections.
- The "Conformity with Pressure Equipment Directive 97/23/EG" was issued. The products produced by us are signed with the CE 0408-marking

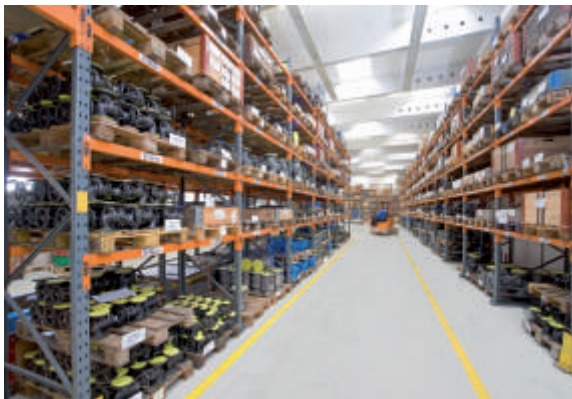


Aerial view of the production site in Gumpoldskirchen (Austria)



On the occasion of its 111th anniversary, Klinger opened the new office building in Gumpoldskirchen on November 11th 2004.

Four companies of the Klinger Group are located on the business park in Gumpoldskirchen.



Storage area of Klinger Fluid Control



Machining center for large sized Ballostar ball valves



KLINGER KVN

Piston valves for a large field of applications

Nominal Sizes:

DN 15 – 200
NPS 1/2" – 8"

Pressure Range:

PN 16, PN 40 and PN 63
Class 150, Class 300 and CWP 900

Temperature Range:

from -85 °C up to 400 °C

Valve Materials:

Cast iron, nodular cast iron, carbon steel
and stainless steel

Connections:

Flanges acc. to EN 1092-1/-2
Female screwed ends acc. to ISO 228-1 and
NPT-thread ANSI B 2.1
Socket welding ends acc. to EN 12 760 and butt
welding ends acc. to EN 12627

Accessory:

Actuators (electro-mechanical, pneumatic),
heating jackets, etc.

Special Types

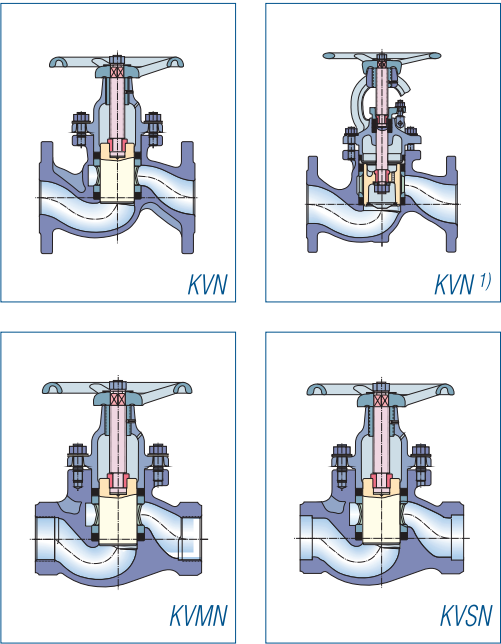
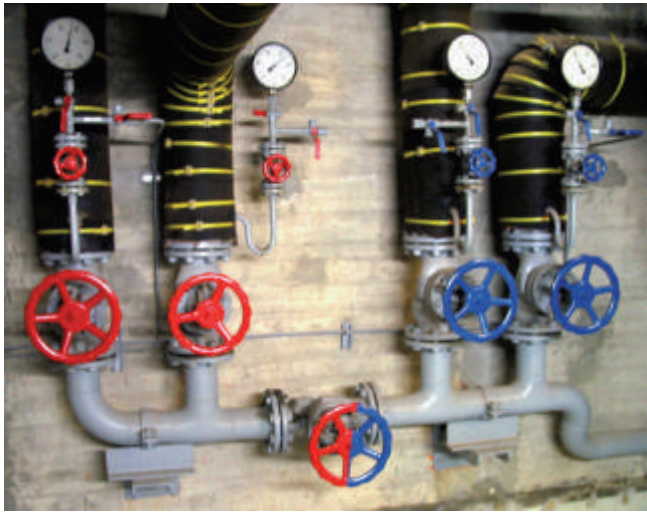
- Regulating piston valve DN 10–50 with regulation piston (KVRKN)
- Regulating piston valve DN 65–200 with regulation lantern bush (KVRLN)
- Piston valve for tank vehicles

Certificates and type approvals

- Fire safety according to API 6FA
- Type approval acc. to VdTÜV 1065
- Type approval for tankers (RID/ADR+TRT)
- Release for oxygen service
- Successfully emission tested acc. to the requirements of TA-Luft, EN 15848-1 and VDI 2440

KVN Advantages

- Reliably tight - across the bore and to the atmosphere
- Larger sealing surface compared to other valve types
- Insensitive to sedimentations and vibrations
- No erosion on the sealing surface
- High durability (operating cycles)
- Unbeatable in a comparison of profitability (low life cycle costs)
- Generally maintenance-free
- Valve remains in line if valve rings have to be replaced
- Excellent regulating characteristics
- Environmentally safe and energy efficient: Emission tested acc. to TA-Luft and EN 15848
- Self cleaning due to construction design



DN	mm	15	20	25	32	40	50	65	80	100	125	150	200
NPS	Inch	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
Connection Type	Material Code												
Type KVN DIN and ANSI Flange ends	III	●	●	●	●	●	●	●	●	●	●	●	
	VI	●	●	●	●	●	●	●	●	●	●	●	●
	VIII	●■	●■	●■	●	●■	●■	●■	●■	●■	●	●■	●■
	Xc	●■	●■	●■	●	●■	●■						
Type KVN 1) DIN	III / VIII							●	●	●	●	●	●
Type KVMN DIN and ANSI Threaded ends	III	●	●	●	●	●	●						
	VIII	●■	●■	●■	●■	●■	●■						
	Xc	■	■	■	■	■	■						
Type KVSN DIN and ANSI Welding ends	Socket Weld	VIII	●■	●■	●■	●■	●■						
	Socket Weld	Xc	■	■	■	■	■						
	Butt Weld	VIII	●	●	●	●	●	■	■	■		■	■

Pressure Range

- PN 16
- PN 40
- PN 63

Pressure Range

- ANSI Class 150
- ANSI Class 300
- 900 PSI CWP

Material Code	Name of Material	Internals	Material of Body	
			DIN (EN)	ANSI
III	Grey cast iron	Without copper alloy parts	EN-JL1040	-
VI	Nodular cast iron	Without copper alloy parts	EN-JS1049	-
VIII	Carbon steel	Without copper alloy parts	1.0619	A216 WCB
Xc	Stainless steel	Without copper alloy parts	1.4581	A351 CF3M / CF8M

1) Size DN 65 – 200



KLINGER Ballostar® KHA

3-piece ball valves with full and reduced bore,
floating ball design

Nominal Sizes:

DN 10 – 150

Pressure Range:

PN 16, PN 40, PN 63 and PN 100

Temperature Range:

from -196 °C up to 400 °C

Valve Materials:

Carbon steel and stainless steel

End Connections:

Flanges acc. to EN 1092-1 and EN 1092-2
Welding ends acc. to DIN 3239 (EN 12627)
Threaded ends acc. to ISO 228/1

Accessory:

Actuators (directly or via mounting kit), operating
stem extension, interlocking device for hand lever,
regulating disc, heating jacket, etc.

Special types

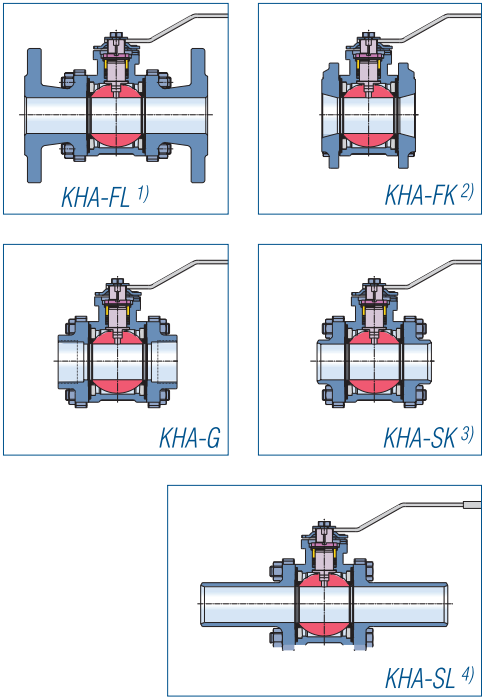
- Metal seat ball valve for abrasive media and high temperature applications
- Shut-off valve for tank vehicles
- Cryogenic ball valve
- Valve for gas and vacuum service

Certificates and type approvals

- Fire safe according to API 607/ 4. Ed.
- Type approved acc. to VdTÜV 1065
- Valve successfully tested acc. to TA-Luft (Clean Air Regulation) requirements
- Emission-tested according to VDI 2440
- Type approved acc. to EN 161: Automatic shut-off valves for gas burners and gas appliances
- Type approved acc. to EN 264: Safety shut-off devices for combustion plants using liquid fuels
- Emissiontest acc. to VDI 2440
- Approved for use with oxygen
- Valve for gas distribution (ÖVGW)

KHA Advantages

- Reliably tight inline and to the atmosphere
- Preloaded, elastic sealing system
- Bidirectional, automatic sealing chamber
- Modular system components
- Wide field of applications
- Antistatic design
- Generally maintenance free
- Best suited for automation
- Actuator connection according to EN ISO 5211



DN	mm	10	15	20	25	32	40	50	65	80	100	125	150
NPS	Inch	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"
Connection Type	Material Code												
KHA-FL Flange ends	III		●	○	○	○	○	○●	○●	○●	○●	○	○
	VIII	●	●	○●	○●	○●	○●	○●	●	●	●	○●	
	Xc	●	●	○●	○●	○●	○●	○●	●	●	●	○●	
KHA-FK Flange ends	III								○	○	○		
	VIII								○	○	○		
	Xc								○	○	○		
KHA-G Thread ends	III		○●	○	○	○	○	○					
	VIII	●	●	○●	○●	○●	○●	○●					
	Xc	●	●	○●	○●	○●	○●	○●					
KHA-SL Welding ends	VIII	●	●	○●	○●	○●	○●	○●	○●	○●	○●	●	
	Xc	●	●	○●	○●	○●	○●	○●	○●	○●	○●	●	
KHA-SK Welding ends	VIII	●	●	○●	○●	○●	○●	○					
	Xc	●	●	○●	○●	○●	○●	○					

Type of Bore	Pressure Range	Material Code	Name of Material	Internals	Materials of body and connection
● Full	● PN 16	III	Grey cast iron	Without copper alloy parts	EN-GJL250
○ Reduced Bore	● PN 40	VIII	Carbon steel	Without copper alloy parts	1.0619
○● Both	● PN 63	Xc	Stainless steel	Without copper alloy parts	1.4408
	● PN 100				

1) Long pattern, overall length acc. to EN 558-1, basic series 1
2) Short pattern, overall length acc. to EN 558-1, basic series 27
3) Short pattern, overall length acc. to DIN 3202-S13
4) Long pattern, overall length acc. to DIN 3202-S10 bzw. ANSI B 16.10



KLINGER Ballostar® KHE

2-piece body ball valves with full bore and floating ball design

Nominal Sizes:

DN 15 – 200 *
NPS 1/2" – 8" *

Pressure Range:

PN 16, PN 40, ANSI Class 150 and Class 300

Temperature Range:

from -60 °C up to 300 °C

Valve Materials:

Carbon steel and stainless steel

End Connections:

Flanges acc. to EN 1092-1 and ANSI B16.5

Accessory:

Actuators (directly or via mounting kit),
regulating disc, operating stem extension
(also with protection pipe), heating jacket, etc.

Special types

- Metal seat for abrasive media

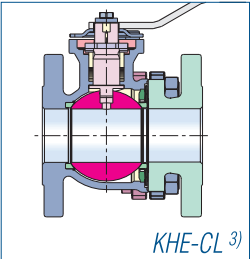
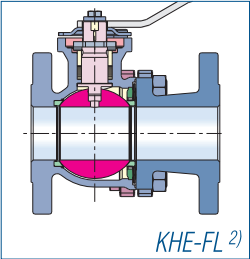
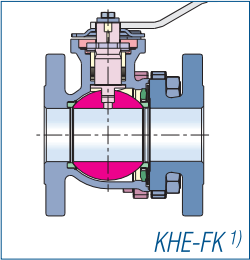
Certificates and type approvals

- Fire safe according to EN ISO 10497
- Emission testing according to VDI 2440
- Valves for gas distribution systems acc. to EN 13774
- Valves for natural gas transport in pipelines acc. to EN 14141
- Valve (soft-seated) with Class A leak tightness acc. to EN12266
- Approved for oxygen application (resistance to internal burnout was tested by BAM)

KHE Advantages

- Reliably tight inline and to the atmosphere
- Preloaded, elastic sealing system
- Spring-loaded labyrinth stuffing box optional stem sealing with O-rings
- Modular system components
- Antistatic design
- Generally maintenance free
- Best suited for automation
- Actuator connection acc. to EN ISO 5211
- Fire safe acc. to API 607 4th Ed.

* Sizes DN 150 (6") and 200 (8") on request



DN	mm	15	20	25	32	40	50	65	80	100	125	150	200
NPS	Inch	1/2	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"
Connection Type	Material Code												
KHE-FK Flange ends	VIII	●	●	●	●	●	●	●●	●●	●●	●●	●	●
	Xc	●	●	●	●	●	●	●●	●●	●●	●●	●	●
KHE-FL Flange ends	VIII	●	●	●	●	●	●	●●	●●	●●	●●		
	Xc	●	●	●	●	●	●	●●	●●	●●	●●		
KHE-CL Flange ends ANSI	VIII	■ ■	■ ■	■ ■		■ ■	■ ■	■ ■	■ ■	■ ■		■	■
	Xc	■ ■	■ ■	■ ■		■ ■	■ ■	■ ■	■ ■	■ ■		■	■

Pressure Range

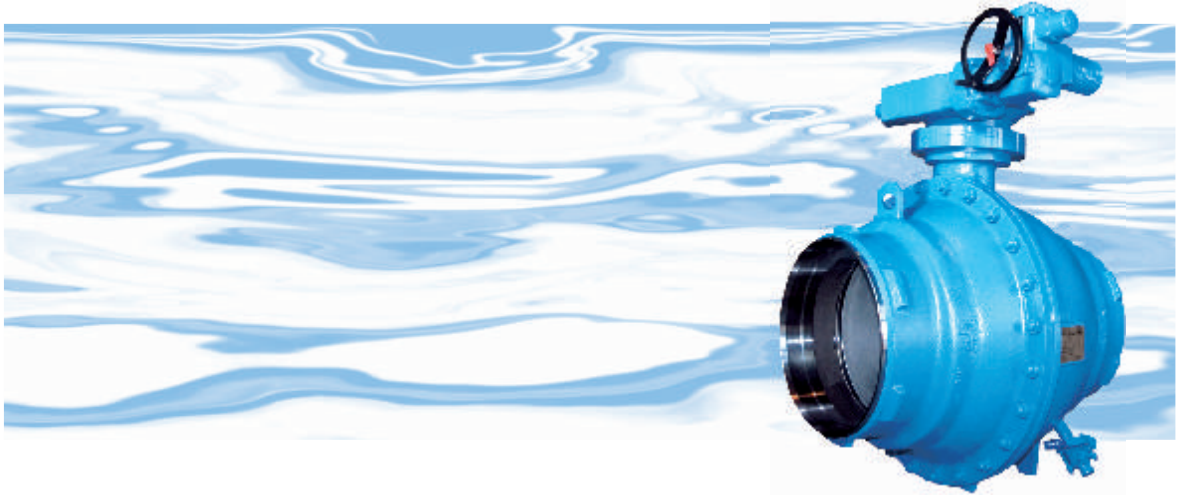
- PN 16
- PN 40

Pressure Range

- ANSI Class 150
- ANSI Class 300

Material Code	Name of Material	Internals	Materials of body and connection	
			DIN (EN)	ASTM
VIII	Carbon steel	Without copper alloy parts	1.0619	A216 WCB
Xc	Stainless steel	Without copper alloy parts	1.4408	A351 CF8M

1) Short pattern overall length acc. to EN 558-1, basic series 27
2) Long pattern, overall length acc. to EN 558-1, basic series 1
3) Full ANSI version, overall length acc. to ANSI B16.10



KLINGER Ballostar[®] KHSVI (KHI)

2-piece body ball valve with full or reduced bore,
trunnion mounted design

Nominal Sizes:

DN 150 - 1000 (up to DN 1200 with reducing cones)

Pressure Range:

PN 16, PN 25 and PN 40

Temperature Range:

from -50 °C up to 260 °C

Valve Materials:

Cast iron, carbon steel and stainless steel

End Connections:

Flanges acc. to EN 1092-1

Butt welding ends to EN 12627, optional with reducing cones

Accessory:

Regulating disc, heating jacket, drain-, air relief and
flushing connections

Special types

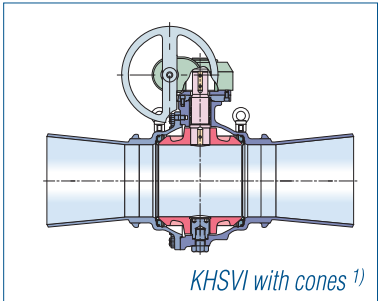
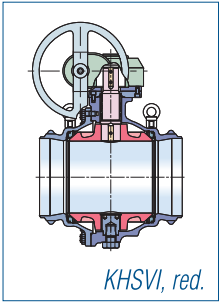
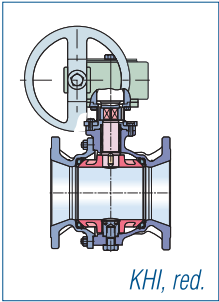
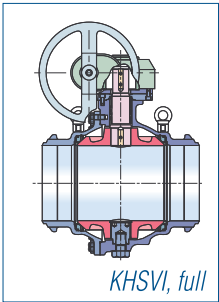
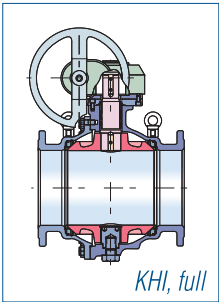
- KHWI/KHSVWI version for high operating temperatures (steam service up to 260 °C)
- Special design for slurry transport
- Metal seats for abrasive media
- Bypass design
- Fully welded and pre-insulated valves for underground/chamber installation
- Special-coated ball (chem. nickel, tungsten carbid)

Certificates and type approvals

- Fire safety according to API 607, 4.th Ed.
- Confirmation of sealing chamber and double block and bleed function (TRD 601)
- Type approval acc. to EN 161 (automatic shut-off valves for gas burners and gas appliances)
- Gas approval (ÖVGW)
- Type approval acc. to EN 488
- Emission testing according to VDI 2440

KHI and KHSVI Advantages

- Reliable seat and stem leak-tightness
- Application as double acting shut off device with pressure relief
- Draining of cavity and tightness testing of seats by drain- and test cock
- Best suitable for automation
- Bi-directional in line tightness
- Long service life
- Maintenance free
- Compact and robust body design
- Insensitive to pipeline forces
- Resistant against fluid contamination
- Valve installation in any position
- Slightest pressure losses



DN	mm	150	200	250	300	350	400	500	600	700	800	900	1000	1100	1200
Connection Type	Material Code														
Typ KHI Flange ends	III		○												
	VII	●●●	●●●	●●●	●●●	●●	●●	●●	●●	●●	●●				
	VIII	●●●	●●●	●●●	●●●	●●	●●	●●	●●	●●	●●				
	Xc	●●●	●●●	●●●	●●●	●●	●●								
Typ KHSVI Welding ends	VII	●	●	●	●●	●●	●●	●●	●●	●●	●●	○	●●	○	○
	VIII	●	●	●	●●	●●	●●	●●	●●	●●	●●	○	●●	○	○

Pressure Range

- Full Bore
- Reduced Bore
- Both

Pressure Range

- PN 16
- PN 25
- PN 40

Material Code	Name of Material	Internals	Materials of body and connection
III	Grey cast iron	Without copper alloy parts	EN-GJL250
VII	Carbon steel	Copper alloy parts included	1.0619
VIII	Carbon steel	Without copper alloy parts	1.0619
X	Stainless steel	Acid resistant steel, nuts and screws steel galvanized	1.4408
Xc	Stainless steel	Acid resistant steel	1.4408

1) Ball valves with extended butt welding ends with reducers acc. to DIN 2616 T2 or in special sizes are available on request.



KLINGER Monolith KHO

Single-piece, fully welded ball valve with reduced bore with stem extension for underground pipe networks

Nominal Sizes:	DN 25 - 300
Pressure Range:	PN 25, PN 40
Temperature Range:	from -10 °C up to 200 °C
Valve Materials:	Carbon steel
End Connections:	Butt welding ends acc. to EN 12627
Accessory:	Retainer for slip on gear, top flange for actuator mounting

Special types

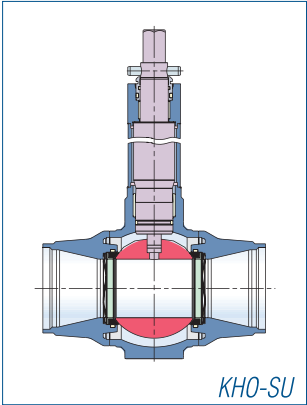
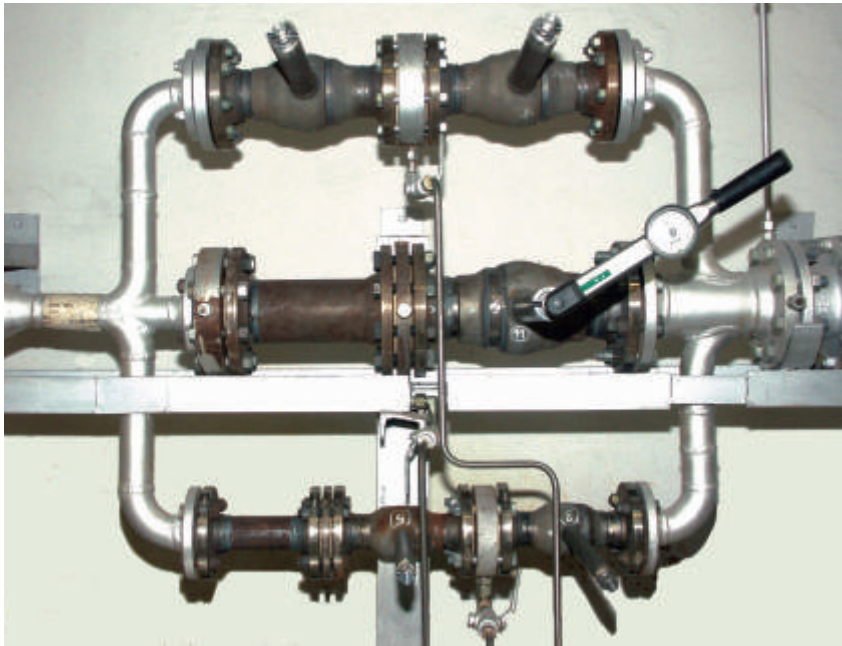
- Valve with extended, bare operating shaft for underground appliance

Certificates and type approvals

- Fulfills the high requirements of valves for underground installation defined in the European Standard EN 488 and the AGFW worksheet FW 401

KHO Advantages

- Best solution for underground service
- Reliable seat and stem leak-tightness
- Operating position of ball is visible, also if hand lever is removed
- Robust, casted body - no pipes or sheet metal parts were used
- Bidirectional sealing system
- Maintenance free
- Optimised life cycle costs
- Low operating torques
- Body design optimised against high pipeline forces
- Ball and operating stem made of stainless steel
- Possibility to change upper O-ring without harming the insulation
- Double supported, blow-out protected stem
- Insensitive to fluid contamination and corrosion resistant
- Different operating stem lengths on request
- Various designs of butt welding ends available

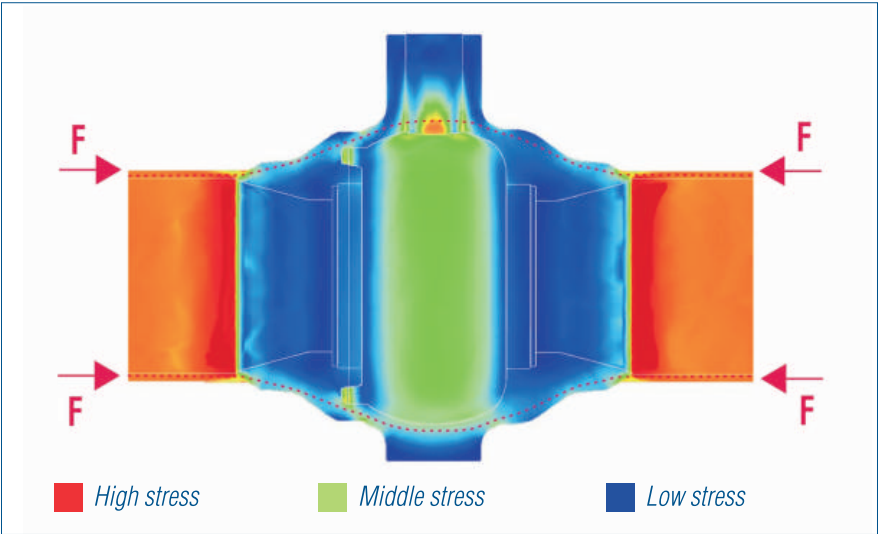


DN	mm	25	32	40	50	65	80	100	125	150	200	250	300
Connection Type	Material Code												
KHO-SU Weld ends	VII	●	●	●	●	●	●	●	●	●	●	●	●

Pressure Range

- PN 25
- PN 40

Material Code	Name of Material	Internals	Materials of body
VII	Carbon steel	Copper alloy parts included	1.0619



The KHO Monolith ball valve is stress-optimised by using FEM to resist highest loads and even bending torques. This leads to high durability and long service life.

The KHO ball valve is simply the best solution for underground laid pipe networks!



KLINGER Monoball

Single-piece, fully welded ball valve with reduced bore

Nominal Sizes:

DN 15 - 300

Pressure Range:

PN 25 and PN 40

Temperature Range:

from -10 °C up to 200 °C

Valve Materials:

Carbon steel

End Connections:

Welding ends acc. to EN 12627

Flange ends acc. to EN 1092-1

Threaded ends acc. to ISO 228-1

Accessory:

Hand lever or mounting flange for mechanical gear,
operating stem extension (350mm)

Special types

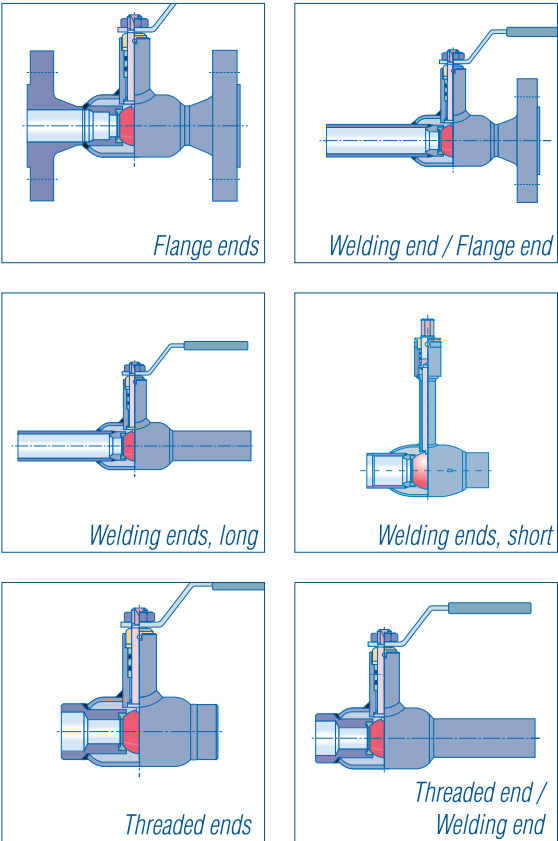
- Valves with extended operating shaft

Certificates and type approvals

- Type approval acc. to EN 488

Monoball Advantages

- Always safe in service and reliably tight
- Maintenance free
- Ball and stem made of stainless steel
- Stem sealing with O-rings made of a high-quality elastomer placed in a PTFE+C-bush
- The stem is sealed off from operating fluid
- Exchangeable upper O-rings
- Selfinhibitive through special placed spring washer
- Operating position of the ball can still be identified even if lever is removed
- Burst-proof and blow-out safe mounted stem



DN	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300
NPS	mm	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
Connection Type	Material Code														
Monoball Thread ends	VIII	●●	●●	●●	●●	●●	●●								
Monoball Welding end / Thread end	VIII	●●	●●	●●	●●	●●	●●								
Monoball Welding ends	VIII	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Monoball Flange end / Welding end	VIII	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Monoball Flange ends	VIII	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●

- Pressure Range

 - Full Bore
 - Reduced Bore
 - Both
- Pressure Range

 - PN 16
 - PN 25
 - PN 40

Material Code	Name of Material	Internals	Materials of body
VIII	Carbon steel	Without copper alloy parts	1.0254



AB-Cocks

Shut-off valves for special instrumentation application

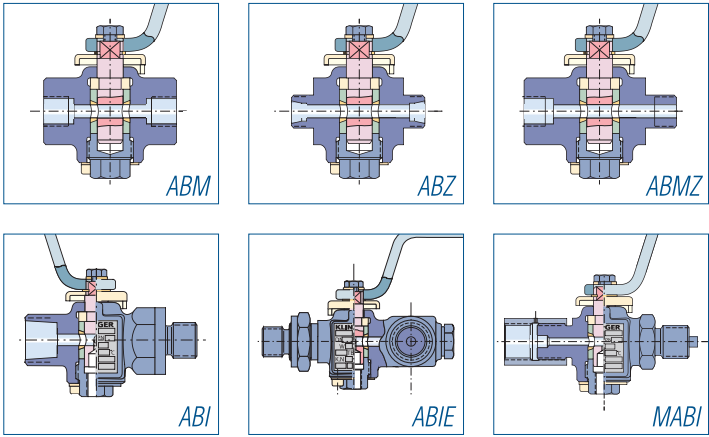
Nominal Sizes:	AB10, AB12 and AB18 (3.25 mm and 6 mm)
Pressure Range:	PN 40 and PN 160
Temperature Range:	from -200 °C up to 400 °C
Valve Materials:	Brass, steel and stainless steel
End Connections:	Female with pipe thread acc. to DIN/ISO 228/1 or NPT-thread acc. to ANSI B2.1 Male with pipe thread acc. to DIN/ISO 228/1 Ermeto compression ring connection acc. to DIN 2353 Female and male with pipe thread acc. to DIN/ISO 228/1 or NPT-thread acc. to ANSI B2.1 Male and lock nut male for connection with Maihak-Indicator Male with lock nut design Burmeister Swagelock resp. ermeto compression ring connection acc. to DIN 2353

Certificates and type approvals

- Emission testing according to VDI 2440

Advantages of AB-Cocks

- 90° operation permits immediate opening/closing
- Large sealing surface guarantees leak-tight seal across the bore and to the atmosphere – hence no false instrument readings
- Suitable for throttling purposes and therefore in blow-down lines
- Simple design (only one moving part) ensures uninterrupted operation
- The packing sleeve, the only part subjected to wear, can be replaced within minutes with cock remaining in line
- Valve can be retightened
- Equipped with plug made of stainless steel
- No seizure caused by corrosion
- Wide field of application
- Special designs for pressure gauges, indicators and liquid level gauges



Cock Type		Material	Pressure range	Bore (mm)	Connection dimension	
					d1	d2
ABM	ABM 12-G 1/4"	VIII, Xc	●	6	G 1/4"	
	ABM 12-G 3/8"				G 3/8"	
	ABM 12-G 1/2"				G 1/2"	
	ABM 12 1/4"-18NPT				1/4"-18NPT	
	ABM 12 1/2"-14NPT				1/2"-14NPT	
ABZ ¹⁾	ABZ 12-L8	VIII, Xc	●	6	M14 x 1,5	8 mm
	ABZ 12-L10				M16x 1,5	10 mm
	ABZ 12-L12				M18 x 1,5	12 mm
	ABZ 12-S8				M16 x 1,5	8 mm
	ABZ 12-S10				M18 x 1,5	10 mm
	ABZ 12-S12				M20 x 1,5	12 mm
	ABZ 12-1/2"-14NPT/S12				M20 x 1,5	12 mm
	ABZ 12-1/4"-18NPT/S12				M20 x 1,5	12 mm
ABMZ	ABMZ 12-1/4"-18NPT/G 1/4"	VII	●	6	G 1/4" A	1/4"-18NPT
	ABMZ 12-1/2"-14NPT/G 1/2"				1/2"-14NPT	G 1/2"
ABI	ABI 12/A	VII	●	6	W27x1/10"	3/4"
	ABI 12/D					
ABIE	ABIE 12/A	VII	●	6	W27x1/10"	3/4"
	ABIE 12/D					
MAB	MABI 12	VIII, Xc	●	4	G 1/2"	G 1/2" A
	MABA 12	IV	●	3,25	G 1/2"	G 1/2"
	MABA 12	VIII, Xc	●			
	MABC 12	IV	●			
	MABC 12	VIII, Xc	●			
	MABU 12	IV	●			
	MABU 12	VIII, Xc	●			
	MABAL 12	IV	●			
	MABAL 12	VIII, Xc	●			

Pressure Range

- PN 40
- PN 160

¹⁾ also available with Swagelock-connection

Material Code	Name of Material	Materials of body
IV	Brass	2.0401
VII, VIII	Carbon steel	1.0460
Xc	Stainless steel	1.4571



KLINGER Borosilicate gauge glasses

"extra-hard"

1. Circular sight glasses

moulded - ground - polished - thermally pre-stressed

Diameter [mm]:	from 31.75 up to 200
Thickness [mm]:	from 10 up to 30
Range of Working Pressure [bar]:	up to 175 bar
Range of Operating Temperature:	from -273 °C up to 356 °C
Chemical Resistance:	Alkali resistance: Class 2 (tested to ISO 695) Water/steam resistance: Class 1 (tested to ISO 719) Acid resistance: Class 1 (tested to ISO 12116)

2. Reflex and transparent glasses

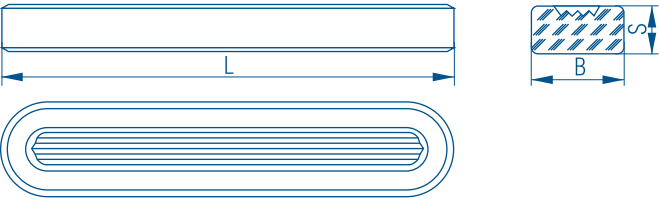
Manufacturing according to following standards:	OENORM M 7354 DIN 7081 JIS B 8211 OMV-Spez. H2009	MIL-G-16356 D Esso Eng. Spec. 123 S.O.D. Spec. 123 BS 3463
Packing:	KLINGER gauge glasses are individually packed in cardboard boxes, including a KLINGER sealing gasket and cushion gasket, forming a complete unit for installation	
Length [mm]:	from 115 (I) up to 340 (IX)	
Range of Operating Pressure:	up to 400 bar	
Operating Temperature:	up to 430 °C	
Chemical Resistance:	Alkali resistance: Class 2 (tested to ISO 695) Water/steam resistance: Class 1 (tested to ISO 719) Acid resistance: Class 1 (tested to ISO 12116)	

*Reflex glasses (Types A, B, H):
The medium facing side is provided with moulded grooves.*

*Transparent glasses (Types A, B, H, TA 28):
The surfaces on both sides are finely ground and polished to ensure optimal transparency.*

**Gasket set and micas available for application in high-pressure steam gauges.
Gauge glasses, which are operated at steam pressures above 35 bar or with media causing rapid wear of glass, have to be protected with a mica shield!**

Reflex glasses A, B, H

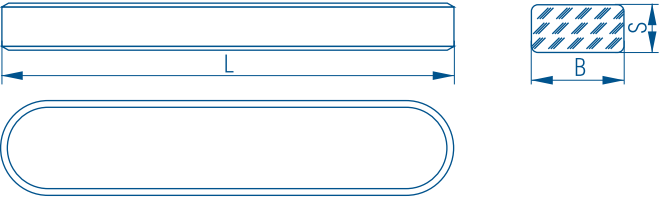


I) Reflex glasses A, B, H

Application range of Klinger reflex gauge glasses	Type A ¹⁾		Type B ¹⁾		Type H	
	Pressure (bar)	Temperature (°C)	Pressure (bar)	Temperature (°C)	Pressure (bar)	Temperature (°C)
For media with no significant glass attack, e.g. oils, hydrocarbons	400	120	265	120	300	120
	150	400	180	400	200	400
	0-10	430	0-10	430	0-10	430
For media with significant glass attack, e.g. saturated steam, HPHW, alkalis	35	243	35	243	42 ²⁾	253

¹⁾ Glass types to OENORM M 7354 or DIN 7081
²⁾ For steam pressure above 35 bar we recommend the use of transparent glasses with mica shields

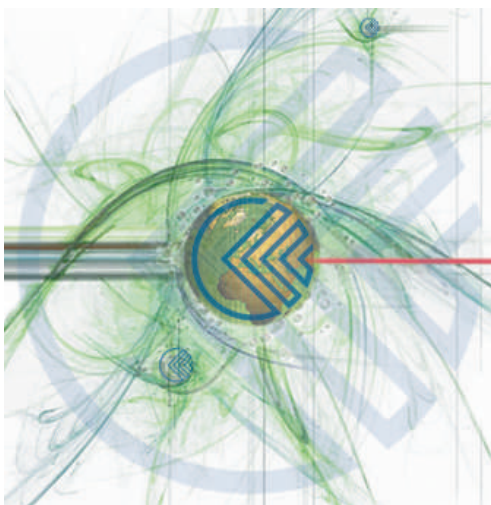
Transparent glasses A, B, H, TA 28



II) Transparent glasses A, B, H, TA 28

Application range of Klinger reflex gauge glasses	Type A ¹⁾		Type B ¹⁾		Type H		Type TA 28 ⁴⁾	
	Pressure (bar)	Temperature (°C)	Pressure (bar)	Temperature (°C)	Pressure (bar)	Temperature (°C)	Pressure (bar)	Temperature (°C)
For media with no significant glass attack, e.g. oils, hydrocarbons	240	120	290	120	340	120	-	-
	160	400	200	400	230	400	-	-
	0-10	430	0-10	430	0-10	430	-	-
For media with significant glass attack, e.g. saturated steam, HPHW, alkalis	35	243	35	243	42 ²⁾	253	120 ³⁾	324
	70 ²⁾	300	85 ²⁾	300	85 ²⁾	300	180 ³⁾	356

¹⁾ Glass types to OENORM M 7354 or DIN 7081
²⁾ For steam pressure above 35 bar we recommend the use of transparent glasses with mica shields
³⁾ For steam pressure above 120 bar only TA-glasses, size I should be used
⁴⁾ TA-glasses have to be used with mica shields



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