

*|| # asistentă tehnică la PTF de la producător
• sau reprezentant oficial în România.*



KLINGER BALLOSTAR® KHA

3-piece ball valves
DN 10 - 150



In. DAIS-0398-04.04.19





GUMPOLDSKIRCHEN
AUSTRIA

KLINGER FLUID CONTROL

Today for tomorrow

As a subsidiary of the KLINGER Group, KLINGER Fluid Control has been developing, manufacturing and maintaining high-quality industrial valves at the business location Gumpoldskirchen/Austria for more than 125 years. Via the global distribution and service network, KLINGER Fluid Control offers both standardized and tailored products, services as well as solutions for customers around the globe.

Products from KLINGER Fluid Control are characterized by their high level of reliability as well as by an above average lifecycle at a simultaneously very total cost of ownership (TCO). As a solutions partner, KLINGER Fluid Control creates customer benefits with added value. In this regard, the focus is on the following core competences:

ENCOMPASSING SERVICE

- Application expertise
- Product trainings
- Fast quotation and order processing
- Customer-specific logistics concepts
- Supply of spare parts
- Valve maintenance
- On site technical support

INNOVATIVE SOLUTIONS

- State of the art development tools
- Product development for different areas of application
- Compilation of customer-specific special solutions
- Automation solutions
- Product tests in the company-own technical center
- A wide range of certificates and approvals

OPERATIONAL EXCELLENCE

- Flexible production
- Transparency in the supply chain
- Short delivery times
- ISO 9001 certified quality
- ISO 14001 as well as EMAS certified environmental management system



trusted worldwide 02|03

CONSISTENTLY MODULAR

One product – many applications

PRODUCT ADVANTAGES

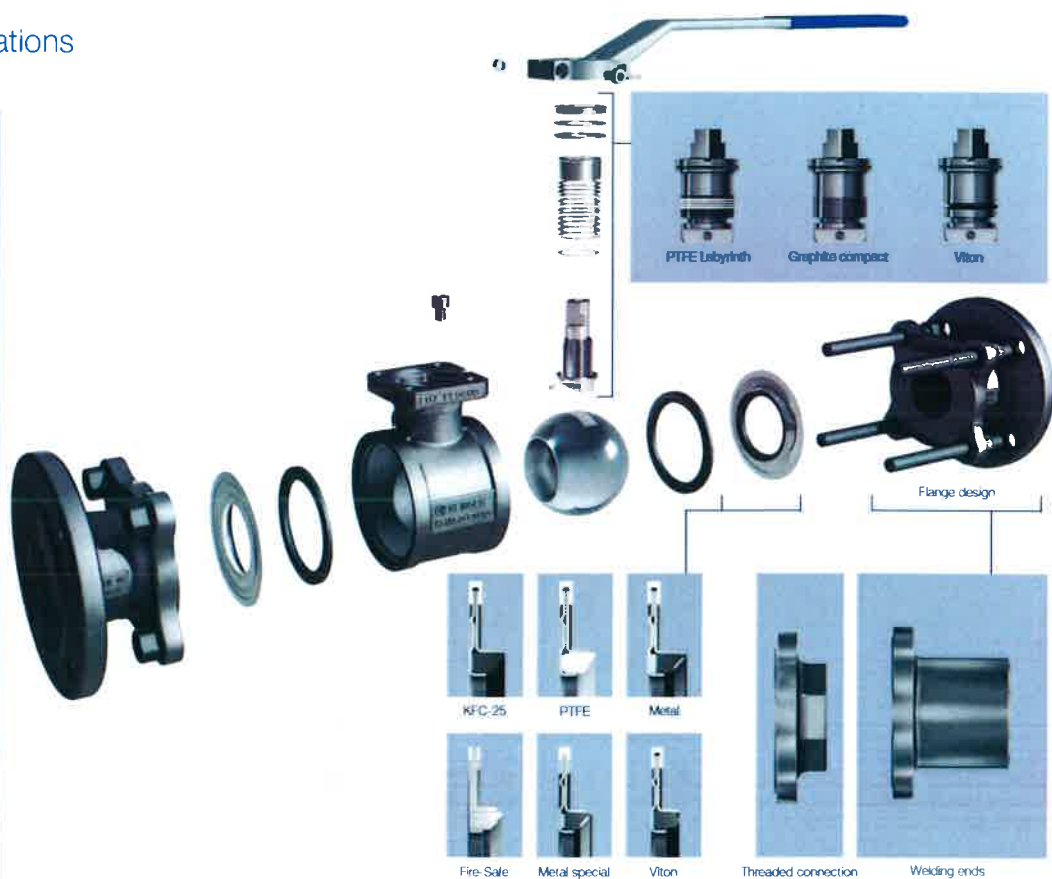
- Maintenance-free
- Supports pressurization on both side
- Bidirectional flow
- Ball with a cylindrical full bore
- Unique pre-stressed and elastic sealing system
- Bidirectional sealing in accordance with EN 12266 – leakage rate A
- Modular selection of system components
- Serviceable without removal from the line
- Antistatic design in accordance with ISO 7121 / EN 1983
- Subsequent automation possible at any time (top flange in accordance with EN ISO 5211)

SPECIAL TYPES

- Metal seat (up to +400 °C) for abrasive media
- Operating stem sealed by O-rings
- Operating stem extension
- Oxygen version (oil, grease and silicone-free)
- Cryogenic version (down to -196 °C)
- Fire-Safe version
- Vacuum version
- Gas version

PRODUCT DETAILS

PN	16/25/40/63/100
DN	10 - 150
Housing	Cast steel, stainless steel, gray cast iron, nodular cast iron, special materials upon request
Ball	Stainless steel
Operating stem	Stainless steel
Temperature	-106 °C to +400 °C
Design	Flanges (long, short), threaded connections, welding ends (long, short), full and reduced bore
Type	Three piece ball valve



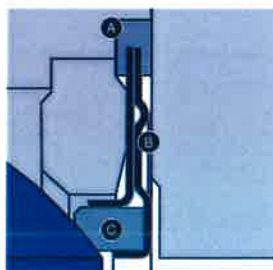
GREATEST SAFETY

The unique KLINGER sealing system with automatic sealing chamber

Leakages represent the worst case for any plant operator. Negative impacts on the environment as well as downtimes, harm to personnel and assets and in some cases heavy financial losses are just a few of the possible outcomes. A seal, which therefore "practices what it preaches", i.e. a valve capable of reliably fulfilling its shut-off function, is a must. With the KLINGER Ballostar® KHA, this is ensured in multiple ways: By means of the unique ball valve sealing system and the automatic sealing chamber.

THE SEALING SYSTEM

- The sleeve reliably keeps the sealing element in the desired position. In the Fire-Safe design, a graphite ring adds additional protection against too high thermal loads.
- The diaphragm spring determines the sealing stress for the entire lifecycle of the seal and simultaneously ensures the required pressure of the sealing ring. As a consequence, the seal remains – independent of the medium pressure and the flow direction – continuously tight.
- The sealing ring itself is surrounded on three sides by the spring-loaded sealing element and can therefore absorb major loads without deformation.



THE AUTOMATIC SEALING CHAMBER

The automatic sealing chamber utilizes spring loads in the two sealing elements for the function of the valve. The result: An automatic sealing chamber, in which the loads of the sealing elements simultaneously work bidirectionally. On the basis of this principle, the TÜV Bayern confirms: The automatic sealing chamber is also capable of replacing two unilaterally sealing standard valves. Primarily, this concerns safety lines in plants, especially those with alternating flow directions.

In the case of the KLINGER Ballostar® KHA, as opposed to conventional ball valves, the absorption area of the medium pressure is not limited to the ball area, but encompasses the entire sealing element (ball and area of the diaphragm spring). In the event of an increase of differential pressure, the additional forces increase as well – the pre-loaded diaphragm springs, which press against the ball, are subsequently relieved and service life further improved.



CERTIFIED QUALITY

The KLINGER Ballostar® KHA lives up to its promises

This is proven by various tests and certifications – for plant operators this means absolute safety in operation with guaranteed tightness.

• Valve according to "TA-Luft"

With a standard value of 10^{-4} mbar l/s, the KLINGER Ballostar® KHA significantly outperforms the requirements of the German Technical Instructions on Air Quality Control.

• Fire-Safe

The Fire-Safe tests in accordance with API Standard 607, 4th Edition and EN ISO 10497:2004 have been certified by the TÜV Austria.

• Valve for gaseous fuels

Due to its product characteristics, the KLINGER Ballostar® KHA can be tested as a safety shut-off installation for firing systems in accordance with the European Norm EN 161. Certification for selected types, in combination with special actuators, can be issued on demand.

• Valve for utilization with oxygen

The BAM Berlin has approved the KLINGER Ballostar® KHA for the utilization in combination with oxygen.

• Valve for gas supply

Certificate on the authorization to bear the ÖVGW gas quality trademark.

• Emission testing in accordance with VDI 2440

Certified emission testing pursuant to VDI 2440 for the KHA labyrinth stuffing box at room ambient temperature and at temperatures ≥ 250 °C. Testing of the KHA O-ring stuffing box (Viton) at ambient room temperature.

• Standard antistatic

The KLINGER Ballostar® KHA features standardized antistatic equipment in accordance with ISO 7121 and EN 1983 respectively. An antistatic ball ensures electrostatic discharge from DN 50 upwards.

• Operational safety

The KLINGER Ballostar® KHA has a fitting for the installation of a locking device as a standard feature. This negates unintended utilization.

• 3.1 Final inspection certificate

In order to ensure quality, application safety and guaranteed tightness for the operator, the KLINGER Ballostar® KHA is standard-issued with a final inspection certificate on the basis of the norm EN 10204 – 3.1.



trusted worldwide 06/07

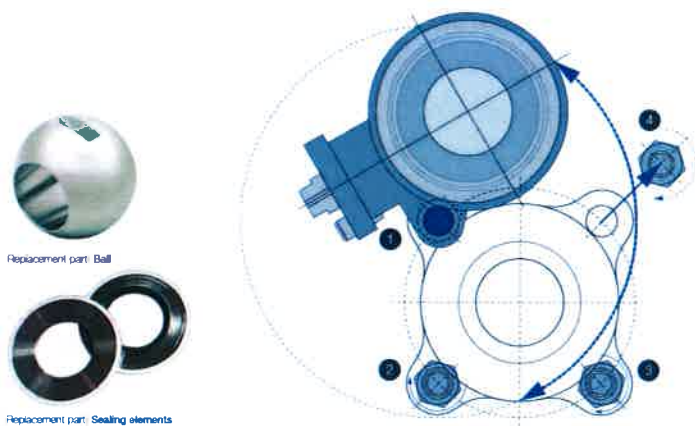
SUSTAINABLE EFFICIENCY

Reliability across the entire lifecycle

The KLINGER Ballostar® KHA is characterized by its low costs across the entire lifecycle of the valve (TCO) as well as by its high durability. As a result of its modularity, only affected components need to be replaced in the course of maintenance. This significantly increases the operating time of the valve in the system. For the operator, this means lower costs with regard to plant maintenance, stock keeping as well as installation – at continuously high safety levels. With its unique design, the KLINGER Ballostar® KHA also offers plant operators the flexibility, which dynamic markets demand today. Thanks to a wide range of modular system components, which can be individually combined among themselves, the ball valve can be equipped, refitted or retrofitted for each application case.

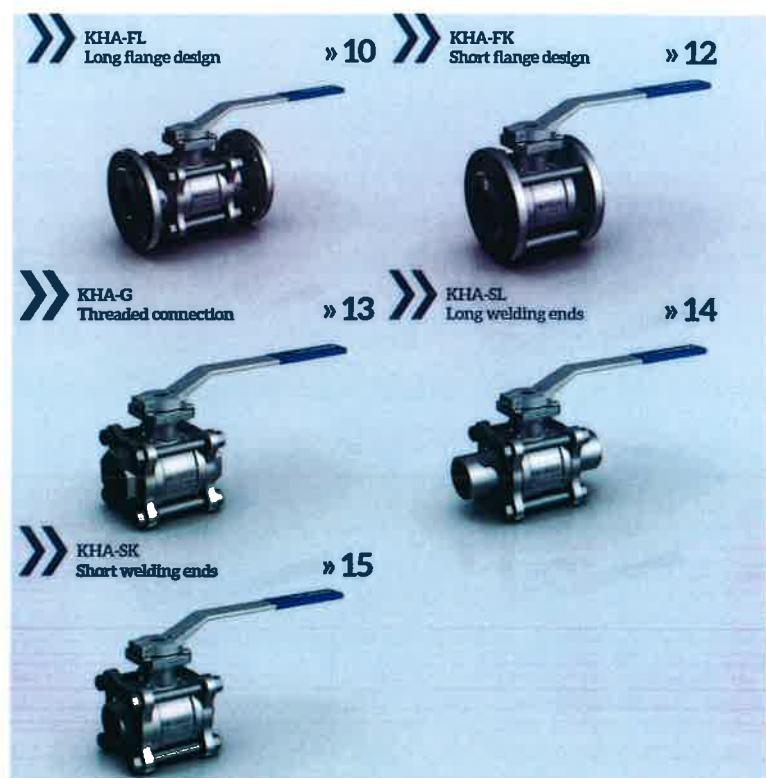
SIMPLE MAINTENANCE WITHOUT REMOVAL FROM THE LINE

During maintenance and service work, the nuts 1-3 need to be removed with the bolt. The remaining nut (4) is only loosened. This allows the core element of the valve to be swung out without major effort and removal from the line, while simultaneously providing access to the two sealing elements in the bore. These can also be easily removed and replaced. Changing the stuffing box seals, removal of the ball and the operating stem (applies to the models KHA SL, SK and G) is also carried out in a very user-friendly manner.



BALLOSTAR® KHA

Overview of types



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BALLOSTAR® KHA-FL

Long flange design

GENERAL FEATURES

- 3-piece ball valve with full or reduced bore
- Floating ball, antistatic, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Range in accordance with EN 1092-1 (VIL, Xc)
Range in accordance with EN 1092-2 (g)

DIMENSIONS

Face-to-face dimensions in accordance with EN 558-1, series 1

ACCEPTANCE TESTING

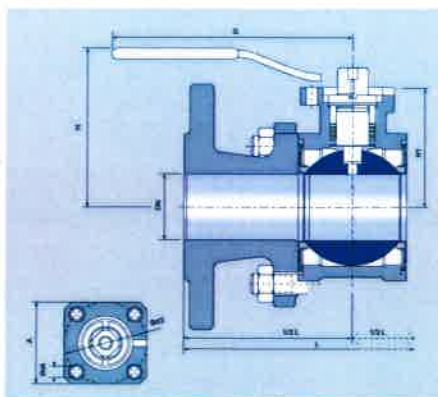
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Range connection in accordance with ISO 5211, allows for direct mounting of an actuator or by means of brackets. Pneumatic and electrical actuators utilisable.

TEMPERATURE

-195 °C to +400 °C (see pT diagram)



KHA-FL VARIANTS

FULL BORE

Material: Grey cast iron EN-GJL-250
(Material code 9)*

* refers to flange, body made of steel casting

FULL BORE

Material: Steel casting 1.0019
(Material code V8)
Stainless steel casting 1.4406
(Material code Xc)

DN	Dimensions				PN			Mounting flange for actuator				Weight kg
	L	H	H1	G	M	V8	Xc	ISO	A	ØA3	ØA4	
15	130	80	36	130	16			F04	42	42	5,8	2,4
20	200	131	90	315	16			F07	70	70	10	13,8
25	200	141	100	315	16			F07	70	70	10	20,2
40	310	182	122	500	16			F10	102	102	12	30,9
50	350	176	125	500	16			F10	102	102	12	44
65	400	211	175	600	16			F12	125	125	15	75,7

Subject to modification of design and dimensions

BALLOSTAR® KHA-FL

Long flange design

GENERAL FEATURES

- 3-piece ball valve with full or reduced bore
- Floating ball, antistatic, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Range in accordance with EN 1092-1 (VIL, Xc)
Range in accordance with EN 1092-2 (g)

DIMENSIONS

Face-to-face dimensions in accordance with EN 558-1, series 1 to DN 100R80
Face-to-face dimensions in accordance with EN 558-1, series 27 for DN 125R100 and 150R125

ACCEPTANCE TESTING

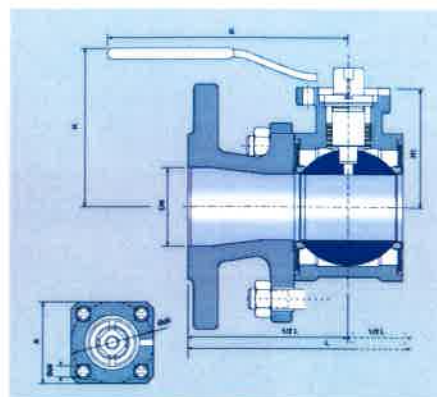
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Range connection in accordance with ISO 5211, allows for direct mounting of an actuator or by means of brackets. Pneumatic and electrical actuators utilisable.

TEMPERATURE

-195 °C to +400 °C (see pT diagram)



KHA-FL VARIANTS

REDUCED BORE

Material: Grey cast iron EN-GJL-250
(Material code 9)*

* refers to flange, body made of steel casting

REDUCED BORE

Material: Steel casting 1.0019
(Material code V8)
Stainless steel casting 1.4406
(Material code Xc)

DN	Dimensions				PN			Mounting flange for actuator				Weight kg
	L	H	H1	G	M	V8	Xc	ISO	A	ØA3	ØA4	
20R15	150	80	36	130	16			F04	42	42	5,8	2,7
25R20	160	94	45	160	16			F04	42	42	5,8	3,8
25R25	180	96	50	160	16			F04	42	42	5,8	5,7
40R40	200	106	65	250	16			F05	50	50	7	7,5
50R50	203	113	72	250	16			F05	50	50	7	10,7
65R65	250	131	90	315	16			F07	70	70	10	16,5
80R85	310	141	100	315	16			F07	70	70	10	22,3
100R100	350	162	122	500	16			F10	102	102	12	34
125R125	355	176	125	500	16			F10	102	102	12	45,9
150R125	360	211	175	600	16			F12	125	125	15	73
20R15	150	80	36	130		40	40	F04	42	42	5,8	3,2
25R20	160	94	45	160		40	40	F04	42	42	5,8	4,4
25R25	180	96	50	160		40	40	F04	42	42	5,8	5,9
40R40	200	106	65	250		40	40	F05	50	50	7	8,1
50R50	203	113	72	250		40	40	F05	50	50	7	11,5
125R100	325	176	125	500		40	40	F10	102	102	12	51,7

Subject to modification of design and dimensions

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BALLOSTAR® KHA-FK

Short flange design

GENERAL FEATURES

- 3 piece ball valve with full or reduced bore
- Floating ball, antistatic, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Flange in accordance with EN 1092-1 (Mk Kc)
Range in accordance with EN 1092-2 (B)

DIMENSIONS

Face to face dimensions in accordance with
EN 558-1, series 27

ACCEPTANCE TESTING

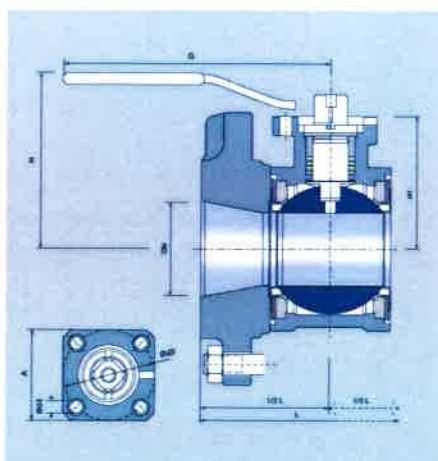
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Flange connection in accordance with ISO 5211,
allows for direct mounting of an actuator or by means
of brackets. Pneumatic and electrical actuators
utilizable.

TEMPERATURE

-196 °C to +400 °C (see pT diagram)



KHA-FK VARIANTS

REDUCED BORE

Material: Grey cast iron EN-GJL-250
(Material code B)
Steel casting 1.0619
(Material code V5)
Stainless steel casting 1.4408
(Material code K)
* refers to flange, body made of cast steel

DN	Dimensions				PN		Mounting flange for actuator				Weight kg
	L	H	H1	G	B	V5	ISO	A	ISO 1	ISO 2	
65/60	170	131	90	315	16		F07	70	70	10	14
80/65	180	141	100	315	16		F07	70	70	10	19.4
100/80	190	152	122	500	16		F10	100	100	12	26
65/60	170	131	90	315	40	40	F07	70	70	10	15.3
80/65	180	141	100	315	40	40	F07	70	70	10	20.3
100/80	190	152	122	500	40	40	F10	100	100	12	28.8

Subject to modification of design and dimensions

BALLOSTAR® KHA-G

Threaded connection

GENERAL FEATURES

- 3 piece ball valve with full or reduced bore
- Floating ball, antistatic, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Internal thread Rp in accordance with EN 10226-1

DIMENSIONS

Face to face dimensions in accordance with DIN
3202 Pt. 4

ACCEPTANCE TESTING

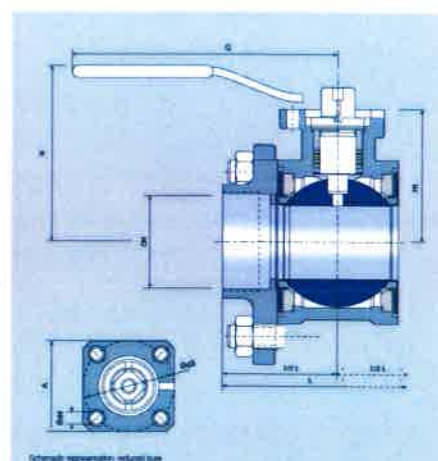
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Flange connection in accordance with ISO 5211,
allows for direct mounting of an actuator or by means
of brackets. Pneumatic and electrical actuators
utilizable.

TEMPERATURE

-196 °C to +400 °C (see pT diagram)



Schematic representation reduced size

KHA-G VARIANTS

FULL BORE

Material: Grey cast iron EN-GJL-400-15
(Material code B)
Steel casting 1.0619
(Material code V5)
Stainless steel casting 1.4408
(Material code K)
* refers to threaded connection, body made of cast steel

DN	Dimensions				PN		Mounting flange for actuator				Weight kg
	L	H	H1	G	B	V5	ISO	A	ISO 1	ISO 2	
3/8"	75	80	35	130	100	63	F04	42	42	5.8	0.6
1/2"	85	80	35	130	100	63	F04	42	42	5.8	0.9
3/4"	95	94	45	160	100	63	F04	42	42	5.8	1.5
1"	105	98	50	160	60	40	F04	42	42	5.8	1.9
1 1/4"	120	106	65	250	60	40	F05	50	50	7	3.2
1 1/2"	130	113	72	250	60	40	F05	50	50	7	4.8
2"	150	131	90	315	80	40	F07	70	70	10	8.2

REDUCED BORE

Material: Steel casting 1.0619
(Material code V5)
Stainless steel casting 1.4408
(Material code K)

1/2" / R15	75	80	35	130	16			F04	42	42	5.8	0.6
3/4" / R15	80	80	35	130	16	100	63	F04	42	42	6.8	0.8
1" / R20	90	94	45	160	16	100	63	F04	42	42	5.8	1.4
1 1/4" / R25	110	98	50	160	16	60	40	F04	42	42	5.8	1.9
1 1/2" / R25	120	110	65	250	16	60	40	F05	50	50	7	2.8
2" / R40	150	112	72	250	16	80	40	F05	50	50	7	4.7

Subject to modification of design and dimensions

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BALLOSTAR® KHA-SL

Long welding ends

GENERAL FEATURES

- 3-piece ball valve with full or reduced bore
- Floating ball, anti-static, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Welding ends in accordance with DIN EN 12627

DIMENSIONS

FTF dimensions in accordance with DIN EN 12060, series 68 (DN 10-40 and 20R15-40R32)
FTF dimensions in accordance with ANSI B16.10 CL 300 (DN 50-100 and 50R40-100R80)
FTF dimensions in accordance with DIN EN 12982, series 7 (DN 125)

ACCEPTANCE TESTING

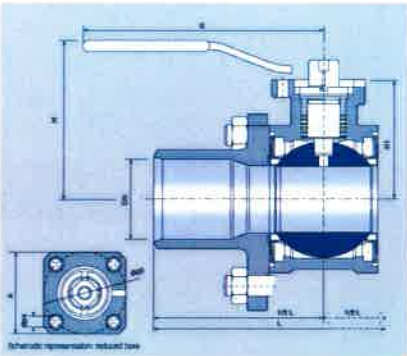
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Range connection in accordance with ISO 5211, allows for direct mounting of an actuator or by means of brackets. Pneumatic and electrical actuators utilisable.

TEMPERATURE

-196 °C to +400 °C (see pT diagram)



DN	Dimensions				PN		Mounting Range for actuator				Weight kg
	L	H	H1	G	V18	Xc	ISO	A	Dc3	Dc4	
10	270	80	35	130	100	63	F04	42	42	5,8	1,1
15	270	80	35	130	100	63	F04	42	42	5,8	1,1
20	270	94	46	160	100	63	F04	42	42	5,8	1,5
25	270	98	50	160	63	40	F04	42	42	5,8	2,5
32	270	106	65	250	63	40	F05	50	50	7	3,9
40	270	112	72	250	63	40	F05	50	50	7	5,4
50	316	131	90	315	40	40	F07	70	70	10	9,5
65	341	141	100	315	40	40	F07	70	70	10	12,5
80	392	162	122	500	40	40	F10	102	102	12	21,2
100	395	176	135	500	40	40	F10	102	102	12	30,1
125	368	211	175	660	40	40	F12	135	135	15	55
20R15	270	80	35	130	100	63	F04	42	42	5,8	1,3
25R20	270	94	46	160	100	63	F04	42	42	5,8	2,2
32R25	270	98	50	160	63	40	F04	42	42	5,8	2,7
40R32	270	106	65	250	63	40	F05	50	50	7	3,9
50R40	316	113	72	350	63	40	F05	60	60	7	5,6
65R60	341	131	90	315	40	40	F07	70	70	10	8,9
80R85	392	141	100	315	40	40	F07	70	70	10	12,9
100R100	395	162	122	500	40	40	F10	102	102	12	22,1

Subject to modification of design and dimensions

BALLOSTAR® KHA-SK

Short welding ends

GENERAL FEATURES

- 3-piece ball valve with full or reduced bore
- Floating ball, anti-static, lockable
- Double tightness in both directions
- Modular system components

CONNECTIONS

Welding ends in accordance with DIN EN 12627

DIMENSIONS

Face-to-face dimensions in accordance with DIN EN 12982, series 67

ACCEPTANCE TESTING

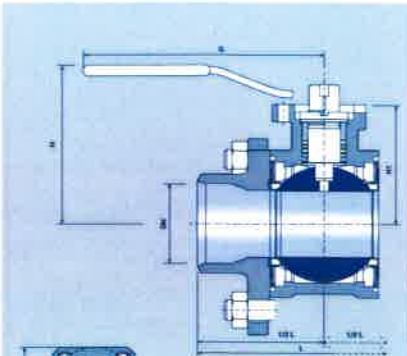
- Seat leak tightness: EN 12266-1 P12, leakage rate A
- Tightness to atmosphere: EN 12266-1 P11
- Strength: EN 12266-1 P10

AUTOMATION

Range connection in accordance with ISO 5211, allows for direct mounting of an actuator or by means of brackets. Pneumatic and electrical actuators utilisable.

TEMPERATURE

-196 °C to +400 °C (see pT diagram)



DN	Dimensions				PN		Mounting Range for actuator				Weight kg
	L	H	H1	G	V18	Xc	ISO	A	Dc3	Dc4	
10	70	80	35	130	100	63	F04	42	42	5,8	0,8
15	75	80	35	130	100	63	F04	42	42	5,8	0,8
20	90	94	46	160	100	63	F04	42	42	5,8	1,4
25	100	98	50	160	63	40	F04	42	42	5,8	1,6
32	110	106	65	250	63	40	F05	50	50	7	3
40	125	113	72	250	63	40	F05	50	50	7	4,7
20R15	80	80	35	130	100	63	F04	42	42	5,8	0,8
25R20	100	94	46	160	100	63	F04	42	42	5,8	1,4
32R25	110	98	50	160	63	40	F04	42	42	5,8	1,8
40R32	125	106	65	250	63	40	F05	50	50	7	3,1
50R40	150	113	72	250	63	40	F05	50	50	7	5

KHA-SK VARIANTS

FULL BORE

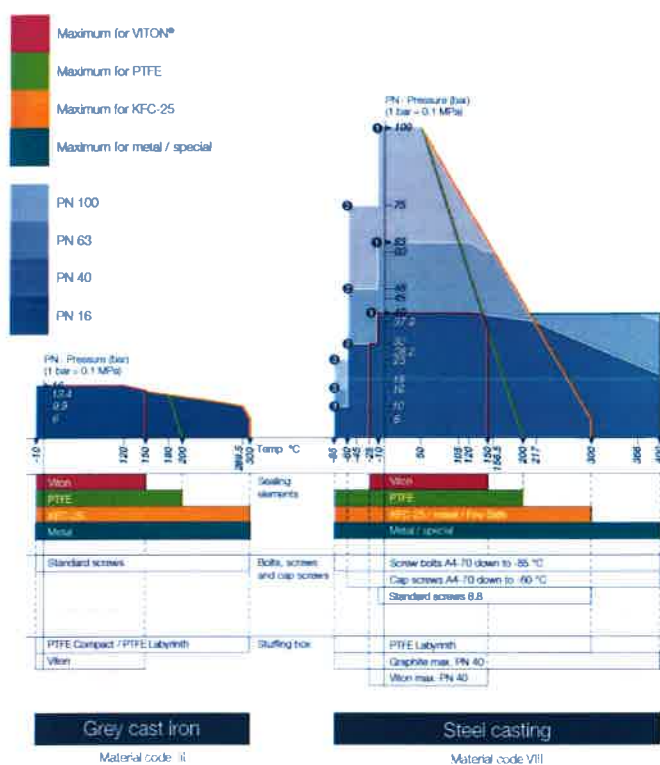
Material: Steel casting 1.0619
(Material code V18)
Stainless steel casting 1.4408
(Material code Xc)

REDUCED BORE

Material: Steel casting 1.0619
(Material code V18)
Stainless steel casting 1.4408
(Material code Xc)

AREAS OF UTILIZATION

Pressure and temperature ranges



The pT diagrams illustrate the influence of the three body materials, the sealing materials and the actuator shafts on the area of utilization of the ball valve.

This represents safety at the highest level. Insert your operating point into the diagram fields and you will identify whether your safety reserves meet your requirements. At

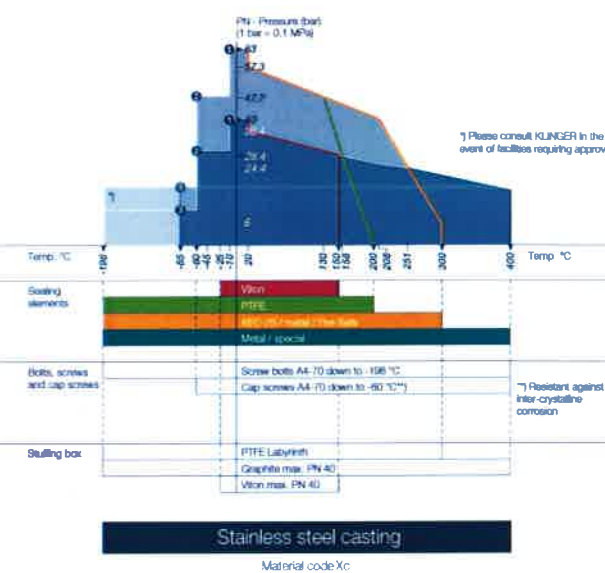
the same time, you will see which parameters may require further change. Carrying out your selection on the basis of this principle, you will optimize the cost-effectiveness of your valve.

1 If the operating pressure is between 75 - 100 % of the nominal pressure, then the application field in all three pressure stages (PN 100, 63, 40) will reach down to -10 °C

2 If the operating pressure, including load peaks, is between 25 - 75 %, the field of application increases to -60 °C. Cap screws made of the material A4-70 are a pre-requisite in this case.

3 If the operating pressure reaches a maximum of 25 % of the nominal pressure, the safety range of the valve increases to -85 °C. Actuator shafts made of the material A4-70 also represent a pre-requisite in this case.

In case the operating pressure drops into the nominal pressure range, the application field in the temperature range will increase.



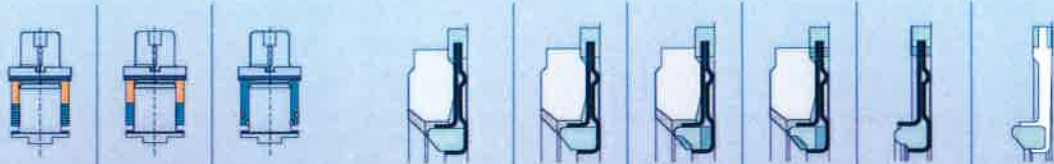
AREAS OF UTILIZATION

Stuffing boxes

Sealing elements

As a standard, the ball valves are fitted with the stuffing box PTFE Labyrinth and the sealing element KFC-25. The remaining designs listed here can be optionally requested upon order. Special designs are supplied with a type plate.

- Recommended
- Less suitable
- Not recommended



	PTL PTFE Labyrinth	GRK Graphite Compact	VIT Viton	KFC KFC-25	PTF PTFE	MET Metal*	MES Metal / special*	VIR Viton	FIS Fire-Safe
Media									
Water / hot water	+	+	+	+	+	+	+	+	+
Mineral oil	+	+	+	+	+	+	+	+	+
Heat transfer oil	+	+	+	+	+	+	+	+	+
Liquid gas / cryogenic temperature	+	+	+	+	+	+	+	+	+
Saturated steam	+	+	+	+	+	+	+	+	+
Misc. gases	+	+	+	+	+	+	+	+	+
Vacuum / full vacuum	+	+	+	+	+	+	+	+	+
Hot steam (max. 300 °C)	+	+	+	+	+	+	+	+	+
Oxygen	+	+	+	+	+	+	+	+	+
Operating conditions									
Standard utilization	+	+	+	+	+	+	+	+	+
High number of cycles	+	+	+	+	+	+	+	+	+
Frequent temperature changes	+	+	+	+	+	+	+	+	+
Fire safety (Fire-Safe)	+	+	+	+	+	+	+	+	+
Chemical industry	+	+	+	+	+	+	+	+	+
Abrasive media	+	+	+	+	+	+	+	+	+
Temperature range (°C)	-196 +300	-85 +400	-25 +150	-196 +300	-196 +200	-196 +300	60 +400	-25 +150	-196 +300
Certifications									
VDI 3440	+		+	+					
ONGW	+		+	+					
Fire-Safe API 607 4th edition, EN ISO 10497:2004	+		+	+					+
TA-Luft	+		+	+					
VdTUV 1085	+		+	+					
EN 181			+	+					

* Suitable for temperatures up to 10 bar of water pressure / The value of the K_{vs} value per series / *Special equipment and accessories for cryogenic temperature

ACTUATOR SELECTION

Actuation torque
for the various seals

Nominal diameter DN	Differential pressure (bar)										
	0	5	10	15	20	25	30	40	50	63	100
Inch mm	Torque (Nm)										

KFC-25

1/4"	10	6	6.2	6.4	6.6	6.8	7	7.2	7.6	8	9.5	10
1/2"	15	6	6.2	6.4	6.6	6.8	7	7.2	7.6	8	9.5	10
3/4"	20	12	12.4	12.7	13.1	13.4	13.8	14.1	14.8	15.5	16.8	19
1"	25	14	15	16.1	17.3	18.1	19.2	20.2	22.3	24.3	27	
1 1/2"	32	17	18.4	19.9	21.8	22.7	24.1	25.8	28.4	31.5	35	
1 1/2"	40	25	27.8	30.8	33.9	36.1	38.9	41.7	47.2	52.8	60	
2"	50	37	40.8	44.3	48.6	51.5	55.1	58.8	66			
2 1/2"	65	40	46.3	50.5	55	58	61.3	67.5	75			
3"	80	56	61.4	66.2	71.8	76	80.8	88	100			
4"	100	80	88.8	95.5	103	108	115.8	125	140			
5"	125	100	111.8	120.5	130	136	145.8	158	175			
6"	150	120	131.8	142	153	160	171.8	185	205			

PTFE

1/4"	10	5.4	5.6	5.8	6	6.1	6.3	6.5	6.8	7.2	7.7	9
1/2"	15	5.4	5.6	5.8	6	6.1	6.3	6.5	6.8	7.2	7.7	9
3/4"	20	10.8	11.1	11.4	11.8	12.1	12.4	12.7	13.3	14	14.8	17.1
1"	25	12.6	13.5	14.5	15.6	16.3	17.2	18.2	20	21.9	24.3	
1 1/2"	32	15.3	16.6	17.8	19.4	20.4	21.7	23	25.6	28.2	31.5	
1 1/2"	40	21.3	23.8	26	28.8	30.7	33.1	35.4	40.1	44.9	51	
2"	50	30.3	33.3	36.3	39.9	42.2	45.2	48.9	54.1			
2 1/2"	65	51	56.3	61.6	66	70.3	74.6	80.9	93.5			
3"	80	72	80.5	89	97.5	105.2	113	121.5	138			
4"	100	120	131.8	145.5	157	169.3	182	196.5	225.5			
5"	125	200.5	216.1	235.8	256.5	278	300.8	325	375.5			
6"	150	282.5	308.1	337.8	369	400.8	433.3	467.5				

METAL/SPECIAL

1/4"	10	7.5	7.8	8.2	8.5	8.8	9.1	9.5	10.1	10.8	11.6	14
1/2"	15	7.5	7.8	8.2	8.5	8.8	9.1	9.5	10.1	10.8	11.6	14
3/4"	20	15	16.7	18.4	19.2	19.8	20.5	21.2	22.6	24	25.8	29
1"	25	18	19.4	20.8	22.6	23.7	25.1	26.6	29.4	32.3	36	
1 1/2"	32	25	26.7	28.3	30.3	31.7	33.3	35	38.3	41.7	46	
1 1/2"	40	40	44.8	49.5	53.2	56	58.8	62.6	70.1	77.6	86	
2"	50	56	61.4	66.2	71	75.8	80.6	85.4	95.5	105.8	117	
2 1/2"	65	85	92.8	100.8	108.8	116.8	124.8	132.8	148	163	180	
3"	80	140	152.5	165	177.5	190	202.5	215	240	265	290	
4"	100	250	267.5	285	302.5	320	337.5	355	400	440	480	
5"	125	450	500	550	600	650	700	750	850	950	1050	
6"	150	650	710	770	830	890	950	1010	1150	1280	1410	

VITON

1"	25	14	15.9	17.8	20
1 1/2"	32	18	20.2	22.4	25
1 1/2"	40	25	29.7	34.8	40
2"	50	40	49.4	56.6	70
2 1/2"	65	55	72.2	86.4	110
3"	80	100	100	100	200
4"	100	180	219.4	279.8	350

For standard computations, KJINGER recommends the factor 1.5, i.e. using plus 50 %. With regard to ball valves with reduced bores, the values of the preceding row, i.e. a smaller nominal diameter, must be taken into account.

TECHNICAL DETAILS

Flow characteristics for the determination
of the nominal diameter

SIZE OF BALL VALVE

- Flow rate Q In m³/h
- Pressure loss Δp In bar
- Density ρ In kg/m³
- Velocity w In m/s
- Flow coefficient K_v In m³/h
- Pressure loss coefficient ζ

Allows for the calculation of:

$$K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$$

The valve is to be selected in a manner that the K_v value is greater, or the ζ value less than the computed value.

$$\zeta = \frac{2 \cdot \Delta p \cdot 10^5}{\rho \cdot w^2}$$

FLOW VALUES

DN (mm)	ζ	K_v -value
10	0.35	6.8
15	0.33	10.8
20	0.30	16.8
25	0.14	26.8
32	0.12	41.9
40	0.11	56.9
50	0.10	71.9
65	0.075	101.9
80	0.067	126.9
100	0.059	166.9
125	0.051	216.9
150	0.046	266.9
200	0.04	366.9
250	0.035	466.9
300	0.03	566.9
400	0.025	766.9
500	0.02	966.9
600	0.015	1166.9
800	0.01	1566.9
1000	0.008	1966.9
1200	0.006	2366.9
1500	0.005	2766.9

PRESSURE LOSSES

$$\Delta p = \zeta \cdot \frac{\rho}{2} \cdot w^2 \cdot 10^{-5}$$

or

$$\Delta p = \left(\frac{Q}{K_v} \right)^2 \cdot \frac{\rho}{1000}$$

The characteristic unit for shut-off and control valves is the K_v value. The values provided in the table apply to a H₂O flow medium with a temperature of 5 – 30 °C, a density of 1000 kg/m³ and a pressure loss of $p = 1$ bar at the valve.

In metric measurement systems the characteristic unit utilized is the K_v value. In countries using inches, the characteristic unit is described by means of the C_v -value. It provides how many US gal/min of water, at a temperature of 60 °F and with a pressure loss of 1 psi, flow through the valve.

PRODUCT OVERVIEW



>> AREAS OF APPLICATION





Your KLINGER distribution partner

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