



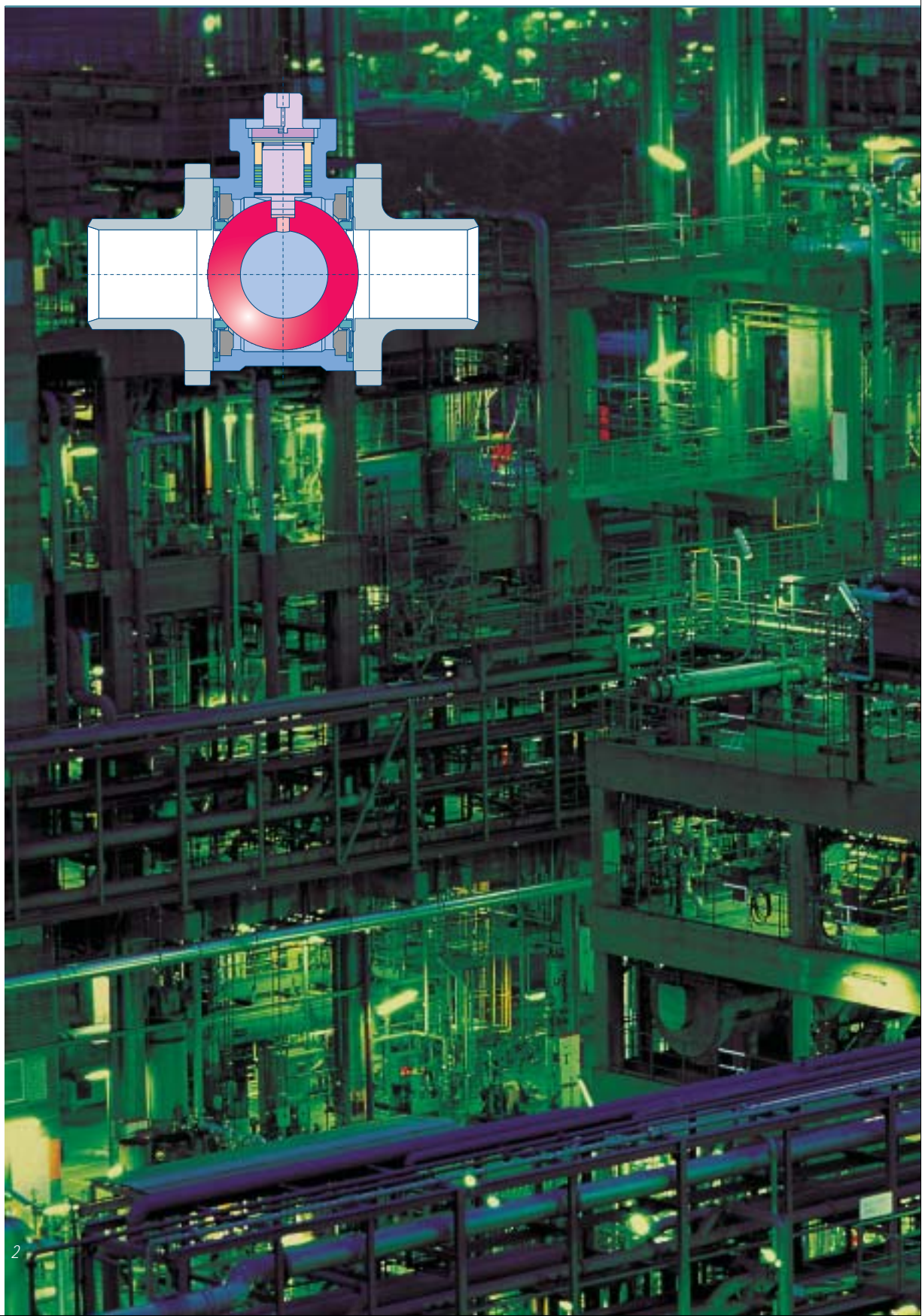
KLINGERballostar® KHA

3 pieces ball valve


DN 10 – 150

CE 0408
Conformity with Pressure
Equipment Directive 97/23/EC

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KLINGERballostar-A: The new ball valve just offers more



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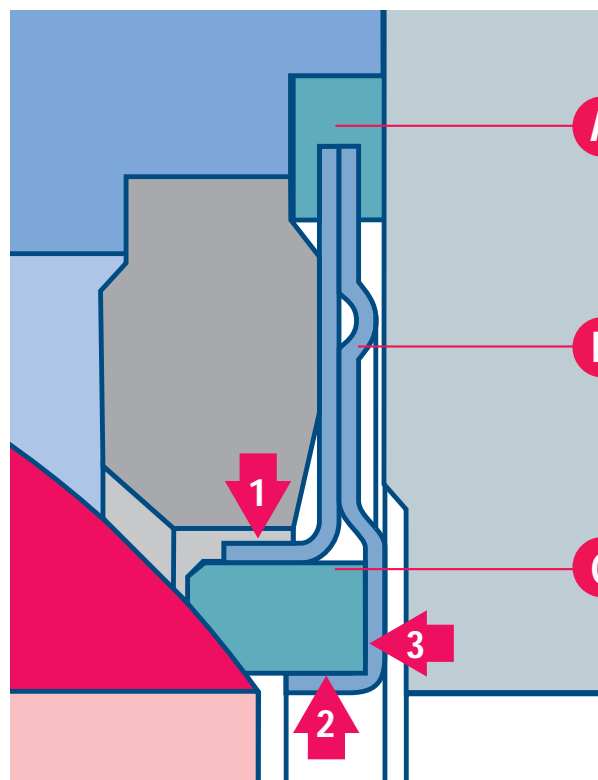
Threaded connection, full port
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The technical data of connection and ball valve at one glance



Who or whatever controls



The sealing element from Klinger offers safety for many years

The sleeve

This consists of a soft material with good flow characteristics (PTFE) so that the sealing element is reliably held in the flange. A graphite ring provides protection against thermal loads in the Fire Safe version.

The diaphragm spring

Thanks to the spring load a tight fit of the actual sealing ring to the ball is guaranteed independent of fluid pressure and direction.

The sealing ring

The ring is enclosed on three sides by metal. Hence it is able to absorb the incorporated spring load and transfers the force to the ball without suffering any deformation.

The sealing element is the heart of a valve. If a valve can reliably fulfil the sealing or controlling functions is determined by the seal. Who or whatever controls the sealing element, controls safety.

Klinger is the only manufacturer in the world who offers both valves and seals.

It is obvious that a hundred years of experience in sealing technology has led to a natural advantage in competition. You are just about to see part of it.

Here we show you the main differences of the Klinger sealing element. On the next pages we explain how these advantages affect the entire valve concept.

The sealing system decides a ball valve's quality

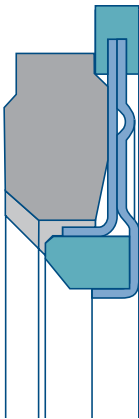
the sealing element and the stuffing box, controls safety

One principle. Six safeties!

*Each sealing element can be replaced by another at any time.
This allows quick and easy adjustment of the valve to altering requirements,
even in-line.*

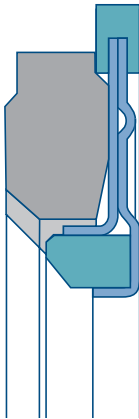
Standard:

For applications up to 300 °C, sealing ring of KFC-25.



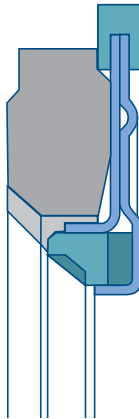
Resistant to fluids:

For an extremely high leak tightness and special application in the chemical area. Sealing ring of PTFE.



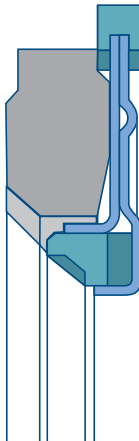
Resistant to wear:

For abrasive fluids and those containing solids. Sealing ring of coated metal.



Temperature resistance:

For the high temperature range up to 425 °C. Sealing ring of coated metal.



Resistant to vacuum:

Reliably leak-proof at low pressure and fine vacuum. Viton sealing ring.



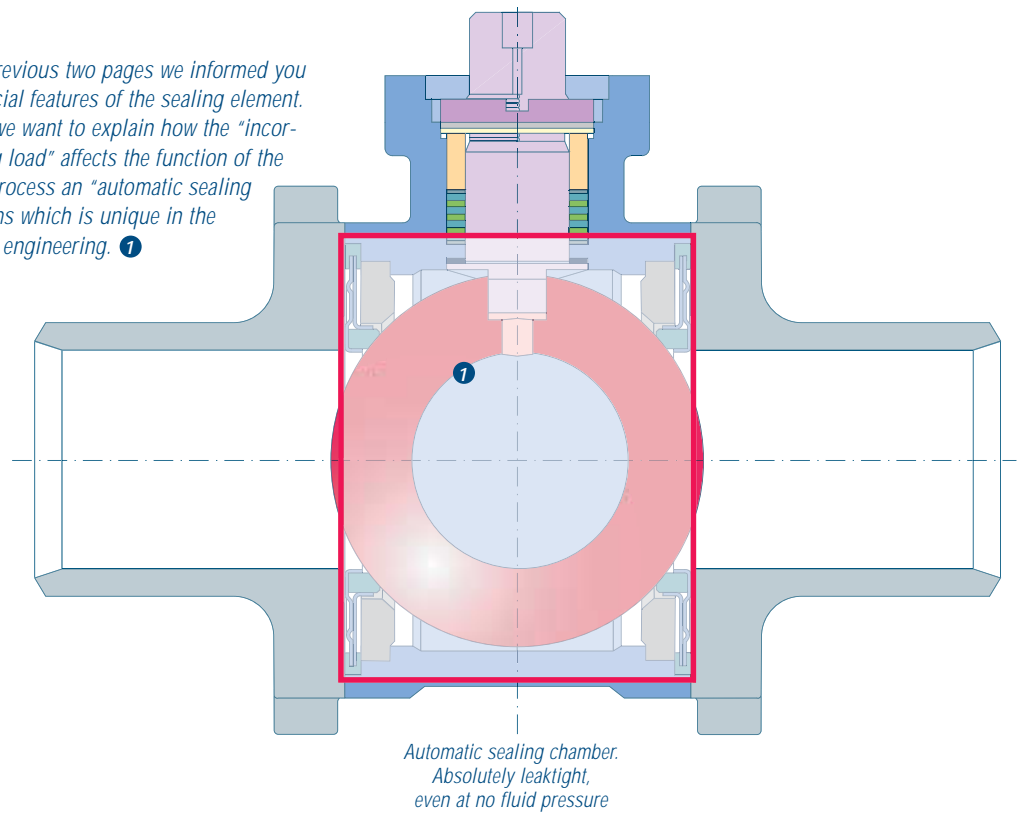
Fire Safe:

Safety acc. to API 607. Special sleeve. Sealing ring of KFC-25.



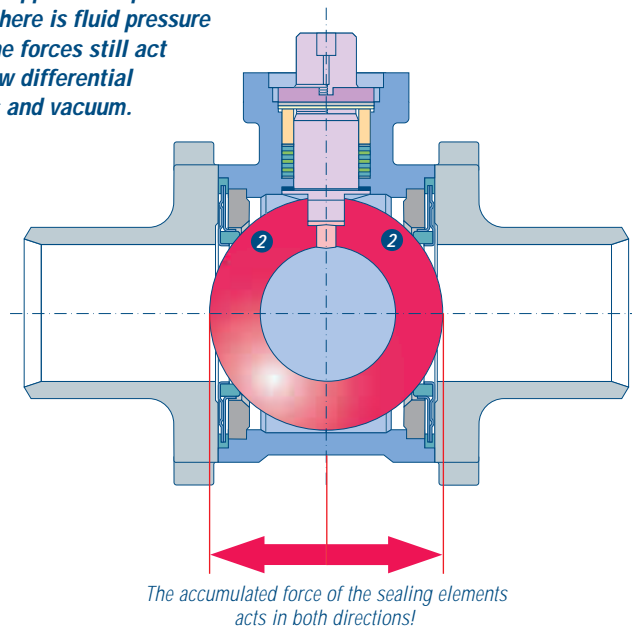


On the previous two pages we informed you about the special features of the sealing element. On this page we want to explain how the "incorporated spring load" affects the function of the valve. In the process an "automatic sealing chamber" forms which is unique in the world of valve engineering. ①

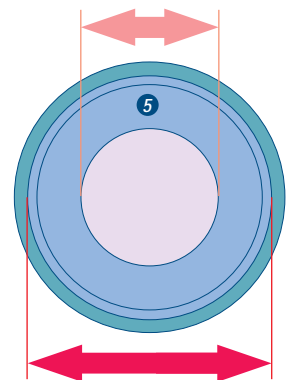


When connecting the flanges with the centre piece the forces of the preloaded springs are released and press the sealing rings to the ball. ②

This happens irrespective of whether there is fluid pressure or not! The forces still act at very low differential pressures and vacuum.

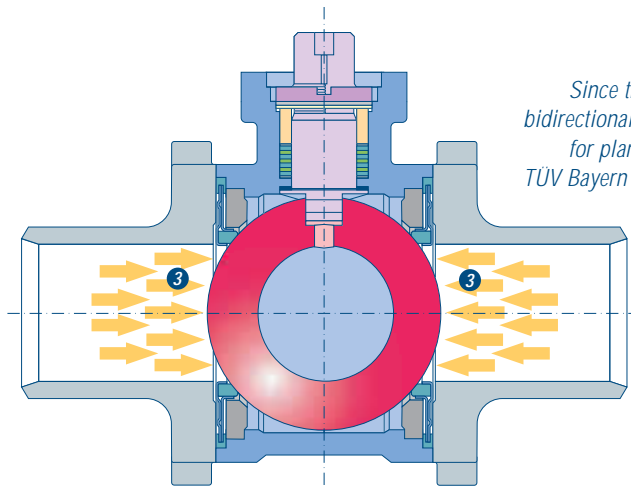


Fluid pressure absorption area in rival systems: Ball area only.



Fluid pressure absorption area at Klinger: Ball and diaphragm spring area.

Only at Klinger will you find a ball valve with "automatic sealing chamber"



Since the "automatic sealing chamber" acts bidirectional, ③ the KLINGERballostar-A is ideal for plants with changing flow directions.

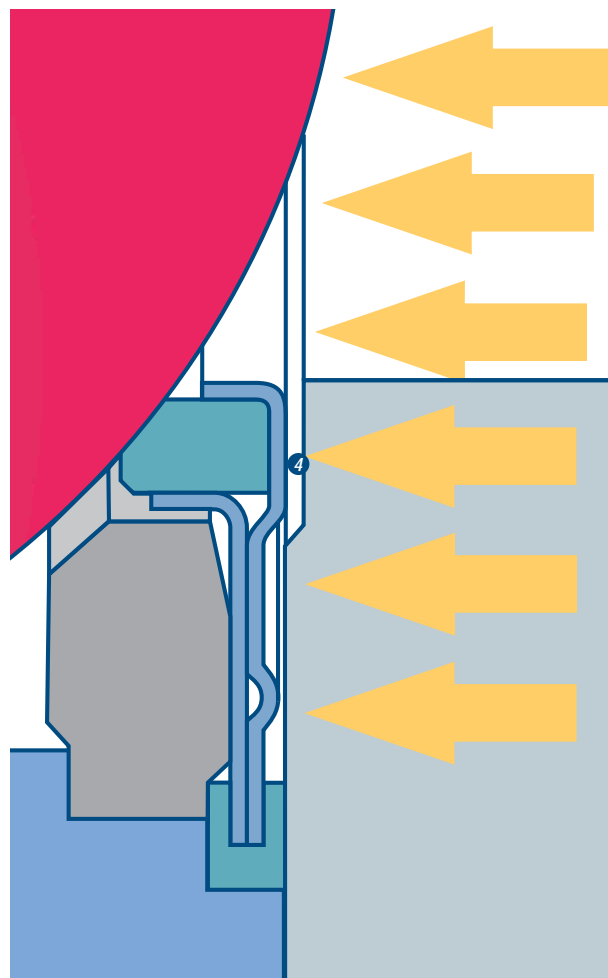
TÜV Bayern confirms:

...the „automatic sealing chamber“ can substitute two on-sided sealing standard valves as are required sometimes in security sections.

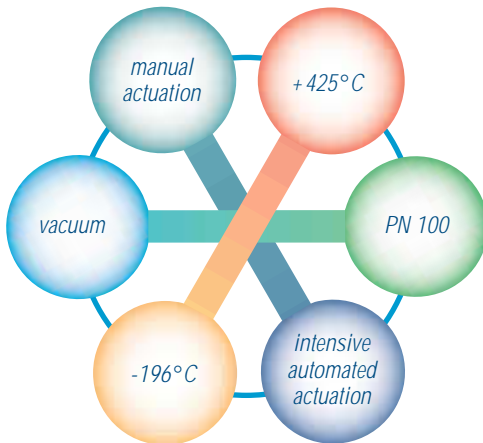
In conventional ball valves, fluid only acts on the ball in the flow direction. In a KLINGERballostar-A ball valve, the complete sealing element is charged with the fluid pressure. ④

Advantage:

With an increasing differential pressure the additional forces increase as well. This relieves the preloaded diaphragm spring and prolongs the service life.



The sketch to the right clearly shows how much larger the pressure absorbing surface is in a Klinger sealing element. ⑤



*Remark: Type plate since 2003
only for special design*



What can provide you with
more safety, profitability
and universality than a
KLINGERballostar-A?





The modular system

A The ball of acid-resistant steel.

B The valve body, two different materials to choose from.

The ISO flange is the defined connection to the actuator.

C Different sealing elements in the port of different material combinations

D Connecting bolts and nuts of three different materials to choose from, suitable for temperature ranges from +425°C to -196°C.

E Pneumatically or electrically activated actuators, suitable for direct or indirect mounting to the ISO flange.

1 The lever is included in the standard scope of supply.

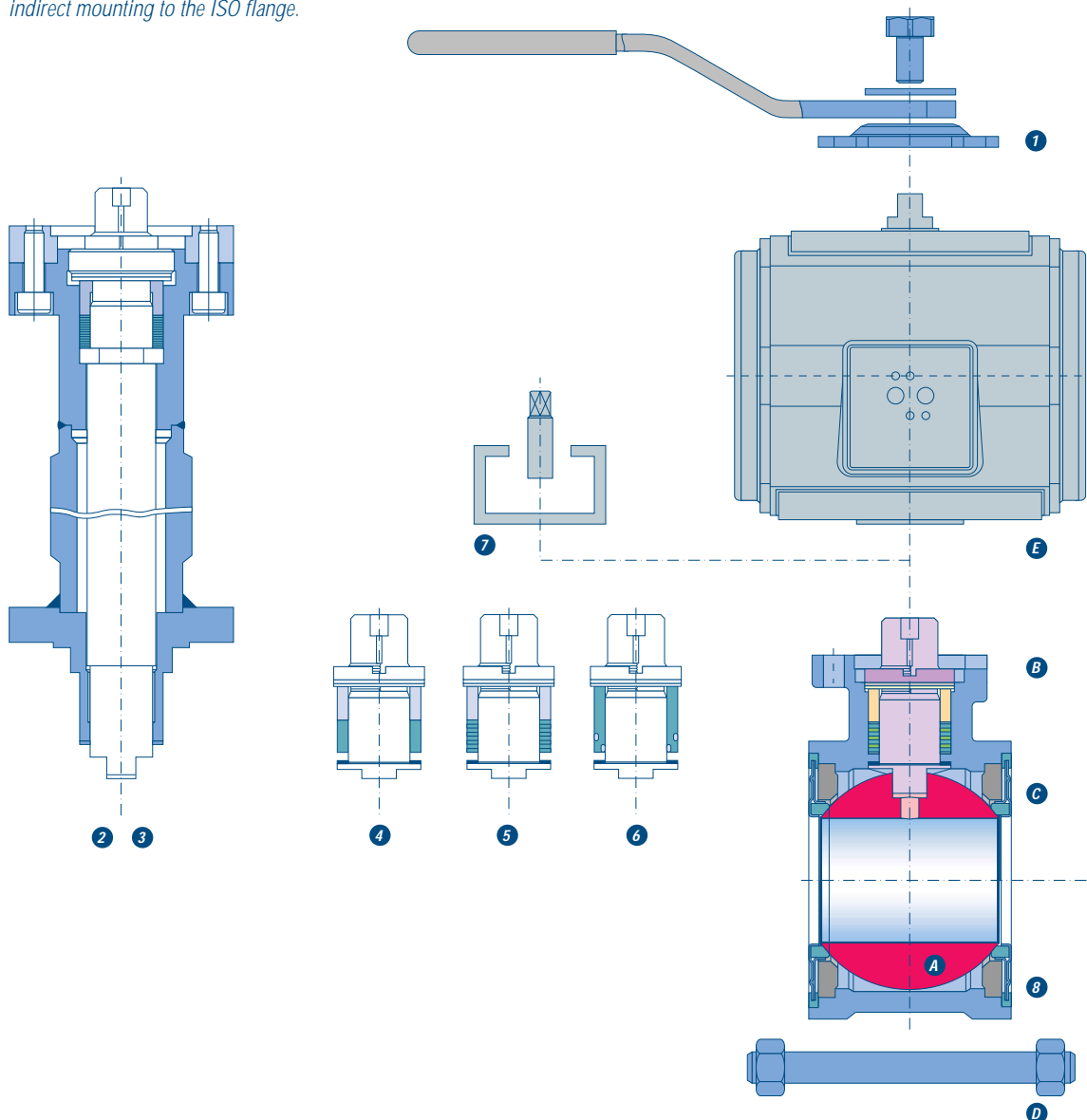
2 - **3** The operating bolt extension for fluids in the low temperature range, also with insulation, depending on the job.

4 - **6** Reloadable stuffing boxes for the operating stem. Four different versions and materials : Graphite, PTFE, labyrinth seal and Viton ring.

7 At option: The bracket for mounting the actuator, where direct mounting is either not feasible or desirable.

8 - **13** The elastic sealing element for the port. Six different materials and versions: KFC-25, PTFE, metal, metal in high-temperature version, Viton, Fire Safe.

14 - **20** Connections designed as flange or threaded connections or weld ends with full or reduced port.



You determine the spot-on ball valve quality through variation of the system components

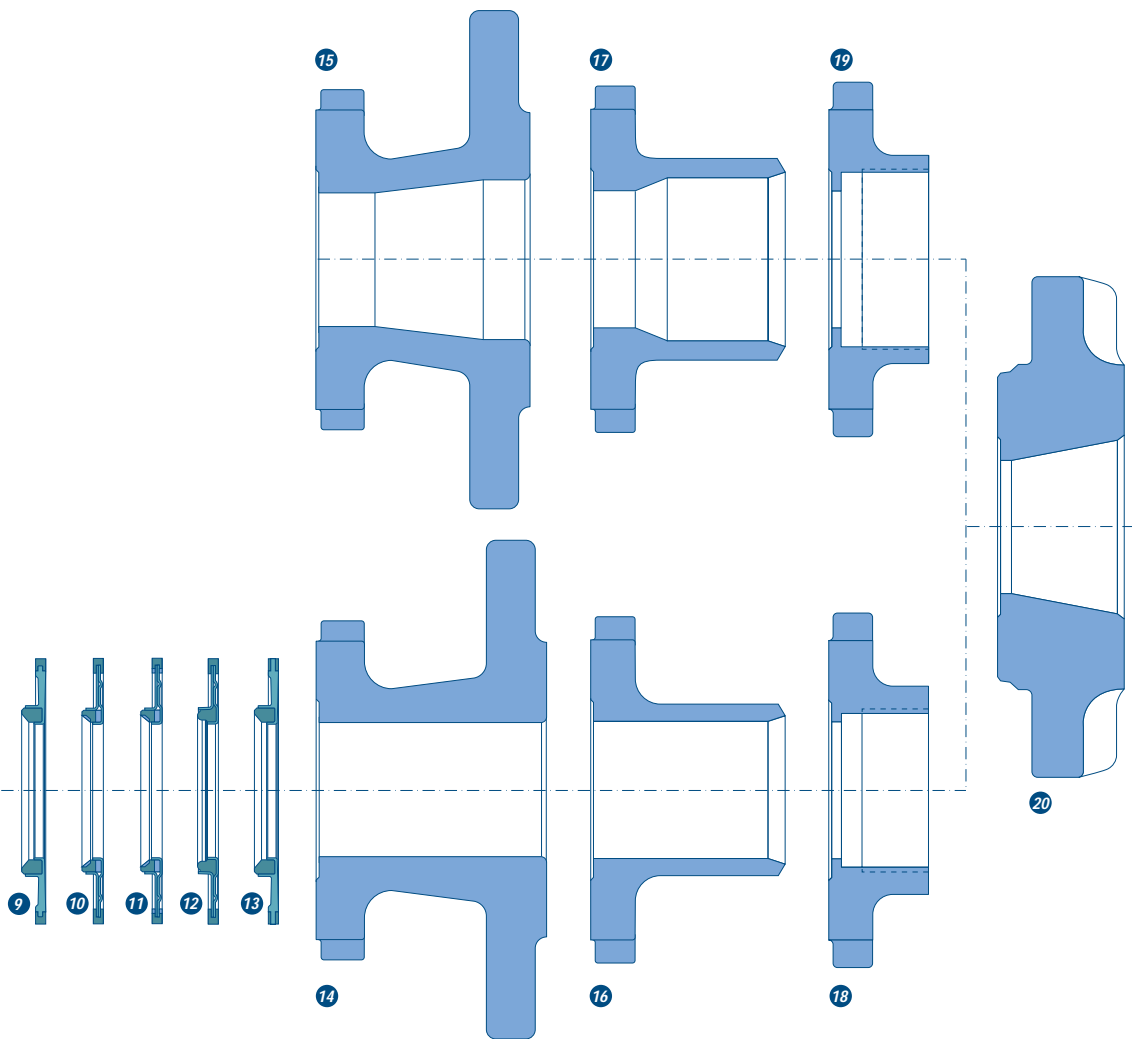
You can fit, retrofit or convert your ball valve for every special operating condition by choosing and combining the various versions and qualities of the system components.

Thanks to the modular system, the safety of the ball valve is quite cost-efficient, because you only buy what you really need and don't waste money on "panic surcharges" or superfluous equipment features.

The fields of application for body materials, sealing elements, and connecting bolts at different pressures and temperatures are shown in the safety diagrams on the pages 16-17.

We place great store in the fact that the low torques of our ball valves definitely result in the choice of an – often – smaller actuator. For more information on the proper torque please see pages 26-27.

With valves of a modular design, maintenance, repair and retrofitting are cost-efficient and easy. For details see the following page.





For a better understanding of the spare part kits:

*The sum of the parts in the spare parts kits **always forms a functional unit.***

Depending on the nominal width of the valve or the application parameters the number of parts and/or their materials may vary with an identical function. In this respect, the kit illustrations only serve for a better understanding and, in most cases, only have a symbolic meaning.

If you are the sort of person who asks: what does the valve cost after it has been purchased, and if you relate the investment to follow-up costs, then we have some good news for you.

In the fields of application of the ball valves, with the KLINGER-ballostar-A now you can achieve a whole new dimension in safety and economy for plant maintenance with a low capital tie-up and fewer working hours.

Not only does the modular technology of the components offer the big advantages of exactly matched original equipment, but it also ensures spot-on substitution in maintenance and upgrading.

You only have to replace what needs be replaced. This considerably prolongs the service life of the valves in the system, and at the same time cuts the costs of plant maintenance for stockkeeping and assembly.

What is not lowered is the safety standard, which in many cases can in fact easily be improved, if required.

The quality sign on the spare parts packages is your guarantee of original quality.



Spare part kit «ball»

*The ball, standard version:
Original Klinger quality*

Even after years, you still have original quality

But guarantee promises and warranty are based on three prerequisites:

1. You use only original Klinger parts, which can be recognized by the "Q".



2. Maintenance and assembly work must always comply with the KLINGER Fluid Control guidelines.

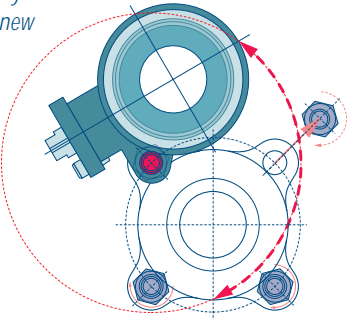
3. Acceptance tests in accordance with DIN 3230 are performed exclusively by organisations authorized by KLINGER Fluid Control.

Maintenance and Service without disassembly

Only the nuts on three of the four through bolts need to be slightly loosened for maintenance and service work. The fourth nut is removed and the bolt retracted. The core of the valve can then be easily swung out, as shown in the schematic diagram alongside.

The two sealing elements in the port are then accessible and can be easily removed and replaced by new ones.

And changing the stuffing box seals, removing the ball or the operating stem is just as easy.



Spare part kit «sealing elements»

The two preloaded sealing elements:
Original Klinger quality



Spare part kit «set of seals»

Stuffing box and
sealing elements:
Original Klinger quality



To ensure it can cope with different needs and everyday jobs, the KLINGERballostar-A ball valve leaves the factory fit to face any situation. That's what the modular system with the "safety from the construction kit" is about.

1. Fire-safe

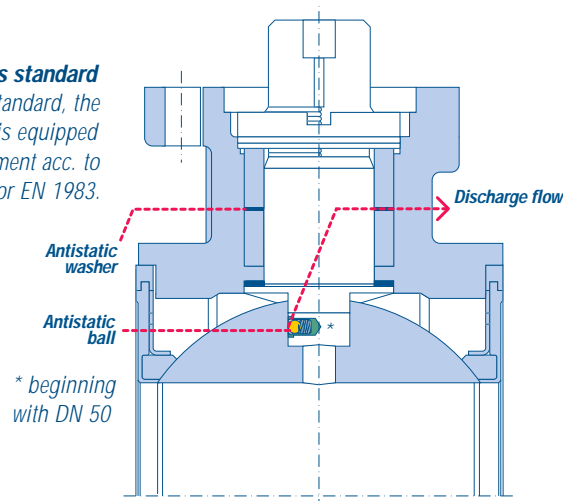
The fire-safe version in accordance with API standard 607 requires special sealing elements in the port. These fire-safe elements are mounted directly in the factory.

2. CE marking

As a sign for our high quality standard we achieved the CE marking which will be printed on each Ballostar and replaces the 3.1B certificate.

3. Antistatic design as standard

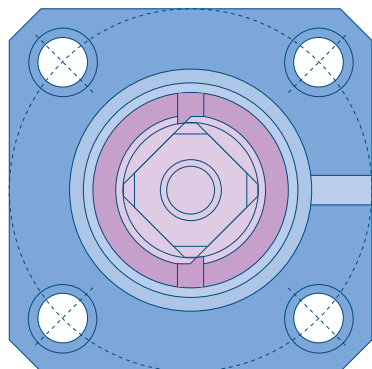
As standard, the KLINGERballostar-A is equipped with an antistatic equipment acc. to ISO 7121 or EN 1983.



4. Clever actuating protection

It goes without saying, that a lever interlocking device is a standard feature. A single pin is enough to connect lever and body. The easy way to ensure adequate protection against unintentional use.

What more can a good ball valve offer



5. Actuators

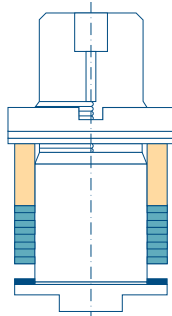
The flange acc. to ISO 5211 is connected to the actuator either directly or via a bracket.

You can fit and dismantle the required actuator type any time, even when the plant is in operation, which makes changing the actuator after a breakdown a piece of cake.

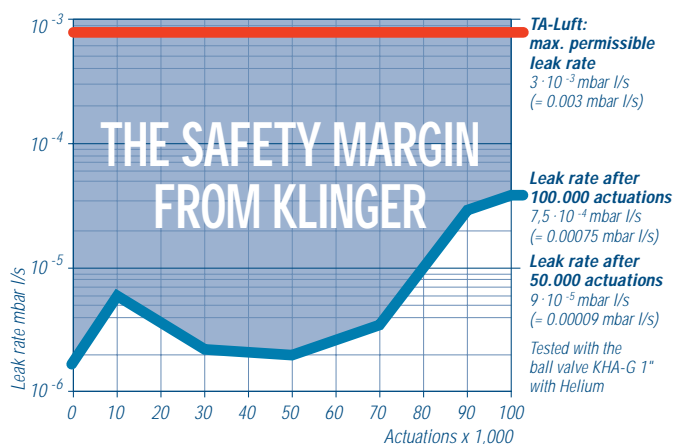
10⁻⁵

6. Standard leak tightness: 10⁻⁵

Klinger is the only manufacturer in the world who offers both valves and seals. The synergistic effect of these two fields of knowledge can be seen in the seals for the port and the stuffing box. The diagram shows the safety margin of the ball valve as compared with the requirements of the Clean Air regulations (TA-Luft).



The labyrinth stuffing box



Safety with guarantee

Summary of the current type approvals

Valve according to the TA-Luft (Clean air regulations)

The requirements for limiting emissions to prevent air pollution (TA-Luft) are clearly fulfilled.

Fire safety

The fire-safe test according to the API Standard 607 and ISO 10497 was certified by TÜV Österreich.

Valve for liquid fuel

The ball valve is approved as a safety control system for furnaces using liquid fuels, under European Standard EN 264.

Valve for gaseous fuel

The ball valve is approved as a safety control system for furnaces using gaseous fuels, under European Standard EN 161.

Valve for gases and hazardous liquids

The valve passed the type test with evidence under VdTÜV 1065. This also covers the requirements under VbF, Gas-HL-VO, TRB 801 No.45, DIN 3840, DIN 3230 Part 3, DIN 3230 Part 5/PG3 and Part 6, by VdTÜV Essen.

Valve for tanks transporting hazardous goods

The type test for valves used in tanks transporting hazardous goods was likewise passed. This also covers the requirements of GGVE/RID, GGVS/ADR, TRT 006, TRT 024, TRT 042, TRG 770/ Annex 2, DIN 3840, DIN 3230 Part 6, VdTÜV Essen.

Valve for use with oxygen

Approval for use with oxygen was issued by the Federal Institute for Material Research and Testing (BAM) Berlin.

Valve as gas house connection

The approval was issued under ÖVGW approval mark G2.531. DVGW approval: NG-4314AU2451 for type KHA-FL/SL/SK NG-4313AU2452 for type KHA-G

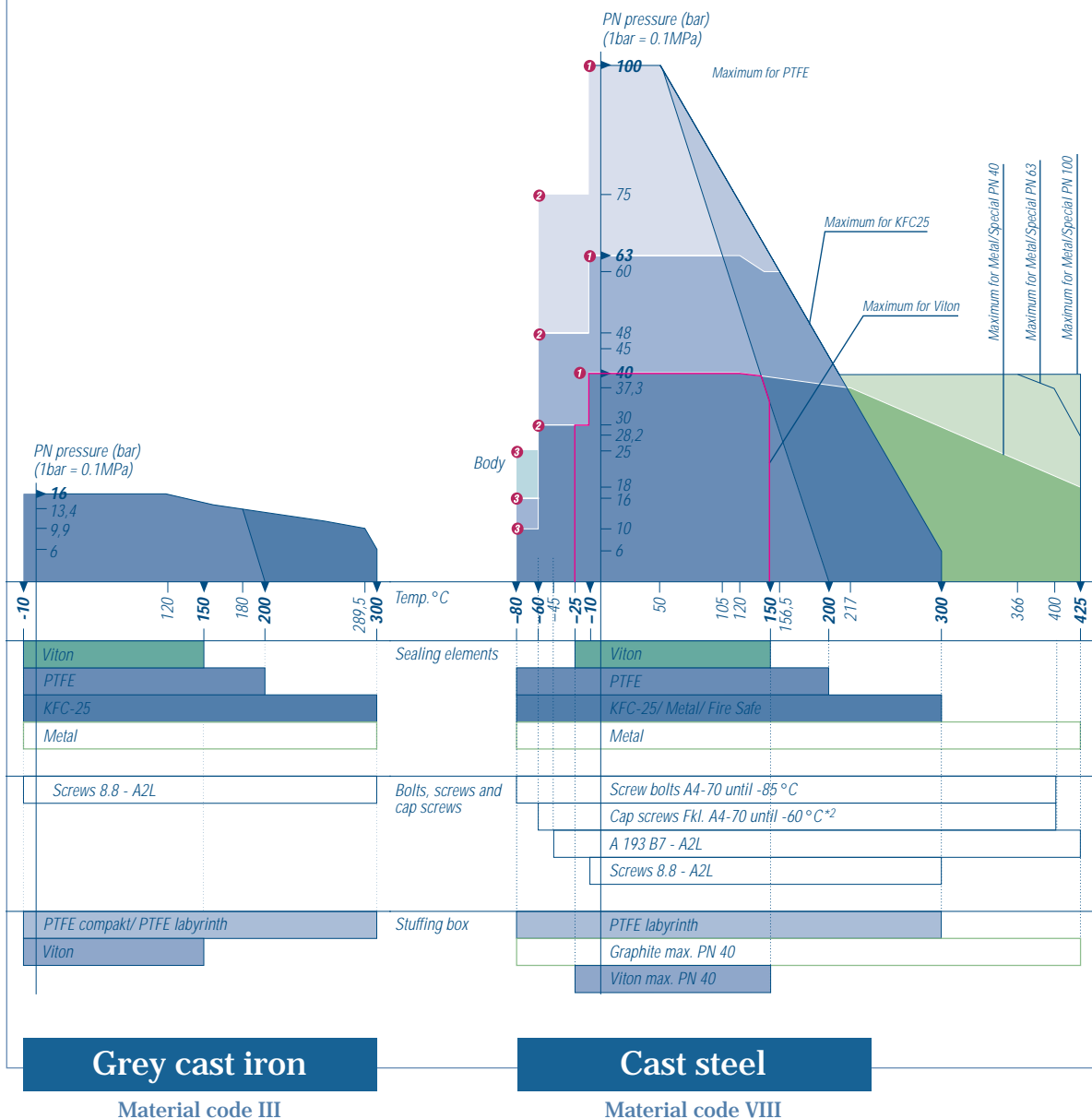


1 With an operating pressure between 75 and 100% of the nominal pressure, the field of application in all three pressure stages (PN 100, 63, 40) is down to -10°C.

2 If the operating pressure incl. load peaks is between 25 and 75 %, the field of application is extended to -60°C assuming cap screws of A4-70.

3 If the operating pressure reaches max. 25% of the nominal pressure, the safety range for the valve is extended to -85°C assuming screw bolts of A4-70.

A decrease in the operating pressure in the nominal pressure range means an increase in the field of applications in the temperature range.

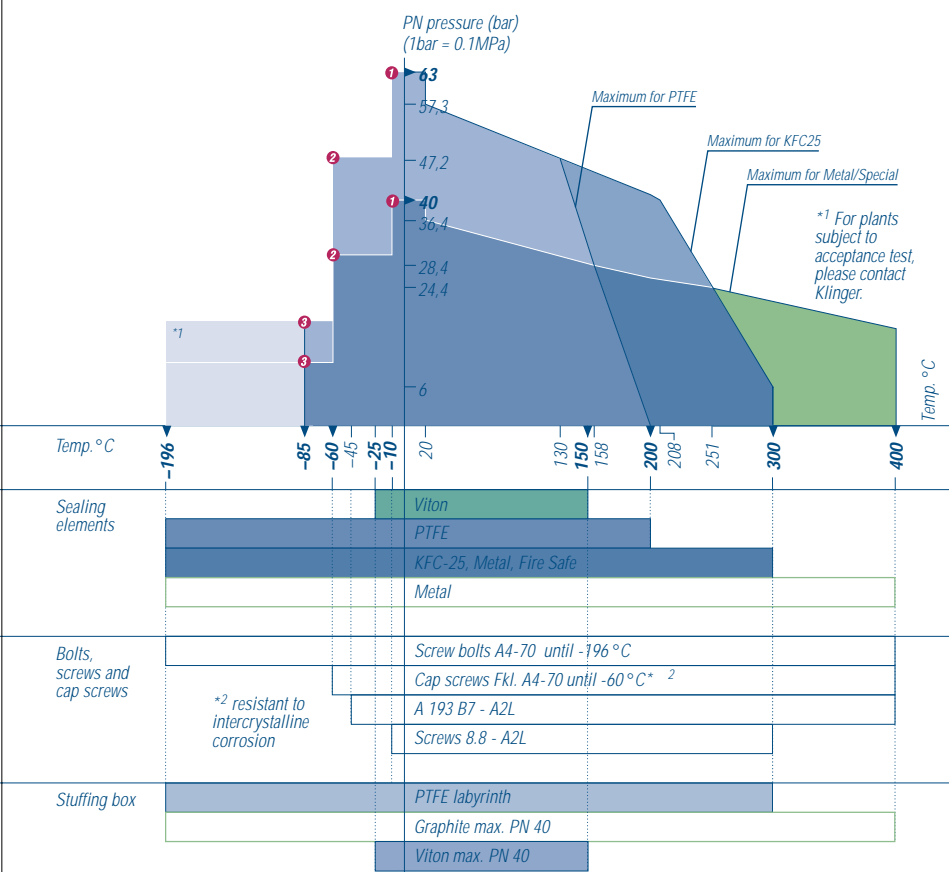


The safety diagrams help you optimise the efficiency of the valve

The influence of the three body materials, the sealing materials and the screws on the range of application of the ball valve is clearly shown in the pt diagrams.

This is safety à la carte. Plot your operating point in the diagram fields to find out whether the safety margins meet your requirements or not. And at the same time you can see which parameters have to be changed.

Choosing your ball valve in this way means optimizing the economy of the valve.

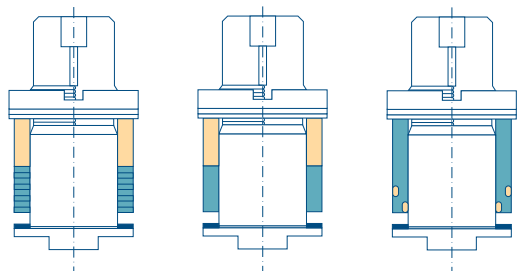


Acid-resistant cast steel

Material code X_C

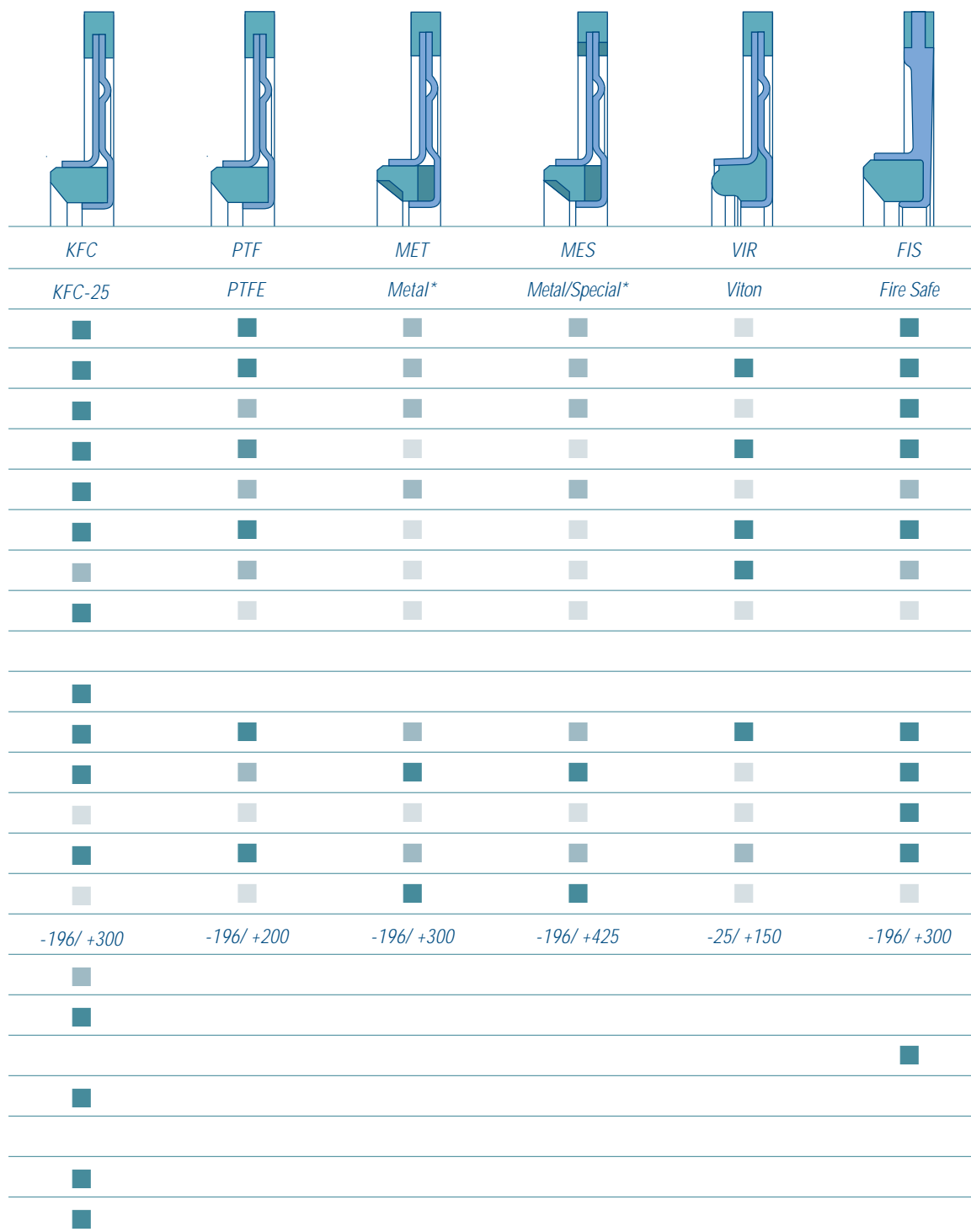


The ball valves are equipped with the stuffing box "PTFE compact" and the sealing element "KFC 25" as standard.
The other versions listed may be ordered optionally when placing the order.



		PTL	GRK	VIT
		PTFE labyrinth	Graphite compact	Viton
Fluids	Water/hot water	■	■	■
	Mineral oil	■	■	■
	Heat transfer oil	■	■	■
	Liquid gas/low temperature	■	■	■
	Saturated steam	■	■	■
	Misc. gases	■	■	■
	Vacuum/ high vacuum	■	■	■
	Hot steam	■	■	■
	O ₂	■		
Conditions of use	Standard application			
	High no. of cycles	■	■	■
	Frequent temp. changes	■	■	■
	Fire safety (Fire Safe)	■	■	■
	Chemical industry	■	■	■
	Abrasive fluids	■	■	■
	Temperature range [°C]	-196/ +300	-85/ +425	-25/ +150
Approval certificates	DVGW	■		■
	ÖVGW	■		■
	Fire Safe API 607	■		
	TA-Luft	■		■
	VdTÜV 1065	■		
	EN 161			■
	EN 264			■

The safety margins of the stuffing boxes and sealing elements

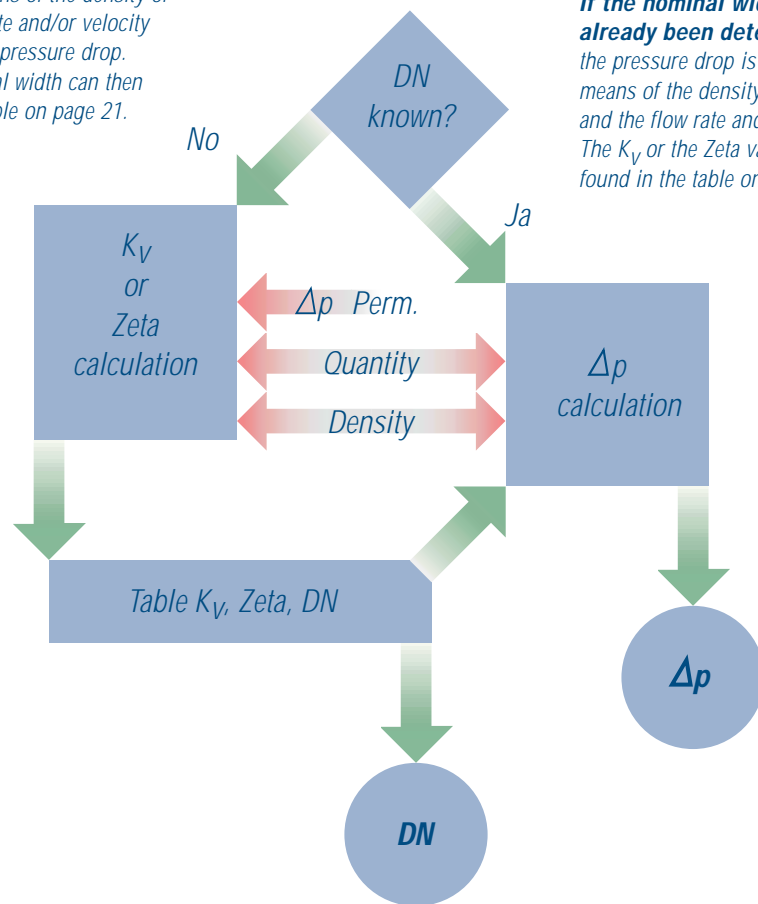




Flow calculation

If the nominal width (DN) has to be determined, the K_V or Zeta value is calculated by means of the density of the fluid, the flow rate and/or velocity and the permissible pressure drop. The required nominal width can then be read off in the table on page 21.

If the nominal width (DN) has already been determined, the pressure drop is calculated by means of the density of the fluid and the flow rate and/or velocity. The K_V or the Zeta value can be found in the table on page 21.



Flow characteristic curves to determine the nominal diameter

Size of the ball valve

Flow rate	Q	in m^3/h
Pressure drop	Δp	in bar
Density	S	in kg/m^3
Velocity	w	in m/s

so that:

$$K_V = Q \sqrt{\frac{S}{1000 \times \Delta p}}$$

When choosing a valve note that the K_V -value should be bigger and the Zeta-value smaller than the calculated value.

or

$$\text{Zeta} = \frac{2 \times \Delta p \times 10^5}{S \times w^2}$$

Flow characteristic values

DN mm	Zeta	K_V (m^3/h)
10	0.35	6.8
15	0.23	18.8
20	0.20	35.8
25	0.14	66.8
32	0.12	118
40	0.11	193
50	0.10	316
65	0.076	607
80	0.067	980
100	0.058	1645
125	0.051	2742
20R15	0.96	16.3
25R20	0.54	34
32R25	0.41	63,9
40R32	0.35	108
50R40	0.33	174
65R50	0.32	299
80R65	0.31	460
100R80	0.30	730
125R100	0.30	1141
150R125	0.30	1642

The coefficients quoted in the table can be used to calculate the right size or pressure drop of the KLINGERballostar-A ball valves. Both the Zeta and K_V values are shown.

K_V values valid for water with a density of $1000 \text{ kg}/\text{m}^3$.

Pressure drops

$$\Delta p = \text{Zeta} \times \frac{S}{2} \times w^2 \times 10^{-5} [\text{bar}]$$

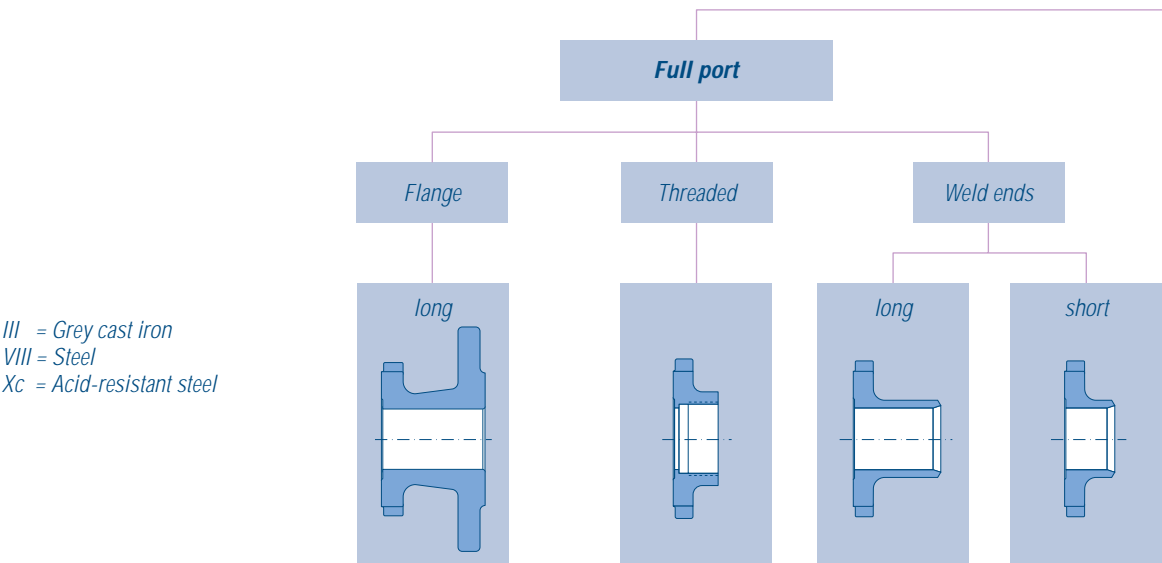
or

$$\Delta p = \left(\frac{Q}{K_V} \right)^2 \times \frac{S}{1000}$$



Once you have chosen your Klingerballostar-A with the help of the pt-diagram, all you have to do now is find the right connection for the pipeline system

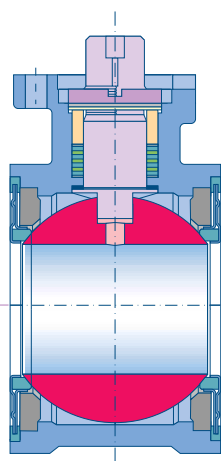
On this page you will find a detailed illustration of the port, type of connection and connection length for the respective material groups.



Type of connection	FL			G			SL			SK		
Material code	III	VIII	Xc	III	VIII	Xc	III	VIII	Xc	III	VIII	Xc
DN 10 3/8"		■	■		■	■		■	■		■	■
DN 15 1/2"	■	■	■		■	■		■	■		■	■
DN 20 3/4"		■	■		■	■		■	■		■	■
DN 25 1"		■	■		■	■		■	■		■	■
DN 32 1 1/4"		■	■		■	■		■	■		■	■
DN 40 1 1/2"		■	■		■	■		■	■		■	■
DN 50 2"	■	■	■		■	■		■	■			
DN 65 2 1/2"	■	■	■					■	■			
DN 80 3"	■	■	■					■	■			
DN 100 4"	■	■	■					■	■			
DN 125 5"		■	■					■	■			

mm inch

Types of connection and choice of material

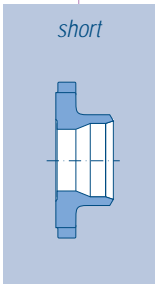
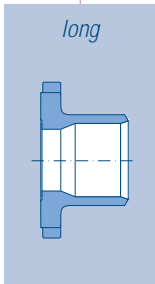
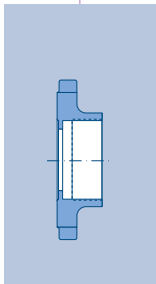
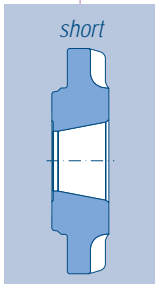
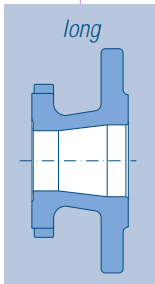


Reduced port

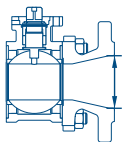
Flange

Threaded

Weld ends



Type of connection	FL			FK			G			SL			SK		
Material code	III	VIII	Xc	III	VIII	Xc	III	VIII	Xc	III	VIII	Xc	III	VIII	Xc
1/2"R15							■								
DN 20R15 3/4"R15	■	■	■				■	■	■		■	■		■	■
DN 25R20 1"R20	■	■	■				■	■	■		■	■		■	■
DN 32R25 1 1/4"R25	■	■	■				■	■	■		■	■		■	■
DN 40R32 1 1/2"R32	■	■	■				■	■	■		■	■		■	■
DN 50R40 2"R40	■	■	■				■	■	■		■	■		■	■
DN 65R50 2 1/2"R50	■			■	■	■					■	■			
DN 80R65 3"R65	■			■	■	■					■	■			
DN 100R80 4"R80	■			■	■	■					■	■			
DN 125R100 5"R100	■	■	■												
DN 150R125 6"R125	■														
mm*															
inch*															



* Connection nominal diameter with reduced port



Especially suitable
for automation systems thanks to
long-time safety.
KLINGERballostar-A





Your actuator will appreciate the low torque

Choice of actuator

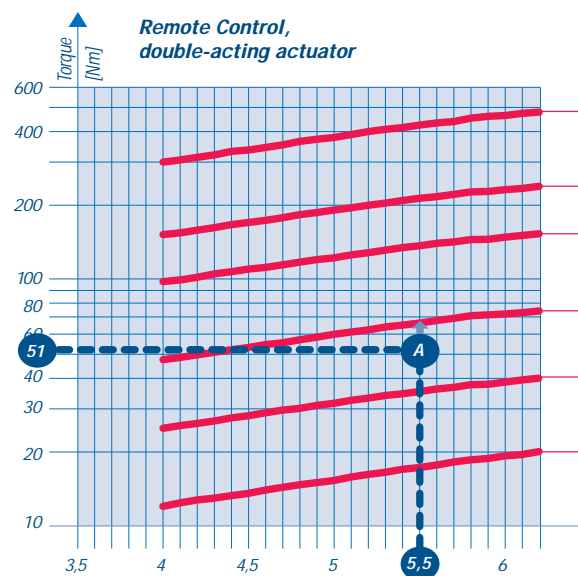
Min. torques for the various seals

Nominal diameter DN		KFC-25										
		Differential pressure (bar)										
		0	5	10	16	20	25	30	40	50	63	100
inch	mm	Torque Nm										
1/2"	15	6	6.2	6.4	6.6	6.8	7	7.2	7.6	8	8.5	10
3/4"	20	12	12.4	12.7	13.1	13.4	13.8	14.1	14.8	15.5	16.4	19
1"	25	14	15	16.1	17.3	18.1	19.2	20.2	22.3	24.3	27	
1 1/4"	32	17	18.4	19.9	21.6	22.7	24.1	25.6	28.4	31.3	35	
1 1/2"	40	25	27.8	30.6	33.9	36.1	38.9	41.7	47.2	52.8	60	
2"	50	37	40.6	44.3	48.6	51.5	55.1	58.8	66			
2 1/2"	65	60	66.3	72.5	80	85	91.3	97.5	110			
3"	80	96	114	132	153.6	168	186	204	240			
4"	100	160	183.8	207.5	236	255	278.8	302.5	350			
5"	125	270	317.5	365	422	460	507.5	555	650			

Nominal diameter DN		PTFE										
		0	5	10	16	20	25	30	40	50	63	100
inch	mm	Torque Nm										
1/2"	15	5.4	5.6	5.8	6.0	6.1	6.3	6.5	6.4	7.2	7.7	9.0
3/4"	20	10.8	11.1	11.4	11.8	12.1	12.4	12.7	13.3	14.0	14.8	17.1
1"	25	12.6	13.5	14.5	15.6	16.3	17.2	18.2	20.0	21.9	24.3	
1 1/4"	32	15.3	16.6	17.9	19.4	20.4	21.7	23.0	25.6	28.2	31.5	
1 1/2"	40	21.3	23.6	26.0	28.8	30.7	33.1	35.4	40.1	44.9	51.0	
2"	50	30.3	33.3	36.3	39.9	42.2	45.2	48.2	54.1			
2 1/2"	65	51.0	56.3	61.6	68.0	72.3	77.6	82.9	93.5			
3"	80	72.0	85.5	99.0	115.2	126.0	139.5	153.0	180.0			
4"	100	120.0	137.8	155.6	177.0	191.3	209.1	226.9	262.5			
5"	125	202.5	238.1	273.8	316.5	345.0	380.6	416.3	487.5			

Nominal diameter DN		Metall/ metal										
		0	5	10	16	20	25	30	40	50	63	100
inch	mm	Torque Nm										
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	15.7	16.4	17.2	17.8	18.5	19.2	20.6	22	23.8	29
1"	25	18	19.4	20.9	22.6	23.7	25.1	26.6	29.4	32.3	36	
1 1/4"	32	25	26.7	28.3	30.3	31.7	33.3	35.0	38.3	41.7	46	
1 1/2"	40	40	44.8	49.5	55.2	59	63.8	68.6	78.1	87.6	100	
2"	50	55	64.4	73.8	85	92.5	101.9	111.3	130			
2 1/2"	65	85	101.9	118.8	139	152.5	169.4	186.3	220			
3"	80	140	172.5	205	244	270	302.5	335	400			
4"	100	250	293.8	337.5	390	425	468.8	512.5	600			
5"	125	450	580	710	866	970	1.100					

KLINGER recommends to use a factor of 1.5, i.e. plus 50% for standard calculations.



Transfer the design torque and the control pressure to obtain the working point A. Now you choose the actuator with the next higher torque. In this case it is RC 230-DA.

Nominal diameter DN		Viton			
		Differential pressure (bar)			
		0	5	10	16
inch	mm	Torque Nm			
1/2"	15				
3/4"	20				
1"	25	14.0	15.9	17.8	20.0
1 1/4"	32	18.0	20.2	22.4	25.0
1 1/2"	40	25.0	29.7	34.4	40.0
2"	50	40.0	49.4	58.8	70.0
2 1/2"	65	55.0	72.2	89.4	110.0
3"	80	100.0	150.0	200.0	260.0
4"	100	160.0	219.4	278.8	350.0
5"	125				

Information on other sizes or differential pressures on request

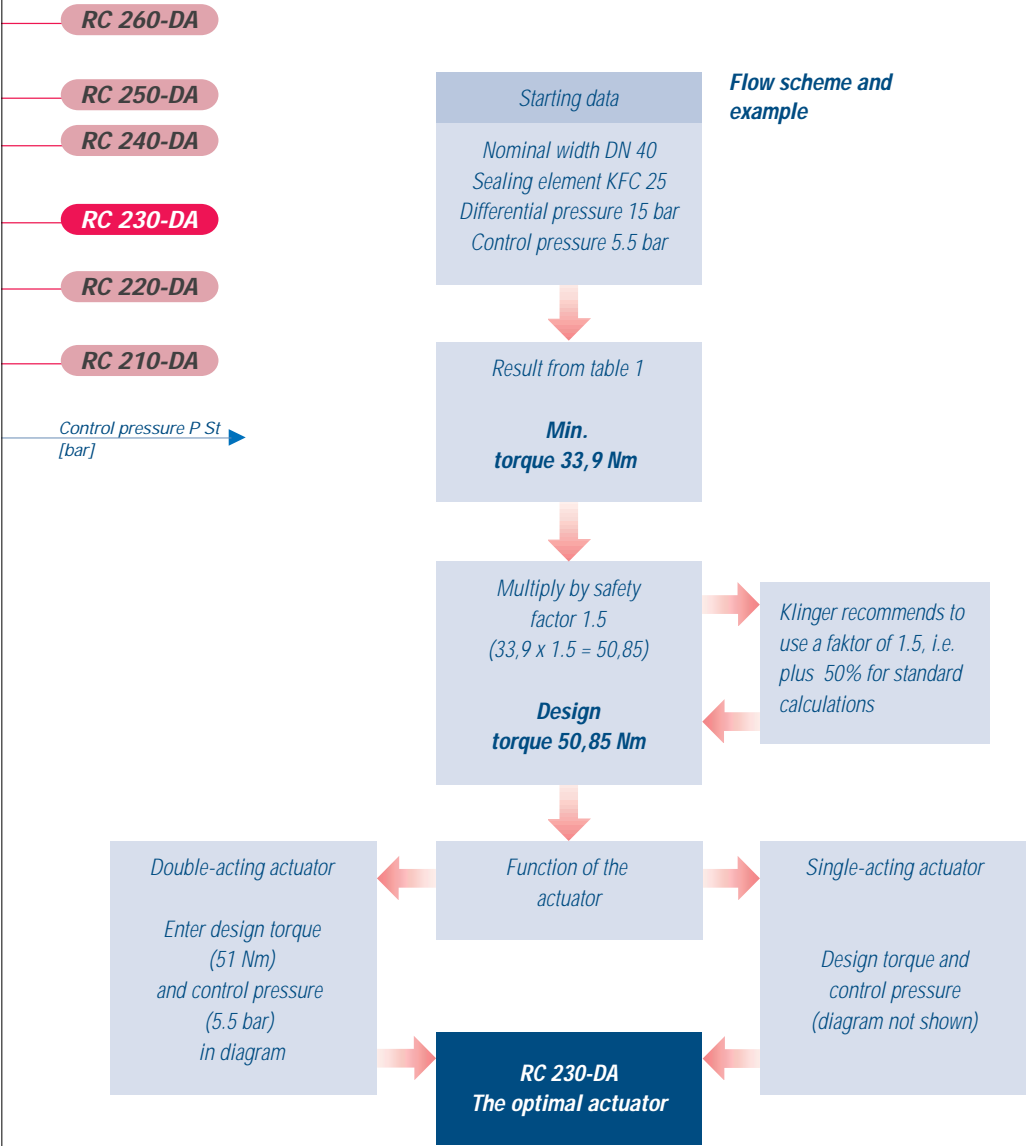
How to choose an actuator

You can save on investment and additional costs by designing the actuator for your ball valve assuming not the possible but the necessary maximum.

The torque of the actuator is determined by the required differential pressure, not by the nominal pressure.

What's more, the KLINGERballostar-A ball valve has the same, relatively low torque in all operating states.

When both aspects are considered, the actuator can often be smaller by one or two performance stages. And a smaller actuator means smaller structural size and smaller fitting dimension. This is important for in plant construction millimetres often make a big difference. And a smaller structural size means a lower capacity and a lower energy requirement for the kinematics. And this day by day, for many years!



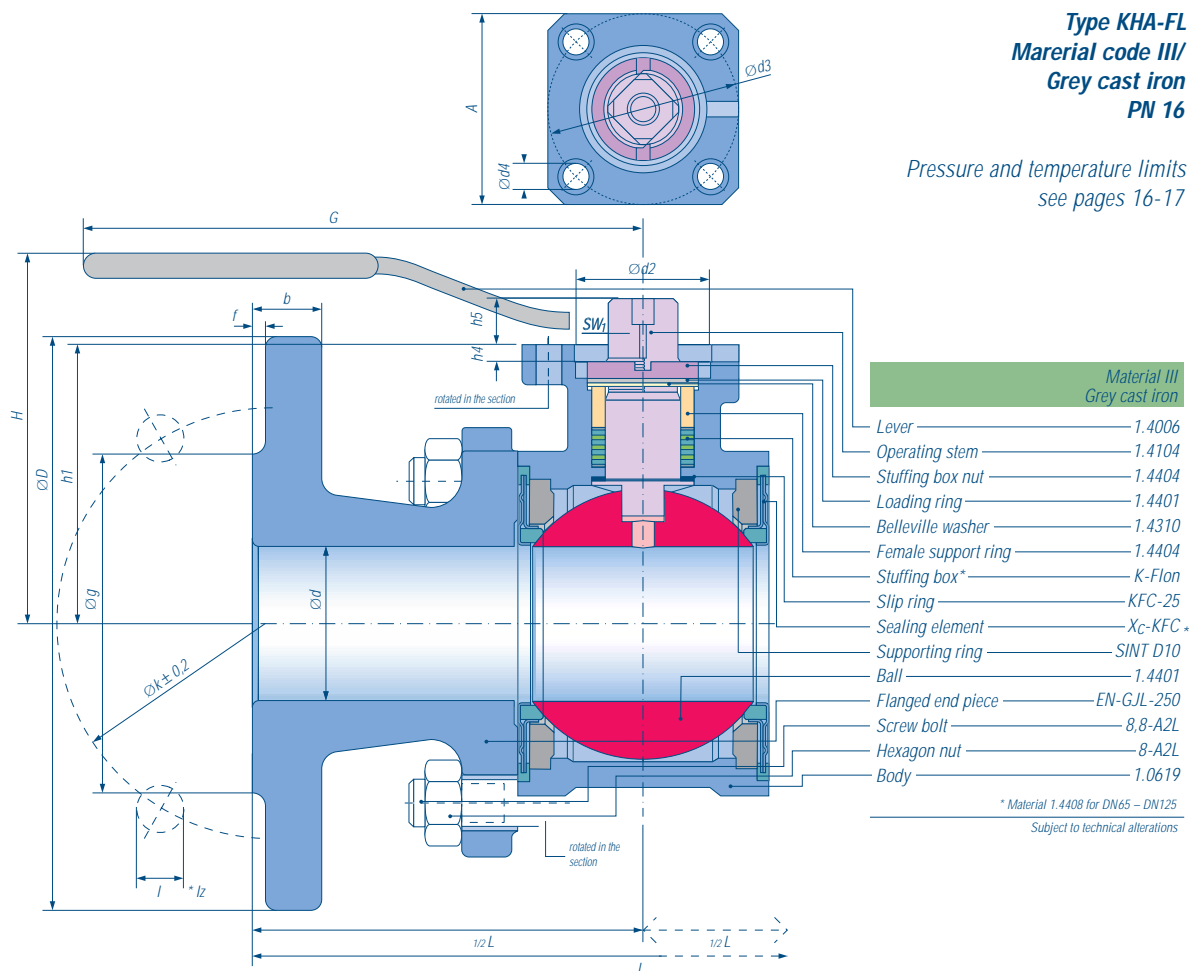


KLINGERballostar-A

Ball valve with flange connection and full port, long

Type KHA-FL
Material code III/
Grey cast iron
PN 16

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak tightness bi-directional.
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Flanges acc. to EN 1092-2
(former DIN 2533)

Dimensions

Face-to-face dimensions acc. to
EN 558-1, basic line 1, or DIN 3202-F1.

Main use

Generally for liquids and gases, other
fluids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
Complies with the requirements of
TA Luft.

Automation

Flange connection acc. to ISO 5211,
allows direct mounting of the actuator or
mounting with bracket.
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN	Connecting dimensions										Mounting flange for actuator							Weight kg/pc
	L	H	G		h1	Ød	ØD	Øg	f	b	Øk	l	lz*	ISO	A	d3	SW ₁	Ød2	Ød4	h4	h5	
15	130	80	130	16	35	15	95	45	2	14	65	14	4	F04	42	42	8	30	5,8	3	7	2.4
50	230	131	315	16	90	50	165	102	3	20	125	18	4	F07	70	70	17	55	10	4	15	13.3
65	290	141	315	16	100	65	185	122	3	20	145	18	4	F07	70	70	17	55	10	4	15	16.4
80	310	162	500	16	122	80	200	138	3	22	160	18	8	F10	102	102	22	70	12	4	20	30.1
100	350	176	500	16	135	100	220	158	3	24	180	18	8	F10	102	102	22	70	12	4	20	36.8

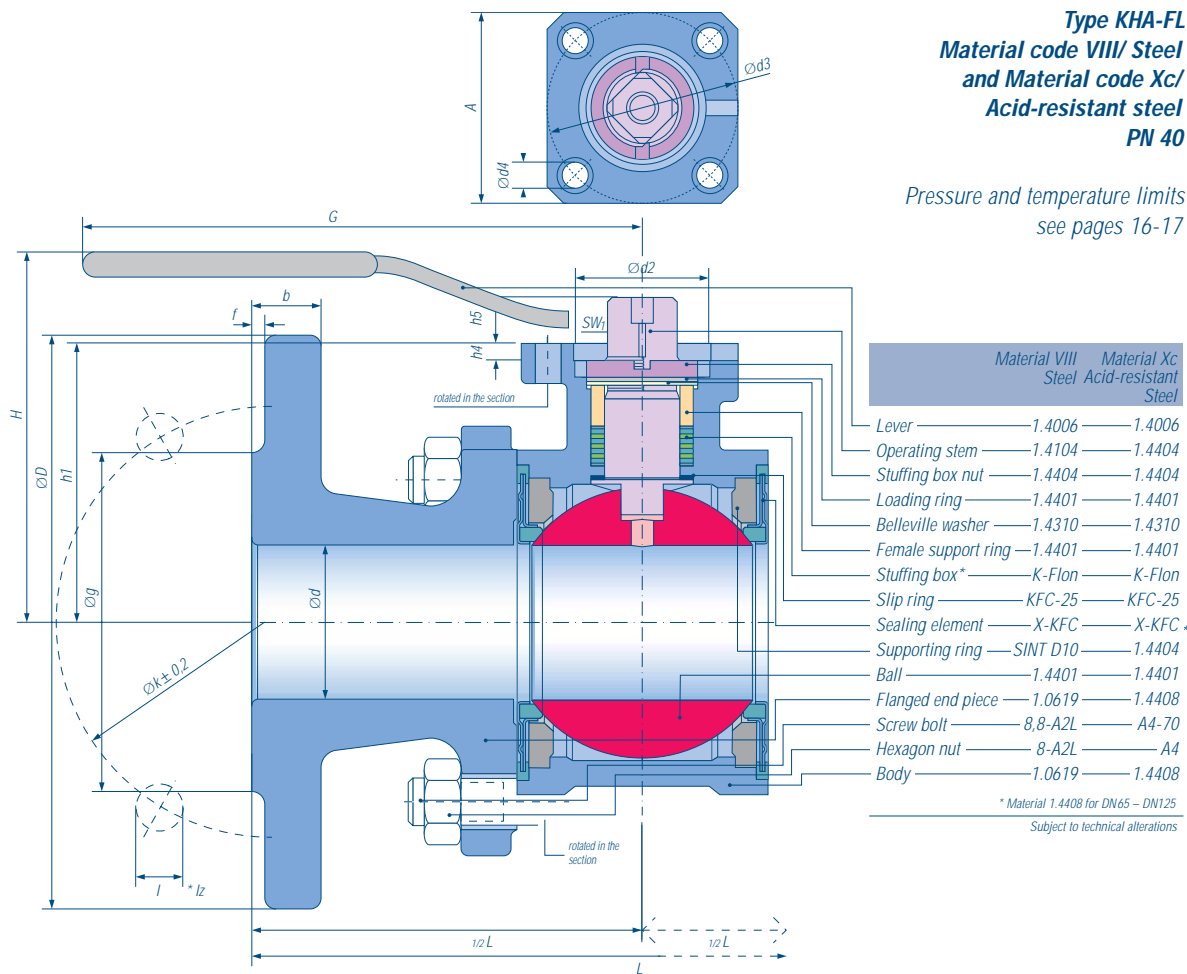
all dimensions in mm

* lz: number of bore holes

Ball valve with flange connection and full port, long

Type KHA-FL
Material code VIII/ Steel
and Material code Xc/
Acid-resistant steel
PN 40

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions.

*Modular construction kit system:
several versions of stuffing boxes
and sealing elements available*

Connections

Flanges acc. to EN 1092-1

Dimensions

Face-to-face dimensions acc. to
EN 558-1, basic line 1, or DIN 3202-F1.

Main use

Generally for liquids and gases, other fluids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0. Complies with the requirements of TA Luft.

Fire safety (special version)

Fire safe acc. to API 607.

Automation

Flange connection acc. to ISO 5211, permits direct mounting of the actuator or mounting with bracket. Pneumatic and electrical actuators possible.

DN	Dimensions			PN	Connecting dimensions										Mounting flange for actuator									Weight kg/pc
	L	H	G		h1	Ød	ØD	Øg	f	b	Øk	l	lz*	ISO	A	d3	SW ₁	Ød2	Ød4	h4	h5			
10	120	80	130	40	35	10	90	40	2	16	60	14	4	F04	42	42	8	30	5.8	3	7	2.3		
15	130	80	130	40	35	15	95	45	2	16	65	14	4	F04	42	42	8	30	5.8	3	7	2.8		
20	150	94	160	40	46	20	105	58	2	18	75	14	4	F04	42	42	11	30	5.8	3	9	3.8		
25	160	98	160	40	50	25	115	68	2	18	85	14	4	F04	42	42	11	30	5.8	3	9	5.1		
32	180	106	250	40	65	32	140	78	2	18	100	18	4	F05	50	50	14	35	7	4	12	7.9		
40	200	113	250	40	72	40	150	88	3	18	110	18	4	F05	50	50	14	35	7	4	12	9.8		
50	230	131	315	40	90	50	165	102	3	20	125	18	4	F07	70	70	17	55	10	4	15	14.1		
65	290	141	315	40	100	65	185	122	3	22	145	18	8	F07	70	70	17	55	10	4	15	18.3		
80	310	162	500	40	122	80	200	138	3	24	160	18	8	F10	102	102	22	70	12	4	20	30.9		
100	350	176	500	40	135	100	235	162	3	24	190	22	8	F10	102	102	22	70	12	4	20	39.7		
125	400	211	650	40	175	125	270	188	3	26	220	26	8	F12	125	125	27	85	15	4	25	52.2		

all dimensions in mm

* Iz: number of bore holes

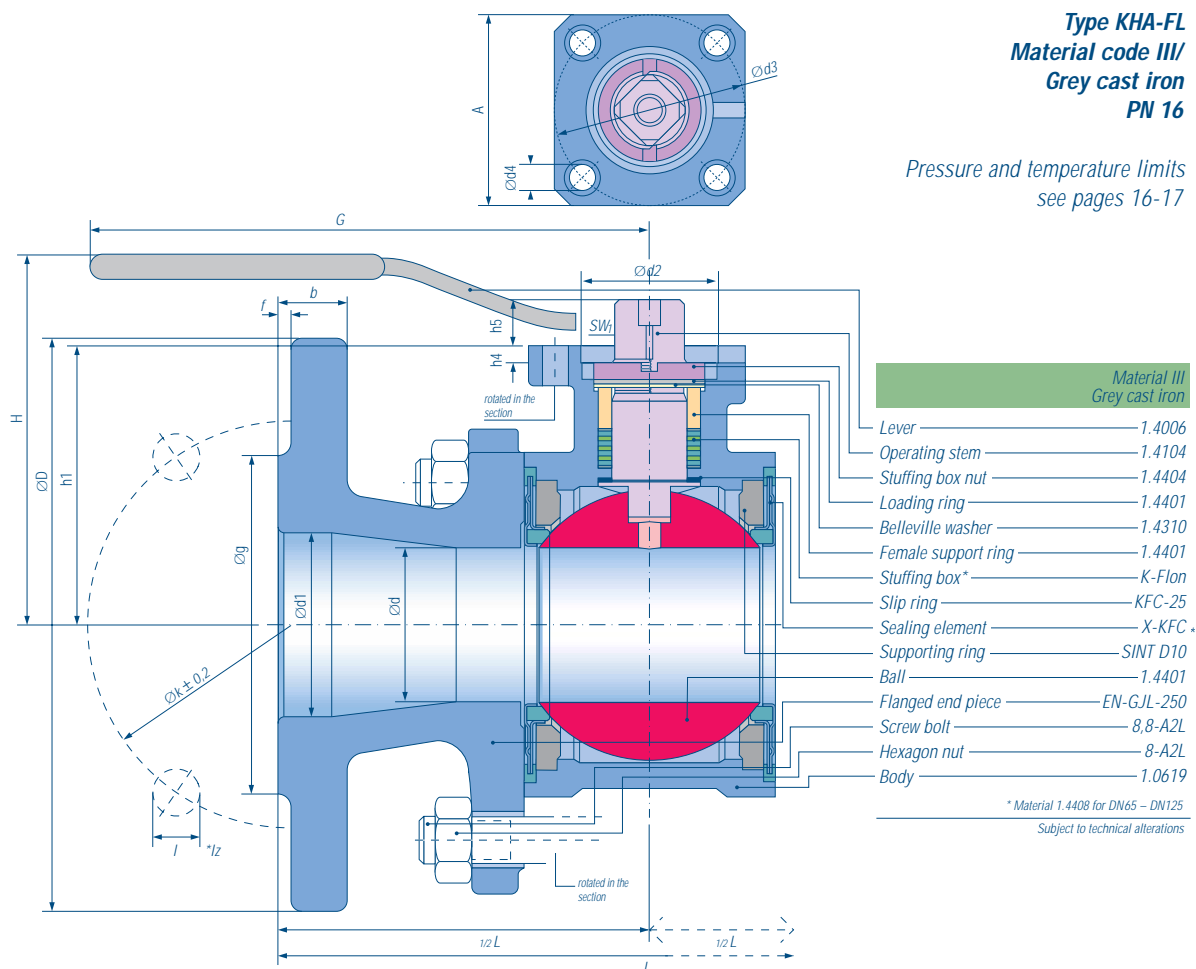


KLINGERballostar-A

Ball valve with flange connection and reduced port, long

Type KHA-FL
Material code III/
Grey cast iron
PN 16

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions

Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Flanges acc. to EN 1092-2
(former DIN 2533).

Dimensions

Face-to-face dimensions acc. to
EN 558-1, basic line 1, or DIN 3202-F1
up to DN 100R80.

Face-to-face dimensions acc. to
EN 558-1, basic line 27, or acc. to
DIN 3202-F5 for DN 125R100 and
DN 150R125.

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.

Pneumatic and electrical actuators
possible.

DN	Dimensions			PN	Connecting dimensions										Mounting flange for actuator								Weight kg/pc
	L	H	G		h1	Ød	Ød1	ØD	Øg	f	b	Øk	l	lz*	ISO	A	d3	SW ₁	Ød2	Ød4	h4	h5	
20R15	150	80	130	16	35	15	20	105	58	2	16	75	14	4	F04	42	42	8	30	5.8	3	7	3.3
25R20	160	94	160	16	46	20	25	115	68	2	16	85	14	4	F04	42	42	11	30	5.8	3	9	4.2
32R25	180	98	160	16	50	25	32	140	78	2	18	100	18	4	F04	42	42	11	30	5.8	3	9	6.2
40R32	200	106	250	16	65	32	40	150	88	3	18	110	18	4	F05	50	50	14	35	7	4	12	8.2
50R40	230	113	250	16	72	40	50	165	102	3	20	125	18	4	F05	50	50	14	35	7	4	12	11.5
65R50	290	131	315	16	90	50	65	185	122	3	20	145	18	4	F07	70	70	17	55	10	4	15	13.4
80R65	310	141	315	16	100	65	80	200	138	3	22	160	18	8	F07	70	70	17	55	10	4	15	20.5
100R80	350	162	500	16	122	80	100	220	158	3	24	180	18	8	F10	102	102	22	70	12	4	20	26.8
125R100	325	176	500	16	135	100	125	250	188	3	26	210	18	8	F10	102	102	22	70	12	4	20	48.2
150R125	350	211	650	16	175	125	150	285	212	3	26	240	22	8	F12	125	125	27	85	15	4	25	63.2

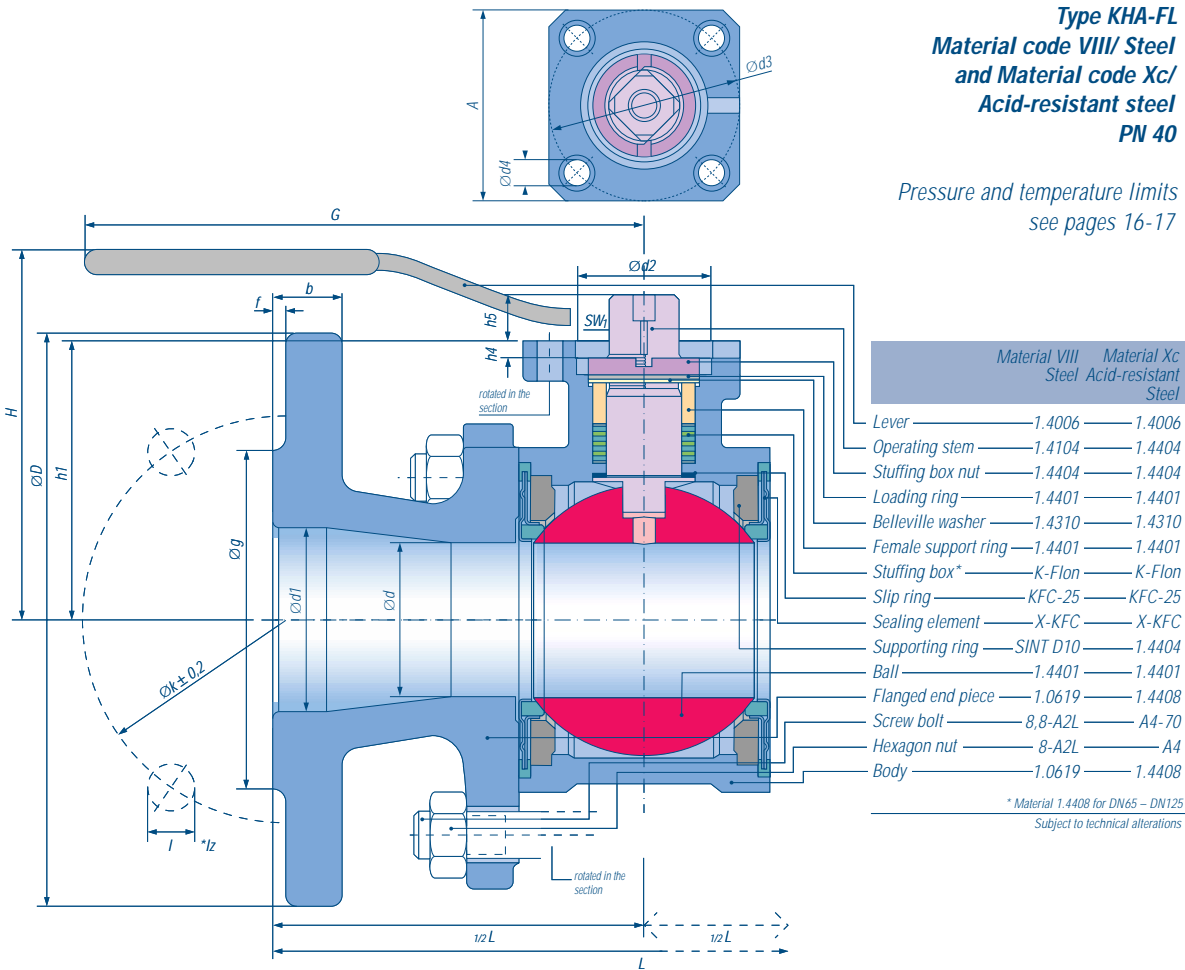
all dimensions in mm

* lz: number of bore holes

In the interest of technical progress designs and dimensions are subject to modification.

KLINGERballostar-A

Ball valve with flange connection and reduced port, long



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions.
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Flanges acc. to EN 1092-1

Dimensions

Face-to-face dimensions acc. to
EN 558-1, basic line 1, or DIN 3202-F1
up to DN 50R40.

Face-to-face dimensions acc.to
EN 558-1, basic line 27, acc. to
DIN 3202-F5 for DN 125R100.

Main use

Generally for liquids and gases, other
fluids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.

Fire safety (special version)

Fire safe acc. to API 607.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN	Connecting dimensions										Mounting flange for actuator							Weight kg/pc
	L	H	G		h1	Ød	Ød1	ØD	Øg	f	b	Øk	l	lz*	ISO	A	SW ₁	Ød3	Ød4	h4	h5	
20R15	150	80	130	40	35	15	20	105	58	2	18	75	14	4	F04	42	8	42	5.8	3	7	3.2
25R20	160	94	160	40	46	20	25	115	68	2	18	85	14	4	F04	42	11	42	5.8	3	9	4.4
32R25	180	98	160	40	50	25	32	140	78	2	18	100	18	4	F04	42	11	42	5.8	3	9	5.9
40R32	200	106	250	40	65	32	40	150	88	3	18	110	18	4	F05	50	14	50	7	4	12	8.1
50R40	230	113	250	40	72	40	50	165	102	3	20	125	18	4	F05	50	14	50	7	4	12	11.6
125R100	325	176	500	40	135	100	125	270	188	3	26	220	26	8	F10	102	22	102	12	4	20	49.5

all dimensions in mm

* lz: number of bore holes

In the interest of technical progress designs and dimensions are subject to modification.

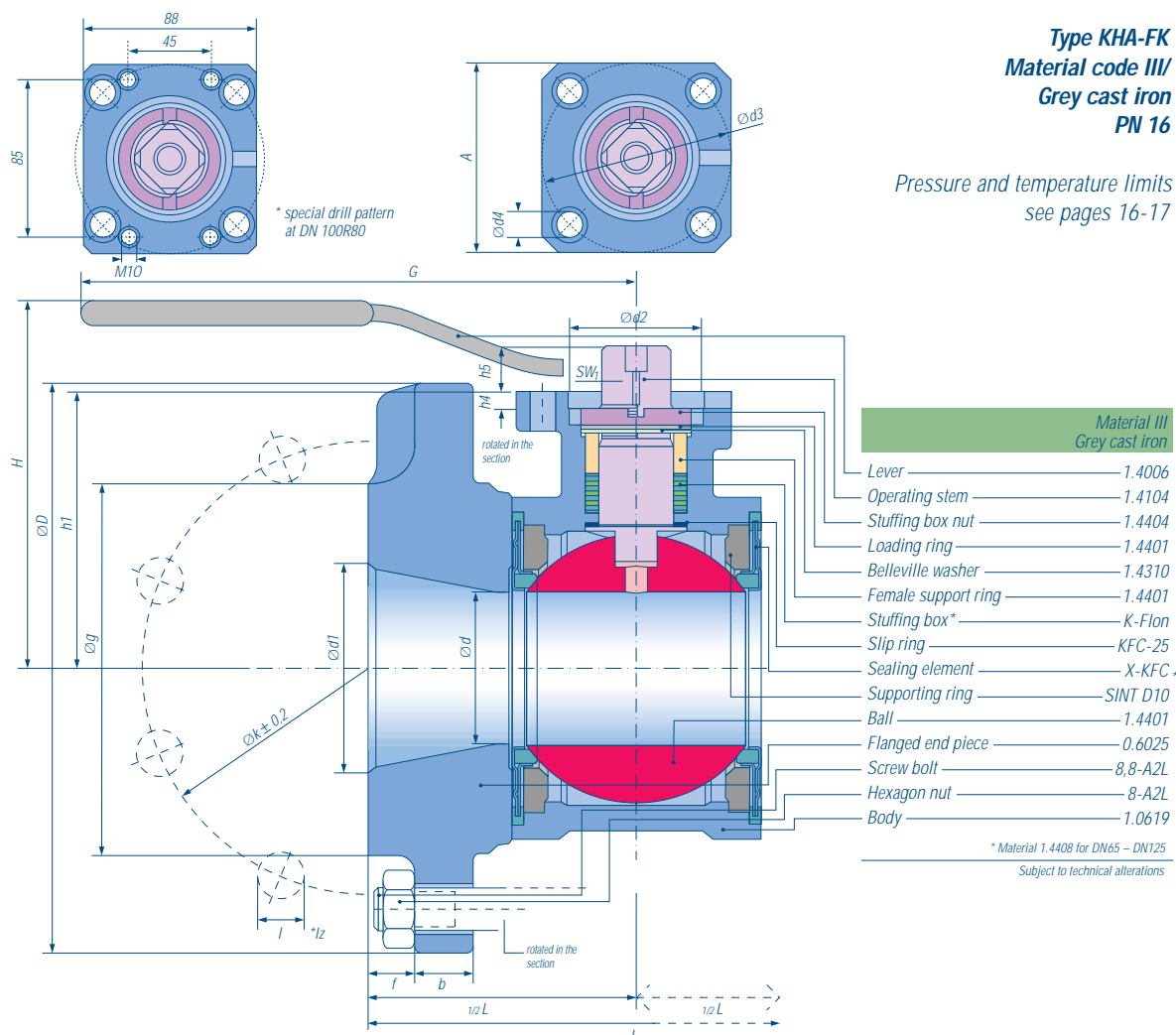


KLINGERballostar-A

Ball valve with flange connection and reduced port, short

Type KHA-FK
Material code III/
Grey cast iron
PN 16

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Flanges acc. to EN 1092-2
(former DIN 2533).

Dimensions

Face-to-face dimensions acc. to
EN 558-1, basic line 27,
or DIN 3202-F4.

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
In accordance with the requirements of
TA Luft.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator or
mounting with bracket.
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN	Connecting dimensions										Mounting flange for actuator								Weight kg/pc
	L	H	G		h1	Ød	Ød1	ØD	Øg	f	b	Øk	I	Iz*	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	
65R50	170	131	315	16	90	50	65	185	122	20	17	145	18	4	F07	70	17	55	70	10	4	15	13.5
80R65	180	141	315	16	100	65	80	204	138	16	21	160	18	8	F07	70	17	55	70	10	4	15	19.7
* 100R80	190	162	500	16	122	80	100	225	158	16	21	180	18	8	F10	102	22	70	102	12	4	20	25.7

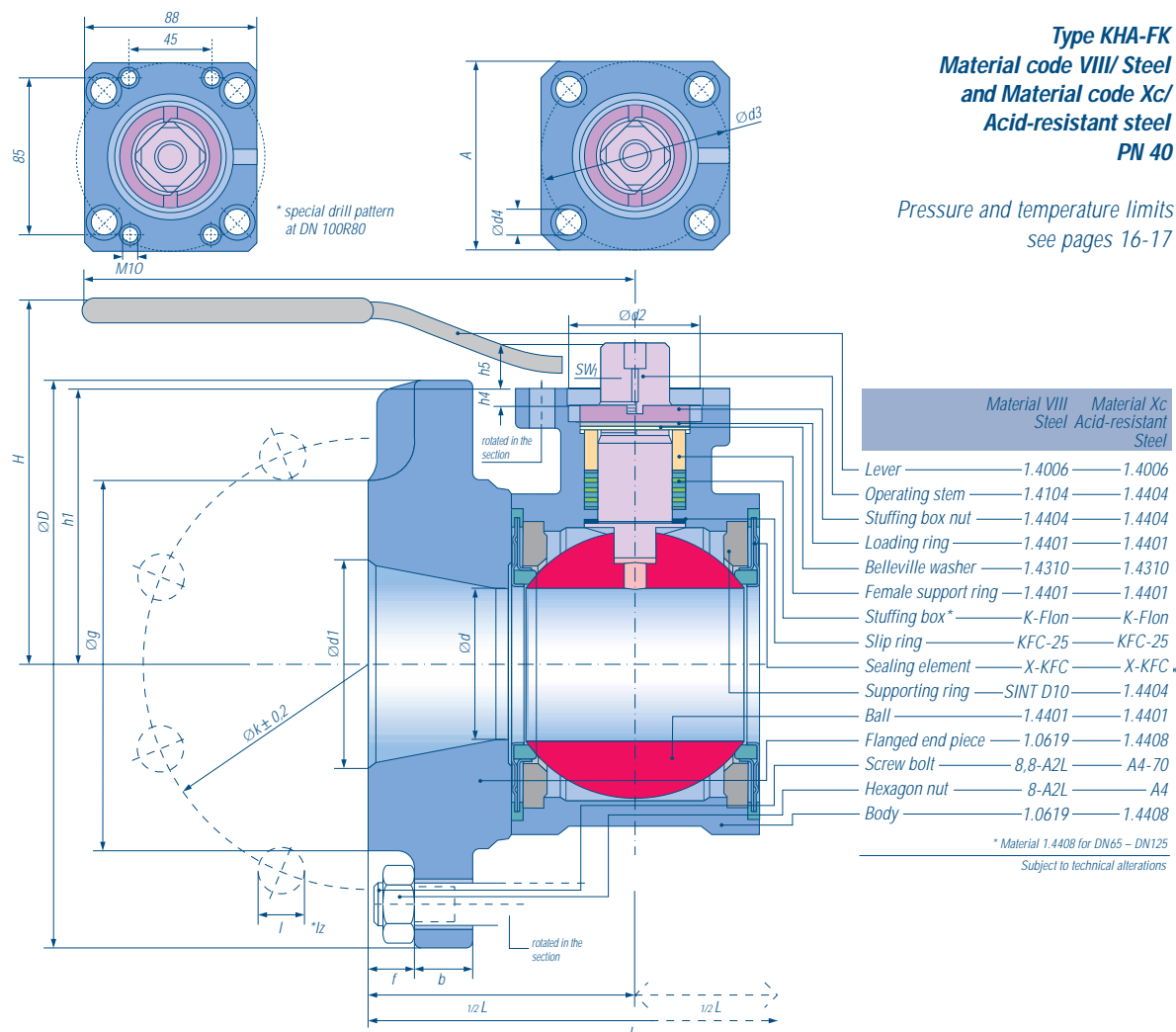
all dimensions in mm

* Iz: number of bore holes

KLINGERballostar-A

**Material code VIII/ Steel
and Material code Xc/
Acid-resistant steel
PN 40**

*Pressure and temperature limits
see pages 16-17*



3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Flanges acc. to EN 1092-1

Dimensions
Face-to-face dimensions acc. to
EN 558-1, basic line 27,
or DIN 3202-F4.

Generally for liquids and gases, other fluids see resistance table.

DIN 3230, Part 3, test level B0.

*In accordance with the requirements of
TA Luft.*

Fire safe acc. to API 607.

*Flange connection acc. to ISO 5211,
permits direct mounting of the actuator or
mounting with bracket.
Pneumatic and electrical actuators
possible.*

DN	Dimensions			PN	Connecting dimensions									Mounting flange for actuator								Weight kg/pc	
	L	H	G		h1	Ød	Ød1	ØD	Øg	f	b	Øk	l	lz*	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4		h5
65R50	170	131	315	40	90	50	65	188	122	15	19	145	18	8	F07	70	17	55	70	10	4	15	15.3
80R65	180	141	315	40	100	65	80	204	138	16	21	160	18	8	F07	70	17	55	70	10	4	15	21.3
* 100R80	190	162	500	40	122	80	100	235	162	16	21	190	22	8	F10	102	22	70	102	12	4	20	29.7

* I_z : number of bore holes

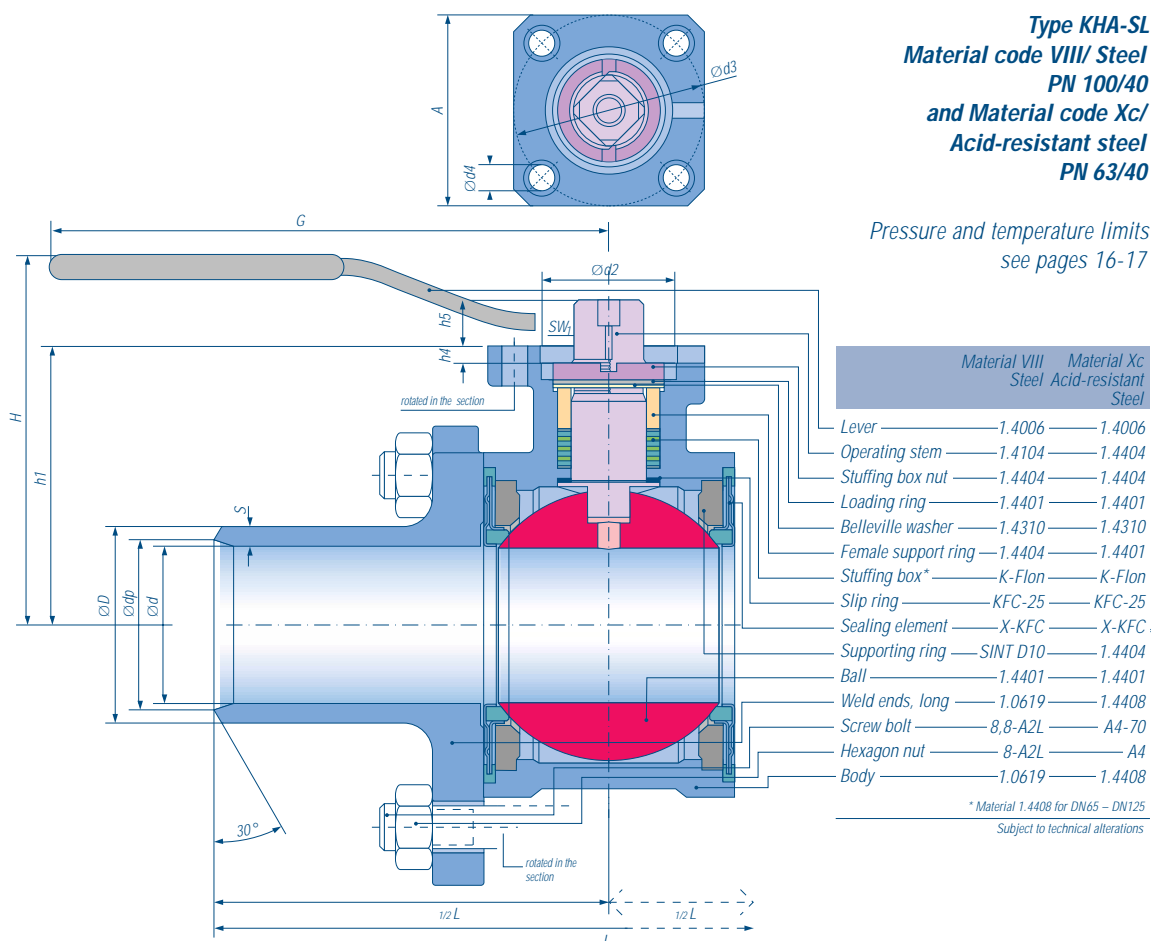


KLINGERballostar-A

Ball valve with weld ends and full port, long

Type KHA-SL
Material code VIII/ Steel
PN 100/40
and Material code Xc/
Acid-resistant steel
PN 63/40

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions

Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Weld ends acc. to DIN 3239 (EN 12627)

Dimensions

Face-to-face dimensions acc. to
DIN 3202-S10 (DN 10-40)

Face-to-face dimensions acc. to
ANSI B16.10 Cl.300 (DN 50-125)

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0. In accor-
dance with the requirements of TA Luft.

Fire safety (special version)

Fire safe acc. to API 607.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.

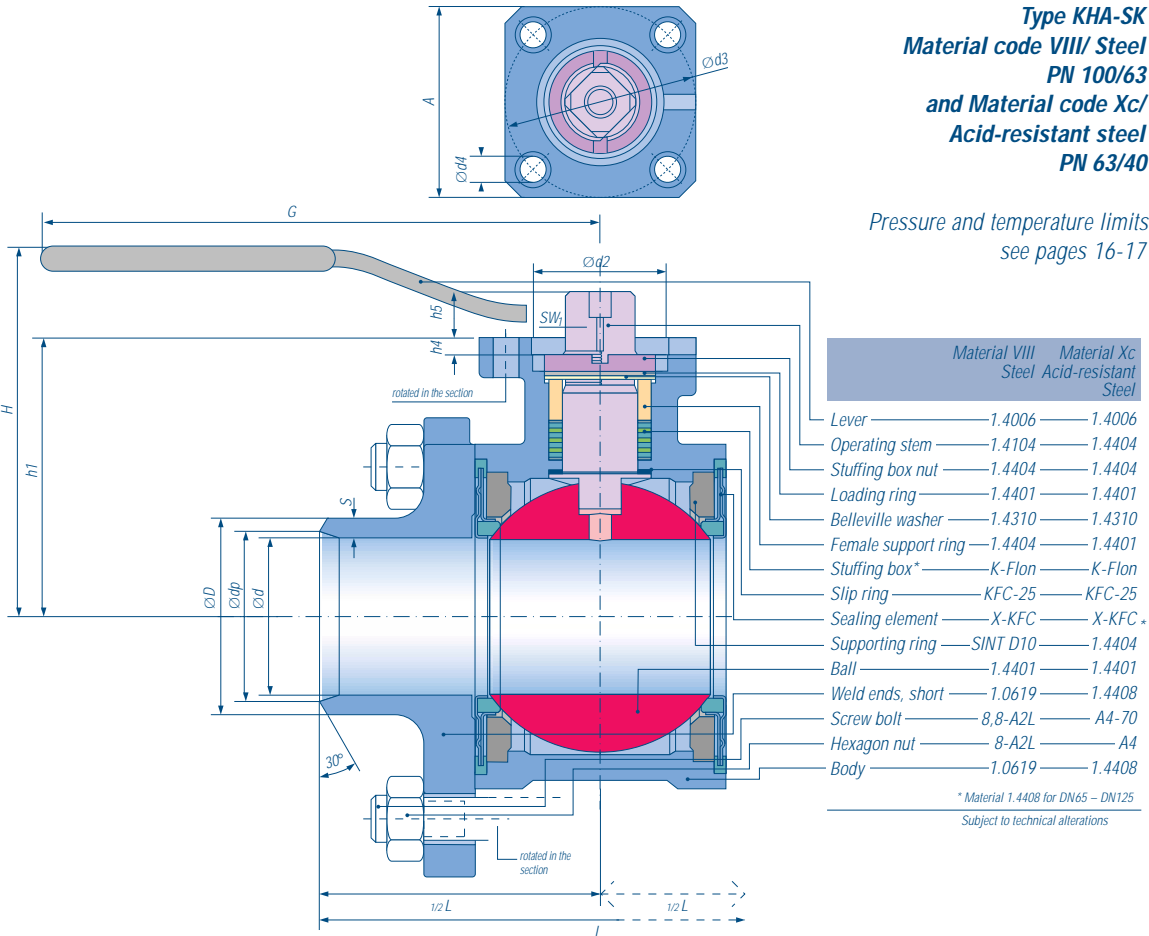
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN		Connecting dimensions					Mounting flange for actuator								Weight kg/pc
	L	H	G	VIII	Xc	h1	Ød	ØD	Ødp	S	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	
10	270	80	130	100	63	35	10	18	13	4.0	F04	42	8	30	42	5.8	3	7	0.7
15	270	80	130	100	63	35	15	22	17	3.5	F04	42	8	30	42	5.8	3	7	0.9
20	270	94	160	100	63	46	20	28	22	4.0	F04	42	11	30	42	5.8	3	9	1.5
25	270	98	160	63	40	50	25	34	28,5	4.5	F04	42	11	30	42	5.8	3	9	2.1
32	270	106	250	63	40	65	32	43	37	5.5	F05	50	14	35	50	7	4	12	2.3
40	270	113	250	63	40	72	40	49	43	4.5	F05	50	14	35	50	7	4	12	4.8
50	216	131	315	40	40	90	50	61	54,5	5.5	F07	70	17	55	70	10	4	15	8.3
65	241	141	315	40	40	100	65	77	70	6.0	F07	70	17	55	70	10	4	15	12.5
80	282	162	500	40	40	122	80	90	82	5.0	F10	102	22	70	102	12	4	20	22.8
100	305	176	500	40	40	135	100	115	106,5	7.5	F10	102	22	70	102	12	4	20	33.5
125	356	211	650	40	40	175	125	141	131	8.0	F12	125	27	85	125	15	4	25	42.0

all dimensions in mm

KLINGERballostar-A

Ball valve with weld ends and full port, short



Design features
 3-piece ball valve,
 floating ball, antistatic, lockable.
 Double leak-tightness in both port
 directions
 Modular construction kit system:
 several versions of stuffing boxes
 and sealing elements available

Connections
 Weld ends acc. to DIN 3239
 (EN 12627)
Dimensions
 Face-to-face dimensions acc. to
 DIN 3202-S13
Main use
 Generally for liquids and gases, other flu-
 ids see resistance table.
Leak tightness
 DIN 3230, Part 3, test level B0.
 In accordance with the requirements
 of TA Luft.
Fire safety (special version)
 Fire safe acc. to API 607.

Automation
 Flange connection acc. to ISO 5211,
 permits direct mounting of the actuator
 or mounting with bracket.
 Pneumatic and electrical actuators
 possible.

DN	Dimensions			PN		Connecting dimensions					Mounting flange for actuator								Weight kg/pc
	L	H	G	VIII	Xc	h1	Ød	ØD	Ødp	S	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	
10	70	80	130	100	63	35	10	18	13	4.0	F04	42	8	30	42	5.8	3	7	0.6
15	75	80	130	100	63	35	15	22	17	3.5	F04	42	8	30	42	5.8	3	7	0.8
20	90	94	160	100	63	46	20	28	22	4.0	F04	42	11	30	42	5.8	3	9	1.4
25	100	98	160	63	40	50	25	34	28,5	4.5	F04	42	11	30	42	5.8	3	9	1.9
32	110	106	250	63	40	65	32	43	37	5.5	F05	50	14	35	50	7	4	12	2.7
40	125	113	250	63	40	72	40	49	43	4.5	F05	50	14	35	50	7	4	12	4.6

all dimensions in mm

In the interest of technical progress designs and dimensions are subject to modification.

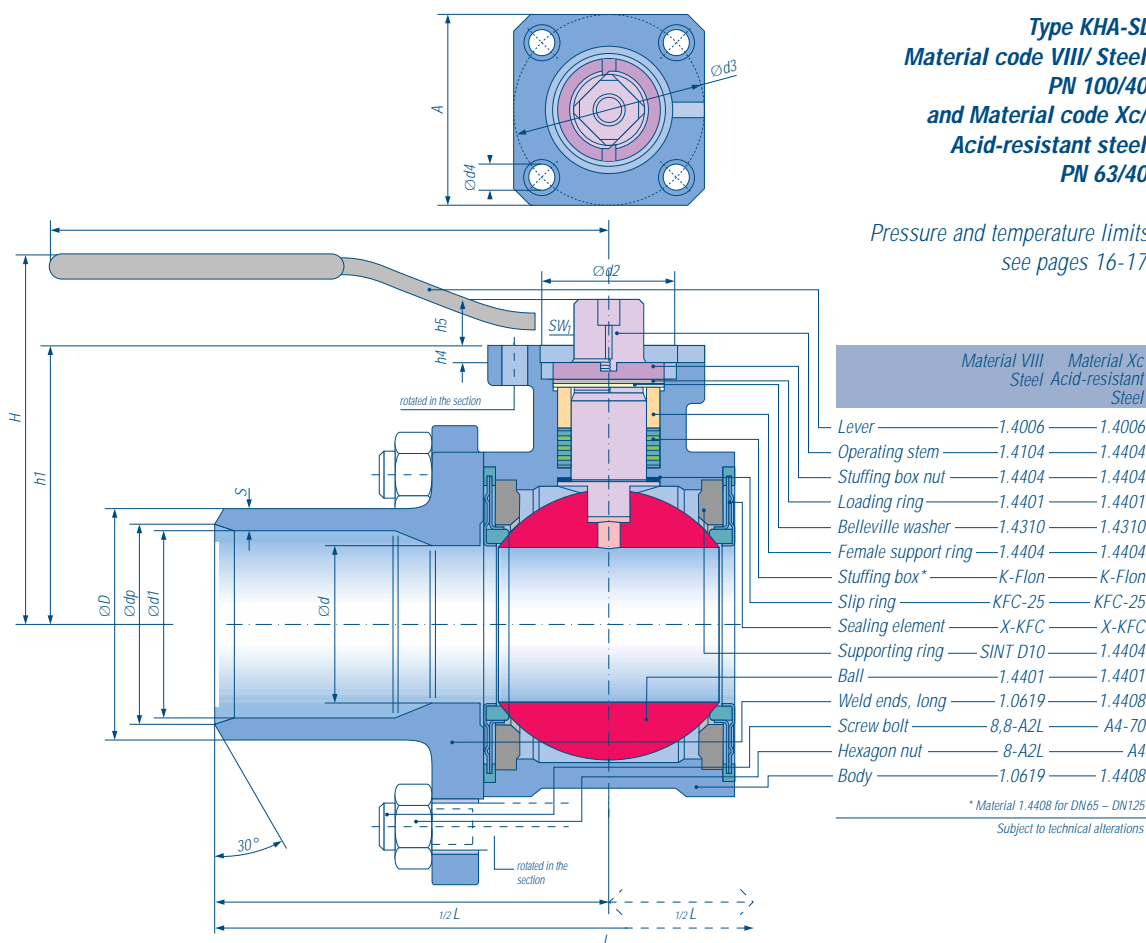


KLINGERballostar-A

Ball valve with weld ends and reduced port, long

Type KHA-SL
Material code VIII/ Steel
PN 100/40
and Material code Xc/
Acid-resistant steel
PN 63/40

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Weld ends acc. to DIN 3239
(EN 12627)

Dimensions

Face-to-face dimensions acc. to
DIN 3202-S10 (20R15-40R32)
Face-to-face dimensions acc. to
ANSI B16.10 Cl. 300 (50R40-100R80)

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.

Fire safety (special version)

Fire safe acc. to API 607.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.
Pneumatic and electrical actuators
possible.

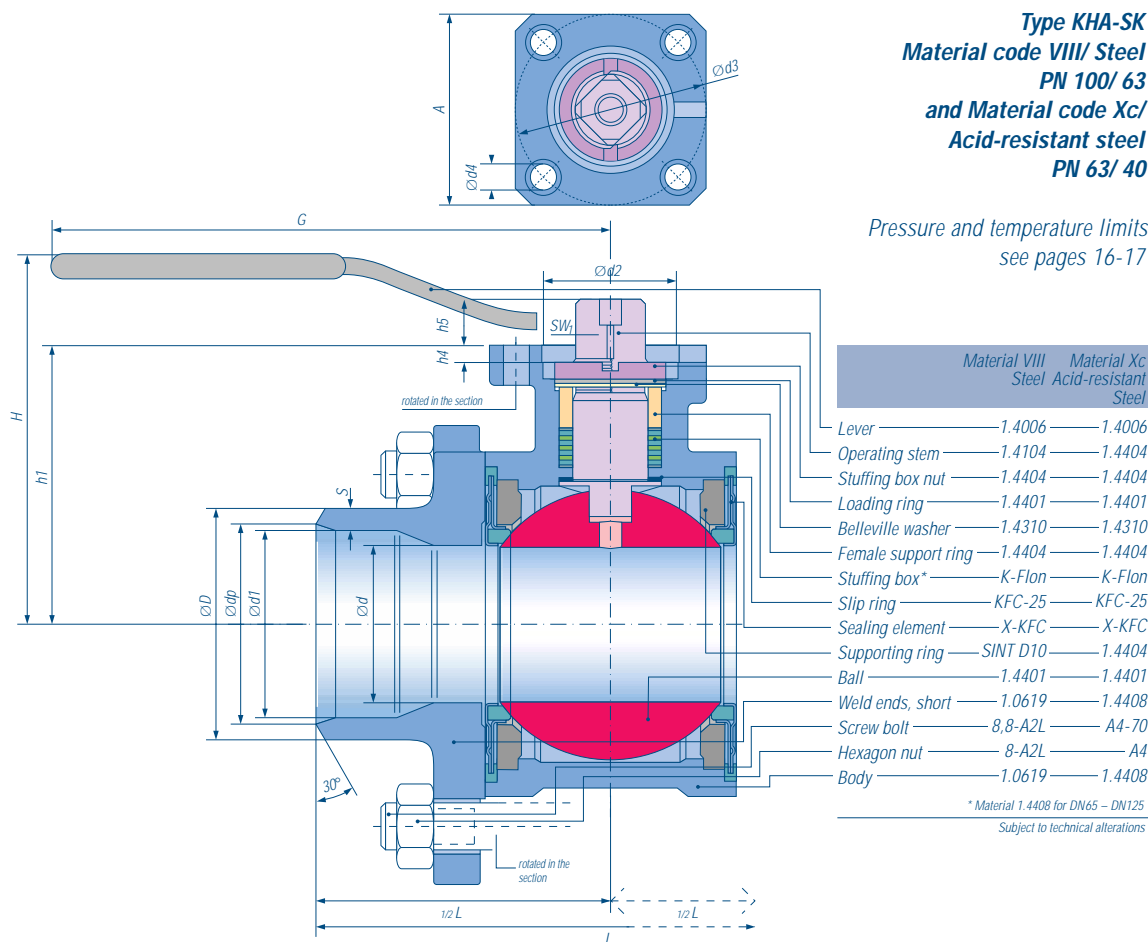
DN	Dimensions			PN		Connecting dimensions						Mounting flange for actuator									Weight kg/pc
	L	H	G	VIII	Xc	h1	Ød	Ød1	ØD	Ødp	S	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5		
20R15	270	80	130	100	63	35	15	20	28	22	4.0	F04	42	8	30	42	5.8	3	7	1.0	
25R20	270	94	160	100	63	46	20	25	34	28.5	4.5	F04	42	11	30	42	5.8	3	9	1.6	
32R25	270	98	160	63	40	50	25	32	43	37	5.5	F04	42	11	30	42	5.8	3	9	2.3	
40R32	270	106	250	63	40	65	32	40	49	43	4.5	F05	50	14	35	50	7	4	12	3.2	
50R40	216	113	250	63	40	72	40	50	61	54.5	5.5	F05	50	14	35	50	7	4	12	5.7	
65R50	241	131	315	40	40	90	50	65	77	70	6.0	F07	70	17	55	70	10	4	15	9.1	
80R65	282	141	315	40	40	100	65	80	90	82	5.0	F07	70	17	55	70	10	4	15	14.4	
100R80	305	162	500	40	40	122	80	100	115	106.5	7.5	F10	102	22	70	102	12	4	20	24.1	

all dimensions in mm

Ball valve with weld ends and reduced port, short

Type KHA-SK
Material code VIII/ Steel
PN 100/ 63
and Material code Xc/
Acid-resistant steel
PN 63/ 40

*Pressure and temperature limits
see pages 16-17*



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Weld ends acc. to DIN 3239
(EN 12627)

Dimensions

Face-to-face dimensions acc. to
DIN 3202-S13 (20R15-40R32)
Face-to-face dimensions acc. to
ANSI B16.10 Cl. 300 (50R40)

Main use

Generally for liquids and gases, other fluids see resistance table.

Leak tightness

*DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.*

Fire safety (special version)

Fire safe acc. to API 607.

Automation

*Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.
Pneumatic and electrical actuators
possible.*

DN	Dimensions			PN		Connecting dimensions						Mounting flange for actuator									Weight kg/pc
	L	H	G	VIII	Xc	h1	Ød	Ød1	ØD	Ødp	S	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5		
20R15	90	80	130	100	63	35	15	20	28	22	4.0	F04	42	8	30	42	5.8	3	7	0.8	
25R20	100	94	160	100	63	46	20	25	34	28.5	4.5	F04	42	11	30	42	5.8	3	9	1.4	
32R25	110	98	160	63	40	50	25	32	43	37	5.5	F04	42	11	30	42	5.8	3	9	2.1	
40R32	125	106	250	63	40	65	32	40	49	43	4.5	F05	50	14	35	50	7	4	12	2.9	
50R40	150	113	250	63	40	72	40	50	61	54.5	5.5	F05	50	14	35	50	7	4	12	5.0	

all dimensions in mm

In the interest of technical progress designs and dimensions are subject to modification.

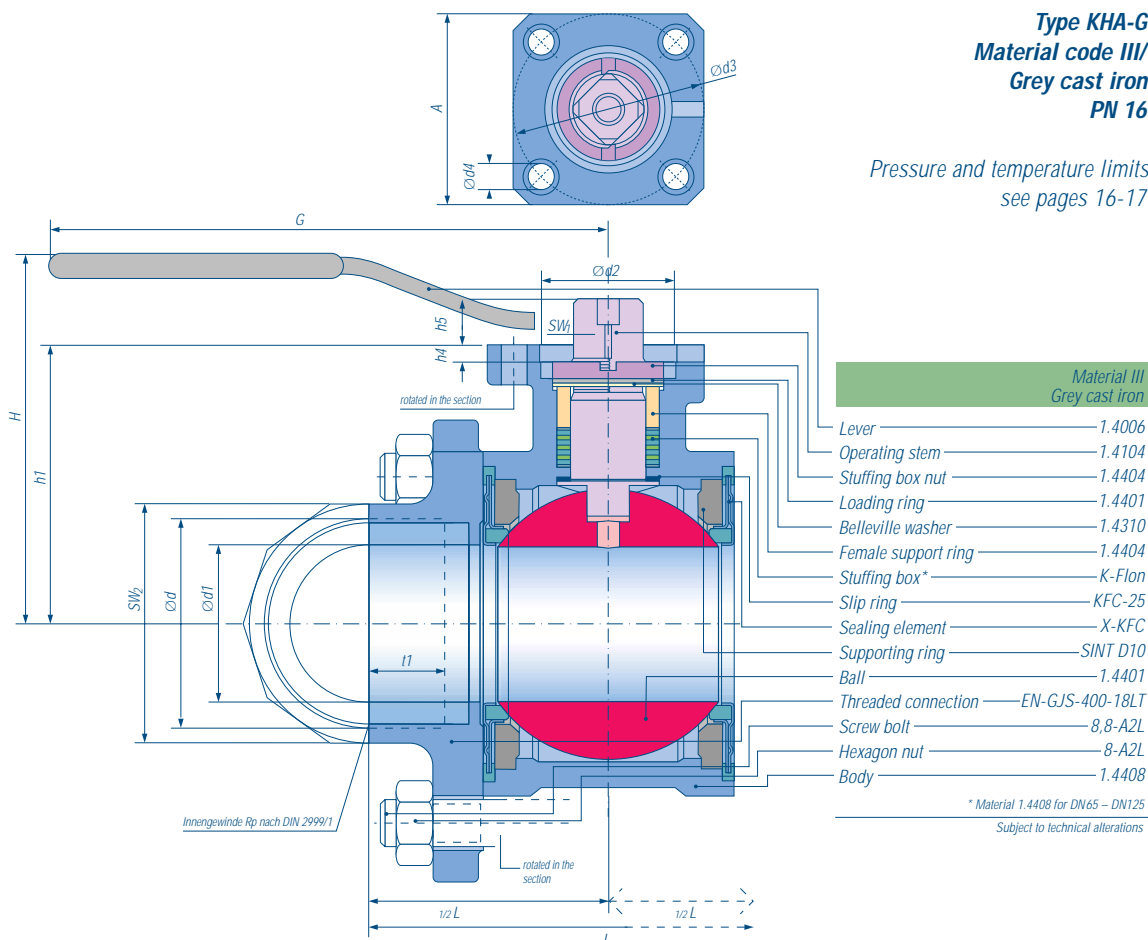


KLINGERballostar-A

Ball valve with threaded connection and reduced port

Type KHA-G
Material code III/
Grey cast iron
PN 16

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Pipe thread acc. to DIN/ISO 228/1

Dimensions

Face-to-face dimensions acc. to
DIN 3202-M3

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.

In accordance with the requirements
of TA Luft.

Automation

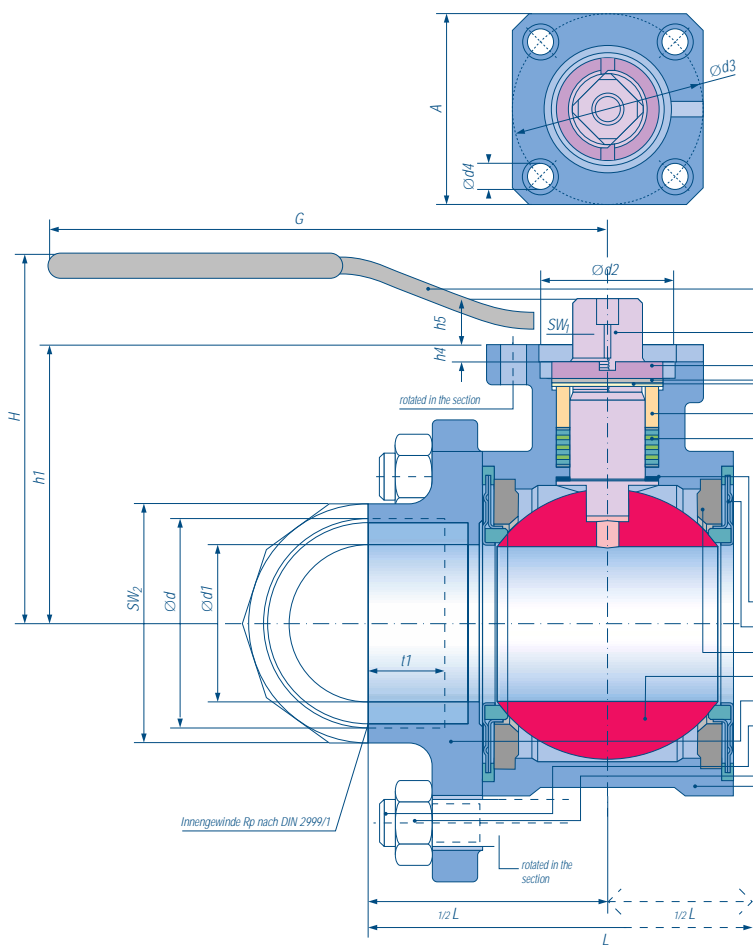
Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN	Connecting dimensions					Mounting flange for actuator								Weight kg/pc
	L	H	G		h1	Ød1	Ød	SW ₂	t1	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	
1/2" / R15	75	80	130	16	35	15	R _P 1/2"	32	14,5	F04	42	8	30	42	5.8	3	7	0.6
3/4" / R15	80	80	130	16	35	15	R _P 3/4"	32	16	F04	42	8	30	42	5.8	3	7	0.7
1" / R20	90	94	160	16	46	20	R _P 1"	41	17	F04	42	11	30	42	5.8	3	9	1.3
1 1/4" / R25	110	98	160	16	50	25	R _P 1 1/4"	50	21	F04	42	11	30	42	5.8	3	9	1.9
1 1/2" / R32	120	106	250	16	65	32	R _P 1 1/2"	55	21	F05	50	14	35	50	7	4	12	2.6
2" / R40	140	113	250	16	72	40	R _P 2"	70	25	F05	50	14	35	50	7	4	12	4.5

all dimensions in mm or inch

KLINGERballostar-A

Ball valve with threaded connection and reduced port



Type KHA-G
Material code VIII/ Steel
PN 100 – 63
and Material code Xc/
Acid-resistant steel
PN 63 – 40

Pressure and temperature limits
see pages 16-17

	Material VIII Steel	Material Xc Acid-resistant Steel
Lever	1.4006	1.4006
Operating stem	1.4104	1.4404
Stuffing box nut	1.4404	1.4404
Loading ring	1.4401	1.4401
Belleville washer	1.4310	1.4310
Female support ring	1.4404	1.4404
Stuffing box*	K-Flon	K-Flon
Slip ring	KFC-25	KFC-25
Sealing element	X-KFC	X-KFC
Supporting ring	SINT D10	1.4404
Ball	1.4401	1.4401
Threaded connection	1.0619	1.4408
Screw bolt	8.8-A2L	A4-70
Hexagon nut	8-A2L	A4
Body	1.0619	1.4408

* Material 1.4408 for DN65 – DN125
Subject to technical alterations

Design features
3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections
Pipe thread acc. to DIN/ISO 228/1
Dimensions
Face-to-face dimensions acc. to
DIN 3202 Part 4 – M3
Main use
Generally for liquids and gases, other flu-
ids see resistance table.
Leak tightness
DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.

Fire safety (special version).
Fire safe acc. to API 607.
Automation
Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.
Pneumatic and electrical actuators
possible.

DN	Dimensions			PN		Connecting dimensions					Mounting flange for actuator									Weight
	L	H	G	VIII	Xc	h1	Ød1	Ød	SW ₂	t1	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	kg/pc	
3/4" / R15	80	80	130	100	63	35	15	R _P 3/4"	32	16	F04	42	8	30	42	5.8	3	7	0.7	
1" / R20	90	94	160	100	63	46	20	R _P 1"	41	17	F04	42	11	30	42	5.8	3	9	1.3	
1 1/4" / R25	110	98	160	63	40	50	25	R _P 1 1/4"	50	21	F04	42	11	30	42	5.8	3	9	1.9	
1 1/2" / R32	120	106	250	63	40	65	32	R _P 1 1/2"	55	21	F05	50	14	35	50	7	4	12	2.6	
2" / R40	140	113	250	63	40	72	40	R _P 2"	70	25	F05	50	14	35	50	7	4	12	4.5	

all dimensions in mm or inch

In the interest of technical progress designs and dimensions are subject to modification.

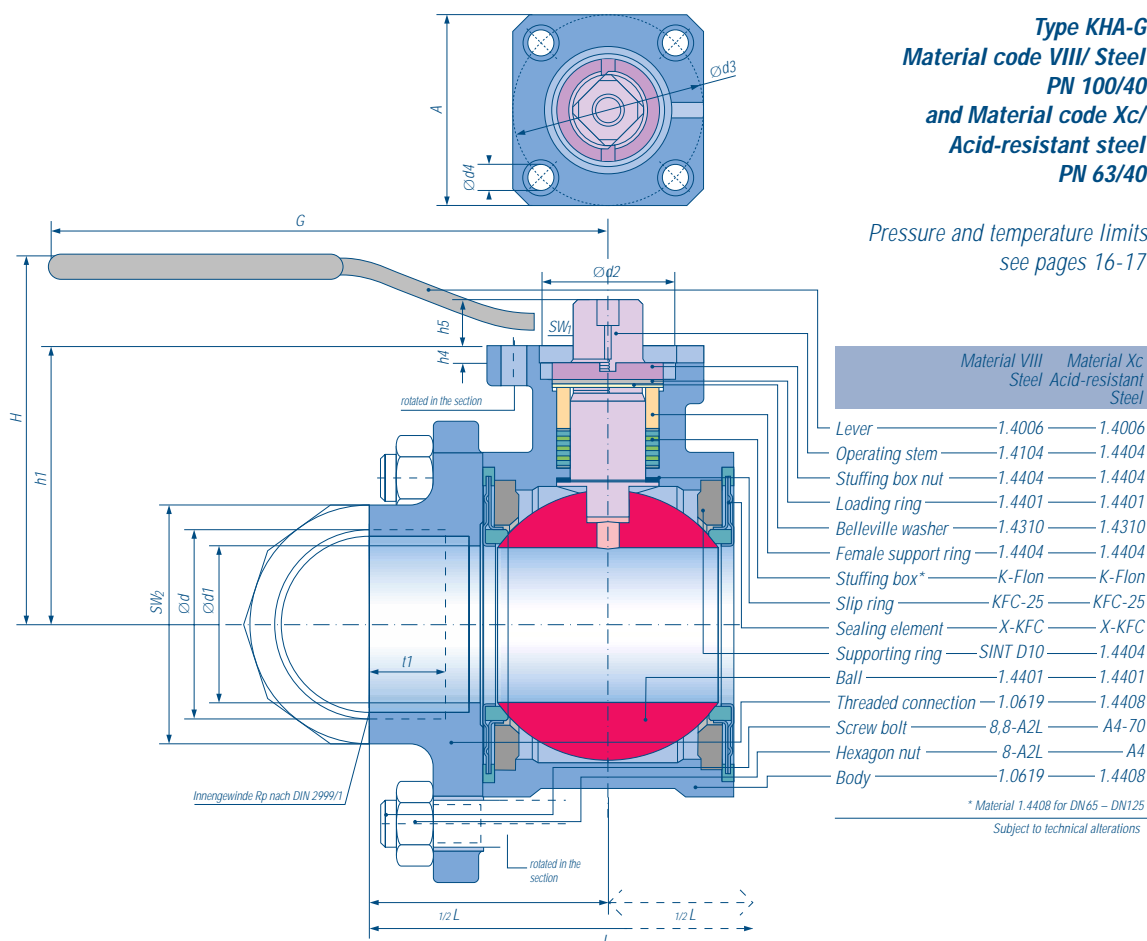


KLINGERballostar-A

Ball valve with threaded connection and full port

Type KHA-G
Material code VIII/ Steel
PN 100/40
and Material code Xc/
Acid-resistant steel
PN 63/40

Pressure and temperature limits
see pages 16-17



Design features

3-piece ball valve,
floating ball, antistatic, lockable.
Double leak-tightness in both port
directions
Modular construction kit system:
several versions of stuffing boxes
and sealing elements available

Connections

Pipe thread acc. to DIN/ISO 228/1

Dimensions

Face-to-face dimensions acc. to
DIN 3202 Part 4 – M4

Main use

Generally for liquids and gases, other flu-
ids see resistance table.

Leak tightness

DIN 3230, Part 3, test level B0.
In accordance with the requirements
of TA Luft.

Fire safety (special version)

Fire safe acc. to API 607.

Automation

Flange connection acc. to ISO 5211,
permits direct mounting of the actuator
or mounting with bracket.

Pneumatic and electrical actuators
possible.

DN	Dimensions			PN		Connecting dimensions						Mounting flange for actuator							Weight kg/pc
	L	H	G	VIII	Xc	h1	Ød	Ød1	SW ₂	t1	ISO	A	SW ₁	Ød2	Ød3	Ød4	h4	h5	
3/8"	75	80	130	100	63	35	R _P 3/8"	10	27	11	F04	42	8	30	42	5.8	3	7	0.7
1/2"	85	80	130	100	63	35	R _P 1/2"	15	32	14.5	F04	42	8	30	42	5.8	3	7	0.8
3/4"	95	94	160	100	63	46	R _P 3/4"	20	36	16	F04	42	11	30	42	5.8	3	9	1.5
1"	105	98	160	63	40	50	R _P 1"	25	46	17	F04	42	11	30	42	5.8	3	9	2.1
1 1/4"	120	106	250	63	40	65	R _P 1 1/4"	32	55	21	F05	50	14	35	50	7	4	12	2.9
1 1/2"	130	113	250	63	40	72	R _P 1 1/2"	40	60	21	F05	50	14	35	50	7	4	12	4.7
2"	150	131	315	40	40	90	R _P 2"	50	75	25	F07	70	17	55	70	10	4	15	7.4

all dimensions in mm or inch

Applications

*Ballostar ball valves type KHA with pneumatic actuator
in a chemical plant in Sweden.
Medium: Thermal oil*





Resistance table

Recommendations in this table should help you to choose suitable materials and types. We cannot assume a guarantee since the function and durability of the products are largely dependent on factors over which the manufacturer has no influence.

In the event of specific conditions of approval, these must be observed. Please contact us if in doubt. Wherever solids are named in the list, what is meant are their aqueous solutions or suspensions.

Names of materials for seals:

PTFE = KLINGERflon® PTFE
KFC-25 = KLINGERflon® carbon-reinforced
Metall = 1.4436 sealing ring coated with STELLITE
Viton = Fluorinated rubber

Body material codes:

Material code III

Body: Cast steel
Colour of body: Dark grey, phosphated
Connection: Grey cast iron
Inside parts: Corrosion resistant steel

Material code VIII

Body and connection: Steel
Colour of body: Dark grey, phosphated
Inside parts: Corrosion resistant steel

Material code Xc

Body and connection: Acid-resistant steel
Colour of body: Bright, pickled
Inside parts: Acid-resistant steel

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metall	Viton	III	VIII	Xc
Acetone	CH ₃ COCH ₃		20	●	●	●	×	●	●	●
Acetylene	C ₂ H ₂			●	●	●	●	●	●	●
Air, dry				●	●	●	●	●	●	●
Alum	KAl(SO ₄) ₂	10	20	●	●	●	●	■	■	●
Alum	KAl(SO ₄) ₂	10	100	●	●	●	●	■	■	●
Aluminium acetate	(CH ₃ COO) ₃ Al			●	●	●	×	×	×	●
Aluminium ethylate	Al(OC ₂ H ₅) ₂			●	●	●	×	●	●	●
Aluminium chlorate	Al(ClO ₃) ₃			●	●	●	×	■	■	●
Aluminium fluoride	AlF ₃			×	×	●	×	×	●	●
Aluminium oxyde	Al ₂ O ₃			●	●	●	×	●	●	●
Ammonia	NH ₃	10	20	●	●	●	●	●	●	●
Ammonium hydroxyde	NH ₄ OH	10	20	●	●	●	●	●	●	●
Ammonium hydroxyde	NH ₄ OH	10	100	●	●	●	●	●	●	●
Ammonium bicarbonate	(NH ₄)HCO ₃			●	●	●	×	●	●	●
Ammonium chloride	NH ₄ Cl	5	20	●	●	●	●	■	■	●
Ammonium chloride	NH ₄ Cl	10	20	●	●	●	●	■	■	●
Ammonium chloride	NH ₄ Cl	10	100	●	●	●	●	×	×	●
Ammonium chloride	NH ₄ Cl	50	20	●	●	●	●	■	■	●
Ammonium diphosphate	(NH ₄) ₂ HPO ₄			●	●	●	●	■	■	●
Ammonium carbonate	(NH ₄) ₂ CO ₃		Kp	●	●	●	×	▲	▲	●
Ammonium nitrate	NH ₄ NO ₃		Kp	●	●	●	●	▲	▲	●
Ammonium sulphate	(NH ₄) ₂ SO ₄		Kp	●	●	●	●	×	×	●
Aniline	C ₆ H ₅ NH ₂			●	●	●	●	●	●	●

Our contribution to fluid safety

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metal	Viton	III	VIII	Xc
Arsenic acid	H ₃ AsO ₄			●	●	●	●	▲	▲	●
Asphalt (tar)				●	●	●	●	I	I	●
Beer				●	●	●	●	X	X	●
Benzene	C ₆ H ₆			●	●	●	●	●	●	●
Benzine				●	●	●	X	●	●	●
Bleaching liquor (chloride of lime)				●	●	●	●	I	I	■
Borax	Na ₂ B ₄ O ₇ 10H ₂ O			●	●	●	●	I	I	●
Boric acid	H ₃ BO ₃	4	20	●	●	●	●	▲	▲	●
Boric acid	H ₃ BO ₃	4	100	●	●	●	●	▲	▲	●
Boric acid	H ₃ BO ₃	100	100	●	●	●	●	▲	▲	●
Butane	C ₄ H ₁₀			●	●	●	●	●	●	●
Buttermilk			20	●	●	●	X	I	I	●
Butyl acetate	CH ₃ COOC ₄ H ₉			●	●	●	X	●	●	●
Butyl alcohol	C ₄ H ₉ OH			●	●	●	X	●	●	●
Calcium bisulphite	Ca(HSO ₃) ₂		20	●	●	●	●	▲	I	●
Calcium bisulphite	Ca(HSO ₃) ₂		200	●	●	●	●	▲	I	●
Calcium chloride	CaCl ₂		20	●	●	●	●	■	■	●
Calcium chloride	CaCl ₂		100	●	●	●	●	▲	▲	■
Calcium hydroxide	Ca(OH) ₂			●	●	●	●	●	●	●
Calcium hydroxide	Ca(OH) ₂		20	●	●	●	●	●	●	●
Calcium hydroxide	Ca(OH) ₂		Kp	●	●	●	●	●	●	●
Calcium hypochlorite	Ca(ClO) ₂			●	●	●	●	▲	▲	■
Calcium sulphate	CaSO ₄			●	●	●	X	●	●	●
Carbon dioxide	CO ₂	to	150	●	●	●	●	●	●	●
Carbon dioxide	CO ₂		400	●	●	●	●	●	●	●
Carbon disulfide	CS ₂		20	●	●	●	●	●	●	●
Carbon tetrachloride	CCl ₄			●	●	●	●	■	■	●
Chloroform	CHCl ₃			●	●	●	●	●	●	●
Chloroform	CHCl ₃		20	●	●	●	●	●	●	●
Chlorosulphonic acid	HOSO ₂ Cl		Kp	●	●	●	X	■	■	I
Chromic acid	H ₂ CrO ₄	10	20	●	●	●	●	■	●	●
Chromic acid	H ₂ XCrO ₄	10	Kp	●	●	●	●	I	I	●
Chromic acid	H ₂ CrO ₄	50	20	●	●	●	●	●	●	●
Citric acid	(CH ₂ COOH) ₂ C(OH)COOH		20	● ³⁾	●	●	●	X	X	●
Citric acid	(CH ₂ COOH) ₂ C(OH)COOH		Kp	●	● ³⁾	●	●	X	X	●
Clophen T 64				●	●	●	X	●	●	●
Coagulating baths (up to 10%)	H ₂ SO ₄		80	●	●	●	X	X	X	●
Copper acetate	(CH ₃ COO) ₂ Cu		20	●	●	●	X	●	●	●

1) Discolorations may occur.
2) All iron materials are in general chemically resistant to hydrogen;
however, we would like to point out that hydrogen diffuses and can lead to brittleness in grey cast iron.
3) 150 °C

Abbreviations:
Kp = boiling point
sat. sol. = saturated solution
aq. sol. = aqueous solution
conc. = concentrated

Explanation of symbols:
for metallic materials:
● practically resistant,
removal up to 2.4 g/m²/day
■ fairly resistant,
removal 2.4-24 g/m²/day
▲ hardly resistant,
removal 24-72 g/m²/day
X not resistant,
removal over 72 g/m²/day
I not tested or not common

for sealing materials:
● suitable
X unsuitable



Resistance table

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metal	Viton	III	VIII	Xc
Copper acetate	$(CH_3COO)_2Cu$		Kp	●	●	●	×	▲	▲	●
Copper sulphate	$CuSO_4$		20	●	●	●	●	×	▲	●
Copper sulphate	$CuSO_4$		Kp	●	●	●	●	×	▲	●
Diazotation bath (weakly acid)			20	●	●	●	×	▲	▲	■
Diazotation bath (weakly acid)			80	●	●	●	×	▲	▲	■
Diesel oil			20	●	●	●	●	●	●	●
Diphyl				●	●	●	×	●	●	●
Dowtherm A				●	●	●	×	●	●	●
Dye liquor, alkaline or neutral			20	●	●	●	×	■	■	●
Dye liquor, alkaline or neutral			Kp	●	●	●	×	■	■	●
Dye liquor, organic acid			20	●	●	●	×	■	■	●
Dye liquor, organic acid			Kp	●	●	●	×	■	■	●
Dye liquor, strongly sulphuric acid	H_2SO_4 over 0,3%		20	●	●	●	×	■	■	●
Dye liquor, strongly sulphuric acid	H_2SO_4 over 0,3%		Kp	●	●	●	×	■	■	■
Dye liquor, weakly sulphuric acid	H_2SO_4 under 0,3%		Kp	●	●	●	×	■	■	●
Ethane	C_2H_6			●	●	●	●	●	●	●
Ethanol	C_2H_5OH			●	●	●	×	●	●	●
Ethyl ether	$C_2H_5OC_2H_6$			●	●	●	×	■	■	●
Ethyl acetate	$CH_3COOC_2H_5$		Kp	●	●	●	×	●	●	●
Ethylene	C_2H_4			●	●	●	●	●	●	●
Ethylen chloride (dichlorethane)	$(CH_2Cl)_2$		20	●	●	●	●	●	●	●
Fatty acids from C6				●	●	●	●	■	■	●
Formaldehyde	$HCHO$		40 20	●	●	●	●	×	×	●
Formaldehyde	$HCHO$		40 Kp	●	●	●	●	×	×	●
Formic acid	$HCOOH$		10 20	●	●	●	×	×	×	●
Formic acid	$HCOOH$		10 100	●	●	●	×	×	×	■
Formic acid	$HCOOH$		100 20	●	●	●	×	×	×	●
Formic acid	$HCOOH$		100 100	●	●	●	×	×	×	■
Freon 12, Frigen 12				●	●	●	×	●	●	●
Glacial acetic acid	CH_3COOH		20	●	●	●	×	▲	▲	●
Glacial acetic acid	CH_3COOH		10 20	●	●	●	×	▲	▲	●
Glacial acetic acid	CH_3COOH		10 Kp	●	●	●	×	▲	▲	●
Glacial acetic acid	CH_3COOH		50 20	●	●	●	×	×	▲	●
Glacial acetic acid	CH_3COOH		50 Kp	●	●	●	×	×	▲	■
Glacial acetic acid	CH_3COOH		80 20	●	●	●	×	×	▲	■
Glacial acetic acid	CH_3COOH		80 Kp	●	●	●	×	×	▲	■
Glycerine	$(CH_2OH)_2CHOH$		20	●	●	●	●	▲	▲	●
Glycerine	$(CH_2OH)_2CHOH$		100	●	●	●	●	▲	▲	●
Grape vinegar			20	●	●	●	●	■	■	●
Heat transfer oils				●	●	●	×	●	●	●
Hydrochloric acid, dry	HCl		20	●	●	●	●	■	■	■
Hydrochloric acid, dry	HCl		100	●	●	●	●	■	■	▲

Our contribution to fluid safety

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metal	Viton	III	VIII	Xc
Hydroxylamine sulphate	(NH ₂ OH)H ₂ SO ₄	10	20	●	●	●	●	■	■	●
Hydroxylamine sulphate	(NH ₂ OH)H ₂ SO ₄	10	Kp	●	●	●	×	■	■	●
Hydrochloric acid	HCl	0,2	20	●	●	●	●	×	×	●
Hydrochloric acid	HCl	0,2	50	●	●	●	●	×	×	■
Hydrochloric acid	HCl	1	20	●	●	●	●	×	×	■
Hydrogen sulphide, gas, dry	H ₂ S		20	●	●	●	×	■	■	●
Hydrogen sulphide, gas, wet	H ₂ S		20	●	●	●	×	■	■	●
Hydrogen	H ₂			●	●	●	●	●	●	2)
Hydrogen peroxide	H ₂ O ₂		20	●	●	●	×	×	×	●
Hydrogen peroxide	H ₂ O ₂		50	●	●	●	×	×	×	●
Illuminating gas				●	●	●	●	●	●	●
Kreosote			20	●	●	●	●	■	■	●
Kreosote			Kp	●	●	●	●	■	■	●
Lead acetate (lead sugar)	Pb(CH ₃ COO) ₂	100	Kp	●	●	●	×	×	×	▲
Lead arsenate	Pb ₃ (AsO ₄) ₂			●	●	●	×	■	■	●
Linseed oil			20	●	●	●	●	■	■	●
Linseed oil			100	●	●	●	●	■	■	●
Magnesium sulphate	MgSO ₄		20	●	●	●	●	■	■	●
Magnesium sulphate	MgSO ₄		Kp	●	●	●	●	■	■	●
Manganous chloride	MnCl ₂		20	●	●	●	●	▲	▲	●
Manganous chloride	MnCl ₂		Kp	●	●	●	●	▲	▲	●
M.E.K. (Butanone)	CH ₃ COC ₂ H ₅		Kp	●	●	●	×	■	■	●
Mercury	Hg		20	●	●	●	●	■	■	●
Mercury (II) chloride (sublimate)	HgCl ₂		20	●	●	●	●	×	×	●
Mercury (II) nitrate	Hg(NO ₃) ₂		20	●	●	●	×	▲	▲	●
Methyl alcohol	CH ₃ OH		20	●	●	●	×	● ¹⁾	● ¹⁾	●
Methyl alcohol	CH ₃ OH		Kp	●	●	●	×	● ¹⁾	● ¹⁾	●
Methylene chloride	CH ₂ Cl ₂		20	●	●	●	×	■	■	●
Methylene chloride	CH ₂ Cl ₂		Kp	●	●	●	×	■	■	●
Milk				●	●	●	●	▲	▲	●
Natrium acetate	CH ₃ COONa			●	●	●	×	■	■	●
Natural gas				●	●	●	●	■	●	●
Nitric acid	HNO ₃	10	20	●	●	●	●	×	×	●
Nitric acid	HNO ₃	10	Kp	●	●	●	●	×	×	●
Nitric acid	HNO ₃	40	20	●	●	●	●	×	×	●
Nitric acid	HNO ₃	40	Kp	●	●	●	●	×	×	●
Nitric acid	HNO ₃	conc.	20	●	●	●	●	×	×	●
Nitric acid	HNO ₃	conc.	Kp	●	●	●	●	×	▲	■

1) Discolorations may occur.
2) All iron materials are in general chemically resistant to hydrogen;
however, we would like to point out that hydrogen diffuses and can lead to brittleness in grey cast iron.
3) 150 °C

Abbreviations:
Kp = boiling point
sat. sol. = saturated solution
aq. sol. = aqueous solution
conc. = concentrated

Explanation of symbols:
for metallic materials:
● practically resistant,
removal up to 2.4 g/m²/day
■ fairly resistant,
removal 2.4-24 g/m²/day
▲ hardly resistant,
removal 24-72 g/m²/day
× not resistant,
removal over 72 g/m²/day
■ not tested or not common

for sealing materials:
● suitable
× unsuitable



Resistance table

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metal	Viton	III	VIII	Xc
Nitrogen	N ₂			●	●	●	●	●	●	●
Oils (lubricating oils, mineral)			20	●	●	●	●	●	●	●
Oils (vegetable)			20	●	●	●	●	●	●	●
Oleic acid	C ₁₇ H ₃₃ COOH			●	●	●	×	●	●	●
Oxalic acid	COOHCOOH			●	●	●	●	▲	▲	●
Oxygen	O ₂		20	●	●	●	●	●	●	●
Pentyl acetate	CH ₃ COOC ₅ H ₁₁			●	●	●	×	●	●	●
Petroleum ether			20	●	●	●	×	●	●	●
Phenol	C ₆ H ₅ OH			●	●	●	●	▲	▲	●
Phosphoric acid	H ₃ PO ₄	10	20	●	●	●	●	▲	▲	●
Phosphoric acid	H ₃ PO ₄	10	Kp	●	●	●	●	×	×	●
Phosphoric acid	H ₃ PO ₄	50	20	●	●	●	●	▲	▲	●
Phosphoric acid	H ₃ PO ₄	50	Kp	●	●	●	●	×	×	■
Phosphoric acid	H ₃ PO ₄	80	20	●	●	●	●	×	×	●
Phosphoric acid	H ₃ PO ₄	80	Kp	●	●	●	●	×	×	▲
Potassium acetate	CH ₃ COOH		Kp	●	●	●	×	●	●	●
Potassium carbonate	K ₂ CO ₃	50	20	●	●	●	●	■	●	●
Potassium carbonate	K ₂ CO ₃		Kp	●	●	●	●	■	●	●
Potassium chlorate, at 100°, saturated sol.	KClO ₃		Kp	●	●	●	●	▲	▲	●
Potassium chromium sulphate	KCr(SO ₄) ₂ 12H ₂ O		20	●	●	●	●	■	■	●
Potassium chromium sulphate	KCr(SO ₄) ₂ 12H ₂ O		Kp	●	●	●	×	■	■	×
Potassium cyanide solution	KCN	5	20	● ³⁾	●	●	×	■	■	●
Potassium dichromate	K ₂ Cr ₂ O ₇	25	20	●	●	●	×	●	●	●
Potassium dichromate	K ₂ Cr ₂ O ₇		Kp	●	●	●	×	▲	▲	●
Potassium hydrogentartrate	COOH(CHOH) ₂ COOK		20	●	●	●	×	■	■	●
Potassium hydrogentartrate, at 100°, sat. sol.	COOH(CHOH) ₂ COOK		Kp	●	●	●	×	■	■	■
Potassium hydroxide	KOH	25	20	●	●	●	×	●	●	●
Potassium hydroxide	KOH	25	Kp	●	●	●	×	■	■	●
Potassium hydroxide	KOH	50	20	●	●	●	×	●	●	●
Potassium hydroxide	KOH	50	Kp	●	●	●	×	×	×	●
Potassium hydrochlorite	KOCl		20	●	●	●	×	▲	▲	■
Potassium hydrochlorite	KOCl		40	●	●	●	×	▲	▲	■
Potassium iodide	KJ		Kp	●	●	●	●	▲	▲	●
Potassium iodide	KJ			●	●	●	●	■	■	●
Potassium nitrate	KNO ₃		20	●	●	●	●	●	●	●
Potassium nitrate	KNO ₃		Kp	●	●	●	●	▲	▲	●
Potassium permanganate	KMnO ₄		20	●	●	●	●	●	●	●
Potassium permanganate	KMnO ₄		Kp	●	●	●	●	×	×	●
Propane	C ₃ H ₈		20	●	●	●	●	●	●	●
Salicylic acid	C ₆ H ₄ OHCOOH		20	●	●	●	●	▲	▲	●
Salpeter				●	●	●	●	●	●	●
Salt (rock salt)	NaCl		20	●	●	●	●	×	×	■

Our contribution to fluid safety

Fluid	Chemical formula	Concentration and temperature		Materials for seals				Body and connection (material code)		
		%	°C	KFC-25	PTFE	Metal	Viton	III	VIII	Xc
Sea water			20	●	●	●	●	✗	✗	●
Sea water			Kp	●	●	●	●	✗	✗	●
Silicone oil				●	●	●	●	●	●	●
Soap				●	●	●	●	●	●	●
Sodium carbonate (soda solution, cold sat.)	Na ₂ CO ₃		20	●	●	●	✗	●	●	●
Sodium carbonate (soda solution)	Na ₂ CO ₃		Kp	●	●	●	✗	■	■	●
Sodium hydroxide	NaOH	20	20	●	●	●	✗	●	●	●
Sodium hydroxide	NaOH	20	Kp	●	●	●	✗	■	■	●
Sodium hydroxide	NaOH	35	20	●	●	●	✗	●	●	●
Sodium hydroxide	NaOH	35	Kp	●	●	●	✗	✗	✗	●
Sodium sulphate	Na ₂ SO ₄			●	●	●	●	●	●	●
Starch solution				●	●	●	●	▲	▲	●
Steam				●	● ³⁾	●	✗	●	●	●
Stearic acid	C ₁₇ H ₃₅ COOH			●	●	●	●	▲	▲	●
Sugar			20	●	●	●	●	■	■	●
Sugar			80	●	●	●	●	■	■	●
Sulphite lye	Ca(HSO ₃) ₂	20		●	●	●	●	■	■	●
(fresh cooking liquor, spent liquor)	Ca(HSO ₃) ₂	80		●	●	●	●	■	■	●
Sulphur dioxide	SO ₂			●	●	●	✗	✗	✗	●
Sulphuric acid	H ₂ SO ₄	1	20	●	●	●	✗	✗	✗	●
Sulphuric acid	H ₂ SO ₄	10	20	●	●	●	✗	✗	✗	●
Sulphuric acid	H ₂ SO ₄	90	20	●	●	●	✗	■	■	●
Sulphuric acid	H ₂ SO ₄	conc.	20	●	●	●	●	●	●	●
Sulphurous acid	H ₂ SO ₃			●	●	●	●	✗	✗	● ²⁾
Tannic acid	C ₇₆ H ₅₂ O ₄₆	10	20	●	●	●	●	▲	▲	●
Tannic acid	C ₇₆ H ₅₂ O ₄₆	10	Kp	●	●	●	●	✗	✗	●
Tannic acid	C ₇₆ H ₅₂ O ₄₆	50	20	●	●	●	●	▲	▲	●
Tar			180	●	●	●	●	■	■	●
Tartaric acid	(CHOHCOOH) ₂		20	●	●	●	●	▲	▲	●
Toluene	C ₆ H ₅ CH ₃		20	●	●	●	●	●	●	●
Trichlorethylene	C ₂ HCl ₃			●	●	●	●	■	■	●
Turpentine oil			20	●	●	●	●	●	●	●
Urea	(NH ₂) ₂ CO		20	●	●	●	●	■	■	●
Water (fresh and drinking water)	H ₂ O			●	●	●	●	●	●	●
Water glass (K- and Na-silicate)	K ₂ SiO ₃ Na ₂ HCl ₃			●	●	●	●	●	●	●
Xylene	C ₆ H ₄ (CH ₃) ₂		20	●	●	●	●	●	●	●

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KLINGER product range

Product range

Ballostar® KHA

3-piece ball valve made of grey cast iron, steel and stainless cast steel

Ballostar® KHI

2-piece ball valve made of grey cast iron, steel and stainless cast steel

KLINGER Monoball®

One-piece ball valve made of steel and stainless cast steel

KLINGER Ball-o-top

Brass ball valve

Piston valves KVN

Made of grey cast iron, nodular cast iron, steel and stainless cast steel

KLINGERMATIC®

Actuator for ball valves and piston valves

Liquid level gauges

For steam boilers and process applications

Reflex and transparent sight glasses

Circular sight glasses

AB- cocks

Packing-sleeve cocks and pressure-gauge cocks in brass, steel and stainless steel

Key role

Link

Innovation

Navigation

Growth

Efficiency

Routine

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