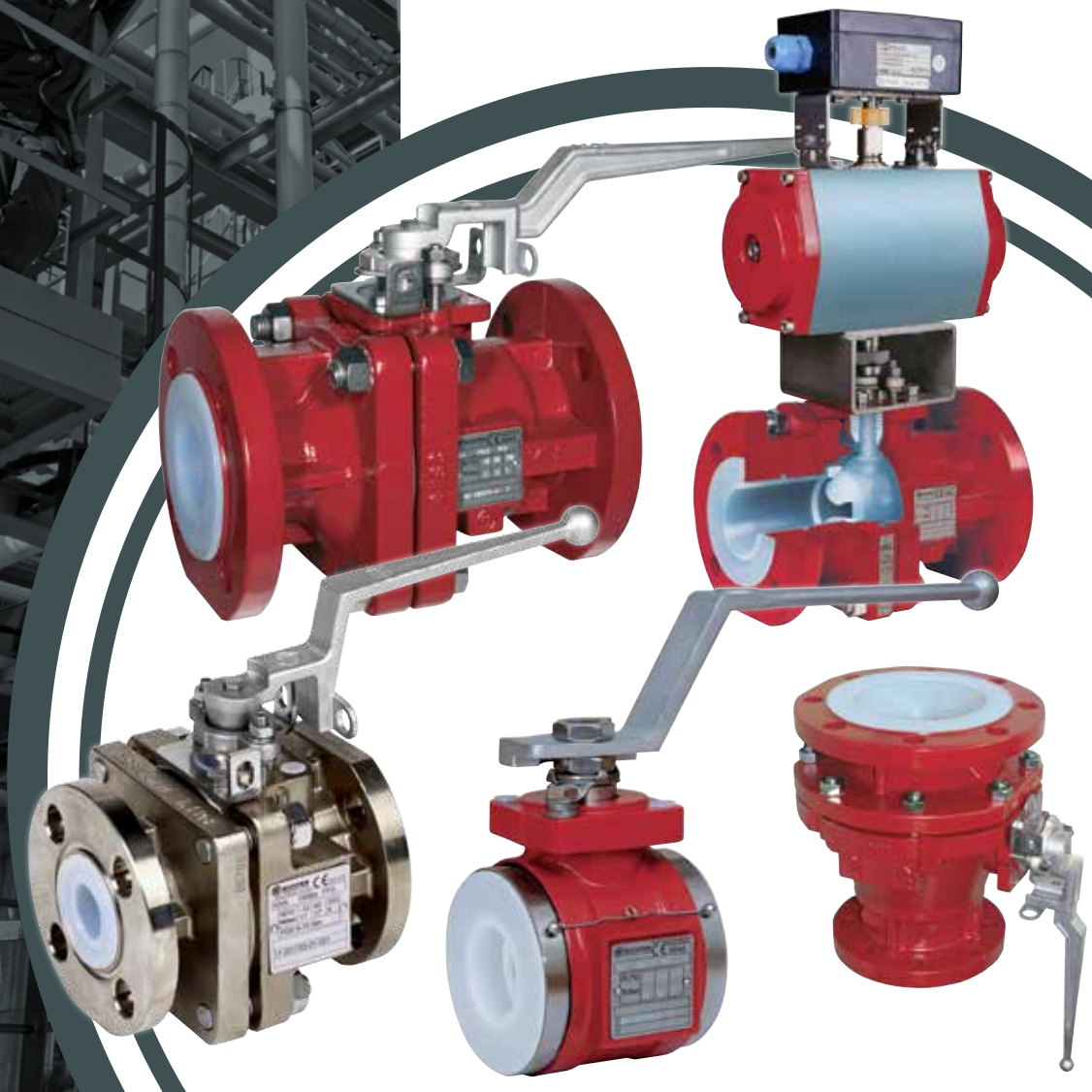
RICHTER
Process Pumps & Valves

KN, KNA, KNR, KNAR, KA-N, KK

HEAVY-DUTY BALL VALVES

SHUT-OFF, CONTROL & DRAIN VALVES

- *SUPERIOR CORROSION RESISTANCE*
- *RELIABLE DESIGN*
- *MAINTENANCE-FREE ENVIPACK STEM SEALING*
- *-60 TO +200 °C (-75 TO +400 °F)*



Heavy duty ball valves with ENVIPACK stem sealing

The ball valve family, KN, excels by offering problem solutions from a modular system. The selection of fluoroplastic linings (i. e. PFA), the large temperature/pressure range and the numerous options permit a tailor-made solution for virtually every application involving highly corrosive and ultrapure media – with more or less the same components!

The standard KN/KNA modular system:
1 ASME/ANSI + 1 ISO/DIN body, 4 lining materials,
1 universal stem sealing, 4 standard ball versions.
In addition, Richter´s speciality: customised special solutions.

The ball valves of the KN/KNA family are
- Shut-off and control valves for highly aggressive fluids
- For applications where stainless steel, special metals and standard plastics are not sufficiently corrosion-resistant
- The lower-cost alternative to special metals
- Suitable for pure, ultrapure and solids-laden media
- AAR Association of American Railroad certified (KA-N, KNA)

Product features
- 1-piece, PFA-lined ball/stem, optionally Al_2O_3 ball and special versions
- $^1/_2$″-8″ and DN 15-200, full bore
- DN 200 optional with reduced bore
- Optional certified to TRwS ATV-DVWK-A 780, part 1, design A

Type codes	manual actuation		remote actuation	
	Shut-off valve	Control valve	Shut-off valve	Control valve
• ASME/ANSI short	KNA/…	KNAR/…	KNAP/…	KNARP/…
• ISO/DIN	KN/…	KNR/…	KNP/…	KNRP/…

Lining

• PFA	…/F
• Antistatic PFA-L	…/F-L
• Ultrapure (e.g. pharma applications) PFA-HP	…/F-HP

Ball valve series selection
Outline of the features that can be configured

Options	KN	KNA	KNR	KNAR	KA-N	KK
ISO/DIN face-to-face, flanges PN 16 a / ISO/DIN face-to-face, flanges PN 25 (DN 25-80)	•/•		•/•		b	c
ASME/ANSI short face to face, flanges Cl. 150		•		•		
Shut-off/control	•/-	•/-	•/•	•/•	•/-	•/-
ENVIPACK bellows-type packing	•	•	•	•	•	
Operating temperature up to -20 °F/400 °F (150 °C/200 °C)	•/•	•/•	•/•	•/•	•/•	•/-
Operating temperature down to -20 °F/-75 °F (-30 °C/-60 °C)	•/•	•/•	•/•	•/•	•/•	•/•
Vacuum applications	•	•	•	•	•	•
Solids-containing fluids d	•	•	e	e	•	•
Ultrapure media	•	•	•	•	•	
TF ball/stem for optimum drainability	•	•			•	
Low-cavity	•	•	•	•	•	•
Lining pure PFA, $^1/_7$″/$^1/_5$″ (3,5 mm/5 mm)	•/•	•/•	•/•	•/•	•/•	•/-
Lining antistatic PFA-L	•	•	•	•	•	•
Lining ultrapure PFA-HP	•	•	•	•	•	•
One-piece PFA-lined ball/stem	•	•	•	•	•	
PFA-lined ball, separate stem						•
Al_2O_3 ceramic ball, separate stem	•	•			•	•
Body ductile cast iron/stainless steel (1″-2″)	•/•	•/•	•/•	•/•	•/-	•/-

① **$^1/_7$″ (3.5 mm) Consistent thick lining made of pure PFA**
- High permeation resistance
- Vacuum-proof anchoring
- $^1/_5$″ (5 mm) wall thickness option (≥ 1″/DN 25)
- Optional antistatic lining

② **Body made of ductile cast iron**
EN-JS 1049/ASTM A395, absorbs the system and pipe forces
Up to 2“ also available in stainless steel (1.4408)

③ **Permanently tight body connection**
- Allows frequent temperature changes
- Sealing surface (3a) with full lining
- Body halves center themselves exactly to each other owing to the fit (3b)
- Labyrinth-like sealing (3c): maximum surface pressure between the body halves
- **“Virtual metallic contact”** (3d) absorbs pipe forces (see page 3)

④ **Different ball versions** (see page 3)
- Standard one-piece ball/stem with $^1/_8$″ (3 mm) lining and stainless steel core
- Eliminates the fits of 2-piece plastic-lined ball/stem versions which are less load-bearing
- Thus optimising operational reliability

⑤ **Resilient PTFE seat rings; spring loaded**
Permanent pretension of the ball, gas-tight seal

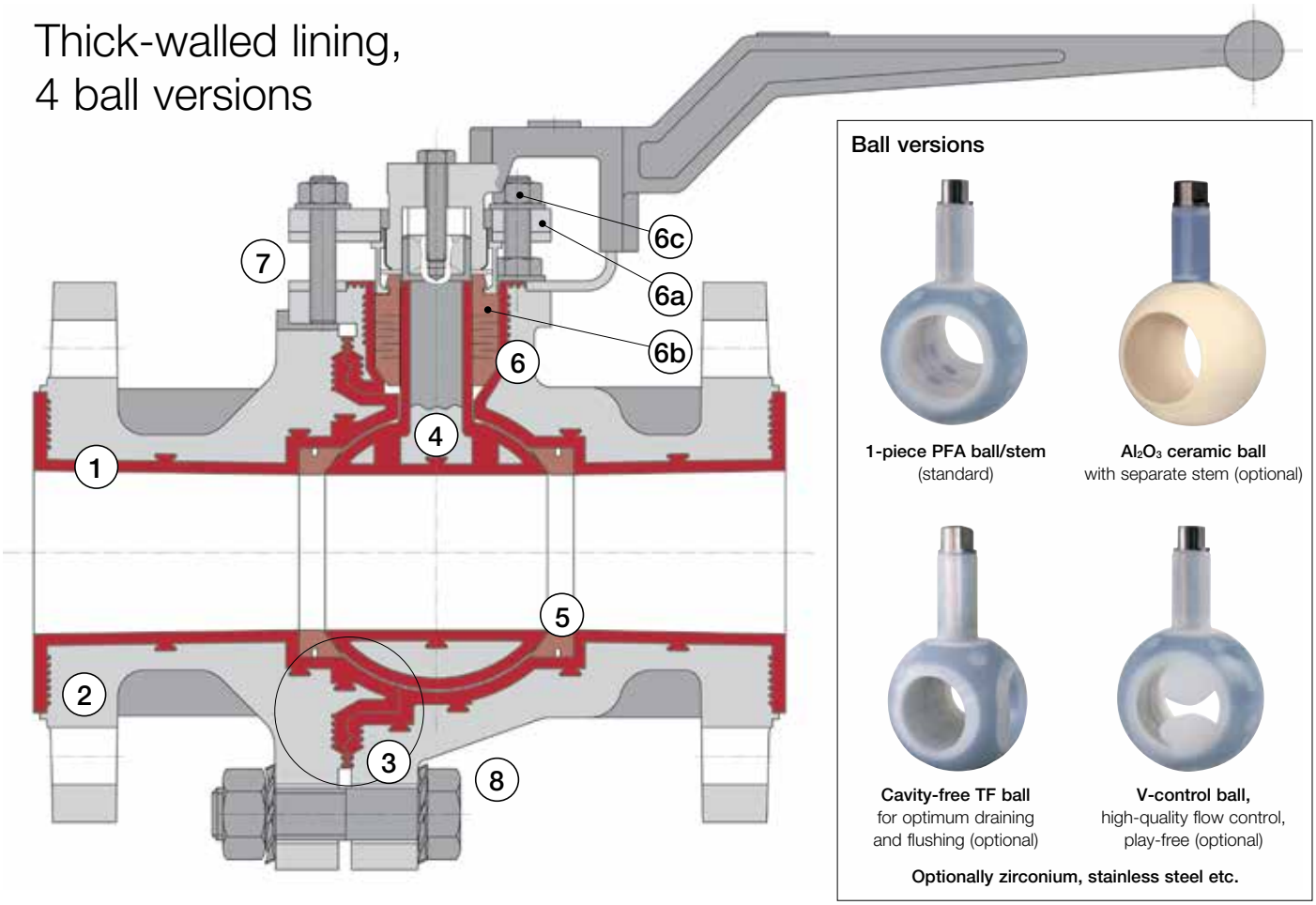
⑥ **Richter ENVIPACK stem sealing with active stainless steel packing gland follower** (6a)
- Conformity with German Clean Air Act (TA Luft), self-adjusting
- Bellows-type packing insert (6b), gas-tight to EN 12266 leakage rate A
- Virtually maintenance-free sealing even with frequent hot/cold cycles
- Visual inspection of the pre-tensioning action
- Can be re-adjusted from outside in a controlled manner (6c)

⑦ **Universal ISO 5211 connection**

⑧ **External corrosion protection**
Epoxy coating. Stuffing box, lever, screws/nuts made of stainless steel

a On request, flanges drilled to ASME/ANSI Cl.150
b Special face to face, see tables on page 7
c Flangeless compact design, face to face = DN + 50 mm
d Solids: in general, consultation with manufacturer recommended
e Limited suitability

Thick-walled lining, 4 ball versions



Ball versions

1-piece PFA ball/stem
(standard)

Al_2O_3 ceramic ball
with separate stem (optional)

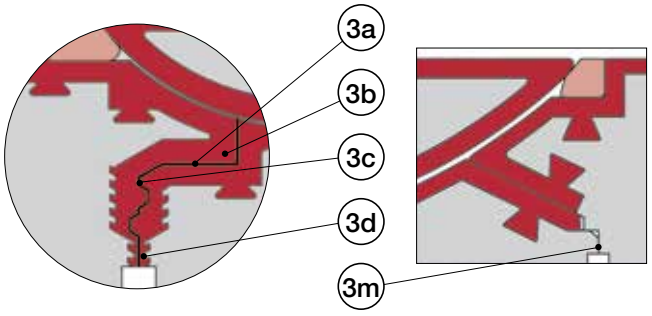
Cavity-free TF ball
for optimum draining and flushing (optional)

V-control ball,
high-quality flow control, play-free (optional)

Optionally zirconium, stainless steel etc.

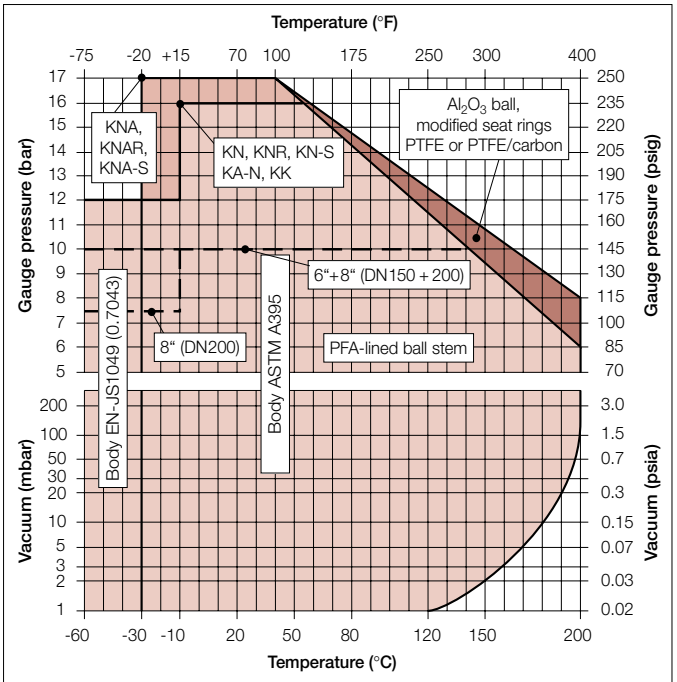
Why “Virtual metallic contact” instead of “metallic contact”?

Richter’s “virtual metal-to-metal contact”, permanently tight:
The body lining (3d) tappers to about 0.02″ (0.5 mm) permitting the inner flange connection to be retightened. Leakage is highly improbable thanks to the labyrinth-type design (3c) typical of Richter.



What are the disadvantages of lined valves with “metallic contact”?
The body halves are bolted together with full metallic contact (3m). **Retightening is not possible, any leak that occurs cannot be stopped.** The cavity between the lining and the metallic contact also prevents the early detection of any leak.

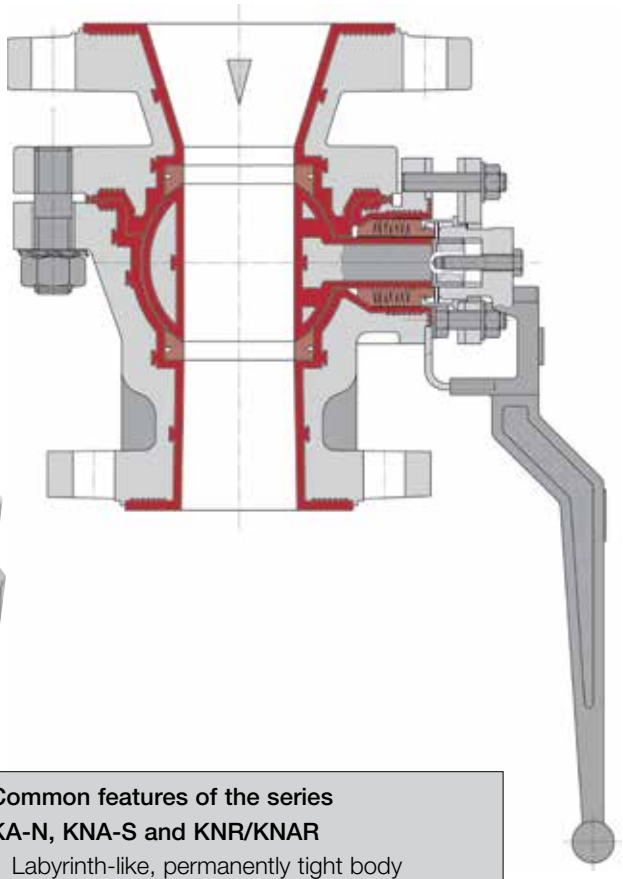
Pressure/temperature range



Body ASTM A395/PFA:
-20 °F (-30°C) to 400 °F (+200 °C); max. 250 psi (17.2 bar) acc. to ASME B16.42
Body EN-JS 1049 (0.7043)/PFA:
-75 °F (-60 °C) to 400 °F (+200 °C); max. 235 psi (16 bar) acc. to AD 2000
For applications at low temperatures, please observe the local regulations!
Operating temperatures below 15 °F (-10 °C): special material for ball stem core

Richter drain reduction valves KA-N with ENVIPACK stem sealing

Drain reduction valves are compact, sturdy vessel drain valves and much lower-priced than sliding stem valves. The KA-N has – apart from the tapered inlet nozzle – the same design as the ball valve series KNA. The pressure/temperature range, design features, material range and the major spare parts are identical.



Product features

- Full bore
- 2″/1″ (Ø 1″) to 8″/6″ (Ø 6″)/ DN 50/25 (Ø 25 mm) to 150/100 (Ø 100 mm)
- -75 to +400 °F (-60 to +200°C), see diagram on page 3
- Face-to-face: see table on page 7
- Flanges ISO/DIN 7005-2 PN 16, on request, drilled to ANSI B16.10 Cl.150

Other options:

- High-purity version for pharmaceutical or semiconductor industries
- Body heating jacket, stem extension etc.

Common features of the series KA-N, KNA-S and KNR/KNAR

- Labyrinth-like, permanently tight body connection
- Lining $^1/_7$″ (3.5 mm) virgin PFA, optionally PFA-L antistatic
- Self-adjusting, maintenance-free ENVIPACK stem sealing
- Resilient seat rings, gas-tight in the seat
- Conformity with the German Clean Air Act
- Lockable stainless steel lever
- Actuator mounting to ISO 5211, optionally head flange to ISO
- Low-cavity as standard feature
- One-piece PFA ball stem, optionally Al_2O_3 ceramic ball with separate stem, cavity-free TF ball, all blowout-proof
- Or V-control ball with high-quality control performance for KNAR and KNR

PFA lined stainless steel shut-off and control valves to ASME/ANSI

The PFA-lined stainless steel KNA-S and KN-S are predestined for the shut-off and control of corrosive fluids

- in clean-room environments where high-quality exterior surfaces without paint are preferred
- in corrosive atmospheres, e.g. in HF, HNO_3 and pickling plants
- in processes where the fluid itself must not come into contact with ductile cast iron if the lining is damaged.

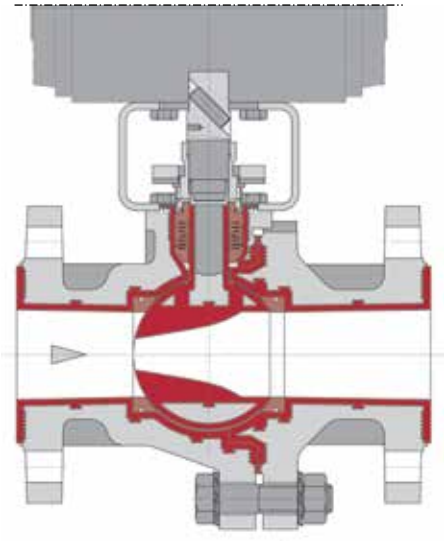
The pressure/temperature range as well as the components balls, seat rings, stem sealing and valve actuation correspond to those of the KNA and KN series, see page 3.

Product features

- Precision cast stainless steel 1.4408 (316, CF8M), lining PFA
- Full bore
- 25 mm (1″) to 80 mm (2″), other nominal sizes on request
- -75 to +400 °F (-60 to +200 °C), see diagram on page 3
- Very low temperatures down to -400 °F (-200°C) on request
- Face-to-face acc. to ASME/ANSI 16.10/short,face to face ISO/DIN
- Flanges ASME/ANSI B 16.10 Cl.150, on request drilled to ISO 7005-2 PN 16.

Richter control valves KNAR and KNR with play-free torque transmission

With the series KNAR (ASME/ANSI) and KNR (ISO/DIN) compact control valves with high control accuracy are available to plant operators. In many applications the KNR/KNAR are economical alternatives to bellows-type, sliding stem valves. Valve bodies, seat rings and the ENVIPACK stem sealing are identical to those of the shut-off valves KNA and KN as are the selection of material and the pressure/temperature range.
Advantages: minimum stock of spare parts, conversion from shut-off to control valve possible.



Product features

- Up to 8 finely graduated k_{vs}/Cv-values per nominal size
- Equal percentage characteristic acc. to DIN EN 60534, linear by means of positioner
- 1/2″ to 8″ (DN 15-200)
- -75 to +400 °F (-60 to +200 °C), see diagram on page 3
- Face-to-face according to
  - ISO/DIN 5752 R.1 (apart from DN 200/8″)
  - ASME/ANSI B 16.10/8, Cl.150
- Flanges to
  - ISO/DIN 7005-2 PN 16 (8″/DN 200: PN 10), 1″-3″ (DN 25-80) optionally PN 25 with PB 16 bar,
  - ASME/ANSI B16.5 Cl.150

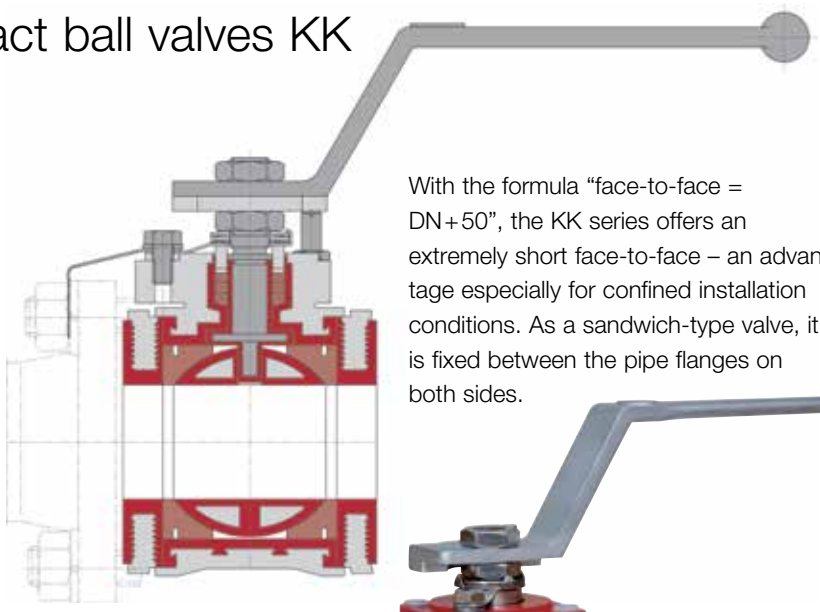
Other options:

- Extra thick body lining: 1/5″ (5 mm) PFA for permeating media
- Ultrapure version for pharmaceutical and semiconductor industries
- Body heating jacket

Richter flangeless compact ball valves KK

Product features

- Lining 1/7″ (3.5 mm) virgin PFA
- Body of ductile cast iron EN-JS 1049 (ASTM A395)
- 1″-6″ (DN 25-150), PN 16 (6″ (DN 150) = PN 10)
- Full bore with 1″-2″ (DN 25-50), reduced bore with ≥ 2 1/2″ (DN 65)
- -75 to +360 °F (-60 to +180 °C)
- Flangeless, face-to-face: 2″ (DN+50 mm), e.g. 2″ (DN 50) = 4″ (100 mm)
- PFA ball with separate stem, Al_2O_3 ceramic ball option, blowout-proof
- Self-adjusting, maintenance-free stem sealing
- Resilient seat rings, gas-tight in the seat
- Conformity with German Clean Air Act
- TÜV AGG-certified to “dangerous goods” GGVSE/ADR/RID ch. 6.8
- Stainless steel lever
- Actuator mounting to ISO 5211
- Stainless steel grounding rope



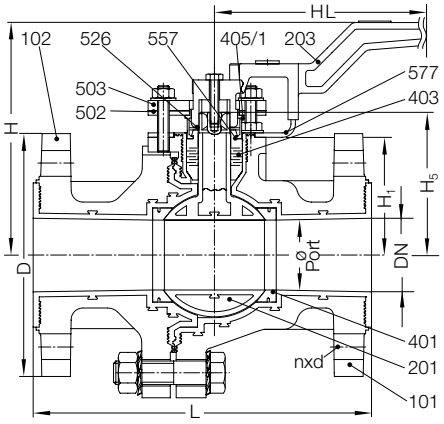
With the formula “face-to-face = DN+50”, the KK series offers an extremely short face-to-face – an advantage especially for confined installation conditions. As a sandwich-type valve, it is fixed between the pipe flanges on both sides.

Other options:

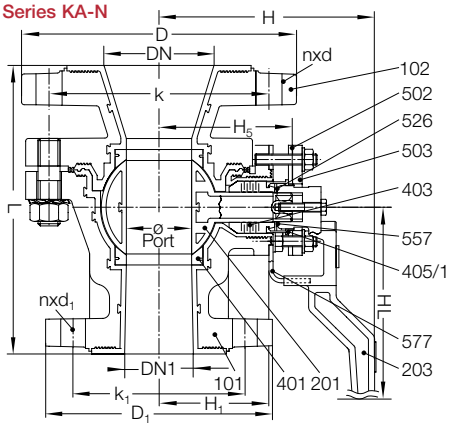
- Stem extension
- Different ball materials
- Low-cavity (see Fig.)

Components and materials, operating torques, Cv/k_v-values

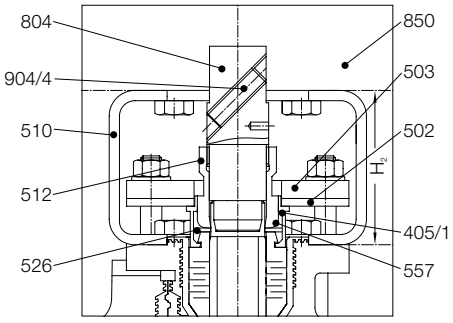
Series KN, KNA, KNAR, KNR



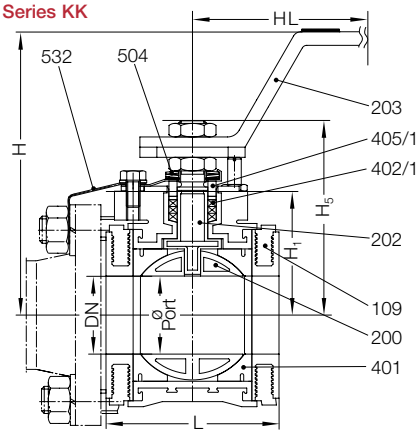
Series KA-N



Play-free coupling for KNR, KNAR



Series KK



Components and materials

Item	Designation	Material
101	Main body	Ductile cast iron EN-JS1049 (ASTM A395), PFA-lined
102	Body end piece	optionally PFA-L antistatic.
109	Transition cover	Stainless steel/PTFE
200	Ball	Al_2O_3 99,7 %, stainl. steel/PFA (only KK)
201	Ball stem unit	Stainless steel, PFA-lined
202	Stem	optionally PFA-L antistatic.
203	Lever	Stainless steel
401	Seat rings	PTFE (opt. Al_2O_3 ball: mod. PTFE)
402/1	Packing ring	PTFE
403	Packing bellows	PTFE
405/1	Thrust ring	Stainless steel
502	Spring gland follower	Stainless steel
503	Packing gland follower	Stainless steel
504	Cup spring assembly	Stainless steel
510	Bracket	Stainless steel
512	Sleeve nut	Stainless steel
526	Retaining washer	Stainless steel
532	Grounding rope	Stainless steel
557	Grounding spring washer	Stainless steel
577	Lever stop	Stainless steel
804	Coupling, play-free	Stainless steel
850	Actuator	to customer request
904/4	Setscrew	Stainless steel
w/o Nr.	Screws and nuts	Stainless steel

All torques: Test medium water 20 °C, seat rings of pure PTFE. The torques may vary depending on the medium (dry gases, crystallising media, oil contents etc.)

KK: Operating torques (incl. breakaway torques) with PFA-lined or with Al_2O_3-ball

KK		Operating torques									
DN		Dp 45 psi/ 3 bar		Dp 85 psi/ 6 bar		Dp 145 psi/ 10 bar		Dp 235 psi/ 16 bar		max. admissible	
inch	mm	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
1″	25	7	62	7	62	7	62	7	62	20	177
1½″	40	15	133	15	133	15	133	18	159	50	443
2″	50	15	133	15	133	15	133	18	159	50	443
2½″	65	15	133	15	133	15	133	18	159	50	443
3″	80	40	354	40	354	42	372	50	443	120	1062
4″	100	60	531	60	531	64	566	80	708	250	2213
6″	150	100	885	113	1000	180	1593	-	-	500	4425

Cv/k_{vs}-values*

KK*	
Cv	k_{vs}
USgpm	m³/h
59	51
175	150
289	248
350	300
530	455
967	830
1480	1270

KN, KNA, KNR, KNAR, KA-N: Operating torques (incl. breakaway torques) with PFA-lined ball

KN, KNA, KNR, KNAR		KA-N		Operating torques									
DN		DN/DN1		Dp 45 psi/3 bar		Dp 85 psi/6 bar		Dp 145 psi/10 bar		Dp 235 psi/16 bar		max. admissible	
inch	mm	inch	mm	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
½″	15	-	-	8	71	8	71	8	71	10	89	70	620
¾″	20	-	-	8	71	8	71	8	71	10	89	70	620
1″	25	2″/1″	50/25	12	106	12	106	12	106	12	106	70	620
1½″	40	-	-	20	177	20	177	20	177	25	221	225	1990
2″	50	3″/2″+4″/2″	80/50+100/50	25	221	25	221	25	221	30	266	225	1990
3″	80	-	-	60	531	60	531	65	575	80	708	500	4425
4″	100	6″/4″	150/100	80	708	80	708	90	797	170	1505	500	4425
6″	150	-	-	200	1770	250	2213	350	3098	-	-	2200	19470
8″/6″	200/150	-	-	200	1770	250	2213	350	3098	-	-	2250	19913
8″	200	-	-	600	5310	600	5310	600	5310	-	-	2200	19470

Cv/k_{vs}-values*

KN, KNA, KA-N*	
Cv	k_{vs}
USgpm	m³/h
20	17,5
36	31
87	75
233	200
361	310
932	800
1456	1250
3262	2800
3728	3200
6990	6000

KN, KNA, KA-N: Operating torques (incl. breakaway torques) with Al_2O_3 ball

KN, KNA		KA-N		Operating torques									
DN		DN/DN1		Dp 45 psi/3 bar		Dp 85 psi/6 bar		Dp 145 psi/10 bar		Dp 235 psi/16 bar		max. admissible	
inch	mm	inch	mm	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs
½″	15	-	-	10	89	10	89	10	89	12	106	28	248
¾″	20	-	-	10	89	10	89	10	89	12	106	28	248
1″	25	2″/1″	50/25	12	106	12	106	12	106	12	106	28	248
1½″	40	-	-	20	177	25	221	30	266	45	398	80	708
2″	50	3″/2″+4″/2″	80/50+100/50	25	221	30	266	35	310	50	443	120	1062
3″	80	-	-	60	531	100	885	160	1416	220	1947	250	2215
4″	100	6″/4″	150/100	80	708	130	1151	200	1770	280	2478	350	3098
6″	150	-	-	350	3098	450	3983	600	5310	-	-	1200	10620
8″/6″	200/150	-	-	350	3098	450	3983	600	5310	-	-	1200	10620

Cv/k_{vs}-values*

KN, KNA, KA-N*	
Cv	k_{vs}
USgpm	m³/h
20	17,5
36	31
87	75
233	200
361	310
932	800
1456	1250
3262	2800
3728	3200

* for KNAR and KNR Cv/k_{vs}-values see separate brochure

RICHTER Process Pumps & Valves

Dimensions, weights

KN, KNR (ISO/DIN): Installation dimensions and approx. weights

Face-to-face ISO 5752 series 1 (DIN 3202 F1), flanges ISO 7005-2**

DN		Ø Port		L		HL		H		D		k		nxd$_1$		EN ISO	H$_1$		H$_5$		H$_2$		Weight man. act.	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	5211	inch	mm	inch	mm	inch	mm	lbs	kg
1/2″	15	0.59	15	5.12	130	7.0	179	5.12	130	3.74	95	2.56	65	4x0.55	4x14	F05	1.97	50	2.36	60	2.36	60	12.3	5.6
3/4″	20	0.79	20	5.91	150	7.0	179	5.12	130	4.13	105	2.95	75	4x0.55	4x14	F05	1.97	50	2.36	60	2.36	60	13.2	6
1″	25	0.96	24.5	6.30	160	7.0	179	5.12	130	4.53	115	3.35	85	4x0.55	4x14	F05	1.97	50	2.36	60	2.36	60	13.2	6
1 1/2″	40	1.50	38	7.87	200	10.2	259	6.10	155	5.91	150	4.33	110	4x0.75	4x19	F07	3.03	77	3.70	94	2.36	60	30.9	14
2″	50	1.87	47.5	9.06	230	10.2	259	6.10	155	6.5	165	4.92	125	4x0.75	4x19	F07	3.15	80	3.82	97	2.36	60	35.3	16
3″	80	3.07	78	12.2	310	16.1	410	7.09	180	7.87	200	6.30	160	8x0.75	8x19	F10	4.65	118	5.51	140	3.15	80	77	35
4″	100	3.78	96	13.8	350	16.1	410	7.68	195	8.66	220	7.09	180	8x0.75	8x19	F10	5.28	134	6.14	156	3.15	80	121	55
6″	150	5.71	145	18.9	480	20.2*	513*	10.4	265	11.2	285	9.45	240	8x0.91	8x23	F12	7.24	184	8.46	215	3.94	100	229	104
8″/6″	200/150	5.71	145	18	457	20.2*	513*	10.4	265	13.4	340	11.61	295	8x0.91	8x23	F12	7.24	184	8.46	215	3.94	100	276	125
8″	200	7.68	195	18	457	No lever, only gear				13.5	343	11.61	295	8x7/9	12x23	F12	9.33	237	10.53	267.5	3.94	100	375	170

* 6″ (DN 150) and 8″ (DN 200): At **D**p > approx. 29 psi (2 bar) a worm gear is recommended instead of the hand lever. Details on request.
** On request: drilled to ANSI B16.5 Cl.150

KNA, KNAR (ASME/ANSI): Installation dimensions and approx. weights

Face-to-face ASME/ANSI B16.10 short, flanges ASME/ANSI B16.5 Cl.150**

DN		Ø Port		L		HL		H		D		k		nxd$_1$		EN ISO	H$_1$		H$_5$		H$_2$		Weight man. act.	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	5211	inch	mm	inch	mm	inch	mm	lbs	kg
1/2″***	15***	0.59	15	5.12	130***	7.0	179	5.12	130	3.5	89	2.38	60.5	4x5/8	4x16	F05	1.97	50	2.36	60	2.36	60	12.3	5.6
3/4″***	20***	0.79	20	5.91	150***	7.0	179	5.12	130	3.88	98.5	2.76	70	4x5/8	4x16	F05	1.97	50	2.36	60	2.36	60	13.2	6
1″	25	0.96	24.5	5.0	127	7.0	179	5.12	130	4.25	108	3.13	79.5	4x5/8	4x16	F05	1.97	50	2.36	60	2.36	60	12.3	5.6
1 1/2″	40	1.50	38	6.5	165	10.2	259	6.10	155	5.0	127	3.88	98.5	4x5/8	4x16	F07	3.03	77	3.70	94	2.36	60	26.4	12
2″	50	1.87	47.5	7.0	178	10.2	259	6.10	155	6.0	152.5	4.75	120.5	4x3/4	4x19	F07	3.15	80	3.82	97	2.36	60	32	14.5
3″	80	3.07	78	8.0	203	16.1	410	7.09	180	7.5	190.5	6.0	152.5	4x3/4	4x19	F10	4.65	118	5.51	140	3.15	80	74	33.5
4″	100	3.78	96	9.0	229	16.1	410	7.68	195	9.02	229	7.5	190.5	8x3/4	8x19	F10	5.28	134	6.14	156	3.15	80	110	50
6″	150	5.71	145	10.5	267	20.2*	513*	10.4	265	11.0	279.5	9.51	241.5	8x7/8	8x23	F12	7.24	184	8.46	215	3.94	100	201	91
8″/6″	200/150	5.71	145	18	457	20.2*	513*	10.4	265	13.5	343	11.75	298.5	8x7/8	8x23	F12	7.24	184	8.46	215	3.94	100	276	125
8″	200	7.68	195	18	457	No lever, only gear				13.5	343	11.75	298.5	8 x7/9	8x23	F12	9.33	237	10.53	267.5	3.94	100	375	170

* 6″ (DN 150) and 8″ (DN 200): At **D**p > approx. 29 psi (2 bar) a worm gear is recommended instead of the hand lever. Details on request.
** On request: drilled to ISO 7005-2
*** face-to-face not to ANSI

KA-N: Installation dimensions and approx. weights

Special face-to-face, flanges ISO 7005-2 (optionally drilled to ASME/ANSI B16.5 Cl.150)

DN/DN1		Ø Port		L		HL		H		D		k		nxd		D$_1$		k$_1$		nxd$_1$		EN ISO	H$_1$		H$_5$		H$_2$		Weight man. act.	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	5211	inch	mm	inch	mm	inch	mm	lbs	kg
2″/1″	50/25	0.96	24.5	6.3	160	7.0	179	5.12	130	6.5	165	4.92	125	4x0.75	4x19	4.53	115	3.35	85	4x0.55	4x14	F05	1.97	50	2.36	60	2.36	60	17.6	8
3″/2″	80/50	1.87	47.5	8.27	210	10.2	259	6.1	155	7.87	200	6.3	160	8x0.75	8x19	6.5	165	4.92	125	4x0.75	4x19	F07	3.15	80	3.82	97	2.36	60	37	17
4″/2″	100/50	1.87	47.5	8.27	210	10.2	259	6.1	155	8.66	220	7.09	180	8x0.75	8x19	6.5	165	4.92	125	4x0.75	4x19	F07	3.15	80	3.82	97	2.36	60	40	18
6″/4″	150/100	3.78	96	12.8	325	16.1	410	7.68	195	11.2	285	9.45	240	8x0.91	8x23	9.02	229	7.09	180	8x0.75	8x19	F10	5.28	134	6.14	156	3.15	80	114	51.5

KK: Installation dimensions and approx. weights

Special face-to-face "DN + 50 mm", flangeless sandwich design

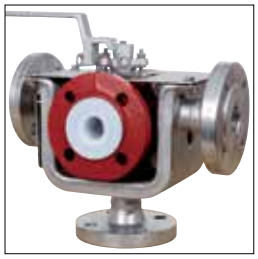
DN		Ø Port		L		HL		H		EN ISO	H$_1$		H$_5$		H$_2$		Weight man. act.	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	5211	inch	mm	inch	mm	inch	mm	lbs	kg
1″	25	0.94	24	2.95	75	5.6	143	4.72	120	F05	1.73	44	2.78	70.5	2.36	60	3.7	1.7
1 1/2″	40	1.50	38	3.54	90	8.9	225	6.5	165	F07	2.72	69	4.13	105	2.36	60	8.2	3.7
2″	50	1.81	46	3.94	100	8.9	225	6.69	170	F07	2.87	73	4.29	109	2.36	60	9.5	4.3
2 1/2″	65	2.28	46	4.53	115	8.9	225	6.69	170	F07	2.87	73	4.29	109	2.36	60	13.2	6
3″	80	3.07	65	5.12	130	8.9	225	7.48	190	F07	4.13	105	5.57	141.5	2.36	60	17.6	8
4″	100	3.07	78	5.91	150	12.8	325	7.48	190	F10	4.45	113	6.3	160	3.15	80	30	13.5
6″	150	4.33	110	7.87	200	15.2	385	9.45	240	F12	6.26	159	8.15	207	3.94	100	72	32.5

Richter's speciality: customised problem solutions

Ask Richter when you are looking for a solution to your problem!
In addition to the selection of common special designs presented here, we also offer many other specialities.

Lever extension
100, 200, 300 mm

Stainless steel heating jacket
for all standard heat transfer media



Lockable lever as standard feature (KN, KNA)

Special manual actuations
e.g. limit switch, locking, manual gear

Linings antistatic, FDA-compliant

Extra thick-walled lining 1/5″ (5 mm) for highly permeating media

Ball with relief opening for pressure relief of the ball interior in the closed position

Presented by:

RICHTER
Process Pumps & Valves
IDEX

Richter Pumps and Valves Inc.
406 State Street, Cedar Falls, 50613 IA, USA
Tel. +1(319) 268-8038, Fax +1(803) 216-7702

Headquarter:
Richter Chemie-Technik GmbH
Otto-Schott-Str. 2, D-47906 Kempen, Germany
Tel. +49(0)21 52/146-0, Fax +49(0)21 52/146-190
www.richter-ct.com