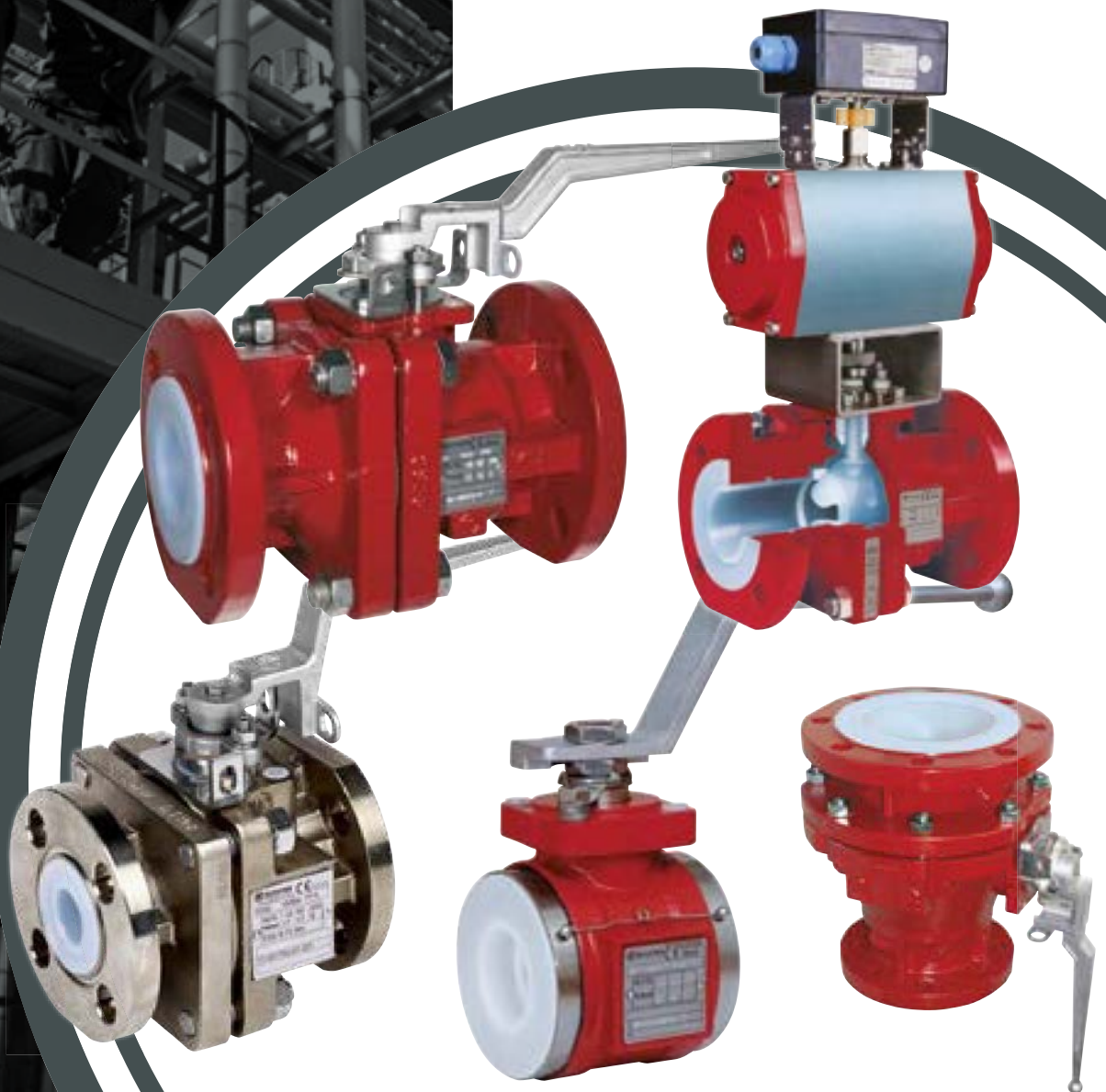


KN, KNA, KNR, KNAR, KA-N, KK

## 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, 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 ISO/DIN + 1 ASME/ANSI body, 2 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 cost-effective and readily available alternative to special metals
- Suitable for pure, ultrapure and solids-laden media

### Product features

- 1-piece, PFA-lined ball/stem, optionally  $Al_2O_3$  ball and special versions
- DN 15-200 and 1/2"-8", full bore
- DN 200 optional with reduced bore
- Optional manufacturer's declaration to TRwS ATV-DWVK-A 780, part 1, design A
- optional: type-test approval mark according to DIN EN 14432

| Type codes | manual actuation |               | remote actuation |               |
|------------|------------------|---------------|------------------|---------------|
|            | Shut-off valve   | Control valve | Shut-off valve   | Control valve |

- |                   |         |          |          |           |
|-------------------|---------|----------|----------|-----------|
| • ISO/DIN         | KN/...  | KNR/...  | KNP/...  | KNRP/...  |
| • ASME/ANSI short | KNA/... | KNAR/... | KNAP/... | KNARP/... |

### Lining

- |                    |         |
|--------------------|---------|
| • PFA              | .../F   |
| • Antistatic PFA-L | .../F-L |

### ① min. 3.5 mm (1/7") thick lining made of pure PFA

- High permeation resistance
- Vacuum-proof anchoring
- transparent, optimal quality assurance,
- minimal 5 mm (1/5") wall thickness option ( $\geq$  DN 25/1")
- Optional antistatic lining

### ② Body made of ductile cast iron

EN-JS 1049/ASTM A395, absorbs the system and pipe forces

DN 25 up to DN 80 respectively ASME/ANSI 1"-2" also available in stainless steel (1.4408)

### ③ Permanently tight body connection

- Also with frequent temperature changes
- Full lining (3a)
- Body halves center themselves exactly to each other owing to the fit (3b)
- Labyrinth-like sealing (3c): maximum surface pressure between the body halves
- „Almost metallic stop“ (3d) absorbs pipe forces (see page 3)

### ④ Different ball versions (see page 3)

- Standard one-piece ball/stem with 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

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 ① / ISO/DIN face to face, flanges PN 25 (DN 25-80) | •/• |     | •/• |      | ②    | ③   |
| ASME/ANSI short face to face, flanges Cl. 150 ①                                        |     | •   |     | •    |      |     |
| Shut-off/control                                                                       | •/- | •/- | •/• | •/•  | •/-  | •/- |
| ENVIPACK bellows-type packing                                                          | •   | •   | •   | •    | •    |     |
| Operating temperature up to 150 °C/200 °C (-20 °F/400 °F)                              | •/• | •/• | •/• | •/•  | •/•  | •/- |
| Operating temperature down to -29 °C/-60 °C (-20 °F/-75 °F)                            | •/• | •   | •/• | •    | •/•  | •/• |
| Vacuum applications                                                                    | •   | •   | •   | •    | •    | •   |
| Solids-containing fluids ④                                                             | •   | •   | ⑤   | ⑤    | •    | •   |
| Ultrapure media                                                                        | •   | •   | •   | •    | •    |     |
| TF ball/stem for optimum drainability                                                  | •   | •   |     |      | •    |     |
| Low-cavity                                                                             | •   | •   | •   | •    | •    | •   |
| Lining pure PFA, min. 3,5 mm/min. 5 mm (1/7"/1/5")                                     | •/• | •/• | •/• | •/•  | •/•  | •/- |
| Lining antistatic PFA-L                                                                | •   | •   | •   | •    | •    | •   |
| One-piece PFA-lined ball/stem                                                          | •   | •   | •   | •    | •    |     |
| PFA-lined ball, separate stem                                                          |     |     |     |      |      | •   |
| Al <sub>2</sub> O <sub>3</sub> ceramic ball, separate stem                             | •   | •   |     |      | •    | •   |
| Body ductile cast iron                                                                 | •   | •   | •   | •    | •    | •   |
| Body stainless steel ISO/DIN (DN 25-80)                                                | •   |     | •   |      |      |     |
| ASME/ANSI (1"-2")                                                                      |     | •   |     | •    |      |     |

① On request, flanges drilled to ASME Cl.150

② Special face to face, see tables on page 7

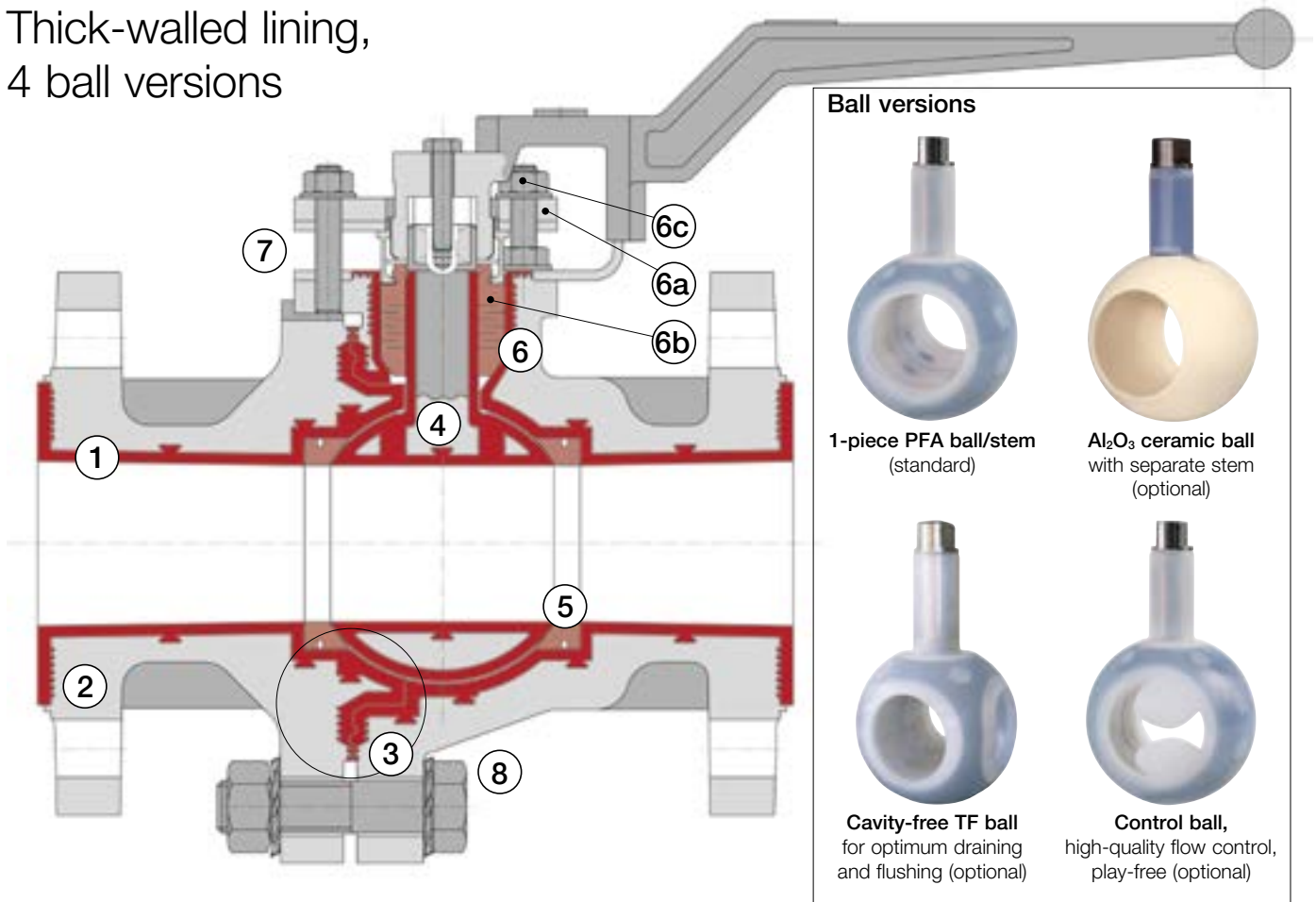
③ Flangeless compact design, face to face = DN + 50 mm

④ Solids: in general, consultation with manufacturer recommended

⑤ Limited suitability



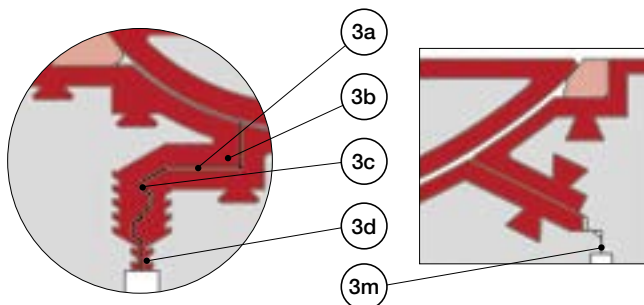
## Thick-walled lining, 4 ball versions



## Why does Richter rely on “almost metallic stop” instead of “metallic stop”?

**Richter’s “virtually metal-to-metal contact”, permanently tight:**

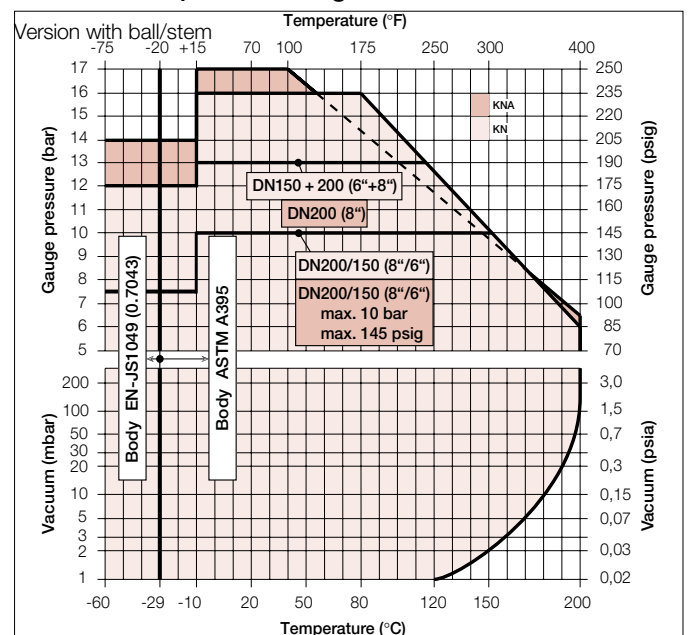
The body lining (3d) decreases to about 0.5 mm (0.02”) permitting the inner flange connection to be retightened in the event of a leak in the sealing area. However, leakage is highly improbable thanks to the labyrinth-type design (3c) typical of Richter.



## What are the disadvantages of lined valves with “metallic stop”?

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 EN-JS 1049 (0.7043)/PFA:

-60 °C (-75 °F) to +200 °C (400 °F); max. 16 bar (235 psi) acc. to AD 2000

### Body ASTM A395/PFA:

-29 °C (-20 °F) to +200 °C (400 °F); max. 17.2 bar (250 psi) acc. to ASME B16.42

**For applications at low temperatures, please observe the local regulations!**

## Richter drain valves KA-N with ENVIPACK stem sealing

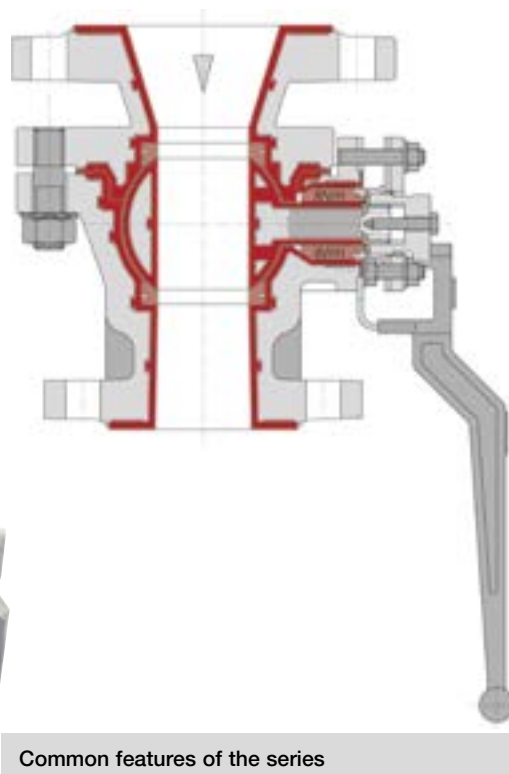
Drain valves are compact, sturdy vessel drain valves and much lower-priced than sliding stem valves. The KA-N has – apart from the tapered inlet nozzle – the same design as the ball valve series KN. The pressure/temperature range, design features, material range and the major spare parts are identical.

### Product features

- Full bore
- DN 50/25 (Ø 24,5 mm) to 150/100 (Ø 96 mm), 2 1/4" (Ø 1") to 8 5/8" (Ø 6")
- -60 to +200 °C (-75 to +400 °F), see diagram on page 3
- Face-to-face: see table on page 7
- Flanges ISO/DIN 7005-2 PN 16, on request, drilled to ASME B16.05 class 150

### Other options:

- Body heating jacket, stem extension



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

- Labyrinth-like, permanently tight body connection
- Lining 3.5 mm (1/7") 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<sub>2</sub>O<sub>3</sub> ceramic ball with separate stem, cavityfree TF ball, all blowout-proof
- Or control ball with high-quality control performance for KNR and KNAR valves

## PFA lined stainless steel shut-off and control valves

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<sub>3</sub> 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 KN and KNA series, see page 3.

### Product features

- Precision cast stainless steel 1.4408 (316, CF8M), lining PFA
- Full bore flow
- ISO/DIN (DN 25 to DN 80) ASME/ANSI (1" to 2"), other nominal sizes on request
- from -29 to +200 °C (-20 to +400 °F) for KNA series
- from -60 to +200 °C (-75 to +400 °F) for KN series, see diagram on page 3
- Very low temperatures down to -200 °C (-330 °F) on request
- Face-to-face acc. to ASME/ANSI 16.10/short, face-to-face ISO/DIN on request



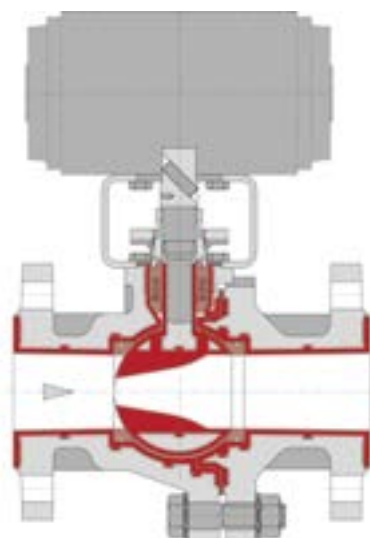
## Richter control valves KNR and KNAR with play-free torque transmission



With the series KNR (ISO/DIN) and KNAR (ASME/ANSI) compact control valves with high control accuracy are available to plant operators. The KNR/KNAR valves are in many applications a very economical alternative to bellows-type, sliding stem valves.

Valve bodies, seat rings and the ENVIPACK stem sealing are identical to those of the shut-off valves KN and KNA 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.

Weitere Informationen siehe separate Druckschrift.



### Product features

- Up to 8 finely graduated  $k_{vs}/C_v$ -values per nominal size
- Equal percentage characteristic acc. to DIN EN 60534, linear by means of positioner
- DN 15 to 200 ( $\frac{1}{2}$ " to 8")
- -60 to +200 °C (-75 to +400 °F), see diagram on page 3
- Face-to-face according to
  - ISO/DIN 5752 R.1 (apart from DN 200)
  - ASME/ANSI B 16.10/8, Cl.150
- Flanges to
  - ISO/DIN 7005-2 PN 16 (DN 200/150 8"/6": PN 10), DN 25-80 (1"-3")
  - ASME B16.5 Cl.150

### Other options:

- Extra thick body lining: 5 mm ( $\frac{1}{5}$ ") PFA for permeating media

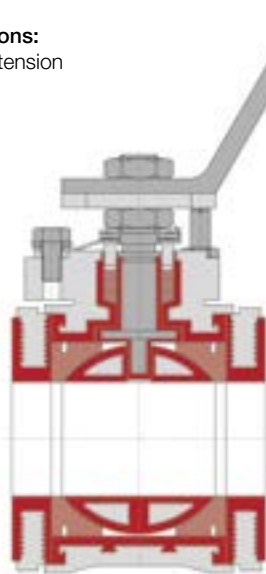
## Richter flangeless compact ball valves KK

### Product features

- Lining 3.5 mm ( $\frac{1}{7}$ ") virgin PFA
- Body of ductile cast iron EN-JS 1049 (ASTM A395)
- DN 25-150 (1"-6"), PN 16 (DN 150 (6") = PN 10)
- Full bore with DN 25-50 (1"-2"), reduced bore with DN  $\geq 65$  (2 $\frac{1}{2}$ ")
- -60 to +180 °C (-75 to +360 °F)
- Flangeless, face-to-face: DN+50 mm (2"), e. g. DN 50 (2") = 100 mm (4")
- 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
- DIN EN 14432 Dangerous goods certified to "dangerous goods" GGVSE/ADR/RID ch. 6.8
- Stainless steel lever
- Actuator mounting to ISO 5211
- Stainless steel grounding rope

### Other options:

- Stem extension



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





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

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

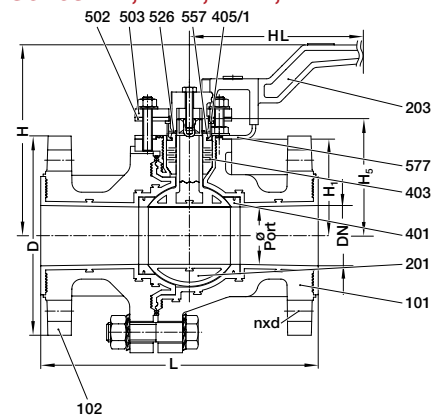
## Components and materials

| Item  | Designation             | Material                                                            |
|-------|-------------------------|---------------------------------------------------------------------|
| 101   | Main body               | Ductile cast iron EN-JS1049 (ASTM A395), PFA-lined optionally PFA-L |
| 102   | Body end piece          | Stainless steel/PTFE                                                |
| 109   | Transition cover        | Stainless steel/PTFE                                                |
| 200   | Ball                    | Al <sub>2</sub> O <sub>3</sub> 99,7 %                               |
| 201   | Ball (only KK)          | Al <sub>2</sub> O <sub>3</sub> 99,7 %, stainl. steel/PFA            |
| 202   | Ball stem unit          | Stainless steel, PFA-lined optionally PFA-L                         |
| 203   | Stem                    | Stainless steel                                                     |
| 203   | Lever*                  | Stainless steel                                                     |
| 401   | Seat rings              | PTFE (opt. Al <sub>2</sub> O <sub>3</sub> ball: mod. PTFE)          |
| 402/1 | Packing ring            | PTFE                                                                |
| 403   | Packing bellows         | PTFE                                                                |
| 405/1 | Thrust ring             | Stainless steel                                                     |
| 422   | Base lever              | Modified PTFE                                                       |
| 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.  | Screws and nuts         | Stainless steel                                                     |
| Nr.   |                         |                                                                     |

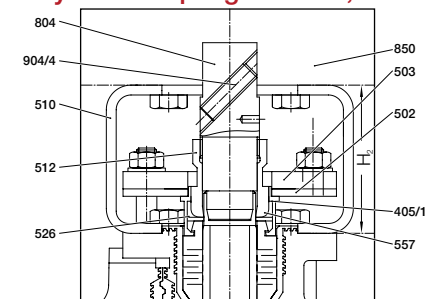
\* a worm gear is recommended for torques >= 200 Nm (1770lbs)

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.)

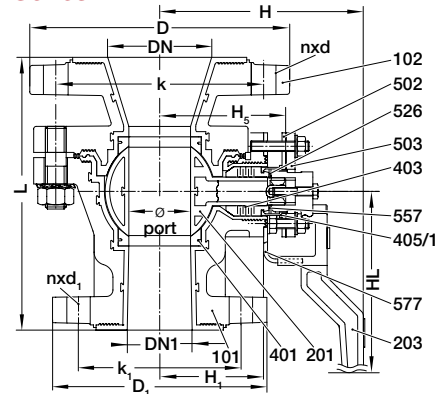
## Series KN, KNA, KNR, KNAR



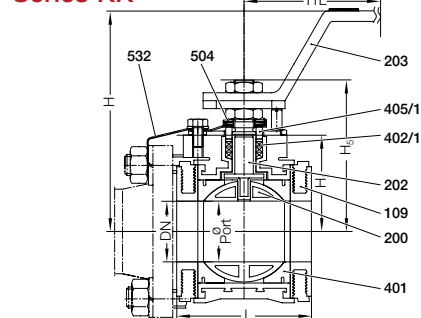
## Play-free coupling for KNR, KNAR



## Series KA-N



## Series KK



## KK: Operating torques (incl. breakaway torques) with PFA-lined or with Al<sub>2</sub>O<sub>3</sub>-ball

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

## k<sub>v100</sub> / Cv-values\*

| KK*               |       |
|-------------------|-------|
| k <sub>v100</sub> | Cv    |
| m <sup>3</sup> /h | USgpm |
| 51                | 59    |
| 150               | 175   |
| 248               | 289   |
| 300               | 350   |
| 455               | 530   |
| 830               | 967   |
| 1270              | 1480  |

## 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         |                 | Δp 3 bar          |        | Δp 6 bar |        | Δp 10 bar |        | Δp 16 bar |        | max. admissible |        |
| mm                 | inch   | mm             | inch            | Nm                | in-lbs | Nm       | in-lbs | Nm        | in-lbs | Nm        | in-lbs | Nm              | in-lbs |
| 15                 | ½"     | -              | -               | 8                 | 71     | 8        | 71     | 8         | 71     | 10        | 89     | 70              | 620    |
| 20                 | ¾"     | -              | -               | 8                 | 71     | 8        | 71     | 8         | 71     | 10        | 89     | 70              | 620    |
| 25                 | 1"     | 50/25          | 2 1/4"          | 12                | 106    | 12       | 106    | 12        | 106    | 12        | 106    | 70              | 620    |
| 40                 | 1 ½"   | -              | -               | 20                | 177    | 20       | 177    | 20        | 177    | 25        | 221    | 225             | 1990   |
| 50                 | 2"     | 80/50 + 100/50 | 3 1/2" + 4 1/2" | 25                | 221    | 25       | 221    | 25        | 221    | 30        | 266    | 225             | 1990   |
| 80                 | 3"     | -              | -               | 60                | 531    | 60       | 531    | 65        | 575    | 80        | 708    | 500             | 4425   |
| 100                | 4"     | 150/100        | 6 1/4"          | 80                | 708    | 80       | 708    | 90        | 797    | 170       | 1505   | 500             | 4425   |
| 150                | 6"     | -              | -               | 200               | 1770   | 250      | 2213   | 350       | 3098   | -         | -      | 2200            | 19470  |
| 200/150            | 8 1/6" | -              | -               | 200               | 1770   | 250      | 2213   | 350       | 3098   | -         | -      | 2250            | 19913  |
| 200                | 8"     | -              | -               | 600               | 5310   | 600      | 5310   | 700       | 6310   | -         | -      | 2200            | 19470  |

## KN, KNA, KA-N: Operating torques (incl. breakaway torques) with Al<sub>2</sub>O<sub>3</sub> ball

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

## k<sub>v100</sub> / Cv-values\*

| KN, KNA, KA-N*    |       |
|-------------------|-------|
| k <sub>v100</sub> | Cv    |
| m <sup>3</sup> /h | USgpm |
| 17,5              | 20    |
| 31                | 36    |
| 75                | 87    |
| 200               | 233   |
| 310               | 361   |
| 800               | 932   |
| 1250              | 1456  |
| 2800              | 3262  |
| 3200              | 3728  |
| 6000              | 6990  |

## k<sub>v100</sub> / Cv-values\*

| KN, KNA, KA-N*    |       |
|-------------------|-------|
| k <sub>v100</sub> | Cv    |
| m <sup>3</sup> /h | USgpm |
| 17,5              | 20    |
| 31                | 36    |
| 75                | 87    |
| 200               | 233   |
| 310               | 361   |
| 800               | 932   |
| 1250              | 1456  |
| 2800              | 3262  |
| 3200              | 3728  |

\* for KNR and KNAR k<sub>v100</sub> / Cv-values see separate brochure

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

## 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 <sub>1</sub> |        | EN ISO 5211 | H <sub>1</sub> |      | H <sub>5</sub> |       | H <sub>2</sub> |      | Weight man. act. |      |
|---------|-------|--------|------|-----|------|---------------------|-------|-----|------|-----|------|-----|-------|------------------|--------|-------------|----------------|------|----------------|-------|----------------|------|------------------|------|
| mm      | inch  | mm     | inch | mm  | inch | mm                  | inch  | mm  | inch | mm  | inch | mm  | inch  | mm               | inch   |             | mm             | inch | mm             | inch  | mm             | inch | kg               | lbs  |
| 15      | ½"    | 15     | 0,59 | 130 | 5,12 | 179                 | 7,0   | 130 | 5,12 | 95  | 3,74 | 65  | 2,56  | 4x14             | 4x0,55 | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 5,6              | 12,3 |
| 20      | ¾"    | 20     | 0,79 | 150 | 5,91 | 179                 | 7,0   | 130 | 5,12 | 105 | 4,13 | 75  | 2,95  | 4x14             | 4x0,55 | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 6                | 13,2 |
| 25      | 1"    | 24,5   | 0,96 | 160 | 6,30 | 179                 | 7,0   | 130 | 5,12 | 115 | 4,53 | 85  | 3,35  | 4x14             | 4x0,55 | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 6                | 13,2 |
| 40      | 1½"   | 38     | 1,50 | 200 | 7,87 | 259                 | 10,2  | 155 | 6,10 | 150 | 5,91 | 110 | 4,33  | 4x19             | 4x0,75 | F07         | 77             | 3,03 | 94             | 3,70  | 60             | 2,36 | 14               | 30,9 |
| 50      | 2"    | 47,5   | 1,87 | 230 | 9,06 | 259                 | 10,2  | 155 | 6,10 | 165 | 6,5  | 125 | 4,92  | 4x19             | 4x0,75 | F07         | 80             | 3,15 | 97             | 3,82  | 60             | 2,36 | 16               | 35,3 |
| 80      | 3"    | 78     | 3,07 | 310 | 12,2 | 410                 | 16,1  | 180 | 7,09 | 200 | 7,87 | 160 | 6,30  | 8x19             | 8x0,75 | F10         | 118            | 4,65 | 140            | 5,51  | 80             | 3,15 | 35               | 77   |
| 100     | 4"    | 96     | 3,78 | 350 | 13,8 | 410                 | 16,1  | 195 | 7,68 | 220 | 8,66 | 180 | 7,09  | 8x19             | 8x0,75 | F10         | 134            | 5,28 | 156            | 6,14  | 80             | 3,15 | 55               | 121  |
| 150     | 6"    | 145    | 5,71 | 480 | 18,9 | 513*                | 20,2* | 265 | 10,4 | 285 | 11,2 | 240 | 9,45  | 8x23             | 8x0,91 | F12         | 184            | 7,24 | 215            | 8,46  | 100            | 3,94 | 104              | 229  |
| 200/150 | 8"/6" | 145    | 5,71 | 457 | 18   | 513*                | 20,2* | 265 | 10,4 | 340 | 13,4 | 295 | 11,61 | 8x23             | 8x0,91 | F12         | 184            | 7,24 | 215            | 8,46  | 100            | 3,94 | 125              | 276  |
| 200     | 8"    | 195    | 7,68 | 457 | 18   | No lever, only gear |       |     |      | 343 | 13,5 | 295 | 11,61 | 12x23            | 8x7/8  | F12         | 237            | 9,33 | 267,5          | 10,53 | 100            | 3,94 | 170              | 375  |

\* DN 150 (6") and 200 (8"): At Δp > approx. 2 bar (29 psi) 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): Installation dimensions and approx. weights

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

| DN      |       | Ø Port |      | L   |      | HL                          |       | H   |      | D     |      | k     |       | nxd <sub>1</sub> |       | EN ISO 5211 | H <sub>1</sub> |      | H <sub>5</sub> |       | H <sub>2</sub> |      | Weight man. act. |      |
|---------|-------|--------|------|-----|------|-----------------------------|-------|-----|------|-------|------|-------|-------|------------------|-------|-------------|----------------|------|----------------|-------|----------------|------|------------------|------|
| mm      | inch  | mm     | inch | mm  | inch | mm                          | inch  | mm  | inch | mm    | inch | mm    | inch  | mm               | inch  |             | mm             | inch | mm             | inch  | mm             | inch | kg               | lbs  |
| 15***   | ½"*** | 15     | 0,59 | 130 | 5,12 | 179                         | 7,0   | 130 | 5,12 | 89    | 3,5  | 60,5  | 2,38  | 4x16             | 4x¾   | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 5,6              | 12,3 |
| 20***   | ¾"*** | 20     | 0,79 | 150 | 5,91 | 179                         | 7,0   | 130 | 5,12 | 98,5  | 3,88 | 70    | 2,76  | 4x16             | 4x¾   | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 6                | 13,2 |
| 25      | 1"    | 24,5   | 0,96 | 127 | 5,0  | 179                         | 7,0   | 130 | 5,12 | 108   | 4,25 | 79,5  | 3,13  | 4x16             | 4x¾   | F05         | 50             | 1,97 | 60             | 2,36  | 60             | 2,36 | 5,6              | 12,3 |
| 40      | 1½"   | 38     | 1,50 | 165 | 6,5  | 259                         | 10,2  | 155 | 6,10 | 127   | 5,0  | 98,5  | 3,88  | 4x16             | 4x¾   | F07         | 77             | 3,03 | 94             | 3,70  | 60             | 2,36 | 12               | 26,4 |
| 50      | 2"    | 47,5   | 1,87 | 178 | 7,0  | 259                         | 10,2  | 155 | 6,10 | 152,5 | 6,0  | 120,5 | 4,75  | 4x19             | 4x¾   | F07         | 80             | 3,15 | 97             | 3,82  | 60             | 2,36 | 14,5             | 32   |
| 80      | 3"    | 78     | 3,07 | 203 | 8,0  | 410                         | 16,1  | 180 | 7,09 | 190,5 | 7,5  | 152,5 | 6,0   | 4x19             | 4x¾   | F10         | 118            | 4,65 | 140            | 5,51  | 80             | 3,15 | 33,5             | 74   |
| 100     | 4"    | 96     | 3,78 | 229 | 9,0  | 410                         | 16,1  | 195 | 7,68 | 229   | 9,02 | 190,5 | 7,5   | 8x19             | 8x¾   | F10         | 134            | 5,28 | 156            | 6,14  | 80             | 3,15 | 50               | 110  |
| 150     | 6"    | 145    | 5,71 | 267 | 10,5 | 513*                        | 20,2* | 265 | 10,4 | 279,5 | 11,0 | 241,5 | 9,51  | 8x23             | 8x¾   | F12         | 184            | 7,24 | 215            | 8,46  | 100            | 3,94 | 91               | 201  |
| 200/150 | 8"/6" | 145    | 5,71 | 457 | 18   | 513*                        | 20,2* | 265 | 10,4 | 343   | 13,5 | 298,5 | 11,75 | 8x23             | 8x¾   | F12         | 184            | 7,24 | 215            | 8,46  | 100            | 3,94 | 125              | 276  |
| 200     | 8"    | 195    | 7,68 | 457 | 18   | kein Hebel sondern Getriebe |       |     |      | 343   | 13,5 | 298,5 | 11,75 | 8x23             | 8x7/8 | F12         | 237            | 9,33 | 267,5          | 10,53 | 100            | 3,94 | 170              | 375  |

\* DN 150 (6") and 200 (8"): At Δp > approx. 2 bar (29 psi) 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 B16.5 Cl.150)

| DN/DN1  |       | Ø Port |      | L   |      | HL  |      | H   |      | D   |      | k   |      | nxd  |        | D <sub>1</sub> |      | k <sub>1</sub> |      | nxd <sub>1</sub> |        | EN ISO 5211 | H <sub>1</sub> |      | H <sub>5</sub> |      | H <sub>2</sub> |      | Weight man. act. |      |
|---------|-------|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|--------|----------------|------|----------------|------|------------------|--------|-------------|----------------|------|----------------|------|----------------|------|------------------|------|
| mm      | inch  | mm     | inch | mm  | inch | mm  | inch | mm  | inch | mm  | inch | mm  | inch | mm   | inch   | mm             | inch | mm             | inch | mm               | inch   |             | mm             | inch | mm             | inch | mm             | inch | kg               | lbs  |
| 50/25   | 2"/1" | 24,5   | 0,96 | 160 | 6,3  | 179 | 7,0  | 130 | 5,12 | 165 | 6,5  | 125 | 4,92 | 4x19 | 4x0,75 | 115            | 4,53 | 85             | 3,35 | 4x14             | 4x0,55 | F05         | 50             | 1,97 | 60             | 2,36 | 60             | 2,36 | 8                | 17,6 |
| 80/50   | 3"/2" | 47,5   | 1,87 | 210 | 8,27 | 259 | 10,2 | 155 | 6,1  | 200 | 7,87 | 160 | 6,3  | 8x19 | 8x0,75 | 165            | 6,5  | 125            | 4,92 | 4x19             | 4x0,75 | F07         | 80             | 3,15 | 97             | 3,82 | 60             | 2,36 | 17               | 37   |
| 100/50  | 4"/2" | 47,5   | 1,87 | 210 | 8,27 | 259 | 10,2 | 155 | 6,1  | 220 | 8,66 | 180 | 7,09 | 8x19 | 8x0,75 | 165            | 6,5  | 125            | 4,92 | 4x19             | 4x0,75 | F07         | 80             | 3,15 | 97             | 3,82 | 60             | 2,36 | 18               | 40   |
| 150/100 | 6"/4" | 96     | 3,78 | 325 | 12,8 | 410 | 16,1 | 195 | 7,68 | 285 | 11,2 | 240 | 9,45 | 8x23 | 8x0,91 | 229            | 9,02 | 180            | 7,09 | 8x19             | 8x0,75 | F10         | 134            | 5,28 | 156            | 6,14 | 80             | 3,15 | 51,5             | 114  |

### KK: Installation dimensions and approx. weights

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

| DN  |      | Ø Port |      | L   |      | HL  |      | H   |      | EN ISO 5211 | H <sub>1</sub> |      | H <sub>5</sub> |      | H <sub>2</sub> |      | Weight man. act. |      |
|-----|------|--------|------|-----|------|-----|------|-----|------|-------------|----------------|------|----------------|------|----------------|------|------------------|------|
| mm  | inch | mm     | inch | mm  | inch | mm  | inch | mm  | inch |             | mm             | inch | mm             | inch | mm             | inch | kg               | lbs  |
| 25  | 1"   | 24     | 0,94 | 75  | 2,95 | 143 | 5,6  | 120 | 4,72 | F05         | 44             | 1,73 | 70,5           | 2,78 | 60             | 2,36 | 1,7              | 3,7  |
| 40  | 1½"  | 38     | 1,50 | 90  | 3,54 | 225 | 8,9  | 165 | 6,5  | F07         | 69             | 2,72 | 105            | 4,13 | 60             | 2,36 | 3,7              | 8,2  |
| 50  | 2"   | 46     | 1,81 | 100 | 3,94 | 225 | 8,9  | 170 | 6,69 | F07         | 73             | 2,87 | 109            | 4,29 | 60             | 2,36 | 4,3              | 9,5  |
| 65  | 2½"  | 46     | 2,28 | 115 | 4,53 | 225 | 8,9  | 170 | 6,69 | F07         | 73             | 2,87 | 109            | 4,29 | 60             | 2,36 | 6                | 13,2 |
| 80  | 3"   | 65     | 3,07 | 130 | 5,12 | 225 | 8,9  | 190 | 7,48 | F07         | 105            | 4,13 | 141,5          | 5,57 | 60             | 2,36 | 8                | 17,6 |
| 100 | 4"   | 78     | 3,07 | 150 | 5,91 | 325 | 12,8 | 190 | 7,48 | F10         | 113            | 4,45 | 160            | 6,3  | 80             | 3,15 | 13,5             | 30   |
| 150 | 6"   | 110    | 4,33 | 200 | 7,87 | 385 | 15,2 | 240 | 9,45 | F12         | 159            | 6,26 | 207            | 8,15 | 100            | 3,94 | 32,5             | 72   |

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