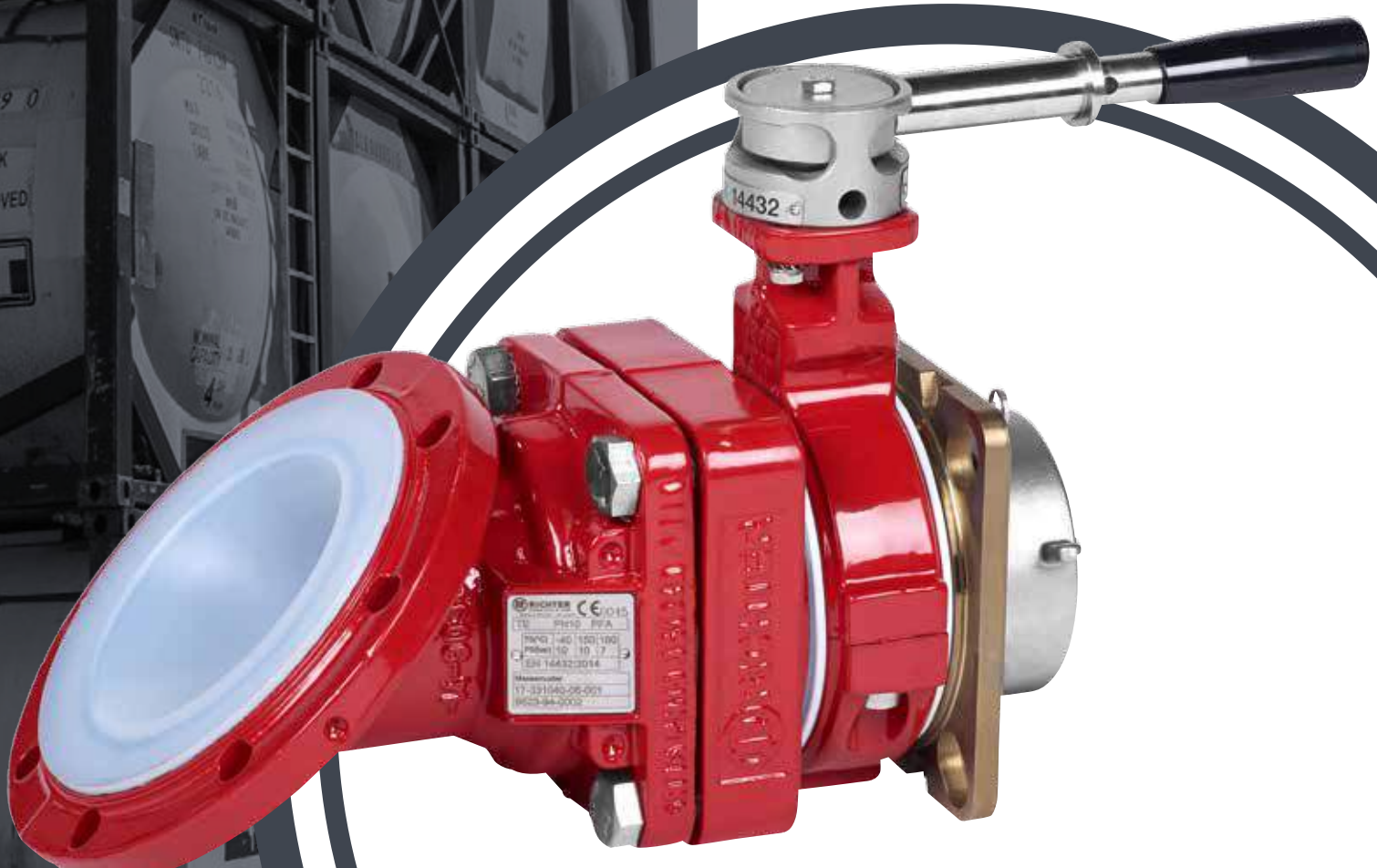
RICHTER
Process Pumps & Valves

TANK BOTTOM VALVE SYSTEM

FOR LINED TANK CONTAINERS

- *INCREASED SAFETY*
- *SUPERIOR CORROSION RESISTANCE*
- *EXTENDED LIFETIME*
- *LOWER OPERATING COSTS*



TE/F - FIRST LINED TANK BOTTOM VALVE

BASED ON BALL VALVE TECHNOLOGY

USER DRIVEN SOLUTIONS

With decades of experience with fluoropolymer lined products with the most corrosive fluids, we have addressed the problems operators of tank containers with bottom discharge valves are facing currently, namely: **limited lifetime and reliability.**

The Richter Foot Valve TE/F for lined tank containers is another example of Richter's innovative, user driven solutions. It is specifically designed to **increase safety** and **reduce total cost of ownership** when transporting corrosive or high purity media. The patent pending solution is simple yet innovative.

OTHER VALVES *vs.* RICHTER VALVES

Halar® (ECTFE) valves have a thin coating, which erodes faster, causing a potential safety hazard to operators and the environment.

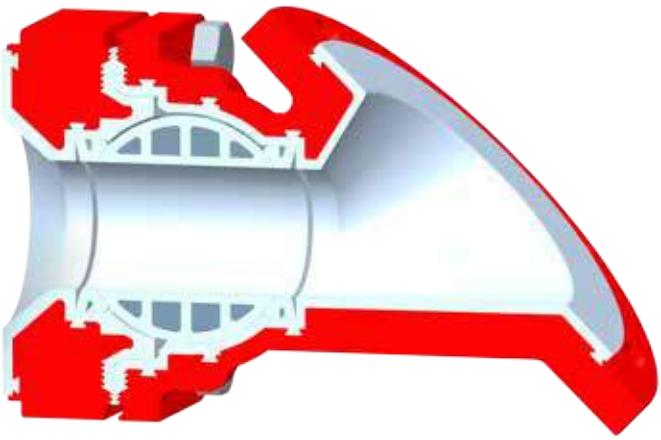
The emergency closing mechanism basically consists of a steel wire. This needs to be pulled to close the valve in case of an emergency, offering no option for operators to open the 'last line of defense' outside the danger zone.

Based on Richter's robust ball valve technology, the TE/F foot valve design has **up to 7 times thicker PFA coating.** It also has no known wear & tear with opening and closing.

Richter's ball valves have proven to last up to **more than a decade in extreme conditions.**

Robust stainless steel system for remote emergency closing AND opening replaces the steel wire 'emergency closing mechanism'.

PFA FLUOROPOLYMER LINING ADVANTAGES



- Universal corrosion resistance
- Outperforms Duplex, Hastelloy®, Halar®, PVDF, ETFE, titanium and nickel
- Suitable for high-purity and corrosive fluids
- Vacuum resistant lining, easy to maintain
- Large operating temperature range from -40°C to 180°C (-40°F to 356°F)
- Reduced total cost of ownership due to increased lifetime

NKS-T/F BUTTERFLY VALVE

EXPERIENCE. IDEAS. SOLUTIONS.

Built on Richter's PFA lined NK series, the NKS-T/F Butterfly Valve is designed to fit with the TE/F Bottom Valve, it can, however, also be used on top of the tank container. The sandwich-type body is equipped with PTFE and the disc is lined with PFA for **maximum corrosion resistance.** The single piece disc / stem is maintenance free and the self-adjusting top and bottom stem sealing warrants reliability, even with many switching cycles.

The simple yet ingenious acentric hand lever is equipped with a locking mechanism and is designed with ultimate flexibility in mind to allow for secure and easy operation in small spaces. The NK series are known for their reliable and durable construction, while displaying high performance.

- Single-piece disc / stem unit lined with pure PFA for maximum corrosion resistance and long service life
- Low friction values and torques during opening and closing
- Soft-sealing and gas-tight PFA disc on PTFE body; leakage rate in the seat to DIN EN 12266: gas-tight, zero bubbles
- Leak-tight against the atmosphere in compliance with the German Clean Air Act (TA-Luft)
- Core made of highly torsion-resistant duplex stainless steel 1.4517/CD-4MCuN
- Certified to DIN EN14432, ADR: 2015 chapter 6.8
- Multi-position lever with lockable end positions

Reliable and durable construction, while displaying high performance

TECHNICAL DETAILS TE/F

SPECIFICATION

- **Operating temperature:** -40°C to 180°C (-40°F to 356°F)
- **Design pressure:** 10 bar
- **Test pressure:** 15 bar
- **Weight:** 17 kg
- **Ball port:** DN 50

CONFORMITY

- **Designed to:**
  - TA-Luft: German Clean Air Act
  - PED2014/68/EU and ASME Sect. VIII, Div. 1
  - U.N. Portable International Maritime Dangerous Goods

CERTIFICATION

- **DIN EN 12266-1:** Tightness
- **ADR: 2015 chapter 6.8:** European Rules for Road Transport
- **DIN EN 14432:** Tanks for the transport of dangerous goods
- **RID:** European Rules for Rail Transport

MATERIALS

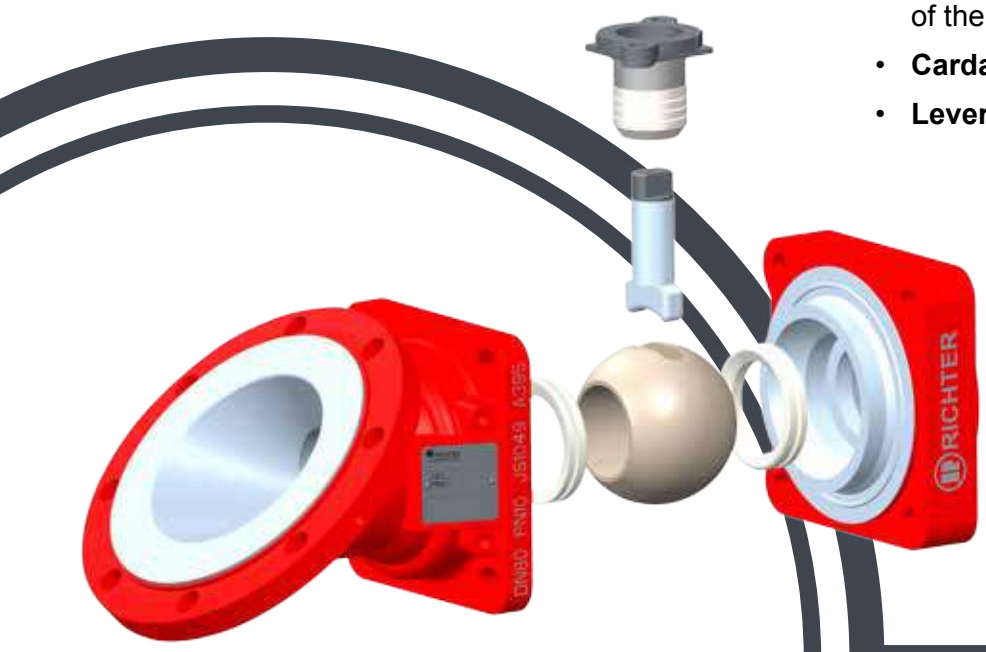
- **Ball:** AL_2O_3
- **Ball/stem unit:** Stainless steel/PFA lined
- **Seat rings:** PTFE
- **ENVIPACK bellow:** PTFE
- **Slide bearing:** PTFE
- **Lining:** PFA, 3.5 mm thickness
- **Valve body:** Ductile iron EN-JS 1049 / ASTM A395
- **Coating:** Epoxy (ext. corrosion protection)

Components made of stainless steel:

- **Remote actuation:** 1.4301 (304)
- **Lever:** 1.4408 (CF8M)
- **Cover:** 1.4301 (304)
- **Screws:** A4-70 (316)

FITTING DETAILS

- **45°- inlet flange:** 8 x Ø14, K = 178 mm (7“)
- **Outlet flange:** 4 x M16, K = 160 mm, Height/Width = 144 mm
- **Elongated stem:** ~1200 mm to be fit on site to the width of the tank container
- **Cardan joint:** Maximum 45° deflection
- **Lever:** Lockable end positions



TECHNICAL DETAILS NKS-T/F

SPECIFICATION

- **Operating temperature:** -40°C to 180°C (-40°F to 356°F)
- **Design pressure:** 10 bar
- **Test pressure:** 15 bar
- **Weight:** 5.3 kg
- **Ball port:** DN 80

CONFORMITY

- **Designed to:**
  - TA-Luft: German Clean Air Act
  - PED 2014/68/EU and ASME Sect. VIII, Div. 1
  - U.N. Portable International Maritime Dangerous Goods

CERTIFICATION

- **DIN EN 12266-1:** Tightness
- **ADR:2015 chapter 6.8:** European Rules for Road Transport
- **DIN EN 14432:** Tanks for the transport of dangerous goods
- **RID:** RID European Rules for Rail Transport

MATERIALS

- **Valve body:** Ductile iron EN-JS 1049 / ASTM A395
- **Body lining:** PTFE, 3 mm thickness
- **Disc / stem core:** Duplex stainless steel / PFA lined
- **Coating:** Epoxy (ext. corrosion protection)
- **Lever:** Stainless Steel
- **Lever stop:** 1.4301 (304)
- **Screws / nuts:** A4-70 (316)
- **Springs:** Stainless Steel
- **O-ring:** FKM
- **Elastomer inlay:** Silicone

FITTING DETAILS

Lever: Lockable end positions

FIRST PFA LINED 3” BSP OUTLET FLANGE

This first-to-market PFA lined stainless steel flange and blind cap completes the corrosion resistant system. The design has been optimized to protect the metal screw thread.

The blind cap is equipped with a grounding cable to prevent static electricity build-up and moves smoothly along without entangling with opening and closing of the cap.

SPECIFICATION

- **Operating temperature:** -40°C to 180°C (-40°F to 356°F)
- **Working pressure:** max. 4 bar
- **Weight:** 2.1 kg
- **Valve size:** 3" BSP

MATERIALS

- **Outlet flange:** 1.4408 / CF8M / PFA
- **Blind cap:** 1.4408 / CF8M / PTFE gasket
- **PTFE gasket:** A4-70 (316)

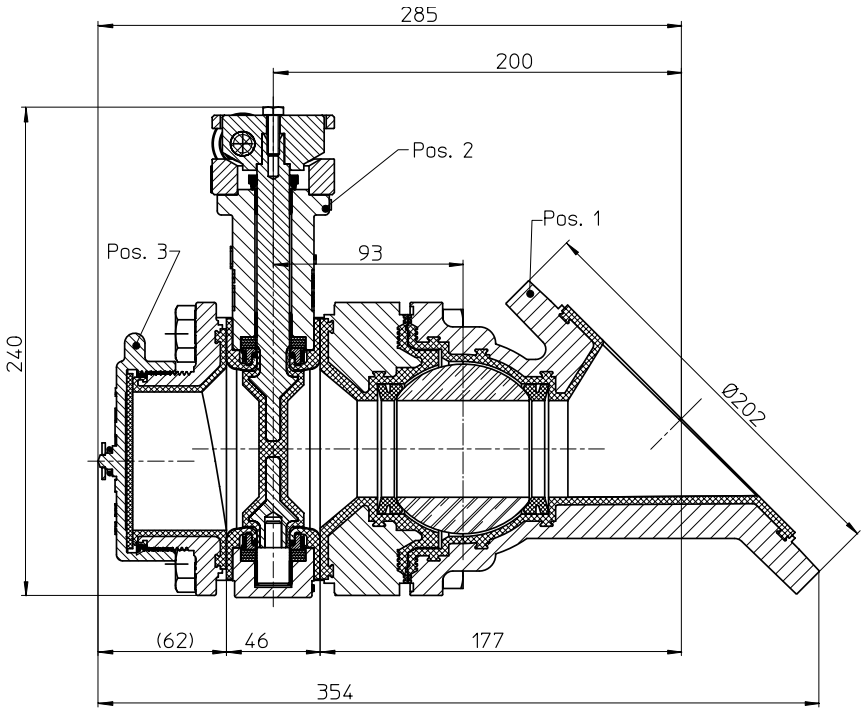
CONFORMITY

- **Designed to:**
  - ADR European Rules for Road Transport
  - FDA Food and Drug Administration

- Integral 3 mm PFA lining, extended over the raised flange faces
- Excentric outlet for maximum drainability; no dead-volume
- Blind cap with PTFE washer equipped with steel attachment wire

ORDERING INFORMATION

Tank Bottom Valve System



MATERIAL NUMBER	MATERIAL DESCRIPTION
9523-94-0002	TE/F Foot Valve with remote control, AL_2O_3 Elongated Stem, 1200 mm
9522-61-0001	NKS-T/F Butterfly Valve, DN 80
9523-94-5001	3” BSP outlet flange with blind cap, incl. screws
9527-24-8042	Maintenance kit TE/F, 6 x seat rings, PTFE

Additional Richter PFA lined products for dangerous goods transportation

Ball valve KNA

Ball Valve KK

PRODUCT	SIZES	FUNCTION	FACE TO FACE AND FLANGES
Ball Valve KN, KNA	DN 15-200 / ½”-8”	Shut-off valve	ISO/DIN, ASME/ANSI
Ball Valve BVA	DN 15-200 / ½”-8”	Shut-off valve	ASME/ANSI
Compact Ball Valve KK	DN 25-150 / 1”-6”	Shut-off valve	Flangeless

YOUR SAFETY IS OUR GOAL.
WORLDWIDE.

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