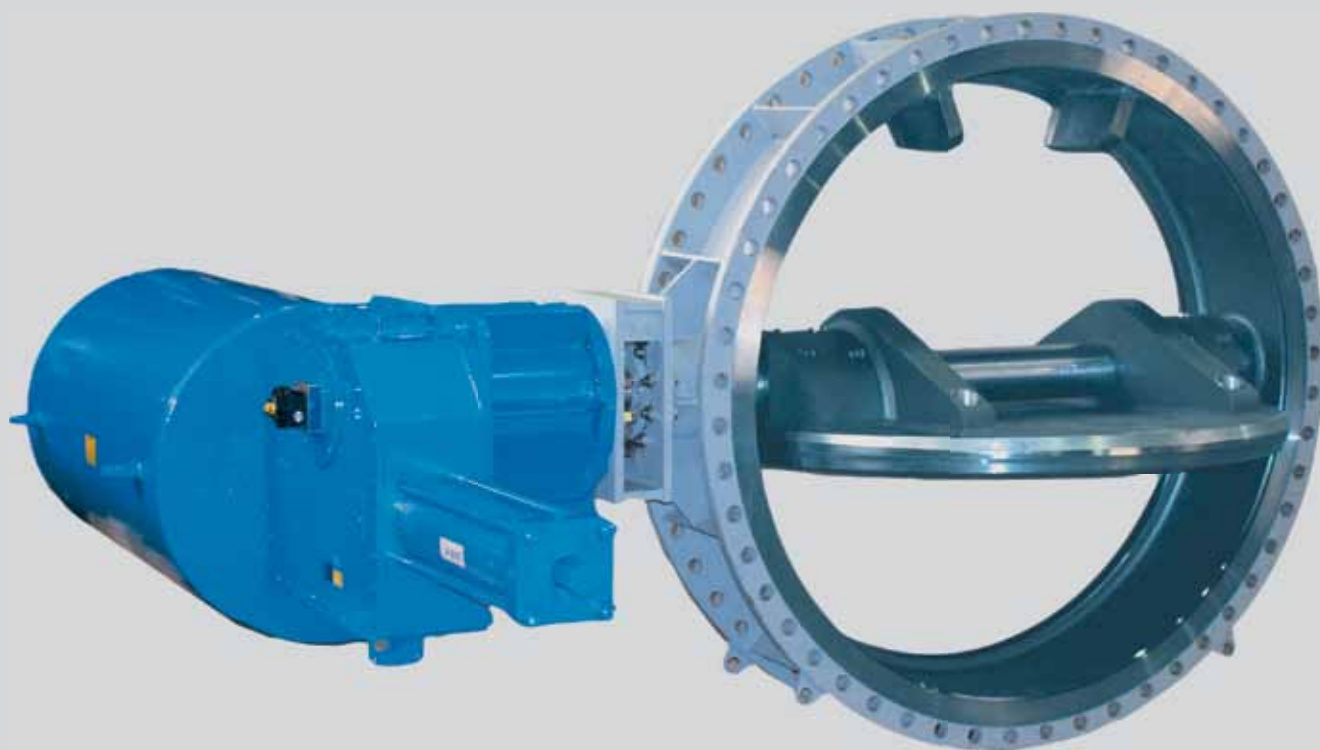


brands you trust.



KROMBACH<sup>®</sup> Triple-Eccentric Valves  
(Tri-EX) AK110

**CRANE**<sup>®</sup>

Energy Flow Solutions

[www.craneenergy.com](http://www.craneenergy.com)

## Key Features



## Key Features

---

- 1 Self-centering stainless steel laminated seal ring provides repeatable, bi-directional shutoff
- 2 Fabricated designs expands material and design customization options, reduces weight and cost, and enables shorter lead times
- 3 Available in sizes from 4" - 120" (DN 100 - DN 3000), with a wide range of standard and customized actuation packages for special applications such as quick-closing for emergency service

# Overview and Applications



## Overview

<b>Size:</b>	4" - 120" (DN 100 - DN 3000)
<b>Class:</b>	ASME 150 - 300 (PN 6, 10, 16, 25, 40)
<b>Temperature:</b>	-76°F to 752°F (-60°C to +400°C)
<b>Maximum Pressure:</b>	580.2 psi (40 bar)
<b>Body Types:</b>	Double Flange and Buttweld
<b>Standard Materials:</b>	Carbon Steel, Stainless Steel and other materials available

## Applications

- Steam/water isolations
- Steam turbine trip/throttle valves
- Condenser isolations
- Cogeneration plant applications
- Flue Gas/Hot Air isolations
- Hydrocarbon process applications such as:
  - Fuel loading
  - Pump isolation
  - Tank farms
  - FCC units
  - Crude units
  - Hydrotreating
  - Hydrogen plant

## Design Features

### Design Features

- Flexible, floating laminated seal ring
- One-piece stainless steel shaft
- Live-loaded packing
- Bearing protectors
- Top mounting flange according to ISO 5211
- Gear, Pneumatic, Electric, or Hydraulic Actuation Packages

#### Seal Ring

The seal ring is mounted on the disc and is self-centering, improving the sealing performance of the valve.

#### Gas Tightness

Flexible seal ring with multiple laminations of 316Ti Stainless Steel and graphite (standard).

- Graphite laminations give the elasticity that ensures repeatable, tight shutoff.
- Graphite provides lubrication, reducing wear and friction, and extending lifetime.

#### Closing Force

Krombach Tri-Ex is torque-seated; the torque generates the closing force to tighten the valve. More torque equals a tighter seal; no overtravel/limit stop needed.



## Design Features

<b>Sealing Geometry:</b>	Triple-Eccentric
<b>Disc Sealing:</b>	Self-centering, flexible seal ring
<b>Seat:</b>	304 Stainless Steel (standard), Stellite® 21 (optional)
<b>Leakage Rate:</b>	Per customer requirements (EN 12266-1, EN 12266-2, API 598)
<b>Packing:</b>	Pure graphite, live-loaded
<b>Mounting Flange:</b>	ISO 5211
<b>Face-To-Face</b>	
<b>Dimensions:</b>	ANSI B16.10 / EN 558 / ISO 5752

Stellite® is a registered trademark of Deloro Stellite.



## Additional Design Features

- Dual Packing
- Lantern Ring
- Bearing Seal Connection
- Bearing Flush Connection
- NACE Compliant
- High Temperature Service
- Vacuum Service
- Chlorine Service
- Dead-end Service
- Stem Extensions
- Lockable Gears

### Shaft Bearing

Bearing design ensures no leakage and long, maintenance-free performance.

**Superior design features with many options to meet customer requirements and specifications.**

# Triple-Eccentric (Tri-EX) Design

## Triple-Eccentric (Tri-EX) Design

What does Triple-Eccentric design mean? Traditional butterfly valves are concentric – no offsets. Three offsets ensure non-rubbing rotation, minimizing torque required and maximizing seat/seal ring lifetime.

### First Offset (1)

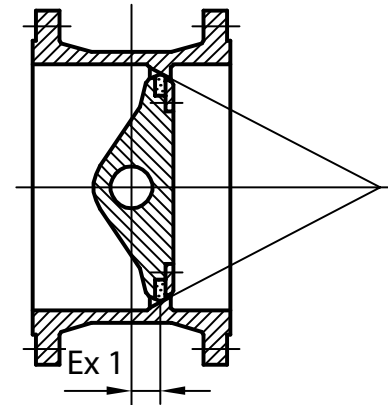
Seat has axial offset to the shaft

### Second Offset (2)

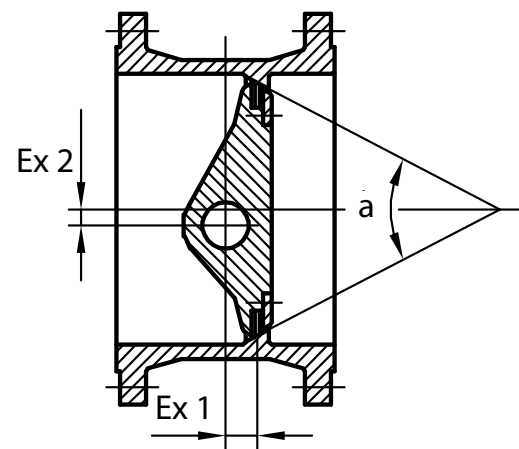
Shaft has offset to the center of the valve

### Third Offset (3)

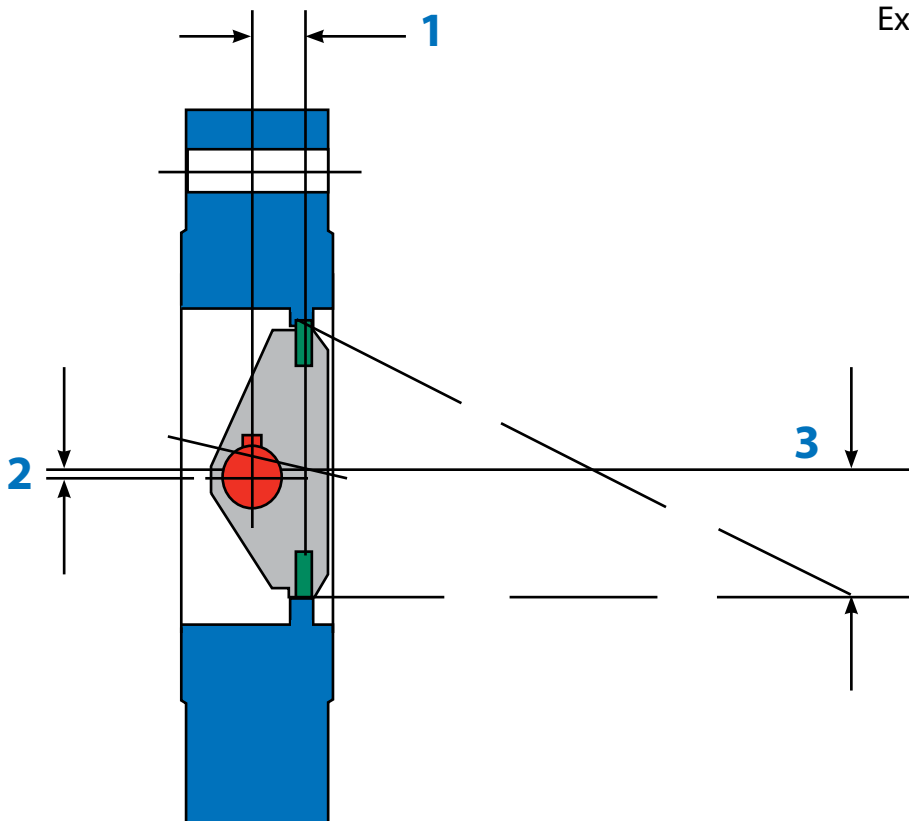
Seat has a cone shape. The top of the cone has an offset to the center of the valve



**First Offset 1**



**Second Offset 2**



**Third Offset 3  
(Tri-EX)**

## Standards & Certificates

Design:	Fabricated, Triple-Eccentric
Face-To-Face Dimension:	ANSI B16.10 / EN 558 / ISO 5752
Top Flange:	ISO 5211
End Connection:	Double Flanged or Weld Ends
Testing:	EN 12266 part 1 and 2, API 598
Marking:	PED 97/23/EC, AD2000-A4, API-Standard 609
Quality Assurance:	DIN EN ISO 9001:2008
Approvals:	PED 97/23/EC AD2000-A4 GOST-R API-Standard 609







## CRANE Energy Flow Solutions®

CRANE Energy Global Headquarters  
4526 Research Forest Drive, Suite 400

The Woodlands, Texas 77381 U.S.A.

Tel.: (1) 936-271-6500

Fax.: (1) 936-271-6510

Krombach Customer Service

Postfach 1130, D-57202

Kreuztal, Germany D-57202

Tel.: +49 (0) 2732/520-00

Fax.: +49 (0) 2732/520-100

[www.craneenergy.com](http://www.craneenergy.com)

**CRANE**

Energy Flow Solutions



brands you trust.



COMPAC-NOZ®

**CRANE**

Duo-CHEK®



NOZ-CHEK®



**STOCKHAM**



UNI-CHEK®

NUCLEAR

VALVE SERVICES

EG-KB-BU-EN-L16-44-1206

Crane Co., and its subsidiaries cannot accept responsibility for possible errors in catalogues, brochures, other printed materials, and website information. Crane Co. reserves the right to alter its products without notice, including products already on order provided that such alteration can be made without changes being necessary in specifications already agreed. All trademarks in this material are property of the Crane Co. or its subsidiaries. The Crane and Crane brands logotype (Aloyco®, Center Line®, Compac-Noz®, Crane®, Duo-Chek®, Flowseal®, Jenkins®, Krombach®, Noz-Chek®, Pacific Valves®, Stockham®, Triangle®, Uni-Chek®) are registered trademarks of Crane Co. All rights reserved.