

# VOSS

Reliability has a name – ZAKO flange joints



[www.voss.net](http://www.voss.net)

## ZAKO hydraulic connections set the standard



In hydraulic connection technology, the ZAKO flange range stands for large-scale reliability. With its unique construction, it easily withstands not only the toughest demands but is also designed for large pipe diameters. With their 10° flare system and exclusive zinc-nickel coating for the best protection against corrosion, ZAKO flanges set the standard in all areas of hydraulics and their performance has been proven in surface mining, hydraulic compression and in injection moulding machines, for example.

### ZAKO – One look convinces

For pipe outer diameters of 16 mm to 120 mm and wall thicknesses of up to 20 mm

- Standard series up to 250 bar and high-pressure series up to 400 bar with quadruple security
- For standard SAE hole patterns (3000 psi/6000 psi) and square flanges
- The best resistance to corrosion thanks to VOSS zinc-nickel surface; phosphatized surface also optionally available
- Superior 10° flare system
- Also available: ZAKO LP – the low-pressure version for up to 60 bar, for applications in low-pressure areas (e.g. for return and lubrication pipes)

## Safely master enormous forces

The most extreme demands and high pressures with huge volume flow rates provide particular challenges for hydraulic components in mining applications. The ZAKO flange system is specially designed for these applications and guarantees the highest degree of reliability.



## As simple as it is effective – the ZAKO system

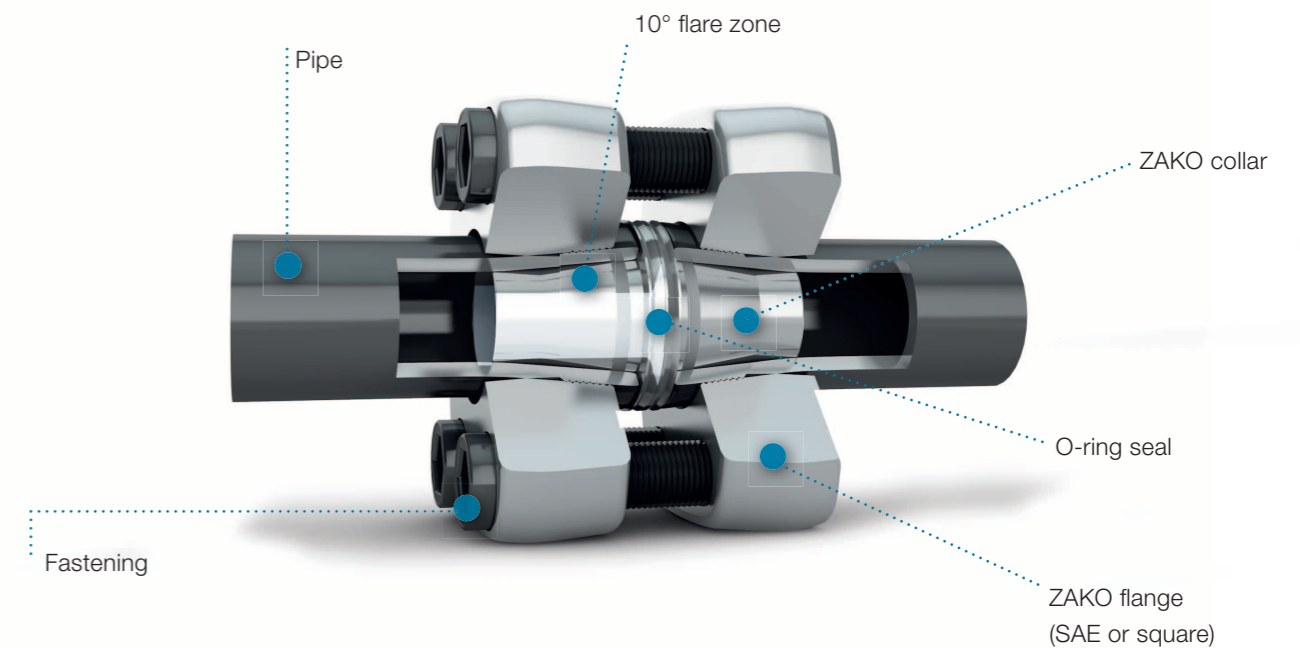
The detachable flange system means that laborious welding is unnecessary

The ZAKO system is also a winner from economical and technical points of view when compared to standard welded connections.

- Detachable connections, thus making them ideal for maintenance and repair work
- The connections are four times as safe
- Fast assembly saves time and costs
- Components have lower process costs
- Can also be used in combustible environments
- No laborious process steps (tacking, setting up, seal welding, cleaning, flame straightening)

### Perfectly constructed for efficient assembly

ZAKO-system pipe connections consist of four elements, ideally tailored to each other: Collar, O-ring, flange and connecting screws. The proven 10° flare principle using the ZAKO collar allows pre-assembly free of chamfers and indents. Here the collar is accurately pressed under high pressure into the pipe using special pre-assembly equipment. Together with an additional labyrinth box, this guarantees the tightness and stability of the system.

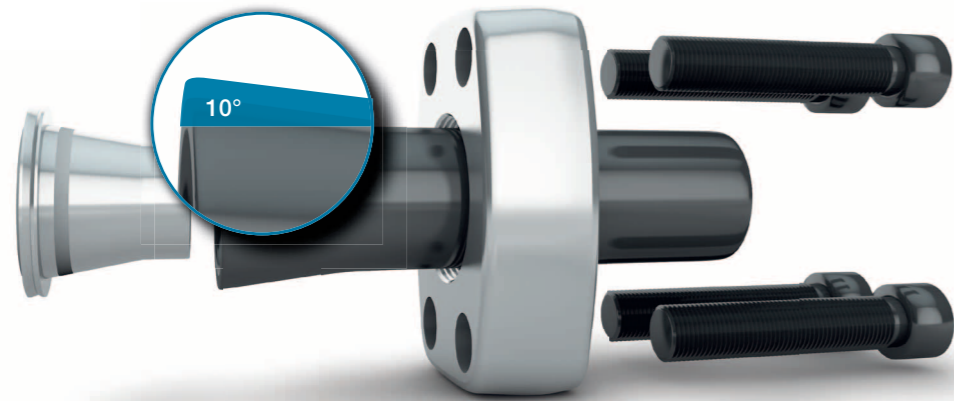


## High performance on the high seas

Whether in ship building or in the offshore industry, i.e. on gas or oil platforms, the ZAKO system is ideal for hard use on the high seas thanks to straightforward on-site assembly, its high degree of security and VOSS zinc-nickel corrosion protection, and it also reliably withstands extreme bending forces and aggressive salt water.



## Less is more, at least when it comes to flare angles



Compared to standard flare angles of 37°, ZAKO flange systems use an angle of 10° with small saw teeth in the flare zone. Our many years of experience with this system, as well as extensive measurements of forces, show significant benefits with reference to the stability and security of the joint. By widening the pipe by just 10°, the material is additionally not overstretched and thus remains sufficiently elastic to compensate for even the greatest flexural demands.

### 10° stands for ...

- **Greater functional reserves**  
The minimal expansion of the pipe allows unrestricted material strength
- **Greater contact force**  
At the same bolt force, the contact force is around 3.5 times higher than with comparable 37° systems
- **Optimized assembly without tool wear**  
The collar is the tool and component in one and is pressed into the pipe during pre-assembly
- **Easy processing**  
No assembly limit (limit stop) required for assembly
- **More support**  
A longer flare zone better supports the system and greatly increases the stability in the case of dynamic stresses
- **Better seal**  
Saw teeth in the flare zone provide an additional labyrinth-box effect

## Corrosion protection without compromise, by VOSS

VOSS has invested in the most modern, fully-automated galvanizing plant, with the aim of developing innovative and eco-friendly corrosion protection. The reward for our own research and development: Corrosion protection that

is setting new standards across the whole of the industry. VOSS zinc-nickel is free from chromium VI, cobalt and nano-particles, and takes the corrosion-resistance of all the components in the ZAKO flange range to new levels.

### The benchmark test in the salt-spray chamber

VOSS zinc-nickel



### All parts in one quality: The best

VOSS zinc-nickel guarantees the longest life:

- The zinc-nickel base layer is many times more resistant than pure zinc
- The greatest corrosion resistance, even after handling and assembly
- White rust only appears in the form of a light grey bloom
- The greatest process security through Europe's most modern in-house electroplating shop
- VOSS zinc-nickel corrosion protection is free from chromium VI and cobalt

## Pressure from the industry

The largest forging presses used in the creation of vehicle bodies generate an unbelievable 90,000 kN of pressing power. But enormous forces also have to be mastered in other areas of industry. Here, ZAKO systems show their capabilities and link efficient assembly and flexible dismantling (for maintenance work, for example) with the highest reliability and safety.



## We know our stuff when it comes to steel

Extreme temperatures, dust and high pressures – these are the environmental conditions in which the ZAKO system can really show what it's made of. Because in heavy industry and in the steel industry, flexibility, robustness and secure connections are elementary for achieving efficient processes.



## The full range of quality and safety

The ZAKO flange system is available for pipe diameters from 16 to 120 mm and with various wall thicknesses. All dimensions are available as standard designs for high pressure (up to 400 bar) and as low pressure variants (up to 60 bar).

### An overview of the 10° flange system

#### ZAKO

Pipe OD* (mm)	Wall thickness (mm)
16	2,0   2,5
20	3,0   2,5   3,0   3,5
25	3,0   4,0
38	4,0   5,0   6,0
42	2,0
50	2,5   5,0   6,0   8,0   9,0
60	2,0   5,0   10,0
65	3,0   4,0   5,0   8,0
75	12,5
80	3,0   8,0   10,0
88	14,0
101.6	16,0
114.3	17,5
120	20,0

\* Outer diameter

#### ZAKO LP

Pipe OD* (mm)	Wall thickness (mm)
48.3	3,2   4,0
60.3	3,6   4,5
76.1	3,6   5,0
88.9	3,6   5,0
114.3	3,6   6,3

## The ZAKO principle

A ZAKO flange joint can be assembled simply and securely. The collar is pressed into the pipe to be connected using a pre-assembly device. Here, the collar is simultaneously its own tool, and it remains in the flared pipe. Process errors caused by tool wear are thus ruled out. The two pipes are subsequently connected using the flange and the relevant connecting screws. An O-ring fitted in the collar seals the joint. The 10° flare angle allows a very long seat and support for the joint, which guarantees stability even under the greatest dynamic loads. The flange connection can be dismantled very easily for repair or maintenance work.

### Pre-assembly devices

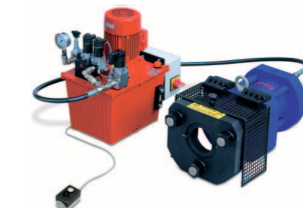
We can offer you a broad spectrum of pre-assembly devices, depending on where and how you want to carry out pre-assembly of the ZAKO collars. These range from hand-operated devices for occasional use to powerful equipment for series production.



**Type 80N and 80N2**  
Pipe OD 16 – 38 mm

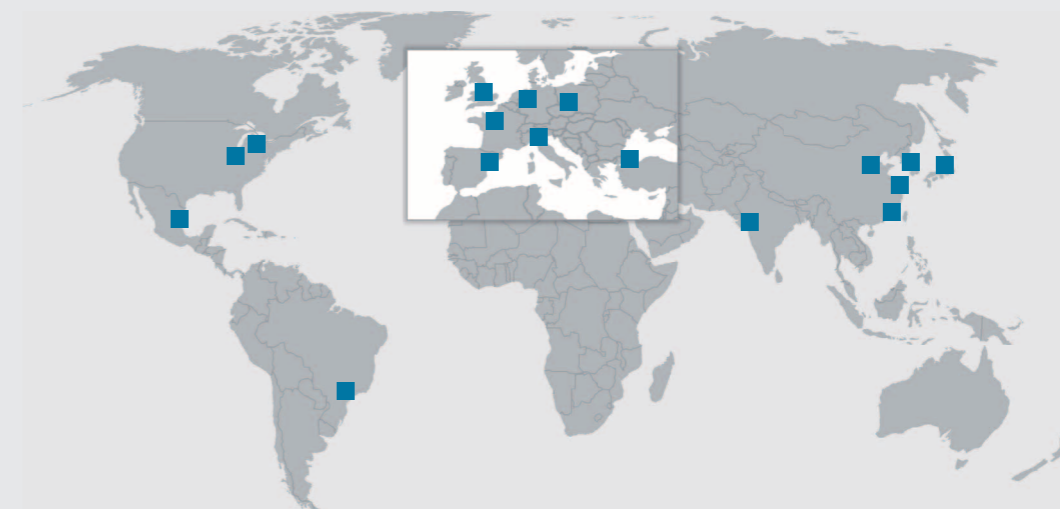
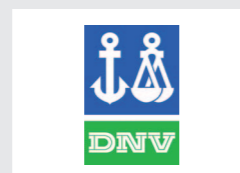


**Type 90 Basic**  
Pipe OD 16 – 38 mm



**Type 85**  
Pipe OD 38 – 120 mm

### Certifications



VOSS Fluid:  
Locations around  
the world as well  
as a global network  
of sales partners

# VOSS



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