

# INSTALLATION INSTRUCTIONS FOR FLAT GASKETS

Optimal installation with maximum security.

## A guide to successfully installing flat gaskets

- » The successful sealing of a flange connection depends on the combination of all individual components into a well designed flange system.
- » This document is a guide for maintenance personnel, engineers and pipe fitters, to successfully using flat gaskets and safely fitting a bolted flange connection.
- » The guide is an addition to other installation regulations relating to specific plants.

## Tools required:

Certain specific tools are required to clean and bolt the connecting elements. In addition, the usual safety equipment and safety standards should be applied.

As well as your own personal protective equipment, ensure that the following equipment is available before installation.

- » Calibrated torque wrench
- » Wire brush (preferable from brass)
- » Lubricant
- » Other plant-specific equipment

## Cleaning

Remove all dirt from:

- » sealing surfaces
- » screws or bolts\*
- » nuts\*
- » washers\*

Take note of specific regulations on dust control

\* if reuse is permitted

## Check

- » Check screws and bolts, nuts and washers for tears or burrs
- » Check the flange surface for distortion, radial scratches, tool marks or other damage which could adversely affect safety.
- » Replace components if damaged

## Aligning the flanges

- » Align the flange surfaces and the bolt holes without excessive force
- » Correct every critical alignment of the flanges

## Installing flat gaskets

- » Check that the measurements and material of the gasket conforms to the specification
- » Check the gasket to ensure that it is not damaged in any way
- » Slide the gasket carefully into the gap between the flanges without damaging them
- » Ensure that the gasket is centred between the flanges
- » Do not use anti-adhesive materials. If there are any problems with fixed flanges, consult the manufacturer of the gasket
- » Tightening the flanges, but ensure that the gasket is not squeezed or damaged

# INSTALLATION INSTRUCTIONS FOR FLAT GASKETS

## Installation and tightening of bolts

- » Only use suitable tools: calibrated torque keys or other tools for controlled tightening
- » Consult the gasket manufacturer and/or the technical department of your company in relation to the recommended torque specification
- » Always tighten the bolts by the cross

## Installation and fastening of the screws

- » Use only suitable tools: Calibrated torque wrenches or other tools for controlled tightening.
- » Ask the seal manufacturer and/or your company's technical department for advice about the correct torque specification.
- » Always tighten the screws crosswise.

## Always tighten the bolts in several passes

### Pass 1

- » Tighten all bolts by hand (larger bolts may require a small hand key)

### Pass 2

- » Pull each bolt with approximately 30% of the full torque

### Pass 3

- » Pull each bolt with approximately 60% of the full torque

### Pass 4

- » Tighten each bolt with full torque, always crosswise (larger diameters may require additional passes)

### Pass 5

- » Tighten each bolt at least once with full torque clockwise in one pass, (larger diameters may require additional passes)

## Retightening

- » Warning: Consult the gasket manufacturer and/or the technical department of your company in relation to the recommended retightening
- » Never retighten elastomer bonded, asbestosfree gaskets after these have been exposed to high temperatures
- » Each retightening may only be carried out at atmospheric temperature and pressure

Other details on installing flat gaskets can be found in the ESA/FSA guide for a secure seal connection on flanges.

You can obtain these from the FSA\* and the ESA\*\* in several languages.

\* Fluid Sealing Association

\*\* European Sealing Association

## Our service:

### Assembly as a training certified expert in accordance with DIN EN 1591-4

We will train your employees pursuant to DIN EN 1591 as specialists in the installation of sealing connections in flanges to the standards required by Directive 97/23 EC on pressure equipment and DIN EN 1591-4.

With the coming into force of the fourth part of DIN EN 1591, operators will now have one harmonised standard to apply to the training of assembly fitters. It is possible to select assembly operators according to the individual area of expertise required. Flange gaskets that are subject to Directive 97/23 EC will in the future be expertly fitted by competent staff.