

Calculation service

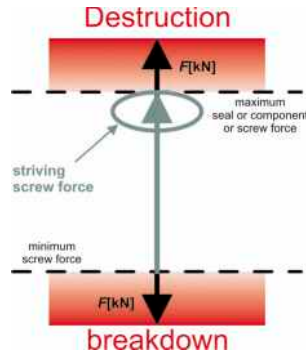
Free KemProof® online calculation program for screw tightening torques

Available online at <http://www.kempchen.de>

The program provides the tightening torque of the screws whilst taking the following into consideration:

- DIN, ANSI flange type
- Additional loads
- Screw type and screw material
- Pressure
- Temperature
- Required leakage class
- Friction coefficients
- Gasket type

The foundation of the program is a calculation algorithm based upon AD2000-B7 whilst taking gasket values according to EN 13555 into consideration.



When dealing with EN 1092-1 flanges, it is possible to perform an online calculation according to EN 1591-1 if necessary. For this purpose, further data is taken into consideration:

- Flange material
- Nominal calculation tension

In addition to the torque, the calculation also provides the capacity utilisation of the following components:

- Flanges
- Screws
- Gasket

as well as the flange sheet inclination. A notification is issued if the maximum flange sheet inclination is exceeded. The VDI 2290 minimisation requirement is taken into consideration when calculating the torque. All components are used at ideal capacity.

It is possible to select all parameters from data tables via a menu structure. Thanks to its intuitive structure, the program is extremely user-friendly and leads to a result after only a few entries.

All entered data is sent to the user as a PDF file via e-mail.

Register at <http://kempproof.kempchen.de>. You will quickly receive your access authorization via e-mail. It is free to use the program.

Calculation service

Example calculation

The required tightening torque is: 100 Nm
Selected tightness class reached.

The calculation was performed based upon the following specifications:

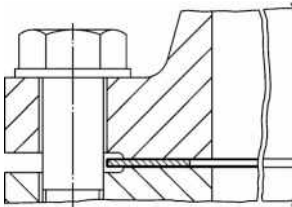
Screws

Dimension : VS - M20
 Quantity : 8
 Rp 0.2 (RT) : 300 N/mm²
 Rp 0.2 (operation) : 195 N/mm²
 Material : St 5.6



Flange

Standard description : EN1092-1 DN 100.00/PN 40
 Sealing strip
 Internal diameter : 107.1 mm
 External diameter : 162 mm



Operating data

Operating pressure : 30 bar
 Testing pressure : 39 bar
 Operating temperature : 300 °C
 Additional pipe forces ... : 0 kN
 Friction coefficient : 0.12
 Tightness class : 1E-3 mg/(s*m)

Gasket

Order text : B9A grooved gasket
 Stainless steel beam with 0.5 mm graphite coating
 Standard/plant standard : WN 145 / EN 1514-6 173 77 5
 Inner diameter : 118 mm
 External diameter : 138 mm



Total acting
 gasket area : 4021 mm²
The gasket is of a premium standard within the context of TA Luft

Gasket values according to EN 13555

QSmin : 13 N/mm² minimum surface pressure in operating state
 Qmin : 32 N/mm² minimum surface pressure during assembly
 Qmax : 480 N/mm² maximum permissible surface pressure

Calculation values

QA opt : 62 N/mm² ideal installation surface pressure
 Qp : 48 N/mm² surface pressure in testing state
 Qs : 47 N/mm² surface pressure in operating state
 Screw utilisation : 65 %

Advantages of a screw force that is as high as possible:

- Lowest possible leakage during operation.
- Highest residual surface pressure during operation.
- Highest blow out resistance

New

Calculation according to
 DIN EN 1591-1 also
 available as an online
 calculation for smartphones.



Professional flange calculation in accordance with the following regulations:

- AD-2000 B7/B8
- ASME VIII Div.I, Appendix 2
- DIN EN 1591-1

This professional and extremely comprehensive flange connection calculation represents our top-level service, and is documented using the software solutions:

- DIMY
- Compress
- PV Elite

The service includes the information required by the standards, as well as a separate listing, containing an overview of all the calculated values.

The calculations are retained in our archive. They can be traced using the appropriate order numbers. In addition, we will supply the calculations on a CD-ROM.

