

SUPERBOLT®

Expansion Bolts

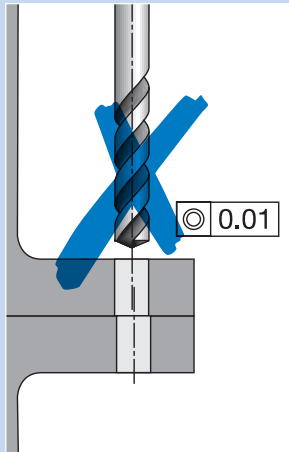


Problems

Heavy machinery requires bolting elements that can easily be installed and removed. This is especially true on large and high-performance flange couplings where the bolting elements produce an interference fit for proper torque transfer.

Machining Requirements

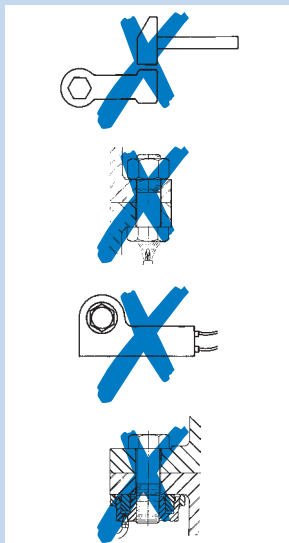
Coupling flanges requiring tight or interference fit type bolting elements are expensive to manufacture. For proper functioning of these bolts, high demands are posed upon the tolerances and the surface finishes of the bores. Also during assembly, the flanges that are fitted together often require further mechanical adjustments.



Tools

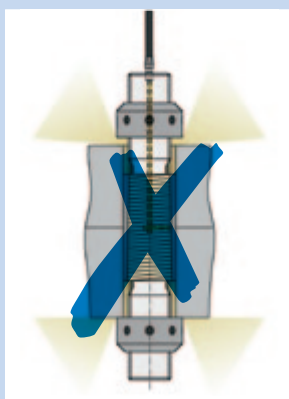
Large bolts require expensive tools for tightening and loosening:

- Slugging wrench:
No control, very accident prone!
- Pre-heating:
Difficult to control pre-load, time-consuming
- Torque multiplier:
High friction load, inaccurate
- Hydraulic stretching:
Large space requirement, expensive tools



Removal

Many interference fit type bolting elements are expensive to maintain and can only be removed using special tools and procedures. Often only expensive, improvised methods have to be used for removing the bolting element (i.e. torch cutting).

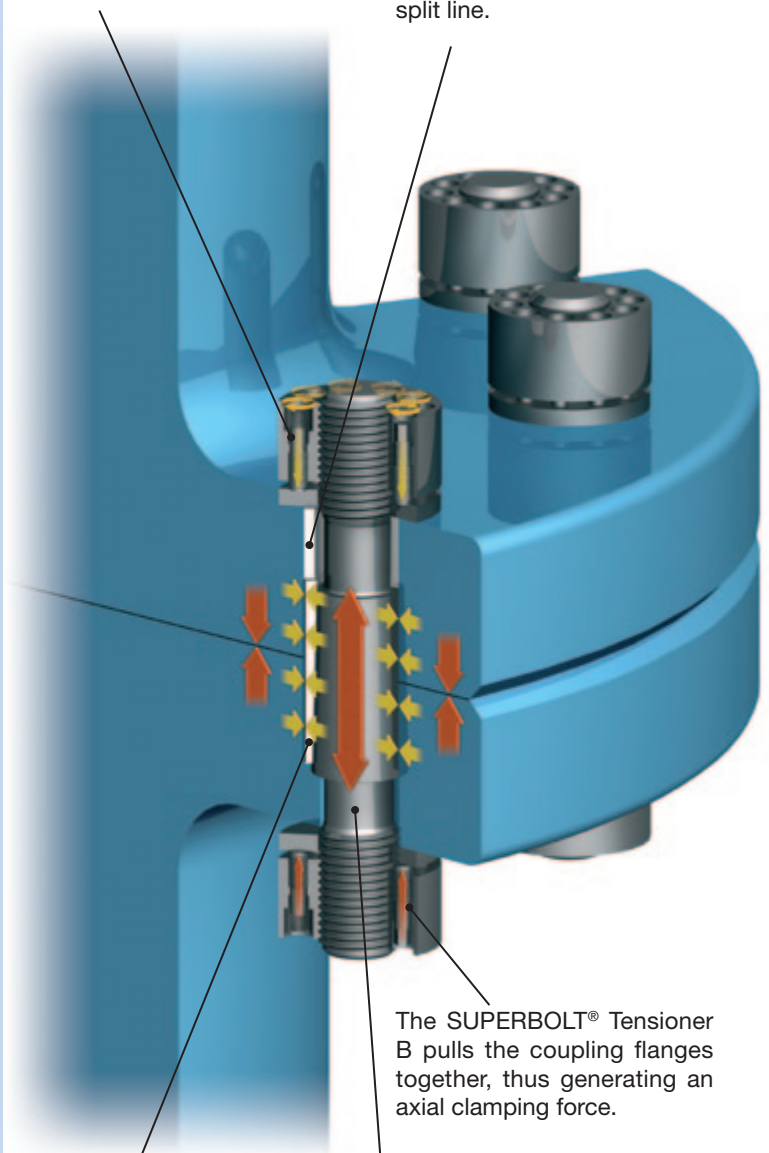


The Innovative Solution

SUPERBOLT® Expansion Bolts

SUPERBOLT® Tensioner A pulls the tapered stud into the tapered sleeve, thus generating a radial force.

The spacer centers the split tapered sleeve relative to the split line.



The split tapered sleeve creates a radial pre-load and transfers the external torque.

The SUPERBOLT® Tensioner B pulls the coupling flanges together, thus generating an axial clamping force.

The tapered stud transfers the forces required for the radial and axial frictional contacts. At the same time, it offers an additional form closure when over-loaded.

Applications

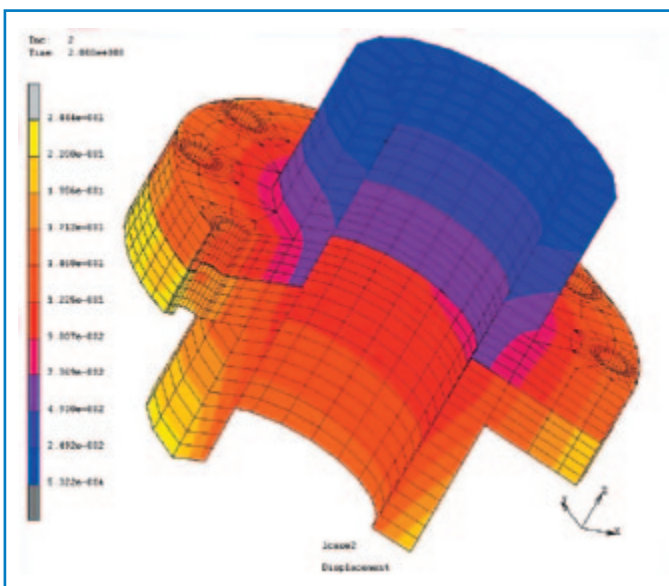
Product Development

Two simple innovations in the design of the expansion bolts have changed their performance so dramatically that they can now be considered as a new bolting element:

- Not only does the split tapered sleeve take up the clearances of the bore, but it also provides a strong radial force. The sleeve also increases the rigidity of the connection and eliminates harmful micro-movements in the split line. Further the sleeve can compensate wider tolerances of the bore.
- With the use of multi-jackbolt tensioners (SUPERBOLT® MJT) extremely high pre-loads can be reached with simple tools.

The tapered sleeve is split along its length. Therefore it can expand further. For the user it is crucial that the split tapered sleeve achieves high radial forces. The new design not only eliminates the radial clearance, but also creates a true radial pre-load. A similar load carrying behaviour is achieved, as has been known so far only on axially loaded components. In operation, no one-sided lift-off of the tapered sleeve from the bore occurs, as the split tapered sleeve remains in steady contact with the bore. The thrust, therefore, remains within the elastic range.

SUPERBOLT® Expansion Bolts are used in all industries: couplings on ship drives, turbines, engines, generators and compressors etc., as well as in the form of dowels for taking up transversal loads on foundation anchors, for example.



Expansion Bolt: Deformation on the whole flange under tension (100 x Enlargement)

Advantages of the new SUPERBOLT® Expansion Bolt:

- Substantial cost advantages: Elimination of time-consuming and destructive removal procedures, expensive repair of distorted bores and also the purchase of new bolting elements.
- High removal safety: Simple and quick installation and removal.
- Simple handling: Only hand-held tools are needed; special tools are not required.
- Re-usable many times: Expansion Bolts retain their original state after each removal.



Summary Expansion Bolts EB



EBC
Expansion Bolt for through holes
ø 28–165 mm



EBB
Expansion Bolt for blind holes
Dimensions on request



EBA
Expansion Bolt for holes without thread
Dimensions on request

Approved by:

- American Bureau of Shipping
- Det Norske Veritas
- Lloyd's Register

Applied at:

- German Lloyd

... as well as installed by many satisfied customers.

Short summary standard products



Tensioners
M16–M160

Various types for all kind of industries as well as specials up to diameter 1000 mm.



Torquebolts
M16–M160

Various types for all kind of industries as well as specials up to diameter 1000 mm.



Lubricants

- JL-AS
- JL-M
- P37



Tools

- Torque wrenches
- Air impact tools
- Sockets

Certain elements are certified by independant agencies:

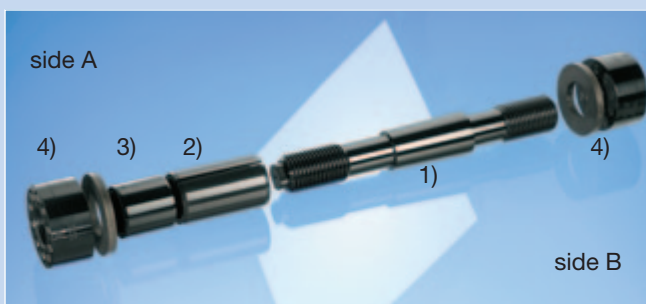
Germanischer Lloyd / Lloyd's Register / Det Norske Veritas / American Bureau of Shipping

Certified quality management system EN ISO 9001, reg.nr. 0080

Brief instructions

Installation

1. Push split tapered sleeve (2) onto the tapered stud and place together in the bore
2. On side A, place spacer (3) in the bore
3. On side A, slide washer over the tapered stud (1) and screw on the nut body (4) by hand
4. Tighten jackbolts stepwise according to tightening procedure
5. On side B, slide hardened washer over the tapered stud (1) and screw on nut body (4) by hand
6. Tighten jackbolts stepwise according to tightening procedure
7. Verify torque on side A



Removal

1. According to removal procedures, loosen the jackbolts on side A stepwise and unscrew nut body (4) by hand
2. According to removal procedures tighten several jackbolts on side B further, in order to pull out the tapered stud (1) off the tapered sleeve (2)
3. Unscrew nut body (4) by hand
4. Remove tapered stud (1), tapered sleeve (2) and spacer (3) from the bore

Note: Detailed instructions are included with each shipment.

Your local contact: