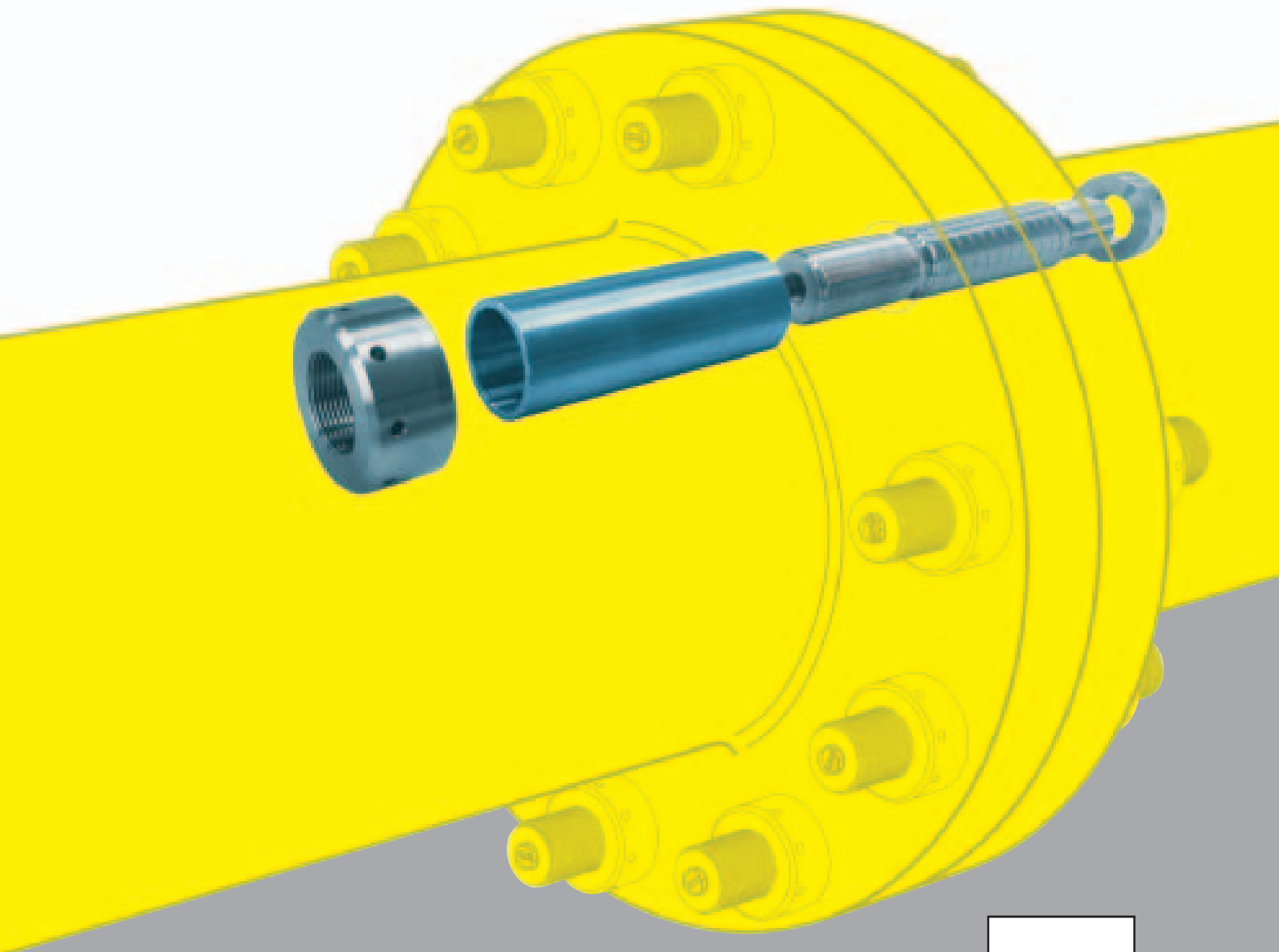
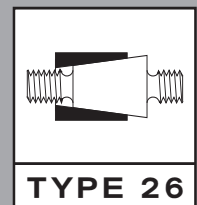


# Connecting bolts

## ExpaTen



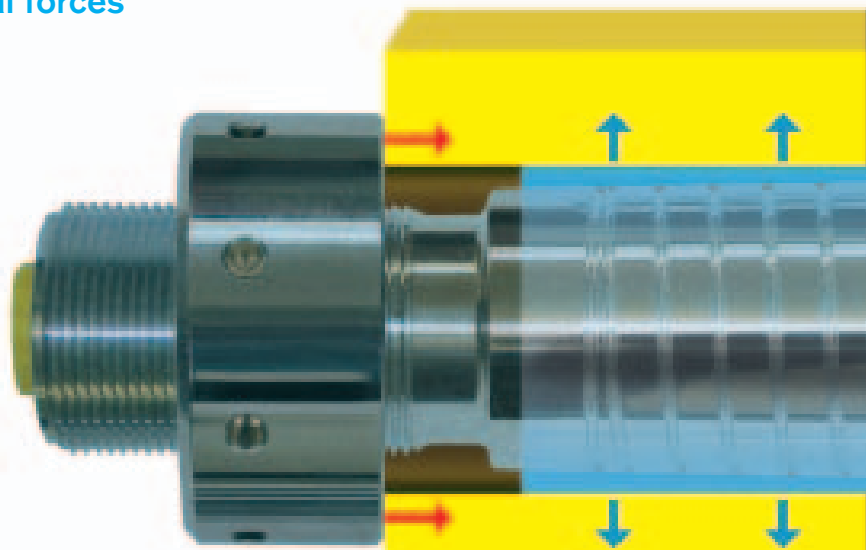
reusable  
**cost-saving**  
resistant to deflection and rotational forces



# The solution

ExpaTen solves the problem.

- maximum torque transmission in minimum space
- resistant to deflection and rotational forces
- shock resistant
- maintenance free
- reusable
- cost-saving
- fewer bolts required
- smaller flanges possible
- improved safety
- easy and quick mounting and dismantling even in restricted environment



## ADVANTAGES

Expansion and pre-tensioning repeat completely evenly in all bores and result in:

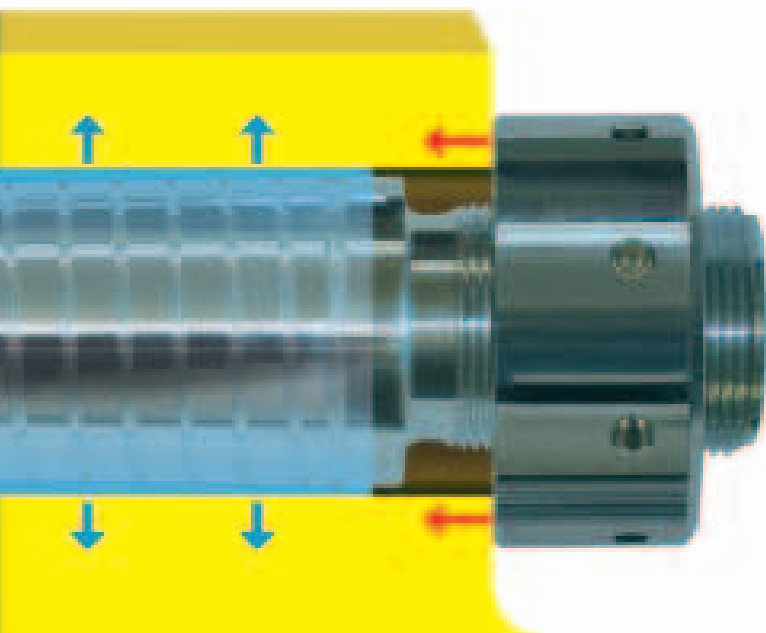
- A high torque transmission, completely free of backlash
- A connection which is resistant to torque even when changing rotation speed, torque or sense of rotation – by 100 % positive locking
- A high axial pre-tensioning force and, thus, maximum frictional connection
- A maximum of transferable power
- A connection that is resistant to bending by extreme pre-tensioning of the flanges

# positive fit!

imal connection.

## TENSION:

### AXIAL PRE-TENSIONING WITHIN THE CENTRAL BOLT



The procedure is easy and reliable.

- Even in restricted environment, it brings perfect results.
- It allows disassembly without problems, even after years in use.
- The ExpaTen Bolt produces an unequalled high power transmission by 100% positive locking and additional high frictional connection.
- FASTEC presents the correct axial bolt tensioning technique and the system accessories.

## EXPANSION:

### EXPANDING THE OUTER DIAMETER

#### EXAMPLES OF APPLICATION

Connecting drive shafts or shaft sections

- in ship building
- in power stations
- in rolling mills
- in railways
- with generators and turbines

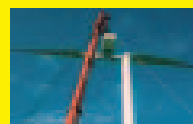
Hub-to-arbour connection

- in mining
- in conveyer plants
- in water turbines
- and in many areas more

#### APPLICATION AREAS

The main application area of the ExpaTen Bolt is the connection of heavy rotating shafts transmitting high torque.

This can be two abutting shafts or shaft sections resp. or the joint of an arbour to the hub of gear-wheels, cutting heads, bucket and turbine wheels or propellers.



Wind power



Ship propulsion



Steam turbine

# ExpaTen

## EXPANSION & TENSION

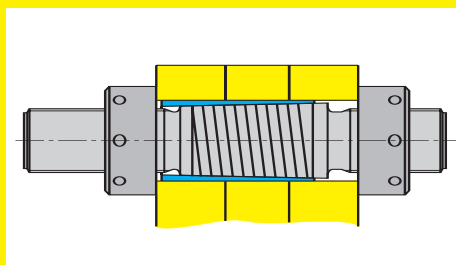
### FUNCTION

By expanding the Conical Sleeve the bore is filled 100% with high tensile material. In this case the term close tolerance is accurate because the ExpaTen Bolt expands to the full diameter of the bore to remove any clearance and, then, produces a press fit. The 100% expansion of the bolt into the bore results in a rigid junction of the shaft flanges, giving the maximum resistance to rotational forces.

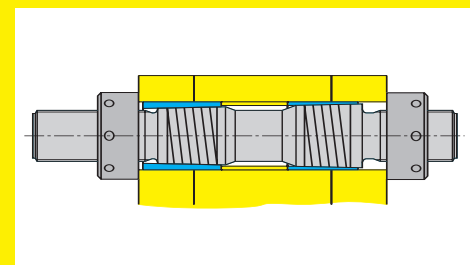
Then, by pre-tensioning the bolt to its optimum tensile strength purely axially, no torque or friction is introduced into the bolt or its thread, therefore ensuring that the bolt material is exploited to its maximum potential.

By combining both functions in one component it is often possible to use smaller and fewer ExpaTen Bolts.

This enables the possibility of reducing flange dimensions, resulting in space savings, and smaller masses and moments of inertia requiring lower power outputs as well as reduced investment costs.



Expaten bolt for shaft flanges with one or two joints, one Conical Sleeve. High torque transmission by positive locking and additional frictional connection.  
Example: ship shafting, generators.



Expaten bolt for shaft flanges with removable intermediate piece, extra long, two Conical Sleeves. High torque transmission by positive locking and additional frictional connection.  
Example: ship shafting

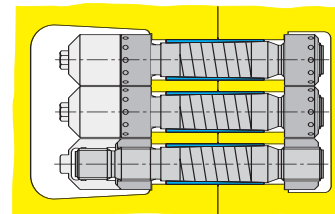
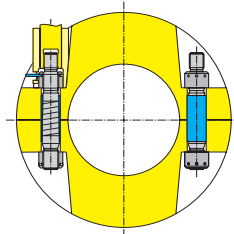
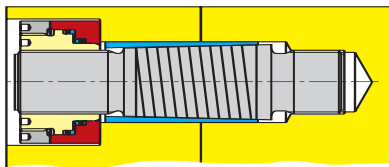
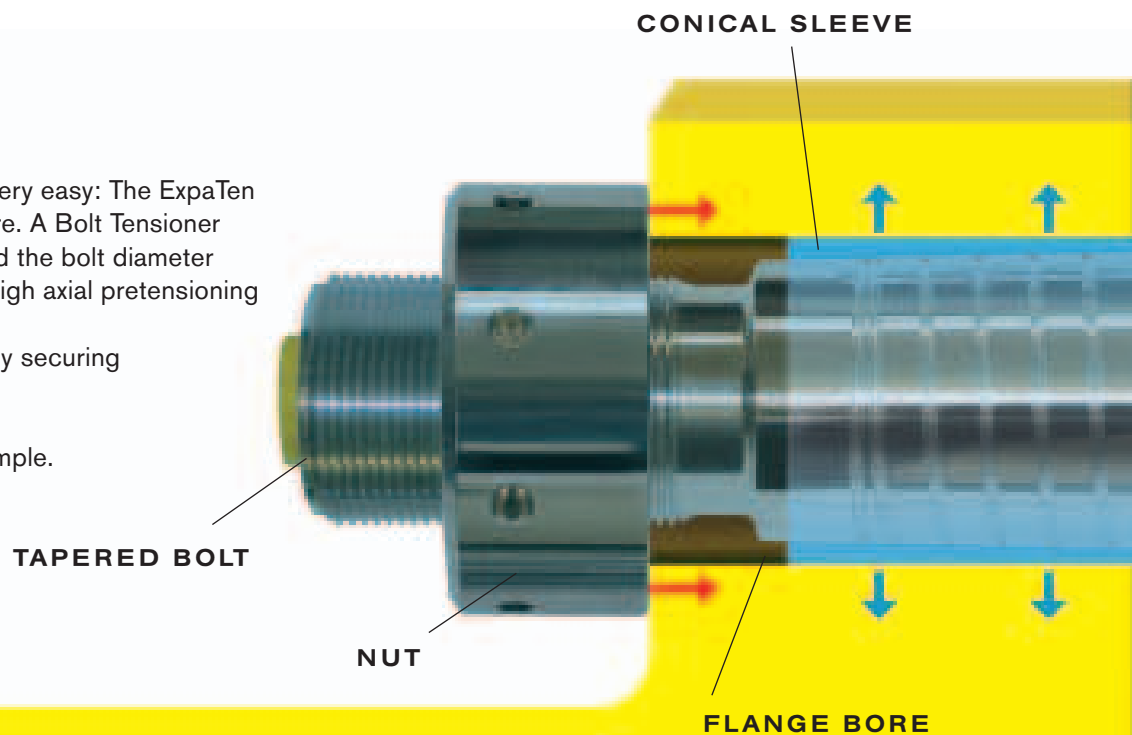
# simply 100%

Expansion and axial tension create an opt

Operation of the ExpaTen is very easy: The ExpaTen Bolt is positioned into the bore. A Bolt Tensioner is then used to: Firstly, expand the bolt diameter and, secondly, generate the high axial pretensioning force.

The sequence is completed by securing mechanically.

The dismounting is equally simple. The parts are reusable.



**Screwed in ExpaTen Bolt**  
Here, the Bolt Tensioner is replaced by a Hydraulic Nut with mechanical lock ring, which stays on site, because there is no access from the side to tighten a mechanical nut from there.

Two part hub clamped on the arbour, the torque is transmitted by frictional connection.  
Example: chain wheel, cutting head.

Three ExpaTen Bolts side by side to increase the transferable power.

## STANDARD FEATURES

FASTEC ExpaTen Bolts consist of:

- Tapered Bolt from high tensile steel highly quenched and tempered for taking a high axial pre-tensioning load
- Conical Sleeve from tenacious, high tensile steel guarantees maximum transversal strength
- Two Round Nuts of highest strength with modified thread form oriented to the function

and are equipped with:

- fine thread, rolled for maximum endurance
- pressure connection bore for pressing out the Tapered Bolt
- groove on taper for distributing the pressure

Each ExpaTen Bolt is:

- checked, with utmost care, on material quality, dimensional accuracy, function and pressure safety
- attended by regular quality assurance measures during manufacturing
- supplied with detailed technical documentation
- delivered ready to use and packaged for best assembly

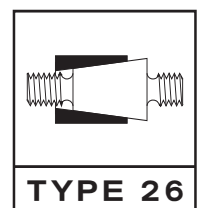
## EQUIPMENT VARIATIONS

- **one or two clamping areas for one or two flange joints**
- **Element generating the axial pre-tensioning force**
  - separate Bolt Tensioner or separate or integrated Hydraulic Nut
- **Surface finish**
  - chemi-black
  - electroless nickel coating
  - on customer's demand
- **Certificates and Approvals**
  - specific test reports
  - material test reports
  - approvals by classification societies
  - on customer's demand
- **Accessories**
  - Bolt Tensioners
  - Hydraulic Nuts
  - other Clamping Cylinders
  - high pressure hydraulic pumps hand operated, motor or air driven
  - complete control units
  - high pressure flexible hoses
  - Couplers, Nipples, Adaptors, distributor blocks for pressures up to 4000 bar



## ON DEMAND

we supply the correct Bolt Tensioner or Hydraulic Nut, hydraulic pump and high pressure flexible hoses, appropriate for the special size and application



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