

# Running Procedure

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VExplorer®

Rev.:5

# VExplorer®

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RS-RP-VAX-1 Rev.5: Updated requirements for acceptance criteria and break outs

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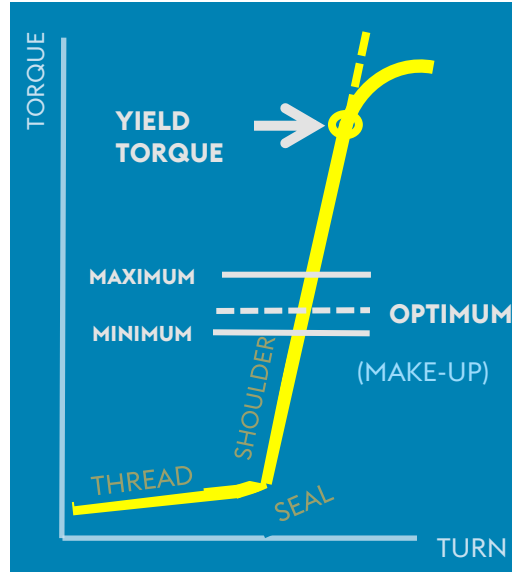
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This document contains the recommended practices for the installation of voestalpine tubulars proprietary connections. This is not comprehensive and is meant only as general guidance, based on best industry practices.

The user assumes all responsibility for the safe and effective implementation of these practices. Further, it is the user's responsibility to provide competent and knowledgeable personnel, as well as appropriate and well maintained equipment.

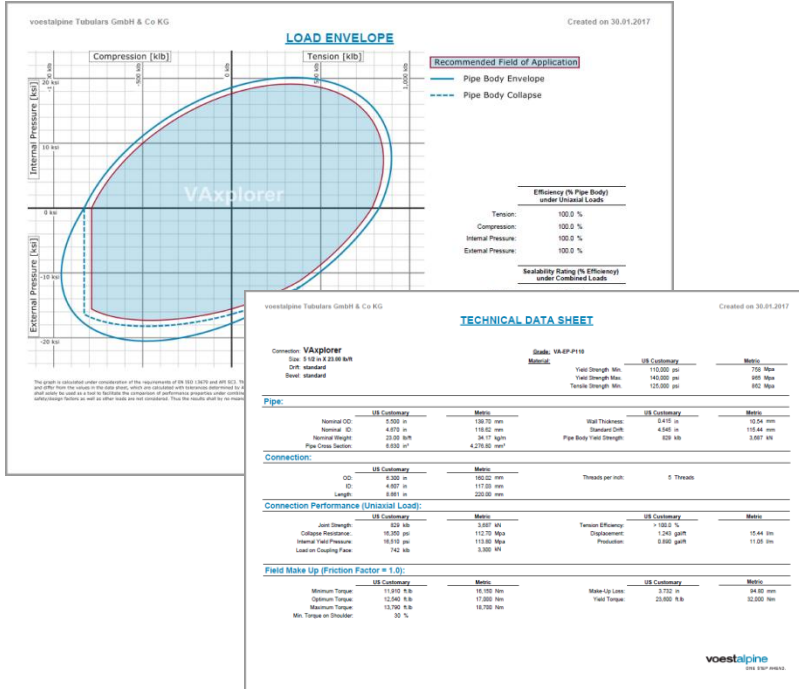
# VExplorer®



Definition yield torque: transition point from elastic to plastic zone

- Suitable for
  - Extreme torques
  - Extended reached wells
  - Rotation operations
- High yield torque
- 100% compression and tension efficiency
- Successfully Cal IV tested

# VExplorer®



Dimensions and torque values will be provided through our datasheet generator: <http://www.voestalpine.com/tubulars/en> -> Customer service -> Datasheet generator

- Torques are valid for dope with friction factor 1 at room temperature
- Max. torque: optimum +10%
- Min. torque: optimum -5%
- Torques for special clearance couplings on request
- Special clearance & 20° beveled couplings: slip type elevator strongly recommended due to lower load on coupling face

# Running and handling

## ■ Equipment

### ■ Elevator

- If collar type – smooth bearing face
- If slip type – clean and sharp dies

### ■ Derrick

- Blocks are centered over rotary table

### ■ Power tong

- Correct size and calibrated
- Torque-turn monitoring system

## ■ Pipe handling

- Thread protectors in place
- No hooks to lift pipes
- No rough handling
- Use proper racks

## ■ Preparation

### ■ Cleaning

- Remove and clean protectors
- Clean pin and box
- Diesel and oil-based products are not recommended as cleaning solvent

- Prevent corrosion

### ■ Drifting

- Drift on pipe rack – start from box end

### ■ Visual inspection

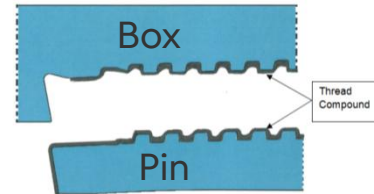
- Check each pipe (see page 11)
- Apply clean and dry protectors

### ■ Pipe tally

## ■ Running

### ■ Lifting and stabbing

- Remove pin protectors just before stabbing
- Clean connection with compressed air
- Check seal area for damages
- Apply thread compound – pin & box



API-modified running compound with known friction factor between 0,8 and 1,2 is recommended. Dope shall be applied uniform on pin and box (on pin including seal and shoulder)

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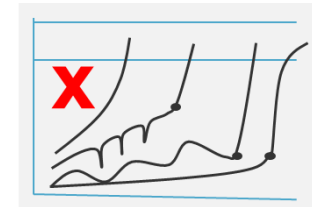
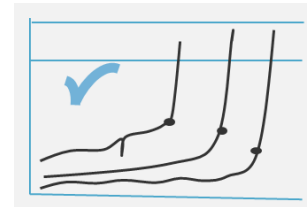
ONE STEP AHEAD.

# Running and handling

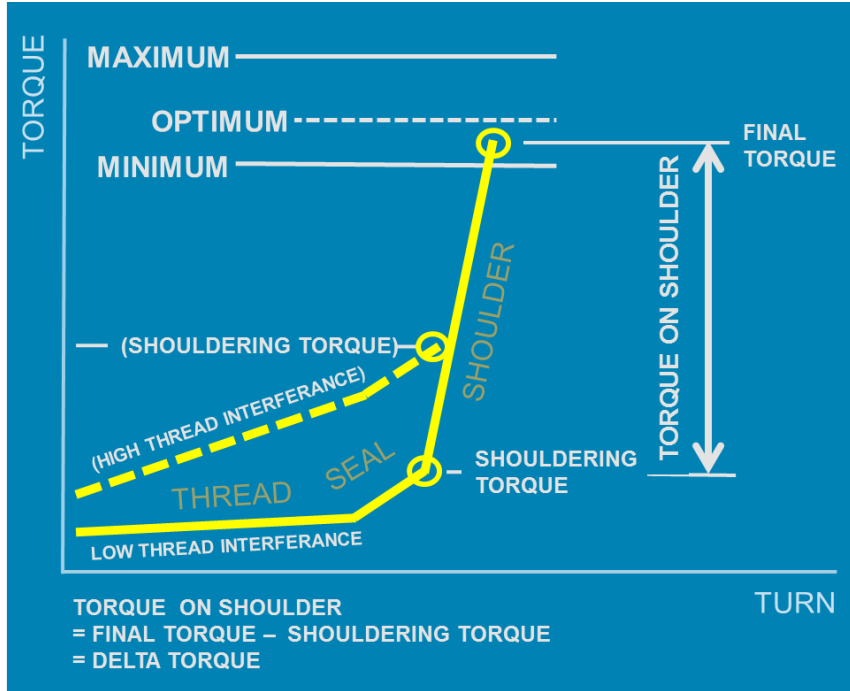
- Use a stabbing guide
- Lower carefully
- Maintain good alignment
- **Make-up**
  - Start slowly in high gear with open back-up
  - If connection jams (torque increases immediately)
    - Stop and release tong
    - Disengage connection / place back-up on coupling
    - Clean connection / visual inspection
    - If questionable - set aside
    - If o.k. – stab again
  - If connection stabs correct
    - Increase speed to spin-in (max. 20 rpm)
    - Assemble until torque increase
    - Stop rotation / close back-up
  - Finish in low gear and with speed less than 5 rpm
    - Approximately 1 to 2 turns before shouldering

- **Acceptance**

- Final torque between maximum and minimum
  - Use correct friction factor of dope
  - Friction factor might be affected by extreme temperatures
- Delta torque shall be at least 30 % of actual applied torque
  - See diagram on page 8
  - Proceed as described under Break-out if 30% delta torque couldn't be achieved
- No plastic deformation
- Increase of torque shall be reasonable uniform and smooth

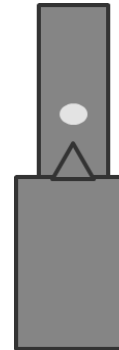


# Running and handling



## Casing

Minimum 30 % torque on shoulder (Delta torque).



**Triangle stamp** shall be used as rough indicator for the make-up progress only.

After final make-up the coupling should be close to base line.

# Running and handling

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- Break-out
  - Place back up tong on coupling mill side
  - Set up power tongs to low gear
  - Speed shall be less than 10 rpm
  - Slowly lift the pin out of the box
  - Handle with care / use protectors
  - Clean pin and box
  - Visual inspection / page 11
  - Prepare for the re-run as described under Make-up
    - Only, if no mechanical damages are visible or, if mechanical damages can be repaired, which shall be done before the re-run
    - Apply thread compound – pin & box
  - If make-up graph is still not acceptable
    - Proceed as described under Break-out
    - Maximal 2 re-runs allowed
    - After 2<sup>nd</sup> re-run, pipes shall be set aside for further investigation
- Any problems during make-up or break-out should be reported immediately
  - Used equipment, thread compound, torques used, assembly speed, .....
- Any questionable joint, set aside for evaluation, shall be brought to a disposition
  - Accepted or rejected
  - If rejected it must be properly marked

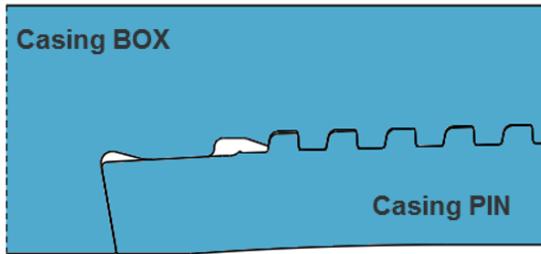
# Running and handling

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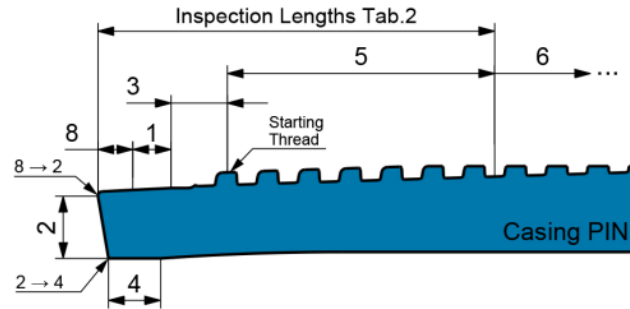
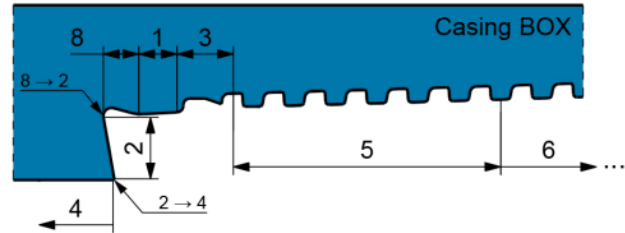
- High chromium material
  - Handling
    - Avoid metal to metal contact
  - Equipment
    - Use non ferrous low marking dies
    - Use weight compensator
    - Use non metallic drift
    - No misalignment
  - Make-up
    - Start make-up by hand – straplock can be used
    - Maximum assembly speed 10 rpm
    - Final make-up speed max. 5 rpm
- Thread lock compound
  - Pin
    - Thread lock compound shall be applied on the first two-thirds of the threads. No other compound on pin.
  - Box
    - No thread lock compound on threads. On seal and shoulder running compound shall be applied.

# Visual inspection and field repair

- 1 Seal
- 2 Shoulder
- 3 Cylindrical section
- 4 Internal bore
- 5 Perfect thread area
- 6 Non perfect thread area
- 7 Coupling face \*
- 8 Clearance



\* not shown in sketch



# Visual inspection and field repair

## Pin

Tab.1

Element	Area	Rust	Rust + Pitting	Burrs	Scratches	Dent
Seal (a*)	1	Remove with abrasive fleece	Re-cut the pin	N/A	Minor remove with abrasive fleece	Re-cut the pin
Shoulder	2	Remove with abrasive fleece	Grind to smooth surface with emery paper	N/A	Grind to smooth surface with emery paper	Grind to smooth surface with file and emery paper
Radius between seal and shoulder	1->2	Remove with abrasive fleece	Grind to smooth surface with emery paper	N/A	Grind to smooth surface with emery paper	Grind to smooth surface with file and emery paper
Edge between shoulder and bore	2->4	N/A	N/A	Remove with emery paper	N/A	Grind to smooth surface with file and emery paper
Cylindrical section	3	Remove with abrasive fleece	Remove rust with abrasive fleece. Pitting is accepted.	N/A	Accepted	Grind to smooth surface with file and emery paper
Internal bore	4	Accepted	Accepted	N/A	Accepted	Accepted
Perfect thread area (b*)	5	Remove with abrasive fleece	Grind to smooth surface with emery paper	Remove with emery paper	Accepted	Grind to smooth surface with file and emery paper
Non-perfect thread area	6	Remove with abrasive fleece	Grind to smooth surface with emery paper	Accepted	Accepted	Grind to smooth surface with file and emery paper
Clearance area	8	Remove with abrasive fleece	Remove rust with abrasive fleece. Pitting is accepted.	N/A	Accepted	Grind to smooth surface with file and emery paper

a\* Minor pitting, dents or scratches may be accepted after approval by voestalpine Tubulars specialist

b\* Up to 2 thread-turns may be imperfect if not more than ¼ of a turn is affected. If more than 2 thread-turns / or more than a half turn in total / are affected, hand-repair may be accepted after approval by voestalpine Tubulars specialist.

Abrasive fleece : 400 / 500 (superfine)

Emery paper : 300 -400 (superfine)

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Tab.2

Inspection length (measured from Pin End)		
Area of visual inspection of perfect thread		
PIPE OD	mm	inch
4 1/2"	30,24	1,191
5 1/2"	35,20	1,386
6"	33,60	1,323
7"	38,40	1,512

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ONE STEP AHEAD.

# Visual inspection and field repair Box

Tab.3

Element	Area	Rust	Rust + Pitting	Burrs	Scratches	Dent
Seal (a*)	1	Remove with abrasive fleece	Change coupling	N/A	Change coupling	Change coupling
Shoulder (a*)	2	Remove with abrasive fleece	Change coupling	N/A	Minor accepted	Change coupling
Radius between seal and shoulder	1->2	Remove with abrasive fleece	Change coupling	N/A	Minor accepted	Change coupling
Edge between shoulder and bore	2->4	N/A	N/A	Remove with emery paper	N/A	Change coupling
Cylindrical section	3	Remove with abrasive fleece	Remove rust with abrasive fleece. Pitting is accepted.	N/A	Accepted	Change coupling
Internal bore	4	Accepted	Accepted	N/A	Accepted	Accepted
Perfect thread area (b*)	5	Remove with abrasive fleece	Change coupling	Remove with emery paper	Accepted	Change coupling
Non-perfect thread area	6	Remove with abrasive fleece	Minor pitting, after removal of rust with abrasive fleece, is acceptable	Accepted	Accepted	Accepted
Coupling face	7	Accepted	Accepted	Accepted	Accepted	Accepted
Clearance	8	Accepted	Accepted	Accepted	Accepted	Accepted

General : The phosphated surface shall not be removed by hand – repair (except area 3,4 and 7. If removed, it can be accepted after approval by voestalpine Tubulars specialist and application of phosphate spray. It is also recommended that after repair Moly-disulfide spray should be applied (pin and box).

a\* Minor pitting, dents or scratches may be accepted after approval by voestalpine Tubulars specialist

b\* Up to 4 thread-turns may be imperfect if not more than ½ of a turn is affected. If more than 4 thread-turns / or more than 2 in total are affected, hand-repair may be accepted after approval by voestalpine Tubulars specialist

# Transportation, Handling and Storage

(as recommended by API 5C1)

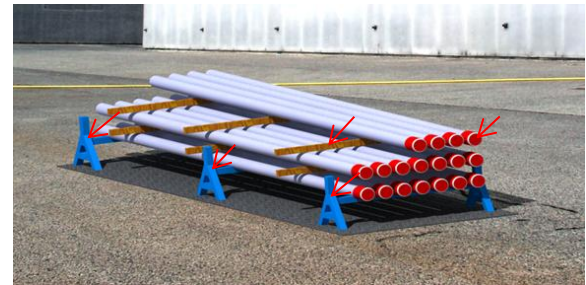
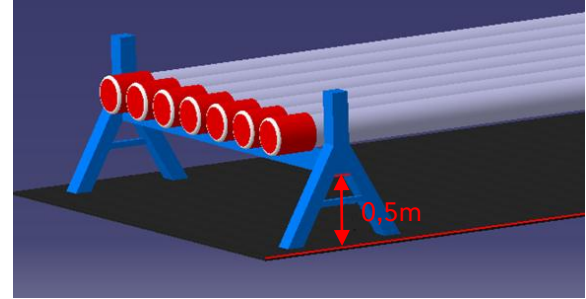
- Transportation
  - Load pipe on bolsters and tie down with suitable chains or straps at the bolsters
  - Load pipe with all couplings on the same end of the truck
  - Do not overload the truck
- Handling
  - Before loading or unloading thread protectors should be in place
  - Do not unload pipe by dropping
  - Avoid rough handling which might damage the threads or the body of the pipe
  - When rolling pipe, on the rack, keep pipe parallel and do not allow pipe to strike the ends
  - Do not use hooks to lift pipes



# Transportation, Handling and Storage

## ■ Storage

- At least every six months some of the pin and box thread protectors should be removed at random and the threads should be checked for corrosion
- First tier of pipes should be no less than 1,5 feet's (approximately 0,5m) from the ground
- Pipes should properly rest on supports to prevent bending and damages
- Between the successive layers of pipes you should provide wooden strips as separators
- Do not stack pipes higher than three meters
- Only use thread protectors that correspond to the threaded pin/box ends
- Do not mix different pipes in the stack
- All protectors must be secured and should have no damage.



# Thank you

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ONE STEP AHEAD.