

Running Procedure

VAtitan-TC[®]

Rev.: 0

VAtitan-TC[®]

RS-RP-VAT-TC-1 Rev. : 0

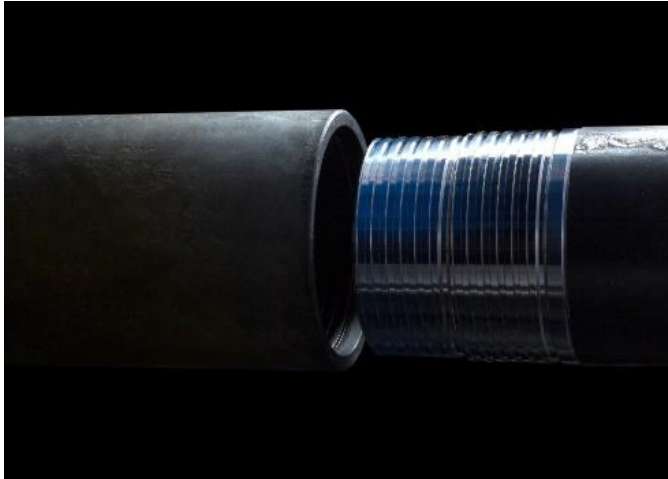
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This document contains the recommended practices for the installation of voestalpine Tubulars proprietary connections. This is not comprehensive and is meant only as general guidance, based on best industry practices.

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.

VAtitan[®]



- Premium connection suitable for extreme torques, extended reach wells and rotation operations
- Multifaceted wedge-type thread profile
- Two-step connection design
- Extremely high yield torque
- Successfully tested according to the fit-for-purpose test protocol for multi-fractured horizontal wells

Dimensions and torque values

voestalpine Tubulars GmbH & Co KG **TECHNICAL DATA SHEET** Created on 13.08.2019

Connection: **VAtitan** Grade: VA-EP-P110
Size: 6 1/2 in x 20.00 Bar Material: US Customary Metric
DR: standard Yield Strength Min: 120,000 psi 802 MPa
Seal: standard Yield Strength Max: 160,000 psi 902 MPa
Tensile Strength Min: 120,000 psi 802 MPa

Pipe:

US Customary		Metric		US Customary		Metric	
Nominal OD	6.500 in	165.75 mm	Wall Thickness	0.361 in	9.17 mm		
Nominal ID	4.778 in	121.36 mm	Standard Drift	4.653 in	118.10 mm		
Nominal Weight	25.00 lbs	25.00 kg/m	Pipe Body Yield Strength	720 MPa	3,240 N		
Pipe Cross Section	5.628 in ²	3,760.00 mm ²					

Connection:

US Customary		Metric	
OD	6.500 in	165.75 mm	
ID	4.942 in	125.00 mm	
Length	11.624 in	295.00 mm	

Connection Performance (Uniaxial Load):

US Customary		Metric		US Customary		Metric	
Joint Strength	649 lbs	2,840 N	Tension Efficiency	79.3 %			
Collaps Resistance	13,300 psi	91.70 MPa	Displacement	1,240 gal/in	15.47 in		
Internal Yield Pressure	14,300 psi	99.00 MPa	Production	0.030 gal/in	11.07 in		
Load on Coupling Face	649 lbs	2,840 N					

Field Make Up (Friction Factor = 1.0):

US Customary		Metric		US Customary		Metric	
Minimum Torque	21,400 ft-lb	29,000 Nm	Make Up Loss	3,294 in	184.40 mm		
Optimum Torque	23,600 ft-lb	32,000 Nm	Yield Torque	67,900 ft-lb	92,000 Nm		
Maximum Torque	25,800 ft-lb	35,000 Nm	Max. working Torque	38,400 ft-lb	52,000 Nm		

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ONE STEP AHEAD.

Dimensions and torque values will be provided through our datasheet generator:

<http://www.voestalpine.com/tubulars/en> ->

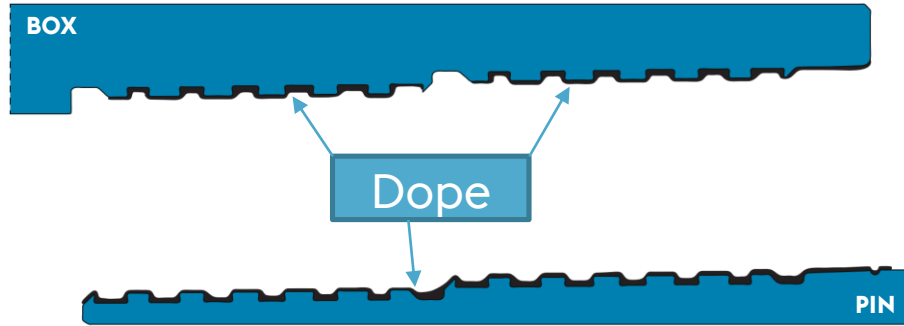
Customer service -> Datasheet generator

- Torques are valid for dope with friction factor 1 at room temperature
- Max. torque: optimum +10%
- Min. torque: optimum -10%
- 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 recommended
- **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
 - Apply thread compound – pin & box

Running and handling



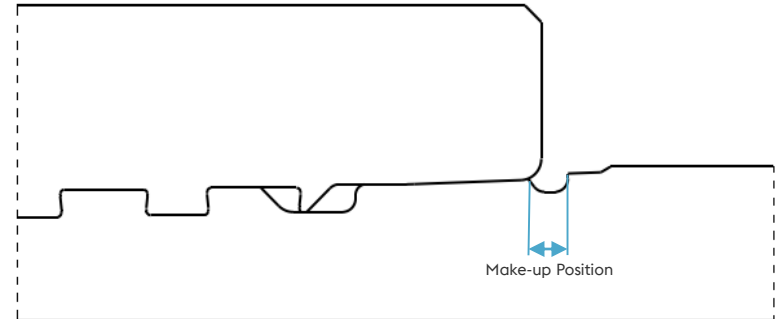
API-modified running compound with known friction factor between 0,8 and 1,2 is recommended. Dope shall be applied uniform on pin and box

Running and handling

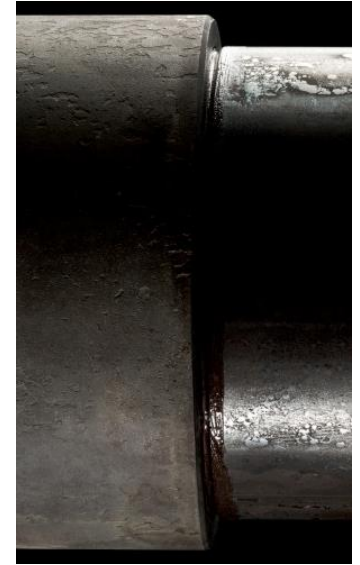
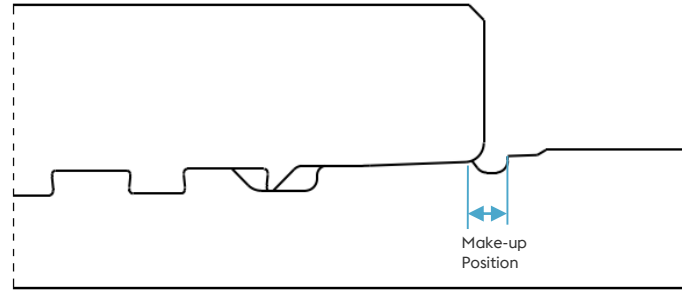
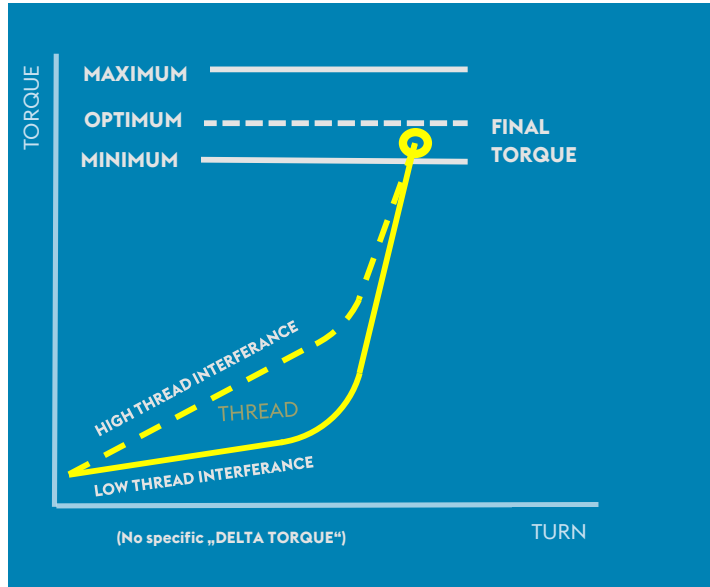
- Use a stabbing guide
- Lower carefully
- Maintain good alignment
- **Make-up**
 - Start slowly in high gear with open back-up
 - If connection jams (torque increases immediately)
 - Stop and release tong
 - Disengage connection / place back-up on coupling
 - Clean connection / visual inspection
 - If questionable - set aside
 - If o.k. – stab again
 - If connection stabs correct
 - Increase speed to spin-in (max. 25 rpm)
 - Finalize with max. 15 rpm

■ Acceptance

- Connection shall be made up to position and the torque should be between maximum and minimum
 - Use correct friction factor of dope
 - Friction factor might be affected by extreme temperatures.
- Increase of torque shall be reasonable uniform and smooth



Running and handling

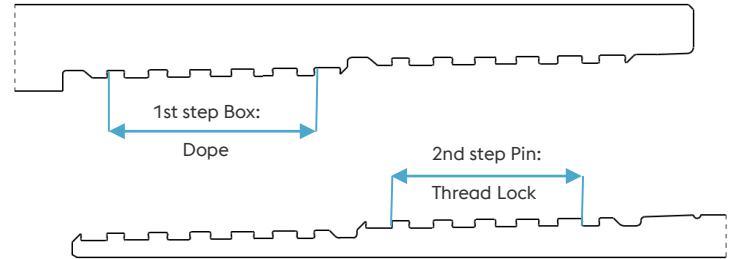


Running and handling

- 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 all pipes
 - Visual inspection / page 11
 - Apply appropriate dope
 - 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

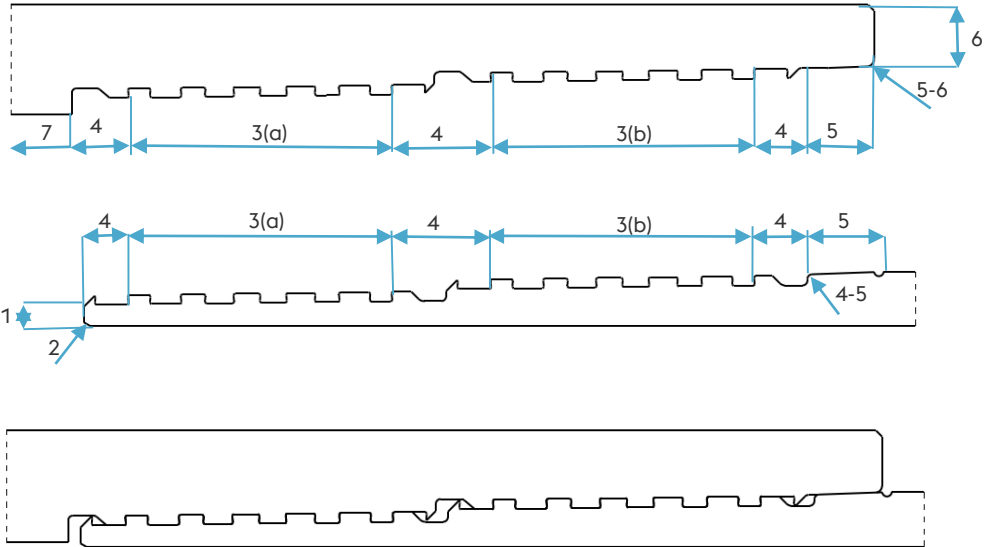
- Thread lock compound

- Pin
 - Thread lock compound shall be applied on the 2nd step of the threads. No other compound on pin.
- Box
 - Dope shall be applied on the 1st step of the threads. No other compound on Box



Visual inspection and field repair

- 1 Pin face
- 2 Chamfer
- 3 Full crested thread area
 - 3(a) Thread step 1
 - 3(b) Thread step 2
- 4 Run in / run out area (not full crested threads)
- 5 Cone
- 6 Coupling face
- 7 Internal bore
- 4-5 Radius Pin
- 5-6 Radius Box



Visual inspection and field repair

Pin

Element	Area	Rust	Rust + Pitting	Burrs	Scratches	Dent
Pin face	1	Accepted	Accepted	Accepted	Accepted	Accepted
Chamfer	2	Accepted	Accepted	Accepted	Accepted	Accepted
Full crested thread area (a*)	3(a) 3(b)	Remove with abrasive fleece	Grind to smooth surface with emery paper	Grind to smooth surface with emery paper	Grind to smooth surface with emery paper	Grind to smooth surface with emery paper
Run in / run out area (not full crested threads)	4	Remove with abrasive fleece	Remove rust with abrasive fleece	Grind to smooth surface with emery paper	Accepted	Grind to smooth surface with file or emery paper
Cone	5	Remove with abrasive fleece	Remove rust with abrasive fleece	N/A	Accepted	Grind to smooth surface with emery paper – 75% of original surface shall at least remain
Radius	4-5	Accepted	Accepted	N/A	Accepted	Grind to smooth surface with file or emery paper

a* Up to 1 thread-turn per thread-step may be imperfect if not more than $\frac{1}{4}$ of a turn is affected. If more than 1 thread-turn per thread-step / or more than $\frac{1}{4}$ thread-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)

Visual inspection and field repair

Box

Element	Area	Rust	Rust + Pitting	Burrs	Scratches	Dent
Full crested thread area	3(a) 3(b)	Remove with abrasive fleece	Change coupling	Change coupling	Accepted	Change coupling
Run in – run out area (not full crested threads)	4	Remove with abrasive fleece	Remove rust with abrasive fleece	Grind to smooth surface with emery paper	Accepted	Grind to smooth surface with emery paper
Cone	5	Remove with abrasive fleece	Remove rust with abrasive fleece	N/A	Accepted	Grind to smooth surface with emery paper
Coupling face	6	Accepted	Accepted	Accepted	Accepted	Accepted
Internal bore	7	Accepted	Accepted	Accepted	Accepted	Accepted
Radius	5-6	Accepted	Accepted	N/A	Accepted	Grind to smooth surface with emery paper

General: The phosphated surface shall not be removed excessively by hand – repair (except area 4,6 and 7). Minor removal is acceptable as it is.

Heavier removal can be accepted after approval by voestalpine Tubulars specialists. Phosphate and/or corrosion protection spray should be applied (time for drying shall be given).

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

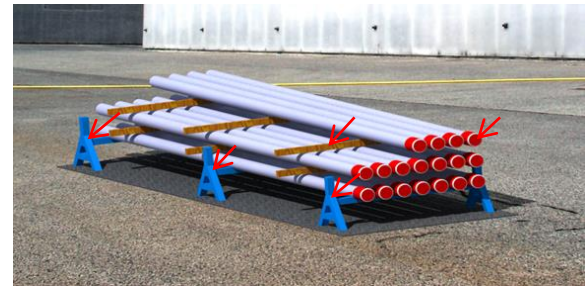
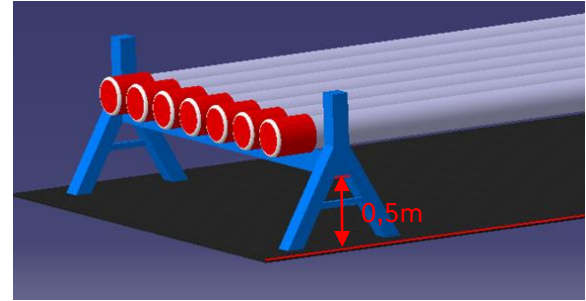


Transportation, Handling and Storage

(as recommended by API 5C1)

■ 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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www.voestalpine.com/tubulars

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ONE STEP AHEAD.