

Running Procedure

VAGT®

Rev.:6

VAGT®

RS-RP-VAGT-1 Rev.6: Updated requirements for acceptance criteria and break outs

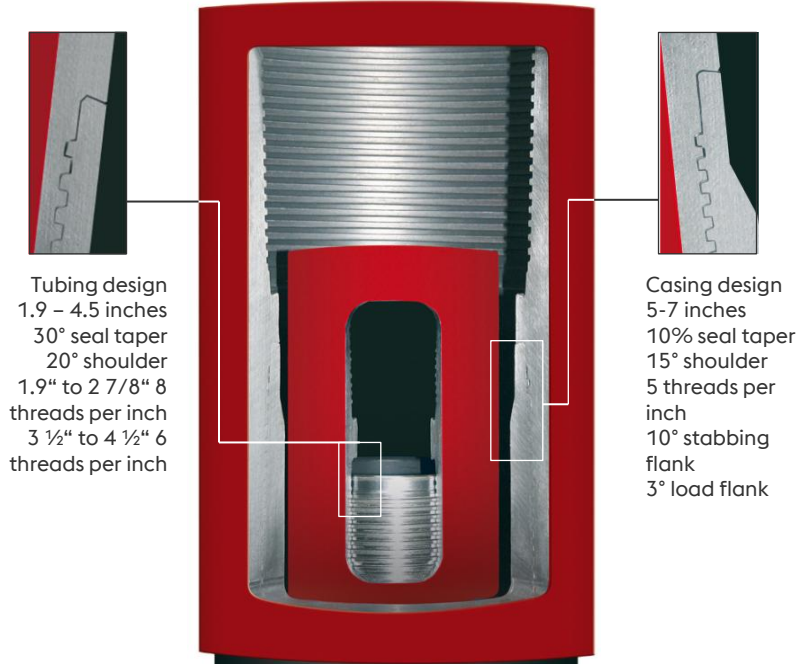
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This document contains the recommended practices for the installation of voestalpine tubulars proprietary connections. This is not comprehensive and is meant only as general guidance, based on best industry practices.

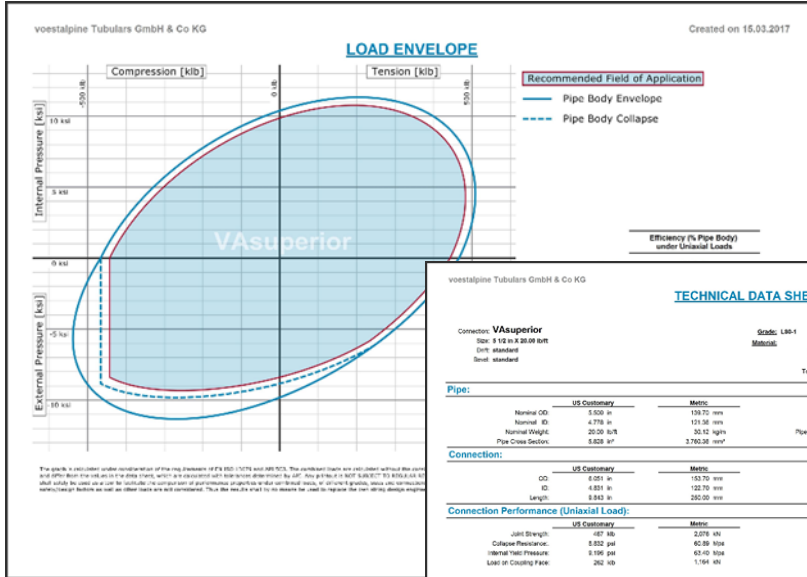
The user assumes all responsibility for the safe and effective implementation of these practices. Further, it is the user's responsibility to provide competent and knowledgeable personnel, as well as appropriate and well maintained equipment.

VAGT®



- VAGT® is field approved by millions of successfully installed feet
- **Gas tight thread connection**
- **Metal to Metal Seal** – The high contact pressure in the seal area ensures 100% gas tightness
- **Internal Shoulder** – Reinforces the contact pressure in the seal area and acts as a positive make-up stop.
- **Improved Buttress Thread design** – The thread design ensures a high stress performance and allows easy make-up even under severe condition.
- **Smooth Internal Profile** – Minimizes turbulence and also provides good conditions for internal plastic coating.

Technical data sheet



voestalpine Tubulars GmbH & Co KG
TECHNICAL DATA SHEET
Created on 15.03.2017

Connector: **VASuperior**
Size: 8 1/2 in x 20.00 lbft
End: standard

Grade: L80-1
Material:

	US Customary	Metric	US Customary	Metric
Yield Strength Min.	80,000 psi	552 MPa		
Tensile Strength Min.	95,000 psi	655 MPa		
Tensile Strength Max.	95,000 psi	655 MPa		

Pipe:

	US Customary	Metric	US Customary	Metric
Nominal OD	8.500 in	215.75 mm	Wall Thickness	0.281 in
Nominal ID	4.776 in	121.36 mm	Standard DR	4.883 in
Nominal Weight	20.00 lb/ft	29.12 kg/m	Pipe Body Yield Strength	487 MPa
Pipe Cross Section	6.828 in ²	3.763 dm ²		

Connection:

	US Customary	Metric	US Customary	Metric
OD	8.081 in	205.70 mm	Threads per inch	5 Threads
ID	4.831 in	122.70 mm		
Length	8.843 in	225.00 mm		

Connection Performance (Uniaxial Load):

	US Customary	Metric	US Customary	Metric
Joint Strength	487 MPa	2,078 kN	Tension Efficiency	> 100.0 %
Collaps Pressure	8,582 psi	60.89 MPa	Displacement	1,241 gPRF
Internal Yield Pressure	8,189 psi	58.45 MPa	Production	2,932 gPRF
Load at Cracking Face	262 kN	1,164 kN		

Field Make Up (Friction Factor = 1.0):

	US Customary	Metric	US Customary	Metric
Minimum Torque	7,200 ft-lb	9,818 Nm	Make-Up Loss	4,313 in
Optimum Torque	7,860 ft-lb	10,675 Nm	Yield Torque	6,960 lb
Maximum Torque	8,580 ft-lb	11,633 Nm		
Min. Torque on Shoulder	80 %			

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ONE STEP AHEAD

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

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

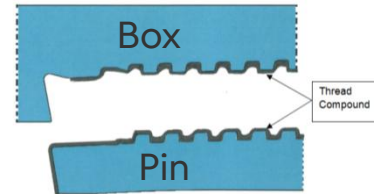
Customer service -> Datasheet generator

- Torques are valid for dope with friction factor 1 at room temperature
- Max. torque: optimum +15%
- 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
- 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 13)
 - 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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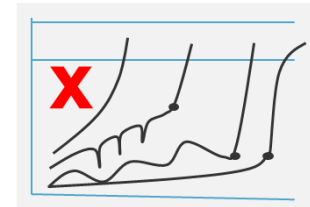
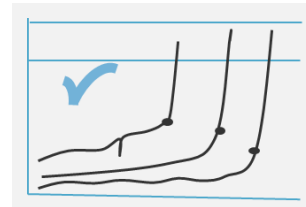
ONE STEP AHEAD.

Running and handling

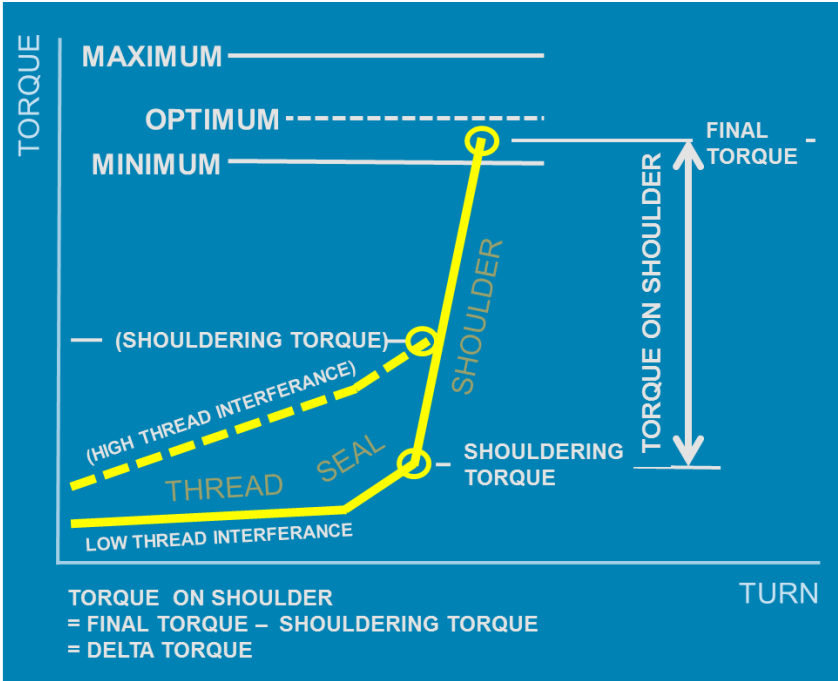
- Use a stabbing guide
- Lower carefully until pipe fully landed inside of the box
- Maintain good alignment
- Make-up
 - Start slowly in high gear with open back-up
 - If connection jams (torque increases immediately)
 - Stop and release tong
 - Disengage connection / place back-up on coupling
 - Clean 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 minimum recommended torque as per Datasheet
 - 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

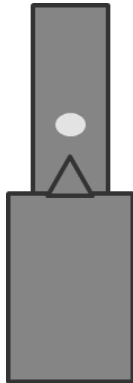


Running and handling



Casing and tubing

Torque on shoulder (delta torque) shall be at least 30 % of minimum recommended torque as per Datasheet



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

- 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 13
 - 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 2nd 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

- 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.

DryTec®

- For DryTec only
 - No special equipment requested
 - Clean with compressed air
 - Standard drift procedure
 - Visual inspection
 - Check each pipe (see page 13-15)
 - Apply clean and dry protectors. Always use original protectors.
 - No special running procedure except :
 - No application of dope
 - Pipes shall not be rotated during lowering into the box
 - Extreme temperature will affect friction
 - Optimum torque at specific temperatures will be calculated as follow : Optimum torque from data sheet (at 20°C/68°F) x temperature related friction factor
 - Friction factor as per table on page 12.
 - High shoulder connections
 - Job-specific conditions but also the coating ingredients might affect the make-up graphs
- If required, torques can be gradually increased until consistent minimum delta torque as specified on page 8 is achieved
 - Start of the first increase only if 8 out of 10 make-up shows consistent high-shoulder connections
- Torques can be increased up to 20% above max. recommended make-up torque as per Datasheet
 - Only if it is necessary to achieve the required delta-torque because of high thread-torque (high-shoulder connections)
- No plastic deformation shall be visible on any make-up graph.
- The delta torque shall always be 30% of the minimum recommended make-up torque as per Datasheet – even if the final make-up torque is increased and above max. recommended make-up torque as per Datasheet
- Accessories
 - If a DryTec pin is made-up with regular box : Apply dope on box
 - If a DryTec box is made up with a regular pin: Apply dope on pin and box

For DryTec only

Temperature		Friction factor (related)
-40°C to -15°C	-40°F to +5°F	1,28
-15°C to +10°C	+5°F to +50°F	1,13
+10°C to +35°C	+50°F to +95°F	1,00
+35°C to +60°C	+95°F to +140°F	0,84

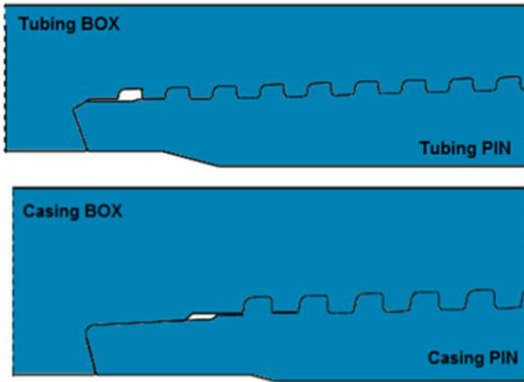
Torque/Turn monitoring is required to properly ensure correct make-up of each connection with DryTec.

The friction factors provided above are for guidance only and cannot represent all scenarios. To prevent yielding (plastic deformation), it is recommended to start at extreme temperatures with the minimum torque value to determine how the job-specific conditions are affecting the make-up.

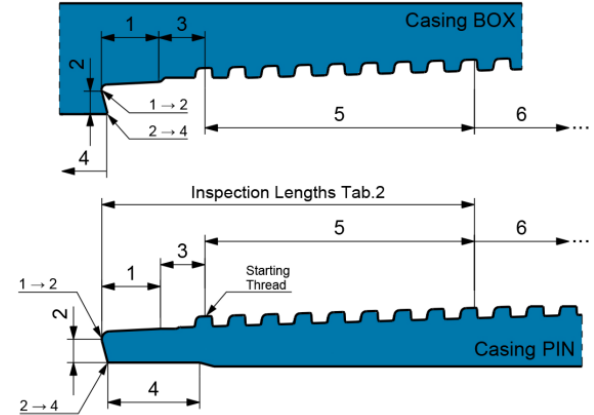
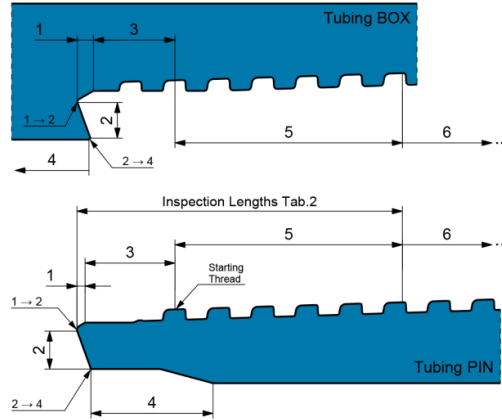
Make-up acceptance shall always be determined based on the criteria outlined on pages 7 - 10.

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 *



* 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

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 threads		
PIPE OD	mm	inch
2 3/8 "	20,2	0,80
2 7/8 "	27,2	1,07
3 1/2 "	36,8	1,45
4 "	42,2	1,66
4 1/2 "	46,6	1,83
5 "	50,9	2,00
5 1/2 "	52,9	2,08
5 3/4 "	54,9	2,16
6 5/8 "	58,2	2,29
7 "	62,9	2,48

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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

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 1/2 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

General: The phosphated and/or DryTec-coated surface shall not be removed excessively by hand - repair (except area 3,4 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).

This is as well applicable for the DryTec Pin

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

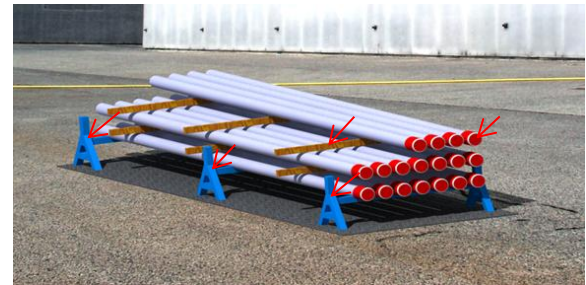
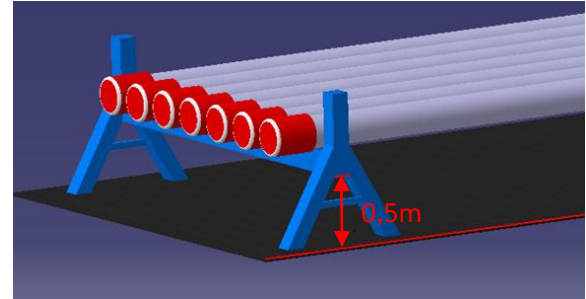
- Before loading or unloading thread protectors should be in place
- Do not unload pipe by dropping
- Avoid rough handling which might damage the threads or the body of the pipe
- When rolling pipe, on the rack, keep pipe parallel and do not allow pipe to strike the ends
- Do not use hooks to lift pipes



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. DryTec® protectors shall be checked for proper tightness (hand tight) when put pipes into storage and at least each 3 months during storage



Thank you

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www.voestalpine.com/tubulars

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