TenarisHydril Wedge 361™ Connection

Scope

These guidelines apply specifically to the use of Wedge 361™ connections. This document should be used in conjunction with the TenarisHydril Running Manual, which is the main document applicable to the running of all TenarisHydril premium connections.
Tenaris Field Service Representatives can modify these guidelines when circumstances dictate. Implementation will only occur if the representative deems the modification to be non-detrimental to product integrity. All modifications need to be clearly explained and agreed with the client representative prior to implementation and fully documented in the running report.

References

- FTD29356 - Premium Connection Approved Thread Compounds.
- GDL31457 - Recommended guidelines for the field inspection of TenarisHydril connections.
- GDL23349 - Pre-Running Preparation
- GDL23355 – Wedge™ Series Make up Acceptance

Equipment, Material & Documents

1. Wedge 361™ connection is delivered from Tenaris facilities with Easy Run Coating (ERC) by default. In case the material is not delivered in this way, verify the appropriate thread compound is available.

2. Refer to document FTD29356 for a list of thread compounds approved by Tenaris.

3. Latest version of the specific Product Data Sheet can be obtained from Tenaris website. In case this is not available, request the data sheet from the local Technical Sales representative.

Pre-Running

1. Never move or handle pipe without the correct thread protectors securely in place.

2. Verify all pipe and accessories have genuine TenarisHydril manufactured connections.

3. Verify the compatibility of the Wedge 361™ connection with accessories such as cement heads, safety valves, crossovers, etc.

4. Verify material grade of all accessories ensuring compatibility with main string.

5. If pipe is delivered from a Tenaris facility with Easy Run Coating (default delivery) no cleaning is required as the material has been previously inspected by Tenaris.

6. If pipe is delivered with storage compound, clean connections following the recommendations contained within the TenarisHydril Running Manual (GDL23349 - "Pre-Running Preparation").

- Visually inspect thread area prior to running, ensuring no damage is evident.
- Ensure connections are clean and free of all debris and / or contaminants prior to applying running compound.

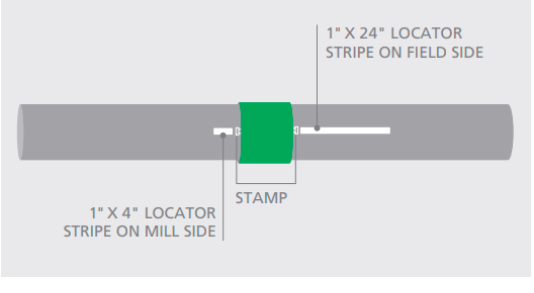
Inspection

1. Inspection criteria for Wedge 361™ connection is as outlined in GDL31457 for Wedge connections.

2. Ensure threads are clean and free of any debris or contamination.

Wedge 361™ Configuration

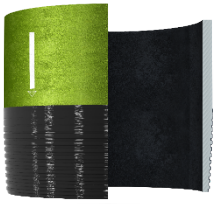
*Comes with Easy Run Coating (ERC)

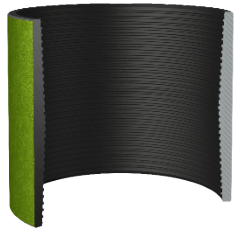


Wedge 361™ is interchangeable with same size / different weight but is not compatible with any other connection.

Wedge 361™ is delivered from Tenaris facilities with Easy Run Coating (default delivery), which replaces traditional running compound and provides corrosion protection. Easy Run Coating (ERC) is compatible with thread compounds, i.e. a pin or coupling with ERC can be assembled with a coupling or pin with thread compound.

Thread Compound Application



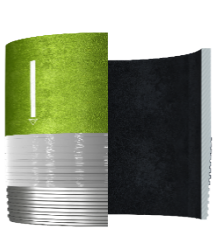


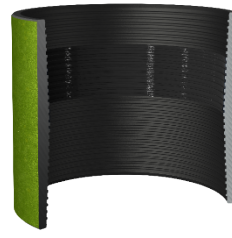
1. If pipe is received from Tenaris with Easy Run Coating (default delivery), no additional cleaning or compound application is required prior to running. Remove thread protectors, and -if needed – redistribute the coating on the pin with clean brush to ensure homogeneous coverage of threads and nose.

2. In case the product is received with storage compound, clean thoroughly and follow the recommendations below:

- Apply a thin coating of thread compound on the pin threads. The thread form should be clearly visible.
- Do not apply running compound to the box end. If thread compound has been applied previously, remove before running.

Thread Lock Application





1. Connections should be clean and dry when applying thread lock.

2. Thread lock should be applied to 50% of the threads at the back of the pin connection.

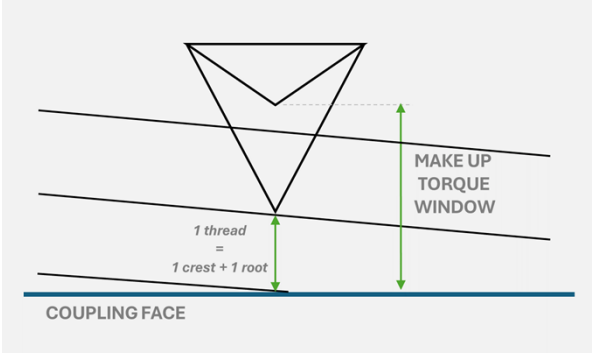
3. Running compound or Easy Run Coating (ERC) should then be applied to the threads at the back of the box connection.

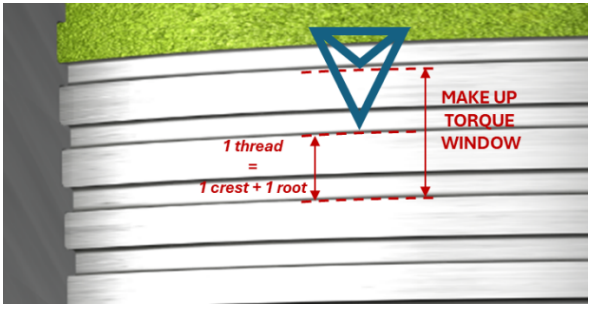
Torque Application

1. The make-up criteria for Wedge 361™ connection is the attainment of optimum torque along with the coupling face final position.

2. Wedge 361™ is correctly assembled when both box faces are within acceptable region of the corresponding visual indicator stamp. Acceptable final position of the coupling face is anywhere between 1 thread (that is: 1 crest and 1 root) before apex of triangle, and the maximum position defined by the internal apex. The remaining part of the triangle and base will serve solely to assist in locating the triangle.

3. Although computer make-up equipment is not required, it assists in keeping records on connection behavior during assembly for subsequent quality control purposes.





VISUAL INDICATOR STAMP

4. For making up connection with Easy Run Coating or thread compound, apply the specified torques as indicated on the Wedge 361™ data sheet. Do not apply thread compound manufacturer's friction factor.

5. On the first connection make up:

- Once optimum torque has been attained relax the tong.
- Draw a longitudinal line across pin and box and re-apply optimum torque without breaking out the connection.

- If movement over 2" is witnessed for the drawn line on the field pin end:
  - Check for factors that are absorbing the applied torque. Often the issue is caused by excessive application of thread compound. Recheck alignment and tong function, adjusting as necessary.
  - Draw a second line, re-apply optimum torque without breaking out the connection and check the new drawn line does not move beyond 2".
  - Repeat this process without breaking out the connection until rotation is less than 2" after re-applying optimum torque.
  - If this process was repeated and rotation exceeded the mark of 2" twice or more, then reduce the amount of thread compound for the following connection and repeat the process until getting less than 2" in the first attempt.

- Only if the re-application of torque does not result in movement above 2" continue running the rest of the string normally applying optimum torque once only along with the adjusted amount of thread compound.

6. When thread locking connections, optimum torque values +10% should be applied at low RPM. Re-apply this increased torque as necessary until rotation witnessed is below 2".

7. Wedge 361™ is compatible for same size / different weight but is not compatible with any other connection.

8. When mixing weights/grades ensure compatibility of design and proceed as follows:

- Place back up tong on the lower side of the coupling (mill side) for making up connections.

- If using recommended make up torques, apply the optimum make up torque value corresponding to the weight/grade of pin member to be assembled.

- If using operational torques, apply the lower operational torque value of the two connections.

- The operative torque of a Wedge 361™ string with mixed grades/weights corresponds to the minimum operative torque of all connections within the string.

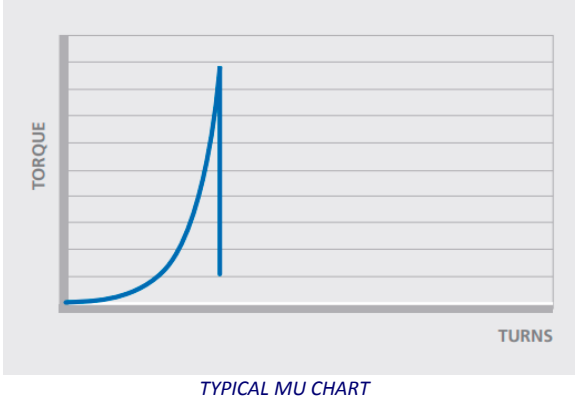
9. Coupling rotation when applying make up torque is acceptable as long as both couplings stay within the make up window.

10. When computer equipment is used:

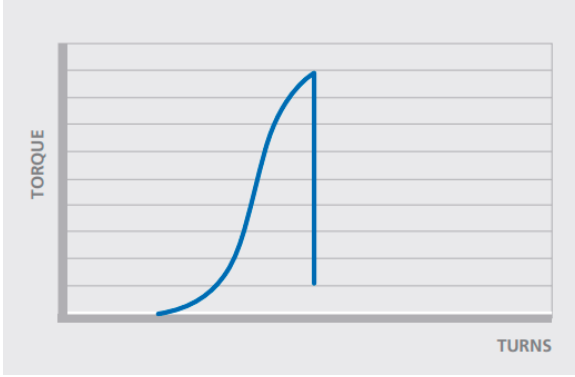
- Reference torque should be initially set at 5% of optimum torque.

- The dump valve should be set at optimum torque, verify correct operation on the pipe body prior to first make up.

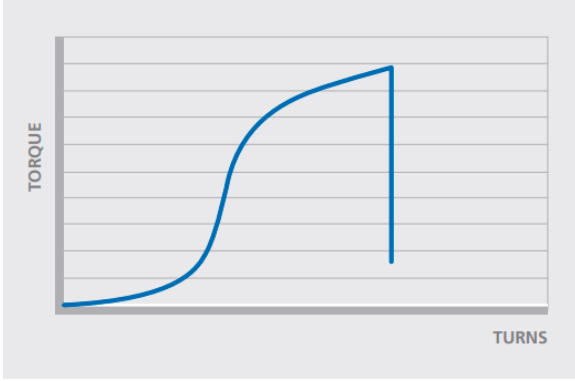
- Set the computer turns to 2 initially, then adjust as necessary to attain good graph depiction. Graph profile should be similar to the ones below. Refer to GDL23355 – Wedge™ Series Make up Acceptance for further explanation.



TYPICAL MU CHART



EXAMPLE – COUPLING ROTATION



EXAMPLE – HIGH TORQUE & COUPLING ROTATION

Running

1. The use of a stabbing guide is recommended.

2. To avoid cross-threading stab pipe in a smooth controlled fashion ensuring the pipe is vertical when doing so, continue to support and stabilize the pipe throughout the make up operation.

3. Upon commencement of initial rotation use low RPM (5 RPM or below) in order to ensure the pipe has not cross-threaded during stabbing.

4. If cross-threading is evident, immediately reverse rotate the pipe, completely disassemble, clean and inspect both connections.

5. Maximum assembly speeds are indicated in the table below. These are applicable for running in singles with power tong or CRT and assuming ideal conditions. Several factors may dictate a lower RPM should be used for assembly such as weather, pipe movement or alignment among other variables.

MATERIAL	OD	SPIN IN RPM	FINAL M/U RPM
Carbon Steel	7 5/8" – 9 5/8"	40	15

6. A factor which may preclude complete assembly is excessive thread compound applied to the connection, reduce the quantity applied if this is found to be the case.

Pulling

1. The use of a stabbing guide is recommended to prevent hang up.

2. Apply the back up tong on the lower part of the coupling (mill side), as close to the pipe end as possible. The back ups should be released as soon as the field end is disengaged, and re-set on the pipe body for spin out completion if necessary.

3. Apply power tong in low RPM (3-5 RPM) to break out the connection, ensuring the pipe is stabilized during the breakout process.

4. Maximum spin-out speed should not exceed 15 RPM.

5. Visual inspection is recommended to classify the thread condition; any rejected connections should be clearly marked and segregated for further investigation.

6. Apply clean, dry thread protectors after applying storage compound on clean, dry connections, even rejects.