

# TenarisHydril Wedge 461® Connection

## Scope

These guidelines apply specifically to the use of Wedge 461® connections. This document is part of the TenarisHydril Running Manual, and provides an overview of best practices for these specific products. It should be used in conjunction with the rest of the sections within the TenarisHydril Running Manual.

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.
- GDL23352 - Torque Application.
- GDL23355 - Wedge™ Series Make up Acceptance.
- GDL23349 - Pre-Running Preparation.

## Equipment, Material & Documents

1. Verify the appropriate thread compound is available. Refer to document FTD29356 for a list of compounds approved by Tenaris.
2. Identify the product to be run and the connections of all accessories.
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.

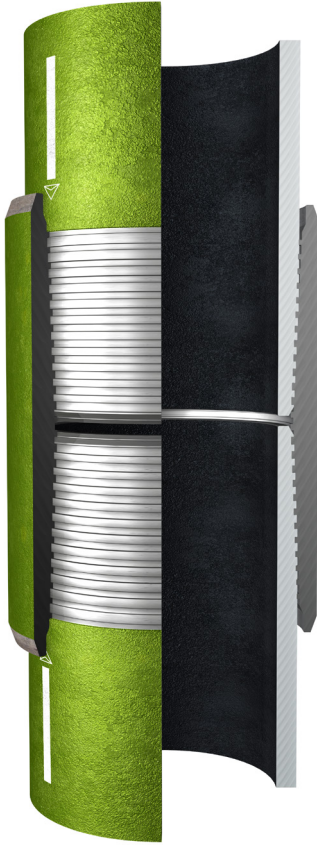
## Pre-Running

1. Never move or handle pipe without the correct thread protectors securely in place.
2. Ensure connections are clean and free of all debris and / or contaminants, cleaning methods employed should conform to the recommendations contained within the TenarisHydril Running Manual (GDL23349 - "Pre-Running Preparation").
3. Visually inspect thread area prior to running, ensuring no damage is evident.
4. Verify the compatibility of the Wedge 461<sup>®</sup> connection with accessories such as cement heads, safety valves, cross overs, etc.
5. Verify material grade of all accessories ensuring compatibility with main string.

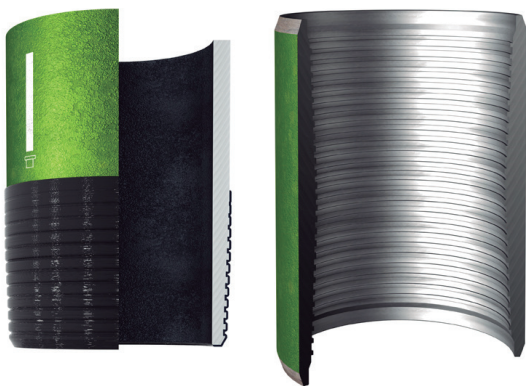
## Inspection

1. Inspection criteria for Wedge 461® connection is as outlined in GDL31457.
2. Light scratches on pin nose are acceptable as long as there is no protruding metal.

## Wedge 461® Configuration

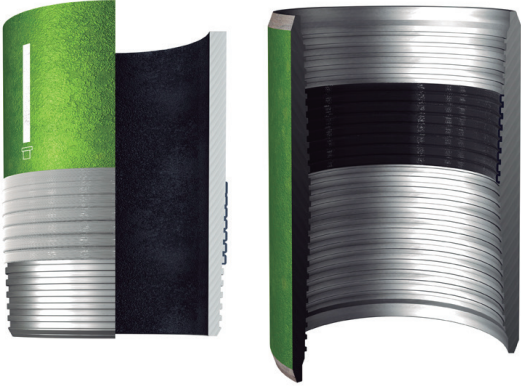


## Thread Compound Application



1. All storage compound should be completely cleaned from the connections.
2. Apply a thin coating of thread compound on the full pin end only, threads and pin nose, the thread form should be clearly visible.
3. Do not apply running compound to the box end. If thread compound has been applied previously, remove before running.
4. If pipe is received from Tenaris as RunReady™ with running compound already applied, no additional cleaning or compound application is required prior to running. Remove thread protectors, redistribute thread compound on the pin with a clean brush to ensure homogeneous coverage of threads and pin nose.

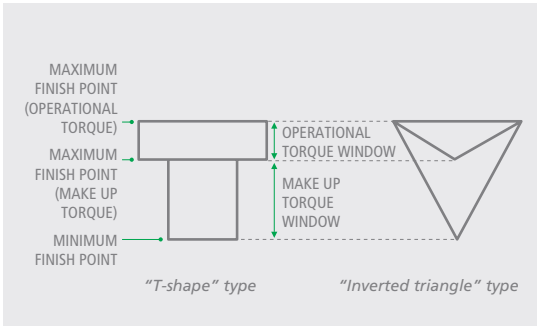
## Thread Lock Application



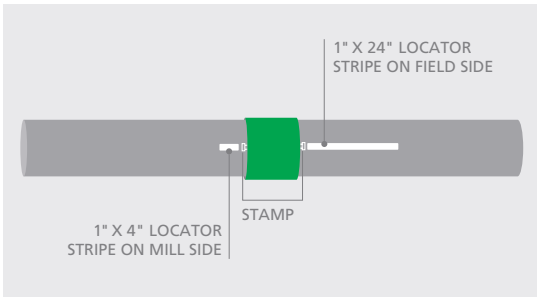
1. Connections should be clean and dry when applying thread lock.
2. Thread lock should be applied to 50% of the threads at the back of the pin connection.
3. Running compound should then be applied to the threads at the back of the box connection.

## Torque Application

1. Set tong dump valve at optimum torque then test on pipe body.
2. Apply the specified torques as indicated on the Wedge 461® data sheet. Do not apply thread compound manufacturer's friction factor.
3. The make up criteria for Wedge 461® connection is the attainment of optimum torque along with the coupling face final position.
4. Wedge 461® is correctly assembled when both box faces finish within the region of the visual indicator stamp corresponding to the torque applied, as detailed below:
  - The visual indicator can be either a T-shaped stamp, or alternatively an inverted triangle stamp. Both of them have the same function and are equivalent, with the triangular one being the latest design for improved visibility. Refer to sketch on next page.
  - If using make up torques, coupling face should finish within the make up torque window.
  - If exceeding maximum make up torque, the coupling face should finish anywhere within the minimum finish point and maximum finish point for operational torque.



### VISUAL INDICATOR STAMP



#### 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 1" 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, making adjustments 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 1".
  - Repeat this process without breaking out the connection until rotation is less than 1" after re-applying optimum torque.
  - After repeating the process twice or more with rotation exceeding 1". Reduce the amount of thread compound on the following connection and repeat the process until less than 1" of rotation occurs on the first make up attempt.
- Only if the re-application of torque does not result in movement above 1" continue running the rest of the string normally applying optimum torque once only along with the adjusted amount of thread compound.

6. Refer to GDL23352, Torque Application.

7. When thread locking connections, optimum torque values +20% should be applied at low RPM.

8. Interchange capability of Wedge 461® is indicated in the product data sheet.

9. 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.
- Operational torque of all connections within a Wedge 461® string with mixed grades / weights is that of the lower grade or weight.

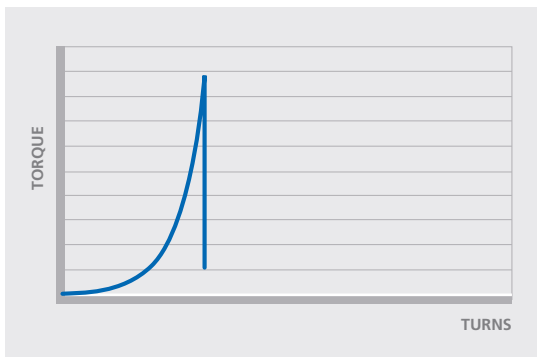
**10.** Coupling rotation when applying make up torque is acceptable as long as both faces of the coupling remain within the appropriate make up window for the torque applied.

**11.** Computer make up equipment is recommended for Wedge 461® connections.

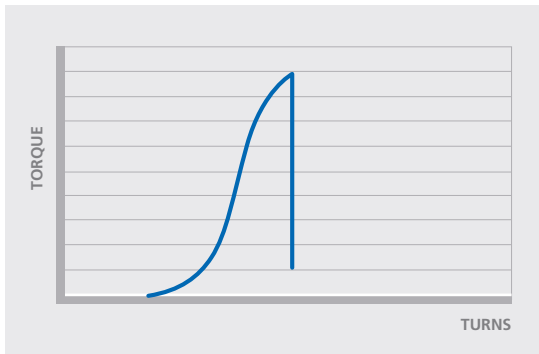
**12.** When computer equipment is used, reference torque should be set at 5% of optimum torque.

**13.** Set the computer turns to 2 initially, then adjust as necessary to attain good graph depiction.

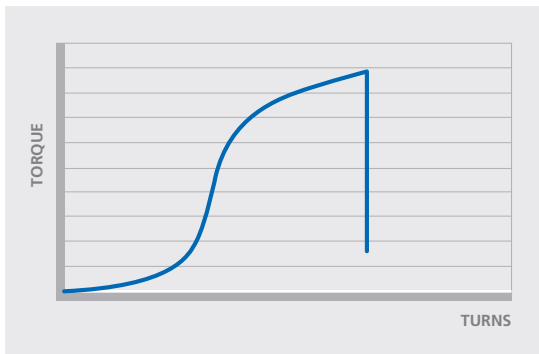
**14.** Graph profiles should be similar to the ones below.



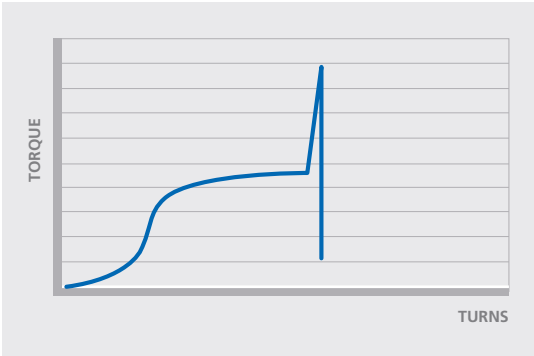
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EXAMPLE - COUPLING ROTATION

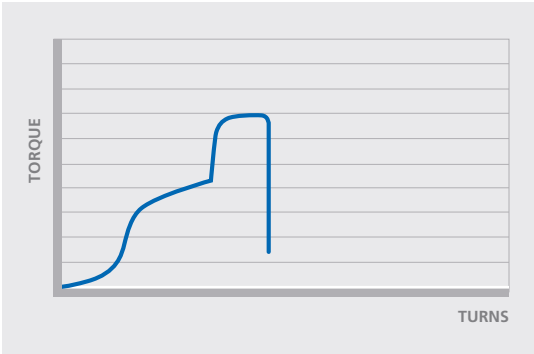


EXAMPLE - HIGH TORQUE & COUPLING ROTATION



#### EXAMPLE - COUPLING ROTATION & PIN TO PIN CONTACT

15. Below an example of a non-acceptable graph on Wedge 461<sup>®</sup> due to yielding.



#### EXAMPLE - YIELDED CONNECTION

16. Refer to GDL23355; Wedge™ Series Make up Acceptance, for further explanation.

17. When computer equipment is used the make up indicator can be used as an additional verification of correct final assembly position.

**18.** Frequency of the visual check of the make up indicator should be agreed with the Tenaris Field Services Representative and documented in the running report. It is suggested to visually check the first 5 joints, then every 20 joints during the job.

## Running

- 1.** The use of a stabbing guide is recommended.
- 2.** The use of slip type elevators is strongly recommended.
- 3.** The use of a weight compensator is strongly recommended for chrome, pipe with an OD  $\geq 14$ " and stands of 3 joints  $\geq 7$ ".
- 4.** 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.
- 5.** Upon commencement of initial rotation use low RPM (5 RPM or below) in order to ensure the pipe has not cross threaded during stabbing. If cross threading is evident, immediately reverse rotate the pipe, completely disassemble, clean and inspect both connections.
- 6.** 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.
- 7.** Conditions may dictate lower assembly speeds than the maximums indicated. High winds or excessive pipe movement among other variables will necessitate a lower RPM be used.

MATERIAL	OD	SPIN IN RPM	FINAL MAKE-UP RPM
Carbon Steel	below 8 5/8"	40	15
	8 5/8" and above	25	10

8. Walk chrome pipe all the way in to hand tight, then apply tong only for final make up.
9. Apply power tong at low RPM (do not exceed 5RPM) for final make up.
10. Do not apply back up tong on the coupling unless a torque higher than recommended maximum is to be applied.
11. 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. Automatic stabbing system or stabber is strongly recommended to maintain pipe in a vertical position.
2. The use of a weight compensator is strongly recommended for chrome, pipe with an OD  $\geq 14$ " and stands of three joints  $\geq 7$ ".
3. Apply the back up tong on the lower end of the coupling.
4. Apply power tong in low RPM (3-5 RPM) to break out the connection, ensuring the pipe is stabilized during the break out process.
5. Do not exceed 15 RPM during spin out.

6. Walk chrome pipe all the way out by hand after initial break out.
7. It is recommended the stabbing guide is used when lifting the pin from the box to prevent hang up of the threads.
8. Visual inspection is recommended to classify the thread condition; any rejected connections should be clearly marked and segregated for further investigation.
9. Apply clean, dry thread protectors after applying storage compound on clean, dry connections.
10. Storage / thread compound should always be applied to connections post job, even rejects.

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