Torque Application

1. The correct application of torque for the connection type, OD, weight and grade being assembled is imperative in ensuring the connection can perform optimally.

2. The size of power tong used should be appropriate for the size of pipe being assembled. The tong should have the capability of applying the required torque plus 30% in order to ensure break out capability which may require a higher torque.

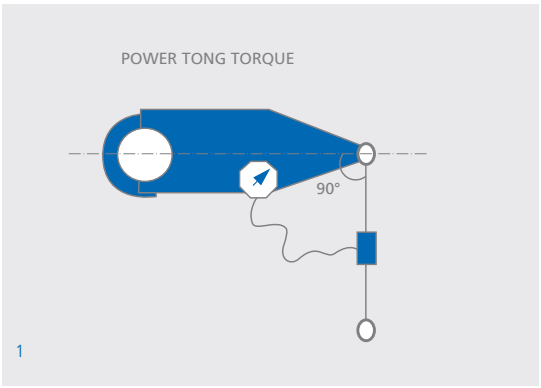
3. The tong and load cell should not be excessively oversized for the pipe to be run, a 30k load cell should not be used to assemble pipe which has a make up torque of 5k. Likewise a 14" tong should not be used to make up 5 ½" pipe.

4. If using a power tong with integral back up ensure both units are level allowing even die contact round the pipe OD. Power tongs with integral back up are strongly recommended for pipe up to and including 7" OD.

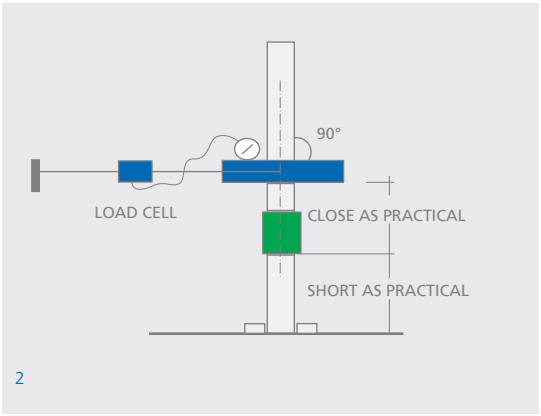
5. The power tong snub line should be attached to a back up post, leveled and positioned at a 90° angle to the power tongs.

6. The snub line should be of cored wire construction, nylon slings or chains are not acceptable.

IDM Code GDL23352/4 / August 2024



1



2

MAKE UP

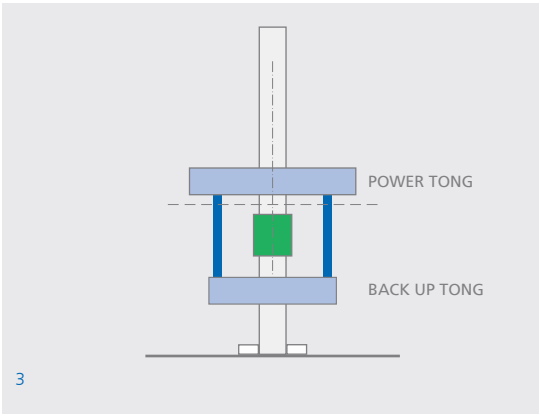
1. Power tong, upper view.
2. Load cell installation, side view.

7. Ideally jaws which allow wrap around die contact of the pipe body should be used.

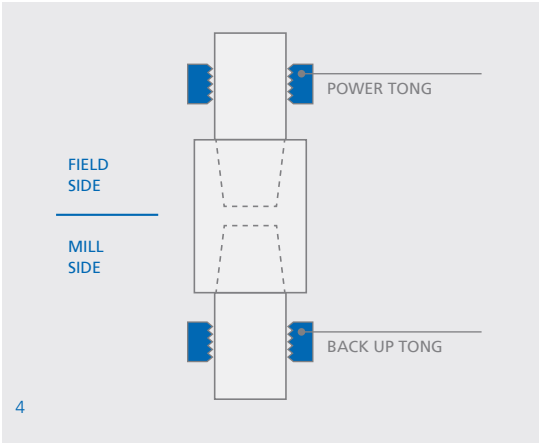
8. Tongs should be placed on the pipe body either side of the connection.

9. Do not grip the coupling or the OD of integral connections.

10. Best practice is to spin the connection in without actuating the back up tong until final make up in low gear.



3



4

MAKE UP

Power tong positioning for make up of coupled connections.

IDM Code GDL233524 / August 2024

11. A new product data sheet should be downloaded for each run to ensure the latest torque figures are being applied.

12. With the exception of SLX®, MACII™, PH6™, PH4™ and CS® apply the friction factor indicated in FTD29356, Premium Connection Approved Thread Compounds, to the appropriate torques for all Blue® Series, Legacy Series and TXP® BTC connections.

13. For all Wedge™ Series connections do not apply a friction factor.

14. Computer make up analysis equipment is strongly recommended for all Blue® Series and Legacy Series connections.

15. Computer make up analysis equipment is strongly recommended for all Wedge™ Series 500 and Wedge™ Series 600 connections in chrome and CRA.

16. Computer make up analysis equipment is recommended for all Wedge™ Series connections.

17. Computer equipment should have the capability to display torque turn analysis.

18. Torque Time analysis is not accurate enough for premium connections.

19. Computer equipment capable of 1000 pulses per turn as a minimum is recommended.

20. All measuring equipment such as load cells must be calibrated.

21. Dump valve actuation should be set at optimum torque.

22. Check dump valve actuation on the pipe body prior to assembling the first connection.

23. Some TenarisHydril connections have visual make up indicators. These indicators are an aid to be used in conjunction with good make up practices and computer graph interpretation. See connection specific running guidelines.

24. The following data should be loaded into the computer:

- Reference torque
- Minimum shoulder torque
- Maximum shoulder torque
- Minimum make up torque
- Optimum make up torque
- Maximum make up torque
- Calibration value of the load cell
- Dump valve sensitivity
- Turn transducer sensitivity

25. Initially it is recommended to set reference torque at 5% of optimum. Thereafter it can be adjusted to allow at least the last full turn of assembly to be displayed.

IDM Code GDL2335214 / August 2024

TORQUE DEFINITIONS
REFERENCE TORQUE The torque set in the computer where graph depiction begins.
MINIMUM SHOULDER TORQUE The lowest point at which indicated shoulder can be accepted.
MAXIMUM SHOULDER TORQUE The highest point at which indicated shoulder can be accepted.
MINIMUM MAKE UP TORQUE The lowest acceptable make up torque.
OPTIMUM MAKE UP TORQUE The ideal applied make up torque.
MAXIMUM MAKE UP TORQUE The highest acceptable make up torque.
OPERATIONAL TORQUE Maximum useable torque measured at surface when rotating the string. Operational torque should never be exceeded.*
YIELD TORQUE The torque at which deformation of the connection is expected. Yield torque should never be approached.

(*) PRIOR TO APPLYING OPERATIONAL TORQUE CONTACT TENARIS FOR ANALYSIS OF RPM, ROTATION TIME AND FATIGUE.

Combining Different Weight / Grade

1. When combining different weight / grade of connections ensure compatibility of weight as indicated in the product data sheet. If any doubt exists as to interchange capability contact the local Tenaris Technical Sales Representative.

2. Torque values of mixed assemblies can be obtained from the tool available at https://dcp.tenaris.com/Mixed_Assemblies.

3. For all Blue® Series, Legacy Series and TXP® BTC connections use the lower of the two torque values.

4. For Wedge™ Series 500 and Wedge™ Series 600 connections, including interchangeable designs, use the higher of the two torque values.

5. If the higher torque exceeds the operational torque of the lower weight / grade connection contact Tenaris for torque to be applied.

6. For Wedge™ Series 400 use the torque corresponding to the pin member when assembling to field torques.

CONNECTION	LOWER TORQUE	HIGHER TORQUE
Blue® Series, Legacy Series, TXP® BTC	X	
Wedge™ Series 500 and Wedge™ Series 600		X

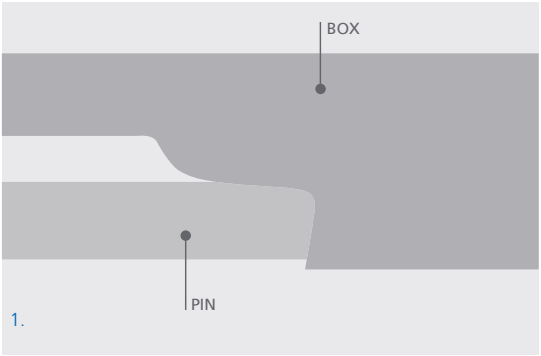
7. When assembling Blue® Series, Legacy Series or TXP® BTC accessories with a large disparity in OD / ID, higher shoulder points may be encountered. Contact a Tenaris representative to validate if a change in torque is required.

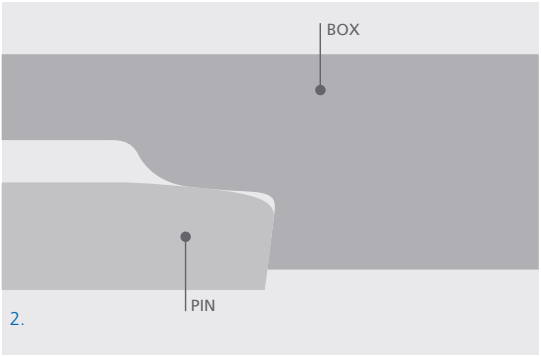
8. If connections with a grade disparity larger than 30KSI are to be mixed contact Tenaris to validate torques.

9. For further information on interchange capability and torques to be applied for Dopeless® connections refer to GDL23356, Dopeless® Connections.

IDM Code GDL23352/4 / August 2024

NOTE: IF DIFFERENT WEIGHT OF CONNECTIONS ARE COMBINED THERE WILL BE A STEP IN THE BORE.





ASSEMBLED CONNECTIONS OF DIFFERENT WEIGHT

1. Lighter pin into heavier box.
2. Heavier pin into lighter box.

Torque Application Wedge™ Series

1. For doped variant Wedge™ Series connections, follow the "double bump" process described below on the first joint.

2. Make up the first joint to the specified optimum torque and relax the tongs.

3. Draw a longitudinal line across the pin and box and re-apply the optimum torque as indicated in the Data Sheet.

4. If the drawn line does not move more than the allowed limit (1/2" for Wedge™ Series 500 & 600, or 1" for Wedge™ Series 400) after the second torque application, continue running the rest of the string normally using the specified optimum torque.

5. If the drawn line moves more than the allowed limit after the second torque application, a portion of the torque is being absorbed by other variables during assembly. If this occurs, do the following:

For Wedge™ Series 500 & 600:

- Increase the optimum torque by 20% and re-apply the torque.
- Draw a second line and re-apply optimum torque plus 20%.
- If the second drawn line does not move more than ½", continue running the remainder of the string using the 20% higher optimum torque.
- If the second drawn line moves more than ½", recheck the alignment, dope application and tong function, then repeat this procedure until the drawn line moves less than ½".

IDM Code GDL23352/4 / August 2024

For Wedge™ Series 400:

- Re-check alignment and tong function, and verify amount of dope applied is not excessive, making adjustments as necessary.
- Draw a second line, re-apply optimum torque 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.
- If re-applying torque does not result in movement greater than 1", continue running the rest of the string normally, applying optimum torque once only.

6. It is best practice to repeat this procedure if the tongs are changed out during the run.

7. Apply enough torque to ensure it is not lost to other variables in the make up system such as rig motion, misalignment or tong inconsistencies.

8. For doped variant Wedge™ Series 500 and Wedge™ Series 600 connections in sizes 10 3/4" and larger either:

- Apply the optimum torque twice on every connection.
- Hold the torque for several seconds on every connection.

9. There is no need to hold or apply the torque twice for Dopeless® connections.

10. Always check the visual make up verification aid if available, refer to specific product running guidelines.

11. During freezing weather, maximum make up torque may be required to overcome running compound viscosity and ensure correct make up.

12. When using tubing as a work string or test string, good practice is to make up the first one or two turns by hand to extend the life of the connection.

13. If, when assembling or during the double bump process Wedge™ Series couplings begin to turn check the coupling face finish point of both sides of the coupling in relation to the make up loss bands.

14. If the coupling face of both field and mill ends finish within the make up bands or stamps and the computer graph does not indicate damage has occurred, accept the make up. When computer is not used, ensure correct torque is attained prior to accept the make up.

MAKE UP BAND

Correct make up is achieved when the coupling face finishes within the make up band lines.

IDM Code GDL233524 / August 2024