TenarisHydril Blue® Dopeless® 3.0/3.1 Connection

Scope

These guidelines apply specifically to the use of TenarisHydril Blue® Dopeless® 3.0/3.1 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.

Equipment, Material & Documents

1. Identify the product involved including the version of Dope-free technology and all accessories connections.

2. Latest version of the specific Product Data Sheet can be obtained from Tenaris web site. In case this is unavailable, request the data sheet from the local

IDM Code GDL371332/3 / December 2022

Technical Sales Representative or contact-tenarishydril@tenaris.com. Dopeless® 3.0/3.1 technology does not require the use of thread compounds.

3. The use of a torque-turn computer monitoring system is strongly recommended to be used to make up TenarisHydril Blue® Dopeless® 3.0/3.1 connections.

4. In case assemblies in the job demands the use of thread compound verify the appropriate thread compound is available in accordance with FTD29356.

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.

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

4. Visually inspect thread and seal areas prior to running, ensuring no damage is evident.

5. Check condition of both pin and box coating ensuring no peel off or degradation has occurred.

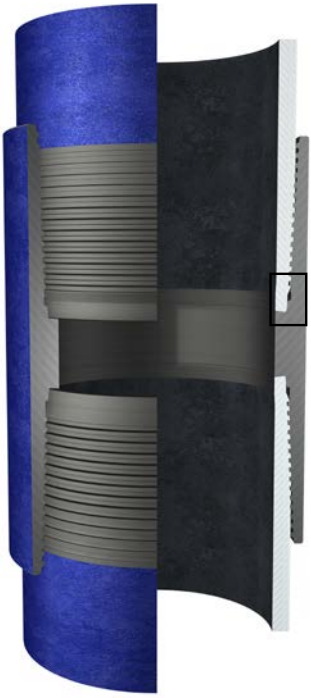
6. Verify the compatibility of the TenarisHydril Blue® Dopeless® 3.0/3.1 pipe with accessories such as cement heads, safety valves, cross overs, etc.

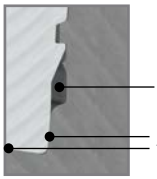
7. Connection weight interchange compatibility is indicated in the data sheet.

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

Blue® Dopeless® 3.0/3.1 Configuration

5 TPI ≤ 5 ½"
4 TPI > 5 ½"





IDM Code GDL371332/3 / December 2022

Inspection

1. Inspection criteria for all TenarisHydril connections is as outlined in the Field Service Operative Guideline GDL31457.

2. Pay particular attention to seal areas.

3. Ensure the pin nose has no tears, gouges or raised metal.

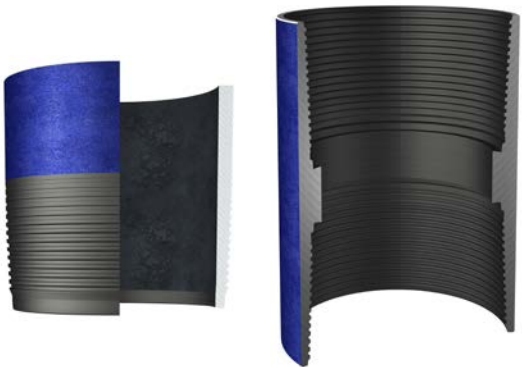
4. Ensure the pin and box torque shoulders have no dents, tears or raised material which could interfere with correct assembly.

5. Repair of Dopeless® 3.0/3.1 in the field is limited to Field Services Representative or full refurbishment at Qualified Dopeless® facilities.

Thread Compound Application

1. The application of thread compound is not required to assemble connections with Dopeless® 3.0/3.1 technology.

Blue® Dopeless® 3.0/3.1 Technology



1. TenarisHydril Blue® Dopeless® 3.0/3.1 connections do not require the application of thread compound for make-up.

2. If for whatever reason thread compound has to be applied to TenarisHydril Blue® Dopeless® 3.0/3.1 connections, whether both pin and box are Dopeless® 3.0/3.1 or when mixing a standard connection with Dopeless® 3.0/3.1, apply thread compound as indicated below.

- Apply a very thin coating of thread compound on all pin threads, seal and pin nose.
- Apply a thin layer of thread compound to the box seal.

3. Use the following instructions for mixed assemblies:

IDM Code GDL371132/3 / December 2022

OD < 7"		PIN		
		STANDARD	DOPELESS® TECHNOLOGY	DOPELESS® 3.0 TECHNOLOGY
Box	Standard	Standard	Apply the higher torque value of Standard/ Dopeless® Technology	Apply the higher torque value of Standard/ Dopeless® 3.0 Technology
	Dopeless® Technology	Apply the lower torque value of Standard/ Dopeless® Technology	Dopeless® Technology torques	Reduce by 20% the lower torque value between Dopeless®/ Dopeless® 3.0 Technology
	Dopeless® 3.0 Technology	Apply the higher torque value of Standard/ Dopeless® 3.0 Technology	Increase by 20% the higher torque value between Dopeless®/ Dopeless® 3.0 Technology	Dopeless® 3.0 Technology torques

TABLE 1.a. Mixed assemblies Make up torques for OD < 7".
Standard torques refer to torque for standard version of the product affected by friction factor.

NOTE: For this OD range, Dopeless® 3.1 variant is currently not available.

OD ≥ 7"		PIN			
		STANDARD	DOPELESS® TECHNOLOGY	DOPELESS® 3.0 TECHNOLOGY	DOPELESS® 3.1 TECHNOLOGY
Box	Standard	Standard torques	Apply the higher torque value of Standard/ Dopeless® Technology	Apply the higher torque value of Standard/ Dopeless® 3.0 Technology	Apply the higher torque value of Standard/ Dopeless® 3.1 Technology
	Dopeless® Technology	Apply the lower torque value of Standard/ Dopeless® Technology	Dopeless® Technology torques	Apply the lower torque value of Dopeless®/ Dopeless® 3.0 Technology	Apply the lower torque value of Dopeless®/ Dopeless® 3.1 Technologies
	Dopeless® 3.0 Technology	Apply the lower torque value of Standard/ Dopeless® 3.0 Technology	Apply the higher torque value of Dopeless®/ Dopeless® 3.0 Technology	Dopeless® 3.0 Technology torques	Apply the lower torque value of Dopeless® 3.0/ Dopeless® 3.1 Technologies
	Dopeless® 3.1 Technology	Apply the higher torque value of Standard/ Dopeless® 3.1 Technology	Apply the higher torque value of Standard/ Dopeless® 3.1 Technology	Apply the higher torque value of Dopeless® 3.0/ Dopeless® 3.1 Technologies	Dopeless® 3.1 Technology torques

TABLE 1.b. Mixed assemblies Make up torques for OD ≥ 7". Standard torques refer to torque for standard version of the product affected by friction factor.

In any case involving a standard (with dope) connection, running compound shall be applied according to the instructions mentioned above.

Blue® Dopeless® 3.0/3.1 Technology Thread Lock

1. Ideally when running a Tenarishydril Blue® Dopeless® 3.0/3.1 string the connections to be thread locked should be the non Dopeless® variant with the connections cleaned of thread compound and completely dried.

2. When thread locking Dopeless® 3.0/3.1 connections remove the Dopeless® 3.0/3.1 coating from the threads on the pin connection where the thread lock is to be applied.

3. Use a hand or rotary brass wire wheel to remove the Dopeless® 3.0/3.1 coating from the pin threads, ensuring no contact is made with the seal.

4. Leave the Dopeless® 3.0/3.1 coating on the pin seal, torque shoulder and threads where no thread lock is to be applied.

5. Dopeless® 3.0/3.1 boxes should be washed with hot water then dried prior to thread locking.

6. Thread lock should be applied to 50% of the pin threads immediately behind the seal area, as per the diagram below.

7. Apply optimum torque from standard variant of the connection, affected by thread lock manufacturers indicated friction factor.

8. The application of thread dope is not required.

Torque Application

1. The use of computer make up analysis equipment is strongly recommended when assembling TenarisHydril Blue® Dopeless® 3.0/3.1 connections.

2. Computer equipment should have the capability of displaying torque turn graph profiles.

3. The use of torque time prevents accurate graph interpretation of connection assembly.

4. Check calibration certificates of the torque gauge and computer equipment.

5. Shoulder points for TenarisHydril Blue® Dopeless® 3.0/3.1.

- Minimum 15% of optimum torque.
- Maximum 85% of optimum torque.

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

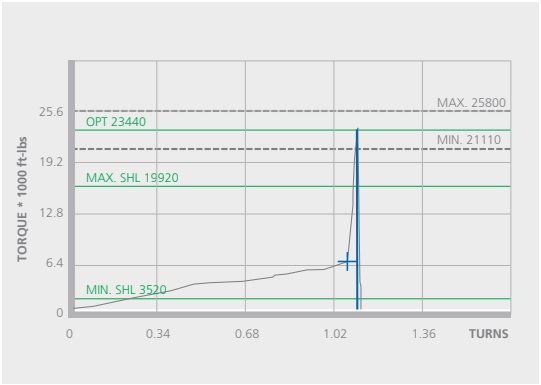
7. The dump valve should be set at optimum torque, verify correct operation on the pipe body prior to first make up.

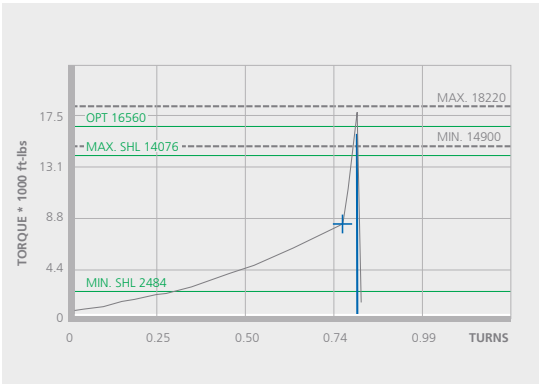
8. Set the computer turns to 2 initially then adjust as necessary to attain good graph depiction.

9. Refer to the TenarisHydril running manual, make up acceptance section for further explanation.

10. The computer make up profile for TenarisHydril Blue® Dopeless® 3.0/3.1 should be similar to the ones below.

IDM Code GDL371132/3 / December 2022





11. If different weight or grade of Blue® Dopeless® 3.0/3.1 connections are to be mixed apply the lower of the indicated make up torques.

12. When assembling TenarisHydril Blue® Dopeless® 3.0 or Dopeless® 3.1 connections the torques applied must be taken from the data sheet corresponding to the correct Dopeless® variant.

13. When mixing connections of different variants (standard, Dopeless® or Dopeless® 3.0/3.1) apply the torque values indicated in table 1 (1.a or 1.b as applicable).

14. When assembling Dopeless® 3.0/3.1 connections with thread lock, apply the torque values indicated in table 1 (1.a or 1.b as applicable) and apply the thread lock manufacturer's recommended friction factor.

15. If dope has to be applied on an assembly where both pin and box are Dopeless® 3.0/3.1 technology, utilize standard torques affected by friction factor.

Running

1. The use of a stabbing guide is strongly recommended.

2. The use of a weight compensator is strongly recommended for chrome, large OD or heavy pipe.

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

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

5. 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 2. These are applicable for running in singles with a tong or CRT and assuming ideal conditions.

IDM Code GDL371132/3 / December 2022

TSH BLUE DOPELESS® 3.0/3.1	OD	SPIN IN RPM	FINAL M/U RPM
Carbon Steel	3 1/2" - 4"	15	5
	Above 4"	30	5

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 to be used.

8. Walk chrome pipe all the way in to hand tight, then apply tong only for final make up.

Pulling

1. Automatic stabbing system or stabber is highly recommended to maintain the pipe in a vertical position.

2. The use of a stabbing guide is recommended to assist in centralising the pin to prevent hang up.

3. A weight compensator is strongly recommended for chrome, large OD and heavy pipe.

4. Apply the back-up tong jaw on the lower part, over the mill end, of the coupling.

5. Apply power tong in low rpm (3-5 RPM) to break the connection, ensuring the pipe is stabilised during the break and spin out process.

6. Do not exceed 15 RPM during spin out.

7. Walk chrome pipe all the way out by hand after initial break.

8. Visual inspection is recommended to classify the thread condition.

9. Rejected connections should be clearly marked and segregated for further investigation.

10. Do not apply storage compound to Dopeless® 3.0/3.1 connections.

11. Apply clean dry thread protectors on clean and dry connections.

12. For long term storage of Dopeless® 3.0/3.1 connections, refurbishment by qualified personnel is recommended.

13. Ensure Dopeless® 3.0/3.1 protectors with seal rings correctly in place are installed.

IDM Code GDL371132/3 / December 2022