Running Procedure for Bushmaster® GT Connection

Procedure No: FT-RP-009
Rev: 02

Fermata Technologies

Approvals

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Revision Control

Rev	Description of Changes	Date Issued
00	Issued for use	3/1/2021
01	Added Jet Lube Seal Guard and Secondary Verification	11/10/2021
02	Updated Measurements and Procedures for Smaller Diameter Configurations	2/5/2024

1. General Running Procedure

1.1 Refer to General Running Procedure No. FT-RP-000 latest revision.

2. Thread Compound Application

2.1 Fermata® recommends the use of Jet-Lube Seal Guard or alternatively BOL 72733 can be used for sizes 4-1/2" and larger. For 3-1/2" Fermata® Recommends the use of the Fermata® Constrictor® Advanced Thread Sealant.

Figure 1: Fermata® Constrictor® Advanced Thread Sealant

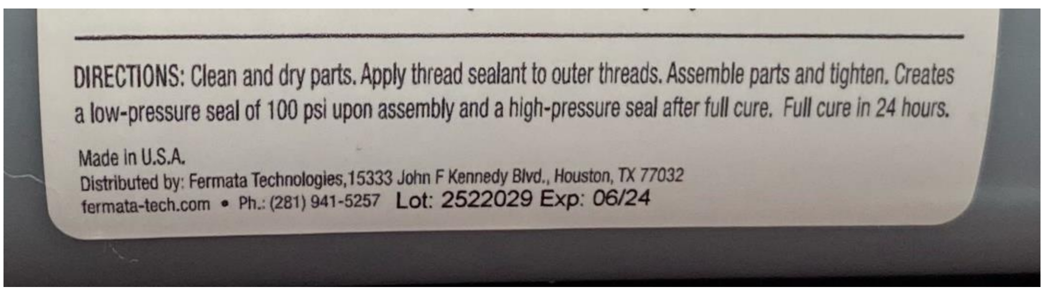

Figure 2: Example of Fermata® Constrictor® Advanced Thread Sealant Label Expiration Date

2.2 The amount of applied thread compound will depend on the size and weight configuration of the connection.

2.3 Using a measuring device, apply the amount of thread compound or sealant specified in Table 1 to the coupling box threads and seal area. Adjust thread compound or sealant amount by up to 2mL as needed to achieve comparable application to that in Figure 3. DO NOT apply thread compound or sealant on the pin connection. Under certain circumstances dope application may be altered only if approved by Fermata® engineering.

Table 1: Constrictor® Advanced Thread Sealant Amount

OD (inches)	Volume (mL)
3-1/2”	1.25
4-1/2”	3
5”	3.5
5-1/2”	5
7	5
7-5/8”	6.25
8-5/8”	6.25
9-5/8”	7.5

2.4 The use of a fine brush (mustache or 1in paint brush) is recommended to best control the application of thread compound. The brush should be free of any water. Water that is on the brush, connection or in the running compound bucket must be completely removed before applying the compound. Apply a light coat of thread compound to the coupling box threads and seal area.

Figure 3: Example of Proper Thread Compound Application of the Box Connection

2.5 Ensure to not overapply thread compound. When using a measuring spoon, level the spoon by scraping the top with a flat edge if the volume increment is equivalent to the spoon (example: if 5mL is specified in the running procedure and a 5mL spoon is used for measuring, level the spoon). Use the applicator brush to clean out the spoon and spread the compound evenly across all threads. Do not apply any compound past the base of the make-up indicator.

2.6 Excessive thread compound can cause dope squeeze and/or yielding on a connection. If dope squeeze or yielding is observed, reduce the amount of thread compound. It is recommended to start with a reduction of 30%. Ensure that the connection still maintains light, full coverage. The following figures (Figures 4 & 5) are 2 unacceptable graphs due to excessive compound.

Figure 4: Yielding

Figure 5: Dope Squeeze

3. Connection Compatibility

3.1 Bushmaster® GT pins have limited compatibility with differing weights with the same OD. Careful consideration of the performance properties of the weakest connection must be made by the operator. Confirm specific weight compatibility with a Fermata® representative prior to running.

4. Connection Make-Up

4.1 Fermata® recommends targeting the optimum make-up torque listed on the current connection data sheet. Any make-up torque between the minimum and maximum make-up torque is acceptable, but the optimum make-up torque is ideal for most conditions and common equipment. Add 10% to all specified make-up torque values when using thread locking compound. A Constrictor® lock point must be visible for proper make-up. See Figure 7.

4.2 Spin in the connection in high gear at Revolutions Per Minute (RPM) at or below that listed in Table 2.

4.3 Move to low gear prior to the Constrictor® lock point and keep the RPM at or below that listed in Table 2.

4.4 The following (Table 2) is the recommended maximum make-up RPM.

Table 2

Pipe Diameter	High Gear not to exceed	Low Gear not to exceed
< 5-1/2”	20 RPMs	5 RPMs
7” to 7-5/8”	15 RPMs	5 RPMs
>7-5/8”	7 RPMs	3 RPMs

4.5 Secondary verification of Bushmaster® GT connection make-up can be made by checking that the base of the triangle is aligned within +/-.100 of the box face. See Figure 6.

Figure 6: Example of Proper Triangle Stamp Position After Make-Up

4.6 A 1” wide X 4” long white paint stripe is applied to the mill and 1” wide X 24” long field end to aid in locating the triangle stamp.

4.7 The Constrictor® Lock Point is the point on the graph where the torque-turn slope begins to change from curved too linear. It is required to be between 5% and 80% of makeup torque. See Figure 7.

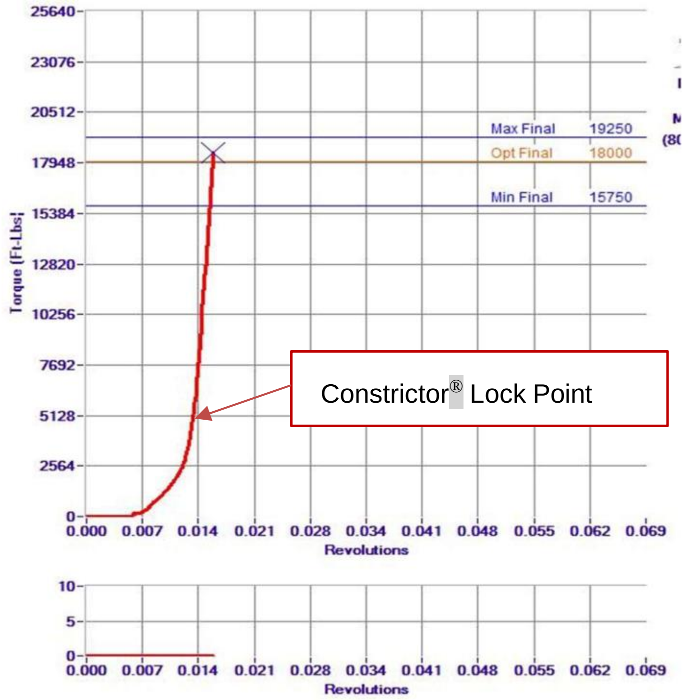

Figure 7: Example of Proper Make-Up Graph

4.8 Figures 8 and 9 are examples of unacceptable graphs where too much thread compound was applied.

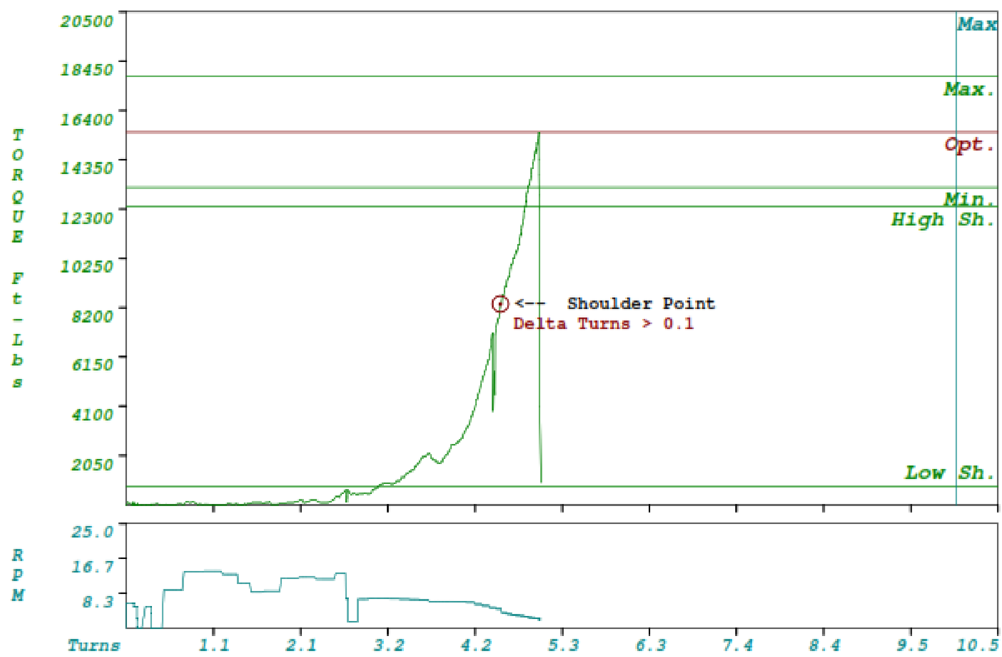

Figure 8: Unacceptable Make-Up Graph Example 1

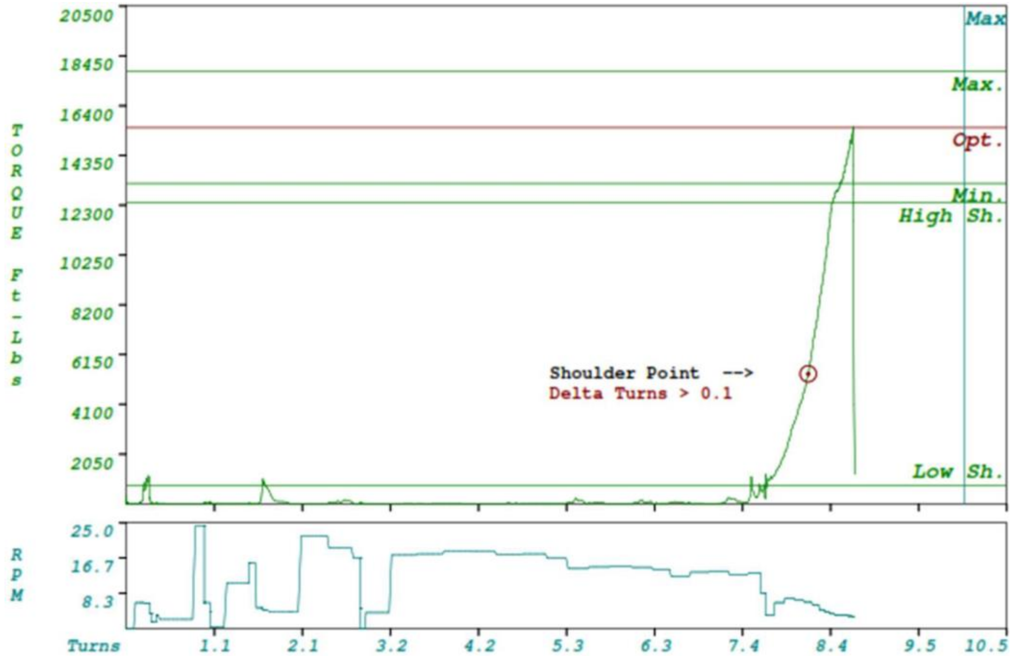

Figure 9: Unacceptable Make-Up Graph Example 2

5. Downhole Rotation

5.1 The maximum operating torque listed on the current connection data sheet is the maximum torque for downhole rotation unless reviewed and approved by engineering. Speed should not exceed 40 RPM. RPM's and operating torque can be evaluated and adjusted on a case-by-case basis, if approved by the engineering group.

5.2 Take care to gradually increase or decrease rotation speed and torque to prevent potential dynamic loading scenarios.

6. Break out & Inspection of Connection

6.1 Verify back-up tongs are equipped with the appropriately sized dies prior to break-out.

6.2 Place the back-up tongs on the pipe body below the threaded area of the box.

6.3 Break-out the connection in low gear to ensure adequate torque capability.

6.4 Keep break-out speed low to prevent galling (preferably 5 RPM or less)

6.5 Break-out slowly until the pin "jumps", indicating disengagement.

6.6 Use a stabbing guide prior to disengagement to prevent damage to the connection.

6.7 Alignment is equally important during break-out as during make-up. Verify alignment prior to break-out.

6.8 If re-running, fully break-out the connection, remove all thread compound and debris, inspect, and follow the make-up procedure. If laying down, apply storage compound and thread protectors free of grime and debris.

7. Marking Instructions

7.1 All used, rejected, repairable, and/or prime pipe left at rig locations will be identified, tagged and categorized based on the chart shown in Figure 10, and must be submitted to Field Service Management as soon as possible via email.

Summary of Pipe left on Rig Location

Customer: ____________________ **Rig:** _______ **Well Name:** __________________________

String 1	String 2	
________	________	**Prime Joints**, conduct VTI leave insructions to apply storage compound prior to having thread protectors placed back on. (Joints that never left the pipe rack)
________	________	**Rig Returns**, identified by **1 White band** near mill end & **1 Yellow band** at repairable end / area. (Joints that were made up never went below the rig floor, broken out, laid down, and passed VTI.)
________	________	**Used Pipe**, identified by a **1 Orange band** 6 inches each side of the defect, damage, or made up end and near the mill end. (Joints failed VTI or went below rig floor.)
________	________	**Rejected Pipe**, identified by a **1 Red band** 6 inches each side of the defect, damage, or made up end and near the mill end. (Joints rejected with signs of galling, pitting, or other damage.)

Figure 10: Pipe Classification Summary Example