Running Procedure for Cobra® SP Connection

Procedure No: FT-RP-005

Rev: 05

Approvals

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Revision Control

Rev	Description of Changes	Date
00	Issued for use	03/18/2021
01	Section 2, Figure 4 & 5	09/21/2021
02	Section 2, Table 1, Section 4	12/01/2022
03	Revised to reflect updated best practice procedures verified via testing	06/12/2023
04	Revised to update thread compound application & make-up procedure	09/11/2024
05	Revised to include additional casing diameters on Tables 1 & 2	01/28/2025

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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 Fermata® Constrictor® Advanced Thread Sealant for all sizes on the pin connection.

Figure 1: Fermata® Constrictor® Advanced Thread Sealant

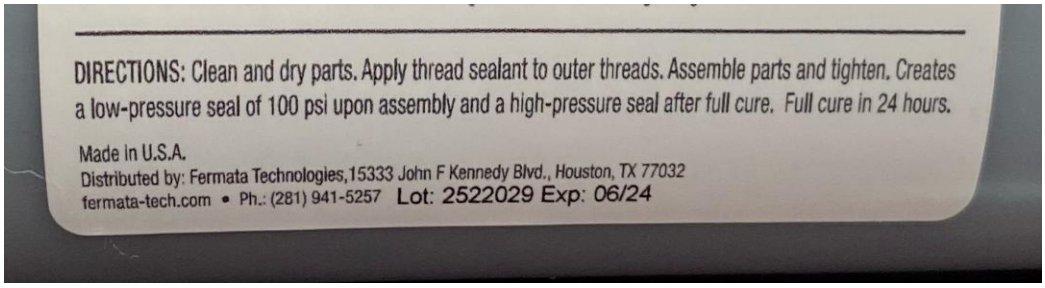

Figure 2: Example of Fermata® Constrictor® Advanced Thread Sealant Label Expiration Date

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 sealant specified in Table 1 to the pin threads. Adjust thread compound amount by up to 2 mL as needed to achieve comparable application to that in Figure 3. DO NOT apply any thread compound on the box 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”	2.5
4-1/2”	3
5”	3.5
5-1/2”	4
7	5
7-5/8”	6.25
8-5/8”	6.25
9-5/8”	7.5
10-3/4”	9
18-5/8”	17

2.4 The use of a fine bristle mustache or 1” paint brush is recommended to best control the application of thread sealant. The brush should be clean and free of any water. Water that is on the brush or connection must be completely removed before the application of sealant. As the thread compound brush becomes more saturated with compound, less is required to achieve full coverage compared to when the brush was new.

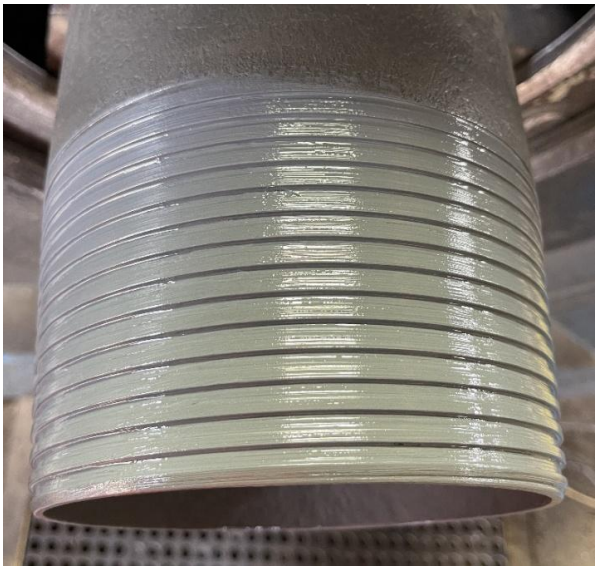

Figure 3: Example of Proper Thread Compound Application of the Pin Connection

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 are 2 unacceptable graphs due to excessive compound.

Figure 4: Dope Squeeze

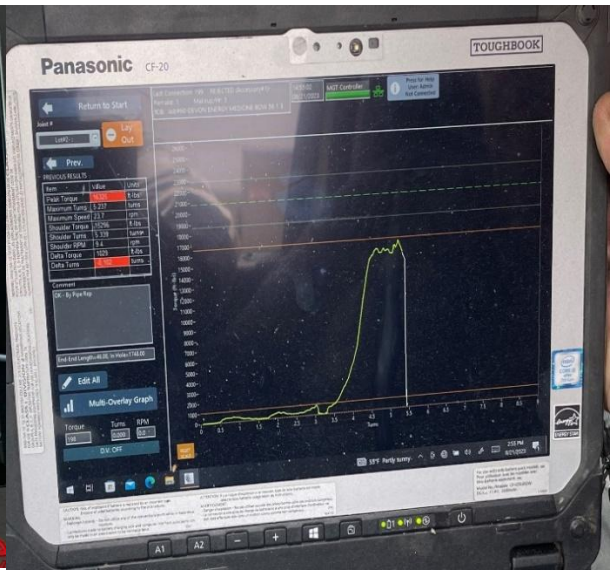

Figure 5: Dope Squeeze

2.7 Due to thread compound transfer between the thread and the thread protector, re-distribute the thread compound on the pin threads before stabbing into the box end, to ensure even thread compound coverage of the connection after removing the pin end thread protector.

3. Connection Compatibility

3.1 Cobra® SP does **NOT** have compatibility with differing weights within the same OD.

4. Connection Make-Up

4.1 Fermata® recommends setting the scale (X axis) of the make-up graph to 5-8 turns to obtain a proper make-up profile.

4.2 An encoder should be used and not a proximity switch for counting rotations. Generally, proximity switches do not provide adequate pulses per revolution. A 500 pulse per revolution should be the minimal pulses referenced per turn.

4.3 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 a thread locking compound.

4.4 For casing sizes larger than 13-3/8", the use of a single-joint compensator to aid in the lifting of the casing to minimize the risk of thread galling and cross-threading during stabbing, make-up and break-out of the connection is highly recommended.

4.5 Before the first connection make-up, set the dump valve to the optimum torque, and test on the pipe body to ensure proper tong engagement and that the pipe integrity is not compromised.

4.6 Make-up the first connection to the optimum torque, draw a line across the pin and box, and re-apply the optimum torque (double bump).

4.7 If movement past 0.5" is observed, reapply optimum torque +20% (This may exceed maximum make-up torque, but is acceptable, provided no yielding is observed and the tongs are not compromising the pipe body).

4.8 Repeat 4.5 to 4.6.

4.9 Movement is an indication of excess thread compound. If observed, review the amount of thread compound applied and reduce the amount.

4.10 Continue making up the string to the higher torque value, if necessary.

4.11 Spin in the connection in high gear at Revolutions Per Minute (RPM) at or below that listed in Table 2. A maximum of 3 turns per revolution are recommended to prevent a false lock point while running in high gear.

4.12 Move to low gear prior to the Constrictor® lock point (see Figure 6) and keep the RPM at or below that listed in Table 2.

4.13 RPM may occasionally be adjusted based on makeup profile if approved by Fermata® Field Service Management or Engineering.

4.14 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
4-1/2" to 5-1/2"	20 RPMs	5 RPMs
7" to 7-5/8"	15 RPMs	5 RPMs
8-5/8" – 10-3/4"	10 RPMs	3 RPMs
13-3/8" & Higher	5 RPMs	3 RPMs

4.15 Verify the make-up result against the torque-turn graph to ensure that there were no abnormal make-up scenarios that could affect the make-up and performance of the connection.

4.16 The Constrictor® Lock Point is the point on the graph where the torque-turn slope begins to change from curved to linear. It is required to be between 5% and 80% of makeup torque. See Figure 6.

4.17 Once the Constrictor® Lock Point is achieved, the graph should continue a linear profile with no decrease in slope. See figures 7 and 8 for examples of unacceptable graphs where a decrease in slope is observed after the Constrictor® Lock Point.

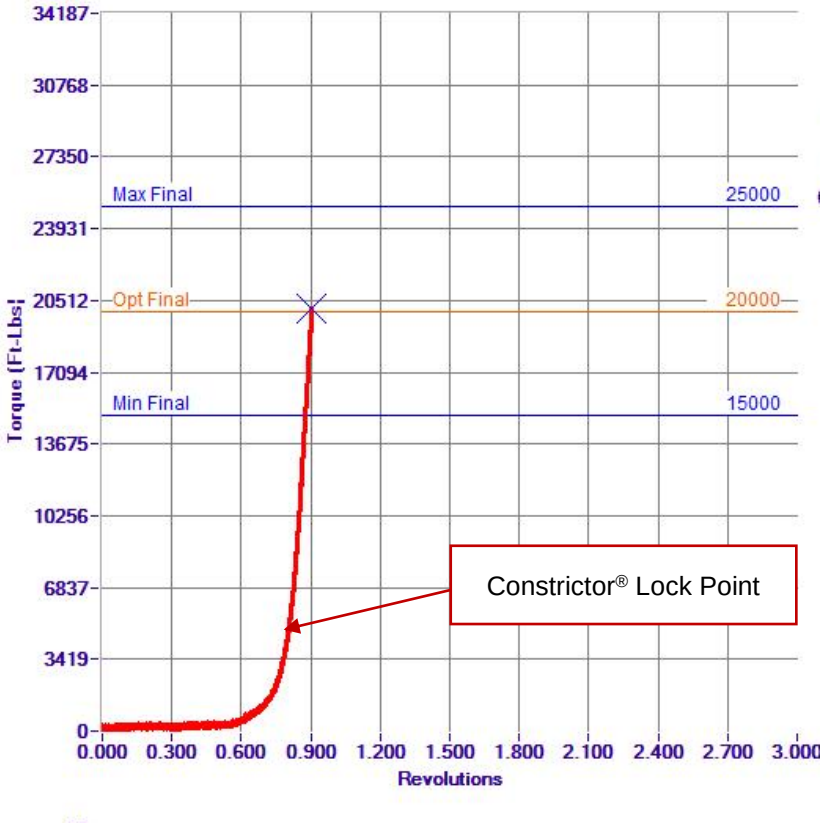

Figure 6: Example of a Proper Make-up Graph

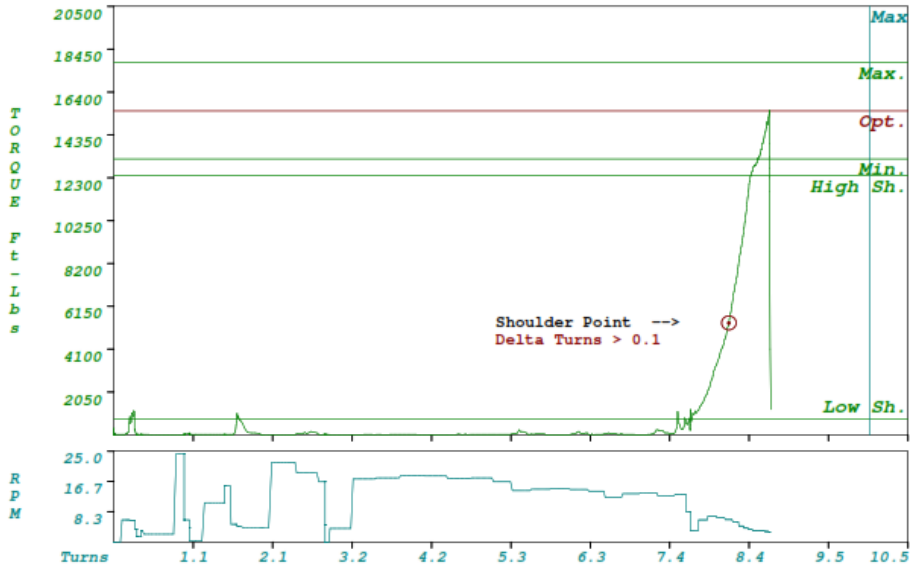

Figure 7: Unacceptable Make-Up Graph Example 1

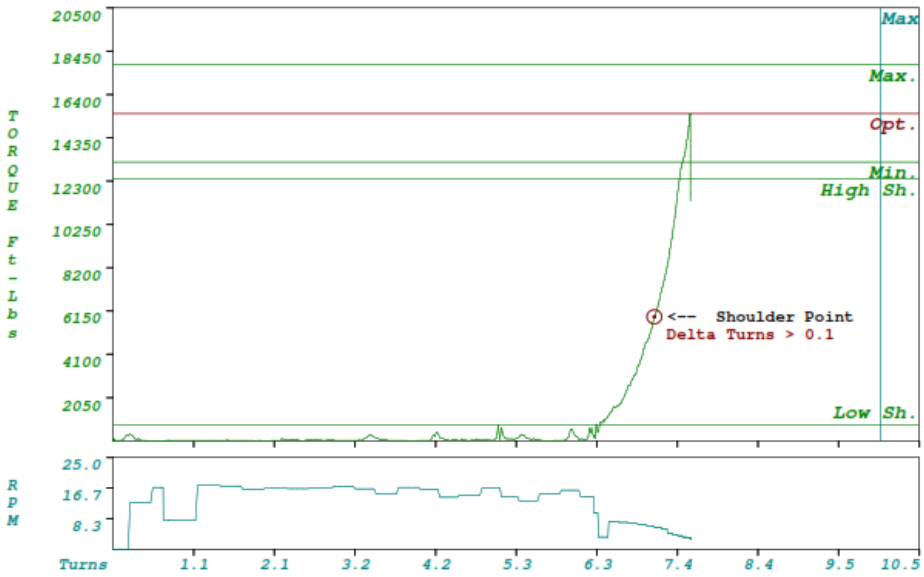

Figure 8: Unacceptable Make-Up Graph Example 2

4.18 Secondary verification of proper Cobra® SP connection make-up can be made by checking that the base of the triangle is aligned within ±.062" of the box face as shown in Figure 9.
A 1" wide x 24" long white paint stripe is applied to the field (Pin) end to aid in locating the triangle stamp location.

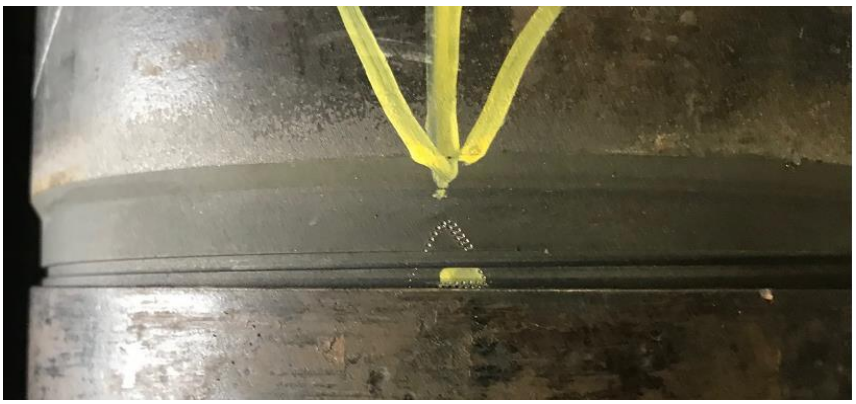

Figure 9: Example of Proper Triangle Stamp Position After Make-Up

5. Downhole Rotation

5.1 The maximum operating torque listed on the latest revision of the connection data sheet is the maximum torque allowed for downhole rotation, unless reviewed and approved by Fermata® Engineering. The speed should not exceed 40 RPM.

5.2 RPM's and operating torque may be evaluated and adjusted on a case-by-case basis, if approved by Fermata® Engineering.

5.3 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 the back-up tongs are equipped with the appropriately sized dies prior to break-out of the connection.

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 the connection 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 the connection break-out as during make-up. Verify alignment prior to break-out of the connection.

6.8 If it is necessary to re-run the connection, make sure to fully break-out the connection, remove all thread compound and debris, inspect the connection for damage (galling/gouging), and follow the make-up procedure outlined in Section 4.

6.9 When necessary to lay down the string, the connection must be stored and covered with an approved storage compound and covered with the proper sized thread protectors. Ensure that the thread protectors are clean and free of grime, debris and foreign contaminants.

6.10 Properly mark the joints in accordance with the rig repair / rejection report (Figure 10) and notify your immediate supervisor if joints were laid down.

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