Running Procedure for Rattler® Connection

Procedure No: FT-RP-001

Rev: 02

Approvals

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Revision Control

Rev	Description of Changes	Date Issued
00	Issued for use	10/28/2020
01	Marking requirement	03/04/2021
02	Revision to updated Rattler® & Fermata®; Updated company logo	08/10/2023

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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 BOL 2000, BOL 72733, or API Modified. Ensure thread compound is properly mixed prior to using. Thread compound shall be in good condition without any debris or contaminants.

2.2 The use of a fine bristle mustache or 1" 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 threads in the coupling only. Leave the last ¼" bare (See Figure 2). When applying thread compound ensure the mill end pin is made up to the center of the coupling to prevent a low or high shoulder torque.

2.3 Under certain circumstances dope application may be altered only if approved by Fermata® engineering.

Figure 1: Correct way to apply thread compound.

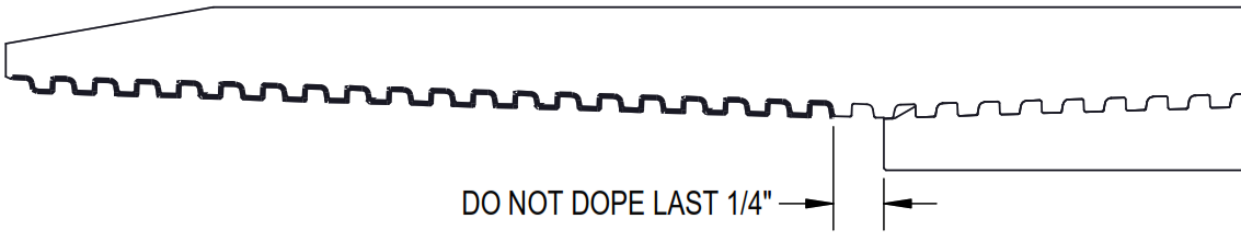

Figure 2: Correct way to apply thread compound.

Figure 3: Do NOT apply thread compound to Rattler® Pins.

3. Compatibility

3.1 Rattler® has limited compatibility with API BTC and differing weights within the same OD. Careful consideration of the performance properties of the weakest connection must be made by the operator. Table 1 describes the make-up and performance criteria:

Pin End	Box End	Makeup Criteria	Performance
Rattler®	Rattler®	Rattler®	Rattler®
Rattler®	API BTC	API BTC	API BTC*
API BTC	Rattler®	Rattler®	API BTC*

(*) The string may retain Rattler® performance if the API BTC connection is limited to accessories at the toe of the string and thread lock compound is used (ex: float equipment). Accessories threaded to API BTC used higher in the string (ex: air lock sub) will limit the string to API BTC performance.

Table 1

4. 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 torque shoulder must be visible for proper make-up.

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

4.3 Switch to low gear prior to shouldering and keep the RPM's at or below that listed in Table 2

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

Pipe Diameter	High Gear not to exceed	Low Gear not to exceed
4-1/2" to 5-1/2"	40 RPMs	15 RPMs
7" to 7-5/8"	20 RMPs	10 RPMs
9-5/8" and greater	15 RPMs	7 RPMs

Table 2

4.5 The shoulder torque is the point in which the pin noses make contact. This is indicated by a dramatic spike in the torque-turn graph and shall be clearly visible at a minimum of 5% of make-up torque and at a maximum of 90% of make-up torque. If the shoulder torque is outside of these specifications, break out and inspect the pin and coupling.

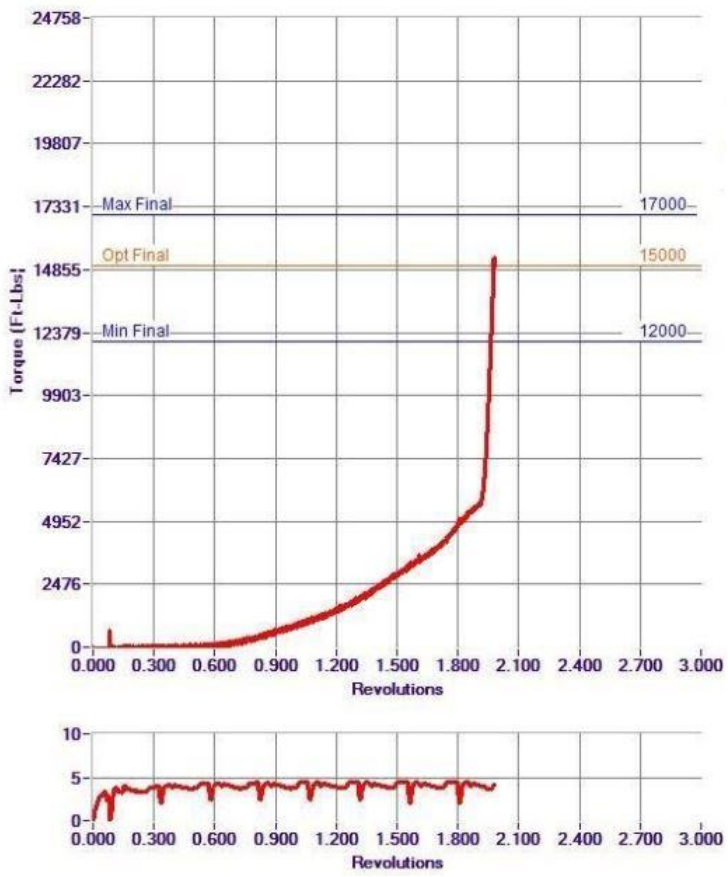

Figure 4: Correct make-up graph

4.6 If torque-turn monitoring is not used for make-up, verify the coupling face is at the base of the triangle stamp ±1/16” after applying make-up torque. See Figure 5.

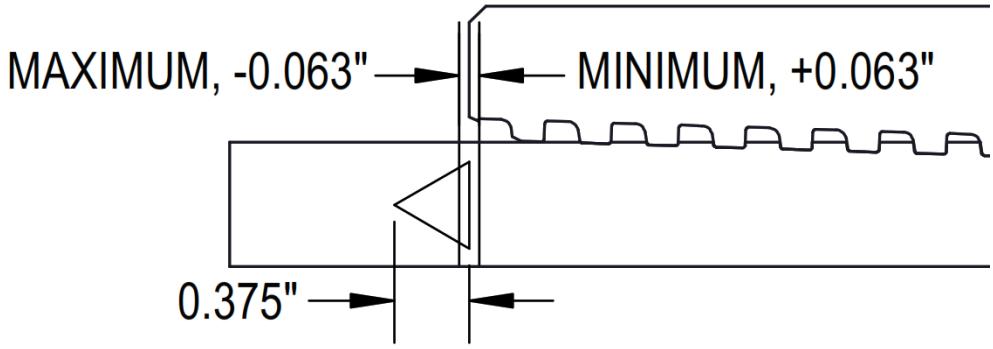

Figure 5: Triangle Stamp Criteria

5. Downhole Rotation

5.1 The maximum operating torque listed on the current connection data sheet is the maximum torque for downhole rotation. Speed should not exceed 40 RPM.

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

6. Break out and 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 lower half of the coupling and not on the pipe body for threaded & coupled connections to ensure breaking out the field end pin.

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 on rig locations will be identified into a classification based on the below chart 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 6: Pipe classification summary