Running Procedure for Ares™ Connection

Procedure No: FT-RP-014

Rev: 01

Approvals

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Revision Control

Rev	Description of Changes	Date Issued
00	Issued for use	01/25/2022
01	Revised to reflect updated best practice procedures verified via testing	7/12/2023

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1. General Running Procedure

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

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 The thread sealant will need to be measured ensure the proper amount of sealant is applied to the connection, to lightly coat the root and crest of the pin connection. Refer to Table 1 for the required thread sealant mass in accordance with the size and weight configuration.

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 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.

2.5 Under certain circumstances, the thread sealant brand and application process may be altered, only if approved by Fermata® Engineering.

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

2.6 Ensure to not overapply thread compound. When using a measuring spoon to measure the thread compound amount, level the spoon by scraping the top of the spoon 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.

2.7 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 maintains light and full coverage. The following figures (Figures 4 & 5) are two unacceptable graphs due to excessive compound.

Figure 4: Yielding

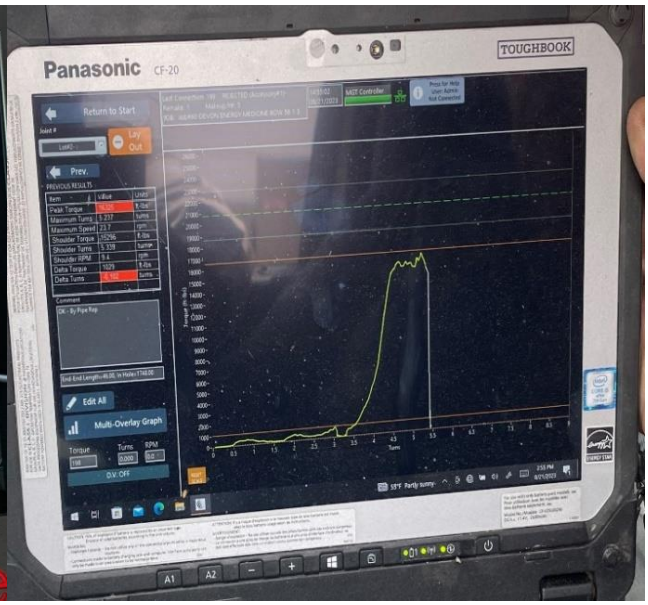

Figure 5: Dope Squeeze

3. Connection Compatibility

3.1 Ares™ 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.

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

4.5 Move to low gear before the shoulder torque interference appears in the torque turn graph and after proper engagement has been confirmed and keep the RPM at or below that listed in Table 2.

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

4.7 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
9-5/8” and greater	10 RPMs	3 RPMs

4.8 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.

4.9 A torque shoulder must be visible for proper make-up. See Figure 6.

4.10 The shoulder torque is the point in which the pin nose contacts the box shoulder. This is indicated by a dramatic spike in the torque-turn graph and shall be clearly visible at a minimum of 500 ft-lbf make-up torque and at a maximum of 80% of make-up torque.

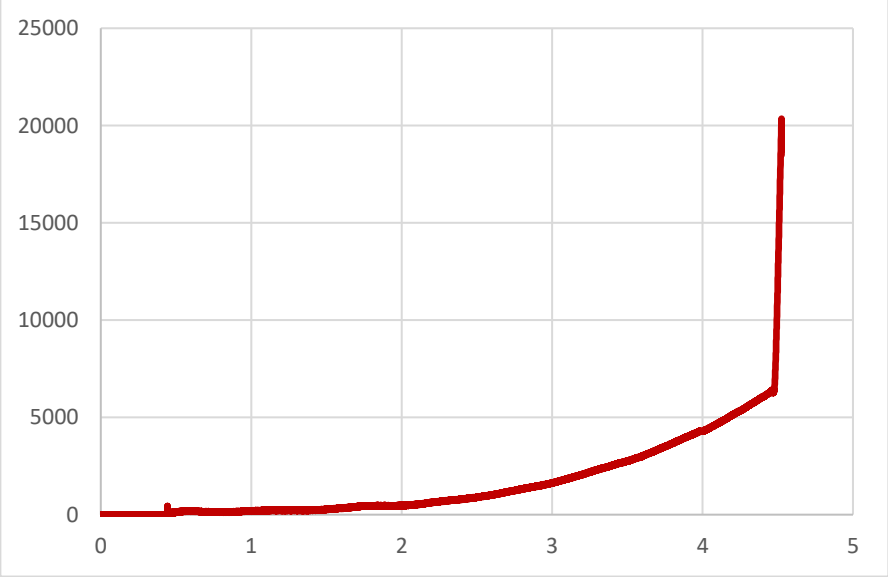

Figure 6: Example of a Proper Make-up Graph

4.11 If the shoulder torque is outside of these specifications, break out and inspect the pin and box. A large torque increase prior to shouldering may indicate a problem in make-up such as cross threading. A medium torque increase more than three turns from shouldering may indicate a problem in make-up such as galling.

4.12 The external shoulder point of the pin should be fully seated with the box face.

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 and 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 the 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 7) and notify your immediate supervisor if joints were laid down.

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 chart shown in Figure 7, 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 7: Pipe Classification Summary Example