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Based on the TorqTables.Rev34.2012-02-14.xlsx design spreadsheet

Document created by the 40009J-MLT.MUPProcedure.xlsm spreadsheet

Volant Multi Lobe Torque Ring Field Make-Up Procedure

Torsion application

Ring: (9.625 - 53.5 lb/ft) BT & C L80

Casing: (9.625 - 53.5 lb/ft) BT & C L80

Purpose:

The purpose of this procedure is to provide supplemental information to general API guidelines for the make up of API connections with Multi Lobe Torque (MLT) Rings installed.

Definitions

Shoulder torque is the torque at which pin tip first contacts the MLT ring. At the shoulder point, the torque gauge will jump up sharply without a corresponding increase in tong speed.

Delta torque is the torque applied in addition to shoulder torque. Delta torque equals final torque minus shoulder torque. Delta torque is located in the torque value chart

Make up torque

Expected minimum shoulder torque: 9890 ft·lb

**Maximum delta torque: 39561 ft·lb (*with* computer torque monitoring)

29671 ft·lb (*without* computer torque monitoring see note)

Initial Target torque (1st 10 joints): Min. API + Max Delta (*with* computer torque monitoring) = 49451 ft·lb

Min API + Max Delta (*without* computer torque monitoring) = 39561 ft·lb

Final Torque:

Min Shoulder Torque from first 10 joints observed + Max Delta

**Note:

If computer torque monitoring and control is NOT being utilized, only use 75% of the MLT Ring delta torque. Delta torque is selected in accordance to the weakest connection component.



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Running Procedure:

- Remove protectors and visually inspect the pin and box threads for damage.
- Ensure the connections are clean and free of debris
- Do a visual inspection checking for thread damage and ensuring the MLT Ring is installed.
- Apply a thin even coat of API Modified thread compound to the coupling and pin threads
- Set the pressure relief valve, or dump valve, on the tong or top drive to relieve at the specified makeup torque (see below)
- **Apply the back up jaws to the mill end pipe during make up.**
- **Make up the first 10 joints as described below.**
- **Observe the shoulder torque for each connection and record. Final Torque for the remainder of the string will be determined by adding the max delta torque (39561 ft·lb) to the minimum connection shoulder torque of the first 10 Joints.**
If at any time during the first 10 joints a shoulder torque below the API minimum is observed (9890 ft·lb) the initial target torque must be reduced to this shoulder torque plus the delta torque.
- Make up the connection until initial target torque is reached unless more than 1/8 turn is observed after connection shouldering
- **Do not** exceed maximum delta torque as specified for the application and torque control limitation.
- **Ensure shoulder torque is greater than the minimum shoulder torque observed in the first 10 make ups.**
Make up speed at shoulder is not to exceed 15 RPM.
- Ensure all acceptance criteria are met (see table below).
- Should an individual connection appear NOT to shoulder, back off one turn and re-make the connection to target torque. If the connection still doesn't shoulder, torque can be increased by 50% of the delta torque for that connection only.



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Field Ring Installation

Thread the coupling on the mill end hand tight. Install a Red MLT Ring in the coupling by hand with the colour facing up. Float the connection make up not exceeding 10 RPM during make up. In the unlikely event that the shoulder torque is below minimum acceptable, remove the coupling, install a green MLT Ring in a new coupling and re-make.

Acceptance Criterion:	Corrective Action if criterion not met:
Connection must shoulder TO ...ensure availability of torque boost and protect J section from debris and erosion	<ol style="list-style-type: none"> 1. Back off one turn; 2. Re-make the connection. If it still doesn't shoulder increase the maximum applied torque by 50% of the delta torque 3. Re-check acceptance criteria.
Maximum delta torque must not be exceeded during make-up AND Connection rotation must not exceed 1/8 turn after shouldering TO ...avoid encroaching on drift diameter.	<ol style="list-style-type: none"> 1. Check that the connection is made up to position. The coupling face will be $\pm\frac{1}{2}$ pitch (0.10") from the base of the triangle) 2. If the connection is at position, run drift. If connection drifts and is at position, make-up is acceptable. 3. If drift is not met or connection is not at position, break out connection and inspect for visual damage, galling, etc. If undamaged, proceed to step four. Otherwise, lay down joints. 4. Drift the coupling and pin end. 5. If both pin and coupling drift, <ol style="list-style-type: none"> a) Change out the coupling and install a new MLT Ring. (See ring installation section) Make up the connections and run drift. If the connection still does not drift, lay out both joints. This rare occurrence indicates undesirable geometry and will compromise torsion capacity. b) If pin drifts and coupling does not, change out the coupling and install a new MLT Ring. (See ring installation section). c) If coupling drifts and pin does not, lay down pin and re-use the coupling and ring. 6. If similar damage is observed on the new part during the next make-up, lay down both joints. This also indicates an unfavourable geometry.