



Safety/Technical Bulletin			 Tesco Corporation 3993 W. Sam Houston Pkwy N., Suite 100 Houston, Texas.77043 Tel: 1-877-TESCO-77 (North America) Tel: (713) 359-7295 (International) www.tescocorp.com www.tescoparts.com
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250-HMIS-475 Quill Fatigue Crack			 TESCO [®] www.tescocorp.com www.tescoparts.com
250-HMIS-475 Quill Fatigue Crack			

ATTENTION ALL CUSTOMERS / RENTERS / USERS OF
250 HMIS 475 TOP DRIVES

**THIS BULLETIN CONTAINS IMPORTANT SAFETY AND TECHNICAL INFORMATION
CONCERNING POTENTIAL QUILL FATIGUE CRACKING**

BACKGROUND INFORMATION:

This Safety/Technical Bulletin supplements the previously issued Technical Bulletin (Ref: TB077) dated June 30, 2010, on the same subject matter (the "June Bulletin"). The June Bulletin alerted customers, renters and users to the possible occurrence of cracks in the load nut grooves on the quill of the 250 HMIS 475 Top Drive (the "Top Drive").

Since the issuance of the June Bulletin, TESCO has conducted ongoing analysis of the design and manufacture of the Top Drive and its component parts to isolate the root cause of the fatigue cracks identified in the June Bulletin. In the course of on-going investigations, the following observations have been made:

- Crack features exhibit characteristics common to bending-induced fatigue, suggesting:
 - mast-to-well-bore misalignment;
 - excessive combination of torque and hook load during drilling operations;
 - a combination of both above factors; and
 - other non-specific factors which induce bending.
- Metallurgical defects do not appear to be a contributing factor.
- Manufacturing defects do not appear to be a contributing factor.

To date there have been no reported instances of failure (dropping or separation) of the Top Drive quill due to fatigue cracking. Most cracks have been discovered during routine inspections and have been limited to surface cracks. However, in two instances, the cracks have been sufficiently deep as to allow fluid to leak from the quill bore.

Notwithstanding the fact there have been no reported safety incidents, the consequences of quill fatigue cracking pose significant risk, up to and including the possibility of dropped drill string, damage to the rig and risk of injury or death.

USE BEYOND LOAD CAPACITY:

As the industry continues to drill deeper and higher angle difficult wells, which we have noted in this inquiry to be occurring primarily in North America, drilling equipment is being pushed beyond its operating limits. During the investigation process, TESCO has learned that users may be operating the Top Drive beyond its intended load capabilities and inconsistent with TESCO's recommendations in the Maintenance Guide and Installation Guide issued with the Top Drive. The 250 Ton rated capacity of the Top Drive is based on static hoisting load through the load collar (i.e. in conventional casing running operations). TESCO rates the capacity of the rotary shouldered connection (NC40 pin) on the Top Drive as 209 tons (189.6 metric tons) and rates the dynamic load capacity of the Top Drive at 158 tons (143.3 metric tons) based on bearing life. TESCO is conducting additional testing to confirm the maximum capabilities.

The TESCO rating of 250 tons does not apply to drilling modes where additional stresses are present from drilling torque, fluid pressure and other loads, including bending due to misalignment. In instances where 5" drill pipe is being used, the increased stiffness of the drill pipe may exacerbate the effects of misalignment on the Top Drive and put additional stress on the quill. Consequently, special care must be taken to ensure safe operation of the Top Drive with 5" drill pipe.

IMMEDIATE ACTION REQUIRED:

TESCO recommends that immediate measures be taken by customers, renters and/or users of the Top Drive to ensure its safe operation including, but not limited to, monitoring for cracking, adhering to the above-stated load capacities and minimizing bending effects on the Top Drive.

TESCO specifically recommends that users of the Top Drive immediately implement the following precautions:

- Maintain inspection frequencies of the load nut groove **every 60 operating days** in accordance with the Top Drive Maintenance Guide and as updated in the June Bulletin. TESCO recommends that, similar to the threaded connection, a wet fluorescence magnetic particle inspection (WFMPI) be used for this area. Inspections should be performed by ASNT certified inspectors and inspections performed in accordance with ASME V, 1998, Sub-section A, Article 7 and Sub-section B, Article 25 or ASTM E709.
- Following rig up and during use, inspect the Top Drive to ensure that it is plumb with the well-bore and to ensure that there is no bowing or flexing of the tubular that could contribute to bending loads being applied to the Top Drive. TESCO recommends checking the alignment as part of the daily Top Drive inspections.
- Inspect the Top Drive load path following any extraordinary use, as advised in Chapter 3 of the Top Drive Maintenance Guide (excerpt below):

TOP DRIVE OWNER'S GUIDELINES

The integrity, performance, and safe operation of TESCO's top drives depend on sound maintenance and inspection of all load path, torque arrest system, and critical components. This chapter describes TESCO's **minimum** recommended inspection schedule, including the following:

- recommended reporting format for third party inspections
- recommended minimum inspection frequency for each load path, torque arrest system or critical component
- specific areas of concern for each component



Caution: In addition to the schedule suggested here, all load path, torque arrest system, and critical components must be inspected following rough drilling, excessive jarring, or any other exceptional circumstance that might increase fatigue failure.

- If 5" drill pipe is being used with the Top Drive, do not exceed the 209 ton (189.6 metric tons) capacity of the rotary shouldered connection (NC40 pin) on the Top Drive or the 158 ton (143.3 metric tons) dynamic load capacity of the Top Drive, as the increased stiffness of 5" drill pipe, exacerbated by misaligned well-bore operation, may put extra strain on the quill and cause fatigue cracking.

TESCO SUPPORT:

Where an inspection is performed and no cracks are found, drilling operations may continue with the existing quill in conformance with the inspections and precautions noted above.

Please follow the above **Immediate Action Required** to ensure the safe operation of the Top Drive in addition to the guidelines for the safe operation of the Top Drive contained in TESCO's Installation, Operation and Maintenance Guides. Any installation, operation or maintenance of the Top Drive inconsistent with the guidelines or the Required Actions specified herein will be at the sole risk and cost of the user.

If a fatigue crack is found, discontinue use of the Top Drive immediately and contact your local TESCO representative to assess the situation.