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**PRODUCT: TOP DRIVE**

**DATE: March 7, 2011**

**SUBJECT:** Broken bolts on Top Drives with “Bat Wing” style guide frames

**SERIAL NUMBERS:** 359, 370, 397, 394, 417, 420, 424, 425, 427, 429, 432, 437, 438, 452, 455, 464, 468, 469, 470, 475, 476, 479, 480, 482, 483, 488, 491, 493, 494, 496, 497, 508, 514, 519, 530, 532, 533, 553, 557, 565, 568, 571, 592, 594, 674, 738, 741, 742, 749, 752, 756, 761, 762, 763, 766, 768, 779, 818, 846, 869

**DISCUSSION:** There has been an incident where the bolts attaching the Guide Runner Frame to the Main Housing have been breaking. Examination has revealed that when the Guide Runner Frame is made up correctly against the Main Housing, it may not be made up flush against the legs of the Frame Base; thus gaps are noticed as seen in the pictures bellow. When the mating surfaces are not made up correctly against each other, the bolts may not share the load equally and the potential for the bolts to fail prematurely exists.



Breaking Bolts

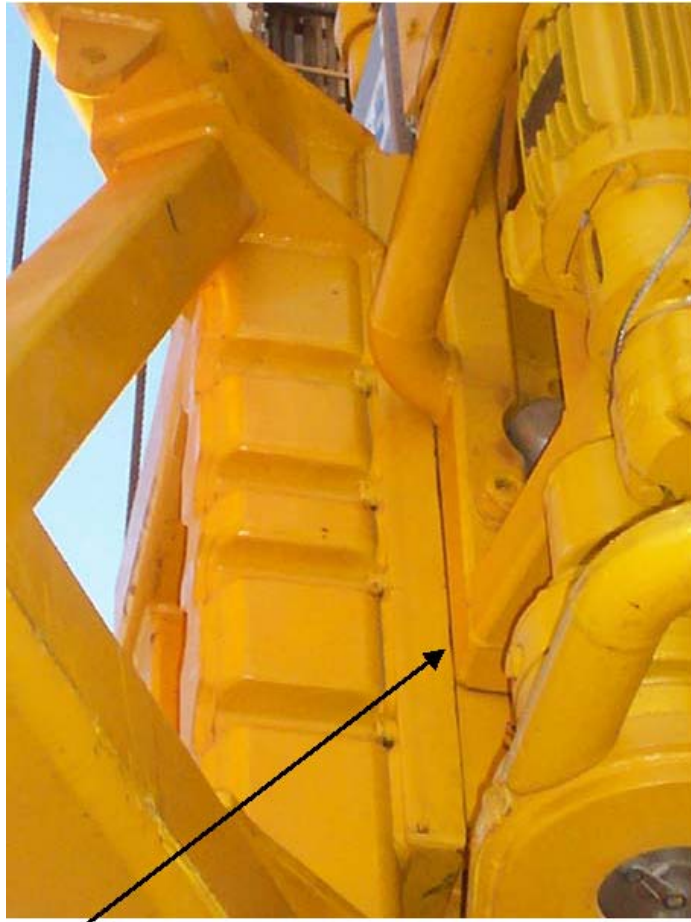


Gap between Frame  
Base Legs and Guide  
Runner Frame

Gap between the  
Frame Base and the  
Guide Runner Frame



ADD 1/4" SPACER  
BETWEEN BOLT  
HEAD & TOP  
DRIVE FRAME



Possible gap between Main Housing and Guide Runner Frame

Returned bolts were examined and it was determined that some of the bolts have bottomed out in the hole rather than at the shoulder. This could have happened only if the threaded holes in the main housing and/or in the Frame Base Legs were tapped short or the bolts were too long.



Signs of bolts bottoming out in the tapped holes of the Main Housing and/or the Frame Base Legs



# Engineering Bill of Material

**Part:** AY14510  
**Description:** KIT, SHIM, HSG TO RUNNER FRAME, M-RIGS

**Eng ID:** 1  
**Drawing ID:** NO DRAWING **Rev No:**

Item	Qty	Units	Part ID	Eng ID	Description
01A	4.00	EA	DT16732-015		SHIM, 0.015, CONN PLT TO MAIN HSG
01B	4.00	EA	DT16732-030		SHIM, 0.030, CONN PLT TO MAIN HSG
01C	4.00	EA	DT16732-060		SHIM, 0.060, CONN PLT TO MAIN HSG
02A	2.00	EA	DT16733-015		SHIM, 0.015, CONN PLT TO TD FRAME
02B	2.00	EA	DT16733-030		SHIM, 0.030, CONN PLT TO TD FRAME
02C	2.00	EA	DT16733-060		SHIM, 0.060, CONN PLT TO TD FRAME
03A	4.00	EA	DT16735-015		SHIM, 0.015, GUIDE FRAME TO TD FRAME
03B	4.00	EA	DT16735-030		SHIM, 0.030, GUIDE FRAME TO TD FRAME
03C	4.00	EA	DT16735-060		SHIM, 0.060, GUIDE FRAME TO TD FRAME
04	8.00	PAIR	LW-0625-NL		LOCKWASHER, 5/8 NORD-LOCK
05	16.00	PAIR	LW-0750-NL		LOCKWASHER, 3/4 NORD-LOCK
06	16.00	PAIR	LW-1000-NL-SP		LOCKWASHER, 1-SP, NORD-LOCK
07A	4.00	EA	DT30274-015		SHIM, WASHER, 0.015, 5/8" BOLT
07B	4.00	EA	DT30274-030		SHIM, WASHER, 0.030, 5/8" BOLT
07C	4.00	EA	DT30274-060		SHIM, WASHER, 0.060, 5/8" BOLT
08A	4.00	EA	DT30275-015		SHIM, WASHER, 0.015, 3/4" BOLT
08B	4.00	EA	DT30275-030		SHIM, WASHER, 0.030, 3/4" BOLT
08C	4.00	EA	DT30275-060		SHIM, WASHER, 0.060, 3/4" BOLT
09A	4.00	EA	DT30276-015		SHIM, WASHER, 0.015, 1" BOLT
09B	4.00	EA	DT30276-030		SHIM, WASHER, 0.030, 1" BOLT
09C	4.00	EA	DT30276-060		SHIM, WASHER, 0.060, 1" BOLT

## RECOMMENDATION:

To eliminate the bolt breakage, inspect, shim if necessary and replace flat washers with Nordlock washers as outlined in the procedure below:

1 To ensure that the bolts (5/8" and 3/4") connecting the Guide Runner Frame to the Main Housing and the Frame Base are not bottoming on the inside of threaded holes, remove the bolts (one by one) and check the tapped depths for the 3/4" and 5/8" holes and ensure they have a minimum of 0.875" and 1.25" respectively. If the tapped depth is too shallow, a shim may be added between the main housing and the guide runner frame. (Note that Nordlock washers require 20% more torque.)

2 To correctly adjust the Guide Runner Frame to the Main Housing and the top drive Frame Base, use a feeler gage to determine if there are any gaps between the mating surfaces. If there are gaps, make a note as to where they are and how big they are. If no gaps were found then replace all the existing washers with the Nordlock washers provided, tighten the bolts to their recommended torques and skip the rest of the procedure.

3 There are 3 size shims included for each connection point to the top drive. They are 0.015", 0.030" and 0.060". On each side of the top drive, there are 8 bolts that connect the housing to the Guide Runner Frame, 4 bolts that connect the Frame Base Legs to the Guide Runner Frame and in 2 spots 4 bolts that connect the top drive Frame Base to the Runner Frame.

4 Loosen all the bolts connecting the runner frame to the top drive but do not remove.

5 Start by adding shim between the housing and the Guide Runner Frame to take up any gap that was found between them in step 2. Replace the current washers with the Nordlock washers provided. Tighten these bolts to their recommended torques. 418 Ft-Lb for the 3/4" bolts and 238 Ft-Lb for the 5/8" bolts. (Torque values shown have already been increased by 20%.)

6 With the housing to the Guide Runner Frame now tight, recheck the gap between the top drive Frame Base Legs and the Guide Runner Frame. Add enough shim to fill this gap. Replace the current washers with the Nordlock washers provided. Tighten these bolts to their recommended torques.

7 Recheck the gap between the top drive Frame Base and the Guide Runner Frame on both ends. Add enough shim to fill this gap. Replace the current washers with the Nordlock washers provided. Tighten these 1.0" bolts to 1018 Ft-Lb. (Torque values shown have already been increased by 20%.)

8. After shim plates have been added (items 1-3 on AY14510\1) for proper spacing and tightened bolt, recheck bolts for proper fit. If daylight is noticed between mating surfaces at any bolt use item 7-9 (AY14510\1) washer shims to eliminate the gap and insure a tight fit.

A new kit AY14510 was created to include all the required shims and Nordlock Washers. See Attached.

Contact Canrig Field Service to schedule inspection and replacement.

**INFORMATION:** *For a complete list of all bulletins go to [www.canrig.com](http://www.canrig.com)*

For further information contact: Field Operations Manager Canrig Drilling Technology Ltd. 14703 FM 1488 Magnolia, Texas 77354 Phone: 281.259.8887 Fax: 281.259.8158

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**INFORMATION:**

For further information contact:

*For a complete list of all bulletins go to [www.canrig.com](http://www.canrig.com)*

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