

TOP DRIVE
PRODUCT BULLETINS



CANRIG TD PRODUCT BULLETIN MANUAL

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Printed in the United States of America.



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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 03

DATE:

SUBJECT: ALERT - Lockout Top Drive When Using Perforating Guns

SERIAL NUMBERS:

DISCUSSION:

RECOMMENDATION:

1. The purpose of this alert is to avoid accidents when handling explosive perforating tools on rigs fitted with Top Drilling Systems.
2. Recent studies have suggested that there is an extreme cause for concern when handling perforating tools while the Top Drive System is not electrically isolated.

Calculations indicate that electrical currents associated with an inactive, but not electrically isolated, Top Drive System may be capable of sufficient voltage to induce premature detonation of explosive devices.

3. Refer to operating instructions, Item 1, to lockout top drive.

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SAFETY ALERT

DATE:

SUBJECT: Top Drive Safety Alert

SERIAL NUMBERS:

DISCUSSION: Safe use of handler assembly.

RECOMMENDATION:

Avoid injuries or equipment damage when the handler assembly is rotated (deliberately or accidental) with the elevator links retracted or extended.

It is good practice to keep the handler locked whenever possible. The operator should verify pin engagement by trying to rotate the handler in one or both directions. If the handler rotates, the pin is not engaged. The handler may have to be rotated to align the pin with the lock holes.

Caution must be used when rotating the handler with the links (and elevators) retracted or extended. Over rotation may cause the links to come in contact with the torque guide, mast, other equipment or personnel.

Always ensure that the lock pin is engaged before using the back-up wrench gripper for make-up or breakout functions. Improper engagement could result in rapid rotation of the handler assembly.

After handler lock is activated, always try to rotate the handler to ensure it is locked.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 05

DATE: April 6, 1993

SUBJECT: Link Tilt

SERIAL NUMBERS: 002, 004,006, 007, 008, 010

DISCUSSION:

1. Link Tilt Maximum Extended Position

The link tilt is designed such that at the fully extended position, the elevators clear the racking board.

Canrig recommends that this clearance be verified at various handler orientations.

If there is insufficient clearance, position the link tilt clamps lower on the links. On average, move the clamps 1/8" inch lower on the links to increase the racking board clearance by 1 inch.

2. Link Tilt Overdrill Position (Retracted)

The fully retracted (overdrill) position is used for drilling as low as possible before connections and for handling tubulars for the mouse hole or V-door.

In the fully retracted position, the elevators reach well beyond the racking board. However, the above operations requiring significant retractions are normally done at or near the floor. **In order to avoid interference of the links and elevators on the racking board, we recommend that significant retraction of the link tilt only be used with the top drive near the floor.** A small amount of link tilt retraction can be used to clear the elevators from the pipe when drilling.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 06

DATE: April 6, 1993

SUBJECT: Handler Rotate and Handler Lock

SERIAL NUMBERS: 002-010

DISCUSSION:

1. To avoid injury to personnel, do not use the Handler Rotate with the links tilted significantly of center.
2. To avoid inadvertent rotation of the pipe handler, keep the handler LOCKED while drilling. Visually verify the lock pin engagement.
3. To avoid in advertent rotation of the pipe handler, always LOCK the handler when using the back-up wrench. Visually verify the lock pin engagement.
4. Under most circumstances, the handler can remain LOCKED except while being repositioned. An exception is in allowing the drill string to rotate when hoisting spiral stabilizers in tight hole. Extra caution should be exercised at any time that the handler is unlocked.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 07

DATE: May 17, 1993

SUBJECT: Air Duct Connection Clamp

SERIAL NUMBERS: 002, 003, 004, 006, 007, 008

DISCUSSION:

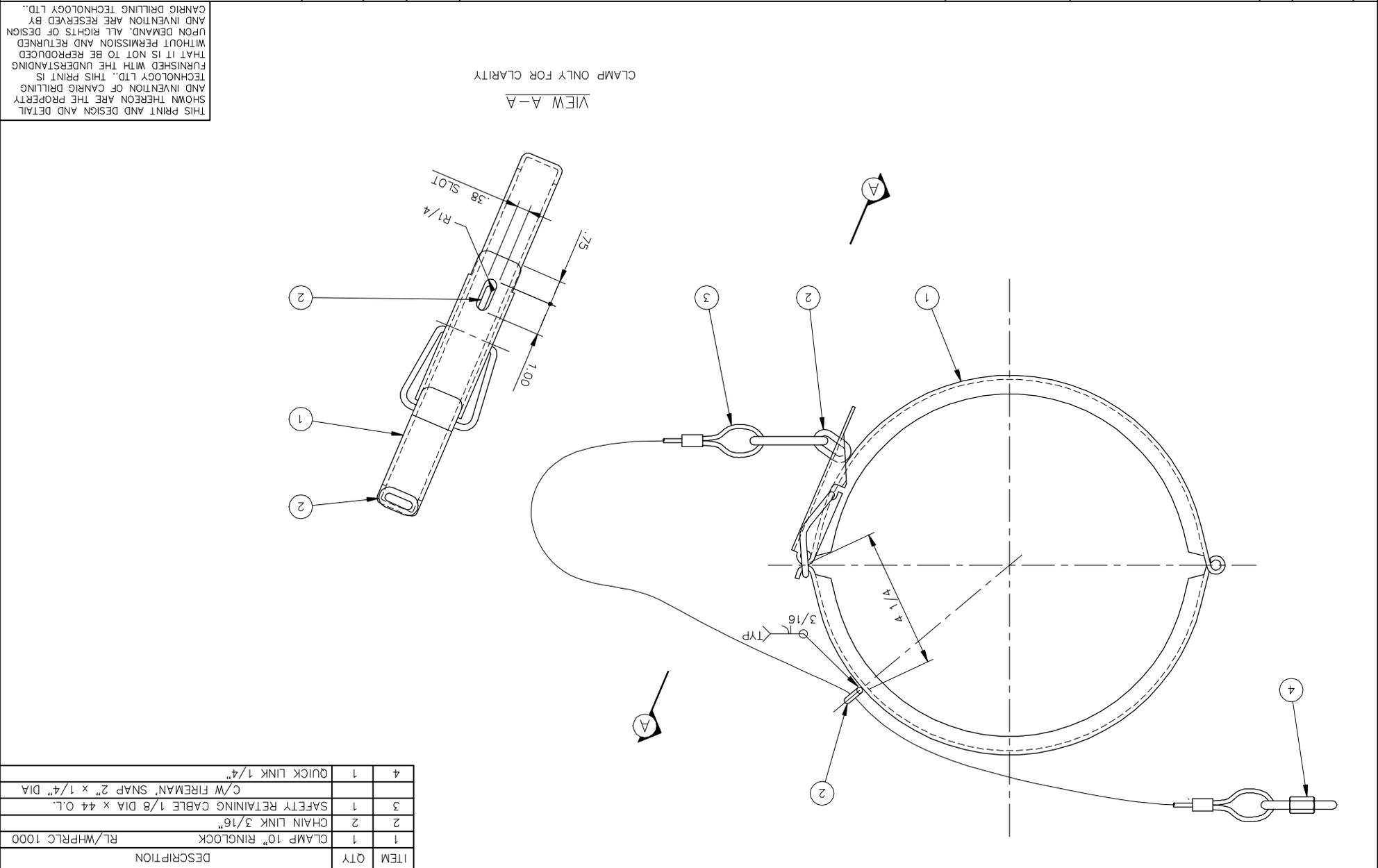
1. The air duct quick connect clamp rings have normally been safety wired to prevent inadvertent opening and falling. A new safety cable arrangement has been developed for improved retention to the clamp- See attached Assembly No.C-3-787-15-0 or C-3-696-16-0. New clamp and safety cables are being shipped to each of the subject units.
2. While awaiting delivery of the new style clamp, please ensure that the quick connect clamp on the air duct is safety wired.
3. A safety cable should also be used to retain the air duct to the top drive unit. See attached Assembly Drawing No. C-2-787-01-3 or C-2-696-01-3.
4. **It is important that both the duct and clamp ring be retained for safety.**

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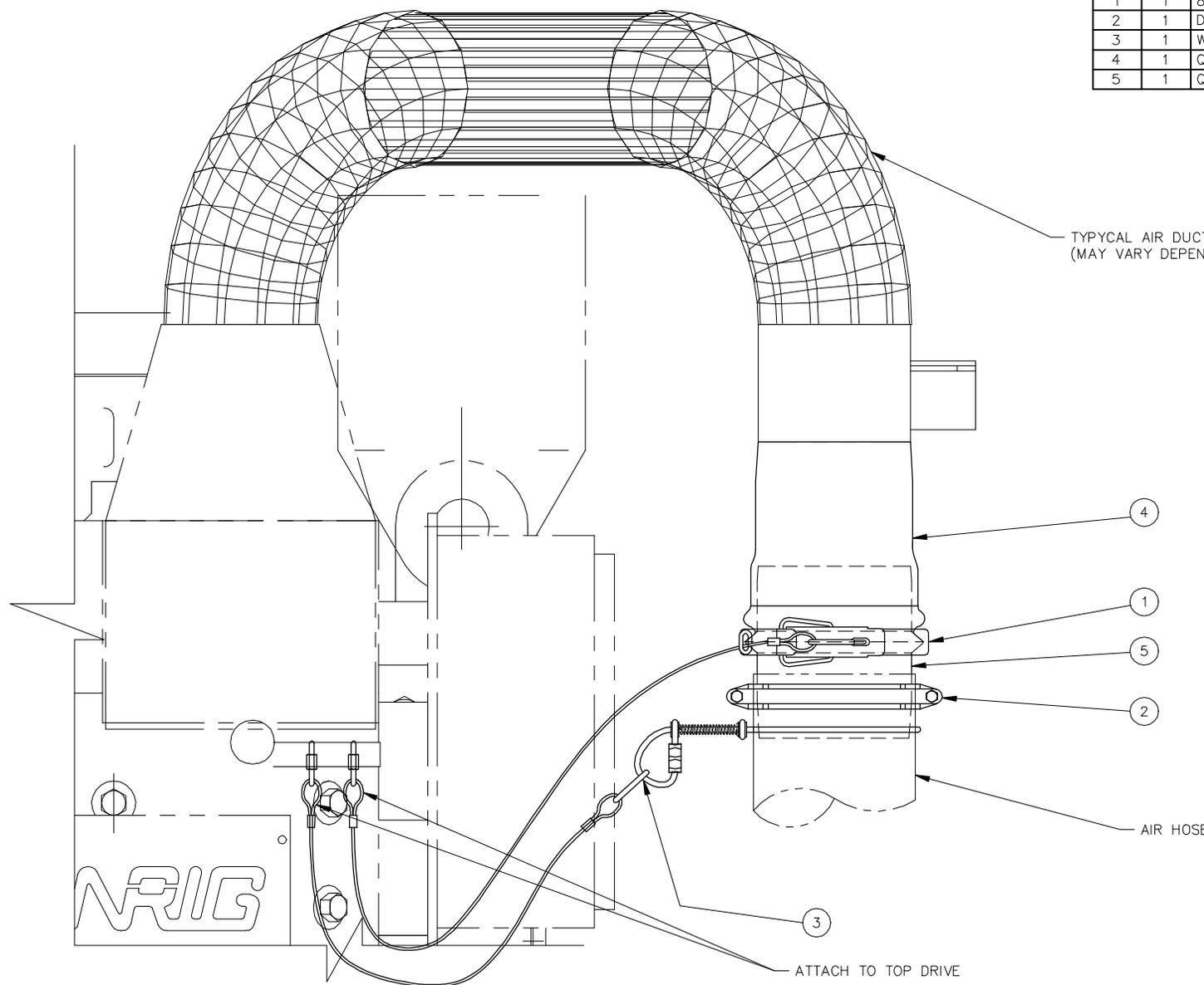
No.	Y/M/D	BY	REVISION	REFERENCE DWGS	MACHINED SURFACES 125 Φ TRUE POSITION ±.005 LI PARALLELISM ±.010 IN 5 INCHES ±.010 IN 5 INCHES ① STRAIGHTNESS ±.005 IN 5 INCHES ② CONCENTRICITY ±.005 TIR ± 1/16	REMOVE SHARP CORNERS AND BURRS CASTING ± 1/16	FABRICATING	FRACTIONAL 0 TO 24 ± 1/16 > 24 ± 1/8	DECIMAL 0 TO 24 ± .030 > 24 ± .015	ANGULAR ± 2.° ± .12 > 24 ± .06 > 24 ± .12	ANGULAR ± 1.° ± .005 > 24 ± .015 > 24 ± .030	ESTI. WEIGHT SCALE 1:2	PROJECT AIR DUCT	C-3-696-16-0 REV
							MACHINING	CHECKED	APPR'D	MATERIAL	BY	Y/M/D	10" QUICK CONNECT CLAMP	
													CANRIG DRILLING TECHNOLOGY LTD.	



ITEM	QTY	DESCRIPTION
1	1	CLAMP 10" RINGLOCK RL/WHPRLC 1000
2	2	CHAIN LINK 3/16"
3	1	SAFETY RETAINING CABLE 1/8 DIA x 44 O.L.
		C/W FIREMAN SNAP 2" x 1/4" DIA
4	1	QUICK LINK 1/4"

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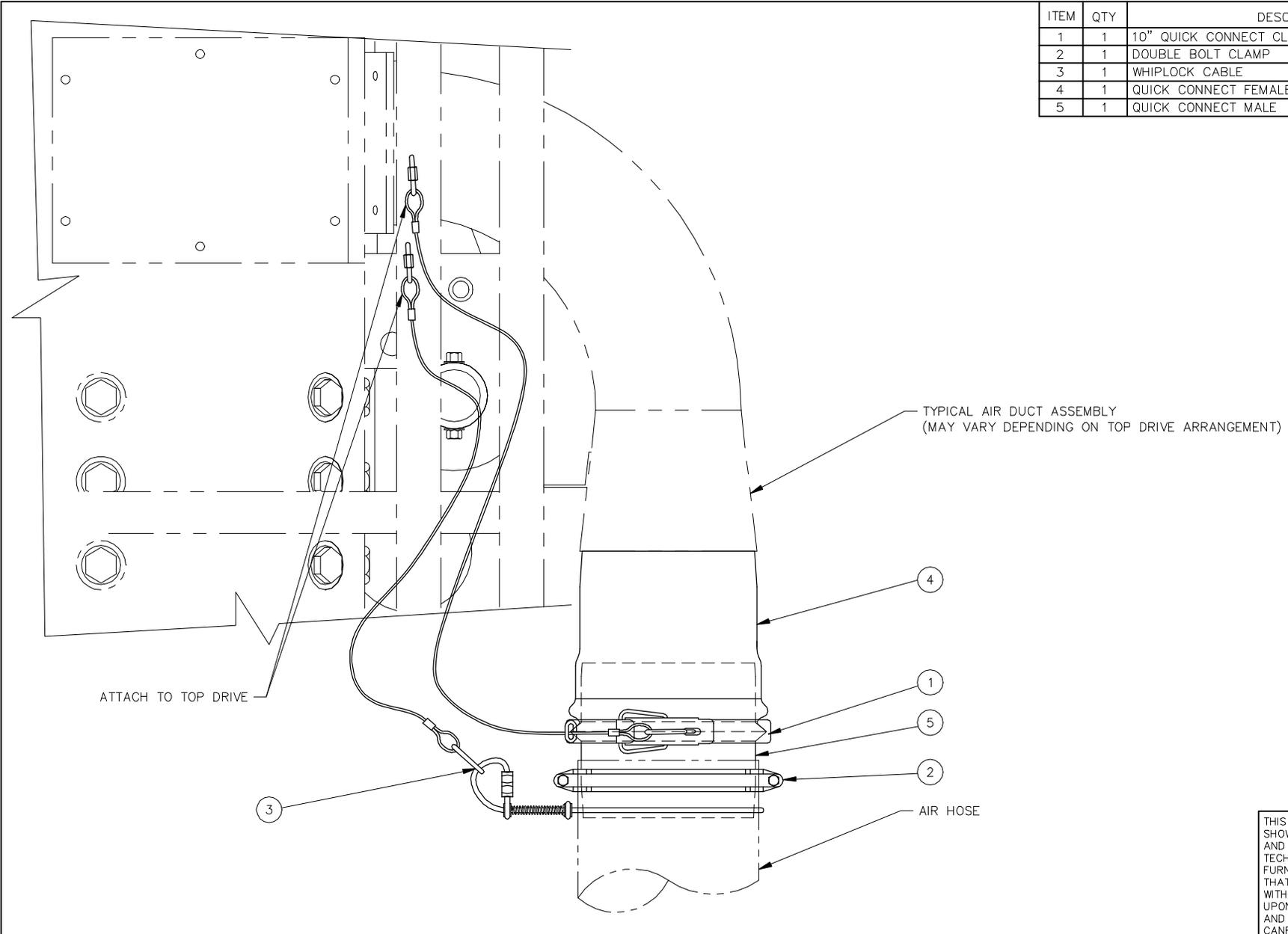
ITEM	QTY	DESCRIPTION
1	1	8" QUICK CONNECT CLAMP DWG #C-3-787-15-0
2	1	DOUBLE BOLT CLAMP PARKER 750-M-875
3	1	WHIPLOCK CABLE DWG #C-3-787-16-0
4	1	QUICK CONNECT FEMALE RL/SRL-F800
5	1	QUICK CONNECT MALE RL/SRL-M800



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TOLERANCE - UNLESS OTHERWISE SPECIFIED					DRAWN	D.P.	93/05/19	CANRIG DRILLING TECHNOLOGY LTD.	
REMOVE SHARP CORNERS AND BURRS					CHECKED				CANRIG DRILLING TECHNOLOGY LTD.
CASTING ± 1/16					APPRVD				
No.	Y/M/D	BY	REVISION	REFERENCE DWGS	MATERIAL			BY	Y/M/D
FRACTIONAL 0 TO 24 ± 1/16 > 24 ± 1/8 DECIMAL 0 TO 24 ± .06 > 24 ± .12 ANGULAR ± 2°					MACHINING FRACTIONAL ± 1/32 DECIMAL .x ± .030 .xx ± .015 .xxx ± .005 ANGULAR ± 1°			EST. WEIGHT	SCALE
STRAIGHTNESS ± .005 IN 5 INCHES SQUARENESS ± .010 IN 5 INCHES PARALLELISM ± .010 IN 5 INCHES TRUE POSITION .005 MACHINED SURFACES 125/					PROJECT C-2-787-01-3 REV			QUICK CONNECT ASSEMBLY 8" AIR DUCT	

ITEM	QTY	DESCRIPTION
1	1	10" QUICK CONNECT CLAMP DWG #C-3-696-16-0
2	1	DOUBLE BOLT CLAMP PARKER 750-M-1125
3	1	WHIPLOCK CABLE DWG #C-3-696-17-0
4	1	QUICK CONNECT FEMALE RL/SRL-F1000
5	1	QUICK CONNECT MALE RL/SRL-M1000



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TOLERANCE - UNLESS OTHERWISE SPECIFIED					DRAWN	D.P.	93/05/18	 CANRIG DRILLING TECHNOLOGY LTD.	
REMOVE SHARP CORNERS AND BURRS					CHECKED				QUICK CONNECT ASSEMBLY 10" AIR DUCT
CASTING ± 1/16					APPR'VD				
No.	Y/M/D	BY	REVISION	REFERENCE DWGS	MATERIAL BY Y/M/D				
FRACTIONAL MACHINING 0 TO 24 ± 1/16 FRACTIONAL ± 1/32 > 24 ± 1/8 DECIMAL .x ± .030 DECIMAL .xx ± .015 0 TO 24 ± .06 .xxx ± .005 > 24 ± .12 ANGULAR ± 1' ANGULAR ± 2'									



DATE: 6-18-93

SUBJECT: Pressure Adjustment of Link Tilt Cylinders

SERIAL NUMBERS: 007

DISCUSSION: We have discovered that the relief valve on the extended side of the link tilt cylinders may be set too high. The correct pressure setting is 600psi. The procedure for setting the pressure is as follows:

- i) Locate the test point stamped "E" on the rotary manifold (see drawing D-1682-01-1 in Section 5 of the Parts Book). Attach a P-Check gauge at this location.
- ii) With no load in the elevators completely extend the link tilt cylinders.
- iii) Observe the pressure of the gauge. It should read 600 psi while the switch is held in the extended position.
- iv) If the pressure setting is correct no further action is required. If the pressure is not correct continue with this procedure
- v) Locate the Link Tilt Float valve stack on the top drive. (See Parts Book drawing D-4-698-001-2 in Section 5 of the Parts Book) It is located on the off drillers end of the five valve bank (the middle bank).
- vi) The relief valve is the lowest valve on the stack. (i.e. adjacent to the manifold). It has an adjustment on each side, which is probably covered by a plastic cap.
- vii) Extend should be the adjustment on the forward side. Remove the plastic cap and loosen the 24mm locknut ½ turn while holding a 10mm wrench on the adjustment screw.
- viii) Have someone hold the link tilt switch in the extended position while the adjustment screw on the relief valve is slowly crewed out (counter clockwise). Count the number of turns the adjustment is unscrewed.
- ix) The pressure on the P-test gauge should begin to drop. If the pressure is not dropping after 3 turns on the adjustment screw, turn it back to its original position, tighten the locknut and adjust the opposite side of the relief valve instead.
- x) Reduce the pressure to 600psi. Tighten the locknut and re-check the pressure. REMEMBER TO HAVE THE LINK TILT SWITCH HELD IN THE EXTEND POSITION WHEN CHECKING OR ADJUSTING THIS PRESSURE.
- xi) To summarize, the extend relief setting should be 600 psi and the retract relief setting should be 2000 psi.

A revised schematic showing the correct pressure setting will be issued.

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DATE: June 18, 1993

SUBJECT: Top Drive Inspection Following Periods of Rough Drilling

SERIAL NUMBERS: 007, 008

DISCUSSION: The following inspection procedure is recommended after periods of rough drilling:

1. Perform a thorough visual examination of the top drive looking for any signs of damage.
2. Visually inspect the mud inlet piping.
3. Check all wire locked bolts for damage or broken wires. If broken wires are detected, check the affected bolts for tightness and rewire. Torque specifications are documented in Parts Book. Replace damaged wires.
4. Check all external bolts that are not wired for tightness. The following list is provided as a guide. (see table)
5. Check all guards, vents and covers for tightness.
6. Ensure that all safety cables are properly and securely attached.
7. Visually examine inside of junction box for loose components.

Description	Parts Book Drawing Reference	Check
4.1 Link Title upper support leg	D-1-689-01-1	6 bolts
4.2 Link Title Cylinder end caps	D-1-689-01-1	2 bolts
4.3 Bonnet	D-1-692-01-1	12 bolts
4.4 Upper Well Control Valve Actuator	D-1-692-01-1	2 bolts
4.5 Upper Bearing Seat	D-1-692-01-1	12 bolts
4.6 Gooseneck split ring	D-1-692-01-1	12 bolts
4.7 Gooseneck male half coupling	D-1-692-01-1	12 bolts
4.8 Top Drive guides		Visual
4.9 Lube Pump Assembly	D-1-694-01-1	4 bolts
4.10 Air Duct	D-1-696-01-1	4 bolts
4.11 Block Guide assembly	D-1-701-02-1	32 bolts
4.12 Top Drive guard	D-1-702-01-1	4 bolts
4.13 Torque Boost assembly	D-1-602-01-2	12 bolts + 2 bolts
4.14 Rotary Manifold lift	D-1-684-01-1	Visual
4.15 Back-up Wrench mounting	D-1-687-01-1	4 bolts
4.16 Back-up Wrench frame	D-1-687-01-1	
4.17 Handler Rotate	D-1-691-01-1	

RECOMMENDATION:

A. MONTHLY INSPECTION

1. Remove the saver sub and lower well control valve and inspect the connections (including the quill pin) using magnetic particle techniques according to API RP7G.
2. Pressure tests the circulating path from saver sub to the upper well control valve to 200psi and 5000 psi.
3. Visually inspect the following for hoisting integrity:
 - Bail (if applicable)
 - Upper links
 - Housing
 - Rotary manifold outer sleeve
 - Upper link support
 - Elevator links
 - Elevators (if applicable)
4. Visually check the top drive unit for loose bolts.

5. Check the drive motor according to the General Electric Publication, which is in the Component Literature (electrical) section of the top drive manual.
6. Visually inspect the electrical cables on the top drive unit.

NOTE: Items 3,4,5, & 6 from the above list should also be checked after operation for one day and one week on a new top drive installation.

B. INSPECTION EACH MOVE

1. Visually check the integrity of all of the torque guide turnbuckles, pins, spherical bushings and flange connection bolts. (if applicable).
2. Check for loose bolts and mountings for the blower, mast junction box, cable trays and hydraulic tubes.
3. Visually check the service loop.
4. Visually check the blower duct.

C. ANNUAL INSPECTION

1. Check the clearance in the main top drive bearings and re-shim if necessary according to the instructions in the manual.
2. Remove the drive motor and check the condition of the lower shaft seals (see Top Drive Drilling Motor Assembly). Replace the seals if necessary and ensure that the space between the seals is packed with grease. Also ensure that there is adequate grease in the bearing at this time.

D. INTERNAL INSPECTION

The following major inspection is recommended every 1000 working days or at alternate intervals which may be specified by regulatory authorities, operator policies or contractor policies:

1. Disassemble the top drive unit.
2. Inspect all of the following hoisting load path components using magnetic particle techniques:
 - Quill
 - Spindle
 - Support nut
 - Elevator links
 - Elevators (if applicable)
 - Upper link support
 - Rotary manifold outer sleeve
 - Housing
 - Upper links
 - Bail (if applicable)
 - Upper link pins (4)
3. Check all bearings, seals, and seal running surfaces, gears and splines. Refurbish as necessary.

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CANRIG DRILLING TECHNOLOGY LTD

CANRIG TOP DRIVE DRILLING SYSTEMS RECOMMENDED INSPECTION PROGRAM

A. MONTHLY INSPECTION

1. Remove the saver sub and lower well control valve and inspect the connections (including the quill pin) using magnetic particle techniques according to API RP7G.
2. Pressure test the circulating path from the saver sub to the upper well control valve to 200 psi and 5000 psi.
3. Visually inspect the following for hoisting integrity:
 - Bail (if applicable)
 - Upper links
 - Housing
 - Rotary manifold outer sleeve
 - Upper link support
 - Elevator links
 - Elevators (if applicable)
4. Visually check the top drive unit for loose bolts.
5. Check the drive motor according to the General Electric Publication which is in the Component Literature (electrical) section of the top drive manual.
6. Visually inspect the electrical cables on the top drive unit.

NOTE: Items 3,4,5, and 6 from the above list should also be checked after operation for one day and one week on a new top drive installation.

B. INSPECTION EACH RIG MOVE

1. Visually check the integrity of all of the torque guide turnbuckles, pins, spherical bushings and flange connection bolts. (If applicable)
2. Check for loose bolts and mountings for the blower, mast junction box, cable trays and hydraulic tubes.
3. Visually check the service loop.
4. Visually check the blower duct.

CANRIG DRILLING TECHNOLOGY LTD

C. ANNUAL INSPECTION

1. Check the clearance in the main top drive bearings and re-shim if necessary according to the instructions in the manual.
2. Remove the drive motor and check the condition of the lower shaft seals (see Top Drive Drilling Motor Assembly). Replace the seals if necessary and ensure that the space between the seals is packed with grease. Also ensure that there is adequate grease in the bearing at this time.

D. INTERNAL INSPECTION

The following major inspection is recommended every 1000 working days or at alternate intervals which may be specified by regulatory authorities, operator policies or contractor policies:

1. Disassemble the top drive unit.
2. Inspect all of the following hoisting load path components using magnetic particle techniques:
 - Quill
 - Spindle
 - Support nut
 - Elevator links
 - Elevators (if applicable)
 - Upper link support
 - Rotary manifold outer sleeve
 - Housing
 - Upper links
 - Bail (if applicable)
 - Upper link pins (4)
3. Check all bearings, seals, seal running surfaces, gears and splines. Refurbish as necessary.



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 10

DATE: July 13, 1993

SUBJECT: Torque Guide Connection Flanges

SERIAL NUMBERS: 007, 008

DISCUSSION:

The lowermost Torque Guide Connection flange (immediately above the transport skid section) may be subject to forward acting forces when pulling tubular up the Vee-door ramp. These forces may overstress the flange connection bolts,

*S/N 007 Item 7, Drawing D-1-780-20-0

*S/N 008-117 Item 5, Drawing D-1-781-20-0

*S/N 008-125 Item 6, Drawing D-1-782-20-0

* See parts manual.

RECOMMENDATION:

It is recommended that the bottom two connections be reinforced according to the attached modification, Drawing C-3-781-20-5.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 11

DATE: July 13, 1993

SUBJECT: Safety Retention of Torque Guide Flange Bolts

SERIAL NUMBERS: 002, 004, 007, 008

DISCUSSION: It is important that to prevent the subject bolts from falling should they loosen or break.

RECOMMENDATION: Drill and wire the subject bolts according to Drawing Number B-3-781-20-6.

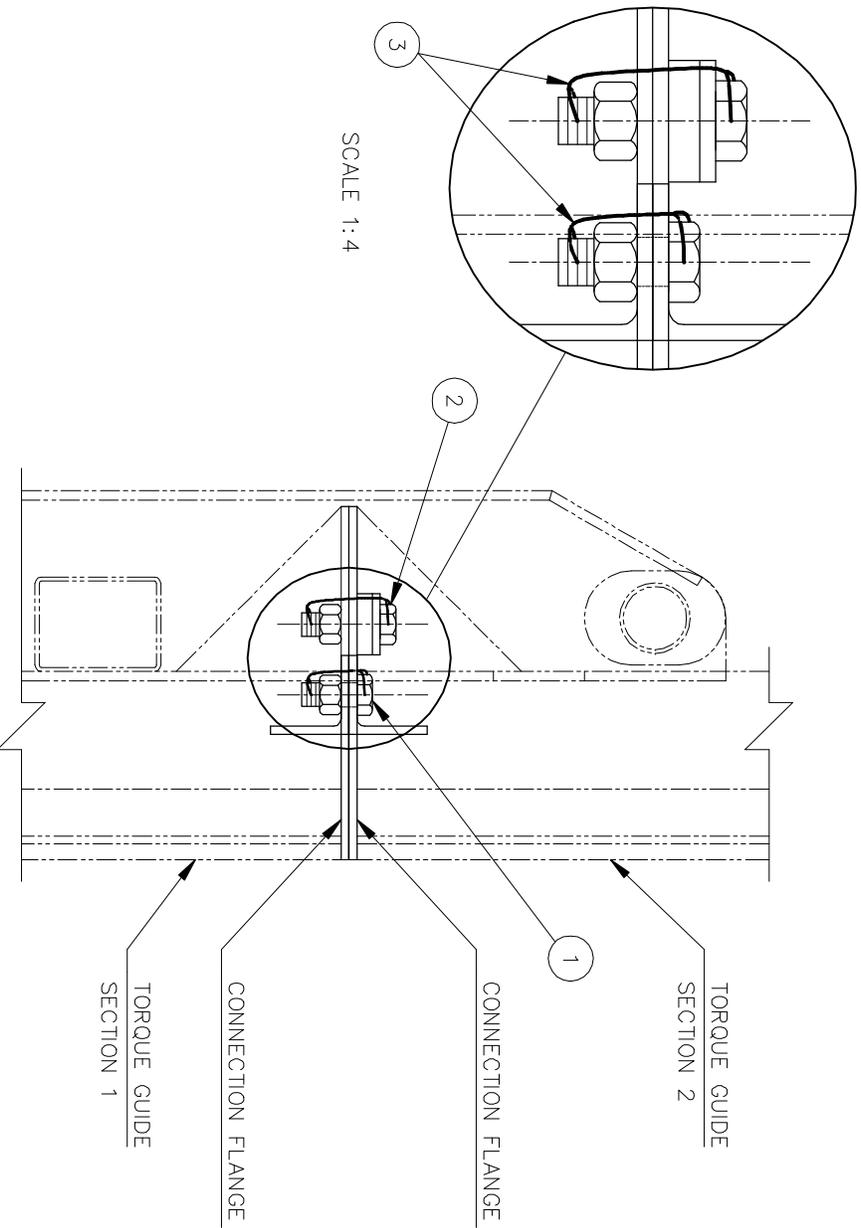
Drilled bolts are also available from Canrig order, Part Number B-3-781-20-7 & B-3-781-20-8.

INFORMATION :

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ITEM	QTY	DESCRIPTION
1	REF	CAPSCREW B-3-781-20-7
2	REF	CAPSCREW B-3-781-20-8
3	REF	LOCK WIRE 12 Ga.



DRILLERS SIDE VIEW

TOLERANCE - UNLESS OTHERWISE SPECIFIED

REMOVE SHARP CORNERS AND BURRS	FABRICATING	MACHINING
CASTING ± 1/16	FRACTIONAL ± 1/16	FRACTIONAL ± 1/32
CONCENTRICITY ± .005 TIR	DECIMAL 0 TO .24 ± .12	DECIMAL .x ± .030
STRAIGHTNESS ± .005 IN 5 INCHES	DECIMAL > .24 ± .06	.xx ± .015
SQUARENESS ± .010 IN 5 INCHES	DECIMAL 0 TO .24 ± .12	.xxx ± .005
TRUE POSITION ± .005	ANGULAR > 24 ± 2'	ANGULAR ± 1'
TRUE POSITION ± .005	ANGULAR > 24 ± 2'	ANGULAR ± 1'
MACHINED SURFACES 125/		

No.	Y/M/D	BY	REVISION	REFERENCE DWGS

DRAWN: 93/07/14

CHECKED	D.P.
APPRVD	
MATERIAL	
EST. WEIGHT	SCALE
	1:8

CAVRIG CANRIG DRILLING TECHNOLOGY LTD.

SAFETY RETENTION OF TORQUE GUIDE FLANGE BOLTS

PROJECT: B-3-781-20-6 REV

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 12

DATE: July 13, 1993

- SUBJECT:** Torque Guide Connection Flange Bolts
- SERIAL NUMBERS:** 007, 008
- DISCUSSION:** It is important that all of the subject bolts be properly tightened in order that they properly carry their design loads. This is especially important on the first connection where the forward forces when picking up tubular out of the Vee door necessitate proper load sharing between the bolts.
- RECOMMENDATION:**
1. Tighten the bolts to 1500 ft-lb at rig-up.
 2. Re-tighten the bolts at the first connection (immediately above the transport skid section) following any torque Guide alignment or mast leveling procedures.
 3. Check the tightness of the bolts in the first connection weekly.

INFORMATION :

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Fax: 281.259.8158



DATE: September 1, 1993

SUBJECT: Torque Guide Connection Flange Bolts

SERIAL NUMBERS: 007, 008

DISCUSSION: It is important that all of the subject bolts be properly tightened in order that they properly carry their design loads. This is especially important on the first connection where the forward forces when picking up tubular out of the Vee door necessitate proper load sharing between the bolts.

RECOMMENDATION:

1. Tighten the bolts to 1500 ft.lb at rig-up. *It is adequate to estimate this torque; a torque wrench should not be necessary*
2. Re-tighten the bolts at the first connection (immediately above the transport skid section) following any Torque Guide alignment changes or mast leveling procedures.
3. Check the tightness of the bolts in the first connection weekly.

INFORMATION :

For further information contact:

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DATE: July 3, 1993

SUBJECT: Alignment of the Mast, Torque Guide and Top Drive

SERIAL NUMBERS: 007, 008

DISCUSSION: Proper alignment of all components is essential for efficient and safe operation of the top drive system.

RECOMMENDATION: We recommend the following alignment procedures:

A. **Before mast raising:**

1. Before mast erection, check the centering of the Torque Guide with respect to the mast. Measurements taken to each side of the mast from the Torque Guide should be equal +/- 1/2 inch.

Adjust the turnbuckles **equal** amounts in **opposite** directions to correct any centering errors. For example, if the Torque Guide is too close to the driller's side at a particular mounting point, then extend the driller's side turnbuckle and retract the off-driller's side turnbuckle equal amounts.

2. Adjust the fore-aft position of the Torque Guide in the mast according to:

S/N 007	Drawing	Series D-1-780
S/N 008-117	Drawing	Series D-1-781
-125	Drawing	Series D-1-782

These drawing show theoretical fore-aft positions of the Torque Guide but some fine tuning is normally done at the time of Commissioning. Please measure the actual fore-aft dimensions, Mark them on the attached drawing and return to Canrig. We will issue a formal drawing with "as built" fore-aft dimensions which can be used to verify the correct Torque Guide position at subsequent Rig-ups.

When measuring the fore-aft position, measure at each side to the Guide and take the average.

The tolerance for the fore-aft position should be +/- 1/2 inch.

Correct the fore-aft position by adjusting the two turnbuckles **Equally** and in the **same** direction.

3. **Ignore the torsional position of the Torque Guide at this stage – the torsional position is not controlled by the turnbuckles.**
4. Visually check the straightness of the Torque Guide both in the side to side and fore-aft planes and make minor adjustment as required.
5. After initial commissioning, the Torque Guide Turnbuckles should never need to be re-adjusted.
6. It is recommended that the turnbuckles be wired to prevent accidental adjustment or movement due to drilling vibrations

B. With the mast up and the Top Drive installed:

1. Level the mast side-to-side and front to back so that a stand of drill pipe in the elevators hangs over well center.
2. Adjust the top drive guide runners until the quill is vertical and centered over the rotary table.
 - A.) Loosen clamping bolts (Item 5, Drawing D-1-694-01-1) 2 turns.
 - B.) Move the runners in the desired directions with the jacking nuts (Item 7, Drawing d-1-694-01-1).
 - C.) The runners should be approximately 1/8 inch loose on the track.
 - D.) Re-tighten the clamping bolts (Item 5, drawing D-1694-01-1) to 350 ft./lb.

The runners are independently adjustable at four points:

- Driller's Side Top DS Top
- Driller's Side Bottom DS Bottom
- Off-Driller's Side Top ODS Top
- Off-Driller's Side Bottom ODS Bottom

Move the runners in the following directions **with respect to the top drive** to correct the following errors:

	DS Top	DS Bottom	ODS Top	ODS Bottom
Top Drive leaning back at the top	Back	Forward	Back	Forward
Top Drive leaning forward at the top	Forward	Back	Forward	Back
Top Drive too far back	Back	Back	Back	Back
Top Drive too far forward	Forward	Forward	Forward	Forward
Top Drive off center toward the Driller's side	Back	Back	Forward	Forward
Top Drive off center toward the Off-Driller's side	Forward	Forward	Back	Back

The Top Drive should be able to cleanly stab into pipe set in the slips.

3. If the mast is re-leveled after rig-up, re-tighten the Torque Guide connection flange bolts at the first flange (immediately above the transport skid section).

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 14

DATE: July 8, 1993

SUBJECT: Block Guide disconnection for Mast Erection

SERIAL NUMBERS: 007, 008

DISCUSSION: The position of the mast raising line sheaves of the sides of the mast often results in a loading of the traveling block during mast erection significantly off well center. This loading could overstress the Toque Guide and its mounts if the block guides are attached.

RECOMMENDATION: Unless approval is obtained from Canrig, disconnect the block guides for mast raising.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 15

DATE: July 13, 1993

SUBJECT: Block Guides

SERIAL NUMBERS: 007, 008

DISCUSSION: The possibility of the block guides catching on a Torque Guide seam should be minimized and the block guides should be retained from falling should the bolts break or fall out.

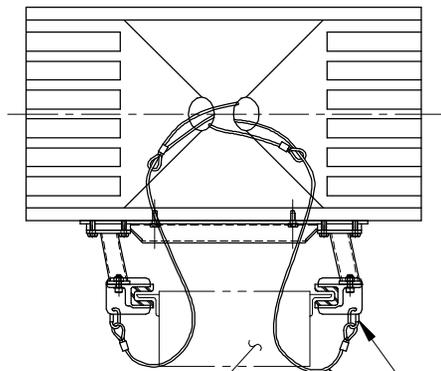
RECOMMENDATION:

1. We recommend that the urethane at the ends of the block guides be beveled according to Drawing C-3-701-10-0 (attached). A grinder or saw can be used for this purpose.
2. We recommend that safety chains be installed on the block guides in a manner similar to Drawing B-3-701-03-1 (attached).

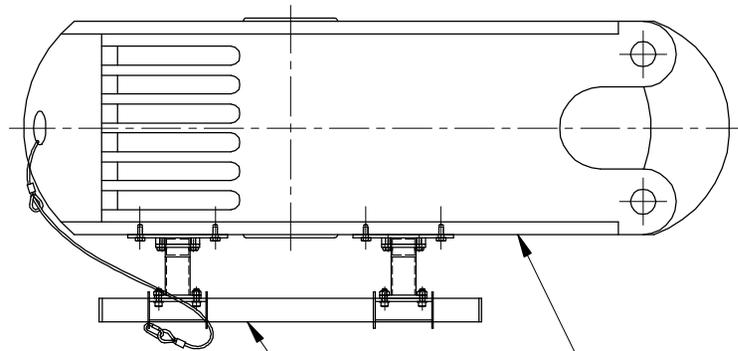
INFORMATION:

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TORQUE GUIDE



QUICK LINK

CABLE c/w THIMBLES

BLOCK GUIDE

TRAVELLING BLOCK

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					TOLERANCE - UNLESS OTHERWISE SPECIFIED			DRAWN	D.P.	93/08/04
					REMOVE SHARP CORNERS AND BURRS			CHECKED		
					CASTING ± 1/16	FABRICATING	MACHINING	APPR'VD		
					⊙ - CONCENTRICITY ±.005 TIR	FRACTIONAL	FRACTIONAL ± 1/32	MATERIAL	BY	Y/M/D
					— STRAIGHTNESS ±.005 IN 5 INCHES	0 TO 24 ± 1/16	DECIMAL .x ± .030			
					> 24 ± 1/8					
					⊥ - SQUARENESS ±.010 IN 5 INCHES	DECIMAL	.xx ± .015			
					- PARALLELISM ±.010 IN 5 INCHES	0 TO 24 ± .06	.xxx ± .005			
					⊕ - TRUE POSITION .005	> 24 ± .12	ANGULAR ± 1°	EST. WEIGHT	SCALE	PROJECT
No.	Y/M/D	BY	REVISION	REFERENCE DWGS	MACHINED SURFACES 125/	ANGULAR ± 2°			1:20	
										CANRIG DRILLING TECHNOLOGY LTD.
										SAFETY CABLE TOP DRIVE GUIDES
										B-3-701-03-1 REV



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 16

DATE: July 13, 1993

SUBJECT: LinkTilt Bracket Bolts

SERIAL NUMBERS: 007, 008

DISCUSSION: It is desirable to increase the safety and redundancy of the bolted connection of the Link Tilt Bracket (C-3-689-11-0 rev A) to the Link Support Casting (D-3-683-10-0 rev A)

RECOMMENDATION: 1. It is recommended that four $\frac{3}{4}$ " Dia. X 2" LG bolts be added according to the attached Drawing Number C-3-689-11-0 rev A.

This modification can be performed on a rig move using the following tools.

- A) Magnetic base drill
- B) 21/32 inch tap drill
- C) $\frac{3}{4}$ inch UNC tap
- D) 13/16 inch drill

2. The link tilt bolts should be checked for tightness according to the Inspection Program defined in the manual.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 17

DATE: July 13, 1993

SUBJECT: Safety Retention of Electrical Plugs

SERIAL NUMBERS: 002, 004, 006, 007, 008

DISCUSSION: It is necessary to prevent accidental disconnection of the electrical plugs where the service loop cables connect to the top drive unit.

RECOMMENDATION: It is recommended that safety retainers be installed on the subject plugs at all times. On the Camlok plugs on the power cable, use a small bolt to prevent the horseshoe pin from falling out. On the Pyle plugs, use a small wire through one of the holes provided in the retainer nut. Tie the wire so as to prevent the nut from loosening.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 18

DATE: June 29, 1993

SUBJECT: Pipe Handler Wireline Maintenance

SERIAL NUMBERS: 006

DISCUSSION: Proper inspection of all components is essential for efficient and safe operation of the Pipe Handler.

RECOMMENDATION:

1. Inspect the cable daily for breakage or fraying.
2. Keep the wireline clean and well lubricated. A lubricant containing molybdenum disulfide is recommended.
3. Inspect the attachment hardware at each end of the wireline looking for signs of wear.
4. Avoid loading of slack line and shock loads.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 19

DATE: August 4, 1993

SUBJECT: Gear and Bearing Lubrication Oil

SERIAL NUMBERS: All

DISCUSSION: Frequency of maintenance or replacement of lubrication oil may have to be increased in humid climates or when used with corrosive drilling fluids.

RECOMMENDATION: When operating a Canrig Top Drive unit in humid climates or when using corrosive drilling fluids (for example high brine content) visually check the lubrication oil on a weekly basis for water contamination. Samples should also be taken for a visual examination. If there is any doubt about the oil quality, it should be changed immediately. Oil should be changed as planned intervals of 30 days or 500 drilling hours or less as required.

Please refer to section 4 of the Parts and Service Manual for more information.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 20

DATE: October 6, 1993

SUBJECT: Handler Rotate Drive

SERIAL NUMBERS: 002 thru 010

DISCUSSION: Due to the varying hydraulic system operating pressures, the Handler Rotate Gear, Taper Bushing and Gear Reducer may be exposed to torque values higher than their working capacities.

RECOMMENDATION: It is recommended that a Pressure Reducing Valve be installed in the Handler Rotate Valve Stack and pressure be set at 1150 psi. This will allow all the components to operate in the proper torque range. Preset valves and stud kits will be issued by Canrig.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 21

DATE: October 25, 1993

- SUBJECT:** Top Drive inspection following periods of rough drilling.
- SERIAL NUMBERS:** 002,003,004,005,006,009,010,011
- DISCUSSION:** After periods of rough drilling, especially on surface hole, various top drive components can loosen due to vibration.
- RECOMMENDATION:** The following inspection procedure is recommended after periods of rough drilling:
1. Perform a thorough visual examination of the top drive looking for any signs of damage.
 2. Visually inspect the mud inlet piping.
 3. Check all wire locked bolts for damage or broken wires. If broken wires are detected, check the affected bolts for tightness and rewire. Torque specifications are documented in the Parts Book. Replace damaged wires.
 4. Check all external bolts that are not wired for tightness.
 5. Check all guards, vents and covers for tightness.
 6. Ensure that all safety cables are properly and securely attached.
 7. Visually examine inside of junction box for loose components.

INFORMATION:

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DATE: October 26, 1993

SUBJECT: Top Drive Maintenance

SERIAL NUMBERS: All

DISCUSSION: When doing maintenance or repairs to the Top Drive System, it is important to re-assemble parts to *manufactures specifications*.

RECOMMENDATION: When assembling any Top Drive components it is important that:

1. All capscrews be coated with Loctite 242 Threadlocker. This is a medium strength threadlocker that prevents rusting of threads and helps prevent loosening due to vibration. This threadlock can be sheared by normal hand tools.
2. All capscrews and bolts used on the Canrig Top Drives meet or exceed ASTM Gr. 8 specifications. These must be torqued to the values shown in the Parts Books or to the following values:

SIZE:	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
TORQUE(ft.lb)	11	40	99	198	350	566	848
TORQUE(N.m)	14.9	54.2	134	268	475	767	1150

It is recommended that tooth anti-vibration lock washers be used where possible.

3. When using capscrews with locknuts, use only Grade C Stover locknuts or equivalent. These can be identified visually by eight raised dots. These are reusable but after repeated removal and installation new nuts are recommended.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 23

DATE: November 10, 1993

SUBJECT: Top Drive Disc Brakes

SERIAL NUMBERS: All

DISCUSSION: Proper maintenance of brakes can greatly increase the life of components.

RECOMMENDATION: The brake fluid reservoir should be visually checked on a daily basis. A sudden drop in oil level may indicate worn components. Be sure to use a mineral base oil only in the brake system.

The brake calipers should be checked weekly. A function test should be done at this time. There should be a minimum gap of .06" between the brake pads and the disc. If the brake pads are dragging, the system may require bleeding to eliminate any trapped air. The brake actuator should be bled first, and then the brake calipers. With the brake on, loosen the bleed screw on the component until there is no sign of air mixed with the oil. Close the bleed screw. Cycle the brake off and on. Repeat the process until no air is visible in the system. In addition to premature wear, dragging brake pads can also cause excessive heat build-up in the brake compartment.

INFORMATION:

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DATE: December 23, 1993

SUBJECT: Top Drive Hydraulic Torque Boost

SERIAL NUMBERS: 003,006,007,008,009,010,011

REFERENCE: ECN #101

DISCUSSION: Under certain operating conditions it is possible to overstress the bottom torque boost bearing and cause premature failure.

- RECOMMENDATION:**
1. All top drive units with a dual pilot-to-open check valve on the Torque Boost clutch hydraulic valve bank should be changed to a single pilot-to-open check valve on the disengage port of the Torque Boost valve bank. For field modifications, Canrig will supply a plug (part # H13-1026-010) to replace the existing check valve cartridge. Upon receipt of the plug do the following action:
 - a) Confirm that the top drive is plumbed according to Fig.1 attached. The lower port of the valve bank should be connected to the lower port of the torque boost bell housing.
 - b) Remove the check valve cartridge identified as cartridge "B" on Fig. 1.
 - c) Replace with the new plug supplied (part # H13-1026-010).

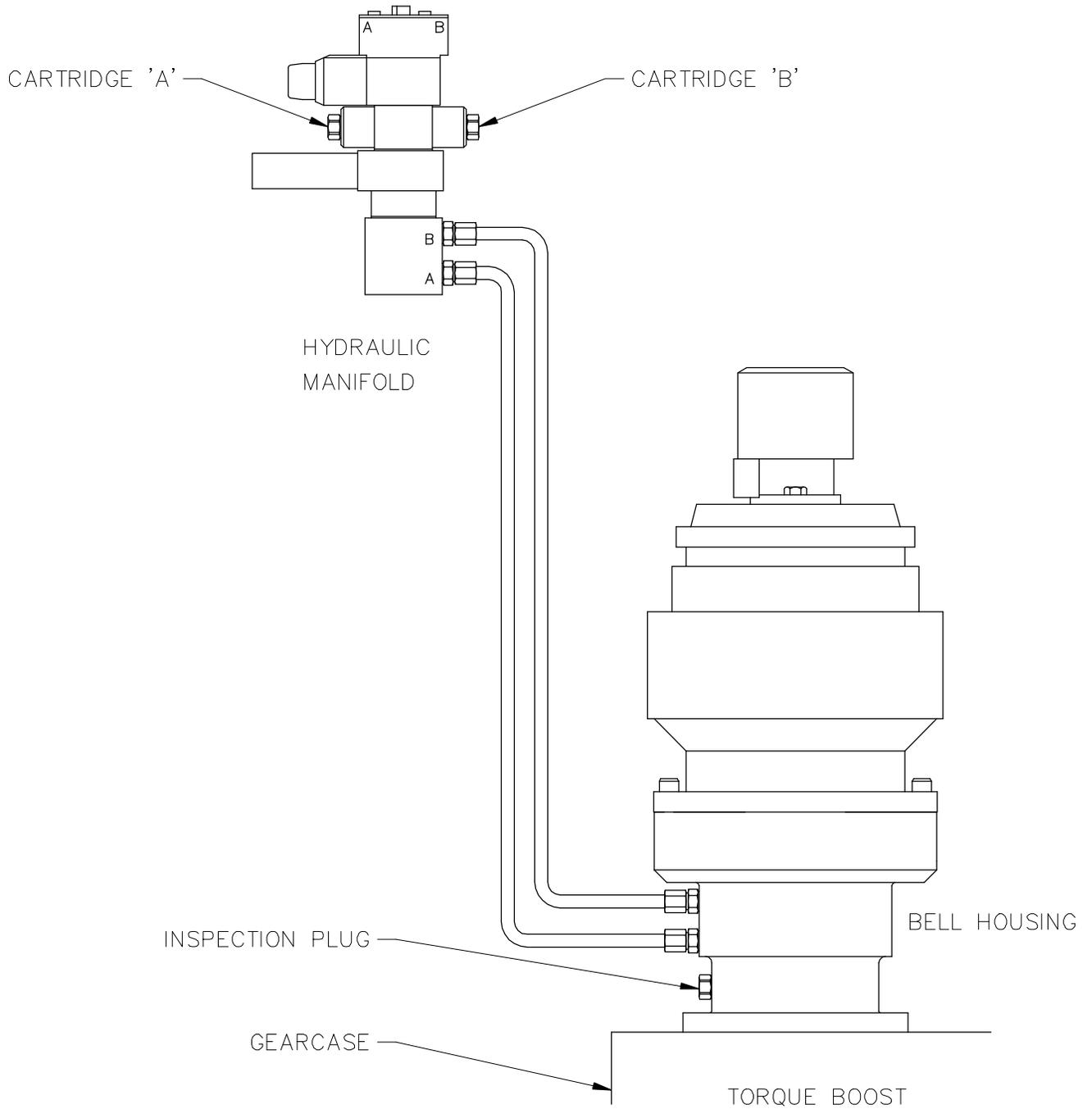
 2. Until the pilot-to-open check valve has been modified avoid using the Torque Boost unless absolutely necessary. If it is absolutely necessary for a connection, and before the modification is completed, use the following procedure:
 - a) Engage the clutch.
 - b) Cycle rapidly between make-up and break-out several times before applying full torque. This will help to ensure full clutch engagement when torquing.

Note: No damage can occur to the torque boost if the clutch is fully engaged. It is only with partial engagement that a chance for damage can occur.
 - c) Engagement can be verified by removing the inspection plug (see Fig. 1) on the torque boost bell housing and visually ensuring proper engagement of the jaw clutch.

INFORMATION:

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PRODUCT BULLETIN 23
FIG. 1



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 25

DATE: January 11, 1994

SUBJECT: Storage and use of spare Top Drive drilling motors

SERIAL NUMBERS: All

DISCUSSION: Proper storage of spare Top Drive drilling motors will ensure they are in working condition when they are required for use.

RECOMMENDATION: Please follow the procedures as described on the attached sheets.

Recommended Storage Instructions For Top Drive Drilling Motors.

Removing Top Drive Drilling Motors From Storage.

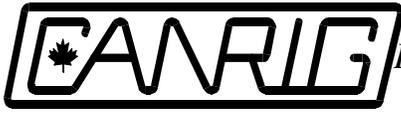
Attachments:

1. Recommended Storage Instructions for Top Drive Drilling Motors
2. Removing Top Drive Drilling Motors for Storage

INFORMATION:

For further information contact:

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INSTRUCTIONS
RECOMMENDED STORAGE INSTRUCTIONS
FOR
TOP DRIVE DRILLING MOTORS

When placing Canrig Top Drive Drilling Motors into storage, the following preparations should be undertaken to prevent damage to the equipment as a result of the storage.

1. Machines should be placed on a pallet and stored indoors if possible. A clean, dry ambient of 60°F is preferred. In a high humidity environment an ambient of 70°F is recommended. Every attempt should be made to avoid widely varying temperatures and high humidity.

A protective cover acting as an umbrella should be used to prevent entrance of rain, dust, etc.

2. The drilling motors are equipped with AC space heaters (220VAC,500W). These heaters should be energized to keep the internal machine temperature above ambient, preventing condensation and sweating.
3. All exposed-machined steel parts and surfaces should be slushed. These areas are slushed prior to shipment from the factory, but should be examined for rust. Rust should be removed using fine abrasive paper, after the old slushing compound has been removed with mineral spirits. Methanol should be used to remove all residue.

WARNING: *Cleaning solvents may be toxic and/or inflammable. They can cause serious or fatal injury if used without proper precautions. For safety:*

1. *Do not inhale solvent fumes.*
2. *Use solvents only in adequately ventilated areas.*
3. *Avoid contact of solvent with the skin.*
4. *Do not expose solvent to flame or sparks.*
5. *Observe caution statements issued by the manufacturer of the solvent.*

Extreme care should be exercised not to damage critical machined surfaces such as the tapered shaft surface while removing rust. The surfaces should be reslushed with slush compound Kendell Grade 5, or the equivalent.

Extra care should be taken with the pinion

4. Brushes should be removed from their holders and clamped under the spring clips to prevent corrosion of the commutator surface as a result of moisture absorption by the carbon.
5. Do not completely seal the motor, but cover major vent areas with a waterproof shipping tape. Leave enough opening so the machine can breathe - i.e., moist air is not trapped. The intention is to prevent entrance of water, dust, small animals, but not to seal airtight. We do not recommend use of a silica gel or dehydrating agent.
6. Since the lubricant drains from the top half of bearings during storage, this area is subject to corrosion. The shaft should be rotated periodically to redistribute a protective film. If stored inside, rotate every three months. If outside, every month. Before placing the machine back into service after prolonged storage (1 year or more) bearings should be inspected and repacked with new grease meeting the recommended GE lubrication specification.
7. The machine should be meggered when placed into storage and periodically while in storage (3-month intervals). Keep a record of these megger readings as a rapid decrease in insulation resistance indicates the machine condition is deteriorating and the storage conditions inadequate.

Before placing a stored motor back into service refer to the applicable instructions "Removing Top Drive Drilling Motors from Storage".



INSTRUCTIONS REMOVING TOP DRIVE DRILLING MOTORS FROM STORAGE

It is often customary for users of Top Drive Systems to retain spare motors which can be used for replacements. The spares might be new, rebuilt, or used. Even though new or recently rebuilt, it is possible the machine has been stored for an extended period of time and should be checked before being placed in service. The fact that a motor checked good when placed in storage does not exempt it from tests when needed for service. Storing location and atmospheric conditions (temperature and humidity) can cause the windings to become contaminated with dirt and/or moisture.

Storage conditions can help in avoiding dirt and moisture accumulation. Where possible, machines should be stored in a clean location where the temperature is kept above 60°F. In a generally high humidity climate, an even higher minimum temperature (70°F) will help keep windings dry. An accumulation of moisture or dirt and moisture causes electrical breakdown of windings.

Before placing a stored motor in use:

1. Blow dust and dirt accumulation out of windings with clean, dry air.
2. Visually inspect for spring corrosion, sticking brushes in brush holders, and general defects.
3. Check winding insulation continuity to ground with a 500 volt megger. If the megger reading is less than 2 megohm, the windings should be baked or dried until the moisture content is sufficiently reduced to raise the megger reading to 2 megohms.
4. An electrical source of heat is best for drying as it can be easily regulated and is clean. Proceed as follows:
 - a. Remove the armature from the frame and remove bearings from the armature shaft.
 - b. Heat the frame and armature until dried sufficiently to obtain the 2 megohm reading.
 - c. Pack bearings with new grease. Refer to instruction manuals for the proper grease and amount.
 - d. Reassemble the motor or generator.
 - e. If facilities are available, give the reassembled machine a running test to check bearings.



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 26

DATE: January 11, 1994

SUBJECT: Top Drive Maintenance

SERIAL NUMBERS: All

DISCUSSION: Regular checks and maintenance of the top drive unit can greatly increase service life and safety.

RECOMMENDATION: Enclosed is a suggested checklist form to use as a guide when servicing and maintaining the top drive unit.

Please note the addition of greasing the upper well control valve and lube oil pump (not all models). These items were not originally mentioned in the service literature.

They should be greased once a day with a general purpose Lithium base grease. One to two pumps of grease is sufficient.

INFORMATION:

For further information contact:

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Canrig Drilling Technology Ltd.
14703 FM 1488
Magnolia, Texas 77354
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**CANRIG MODEL 6027E-2SPH TOP DRIVE
MAINTENANCE CHECKLIST**

SERIAL NO. «Serial Number» _____

WEEK STARTING: _____

REF.	MAINTENANCE FUNCTION	FREQUENCY	PERFORMED BY
A	GREASE WASHPIPE PACKING	8 HRS	
B	GREASE UPPER SEAL RING	8 HRS	
C	GREASE LINK TILT CYLINDER BUSHINGS	DAILY	
D	GREASE LINK SUPPORT	DAILY	
E	GREASE UPPER WELL CONTROL VALVE (OPTIONAL)	DAILY	
F	GREASE LUBE OIL PUMP	DAILY	
G	GREASE BUW MAIN TUBES	WEEKLY	
H	GREASE BUW GRIPPER CYLINDER	WEEKLY	
J	GREASE HANDLER LOCK	DAILY	
L	GREASE ROTARY MANIFOLD BEARING	DAILY	
M	CHECK INDICATOR ON HYDRAULIC FILTER		
	-CHANGE FILTER WHEN INDICATOR SHOWS RED	DAILY	
N	CHECK OIL LEVEL IN HANDLER ROTATE GEARBOX		
P	CHECK OIL LEVEL IN TORQUE BOOST GEARBOX	WEEKLY	
Q	CHANGE OIL IN HANDLER ROTATE GEARBOX	6 MONTHS	
R	CHANGE OIL IN TORQUE BOOST GEARBOX	6 MONTHS	
S	CHECK AND CLEAN LUBE SUCTION Y-STRAINER	WEEKLY	
T	CHANGE OIL IN TOP DRIVE GEARBOX	2 MONTHS	
U	CHECK GEARCASE BREAKTHER	WEEKLY	
V	CHECK OIL LEVEL IN TOP DRIVE GEAR BOX	DAILY	
W	EXAMINE TOP DRIVE FOR LOOSE OR LEAKING	DAILY	
	HYDRAULIC FITTINGS OR COMPONENTS		
X	EXAMINE BRAKE PADS FOR WEAR	DAILY	
Y	EXAMINE TOP DRIVE FOR LOOSE BOLTS OR COMPONENTS	WEEKLY	

THIS IS TO BE USED AS A GUIDE ONLY. PLEASE REFER TO SECTION 4 OF THE MAINTENANCE MANUAL FOR MORE DETAILED INSTRUCTIONS AND SPECIFICATIONS.



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 27

DATE: January 26, 1994

SUBJECT: Shimming of the lower gearcase bearing on two-speed top drive units.

SERIAL NUMBERS: 006

DISCUSSION: The original shimming of the lower gearcase bearing may be inadequate to maintain proper bearing clearance. On S/N 006, this may have caused the bearing to run hot, causing deterioration of the adjacent seals.

RECOMMENDATION: Install a new shim, P/N 731-52-0, furnished by Canrig. Refer to Drawing D-1-731-01-1 in the manual; install the shim between the Lower Bearing Seat (Item 5, P/N C-3-731-14-0) and the Gearcase (Item 2, P/N D-3-731-11-0). Remove any existing shims.

Installation procedure (refer to Dwg D-1-731-01-1):

1. Remove the Retaining Ring (85).
2. Remove the Split Ring Retainer (16).
3. Remove the Split Ring (13) and the Thrust Washer (15).
4. Remove the guard from the pipe handler hydraulic manifold.
5. Unpin the brace from the core recovery platform to the pipe handler.
6. Disconnect the hydraulic P & T lines to the pipe handler.
7. Disconnect the 20 C control cable to the pipe handler.
8. Remove the 4 bolts holding the pipe handler assembly to the gearcase.
9. Remove the pipe handler assembly.
10. Remove the Lower Seal Housing (4).
11. Remove the 2 flat head bolts holding the Lower Bearing Seat (5) to the gearcase.
12. Using three 1/2 inch bolts in the threaded holes, pull the Lower Bearing Seat (5) down about 1/4 inch.
13. Remove any existing shims and install the new shim set (split, P/N 731-52-0). Orient the shim to align the holes to the bolt holes.
14. Re-install the flat-head bolts; torque to 45 ft-lb.
15. Complete the assembly as the reverse of disassembly.

INFORMATION:

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DATE: February 17, 1994

- SUBJECT:** Jarring with the Top Drive
- SERIAL NUMBERS:** All
- DISCUSSION:** It is imperative that top drive users exercise *care and caution* when using a top drive during and after a jarring operation.
- RECOMMENDATION:**
1. Due to the changing parameters of jarring operations (depth of hole, drill string, free point, type of jars, etc.), it is impossible to establish firm limits or guidelines for jarring with the top drive. Every situation will have to be evaluated on individual merits with due consideration of the costs of abandoning a well.
 2. Canrig advises against using surface jars whenever possible, as the risk of damage to the top drive will increase.
 3. After any jarring operation the top drive should be thoroughly inspected according to the following guidelines:
 - 3.1 Perform a thorough visual examination of the top drive looking for any signs of damage.
 - 3.2 Visually inspect the mud inlet piping.
 - 3.3 Check all wire locked bolts for damage or broken wires. If broken wires are detected, retorque the bolts according to Bulletin # 29 and re-wire. Replace damaged wires.
 - 3.4 Check all external bolts and nuts that are not wired for tightness. Any bolts found to be loose should be removed, coated with Loctite 242 Threadlocker, reinstalled and retorqued according to the specifications in the manual or Product Bulletin # 29.
 - 3.5 Check all guards, vents and covers for tightness.
 - 3.6 Ensure that all safety cables are properly and securely attached.
 - 3.7 Visually examine the inside of the junction box(s) for loose components.
 - 3.8 Open the motor brush access covers and check that all bolts are tight and all brushes are correctly positioned. Also ensure that the condensation heater is secure.
 - 3.9 Check that all electrical plugs are properly engaged and secured.
 - 3.10 Check the seals at the bottom of the rotary manifold to ensure they are properly in place.

4. The top drive hoisting load path is designed according to API Specification 8C; it can be treated in much the same manner as any API hoisting equipment. The main difference is that the top drive has many accessories bolted on; these should be checked for loose bolts, etc. as described above.
5. Jarring operations can be done with the load connected to either the quill or the elevators.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 29

DATE: February 9, 1994

SUBJECT: Top Drive Maintenance

SERIAL NUMBERS: All

DISCUSSION: This bulletin Replaces Product Bulletin #22.

The torque values originally specified do not apply to all types of capscrews used on the top drive system. This bulletin specifies torque values for the different types of capscrews.

When doing maintenance or repairs to the top drive system it is important to reassemble parts to manufacturers specifications.

RECOMMENDATION: When assembling any top drive components it is important to install capscrews according to the attached instructions.

INFORMATION:

For further information contact:

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CANRIG DRILLING TECHNOLOGY LTD

CAPSCREW TORQUE VALUES

(Dec 20/93)

All capscrews and bolts used on a Canrig Top Drive meet or exceed ASTM Gr. 8 specifications. These must be torqued to the values shown on the assembly drawings or to the following values:

- All capscrew must be coated with Loctite 242 Threadlocker.
- This is a medium strength threadlocker that prevents rusting of threads and helps prevent loosening due to vibration.
- This threadlock can be sheared by normal hand tools.

- When using capscrews with locknuts, use only Grade C Stover locknuts or equivalent.
- These can be identified visually by eight raised dots.
- These are re-usable but after repeated removal and installation new nuts are recommended.

HEX HEAD CAPSCREW  		
SOCKET HEAD CAPSCREW  		
SIZE	TORQUE ft-lb	TORQUE N-m
1/4	11	14.9
5/16	23	31.2
3/8	40	54.2
7/16	65	88.1
1/2	99	134
9/16	159	216
5/8	198	268
3/4	350	475
7/8	566	767
1	848	1150
1 1/8	1245	1688
1 1/4	1750	2373

FLAT HEAD CAPSCREW  		
BUTTON HEAD CAPSCREW  		
SIZE	TORQUE ft-lb	TORQUE N-m
1/4	8	10.8
5/16	16	21.6
3/8	26	35.2
7/16	42	57
1/2	63	85.4
5/8	126	170
3/4	230	312



DATE: April 14, 1994

SUBJECT: Top Drive Maintenance

SERIAL NUMBERS: All

DISCUSSION: Main bearing end play must be maintained within the acceptable range for optimum performance and longevity.

- RECOMMENDATION:**
1. Check the bearing clearance (end play) according to the attached instruction sheet. The clearance should be checked monthly.
 2. If bearing end play exceeds 0.010in (0.25 mm), shims should be removed from between the upper bearing seat and the main housing until the end play is within the following range:

Minimum	0.001 in 0.025 mm
Maximum	0.003 in 0.075 mm

Do not set the bearing tighter than 0.001in (0.025mm) as overload may result as the temperature changes.

3. If all the shims are removed after several re-shim procedures, contact Canrig for instructions for modifications to allow for more adjustment.
4. Precut shims in various thicknesses are available from Canrig.

SHIM THICKNESS	TOP DRIVE 60XX SERIES	TOP DRIVE 8035/1050
.002"	587-28-002	681-11-1-002
.003"	587-28-003	681-11-1-003
.005"	587-28-005	681-11-1-005
.010"	587-28-010	681-11-1-010
.030"	587-28-030	681-11-1-030

INFORMATION :

For further information contact:

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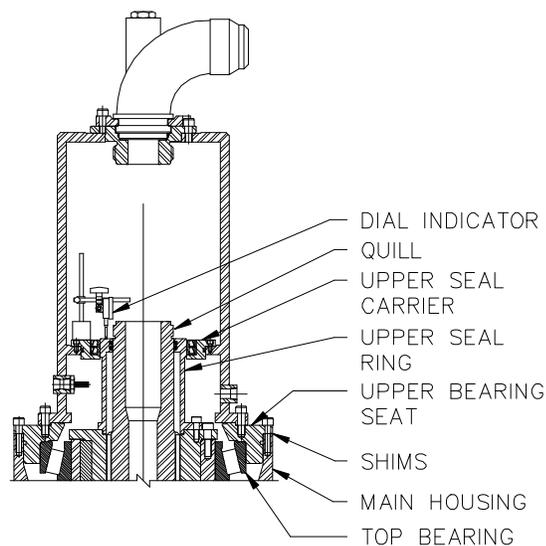
CANRIG DRILLING TECHNOLOGY

TOP DRIVE DRILLING SYSTEM

MAIN BEARING END PLAY – INSPECTION PROCEDURE

1. REMOVE THE WASHPIPE.
2. PLACE THE BASE OF THE DIAL INDICATOR ON TOP OF THE UPPER SEAL CARRIER (OR SIDE OF BONNET) AND THE PLUNGER ON THE TOP OF THE UPPER SEAL RING.
3. LOAD THE END OF THE QUILL AGAINST THE TOP AND BOTTOM OF ITS FREE TRAVEL. (NOTE: QUILL TRAVEL = 8 INCHES)
4. READ THE END PLAY ON THE DIAL.
END PLAY = 0.001/0.003 INCHES
5. TO ADJUST THIS END PLAY, ADD OR REMOVE SHIMS BETWEEN THE UPPER BEARING SEAT AND THE MAIN HOUSING.

<u>MODEL</u>	<u>SHIM PART No.</u>
6025E	C-3-587-28
8035E	C-3-681-11-1
1050E	C-3-681-11-1





CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 31

DATE: May 13, 1994

SUBJECT: Top Drive - Mast Guide Rails

SERIAL NUMBERS: 005, 006, 010, 011, 012

DISCUSSION: To achieve proper life on the top drive guide runners, the mast guide rail must have smooth transitions between sections.

RECOMMENDATION:

1. All transitions of the guide rails between mast sections should be examined. Sharp edges or mis-aligned rails will damage the urethane coating of the top drive guide runners.
2. All transitions should be prepared with tapers in accordance with the attached drawing.

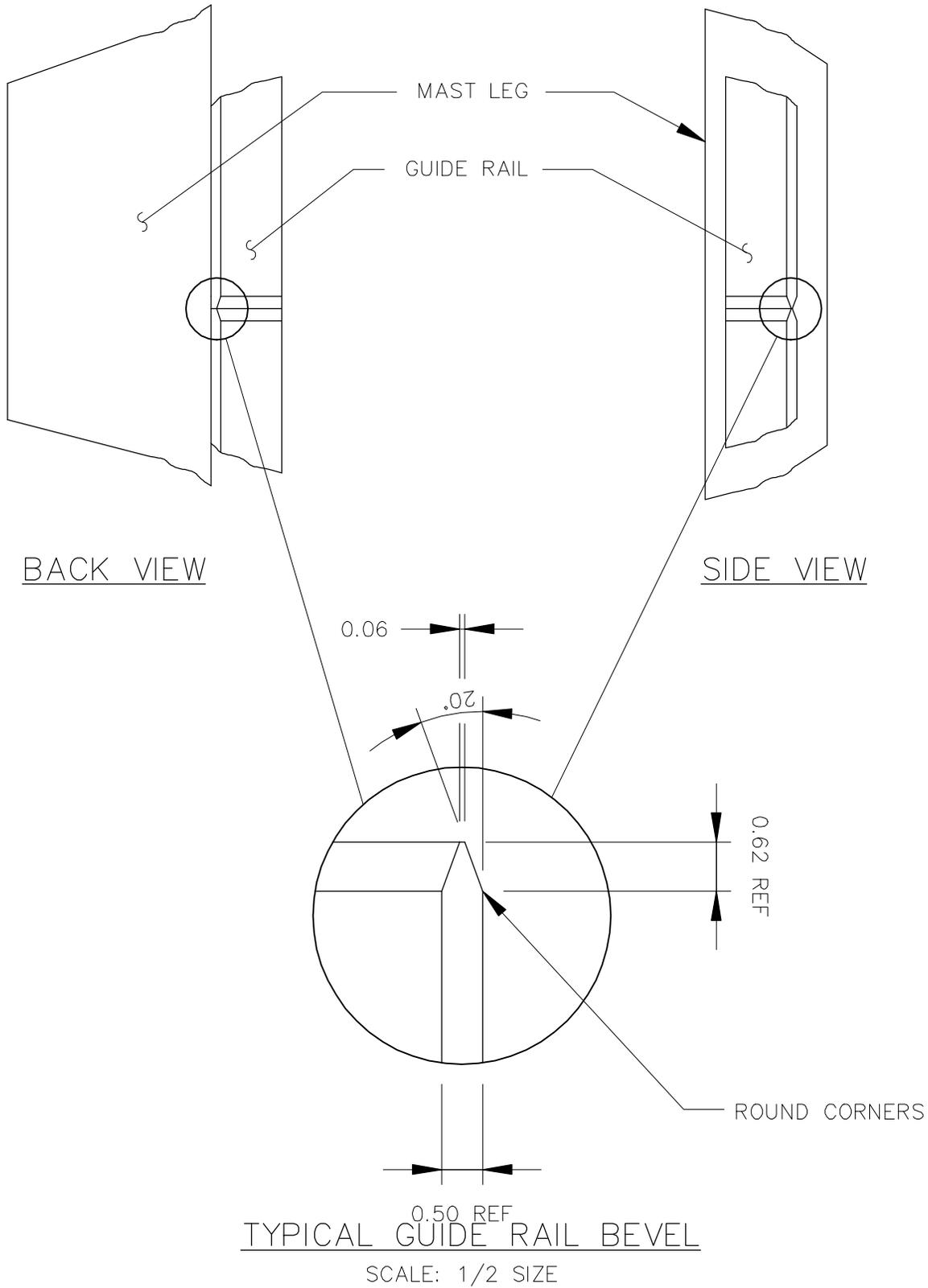
INFORMATION:

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CANRIG DRILLING TECHNOLOGY

PRODUCT BULLETIN No. 31



DRAWING NO.	PB-031	DRAWN BY	MPM	SCALE	1/8 SIZE
REV.	0	DATE	94/05/06	PLOTTED	94/05/09



DATE: February 14, 1995

SUBJECT: GRASSHOPPER RIG-UP

SERIAL NUMBERS: 014, 016, 018, 019

DISCUSSION: Proper procedures must be followed to ensure that the grasshopper will not swing out of control during rigging-up. Failure to do so can result in personal injury and property damage.

- RECOMMENDATION:**
1. The safest method of rigging the grasshopper is with the use of a crane. The crane is generally able to lift from directly above the point of attachment of the cable to the grasshopper allowing the operator to control the movement of the grasshopper.
 2. When a crane is not available the following procedure must be followed to ensure that the grasshopper is rigged-up safely:
 - 2.1 With the grasshopper still in the laid down position, elevate the pole as required and rotate the entire assembly until section 1 (the inboard section) is in the required position. On 3 section grasshoppers it will be necessary to raise the junction box section prior to rotating.
 - 2.2 Anchor section 1 so that it will not rotate while raising sections 2. FAILURE TO DO SO MAY ALLOW THIS SECTION TO SWING UNCONTROLLABLY DURING THE REST OF THE RIG-UP.
 - 2.3 Attach the line to be used for raising sections 2.
 - 2.4 To control the swinging of the grasshopper a tag line must be attached from the outboard end of section 2 to a forklift, loader or similar vehicle. THE TAG LINE MUST BE ATTACHED PRIOR TO ATTEMPTING TO RAISE SECTION 2 OF THE GRASSHOPPER.
 - 2.5 Attach the line in a manner that will not allow it to slide along the grasshopper section.
 - 2.6 Position the vehicle so that it can provide a holdback force which will oppose the lift force as much as possible.
 - 2.7 The operator of the vehicle will keep the line between the vehicle and grasshopper taut at all times in order to provide a holdback force to control the swing of the grasshopper.
 - 2.8 THE SECOND SECTION OF THE GRASSHOPPER WILL HAVE A TENDENCY TO SWING ONCE IT IS LIFTED FROM ITS CRADLED POSITION IN SECTION 1. If the pull from the lifting winch is coming from one side of the grasshopper that is the direction in which it will swing. If the pull is directly along the grasshopper it could swing in either direction. Ensure that the person controlling the tag line is prepared and all personnel are standing clear.
 - 2.9 The operator of the vehicle attached to the tag line will be required to coordinate with the winch operator to control the swing of the grasshopper.

2.10 After section 2 has been raised to a vertical height that will allow it to clear section 1, it can be allowed to swing to a stable position by slowly and carefully slacking off the tag line while keeping section 2 raised above section 1 (i.e. do not allow section 2 to rest on section 1). Once section 2 has swung to its extreme continue the lift to be absolutely sure that there is no more tendency for it to swing. If the grasshopper is stable the tag line can be removed. The structure will remain stable the for the rest of the installation.

INFORMATION:

For further information contact:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 33

DATE: March 9, 1995

SUBJECT: 350 TON BAILS

SERIAL NUMBERS: 014, 017

DISCUSSION: Two 350 ton bails have been produced from material which has a slightly lower yield strength than our specifications. These bails should have their API load rating reduced from 350 tons to 335 tons. They will be replaced at no charge as soon as new bails can be manufactured.

RECOMMENDATION: Continue to use the supplied bail but at the de-rated load value of 335 tons (670 000 lbs.).

Canrig Drilling Technology is proceeding to manufacture replacement bails for the 2 affected machines. We will be in contact with you regarding delivery.

INFORMATION:

For further information contact:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 34

DATE: June 26, 1995

SUBJECT: Lower Well Control Valves

SERIAL NUMBERS: 015

DISCUSSION: Enclosed is a drawing showing the minimum length that the lower well control valve can be from the center line of the ball after being re-cut. This should allow the pin end to be re-cut from five to seven times. The valve cannot be re-cut after it reaches the dimension shown.

INFORMATION:

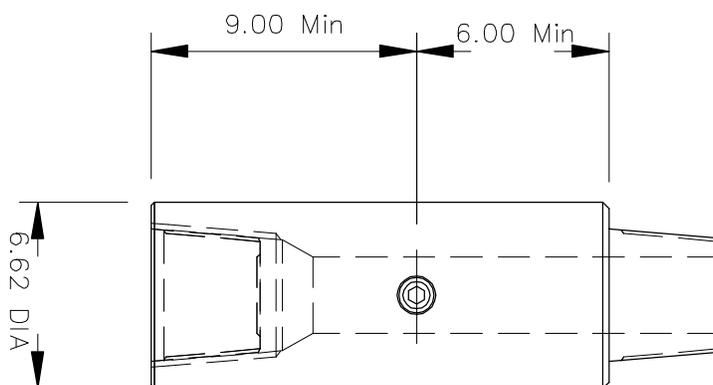
For further information contact:

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CANRIG DRILLING TECHNOLOGY

PRODUCT BULLETIN No. 34

Re-cut Allowance for Lower Well Control Valve
Canrig Part No. R03-1013-010
NC 50 Box x 4 1/2 X.H. Pin



DRAWING NO.	PB-034	DRAWN BY	MPM	SCALE	1/8 SIZE
REV.	0	DATE	94/05/16	PLOTTED	94/05/16



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 35

DATE: June 13, 1995

SUBJECT: Proper use of Lifting/Snubbing Frames and Slings

SERIAL NUMBERS: 14, 16, 18, 19, 20, 21, 22, 23, 24

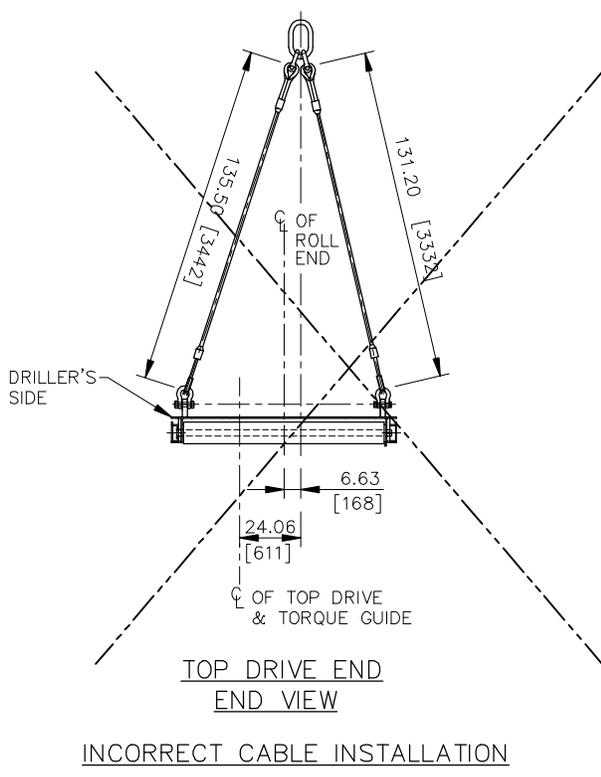
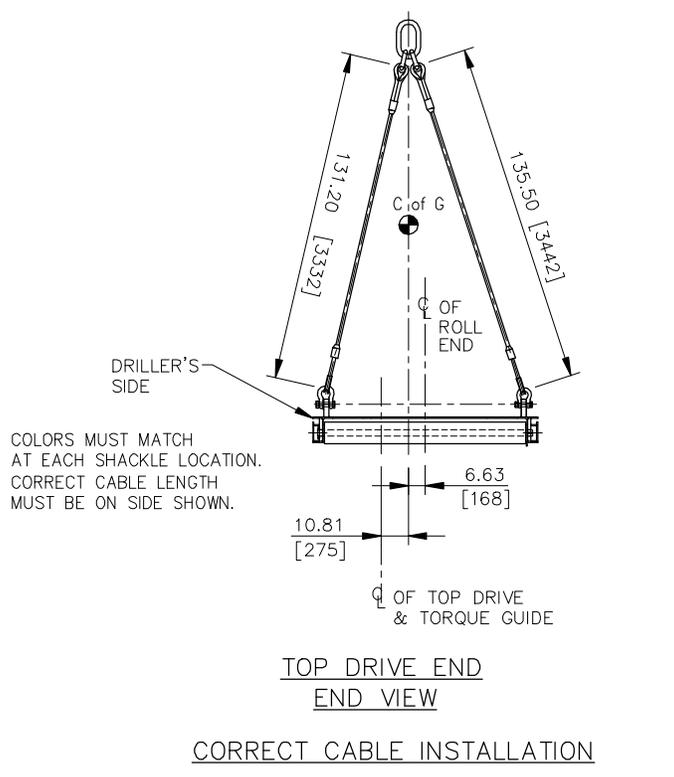
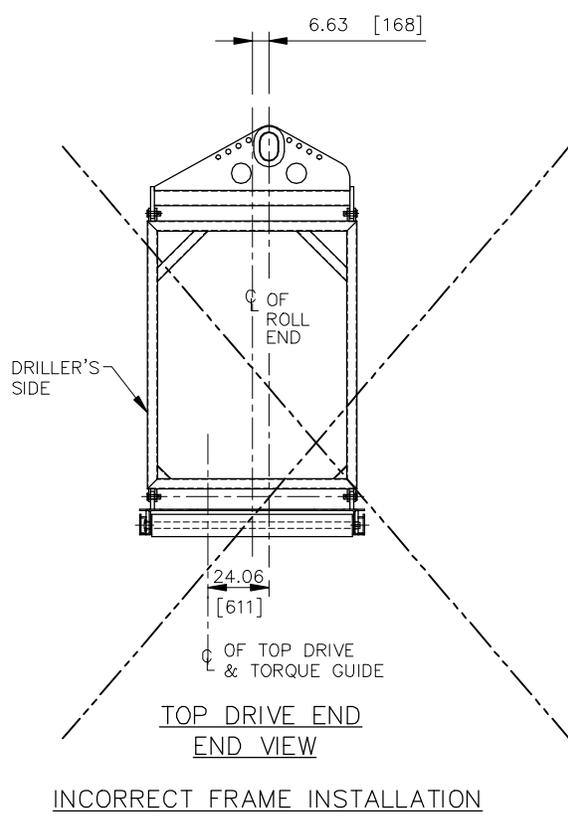
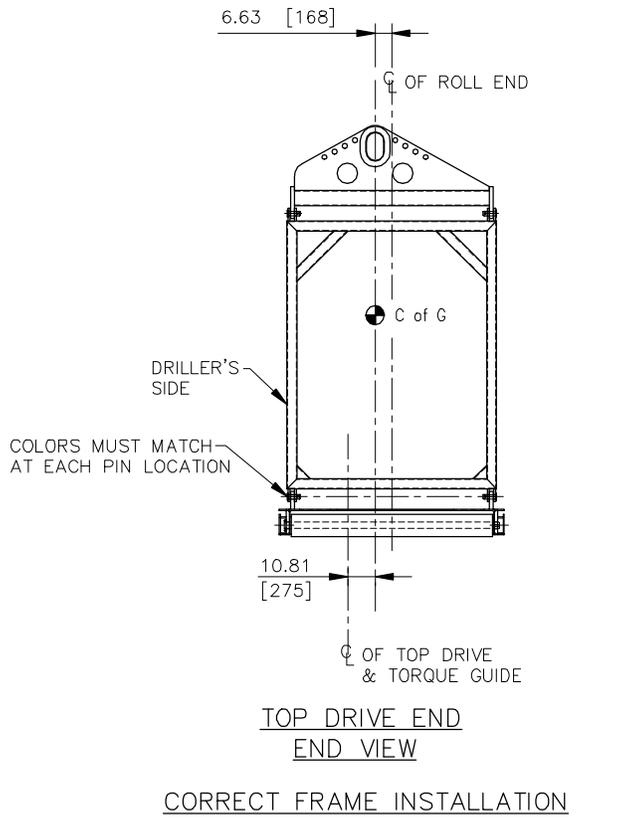
DISCUSSION: When using the lifting/snubbing frame or sling to install the torque guide and top drive it is imperative that the frame or sling be properly oriented. Our experience has shown that if left to their own devices people will probably install the frame or sling backwards. When properly installed the main lifting eye should be approximately 11 inches to the off drillers side of the top drive spindle. (This is illustrated on the attached drawing as well as in Section 6B of your Parts, Service, Data and Operating Manual). This will appear to be the wrong way around as the lifting eye will not be at the center of the roll end. The center of gravity of the skid is not coincident with the center of the roll end, therefore the offset in the main lifting eye. Installing the lifting/snubbing frame or sling wrong will result in the skid being unstable while hoisting into position and could become a safety issue.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY



BULLETIN NO.	035	DRAWN BY	DC	SCALE	1:80
REV.	0	DATE	95/06/13	PLOTTED	95/06/13



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 36

DATE: July 17, 1996

- SUBJECT:** Proper use of the Link Tilt and Handler Lock.
- SERIAL NUMBERS:** 002 - 053
- DISCUSSION:** Proper use of the Handler Lock System and the Link Tilt System can greatly reduce the chances of an accident or personal injury.
- BACKGROUND:** When torquing against the Back-up Wrench, the Handler Lock prevents rotation of the handler assembly due to the applied torque. It is important to avoid the hazard of inadvertent handler rotation with the elevator links tilted.
- RECOMMENDATION:**
1. Please familiarize the rig crews with the attached safety bulletin.
 2. When torquing against the back-up wrench, always keep personnel clear of the swing radius of the links and elevators in case of inadvertent handler rotation.
 3. The driller should keep the links and elevators as close to center as possible when torquing against the back-up wrench. This will minimize the swing radius of the elevators.
 4. The lock pin or locking dog mechanism should be magnetic particle inspected annually.
 5. Top Drive Consoles not already equipped can be fitted with a spring return control for the handler lock if desired. This will default the handler lock to the locked position when not in use. Please contact Canrig for price and availability of a retrofit kit.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 37

DATE: March 13, 2000

SUBJECT: Mallard Bay Rig 42 Electrical

SERIAL NUMBERS: 041

DISCUSSION: Due to the inability to perform the same function in an equal manner with the two SCR's assigned to the Top Drive, the PLC program has been differentially calibrated for SCR 3 and SCR 4.

RECOMMENDATION: Changing *any* electronic components of these two SCR's, or making any adjustments to their calibration may result in the Top Drive producing erroneous torque and speed values. If any components are replaced or swapped with another SCR, or adjustments are made, Canrig strongly recommends re-calibrating the instrumentation of the Top Drive.

Note that the Top Drive re-calibration procedure requires a Canrig Service Technician to make a service call to the rig.

INFORMATION:

For further information contact:

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DATE: December 9, 1996

- SUBJECT:** Ensure engagement of the handler rotate
- SERIAL NUMBERS:** 25, 26, 27, 34, 35, 39, 42, 50, 55, 56, 66
- DISCUSSION:** Verification of the lock dog engagement when locking the handler is critical to proper and safe operation of the pipe handler system.
- RECOMMENDATION:**
1. Always try to visually ensure that the lock dog is engaged prior to torquing against the back- up wrench.
 2. After locking the handler the operator should manually try to rotate the handler both clockwise and counterclockwise to ensure the lock dog is properly engaged.
 3. The Handler Rotate speed is optimum between 4 and 5 RPM. It should not be less than 3 RPM. This will help ensure positive locking.
 4. The hydraulic pressures of the lock dog and the handler rotate should be checked on an annual basis. The pressure should be within 10% of the published levels.
 5. Canrig is offering a sensor upgrade which when installed will indicate whether the lock dog is fully engaged. Please contact Canrig to arrange installation of the upgrade.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 39

DATE: December 9, 1996

SUBJECT: Tightening Of Top Drive Runner Bolts

SERIAL NUMBERS: All

DISCUSSION: In order for the top drive runners to position the top drive, properly and to avoid the possibility of runners, shims or bolts working loose and falling it is necessary that the bolts be properly torqued.

RECOMMENDATION:

1. Keep the runner bolts secure. All top drives except for serial nos. 005 and 007 use 1 inch bolts which are to be torqued to 848 ft*lbs. Top drive serial no. 7 uses 3/4 inch bolts which are to torqued to 350 ft*lbs. Serial no. 005 guides were not supplied by Canrig.
2. Check the bolts for tightness weekly.
3. Check the bolts for tightness after jarring or periods of rough drilling.
4. When checking the bolts check the runner shims to ensure they are installed correctly and not working their way out of position.
5. Canrig is developing a revised runner which will employ a method of safety cabling to prevent the runner from falling in the event that the runner bolts come loose. Contact Canrig's service department for details.

Canrig is developing new shims which will be held captive or safety cabled. Contact Canrig's service department for details.

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 40

DATE: January 31, 1997

SUBJECT: Welding on the Top Drive

SERIAL NUMBERS: All

DISCUSSION: Welding on the Top Drive can cause serious damage to bearings if not performed properly.

RECOMMENDATION: Welding on the top drive should be kept to a minimum and avoided if possible. If a welding procedure must be performed on the top drive the ground should be placed as close as possible to the weld area. If the ground is placed away from the work area there is a possibility that arcing can occur through a bearing and cause severe damage to the bearing roller and race. Good welding practices should always be followed when welding. If a weld repair is being planned you can contact the Canrig office for welding procedures for a specific area.

INFORMATION:

For further information contact:

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DATE: May 13, 1997

- SUBJECT:** Top Drive Inspection Following Periods of Rough Drilling or Jarring
- SERIAL NUMBERS:** All
- DISCUSSION:** After periods of rough drilling or jarring the top drive must be examined for loose or broken components.
- RECOMMENDATION:** **The following inspection procedure is recommended after periods of rough drilling:**
1. Perform a thorough visual examination of the top drive looking for any signs of damage.
 2. Visually inspect the mud inlet piping.
 3. Check all wired bolts for damaged or broken wires. If broken wires are detected, check the affected bolt for tightness and rewire. Torque specifications are documented in the Parts Book or check with Canrig service department. Replace damaged wires.
 4. Check all external bolts that are not wired. **Pay particular attention to the bolts connecting the main housing to the frame.** Torque specifications are documented in the Parts Book or check with Canrig service department.
 5. Check all guards, vents and covers for tightness.
 6. Ensure that all safety cables are properly and securely attached.
- Visually examine the inside of junction boxes for loose components.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 42

DATE: May 13, 1997

SUBJECT: Top Drive Frame to Housing Connection

SERIAL NUMBERS: All

DISCUSSION: After periods of rough drilling or jarring the bolts between the top drive housing casting and the frame must be checked. Bolts could otherwise fail resulting in a broken portion of bolt falling free.

RECOMMENDATION:

1. Inspect the bolts between the main housing and frame on a regular basis, especially after periods of rough drilling or jarring.
2. Check to be sure that there is no gap forming between the housing and frame. A gap may indicate loose or broken bolts.
3. Wherever possible check the bolts for torque.
4. On some units the bolts are only partially visible on the upper housing where the links interfere and cannot be checked for torque. Pry on the heads with a screw driver to ensure the bolts are not broken.
5. If broken bolts are detected a more thorough examination is required. This will require removal of the upper links. For top drives with a pin style handler lock it will be necessary to remove the pin.

Scheduled maintenance should include inspection/torquing of the housing to frame bolts semi-annually. This would best be accomplished on a rig move when the upper links can be easily removed.

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DATE: August 22, 1997

SUBJECT: Handler Lock Sensor Kit

SERIAL NUMBERS: 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 22, 23, 28, 44, 47, 48

DISCUSSION: Canrig has developed a lock position sensor kit which detects the position of the handler lock pin. This system will prevent handler rotation caused by the pin not being properly engaged while torquing.

Previous to the development of the lock position sensor it was the responsibility of the driller to ensure the lock pin was properly engaged prior to torquing. The sensor will detect the pin being out of position and will alert the driller by a horn and flashing light. The PLC program can be modified to prevent torquing when an unsafe condition caused by the handler lock pin not being engaged exists. An override is provided to allow torquing in the event of a sensor failure.

This feature can be installed on existing top drives. Canrig is offering the upgrade kit as follows:

Serial numbers 10, 11, 13, 16, 17, 18, 22, 23, 28, 44, 47, 48

Kits supplied at no charge if the upgrade is ordered prior to December 31, 1997.

Serial numbers 2, 3, 4, 5, 6, 7, 9, 12, 15

These units differ enough from our standard production that the cost of the kits must be determined. The cost evaluation will take place after a customer request. There will be no charge for the evaluation.

All serial numbers

Current labor rates for technicians and travel apply regardless of time of order.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 44

DATE: March 31, 1998

SUBJECT: Proper unloading of portable torque guides

SERIAL NUMBERS: 13, 14, 16, 18 thru 24, 26, 28, 29, 30, 31, 32, 33, 36, 38, 40 thru 46, 48, 51 thru 59, 61, 63 thru 70, 72, 73, 74, 75, 77, 78, 79, 81 thru 95, 97, 98 thru 102, 104 thru 116

DISCUSSION: The lifting/snubbing cables supplied with the torque guide should be used only for installation or removal of the torque guide from the rig. Vertical lifting with a crane for transport purposes is allowed. These cables should never be used for off loading from a bed truck or trailer. The winch lines from the tractor should be attached in the conventional manner. Using the lifting/snubbing cables attached to the winch line could result in an 18" to 24" free fall which could do damage to the winch line and sling assembly.

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 45

DATE: April 22, 1998

SUBJECT: Correct Assembly of Top Drive Components

SERIAL NUMBERS: All

DISCUSSION: After repairs or inspections, all capscrews must be installed to original Canrig specifications. Failure to do so could result in capscrews or objects coming loose and falling free.

- RECOMMENDATION:**
1. All capscrews or fasteners permanently installed shall be coated with Loctite 242 or equivalent. The capscrew threads and mating thread shall be free of all dirt, oil, and grease. Prior to Loctite applications solvents may be used to clean threads.
 2. All capscrews or fasteners that require periodic loosening to facilitate adjustment of components (tool joint clamps, link tilt clamps, guide rails, etc) should be coated with Antiseize Thread Compound 767 or equivalent.
 3. All capscrews should be torqued to the proper specifications with a torque wrench. See attachment for torque values.
 4. Anti-vibration tooth lock washers shall be installed with all capscrews where ever possible.
Internal types are preferred.
 5. Any capscrew that is drilled for wire shall be wired to its partners. If these capscrews are replaced, they shall be replaced with capscrews drilled to accept wire. They should be wired with 12 Gauge Lockwire or 1/16" diameter 7x7 stainless steel wire rope and crimped.

Any safety cables removed to facilitate repairs must be installed prior to operation of the top drive.

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Capcrew Torque Values

(Apr 20, 1998)

All capscrows and bolts used on a Canrig Top Drive meet or exceed ASTM Gr. 8 specifications. These must be torqued to the values shown on the assembly drawings or to the following values:

- All capscrow or fasteners permanently installed must be coated with Loctite 242 Threadlocker or equivalent after insuring that the capscrow threads and mating threads are free of all dirt, oil, and grease. This is a medium strength threadlocker that prevents rusting of threads and helps prevent loosening due to vibration. This threadlock can be sheared by normal hand tools.
- All capscrow or fasteners that require to be loosened periodically to facilitate adjustment of components (tool joint clamps, link tilt clamps, guide rails, etc.) should be coated with anti-seize thread compound 767 or equivalent.
- When using capscrows with locknuts, use only Grade C Stover locknuts or equivalent. These can be identified visually by eight raised dots. These are re-usable, but after repeated removal and installation new nuts are recommended.

Size	Hex Head Capscrow Socket Head Capscrow		Plated Bolts or Machined		Flat Head Capscrows Button Head Capscrows	
	Torque ft/lb	Torque N/m	Torque ft/lb	Torque N/m	Torque ft/lb	Torque N/m
1/4	11	15	8	11	8	11
5/16	23	31	17	23	16	21
3/8	40	54	30	39	26	34
7/16	65	88	49	64	42	55
1/2	99	134	74	97	63	82
9/16	159	216	119	156	101	133
5/8	198	268	149	194	126	165
3/4	350	475	263	343	230	292
7/8	566	767	425	556	360	472
1	848	1150	636	833	540	707
1 1/8	1245	1688	934	1222	792	1037
1 1/4	1750	2373	1313	1718	1114	1458



DATE: December 16, 1998

SUBJECT: Possible SCR Puck failure – Pipe Unwind

SERIAL NUMBERS: 21 – 29, 31, 33 – 66, 68 and up

DISCUSSION: While working a stuck bit, the TD will stall out after several turns of pipe rotation. If the “stall” condition remains for an extended period of time (the CANRIG control system will warn the driller via flashing “enable” light and intermittent horn burst if this time has been reached or exceeded), it will be necessary to either release the torsional torque, or set the brake to avoid overheating of the traction motor. If the “wound-up” torque is not properly released, a SCR failure can result from the reverse flow of energy, from the pipe back to the SCR.

- RECOMMENDATION:**
1. Releasing the torque should be done by turning the throttle down. If the throttle is turned down rapidly, the CANRIG PLC will initiate an “Unwind” routine that will properly control the wound-up torque. The same control can be manually applied by **slowly** reducing the DRILL TORQUE LIMIT.
 2. If the Brake is set, the throttle must be turned to zero. Before the Brake can be released, the throttle must first be applied to control the torque. Once the TORQUE METER indicates that Drill Torque Limit has been reached, the brake can safely be released. If the bit is free, forward rotation will resume and the torque will drop below the limit setting. Drilling ahead can resume. If the bit is still stuck, the motor remains stalled and torque can be unwound as described in paragraph 1 (above).
 3. **If the above procedure is not followed, serious damage can result in the SCR unit. The only time the torque can be unwound by manually switching the brake ON and OFF, is when the Top Drive is in the AUX MODE.**

(This bulletin is based upon information of the systems as delivered from the factory. Any changes or exchanging of system components can impact performances or operational sequences of the equipment.)

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SAFETY ALERT

DATE: March 23, 1999

- SUBJECT:** Back-Up Wrench Inspection After Jarring
- SERIAL NUMBERS:** 2 and Up
- DISCUSSION:** Jarring transfers very large shock loads to the Top Drive and the accessories attached. It is very important that the Back-Up Wrench be inspected for loose or broken bolts after jarring or during long jarring sessions.
- RECOMMENDATION:**
1. Check the pivot pin and cotter pins in the top and bottom of the cylinder inside the Back-Up Wrench tube. The pivot pins are visible through the inspection cutouts on the Drillers side.
 2. Check the main mounting bolts of the BUW to the handler gear for the correct torque.
 3. Check that the 3 bolts that mount the BUW to the outer sleeve are torqued and wired.
 4. Check that the 8 mounting bolts that hold the 4 aluminum sliders to the inside of the outer BUW tube are properly torqued.
 5. Check that the socket head bolt on the top of the stop rod is torqued. This is visible through the ODS upper inspection cutout in the BUW outer tube.

The pivot pins, stop rod and aluminum pads hold the bottom half of the BUW inside the outer tube. It is important they be checked to ensure they have not worked loose or broken during jarring.

A complete guideline for Top Drive inspection after jarring is contained in the Canrig *Operating, Maintenance and Service Instructions Manual*, Section 3A. An illustration is included on the back of this page.

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NOTES:

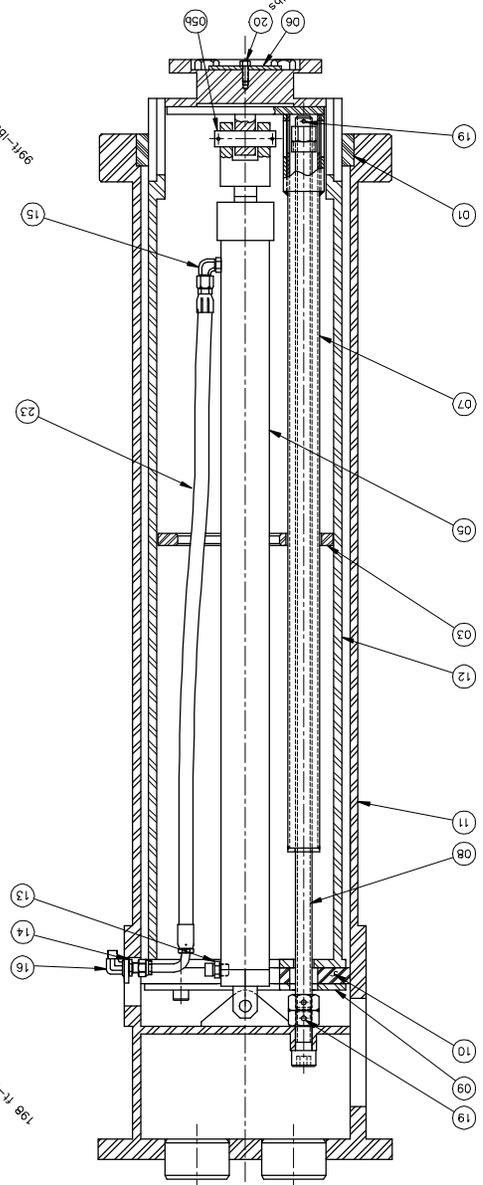
- 2) USE INTERNAL OR EXTERNAL TOOTH LOCKWASHERS ON ALL CAPSCREWS UNLESS OTHERWISE NOTED.
- 3) STAINLESS STEEL WIRE ROPE AS REQ'D.

No.	Y/M/D	BY	REVISION

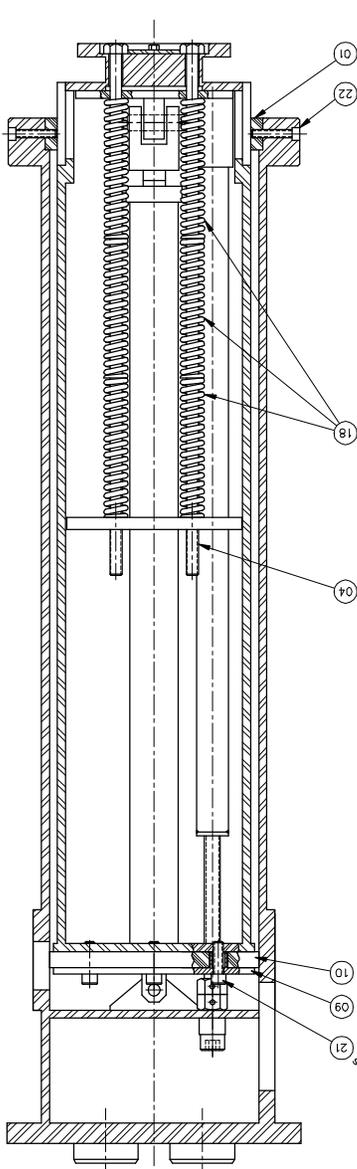
MACHINED SURFACES 125		ANGULAR ± 2'		ANGULAR ± 1'		EST. WEIGHT		SCALE		PROJECT	
①	TRUE POSITION	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4	43.25" STRK, 750 TON	AY10928 REV 0
②	PERPENDICULARITY	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4	POSITIONER ASSY, BUW	
③	STRAIGHTNESS	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
④	STRENGTH	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑤	CONCENTRICITY	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑥	CAMING	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑦	REMOVE SHARP CORNERS AND BURRS	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑧	FABRICATING (METRIC)	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑨	FABRICATING (IMPERIAL)	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑩	CHECKED	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑪	APPROVD	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑫	DRAWN	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑬	DC	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		
⑭	00/02/17	0.10	± .12"	0.10	± .12"	0.10	± .12"	1/4	1/4		

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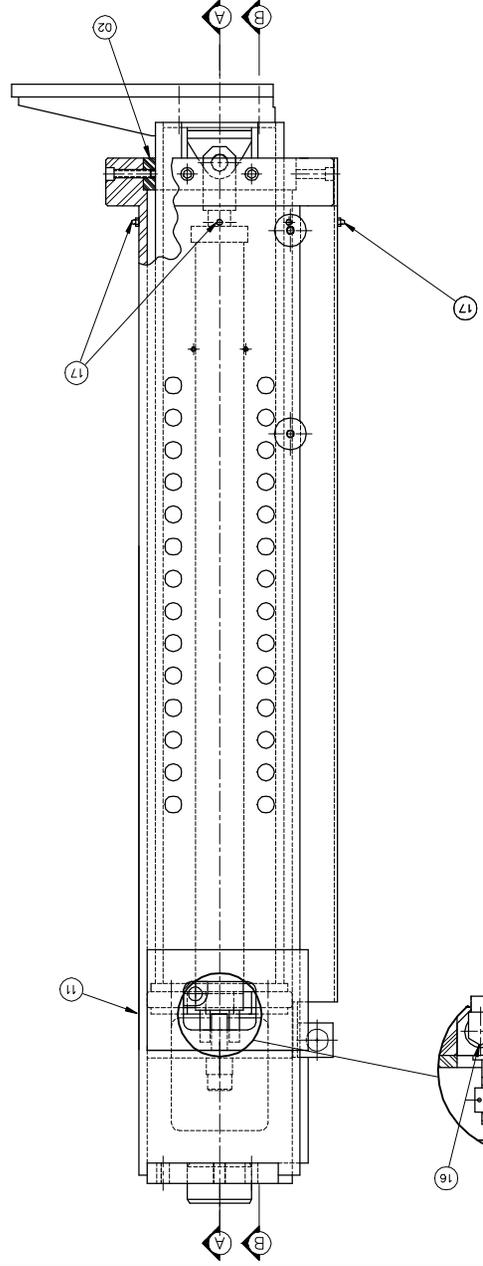
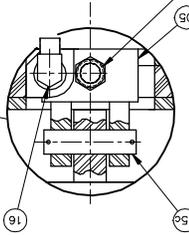
SECTION A-A



SECTION B-B



SCALE: 1:2



CANRIG DRILLING TECHNOLOGY LTD.
CHECKED
APPROVD

POSITIONER ASSY, BUW
43.25" STRK, 750 TON

AY10928 REV 0



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 48

DATE: April 8, 1999

SUBJECT: Rotating Top Drive with Weight in Elevators

SERIAL NUMBERS: 2 and Up

DISCUSSION: When weight is suspended in the elevators, the Rotary Manifold assembly (pipe handler) is designed to drop down approximately 1/8"-1/4" so that the entire string weight is supported internally by a sleeve (inner bearing race) around the main shaft. Subsequently, when the electric motor or torque boost is used to rotate the Top Drive, the bearing race moves in respect to the stationary rotary manifold. This can cause substantial damage to the weight supporting members inside the rotary manifold assembly. The grinding of one member against another will cause metal flakes to accumulate in the bottom end and has the possibility of damaging the oil seals. Rotating in this condition for an extended period of time may also cause severe overheating which could damage the lower oil seals and the integrity of the load bearing components.

RECOMMENDATION:

- The Top Drive should never be rotated with the electric motor or torque boost when there is weight suspended in the elevators.
- The pipe handler assembly may be rotated, if needed, with weight suspended in the elevators but the Top Drive brakes must not be engaged.

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DATE: May 11, 1999

SUBJECT: Inspection of Mudline Goosenecks

SERIAL NUMBERS: All

DISCUSSION: The integrity of the gooseneck, mudline, its connecting capscrews and support brace are critical to avoidance of leaks or separation of these components from the bonnet, which could result in damage to equipment or personnel.

- RECOMMENDATION:**
1. The mudline assembly should be inspected as follows:
 - check the capscrew torque monthly on the Split Flanges and Male Half Coupling
 - remove capscrews and visually inspect annually
 - MPI the entire gooseneck every 1000 daysThe inspection frequency should be increased during periods of rough drilling or jarring.
 2. Proper procedures for assembly and torquing should be followed as specified in PRODUCT BULLETIN 45.
 3. Ensure mudlines are supported near the union end. The Canrig Engineering Department should approve any modifications to the factory brace. A review of existing braces is underway; further notices may be sent out regarding the results of this review.

The rotary hose safety cable should be attached to a secure point on the top drive such as the frame or upper links. The safety cable should not be attached to the mudline assembly. The recommended method of attachment is with the use of $\frac{3}{4}$ " cable and not with chain.

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DATE: June 1, 1999

SUBJECT: DC Motor Maintenance

SERIAL NUMBERS: 001-128,132, 134 and 140

DISCUSSION: Periodic Inspection of Brushes, Brush Holders and Commutator is necessary for DC Motor reliability.

RECOMMENDATION: DC Motors should be inspected monthly at the convenience of the Rig Operation.

Inspections for Brushes and Brush-holders:

1. Check the brushes. See detailed motor inspection instructions for data as specified below.
2. Examine brush-holders for damage.
3. Work the brushes up and down several times in the holders to release carbon dust or foreign material and to insure free movement of brushes. Do not snap the brush-holder spring.
4. Check clearances between the bottom of the brush-holders and commutator. See detailed motor inspection instructions for data as specified below.
5. Inspect brush-holder springs, spring tips, copper shunts, and pigtails.
6. Examine studs and insulators for chipping, cracking, or burning from flashover.
7. Recondition or replace defective parts. Replace a brush-holder if the carbonways are worn enough to allow more than 0.020-inch clearance in thickness between the brush and the carbonway.
8. Examine the Commutator. This can be polished or stoned to eliminate trouble. See detailed motor inspection instructions for data as specified below.

Detailed instructions for inspection, adjustment, repairs and replacement of components can be found in the Component Literature-Electrical of the Top Drive Manual: GE Publication GEK-91584B for 752 Motors, and GEI-91105B for 761 Motors.

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES

SERIAL NUMBERS: 17, 22, 23

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the Mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable Mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the Mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, it should be evaluated.

S/N: 017
022

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

023

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Figure 1-Good Support



Figure 2-Good Support

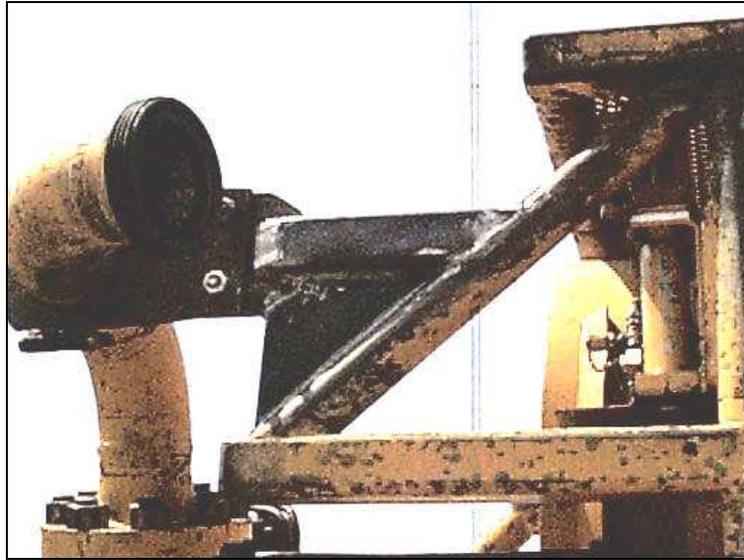


Figure 3-Good Support



Figure 4-Good Support



Figure 5-Insufficient Support

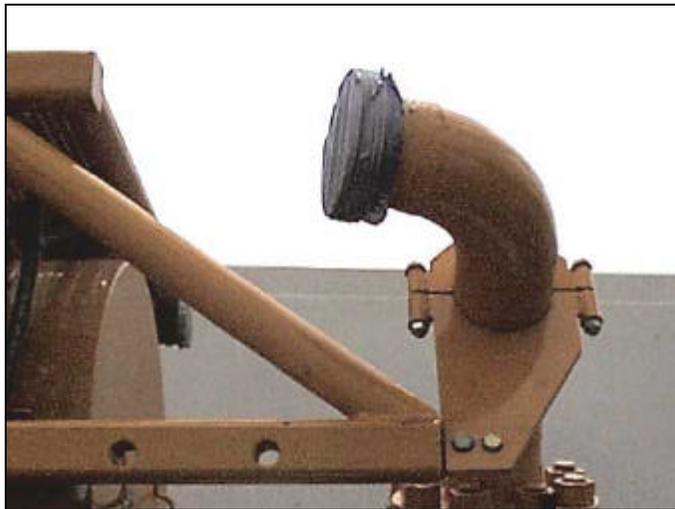


Figure 6-Insufficient Support



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77354



Figure 7-Insufficient Support



Figure 8-Insufficient Support

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 118

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive (serial number 118) mudline brace has been reviewed but sufficient information was not available to determine the acceptability of the brace. The bracing should be evaluated.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 51-3

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 28

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 028 mudline brace has been reviewed and was found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

INFORMATION :

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 89, 112

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 089 mudline brace has been reviewed but sufficient information was not available to determine the acceptability of the brace. This Top Drive should be evaluated.

Your Top Drive S/N 112 mudline brace has been reviewed and may be insufficient to meet the design criteria. This should be modified as soon as possible. Contact the Canrig Service Department for assistance.

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 76

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 076 mudline brace has been reviewed and may be insufficient to meet the design criteria. This should be modified as soon as possible. Contact the Canrig Service Department for assistance.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 51-6

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 005

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive serial number 005 mudline brace has been reviewed but sufficient information was not available to determine the acceptability of the brace. The bracing should be evaluated.

INFORMATION :

For further information contact:

Field Operations Manager
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14703 FM 1488
Magnolia, Texas 77354
Phone: 281.259.8887
Fax: 281.259.8158

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 44, 58

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 058 mudline brace has been reviewed but sufficient information was not available to determine the acceptability of the braces. This Top Drive should be evaluated.

Your Top Drive S/N 044 mudline brace has been reviewed and may be insufficient to meet the design criteria. This should be modified as soon as possible. Contact the Canrig Service Department for assistance.

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 37, 41, 50, 66, 71, 104

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 041 mudline brace has been reviewed and was found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

The following Top Drive mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N:	037	071
	050	104
	066	

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 51-13

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 11

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 011 mudline brace has been reviewed and was found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

INFORMATION :

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 39, 119, 122

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N's 039, 119 and 122 mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. The bracing should be evaluated.

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 006, 16, 26, 31, 32, 60, 61, 64, 65, 78, 87, 106, 132

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, it should be evaluated.

S/N:	006	106
	026	132

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N:	016	060	065
	031	061	078
	032	064	087

INFORMATION :

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 001, 002, 14, 20, 21, 30, 38, 84, 92, 93, 98, 100, 107, 109

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, it should be evaluated.

S/N:	001	020	030
	002	021	038

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N:	014	093	107
	084	098	109
	092	100	

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 51-17

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 008, 15, 33, 36, 40, 43, 45, 46, 53, 54, 56, 59, 63, 68, 70, 74, 75, 77, 79, 81, 82, 86, 90, 94, 101, 116, 121

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, it should be evaluated.

S/N:	008	063
	033	074
	045	075
	046	079
	053	082
	054	090
	059	094

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N:	015	068	101
	036	070	116
	043	077	121
	056	086	

The following Top Drive Mudline braces have been reviewed and may be insufficient to meet the design criteria. These should be modified as soon as possible. Contact the Canrig Service Department for assistance.

S/N:	040
	081

INFORMATION :

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 96

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive serial number 096 mudline brace has been reviewed and may be insufficient to meet the design criteria. This should be modified as soon as possible. Contact the Canrig Service Department for assistance.

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 003, 009, 97

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive serial numbers 003 and 097 mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the braces has been field modified, they should be evaluated.

Your Top Drive serial number 009 mudline brace has been reviewed and may be insufficient to meet the design criteria. This should be modified as soon as possible. Contact the Canrig Service Department for assistance.

INFORMATION :

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 67, 73, 91, 114, 115, 127

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N 073 091 127

The following Top Drive Mudline braces have been reviewed and may be insufficient to meet the design criteria. These should be modified as soon as possible. Contact the Canrig Service Department for assistance.

S/N: 067 114 115

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 13, 47

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N's 013 and 047 mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 007, 18, 69

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N's 007 and 018 mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

Your Top Drive S/N 069 mudline brace has been reviewed but sufficient information was not available to determine the acceptability of the brace. This Top Drive should be evaluated.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 51-25

SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 29, 34, 35, 49, 55, 62, 103, 111

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

The following Top Drive Mudline braces have been reviewed and were found to be properly installed at the factory to support the rated loads. If the brace has been field modified, it should be evaluated.

S/N:	029	035
	034	049

The following Top Drive Mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

S/N:	055	103
	062	111

INFORMATION :

For further information contact:

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SAFETY ALERT

DATE: June 15, 1999

SUBJECT: MUDLINE SUPPORT BRACES (See pictures at the end of 51-1)

SERIAL NUMBERS: 51, 52, 126

DISCUSSION: Improper support of the Top Drive Mudline and Gooseneck can result in the Mudline components being overloaded. A proper brace should be able to support 5000 pounds vertical load. It should support the mudline from directly underneath as far out on the kelly hose connection end as possible. If support from directly below was not possible, the bracing should still be able to support 5000 thousand pounds, but must also not allow for any twisting motion in the support. The mounting bolts should be 5/8" minimum with locking nuts and be spaced 3-4" apart.

RECOMMENDATION: Attached are example pictures of acceptable mudline brace designs. These can be used to help evaluate the Mudline bracing on the Top Drive. If you wish to have Canrig evaluate the bracing, please send pictures of the mudline and bracing to the Canrig Service Department with the Top Drive serial number clearly marked.

Your Top Drive S/N 052 mudline brace has been reviewed and was found to be properly installed at the factory to support the rated loads. If the brace has been field modified, however, it should be evaluated.

Your Top Drive S/N's 051 and 126 mudline braces have been reviewed but sufficient information was not available to determine the acceptability of the braces. These Top Drives should be evaluated.

INFORMATION :

For further information contact:

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DATE: July 12, 1999

SUBJECT: PORTABLE TORQUE GUIDES

SERIAL NUMBERS: 13, 14, 16, 19-24, 26-33, 36, 38, 40-46, 51-54, 56-65, 67-79, 81-95, 97-102, 104-116, 121, 125, 128, 132, 134, 140

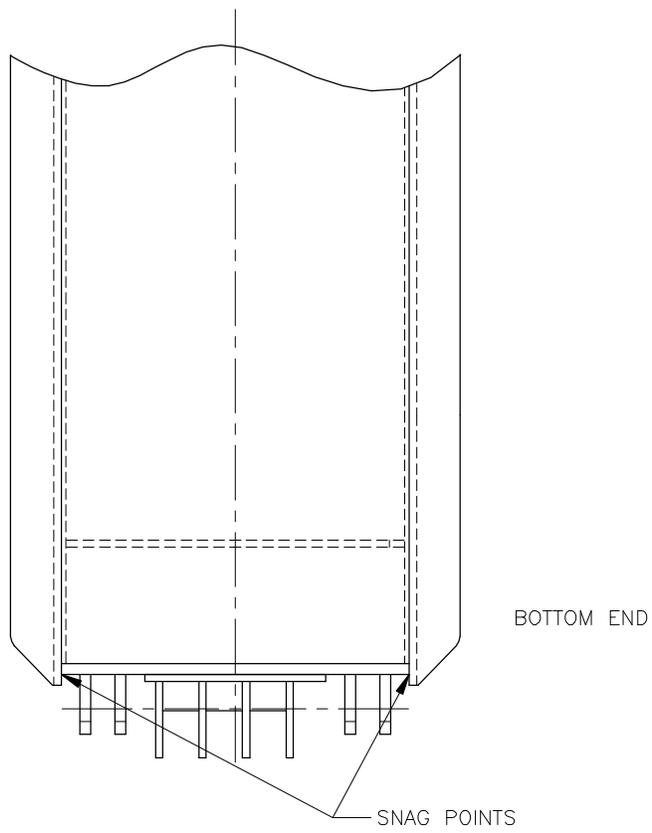
DISCUSSION: When running casing, angles on the Torque Guide Section 2 can be a snag hazard if using a pick-up/lay down machine to push the casing.

RECOMMENDATION: The angles can be trimmed back approximately 1/2 inch to be flush or recessed with the bottom of the Torque Guide tube. See attached drawing. The angle should be beveled and ground smooth. This will help prevent premature wear of the Top Drive guide rails.

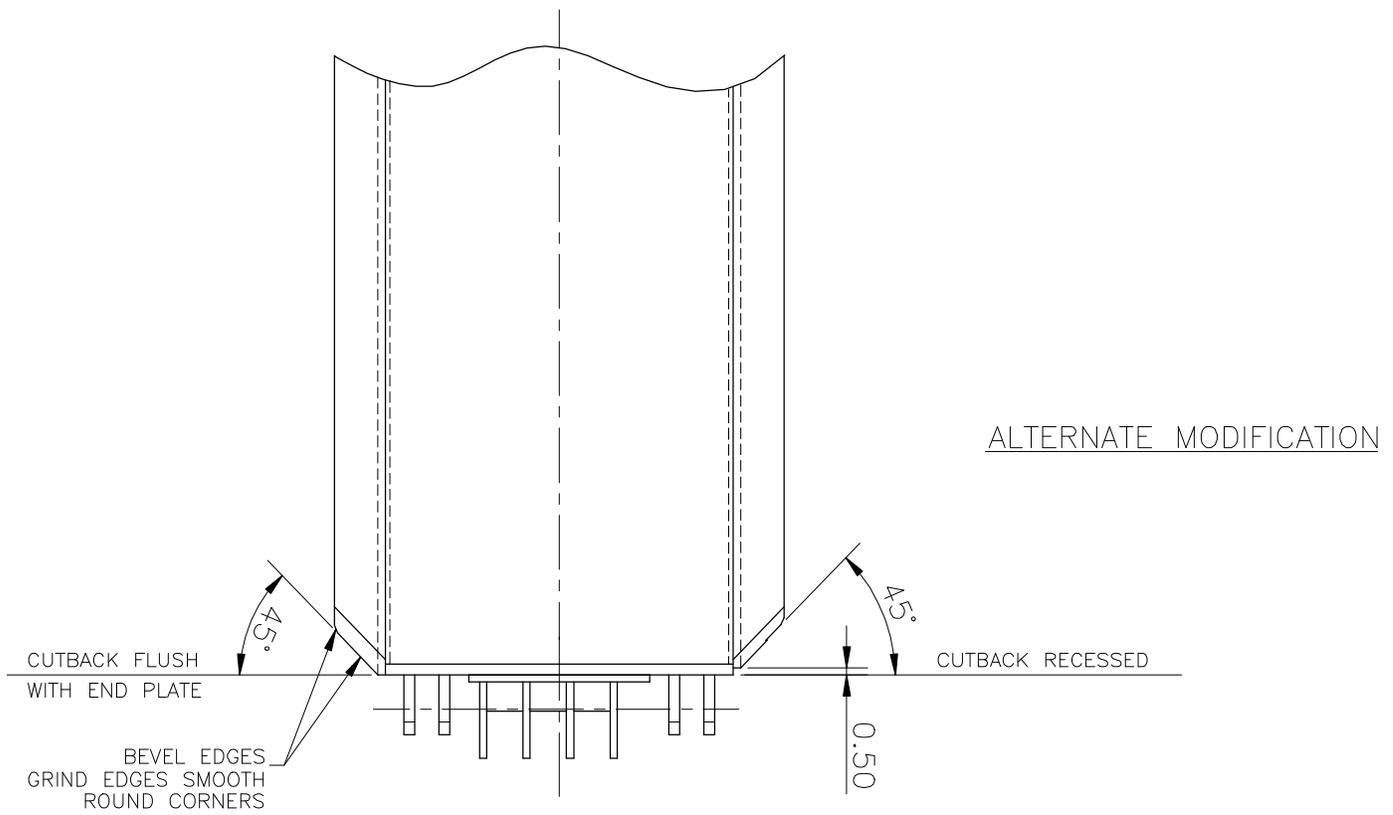
INFORMATION :

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EXISTING SECTION 2



MODIFIED SECTION 2



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 53

SAFETY ALERT

DATE: December 8, 1999

SUBJECT: 275 TON HANDLER LOCK PIN

SERIAL NUMBERS: 002-006, 009-013, 030, 036, 041, 047, 049, 062, 071, 076, 092, 097, 111, 116, 123, 124, 132, 138, 139

DISCUSSION: Over time, it may be possible for the Handler Lock Pin to become partially or fully unthreaded from the Handler Lock Cylinder rod leading to a failure of the pin to cylinder rod connection. In the event of a connection failure, it is then possible for the Lock Pin to fall from the Top Drive.

RECOMMENDATION: The Handler Lock cylinder and pin assembly should be removed and inspected. The Lock Pin should be removed from the cylinder rod, the threads cleaned of debris and grease, and re-installed with Loctite 262 threadlocker applied to the threads. Loctite should also be applied to the set screw in the side of the Lock pin.
It is also recommended that the tightness of the Lock Pin to cylinder rod connection be verified every six (6) months to confirm that the Loctite is still holding.
A design review is underway; further notices may be sent out regarding the results of this review.

INFORMATION:

For further information contact:

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SAFETY ALERT

DATE: December 22, 1999

- SUBJECT:** Portable Torque Guide Lifting
- SERIAL NUMBERS:** 6, 8, 13, 14, 16, 18-24, 26-33, 36, 38, 40, 41, 42-49, 51-54, 56, 58-65, 67-75, 77-79, 81-95, 97-102, 104, 117, 120, 121, 125, 126, 128, 129, 131, 132, 134, 140, 143, 145
- DISCUSSION:** An incident occurred where a torque guide lifting sling parted causing the torque guide and top drive to fall out of the mast. Following proper portable torque guide lifting procedures and good maintenance practices will ensure a safe installation and removal of the top drive system.
- RECOMMENDATION:** When installing or removing a portable torque guide and top drive into a mast, the following precautions should be followed:
1. Ensure the rig weight indicator is installed and operational.
 2. Ensure the rig drilling recorder is functional and is monitoring hook load.
 3. Clear the floor area of all unnecessary equipment and personnel.
 4. Clear the area in front of the substructure (catwalk and ramp) of all personnel and non-essential equipment.
 5. Visually inspect the rig-up assembly and lifting slings prior to each use and ensure there is no wear or damage. Repair or replace if required.
 6. While hoisting with the travelling block, ensure the design load rating of the 1.75" Dia. wire rope sling is not exceeded. Do not hoist more than 20 000 lbs over the free weight of the assembly.
 7. Ensure the torque guide or top drive does not snag or hang up in the mast. This can cause the hoisting load to exceed the load rating of the equipment.
 8. Re-certify all lifting slings at the same intervals as the rig slings (or at least every 1000 working days).

INFORMATION:

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 55

DATE: February 7, 2000

SUBJECT: Torque Reaction Slide Plates

SERIAL NUMBERS: 6, 8, 13, 14, 16, 18-24, 26-33, 36, 38, 40, 41, 42-49, 51-54, 56, 58-65, 67-75, 77-79, 81-95, 97-102, 104-113, 116, 120, 121, 123, 125, 126, 128, 129, 131, 132, 134, 140, 147

DISCUSSION: An incident occurred where a slide plate was pushed up out of the clamp plates by the torque guide and fell to the floor. This occurred while the rig was raising the torque guide.

RECOMMENDATION: Add a 4" piece of ½" sq. bar to the bottom of the drawworks side of the slide plate. This will make the slide plate captive in the torque reaction assy.

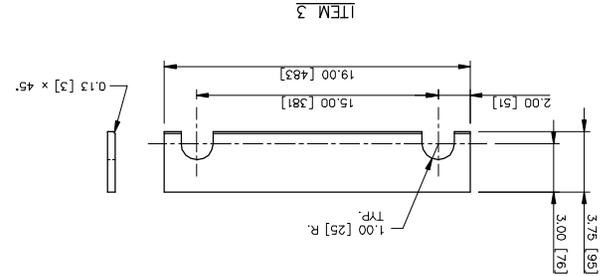
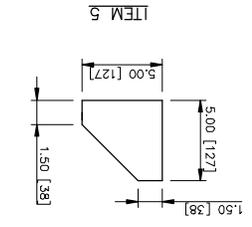
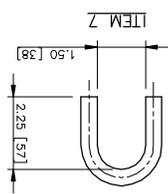
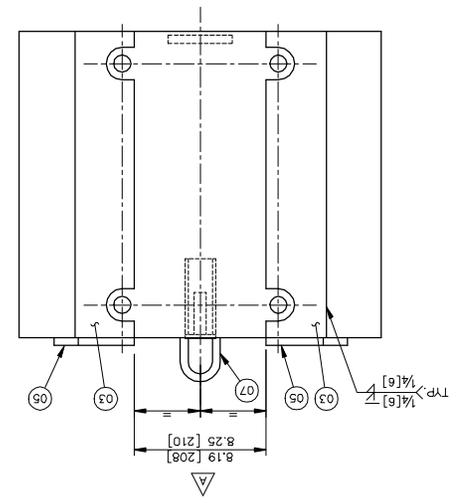
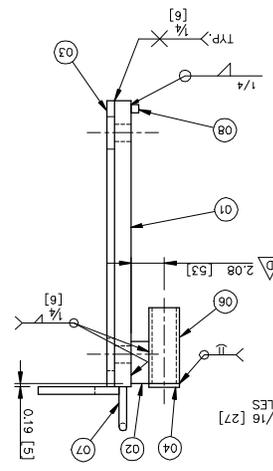
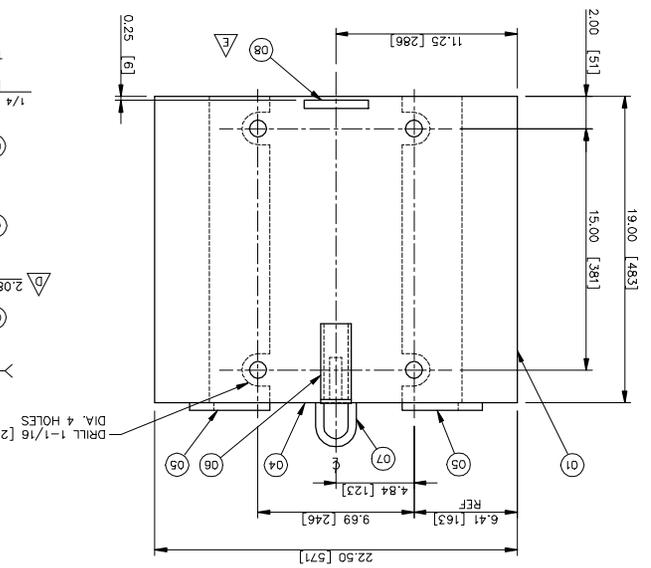
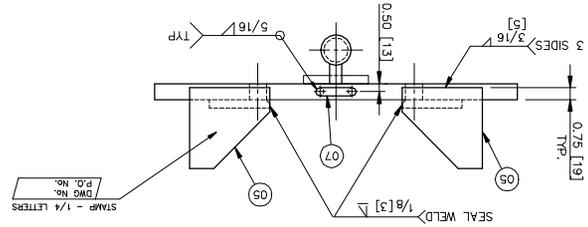
See attached dwg's: Modify as per the style of slide plate that you have.

INFORMATION:

For further information contact:

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ITEM QTY	DESCRIPTION	ITEM QTY
01	1" PLATE, 19.00 [483] X 22.50 [572]	44W
02	3/4 PLATE, 1.13 [29] X 2.63 [67]	44W
03	1/2 PLATE, 3.75 [95] X 19.00 [483] LG.	44W
04	1/4 PLATE X 1.88 [48] DIA.	M.S.
05	1/2 PLATE, 5.00 [127] X 5.00 [127]	M.S. (TEMPLATE)
06	1" PIPE 1 1/2" SCHED 40 X 4.89 [119]	M.S.
07	1" BAR, RD, 1 1/2" X 6.25 [159] LG.	44W
08	1" BAR, SQ, 1 1/2" X 4.00 [102] LG.	44W



FABRICATION NOTES:

- 1) FABRICATE IN PAIRS
- 2) TACK WELD ITEM 1 TOGETHER BACK TO BACK.
- 3) WELD ITEM 3 TO ITEM 1 AS SHOWN.
- 4) BREAK TACK WELDS, THEN WELD ITEMS 2,4,5, & 6 TO ITEM 1.

No	Y/M/D	BY	REVISION
E	00/01/27	JSC	ECN# 664
D	99/09/30	DAJ	ADDED DIM FROM C/L OF PIPE TO FACE OF PLATE
C	98/02/27	DAJ	SEE ECN #566, P/PF NOW SCHED. 40 WMS XS
B	96/09/05	DC	ADDED ITEM 7
A	95/08/01	DC	8.19 WMS 8.06

ANGULAR	±	ANGULAR	±
ANGULAR	± 2'	ANGULAR	± 1'
± 24"	± .12"	± 24"	± .12"
± 10' 24"	± .06"	FABRICATING IMPERIAL	± .06"
± .010 IN 5 INCHES	± .005	FABRICATING METRIC	± .05
± .010 IN 5 INCHES	± .005	DECIMAL	± .030
± .010 IN 5 INCHES	± .005	MACHINING IMPERIAL	± .015
± .010 IN 5 INCHES	± .005	MACHINING METRIC	± .030
± .010 IN 5 INCHES	± .005	MATERIAL	± .015
± .010 IN 5 INCHES	± .005	CHECKED	± .015
± .010 IN 5 INCHES	± .005	APPROVED	± .015
± .010 IN 5 INCHES	± .005	DRAWN	± .015
± .010 IN 5 INCHES	± .005	DATE	± .015

PROJECT	SCALE	EST. WEIGHT	SCALE
TORQUE REACTION BEAM	1:4		1:4

REV	DESCRIPTION
E	REV E

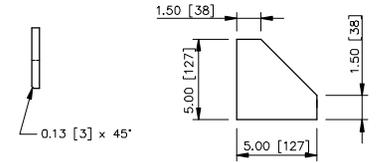
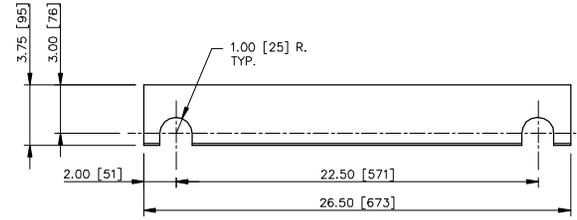
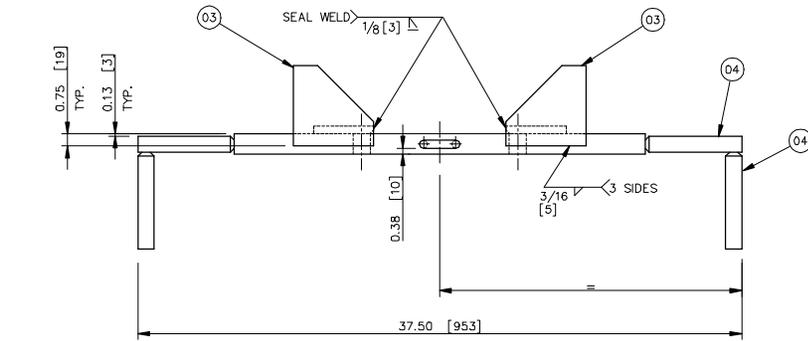
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REMOVE SHARP CORNERS AND BURRS
 CASTING ± 1/16
 CONCENTRICITY ± .005 DIA
 STRAIGHTNESS ± .010 IN 5 INCHES
 PARALLELISM ± .010 IN 5 INCHES
 TRUE POSITION ± .005

TOLERANCE - UNLESS OTHERWISE SPECIFIED

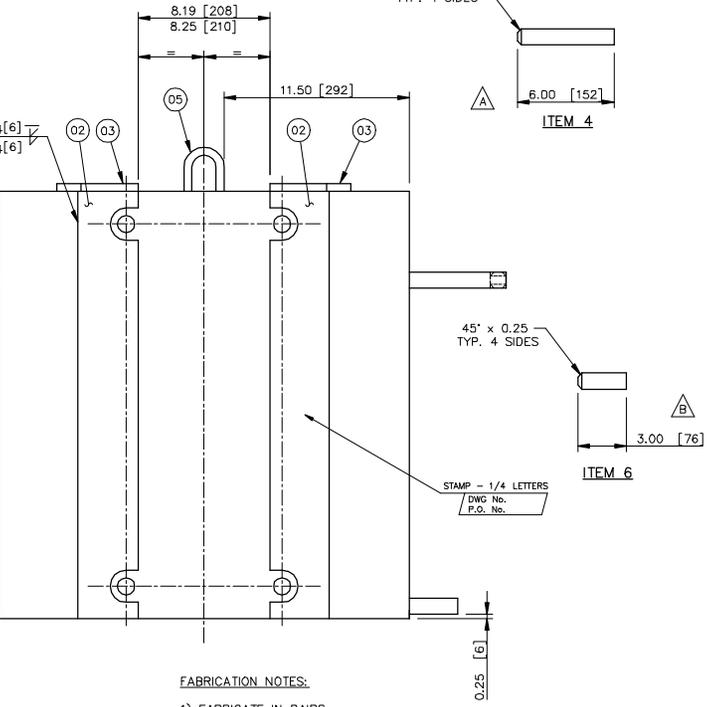
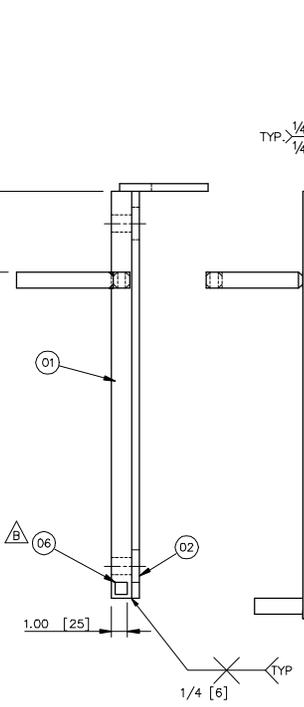
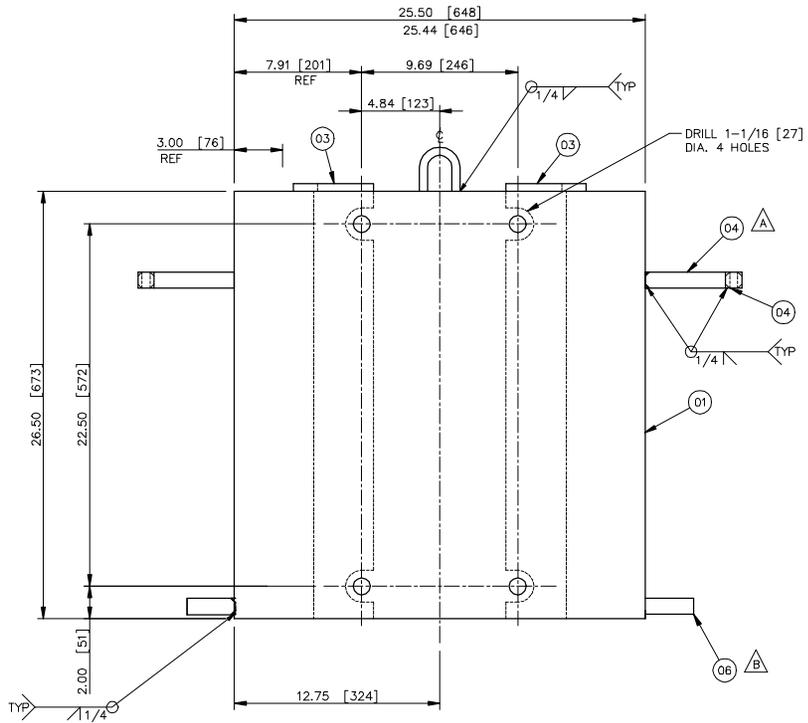


ITEM	QTY	DESCRIPTION	CANRIG PART No
01	1	PLATE 1 1/4" x 25.50 [648] x 26.50 [673] LG	A36
02	2	PLATE 1/2" x 3.75 [95] x 26.50 [673] LG	A36
03	2	PLATE 1/2" x 5.00 [127] x 5.00 [127]	A36
04	4	BAR, SQ, 1" x 6.00 [152]	A36
05	1	BAR, RD, 1/2" x 6.25 [159] LG	A36
06	2	BAR, SQ, 1" x 3.00 [50.8] LG	A36



ITEM 2

ITEM 3



ITEM 4

ITEM 6

FABRICATION NOTES:

- 1) FABRICATE IN PAIRS.
- 2) TACK WELD ITEM 1 TOGETHER BACK TO BACK.
- 3) WELD ITEM 2 TO ITEM 1 AS SHOWN.
- 4) BREAK TACK WELDS, THEN WELD ITEM 3 TO ITEM 1.

No.	Y/M/D	BY	REVISION
B	00/01/27	JSC	ECN# 664
A	99/07/08	RAS	REVISED ITEM 4, TO AID IN SHIMMING

TOLERANCE - UNLESS OTHERWISE SPECIFIED			
REMOVE SHARP CORNERS AND BURRS			
CASTING	± 1/16	FABRICATING [METRIC]	MACHINING IMPERIAL
0 TO 600 mm ± 1 mm		0 TO 600 mm ± 3 mm	DECIMAL .x ± .030"
600 TO 1200 mm ± 1.5 mm		600 TO 1200 mm ± 4.5 mm	xxx ± .015"
1200 TO 1800 mm ± 2 mm		1200 TO 1800 mm ± 6 mm	xxx ± .005"
1800 TO 2400 mm ± 2.5 mm		1800 TO 2400 mm ± 7.5 mm	
2400 TO 3000 mm ± 3 mm		2400 TO 3000 mm ± 9 mm	
3000 TO 3600 mm ± 3.5 mm		3000 TO 3600 mm ± 10.5 mm	
3600 TO 4200 mm ± 4 mm		3600 TO 4200 mm ± 12 mm	
4200 TO 4800 mm ± 4.5 mm		4200 TO 4800 mm ± 13.5 mm	
4800 TO 5400 mm ± 5 mm		4800 TO 5400 mm ± 15 mm	
5400 TO 6000 mm ± 5.5 mm		5400 TO 6000 mm ± 16.5 mm	
6000 TO 6600 mm ± 6 mm		6000 TO 6600 mm ± 18 mm	
6600 TO 7200 mm ± 6.5 mm		6600 TO 7200 mm ± 19.5 mm	
7200 TO 7800 mm ± 7 mm		7200 TO 7800 mm ± 21 mm	
7800 TO 8400 mm ± 7.5 mm		7800 TO 8400 mm ± 22.5 mm	
8400 TO 9000 mm ± 8 mm		8400 TO 9000 mm ± 24 mm	
9000 TO 9600 mm ± 8.5 mm		9000 TO 9600 mm ± 25.5 mm	
9600 TO 10200 mm ± 9 mm		9600 TO 10200 mm ± 27 mm	
10200 TO 10800 mm ± 9.5 mm		10200 TO 10800 mm ± 28.5 mm	
10800 TO 11400 mm ± 10 mm		10800 TO 11400 mm ± 30 mm	
11400 TO 12000 mm ± 10.5 mm		11400 TO 12000 mm ± 31.5 mm	
12000 TO 12600 mm ± 11 mm		12000 TO 12600 mm ± 33 mm	
12600 TO 13200 mm ± 11.5 mm		12600 TO 13200 mm ± 34.5 mm	
13200 TO 13800 mm ± 12 mm		13200 TO 13800 mm ± 36 mm	
13800 TO 14400 mm ± 12.5 mm		13800 TO 14400 mm ± 37.5 mm	
14400 TO 15000 mm ± 13 mm		14400 TO 15000 mm ± 39 mm	
15000 TO 15600 mm ± 13.5 mm		15000 TO 15600 mm ± 40.5 mm	
15600 TO 16200 mm ± 14 mm		15600 TO 16200 mm ± 42 mm	
16200 TO 16800 mm ± 14.5 mm		16200 TO 16800 mm ± 43.5 mm	
16800 TO 17400 mm ± 15 mm		16800 TO 17400 mm ± 45 mm	
17400 TO 18000 mm ± 15.5 mm		17400 TO 18000 mm ± 46.5 mm	
18000 TO 18600 mm ± 16 mm		18000 TO 18600 mm ± 48 mm	
18600 TO 19200 mm ± 16.5 mm		18600 TO 19200 mm ± 49.5 mm	
19200 TO 19800 mm ± 17 mm		19200 TO 19800 mm ± 51 mm	
19800 TO 20400 mm ± 17.5 mm		19800 TO 20400 mm ± 52.5 mm	
20400 TO 21000 mm ± 18 mm		20400 TO 21000 mm ± 54 mm	
21000 TO 21600 mm ± 18.5 mm		21000 TO 21600 mm ± 55.5 mm	
21600 TO 22200 mm ± 19 mm		21600 TO 22200 mm ± 57 mm	
22200 TO 22800 mm ± 19.5 mm		22200 TO 22800 mm ± 58.5 mm	
22800 TO 23400 mm ± 20 mm		22800 TO 23400 mm ± 60 mm	
23400 TO 24000 mm ± 20.5 mm		23400 TO 24000 mm ± 61.5 mm	
24000 TO 24600 mm ± 21 mm		24000 TO 24600 mm ± 63 mm	
24600 TO 25200 mm ± 21.5 mm		24600 TO 25200 mm ± 64.5 mm	
25200 TO 25800 mm ± 22 mm		25200 TO 25800 mm ± 66 mm	
25800 TO 26400 mm ± 22.5 mm		25800 TO 26400 mm ± 67.5 mm	
26400 TO 27000 mm ± 23 mm		26400 TO 27000 mm ± 69 mm	
27000 TO 27600 mm ± 23.5 mm		27000 TO 27600 mm ± 70.5 mm	
27600 TO 28200 mm ± 24 mm		27600 TO 28200 mm ± 72 mm	
28200 TO 28800 mm ± 24.5 mm		28200 TO 28800 mm ± 73.5 mm	
28800 TO 29400 mm ± 25 mm		28800 TO 29400 mm ± 75 mm	
29400 TO 30000 mm ± 25.5 mm		29400 TO 30000 mm ± 76.5 mm	
30000 TO 30600 mm ± 26 mm		30000 TO 30600 mm ± 78 mm	
30600 TO 31200 mm ± 26.5 mm		30600 TO 31200 mm ± 79.5 mm	
31200 TO 31800 mm ± 27 mm		31200 TO 31800 mm ± 81 mm	
31800 TO 32400 mm ± 27.5 mm		31800 TO 32400 mm ± 82.5 mm	
32400 TO 33000 mm ± 28 mm		32400 TO 33000 mm ± 84 mm	
33000 TO 33600 mm ± 28.5 mm		33000 TO 33600 mm ± 85.5 mm	
33600 TO 34200 mm ± 29 mm		33600 TO 34200 mm ± 87 mm	
34200 TO 34800 mm ± 29.5 mm		34200 TO 34800 mm ± 88.5 mm	
34800 TO 35400 mm ± 30 mm		34800 TO 35400 mm ± 90 mm	
35400 TO 36000 mm ± 30.5 mm		35400 TO 36000 mm ± 91.5 mm	
36000 TO 36600 mm ± 31 mm		36000 TO 36600 mm ± 93 mm	
36600 TO 37200 mm ± 31.5 mm		36600 TO 37200 mm ± 94.5 mm	
37200 TO 37800 mm ± 32 mm		37200 TO 37800 mm ± 96 mm	
37800 TO 38400 mm ± 32.5 mm		37800 TO 38400 mm ± 97.5 mm	
38400 TO 39000 mm ± 33 mm		38400 TO 39000 mm ± 99 mm	
39000 TO 39600 mm ± 33.5 mm		39000 TO 39600 mm ± 100.5 mm	
39600 TO 40200 mm ± 34 mm		39600 TO 40200 mm ± 102 mm	
40200 TO 40800 mm ± 34.5 mm		40200 TO 40800 mm ± 103.5 mm	
40800 TO 41400 mm ± 35 mm		40800 TO 41400 mm ± 105 mm	
41400 TO 42000 mm ± 35.5 mm		41400 TO 42000 mm ± 106.5 mm	
42000 TO 42600 mm ± 36 mm		42000 TO 42600 mm ± 108 mm	
42600 TO 43200 mm ± 36.5 mm		42600 TO 43200 mm ± 109.5 mm	
43200 TO 43800 mm ± 37 mm		43200 TO 43800 mm ± 111 mm	
43800 TO 44400 mm ± 37.5 mm		43800 TO 44400 mm ± 112.5 mm	
44400 TO 45000 mm ± 38 mm		44400 TO 45000 mm ± 114 mm	
45000 TO 45600 mm ± 38.5 mm		45000 TO 45600 mm ± 115.5 mm	
45600 TO 46200 mm ± 39 mm		45600 TO 46200 mm ± 117 mm	
46200 TO 46800 mm ± 39.5 mm		46200 TO 46800 mm ± 118.5 mm	
46800 TO 47400 mm ± 40 mm		46800 TO 47400 mm ± 120 mm	
47400 TO 48000 mm ± 40.5 mm		47400 TO 48000 mm ± 121.5 mm	
48000 TO 48600 mm ± 41 mm		48000 TO 48600 mm ± 123 mm	
48600 TO 49200 mm ± 41.5 mm		48600 TO 49200 mm ± 124.5 mm	
49200 TO 49800 mm ± 42 mm		49200 TO 49800 mm ± 126 mm	
49800 TO 50400 mm ± 42.5 mm		49800 TO 50400 mm ± 127.5 mm	
50400 TO 51000 mm ± 43 mm		50400 TO 51000 mm ± 129 mm	
51000 TO 51600 mm ± 43.5 mm		51000 TO 51600 mm ± 130.5 mm	
51600 TO 52200 mm ± 44 mm		51600 TO 52200 mm ± 132 mm	
52200 TO 52800 mm ± 44.5 mm		52200 TO 52800 mm ± 133.5 mm	
52800 TO 53400 mm ± 45 mm		52800 TO 53400 mm ± 135 mm	
53400 TO 54000 mm ± 45.5 mm		53400 TO 54000 mm ± 136.5 mm	
54000 TO 54600 mm ± 46 mm		54000 TO 54600 mm ± 138 mm	
54600 TO 55200 mm ± 46.5 mm		54600 TO 55200 mm ± 139.5 mm	
55200 TO 55800 mm ± 47 mm		55200 TO 55800 mm ± 141 mm	
55800 TO 56400 mm ± 47.5 mm		55800 TO 56400 mm ± 142.5 mm	
56400 TO 57000 mm ± 48 mm		56400 TO 57000 mm ± 144 mm	
57000 TO 57600 mm ± 48.5 mm		57000 TO 57600 mm ± 145.5 mm	
57600 TO 58200 mm ± 49 mm		57600 TO 58200 mm ± 147 mm	
58200 TO 58800 mm ± 49.5 mm		58200 TO 58800 mm ± 148.5 mm	
58800 TO 59400 mm ± 50 mm		58800 TO 59400 mm ± 150 mm	
59400 TO 60000 mm ± 50.5 mm		59400 TO 60000 mm ± 151.5 mm	
60000 TO 60600 mm ± 51 mm		60000 TO 60600 mm ± 153 mm	
60600 TO 61200 mm ± 51.5 mm		60600 TO 61200 mm ± 154.5 mm	
61200 TO 61800 mm ± 52 mm		61200 TO 61800 mm ± 156 mm	
61800 TO 62400 mm ± 52.5 mm		61800 TO 62400 mm ± 157.5 mm	
62400 TO 63000 mm ± 53 mm		62400 TO 63000 mm ± 159 mm	
63000 TO 63600 mm ± 53.5 mm		63000 TO 63600 mm ± 160.5 mm	
63600 TO 64200 mm ± 54 mm		63600 TO 64200 mm ± 162 mm	
64200 TO 64800 mm ± 54.5 mm		64200 TO 64800 mm ± 163.5 mm	
64800 TO 65400 mm ± 55 mm		64800 TO 65400 mm ± 165 mm	
65400 TO 66000 mm ± 55.5 mm		65400 TO 66000 mm ± 166.5 mm	
66000 TO 66600 mm ± 56 mm		66000 TO 66600 mm ± 168 mm	
66600 TO 67200 mm ± 56.5 mm		66600 TO 67200 mm ± 169.5 mm	
67200 TO 67800 mm ± 57 mm		67200 TO 67800 mm ± 171 mm	
67800 TO 68400 mm ± 57.5 mm		67800 TO 68400 mm ± 172.5 mm	
68400 TO 69000 mm ± 58 mm		68400 TO 69000 mm ± 174 mm	
69000 TO 69600 mm ± 58.5 mm		69000 TO 69600 mm ± 175.5 mm	
69600 TO 70200 mm ± 59 mm		69600 TO 70200 mm ± 177 mm	
70200 TO 70800 mm ± 59.5 mm		70200 TO 70800 mm ± 178.5 mm	
70800 TO 71400 mm ± 60 mm		70800 TO 71400 mm ± 180 mm	
71400 TO 72000 mm ± 60.5 mm		71400 TO 72000 mm ± 181.5 mm	
72000 TO 72600 mm ± 61 mm		72000 TO 72600 mm ± 183 mm	
72600 TO 73200 mm ± 61.5 mm		72600 TO 73200 mm ± 184.5 mm	
73200 TO 73800 mm ± 62 mm		73200 TO 73800 mm ± 186 mm	
73800 TO 74400 mm ± 62.5 mm		73800 TO 74400 mm ± 187.5 mm	
74400 TO 75000 mm ± 63 mm		74400 TO 75000 mm ± 189 mm	
75000 TO 75600 mm ± 63.5 mm		75000 TO 75600 mm ± 190.5 mm	
75600 TO 76200 mm ± 64 mm		75600 TO 76200 mm ± 192 mm	
76200 TO 76800 mm ± 64.5 mm		76200 TO 76800 mm ± 193.5 mm	
76800 TO 77400 mm ± 65 mm		76800 TO 77400 mm ± 195 mm	
77400 TO 78000 mm ± 65.5 mm		77400 TO 78000 mm ± 196.5 mm	
78000 TO 78600 mm ± 66 mm		78000 TO 78600 mm ± 198 mm	
78600 TO 79200 mm ± 66.5 mm		78600 TO 79200 mm ± 199.5 mm	
79200 TO 79800 mm ± 67 mm		79200 TO 79800 mm ± 201 mm	
79800 TO 80400 mm ± 67.5 mm		79800 TO 80400 mm ± 202.5 mm	
80400 TO 81000 mm ± 68 mm		80400 TO 81000 mm ± 204 mm	
81000 TO 81600 mm ± 68.5 mm		81000 TO 81600 mm ± 205.5 mm	
81600 TO 82200 mm ± 69 mm		81600 TO 82200 mm ± 207 mm	
82200 TO 82800 mm ± 69.5 mm		82200 TO 82800 mm ± 208.5 mm	
82800 TO 83400 mm ± 70 mm		82800 TO 83400 mm ± 210 mm	
83400 TO 84000 mm ± 70.5 mm		83400 TO 84000 mm ± 211.5 mm	
84000 TO 84600 mm ± 71 mm		84000 TO 84600 mm ± 213 mm	
84600 TO 85200 mm ± 71.5 mm		84600 TO 85200 mm ± 214.5 mm	
85200 TO 85800 mm ± 72 mm		85200 TO 85800 mm ± 216 mm	
85800 TO 86400 mm ± 72.5 mm		85800 TO 86400 mm ± 217.5 mm	
86400 TO 87000 mm ± 73 mm		86400 TO 87000 mm ± 219 mm	
87000 TO 87600 mm ± 73.5 mm		87000 TO 87600 mm ± 220.5 mm	
87600 TO 88200 mm ± 74 mm		87600 TO 88200 mm ± 222 mm	
88200 TO 88800 mm ± 74.5 mm		88200 TO 88800 mm ± 223.5 mm	
88800 TO 89400 mm ± 75 mm		88800 TO 89400 mm ± 225 mm	
89400 TO 90000 mm ± 75.5 mm		89400 TO 90000 mm ± 226.5 mm	
90000 TO 90600 mm ± 76 mm		90000 TO 90600 mm ± 228 mm	
90600 TO 91200 mm ± 76.5 mm		90600 TO 91200 mm ± 229.5 mm	
91200 TO 91800 mm ± 77 mm		91200 TO 91800 mm ± 231 mm	
91800 TO 92400 mm ± 77.5 mm		91800 TO 92400 mm ± 232.5 mm	
92400 TO 93000 mm ± 78 mm		92400 TO 93000 mm ± 2	



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 56

DATE: February 10, 2000

SUBJECT: 275 Ton Reducing Gear Shaft Key

SERIAL NUMBERS: 062,071,076,111,116,124,132,138,139,144

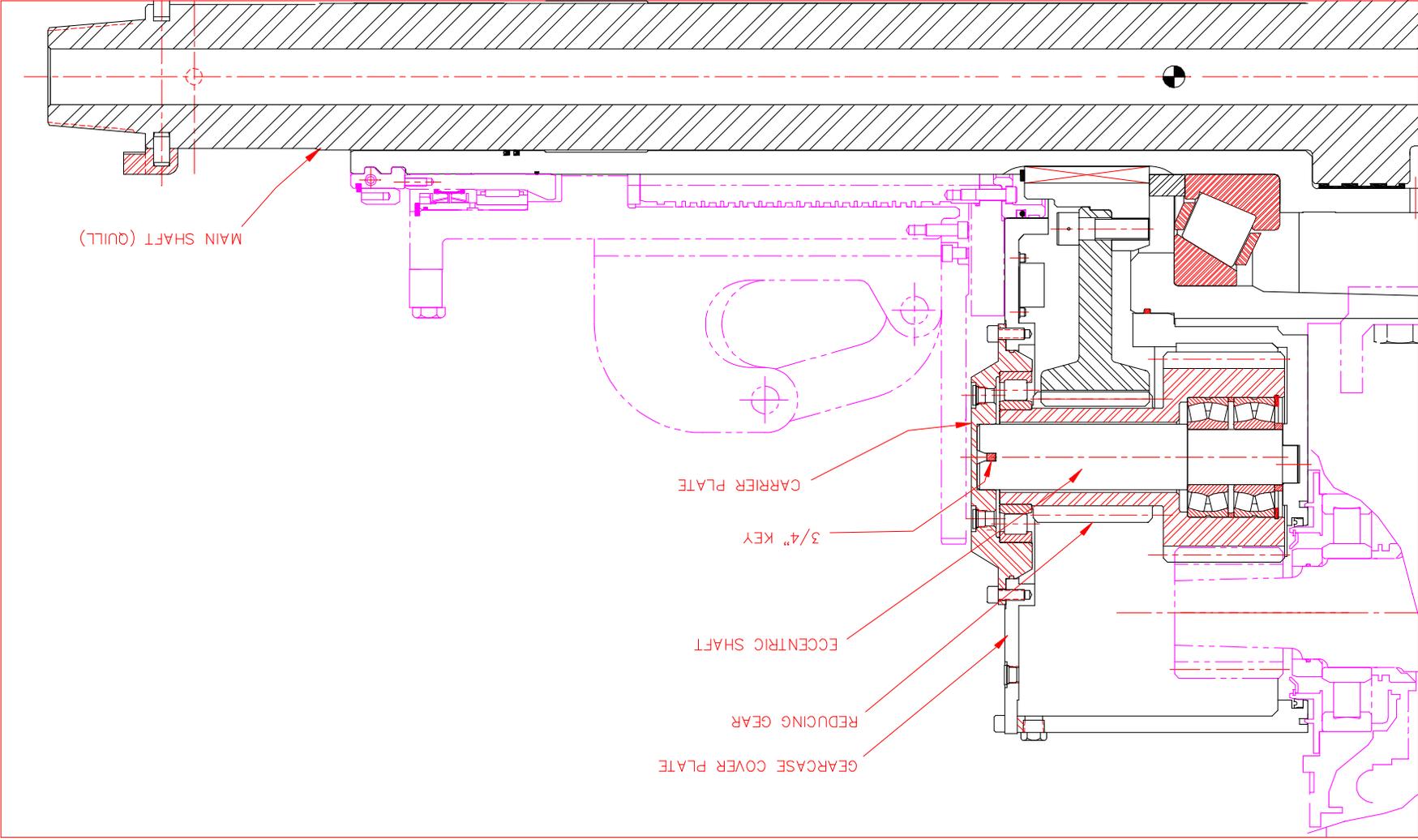
DISCUSSION: It may be possible on some 6.39 and 9.38 ratio 275 Ton Top Drives for the reducing gear eccentric shaft key to break allowing the reducing gear to become mis-aligned. This may lead to a failure of the traction motor shaft. The key is located in the 'reducing gear carrier plate' bolted on the front face of the main gearcase lid (see attached drawing).

RECOMMENDATION: The Carrier Plate and Eccentric Shaft design have been modified to accommodate a $\frac{3}{4}$ " square key instead of the $\frac{3}{8}$ " key. To avoid possible damage to the Top Drive, it is recommended that these components be changed at the rig's earliest convenience. The Carrier Plate (P/N 966-16-0), Eccentric Shaft (P/N 966-12-0) and $\frac{3}{4}$ " key (P/N DT11320) may be supplied at no charge provided that the old parts are returned to Canrig in Magnolia, Texas. Shipping and handling costs will be born by the customer. Alternatively, modification drawings can be supplied by Canrig for the conversion of the existing parts.

INFORMATION:

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



14703 FM 1488
 Magnolia, Texas
 USA
 77354

CANRIG DRILLING TECHNOLOGY LTD





DATE: March 10, 2000

SUBJECT: Portable Torque Guide - Removal

SERIAL NUMBERS: 6, 8, 13, 14, 16, 18-24, 26-33, 36, 38, 40, 41, 42-49, 51-54, 56, 58-65, 67-75, 77-79, 81-95, 97-102, 104-116, 120, 121, 123, 125, 126, 128, 129, 131, 132, 134, 140, 147

DISCUSSION: When rigging down a portable torque guide, the top section of torque guide (section 5) is traditionally laid across the drill floor while removing the rigging assembly from the blocks. A tugger line is attached to the top of section 5 for the final lowering of the last 2 sections down to the truck.

RECOMMENDATION: Before the rigging assembly is removed, the top section of the torque guide **MUST** be chained down to the rig floor even if it looks stable. This prevents the torque guide from suddenly shifting and possibly falling from the rig floor.
See attached 'Rigging Down' instructions for full removal details.

INFORMATION :

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

Portable Torque Guide Removal

MAST APPLICATION

DESCRIPTION	DRAWING NUMBER
A Preparation for Removal	M-7-126-01 (0)
B Top Drive Positioning	M-7-126-02 (0)
C Traveling Block Removal	M-7-108-11 (0)
D Erection Rigging	M-7-108-10 (A)
E Torque Guide Untensioning	M-7-108-12 (A)
F Torque Reaction	M-7-108-09 (0)
G Harpoon	M-7-108-08 (A)
H Torque Guide Removal	M-7-109-08 (0)
	M-7-109-07 (A)
	M-7-109-05 (A)
	M-7-126-03 (0)
	M-7-109-04 (B)
	M-7-109-02 (A)

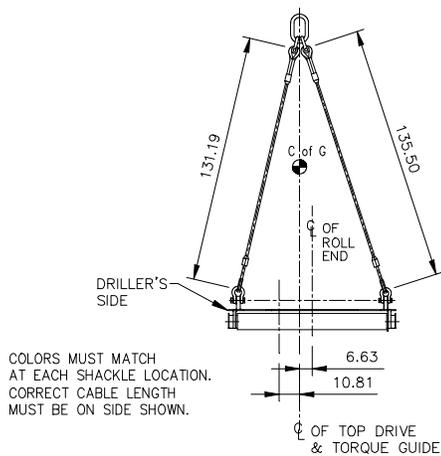
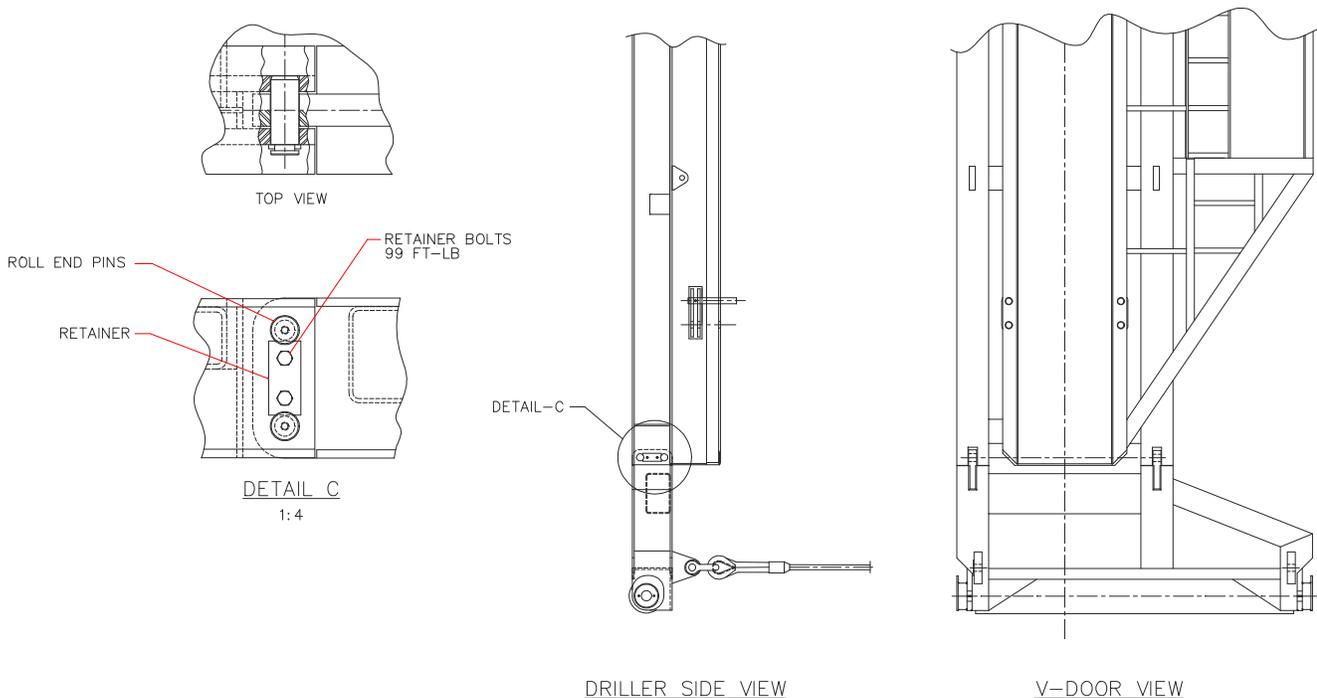
The drawings in this Subsection are provided to represent a TYPICAL PORTABLE TORQUE GUIDE MAST APPLICATION. As applications tend to differ from one rig to the next, the user should refer to the drawings in Section 6 of this Manual for specifications and instructions for the specific application.

Subsection 3B: Top Drive and Torque Guide Installation

Preparation for Removal

Drawing Number: M-7-126-01 (0)

1. Remove Elevators and Lower Links. Disconnect Rotary Hose. Remove Blower Hose.
2. If Lower Well Control Valves or Cross-over Subs require inspection, remove at this time.
3. Raise the Top Drive to allow access to the Torque Guide skid.
4. Raise the Live Roll assembly using the floor winches and insert into the Torque Guide skid. Install the roll end pins and pin retainers.
5. Remove winch lines.



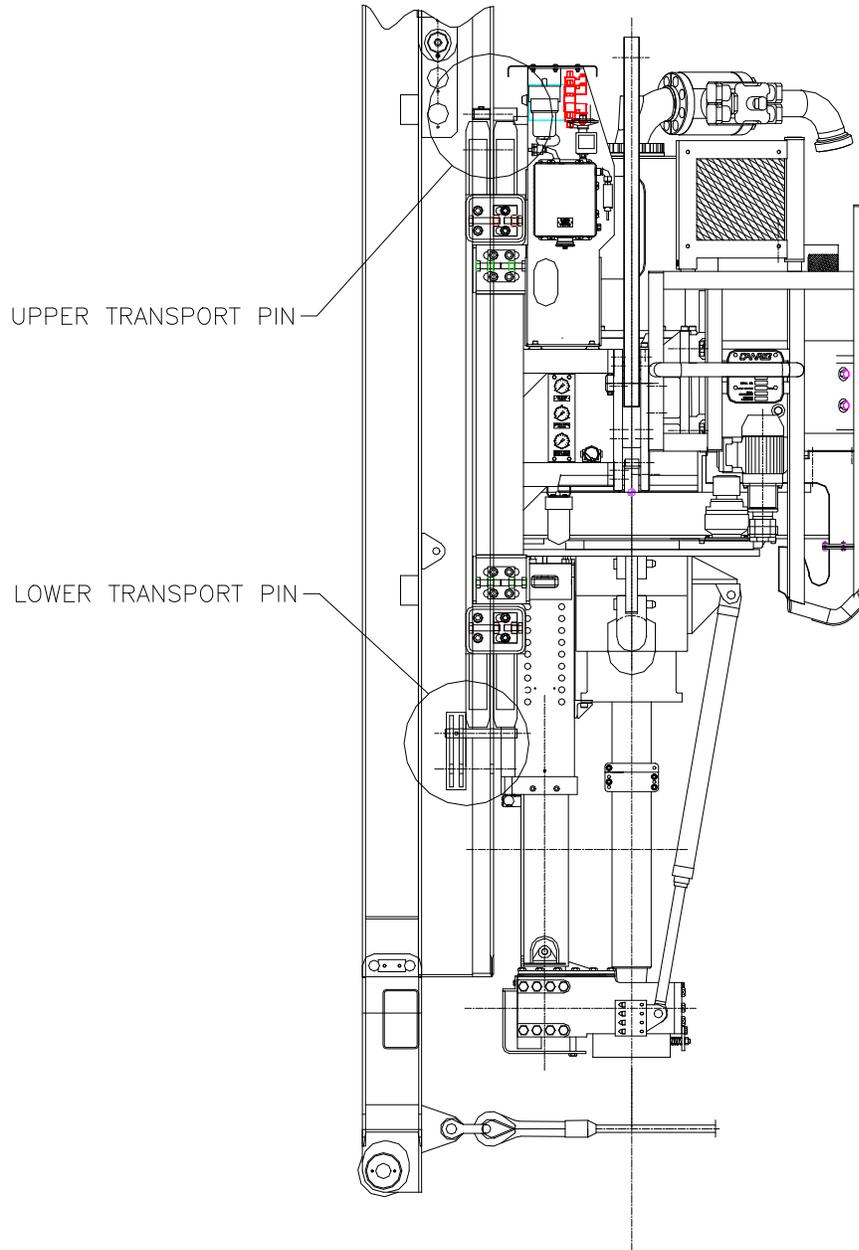
COLORS MUST MATCH
AT EACH SHACKLE LOCATION.
CORRECT CABLE LENGTH
MUST BE ON SIDE SHOWN.

CORRECT CABLE INSTALLATION

Portable Torque Guide – Top Drive Positioning

Drawing Number: M-7-126-02 (0)

1. Install the Lower Transport Pins into the Torque Guide.
2. Lower the Top Drive until the full weight of the Top Drive unit is supported by the Transport Skid.
3. Install the Upper Transport Pins into the Torque Guide.

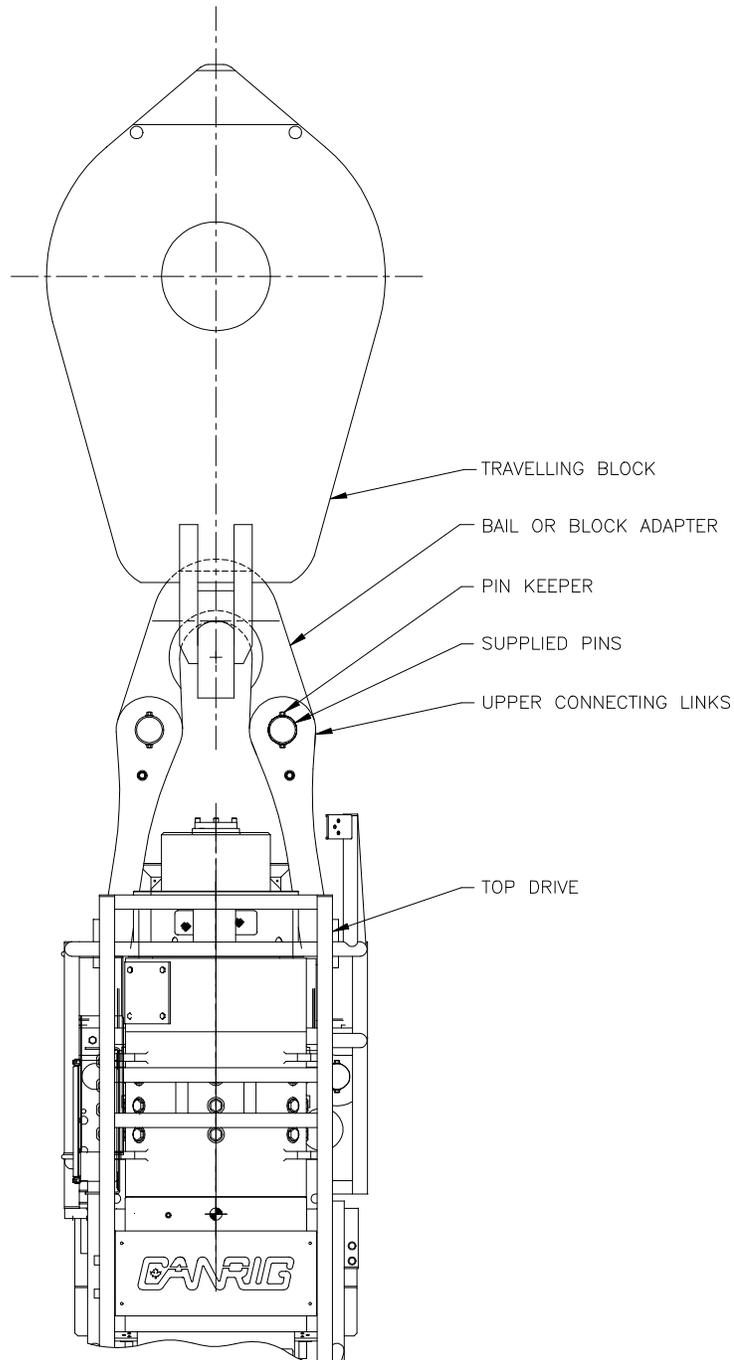


Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Traveling Block Removal

Drawing Number: M-7-108-11 (0)

1. With the full weight of the Top Drive on the Transport Pins, position the Block for removal of the Upper Link Pins.
2. Remove Pin keepers and Pins.
3. Raise the Traveling Block so the Bail or Block Adapter is free of the Upper Connecting Links.
4. Prepare to install the Erection Rigging.

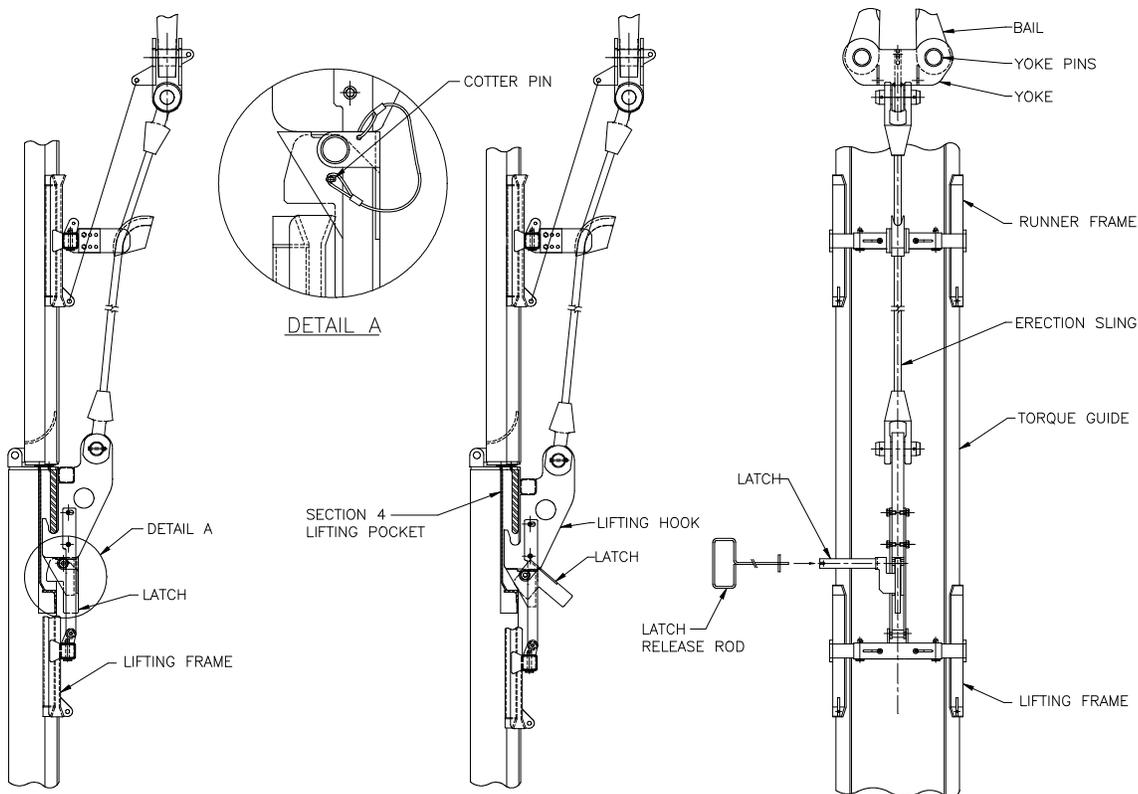


Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Erection Rigging

Drawing Number: M-7-108-10 (A)

1. Raise the Erection apparatus by connecting a tugger line to the Yoke. Raise the apparatus into position at the Traveling Block and pin the Yoke into the Bail. Install the keepers into the Bail Pins.
2. Remove the Driller's Side Pin on the runner frame and slide the runner to its extended position. Tilt the Lifting Frame and hook the ODS runner around the Torque Guide track. Slide the Driller's side frame to its retracted position around the Torque Guide track and replace the pin.
3. Raise the Traveling Block and repeat Step 2 for the Lifting Frame.
4. Raise the Traveling Block until the Lifting Hook is near the pocket on section 4 of the Torque Guide. Carefully raise the Block and ensure the Lifting Hook goes into the Lifting Pocket.
5. Insert the Latch Release Rod into the Lifting Hook Latch and turn until the latch is in the locked position as shown below.
6. Insert the $\frac{1}{2}$ " Cotter Pin in the Latch Lock.



DRILLER'S SIDE VIEW
LATCH IN LOCKED POSITION
HOOK IN UPPERMOST POSITION

DRILLER'S SIDE VIEW
LATCH IN UNLOCKED POSITION

V-DOOR VIEW

Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Traveling Block Untensioning

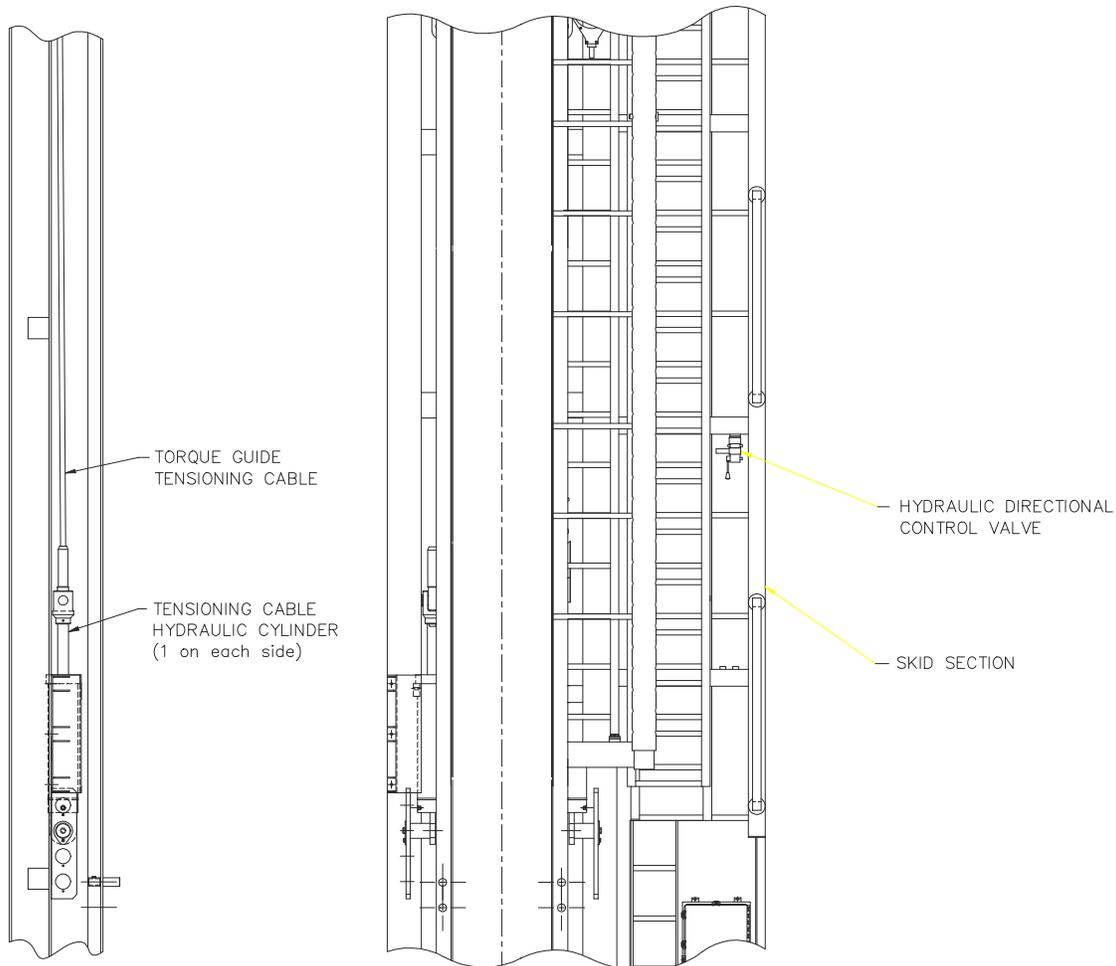
Drawing Number: M-7-108-12 (A)

1. Shift the Hydraulic Valve to extend the two hydraulic Tensioning Cable cylinders. The Valve is located on the lower skid section as shown below.
2. Any remaining torque in the Tensioning Cables can be eliminated by rotating the tensioning cable in the proper direction with a pipe wrench.

NOTE: Do not use a pipe wrench on the cylinder rod.

3. The Tensioning Cables can be unpinned from the Tensioning Cylinder to allow cable movement during the Rig-down procedure. Remove pins when Tensioning Cylinder rods are fully extended. Stand clear while retracting the cylinder rods.

CAUTION: The tensioning cables may spin rapidly when they become free from the tensioning cylinder rod.



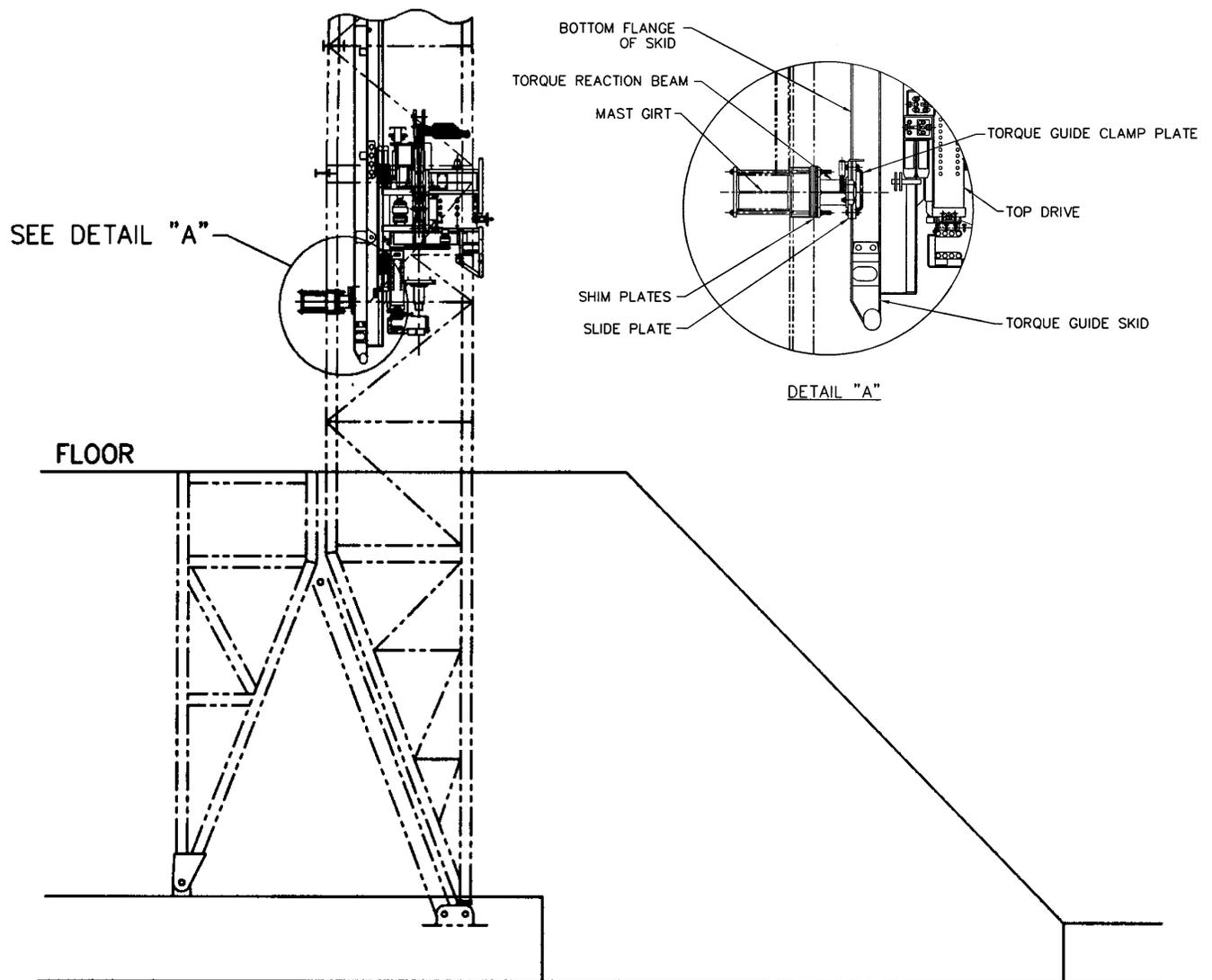
V-DOOR VIEW
(TOP DRIVE NOT SHOWN FOR CLARITY)

Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Torque Reaction

Drawing Number: M-7-108-09 (0)

1. Remove the Torque Guide clamp plates to allow the skid section to be free of the Torque Reaction Beam.
2. The clamp plates can be re-installed on the Torque Reaction Beam for transport purposes.
3. Ensure the main breakers are turned off in the TDSU and no power is going to the Top Drive.
4. Disconnect electrical and hydraulic lines from the Torque Guide.

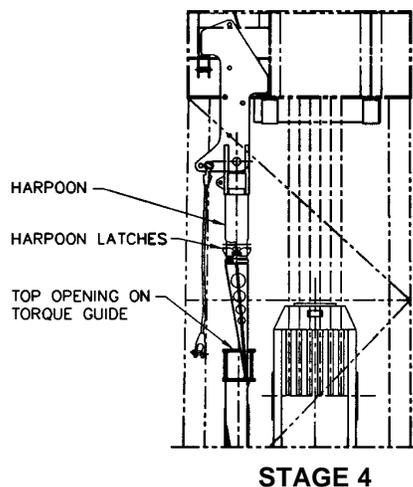
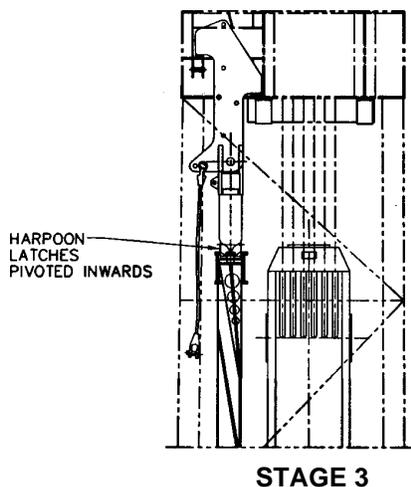
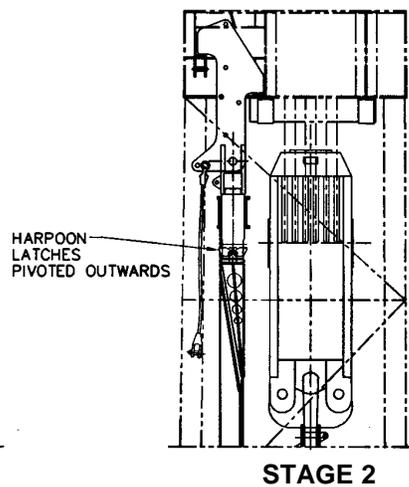
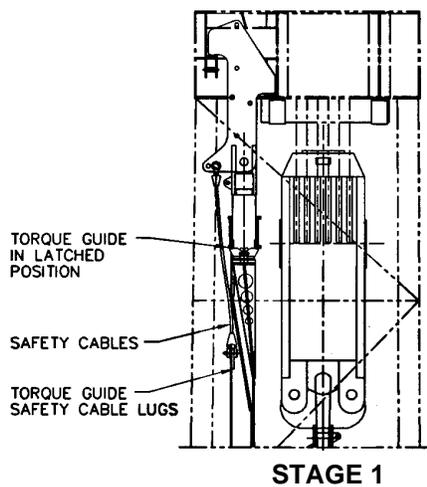


Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Harpoon

Drawing Number: M-7-108-08 (0)

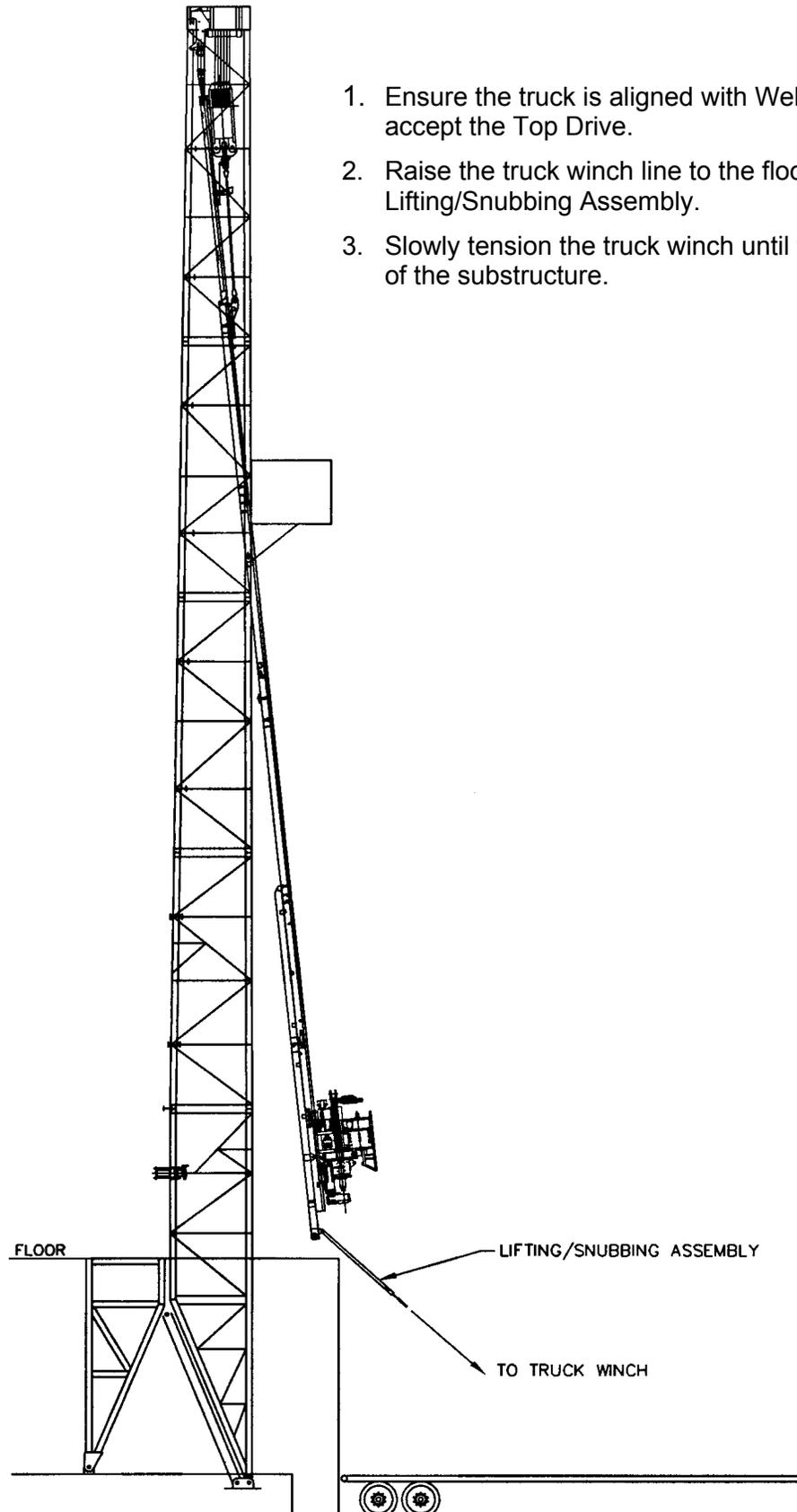
1. Remove the Safety Cables from the Torque Guide Section 5.
2. Slowly raise the Traveling Block so the Harpoon Latches are free from the top opening on the Torque Guide.
3. Pull on the Harpoon Latch Cables to pivot them inward. Lower the Torque Guide until the top opening is below the Harpoon Latches. Release the Harpoon Latch Cables.
4. The Torque Guide and Top Drive are now suspended from the Traveling Block.



Portable Torque Guide - Torque Guide Removal

Drawing Number: M-7-109-08 (A)

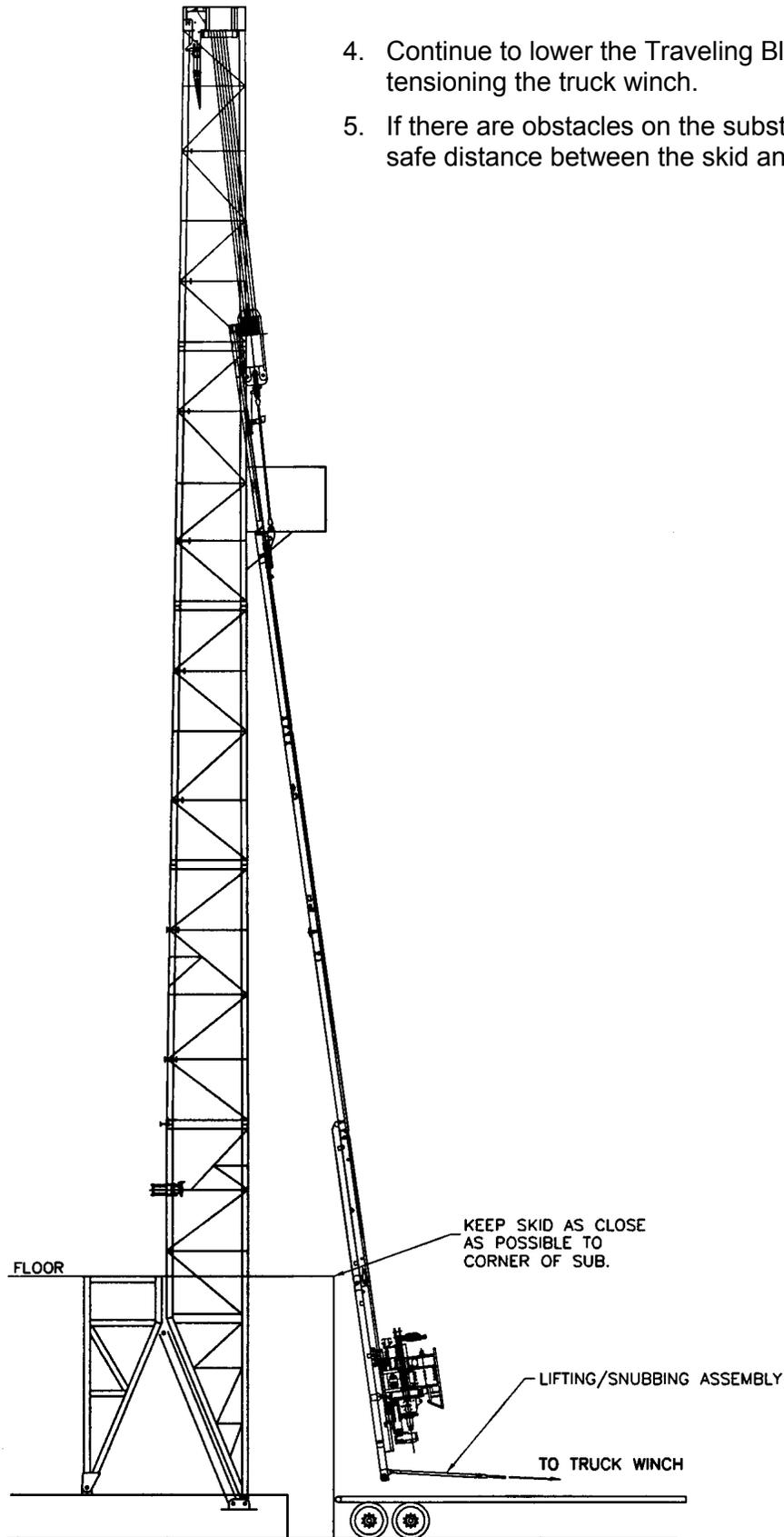
1. Ensure the truck is aligned with Well Center and in position to accept the Top Drive.
2. Raise the truck winch line to the floor and attach to the Lifting/Snubbing Assembly.
3. Slowly tension the truck winch until the Torque Guide Skid is clear of the substructure.



Portable Torque Guide – Torque Guide Removal

Drawing Number: M-7-109-07 (A)

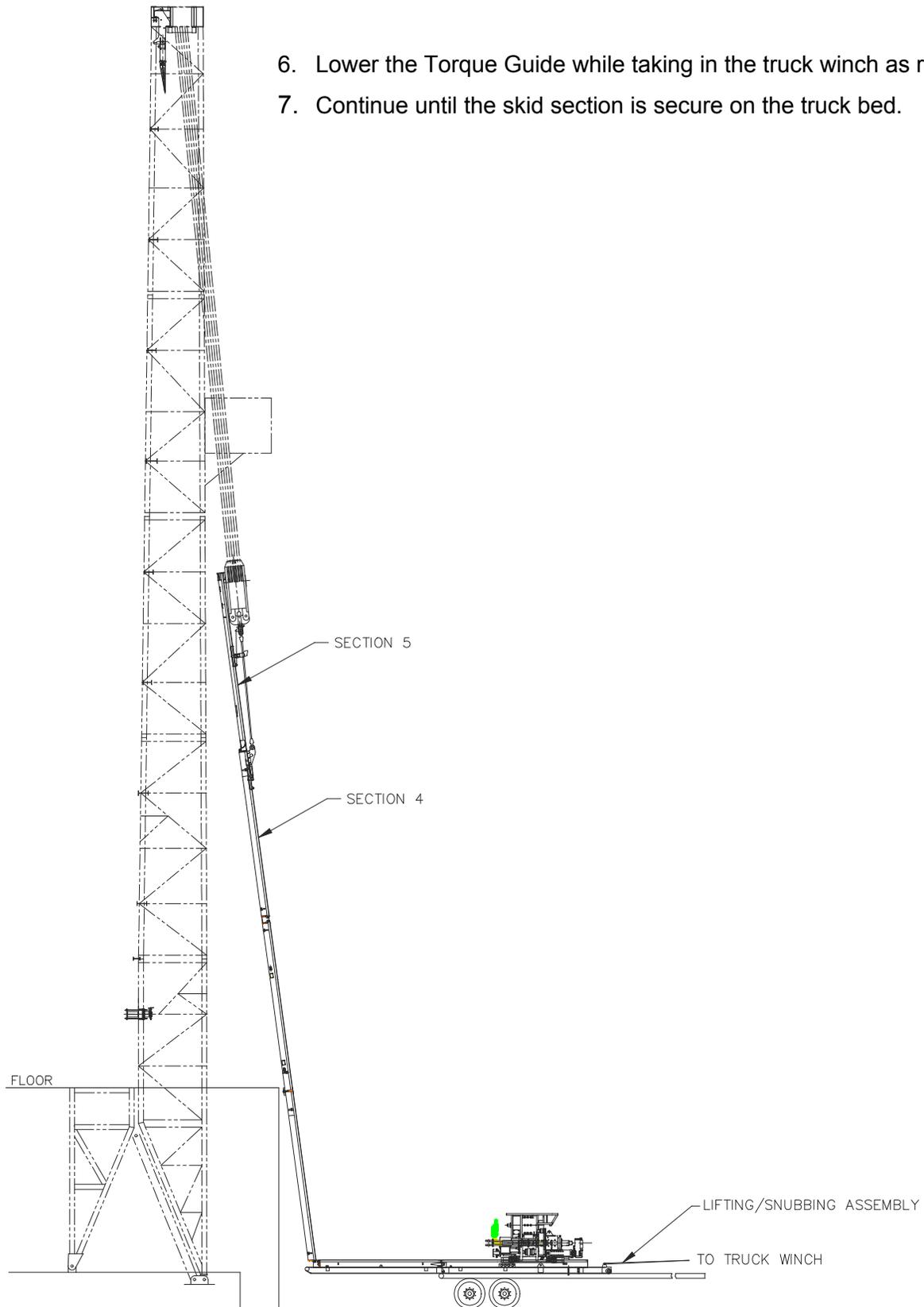
4. Continue to lower the Traveling Block/Torque Guide while tensioning the truck winch.
5. If there are obstacles on the substructure be sure to maintain a safe distance between the skid and substructure while lowering.



Portable Torque Guide – Torque Guide Removal

Drawing Number: M-7-109-05 (A)

6. Lower the Torque Guide while taking in the truck winch as required.
7. Continue until the skid section is secure on the truck bed.

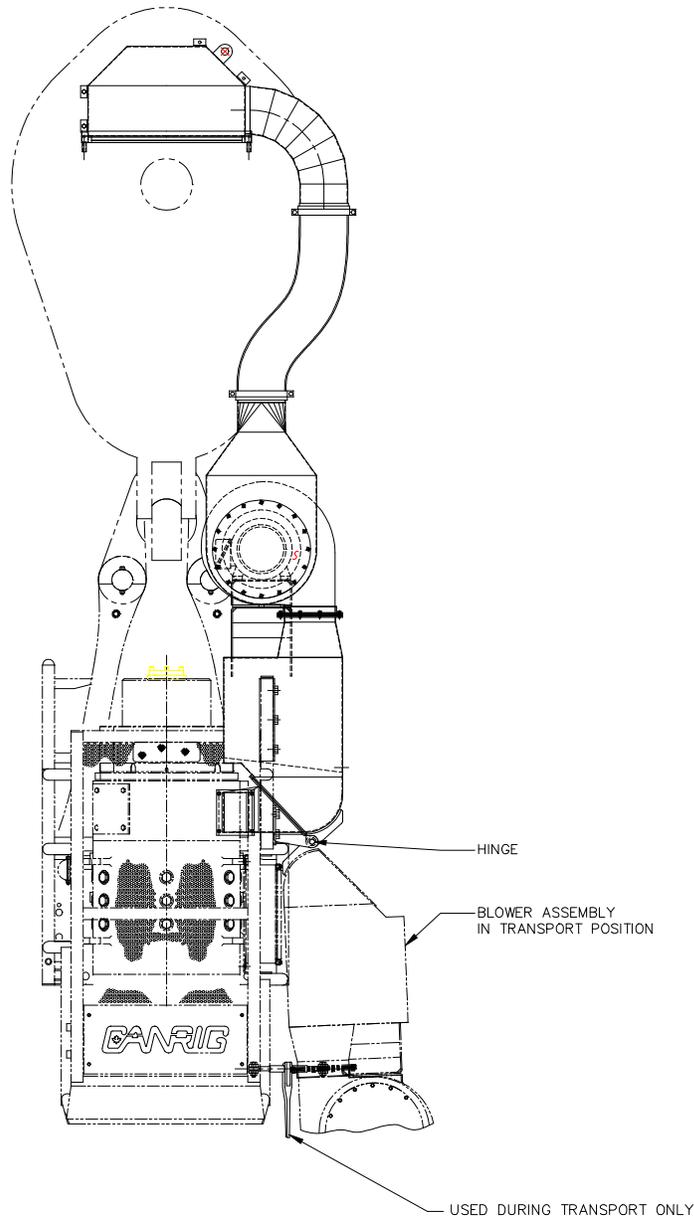


Subsection 3B: Top Drive and Torque Guide Installation

Portable Torque Guide – Torque Guide Removal

Drawing Number: M-7-126-03 (0)

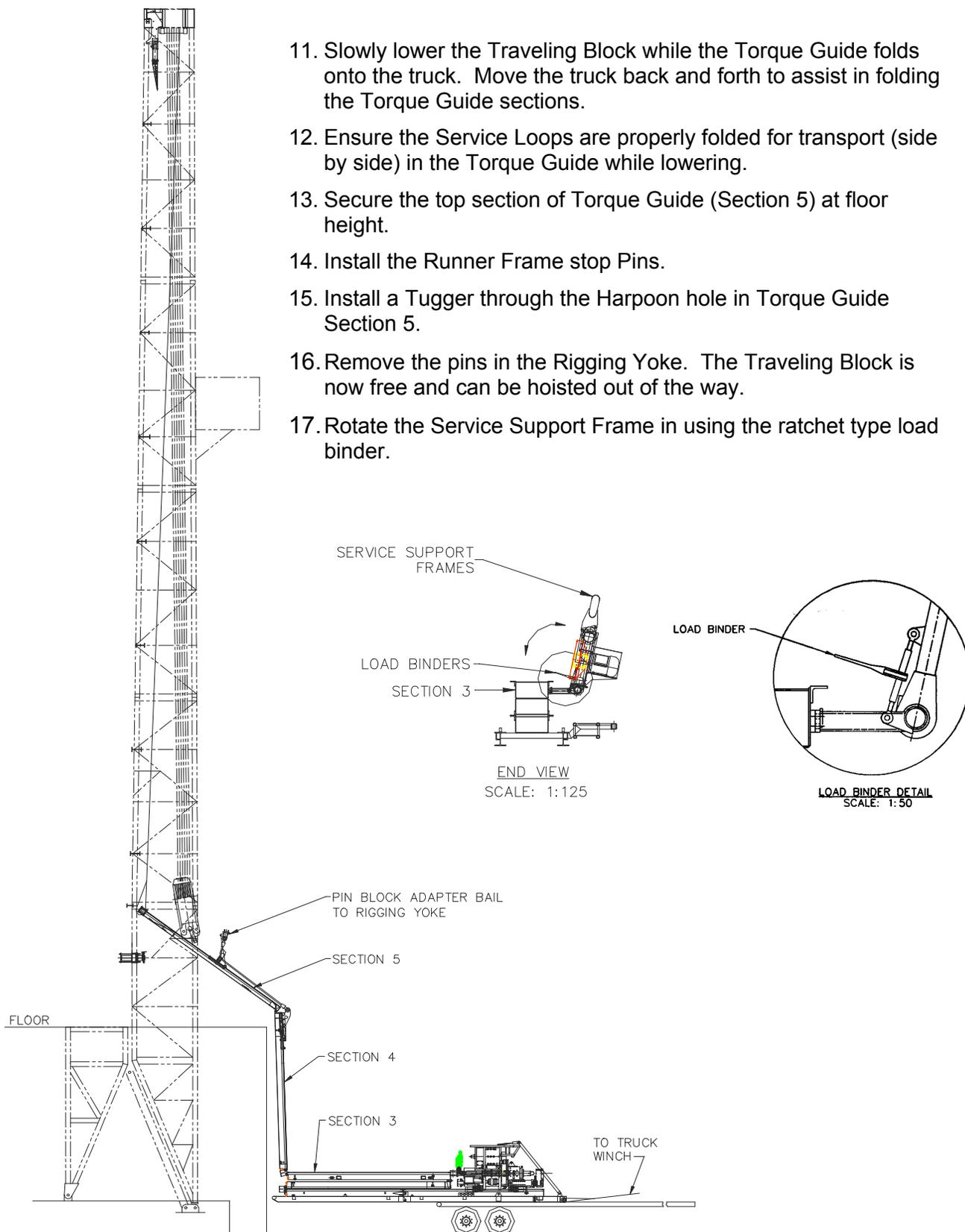
8. Unbolt the Blower from the working position.
9. Swing the Blower into transport position and install load binder.
10. If extended Upper Links were in use, one or both may have to be removed from the Top Drive to allow clearance for the Torque Guide to fold into the transport position.



Portable Torque Guide – Torque Guide Removal

Drawing Number: M-7-109-04 (B)

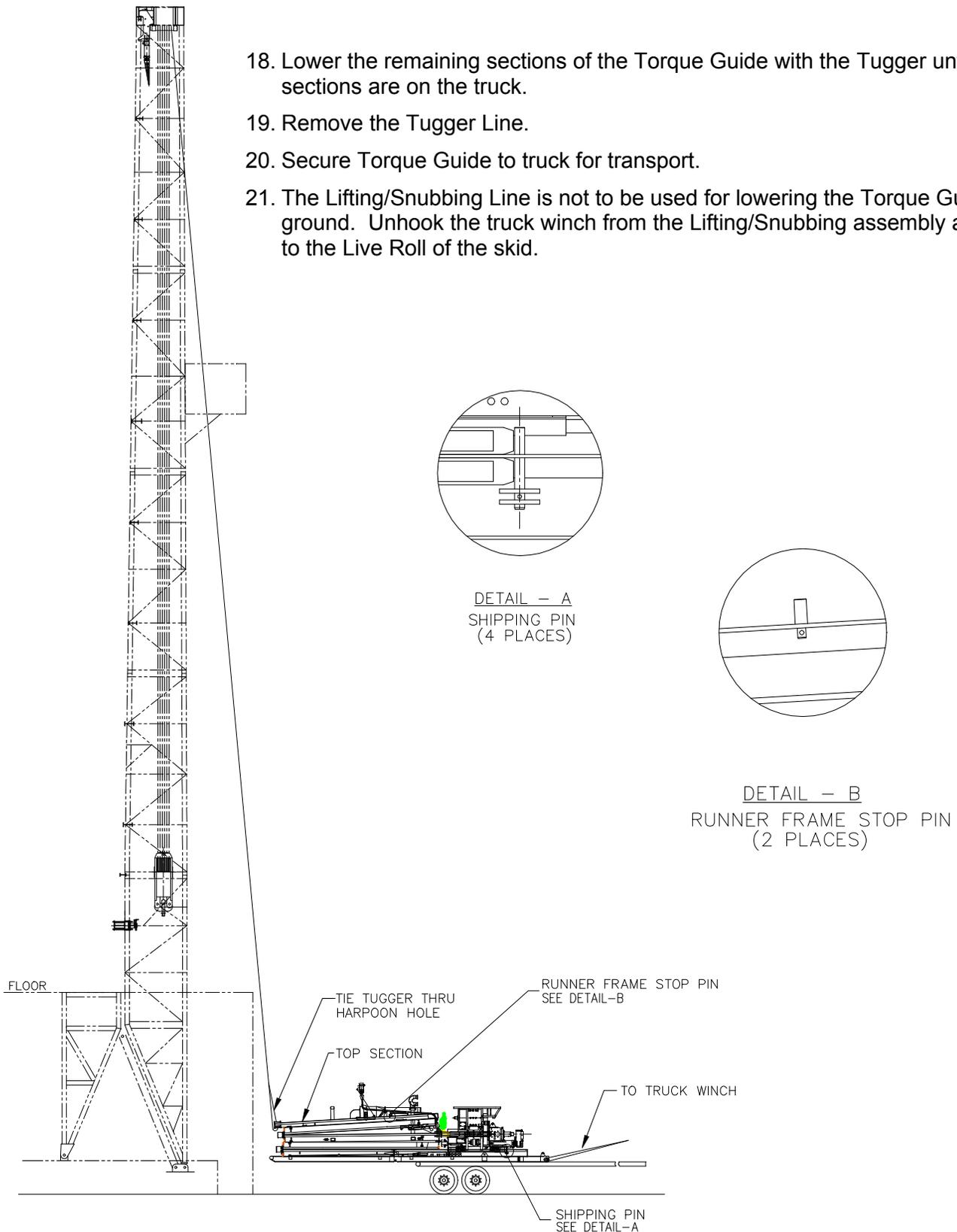
11. Slowly lower the Traveling Block while the Torque Guide folds onto the truck. Move the truck back and forth to assist in folding the Torque Guide sections.
12. Ensure the Service Loops are properly folded for transport (side by side) in the Torque Guide while lowering.
13. Secure the top section of Torque Guide (Section 5) at floor height.
14. Install the Runner Frame stop Pins.
15. Install a Tugger through the Harpoon hole in Torque Guide Section 5.
16. Remove the pins in the Rigging Yoke. The Traveling Block is now free and can be hoisted out of the way.
17. Rotate the Service Support Frame in using the ratchet type load binder.



Portable Torque Guide – Torque Guide Removal

Drawing Number: M-7-109-02 (A)

18. Lower the remaining sections of the Torque Guide with the Tugger until all sections are on the truck.
19. Remove the Tugger Line.
20. Secure Torque Guide to truck for transport.
21. The Lifting/Snubbing Line is not to be used for lowering the Torque Guide to the ground. Unhook the truck winch from the Lifting/Snubbing assembly and attach to the Live Roll of the skid.





CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 58

DATE: March 17, 2000

SUBJECT: Maintenance of Safety Cable on Back-Up Wrench Pipe Deflector

SERIAL NUMBERS: 68-70, 72-75, 77-91, 93-96, 98-110, 112-115, 117-122, 125 and up
All earlier models retrofitted.

DISCUSSION: The Back-up Wrench Pipe Deflector is a guard on the back side of the Back-up Wrench Gripper foot. It is designed to deflect the pipe away from a hydraulic block mounted on the back of the gripper (see attached sketch). If the deflector takes too large an impact, the mounting bolts may be sheared and the deflector may be dislodged from the Top Drive.

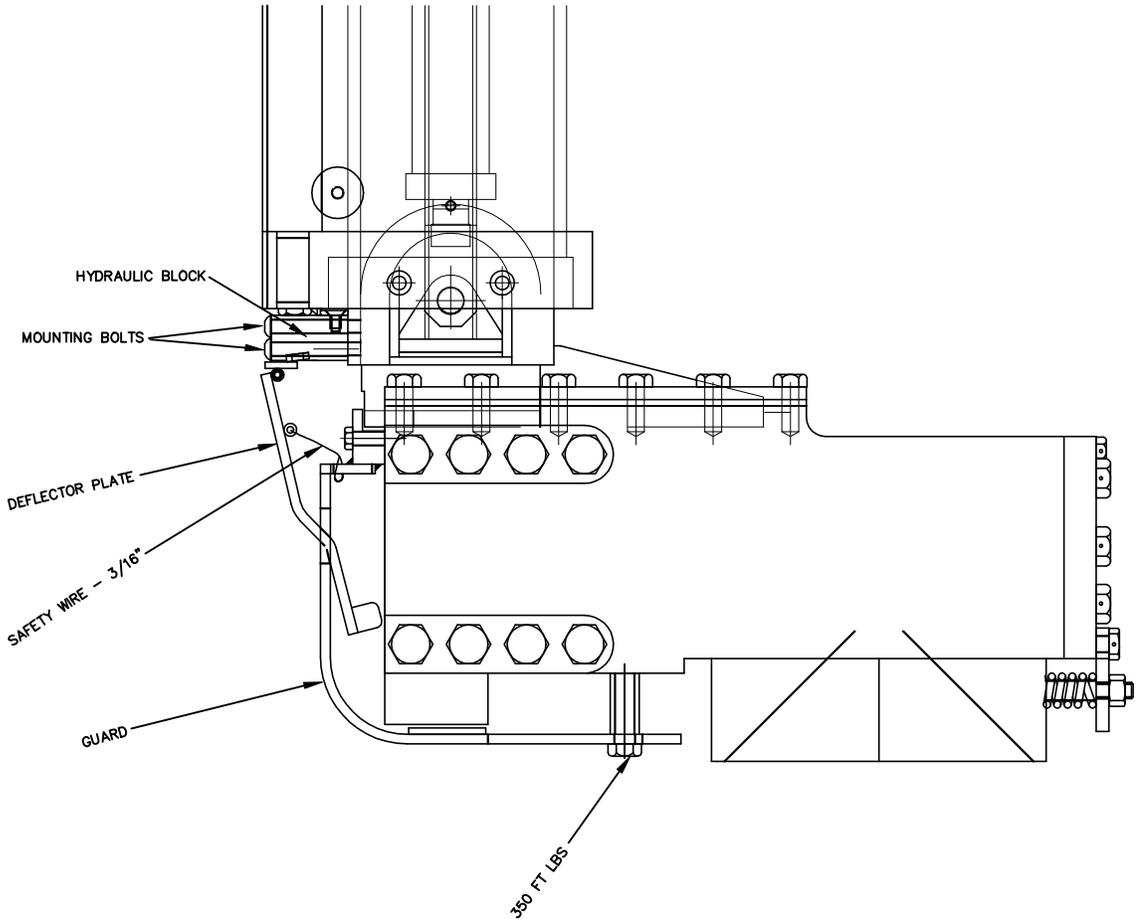
RECOMMENDATION: The deflector plate has a mounting ring welded on the inside of the plate for the attachment of a safety cable. It should be verified that the safety cable for the deflector is firmly attached and is 3/16" (minimum) in diameter. The mounting bolts should be inspected periodically to ensure tightness.

INFORMATION :

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CANRIG DRILLING TECHNOLOGY



BULLETIN NO.	58	DRAWN BY	EMB	SCALE	6.75:1
REV.		DATE	03/20/00	PLOTTED	03/20/00



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 59

DATE: May 30, 2000

SUBJECT: 275 TON HANDLER LOCK PIN (Model 6025, 6027)

SERIAL NUMBERS: 013, 030, 036, 041, 047, 049, 062, 071, 076, 092, 097, 111, 116, 123, 124, 132, 138, 139, 144, 145

DISCUSSION: Over time, it may be possible for the Handler Lock Pin to become partially or fully unthreaded from the Handler Lock Cylinder rod. If the connection is not properly tightened, this could result in a failure of the pin to cylinder rod connection. It is then possible for the Lock Pin to fall from the Top Drive. The lock pin and bore can be modified to include a shoulder that would prohibit the pin from falling from the Top Drive in the event that the cylinder rod was to break. The cylinder rod has also been modified to reduce the stress where it connects to the lock pin. See assembly drawing PB59-D2.

RECOMMENDATION: The full modification should be completed at the earliest opportunity such as a rig move. The rotary manifold plate will have to be removed and the lock pin bore machined to include a shoulder as shown on drawing PB59-D1. A new pin (P/N DT11313) and cylinder (P/N DT11318) should then also be installed.
As a temporary measure until the full modification can be completed, a 1/8" hole can be drilled through the pin and cylinder rod and a roll pin installed to prevent the lock pin from unthreading (see drawing AY10986).

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No.	Y/M/D	BY	REVISION	REFERENCE DWGS
A	99/12/20	DC	ECN# 652	
B	00/04/11	DC	ECN# 688, PIN HEAD MODIFICATION	

REMOVE SHARP CORNERS AND BURRS CASTING ± 1/16	CONCENTRICITY ± .005 TIR	STRAIGHTNESS ± .010 IN 5 INCHES	PARALLELISM ± .010 IN 5 INCHES	TRUE POSITION ± .005	MACHINED SURFACES 125
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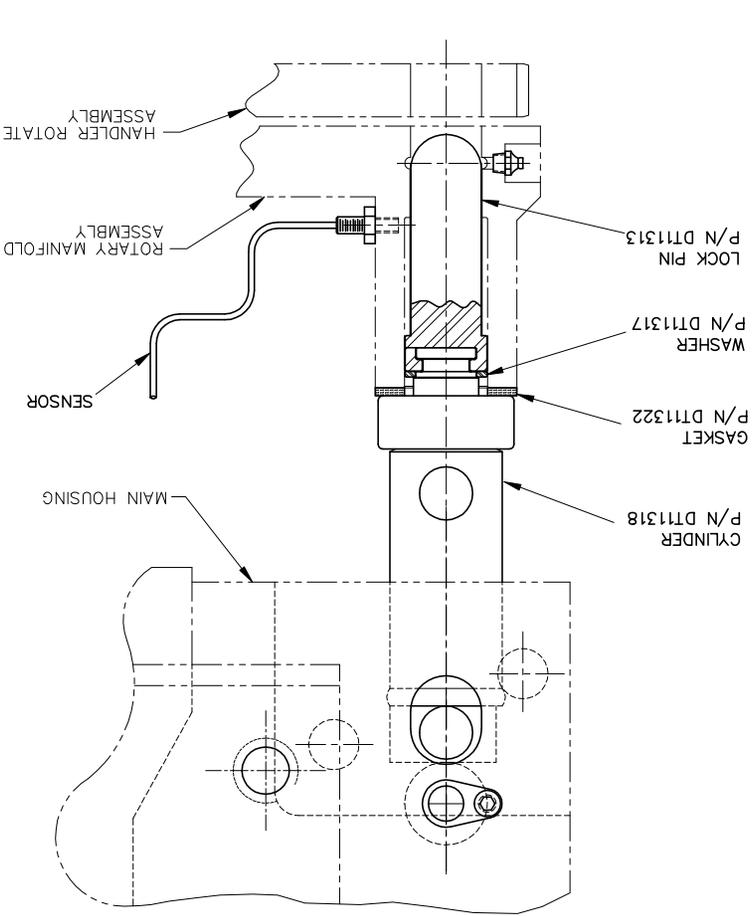
0 TO 600 mm ± 1 mm	FABRICATING [METRIC]	ANGULAR ± .2°	ANGULAR ± .12°
> 600 mm ± 3 mm	FABRICATING IMPERIAL	0 TO .24" ± .06"	> .24" ± .12"
DECIMAL x ± .030"	MACHINING IMPERIAL	.xxx ± .005"	.xxx ± .005"

DRAWN	DNC	98/09/02
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PLOTTED		
MATERIAL		

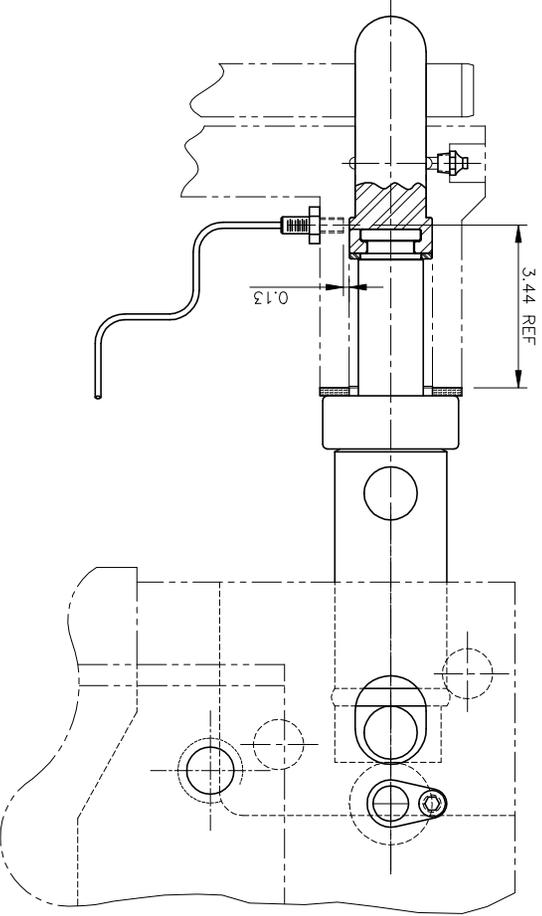
EST. WEIGHT	SCALE	PROJECT	6027E	PB59-D2	REV 0
HANDLER LOCK ASSY			275 TON		
CANRIG DRILLING TECHNOLOGY LTD.			CANRIG DRILLING TECHNOLOGY LTD.		

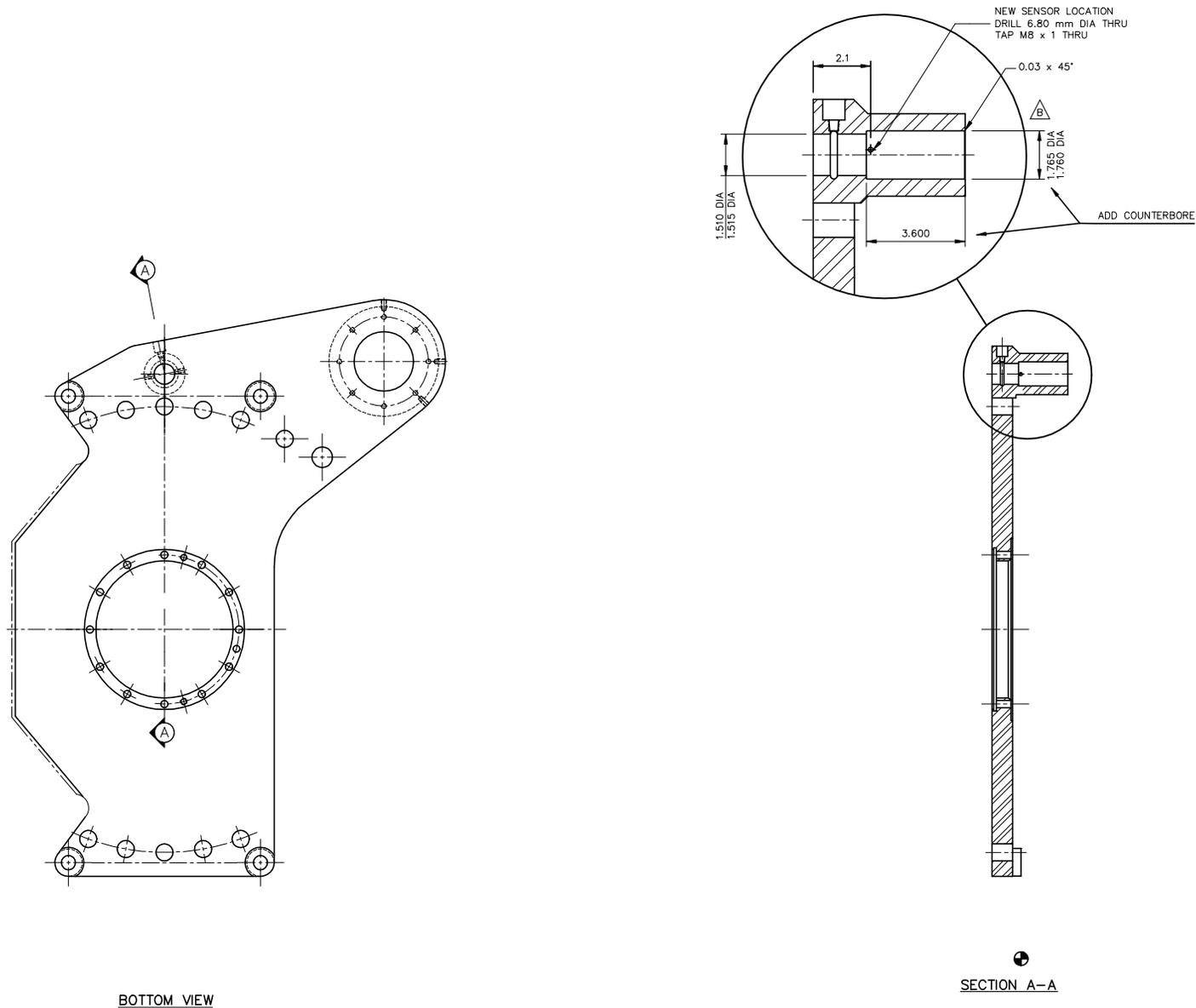
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UNLOCKED POSITION



LOCKED POSITION





BOTTOM VIEW

SECTION A-A

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B	99/12/16	DC	ADDED COUNTERBORE	<table border="1"> <tr> <td>REMOVE SHARP CORNERS AND BURRS</td> <td>FABRICATING [METRIC]</td> <td>MACHINING IMPERIAL</td> </tr> <tr> <td>CASTING ± 1/16</td> <td>0 TO 600 mm ± 1 mm</td> <td>DECIMAL .x ± .030*</td> </tr> <tr> <td>⊙ CONCENTRICITY .005 TIR</td> <td>> 600 mm ± 3 mm</td> <td>.xx ± .015*</td> </tr> <tr> <td>— STRAIGHTNESS ± .005 IN 5 INCHES</td> <td></td> <td>.xxx ± .005*</td> </tr> <tr> <td>⊥ SQUARENESS ± .010 IN 5 INCHES</td> <td>FABRICATING IMPERIAL</td> <td></td> </tr> <tr> <td>∥ PARALLELISM ± .010 IN 5 INCHES</td> <td>0 TO 24" ± .06"</td> <td></td> </tr> <tr> <td>⊕ TRUE POSITION .005</td> <td>> 24" ± .12"</td> <td></td> </tr> <tr> <td></td> <td>ANGULAR ± 2'</td> <td>ANGULAR ± 1'</td> </tr> </table>	REMOVE SHARP CORNERS AND BURRS	FABRICATING [METRIC]	MACHINING IMPERIAL	CASTING ± 1/16	0 TO 600 mm ± 1 mm	DECIMAL .x ± .030*	⊙ CONCENTRICITY .005 TIR	> 600 mm ± 3 mm	.xx ± .015*	— STRAIGHTNESS ± .005 IN 5 INCHES		.xxx ± .005*	⊥ SQUARENESS ± .010 IN 5 INCHES	FABRICATING IMPERIAL		∥ PARALLELISM ± .010 IN 5 INCHES	0 TO 24" ± .06"		⊕ TRUE POSITION .005	> 24" ± .12"			ANGULAR ± 2'	ANGULAR ± 1'	<table border="1"> <tr> <td>MATERIAL</td> <td>587-84-2</td> </tr> <tr> <td>EST. WEIGHT</td> <td>285 lb</td> </tr> <tr> <td>SCALE</td> <td>1:4</td> </tr> </table>	MATERIAL	587-84-2	EST. WEIGHT	285 lb	SCALE	1:4	<table border="1"> <tr> <td colspan="2"> CANRIG DRILLING TECHNOLOGY LTD. </td> </tr> <tr> <td colspan="2"> ROTARY MANIFOLD PLATE LOCK PIN MODIFICATION </td> </tr> <tr> <td>PROJECT</td> <td>6025E</td> </tr> <tr> <td></td> <td>PB59-D1 REV 0</td> </tr> </table>	CANRIG DRILLING TECHNOLOGY LTD.		ROTARY MANIFOLD PLATE LOCK PIN MODIFICATION		PROJECT	6025E		PB59-D1 REV 0
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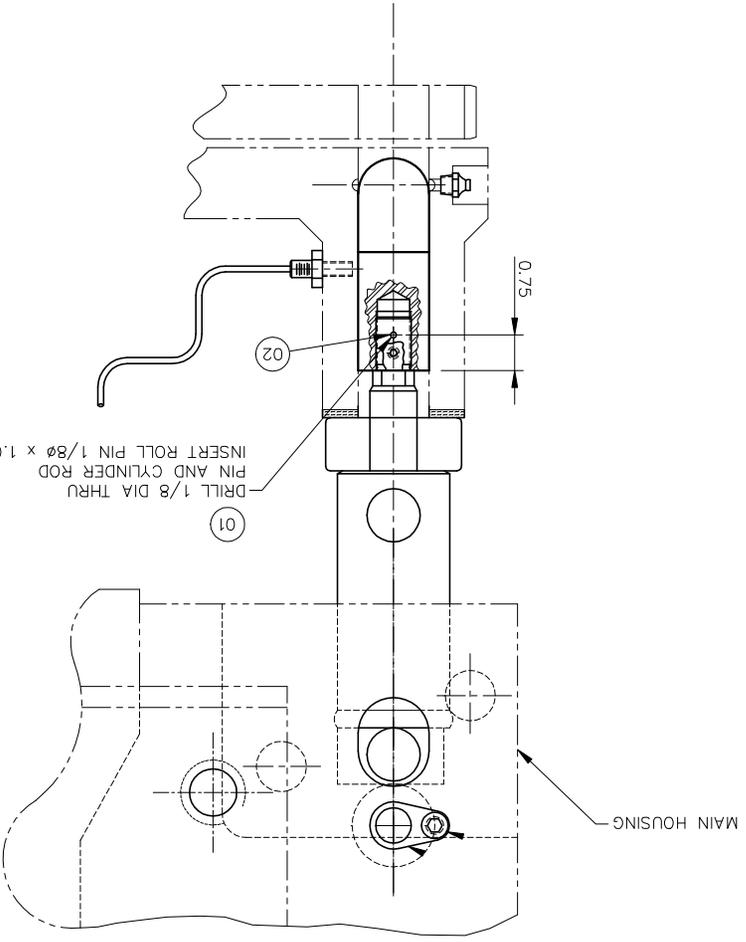
No.	Y/M/D	By	REVISION	REFERENCE DWGS

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 TRUE POSITION

ANGULAR	± .2°
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FABRICATING IMPERIAL	0 TO 600 mm ± 1 mm
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FABRICATING IMPERIAL	0 TO 24" ± .06"
FABRICATING IMPERIAL	> 24" ± .12"

DRAWN	DC	00/05/08
CHECKED		
APPR'D		
PLOTTED		
MATERIAL		

EST. WEIGHT	SCALE	PROJECT
1:2		
CANRIG DRILLING TECHNOLOGY LTD. CANRIG CANRIG DRILLING TECHNOLOGY LTD. 275 TON KIT, HANDLER LOCK MOD AY10986 REV 0		



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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 60

SAFETY ALERT

DATE: 6 October, 2000

SUBJECT: PINCH POINTS

SERIAL NUMBERS: ALL

DISCUSSION: While working on the Top Drive, PINCH POINTS are critical whenever motion is involved. Every part of the CANRIG Top Drive can become a PINCH POINT – **exercise extreme caution.**

RECOMMENDATION: Be aware of the following critical PINCH POINTS:

1. Hydraulic Energy - stored and (inadvertently) released

- ◆ Link Support (counter balance accumulator)
 - Will drop when pressure is bled-off – Collar pinch point
- ◆ Link Tilt Assy - Could rotate & swing links such as to trap someone
- ◆ Handler Rotate
- ◆ Handler Lock
- ◆ BUW - Up or Down travel
- ◆ BUW - Gripper mechanism
 - Will open and drop what was gripped, when hydraulic power is released (HPU stopped).

2. Drawworks related Motion

If the drawworks is moved while work is in progress at the Top Drive, **serious** pinch point danger exists as follows:

- ◆ Whole Top Drive (when moving could trap or crush body parts)
- ◆ Block Interface and Travelling Block (especially fingers and arms)
- ◆ Upper Links
- ◆ Elevator Support Unit or Elevator Links (bails)
- ◆ Floating Quill – especially washpipe packing nut
- ◆ Guide Runner to track interference

3. Gravity related

- ◆ Any component or part, where the mounting arrangement is altered (i.e. loosening bolts, pry or break supports, cut welds, etc)
- ◆ Elevators (could tilt unexpectedly)
- ◆ Hinged components:
 - Lube Cooler
 - Blower Assy
 - Junction Box Covers
 - Elevator & Bails

4. Other external forces

- ◆ *Electrical (Control & Power)*
 - Unexpected start of:
 - DC or AC motors
 - Any function induced by a hydraulic or pneumatic valve**LOCK-OUT before working on equipment**

- ◆ *Wind*
 - Mud Line & Kelly (Rotary) Hose
 - Service Loops (electrical and hydraulic)
 - Tugger Lines

- ◆ *Trapped energy*
 - Torque in drill pipe may rotate quill or handler
 - Elevators
 - Back-up Wrench Assy (spring loaded Up/Down motion)
 - While working with tools:
 - Slippage of wrench, socket, key or screw driver
 - Breakage of tool
 - Release of bolt

Think of where your hands will be in a second!

INFORMATION:

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DATE: December 6, 2000

SUBJECT: SUMMARY OF HUB SHRINK FITS

SERIAL NUMBERS: All

DISCUSSION: Revised Pinion and Hub advance Chart

RECOMMENDATION: Refer to chart below for new recommended Pinion and Hub Installation

TOP DRIVE MODEL	ADVANCE (IN)	ABOVE AMBIENT		MAX. PUMP OFF PRESSURE (PSI)
		TEMP RISE + °F	TEMP RISE + °C	
MOTOR PINION 6025E/6027E	0.145 – 0.155	345 - 370	174 - 187	36 000
MOTOR PINION 8035E/1050E/1165E/1275AC	0.085 – 0.094	315 - 345	156 - 175	35 000
TORQUE BOOST PINION 6025E/6027E	0.145 – 0.155	345 - 370	174 - 187	36 000
TORQUE BOOST PINION 8035E/1050E/1165E/1275AC	0.145 – 0.155	345 - 370	174 - 187	38 000
BRAKE HUB 6025E/6027E	0.110 – 0.120	260 - 290	127 - 143	21 000
BRAKE HUB 8035E/1050E/1165E/1275AC	0.065 – 0.075	220 - 250	104 - 121	23 000

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CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 62

SAFETY ALERT

DATE: January 22, 2001

SUBJECT: BEARING REMOVAL

SERIAL NUMBERS: ALL

DISCUSSION: Removing Bearings with hydraulic press (or other mechanical means) could cause the bearing to fail and come apart, creating a hazard or cause injury.

RECOMMENDATION: DO NOT REMOVE ANY BEARING WITHOUT PROPER PROCEDURE.

Use proper tooling whenever pressing off bearings. Always follow the manufacturers recommendations. Take proper precautions to safeguard against bearing failure or injury.

If in doubt, contact CANRIG for appropriate procedures before attempting any removal or installation of parts on the CANRIG Top Drive.

INFORMATION :

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Fax: 281.259.8158



DATE: January 24, 2001

SUBJECT: TOP DRIVE GEARCASE OIL CAPACITY

SERIAL NUMBERS: ALL

DISCUSSION: To achieve optimum performance from the Top Drive unit, proper oil levels should be maintained. This will ensure adequate lubrication while preventing over-heating. Excessive oil in the Gearcase can create heat when the Top Drive is running at or near maximum RPM.

RECOMMENDATION: Oil should be changed at planned intervals of 60 days or 1000 drilling hours or less. Oil should never be permitted to become visibly contaminated with mud or water, which will cause rapid bearing failure. If there is any doubt about the oil quality, it should be changed even though the change interval has not expired. Refer to Gearcase Capacity Chart for oil quantities.

Top Drive Gearcase Oil Capacity

Top Drive Model	US Gallons	Litres	Oil Level	
			Below Gearcase Window	
6027E	10	38	1/2"	13 mm
8035E-500	10	38	1/2"	13 mm
1050E-500	10	38	1/2"	13 mm
1050E-712	12	45	1/2"	13 mm
1165E-712	12	45	1/2"	13 mm
1250AC-681	10	38	3/4"	19 mm
1265AC-681	10	38	3/4"	19 mm
1275AC-681	10	38	3/4"	19 mm

INFORMATION:

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SAFETY ALERT

DATE: February 22, 2001

SUBJECT: RETRACTION FRAME/ GUIDE RUNNERS

SERIAL NUMBERS: 135, 136, 137

DISCUSSION: Improper securing of guide runners and all related fasteners could result in the runners or fasteners falling free.

RECOMMENDATION: All fasteners on the retraction frame assembly should be inspected for proper torque value and safety wire. The guide runners are not currently secured properly. They should be secured by one of two ways:

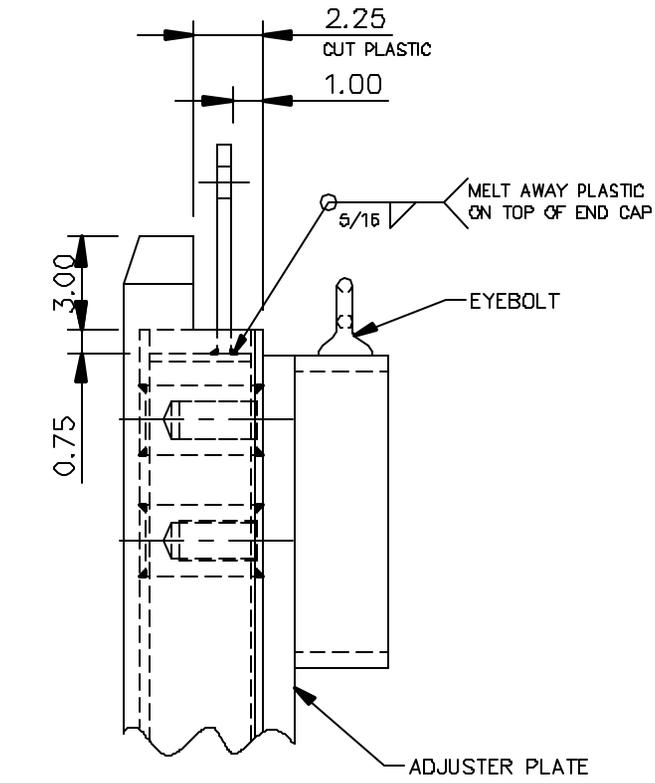
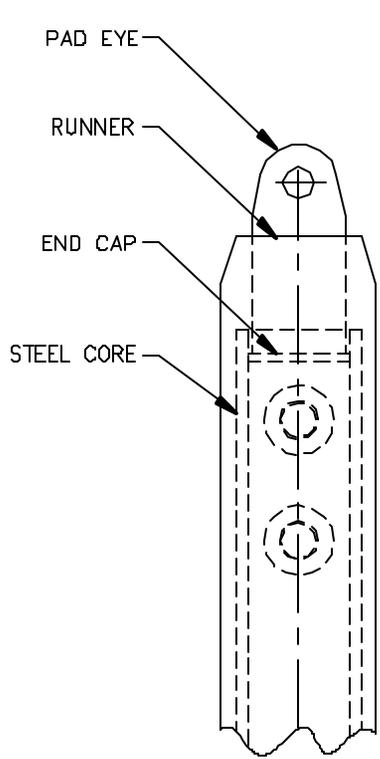
- 1) Cut off the top 3" of plastic from the top end of each runner. Drill and tap the top end cap of the runners 1/2".
NOTE: The steel end cap is located approximately 3/4" below the top of the cut runner. Thread a 1/2" eyebolt into the top of each runner and secure to the eyebolt on top of the adjusting plate with 1/4" wire.
- 2) Weld a pad eye to the top of each runner on the face that fits against the adjusting plate. The steel core of the runner extends above the top of the adjusting plate by 3/4". The pad eye should be welded to steel core of the runner at this location. Secure the runners to the eyebolt on top of the adjuster plate with 1/4" wire.

And Safety cables or wires that are removed to facilitate repairs must be re-installed prior to operation of the Top Drive or Retraction Frame.

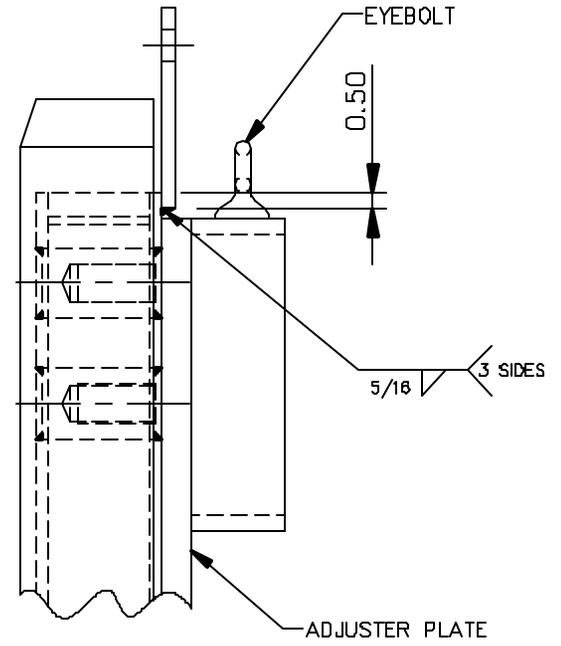
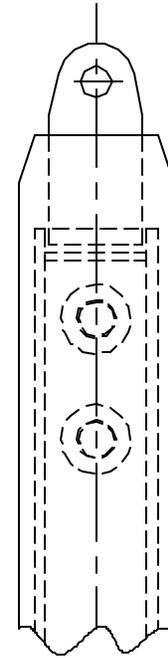
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For further information contact:

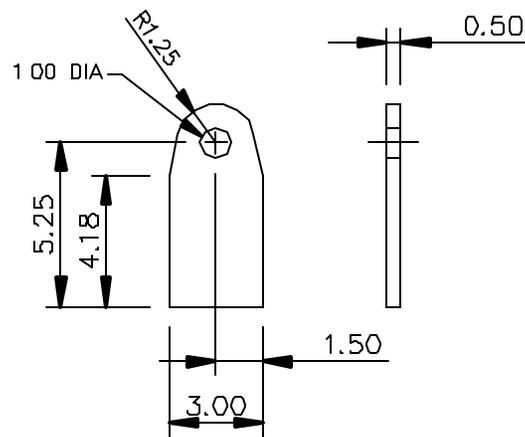
Field Operations Manager
Canrig Drilling Technology Ltd.
14703 FM 1488
Magnolia, Texas 77354
Phone: 281.259.8887
Fax: 281.259.8158



OPTION #1



OPTION #2



PAD EYE DETAIL



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 65

SAFETY ALERT

DATE: 14 March, 2001

SUBJECT: PIPE ENTRAPMENT on TD GUARD

SERIAL NUMBERS: 25,26,27,34,35,39,42,48,50,55,56,66,80,83,96,103,106,121,126,127,130,131,147,148,151,156,159,163,169,170,171,177

DISCUSSION: While tripping, there is a remote possibility that a stand of pipe could get stuck behind the Top Drive guard. CANRIG has developed a "deflector plate" up-grade kit, that applies to most Model 1050E-712, 1165E-712, 1050E-2SP, 1265AC and 1275AC.
To reduce the risk of injury to people or damage to equipment, do not lower the TD until obstructions (including pipe) have been removed.

RECOMMENDATION: **While tripping out, never lower the Top Drive before the pulled stand of pipe has been removed from the path of the TD.**

To further reduce the risk of an accidental entrapment of the pipe, order AY11137 (deflector plate upgrade kit) from our Field Service Department and install on Top Drive guard as soon as possible.

INFORMATION :

For further information contact:

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14703 FM 1488
Magnolia, Texas 77354
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DATE: June 11, 2001

SUBJECT: AC Top Drive - Variable Speed Drive

SERIAL NUMBERS: 141, 151, 156, 159, 177, 179, 181, 186, 198

DISCUSSION: The Charging unit (incoming rectifier) of the UNICO AC Drive is limited to max. 630 Vac. If the SCR system bus voltage (adjusted by the generator controls) is above 600 Vac or voltage regulation exceeds 5%, it is possible to damage components within the rectifier.

RECOMMENDATION: Monitor the SCR bus voltage daily and adjust to 600 Volt (ac).

The incoming voltage for any AC drive provided by CANRIG should not exceed **630 Vac**. **This is not limited to steady voltage, but also to a surge or fluctuation (i.e. when tripping or hoisting).**

INFORMATION:

For further information contact:

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DATE: June 15, 2001

SUBJECT: Transportation of Portable Top Drive Support Unit (TDSU) Buildings

SERIAL NUMBERS: All Portable TDSU's

DISCUSSION: The TDSU building contains many sensitive and fragile electronic systems and components. These components may be susceptible to vibrations and shock.

RECOMMENDATION: When loading and off-loading the TDSU building, extreme caution should be given, not to drop or "jerk" the building. When transporting TDSU buildings by truck, only 'Air-Ride' trailers should be used. Failure to use the proper type of trailer may lead to premature failure of components and downtime.

INFORMATION:

For further information contact:

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SAFETY ALERT

DATE: 6/4/01

SUBJECT: Maintenance of Fall Arresting Devices

SERIAL NUMBERS: All

DISCUSSION: Canrig supplied either the North Life Line or the DBI Sala L3501 Self Retracting Lifeline on new equipment purchased between 1992 and March 2001. The devices were installed on the top of the ladder on section #1 of the torque guide systems.

CAUTION: When regularly maintained and operated in accordance to the original manufacture's specifications, the fall arresting devices do not pose a threat to the safety of personnel. **When not properly maintained, these devices will become a hazard to personnel.**

RECOMMENDATION: If proper maintenance practices, as outlined in the attached specifications, have not been followed by the systems owner/operator, Canrig recommends that these devices be removed from service immediately and returned to the original manufacturer for inspection and repair. Please refer to the attached maintenance specifications for the North Life Line and The DBI Sala L3501 Self Retracting Lifeline.

INFORMATION:

For further information contact:

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User Instruction Manual Sealed Self Retracting Lifelines

This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1-1992, ANSI A10.14-1991, and the Canadian Standards Association, and should be used as part of an employee training program as required by OSHA.



WARNING: *This product is part of a personal fall arrest or rescue system. The user must read and follow the manufacturer's instructions for each component or part of the complete system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions, or have them explained to them, before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this product. Alterations or misuse of this product or failure to follow instructions may result in serious injury or death.*

IMPORTANT: *If you have questions on the use, care, application, or suitability of this safety equipment, contact DBI/SALA.*

IMPORTANT: *Before using this equipment record the product identification information from the ID label in the inspection and maintenance log in section 9.0 of this manual.*

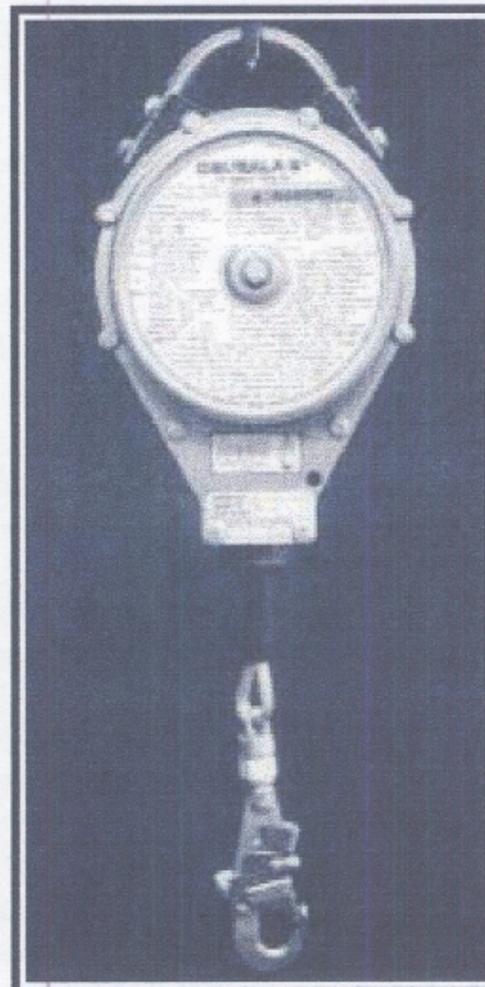


Figure 1

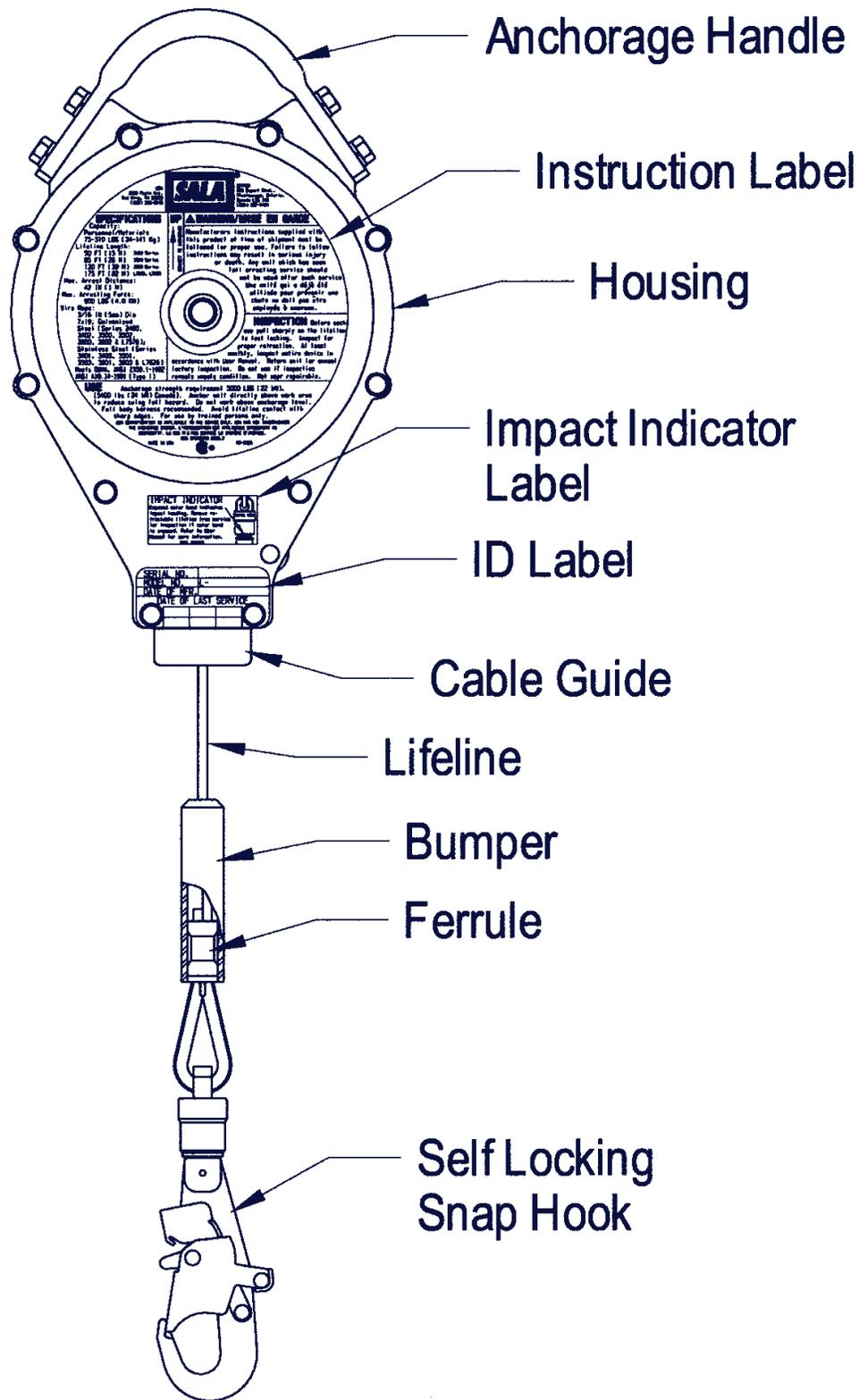
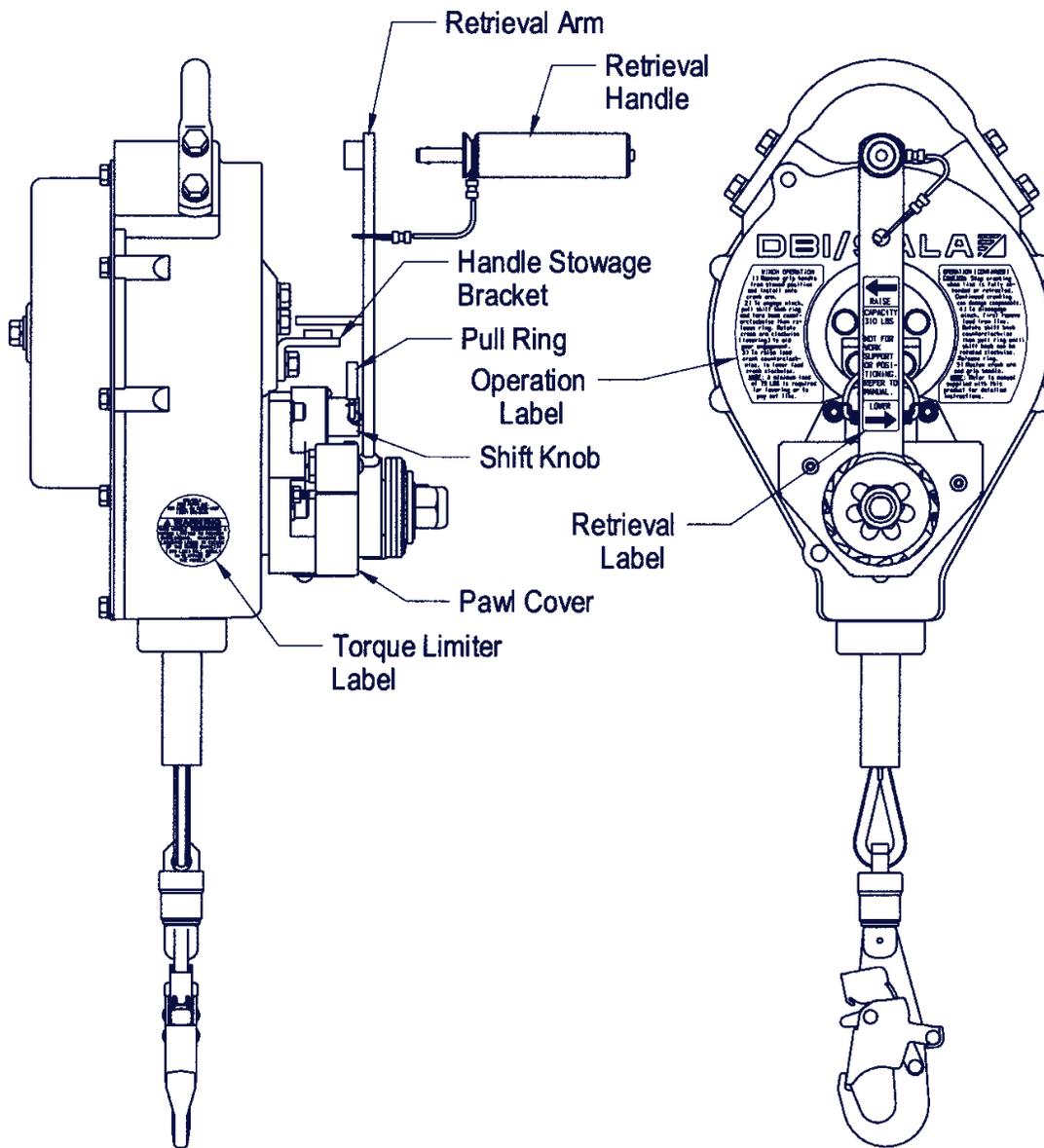


Figure 2



DESCRIPTIONS

- L3400 Sealed Self Retracting Lifeline:** 50 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3401 Sealed Self Retracting Lifeline:** 50 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3402 Sealed Self Retracting Lifeline with Retrieval:** 50 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3403 Sealed Self Retracting Lifeline with Retrieval:** 50 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3500 Sealed Self Retracting Lifeline:** 85 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3501 Sealed Self Retracting Lifeline:** 85 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3502 Sealed Self Retracting Lifeline with Retrieval:** 85 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3503 Sealed Self Retracting Lifeline with Retrieval:** 85 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3600 Sealed Self Retracting Lifeline:** 130 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3601 Sealed Self Retracting Lifeline:** 130 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3602 Sealed Self Retracting Lifeline with Retrieval:** 130 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L3603 Sealed Self Retracting Lifeline with Retrieval:** 130 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L7576 Sealed Self Retracting Lifeline:** 175 ft. of 3/16 inch galvanized wire rope, self locking swiveling snap hook with indicator.
- L7626 Sealed Self Retracting Lifeline:** 175 ft. of 3/16 inch stainless steel wire rope, self locking swiveling snap hook with indicator.
- L3404 Sealed Self Retracting Lifeline with Retrieval:** 30 ft. of 1/4 inch Spectra synthetic rope, self locking swiveling snap hook with indicator.
- L3405 Sealed Self Retracting Lifeline:** 30 ft. of 1/4 inch Spectra synthetic rope, self locking swiveling snap hook with indicator.
- L3504 Sealed Self Retracting Lifeline with Retrieval:** 55 ft. of 1/4 inch Spectra synthetic rope, self locking swiveling snap hook with indicator.
- L3505 Sealed Self Retracting Lifeline:** 55 ft. of 1/4 inch Spectra synthetic rope, self locking swiveling snap hook with indicator.
- L3604 Sealed Self Retracting Lifeline with Retrieval:** 80 ft. of 1/4 inch Spectra synthetic rope, self locking swiveling snap hook with indicator.
- 08731 Sealed Self Retracting Lifeline with Retrieval:** 30 ft. of 1/4 inch Technora synthetic rope, self locking swiveling snap hook with indicator. Mounting bracket included.

- Model numbers with a "Z" prefix (instead of "L") have the same descriptions as above. CSA certified.
- Model numbers with a "-1" suffix (i.e. L3404-1) include a mounting bracket.

1.0 APPLICATIONS

- 1.1 PURPOSE:** DBI/SALA self retracting lifelines (SRL) are designed to be components in personal fall arrest systems (PFAS). They may be used in most situations where a combination of worker mobility and fall protection is required (i.e. inspection work, general

construction, maintenance work, oil production, confined space work, etc.). Some SRL models incorporate a built-in retrieval feature. These models have the same fall arrest capabilities as those described above when used in their non-retrieval mode. In the retrieval mode these models may be used for emergency rescue (raising or lowering) of personnel within the capacity range stated below. It is also permissible to use retrieval models for raising and lowering of materials within the stated capacity range.

IMPORTANT: *This equipment may not be suitable for applications requiring frequent or continual use as a material hoist. Consult DBI/SALA before using this product for such applications. The retrieval models listed above are not designed to be used for general purpose work positioning or man-riding applications.*

1.2 LIMITATIONS: The following application limitations must be considered before using this product:

- A. CORROSION:** Do not leave this equipment for long periods in environments where corrosion of metal parts could occur as a result of vapors from organic materials. Use caution when working around sewage or fertilizer because of their high concentration of ammonia, which is very corrosive. Use near seawater or other corrosive environments may require more frequent inspections or servicing to assure corrosion damage is not affecting the performance of the product.
- B. CHEMICAL HAZARDS:** Solutions containing acids, alkali or other caustic chemicals, particularly at elevated temperatures, may damage DBI/SALA SRL's. When working with such chemicals, frequent inspection of the entire SRL must be completed. Chemical damage to the lifeline is difficult to detect and it is recommended that the lifeline be replaced periodically to ensure safety. The lifeline may only be replaced by an authorized service center). Consult DBI/SALA if in doubt about using this equipment around chemical hazards.
- C. HEAT:** This equipment is not designed for use in high temperature environments. Provide protection for this equipment when using near welding, metal cutting, or similar activities. Hot sparks may burn or damage this equipment. Consult DBI/SALA for details on use in high temperature environments.

NOTE: *SRL's using Spectra synthetic rope are not flame or heat resistant. Do not use in environments exceeding 140°F (60°C). Do not allow Spectra rope to contact materials exceeding 140°F (60°C). SRL's using Technora synthetic rope are heat resistant up to 900°F (480°C).*

- D. ELECTRICAL HAZARDS:** Due to the possibility of electric current flowing through the wire rope lifeline, use extreme caution when working near high voltage power lines.
- E. CAPACITY:** These SRL's are designed for use by persons with a combined weight (person, clothing, tools, etc.) of 75 lbs. to 310 lbs. At no time shall more than one person connect to a single SRL for fall arrest applications.
- F. LOCKING SPEED:** Situations which do not allow for an unobstructed fall path should be avoided. Working in confined or cramped spaces may not allow the body to reach sufficient speed to cause the SRL to lock if a fall occurs. Working on slowly shifting material, such as sand or grain, may not allow enough speed

build-up to cause the SRL to lock. A clear path is required to assure positive locking of the SRL.

G. NORMAL OPERATIONS: Normal operations will allow the lifeline to extend and retract. If a fall occurs a speed sensing brake system will activate, stopping the fall and absorbing much of the energy created. For falls which occur near the end of the lifeline travel a reserve lifeline system has been incorporated to assure a reduced impact fall arrest. If a fall has been arrested, the SRL must be taken out of service and inspected. See section 5.0. Sudden or quick movements should be avoided during the normal work operation, this may cause the SRL to lockup.

H. TRAINING: This equipment is intended to be installed and used by persons who have been trained in its correct application and use.

1.3 Refer to national standards, including; ANSI Z359.1-1992, ANSI A10.14-1991, and local, state, and federal (OSHA) requirements for more information on anchorage connectors and associated components.

2.0 SYSTEM REQUIREMENTS

2.1 COMPATIBILITY OF COMPONENTS AND SUBSYSTEMS: DBI/SALA self retracting lifelines are designed for use with DBI/SALA approved components. Substitutions or replacements made with non-approved components may jeopardize compatibility of the equipment, and may affect the reliability and safety of the complete system. Contact DBI/SALA if you have questions about compatibility of components.

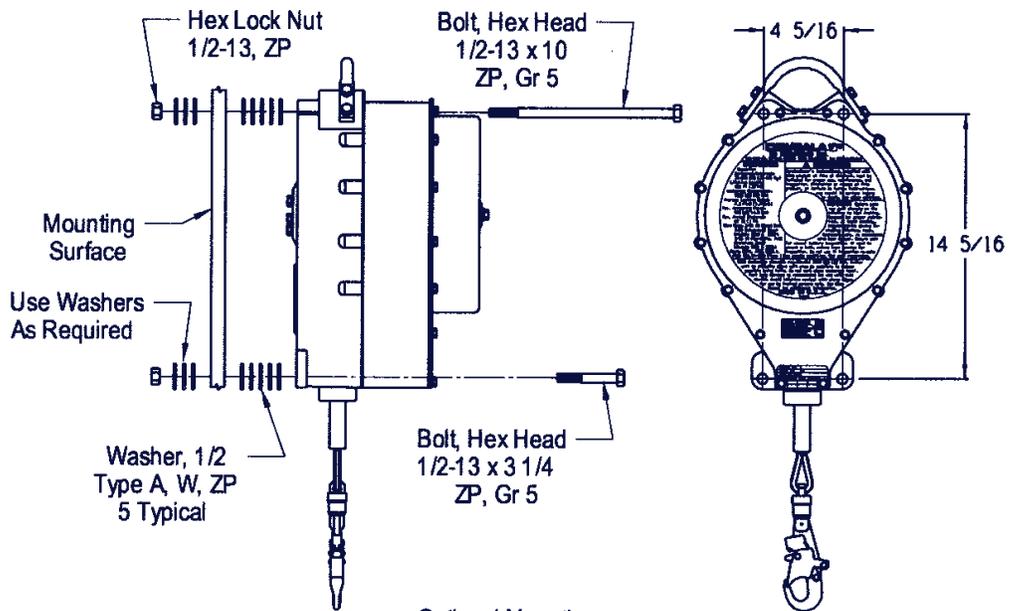
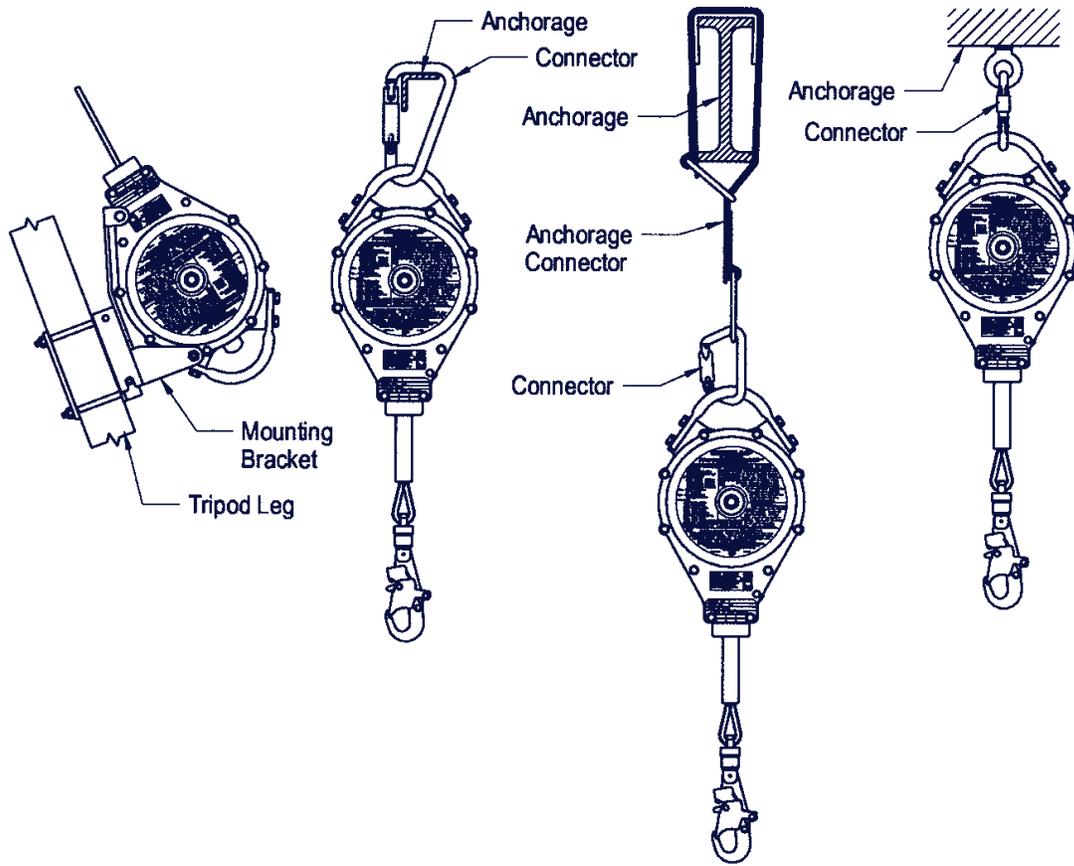
2.2 COMPATIBILITY OF CONNECTORS: Connectors (hooks, carabiners, D-rings) must be capable of supporting 5,000 lbs. (22kN) minimum. Connecting hooks and the connection point must be compatible. Non-compatible connectors may disengage (roll-out). Connectors must be compatible in size, shape, and strength. Per OSHA 1926.500: As of January 1, 1998 the use of a non-locking snap hook as part of a personal fall arrest system and positioning device is prohibited.

2.3 ANCHORAGE STRENGTH: Anchorages used for personal fall arrest systems must sustain static loads applied in the directions permitted by the PFAS of at least 3,600 lbs. (16kN) with certification of a qualified person, or 5,000 lbs. (22kN) without certification. When more than one PFAS is attached to an anchorage the anchorage strengths stated above must be multiplied by the number of personal fall arrest systems attached to the anchorage.

2.4 In applications where an SRL is used in conjunction with a horizontal system (i.e. horizontal I-beams and trolleys), the SRL and horizontal system components must be compatible.

2.5 When using DBI/SALA SRL's with optional retrieval system, ensure the support structure (i.e. tripod, davit arm) is compatible with connection of the SRL, and compatible with the operation, stability, and strength of the SRL. See Figure 3.

Figure 3



Optional Mounting
 L3600, L3601, L3602, L3603, L3604
 L7576, L7626 SRL's

3.0 OPERATION AND USE

WARNING: Do not alter or intentionally misuse this equipment, your safety may depend on it. Consult DBI/SALA when using this equipment with components or subsystems other than those described in this manual. Some subsystem and component combinations may interfere with the operation of this equipment. Use caution when using this equipment around sharp edges and chemical hazards.

WARNING: Consult with your doctor if there is any reason to doubt your fitness to safely absorb the shock from a fall arrest. Age and fitness seriously affect a workers ability to withstand falls. Pregnant women or minors must not use DBI/SALA SRL's.

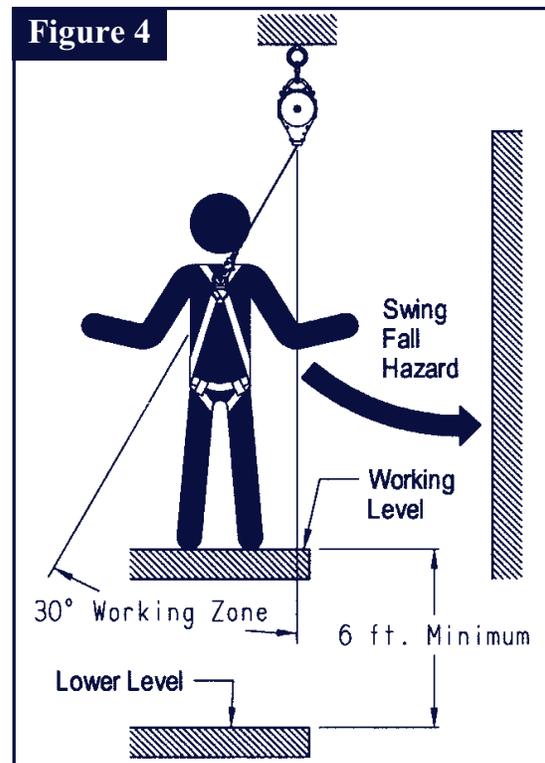
3.1 BEFORE EACH USE: Before each use of this fall protection equipment carefully inspect it to assure it is in good working condition. Check for worn or damaged parts. Ensure all bolts are present and secure. Check that the lifeline is retracting properly by pulling out the line and allowing it to slowly retract. Inspect the lifeline for cuts, frays, burns, etc. Check locking action by pulling sharply on the line. See section 5.0 for inspection details. Do not use if inspection reveals an unsafe condition.

3.2 PLANNING: Plan your fall protection system before starting your work. Consider all factors that may affect your safety before, during, and after a fall. The following list gives some important points to consider when planning your system:

A. ANCHORAGE: Select a rigid anchorage point that capable of supporting 5,000 lbs. (22kN). See Figure 3 and section 2.3. Carefully select the anchorage location to reduce free fall and swing fall hazards.

B. FREE FALL: Personal fall arrest systems must be rigged so the potential free fall is never greater than six feet (five feet per ANSI A10.14-1991). Do not work above your anchorage level to avoid an increased free fall distance. Avoid working where your lifeline may cross or tangle with that of another worker. Do not allow the lifeline to pass under arms or between legs. Never clamp, knot, or prevent the lifeline from retracting or being taut. Avoid slack line. **Do not lengthen SRL by connecting a lanyard or similar component without consulting DBI/SALA.**

C. SWING FALLS: Swing falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object in a swing fall may cause serious injury. In a swing fall the total vertical fall distance will be much greater than if the user had fallen directly below the anchorage point, thus increasing the total free fall distance and the area required to



safely arrest the user. The SRL will activate regardless of its orientation relative to the user. As a commonly followed guideline, do not extend your work zone more than 30 degrees from the anchorage point. Minimize swing falls by working as directly below the anchorage point as possible. Never permit a swing fall if injury could occur. If a swing fall situation exists in your application contact DBI/SALA before proceeding. See Figure 4.

- D. FALL CLEARANCE:** Ensure adequate clearance exists in your fall path to prevent striking an object. A minimum of six feet (2m) from the working level to the lower level nearest obstruction is recommended. See Figure 4.
- E. SHARP EDGES:** Avoid working where the lifeline will be in contact with or abrade against unprotected sharp edges. Provide protection for the lifeline when possible. An energy absorbing component can sometimes be added in-line to further protect the worker. Compatibility and total fall distance must be considered if this is done. Contact DBI/SALA before using an in-line energy absorbing component or lanyard with an SRL.
- F. RESCUE:** If a fall occurs the user (employer) must have a rescue plan and the ability to implement it.
- G. AFTER A FALL:** Equipment which has been subjected to fall arrest forces must be removed from service for inspection. See section 5.0.

WARNING: *Read and follow manufacturer's instructions for associated equipment (i.e. full body harness) used in your personal fall arrest system.*

IMPORTANT: *For special (custom) versions of this product, follow the instructions herein. See attached supplement, if included, for additional instructions when using a customized product.*

3.3 BODY SUPPORT: When using DBI/SALA SRL's a full body harness must be worn. For general fall protection use connect to the back D-ring. For situations such as ladder climbing, it may be useful to attach to the front of the harness. This is acceptable provided potential free fall is very short and footing can be easily regained.

For retrieval operations it is recommended that a full body harness be used to retrieve the victim, assuming their medical condition allows for such retrieval. Models are available with retrieval connections (shoulder D-rings) on top of the shoulders to aid in rescue operations.

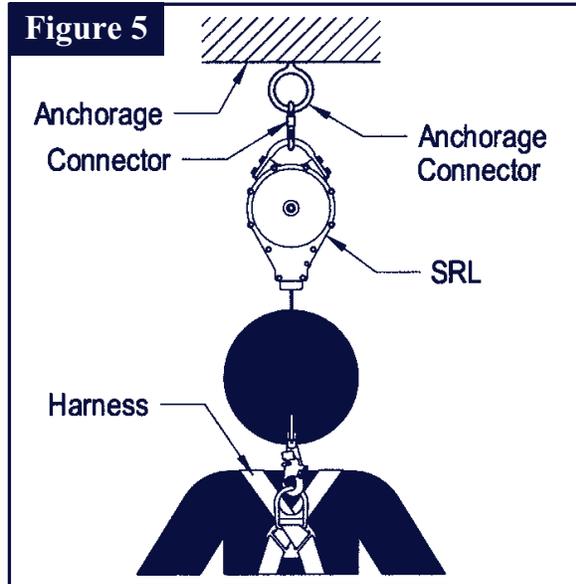
IMPORTANT: *Do not use a body belt for free fall applications. See OSHA 1926.502 for guidelines.*

3.4 MAKING CONNECTIONS: When using a hook to make a connection, ensure roll-out cannot occur. Roll-out occurs when interference between a hook and the mating connector causes the hook's gate or keeper to unintentionally open and release. Self locking snap hooks or self locking/self closing carabiners must be used to reduce the possibility of roll-out when making connections. Do not use hooks or connectors that will not completely close over the attachment object. Do not use non-locking snap hooks. It is recommended that the L7576 and L7626 be attached to a structure in a

fixed position (vs. hanging) with the hardware supplied. The mounting surface should meet the anchorage strength requirements stated in section 2.3. Follow the manufacturer's instructions supplied with each system component. See Figure 3.

IMPORTANT: *If longer bolts are needed to mount the SRL to a structure, use 1/2 inch diameter, grade 5 (minimum) bolts.*

3.5 OPERATION: Inspect the SRL as described in section 3.1. Connect the SRL to a suitable anchorage or anchorage connector as described above. Connect self locking snap hook on end of lifeline to the fall arrest or ladder climbing attachment on the body support (full body harness). Ensure connections are compatible in size, shape, and strength. Ensure hook is fully closed and locked. See Figure 5. Once attached, the worker is free to move about within the recommended working area at normal speeds. If a fall occurs the SRL will lock and arrest the fall. Upon rescue remove SRL from use. Inspect as described in section 5.0. When working with an SRL, always allow the lifeline to recoil back into the device under control. A short tag line may be required to extend or retract the lifeline during connection and disconnection operations. Allowing the lifeline to be fully extended for long periods of time may cause premature weakening of the retraction spring.



3.6 RETRIEVAL SYSTEM OPERATION: To activate retrieval mode, remove the retrieval handle on back side of the SRL by pushing the release button on top of handle and pulling upward. Install pin into hole on end of retrieval arm. Rotate arm assembly to the side to access shift knob. Lift pull ring on shift knob, rotate counter-clockwise 1/8 turn and release. Rotate retrieval arm clockwise to aid engagement. **The shift knob should move inward and rotate to a locked position when drive is fully engaged.** See Figure 6.

- A. **TO RAISE:** Rotate retrieval arm counter-clockwise.
- B. **TO LOWER:** Rotate retrieval arm clockwise. Keep tension on lifeline at all times (75 lbs. minimum).



IMPORTANT: *If a fall occurs in the fall arrest mode and the worker must be lowered to safety, raise the worker slightly to release the locking pawls and lower the worker.*

IMPORTANT: *Do not continue to rotate the retrieval arm in the lowering direction after the cable is fully extended. Spring damage may occur.*

- C. DISENGAGEMENT OF RETRIEVAL MODE:** Remove load from the life-line. Rotate the shift knob counter-clockwise 1/8 turn, pull pull ring out, rotate shift knob clockwise 1/8 turn. Release pull ring. Remove retrieval handle from retrieval arm and stow in stowage bracket. Insert retrieval handle pin through handle and into stowage bracket.

- 3.7 RETRIEVAL OVERLOAD FEATURE:** SRL's which incorporate the retrieval feature are provided with an overload clutch which protects the drive components and the person being raised from excessive force. This same feature provides shock absorption for the user if a fall occurs when the retrieval mode is engaged. The overload clutch is set to slip at approximately 500 lbs. to allow for emergency rescue applications where additional lifting capacity is required.

IMPORTANT: *Operating the retrieval system at loads greater than the rated capacity reduces the overall safety factor. Any unit which has been used above the rated capacity must be removed from service and returned to DBI/SALA for inspection.*

- 3.8 MOUNTING RETRIEVAL MODELS:** The SRL retrieval models may be used with optional brackets for mounting to the DBI/SALA tripod, davit arm, or ladder mast. Follow the steps below for mounting and use of these brackets:

Figure 7



IMPORTANT: *If mating bracket for tripod leg is not attached position clamp plate assembly in desired location on leg and tighten bolts to 15 ft.-lbs. Do not overtighten.*

NOTE: For retrieval models operated from a free hanging position a hand stabilizing bracket (3402-218) is available to steady the SRL. Attach bracket to the SRL housing using bolt, spacer, and washer furnished, which are inserted through the hole in the housing on the bottom half. See Figure 7.

Step 1. Attach the bracket to the SRL by inserting the two furnished bolts through the holes in the SRL housing. Attach nuts and secure.

- Step 2.** After the bracket is secured to the SRL, position the SRL bracket assembly onto mating bracket of tripod, davit arm, or ladder mast. The slot in the end of SRL bracket slides onto pin extending out each side of mating ladder mast, davit arm, or tripod leg bracket.

Figure 8



Reposition tripod leg bracket as required for proper operating height. See Figure 8.

- Step 3.** With assembly resting on pin, pivot top of SRL inward to align holes. Press in button on end of detent pin and slide pin in fully to secure SRL assembly to tripod, davit arm, or ladder mast. See Figure 9.



- Step 4.** Extend cable up support structure and over pulleys. Reinstall detent pins near pulley to prevent cable from sliding off pulleys. See Figure 10. Figures 11 and 12 show a completed attachment.



4.0 TRAINING

- 4.1** It is the responsibility of the user and the purchaser of this equipment to assure they are familiar with these instructions, trained in the correct care and use of, and are aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.

IMPORTANT: *Training must be conducted without exposing the trainee to a fall hazard. Training should be repeated on a periodic basis.*

5.0 INSPECTION

5.1 FREQUENCY:

- **Before Each Use:** Inspect per steps listed in sections 5.2, 5.3, and 5.4.
- **Monthly:** A formal inspection should be done by a competent person other than the user. See sections 5.2, 5.3, and 5.4. Record results in inspection log in section 9.0.
- **Every Two Years:** DBI/SALA SRL's are required to be serviced at least every two years by an authorized service center. Extreme working conditions may require increasing service frequency. Contact DBI/SALA for service frequencies in extreme working conditions. Service shall include, but not be limited to, an intensive inspection and cleaning of all components. Failure to provide required service may shorten the product life and endanger performance.

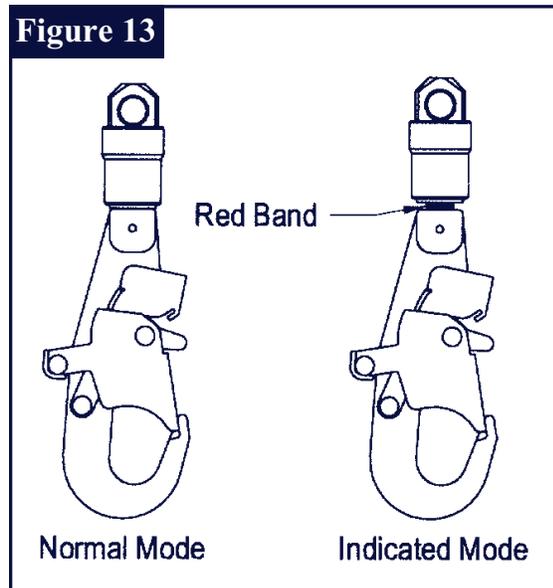
A record of annual service dates can be found on the identification plate of the SRL. See Figure 1 and section 8.0.

- **After Fall Arrest:** Inspect load indicator according to section 5.2, and entire SRL per sections 5.3 and 5.4.
- **After Use Of Retrieval Mode:** After raising or lowering, inspect load indicator according to section 5.2 and entire SRL according to sections 5.3 and 5.4. Applications which require continuous raising and lowering may require increased inspection and servicing frequency. Contact DBI/SALA if you have any questions regarding inspection frequency.

WARNING: *If the self retracting lifeline has been subjected to fall arrest or impact forces, it must be removed from service and inspected according to sections 5.2 and 5.3*

IMPORTANT: *Extreme working conditions (harsh environment, prolonged use) may require increasing the frequency of inspections.*

5.2 IMPACT INDICATOR: To inspect the impact indicator, look for exposed color band on hook as shown in Figure 13. If the hook is in the "indicated mode", an impact loading has occurred. SRL's which have been subjected to impact loading must be removed from service for inspection. Do not attempt to reset impact indicator. Return to an authorized service center for resetting. NOTE: Swivel will not turn freely in "indicated mode."



5.3 INSPECTION STEPS:

- Step 1.** Inspect for loose bolts and bent or damaged parts.
- Step 2.** Inspect housing for distortion, cracks, or other damage.
- Step 3.** Lifeline should pull out and retract fully.
- Step 4.** Ensure device locks up when lifeline is jerked sharply. Lock-up should be positive with no slipping.
- Step 5.** The labels must be present and fully legible. See section 8.0.
- Step 6.** Look for signs of corrosion on the entire unit.
- Step 7. WIRE ROPE:** Inspect wire rope for cuts, kinks, broken wires, corrosion, chemical contact areas, or severely abraded areas. Slide up cable bumper and inspect ferrules for cracks or damage. NOTE: Replace the wire rope assembly if there are six or more randomly distributed broken wires in one lay, or three or more broken wires in one strand in one lay. A "lay" of wire rope is

the length of wire rope it takes for a strand (the larger groups of wires) to complete one revolution or twist along the rope. Replace the wire rope assembly if there are any broken wires within one inch (25mm) of the ferrules.

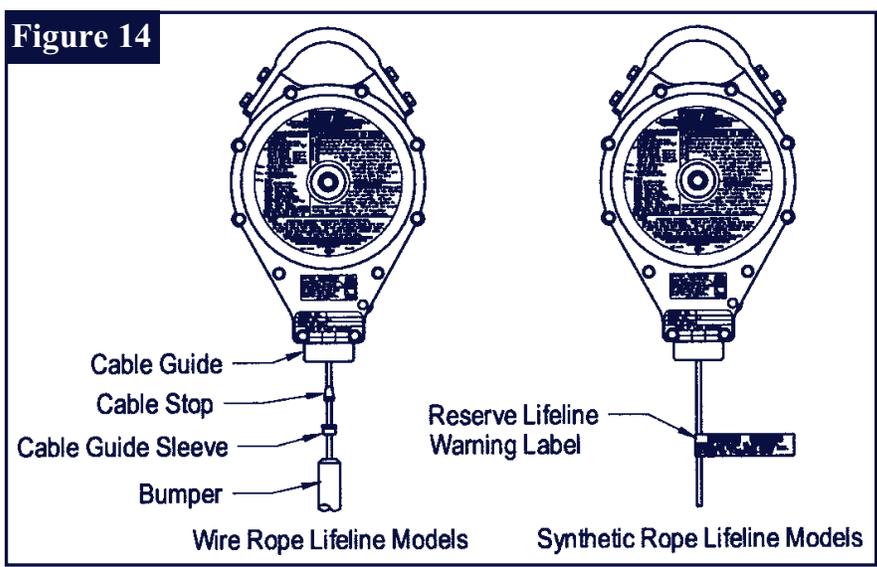
SYNTHETIC ROPE (Spectra and Technora): Inspect synthetic rope for concentrated wear, frayed strands, broken yarns, cuts, and abrasions. The lifeline must be free of knots throughout its length. Inspect for excessive soiling, paint build-up, and rust staining. Inspect for chemical or heat damage indicated by brown, discolored, or brittle areas. Inspect for ultraviolet damage indicated by discoloration and the presence of splinters and slivers on the rope surface. NOTE: All of the above factors are known to reduce rope strength. Rope strength is reduced proportional to the cross-sectional area of the rope damaged. Damaged or questionable ropes must be replaced.

WARNING: Do not tie or knot lifeline. Avoid lifeline contact with sharp or abrasive surfaces. Inspect lifeline frequently for cuts, fraying, burns, or signs of chemical damage. Dirt, contaminants, and water can lower dielectric properties of the lifeline. Use caution near power lines.

Step 8. Inspect connecting hooks for signs of damage, corrosion, and working condition. Swivel should rotate freely. Inspect impact indicator according to section 5.2.

Step 9. WIRE ROPE MODELS: Inspect reserve lifeline payout. If a fall has been arrested When most of the lifeline was out, it is possible that the reserve lifeline has been deployed. To inspect for reserve lifeline deployment, pull lifeline out of the SRL until it stops. If the reserve lifeline cable stop or cable guide sleeve is visible, the reserve lifeline has been spent and the unit must be serviced by an authorized service center before reuse. See Figure 14. If the reserve lifeline has not been deployed, that portion is acceptable and the inspection can continue.

SYNTHETIC ROPE MODELS (Spectra and Technora): Inspect reserve lifeline payout. If a fall has been arrested, it is possible the reserve lifeline has been deployed. To inspect for reserve lifeline deployment, pull lifeline out of the SRL until it stops. If the reserve lifeline warning label is visible,



the reserve lifeline has been spent and the unit must be serviced by an authorized service center before use. See Figure 14. If the reserve lifeline has not been deployed (the reserve lifeline label is not visible) that portion is acceptable and the inspection can continue.

Step 10. Inspect each system component or subsystem according to manufacturer's instructions.

Step 11. Record inspection results in the inspection log found in section 9.0.

INSPECTION STEPS FOR RETRIEVAL COMPONENTS:

Step 12. Inspect retrieval arm for distortion or other damage. Retrieval handle should engage into retrieval arm with ease and push button should work freely.

Step 13. Shift knob should rotate freely when engaging/disengaging. Pull ring on shift knob should spring back when released.

Step 14. Inspect retrieval mode for operation. To test, raise and lower a test weight (sand bag) of between 75 lbs. and 310 lbs. Retrieval operation should be smooth and even. When the retrieval handle is released, the weight should not move and retrieval handle should stay in position (no movement). A "clicking" sound should be evident when raising load.

Step 15. Retrieval pawl cover must be secure and without deformation. Optional mounting bracket must be securely attached to SRL and free from defects. Detent pin must operate freely.

5.4 If inspection reveals a defective condition, remove the SRL from service immediately and contact an authorized service center for repair.

<p><i>NOTE: Only DBI/SALA or parties authorized in writing may make repairs to this equipment.</i></p>

6.0 MAINTENANCE, SERVICING, STORAGE

6.1 Periodically clean the exterior of the SRL using water and a mild soap solution. Position the SRL so excess water can drain out. Clean labels as required.

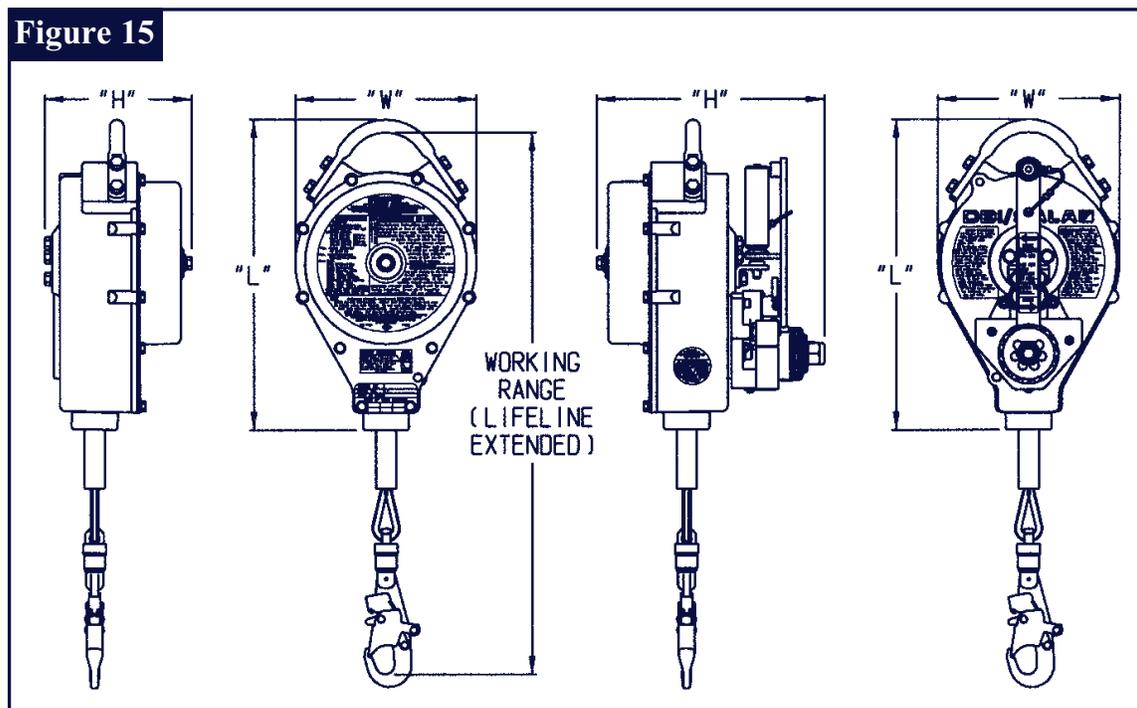
6.2 Clean lifeline with water and mild soap solution. Rinse and thoroughly air dry. Do not force dry with heat. An excessive buildup of dirt, paint, etc. may prevent the lifeline from fully retracting back into the housing causing a potential free fall hazard. Replace lifeline if excessive buildup is present.

6.3 Lifeline replacement, as well as additional maintenance and servicing procedures, must be completed by an authorized service center. An authorization and return number must be issued by DBI/SALA. Do not attempt to disassemble the SRL. See section 5.1 for servicing frequency. NOTE: Do not lubricate any parts.

6.4 Store SRL in a cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors may exist. Thoroughly inspect the SRL after any period of extended storage.

7.0 SPECIFICATIONS

Model	Size (LxWxH) / Weight	Lifeline Type / *Working Range
L3400	13.5x7.9x6.4" / 29 lbs.	Galvanized Wire Rope / 50 ft.
L3401	13.5x7.9x6.4" / 29 lbs.	Stainless Steel Wire Rope / 50 ft.
L3402	13.5x7.9x9.9" / 36 lbs.	Galvanized Wire Rope / 50 ft.
L3403	13.5x7.9x9.9" / 36 lbs.	Stainless Steel Wire Rope / 50 ft.
L3500	16.0x9.9x6.7" / 44 lbs.	Galvanized Wire Rope / 85 ft.
L3501	16.0x9.9x6.7" / 44 lbs.	Stainless Steel Wire Rope / 85 ft.
L3502	16.0x9.9x10.2" / 52 lbs.	Galvanized Wire Rope / 85 ft.
L3503	16.0x9.9x10.2" / 52 lbs.	Stainless Steel Wire Rope / 85 ft.
L3600	18.7x11.7x7.2" / 60 lbs.	Galvanized Wire Rope / 130 ft.
L3601	18.7x11.7x7.2" / 60 lbs.	Stainless Steel Wire Rope / 130 ft.
L3602	18.7x11.7x10.7" / 68 lbs.	Galvanized Wire Rope / 130 ft.
L3603	18.7x11.7x10.7" / 68 lbs.	Stainless Steel Wire Rope / 130 ft.
L7576	18.7x11.7x10.9" / 100 lbs.	Galvanized Wire Rope / 175 ft.
L7626	18.7x11.7x10.9" / 100 lbs.	Stainless Steel Wire Rope / 175 ft.
L3404	13.5x7.9x9.9" / 36 lbs.	Spectra Synthetic Rope / 50 ft.
L3405	13.5x7.9x6.4" / 29 lbs.	Spectra Synthetic Rope / 50 ft.
L3504	16.0x9.9x10.2" / 52 lbs.	Spectra Synthetic Rope / 55 ft.
L3505	16.0x9.9x6.7" / 44 lbs.	Spectra Synthetic Rope / 55 ft.
L3604	18.7x11.7x10.7" / 68 lbs.	Spectra Synthetic Rope / 80 ft.
08731	13.5x7.9x9.9" / 36 lbs.	Technora Synthetic Rope / 30 ft.



* Working range includes a 2 ft. Emergency Reserve

- Maximum Arresting Force, All Models: 900 lbs. when tested in accordance with ANSI Z359.1-1992
- Capacity, All Models: 75-310 lbs.
- Average Locking Speed, All Models: 4.5 ft./second
- Safety Factor at Rated Load: 10:1
- Housing Fastener Torques: 1/4-20 bolts: 60 in-lbs. 5/16-18 bolts: 132 in-lbs.
- U.S. Patent Numbers 4,977,647, 5,186,289 and 5,220,977. Canadian Patent Numbers 2,027,784 (hook) and 2,089,514 (indicator), European Patent Number EP0557031B7 (hook)
- SRL meets industry standards including ANSI Z359.1-1992, ANSI A10.14-1991 and OSHA requirements.
- SRL meets CSA (Canadian Standards Association) requirements Z259.2.

7.1 MATERIAL:

Housing: Cast Aluminum

Housing Cover: Stainless Steel

Anchorage Handle: Stainless Steel

Fasteners: Stainless Steel

Main Shaft: Stainless Steel

Locking Pawls: Stainless Steel

Ratchet Center: Carbon Steel

Motor Spring: Carbon Spring Steel

Finish Paint: Polyester baked finish

Connecting Hook: Forged Alloy Steel

Swivel Assembly: Stainless Steel

Cable Guide: Nylon with Stainless Steel Guide

Cable Bumper: Urethane

Lifeline (Galvanized): 3/16" dia., 7x19 aircraft wire rope, 4,200 lbs. minimum tensile strength

Lifeline (Stainless Steel): 3/16" dia., 7x19 aircraft wire rope, 3,600 lbs. minimum tensile strength

Lifeline (Spectra): 1/4" dia., 12 strand synthetic rope, 5,600 lbs. minimum tensile strength

Lifeline (Technora): 1/4" dia., 12 strand synthetic rope, 8,150 lbs. minimum tensile strength

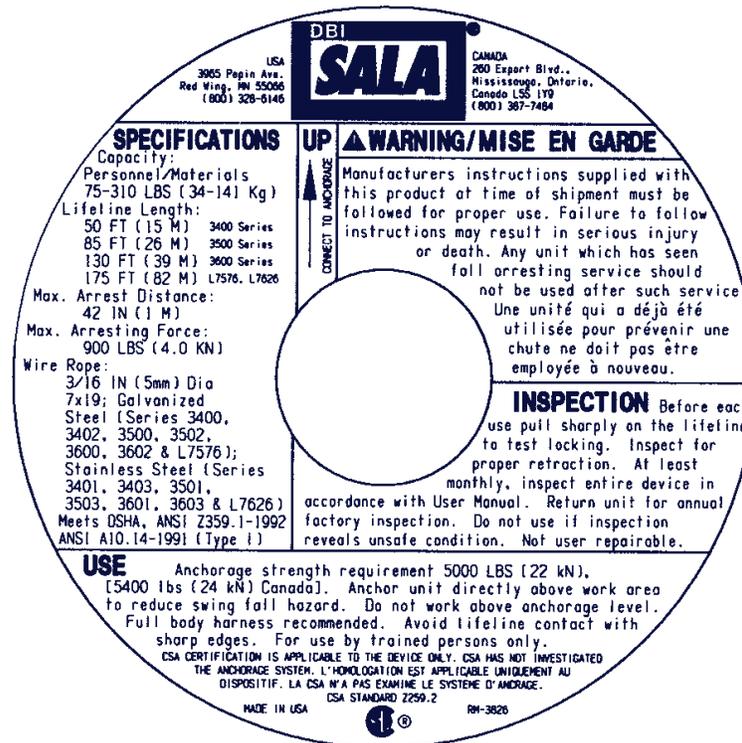
7.2 OPERATING CHARACTERISTICS, RETRIEVAL MODELS:

Model	Gear Ratio	Weight Lifted	Cranking Force
L3402/L3403	6.8:1	200 lbs.	7 lbs. - 12 lbs.
L3402/L3403	6.8:1	310 lbs	11 lbs. - 19 lbs.
L3502/L3503	6.8:1	200 lbs.	8 lbs. - 13 lbs.
L3502/L3503	6.8:1	310 lbs.	12 lbs. - 20 lbs.
L3602/L3603	6.8:1	200 lbs.	9 lbs. - 16 lbs.
L3602/L3603	6.8:1	310 lbs.	12 lbs. - 20 lbs.

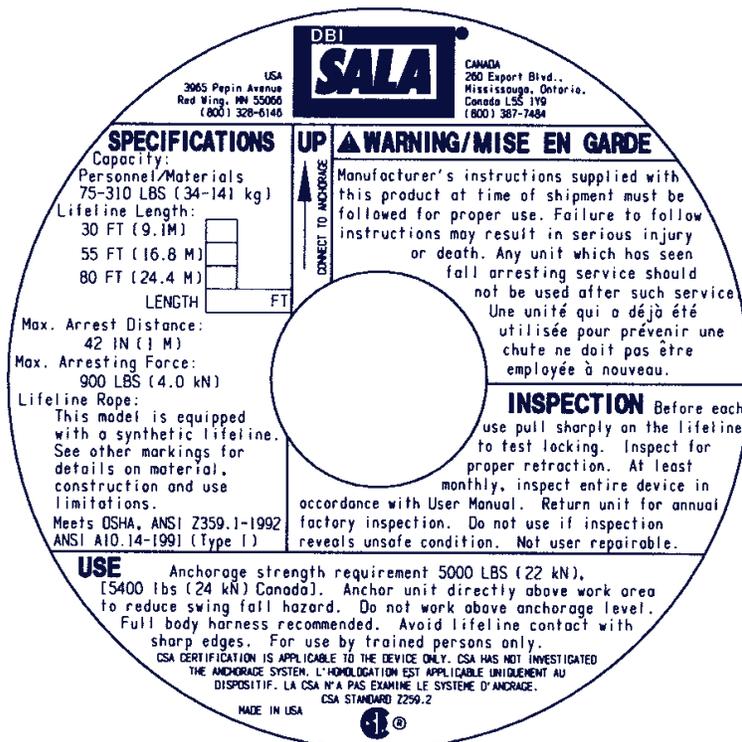
- Average Retrieval Rate at 60 RPM: 12.1 ft./min. (3.7 m/min.)

8.0 LABELING

8.1 These labels be securely attached to the self retracting lifeline and fully legible. See Figures 1 and 2.



**Instruction Label
Wire Rope Models**



**Instruction Label
Spectra and Technora Synthetic Rope Models**

WINCH OPERATION

1) Remove grip handle from stowed position and install onto crank arm.

2) To engage winch, pull shift knob ring and turn knob counterclockwise then release ring. Rotate crank arm clockwise (lowering) to aid gear engagement.

3) To raise load, crank counterclockwise. To lower load, first crank counterclockwise to release fall arrest brake, then crank clockwise.

NOTE : A minimum load of 75 LBS is required for lowering or to pay out line.

OPERATION (CONTINUED)

CAUTION: Stop cranking when line is fully extended or retracted. Continued cranking can damage components.

4) To disengage winch, first remove load from line. Rotate shift knob counterclockwise. Pull ring until knob can be rotated clockwise to locked position. Release ring.

5) Restow crank arm and grip handle.

NOTE: Refer to manual supplied with this product for detailed instructions.

**Retrieval Operation Labels
All Retrieval Models**

DBI/SALA
3965 PEPIN AVE.
RED WING, MN 55066-1837
(800) 328-6146

▲ WARNING

THIS HANDLE INCORPORATES A TORQUE LIMITER TO PREVENT OVERLOADING. RAISING OR LOWERING LOADS IN EXCESS OF THE RATED CAPACITY (310 LBS) WILL RESULT IN SLIPPAGE OF THE HANDLE.

**Torque Limiter Label
All Retrieval Models**

**TO
ENGAGE
DRIVE**

**Shift Knob Label
All Retrieval Models**

←

RAISE

CAPACITY
310 LBS

NOT FOR
WORK
SUPPORT
OR POSI-
TIONING.
REFER TO
MANUAL.

LOWER

→

**Retrieval Arm Label
All Retrieval Models**

SERIAL NO.	
MODEL NO.	
DATE OF MFR.	
LOT NO.	
DATE OF LAST SERVICE	
○	○

Identification Label
All Models



Impact Indicator Label
All Models



Swivel Hook Label
All Models

Lifeline Specifications Material: Spectra Construction: 12 strand Size: 1/4 in. diameter Heat resistant to 140° F (60° C) RM-3625	▲ WARNING
	Do not tie or knot lifeline. Dirt, contaminants, and water can lower dielectric properties of lifeline, use caution near energized lines. Avoid lifeline contact with sharp or abrasive surfaces. Inspect line frequently for cuts, fraying, burns, or signs of chemical damage. See user manual for more information. Failure to heed these warnings may result in injury or death.

Warning Label
Spectra Synthetic Rope Models

Lifeline Specifications Material: Technora Construction: 12 strand Size: 1/4 in. diameter Heat resistant to 900° F (480° C) 08832	▲ WARNING
	Do not tie or knot lifeline. Dirt, contaminants, and water can lower dielectric properties of lifeline, use caution near energized lines. Avoid lifeline contact with sharp or abrasive surfaces. Inspect line frequently for cuts, fraying, burns, or signs of chemical damage. See user manual for more information. Failure to heed these warnings may result in injury or death.

Warning Label
Technora Synthetic Rope Models

WARNING WARNING WARNING WARNING
DISCONTINUE USE IMMEDIATELY! RESERVE LIFELINE IS DEPLOYED, RETURN FOR FACTORY SERVICE. DB INDUSTRIES INC., 3965 PEPIN AVE. RED WING, MN 55066 PHONE 651-388-8282 OR 1-800-328-6146

Reserve Lifeline Warning Label
Spectra and Technora Synthetic Rope Models

9.0 INSPECTION AND MAINTENANCE LOG

SERIAL NUMBER: _____

MODEL NUMBER: _____

DATE PURCHASED: _____

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION TAKEN	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			

9100 Series Self Retracting Lifeline

The 9100 Series Self Retracting Lifeline provides continuous fall protection for workers who work at elevations or wherever there is a potential fall hazard.

Ease of set-up is as simple as:

- 1) Attach the device to an approved anchorage point by means of the supplied 5,000 lb rated locking carabiner
- 2) Attach the locking swivel snap hook on the cable end of the device to the back dee ring on your fall arrest harness. **(Always visually inspect or have inspected the snap hook to dee ring connections; do not rely on hearing an audible snap.)**

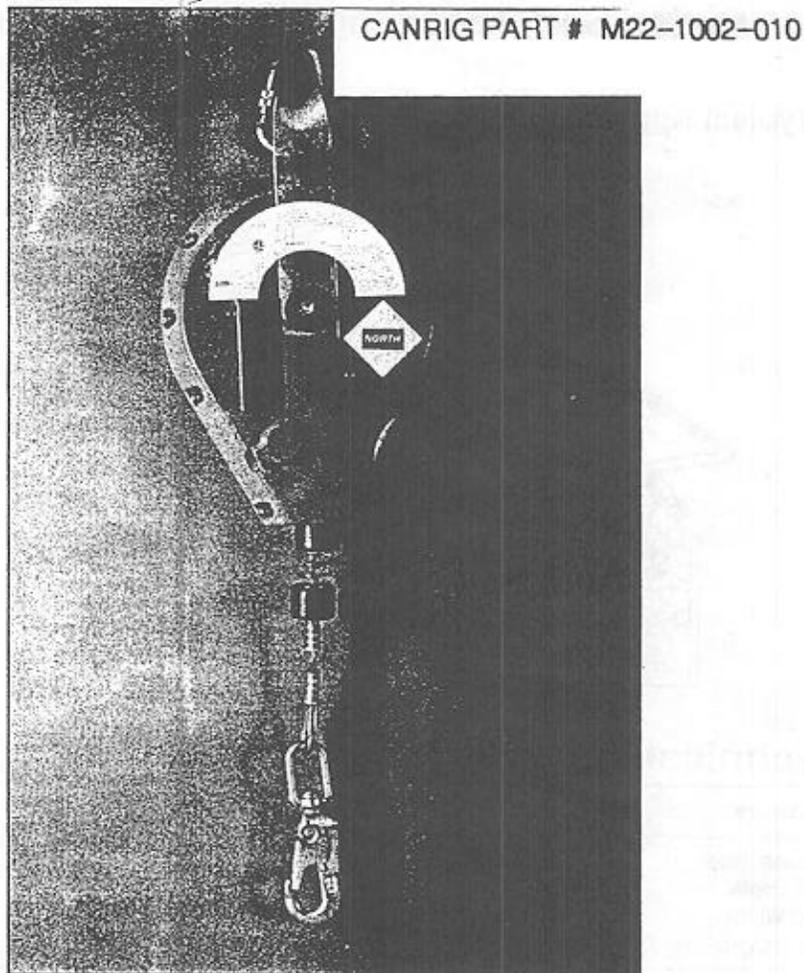
The 5 mm (3/16") galvanized or stainless steel aircraft cable, 1" polyester webbing, or kernmantle rope, automatically extends and retracts as the workers move freely about performing their tasks. A slight, constant tension on the lifeline is applied by an internal coil spring, which eliminates the potential for slack (free fall) to be introduced into the system.

Should a fall or stumble occur, the centrifugal brake system arrests the fall with a cushioning effect. The arrest force levels and cable extension, in a fall situation, meet or exceed the OSHA, ANSI, and CSA requirements. As soon as the tension is removed from the device, the brake is released and normal operation resumes.

The North 9100 Series Self Retracting Lifeline is the answer to a wide range of applications such as: elevated work platforms, rail and tank cars, roofs, rigs and derricks, tanks, silos, transmission tower erection, fixed ladders, etc.

The 9100 is available in a variety of cable lengths from 23' (7.0 M) to 165' (50.3 M) in either plastic or aluminum housings.

OSHA requires the use of back up fall protection such as the 9100 Series Self Retracting Lifeline when raising and lowering personnel with mechanical devices such as our 8100 Series Personnel/Material Winch.



9100 Series Self Retracting Lifeline

Light weight durable components are resistant to damage by chemicals and harsh environments. Quality construction and ease of installation are only two of the standard features that this versatile self retracting lifeline offers the user.

The 9100 Series utilizes the least number of internal components, without compromising its integrity. This offers the user considerable savings on repairs, inspections, and recertifications, compared to competitive devices.

Service and recertification are available at North Safety Products. For further information contact our customer service department at:

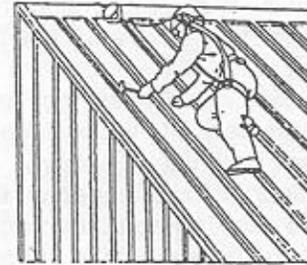
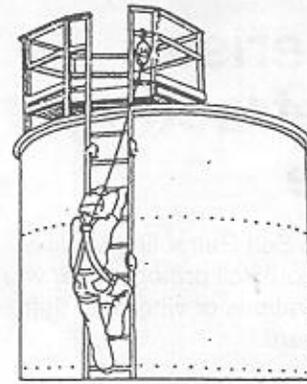
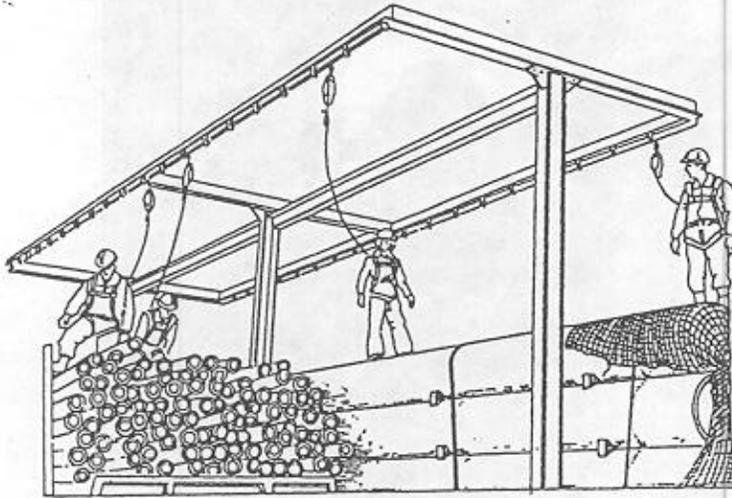
NORTH

Safety Products

 Approved

9100 Series Self Retracting Lifeline

Typical Applications



Technical Information

1,475° 1,720°

Category	P9023	P9125	9125	9139	9150	9165	9180	91110	91140	91165
Dimensions:										
(D) Depth	4"	4"	4"	4"	4"	4"	4.5"	4.5"	4.5"	7"
(W) Width	8"	8"	8"	9"	11"	11"	15"	15"	15"	15"
(L) Length	12"	13.5"	17"	17.5"	20"	20"	24.5"	24.5"	24.5"	25"
Cable Data:										
(L) Length*	23'	25'	25'	39'	50'	65'	80'	110'	140'	165'
Available in:										
(N) 1" Polyester Web	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(S) 5mm Stainless Steel Cable	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(G) 5mm Galvanized Cable	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weight	8 lbs	8 lbs	14 lbs	18 lbs	26 lbs	27 lbs	50 lbs	52 lbs	60 lbs	88 lbs
Housing Materials	Plastic Composite	Plastic Composite	Cast Aluminum Alloy							
Avg. Arresting Force*** 1kn = 224 lbs	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn	5.1 kn
Avg. Cable Pull-out during fall***	29"	29"	29"	29"	29"	29"	29"	29"	29"	29"
Standards Met**	OAC	OAC	OAC	OAC	OAC	OAC	OAC	OAC	OA	OA

* Cable Length (L) is measured from cable opening of housing to tip of snap hook

** O = OSHA 1910.66 appendix C • A = ANSI Z359 • C = CSA Z259.2

*** Average Arresting Force and Average Cable Pull-out based on test results using a 220 lb test weight dropped with a free fall distance of 2 feet (refer to CSA Z259.2 test procedure).

NORTH

North Safety Products

Siebe North Canada Ltd.

26 Dansk Court, Rexdale, Ontario M9W 5V8
 416-675-2810 ext 13 Fax: 416-675-6898
 CDN Toll Free: 1-800-268-6925
 US Toll Free: 1-800-836-8006



SAFETY ALERT

DATE: August 8, 2001

SUBJECT: TDSU – Cable Carrier (Grass-hopper)

SERIAL NUMBERS: All 40 ft TDSU buildings, presently in the field

DISCUSSION: The “grass-hopper” on the land rig TDSU building is designed to be a cable carrier, **not a walkway**. The unit does not have the structural strength to support the weight of a person.

RECOMMENDATION: **Never walk on cable carrier.**

Remove any “handrails” (if they have previously been mounted).

While rigging up the cable carrier, use the following method to avoid the necessity of walking or climbing on the cable carrier:

1. Before raising the cable carrier, ensure that all cables tails are laying on the cable tray and are secured (with rope or straps).
2. After the cable carrier is secured to the rig floor, release the rope or strap and pull each cable up to the lower torque guide junction box, one at a time.

While rigging down the cable carrier, use the following method to avoid the necessity of walking or climbing on the cable carrier:

1. Disconnect each cable from the lower torque guide junction box and lay it on the ground. Bundle the cables together so that they can be handled while storing the cable carrier back onto the TDSU building.
2. Once the cable carrier is on the TDSU, lay all cables (one at the time) into the cable tray of the top section of the cable carrier and secure them with rope or straps.

INFORMATION:

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



DATE: September 25, 2001

SUBJECT: OVERHEATING OF ELECTRICAL ROOM IN TOP DRIVE SUPPORT UNITS (TDSU)

SERIAL NUMBERS: ALL TOP DRIVES WITH A NON-FLEX TDSU

DISCUSSION: The electrical components inside the TDSU electrical room can generate a substantial amount of heat. To avoid overheating this room, CANRIG supplies one air conditioning unit (or two, for complete redundancy, in units shipped after 1995). Should the air conditioning unit(s) fail or be turned off, high temperatures can cause failure and/or damage to electrical equipment and components. Canrig now offers a High Temperature Alarm upgrade kit. This HTA upgrade kit is easy to install, completely "stand-alone" and includes a thermostat which activates a high intensity strobe beacon light when a 130 degrees Fahrenheit (130°F) temperature is reached inside of the TDSU building.

RECOMMENDATION: The HTA upgrade kit (Part Number AY11104) would be an alarm indication to personnel that A/C units inside of TDSU building need to be started or that a possible failure of A/C unit/s inside of TDSU has occurred. If you would like to upgrade your TDSU, please order the HTA kit from CANRIG spare parts sales department.

INFORMATION:

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



DATE: 8 October, 2001

SUBJECT: VIBRATION TECHNOLOGY Inc. – Resonant Vibration System

SERIAL NUMBERS: All

DISCUSSION: Vibration Technology Inc. has installed their “**Resonant Vibration System**” on two different CANRIG Top Drives and in both cases, severe damage was done to the Top Drive and it’s associated components (i.e. electrical j-boxes, hydraulic valve stack, blower, lube pump, etc). The resonant vibration system was designed and is used to free stuck pipe. When hung directly below the Top Drive, it vibrates the TD so violently, that serious damage can result in a very short time.

RECOMMENDATION: The above mentioned tool should not be used in conjunction with any CANRIG top drive. Rigging down the Top Drive, prior to connecting the resonant vibration system should be done whenever possible. Failure to do so, will likely cause significant damage which will not be eligible for repair under the terms of CANRIG’s warranty policy.

INFORMATION:

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



SAFETY ALERT

DATE: December 7, 2001

SUBJECT: PIN FAILURE – RETRACT FRAME

SERIAL NUMBERS: 135, 136, 137 & 141

DISCUSSION: Recently, pin DT10210 which connects the hydraulic cylinder to the retract frame failed and fell 10 meters to the drilling floor alarming personnel. The dropped piece was 1.75 inch diameter by 2.8 inch long weighing 1.9 lb. The pin broke in the middle where a grease port and groove are located.

RECOMMENDATION: CANRIG has reviewed the design of the failed pin. New pins using higher strength material and eliminating the grease passage will be made available. Pin DT10210 will be replaced by pin DT12273. Pin DT10165 will be replaced by pin DT12272. Existing pins should be inspected for cracks at the earliest opportunity and these existing pins should be replaced as new pins are available.

CANRIG will replace all DT10210 and DT10165 pins free of charge under our warranty policy.

Please contact:
Sonny Lynn, Parts Sales Coordinator
Phone: 281-259-3151
Fax: 281-259-3260
E-mail: slynn@canrig.com

INFORMATION:

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



SAFETY ALERT

DATE: March 14, 2002

SUBJECT: SAFETY WIRING – LINK TILT CYLINDER GUARD

SERIAL NUMBERS: All

DISCUSSION: The guards for the Link Tilt Cylinders are secured with four 1/4" bolts. To avoid an incident in case these bolts get sheared (due to inappropriate operation), we installed a 1/16" safety wire to both ends of the guard. This safety wire has been severed during top drive operation causing the guard to fall.

RECOMMENDATION: To improve safety of personnel, Canrig has increased the size of these safety wires to 1/8". Existing 1/16" diameter cables should be changed to the 1/8" diameter. In order to complete this upgrade, you will need 4 feet of safety wire (CANRIG part number M10022) and eight ferrules (M19-3009-010).

INFORMATION:

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



DATE: March 22, 2002

SUBJECT: MAINTAINING TORQUE ON STUCK PIPE

SERIAL NUMBERS: ALL DC POWERED TOP DRIVES

DISCUSSION:

- Applying torque on a **stalled DC motor** causes excessive localized heat. In such a situation, the commutator and the windings will overheat and destroy in relatively short time.

RECOMMENDATION:

To avoid the above mentioned problem, the following procedures should be adhered to:

1. **Never leave the DC motor stalled with current applied beyond 30 seconds.**
2. The manual method to unwind pipe is by **slowly reducing** the drill torque limit until the pipe has fully unwound. **Do not reduce the throttle**, until the pipe has been fully unwound.
3. On serial number 21 and up, CANRIG has installed an automated routine, the "**UNWIND**" feature. With this feature, the following procedures can be adapted:
4. If it is OK to unwind the pipe, reduce throttle rapidly to zero. This will initiate the PLC UNWIND routine and the pipe will slowly unwind automatically. **Do NOT reduce the throttle slowly, as that action will not initiate the UNWIND routine and keep full torque on the motor until the very last part of the throttle reduction, where the torque will fall off quickly and the pipe will spin backwards very fast. This can damage the SCR and accidentally break-out a connection.**
5. If it is required to keep the wound-up torque on the pipe for an extended period, proceed as follows:
 - Apply the brake before the throttle is reduced.
 - Once the brake is set, reduce the throttle quickly to zero
 - Before the brake can be removed, advance the throttle approximately to the same position it was previously. Once the torque on the meter has reached torque limit, the brake can be released. If the pipe is free, the top drive will start to rotate. If the pipe is still stuck, the motor will stall-out and step 1 through 3 apply.

INFORMATION :

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



SAFETY ALERT

DATE: 23 April 2002

SUBJECT: SECOND NOTICE: SAFETY WIRING – LINK TILT CYLINDER GUARD

SERIAL NUMBERS: All

DISCUSSION: In March 2002, CANRIG released Safety Bulletin 73. Subsequent to this release, an accident occurred on a rig, where the Link Tilt guard fell off the Top Drive and struck an employee situated on the rig floor. It is absolutely imperative that the below instructions are being followed and the guard restraining system is being upgraded to include the specification as found on the attached drawing.

RECOMMENDATION: Check each link tilt guard for proper installation of two 1/8" safety restraint wires as per attached drawing. Please note that to ensure cables do not become frayed at the guard tie-off point, this tie-off point on the guard should be on the side, rather than on top. Further, check that the four retaining bolts holding the guard in position are in place and safety wired as per the attached drawing. If these bolts are not drilled for safety wiring, contact CANRIG and proper bolts will be provided to you. If any bolt or safety wire is missing or not applied as outlined on attached dwg, it should be rectified immediately, or the guard should be removed until it can be properly installed. Removing the guard will expose the stainless steel tubing and will increase the potential of a hydraulic leak. The following parts and material may be necessary to bring the guard restraining system into compliance:

- 8 feet of 1/8" safety wire (CANRIG part number M10022), cut into 4 equal length and eight ferrules (M19-3006-010), to make restraint cables.
- 6 feet of 1/16" safety wire (CANRIG part number M19-3009-010) and four ferrules (M21-2000-010), for wiring the 1/4" retaining bolts
- Crimping tool (LOCOLOC No.0 (available from CERTEX), or equiv.)
- Drill and 3/16 drill bit (in the event the hole has to be re-drilled on the side of the guard)

If you would like CANRIG to perform the above mentioned checks or modifications or if you have any questions regarding implementation of this bulletin, please contact the person listed below.

When in doubt, do not hesitate to contact CANRIG and ask questions.

INFORMATION:

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



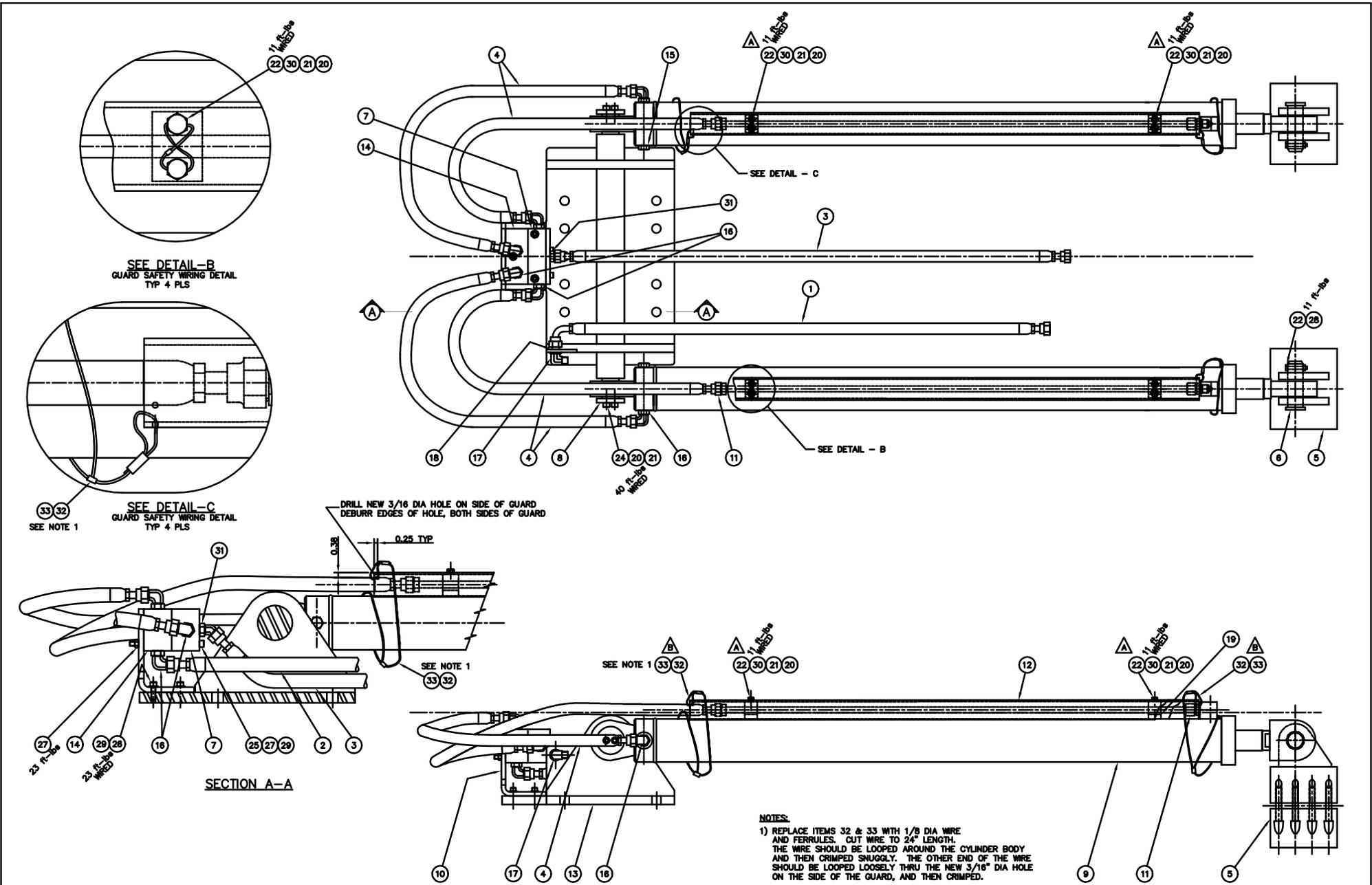
Engineering Bill of Material

Part: AY11262
Description: LINK TILT ASSY, 650 TON, 2 SPD

Eng ID: 0
Drawing ID: AY11262

Rev No: B

Item	Qty	Units	Part ID	Eng ID	Description
01	1.00	EA	F451JSJ9080808-44.79-X-42	0	HOSE ASSY, 1/2, SWV STR, 90° SHT, 44.79
02	1.00	EA	F451JSJS080808-30.8-X-28	0	HOSE ASSY, 1/2, SWV STR, SWV STR, 30.8
03	1.00	EA	F451JSJS080808-28.75-X-26	0	HOSE ASSY, 1/2, SWV STR, SWV STR, 28.75
04	4.00	EA	F451JSJS080808-24.8-X-22	0	HOSE ASSY, 1/2, SWV STR, SWV STR, 24.8
05	2.00	EA	594-02-6		LUG, ELEVATOR LINK, 750 TON
06	2.00	EA	594-05-0		PIN, 1.375 DIA, 3.62 LG, HEAD ONE END
07	1.00	EA	594-07-0		MANIFOLD, HYDRAULIC, LINK TILT
08	2.00	EA	689-12-0		RETAINER, LINK TILT
09	2.00	EA	689-14-0	0	CYL, HYD, BORE 3 1/4, ROD 2, STRK 47.94
09A	0.00	EA	H18-3220-01B		CYLINDER SEAL KIT
09B	0.00	EA	H19-1004-010		CYLINDER ROD EYE
09C	0.00	EA	M04-1000-020		BEARING, PLAIN RADIAL
09D	0.00	EA	M11-1022-010		RETAINING RING, INTERNAL
10	1.00	EA	689-16-0		MOUNT, FLOW DIVIDER, LINK TILT
11	2.00	EA	689-19-0-500	0	HYD TUBE, 1/2, LINK TILT, 500
12	2.00	EA	689-20-0		GUARD, HYDRAULIC TUBE, LINK TILT, 45.75
13	1.00	EA	919-11-0		UPPER SUPPORT LUG LINK TILT
14	1.00	EA	H04-1012-010		VLV, HYD, FLOW DIVIDER, INLINE, SAE-8
15	2.00	EA	H15-090109B-08		PLUG, SOC HEX, 1/2 ORB
16	7.00	EA	H15-520220-08-08		ELL 90°, MALE 1/2 ORFS, MALE 1/2 ORB
17	1.00	EA	H15-520701-08		ELL 90°, BULKHEAD, MALE 1/2 ORFS
18	1.00	EA	H15-520118-08		LOCKNUT, BULKHEAD 1/2, 13/16-16UNF
19	4.00	EA	H25-1002-010		CLAMP, SINGLE, 1/2 IN DIA
20	8.00	EA	M19-3006-010		FERRULE, 1/16, OVAL, ALUMINIUM
21	72.00	IN	M21-2000-010		WIRE ROPE, 1/16, 7 x 7, STAINLESS
22	10.00	EA	HH-0250NC-0175-GR8-W		CAPSCR, HEX HD, 1/4-20UNC x 1.75, GR8
24	4.00	EA	SH-0375NC-0125-W		CAPSCR, HEX SOC HD, 3/8-16UNC x 1.25
25	2.00	EA	SH-0312NC-0500		CAPSCR, HEX SOC HD, 5/16-18UNC x 5.00
26	3.00	EA	SH-0312NC-0100-W		CAPSCR, HEX SOC HD, 5/16-18UNC x 1.00
27	2.00	EA	LN-0312NC-GR8		LOCKNUT, 5/16-18UNC, GR8
28	2.00	EA	LN-0250NC-GR8		LOCKNUT, 1/4-20UNC, GR8
29	5.00	EA	FW-0312-A		WASHER, F, 5/16, PLAIN, TYPE A
30	8.00	EA	LW-0250-ET		LOCKWASHER, 1/4 EXTERNAL TOOTH
31	1.00	EA	H15-520320-08		ELL 45°, MALE 1/2 ORFS, MALE 1/2 ORB
32	8.00	EA	M19-3009-010		FERRULE, 1/8, OVAL, ALUMINIUM
33	96.00	IN	M10022		WIRE ROPE, 1/8, STAINLESS, 7 X 19



DRILL NEW 3/16 DIA HOLE ON SIDE OF GUARD
DEBURR EDGES OF HOLE, BOTH SIDES OF GUARD

- NOTES:**
- 1) REPLACE ITEMS 32 & 33 WITH 1/8 DIA WIRE AND FERRULES. CUT WIRE TO 24" LENGTH. THE WIRE SHOULD BE LOOPED AROUND THE CYLINDER BODY AND THEN CRIMPED SNUGGLY. THE OTHER END OF THE WIRE SHOULD BE LOOPED LOOSELY THRU THE NEW 3/16" DIA HOLE ON THE SIDE OF THE GUARD, AND THEN CRIMPED.

			THIS PRINT AND DESIGN AND DETAIL SHOWN THEREON ARE THE PROPERTY AND INVENTION OF CANRIG DRILLING TECHNOLOGY LTD. THIS PRINT IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED WITHOUT PERMISSION AND RETURNED UPON DEMAND. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED BY CANRIG DRILLING TECHNOLOGY LTD.			TOLERANCE - UNLESS OTHERWISE SPECIFIED			DRAWN DC 02/04/21		CANRIG DRILLING TECHNOLOGY LTD.				
			REMOVE SHARP CORNERS AND BURRS			CASTING ± 1/16		FABRICATING [METRIC]		MACHINING IMPERIAL		CHECKED			
			◎ CONCENTRICITY ± .005 TR - STRAIGHTNESS ± .005 IN 5 INCHES - SQUARENESS ± .010 IN 5 INCHES - PARALLELISM ± .010 IN 5 INCHES - TILT POSITION ± .005			0 TO 600 mm ± 1 mm > 600 mm ± 3 mm		DECIMAL .x ± .030" .xxx ± .015" .xxxx ± .005"		APPROVD MATERIAL				PROJECT	
No. Y/M/D BY REVISION			MACHINED SURFACES 125			0 TO 24° ± .05° > 24° ± .12°		ANGULAR ± 2°		ANGULAR ± 1°		EST. WEIGHT SCALE 1:4		LINKTILT-GUARD REV 0	



DATE: May 7, 2002

SUBJECT: Air Conditioning Unit Set-up

SERIAL NUMBERS: All TDSU Buildings with Dual A/C Units

DISCUSSION: In TDSU (Top Drive Support Unit) buildings for DC Top Drives, two air conditioning units are installed, but only one unit can be running at any time (only one power plug available).
In TDSU buildings for **AC Top Drives**, it may be required to run both air conditioning units simultaneously, to control ambient temperature inside the equipment.

IF THE TEMPERATURE CONTROL OF EITHER A/C UNIT IS SET TOO LOW, THE CONDENSOR WILL FREEZE-UP, RENDERING THE UNIT INOPERATIVE.

RECOMMENDATION: **DC Top Drives**
Operate the same Air Conditioning unit at all times. Each unit has a "high", "medium", "low" and "off" control button. The "running" unit should be set to high, the standby unit should be set to "off". That way, you will have a "new", reliable unit as a standby unit, should you ever need this device.

AC Top Drives
Since both air conditioning units may be needed to maintain proper temperature inside the electrical equipment, the following set-up should be applied:

1. Set both unit control buttons to "high". Set the "primary" unit temperature control dial to the desired room temperature (approx. 72° F). This temperature (and the performance of the air conditioning units) should be monitored periodically, to maintain best performance of the electrical equipment in the TDSU building.
2. Set the "secondary" unit 5° F higher (approx. one division on the adjustment dial). This will keep the unit on automatic standby. The primary unit will perform the temperature control, until the heat generated by the electrical equipment is too much for this unit to handle. At this time, the temperature will rise and the secondary unit will automatically assist the primary unit. To verify the secondary unit is set slightly higher than the primary unit, turn the temperature control knob of this unit slowly counter-clock, until a click can be heard and the unit starts to cool. Note this position and turn the knob clockwise one division.
3. Verify the proper operation of the primary unit by checking the room temperature. Verify the proper operation of the secondary unit (as described above) at least once every week.

INFORMATION:

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



SAFETY ALERT

DATE: June 28, 2002

- SUBJECT:** Maintenance of Back-Up Wrench Gripper Assembly
- SERIAL NUMBERS:** 002 and up
- INCIDENT:** When opening the gripper after breaking a connection during a back-reaming operation, the die retainer pin broke and a portion fell from the back-up wrench gripper.
- DISCUSSION:** Improperly maintained gripper assemblies can cause over-loading of the die blocks, die retainer pins and cylinder components. In extreme cases, the retaining pins or dies can fail and possibly fall from the top drive.
- RECOMMENDATION:** The following items should be addressed for gripper maintenance:
1. Check the die retainer pins for signs of damage whenever doing maintenance. Replace if worn or damaged. Always replace the retaining ring in the die block to ensure the pin is captured.
 2. If the retaining ring groove is damaged in the die block, the die block must be taken out of service and replaced with one in good working order.
 3. The gripper assembly should be checked and cleaned regularly for contamination build up. Dried drilling fluids and other contaminants can prevent the cylinder from operating properly. Wash thoroughly. Excessive build up of matter can cause over-loading of the die retainer pin and possible failure.
 4. Follow the recommended greasing schedule in the Maintenance section of the Parts Book. The gripper cylinder should be greased weekly.
 5. Check the tong dies frequently under periods of heavy use. Change the dies when worn.
 6. Ensure the stabbing bell is sized correctly for the pipe and in good working order.
 7. Ensure all capscrews are properly torqued and safety wired.

Attached is a recommended procedure for removing and installing die blocks in the gripper assembly.

INFORMATION:

For further information contact:

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Magnolia, Texas 77354
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Gripper Die Block Removal and Installation

1. Ensure the top drive is not connected to the drill string and is at floor level.
2. Fully extend the back-up wrench gripper so that it is below the threads of the lower well control valve.
3. If the gripper is not below the pin connection of the LWCV, float the quill up and install the quill support tool below the washpipe stuffing box. See Fig. 1. If the tool is not available, blocking can be used.

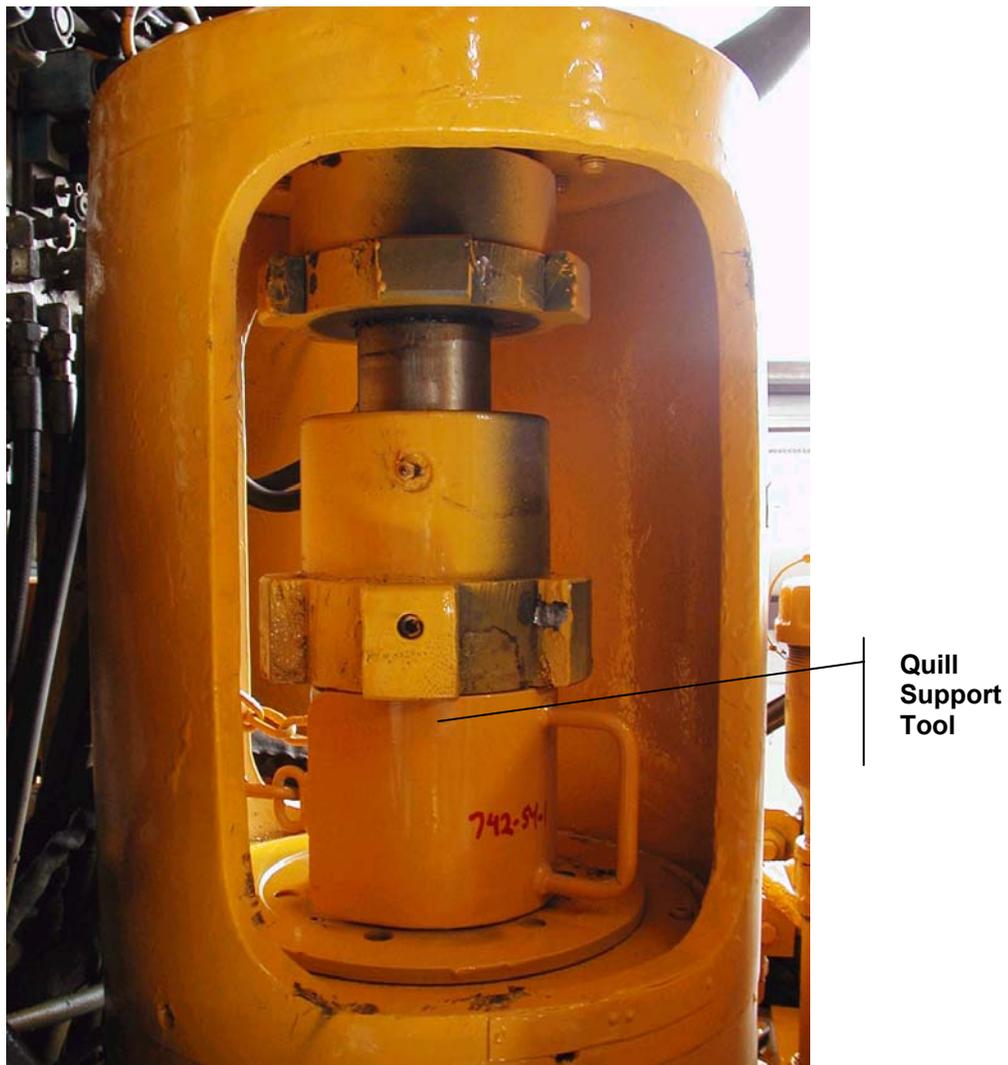


Fig. 1

4. Close the gripper by moving the switch/joystick to Gripper Maintain Closed. The gripper die block assembly should appear as it does in Fig. 2.



Fig. 2

5. Turn off the hydraulic power unit. Function a hydraulic device to remove any residual hydraulic pressure, ie. Handle Rotate or Torque Boost. Proper safety procedures should be followed such as Lock Out/ Tag Out. The hydraulic quick couplers can be disconnected in the circuit to prevent accidental energization.

6. Remove the retaining ring in the top of the die block. See Fig. 3.



Fig. 3

7. From below, use a small punch to push up the die block retaining pin. Pull out the pin from the top. See Fig. 4. Inspect the pin for signs of wear or damage. Replace with a new pin if required.



Fig. 4

- Pull the die block away from the gripper rod and remove from the gripper body. See Fig. 5.



Fig. 5

- Lift the gripper block out of the gripper frame.
- Repeat steps 6 through 9 for the stationary die block.
- While the die block is removed, grease the two fittings on the end of the gripper rod. See Fig. 6. Refer to the Lubrication and Maintenance Section for more information.



Fig. 6

12. Prior to installing the die blocks, apply a light coat of grease to the recessed area on the back. This will help prevent corrosion and make removal easier next time. See Fig. 7.

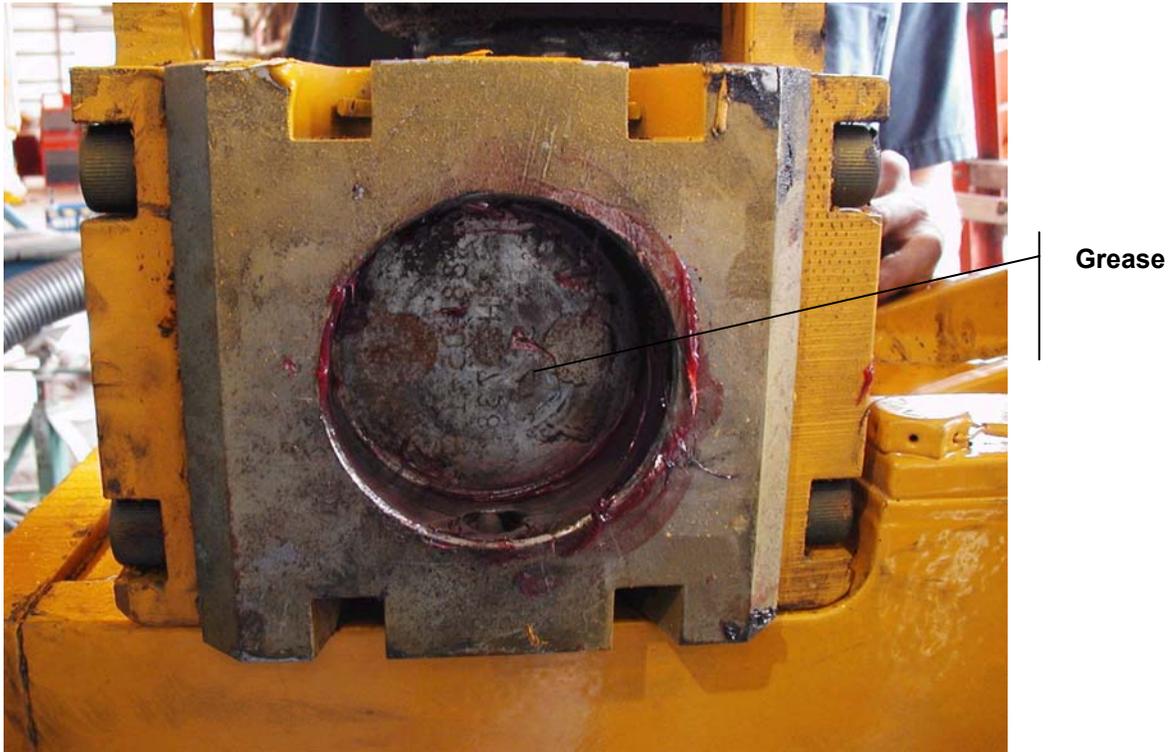


Fig. 7

13. Lift the die block into the frame and slide over the shaft.
14. Grease the die retaining pin and drop into the hole in the die block.
15. Install the retaining ring to prevent the pin from accidentally coming out.
16. Repeat Steps 13, 14 and 15 for the other die block.
17. Energize the hydraulic circuit. Return the gripper joystick to the OPEN position. The gripper die block will retract.
18. Float up the quill and remove the quill support or blocking.



SAFETY ALERT

DATE: August 15, 2002

SUBJECT: **SECOND NOTICE: Proper use of Anco Lock Nuts**

SERIAL NUMBERS: 002 and Up

DISCUSSION: Anco lock nuts (See attachment Figure 78.1) are a galvanized construction and the thread profile is made to match with galvanized threads. These threads are not compatible with standard NC threads. These components are currently used on some torque reaction and rig interface assemblies.

RECOMMENDATION:

1. Use Anco nuts only with proper galvanized rod or bolt.
2. Use Stover locknuts with B7 UNC threaded rod or bolt.
3. When installing any locknut at least three threads must be extended past the outer most locking mechanism (locking tab in case of Anco). If this is not possible, replace the threaded rod or bolt with one of sufficient length and material.
4. **Anco nuts are for one time use only. Replace with new nuts if removed.**

INFORMATION:

For further information contact:

Field Operations Manager
Canrig Drilling Technology Ltd.
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Magnolia, Texas 77354
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Fax: 281.259.8158

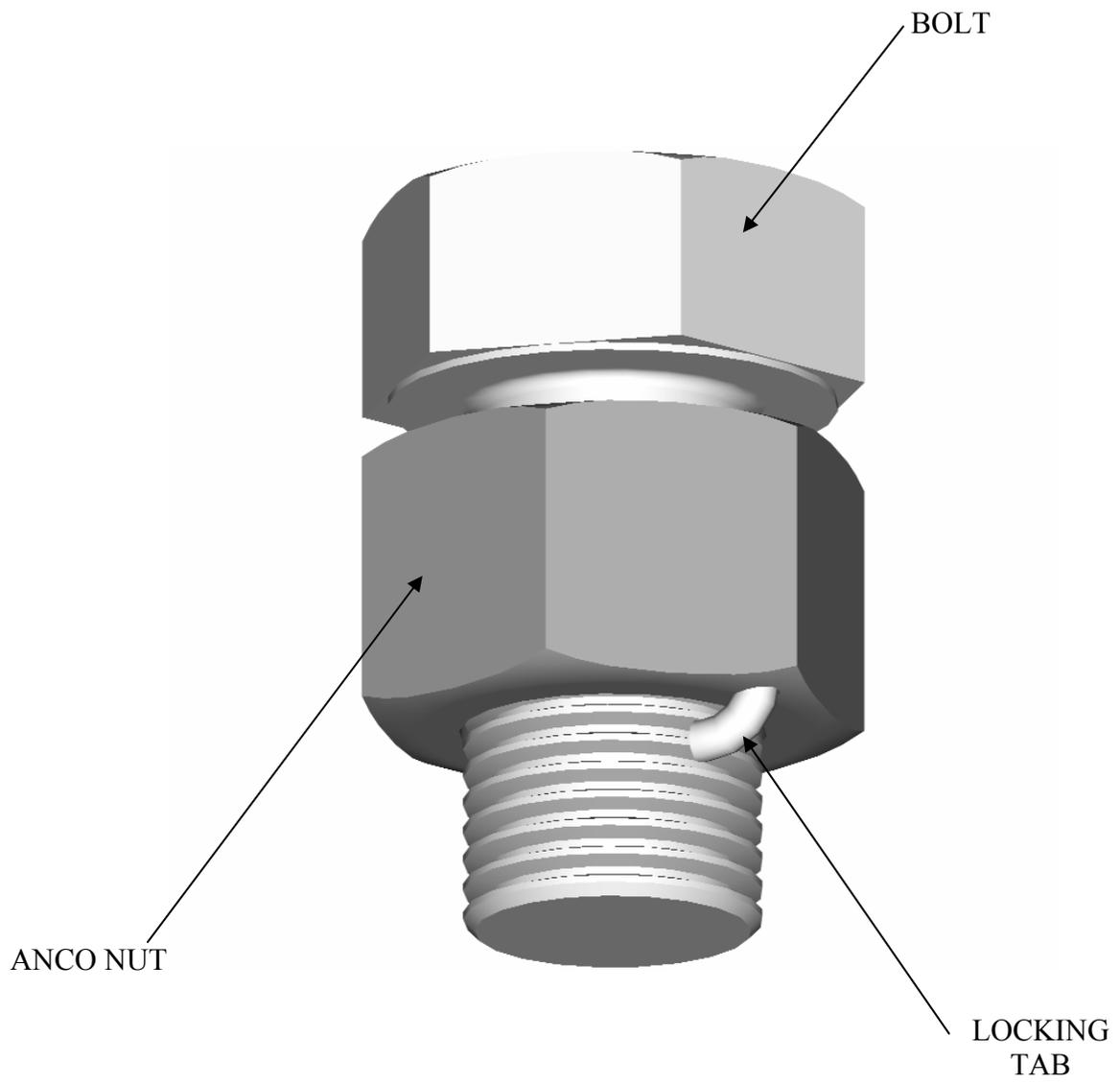


Figure 78.1



DATE: August 1, 2002

SUBJECT: Electric service loop- double bolt clamps

SERIAL NUMBERS: All electric service loops

DISCUSSION: The electric service loops come with four 5" double bolt, hose-clamps that connects the outer skin to the funnels. These clamps come with standard **non-locking nuts** used for tightening the hose around the funnel. The clamps are then safety wired to the cover plate of each funnel. These types of nuts could loosen and back off the bolt. There is a possibility, when this happens, that the outer skin would loosen and slide off the funnel, putting a heavy strain on the safety wiring. This could then lead to the safety wire breaking and becoming useless in the event the clamps came free from the loop.

RECOMMENDATION: Replace the existing non-locking nuts on the double bolt clamps of the electric service loop with:

1. A Stover type locknut or equivalent or
2. A Stover type locknut could be added in conjunction with the existing nut, where the locknut also acts as a "jam nut".

Once the bolt and nut are secure, the safety wiring on the service loop will not be necessary.

INFORMATION:

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



SAFETY ALERT

DATE: August 13, 2002

SUBJECT: ELECTRICAL SHOCK HAZARD

SERIAL NUMBERS: ALL Top drives with CANRIG supplied CIP (Control Interface Panel) or TP (Transfer Panel)

DISCUSSION: When opening an electrical Top Drive control panel (CIP or TP), there are components with hazardous voltage exposed. These hazardous points include (but are not limited to):

- Circuit Breaker connection stabs
- Field Supply and control transformer connection stabs
- Field Supply and 24 Volt power supplies
- Motor starters and contactors
- Un-insulated Buss bars
- Push-buttons and Indicator lights
- Terminal strip connections

RECOMMENDATION:

ONLY QUALIFIED PERSONNEL should work on this equipment at any time.

Whenever possible, remove electrical power and lock equipment out, before working in this area.

CANRIG has developed additional safeguard equipment (insulating, clear plastic protection covers, p/n AY11556, KIT, SAFETY COVERS, CIP) to reduce risk of electrical shock and has implemented this protection kit in the latest model control panels (S/N 220 and up).

If you would like more information about how we can improve safety on your electrical control panels, please contact the Field Service department. To serve you better, please be prepared to give them the S/N of your Top Drive(s).

INFORMATION :

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



DATE: August 23, 2002

SUBJECT: Air Conditioning Unit Set-up

SERIAL NUMBERS: All TDSU Buildings with Dual A/C Units

DISCUSSION: In TDSU (Top Drive Support Unit) buildings for DC Top Drives, two air conditioning units are installed, but only one unit can be running at any time (only one power plug available).
In TDSU buildings for **AC Top Drives**, it may be required to run both air conditioning units simultaneously, to control ambient temperature inside the equipment.

IF THE TEMPERATURE CONTROL OF EITHER A/C UNIT IS SET TOO LOW, THE CONDENSOR WILL FREEZE-UP, RENDERING THE UNIT INOPERATIVE.

RECOMMENDATION: DC Top Drives

Operate the same Air Conditioning unit at all times. Each unit has a "high", "medium", "low" and "off" control button. The "running" unit should be set to high, the standby unit should be set to "off". That way, you will have a "new", reliable unit as a standby unit, should you ever need this device.

AC Top Drives

Since both air conditioning units may be needed to maintain proper temperature inside the electrical equipment, the following set-up should be applied:

1. Set both unit control buttons to "high". Set the "primary" unit temperature control dial to the desired room temperature (approx. 72° F). This temperature (and the performance of the air conditioning units) should be monitored periodically, to maintain best performance of the electrical equipment in the TDSU building.
2. Set the "secondary" unit 5° F higher (approx. one division on the adjustment dial). This will keep the unit on automatic standby. The primary unit will perform the temperature control, until the heat generated by the electrical equipment is too much for this unit to handle. At this time, the temperature will rise and the secondary unit will automatically assist the primary unit. To verify the secondary unit is set slightly higher than the primary unit, turn the temperature control knob of this unit slowly counter-clock, until a click can be heard and the unit starts to cool. Note this position and turn the knob clockwise one division.
3. Verify the proper operation of the primary unit by checking the room temperature. Verify the proper operation of the secondary unit (as described above) at least once every week.

INFORMATION:

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Canrig Drilling Technology Ltd.
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Phone: 281.259.8887
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SAFETY ALERT

DATE: August 23, 2002

SUBJECT: Model 1050 - Upper Link Retainers

SERIAL NUMBERS: 44, 150, 154, 155, 157, 158, 161, 164, 165, 167, 168, 170, 171, 172, 174, 176, 180, 182, 183, 184, 185, 188, 191, 194, 198, 201, 202, 204, 206, 207

DISCUSSION: When the upper links are detached from the bail or block assembly on top drives with the main housing Canrig P/N: 741-30-0, there is no means to prevent the upper links from swinging away from the top drive. This is a major concern when replacing or installing the upper links or the bail. When the top drive is in the vertical position and the upper links are not secured to the bail or block assembly, the upper links could easily swing down. This could result in serious or fatal injury to personnel or severe damage to equipment. Additionally, when the top drive is being transported on a flatbed truck, unrestrained upper links could swing away and be a hazard to other vehicles.

RECOMMENDATION: *The links should always be secured*, to prevent them from swinging away from the top drive. When the bail is removed and the upper links remain pinned to the main housing, the upper links could be secured by using chain, cable, or rope to lash them together.

As an additional safety measure, CANRIG can install upper link retainers (Canrig P/N: DT12217) onto the main housing (Canrig P/N: 741-30-0) to prevent the upper links from swinging completely away from the top drive. The Upper Link Retainer (DT12217) would be mounted flush with the edge of the Main Housing as shown in AY10014-Rev.B (see attached drawing for further details).

INFORMATION:

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



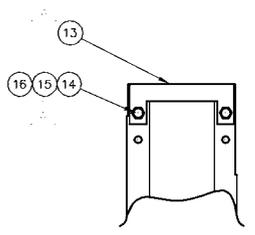
Engineering Bill of Material

Part: AY10014
Description: HOUSING & SPINDLE ASSY, 500 TON

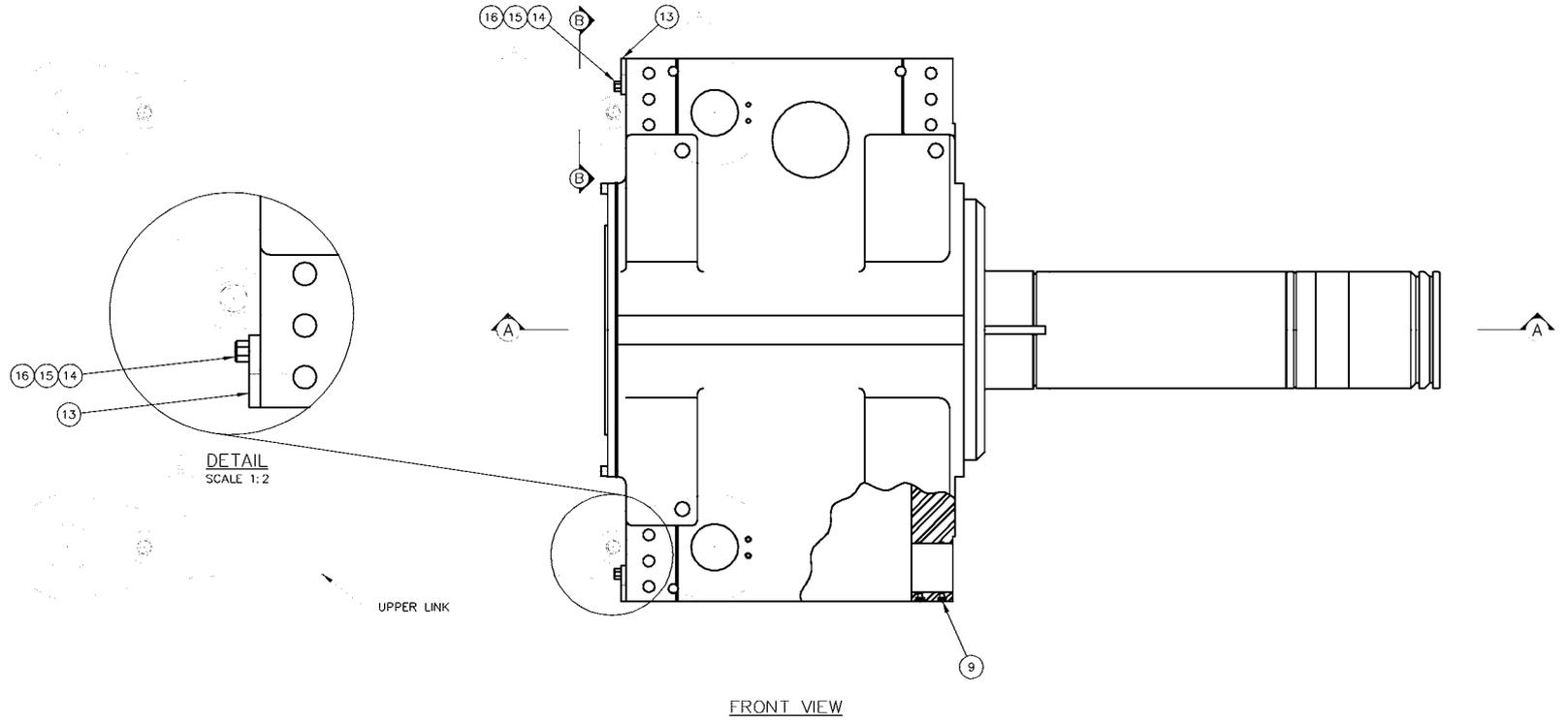
Eng ID: 0
Drawing ID: AY10014

Rev No: B

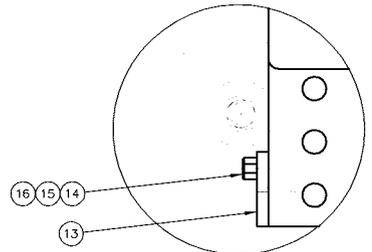
Item	Qty	Units	Part ID	Eng ID	Description
01	1.00	EA	681-11-0	0	SEAT, UPPER BEARING, 350/500/650/750
02a	3.00	EA	681-11-1-002		SHIM, 0.002, BEARING/SEAT, MAIN DRIVE
02b	3.00	EA	681-11-1-003		SHIM, 0.003, BEARING/SEAT, MAIN DRIVE
02c	3.00	EA	681-11-1-005		SHIM, 0.005, BEARING/SEAT, MAIN DRIVE
02d	3.00	EA	681-11-1-010		SHIM, 0.010, BEARING/SEAT, MAIN DRIVE
02e	3.00	EA	681-11-1-015		SHIM, 0.015, BEARING/SEAT, MAIN DRIVE
02f	3.00	EA	681-11-1-020		SHIM, 0.020, BEARING/SEAT, MAIN DRIVE
02g	3.00	EA	681-11-1-030		SHIM, 0.030, BEARING/SEAT, MAIN DRIVE
02h	3.00	EA	681-11-1-060		SHIM, 0.060, BEARING/SEAT, MAIN DRIVE
02i	3.00	EA	681-11-1-120		SHIM, 0.120, BEARING/SEAT, MAIN DRIVE
02j	3.00	EA	681-11-1-125		SHIM, 0.125, BEARING/SEAT, MAIN DRIVE
03	1.00	EA	741-29-0	0	SPINDLE, 500 TON
04	1.00	EA	741-30-0	0	HOUSING, MAIN, 500 TON
05	3.00	EA	H15-090109B-08		PLUG, SOC HEX, 1/2 ORB
06	1.00	EA	M01-1017-010		BRG, TPRD ROL, CUP
07	1.00	EA	M01-1018-010		BRG, TPRD ROL, CONE
08	1.00	EA	M01-1037-010		BRG, TPRD ROL, THRUST
09	2.00	EA	M12-1003-010		GREASE NIPPLE, 1/4-28 UNF, STRAIGHT
10	1.00	EA	S01-1473-01N		O-RING
11	12.00	EA	SH-0625NC-0250		CAPSCR, HEX SOC HD, 5/8-11UNC x 2.50
12	12.00	EA	LW-0625-IT		LOCKWASHER, 5/8 INT TOOTH
13	2.00	EA	DT12217		RETAINER, UPPER LINK
14	4.00	EA	SH-0750NC-0150-W		CAPSCR, HEX SOC HD, 3/4-10UNC x 1.50
15	4.00	EA	M19-3006-010		FERRULE, 1/16, OVAL, ALUMINIUM
16	5.00	FT	M21-2000-010		WIRE ROPE, 1/16, 7 x 7, STAINLESS



VIEW B-B

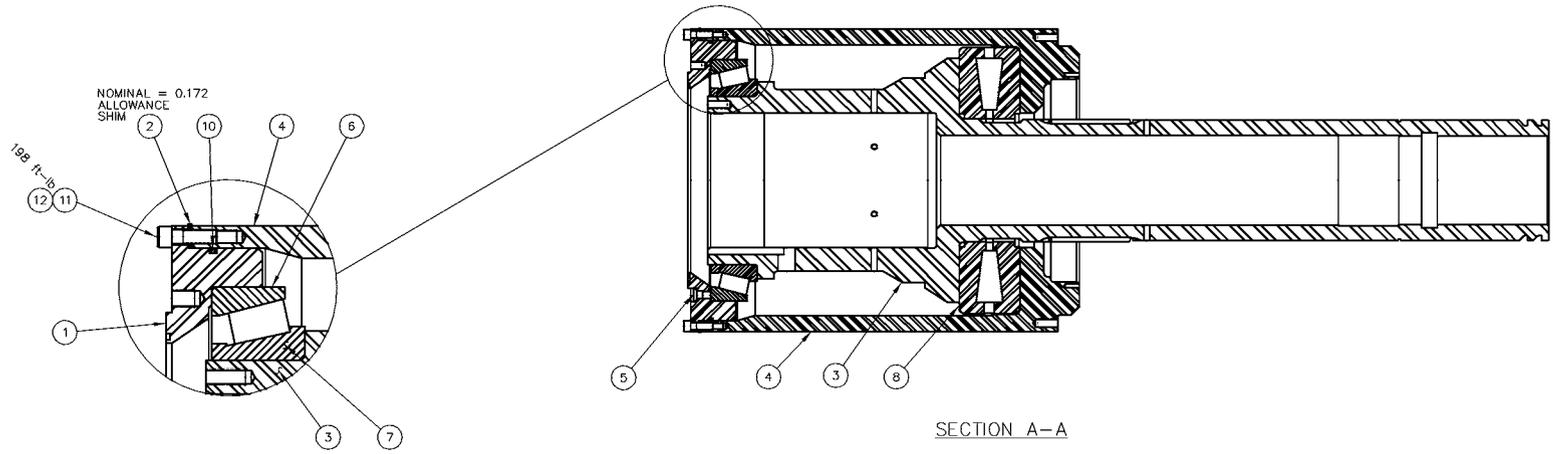


FRONT VIEW

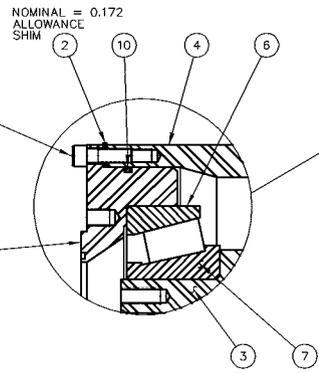


DETAIL
SCALE 1:2

UPPER LINK



SECTION A-A



DETAIL
SCALE 1:2

				THIS PRINT AND DESIGN AND DETAIL SHOW THEREON ARE THE PROPERTY AND INVENTION OF CANRIG DRILLING TECHNOLOGY LTD., THIS PRINT IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED WITHOUT PERMISSION AND RETURNED UPON DEMAND. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED BY CANRIG DRILLING TECHNOLOGY LTD..				TOLERANCE - UNLESS OTHERWISE SPECIFIED				DRAWN AKR 97/6/16		CANRIG DRILLING TECHNOLOGY LTD. MAIN HOUSING & SPINDLE ASSY, 500 TON, 5.00:1			
				REMOVE SHARP CORNERS AND BURRS				FABRICATING [METRIC]		MACHINING IMPERIAL		EST. WEIGHT				SCALE	
				CASTING ± 1/16				0 TO 600 mm ± 1 mm		DECIMAL .x ± .030"		PROJECT				AY10014	
				○ CONCENTRICITY .005 TIR — STRAIGHTNESS ± .005 IN 5 INCHES ⊥ SQUARENESS ± .010 IN 5 INCHES ∥ PARALLELISM ± .010 IN 5 INCHES ⊕ TRUE POSITION .005				> 600 mm ± 3 mm		.xxx ± .015" .xxx ± .005"		500 TON				REV B	
B	02/04/15	JRS	REVISED FOR CLARITY					MACHINED SURFACES 125/		ANGULAR ± 2°		ANGULAR ± 1°					
A	01/10/04	JAB	ADDED ITEM 13 ,14,15, &16														
No.	Y/M/D	BY	REVISION														



SAFETY ALERT

DATE: September 18, 2002

SUBJECT: Guide Runner Adjuster Bolts

SERIAL NUMBERS: 014-185

DISCUSSION: A near-miss incident was experienced when an adjuster bolt broke loose and fell from the Top Drive. The weld that held the nut of the adjuster bolt in place failed and caused the part to separate from the adjuster plate. Investigation showed that the nut was only welded on two sides

RECOMMENDATION: *Inspect each adjuster nut for penetration welds on all four sides of the nut.* If you find any nuts that do not have adequate welding, upgrade the welding to match the specification (see attached drawing) or order the appropriate number of adjuster plates to rectify the situation. The part number for the adjuster plates is as follows:

275 Ton
Rail Adjuster Plate – 841-37-0, TD Adjuster Plate – 841-39-0

350/500 Ton
Rail Adjuster Plate – 841-12-0, TD Adjuster Plate – 841-13-0

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below. ***IF in doubt, ask!***

INFORMATION:

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



SAFETY ALERT

DATE: October 14, 2002

- SUBJECT:** Mounting plate – Handler Rotate Lock
- SERIAL NUMBERS:** 25-27, 34-35, 39, 42, 48,50,55-56, 66, 83, 106, 121, 126-127, 130-131, 133, 135-137, 141, 147
- DISCUSSION:** A Top Drive recently developed a significant crack on the mounting plate, where the handler lock dog is attached. This crack could result in the malfunction of the handler lock and is considered a critical situation, if left unattended.
- RECOMMENDATION:** *Inspect mounting plate for cracks at the lock dog hinge pin, using MPI (see attached drawing for detailed location and previously issued product bulletin 36 for additional information).* If any cracks are detected, the **integrity of the handler lock mechanism is compromised** and the mounting plate must be repaired or replaced as soon as possible. Contact CANRIG for repair procedures. Further, CANRIG has improved replacement plates available upon request.
- If the plate shows no signs of cracks, repeat this inspection periodically (at least every 12 month), to ensure reliable operation of the handler lock.

INFORMATION:

For further information contact:

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Canrig Drilling Technology Ltd.
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Picture of cracked mounting plate

Crack
developed
here





CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 36

DATE: July 17, 1996

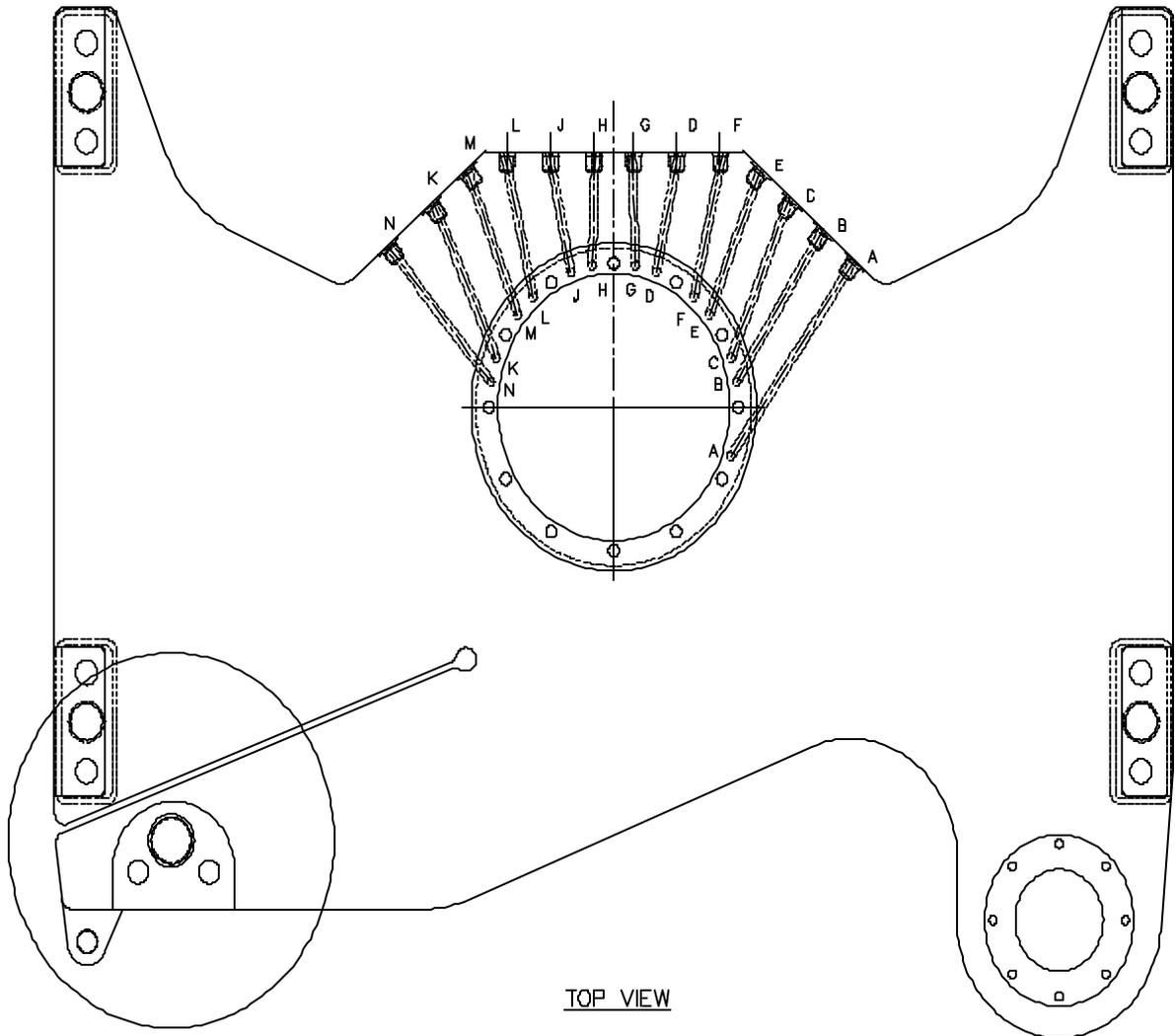
- SUBJECT:** Proper use of the Link Tilt and Handler Lock.
- SERIAL NUMBERS:** 002 - 053
- DISCUSSION:** Proper use of the Handler Lock System and the Link Tilt System can greatly reduce the chances of an accident or personal injury.
- BACKGROUND:** When torquing against the Back-up Wrench, the Handler Lock prevents rotation of the handler assembly due to the applied torque. It is important to avoid the hazard of inadvertent handler rotation with the elevator links tilted.
- RECOMMENDATION:**
1. Please familiarize the rig crews with the attached safety bulletin.
 2. When torquing against the back-up wrench, always keep personnel clear of the swing radius of the links and elevators in case of inadvertent handler rotation.
 3. The driller should keep the links and elevators as close to center as possible when torquing against the back-up wrench. This will minimize the swing radius of the elevators.
 4. The lock pin or locking dog mechanism should be magnetic particle inspected annually.
 5. Top Drive Consoles not already equipped can be fitted with a spring return control for the handler lock if desired. This will default the handler lock to the locked position when not in use. Please contact Canrig for price and availability of a retrofit kit.

INFORMATION:

For further information contact:

Field Operations Manager
Canrig Drilling Technology Ltd.
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Fax: 281.259.8158

Mounting Plate drawing that shows where crack has been found



Area where cracks may develop



SAFETY ALERT

DATE: December 10, 2002

SUBJECT: Urethane Guide Runners

SERIAL NUMBERS: All Models and Serial Numbers

DISCUSSION: A near-miss incident was experienced when a piece of Urethane broke loose from the bottom of a Guide Runner and fell from the Top Drive.

RECOMMENDATION: 1.) The Guide Runners should be inspected for the following areas of wear:

a) Damage to ends of Guide Runners.

The Urethane end piece of the Guide Runner can over time crack and separate from the main body. This is first evident from a crack line between the end piece and the main body. When a crack is detected, the end piece should be removed on not only the damaged Guide Runner, but also on the same end of all other Runners on the unit. Removal of the Urethane is best facilitated with the use of a hacksaw. This should only be performed when the Top Drive is supported by the Traveling Blocks or in a horizontal position.

b) Wear surfaces

Visually inspect for amount of urethane coating on Guide Runner. There should be no metal exposure along either surface in contact with Torque Guide. Check for proper alignment & spacing of rails. Refer to Manual, Section 3B. Guide Runners may be rotated one time to allow usage of all three sides. This should be done when the TD is supported by the Traveling block.

2.) Replacement of Guide Runners

CANRIG has modified the mold for the guide runners to eliminate the big piece of unsupported urethane at the end of the runners. This will eliminate the need to cut the cracked or broken part off on all runners leaving the CANRIG plant from January 2003. Please contact the Field Service department, if you want to order new runners – the same part numbers apply.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG contact or the Field Operations Manager listed below. ***IF in doubt, ask!***

INFORMATION:

For further information contact:

Field Operations Manager
Canrig Drilling Technology Ltd.
14703 FM 1488
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Phone: 281.259.8887
Fax: 281.259.8158



SAFETY ALERT

DATE: December 20, 2002

SUBJECT: Back-up Wrench – Guide Plate, Inner Tube

SERIAL NUMBERS: 002 and up

DISCUSSION: Recently a near miss incident was reported when a BUW guide plate fell from the Top Drive during operation. The retaining bolts became loose and fell out allowing the guide plate to fall.

RECOMMENDATION: Inspect all eight (8) counter-sunk bolts for tightness daily. If a loose bolt is discovered, remove both bolts and the appropriate guide plate, clean the threads and countersunk hole thoroughly from grease and debris. Reinstall the guide plate and bolts, applying Loctite® 242 compound to the thread of the bolts prior to insertion. Any medium strength general purpose thread-locker can be substituted. Tighten bolts to 99 Ft*lbs on 43.25 inch stroke BUW (see below for part numbers) and 63 Ft*lbs for all other BUW assemblies.

CANRIG has developed a retrofit kit to change out the countersunk bolts with hex head bolts that are drilled for safety wire and a heavy duty washer to cover the countersink hole. This kit is available from your regular CANRIG contact or from the field operations manager listed below. For all 43.25" stroke BUW assemblies (i.e. AY10929, AY11125, AY11240 & AY11240-1) use Part No. AY11769, for all other BUW's use Part No. AY11768, when ordering this kit.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG contact or the Field Operations Manager listed below.
IF in doubt, ask!

INFORMATION:

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



DATE: January 15, 2003

SUBJECT: Rotary Manifold – Link Support Passage

SERIAL NUMBERS: 019-220

DISCUSSION: Studies of rotary manifold performance have shown that the most likely seals to fail are the ones used by the link counterbalance system – “K” port in most TD models, “J” port in the 275T Top Drive. Wear and damage to this fluid passage is caused by high pressure pulses generated by fluid flow out of the link counterbalance cylinders. The pressure generated by the link counterbalance cylinders is lowered considerably when the flow control valve in the circuit is opened fully.

RECOMMENDATION: Locate the flow control valve that regulates the “back-pressure” in the “K” (“J”) port “return to tank line”. The location of this valve varies from model to model and from different vintages of Top Drives, but are always between the hydraulic manifold and the rotary manifold mounting plate. For location of this valve, refer to the pictures on the following pages. Loosen the set screw in the knob, then open the valve fully, by turning the adjustment knob **counter clockwise** several turns, until the indicator is showing maximum flow rate (or remove the valve from the circuit). Tighten the set screw to prevent the valve from closing.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG contact or the Field Operations Manager listed below.
IF in doubt, ask!

INFORMATION:

For further information contact:

Field Operations Manager
Canrig Drilling Technology Ltd.
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Magnolia, Texas 77354
Phone: 281.259.8887
Fax: 281.259.8158

Flow control valve closed



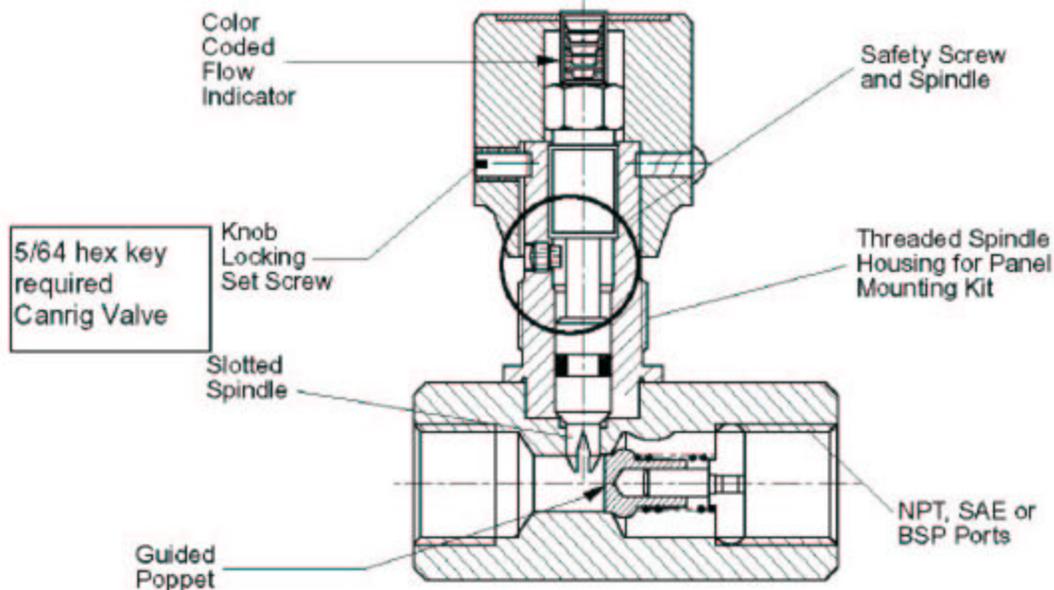
Flow control valve open
Notice the flow indicator



To turn the Knob and adjust the valve, loosen a set screw with a 5/64 inch hex key wrench, this will allow the knob to be rotated. Turn the knob till the indicator extends to its maximum as shown in the photo (above). Tighten the set screw to prevent the valve from closing.

For more details of the functionality of the flow control, see data sheet below.

DESIGN, FEATURES AND OPTIONS



INTRODUCTION

Our complete line of flow control valves are designed and manufactured by our ISO 9001 certified FLUTEC division.

DESCRIPTION

- The **HYDAC** family of flow control valves permit safe, simple and repeatable control of hydraulic fluids at operating pressures to 5000 psi.
- The standard slotted control spindle allows for a wide range of infinitely variable flow adjustments with excellent flow characteristics.
- Precise adjustment of flow is achieved by a micrometer style adjustment knob featuring a color coded flow indicator for accurate, easy-to read visual flow reference.
- Design modifications and special materials are available for corrosive fluids such as phosphate ester, acids and

VALVE DESIGN

HYDAC flow control valves can be adjusted easily and precisely by means of the control knob. Increasing the number of turns from the fully closed position provides a steady increase of the flow rate. The colored scale permits accurate repetition of settings and the colored triangle on the rising spindle provides a visual indication of the increasing cross section of the flow area. A set screw on the side locks the knob at the desired setting.

HYDAC flow control valves include a unique safety spindle design feature. As the valve spindle is turned counter-clockwise, the spindle shoulder will engage the safety screw limiting the travel of the spindle. The hardened, high-strength steel safety screw is sealed in position to discourage tampering.

PRODUCT FEATURES

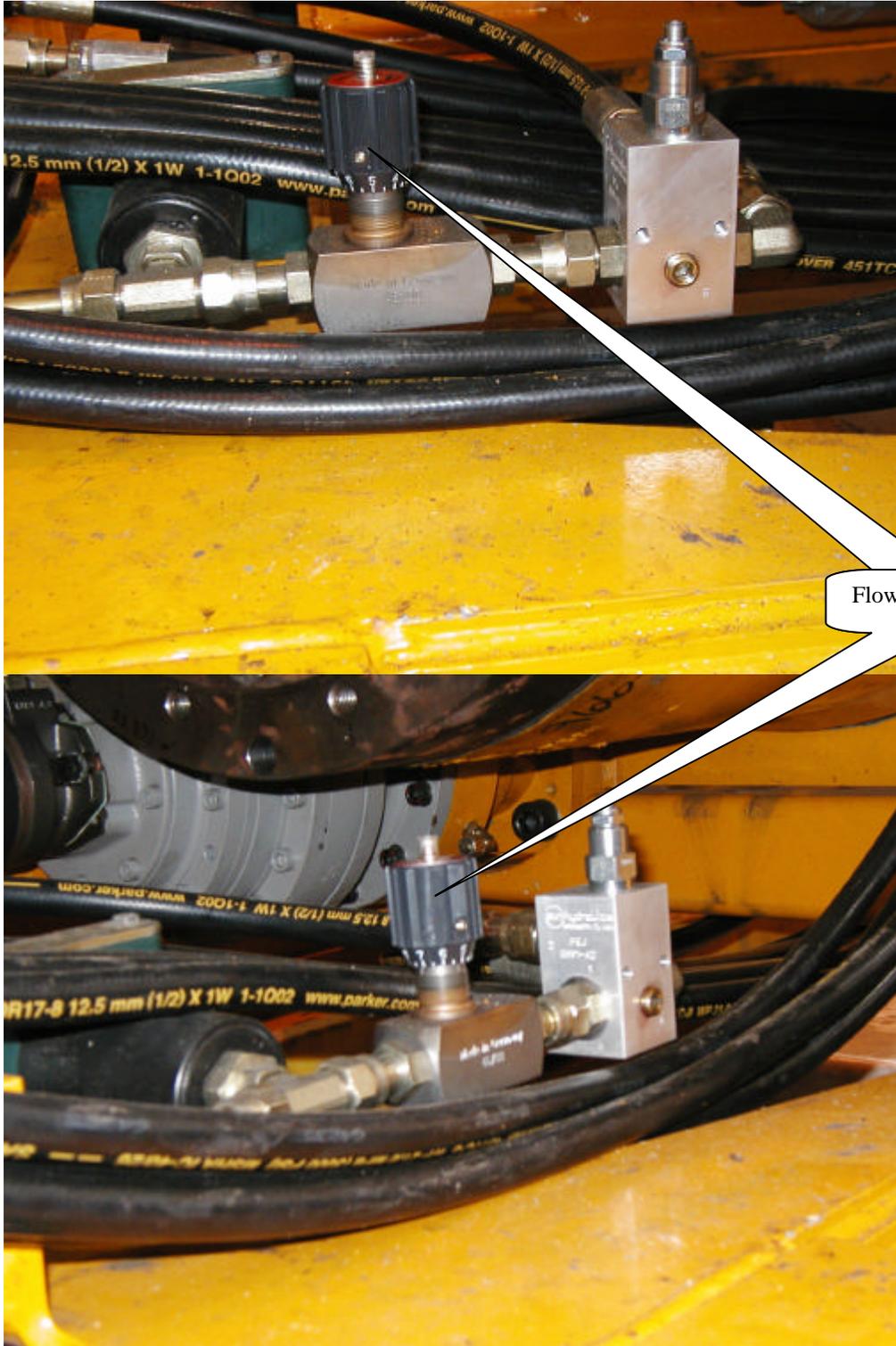
- Phosphate coated steel valve body
- FPM (*Viton*) seals
- Slotted control spindle for precise and linear flow adjustments
- Exclusive safety spindle design
- Graduated knob and color coded spindle for accurate flow control
- Guided poppets for smoother, chatter free operation

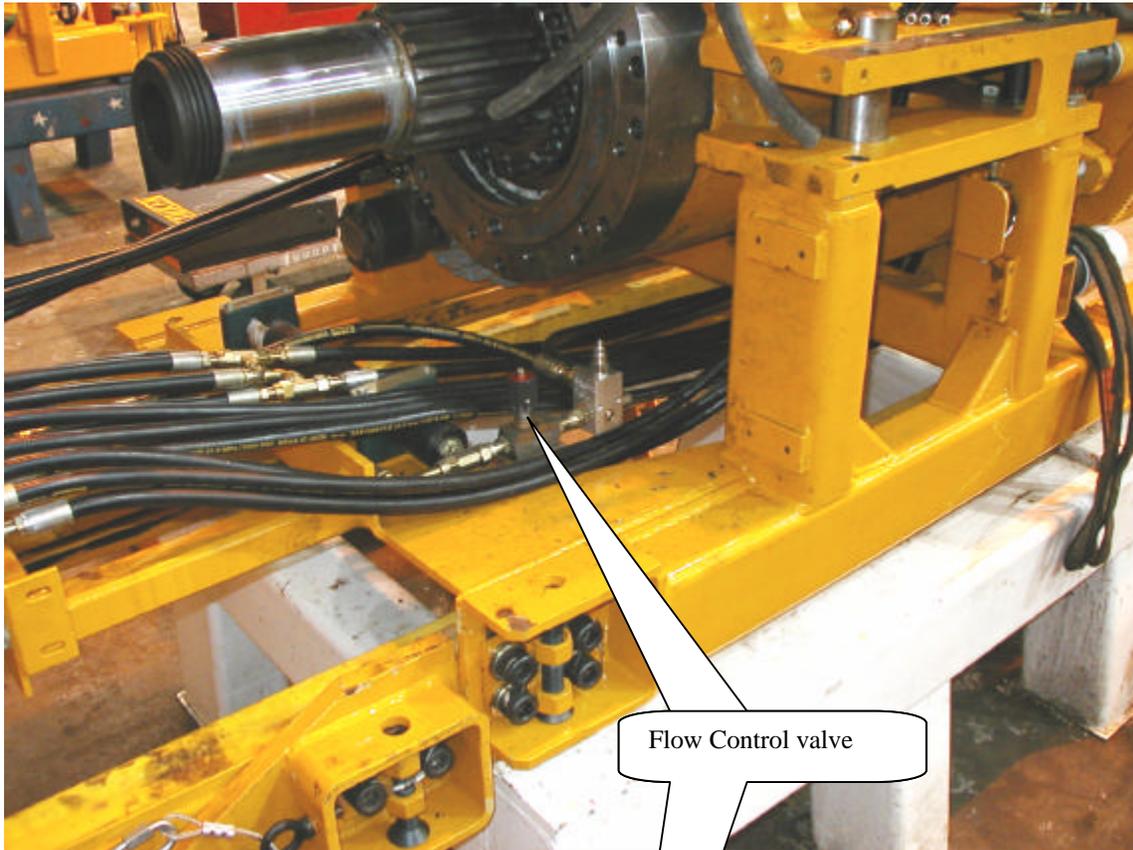
AVAILABLE OPTIONS

- Steel knobs for ambient temperature in excess of 140°F / 60°C
- Panel mounting kit
- 25 and 65 PSI cracking pressure springs (7 psi standard)
- Zinc Plated Body Consult **HYDAC** for price and delivery

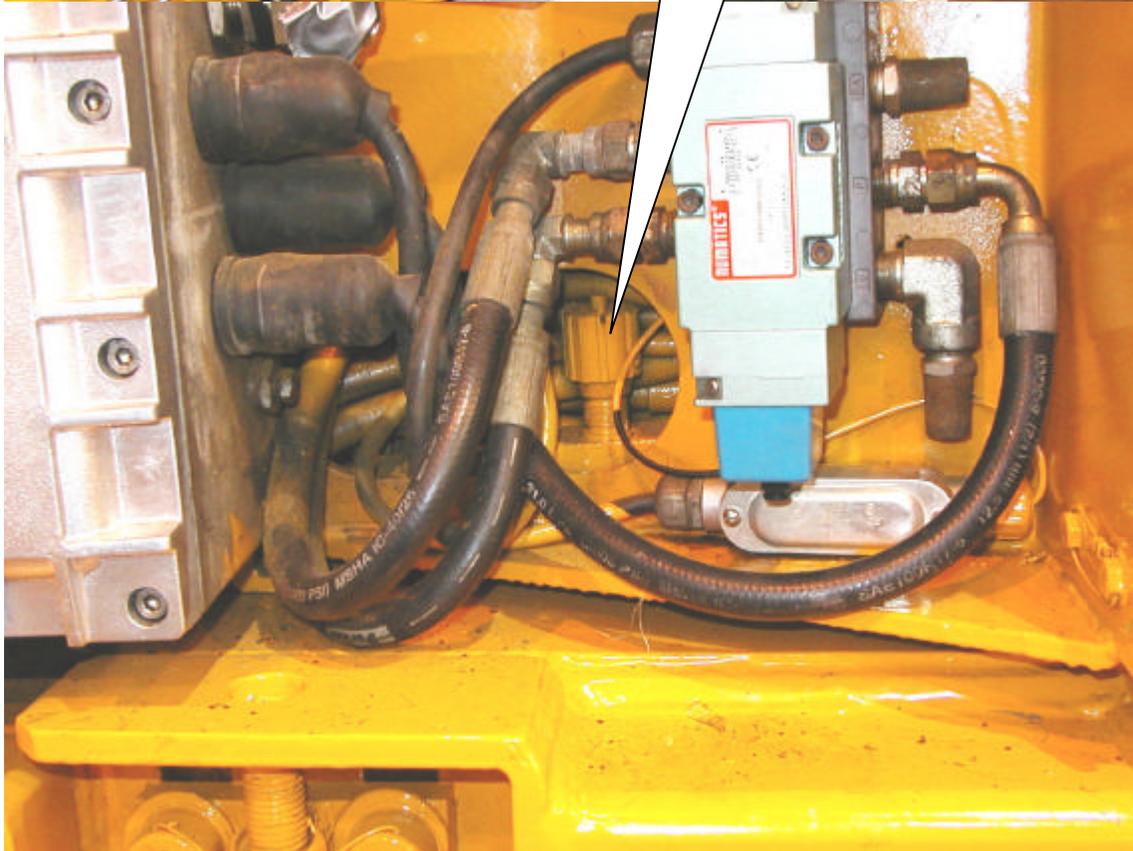


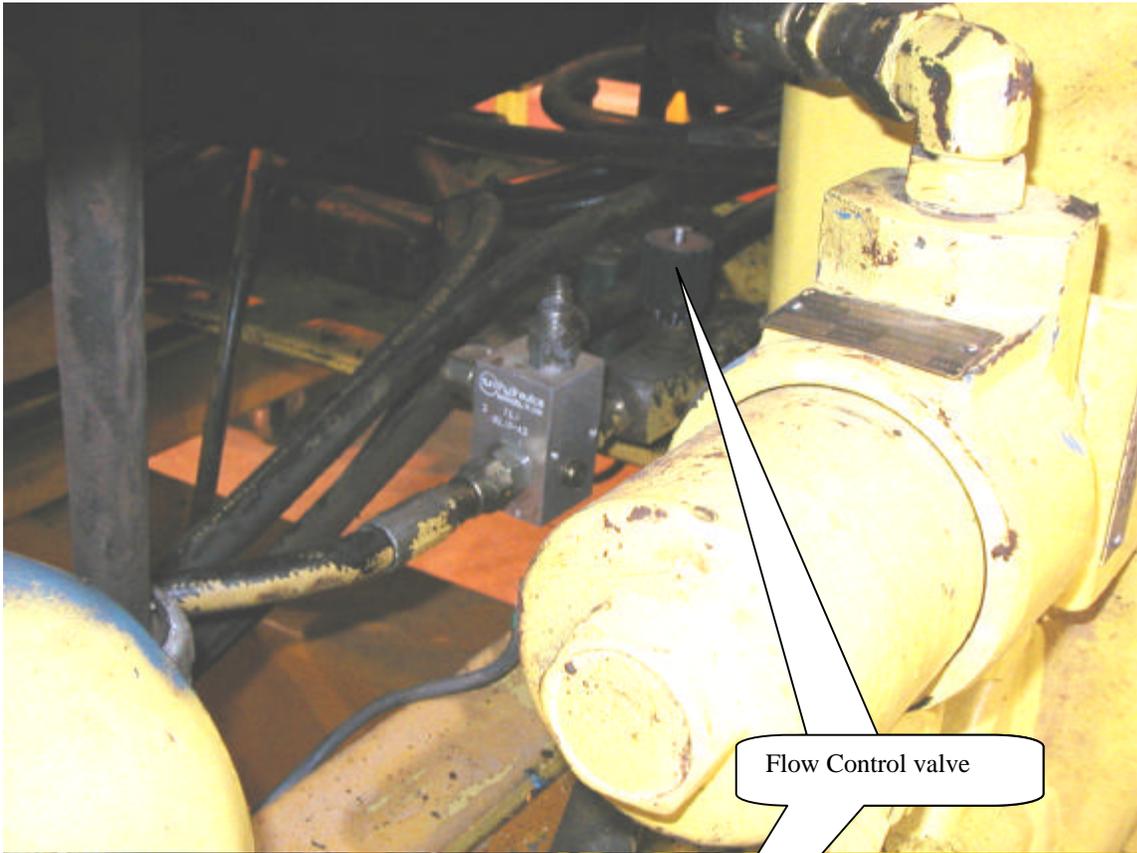
The flow control valves can be found in various places. They are typically underneath the main hydraulic manifold, a few are attached to the manifold, but most are a couple of feet lower and on one side or the other. Some typical placements are:





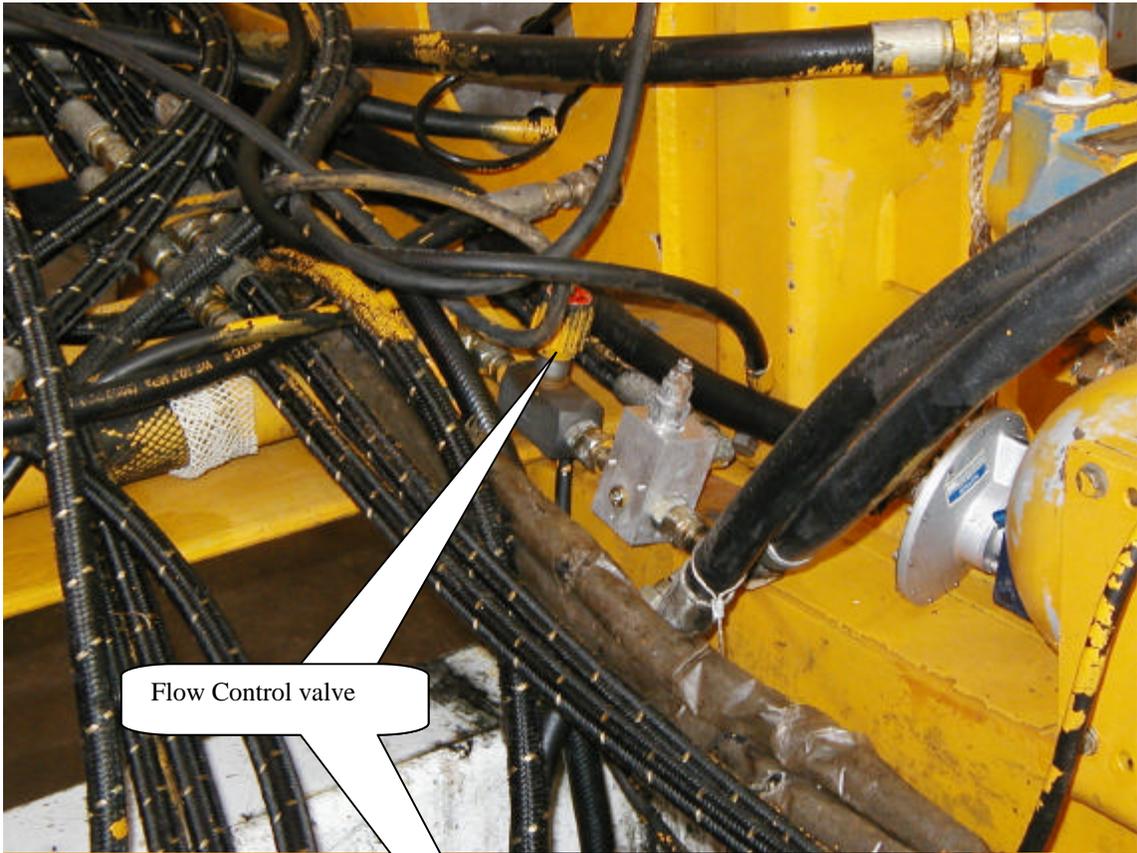
Flow Control valve



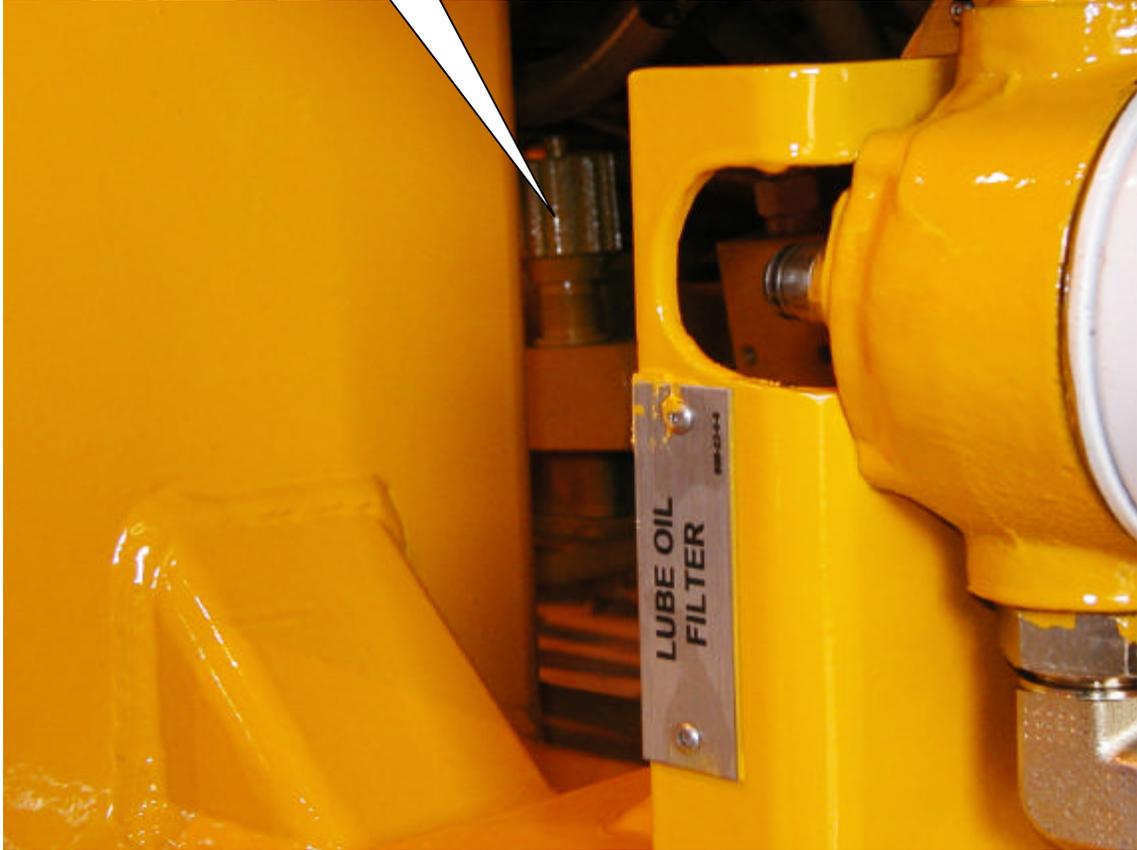


Flow Control valve





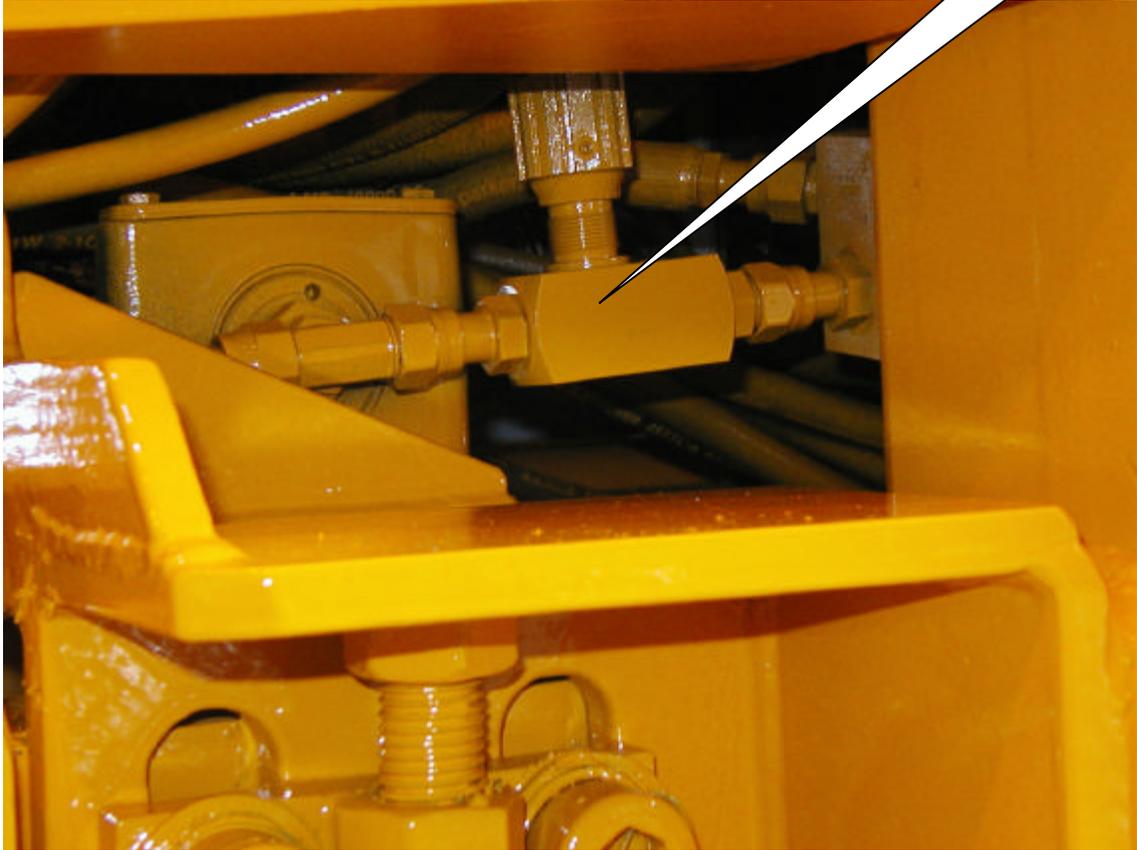
Flow Control valve



LUBE OIL FILTER



Flow Control valve





SAFETY ALERT

DATE: March 27, 2003

SUBJECT: Inspection of safety pins

SERIAL NUMBERS: All

DISCUSSION: An incident occurred where a clevis pin, used in a turnbuckle that secures a torque guide to the mast, fell and landed in one of the derrick beams. It was discovered that the safety pin which secures the clevis pin was missing. Other safety pins showed signs of wear.

RECOMMENDATION: Inspect each safety pin for any wear and make sure each pin is actually closed. Continue with this inspection on a monthly basis. If you find any safety pins that do show signs of wear, replace immediately. It is Canrig's recommendation that any pins found in a vertical position which do not have a shoulder, should be replaced immediately with a shouldered pin. Canrig is conducting a study on the retention system used with these type clevis pins and will provide an update to the bulletin on its conclusion.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

INFORMATION:

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



DATE: May 16, 2003

SUBJECT: Inspection of safety pins – Follow up to safety alert 88, dated Mar 27, 03

SERIAL NUMBERS: All

DISCUSSION: An incident occurred where a clevis pin, used in a turnbuckle that secures a torque guide to the mast, fell and landed in one of the derrick beams. It was discovered that the safety pin which secures the clevis pin was missing. Other safety pins showed signs of wear. CANRIG announced it will conduct a study, to evaluate the proper way to secure the clevis pin.

RECOMMENDATION: The study was completed and it was concluded that the safety pin used for retaining the clevis pin is the preferred method, especially when the clevis pin is frequently removed. Inspection of the clevis is still a very important safety precaution and should be conducted on a monthly basis.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

INFORMATION:

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



SAFETY ALERT

DATE: April 14, 2003

- SUBJECT:** Redesigned Link Tilt Cylinder and Elimination of Link Tilt Cylinder Guard
(Refs: Product Bulletin 73 and 75)
- SERIAL NUMBERS:** 002 - 230
- DISCUSSION:** This redesign of the Link Tilt Cylinders eliminates a potential safety issue relating to the Link Tilt Cylinder guards for your Top Drive. In Product Bulletin 73 (March 14, 2002) and Product Bulletin 75 (April 23, 2002), CANRIG provided a remedial measure to prevent the Link Tilt Cylinder guards from falling off the Top Drive. In the ensuing months, CANRIG has redesigned the Link Tilt Cylinders so that a guard is no longer necessary to protect hydraulic lines on your rig. Until the recommendations of this bulletin are implemented on your rig, it is imperative that you continue to follow Product Bulletin 75.
- RECOMMENDATION:** Your Top Drive must be fitted with the redesigned Link Tilt Cylinders. As soon as practicable, CANRIG will provide new cylinders, free of charge, for each of the Top Drives in your possession, together with instructions for installation. Please contact Sonny Lynn (Phone: 281-259-3151; Fax: 281-259-3260) at CANRIG at your earliest convenience to make arrangements for delivery of the new cylinders. If you have any questions regarding implementation of this bulletin, please contact the person listed below.

Remember, in the meantime, continued compliance with Product Bulletin 75 is a must.

INFORMATION:

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



April 14, 2003

To: Our Valued Customers
From: Bill King, Canrig Drilling Technology, Ltd.
Subject: Replacement of Link Tilt Cylinders

Attached you will find Canrig Product Bulletin # 89 which defines the need and process for replacement of link tilt cylinders on your Canrig Top Drive System. Appropriate contact information is available in the bulletin and replacement cylinders are available on request. On receipt of definitive shipping instructions, Canrig will provide you with one set of cylinders for each of your Top Drive Systems, as well as replacements for each unused new spare cylinder(s) returned to us. As stated in the product bulletin, removal and installation instructions will be provided along with safety wire, crimps and a crimping tool with the replacement cylinder.

On installation of your replacement cylinders, it would be of great assistance in our record keeping if you would e-mail Sonny Lynn at slynn@canrig.com to inform him that you have done so. Your assistance in this matter will be greatly appreciated.

Kindest Regards,

Penny L. Young
Technical Services Administrator

ply/wk
Enclosure
By DHL
cc: Chris Papouras



SAFETY ALERT

DATE: July 22, 2003
Revision 1

SUBJECT: Back Up Wrench Inspection

SERIAL NUMBERS: 002 and up

DISCUSSION: A Top drive recently developed cracks on the slide of the back up wrench inner tube. These cracks could result in improper operation of the gripper and ultimately lead to a failure causing the entire gripper to break free.

RECOMMENDATION: The back up wrench slide should be inspected as shown on the attached map as soon as possible. A dry magnetic particle inspection should be sufficient to identify any cracks that may have developed. The gripper cylinder frame may have to be removed to fully inspect the slide. If any cracks are found, the wrench should be repaired or replaced. Repair procedures will be ready for distribution by July 25, 2003.

All areas of the back up wrench and slide should be inspected as shown on the inspection map on an annual basis or when circumstances call for an out of period inspection. This could be after rough drilling, jarring, hoisting with the gripper closed, or after a high impact. A visual inspection should be performed on a weekly basis.

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

Field Operations Manager
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INSPECTION INDICATION MAP

Back Up Wrench Slide

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

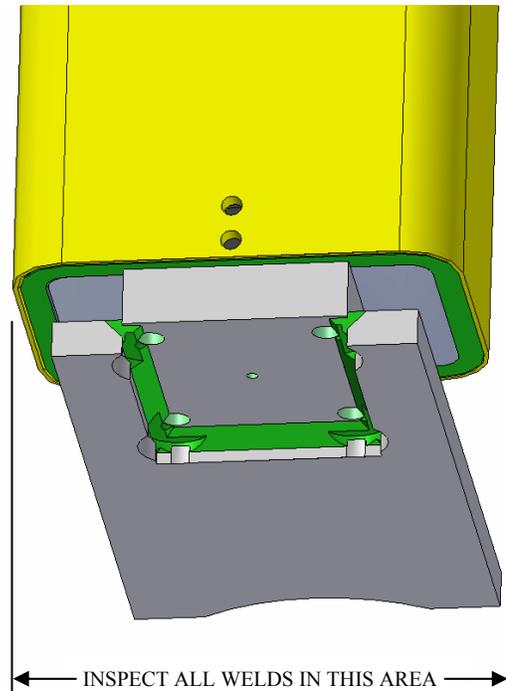
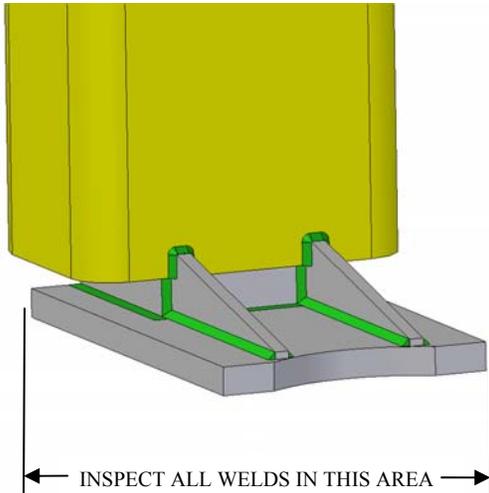
Inspection Report #

Canrig Part #

Inspector's Signature/Stamp:

Serial #

Type of Inspection:



Procedure:

Method: Dry Magnetic Particle method in accordance with ASTM E709

Visual Examination: Visually examine all other areas not designated as MPI for signs of fatigue.



Back-Up Wrench Weld Repair Procedure

This procedure covers the repair of welding cracks associated with the BUW Slide and Inner Tube due to rough drilling, jarring, high impact or hoisting with the gripper closed.

The success of this procedure will depend on the adherence to it and on the qualifications of the individual making the repairs. Therefore it is important that all necessary welding must be done by a welder certified to weld the applicable material to the joint design in accordance with AWS D1.1 or equivalent. This would involve things such as:

1. Make sure to adjust the amperage on the welding machine to give you the best penetration possible.
2. Remove the slag after each pass.

1) BUW Slide Repair:

The slide is generally cracking at the weld joining the slide's bottom plate (1) to the center block (2) that is welded to the inner tube as shown below in Figure 1.



Figure 1: Typical Crack in a Slide

The cause of the crack may result in bending the slide's bottom plate (1). **The BUW inner tube assembly must be replaced if the bottom plate is bent in excess of 1/8".** To check the slide's bottom plate, use a straight edge and place on the bottom of the slide as shown in the picture of Figure 2.



Figure 2: Bent Bottom Plate

If the bottom plate weld has a crack and is NOT bent in excess of 1/8", use the following procedure to repair the cracked weld:

1. Remove the existing weld in the area where the crack is present, down to the base material using grinding or gouging method. To make sure that the crack is completely removed, it is necessary to grind past the visible crack.
2. Dry- MPI (Magnetic Particle Inspection) the crack area completely by going past the end of the visible crack. Ensure that the crack is completely removed.
3. If it was found that the crack was not completely removed or a new crack was discovered, grind the crack completely and Dry-MPI the area again to ensure that the crack is completely removed.

4. The top side of the bottom plate must be prepped as shown on the drawing in figure 3 of this procedure.
5. Prior to any welding, make sure that the Slide's bottom plate (1) is SQUARE to the sides of the inner tube (4) to within 0.03 inch and verify that the distance from the top of the bottom plate to the bottom side of the inner tube is 1.50 inches minimum as shown in figure 3. If tolerances were not met, correct as necessary. The welds around the top of the Slide gussets (where welded to the lower end of the inner tube) may have to be ground and removed to allow for better Slide flexibility. For illustration of the gusset (3) welds, see figure 4. If tolerances can not be achieved, replace the inner tube/slide assembly, otherwise proceed to step 6.
6. Preheat the joint to be welded to 400° Fahrenheit (205° C) (using Rose-Bud/torch is acceptable). To verify temperature, use temperature crayon to ensure proper heat distribution of the entire joint to be welded.

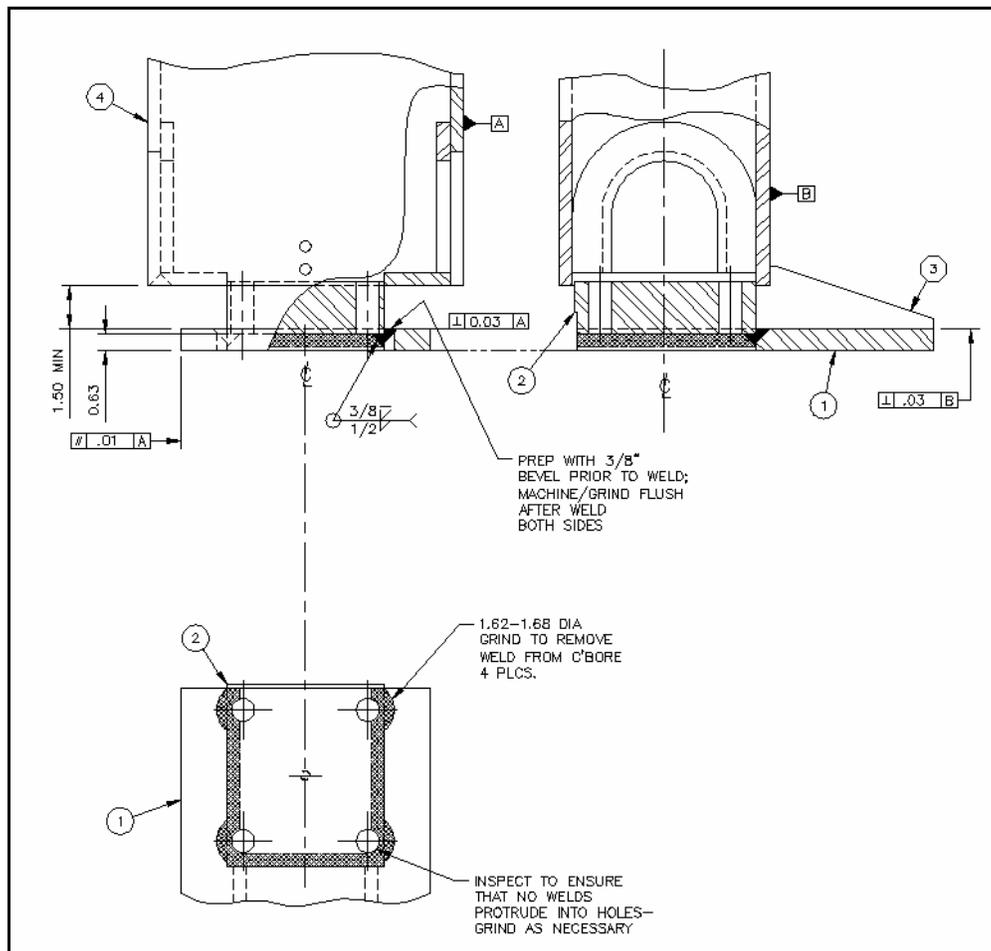


Figure 3: Welding of Slide's Bottom Plate

7. Weld the prepped area using Low Hydrogen E9018 – 3/32” or E9018 – 1/8” rods or equivalent (see Notes). Make sure to adjust the amperage to allow for full penetration weld on both the top and bottom sides of the bottom plate.
8. Allow the weld to slow cool to ambient temperature using thermal blanket over the weld (Do not quench).
9. Machine/Grind the weld on the top side of the bottom plate to make flush with existing machined surface.
10. Grind excess weld from the counter bore areas on the bottom plate as shown above in figure 3 to allow enough room for the rod nut socket.
11. Dry-MPI the weld to ensure that there are no cracks.

2) BUW Slide Gusset Weld Repair:

Cracks in the BUW Slide Gusset welds must be repaired as follows:

1. Remove the existing fillet weld around the top of the gussets (3) where they are attached to the lower end of the inner tube (4) using grinding or gouging method. It is essential that the cracks are completely removed.
2. Dry-MPI the crack area completely to ensure that the crack is completely removed.
3. Make a 1/4” fillet weld around the top end of each gusset where it attaches to the end of the inner tube as shown in figure 4. Use Low Hydrogen E7018-3/32” or E7018-1/8” welding rods or equivalent (see Notes).

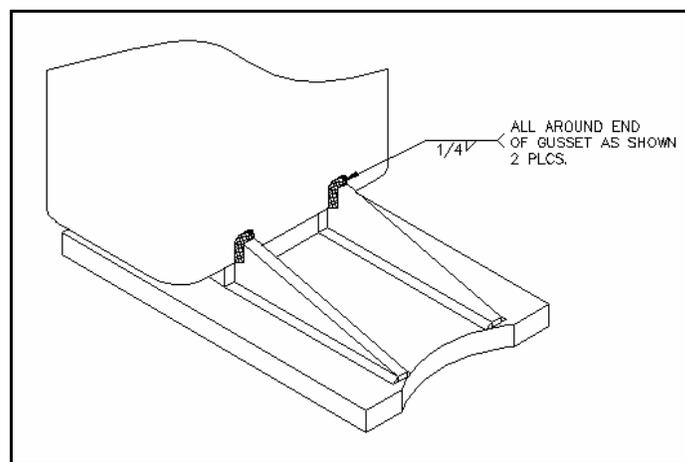


Figure 4: Gusset Weld

4. Dry-MPI the weld to ensure that there are no cracks in the weld.

3) BUW Slide/Inner Tube Joint Repair:

Cracks in the weld joining the Slide's center block (2) to the inner tube must be repaired as follows:

1. Remove the existing fillet weld where the crack is present down to the base material using grinding or gouging method. It is essential that the crack is completely removed.
2. Dry-MPI the crack area completely by going past the end of the crack to ensure that the crack is completely removed.
3. Make a 3/8" fillet weld using Low Hydrogen E7018-1/8" rod or equivalent (see Notes) along the prepped area as shown in figure 5.

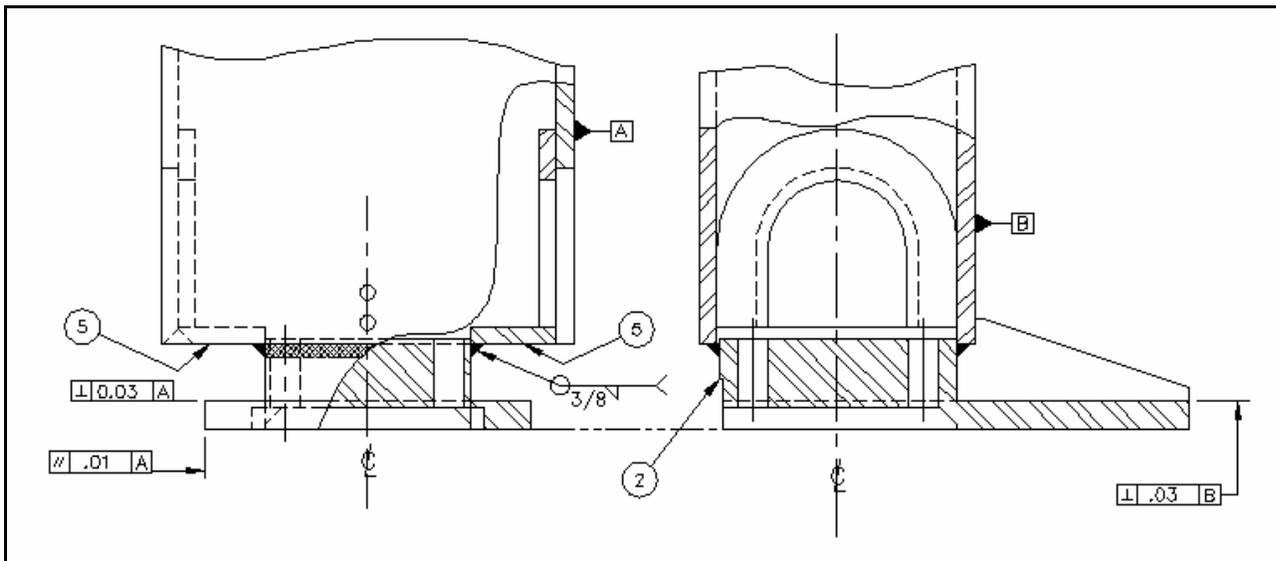


Figure 5: Slide/Inner Tube Joint

4. Dry-MPI the weld to ensure that there are no cracks.

4) BUW Inner Tube End/Strips Repair:

Cracks may occur at the lower end of the inner tube where it is welded to the two strips (5). For illustration see figure 6. This type of crack must be repaired as follows:

1. Remove the existing weld in the area where the crack is present down to the base material using grinding or gouging method. Make sure the crack is completely removed.
2. The inner tube end and the plate must be prepped properly with 3/8" bevels as shown in figure 6.
3. Make a 3/8" weld (double bevel) using Low Hydrogen E7018-3/32" or 1/8" welding rods or equivalent (see Notes).
4. Grind the weld flush with the base material to maintain the 1.5" distance between the end of the inner tube and the top of the slide plate as shown in figure 6.

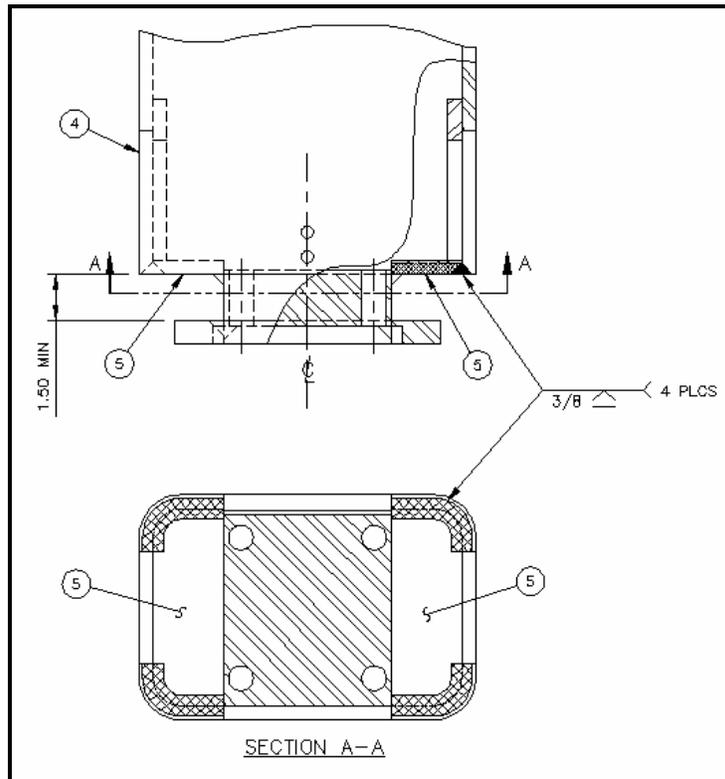


Figure 6: Inner Tube/Strips Weld

5. Dry-MPI the weld area to ensure that there are no cracks in the weld.

Notes:

7018 is a Low Hydrogen welding rod with 70,000 PSI tensile strength
9018 is a Low Hydrogen welding rod with 90,000 PSI tensile strength.

SAFETY ALERT

DATE: July 28, 2003

SUBJECT: Back Up Wrench Cylinder Clevis Backing Out

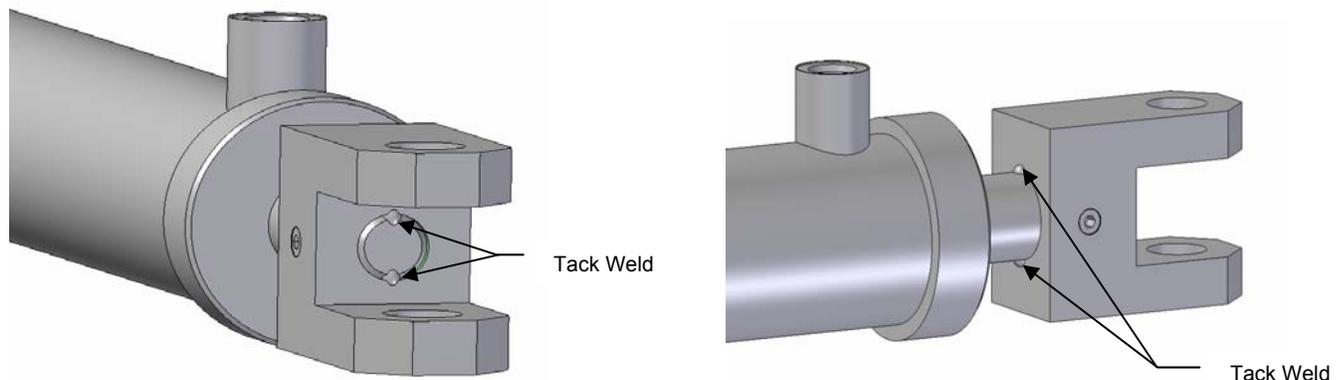
SERIAL NUMBERS: 002 and up

DISCUSSION: It has been reported that the Back-Up Wrench Cylinder rod is coming loose from the clevis; thus allowing the inner tube assembly to drop. It appears that the setscrew that prevents the cylinder rod from rotating had come loose and allowed the rod to unscrew off the clevis.

RECOMMENDATION: The BUW cylinder clevis must be checked immediately to see whether or not the clevis had come loose (i.e. rod thread is visible and a gap is noticed between the end of thread and the clevis shoulder). If the clevis is still tight, check and make sure that the setscrew is tight as well. **On weekly basis or whenever circumstances call for an out of period inspection, check and ensure that the clevis is tight onto the cylinder rod and that the setscrew is tight in place as well.** This could be after rough drilling, jarring, or any abnormal operation.

If the clevis is loose and the setscrew can not keep it tight, follow the procedure below to help retain the clevis onto the rod. The BUW will have to be disassembled and the clevis has to be properly tightened to the rod prior to any welding.

To prevent the cylinder rod from rotating against the clevis and coming loose, it is recommended that a **"TACK WELD"** be applied to the clevis and the cylinder rod as shown in the figures below. The tack weld length must be 0.25 to 0.5" long. Low Hydrogen welding rods 11018 or 7018 must be used for this tack welding. Pre-heating and post heating are not required when tack welding.



INFORMATION:

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For a complete list of bulletins go to www.canrig.com

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Maintenance

DATE: September 23, 2003

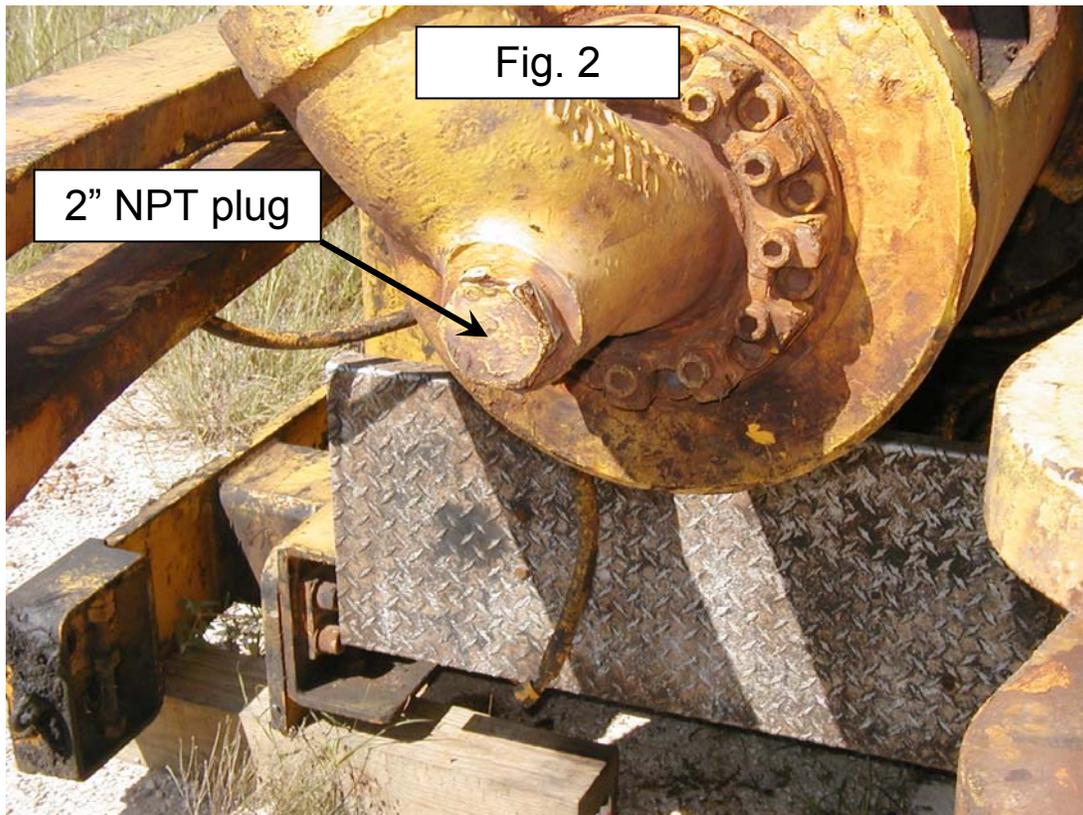
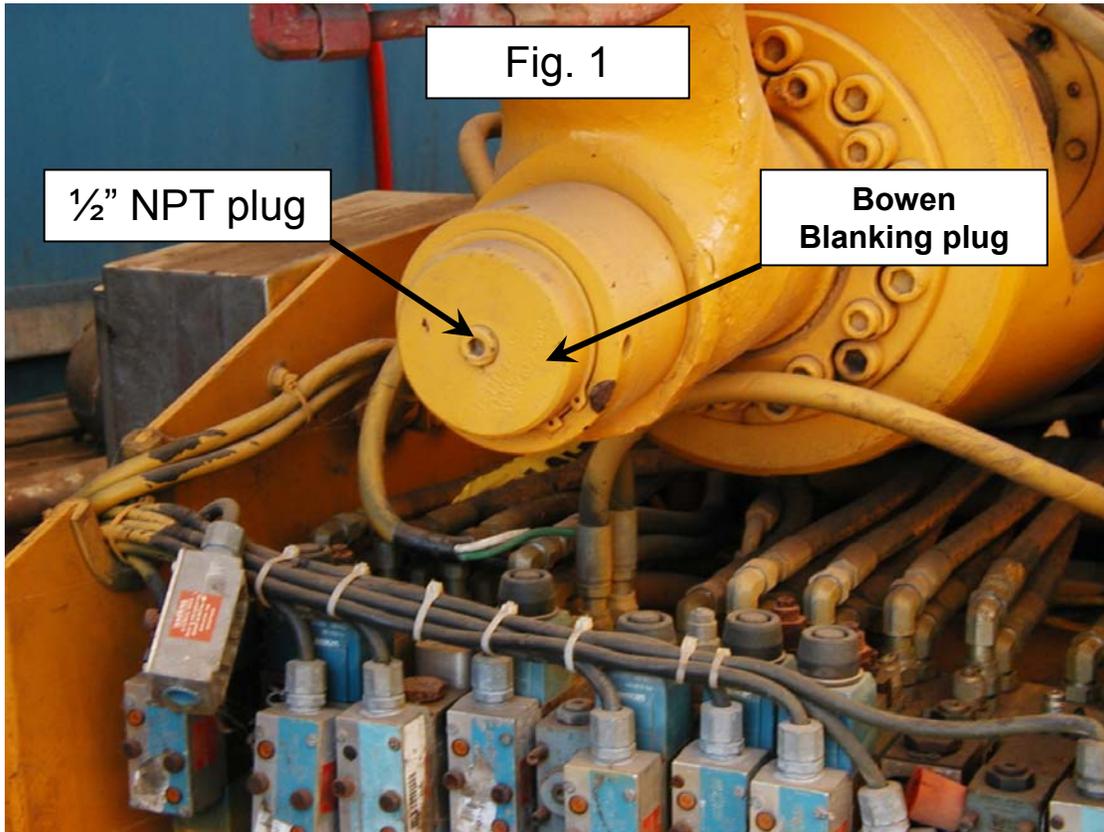
SUBJECT: Gooseneck Plugs

SERIAL NUMBERS: All

DISCUSSION: Regular removal and inspection of gooseneck plugs will help ensure proper operation of the top drive system. Plugs may corrode, preventing removal when required during the drilling operation. Corroded plugs (especially NPT) can weaken over time resulting in a failure under pressure.

RECOMMENDATION: All gooseneck plugs should be removed and inspected for wear and corrosion on a regular basis, but at least annually. Bowen blanking plugs (Fig. 1) should be examined for wear (washouts) and the o-ring replaced if necessary. NPT plugs should be removed and inspected as outlined in API 5B: Threading, Gauging and Thread Inspection of Casing, Tubing and Line Pipe Threads. Replace any components that have worn or corroded threads. NPT threads can be found in a 2" size screwed directly into the gooseneck (Fig. 2) or in a 1/2" size screwed into a Bowen blanking plug (Fig. 1).

Should you have any questions or concerns, please do not hesitate to contact your CANRIG contact or the Field Operations Manager listed below.



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SAFETY ALERT

DATE: September 22, 2003

SUBJECT: Back-up Wrench – Outer Tube cylinder lug

SERIAL NUMBERS: 002 and up

DISCUSSION: An incident occurred where the weld joining the BUW positioning cylinder top lug to the BUW outer tube top mounting plate (see figure 1 and 2 of the attached inspection procedure) broke. This allowed the BUW inner tube to separate from the BUW outer tube. Upon investigation and in-depth failure analysis, it was concluded that the failure was caused by poor workmanship by a vendor.

RECOMMENDATION: *Inspect all BUW outer tubes for the condition of the welds holding the Lug in place.* Attached is a suggested Top Lug Weld Inspection procedure.

Should defects or indications be found, repairs may be performed in accordance with the attached repair procedure or contact CANRIG for further actions.

When in doubt, do not hesitate to contact CANRIG and ask questions.

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Back-Up Wrench Top Lug Weld Inspection

This procedure covers the weld inspection of the Back-Up Wrench (BUW) Top Lug where the top end of the cylinder is mounted.

Inspection through the window

1. Disconnect the two hoses that are connected to the BUW cylinder through the driller side's small window in the outer tube as shown in figure 1 below. Due to the limited access, the use of Crow Foot Wrench to disconnect the hoses may be necessary.

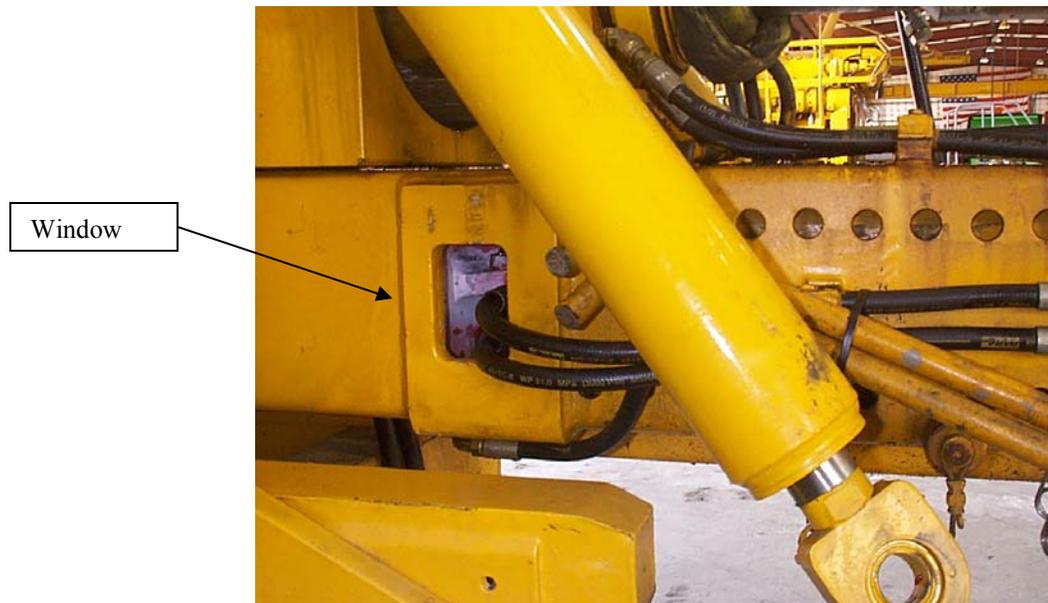


Figure 1

2. The paint on the weld around the lug must be removed by using either a 1) portable sand blaster, 2) buffing (flapper) wheel or any suitable means.
3. To ensure that all the paint has been removed, it is necessary to apply paint remover followed by brushing with a wire brush around the lug (three accessible sides, one short and two long sides of the lug, see figure 2).
4. To clean the weld thoroughly, use a cleaner/remover Ardrox 9PR50 or equivalent and let it dry.

A qualified person must perform the dye penetrant test as follows:

- a) Apply a coat of penetrant Ardrox P6R (visible water washable dye) or equivalent and let it sit for 10 minutes.
- b) Wash the dye with water until all the dye is removed.
- c) Dry the washed area using air or hand towels.
- d) Apply the developer Ardrox 9D1B or equivalent and let it sit for 10 minutes.
- e) The function of the developer is to draw the penetrant out of any imperfections in the weld where it becomes very visible. The use of flash light and a small mirror is necessary to look for the imperfections.



Figure 2

- f) The inspector will have to use his/her own expertise to determine whether or not any imperfections are acceptable.
 - g) If any cracks are found, the outer tube must be replaced. Contact your Canrig Field Service Coordinator for replacement.
5. If cracks are not found, clean the area around the lug and have it repainted.
 6. Assemble the hoses back to the BUW cylinder.

BUW Top Lug Mount Repair Procedure

This procedure covers the repair of the lug on the BUW top mount plate. There are two different designs as to the location of this lug. In the short BUW, the lug is welded directly to the cylinder top mount plate of the outer tube as shown in figure 1. In the long BUW, the lug is welded to the cylinder top mount plate inside the outer tube as shown in figure 5.

The success of this procedure will depend on the adherence to it and on the qualifications of the individual making the repairs. Therefore it is important that all necessary welding must be done by a welder certified to weld the applicable material to the joint design in accordance with AWS D1.1 or equivalent. This would involve things such as:

1. Make sure to adjust the amperage on the welding machine to give you the best penetration possible.
2. Remove the slag after each pass.

The repair procedure for the two different kinds of BUW is as follows:

1) Short Outer Tube Top Mount Lug Repair:

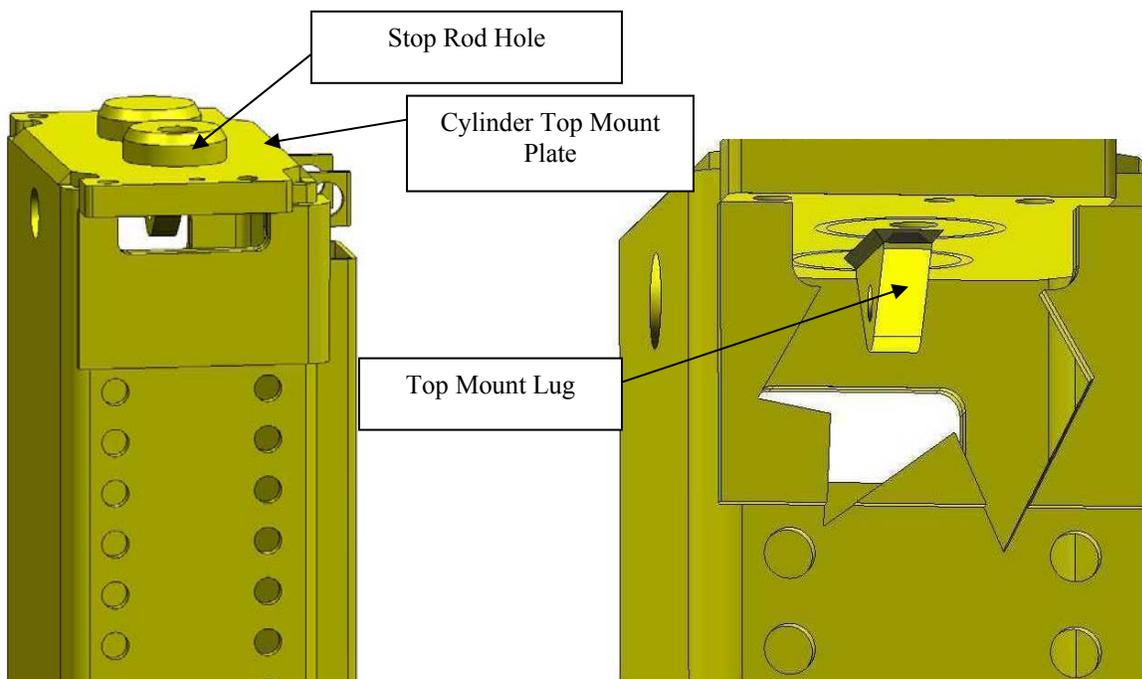


Figure 1: Short Outer Tube - Top Mount Lug

- a) Torch cut/Air arc the welds that are connecting the cylinder top mounting plate to the outer tube. Be extremely careful not to expose the outer tube to too much heat.
- b) Remove the cylinder top mount plate and grind/smoothen the torch-cut edges.
- c) Torch cut/Air arc the welds around the lug. Grind excess weld on the cylinder top mount plate.
- d) Torch-cut/grind a 1/4" bevel around the base of the lug as shown in figure 2 below.

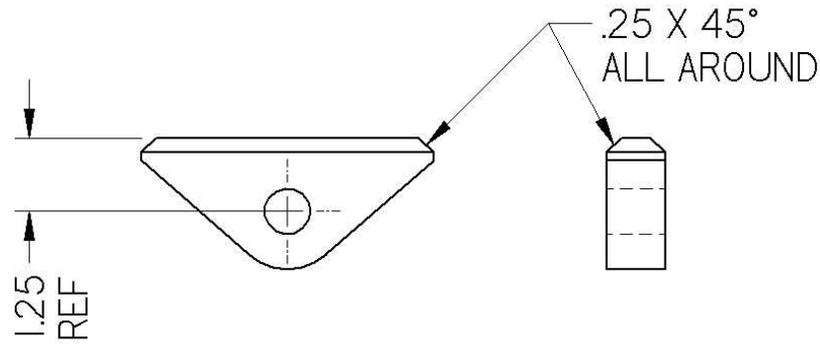


Figure 2: Top Mount Plate Lug

- e) After the cylinder top mount plate and the lug are prepped for welding, place the lug on the cylinder top mount plate as shown in figure 3 below and weld using Low Hydrogen E7018-3/32 or 1/8" welding rod. Note that the short lug side nearest to the hole should have the bevel weld only. Having a fillet weld on that short side may interfere with the nut once the stop rod is installed. Allow the cylinder top mount plate to cool slowly.

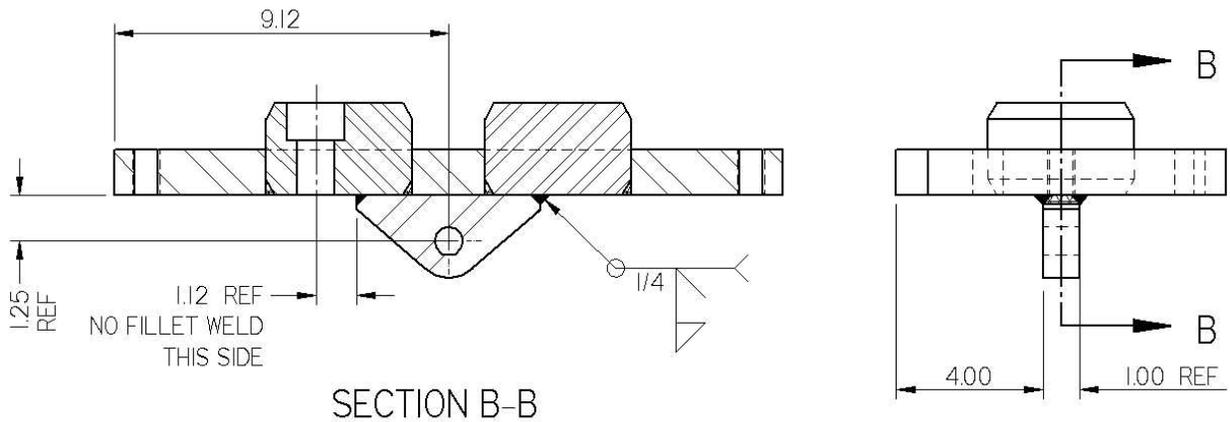


Figure 3: Welding of Lug to Cylinder Top Mount Plate

- f) Dry-MPI the weld around the lug to ensure that there are no cracks.
 g) Once the cylinder top mount plate is cool, place in the notch on top of the outer tube. Make sure that the orientation of the plate is in a manner where the stop rod hole is as shown in figure 1. Also, ensure that the plate is perpendicular to the sides of the outer tube, level if necessary.
 h) Weld a 3/8" fillet all around the top mount plate as shown in figure 4. Use Low Hydrogen E7018-3/32" or 1/8" welding rods. Allow the outer tube to cool slowly.

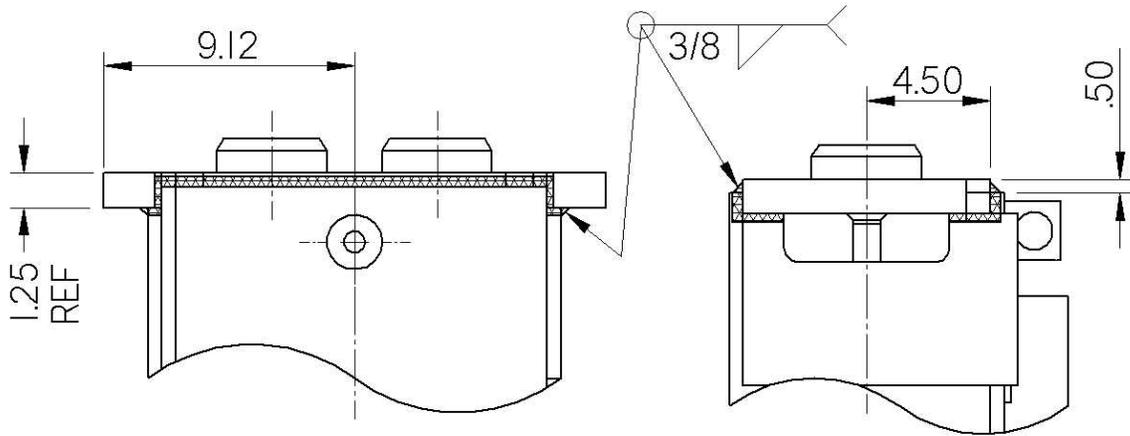


Figure 4: Welding of Top Mount Plate to Outer Tube

- i) Dry-MPI the weld around the cylinder top mount plate to ensure that there are no cracks. If cracks were found, grind the crack completely and re-weld as described above. Once again, Dry-MPI the weld to ensure that there are no more cracks.

2) Long Outer Tube Top Mount Lug Repair:

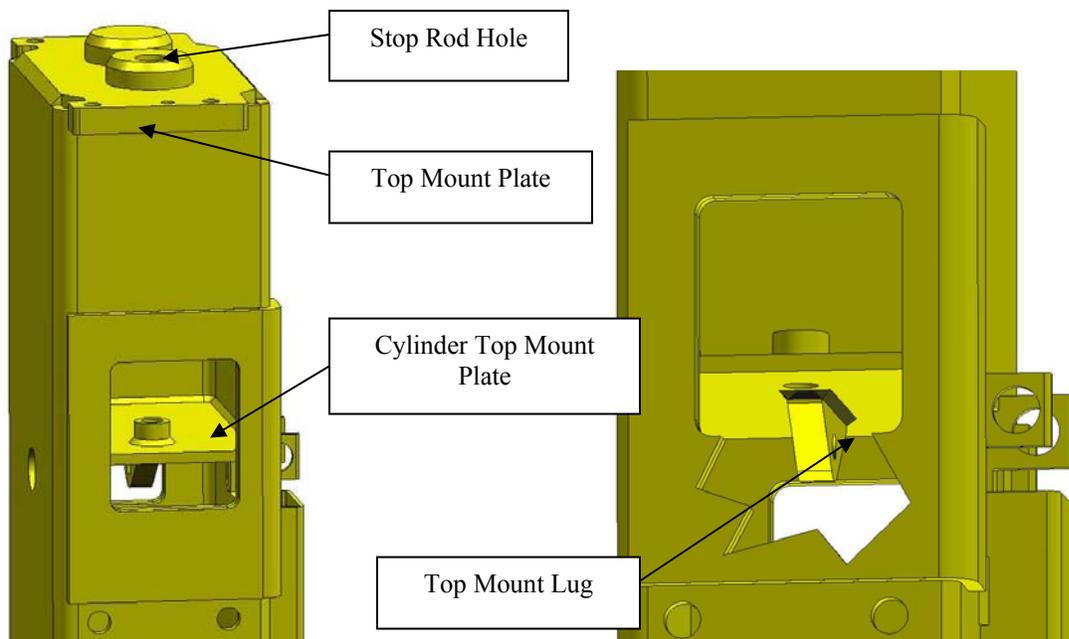


Figure 5: Long Outer Tube - Top Mount Lug

- a) Torch cut/Arc air the welds that are connecting the top mount plate to the outer tube. Be extremely careful to expose the outer tube to too much heat.
- b) Remove the top mount plate and grind/smoothen the Torch cut edges. Set this plate aside once it is prepped up. It will be re-welded back to the outer tube as shown in step j.
- c) Looking inside the outer tube, you will see the cylinder top mount plate as shown in figure 5. Torch cut/Arc air the weld around the cylinder top mount plate, and be extremely careful not to damage the outer tube or expose too much heat to it.
- d) Remove the cylinder top mount plate from the inside of the outer tube and examine it because it may have been damaged during torch cutting the weld. If the cylinder mount plate is damaged, a new plate

must be ordered from Canrig Drilling Technology before continuing with this repair procedure. The Canrig part number for this plate is 829-48-0.

- e) Once the new cylinder top mount plate is received, it should look like the plate shown in figure 6 below.

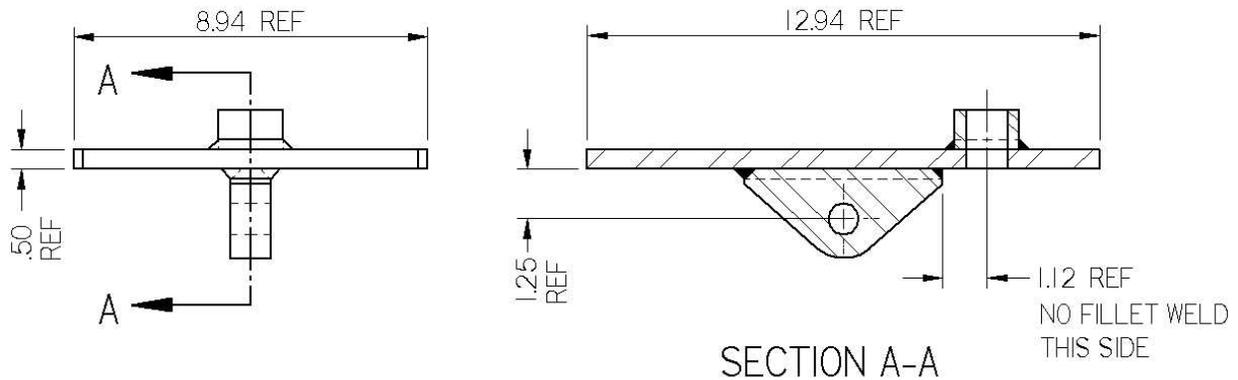


Figure 6: Cylinder Top Mount Plate – Canrig P/N 829-48-0

- f) Grind smooth the surfaces on the inside of the outer tube where the cylinder top mount plate was welded.
- g) Prior to inserting the new cylinder top mount plate P/N 829-48-0 into the outer tube, make sure that the plate is oriented with the lug towards the bottom and the stop rod hole is as shown in figure 5. Position the top of the cylinder top mount plate at 16.25 inches from the top of the outer tube as shown in figure 7. When positioning the plate, make sure it is positioned perpendicular to the outer tube.

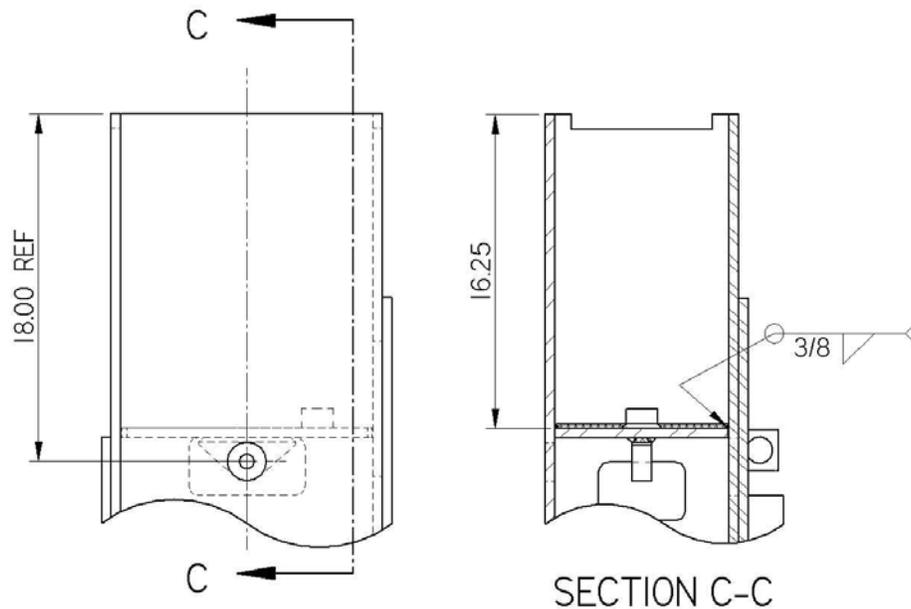


Figure 7: Welding of Cylinder Top Mount Plate

- h) Once the plate is positioned correctly, weld a 3/8" fillet weld all around the top of the cylinder top mount plate as shown in figure 8, using Low Hydrogen E7018 – 1/8" welding rods.
- i) Dry-MPI the weld around the cylinder top mount plate to ensure that the weld is free of cracks.

- j) Place the top mount plate that was ground smooth in step b in the notch on top of the outer tube. Ensure that the plate is perpendicular to the sides of the outer tube, level if necessary. Use E7018-1/8" welding rods to make a 3/8" fillet weld all around the top mount plate as shown in figure 8. Allow the outer tube and top mount plate assembly to cool slowly.

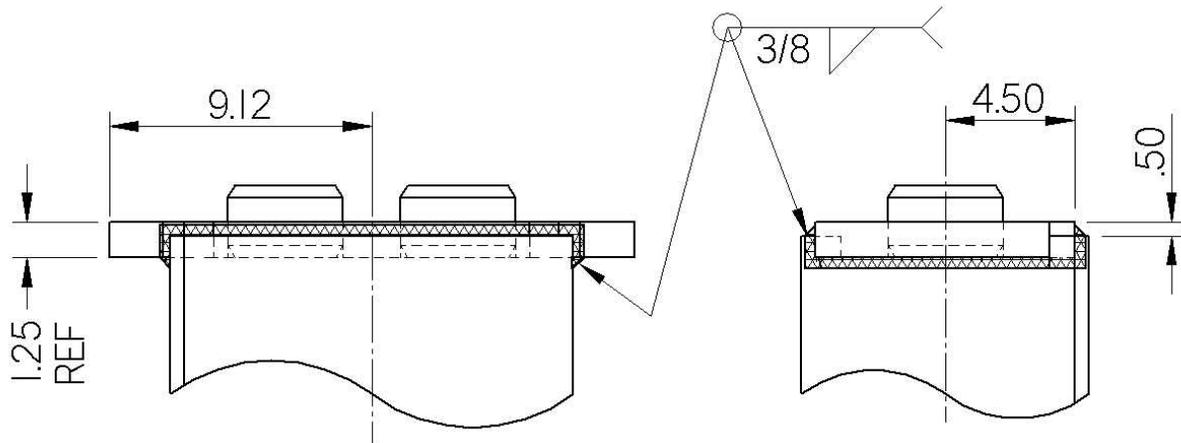


Figure 8: Welding of Top Mount Plate to Long Outer Tube

- k) Dry-MPI the weld around the top mount plate to ensure that the weld is free of cracks.

Notes:

- 1) 7018 is a Low Hydrogen welding rod with 70,000 PSI tensile strength.



SAFETY ALERT

DATE: November 14, 2003

SUBJECT: PIN FAILURE – RETRACT FRAME

SERIAL NUMBERS: 133, 153

DISCUSSION: Recently, pin DT10210 which connects the hydraulic cylinder to the retract frame failed and fell 10 meters to the drilling floor alarming personnel. The dropped piece was 1.75 inch diameter by 2.8 inch long weighing 1.9 lb. The pin broke in the middle where a grease port and groove are located.

RECOMMENDATION: CANRIG has reviewed the design of the failed pin. New pins using higher strength material and eliminating the grease passage will be made available. Pin DT10210 will be replaced by pin DT12273. Pin DT10165 will be replaced by pin DT12272. Existing pins should be inspected for cracks at the earliest opportunity and these existing pins should be replaced as new pins are available.

CANRIG will replace all DT10210 and DT10165 pins free of charge under our warranty policy.

Please contact:
Sonny Lynn, Parts Sales Coordinator
Phone: 281-259-3151
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E-mail: slynn@canrig.com

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SAFETY ALERT

DATE: February 17, 2004

SUBJECT: Top Drive Backup Wrench Die Retention

SERIAL NUMBERS: All

DISCUSSION: An incident happened recently where a die fell out of a top drive backup wrench to the rig floor. It is possible that the die is pushed up or down by pipe movement. Force is placed on the die retainers when relative movement takes place before the hydraulics have time to open or fully close the gripper. During this period the die teeth are biting the pipe but the large friction force between die and holder is absent. This allows the die to slide in the die holder and put a shearing force on the retainer. Dies are currently retained by cotter keys. The "HOLD CLOSE" feature should be eliminated because it has allowed the wrench to remain closed when the top drive was moved. It adds to the above issue due to release time of the hydraulics being slower than the instantaneous electrical release.

RECOMMENDATION: To minimize the possibility of the dies coming loose, the operator should do the immediate actions:

1. Replace the cotter pin holding the die into the die block with a roll pin (slotted type spring pin). Canrig part # M17-1014-010 which is a **7/32** inch diameter x **1** inch long **slotted type spring pin**. This pin has much higher shear strength. Local sources are available.



2. Perform daily inspection of retainer pins to ensure they are in place and not damaged. Also inspect after suspected movement of assemblies without fully opened or closed gripper.
3. Disable the back up wrench gripper "HOLD CLOSE" on driller console. The "HOLD CLOSE" feature is one source that we have identified of causing the gripper to open (through interlock) while relative pipe motion can be present. Refer to back up wrench control

schematic. This applies to most Canrig drilling consoles. On backup wrench joystick JS2 in electrical control schematic, remove jumper wire between plunger 3 and plunger 4. Be sure wire 227 (typical most units) is connected to plunger 3. Check that "HOLD CLOSE" no longer works. Contact Canrig for assistance on disabling the "HOLD CLOSE" function or for instructions specific to your controls.

Proper operation of the top drive is the best way to prevent incidents of this nature.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

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SAFETY ALERT

DATE: May 26, 2004

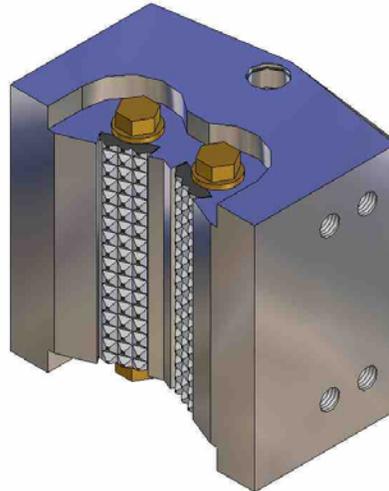
SUBJECT: Top Drive Backup Wrench Die Retention

SERIAL NUMBERS: All

DISCUSSION: An incident happened recently where a die fell out of a top drive backup wrench to the rig floor. Gripper dies are currently retained by cotter pins and/or spring (roll) pins. If force is applied to the dies by the relative movement of the pipe, up or down, these pins can shear and a die can come free and possibly fall.

RECOMMENDATION: To minimize the possibility of the dies coming loose, the operator should do the immediate actions:

1. Replace or modify the die block. The current standard die block uses a cotter pin and/or spring (roll) pin to hold the die in the die block. The new design has four bolts with washers to hold the dies in the die block. New die blocks or modification drawings and instructions are available (see chart).



2. Perform daily inspection of retainer bolts to ensure they are in place and not damaged. Inspect after suspected movement of assemblies without a fully opened or closed gripper.

Proper operation of the top drive is the best way to prevent incidents of this nature.

Die Block for 7" Grippers (4017)

	Original die block	Modification DWG	Replacement Part	Size
Part	DT12847	DT13733	DT13734	4.50 to 7.00"
Assembly	AY11813	AY12322	AY12323	
Part	DT13188	DT13812	DT13811	2.50 to 5.00"
Assembly	AY11949	AY12360	AY12359	

Die Block for All 9" Grippers (6027, 8035, 1050, 1165 & 1275)

	Original die block	Modification DWG	Replacement Part	Size
Part	DT10093	DT13712	DT13716	5.75 to 9.00"
Assembly	588-06-1	AY12304	AY12308	
Part	DT10094	DT13713	DT13717	3.75 to 7.00"
Assembly	588-06-2	AY12305	AY12309	
Part	DT10096	DT13715	DT13719	3.25 to 6.5"
Assembly	588-06-4	AY12307	AY12311	
Part	DT10095	DT13714	DT13718	2.50 to 5.75"
Assembly	588-06-3	DT12306	AY12310	

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

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DATE: April 5, 2004

SUBJECT: Blower Protection

SERIAL NUMBERS: All 4017AC Top Drives

DISCUSSION: The blower on the top drive has potential to be damaged by tugger lines or the similar. This could cause the blower, or a portion of, to become dislodged from its mount and fall.

RECOMMENDATION:

1. The blower needs to be further protected with the addition of a deflector plate which is welded to the top drive guard. The deflector plate should be constructed as shown in Fig.1. Ensure that the edges shown are well rounded to prevent tugger lines from getting caught on it.
2. Cut away the perforated plate in the area shown in Fig.2. Replace the cut away piece with $\frac{1}{4}$ " thick plate or flat bar which measures 2.50" x 6.00 ". This is to allow a stronger weld between the top drive guard and the deflector plate.
3. Weld the deflector plate onto the lower blower guard as shown in Fig.2. The plate should be centered on the pipe and a $\frac{1}{4}$ " fillet weld should be placed all around the plate on both sides.

INFORMATION:

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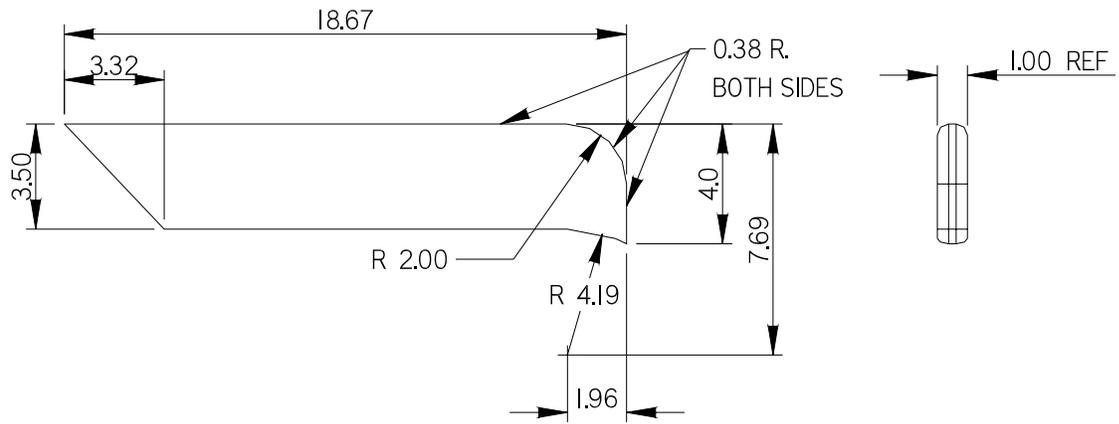


FIG.1

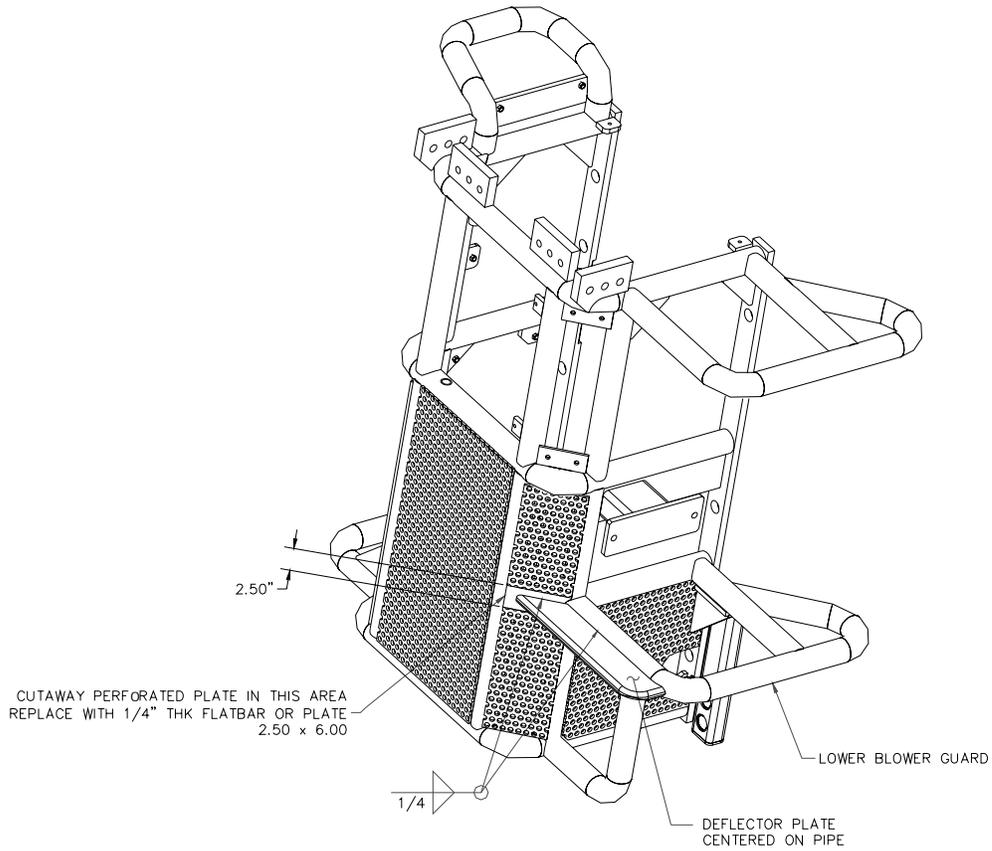


FIG.2



DATE: August 9, 2004

SUBJECT: Canrig Lower Well Control Valve (LWCV) Backpressure Control

SERIAL NUMBERS: S/N 092, 111, 148, 150, 156, 205, 238, 239, 257, 260

DISCUSSION: It has been reported that the cylinders on the Canrig LWCV Actuator were creeping due to backpressure in the hydraulic system. Over a period of time, the creeping could have resulted in the washout of some valves.

RECOMMENDATION: To eliminate the possibility of the hydraulic cylinders creeping when in use, a check valve should be installed in the hydraulic circuit of the LWCV actuator (Canrig P/N H07-1010-010). Please refer to the appropriate instructions below to install the valve.

For all systems, perform the following actions:

Relieve hydraulic pressure from the system- this can be performed by disconnecting the hydraulic quick-connects from the Top Drive at the service loop. Next, operate the torque boost in both directions to relieve pressure in the system.

Locate the LWCV valve stack on hydraulic manifold- normally mounted at position '5' on manifold. Identify top drive configuration (as noted below) and follow the instructions as shown on the following pages.

Before proceeding to update the valve stack, it is imperative that identification is made of the specific hydraulic arrangement that is used on your top drive. To identify the valve voltage, refer to the label on the valve solenoid mounted on the hydraulic manifold- it should read "120 VAC" or "24 VDC". The manifold can be identified by looking at the manifold- non-integrated manifolds are smaller (approximately 3" square) than the integrated manifolds and have all valves mounted on top of the manifold. Integrated manifolds are larger (approximately 6" square) and have several valves mounted directly into the manifold body.

For LWCV installations on 120 VAC non-integrated manifold valve systems, see page 2. For LWCV installations on 24 VDC non-integrated manifold valve systems, see page 3. For LWCV installations on 24 VDC integrated manifold valve systems, see page 4.

AY11920-1, Kit, Interface, LWCV, Non-Integrated Manifold, 120 VAC

Refer to Figure 1 (shown below). Disassemble valve stack noting position and orientation of each valve. Remove existing threaded rods from hydraulic manifold. Install new longer threaded rods (Canrig P/N H13-1036-833) in manifold. Reinstall test port assembly (previously removed) and install check valve (Canrig P/N H07-1010-010) in position on manifold noting proper position of ports. Reinstall previously removed valves in same orientation as noted when removed. Reinstall threadnuts (Canrig P/N H13-1035-01A). Set pressures of all valves as shown in Figure 1.

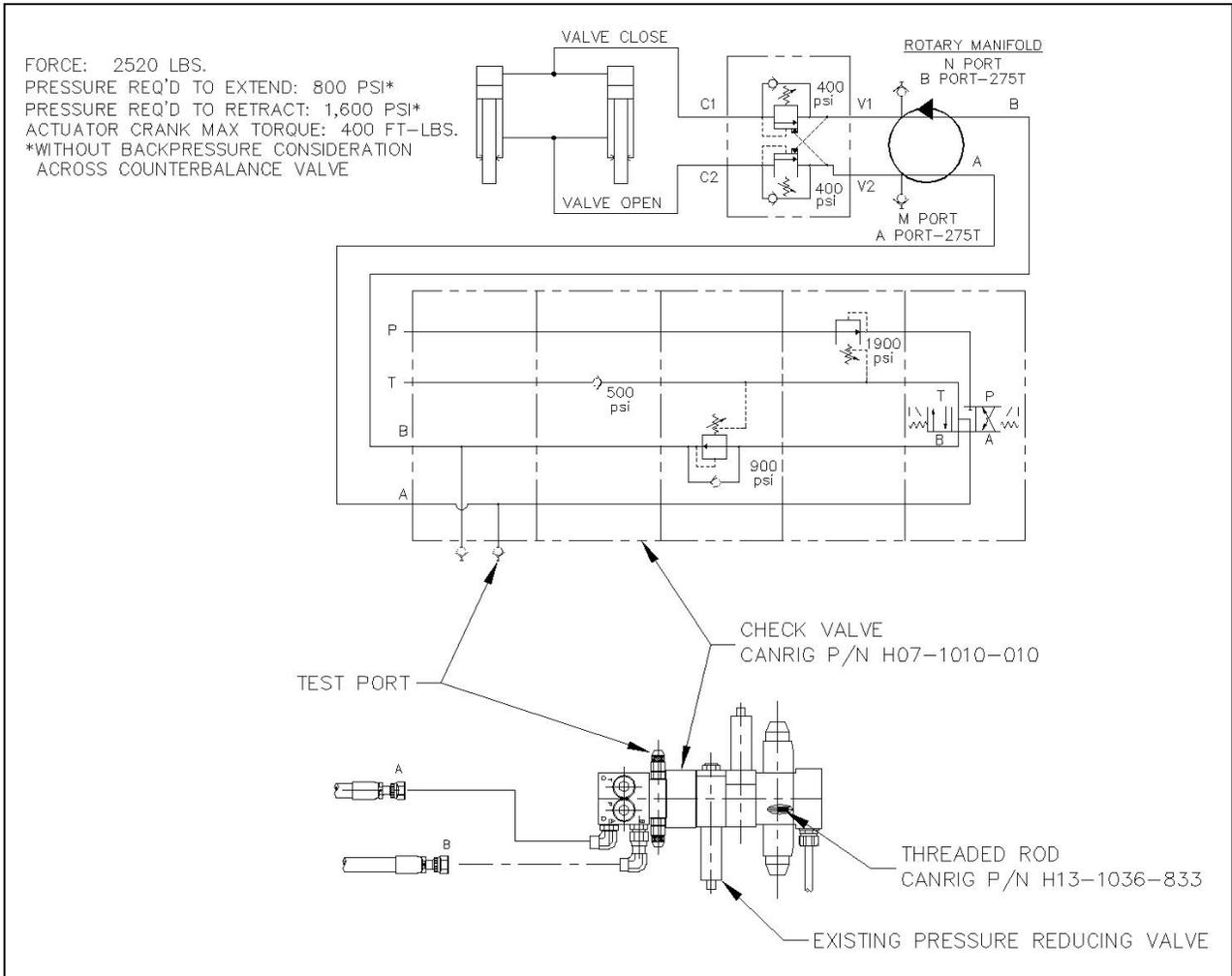


Figure 1

AY11920-2, Kit, Interface, LWCV, Non-Integrated Manifold, 24 VDC

Refer to Figure 2 (shown below). Disassemble valve stack noting position and orientation of each valve. Remove existing threaded rods from hydraulic manifold. Install new longer threaded rods (Canrig P/N H13-1036-754) in manifold. Reinstall test port assembly and install check valve (Canrig P/N H07-1010-010) in position on manifold noting proper position of ports. Reinstall previously removed valves in same orientation as noted when removed. Reinstall threadnuts (Canrig P/N H13-1035-01A). Set pressures of all valves as shown in Figure 2.

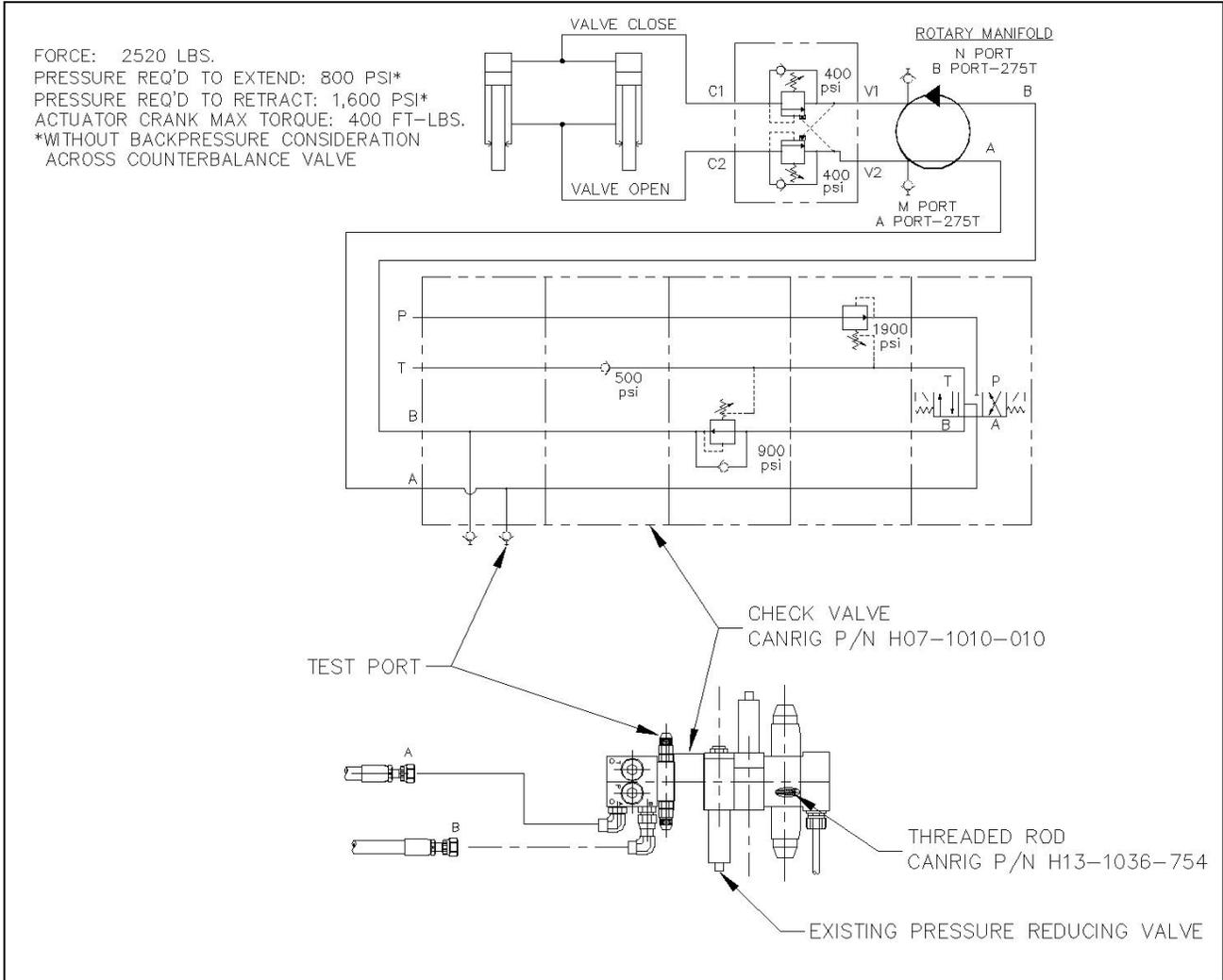


Figure 2

AY11920-3, Kit, Interface, LWCV, Integrated Manifold, 24 VDC

Refer to Figure 3 (shown below). Disassemble valve stack noting position and orientation of each valve. Discard pressure reducing valve (Canrig P/N H05-1001-010) as shown in Figure 3. Install check valve (Canrig P/N H07-1010-010) in position on manifold noting proper position of ports. Reinstall previously removed valves in same orientation as noted when removed. Reinstall threadnuts (Canrig P/N H13-1035-01A). Set pressures of all valves as shown in Figure 3.

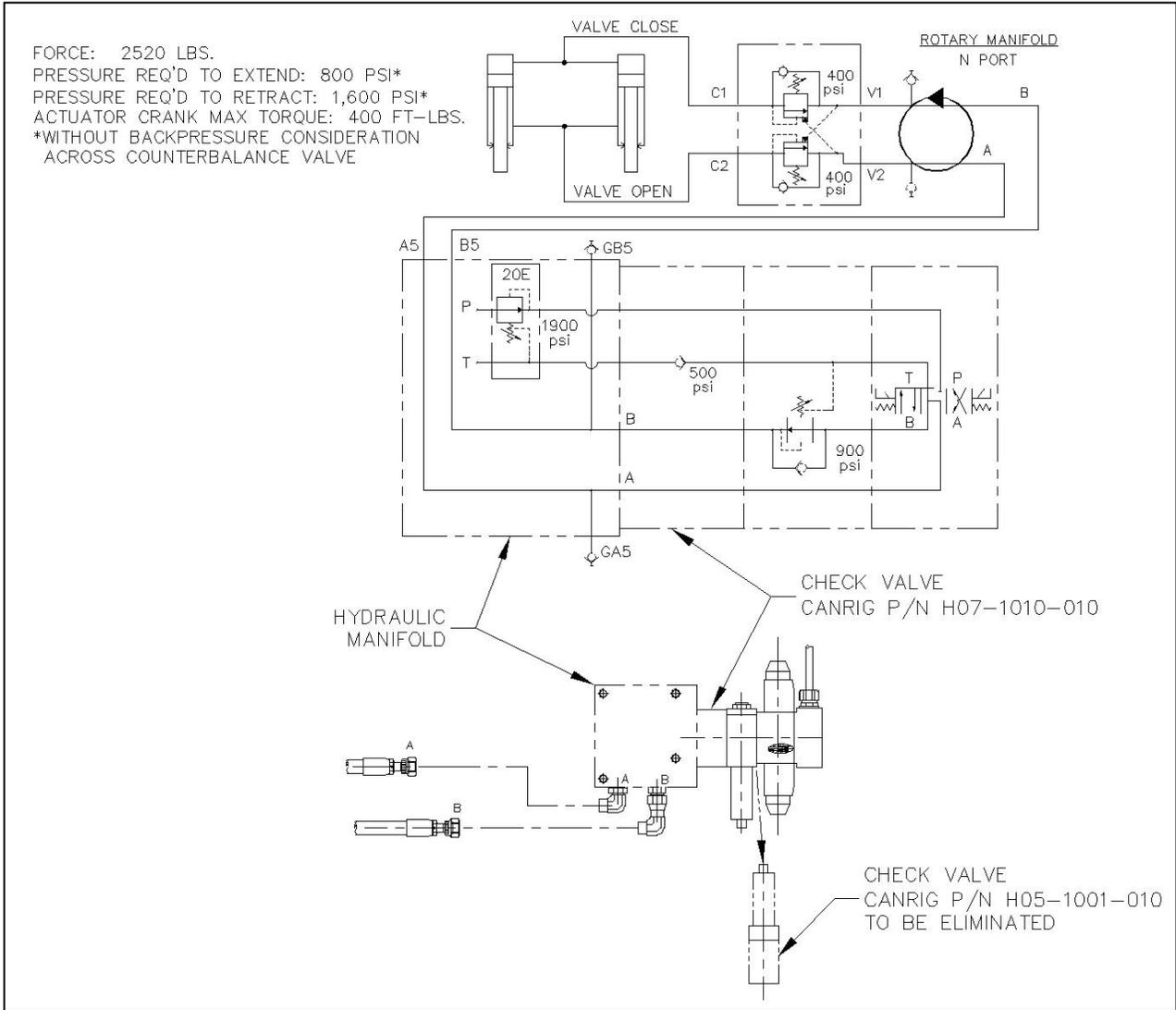


Figure 3

INFORMATION:

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

For further information contact:

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Safety Alert

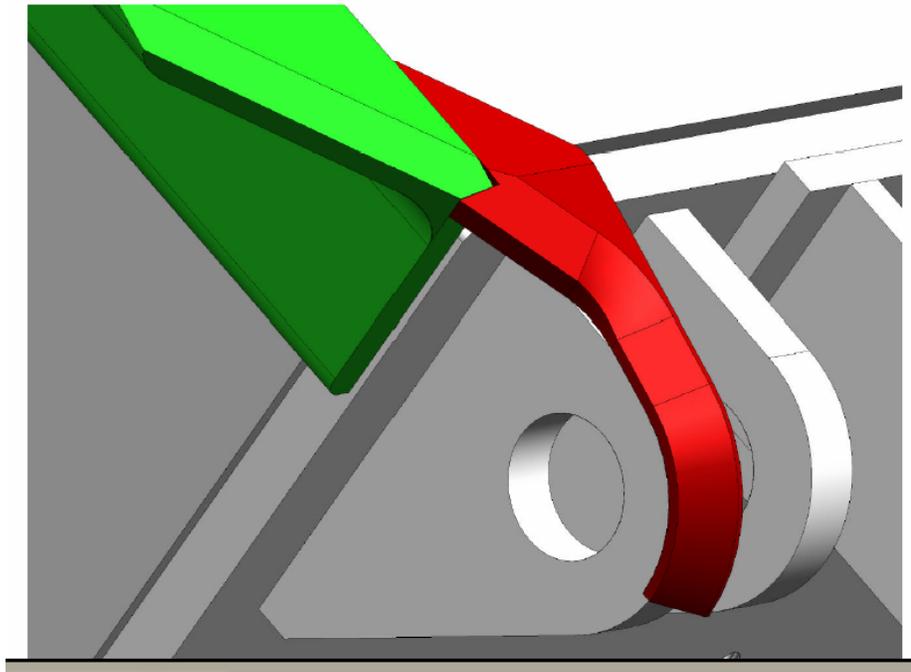
DATE: 25-Jan-05

SUBJECT: Torque Guide – Casing Entrapment

SERIAL NUMBERS: All Portable Torque Guides on TD serial numbers below 270

DISCUSSION: A near miss incident was reported, when a joint of casing got caught on an edge of the bottom of section 2 and subsequently fell to the floor due to breakage of the lifting sling. Although this was considered an unusual accident, CANRIG has developed an additional guard to the hinge point on the bottom of section 2.

RECOMMENDATION: *Perform the modification recommended in PB 52 (Shown Below)*
Further, CANRIG has developed an additional guard that can be installed at the joint of section 2 to decrease another possible pinch point as per the attached drawings. Please order DT14141 and weld as shown on the drawing.



When in doubt, do not hesitate to contact CANRIG and ask questions.

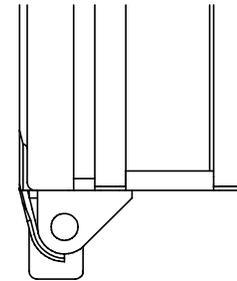
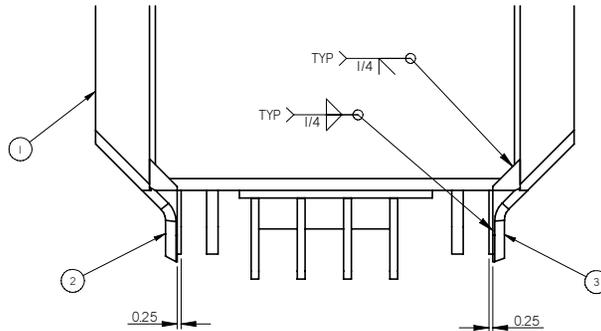
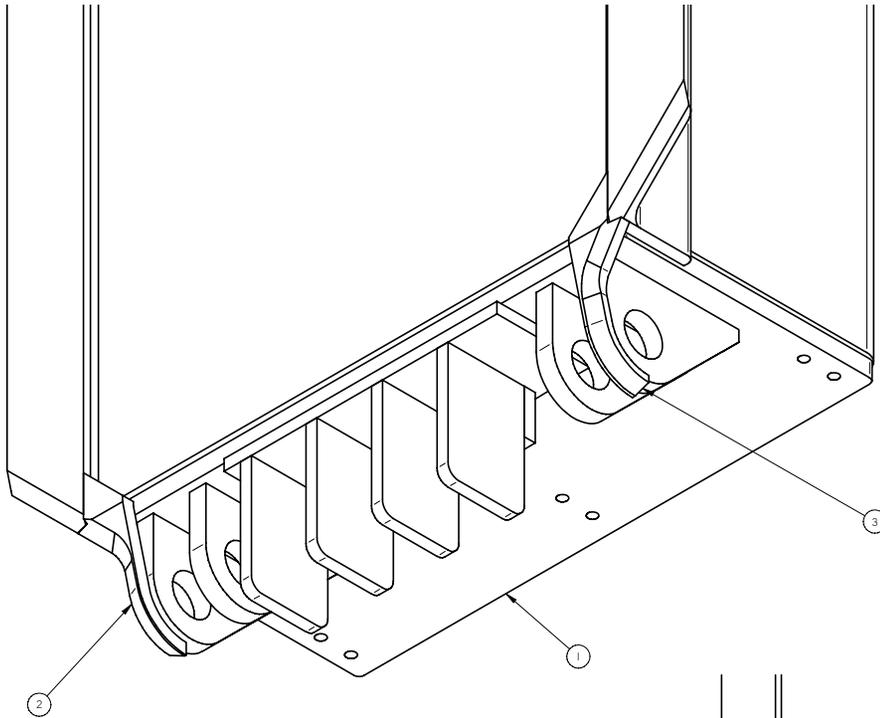
INFORMATION:

For further information contact:

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IF IN DOUBT...PLEASE ASK!

ITEM No.	QTY	DESCRIPTION	MATERIAL	CANRIG PART No.
1	1	TORQUE GUIDE SECTION 2, FINAL WELDMENT		893200
2	1	PLATE, DEFLECTOR DS, SECTION 2		DT14140-DS
3	1	PLATE, DEFLECTOR ODS, SECTION 2		DT14140-ODS



No.	YMD	BY	REVISION	WELDING PROCEDURE UNLESS OTHERWISE SPECIFIED - ANSI/AWS D1.1-98 OR CSA W59-M1989	DRAWN DIA	04/04/12	 Canrig CANRIG DRILLING TECHNOLOGY LTD. MOD. SECTION 2, DEFLECTOR PLATE	
				THIS PRINT AND DESIGN AND DETAIL SHOWN THEREON ARE THE PROPERTY AND INVENTION OF CANRIG DRILLING TECHNOLOGY LTD. THIS PRINT IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED WITHOUT PERMISSION AND RETURNED UPON DEMAND. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED BY CANRIG DRILLING TECHNOLOGY LTD.	CHECKED	SEA		04/01/12
					APPRVD	-		-
				TOLERANCE - UNLESS OTHERWISE SPECIFIED	MATERIAL			
				REMOVE SHARP CORNERS AND BURRS ± 1/16	FABRICATING (METRIC)			
				⊙ CONCENTRICITY .005 TIR	0 TO 500 mm	± 1 mm	MACHINING IMPERIAL	
				— STRAIGHTNESS ± .005 IN 5 INCHES	> 500 mm	± 3 mm	DECIMAL .x ± .030°	
				⊥ SQUARENESS ± .010 IN 5 INCHES	.xx ± .015°			
				∥ PARALLELISM .005	.xxx ± .005°			
				⊕ TRUE POSITION .005	FABRICATING IMPERIAL			
				MACHINED SURFACES 125/	0 TO 24"	± .06°		
					> 24"	± .12°		
					ANGULAR ± 2°	ANGULAR ± 1°		
					EST. WEIGHT	SCALE	PROJECT	
					-	2:1	-	
							DT14141 REV 0	

IF IN DOUBT...PLEASE ASK!



CANRIG DRILLING TECHNOLOGY LTD

PRODUCT BULLETIN NUMBER: 52

DATE: July 12, 1999

SUBJECT: PORTABLE TORQUE GUIDES

SERIAL NUMBERS: 13, 14, 16, 19-24, 26-33, 36, 38, 40-46, 51-54, 56-65, 67-79, 81-95, 97-102, 104-116, 121, 125, 128, 132, 134, 140

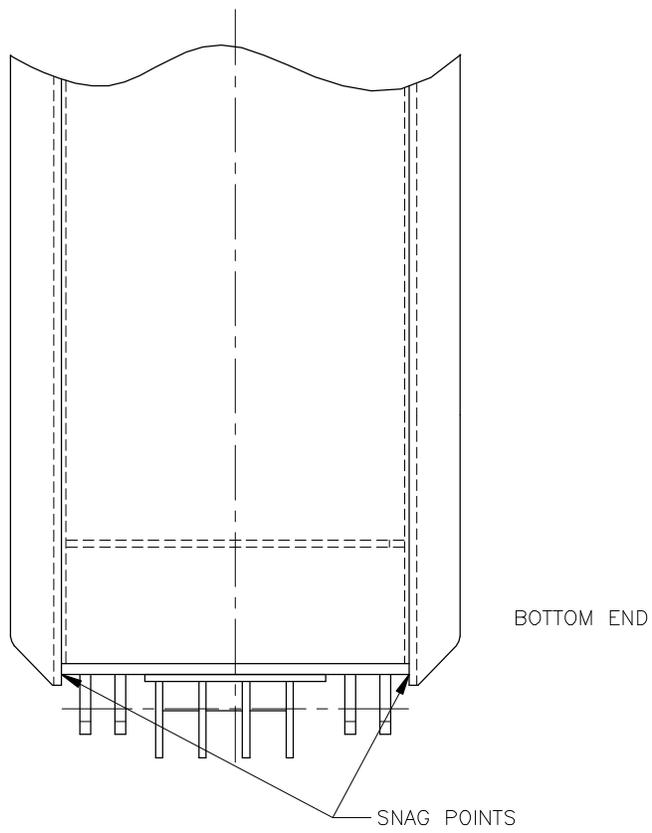
DISCUSSION: When running casing, angles on the Torque Guide Section 2 can be a snag hazard if using a pick-up/lay down machine to push the casing.

RECOMMENDATION: The angles can be trimmed back approximately 1/2 inch to be flush or recessed with the bottom of the Torque Guide tube. See attached drawing. The angle should be beveled and ground smooth. This will help prevent premature wear of the Top Drive guide rails.

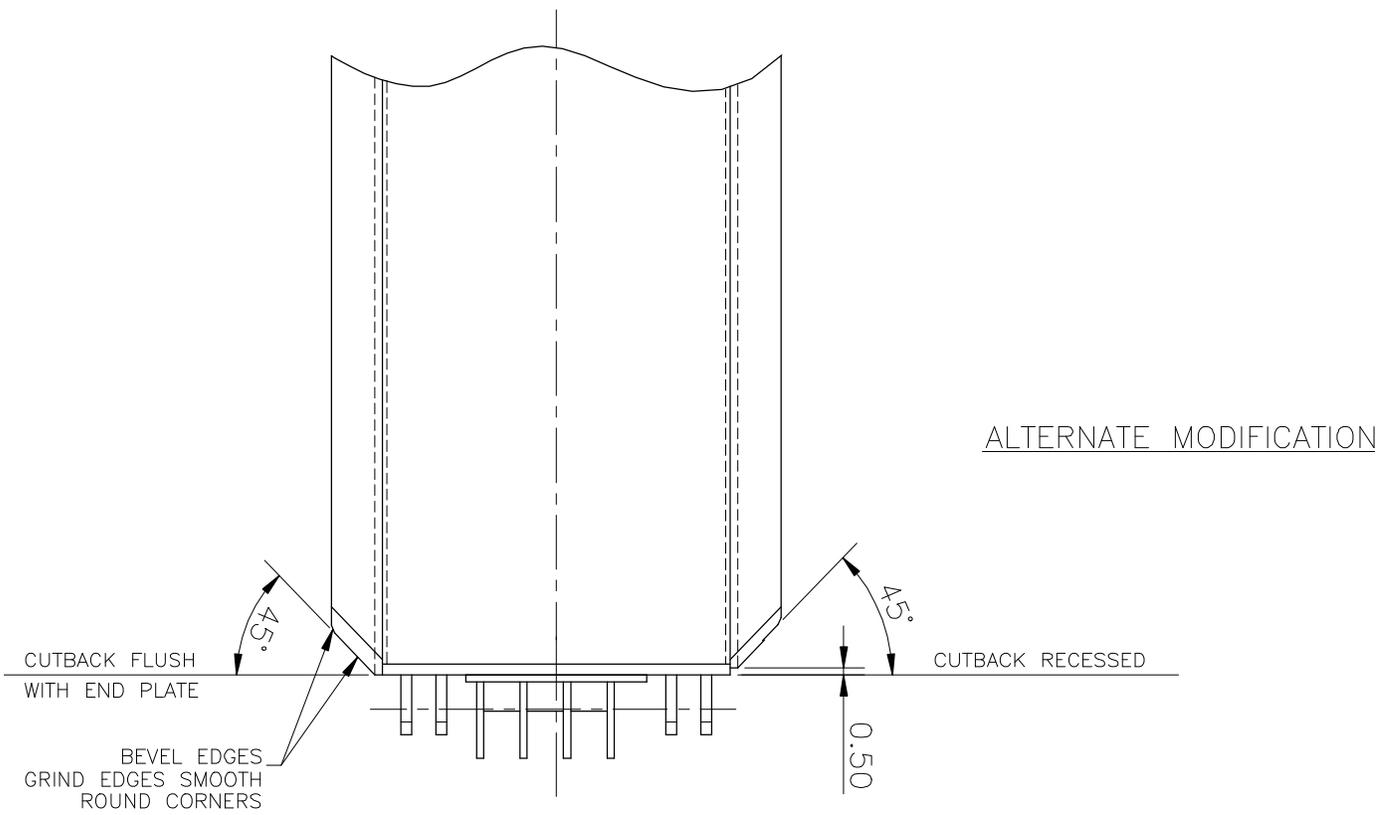
INFORMATION :

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



EXISTING SECTION 2



MODIFIED SECTION 2



DATE: March 21, 2005

SUBJECT:

Revised Inspection Program Section 4B of Parts Manual

SERIAL NUMBERS: All Top Drive models

DISCUSSION: There have been several incidents involving weld failures in the Torque Guide due to 1) fatigue, 2) abnormal loading during rig up/rig down or 3) welding defects.

In an effort to eliminate such incidents from happening, the Inspection Program Section 4B of the parts manual has been revised to include the Torque Guide, Top Drive Frame and Guard, Blower Frame, Harpoon and Grass Hopper.

RECOMMENDATION: There are Inspection maps for all Load Path and structural Components in this revised Inspection program. Ensure that all concerned personnel are aware of this Revised Inspection Program and that it must be followed. Once this revision is received, please distribute it to the appropriate personnel and update your Parts Manuals.

When in doubt, do not hesitate to contact CANRIG and ask questions.

INFORMATION:

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



SUBSECTION 4B: INSPECTION

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Recommended Inspection Program

General Inspection

Pressure test the circulating path from the Lower Well Control Valve (LWCV) to the Upper Well Control Valve (UWCV) to 200 psi to detect obvious leaks before testing at rated pressure. The test intervals may be specified by regulatory authorities, operator policies or contractor policies.

Monthly Inspection

1. Remove the LWCV and inspect the connections (including the quill pin) using magnetic particle techniques according to API RP7G.
2. Visually inspect the following for hoisting integrity:
 - Bail (if applicable)
 - Block Interface
 - Upper links
 - Main housing
 - Rotary manifold outer sleeve
 - Upper link support
 - Elevator links
 - Elevators (if applicable)
3. Visually check the welds on the top drive frame, guard, mounts and supports for cracks or damage.
4. Visually check the Top Drive unit for loose bolts.
5. Check the drive motor according to the manufacturers' publication, which is in the Electrical section of the *Component Literature* book.
6. Visually inspect the electrical cables on the Top Drive Unit.

NOTE: Items 2, 3, 4, 5 and 6 from the above list should also be checked after first week of operation on a new Top Drive installation.

Inspection After Each Rig Move or Every 3 months (which ever comes first)

- Visually check the complete Torque Guide for any damage (i.e. bending or cracking).
- Visually check the integrity of all of the Torque Guide turnbuckles, pins, spherical bushings and flange connection bolts. (If applicable.)
- Visually check all the welds on the Torque Guide System including the harpoon for cracks. If suspicious cracks were found, a full Dry Magnetic Particle inspection must be

Subsection 4B: Inspection

made to all the welds included but not limited to those shown in the Torque Guide Inspection Maps.

- Check for loose bolts and mountings for the blower, mast junction box, cable trays and hydraulic tubes.
- Visually check the service loop and service supports/mounts on the torque guide.
- Visually check the blower and welds on Blower Frame.
- Visually check the Grass Hopper for any damage (i.e. bending and cracking). In addition, check all the welds for cracks.

Subsection 4B: Inspection

Other Inspection

- Check the clearance in the main Top Drive bearings and re-shim if necessary according to the schedule and instructions in this manual.
- Check the gap between the top of the Brake Disk and the caliper. If the Disk is rubbing against the top of the caliper, this maybe an indication that the Brake Hub had spun off.

1000 Days Inspection

The following major inspection is recommended every 1000 working days or at alternate intervals, which may be specified by regulatory authorities, operator policies, contractor policies or drilling conditions:

1. Disassemble the Top Drive unit.
2. Inspect all of the following hoisting load path components using magnetic particle techniques as specified on the Inspection Maps at the end of Section 4B:
 - Quill
 - Spindle
 - Split Ring
 - Upper link support
 - Rotary manifold outer sleeve
 - Housing
 - Upper links
 - Bail (if applicable)
 - Block Interface
 - Upper link pins (4)
3. Check all bearings, seals, seal running surfaces, gears and splines. Refurbish as necessary.
4. Inspect all the welds in the Torque Guide System using magnetic particle techniques as specified on the inspection maps at the end of Section 4B.
5. Inspect the end plates and lugs in the torque tubes for any damage and ensure that the lugs are properly aligned between sections.
6. Remove the motor and send to a qualified repair shop for inspection and repair if necessary. Refer to relevant Canrig and manufacturers' literature for recommended procedures.

Inspection Following Periods of Rough Drilling or Jarring

After periods of rough drilling, especially on surface hole, various Top Drive components can loosen due to vibration. The following inspection procedure is recommended after periods of rough drilling:

- Perform a thorough visual examination of the Top Drive, looking for any signs of damage.
- Visually inspect the mud inlet piping.
- Check all wire-locked bolts for damaged or broken wires. If broken wires are detected, check the affected bolts for tightness and rewire. Refer to the Capscrew Torque Values information in Subsection 4A of this Manual. Replace damaged wires.
- Check all external bolts that are not wired for tightness.
- Check all guards, vents, and covers for tightness.
- Ensure that all safety cables are properly and securely attached.
- Visually check the welds on the Top Drive Guard and Frame, Blower Frame and Torque Guide System.
- Visually examine inside the electrical junction boxes for loose components.
- Inspect the motor armature to ensure it has not dropped:
 - If the Brake Disk is approximately in the center of the Caliper, then this maybe an indication that the armature did not drop.
 - If the Brake Disk is rubbing on the bottom of the caliper, this maybe an indication that the armature did drop.

INSPECTION INDICATION MAP No:

Part Name: Main Housing

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

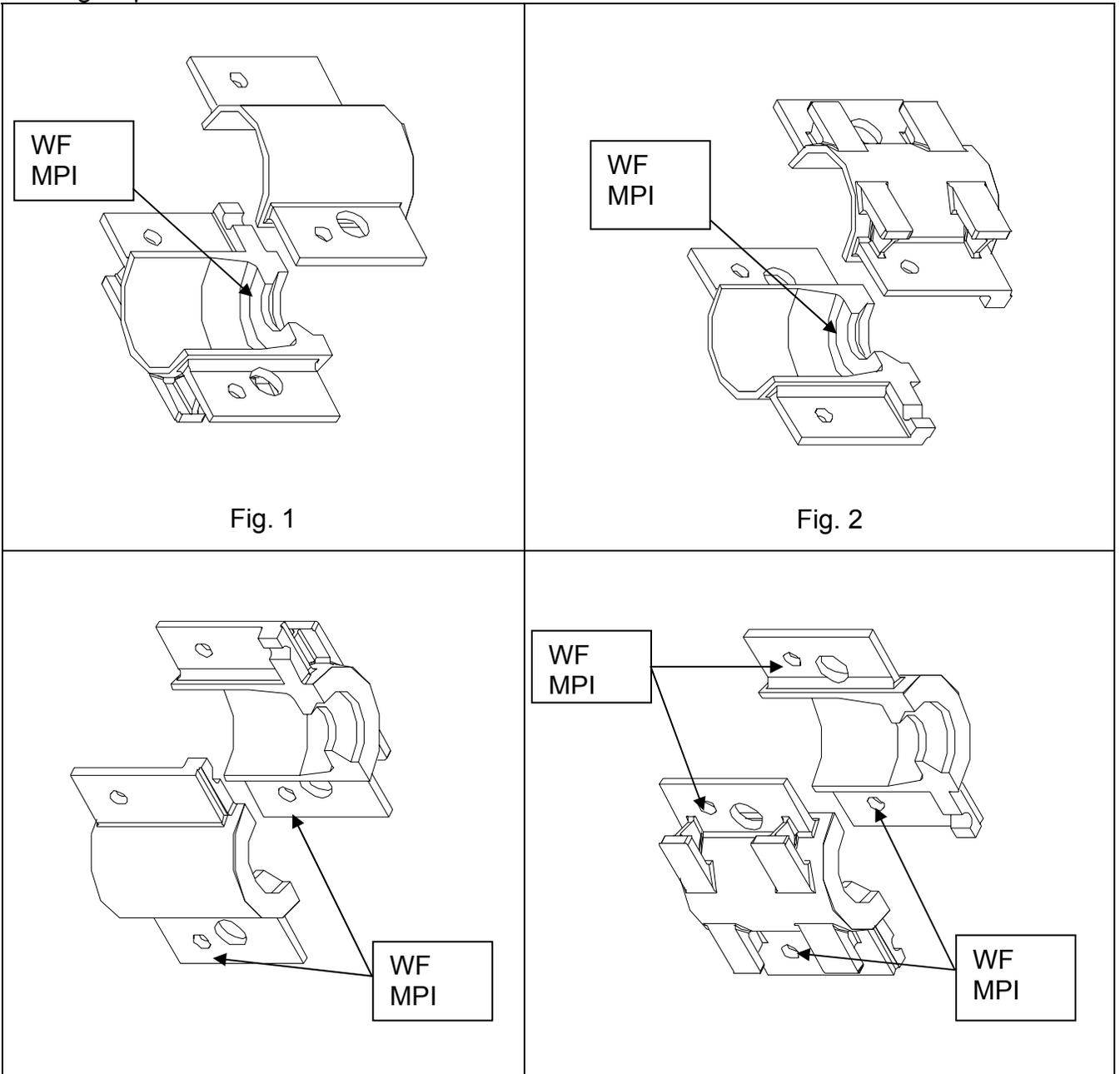
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



INSPECTION INDICATION MAP No:

Part Name: Spindle

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

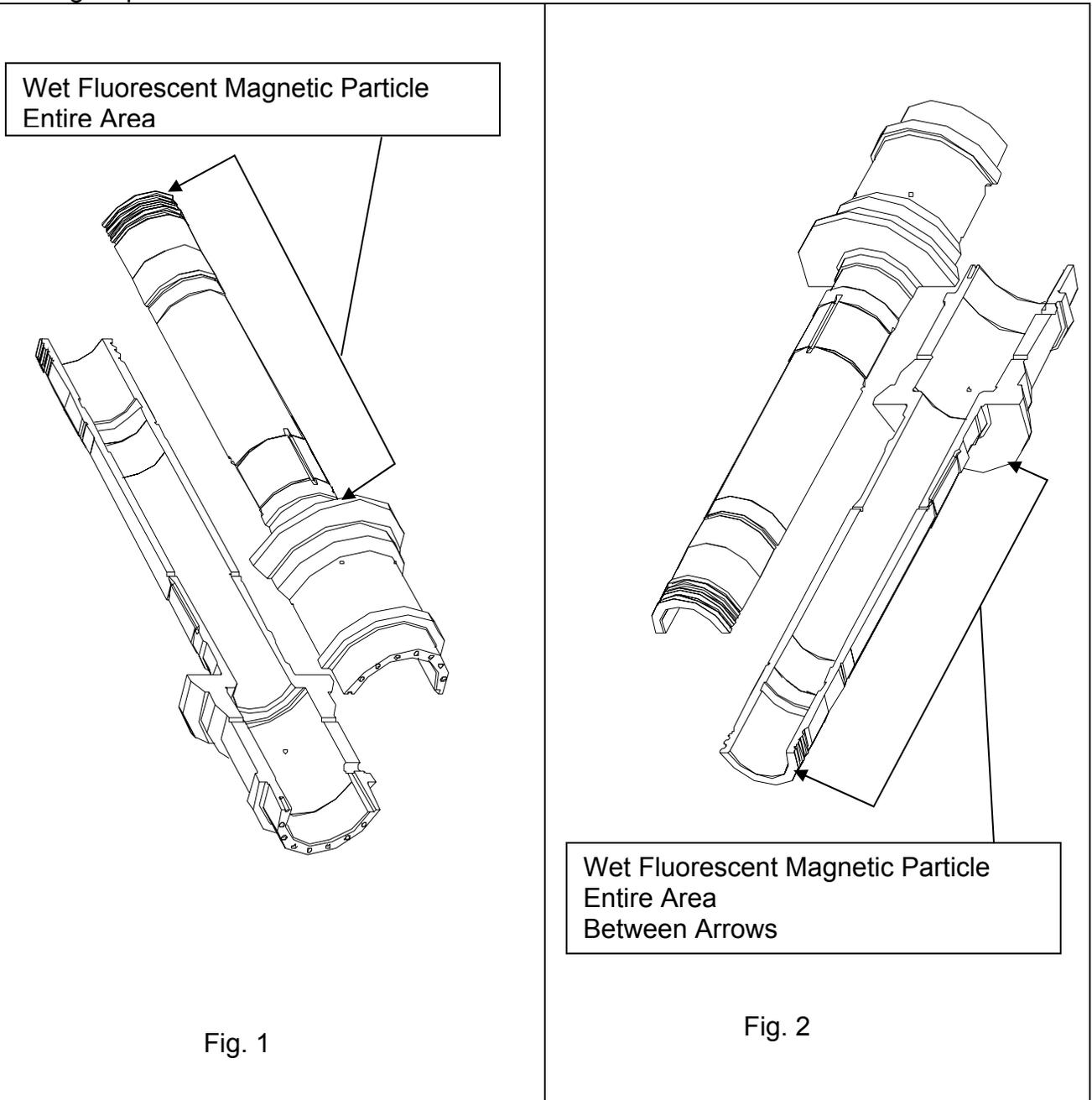
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:
Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Split Ring

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

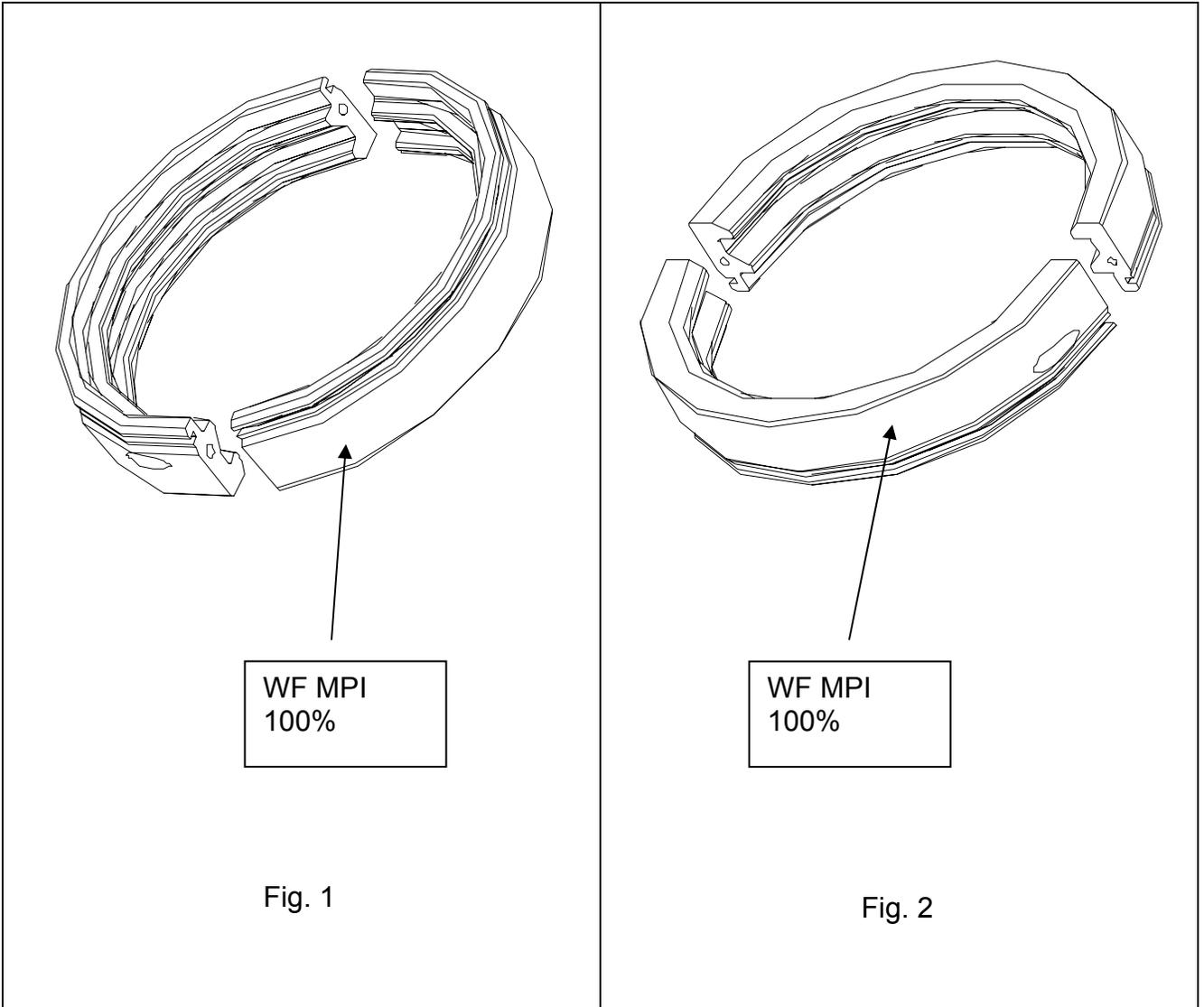
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:
Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Quill

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

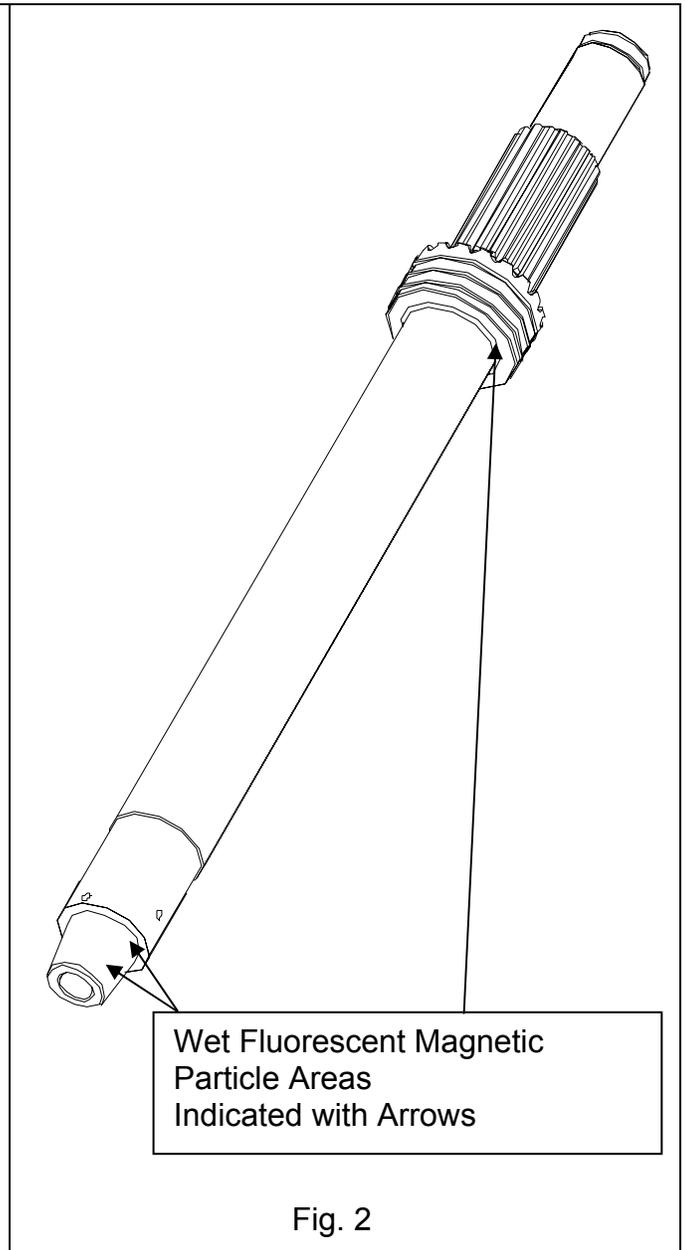
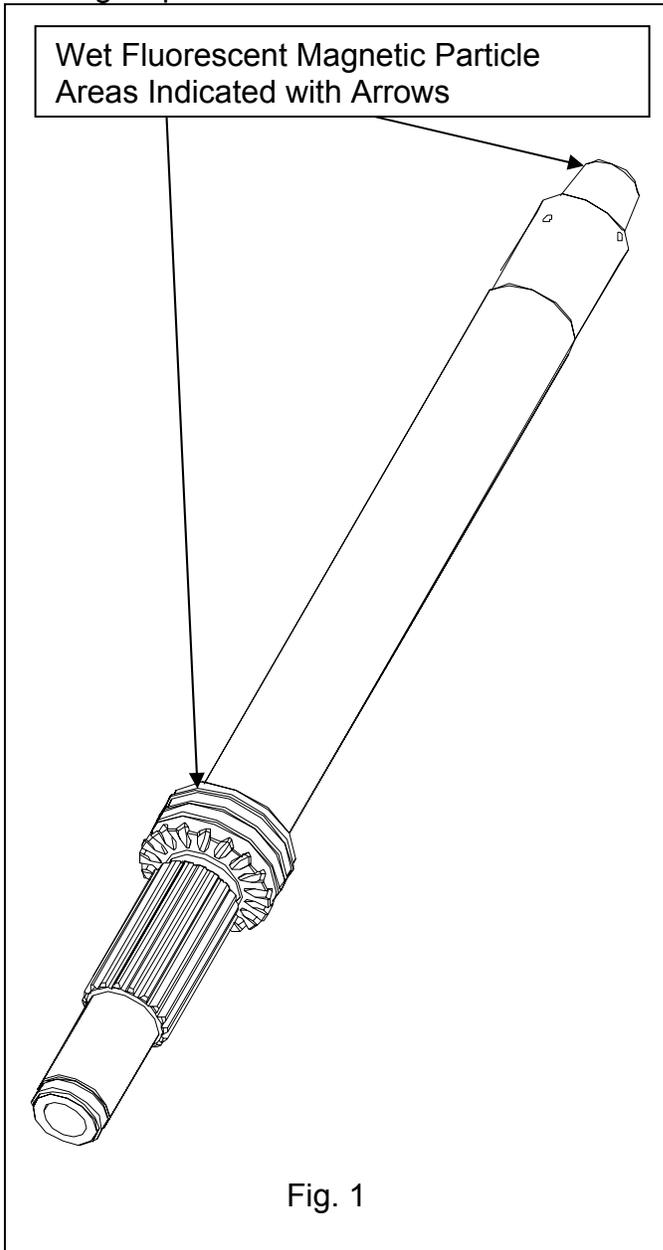
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:
Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Upper Link Support

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

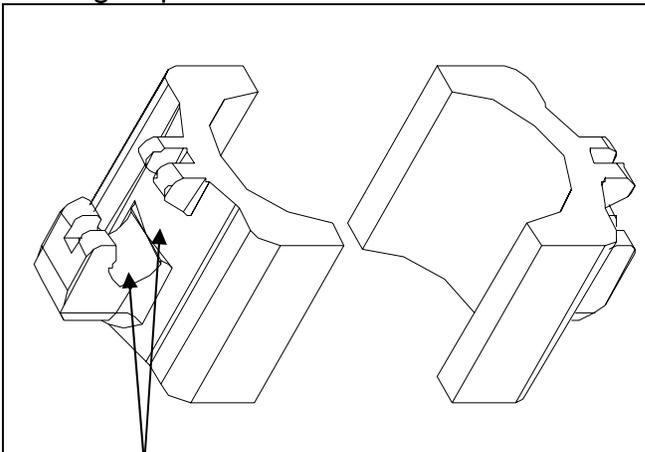
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



WF MPI 100% OF RADIUS ON BOTH EARS AND SURROUNDING AREA

Fig. 1

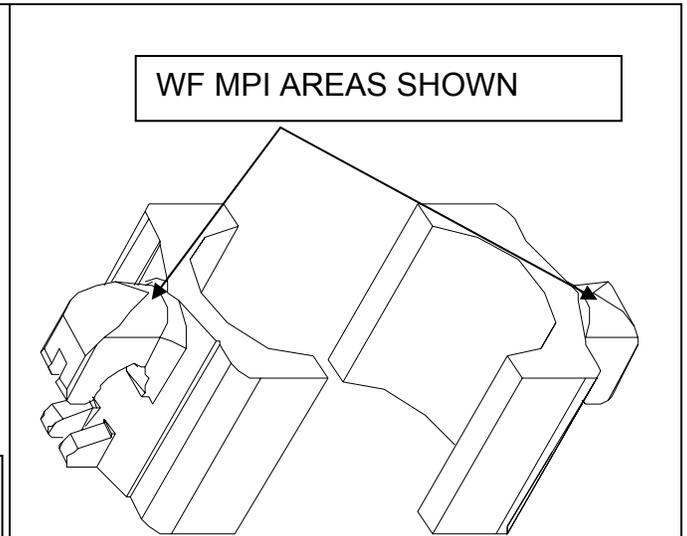
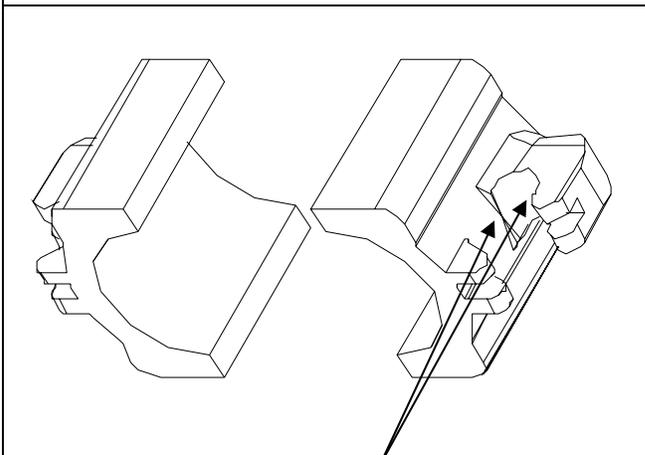


Fig. 2



WF MPI 100% OF RADIUS ON BOTH EARS AND SURROUNDING AREA

Fig. 3

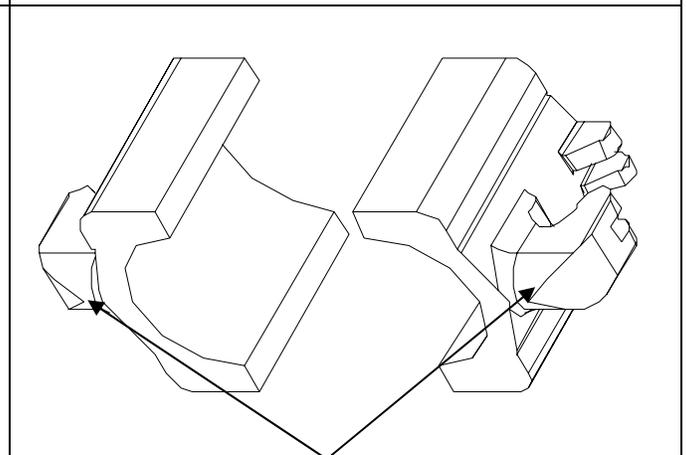


Fig. 4

Procedure:

Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C PSL 2. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Outer Sleeve

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

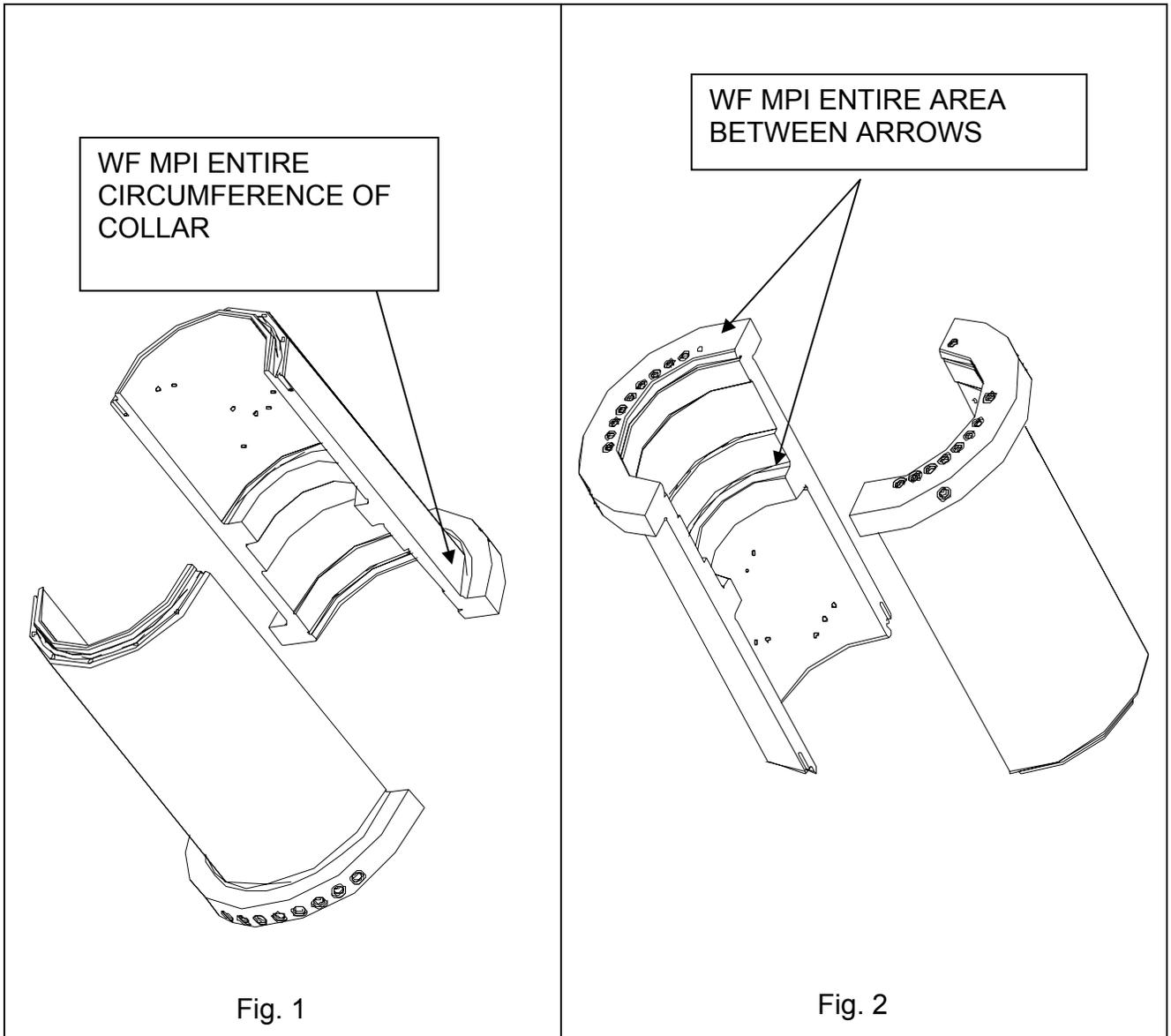
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:

Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Upper Link Pin

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

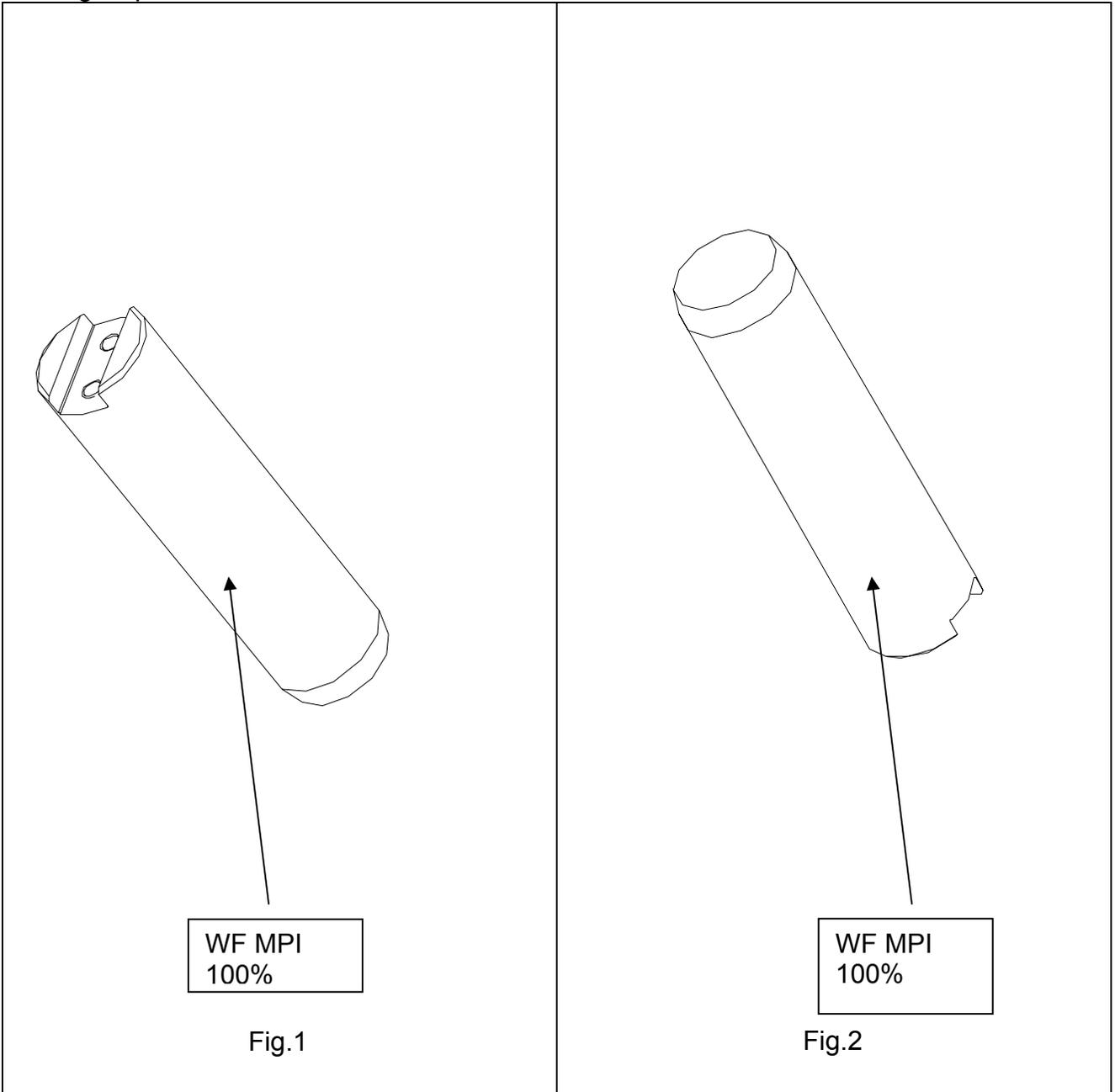
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:
Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C.

INSPECTION INDICATION MAP No:

Part Name: Upper Link

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Date:

Inspection Report #

Canrig Part #

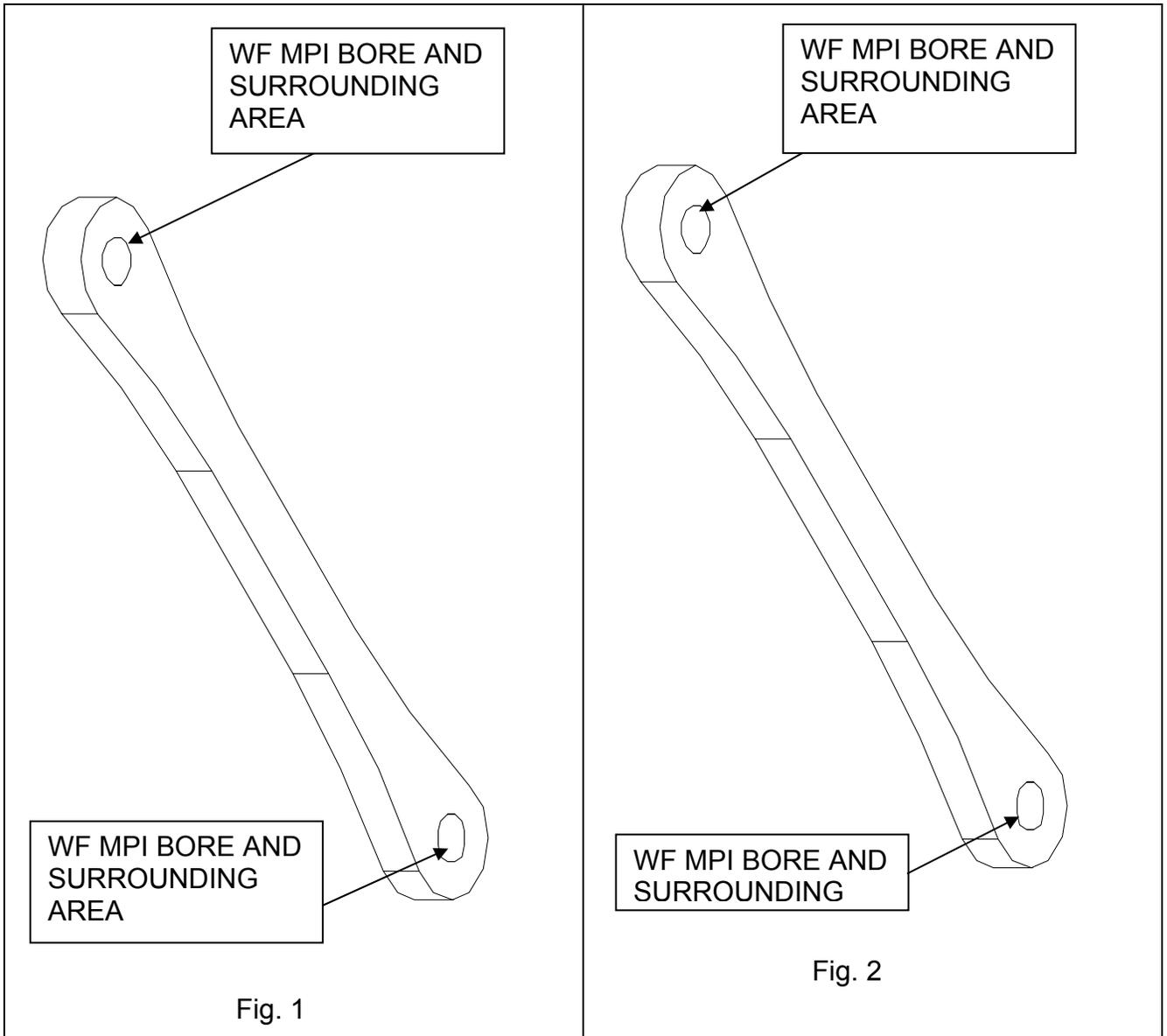
Inspector's Signature/Stamp:

Load Path/ Serial #

Type of Inspection:

Rated Load:

Canrig Representative:



Procedure:
Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP №:

Part Name: Bail

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #

Inspection Report #

Inspector's Signature/Stamp:

Type of Inspection:

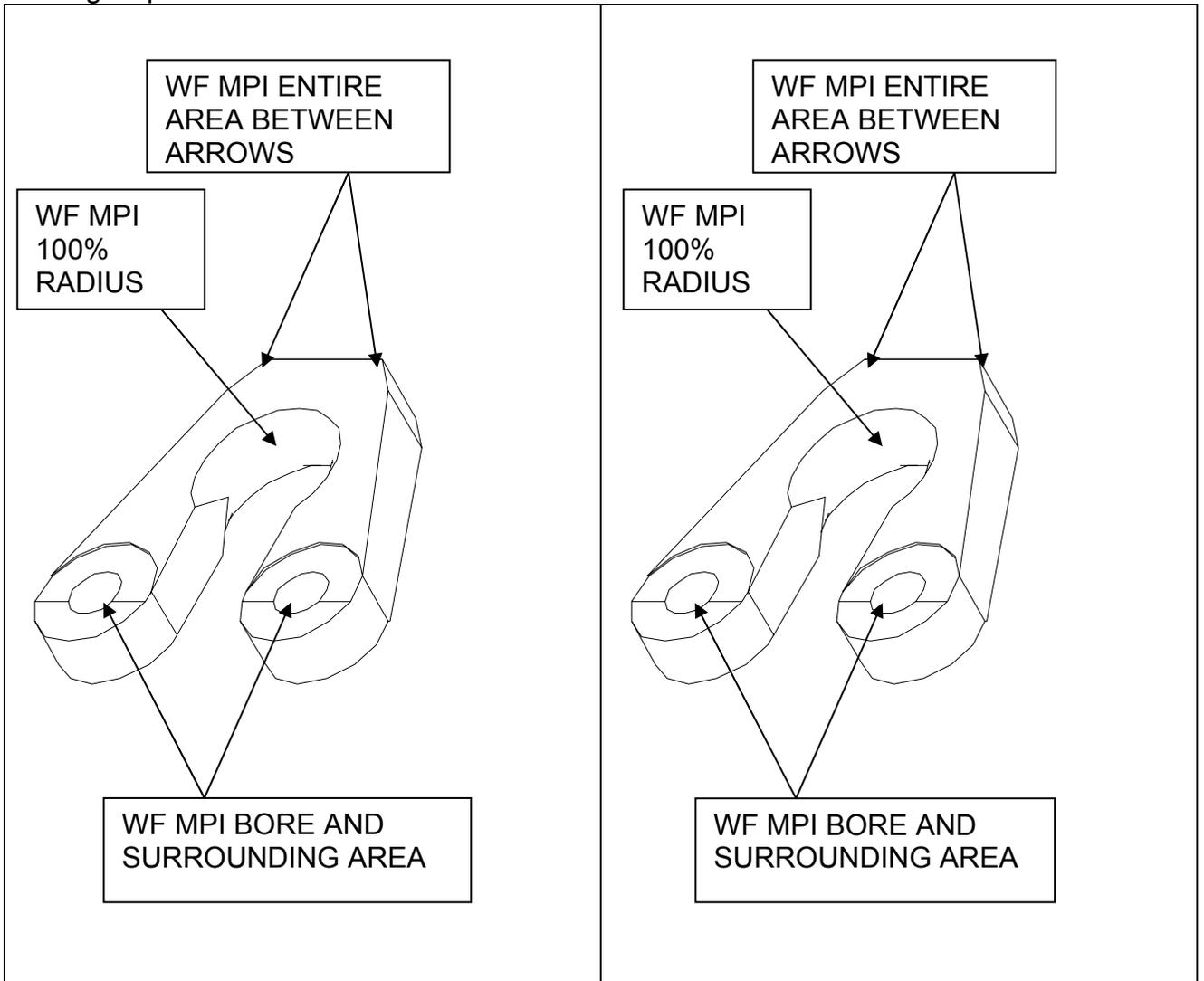
Canrig Representative:

Date:

Canrig Part #

Load Path/ Serial #

Rated Load:



Procedure:

Perform Wet Fluorescent Magnetic Particle Inspection on areas shown in accordance with ASTM E709. Acceptance criteria are as defined in API 8C. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Skid/Section 1

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

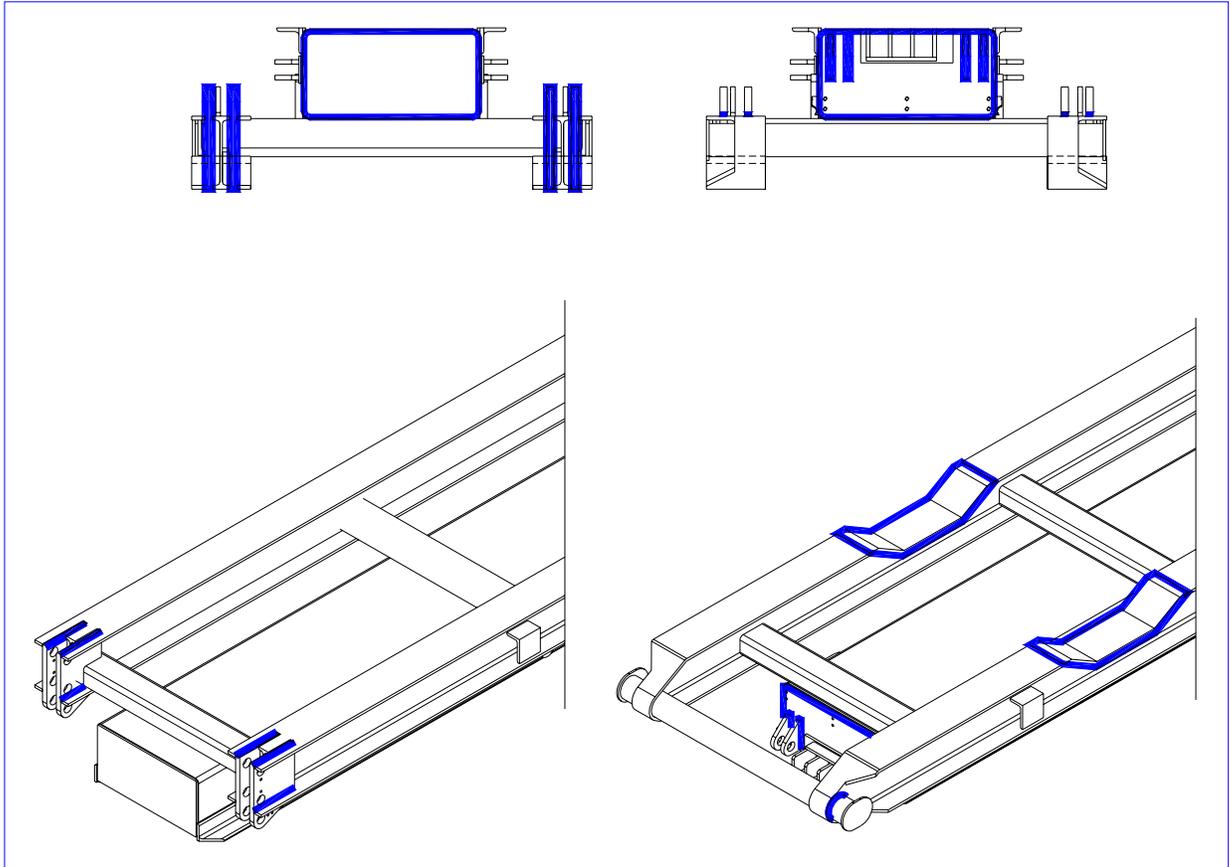
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Live Roll

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

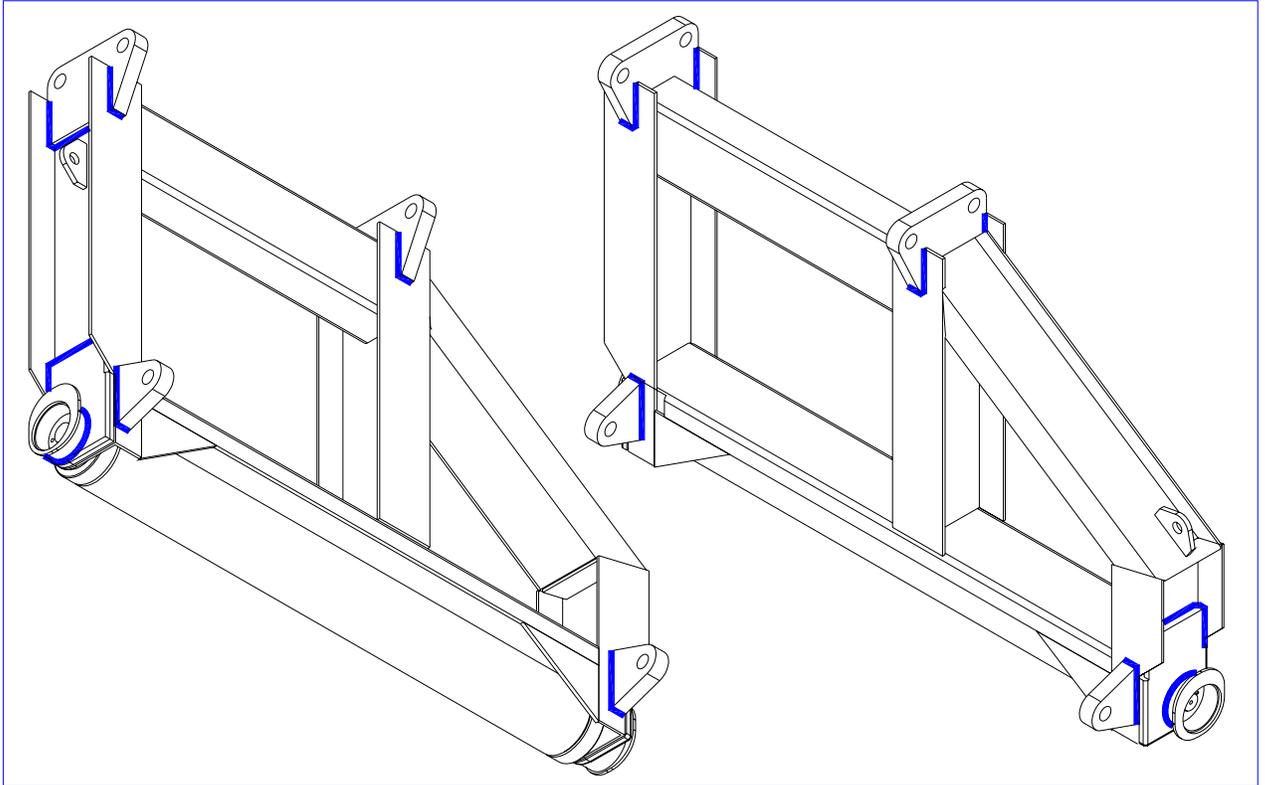
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Section 2

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

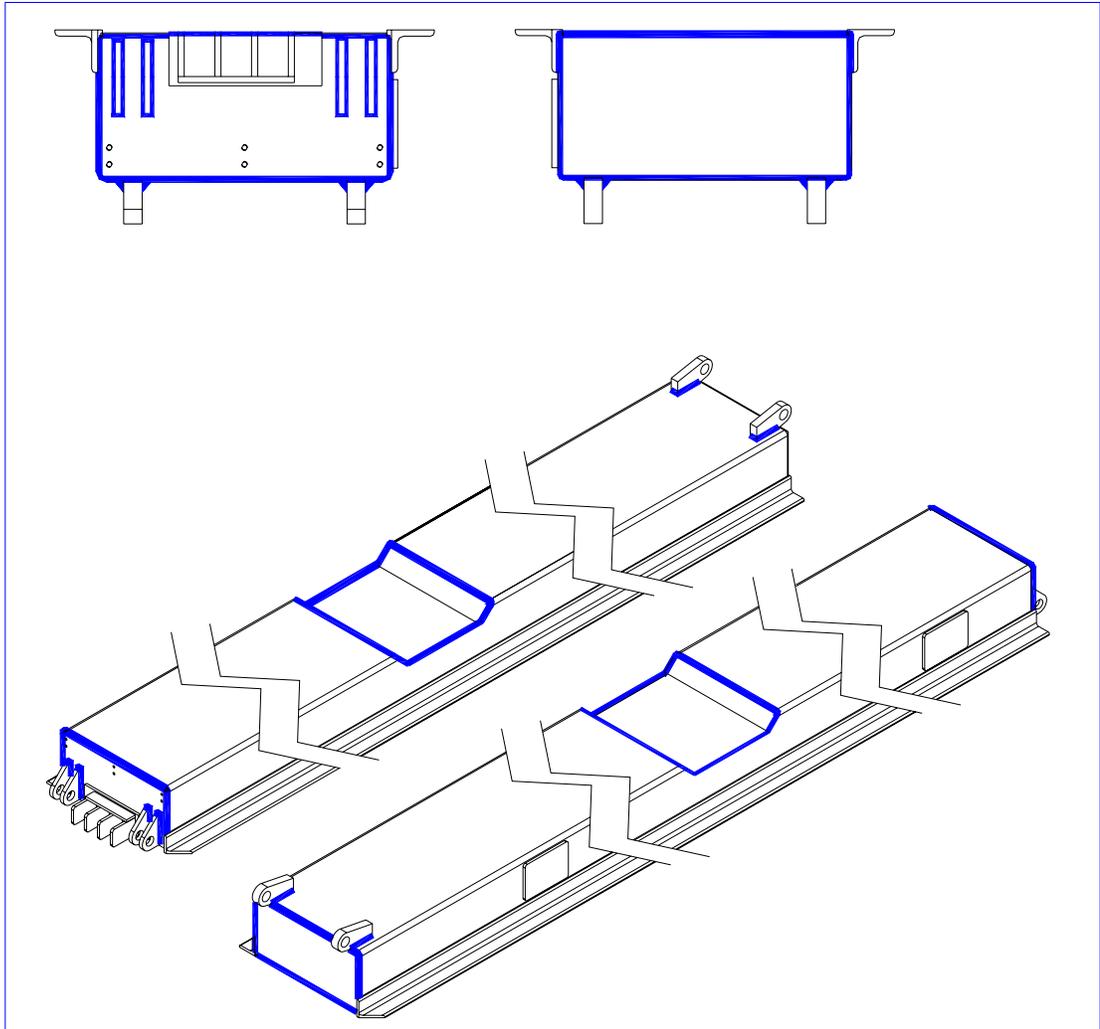
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Section 3

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

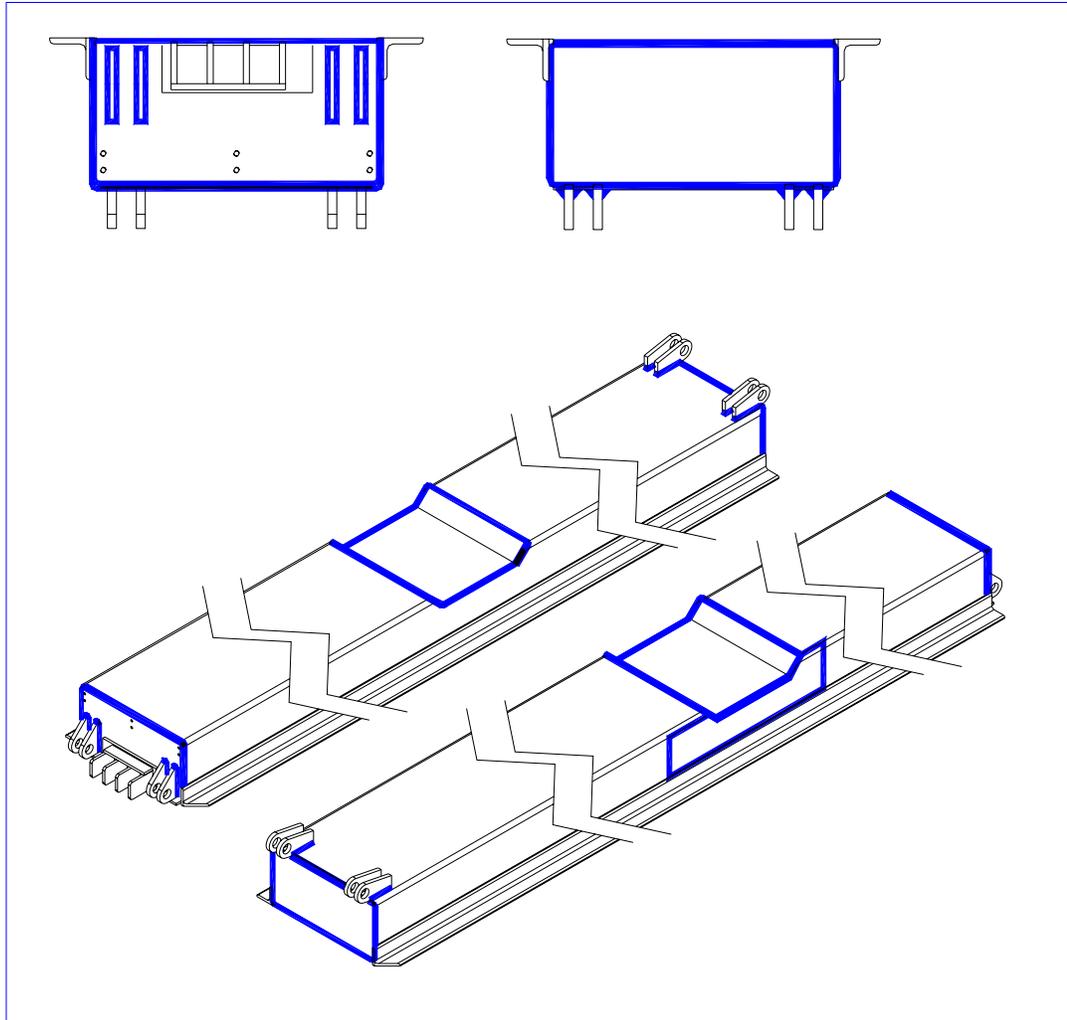
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Section 3/Service Support Frame

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

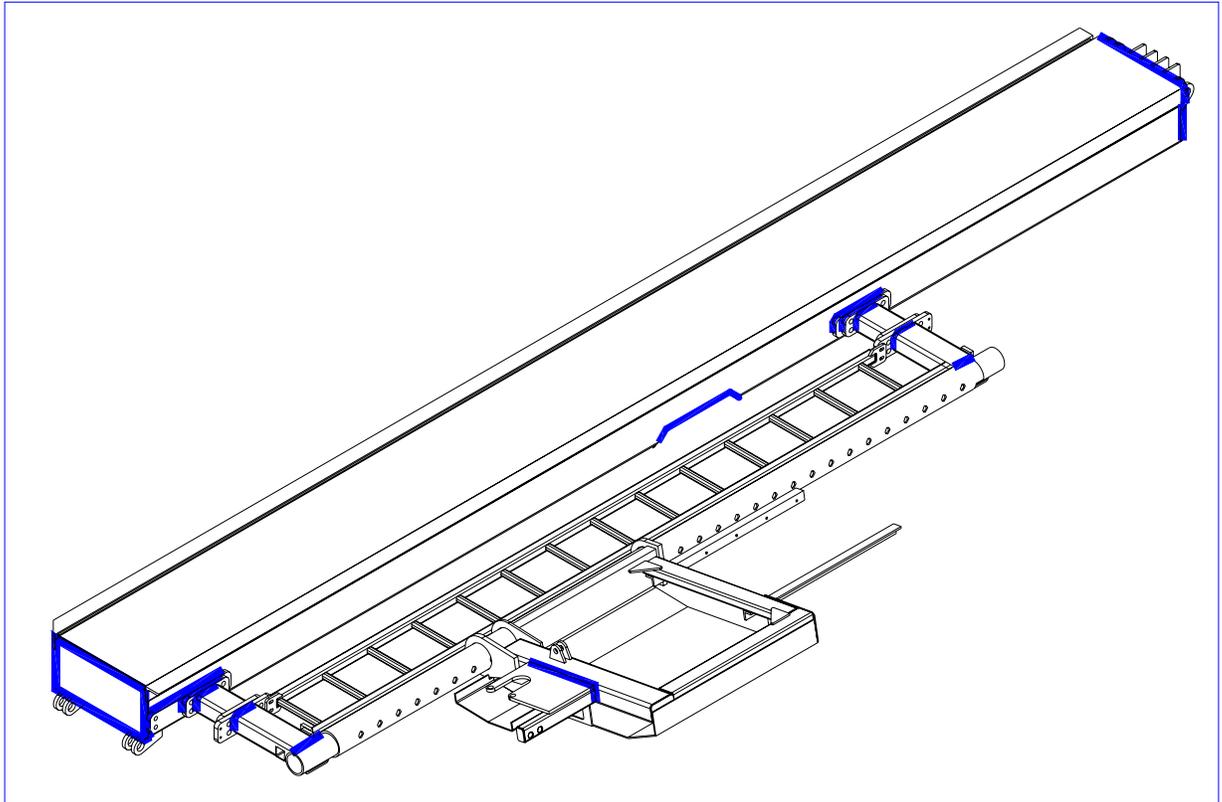
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Section 4

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

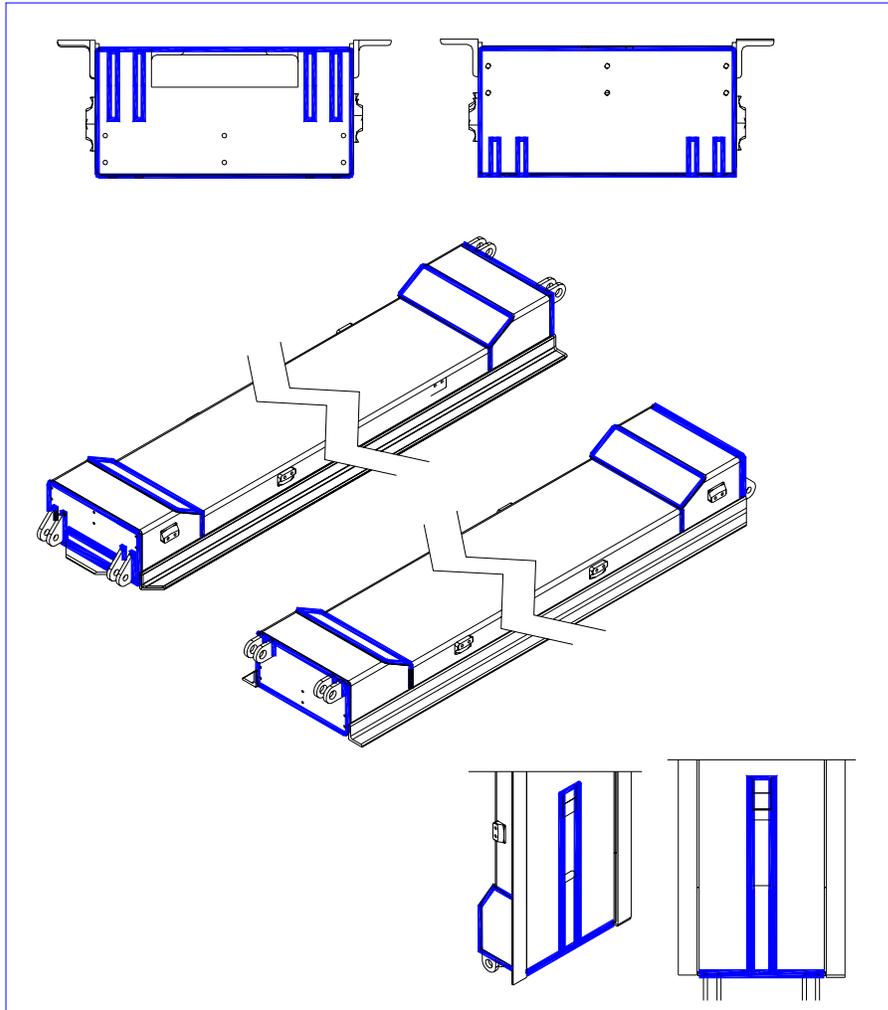
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Section 5

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

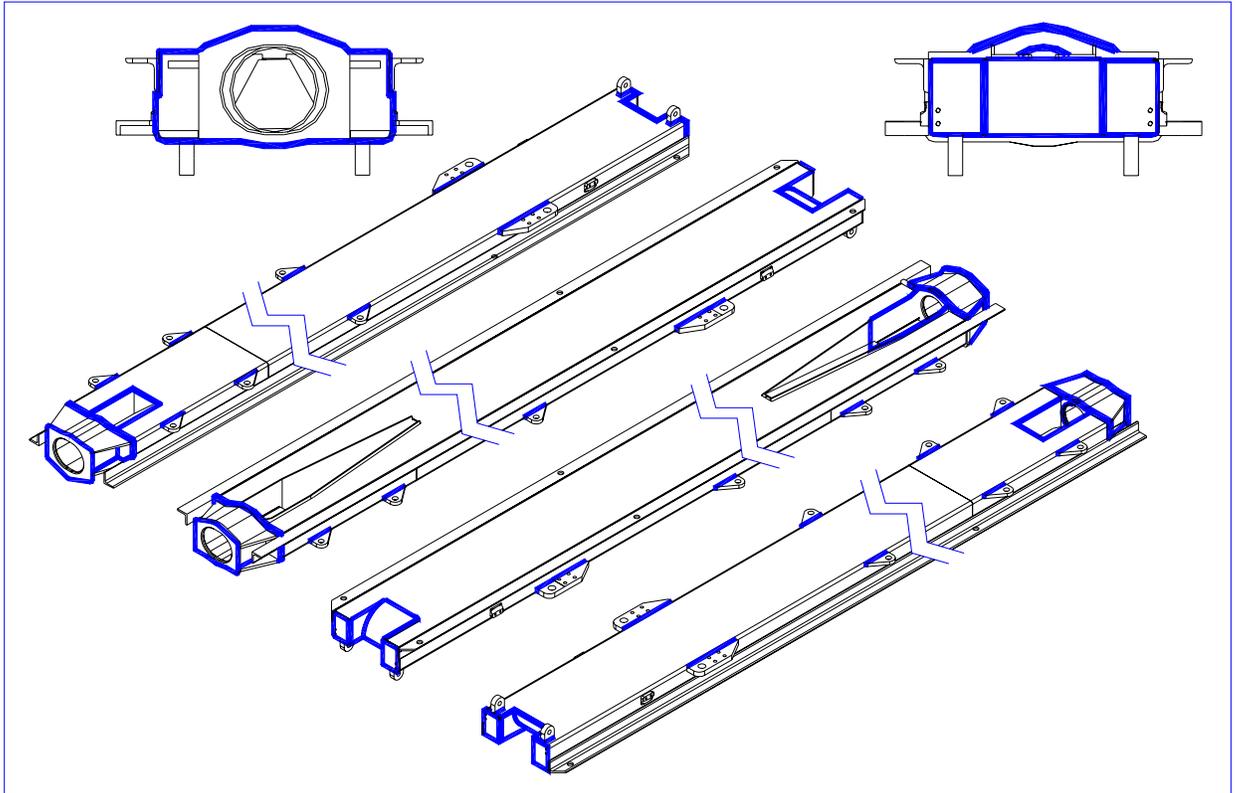
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Torque Guide Pin

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

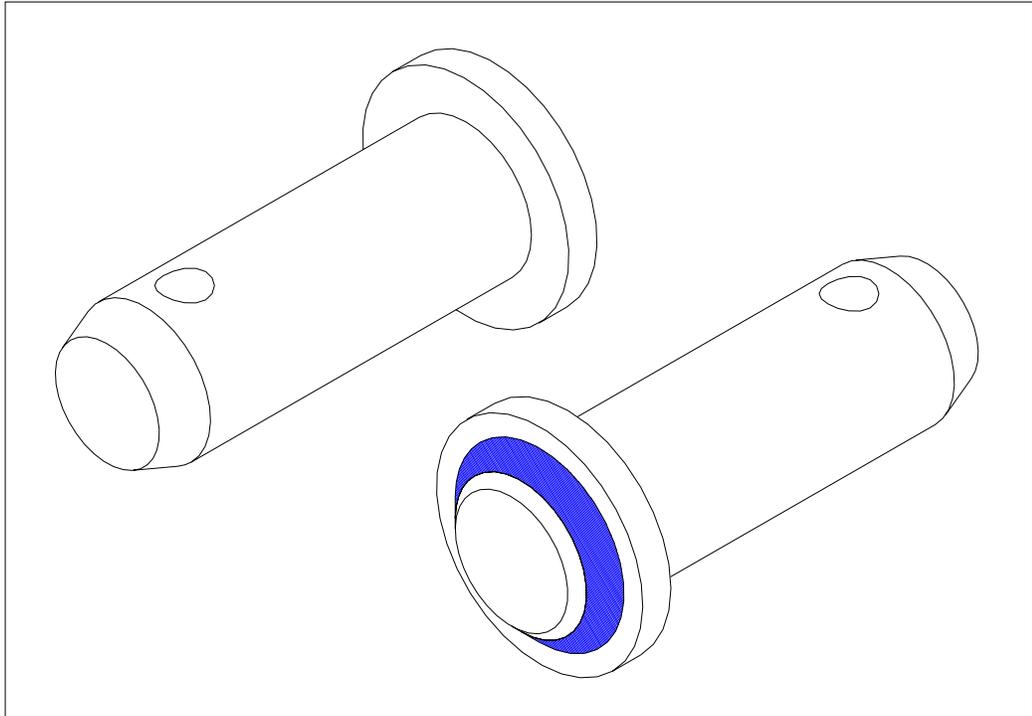
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Die Penetrant Inspection on the entire pin (including the weld) in accordance with ASTM E165. Acceptance criteria are as defined in ASTM E165.

INSPECTION INDICATION MAP No:

Part Name: Harpoon

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

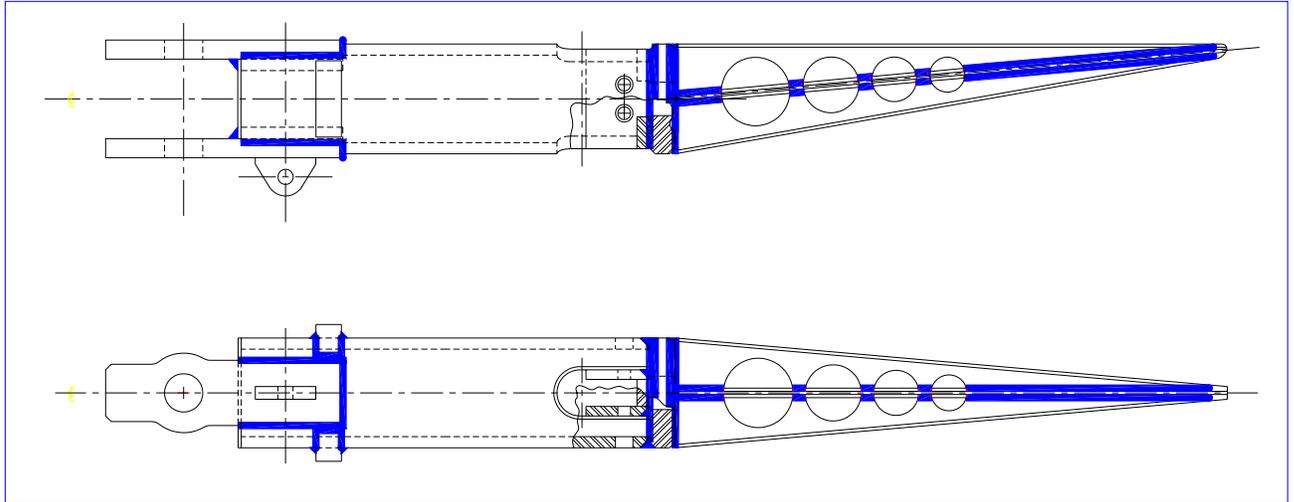
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Top Drive Frame

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

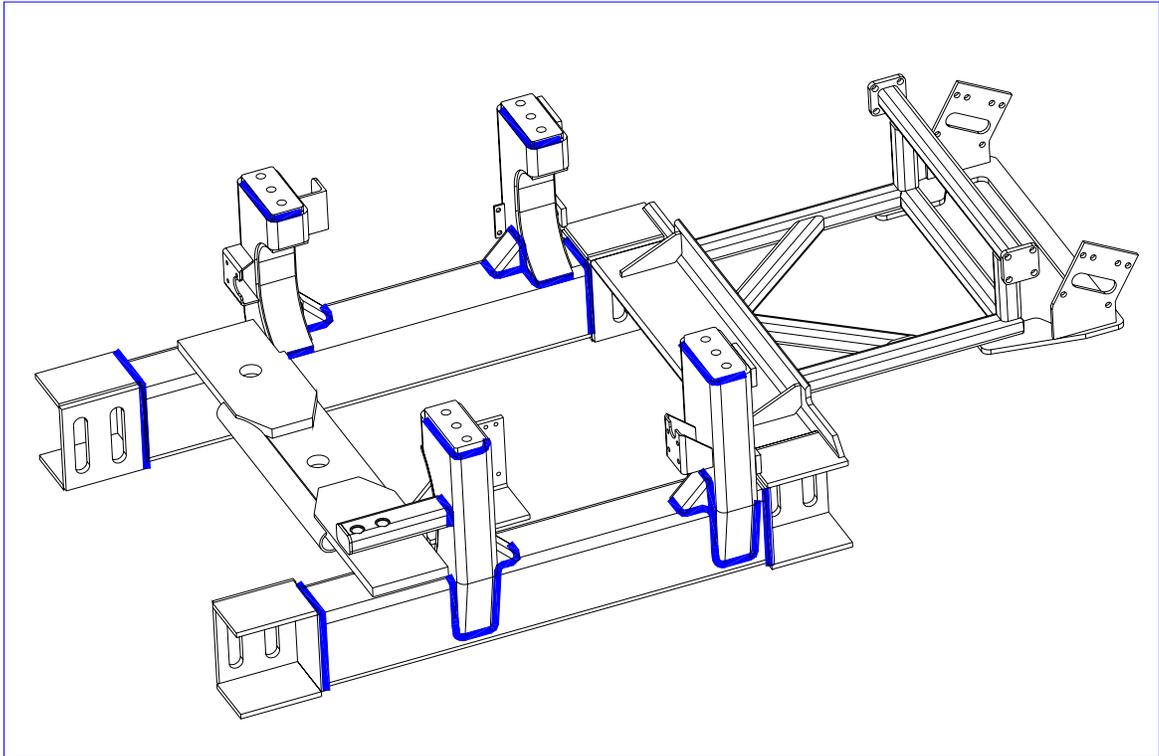
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Top Drive Guard

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

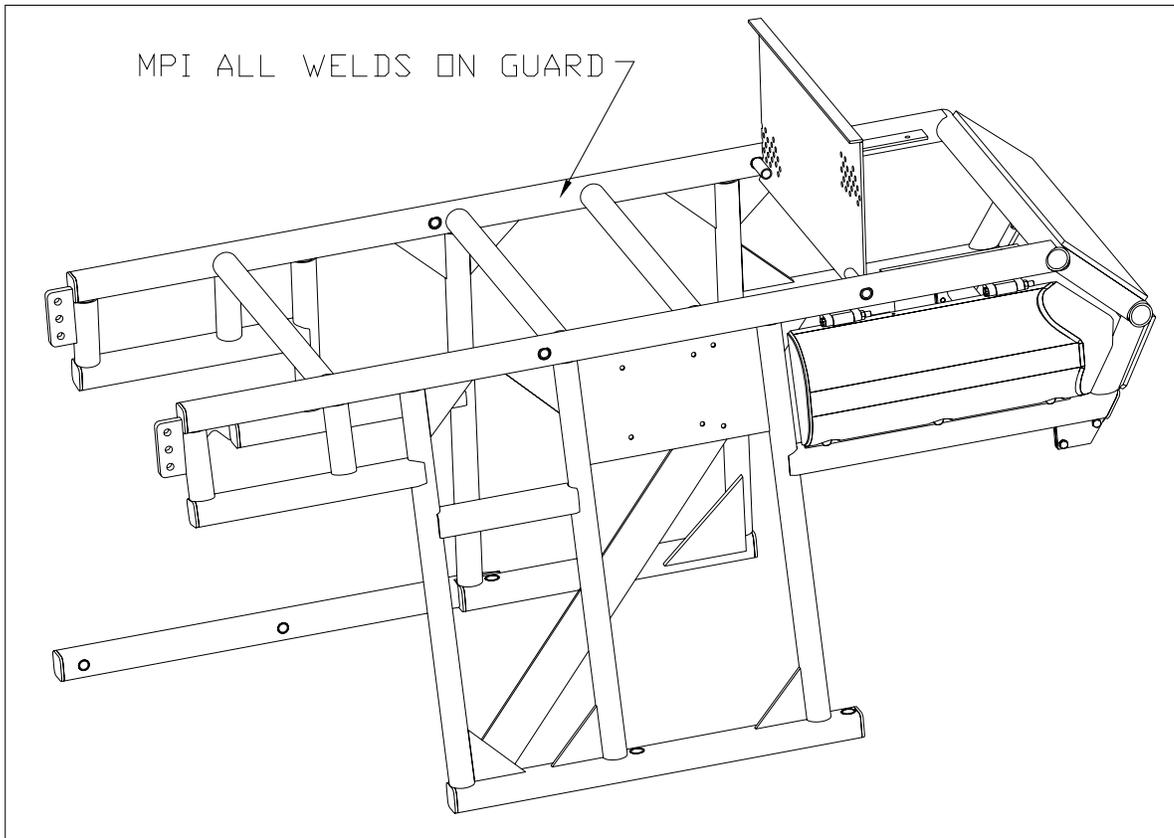
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

INSPECTION INDICATION MAP No:

Part Name: Blower Frame

The following information should be supplied on the Inspection Report as a minimum:

Purchase order #

Date:

Inspection Report #

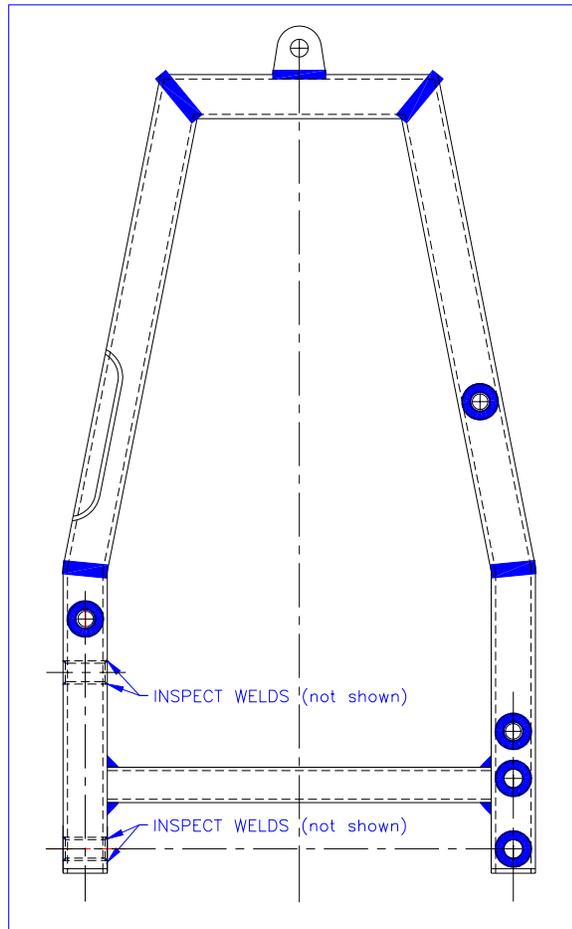
Canrig Part #

Inspector's Signature/Stamp:

Top Drive S/N:

Type of Inspection:

Canrig Representative:



Procedure:

Perform Dry Magnetic Particle Inspection on all welds shown in accordance with ASTM E709. Acceptance criteria are as defined in ASTM E709. All other areas not indicated shall be visually examined for damage and signs of fatigue.

Main Bearing End Play

Inspection Procedure

1. Remove the washpipe.
2. Place the base of the dial indicator on top of the upper seal carrier (or side of the bonnet) and the plunger on the top of the upper seal ring.
3. Load the end of the quill against the top and bottom of its free travel.
(NOTE: Quill travel = 8 inches)
4. Read the end play on the dial. (Desired end play = 0.002/0.004 inches)
5. To adjust this end play, add or remove shims between the upper bearing seat and the main housing.
6. If the gear case oil becomes contaminated, the gear case should be flushed and the oil changed. The end play should be checked before resuming drilling activities. This may reveal indications of premature bearing wear.

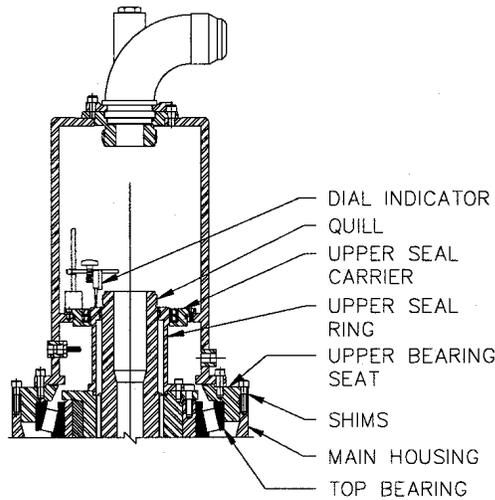


Figure 4.5

MODEL	SHIM PART #	INSPECTION FREQUENCY
6027E	966-26-1	2 – 3 months
8035E, 1035E	681-11-1	4 – 6 months
1050E, 1250AC	681-11-1	4 – 6 months
1165E, 1265AC	681-11-1	4 – 6 months
1275AC	681-11-1	4 – 6 months

Washpipe Inspection Instructions

Packing Assembly

Instructions:

1. Attach magnetic indicator base or improvised holding fixture to quill or packing box.
2. Rotate sleeve 360° and record total indicator reading (TIR) indicator positions A, B, C.

Recommended Tolerances:

- A. Maximum allowable misalignment at gooseneck support bore = 0.008' TIR
- B. Maximum allowable misalignment at gooseneck pilot = 0.010" TIR
- C. Maximum allowable washpipe misalignment after complete assembly = 0.010" TIR

Inspection may indicate misalignment exceeding recommended limits. Washpipe packing assemblies are designed to accommodate misalignments of quill to gooseneck and will operate with some excessive misalignment. However, to achieve maximum packing life, the alignment at the washpipe should be maintained within recommended limits.

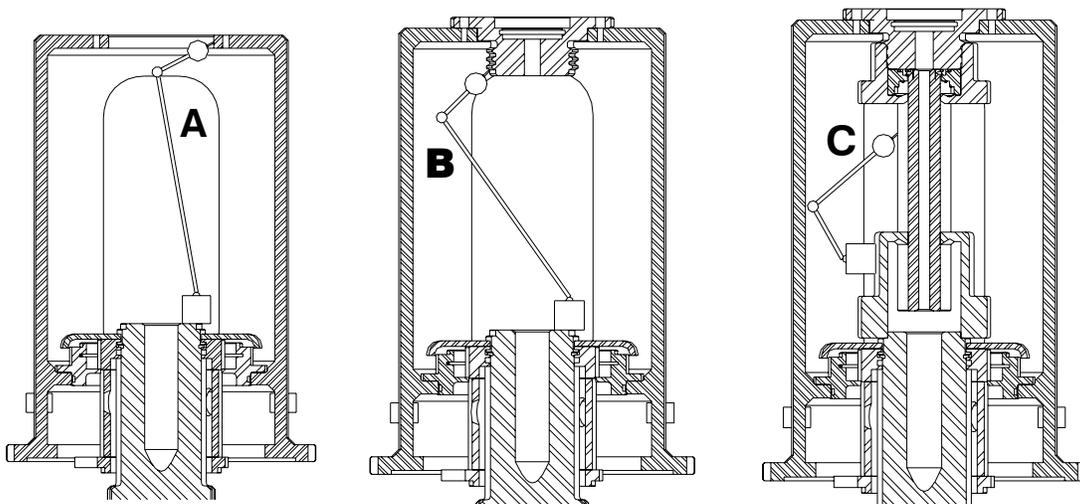


Figure 4.6

Top Drive Disc Brake Inspection

Check Brake Fluid

- Brake fluid reservoir should be visually checked on a daily basis.
- Sudden drop in oil level may indicate worn components. Be sure to only use mineral-based oil (i.e. hydraulic oil) in the brake system.

Check Brake Calipers

- Brake calipers should be checked weekly.
- A function test should be done at this time.
- There should be a minimum gap of 0.06" between the brake pads and the disc.
- In addition to premature wear, dragging brake pads can also cause excessive heat build-up in the brake compartment.
- If the brake pads are dragging, the system may require bleeding to eliminate any trapped air. See Brake Bleeding Procedure.

Manual Brake Bleeding

1. The brake actuator should be bled first, and then the brake calipers.
2. Clean area around reservoir covers (2 on GE 752 and GE B20 motors, 1 on 761 motors).
3. Remove covers.
4. Fill reservoirs to indicated FULL level. Use only mineral base oil (hydraulic oil) in the brake reservoirs. *Do not use brake fluid*. Replace reservoir cover(s) but leave loose.
5. Put the Top Drive selector switch in the AUX position and start the HPU.
6. Cycle the brakes several times by operating the Brake switch at the Top Drive Console.
7. With the brake on and the HPU running, loosen the bleed screw on the component until there is no sign of air mixed with the oil.
8. Close the bleed screw.
9. Cycle the brake off and on.
10. Repeat the process until there is no air visible in the system.
11. Top off reservoirs to indicated FULL level and replace covers tightly.

Auto Brake Bleeding

1. Clean area around reservoir covers (2 on GE 752 and GE B20 motors, 1 on 761 motors).
2. Remove covers.
3. Fill reservoirs to indicated FULL level. Use only mineral base oil (hydraulic oil) in the brake reservoirs. *Do not use brake fluid.*
4. Replace reservoir cover(s) but leave loose. If the cover is tightened the reservoir could be damaged during bleeding.
5. Open ball valve(s) (1 per reservoir) on reservoir return lines.
6. Put the Top Drive selector switch in the AUX position and start the HPU.
7. Cycle the brakes several times by operating the Brake switch at the Top Drive Console.
8. Close the ball valve(s) on the reservoir return line.
9. Top off reservoirs and replace covers tightly.

Ensure there is no air visible in the system.



DATE: 20-Mar-05

SUBJECT: Air Pressure switch N10161 – Model 6027 Top Drive Motor

SERIAL NUMBERS: 036, 049, 116, 123, 160, 166, 173, 189, 197, 257

DISCUSSION: The original design for checking if the GE-761 DC motor receives adequate air cooling included a pressure switch, sensing the relative pressure in the commutator chamber of the motor. In an attempt to simplify the spare parts of all TD models, a factory adjustment of 4.5" water column was selected and installed. It was discovered that this pressure setting is too high for the GE-761 DC motors and WEG AC motors. As a result, we created a new part number for a switch that is factory adjusted to 3" of water column. The new CANRIG part number is **N10161-3** (to replace the existing switch N10161).

RECOMMENDATION: If you are experiencing intermittent or constant "TD Low Air" alarms on a 275Ton Top Drive, please contact the CANRIG field service department. We will either re-adjust the existing switch to the new setting or provide you with a new switch of the correct setting.

When in doubt, do not hesitate to contact CANRIG and ask questions.

INFORMATION:

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



DATE: 13-July-05

SUBJECT: Improper Lugs on 6027TD AC Motor Leads

SERIAL NUMBERS: 239, 257, 265, 268, 270, 278, 279, 281, and 292

DISCUSSION: If the WEG factory lugs were replaced at CANRIG before being installed on the Top Drive, the replacement lug is oversized and not properly suited for this application.

RECOMMENDATION: Inspect the lugs on the WEG AC motor leads at the earliest convenience following the attached inspection procedure. If the motor has the incorrect lug(s), contact CANRIG for a correct replacement lug(s), p/n E11083.

INFORMATION: *For a complete list of all bulletins go to www.canrig.com*

For further information contact:

Field Operations Manager
Canrig Drilling Technology Ltd.
14703 FM 1488
Magnolia, Texas 77354
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Fax: 281.259.8158

Lug Identification Process

Step 1. There are ONLY 2 properly suited lugs for the WEG AC motor as shown in FIGURE A.

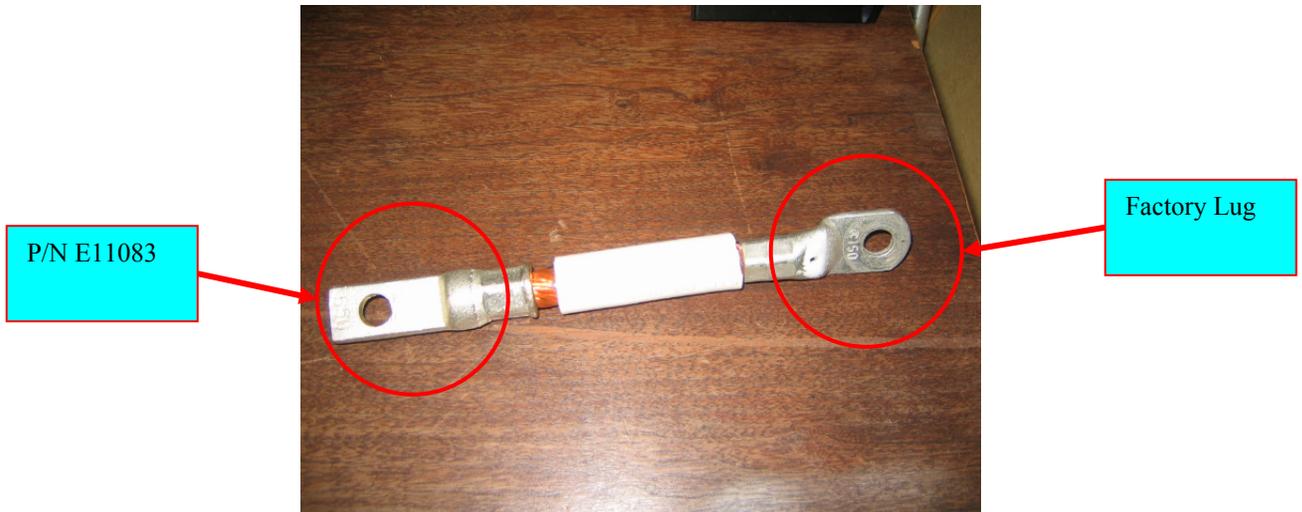


FIGURE A

Step 2. For the non-factory lug, a quick way of identifying the correct lug is to check the inscription on the back; it should have 550 stamped on the back. FIGURE B
Note: This may or may not require the de-lugging and re-lugging process.

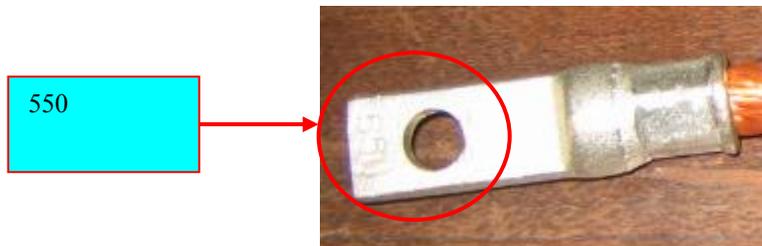


FIGURE B

	AVOID CONTACT WITH ALL LIVE VOLTAGES!
-------------------------------------------------------------------------------------	----------------------------------------------

Step 3. An easy way of identifying the incorrect lug is as follow:

1. Check the stamp on back of the lug; it should have 775 stamped on the back.
2. If the wrong lug has been installed, a gap is visible. See FIGURE C



FIGURE C.

Air Gap

DATE: 23-Aug-05

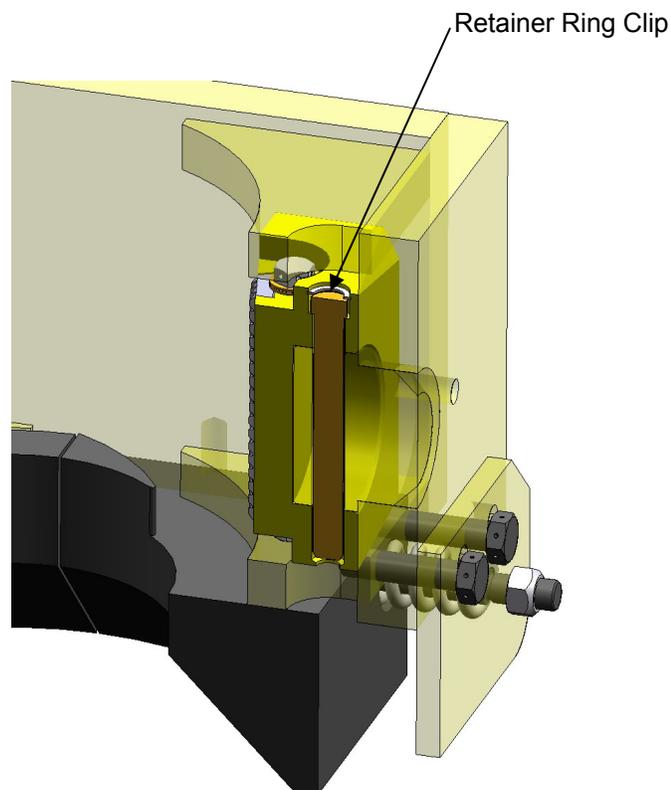
SUBJECT: Top Drive Backup Wrench Pin Retention

SERIAL NUMBERS: All

DISCUSSION: It has been reported that inserting and removing the clip ring that retains the pin holding the die block in place is a difficult task, especially when the proper tools are not available. CANRIG has created an upgrade kit that resolves this issue.

RECOMMENDATION:

- A. Inspect the Gripper Die Blocks as follows to ensure the pin is properly retained.
 - 1. Pin Retention uses a clip on the retainer to hold the pin in place. Ensure that the pin is installed the Die Block.
 - 2. Install the clip on the retainer pin.

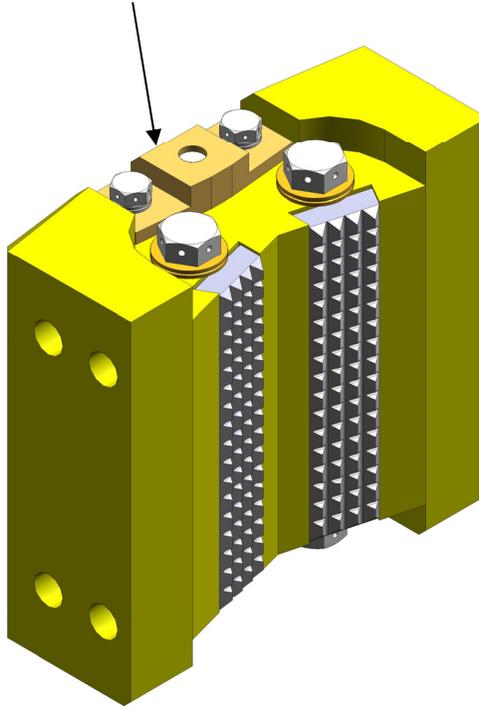


- B.** To make the retention of the Die Block more user friendly, CANRIG designed new Die Blocks and Die Block Retrofit Retainer Kits (AY12954 & AY12955). The new design Die Blocks include parts that are easier to handle and install. The new Die Blocks can be used on all BUW, but Top Drives presently in the field, will need the retrofit kit (DT14656) as well.

1. The new design for Pin Retention to be used on all new Back-up Wrench Die Blocks uses a retainer

plate to hold the pin in place.

(New Retainer Plate DT14335)



Old Die Block	Size	New Die Block
DT13716	5.75-9.00 DIA	DT14330
DT13717	3.75-7.00 DIA	DT14331
DT13718	2.50-5.75 DIA	DT14332
DT13719	3.25-6.50 DIA	DT14333
DT13734	4.50-7.00 DIA	DT14590

2. The hole on top of the Retainer Plate is to verify that the retainer pin is installed.

C. Installation of new design Die Blocks in the field is performed as follows:

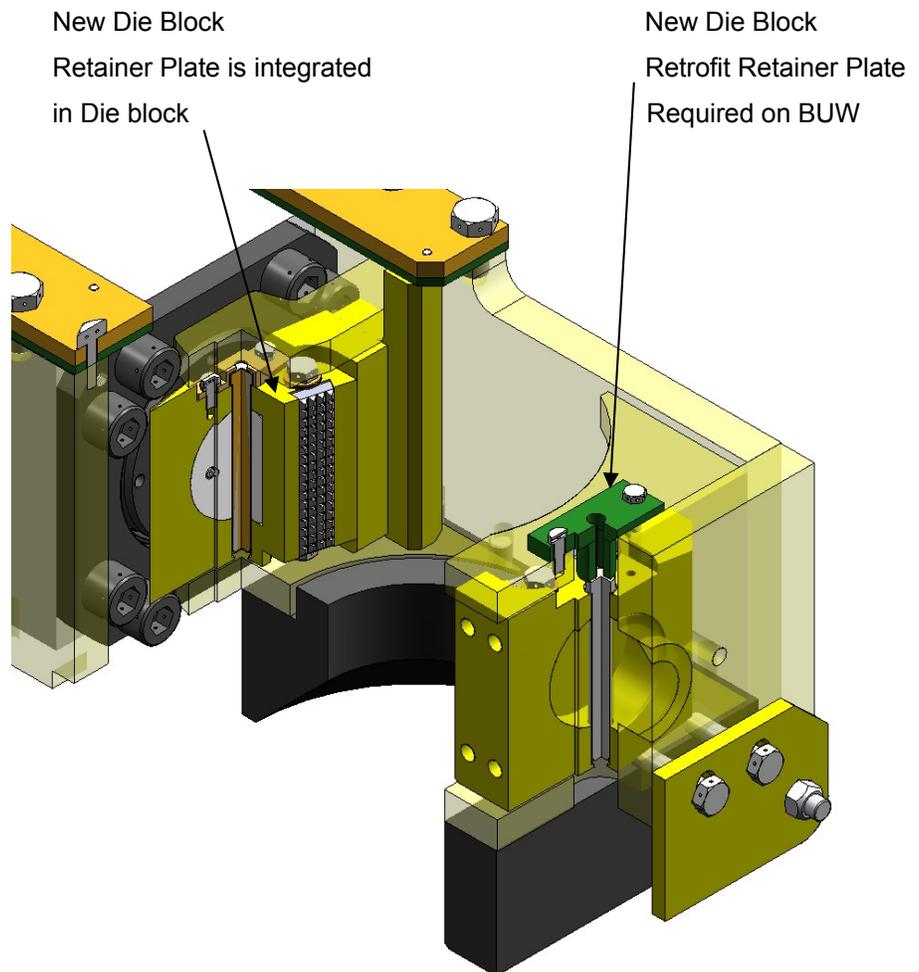
Stationary Die Block:

1. Modify the Back-up Wrench by drilling 2 tap holes on the location specified by Drawings AY12954 (see attached).
2. Insert the New Die Block Assy (AY12689).
3. Place the Die Block Retrofit Pin Retainer (P/N DT14656) on top of the Back-up Wrench aligning with the new tap holes.
4. Tighten, secure and wire the fasteners.

Moving Die Block:

1. Insert the New Die Block Assy (AY12689).
2. Install New Retainer Plate DT14335

NOTE: On the moveable side - no Retrofit Pin Retainer is required.



Proper operation of the Top Drive is the best way to prevent incidents of falling parts.

Should you have any questions or concerns, please do not hesitate to contact your CANRIG representative or the Field Operations Manager listed below.

INFORMATION:

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

Attachment:

AY12954 (PDF)



DATE: 14-Nov-06

- SUBJECT:** Handler Lock Sensor (350 ton and 500 ton units with the pin style lock)
- SERIAL NUMBERS:** 014-024, 028-029, 031, 032, 033, 037, 038, 040, 043-046, 051-054, 057-061, 063, 065, 067-070, 072-075, 077-079, 081, 082, 084-091, 093-095, 098-102, 104, 105, 107-110, 112-115, 117-120, 122, 125, 128, 129, 134, 140, 149, 150, 154, 155, 157, 158, 161, 164, 165, 167, 168, 172, 174, 176, 180, 183-185, 188, 191, 196, 198, 201, 202, 204, 207, 215-217, 219, 222-224, 227, 236, 241, 244, 245, 269, 296, 303, 305, 307, 309, 314, 319, 323, 329, 337, 339, 342, 343
- DISCUSSION:** This product bulletin addresses the potential that the Handler Lock Sensor for the above mentioned Top Drives may indicate a false positive; i.e. that the sensor indicates the lock is engaged when, in fact, it is not. Although Canrig is not aware of any occurrence of a false positive in field operations, the configuration does present such a risk. As currently configured, the Handler Lock Sensor senses the presence of a target when the handler is unlocked and the absence of a target when the handler is locked.
- RECOMMENDATION:** In order to ensure that the sensor does not create a false positive, Canrig has developed a self-checking routine that should be added to the control software, which checks proper installation of the sensor every time the lock mechanism is unlocked or locked. To protect against the risk of a false positive, your PLC software should be upgraded.

This upgrade can be done in four simple steps:

1. Contact CANRIG Field Service and request a program update. Please include the serial number of your Top Drive.
2. CANRIG Field Service department will verify the PLC program and add the appropriate self-check routine to the program.
3. For Top Drives equipped with Remote Access, the new software can be downloaded from our office. Otherwise, proceed to step 4.
4. The new software will be written to an EEPROM (a small memory chip that can be installed on the Process of the PLC, residing inside the Control Interface Panel.
5. The EEPROM with the upgraded Software will be sent to the person requesting the program upgrade.
6. The EEPROM can be installed by a local electrician or by a CANRIG Service Technician (please coordinate installation with the appropriate CANRIG Field Service coordinator).

Top Drives with S/N 033, 040, 054, 063, 068, 078, 079, 086, 090, 094, 095, 099, 101, 110, 113, 117, 119, 120, 128 and all S/N after have an **Advanced Diagnostic System (ADS)**. CANRIG has created a program upgrade, which will provide a simple explanation (e.g. "**Handler Sensor Fault: Check handler lock sensor and mounting**") on the ADS screen, should the handler lock sensor fail. This upgrade can be done in these four simple steps:

1. Contact CANRIG Field Service and request this optional program update. Please include the serial number of your Top Drive.
2. CANRIG Field Service department will verify the PLC program and add the appropriate self-check error message to the ADS program. The new software will be written to a PCMCA card (a small plug in card that can be installed on the ADS screen, after opening the enclosure).
3. The PCMCA card with the upgraded Software will be sent to the person requesting the program upgrade.
4. The PCMCA can be installed by a local electrician or by a CANRIG Service

Technician (please coordinate installation with the appropriate CANRIG Field Service coordinator).

Remember that proper inspection, maintenance, service and operation is imperative to the peak performance of any equipment, including Top Drives. When in doubt, do not hesitate to contact CANRIG and ask questions.

INFORMATION:

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



Safety Alert

DATE: 21-Jun-07

SUBJECT: PC3000 and PC4000 Series Power Catwalks

SERIAL NUMBERS:

DISCUSSION: Canrig's Customers and Canrig Service personnel have identified a potential problem with the Skate system that could result in loss of control of the Skate during operation. The Skate could uncontrollably extend causing tubulars to be pushed onto the drill floor.

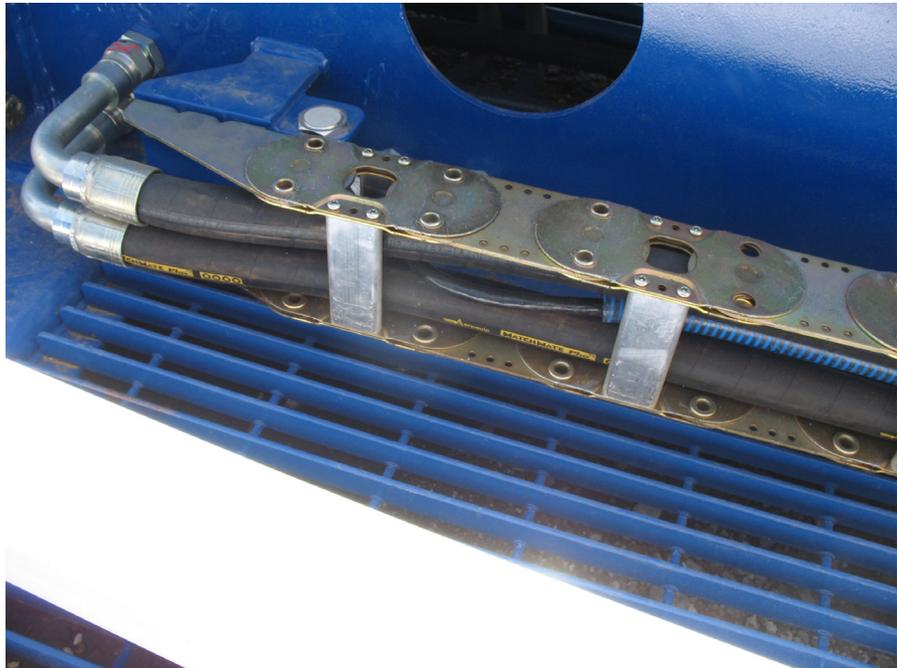
RECOMMENDATION: The problem occurs if the service loop cable within the drag chain rubs on the chain links and wears through to the wiring inside. If the Skate control signal wiring happens to short circuit to ground, the Skate valve can act erratically causing loss of control of the Skate function.

Canrig engineering is working on a solution that will electronically disable the Skate valve in the event of any short circuit of either the control signal wiring or the valve reference voltage wiring.

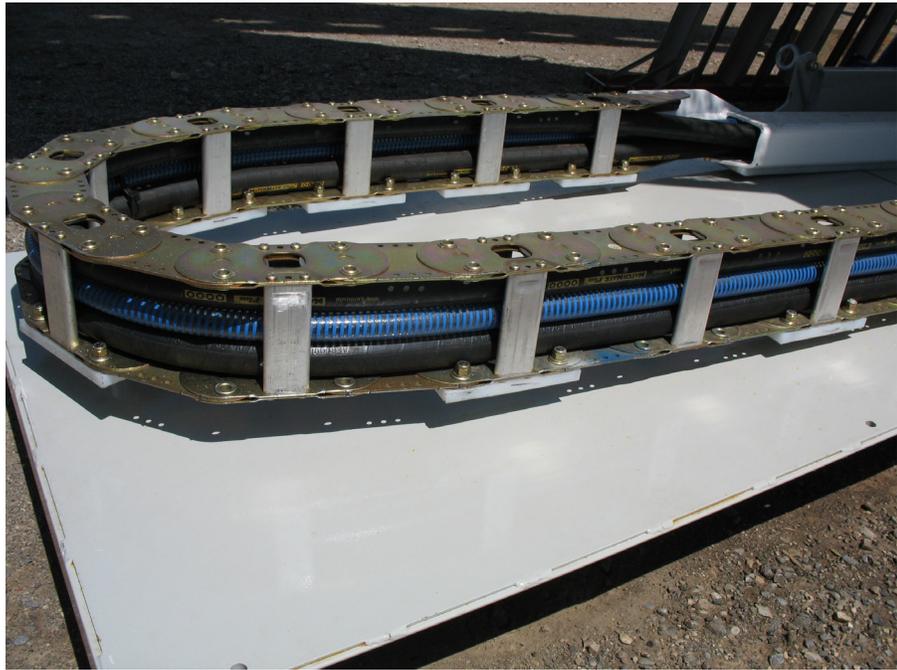
The service loop wiring should be inspected immediately for any signs of wearing or bared wires throughout the length of the service loop cable from the catwalk base bulkhead, through the drag chain, spear, lift arm and into the carrier junction box. If there is any indication of wearing or tearing of the cable sheath or bared exposed wires anywhere in the service loop cable, call Canrig service immediately to have a service technician repair or replace the cable. **Do not operate the Power Catwalk until this cable is repaired.**

(See the attached pictures)

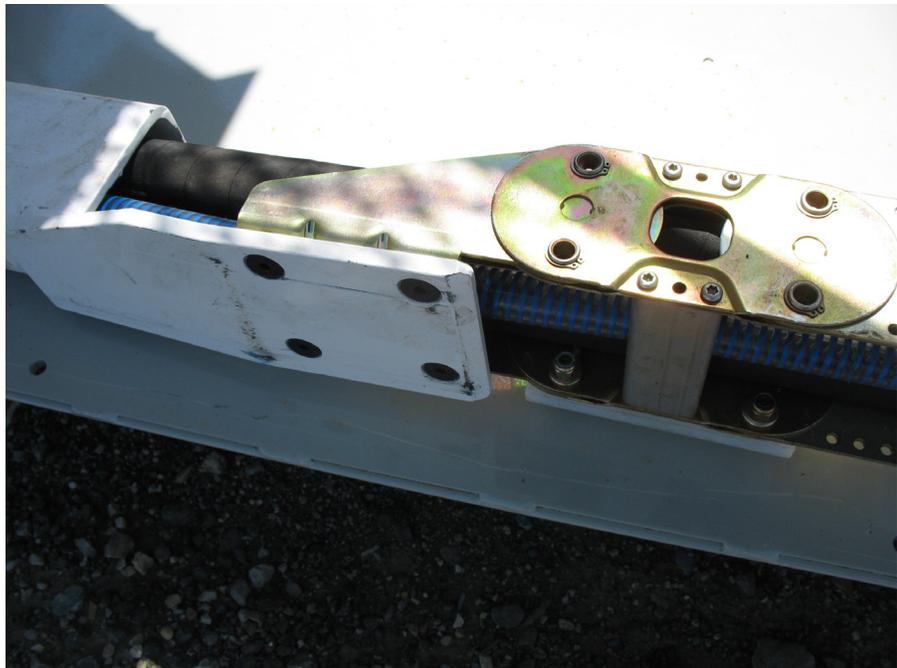
Check cable where it comes thru bulkhead and into drag chain.



Check the cable at each aluminum bar for signs of wear or bared wires. This is most likely where the cable is to wear.

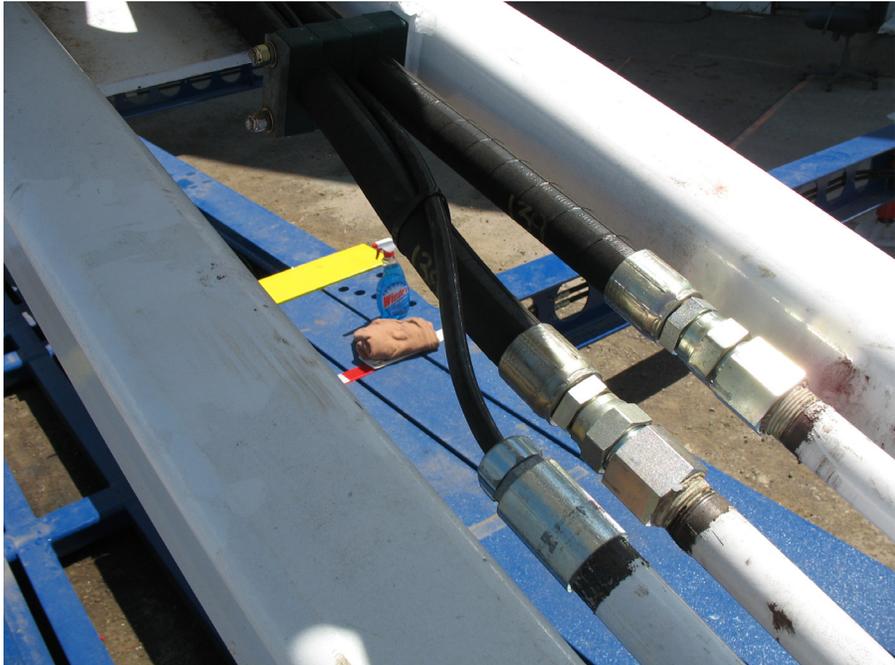


Check cable where it enters and exits the spear and enters the lift arm.





Check cable where it exits the Lift Arm right thru to the junction box in the Carrier.





CAUTION!

If, while in operation, the Skate moves erratically or moves when not expected, use the **Emergency Shutdown Button** or **Motor Stop buttons** on the wireless radio remote controller or Tank Control box to shutdown catwalk operation. Remove any tubulars or tools from the carrier first before restarting to move the carrier down to the lowered home position. **Do not use the power catwalk until Canrig service has inspected the service loop cable and repaired any problems.**

INFORMATION:

For further information contact:

Field Service Manager
Canrig Drilling Technology Ltd.
14703 FM 1488
Magnolia, Texas 77354
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Canrig Drilling Technology Ltd.
7475 51 St Street SE
Calgary, AB Canada T2C 4L6
Phone: 403-237-6400
Fax: 403-269-3090

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

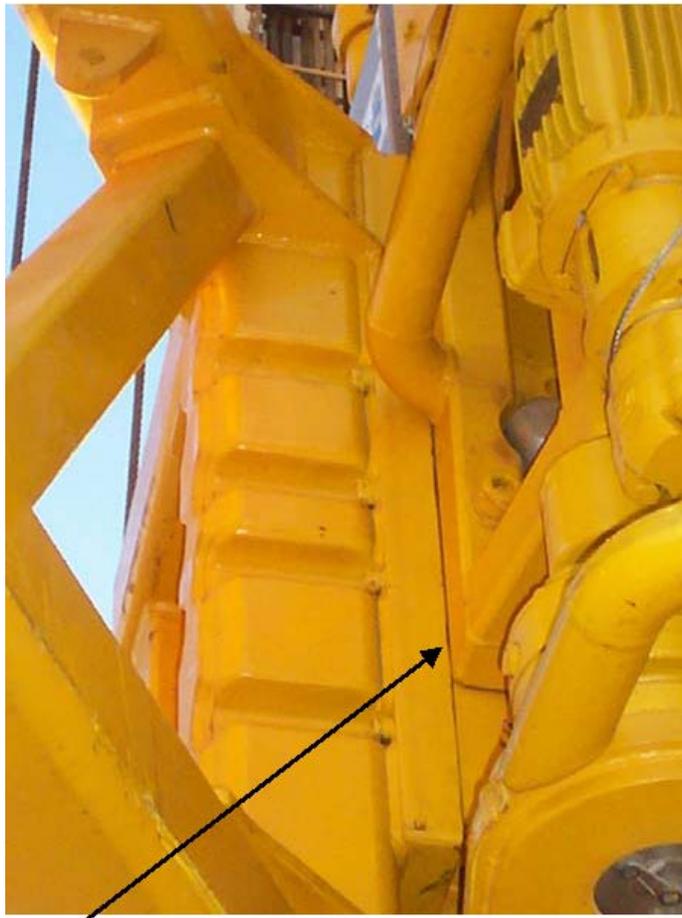


Gap between Frame
Base Legs and Guide
Runner Frame

Gap between the
Frame Base and the
Guide Runner Frame

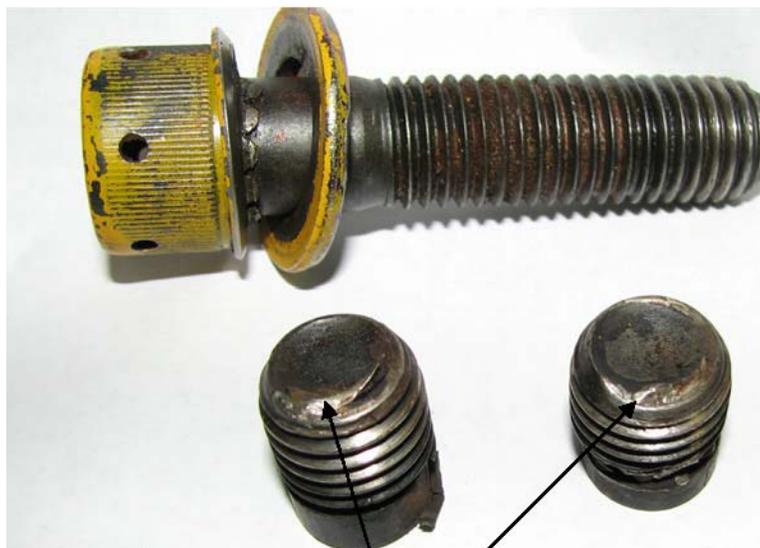


ADD 1/4" SPACER
BETWEEN BOLT
HEAD & TOP
DRIVE FRAME



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*

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

Field Service
Canrig Drilling Technology Ltd.

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7475 51 Street SE
Calgary, AB T2C 4L6
Phone: 403.237.6400
Fax: 403.536.4605

PRODUCT: TOP DRIVE 6027AC-939

DATE: 10/31/2007

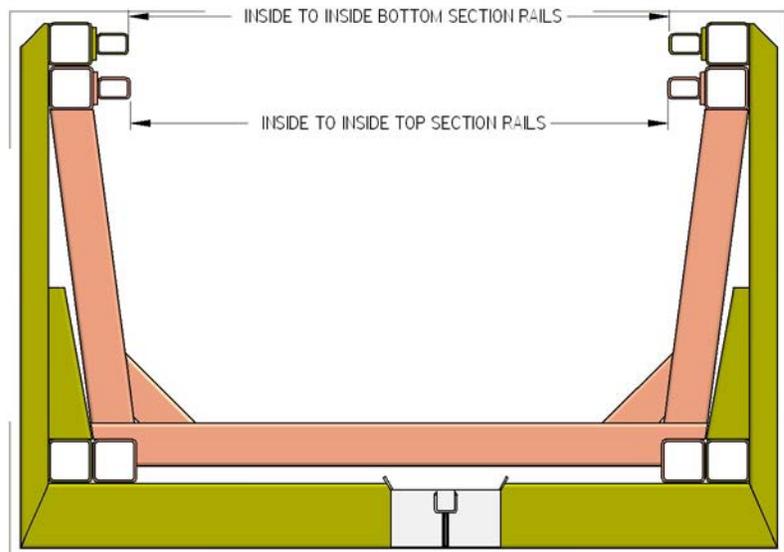
SUBJECT: Proper shimming of guide runners on the NDUSA "M" style rigs with 275 Ton Top Drives

SERIAL NUMBERS: 359, 370, 394, 397, 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, 532, 533, 553

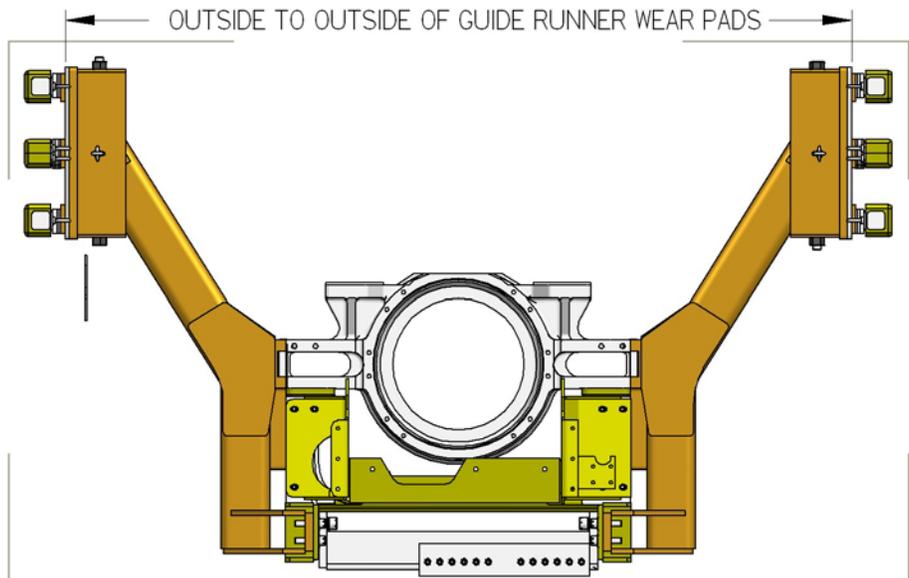
DISCUSSION: There have been a few instances where the top drive has had a sloppy fit in the mast due to variations in the guide rails in the mast. Up to this point there has been no way to shim the top drive side to side in the mast to take up this slop and is allowing the top drive to crab in the mast and causing premature wear on the wear pads.

RECOMMENDATION: For our portable torque guides the recommended gap between the guide and the runner has been between 1/8" and 3/16". To achieve this we have created a shim kit to take up the slop between the guide runner frames and the rails in the mast. The following is a procedure to check how much shim is required and where it needs to be replaced to achieve the proper fit in the rig. NOTE: All item numbers below refer to Assembly Drawing AY13279.

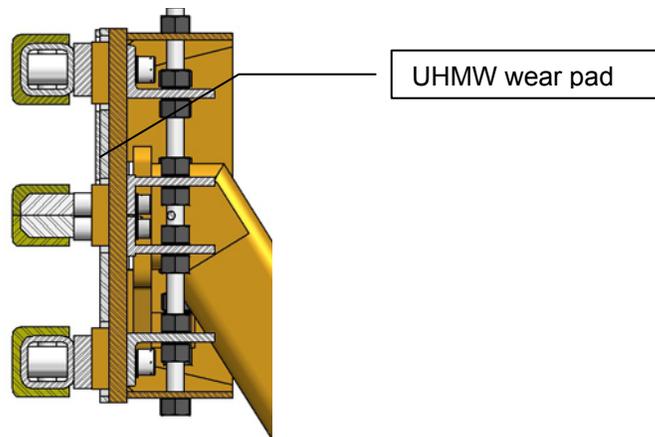
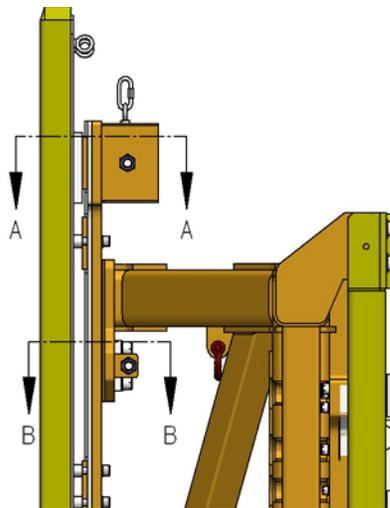
1. Measure the width of the mast inside to inside of the guide rails in at least 3 locations (bottom, middle, and top) on each of the lower and upper sections of mast. Determine the narrowest point in each of the upper and lower sections of the mast.



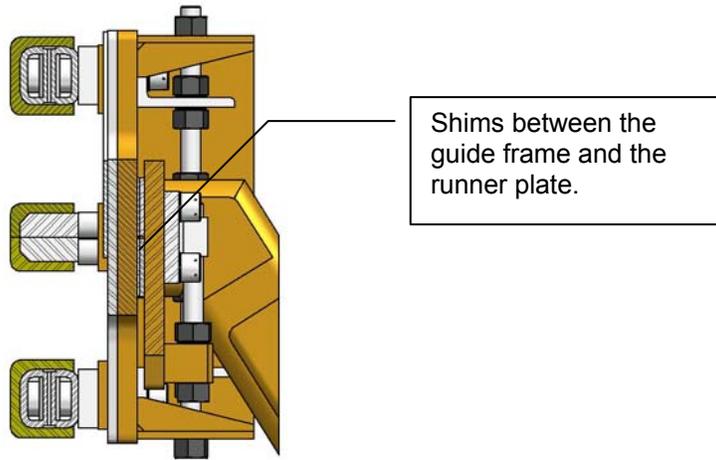
2. Measure the outside to outside distance of the wear pads on the top drive. For proper adjustment side to side of the top drive in the mast, there should be a total of 1/8" to 3/16" gap between the wear pads on the top drive and the narrowest point in the mast.



3. In order to shim the top drive properly you will need to shim it in two places. The first is between the guide frame and the runner plate and the second is on top of the existing UHMW wear pads. This second shim will only be for the wider section in the mast. (Usually the bottom section of mast.)



SECTION A-A



SECTION B-B

4. The first place to check what you need is at the narrowest point of the mast. Subtract the outside to outside distance of the wear pads on the top drive from the narrowest inside to inside measurement on the guide rails. Subtract 1/8" from this number and this is how much shim will need to be added between items 11, 12 and item 03. The shims come in 1/2, 1/4 and 1/8 widths. (See attached drawing AY13279)

Formula: Total thickness of shims = Narrowest Inside to inside of guide rails – outside to outside of wear pad on TD – 1/8"

Example: Total thickness of shims = 97 15/16" – 97" – 1/8" = 13/16"

5. Since this only adjusts the top drive for the narrowest point in the mast, we have come up with a wear pad that will only guide over either the upper or lower section of the mast. By adding this pad we can adjust the other section of mast to the narrowest point on it as well. These wear pads will only come in 1/4" and 1/2" increments. Therefore the gap between the wear pad and the mast may be as much as 7/16".
6. To establish the thickness of the additional wear pad required, take the narrowest measurement on the widest section of mast (probably the lower section) and subtract the outside to outside of wear pad measurement from the top drive after adding the calculated shims in step 4. Subtract an additional 1/8" for clearance to the rails. This is the total amount of shim you will need to add to the wear plates. Round down the total amount of wear pads required to the next closest 1/4". Determine if the stump is lined up with the quill side to side in the mast and add more shims to one side to help compensate for any misalignment.

Formula: Total thickness of wear pads = Narrowest Inside to inside of guide rails on the widest section of mast – outside to outside of wear pad on TD - shims calculated in step 4

Example: Total thickness of wear pads = 98 7/16" – 97" – 13/16" = 5/8"

Therefore use a total of 1/2" more wear pads or 1/4" on each side.

7. Now that you know how much wear pads to add, it will be easiest to lower the runner plate with the runners to the rig floor to make the change. To do this, with the top drive hanging from the blocks as close to the floor as possible, secure the top drive so it won't want to

rotate or tilt once the runner assembly is removed from one side.

8. Connect a tugger to the top of the runner plate (item 03) and loosen the 8 bolts (item 23) holding it in place. Remove any shims and then remove the bolts. Lower the runner plate to the floor. You will need to remove the front runner in order to get the runner plate off the guide rail. If there are shims under the runner remove them first so they do not fall to the floor when you remove the bolts.
9. Once the runner plate is at the rig floor, remove the two middle runners to give you access to the flat head cap screws (item 36). Remove the exposed screws which will allow you to add the UHMW shim you calculated above in step 6. You will need to lengthen the flat head screws by the thickness of the added wear pads. (Longer bolts are provided in the shim kit. AY14485)
10. At this time, add 1" of shim under each runner. For the 2 outside runners, the shims are item 41 and are a "C" shape. For the 2 inside runners, the shims are item 42 and are round. If the distance between the tightest to widest inside to inside of the mast rails in one section is more than 2 ¼" then add additional shims under the runners accordingly. Longer bolts to attach the runners are part of the shim kit. If more than 1" of shim is added, then you will need to get longer bolts.
11. Lift the runner plate back into place with the tugger and attach the front runner with the 1" (or more if required) shims.
12. Now with the runner plate back in place with the bolts (item 23) loosely installed in the top set of holes in each bolt pattern, install the shims between the runner plate (item 03) and the guide frame (items 11 & 12). See calculation in step 4. Use half the shim on each side.
13. The shims are in the shape of a C and can be slid over the top bolt and then the bottom bolt can be replaced, capturing the shim in place. If the amount of shim to be added is more than ¼" on one side, then the length of the bolts should be increased by the same amount as the width of the shims being installed. Longer bolts are included in the shim kit. After all the shim for one side has been installed retighten all 8 bolts.
14. This shim needs to be added equally to the top and bottom adjusters. If the stump is not centered side to side between the rails, the shims can be transferred from one side to the other side to account for this misalignment. Move same amount top and bottom.
15. Also included are Nordlock washers to replace existing lock washers throughout the guide runner assy. For bolts with Nordlock washers torque the ¾" bolts to 418 Ft-lb and the 1" bolts to 1018 Ft-lb. (Torque values shown have already been increased by 20%.)

A new kit AY14485 was created to include all required shims, bolts and Nordlock washers. See Attached.

Contact Canrig Field Service to schedule inspection and replacement.
For a complete list of all bulletins go to www.canrig.com

INFORMATION:

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



Engineering Bill of Material

Part: AY13279
Description: GUIDE FRAME ASSY, 275 T, BE550

Eng ID: 2
Drawing ID: AY13279

Rev No: B

Item	Qty	Units	Part ID	Eng ID	Description
01	4.00	EA	DT15040	VSA	GUIDE RUNNER, SPLIT, 102 LG
02	4.00	EA	694-22-0	0	RUNNER, GUIDE, 102 LG
03	2.00	EA	DT14967		PLATE, MTG, RUNNER, BIG EASY 550
04	2.00	EA	DT15043		PAD, WEAR, UHMW, GUIDE FRAME
05	8.00	EA	DT10824		BRACKET, ADJUSTMENT, GUIDE RUNNER
06	8.00	EA	668-13-0		BRACKET, TOP DRIVE GUIDE ADJUSTMENT
07	4.00	EA	DT12929		ADJUSTER, GUIDE FRAME
08	4.00	EA	DT13248		LEADSCREW, ADJUSTER, GUIDE RAIL
10	4.00	EA	DT15175		CAPSCR, FRAME ADJ, 1-8UNC x 22.25
11	1.00	EA	DT14968-DS		FRAME, GUIDE, BIG EASY 550, DS, FAB
12	1.00	EA	DT14968-ODS		FRAME, GUIDE, BIG EASY 550, ODS, FAB
13	16.00	EA	SH-1000NC-0525-W		CAPSCR, HEX SOC HD, 1-8UNC x 5.25, GR8
14	68.00	PAIR	LW-1000-NL		LOCKWASHER, 1 NORD-LOCK
16	6.00	EA	LN-1000NC-GR8		LOCKNUT, 1-8UNC, GR8, STOVER
17	10.00	EA	M19-4012-010		EYEBOLT, SHLD TYPE, 1/2-13UNC x 1 1/2
18	2.00	EA	LN-0500NC-GR8		LOCKNUT, 1/2-13UNC, GR8, STOVER
19	32.00	EA	SH-0750NC-0500-W		CAPSCR, HEX SOC HD, 3/4-10UNC x 5.00, W
20	48.00	PAIR	LW-0750-NL		LOCKWASHER, 3/4 NORD-LOCK
22	36.00	EA	HN-1000NC-GR8		HEX NUT, 1-8UNC, GR8
23	16.00	EA	SH-1000NC-0275		CAPSCR, HEX SOC HD, 1-8UNC x 2.75
24	16.00	EA	SH-0750NC-0300		CAPSCR, HEX SOC HD, 3/4-10UNC x 3.00
25	8.00	EA	SH-0625NC-0300		CAPSCR, HEX SOC HD, 5/8-11UNC x 3.00
26	8.00	PAIR	LW-0625-NL		LOCKWASHER, 5/8 NORD-LOCK
29	16.00	EA	SH-1000NC-0300-W		CAPSCR, HEX SOC HD, 1-8UNC x 3.00
30	1.00	EA	DT15157	0	MOUNT, DRAG CHAIN, TD END, BE550
31	50.00	FT	M21-2000-010		WIRE ROPE, 1/16" DIA
32	44.00	EA	M19-3006-010		OVAL SLEEVE 1/16" DIA ALUMINUM
33	18.00	FT	M21-2001-010		WIRE ROPE, 3/16
34	8.00	EA	M19-3007-010		WIRE ROPE CRIMP
35	2.00	EA	M19-5002-010		QUICK LINK, 8 MM (5/16 IN)
36	4.00	EA	FS-0500NC-0100		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.00
37	4.00	EA	M19-2005-010		SHACKLE, ANCHOR BOLT TYPE, 1/2, GALV
38	2.00	EA	DT14745	0	MOD, LOAD BINDER
39	2.00	EA	HH-1000NC-0350-GR8		CAPSCR, HEX HD, 1-8UNC x 3.50, GR8
40	12.00	EA	AY13667	0	EYE BOLT ASSY, DRAG CHAIN MOUNT
41	8.00	EA	DT11689-1000		SHIM, 1000, RUNNER/FRAME
42	32.00	EA	DT16747		SHIM, 1 IN, SPLIT GUIDE RUNNER



Engineering Bill of Material

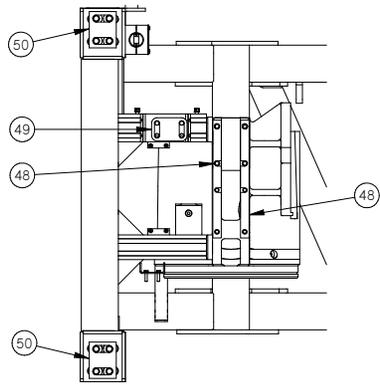
Part: AY13279
Description: GUIDE FRAME ASSY, 275 T, BE550

Eng ID: 2
Drawing ID: AY13279

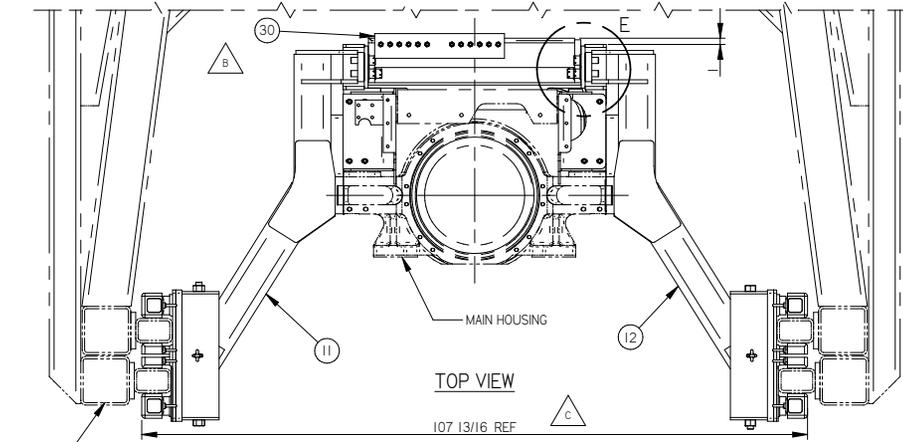
Rev No: B

Item	Qty	Units	Part ID	Eng ID	Description
43A	16.00	EA	DT16690-125		RUNNER SHIM, 1/8 THK, TOP DRIVE
43B	8.00	EA	DT16690-250		RUNNER SHIM, 1/4 THK, TOP DRIVE
43C	8.00	EA	DT16690-500		RUNNER SHIM, 1/2 THK, TOP DRIVE GUIDE
44	4.00	EA	DT16686		PAD, WEAR, UHMW, 1/4 THK, GUIDE FRAME
45	4.00	EA	DT16688		PAD, WEAR, UHMW, 1/2 THK, GUIDE FRAME
46	12.00	EA	FS-0500NC-0125		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.25
47	12.00	EA	FS-0500NC-0150		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.50
48A	4.00	EA	DT16732-015		SHIM, 0.015, CONN PLT TO MAIN HSG
48B	4.00	EA	DT16732-030		SHIM, 0.030, CONN PLT TO MAIN HSG
48C	4.00	EA	DT16732-060		SHIM, 0.060, CONN PLT TO MAIN HSG
49A	2.00	EA	DT16733-015		SHIM, 0.015, CONN PLT TO TD FRAME
49B	2.00	EA	DT16733-030		SHIM, 0.030, CONN PLT TO TD FRAME
49C	2.00	EA	DT16733-060		SHIM, 0.060, CONN PLT TO TD FRAME
50A	4.00	EA	DT16735-015		SHIM, 0.015, GUIDE FRAME TO TD FRAME
50B	4.00	EA	DT16735-030		SHIM, 0.030, GUIDE FRAME TO TD FRAME
50C	4.00	EA	DT16735-060		SHIM, 0.060, GUIDE FRAME TO TD FRAME
51	12.00	EA	FS-0500NC-0175		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.75
52	16.00	PAIR	LW-1000-NL-SP		LOCKWASHER, 1-SP, NORD-LOCK
53	16.00	EA	SH-1000NC-0325-W		CAPSCR, HEX SOC HD, 1-8UNC x 3.25, W

IF IN DOUBT...PLEASE ASK!



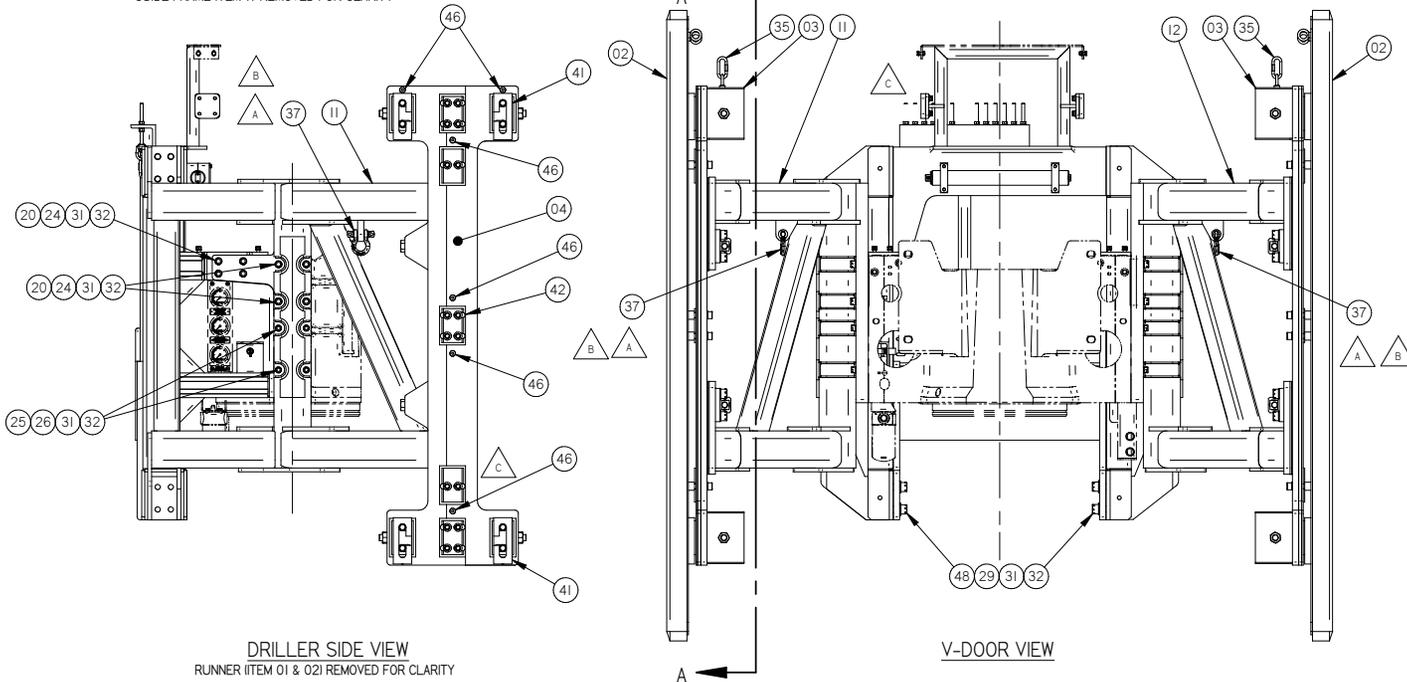
DRILLERS SIDE VIEW
GUIDE FRAME ITEM 11 REMOVED FOR CLARITY



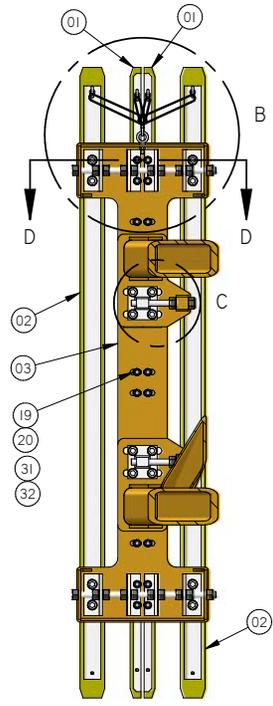
TOP VIEW

107 13/16 REF

MAST



V-DOOR VIEW



SECTION A-A

NOTES:

- 1) ITEMS 31, 32, 45 & 47 NOT SHOWN FOR CLARITY.
- 2) ITEM 38 (LOAD BINDER) NOT SHOWN. TO BE INSTALLED AT RIG UP TIME USING ITEMS 16, 37 AND 39.
- 3) ITEMS 47, 51 AND 53 ARE ALTERNATE LENGTH BOLTS ONLY TO BE USED IF MORE SHIM IS REQUIRED.

No.	Y/M/D	BY	REVISION	CHKD	APVD
C	07/05/22	RDW	ECN 1401: CHGD ITEMS 13, 19; ADDED ITEMS 41-53; GRAPHIC UPDATE	DAR	SEA
B	06/09/15	DAE	ECN 1340 MODIFY ITEM 30, CHANGE ITEM 37 AND ADD ITEM 40	GRT	SEA
A	06/03/17	DNC	REVISED GUIDE FRAME TO HAVE LOAD BINDER MOUNTING LUG	JSC	SEA

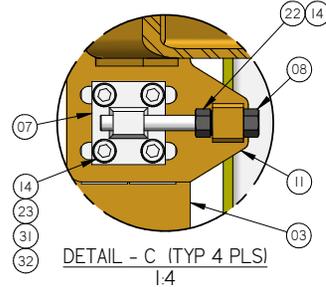
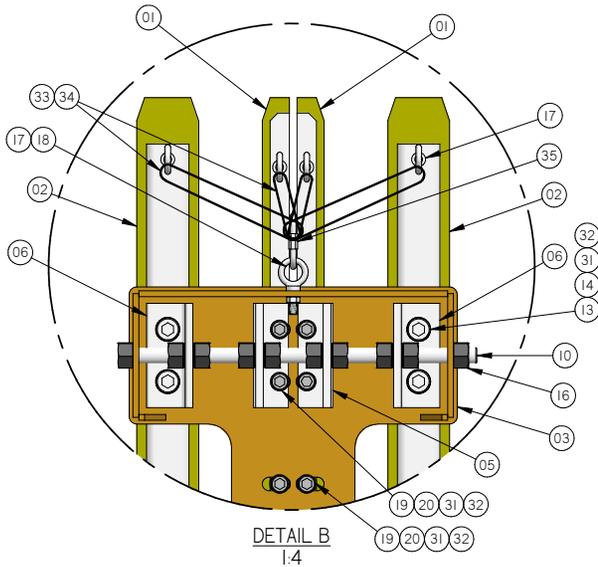
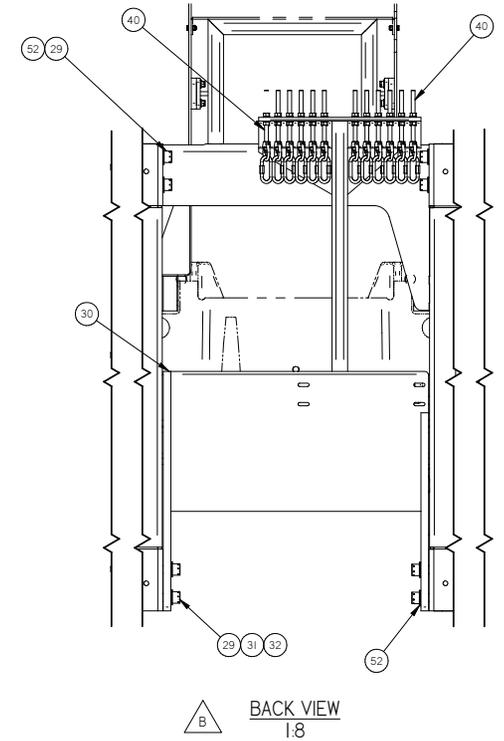
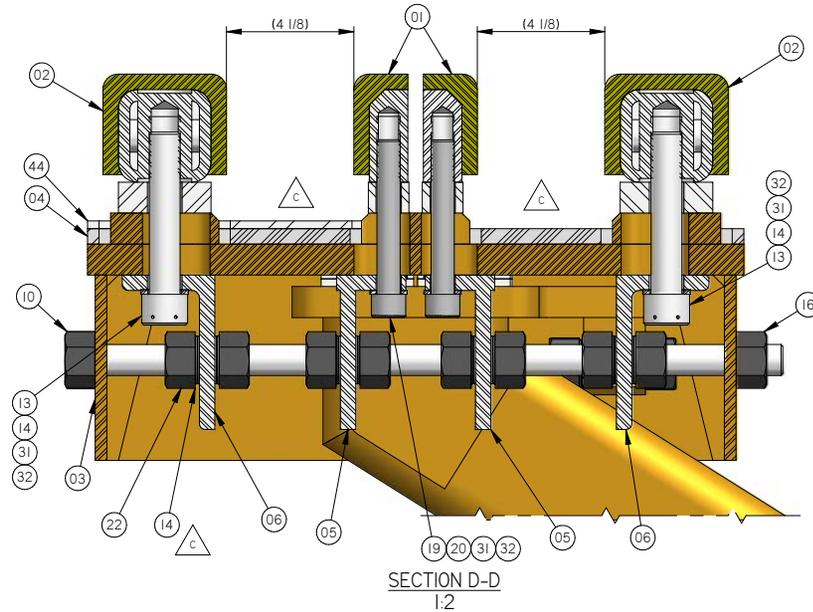
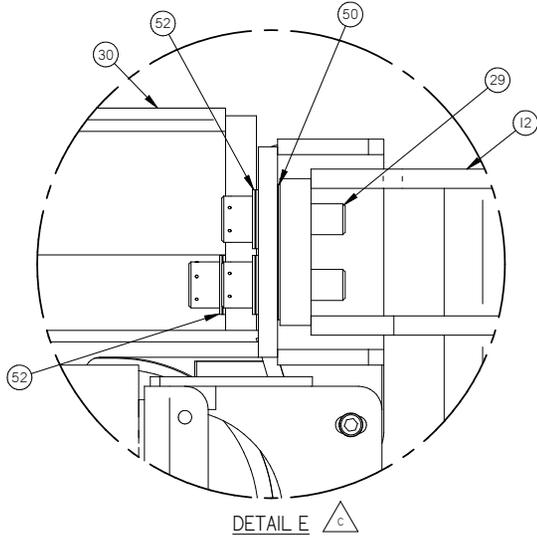
DRAWN		DNC	06/03/03
CHECKED		DAE	06/03/07
APPROVD		SEA	06/03/08
MATERIAL			
TOLERANCE - UNLESS OTHERWISE SPECIFIED FABRICATING IMPERIAL FABRICATING (METRIC) 0 TO 24" ± 1/16" 0 TO 610 mm ± 1 mm 24" to 60" ± 1/8" 610 TO 1525 ± 3 mm 60" to 120" ± 3/16" 1525 TO 3048 ± 5 mm 120" to 280" ± 1/4" 3048 TO 7112 ± 7 mm 280" & OVER ± 1/2" 7112 & OVER ± 13 mm MACHINING IMPERIAL ANGLUAR DECIMAL x ± .030" MACHINING ± .1" xx ± .015" FABRICATION ± .2" xxx ± .005"			
EST. WEIGHT	SCALE	PROJECT	REV C
-	1:10	PACE 750 RIGS	AY13279



GUIDE FRAME ASSY, 275 T, BE550

IF IN DOUBT...PLEASE ASK!

IF IN DOUBT...PLEASE ASK!



SHEET 2 OF 2

WELDING PROCEDURE AS PER CANRIG SPECIFICATION - ENG 704, UNLESS NOTED OTHERWISE						DRAWN	DNC	06/03/03			
THIS PRINT AND DESIGN AND DETAIL SHOWN THEREON ARE THE PROPERTY AND INVENTION OF CANRIG DRILLING TECHNOLOGY LTD. THIS PRINT IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED WITHOUT PERMISSION AND RETURNED UPON DEMAND. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED BY CANRIG DRILLING TECHNOLOGY LTD.						CHECKED	DIA	06/03/07			
REMOVE SHARP CORNERS AND BURRS CASTING ± 1/16						APPROVD	SEA	06/03/08			
C	07/05/22	RDW	ECN 1401: CHGD ITEMS 13, 19, ADDED ITEMS 41-53, GRAPHIC UPDATE	DAR	SEA	CANRIG DRILLING TECHNOLOGY LTD. GUIDE FRAME ASSY, 275 T, BE550					
B	06/09/15	DAE	ECN 1340 MODIFY ITEM 30, CHANGE ITEM 37 AND ADD ITEM 40	GRT	SEA						
A	06/03/17	DNC	REVISED GUIDE FRAME TO HAVE LOAD BINDER MOUNTING LUG	JSC	SEA						
No.	Y/M/D	BY	REVISION	CHKD	APVD				EST. WEIGHT SCALE PROJECT - 1:10 PACE 750 RIGS		
TOLERANCE - UNLESS OTHERWISE SPECIFIED FABRICATING IMPERIAL FABRICATING METRIC 0 TO 24" ± 1/16" 0 TO 610 mm ± 1 mm 24" to 60" ± 1/8" 610 TO 1525 ± 3 mm 60" to 120" ± 3/16" 1525 TO 3048 ± 5 mm 120" to 280" ± 1/4" 3048 TO 7112 ± 7 mm 280" & OVER ± 1/2" 7112 & OVER ± 13 mm TRUE POSITION .005 MACHINED SURFACES ✓ MIN. RADIUS UNLESS SHOWN = 0.03 MAX.						MATERIAL ANGLE DECIMAL x ± .030" xx ± .015" xxx ± .005"			MACHINING ± .1" FABRICATION ± .2"		
CONCENTRICITY .005 TIR STRAIGHTNESS ± .005 IN 5 INCHES SQUARENESS ± .010 IN 5 INCHES PARALLELISM ± .010 IN 5 INCHES FLATNESS ± .010 or as Shown TRUE POSITION .005						EST. WEIGHT SCALE PROJECT - 1:10 PACE 750 RIGS					

IF IN DOUBT...PLEASE ASK!



Engineering Bill of Material

Part: AY14485
Description: KIT, SHIM, GUIDE RUNNER ASSY, M-RIGS

Eng ID: 0
Drawing ID: NO DRAWING

Rev No:

Item	Qty	Units	Part ID	Eng ID	Description
01	8.00	EA	DT11689-1000		SHIM, 1000, RUNNER/FRAME
02	32.00	EA	DT16747		SHIM, 1 IN, SPLIT GUIDE RUNNER
03	2.00	EA	DT16686		PAD, WEAR, UHMW, 1/4 THK, GUIDE FRAME
04	2.00	EA	DT16688		PAD, WEAR, UHMW, 1/2 THK, GUIDE FRAME
05A	16.00	EA	DT16690-125		RUNNER SHIM, 1/8 THK, TOP DRIVE
05B	8.00	EA	DT16690-250		RUNNER SHIM, 1/4 THK, TOP DRIVE
05C	8.00	EA	DT16690-500		RUNNER SHIM, 1/2 THK, TOP DRIVE GUIDE
06	16.00	EA	SH-1000NC-0525-W		CAPSCR, HEX SOC HD, 1-8UNC x 5.25, GR8
07	68.00	PAIR	LW-1000-NL		LOCKWASHER, 1 NORD-LOCK
08	32.00	EA	SH-0750NC-0500-W		CAPSCR, HEX SOC HD, 3/4-10UNC x 5.00, W
09	32.00	PAIR	LW-0750-NL		LOCKWASHER, 3/4 NORD-LOCK
10	12.00	EA	FS-0500NC-0125		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.25
11	12.00	EA	FS-0500NC-0150		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.50
12	12.00	EA	FS-0500NC-0175		CAPSCR, FLAT HD SOC, 1/2-13UNC x 1.75
13	16.00	EA	SH-1000NC-0300-W		CAPSCR, HEX SOC HD, 1-8UNC x 3.00
14	16.00	EA	SH-1000NC-0325-W		CAPSCR, HEX SOC HD, 1-8UNC x 3.25, W
15	16.00	PAIR	LW-1000-NL-SP		LOCKWASHER, 1-SP, NORD-LOCK



PRODUCT: 1250AC TOP DRIVE

DATE: 11/15/2007

SUBJECT: Proper shimming of guide runners on the "F" style rigs with 500 Ton Ac Top Drives

SERIAL NUMBERS: 317, 332, 335, 338, 346, 352, 355, 356, 372, 384, 385, 387, 396, 398, 405, 406, 407, 408, 409, 418, 422, 423, 433, 439, 442, 461, 471, 513, 544, 549, 555, 558, 570

DISCUSSION: There have been some instances where the top drive has had a sloppy fit in the mast due to variations of the width of the guide rails in the mast. If not properly shimmed the top drive could be allowed to crab in the mast or have inadequate runner contact to the rails, causing premature wear of the runners or the runners may become disengaged.

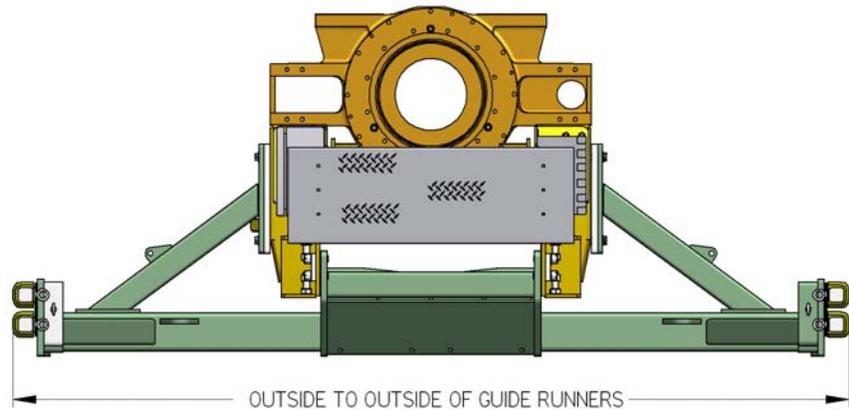
RECOMMENDATION: The recommended gap between the guide rail and the runner is between 1/8" and 3/16". To achieve this on the F-Rigs we have created a kit to shim the guide runner frames out to the narrowest point in the mast rails. NOTE: All items below refer to Assembly Drawing AY12949 Rev E. Attached

PROCEDURE

1. Measure the width of the mast inside to inside of the guide rails, as shown in the picture, every 10 to 15 ft of the mast. Determine the narrowest distance between the rails on the mast.



2. Measure the outside to outside distance of the guide runners on the top drive. For proper adjustment side to side of the top drive in the mast there should be 1/8" to 3/16" gap between the guide runners on the top drive and the narrowest point in the mast.



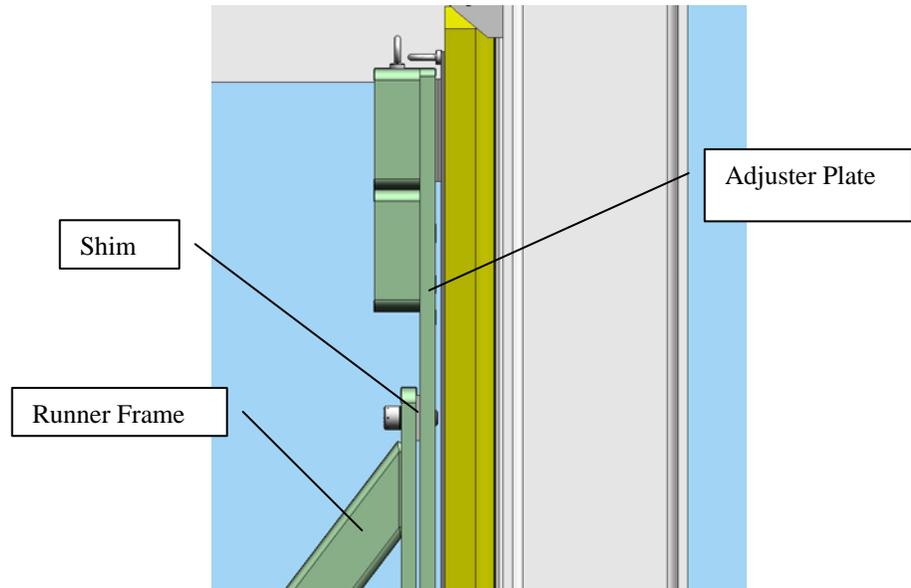
3. The existing top drives in the field should already have at least 1/4" of shim behind each runner. This should stay as is on the top drive with no less than the 1/4" of shim installed.
4. To determine how much shim you will need, subtract the outside to outside distance of the guide runners on the top drive from the narrowest inside to inside measurement on the guide rails. Subtract 1/8" from this number and this is how much shim that will need to be added between items 15, 17 and item 06. The shims, items 36A, 36B and 36C, come in 1/2, 1/4 and 1/8 widths. (See attached drawing AY12949 to locate items)

Formula: Total thickness of shims = Narrowest Inside to inside of guide rails on mast – outside to outside of guide runners on TD – 1/8"

Example: Total thickness of shims = 131" – 130 1/4" – 1/8" = 5/8"

Therefore you would use 1/4" shim on each side and add an extra 1/8" shim to one side.

5. Loosen the bolts between the guide frame (item 06) and the runner plate (items 15 and 17) on one side of the top drive to open a gap between the 2 plates. Remove one pair of bolts at a time and insert the shim (item 36) and replace the bolts with longer ones and add Nord-lock washers. Replace the bolts with ones that extend through item 15 and 17 by no more than $\frac{1}{4}$ ". See calculation in step 4. Use half the shim on each side. Repeat this process for all 4 sets of bolts on one side. Once the shim is added to one side, torque all the 1" bolts to 1018 ft-lb. (Torque values shown have already been increased by 20% for the Nord-lock washers.)



6. This shim needs to be added equally to the top and bottom adjusters. If the stump is not centered side to side between the rails, the shims can be transferred from one side to the other side to account for this misalignment. Move same amount of shim top and bottom.

A new kit AY14553 was created to include all required shims, bolts and Nord-lock washers. See Attached.

Contact Canrig Field Service to schedule inspection and replacement.

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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



Engineering Bill of Material

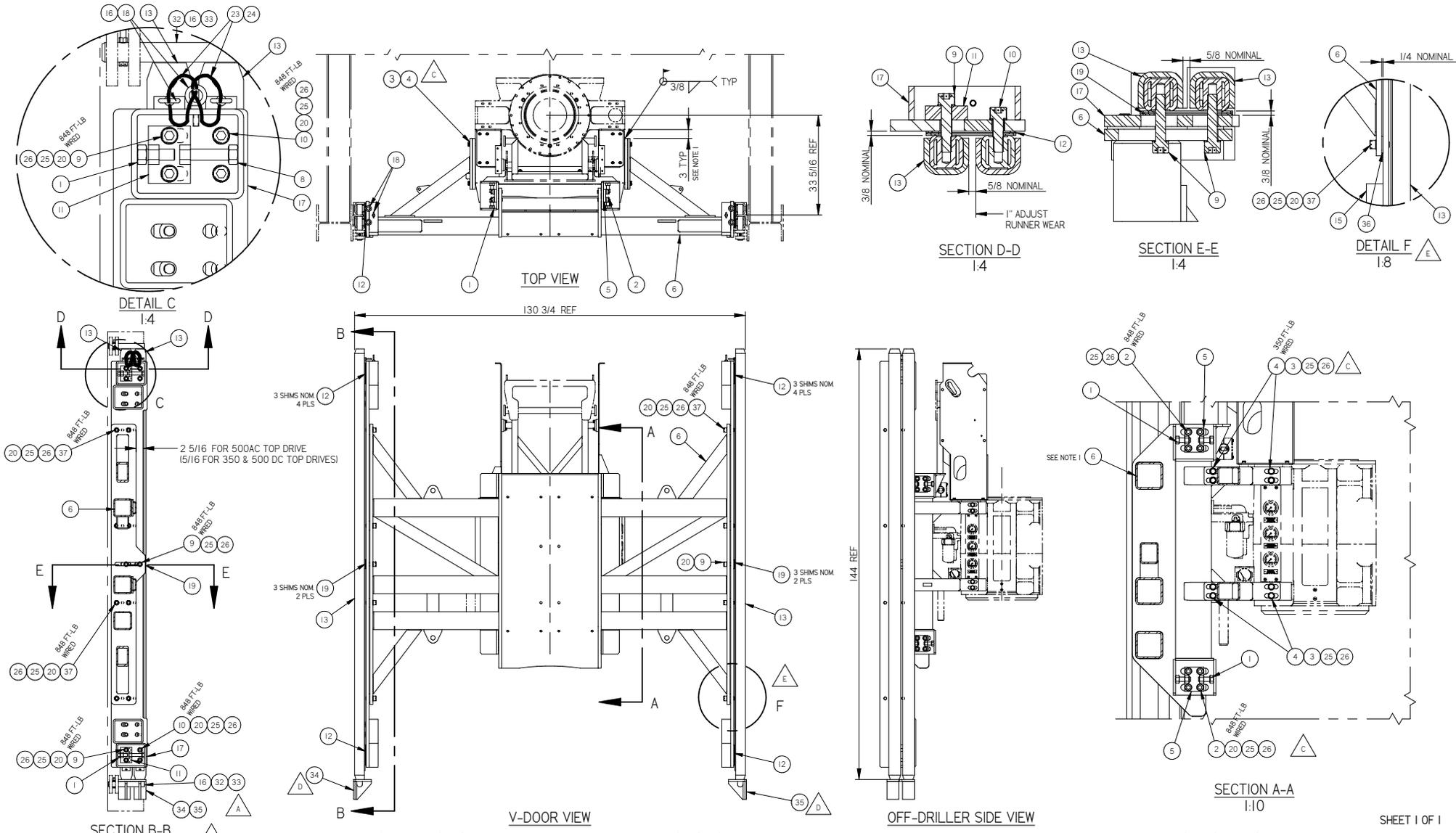
Part: AY12949
Description: GUIDE FRAME ASSY, FMLR, 1250AC

Eng ID: 3
Drawing ID: AY12949

Rev No: E

Item	Qty	Units	Part ID	Eng ID	Description
01	12.00	EA	DT10100	0	CAPSCR, FRAME ADJ, 1-8UNC x 2.50
02	32.00	EA	SH-1000NC-0275-W		CAPSCR, HEX SOC HD, 1-8UNC x 2.75, WIRED
03	16.00	EA	HH-0750NC-0200-GR8-W		CAPSCR, HEX HD, 3/4-10UNC x 2.00, GR8
04	16.00	PAIR	LW-0750-NL		LOCKWASHER, 3/4 NORD-LOCK
05	4.00	EA	841-12-0		ADJUSTER, GUIDE RAIL
06	1.00	EA	DT13891		FRAME, GUIDE, FMLR
08	4.00	EA	DT10101	0	CAPSCR, FRAME ADJ, 1-8UNC x 4.34
09	12.00	EA	SH-1000NC-0425-W		CAPSCR, HEX SOC HD, 1-8UNC x 4.25, GR8
10	8.00	EA	SH-1000NC-0300-W		CAPSCR, HEX SOC HD, 1-8UNC x 3.00
11	4.00	EA	841-13-0		ADJUSTER, GUIDE RAIL
12	20.00	EA	737-28-1		SHIM, GUIDE, 12 GA (1/8)
13	4.00	EA	924-32-0		RUNNER, GUIDE, 144 LG, COATING
14	16.00	EA	SH-1000NC-0225-W		CAPSCR, HEX SOC HD, 1-8UNC x 2.25, WIRED
15	1.00	EA	DT13899		PLATE, ADJ, DS/ODS, 26/27 TGF
16	8.00	EA	LN-0500NC-GR8		LOCKNUT, 1/2-13UNC, GR8, STOVER
17	1.00	EA	DT13899		PLATE, ADJ, DS/ODS, 26/27 TGF
18	6.00	EA	M19-4012-010		EYEBOLT, SHLD TYPE, 1/2-13UNC x 1 1/2
19	10.00	EA	DT14649		SHIM, 12 GA, RUNNER
20	52.00	EA	LW-1000-NL		LOCKWASHER, 1 NORD-LOCK
23	4.00	FT	M21-2001-010		WIRE ROPE, 3/16
24	4.00	EA	M19-3007-010		WIRE ROPE CRIMP
25	20.00	FT	M21-2000-010		WIRE ROPE, 1/16" DIA
26	24.00	EA	M19-3006-010		OVAL SLEEVE 1/16" DIA ALUMINUM
32	6.00	EA	DT14807		PIN, PARKING, TD, 1.75 DIA, FMLR
33	6.00	EA	HH-0500NC-0300-GR8		CAPSCR, HEX HD, 1/2-13UNC x 3.00, GR8
34	1.00	EA	DT15500	0	BLOCK, FMLR MAST, GUIDERUNNER SUPPORT
35	1.00	EA	DT15501	0	BLOCK, FMLR MAST, GUIDERUNNER SUPPORT
36A	16.00	EA	DT12473-125		SHIM, 1/8, TORQUE GUIDE, RIGID
36B	8.00	EA	DT12473-250		SHIM, 1/4, TORQUE GUIDE, RIGID
36C	8.00	EA	DT12473-500		SHIM, 1/2, TORQUE GUIDE, RIGID
37	16.00	EA	SH-1000NC-0250-W		CAPSCR, HEX SOC HD, 1-8UNC x 2.50

IF IN DOUBT...PLEASE ASK!



NOTE:
 1. ITEMS 34 & 35 USED FOR TOP DRIVE IN MAST RAISING POSITION
 2. ITEM 14 AND QTY 16 OF ITEM 2 ARE ALTERNATE BOLTS
 DEPENDING ON HOW MUCH SHIM (ITEM 36) IS USED.

No.	Y/M/D	BY	REVISION	CHKD	APVD	DESCRIPTION
E	07/11/19	DAA	ECN #1427: ADDED ITEM 36 SHIMS & 37, CHANGED ITEM 14 & 20	GRY	SEA	THIS PRINT AND DESIGN AND DETAIL SHOWN THEREON ARE THE PROPERTY AND INVENTION OF CANRIG DRILLING TECHNOLOGY LTD. THIS PRINT IS FURNISHED WITH THE UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED WITHOUT PERMISSION AND RETURNED UPON DEMAND. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED BY CANRIG DRILLING TECHNOLOGY LTD.
D	07/10/05	ATB	ECN #1358: ADDED ITEMS 34, 35 & NOTE 1, REMOVED SHEET 2	DAA	GRY	
C	06/04/10	RDW	ECN #1241: REMOVED ITEMS 7, 22, NOTE 1	DAA	SEA	
B	05/11/19	DNC	REVERSED POSITION OF ADJUSTABLE AND FIXED GUIDE RUNNERS	JSC	SEA	
A	05/09/08	DNC	ADDED ITEMS 32 & 33, CHANGED ITEM 30 QTY FROM 2 TO 6	JSC	SEA	

WELDING PROCEDURE AS PER CANRIG SPECIFICATION - ENG 704, UNLESS NOTED OTHERWISE		TOLERANCE - UNLESS OTHERWISE SPECIFIED	
FABRICATING IMPERIAL	FABRICATING METRIC	FABRICATING IMPERIAL	FABRICATING METRIC
CASTING ± 1/16	± 1.5mm	0 TO 24" ± 1/16"	± 1.1mm
CONCENTRICITY .005 TIR	± 0.13mm	24" TO 60" ± 1/8"	± 3.0mm
STRAIGHTNESS ± .010 IN 5 INCHES	± 0.25mm	60" TO 120" ± 3/16"	± 6.0mm
SQUARENESS ± .010 IN 5 INCHES	± 0.25mm	120" TO 280" ± 1/4"	± 7.0mm
PARALLELISM ± .010 or as Shown	± 0.25mm	280" & OVER ± 1/2"	± 13.0mm
FLATNESS ± .010 or as Shown	± 0.25mm	3045 TO 7112 ± 1/2"	± 13.0mm
TRUE POSITION .005	± 0.13mm	7112 & OVER ± 1/2"	± 13.0mm
MACHINED SURFACES: MIN. RADIUS UNLESS SHOWN = 0.03 MAX.		DECIMAL xx ± .015"	ANGULAR MACHINING ± .1"
		xxx ± .005"	FABRICATION ± .2"

EST. WEIGHT	SCALE	PROJECT	FAST MOVING LAND RIG	AY12949	REV E
	1:15				

IF IN DOUBT...PLEASE ASK!



GUIDE FRAME ASSY, FMLR, 1250AC



Engineering Bill of Material

Part: AY14553

Description: KIT, SHIMMING, GUIDE RUNNERS, F-RIGS

Eng ID: 0

Drawing ID: NO DRAWING

Rev No:

Item	Qty	Units	Part ID	Eng ID	Description
01	16.00	EA	DT12473-125		SHIM, 1/8, TORQUE GUIDE, RIGID
02	8.00	EA	DT12473-250		SHIM, 1/4, TORQUE GUIDE, RIGID
03	8.00	EA	DT12473-500		SHIM, 1/2, TORQUE GUIDE, RIGID
04	16.00	PAIR	LW-1000-NL		LOCKWASHER, 1 NORD-LOCK
05	16.00	EA	SH-1000NC-0250-W		CAPSCR, HEX SOC HD, 1-8UNC x 2.50
06	16.00	EA	SH-1000NC-0275-W		CAPSCR, HEX SOC HD, 1-8UNC x 2.75, WIRED
07	8.00	FT	M21-2000-010		WIRE ROPE, 1/16" DIA
08	8.00	EA	M19-3006-010		OVAL SLEEVE 1/16" DIA ALUMINUM



PRODUCT: All Flex Type Top Drives

DATE: 26 March 2008

SUBJECT: Block Transfer Alarm (all Flex type Top Drives)

SERIAL NUMBERS: 79, 83, 90, 99, 101, 103, 106, 108, 110, 111, 113, 117, 120, 121, 123, 124, 127, 128, 131, 134, 138, 139, 140, 141, 143-550

DISCUSSION: This product bulletin addresses the potential of a Remote I/O module, a module base, or associated wiring failure without causing an Alarm. The Oil Pressure, Brake Temperature, and other Top Drive sensor values may "freeze" at the last value sensed before the failure of the module. If the values "freeze", the ECM System will not be able to sense an out of tolerance condition and therefore will not be able to send alarm notifications based on these conditions.

RECOMMENDATION:

In order to ensure that an alarm is raised if a portion of the Flex I/O system fails, Canrig Engineering has developed a PLC program upgrade. This upgrade consists of creating a "Block Transfer" alarm upon detection of a module, base or wiring failure. The PLC program upgrade can be installed by Canrig Field Service personnel. This PLC program upgrade must be performed while the Top Drive is powered up. The upgrade requires a 10 to 15 minute interruption in service for the program installation and Top Drive function test after installation.

Please contact Canrig Field Service to coordinate this upgrade.

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

Field Service

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14703 FM 1488
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Calgary, AB T2C 4L6
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Fax: 403.233.2667



PRODUCT: Portable TD systems

DATE: 06/12/2008

SUBJECT: Crown Hanger – Clamp Style Bearing Plates

SERIAL NUMBERS: All Portable Top Drives that have crown hangers with clamp style bearing plates.

DISCUSSION: A near miss incident was reported during the installation of the top drive/torque guide. While stabbing the harpoon into the torque guide, the hanger and torque guide was put into a bind which caused the harpoon to lift up on the crown hanger. This upward force of the crown hanger also put the clamp style bearing plate into a bind and caused a piece to break off and fall to the floor.

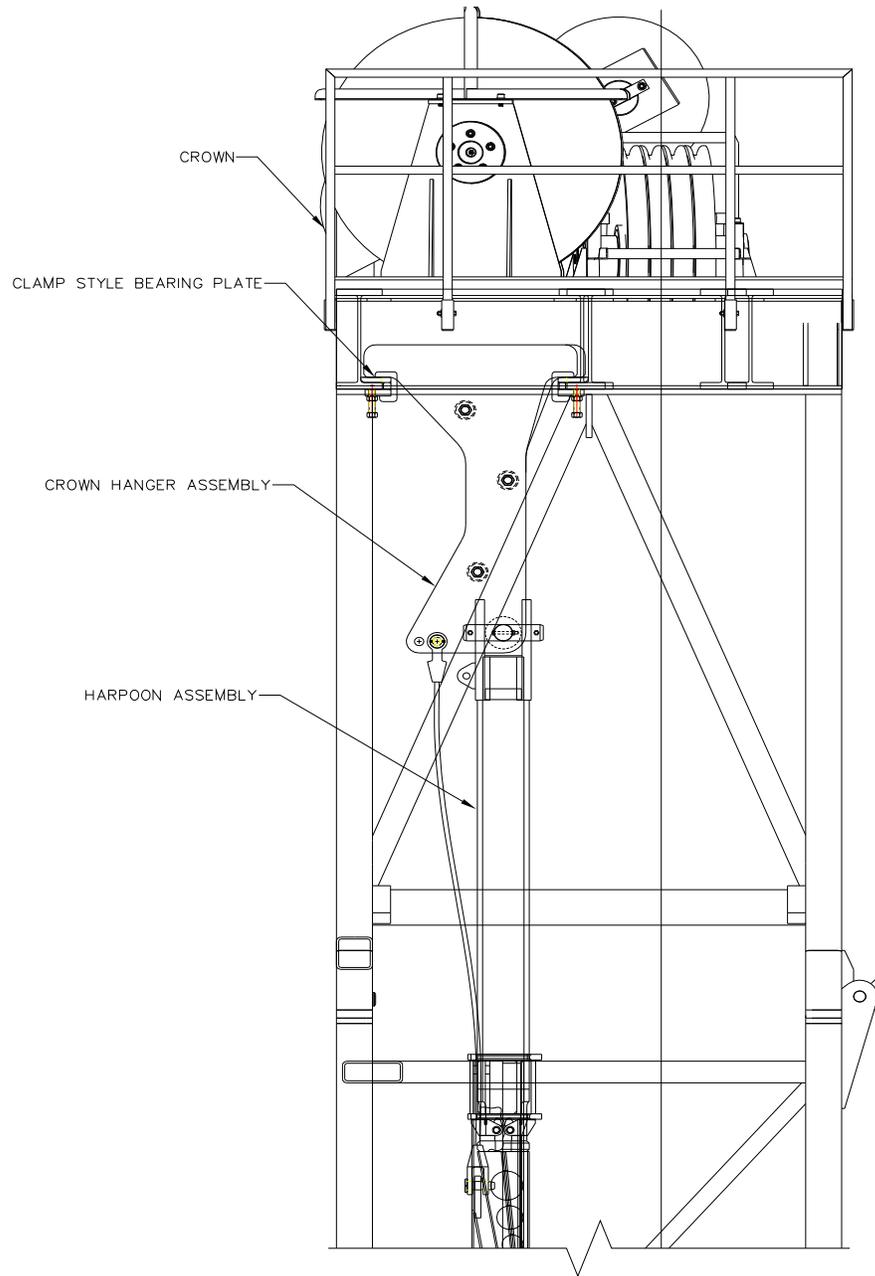
RECOMMENDATION: Identify whether or not you have the clamp style bearing plates. It is part of the crown hanger assembly, which is located in the upper portion of the mast, just under the crown. See [pic # 1](#) for reference.

To eliminate any possibility of the bearing plates falling to the floor; safety wiring any one of the listed options below are acceptable.

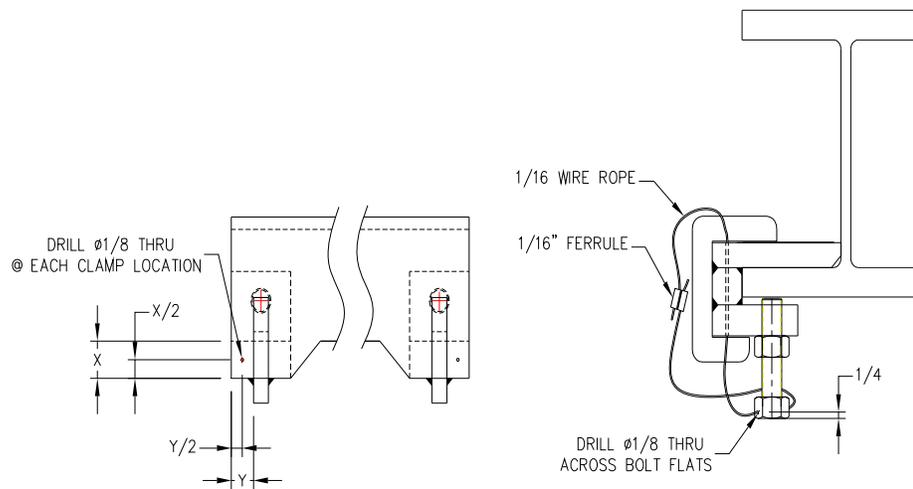
Option 1--- Drill thru bearing plates and bolt as shown and add safety wire.
Option 2--- Weld chain link or quick link to bearing plates, drill thru bolt and add safety wire.

Regardless of the option chosen, be sure to safety wire these back to a secure place in the crown or the crown hanger assembly.

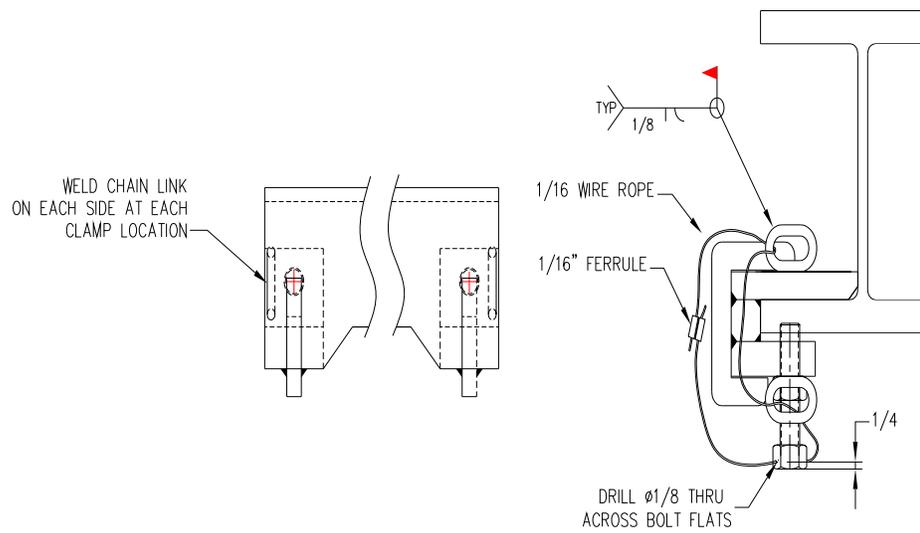
These options are not to be considered as a substitute for regular maintenance inspections during rig moves.



PIC # 1- TOP OF MAST



OPTION 1



OPTION 2

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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PRODUCT: LWCV Actuators

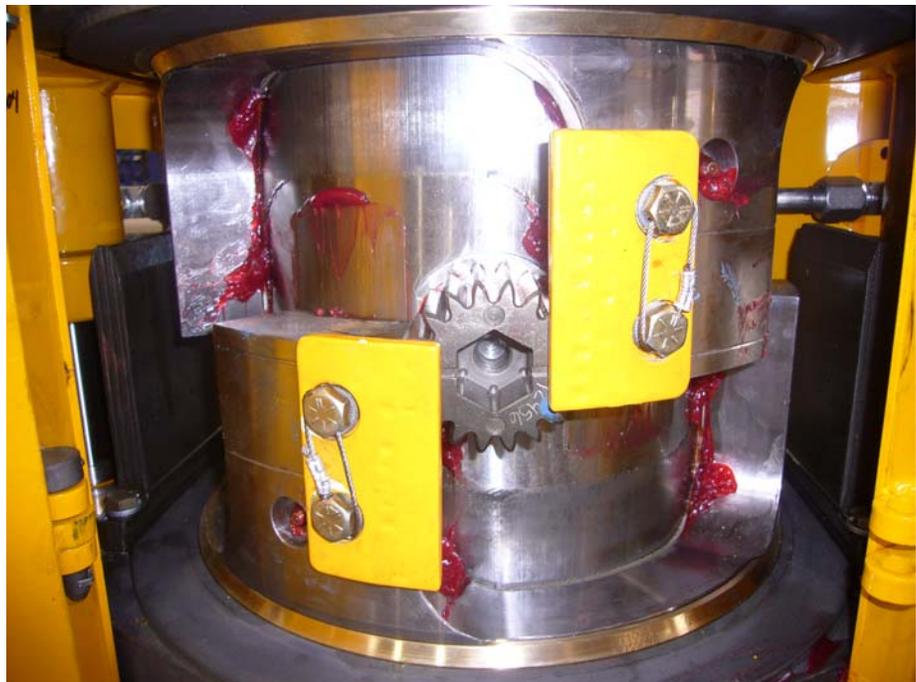
DATE: March 13, 2009

SUBJECT: Dropped Pinion Retainer and Bolts

SERIAL NUMBERS: All

DISCUSSION: There is a potential for the button head bolts on the pinion retainers to come loose and fall to the rig floor.

RECOMMENDATION: The button head bolts on the 3" and 4" LWCV actuators should be changed to hex head bolts and safety wires added to ensure that the bolts are properly secured (as shown in the picture below); thus preventing them from dropping to the rig floor:



In addition to the safety wiring, the bolts must be loctited and torqued to 40 ft-lb. A kit part number AY15364 was created to include the necessary bolts, washers and safety wires as shown on the attached bill of material. This kit will be used for both the 3" and 4" actuators.

For the 4" actuator, the lower (in the pinion area) hydraulic tube must be replaced in order for this tube to clear the newly added hex head bolts on the pinion retainers. The new tube part number is DT18042. After the pinion retainers are assembled and the bolts are secured, ensure that the actuator outer guard is assembled correctly.

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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Engineering Bill of Material

Part: AY15364

Description: KIT, ACTUATOR LWCV, CDTL

Eng ID: 0

Drawing ID: NO DRAWING

Rev No: 0

Item	Qty	Units	Part ID	Eng ID	Description
01	8.00	EA	HH-0375NC-0075-GR8-W		CAPSCR, HEX HD, 3/8-16UNC x 0.75, GR8, W
02	16.00	PAIR	LW-0375-NL		LOCKWASHER, 3/8 NORD-LOCK
03	4.00	FT	M21-2000-010		WIRE ROPE, 1/16" DIA
04	4.00	EA	M19-3006-010		FERRULE, 1/16, OVAL, ALUMINUM

PRODUCT: Top Drive

DATE: August 26, 2009

SUBJECT: Water Ingress to the TD Flex I/O and (if applicable) Torque Guide J-Boxes

SERIAL NUMBERS: 016, 018-024, 026-027, 029, 031, 034-035, 038, 040-041, 043-049, 054, 059, 062-063, 068, 070, 073-074, 077-079, 081-083, 086, 090, 099, 105-106, 108-109, 110-111, 113-117, 120-121, 123-125, 127-134, 138, 140, 142-152, 154-445, 447-499, 501-694, 696-746, 748-761

DISCUSSION: The J-Boxes on the Top Drive and the Torque Guide may be susceptible to water leaks due to faulty or incorrectly installed hole plugs, hinge screws, seal rings, glands, CGBs, breathers, gaskets, strain reliefs. Routine inspection and proper maintenance should always be performed to ensure electrical components are properly sealed from the weather.

RECOMMENDATIONS: Inspect and repair J-Boxes to minimize water leaks.

- PROCEDURES:**
1. All power must be turned off to any of the J-Boxes being inspected. Performing recommended tasks 1-8 will take approximately one hour per J-Box. Canrig recommends performing inspection during rig move or flat time.
 2. Inspect for water ingress on all NEMA 4X J-Boxes on the Torque guide and Top Drive.
 3. If water ingress is noticed, proceed with the rest of the recommendations on this document.
 4. Inspect all hole-plugs to make sure that they are properly installed. Hole-plugs should be installed center point of hole on j-box to center point of hole-plug. If more than 1/4" deviation is noticed from center, re-install hole-plug to match center. See Figure 1 for a proper hole-plug installation and a improper hole-plug installation.

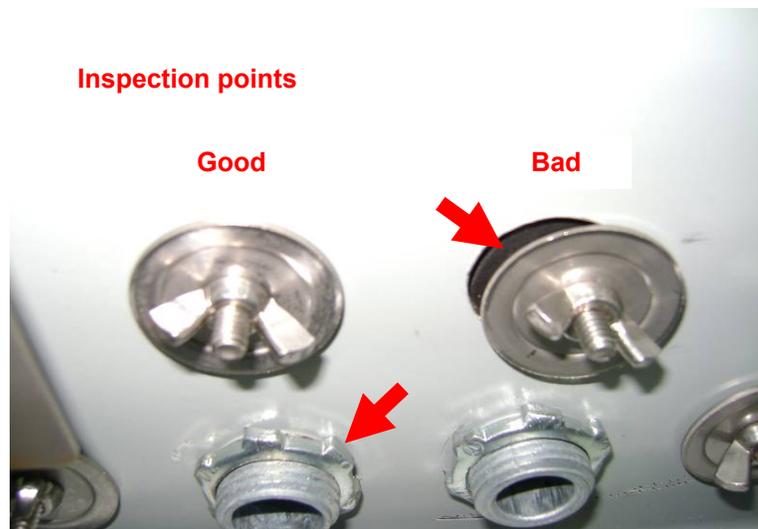


Figure 1

5. Canrig has created a water repair sealing kit, P/N AY15762 to maximize sealing of the junction boxes. Please contact Canrig to order the water sealing kit, should it be deemed necessary. The water repair sealing kit includes the following:
 - 1 Each Gasket, PLC J-Box
 - 1 Each Kit, Enclosure Repair, J-Box, Headwear
 - 8 Each Washer, Rubber
 - 16 Feet Seal, Edge Grip, Adjustable, (rubber gasket)
6. Inspect hinge screws on TD J-Box PLC, to verify that #10 rubber seal washers are installed on the inside and screws are tightened. If no rubber washer, Add a rubber washer in the inside of J-Box (included in repair kit AY15762). A stainless steel washer or nylon washer should be installed on the outside of J-Box.

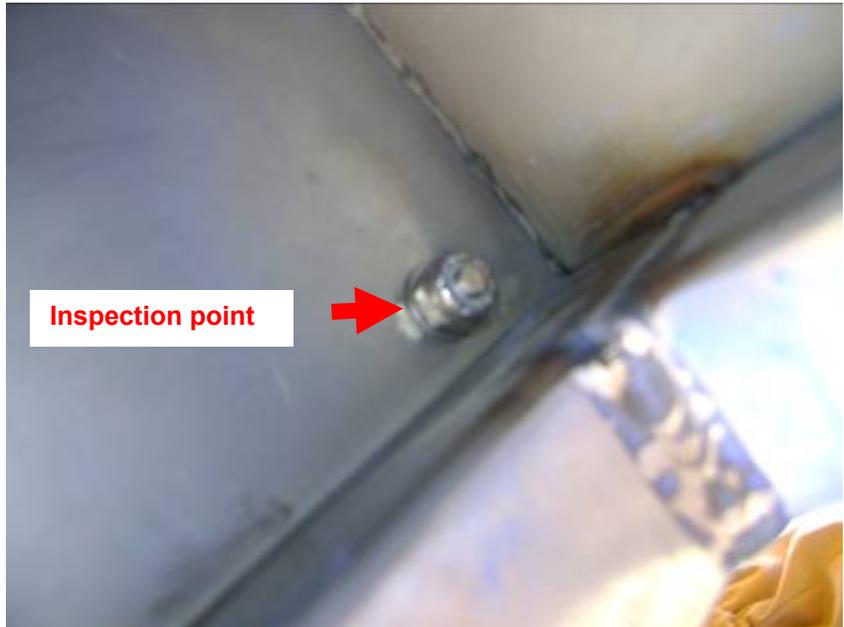


Figure 2

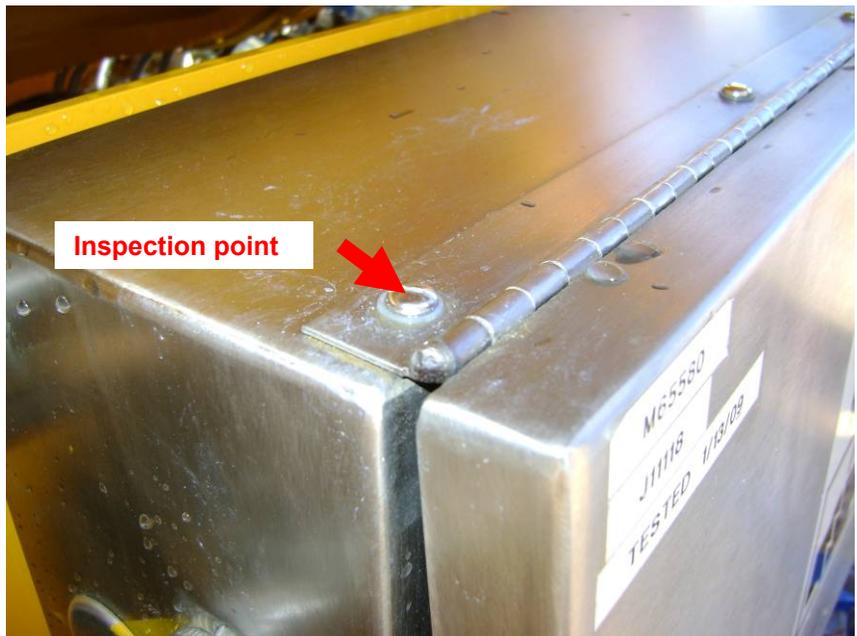


Figure 3

- Carefully inspect the following for proper installation: seal rings on all glands, CGB, breather, door gasket, and other cable strain reliefs.

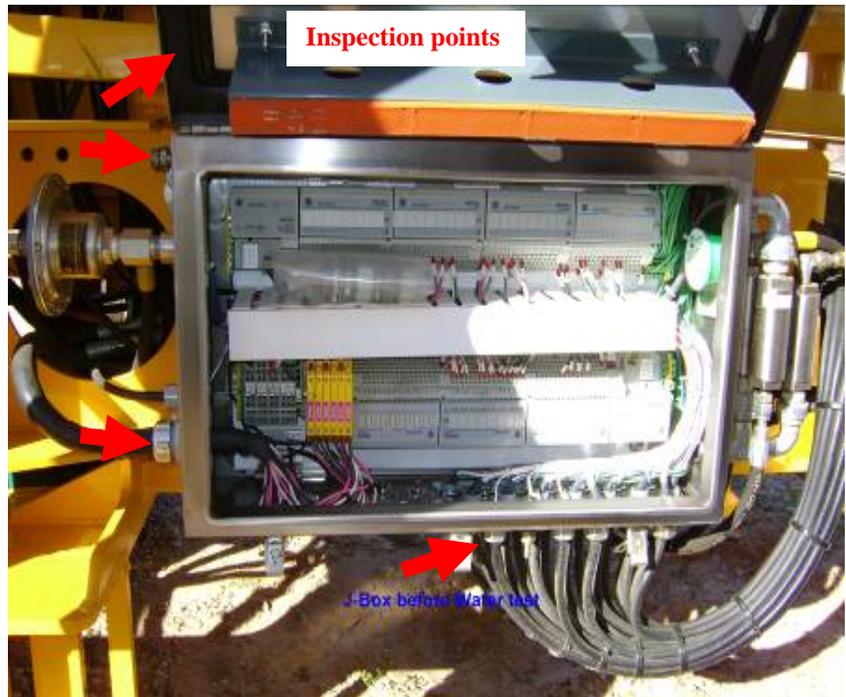


Figure 4

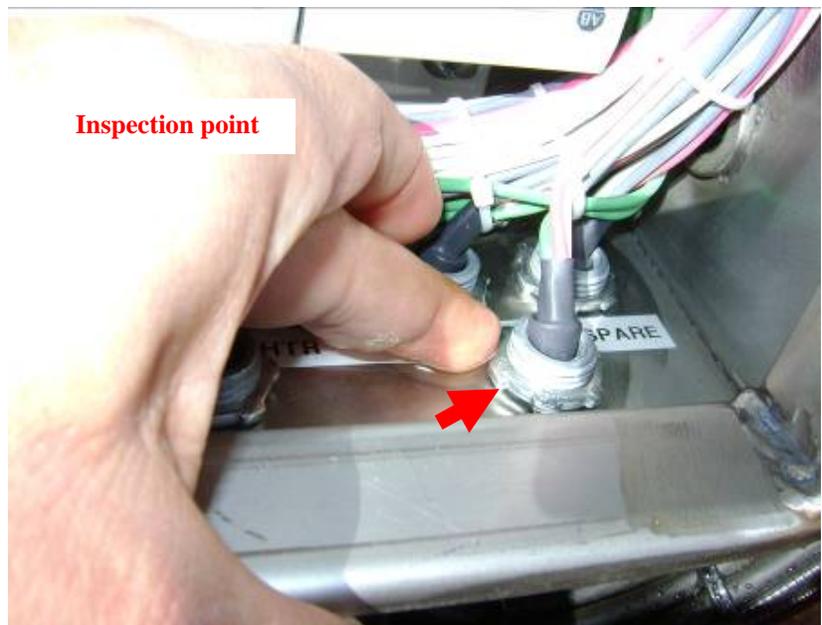


Figure 5

8. Inspect Torque guide J-Box (if applicable) to verify that rubber gasket is installed all around the lip of J-Box opening. If no rubber gasket installed, then install rubber gasket all around the lip opening of J-Box (included in repair kit AY15762).

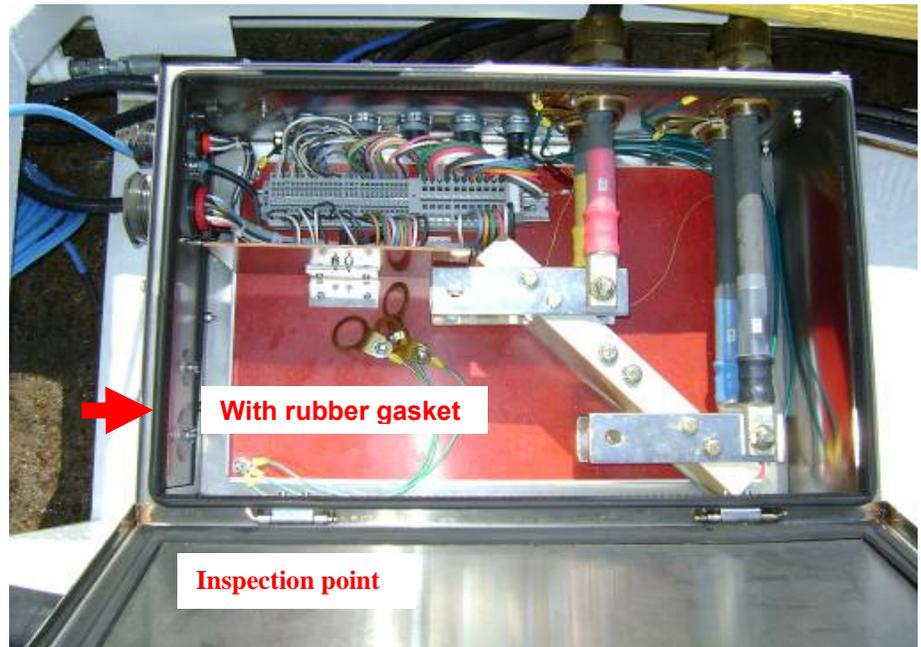


Figure 6

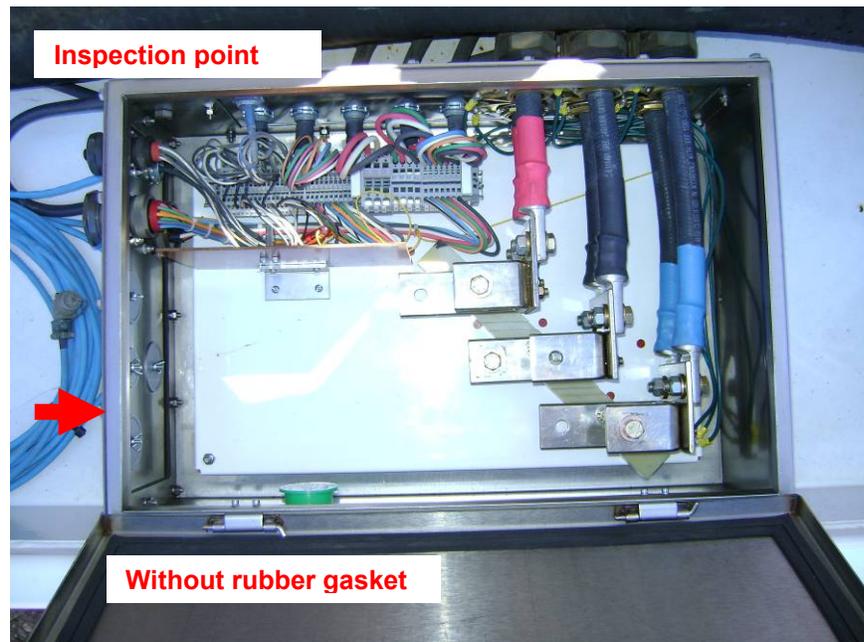


Figure 7

- Install edge guard
- Cut around hinge only on one side for clearance of hinge (see Figure 8)

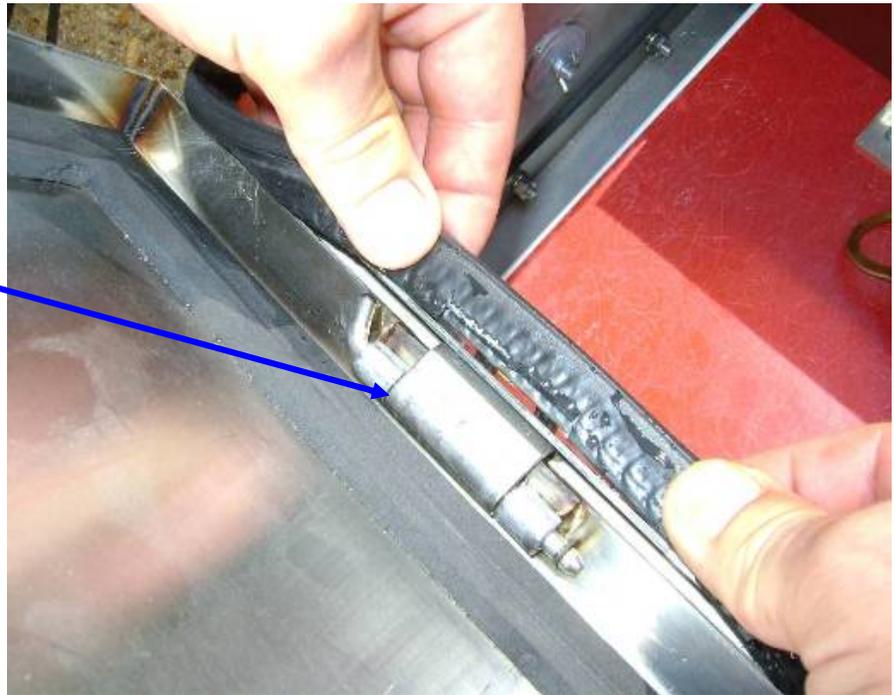


Figure 8

- Super glue both ends creating a seal joint (see Figure 9)
- Wait 5-7 minutes before properly closing door.



Figure 9

9. Verify that work performed to J-Boxes in making them water tight has been successful, by conducting a water test as follows:
 1. Make sure door is properly closed and latched before performing a water test.
 2. Using $\frac{3}{4}$ " garden hose, and standing at an approx distance of 3ft.
 3. Open non-pressurized garden hose and direct the water stream from all angles at the J-Box, simulating rain for a minimal time frame of 15 minutes.
 4. Open J-Box and verify that no more water ingress has occurred.
 5. If water ingress does occur continue with inspection/repair until water leak source has been found and fixed.
 6. For aid in finding water leak use a small amount of blue or red chalk line powder.
 7. Evenly spread the chalk line powder through out the wall of J-Box that are suspected of water leaks.
 8. Performing steps 1-4 the source of leak will easily be detected by the change in chalk line powder color from light to a darker color.



Figure 10

10. On later model Top Drives the J-Box are equipped with Gland Plates (see Figures 11 & 13); Canrig recommends the purchase of a Plug Gland Plate Kit. This kit will substantially improve the Torque Guide J-Box (if applicable) in the following ways:
 1. Reduce Rig-up and Rig-down Time
 2. Eliminate the need of opening the Torque Guide J-Box.
 3. Prevent water from leaking into J-box during pressure washing.
 4. Reduce the amount of time required to connect motor leads and insuring proper connection.
11. Not all lower torque guide J-Box are built or wired the same. It is very important when calling Canrig Service to provide the following information to correctly identify the Plug Gland Plate kit.
 1. Top Drive Serial number
 2. Verify that the lower torque guide J-Box does have a gland plate that is bolted to the J-Box (see Figure 13): **YES** or **NO**

12. Not all Plug Gland Plate kits are the same. Therefore the following kit shown in this document will capture the principle that will encompass almost all lower torque guide J-Boxes. This only an example Plug Gland Plate kit, it is not specific to any Lower Torque Guide J-Box.

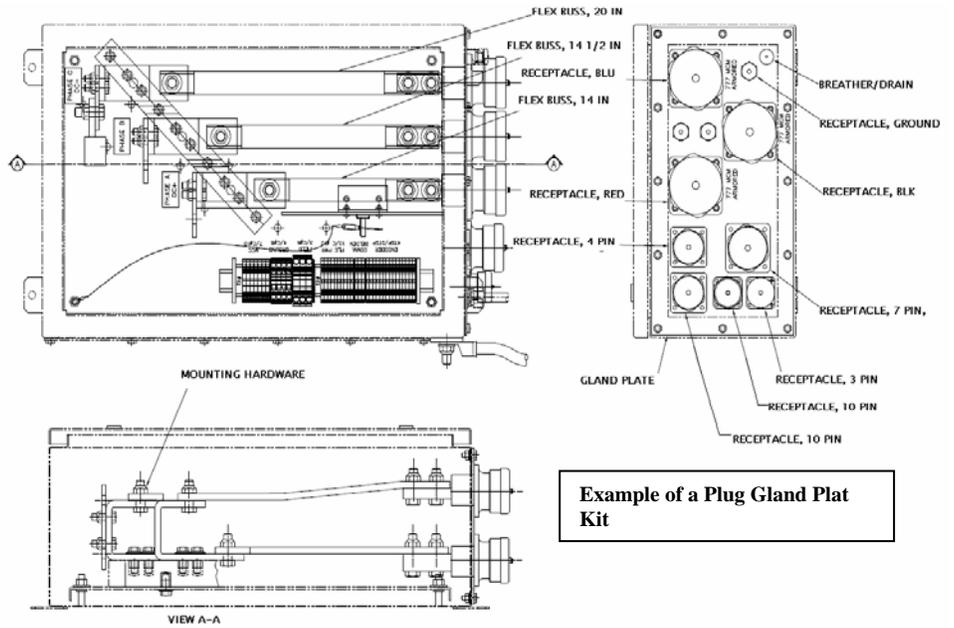


Figure 11



Example of the recommended Plug Gland Plat Kit

Figure 12

Recommended Plug Gland Plate Kit.



Lower Torque Guide J-Box assembled with the Plug Gland Plate Kit

Figure 13

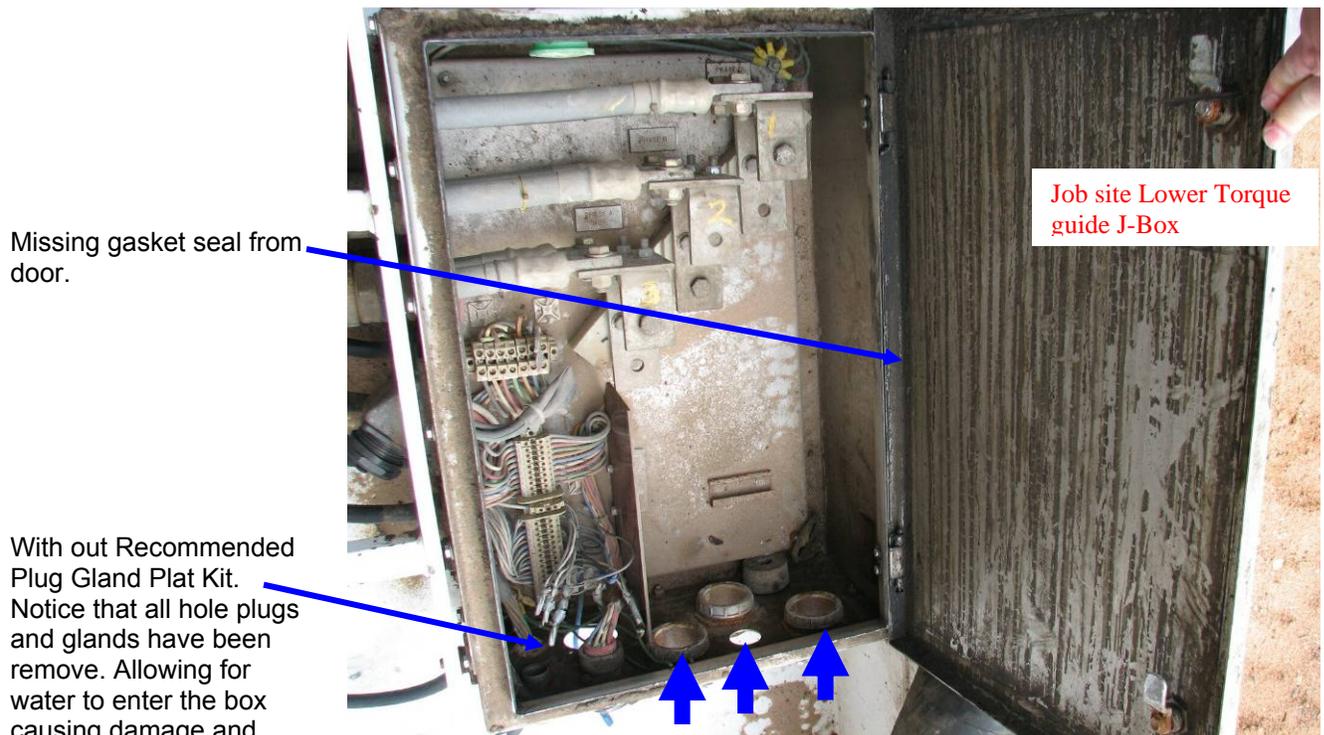


Figure 14

13. Canrig recommends that the installation of the Plug Gland Plate Kit be done by a Canrig Technician or a qualified master electrician. Performing recommended tasks 10-15 will take approximately one day per J-Box. Canrig recommends performing inspection and installation during rig move.
14. Special tools will be required to perform this installation (see Figure 14-15).
 - Wire crimping tool for various gauges (Figure 14).
 - Cable crimping tool gauges 4/O to MCM 777 (Figure 15).
 - Ferrule crimping tool various gauges (Figure 14).
 - Pin inserting tool (Figure 14).



Figure 15



Missing gasket seal from door.

Job site Lower Torque guide J-Box

With out Recommended Plug Gland Plat Kit. Notice that all hole plugs and glands have been remove. Allowing for water to enter the box causing damage and malfunction.

Figure 16

15. The Canrig recommended Plug Gland Plate Kit will minimize further damage of the lower torque guide J-Box as evident in Figure 16.

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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 Fax: 403.536.4605



PRODUCT: Top Drive

DATE: March 01, 2010

SUBJECT: BUW Stop Pin Interference/ Actuator Fittings

SERIAL NUMBERS: Up to S/N 761 with Canrig Lower Well Control Valve Actuator

DISCUSSION: The existing 90 degree fittings on the Lower Well Control Valve Actuator manifold on the outer tube of the Back-up Wrench do not allow for access to the lowest two Backup Wrench positioning holes.

RECOMMENDATION: If it is required to use the stops in the lowest positions, the existing 90 degree fittings should be replaced by straight fittings and long 90 degree fittings so that the hoses will clear the Backup Wrench positioning holes. This requires a new hose assembly to be used.

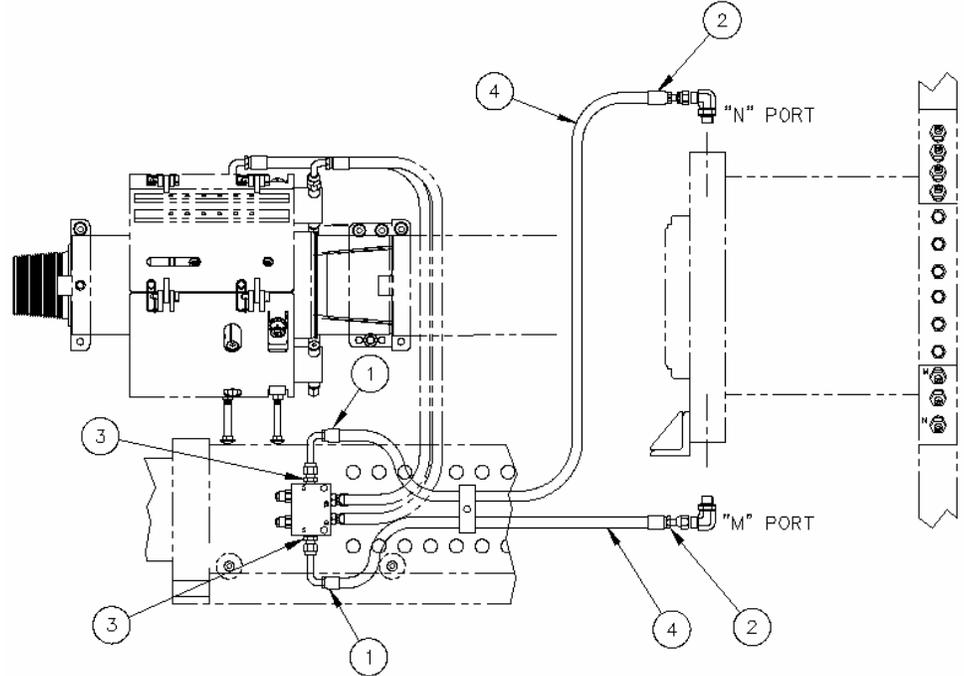
In order to complete the retrofit, the kit needed is:

1 EA – AY15600 – KIT, UPGRADE, HOSE, LWCV INTERFACE

The retrofit kit consists of these parts:

- 2 EA - H15-3010-08-08 - HOSE FTG, ELL 90°LG, 1/2, FEM SWV 1/2 ORFS
- 2 EA - H15-3007-08-08 - HOSE FTG, STR, 1/2, FEM SWV 1/2 ORFS
- 2 EA - H15-520120-08-08 - ADAPTER, MALE 1/2 ORFS, MALE 1/2 ORB
- 10 FT - H16-1381-08 - HOSE, HP SAE 100R2, 1/2, 4250 psi
- 4 EA - E10442 - CABLE TIE, 7.4 IN LG, 50 LB

Remove the pre-existing hose assemblies and 90 degree fittings. This may require the loosening of the counterbalance valve to allow clearance. Cut item 4 (hose) to required lengths in order to clear the BUW pins and attach items 1 and 2 (field attachable fittings.) Thread Item 3 (adapter) into the V1 and V1 ports in the manifold then reconnect the hose assemblies at previously designated locations.



BEFORE



AFTER



INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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Fax: 403.233.2667

PRODUCT: TOP DRIVE

DATE: 03/31/2010

SUBJECT: Back-up Wrench Stop Pin Safety Wiring Procedure

SERIAL NUMBERS: ALL

DISCUSSION: The Back-up Wrench Stop Pins should be retained in a manner that will prevent the pins from falling out if an unforeseen event should occur.

RECOMMENDATION: Kits were created with all the necessary parts for the Back-up wrench Stop Pin function and safety features.

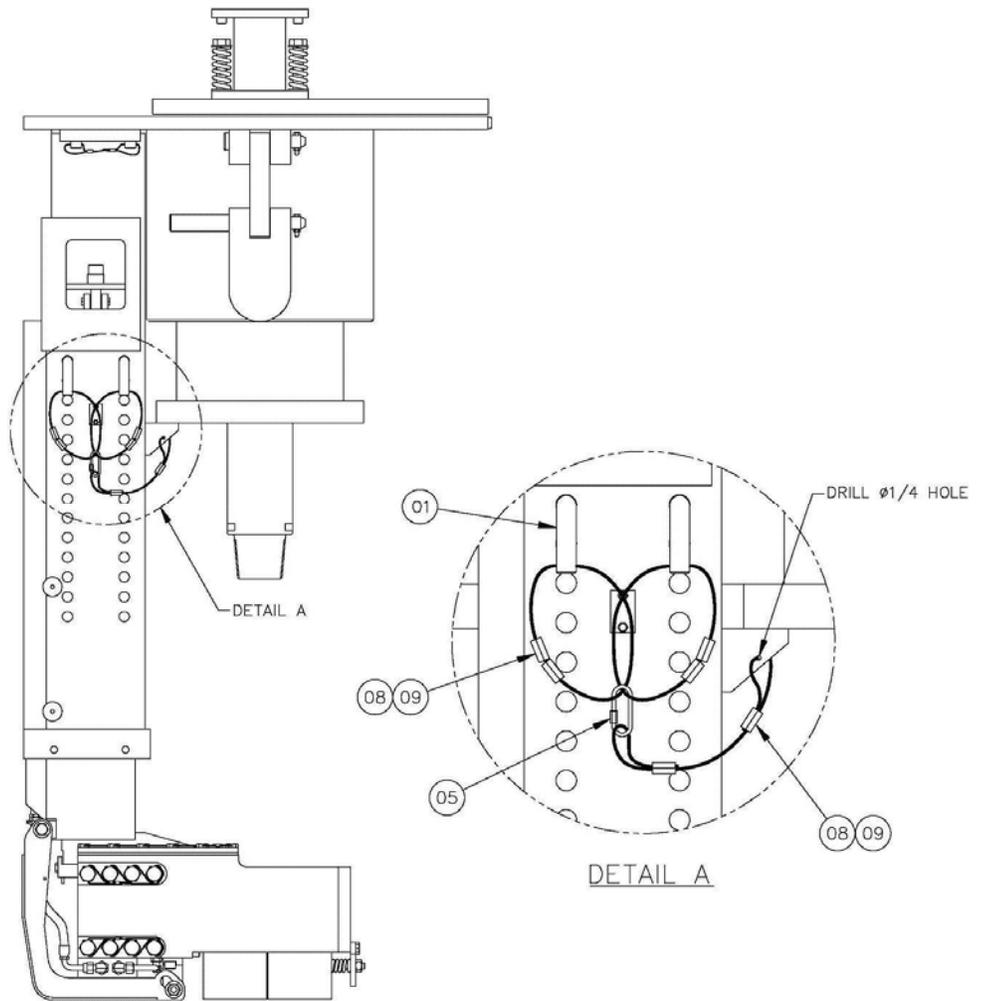
Kit AY16254 is specific to the 175 Ton Top Drive.
Kit AY16255 is specific to the 275 Ton to 750 Ton Top Drives.

Each Kit comes with the appropriate Stop Pin which is drilled for safety wiring and mechanical retention. The necessary mechanical fasteners and wiring components are included.

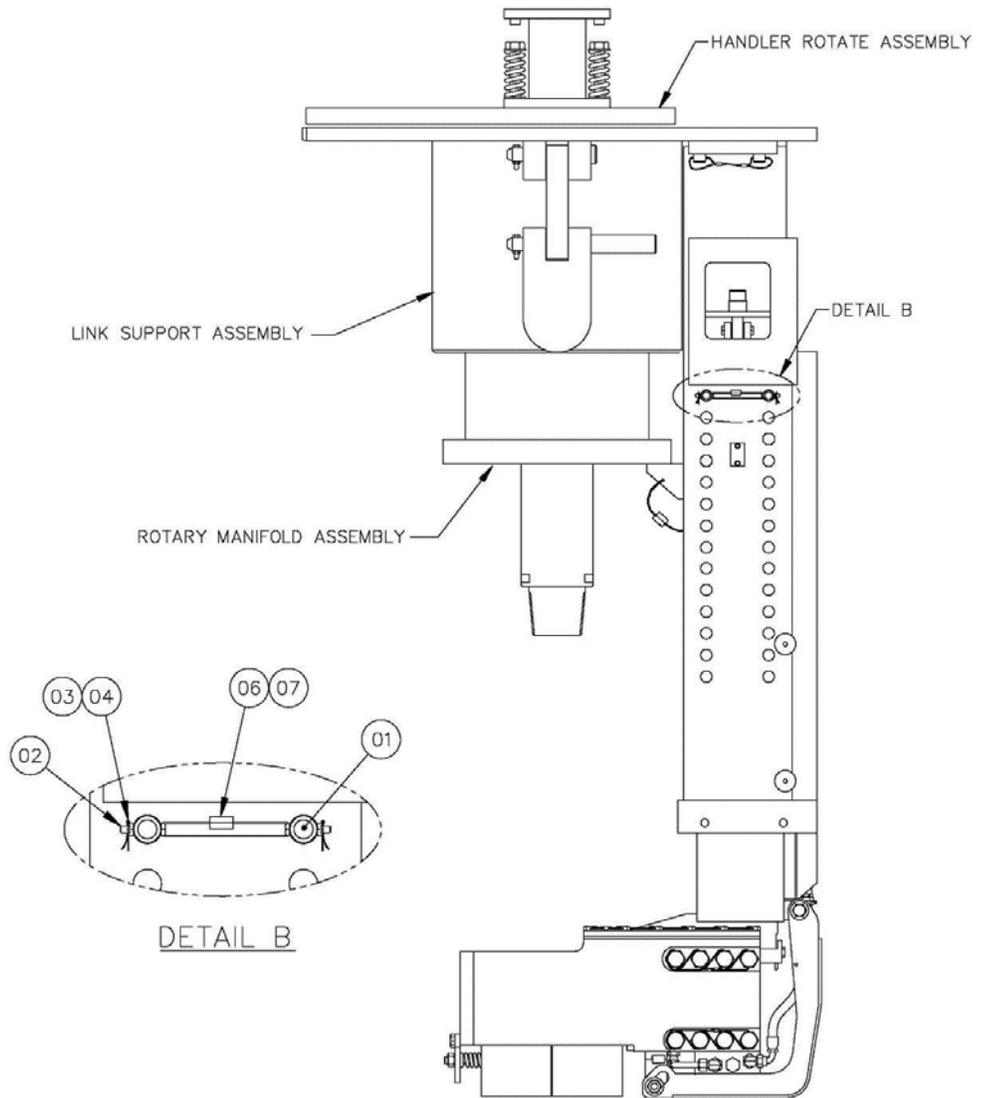
In order to complete the task dictated in the instructions, the proper swaging tool must be used. Tool part number M10193 can be ordered from Canrig if needed.

Instructions:

Drill a 1/4" diameter hole through the gusset of the Rotary Manifold Bracket.



Install 1/8" diameter Wire Rope (M10022) through the hole in the short end of the BUW Stop Pin and make a loop as shown in Detail A. Crimp with the 1/8" ferrules (M19-3009-010) with 3 compressions. Repeat for the other Stop Pin. Capture both wire loops with the Quick Link (M10220). Feed another 1/8" wire rope through the hole that was drilled in the Rotary Manifold Bracket and create a small loop as shown. Crimp with a 1/8" ferrule with 3 compressions. Create another small loop on the other end making sure that the length of the new lead is long enough to allow the Stop Pins to be located at either end of the Back-up Wrench.



As shown in Detail B, Install the Keeper Bolt (DT19010) through the long end of the Stop Pin and secure with the slotted hex nut (HSN-0250NC, GR8) and cotter pin (M24-3012-010). Repeat for the other Stop Pin. Install 1/16" wire rope (M21-2000-010) through the holes in the head of both keeper bolts and crimp with a 1/16" ferrule (M19-3006-010) with 2 compressions.

INFORMATION:

For further information contact:

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 Phone: 403.237.6400
 Fax: 403.536.4605

PRODUCT: TOP DRIVE

DATE: 06.08.2010

**SUBJECT: ROTARY HOSE RETENTION, M-RIG, F-RIG, SUNDOWNER
(FOR NABORS TOP DRIVES ONLY)**

**SERIAL NUMBERS: M-RIG - 359,370,394,397,417,424,425,427,429,432,437,438,452,455,464,468,469,470,
475,476,479,480,482,483,488,491,493,494,496,497,508,514,532,533,538,553,557,565,
568,571,738,741,749,752,756**
**F-RIG - 335,338,346,352,355,356,363,365,372,384,385,387,396,398,400,405,406,407,
408,409,418,422,423,433,439,442,461,471,513,544,549,555,558,570,604**
SUNDOWNER AC/DC – 195,362,368,410,414,520,584

DISCUSSION: It was reported that Rotary Hose safety clamp was secured to the Top Drive Guard with a safety sling which caused a Top Drive Guard member to break off and fall to the rig's floor. This is not a recommended practice.

RECOMMENDATION: If a suitable "tie-off" point is currently not sufficient, kits have been created to provide a permanent "tie-off" location for Rotary Hose Clamp.

Refer to the following Rotary Hose Retention Kits for an itemized parts listing.

TD Models:

Rotary Hose Retention Kits:

6027AC – M-RIG
1250AC – F-RIG
6027AC/DC - SUNDOWNER

AY16645
AY16682
AY16685

INFORMATION:

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contact:

For a complete list of all bulletins go to www.canrig.com

Field Service	
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12707 North Freeway, Suite 500	7475 51 Street SE
Houston, Texas 77060	Calgary, AB T2C 4L6
Phone: 281.774.5600	Phone: 403.237.6400
Fax: 281.774.1940	Fax: 403.536.4605

M-rig Rotary Hose Retention (AY16645) Procedure:

Parts:

DT19013 - PLATE, RETENT.,ROTARY HOSE,275T,M-SERIES
SH-0750NC-0350-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 3.50, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 48" LG WIRE ROPE SLING W/ HEAVY DUTY
THIMBLE AND 7/8" SHACKLE

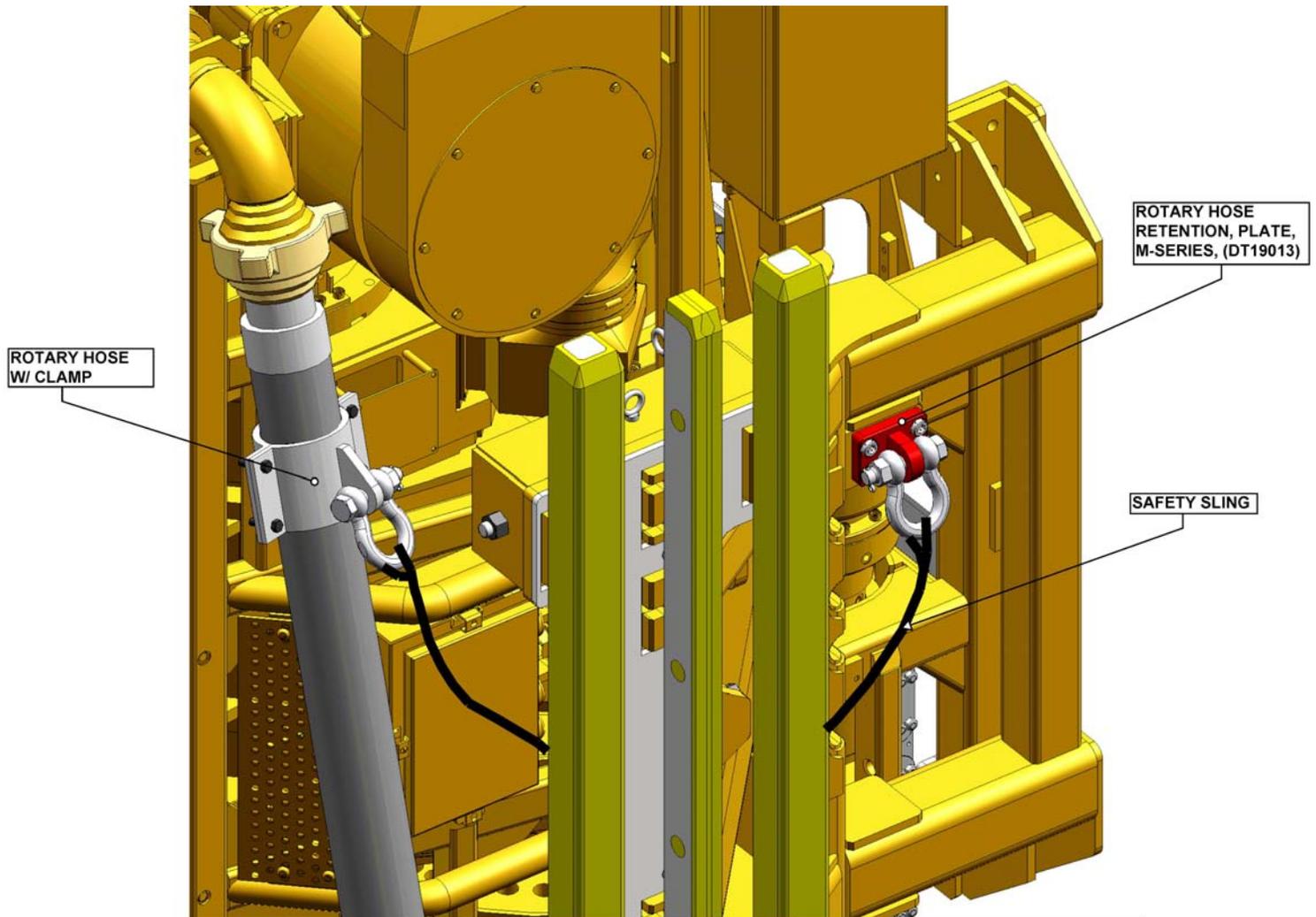


Fig. 1

1. Remove existing (4) $\frac{3}{4}$ "-10UNC capscrews from M-rig Guide Frame and replace with Rotary Hose Retention Kit for M-series (AY16645) which includes Rotary Hose Retention Plate (DT19013) with longer capscrews (4) $\frac{3}{4}$ "-10UNC x 3 $\frac{1}{2}$ " (SH-0750NC-0350-W-GR8) and (4) Nordloc washers (LW-0750-NLS). Rotary Hose Retention Plate (DT19013) is installed on top of the existing M-rig Guide Frame. See Fig. 1.
2. Torque (4) $\frac{3}{4}$ -10UNC x 3 $\frac{1}{2}$ " (SH-0750NC-0350-W-GR8) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
3. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19013). (Sling and shackle supplied by customer.)
4. Install other end of sling to a shackle and attach on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig. 1.

F-rig Rotary Hose Retention (AY16682) Procedure:

Parts:

DT19020 - LUG, RETENTION, ROTARY HOSE, F-RIG
DT19021 - MOD,LUG,RETENTION,ROTARY HOSE, F-RIG
(CUSTOMER SUPPLIED) 7/8" SHACKLE

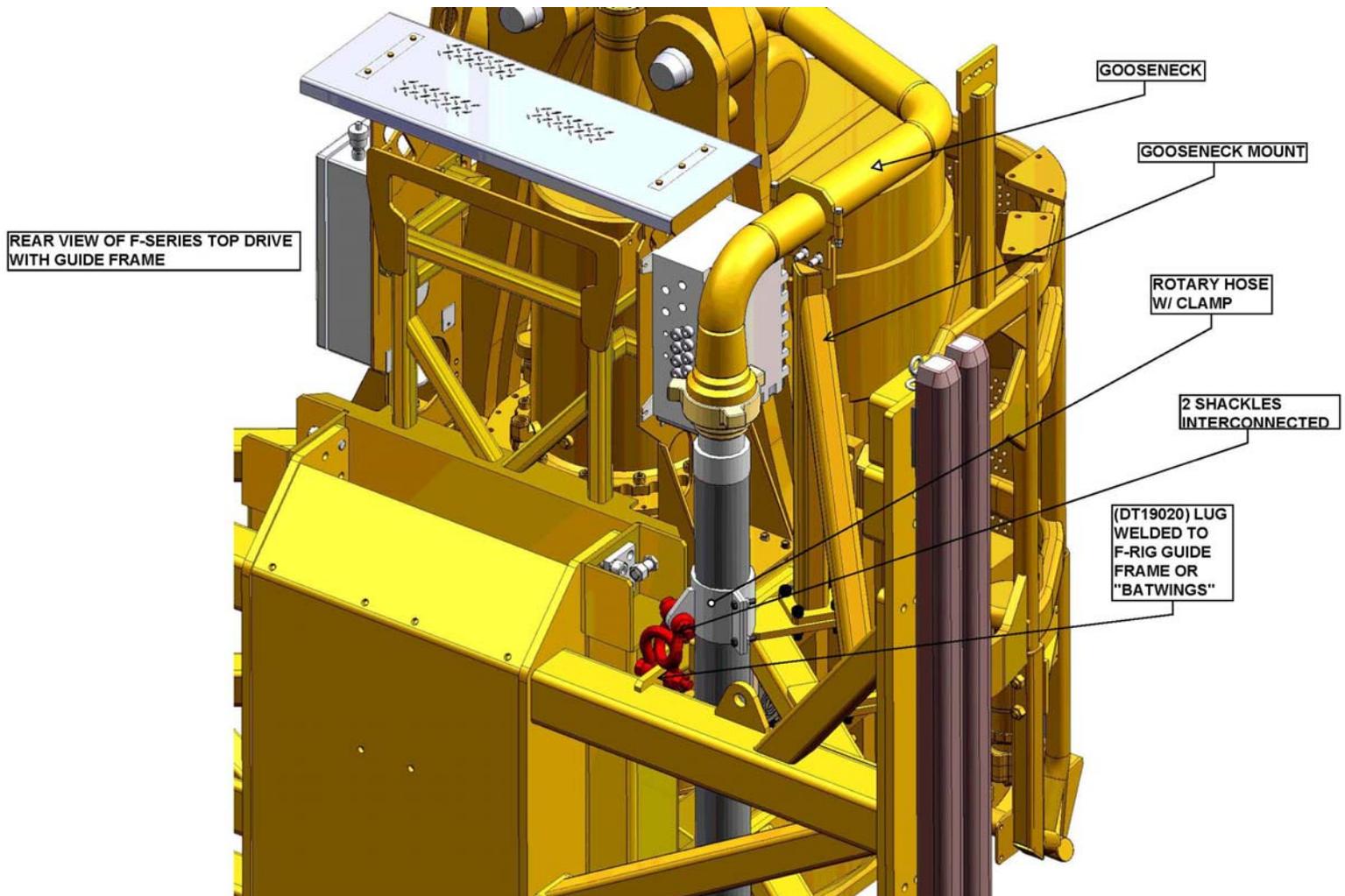


Fig. 2

1. Refer to included drawing (DT19021).
2. Weld lug (DT19020) to F-rig Guide Frame based on specifications shown in the modification drawing (DT19021).
3. Interconnect (2) shackles (supplied by customer) between Rotary Hose Clamp and the lug (DT19020) welded to the F-rig Guide Frame as shown in Fig. 2.

Sundowner Rotary Hose Retention (AY16685) Procedure:

Parts:

DT19013 - PLATE, RETENT.,ROTARY HOSE,275T,M-SERIES
SH-0750NC-0350-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 3.50, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 48" LG WIRE ROPE SLING W/ HEAVY DUTY THIMBLE
AND 7/8" SHACKLE

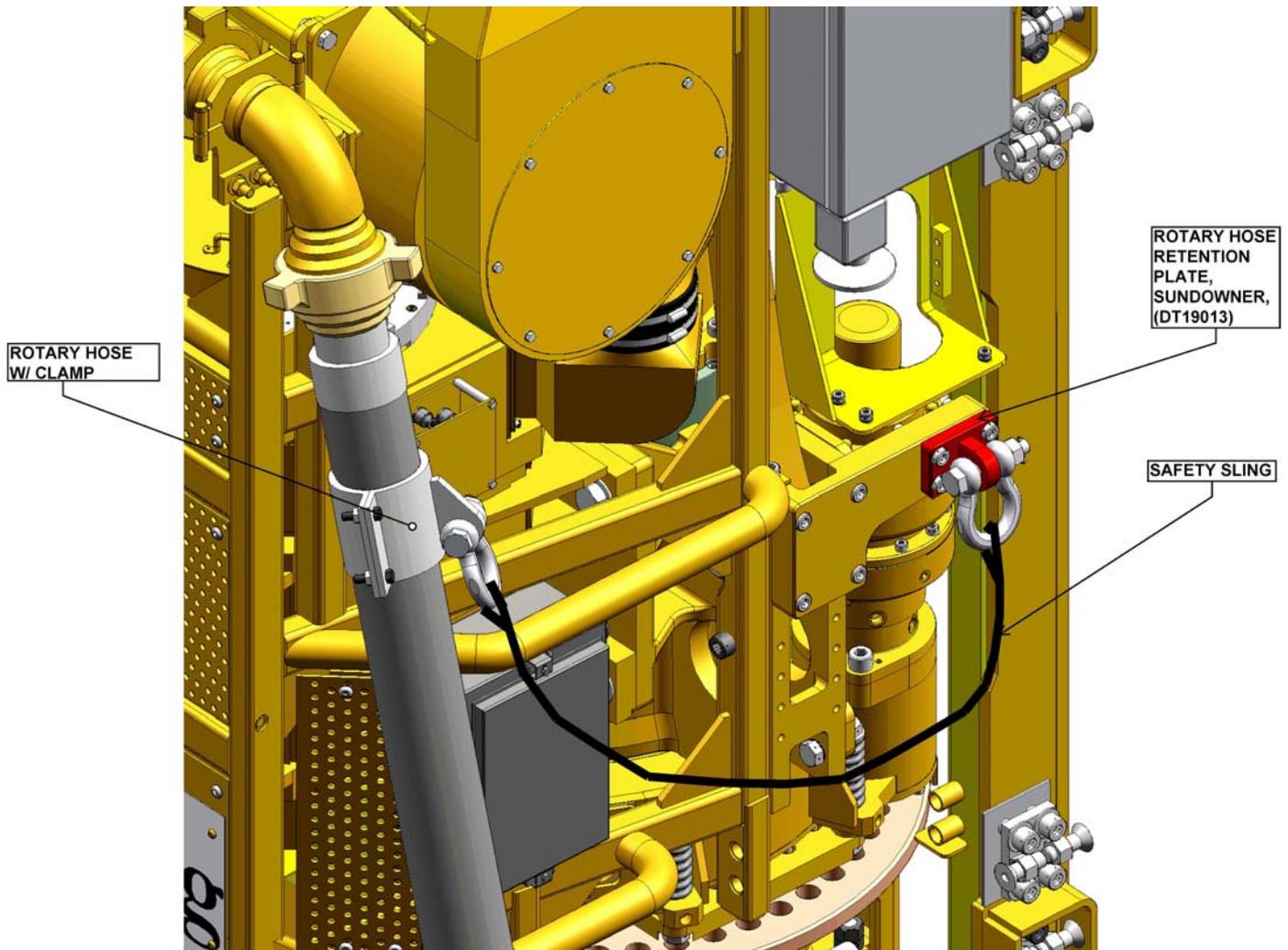


Fig. 3

1. Remove existing (4) $\frac{3}{4}$ "-10UNC capscrews from existing Connector Plate and replace with Rotary Hose Retention Kit (AY16685) for Sundowner which includes Rotary Hose Retention Plate (DT19013) with longer $\frac{3}{4}$ "-10UNC x $3\frac{1}{2}$ " (SH-0750NC-0350-W) capscrews and (4) Nordloc washers (LW-0750-NLS). Rotary Hose Retention Plate is installed on top of the existing Connector Plate. See Fig. 3.
2. Torque the (4) $\frac{3}{4}$ "-10UNC x $3\frac{1}{2}$ " (SH-0750NC-0350-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
3. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19013). (Sling and shackle supplied by customer)
4. Install other end of sling to a shackle and install on the Rotary Hose Clamp. Tie wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig. 3.

PRODUCT: TOP DRIVE

DATE: 06.08.2010

SUBJECT: ROTARY HOSE RETENTION, 275T-AC, 500/750T-AC

SERIAL NUMBERS: **6027AC - 049,151,156,159,166,173,199,239,257,265,268,270,278,279,281,292,297,299,300,304,308,315,320,322,325,333,345,350,354,371,374,381,391,395,404,417,419,421,441,445,457,462,466,478,485,492,498,502,505,506,507,516,519,523,530,540,541,542,543,552,572,573,574,584,585,591,598,599,601,602,603,605,608,616,617,618,619,623,627,629,630,631,634,643,647,649,654,655,658,661,664,668,670,676,680,687,688,690,694,696,700,702,706,709,711,717,730,731,739,740,742,743,744,748,751,753,755,756,759,762,763,764,765,766,768,769,772,773,777,779,780,783,785,786,788,790,792,798,799,800,806,816,818**
500T-AC - 221,229,230,261,262,264,267,271,272,275,276,277,280,283,284,285,286,288,289,291,294,298,301,302,306,312,313,316,318,321,324,326,328,330,334,336,341,344,351,353,357,367,369,373,375,377,379,383,389,390,428,434,435,447,448,450,451,453,459,467,472,474,481,484,490,495,503,504,509,511,512,524,536,539,545,546,551,556,559,561,563,576,577,579,581,583,588,589,590,597,600,607,609,610,611,612,613,615,620,621,622,625,626,632,635,636,637,639,640,641,645,648,650,652,663,665,666,671,672,673,675,678,681,685,691,693,698,699,703,704,705,707,708,713,715,716,721,722,723,724,725,728,729,735,737,746,758,770,771
750T-AC - 151,156,159,177,179,181,186,199,208,212,214,240,258,259,263,273,274,287,311,347,358,364,366,376,380,386,403,412,416,430,443,446,465,500,528,537,547,560,569,578,596,614,624,628,638,646,651,653,656,660,662,669,674,683,697,714,727,750,757,796,805

DISCUSSION: It was reported that Rotary Hose safety clamp was secured to the Top Drive Guard with a safety sling which caused a Top Drive Guard member to break off and fall to the rig's floor. This is not a recommended practice.

RECOMMENDATION: If a suitable "tie-off" point is currently not sufficient, kits have been created to provide a permanent "tie-off" location for Rotary Hose Clamp.

Refer to the following Rotary Hose Retention Kits for an itemized parts listing.

TD Models:

Rotary Hose Retention Kits:

6027AC – STANDARD
1250/1275AC – STANDARD

AY16643
AY16680

INFORMATION:

For further information
contact:

For a complete list of all bulletins go to www.canrig.com

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Fax: 403.536.4605

275T-AC Rotary Hose Retention (AY16643) Procedure:

Parts:

DT19015 PLATE, RETENTION, ROTARY HOSE, 275T-AC
SH-0750NC-0125-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 1.25, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 32" LG WIRE ROPE SLING W/ HEAVY DUTY
THIMBLE AND 7/8" SHACKLE

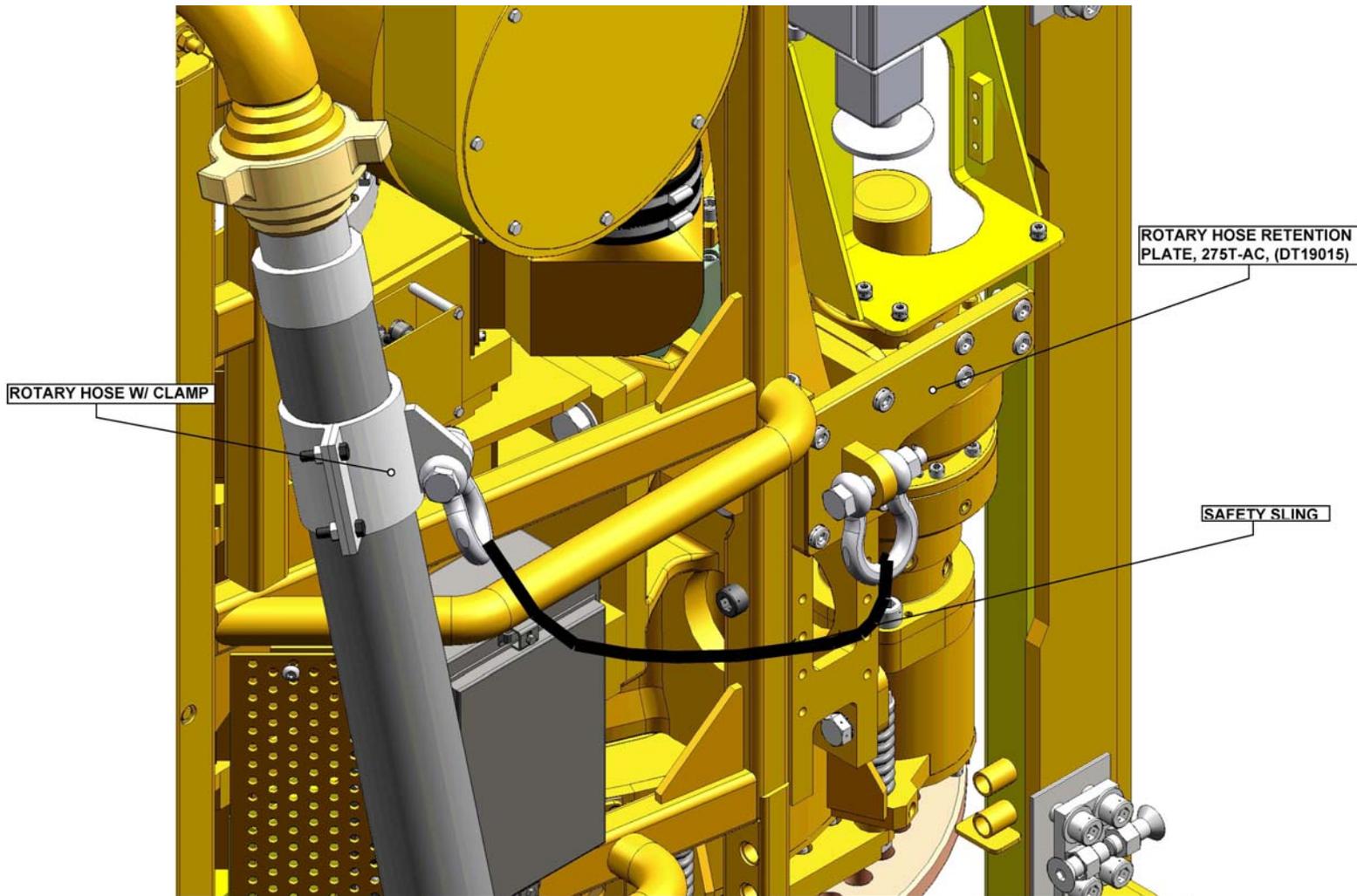


Fig. 1

1. Remove existing Connector Plate with (8) 3/4"-10UNC capscrews and replace with Rotary Hose Retention Kit (AY16643) for 275T-AC Top Drive which includes Rotary Hose Retention Plate (DT19015) with (8) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews and (8) Nordloc washers (LW-0750-NLS). See Fig. 1.
2. Torque the (8) 3/4"-10UNC x 1 1/4" LG capscews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
3. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19015). (Sling and shackle supplied by customer.)
4. Install other end of sling to other shackle and install on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig. 1.

500/750T-AC Rotary Hose Retention (AY16680) Procedure:

Parts:

(CUSTOMER SUPPLIED) 7/8" x 24" LG WIRE ROPE SLING W/ HEAVY DUTY THIMBLE AND 7/8" SHACKLE

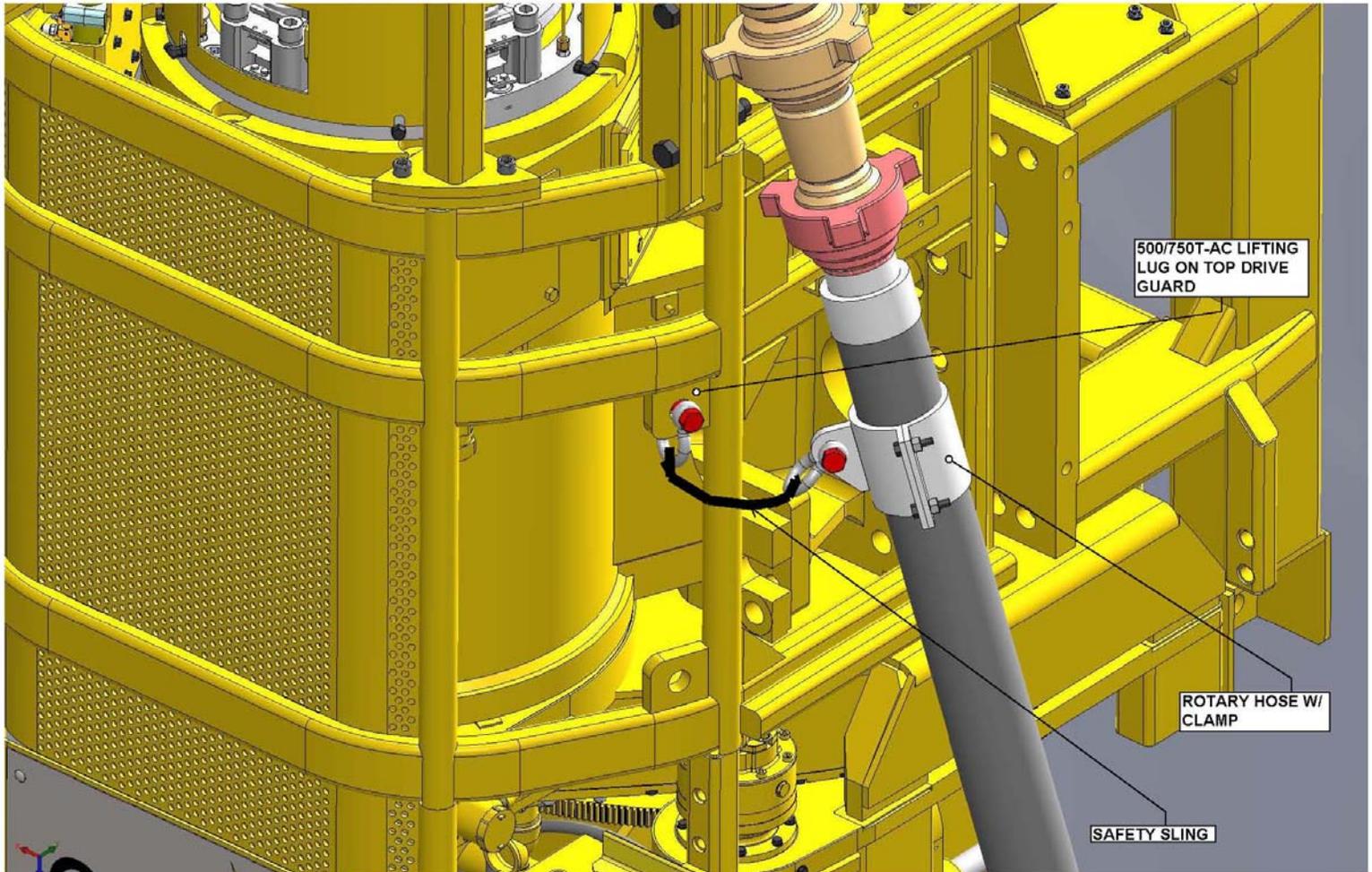


Fig. 2

1. Install one end of sling to shackle and attach to lug on Top Drive Guard. (Sling and shackle supplied by customer.) See Fig. 2.
2. Install other end of sling and shackle on the Rotary Hose Clamp. Final assembly should be as shown in Fig. 2.

PRODUCT: TOP DRIVE

DATE: 06.08.2010

SUBJECT: ROTARY HOSE RETENTION, 275-DC, 350-AC, 4017-AC, 350/500-DC

SERIAL NUMBERS: 275T-DC - 004,005,010,011,013,030,036,041,047,062,076,092,097,111,116,123,124,132,138,139,143,144,145,146,152,160,162,163,169,175,178,187,189,190,192,193,195,197,203,205,210,211,213,220,225,226,228,232,233,234,235,238,266,360,362,410,414,463,477,486,520,526,562,564,594
 350-AC - 454,499,517,531,535,548,582,606,642,667,682,720,745,761,767,782,784,787,793
 4017-AC – 550,554,566,567,586,587,592,644,659,677,679,689,692,710,712,726,733,734,736,760,774,776,804,810
 350/500T-DC - 007,008,014,015,016,017,018,019,020,021,022,023,024,025,027,028,029,031,032,033,034,035,037,038,039,040,042,043,044,045,046,048,051,052,053,054,055,056,058,059,060,061,063,064,065,067,068,069,070,072,073,074,075,077,078,079,081,082,083,084,086,087,088,089,090,091,093,094,095,098,099,100,101,102,104,105,107,108,110,112,113,114,115,117,118,119,120,122,125,126,127,128,129,134,140,142,149,150,154,155,157,158,161,164,165,167,168,170,171,172,174,176,180,182,183,184,185,188,191,194,196,198,201,202,204,206,207,215,216,217,219,222,223,224,236,237,241,242,244,245,260,269,296,303,305,307,309,310,314,319,323,329,331,337,339,342,343,382,388,392,413,415,426,431,440,449,489,501,510,515,521,522,525,534,595,633,686

DISCUSSION: It was reported that Rotary Hose safety clamp was secured to the Top Drive Guard with a safety sling which caused a Top Drive Guard member to break off and fall to the rig's floor. This is not a recommended practice.

RECOMMENDATION: If a suitable "tie-off" point is currently not sufficient, kits have been created to provide a permanent "tie-off" location for Rotary Hose Clamp.

Refer to the following Rotary Hose Retention Kits for an itemized parts listing. The following kits will require a modification to the Top Drive Main Housing.

TD Models:	Rotary Hose Retention Kits:
6027DC	AY16655
350AC	AY16664
4017AC	AY16675
350/500DC	AY16686

INFORMATION: For a complete list of all bulletins go to www.canrig.com

For further information contact:

Field Service Canrig Drilling Technology Ltd. 12707 North Freeway, Suite 500 Houston, Texas 77060 Phone: 281.774.5600 Fax: 281.774.1940	7475 51 Street SE Calgary, AB T2C 4L6 Phone: 403.237.6400 Fax: 403.536.4605
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275T-DC Rotary Hose Retention (AY16655) Procedure:

Parts:

DT19072 - MOD, HOUSING, 275T, ROTARY HOSE RETENTION
DT19071 - PLATE, RETROFIT, ROTARY RETENTION, 275T
SH-0750NC-0125-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 1.25, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 32" LG WIRE ROPE SLING W/ HEAVY DUTY THIMBLE
AND 7/8" SHACKLE

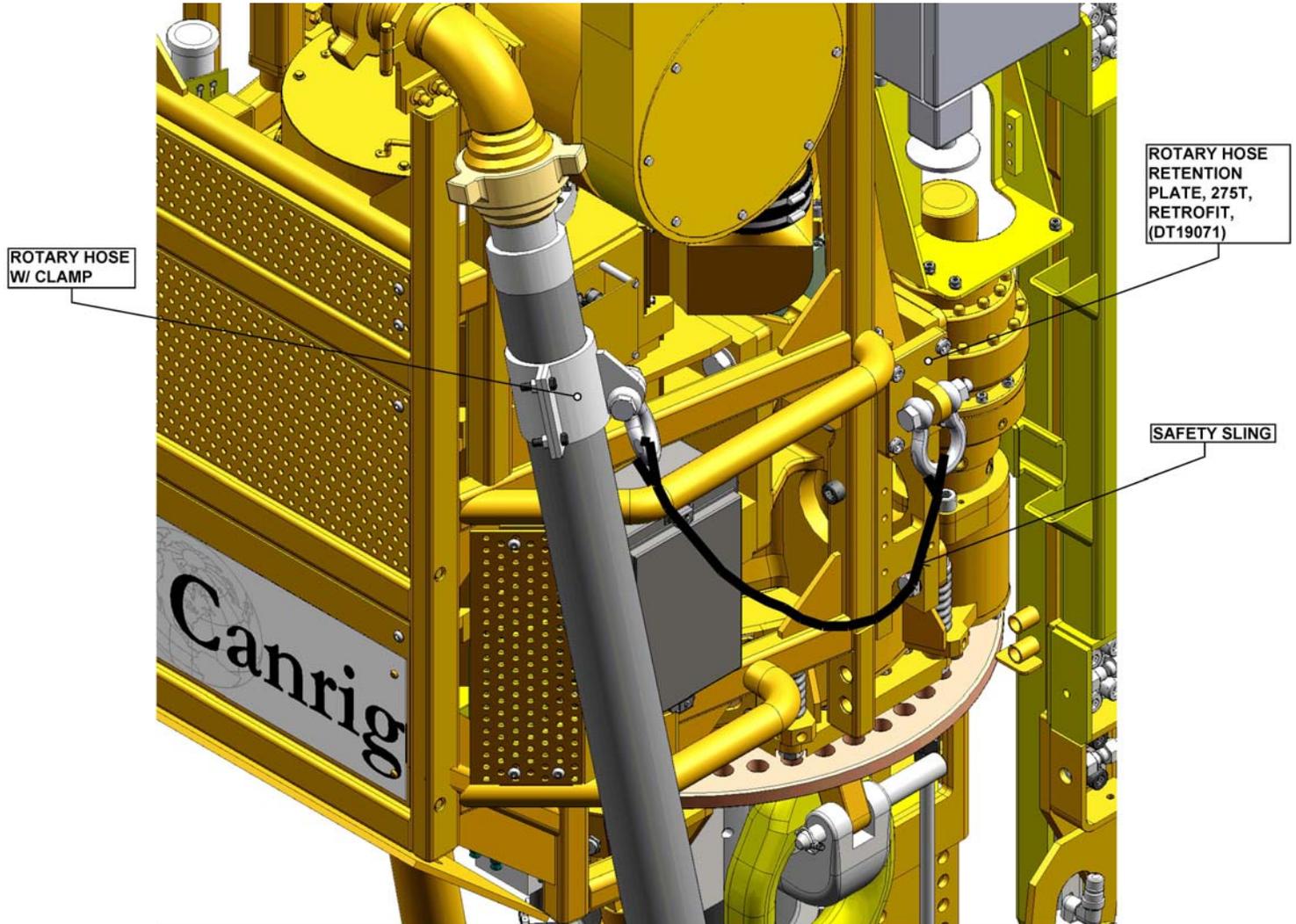


Fig. 1

1. Refer to included drawing (DT19072) for Top Drive Housing modification to drill and tap (4) holes at specified dimensional location in drawing. See Fig. 1.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19071) with (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews and (4) Nordloc washers (LW-0750-NLS).
3. Torque the (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19071). (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig 1.

350T-AC Rotary Hose Retention (AY16664) Procedure:

Parts:

DT19084 - MOD, HOUSING, ROTARY HOSE RETENT., 350T-AC
DT19083 - PLATE, ROTARY HOSE RETENTION, 350T-AC
SH-1000NC-0200-W - CAPSCR, HEX SOC HD, 1-8UNC x 2.00, W
LW-1000-NL - LOCKWASHER, 1 NORD-LOCK
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 40" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

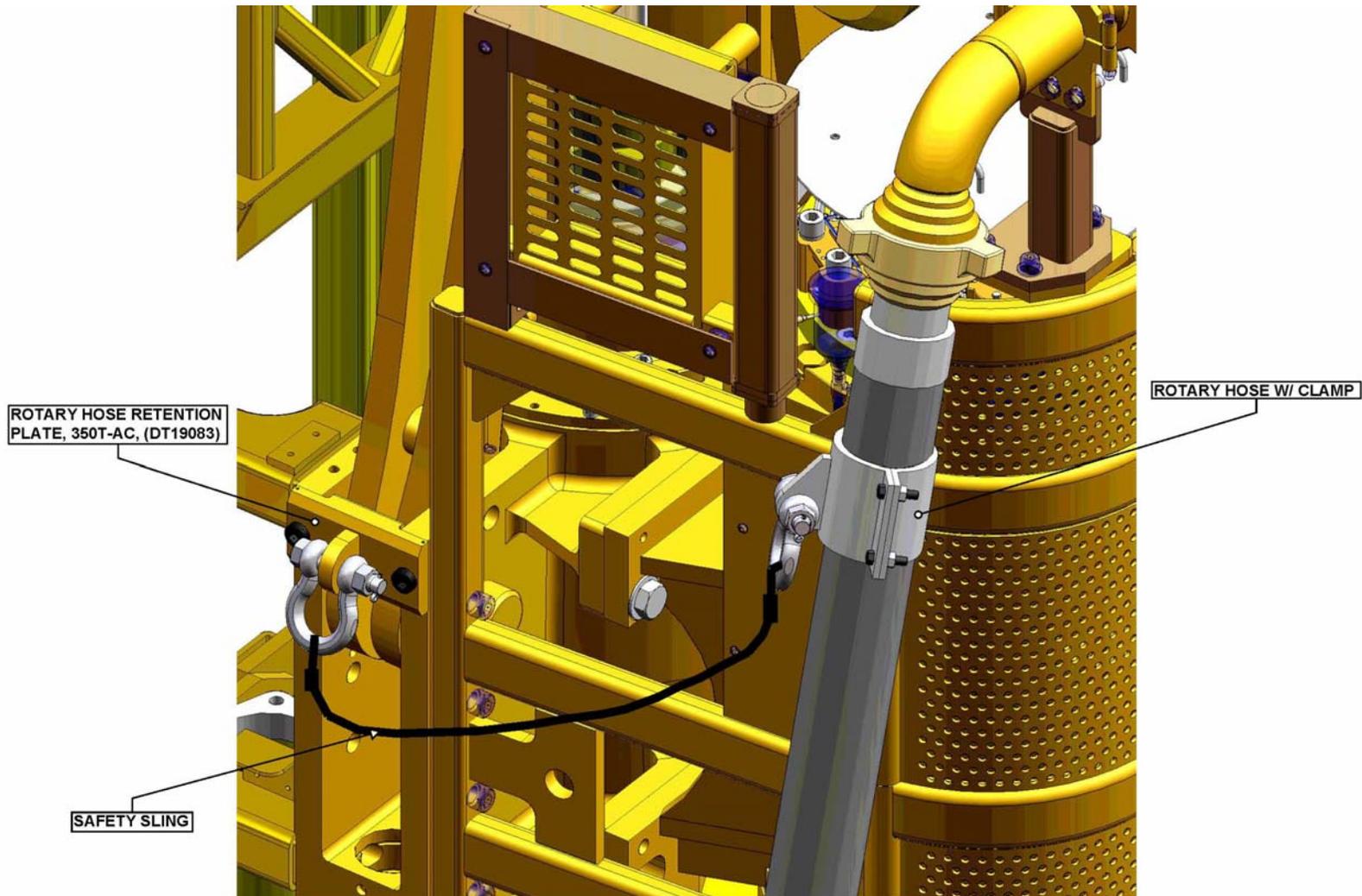


Fig. 2

1. Refer to included drawing (DT19084) for Top Drive Housing Modification to drill and tap (2) holes at specified dimensional location in drawing. See Fig. 2.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19083) with (2) 1"-8UNC x 2" (SH-1000NC-0200-W) capscrews and (2) Nordloc washers (LW-1000-NL).
3. Torque the (2) 1"-8UNC x 2" (SH-1000NC-0200-W) capscrews to 848 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19083). (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap sling to eliminate excess slack with (E03-2000-010) Final assembly should be as shown in Fig 2.

175T-AC Rotary Hose Retention (AY16675) Procedure:

Parts:

DT19121 - MOD, HSG EAR, ROTARY RETENTION, 4017T-AC
DT19107 - PLATE, ROTARY HOSE RETENTION, 4017-AC
SH-0750NC-0125-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 1.25, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 50" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

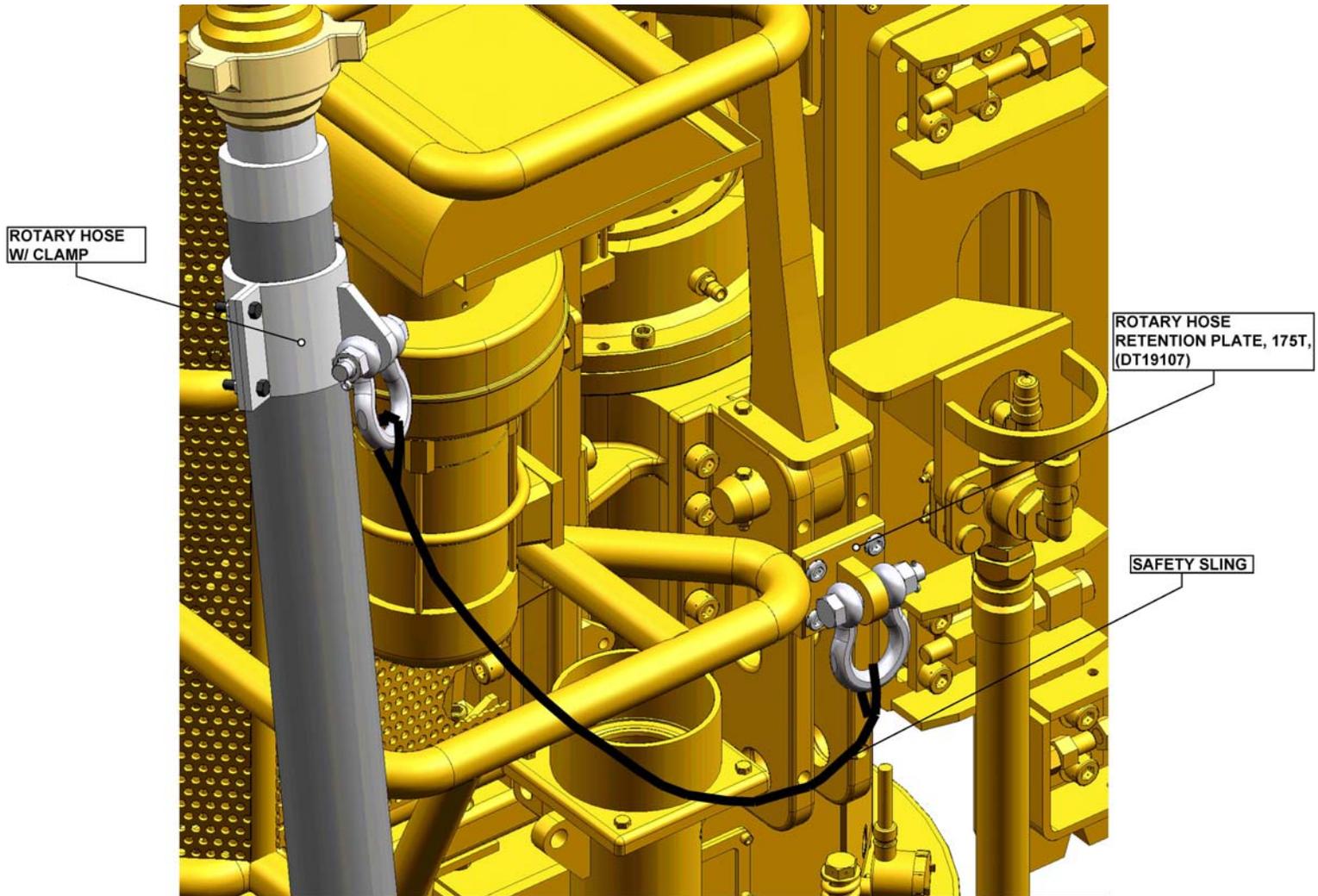


Fig. 3

1. Refer to included drawing (DT19121) for Top Drive Housing modification to drill and tap (4) holes at specified dimensional location in drawing. See Fig. 3.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19107) with (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews and (4) Nordloc washers (LW-0750-NLS)
3. Torque the (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19107) . (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig 3.

350/500T-DC Rotary Hose Retention (AY16686) Procedure:

Parts:

DT19158 - PLATE,ROTARY HOSE RETENTION,350/500T-DC
SH-0750NC-0400-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 4.00, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 43" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

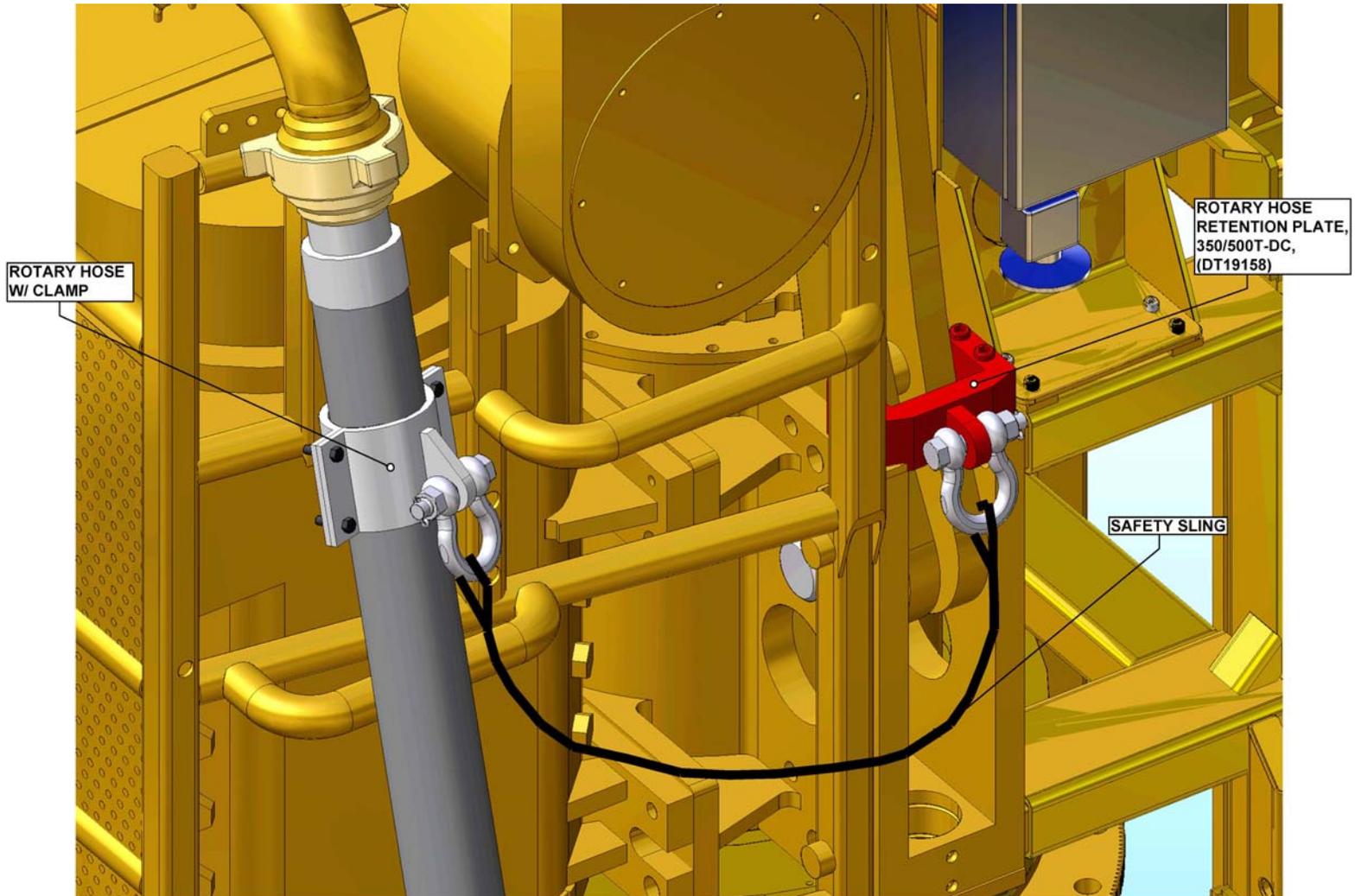


Fig. 4

1. Remove existing Upper Link Retainer with (2) $\frac{3}{4}$ "-10UNC 1 $\frac{1}{2}$ " LG capscrews and replace with Rotary Hose Retention Kit (AY16686) for 350/500T-DC which includes Rotary Hose Retention Plate (DT19158) with (4) $\frac{3}{4}$ "-10UNC x 4" (SH-0750NC-0400-W) capscrews and (4) Nordloc washers (LW-0750-NLS). See Fig. 4.
2. Torque the (4) $\frac{3}{4}$ "-10UNC x 4" (SH-0750NC-0400-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
3. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19158). (Sling and shackle supplied by customer.)
4. Install other end of sling to other shackle and install on the Rotary Hose Clamp. Tie-wrap sling to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig. 4.

275T-DC Rotary Hose Retention (AY16655) Procedure:

Parts:

DT19072 - MOD, HOUSING, 275T, ROTARY HOSE RETENTION
DT19071 - PLATE, RETROFIT, ROTARY RETENTION, 275T
SH-0750NC-0125-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 1.25, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 32" LG WIRE ROPE SLING W/ HEAVY DUTY THIMBLE
AND 7/8" SHACKLE

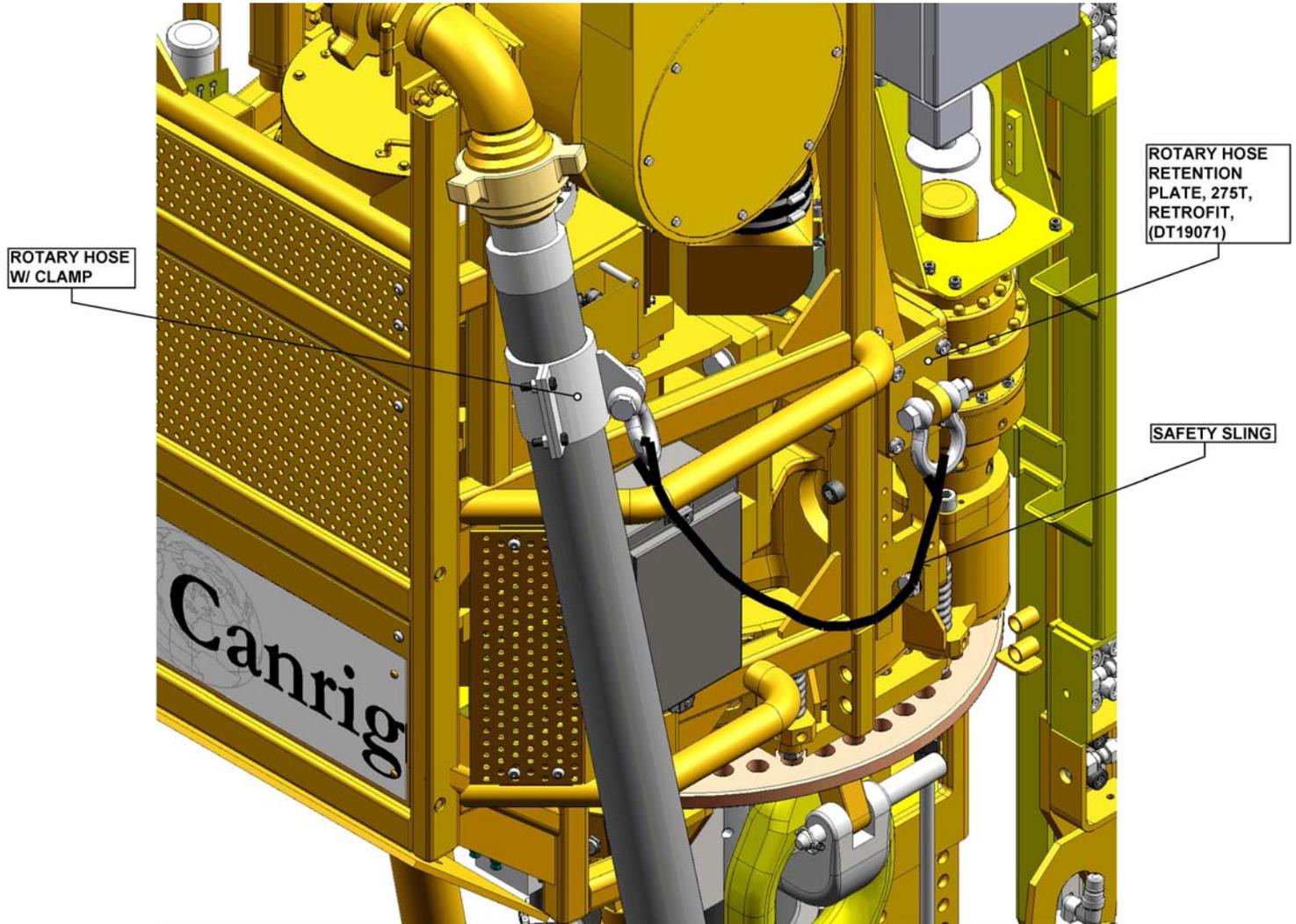


Fig. 1

1. Refer to included drawing (DT19072) for Top Drive Housing modification to drill and tap (4) holes at specified dimensional location in drawing. See Fig. 1.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19071) with (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews and (4) Nordloc washers (LW-0750-NLS).
3. Torque the (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19071). (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig 1.

350T-AC Rotary Hose Retention (AY16664) Procedure:

Parts:

DT19084 - MOD, HOUSING, ROTARY HOSE RETENT., 350T-AC
DT19083 - PLATE, ROTARY HOSE RETENTION, 350T-AC
SH-1000NC-0200-W - CAPSCR, HEX SOC HD, 1-8UNC x 2.00, W
LW-1000-NL - LOCKWASHER, 1 NORD-LOCK
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 40" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

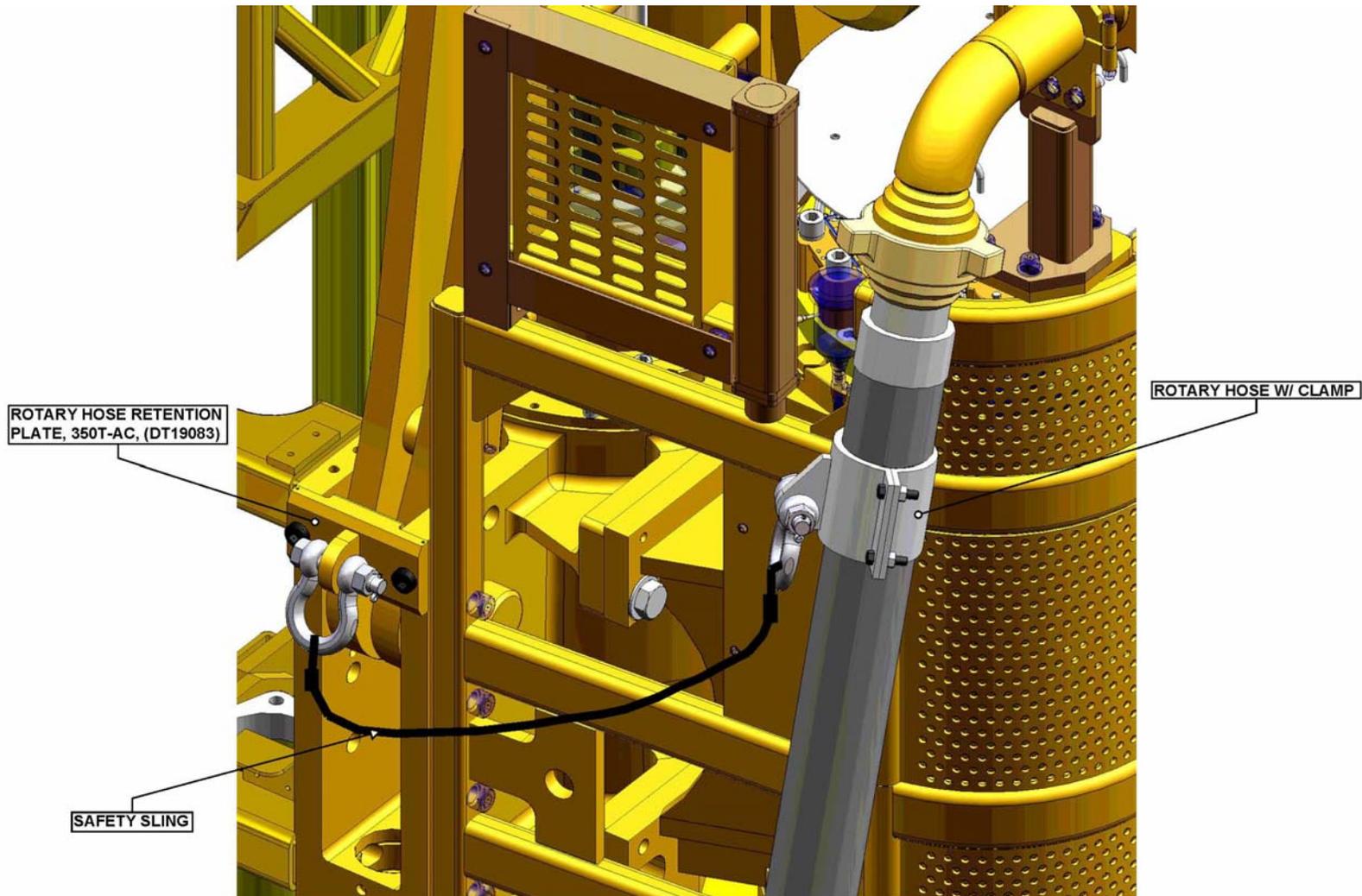


Fig. 2

1. Refer to included drawing (DT19084) for Top Drive Housing Modification to drill and tap (2) holes at specified dimensional location in drawing. See Fig. 2.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19083) with (2) 1"-8UNC x 2" (SH-1000NC-0200-W) capscrews and (2) Nordloc washers (LW-1000-NL).
3. Torque the (2) 1"-8UNC x 2" (SH-1000NC-0200-W) capscrews to 848 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19083). (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap sling to eliminate excess slack with (E03-2000-010) Final assembly should be as shown in Fig 2.

175T-AC Rotary Hose Retention (AY16675) Procedure:

Parts:

DT19121 - MOD, HSG EAR, ROTARY RETENTION, 4017T-AC
DT19107 - PLATE, ROTARY HOSE RETENTION, 4017-AC
SH-0750NC-0125-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 1.25, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 50" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

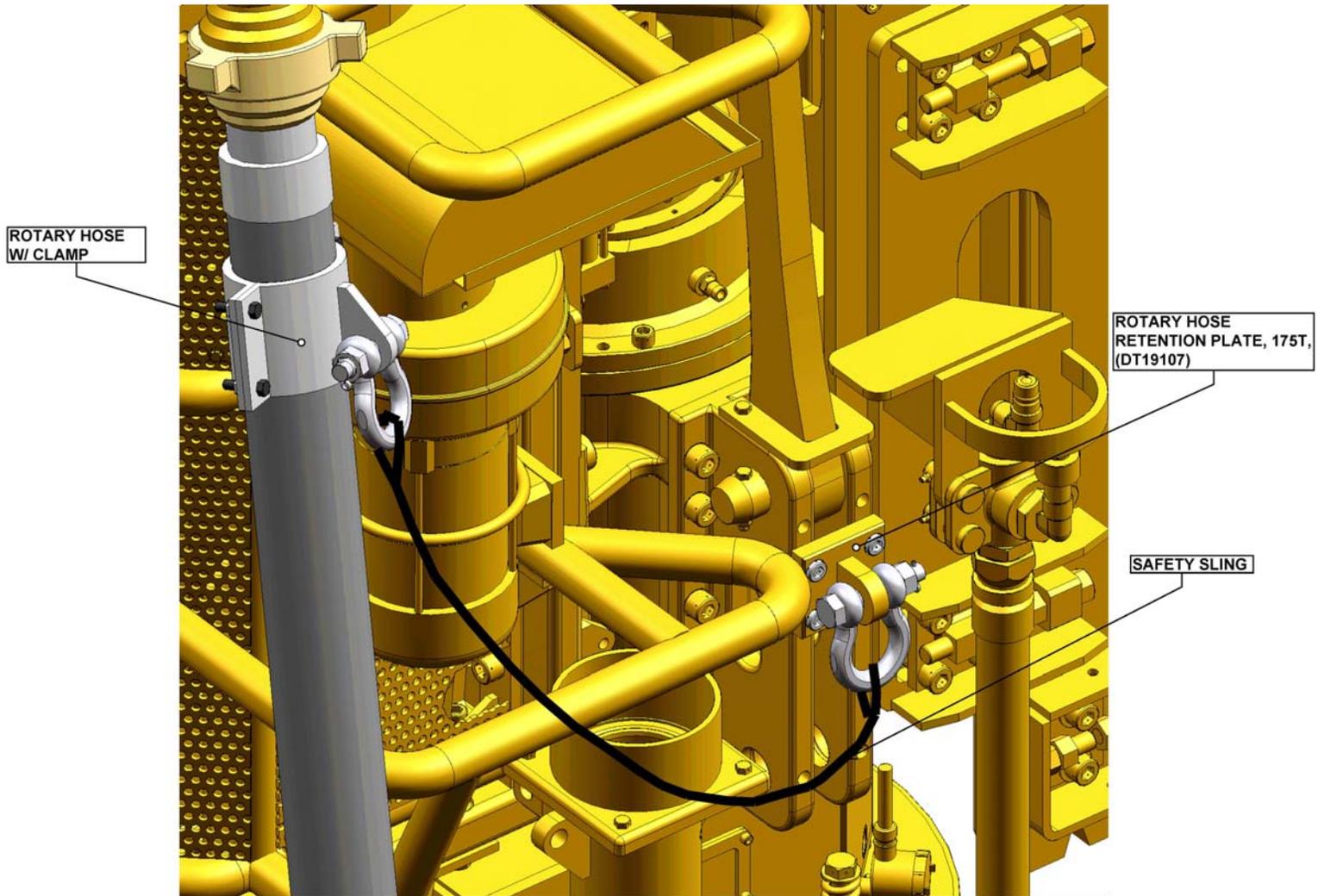


Fig. 3

1. Refer to included drawing (DT19121) for Top Drive Housing modification to drill and tap (4) holes at specified dimensional location in drawing. See Fig. 3.
2. After holes are tapped, install Rotary Hose Retention Plate (DT19107) with (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews and (4) Nordloc washers (LW-0750-NLS)
3. Torque the (4) 3/4"-10UNC x 1 1/4" (SH-0750NC-0125-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
4. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19107) . (Sling and shackle supplied by customer.)
5. Install the other of sling to shackle and attach on the Rotary Hose Clamp. Tie-wrap slings to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig 3.

350/500T-DC Rotary Hose Retention (AY16686) Procedure:

Parts:

DT19158 - PLATE,ROTARY HOSE RETENTION,350/500T-DC
SH-0750NC-0400-W - CAPSCR, HEX SOC HD, 3/4-10UNC x 4.00, W
LW-0750-NLS - LOCKWASHER, 3/4 NORD-LOCK SMALL
M21-2000-010 - WIRE ROPE, 1/16", 7 x 7, STAINLESS
M19-3006-010 - FERRULE, 1/16, OVAL, ALUMINUM
E03-2000-010 - CABLE TIE, 13.4 IN LG
(CUSTOMER SUPPLIED) 7/8" x 43" LG WIRE ROPE SLING W/ HEAVY
DUTY THIMBLE AND 7/8" SHACKLE

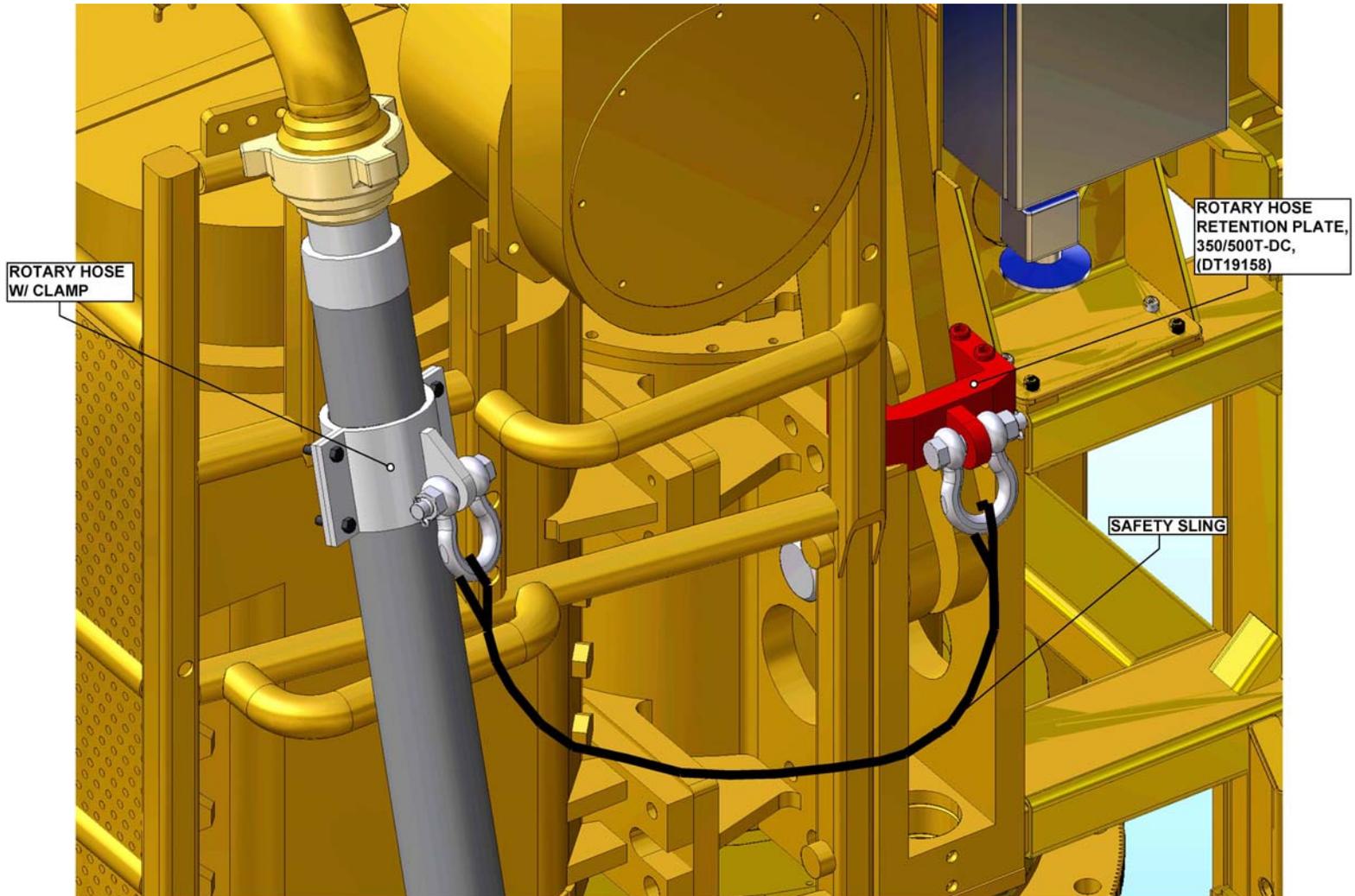


Fig. 4

1. Remove existing Upper Link Retainer with (2) $\frac{3}{4}$ "-10UNC 1 $\frac{1}{2}$ " LG capscrews and replace with Rotary Hose Retention Kit (AY16686) for 350/500T-DC which includes Rotary Hose Retention Plate (DT19158) with (4) $\frac{3}{4}$ "-10UNC x 4" (SH-0750NC-0400-W) capscrews and (4) Nordloc washers (LW-0750-NLS). See Fig. 4.
2. Torque the (4) $\frac{3}{4}$ "-10UNC x 4" (SH-0750NC-0400-W) capscrews to 350 ft-lbs and safety wire with (M21-2000-010) and (M19-3006-010).
3. Install one end of sling to shackle and attach to lug in Rotary Hose Retention Plate (DT19158). (Sling and shackle supplied by customer.)
4. Install other end of sling to other shackle and install on the Rotary Hose Clamp. Tie-wrap sling to eliminate excess slack with (E03-2000-010). Final assembly should be as shown in Fig. 4.

PRODUCT: TOP DRIVE

DATE: 03/01/2011

SUBJECT: DE / NDE GE-B20 Motor Grease Tubing

SERIAL NUMBERS: (All Standard Top Drive GE-B20 Traction Motors)

DISCUSSION: Our many years of experience has shown that not greasing the motor's bearing between overhauls does not cause bearing failure. GE recommends to periodically grease the motor's bearing.

RECOMMENDATION: Grease tubing has been added to the (DE) drive end and (NDE) non-drive end of Top Drive GE-B20 traction motors to improve accessibility to traction motor's grease ports. Follow the instructions below for this one time motor modification.

[Affected Assemblies](#)

AY10869 MOTOR ASSEMBLY, TAPERED SHAFT, 26T
AY10869-1 MOTOR ASSEMBLY, SPLINED SHAFT, 26T
AY11450 MOTOR ASSEMBLY, TAPERED SHAFT, 25T
AY11450-1 MOTOR ASSEMBLY, SPLINED SHAFT, 25T
AY12492-1 MOTOR ASSEMBLY, SPLINED SHAFT, 25T

The following kits have been created to accommodate the addition of grease tubing to GE-B20 motors:

[TAPERED SHAFT MOTOR GREASE TUBE KIT](#)

AY16807 KIT, GREASE TUBE, B20, TAPERED

[SPLINED SHAFT MOTOR GREASE TUBE KIT](#)

AY16808 KIT, GREASE TUBE, B20, SPLINED

[Preliminary Instructions:](#)

Refer to bill of materials for required parts.

Grease Tube Drive-End Installation Procedure:

1. Remove bolts securing Exhaust Plenum to the Traction Motor.
2. Drill 7/8" diameter hole next to differential pressure connection on the off-driller's side of traction motor at dimensions shown in Figure 1.

 **(Note: Ensure shavings are removed from Exhaust Plenum before re-assembly of Exhaust Plenum on the traction motor.)**

3. Weld the 1/4" NPT coupling (F06-1005-010) in 7/8" diameter hole with 1/8 fillet weld all around.
4. Remove the plug on traction motor's grease port and install adapter (H15-2001-04-04).

5. Fasten the drive-end grease tube (DT18754 or DT18754-1) to the adapter (H15-2001-04-04) on the traction motor.
6. Install the other adapter (H15-2001-04-04) on the inside of the Exhaust Plenum in the welded $\frac{1}{4}$ " NPT coupling (F06-1005-010).
7. Re-fasten Exhaust Plenum to the traction motor.
8. Reach through Exhaust Plenum's discharge opening and fasten the other end of the drive-end grease tube to the adapter (H15-2001-04-04) installed in the welded $\frac{1}{4}$ " NPT coupling (F06-1005-010).
9. When greasing of traction motor bearings is required, remove existing plug and replace with $\frac{1}{4}$ " NPT grease zerk. Refer to GE manual GEK-91694C for type, amount, and frequency of applying grease. After recommended grease has been added, remove $\frac{1}{4}$ " grease zerk and proceed to Step 10.
10. Install $\frac{1}{4}$ " plug (H15-140109E-04) on the external side of $\frac{1}{4}$ " NPT coupling as shown in Figure 3.

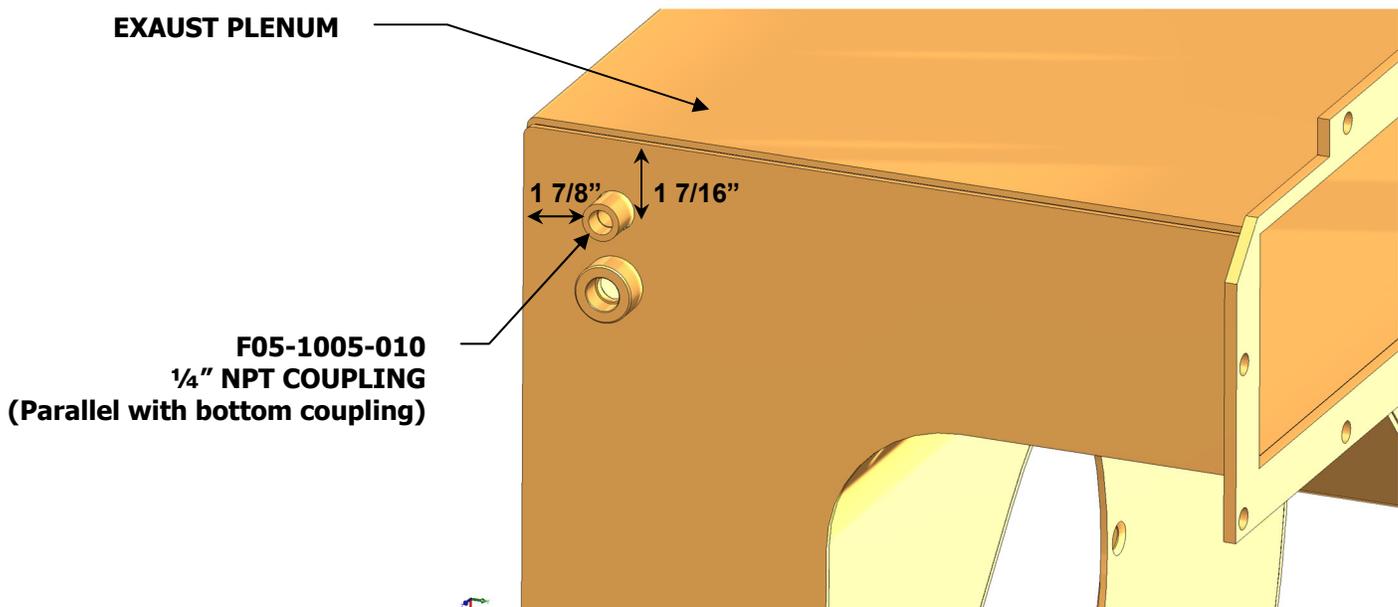


Figure 1

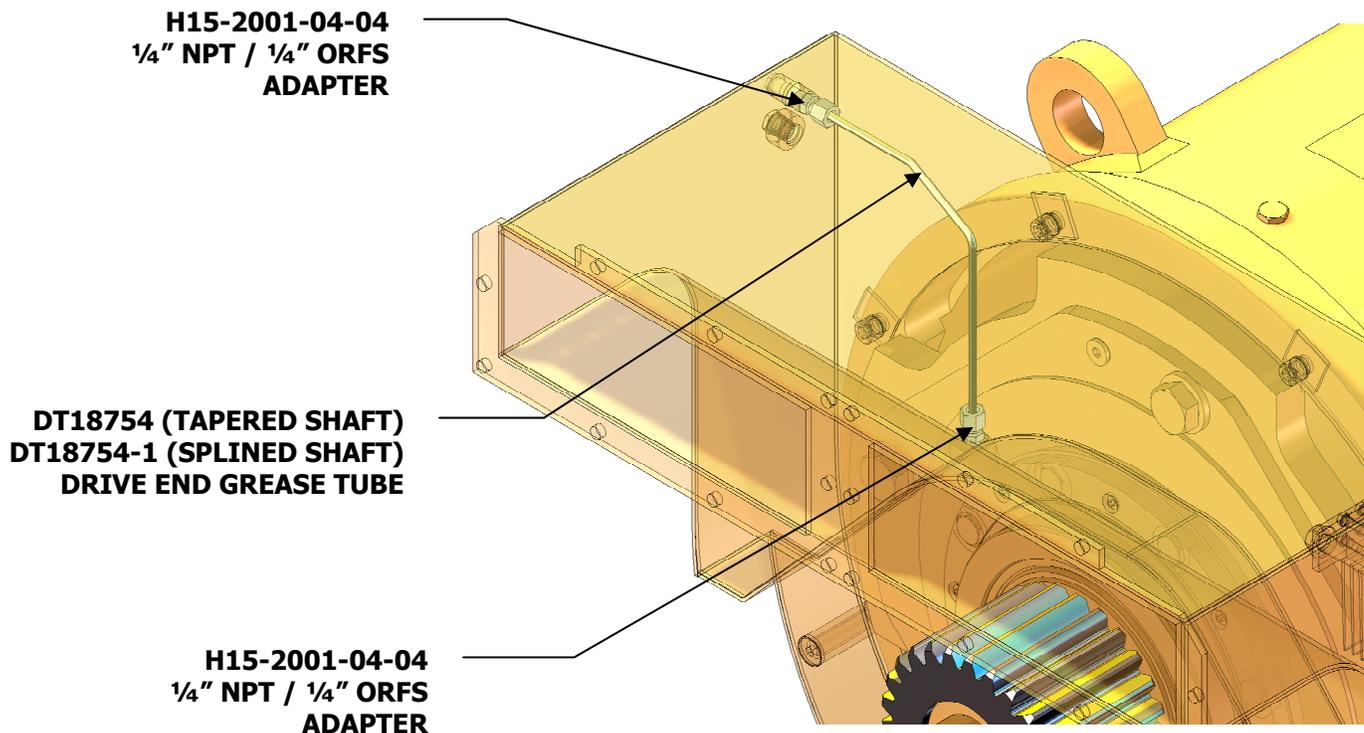


Figure 2

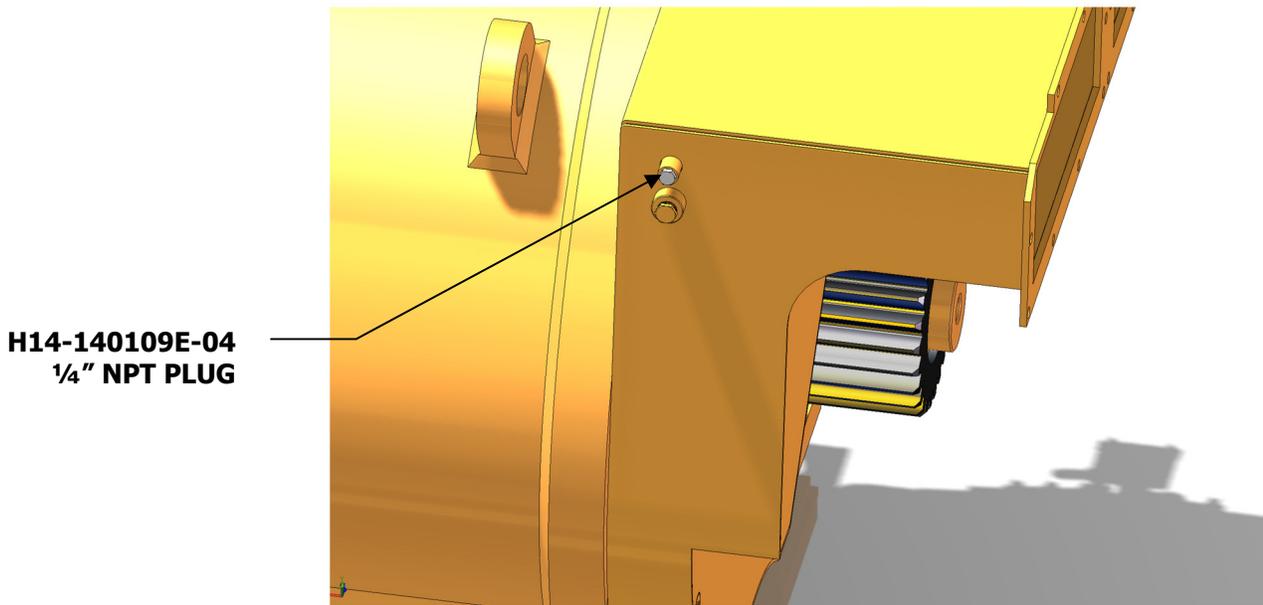


Figure 3

Grease Tube Non-Drive End Splined Shaft Motor Installation Procedure:

1. Remove Encoder and Brake assembly components.
2. Install (AY16278) to Brake Assembly Mount as shown in Figure 4.
3. When greasing of traction motor bearings is required, remove existing plug and replace with 1/4" NPT grease zerk. Pump grease amount as per Canrig Top Drive Manual recommendation. After recommended grease has been added remove 1/4" grease zerk and proceed to Step 4.

4. Install 1/4" plug (H15-140109E-04) on the external side of 1/4" NPT coupling as shown in Figure 4.
5. Re-install Encoder and Brake Assembly components on the traction motor.

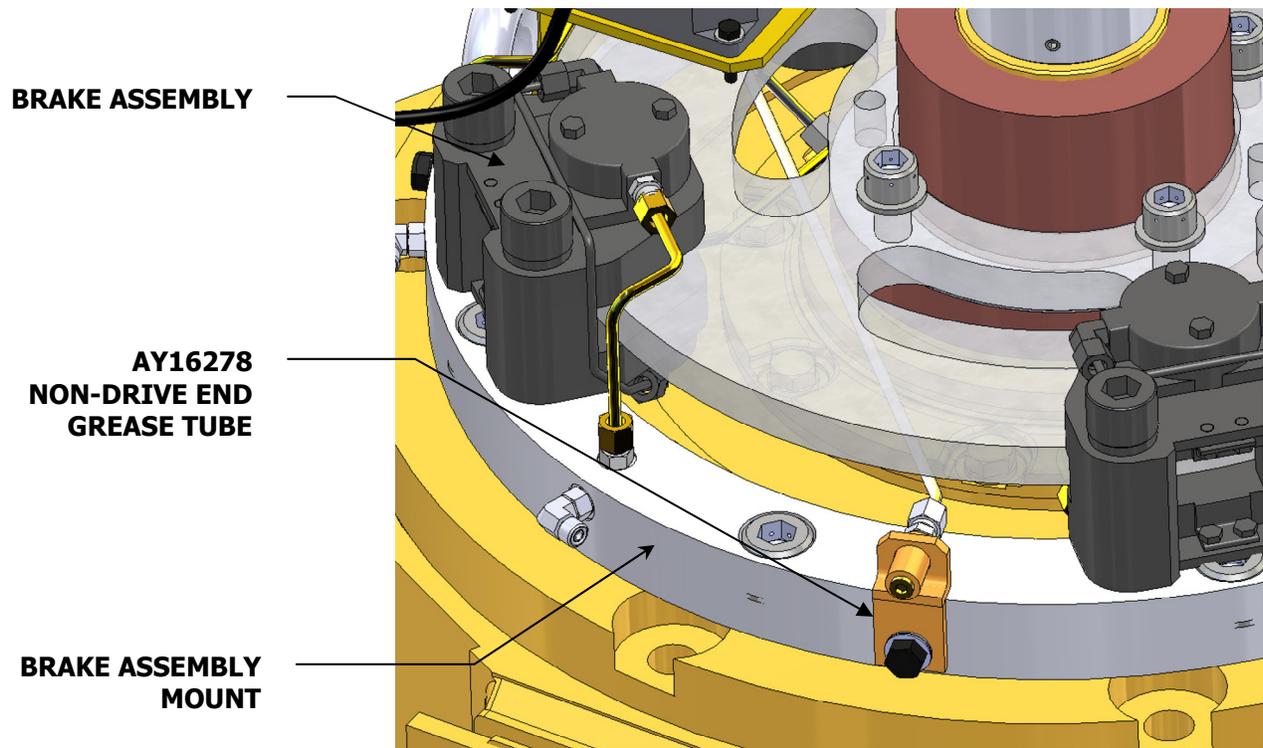
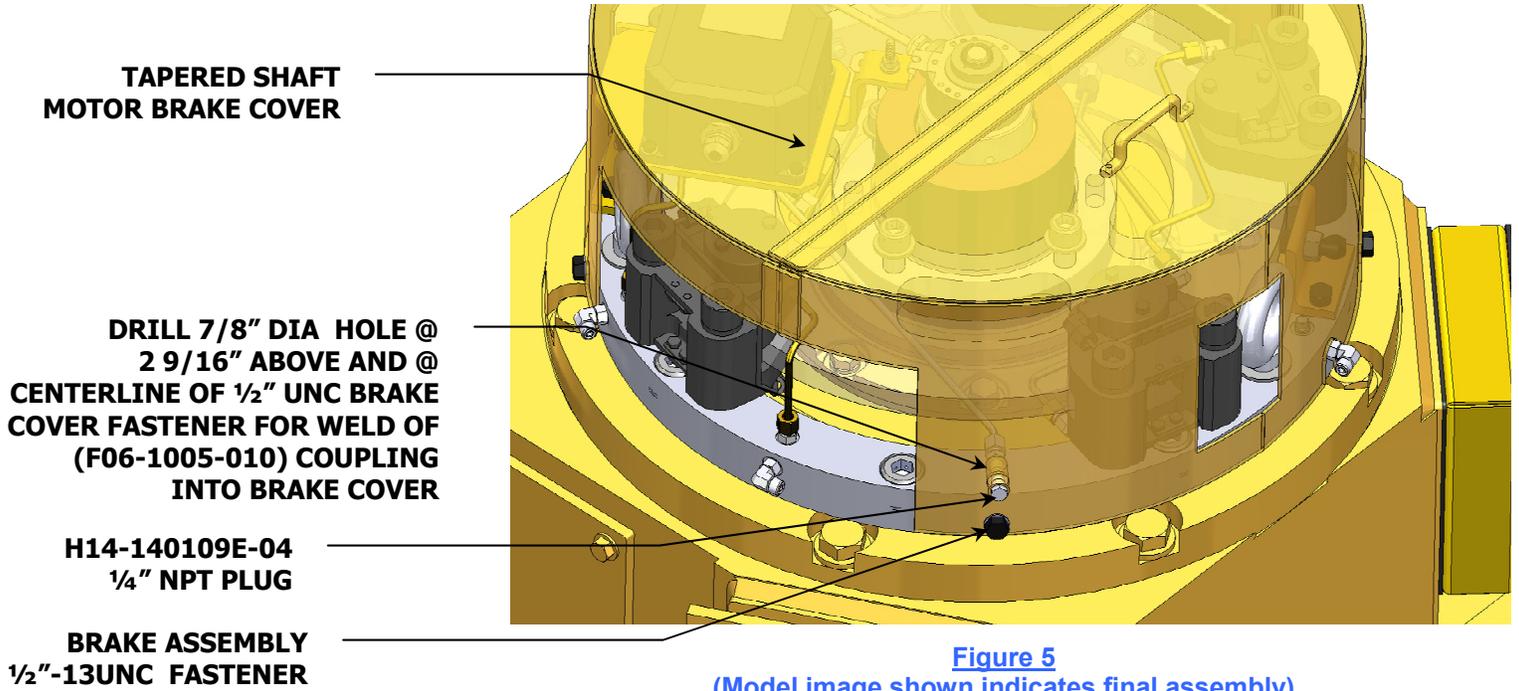


Figure 4
(Model image shown indicates final assembly with Brake Cover removed for clarity)

Grease Tube Non-Drive End Tapered Shaft Motor Installation Procedure:

1. Remove Encoder and Brake Assembly components.
2. Drill 7/8" diameter hole 2 9/16" above and center of existing 1/2"-13 UNC Brake Cover fastener and weld 1/4" NPT Coupling (F06-1005-010) into Brake Cover with 1/8" fillet weld as shown in Figure 5. Allow prior welded 1/4" NPT Coupling time to cool.
3. Install Adapter (H15-2001-04-04) in Traction Motor's grease port and also in internal side of welded 1/4"NPT Coupling in Brake Cover.
4. Install Grease Tube (DT19477) to Traction Motor and to Brake Cover as shown in Figure 5.
6. When greasing of traction motor bearings is required, remove existing plug (H15-140109E-04) and replace with 1/4" NPT grease zerk. Pump grease amount as per Canrig Top Drive Manual recommendation. After recommended grease has been added remove 1/4" grease zerk and proceed to Step 5.

5. Install 1/4" plug (H15-140109E-04) on the external side of 1/4" NPT coupling as shown in Figure 4.
6. Re-install Encoder and Brake Assembly components on the traction motor.



INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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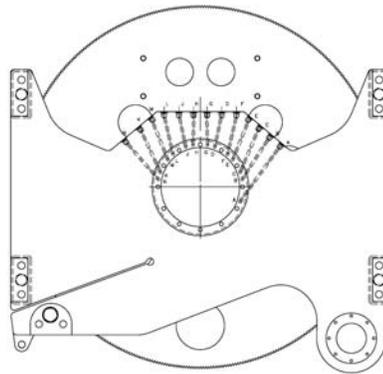
PRODUCT: TOP DRIVE

DATE: April 14, 2011

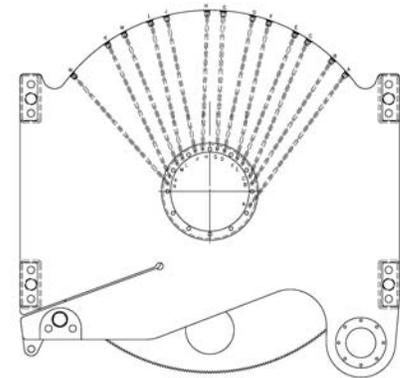
SUBJECT: Replacement Rotary Manifolds

MODELS: 8050,1050,1250 with 6.81 & 7.12 gear ratio, 1275, 6027

DISCUSSION: In an effort to improve top drive reliability, Canrig has modified the rotary manifold mounting plate on select models. They now have a larger radius where the hydraulic fittings attach to the ports. These new mounting plates can be installed on existing units but require a change in hydraulic fittings and hoses. The old mounting plates have been discontinued.



OLD STYLE



NEW STYLE

RECOMMENDATION:

When ordering a replacement mounting plate, place an order for the mounting plate specified in the parts book. If it is a discontinued part, you will receive the new part with all the hoses and fittings required to install. If it is the new style, you will receive the replacement part as ordered.

When ordering a replacement rotary manifold, place an order for the rotary manifold specified in the parts book. If it is a discontinued assembly, you will receive the new assembly with all the hoses and fittings required to install. If it is the new style, you will receive the replacement part as ordered.

TOP DRIVE MODEL	OLD ROTARY MANIFOLD ASSY	REPLACEMENT ROTARY MANIFOLD ASSY
6027	AY10247	AY17840
8050-1250	AY10133	AY17832
1275	AY10114	AY17084

INFORMATION:

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SAFETY ALERT

PRODUCT: TOP DRIVE TORQUE
GUIDE

DATE: SEPT 30, 2011

SUBJECT: TORQUE GUIDE PIVOT PIN RETAINER BOLT LENGTH

SERIAL NUMBERS: ALL PORTABLE FOLDING TORQUE GUIDES

DISCUSSION: The retaining bolt on the torque guide pivot pin may catch on the edge of the torque guide as shown in FIGURE 1. If there is interference between the bolt and torque guide during the operation of raising and lowering of the torque guide, the reacting forces may cause the bolt to shear.



BOLT/TORQUE GUIDE
INTERFERENCE

FIGURE 1

RECOMMENDATION: Reduce the length of the retaining bolt from 3in to 2.5in. This can be done by either cutting/grinding the end of the bolt or replacing the bolt. This reduction of length will eliminate any possible interference between the retaining bolt and the torque guide. Ensure the Stover locknut is used when replacing the bolt.

INFORMATION:

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PRODUCT: Portable Top Drive Systems

DATE: 9/26/11

SUBJECT: Torque Guide Section 1, Tensioning cylinders guard

SERIAL NUMBERS: N/A

DISCUSSION: A Guard around the Tensioning cylinders on the Torque Guide, Section 1, was only tack welded and this was missed on inspection. The tack welds subsequently failed, in the field, and the guard fell to the rig floor.

RECOMMENDATIONS: Immediately inspect the cylinder guards to verify they have sufficient welds.

PROCEDURES:

See Fig 1, Fig 2, & Fig 3
For location of the
Guard

Location of
Cylinder Guards
Under Tensioning
Cylinders



FIG. 1

Top View
Of Cylinder Guard



FIG.2

Cylinder Guard

Tensioning Cylinder

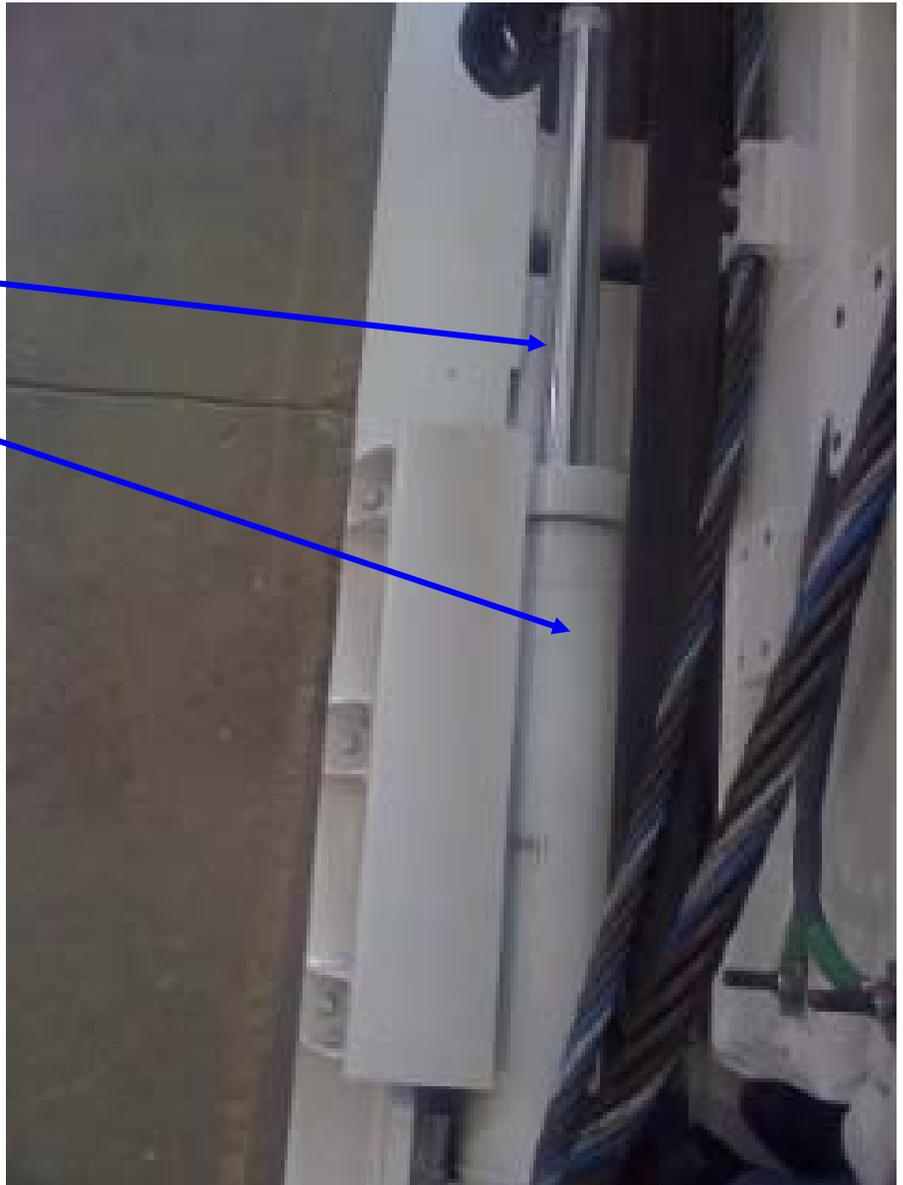


FIG. 3

See Fig 4, 5, & 6 for
welding inspection areas

1. If there are insufficient welds, or only tack welds. Properly secure the plate to insure it does not fall to the rig floor until Repairs can be performed.
2. If welding is required, insure all equipment is turned off, and the ground for welding is located on the Torque Guide and as close to the welded area as possible.
3. Repairs can be performed using good welding practices for mild carbon steel.

Weld inspection
Areas



FIG. 4

Weld inspection
Area



Weld inspection
Areas



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Applies To:
275 Ton Top Drive

August 3, 2012

Product Bulletin # 123



Safety Bulletin

Replacement of Lower Well Control Valve Anti-Rotation Bracket

Introduction

This safety bulletin addresses Canrig 275 ton top drives (Model 6027) that have been equipped with a remotely-operated lower well control valve (LWCV). The LWCV actuator has an anti-rotation bracket that is mounted on the side of the LWCV. During a routine inspection, it was discovered that this LWCV anti-rotation bracket (Canrig Part # DT16711) was cracked as shown in the picture below. This creates a potentially dangerous situation in which the bracket could break and fall to the rig floor.

Recommendation

The bracket should be visually inspected for cracks as soon as possible. This inspection should be included as part of your routine top drive inspection program. If a crack is found, the bracket should be removed from service for repair or replacement.

Figure 1 on page 2 shows a crack on the old anti-rotation bracket (Part # DT16711). This bracket is 1/2" thick. The replacement bracket (Canrig Part # DT31736) is made using 1" thick plate and uses stronger material. (See Figure 2 on page 2.) This replacement bracket may be ordered from the Canrig Sales department.

For any questions or comments, contact RigLine 24/7 Support:

24-hour Support Line: 866.433.4345 | Fax: 281.774.1940 | International +1 281.774.5649 | E-mail: riglinesupport@canrig.com

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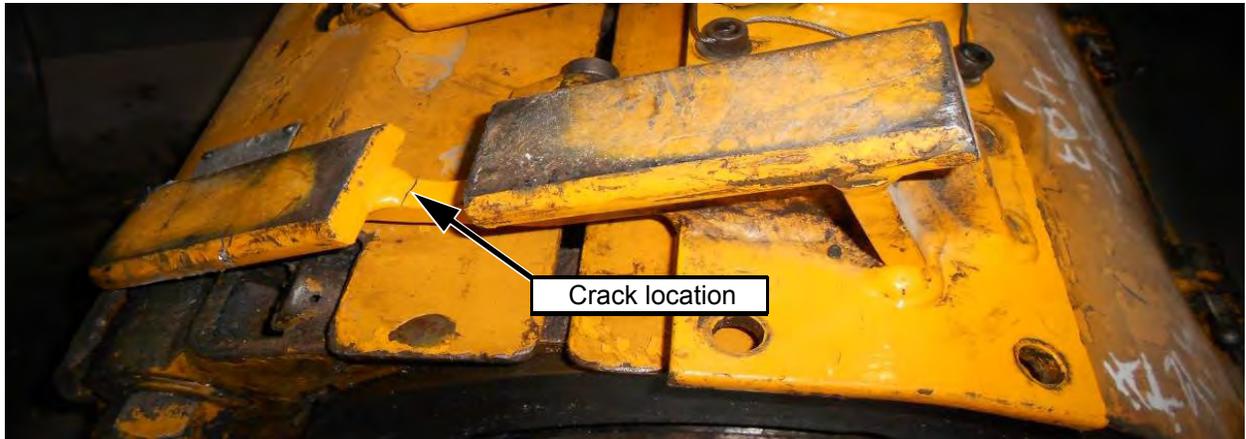


Figure 1: Cracked LWCV Anti-Rotation Bracket (Part # DT16711)

Top Drive Model	Old Anti-Rotation Bracket	Replacement Anti-Rotation Bracket
6027	DT16711	DT31736

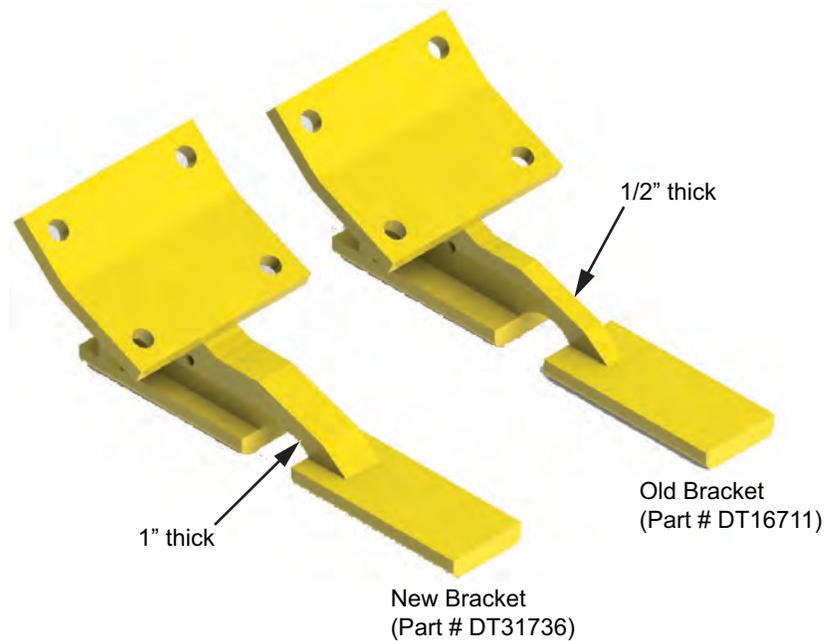


Figure 2: Old and New LWCV Anti-Rotation Brackets

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Elevator Alarm Position Sensor Clamp Replacement

Issue

The elevator alarm position sensor clamp assembly on 500T/650T/750T AC top drives could possibly interfere with the hydraulic fittings on the link tilt cylinders when they are fully retracted and the pipe handler is rotated. While the practice of fully retracting the link tilt cylinders when the handler gear is rotated is not recommended by Canrig, the position sensor clamp assembly has been redesigned to prevent this interference from occurring.

Recommendation



The pipe handler should not be rotated while the link tilt cylinders are fully retracted. Equipment damage can result.

The new position sensor clamp assembly may be installed to eliminate any possibility of interference. Refer to Figure 1 below for an example of a mounted top drive position sensor.

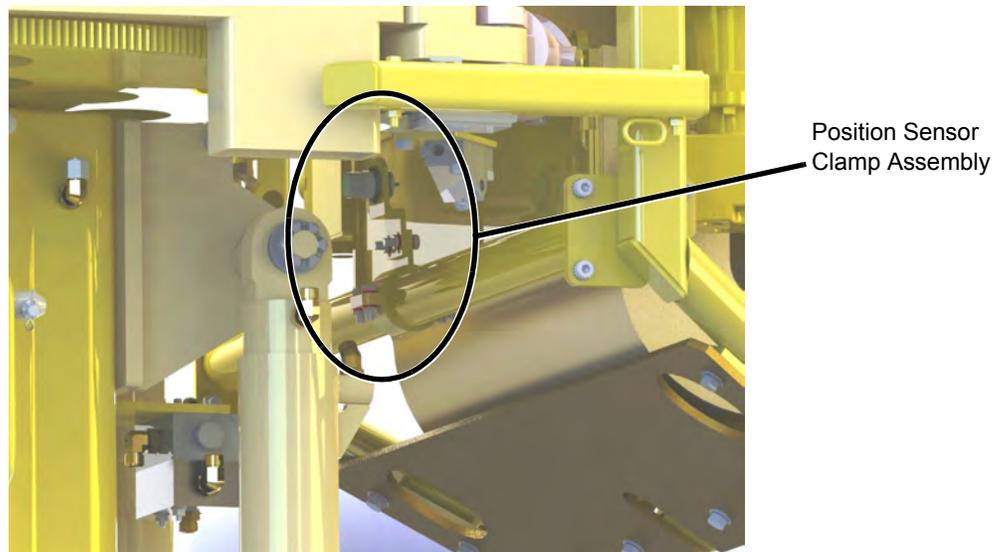


Figure 1: Position Sensor Mounted on Top Drive Guard's Crossbar

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The table below lists the relevant assembly numbers for the position sensor clamp assembly.

Position Sensor Clamp Assembly (Old and New Part Numbers)

Old Position Sensor Clamp Assembly		New Position Sensor Clamp Assembly	
Part #	Description	Part #	Description
AY12991	Mount, HR Position Sensor, 500HR/AC 650T/750T	AY19267	Assembly, Clamp, Sensor, Prox, HR, TD
AY12991-1	Mount, HR Position Sensor, 500HR/AC 650T/750T	AY19267-1	Assembly, Clamp, Sensor, Prox, HR, TD
DT14605-1	Clamp, Mount, HR Position Sensor	DT31702	Clamp, Mount, Sensor, Prox, Handler Pos.
		DT31703	Clamp, Mount, Sensor, Prox, Handler Pos.

Procedure

Remove the old top drive position sensor clamp (Canrig Part # DT14605-1) from the top drive guard's crossbar and replace with the new clamp parts (Canrig Part #'s DT31702 and DT31703). The original position sensor, position sensor mount, and fasteners can be reused for the new assembly if they are not damaged. Contact Canrig Sales to order the replacement parts.

Refer to Figure 4 on page 3 for specific mounting information.

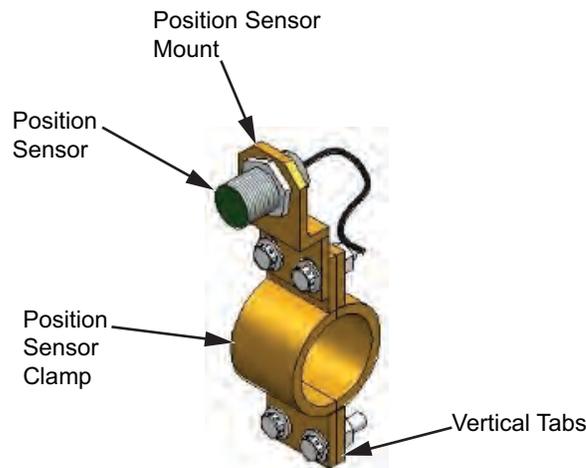


Figure 2: Old Assembly (Canrig Part # AY12991 & AY12991-1)

Applies To 500, 650, and 750 Ton AC Top Drives	August 15, 2012
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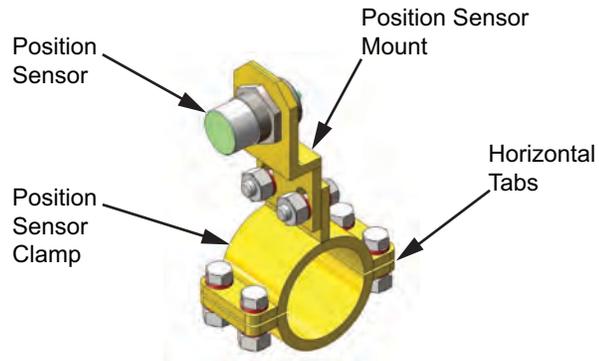


Figure 3: New Assembly (Canrig Part # AY1009267 and AY19267-1)

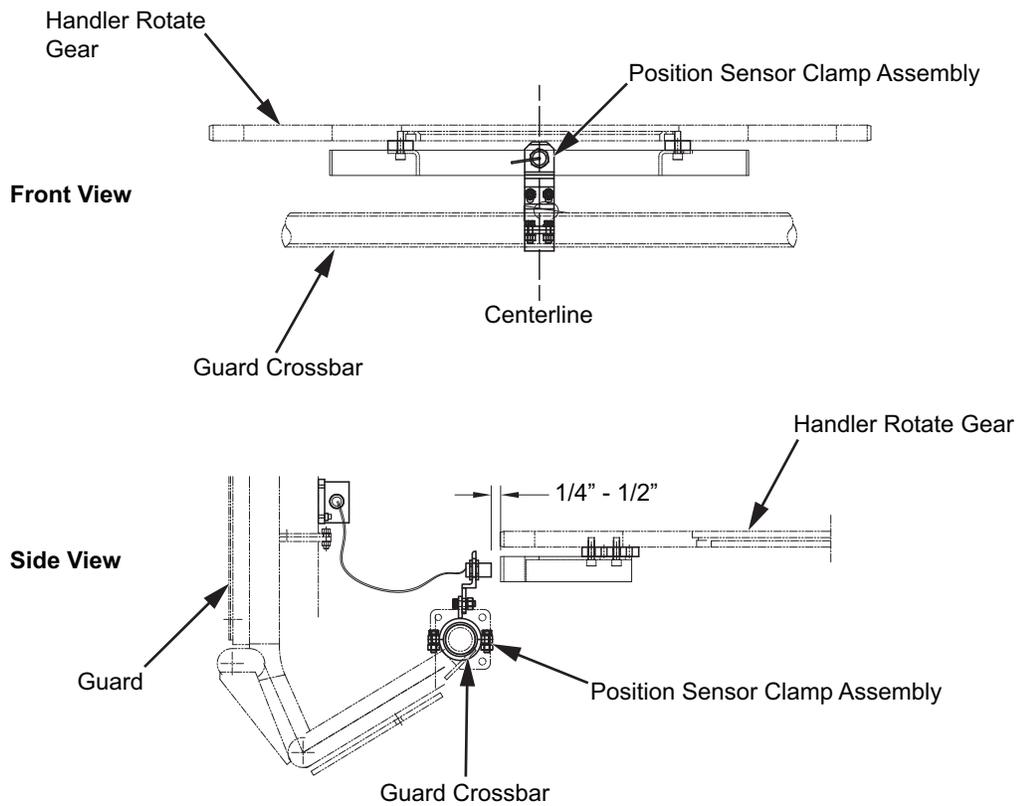


Figure 4: Position Sensor Clamp Installation