

PRODUCT: TOP DRIVE 6027AC-939

DATE: 10/31/2007

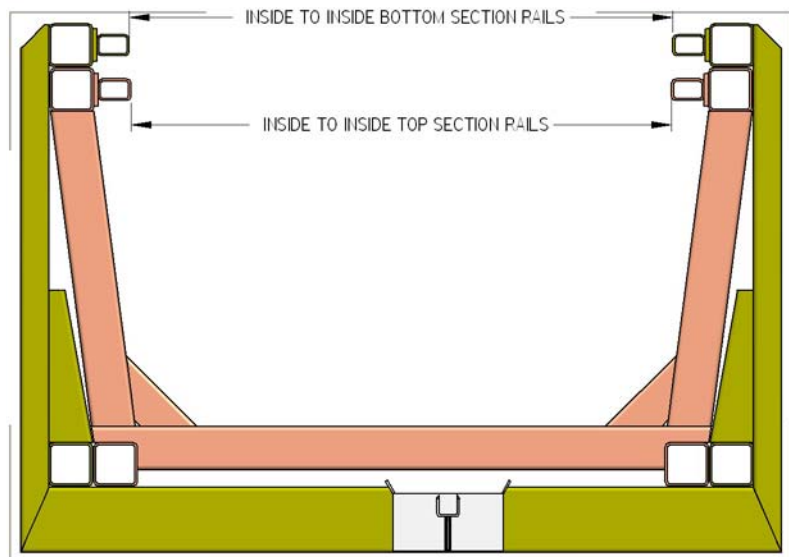
SUBJECT: Proper shimming of guide runners on the NDUSA "M" style rigs with 275 Ton Top Drives

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

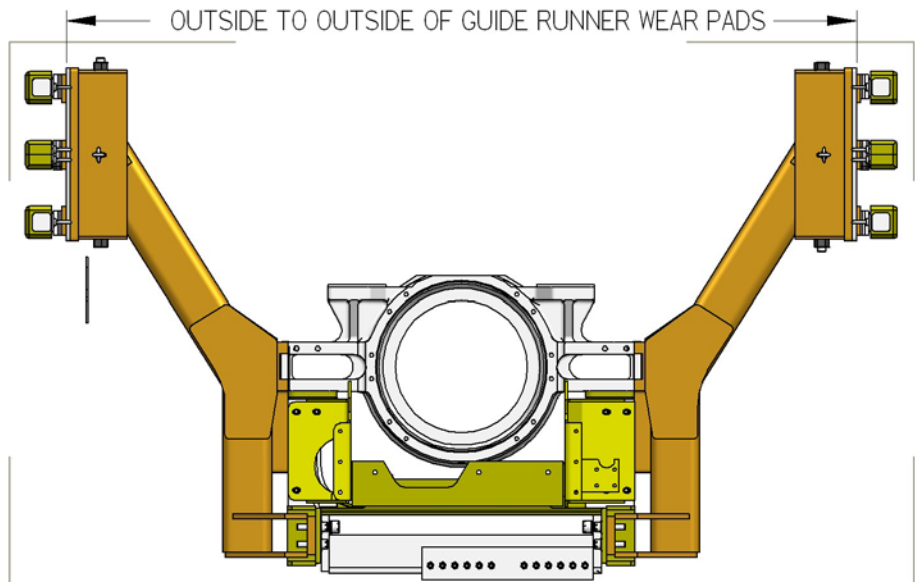
DISCUSSION: There have been a few instances where the top drive has had a sloppy fit in the mast due to variations in the guide rails in the mast. Up to this point there has been no way to shim the top drive side to side in the mast to take up this slop and is allowing the top drive to crab in the mast 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.

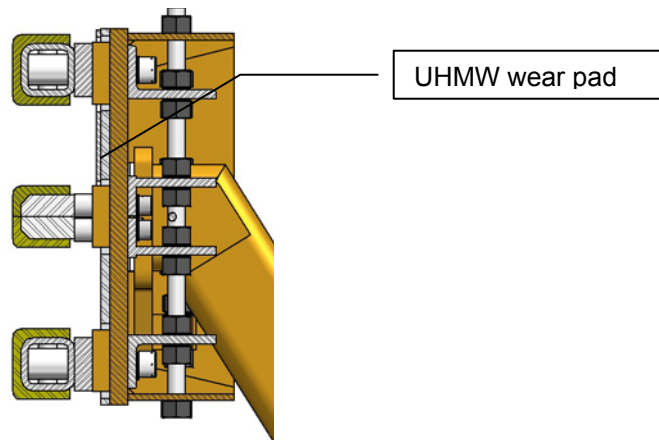
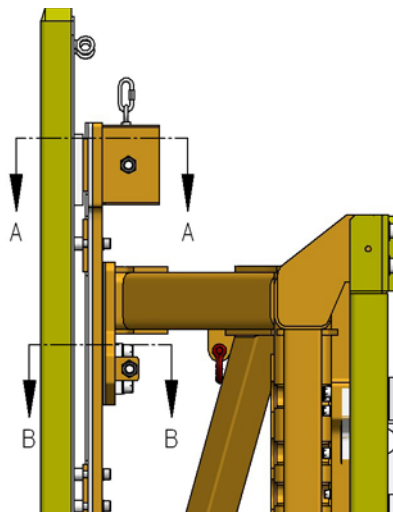
1. Measure the width of the mast inside to inside of the guide rails in at least 3 locations (bottom, middle, and top) on each of the lower and upper sections of mast. Determine the narrowest point in each of the upper and lower sections of the mast.



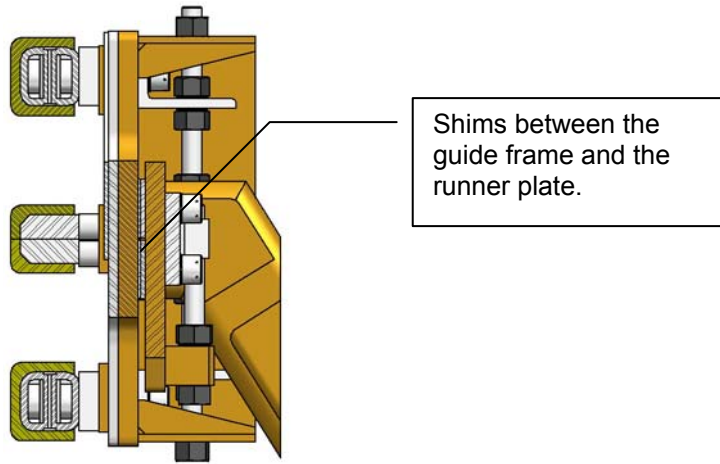
2. Measure the outside to outside distance of the wear pads on the top drive. For proper adjustment side to side of the top drive in the mast, there should be a total of 1/8" to 3/16" gap between the wear pads on the top drive and the narrowest point in the mast.



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

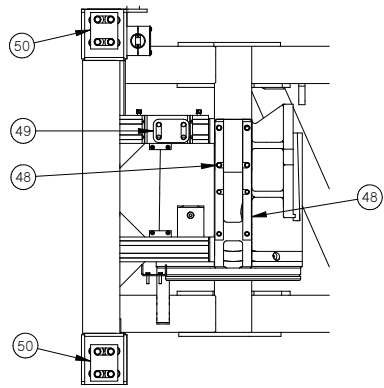
Part: AY13279
Description: GUIDE FRAME ASSY, 275 T, BE550

Eng ID: 2
Drawing ID: AY13279

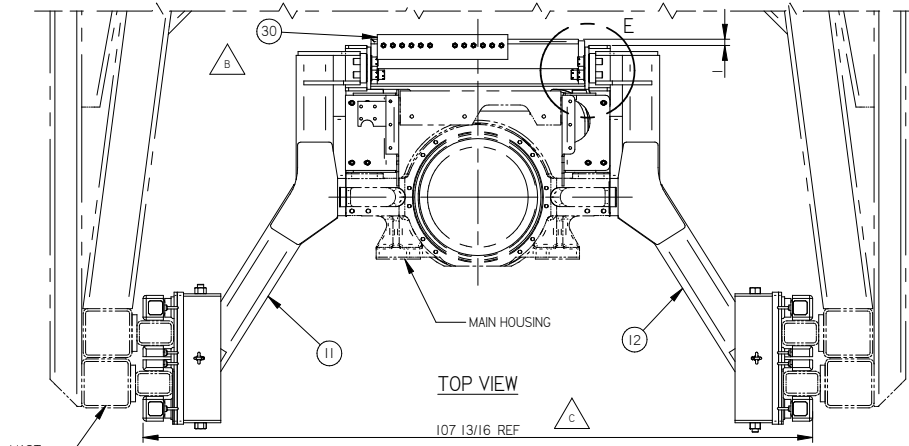
Rev No: B

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!

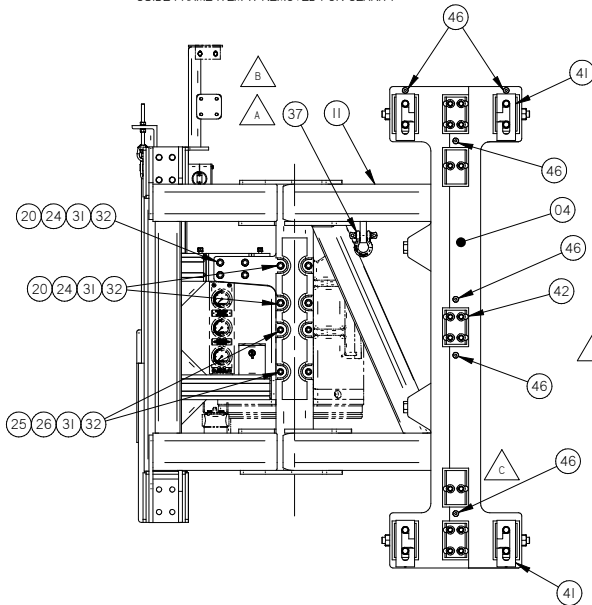


DRILLERS SIDE VIEW
GUIDE FRAME ITEM 11 REMOVED FOR CLARITY

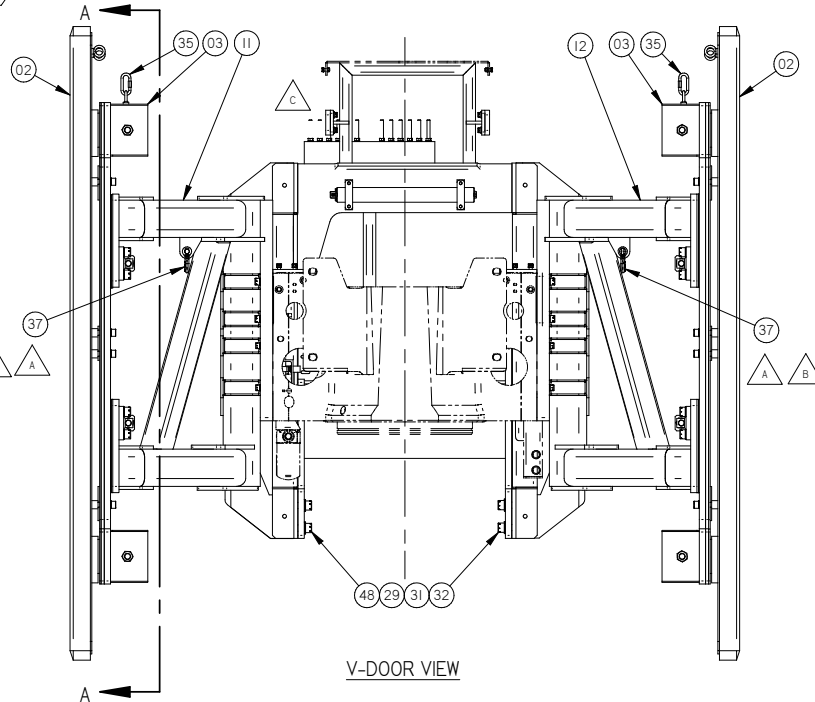


TOP VIEW

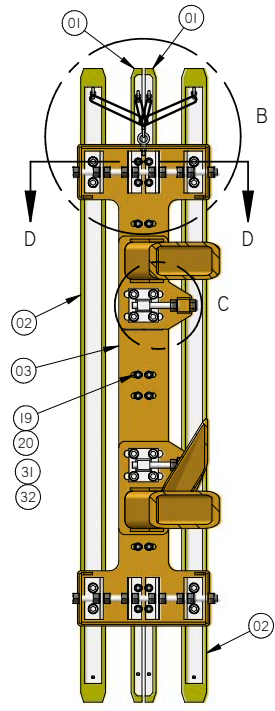
I07 13/16 REF



DRILLER SIDE VIEW
RUNNER ITEM 01 & 021 REMOVED FOR CLARITY



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

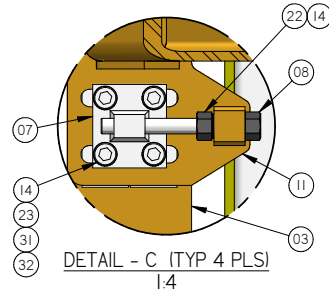
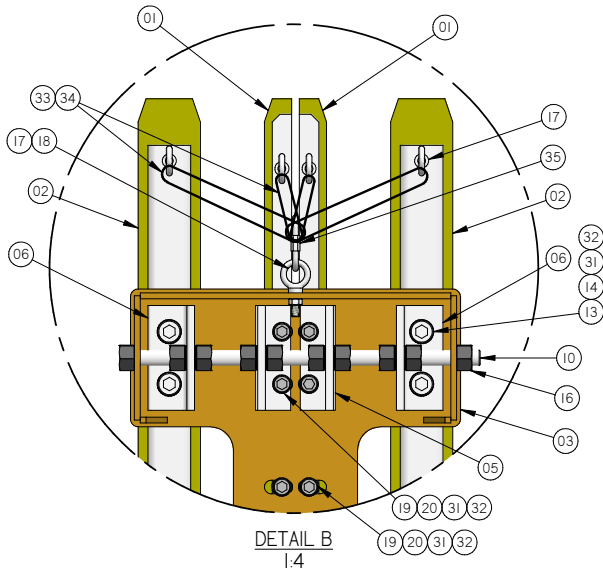
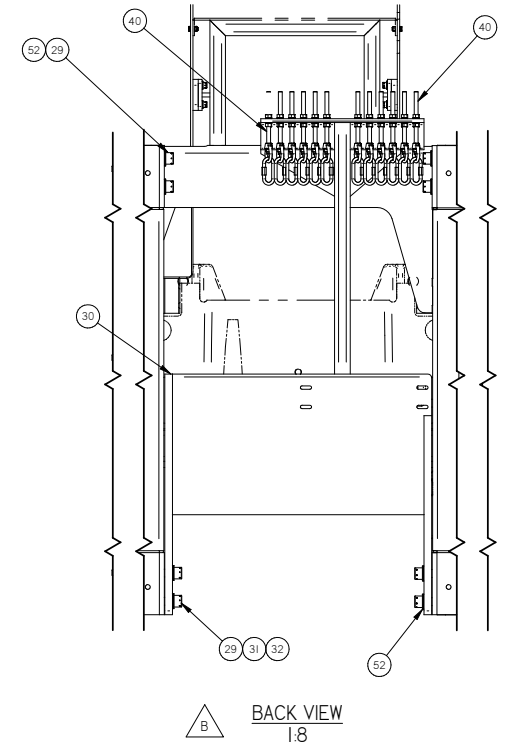
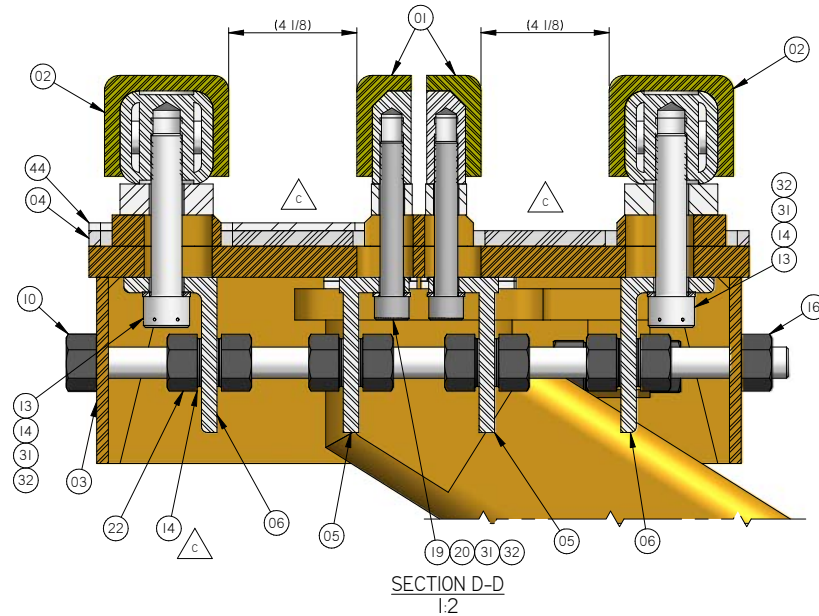
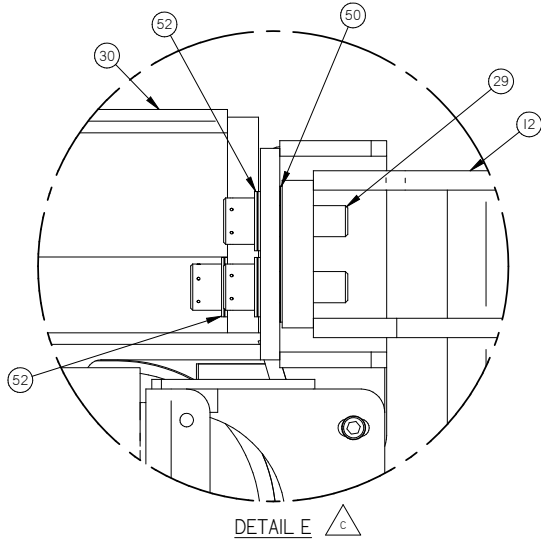
DRAWN		DNC	06/03/03
CHECKED		DAE	06/03/07
APPROVD		SEA	06/03/08
MATERIAL			
TOLERANCE - UNLESS OTHERWISE SPECIFIED FABRICATING IMPERIAL FABRICATING (METRIC) 0 TO 24" ± 1/16" 0 TO 610 mm ± 1 mm 24" to 60" ± 1/8" 610 TO 1525 ± 3 mm 60" to 120" ± 3/16" 1525 TO 3048 ± 5 mm 120" to 280" ± 1/4" 3048 TO 7112 ± 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	MATERIAL		
B	06/09/15	DAE	ECN 1340 MODIFY ITEM 30, CHANGE ITEM 37 AND ADD ITEM 40	GRT	SEA	FABRICATING IMPERIAL 0 TO 24" ± 1/16" ± 1mm		
A	06/03/17	DNC	REVISED GUIDE FRAME TO HAVE LOAD BINDER MOUNTING LUG	JSC	SEA	FABRICATING METRIC 24" TO 60" ± 1/8" ± 3mm		
No.	Y/M/D	BY	REVISION	CHKD	APPRD	FABRICATING IMPERIAL 60" TO 120" ± 3/16" ± 5mm		
						FABRICATING METRIC 120" TO 280" ± 1/4" ± 7mm		
						FABRICATING IMPERIAL 280" & OVER ± 1/2" ± 13mm		
						MACHINING IMPERIAL DECIMAL .xx ± .015" ANGULAR MACHINING ± 1"		
						MACHINING IMPERIAL .xxx ± .005" FABRICATION ± .2"		
						EST. WEIGHT	SCALE	1:10
						PROJECT	PACE 750 RIGS	
						AY13279	REV	C



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

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