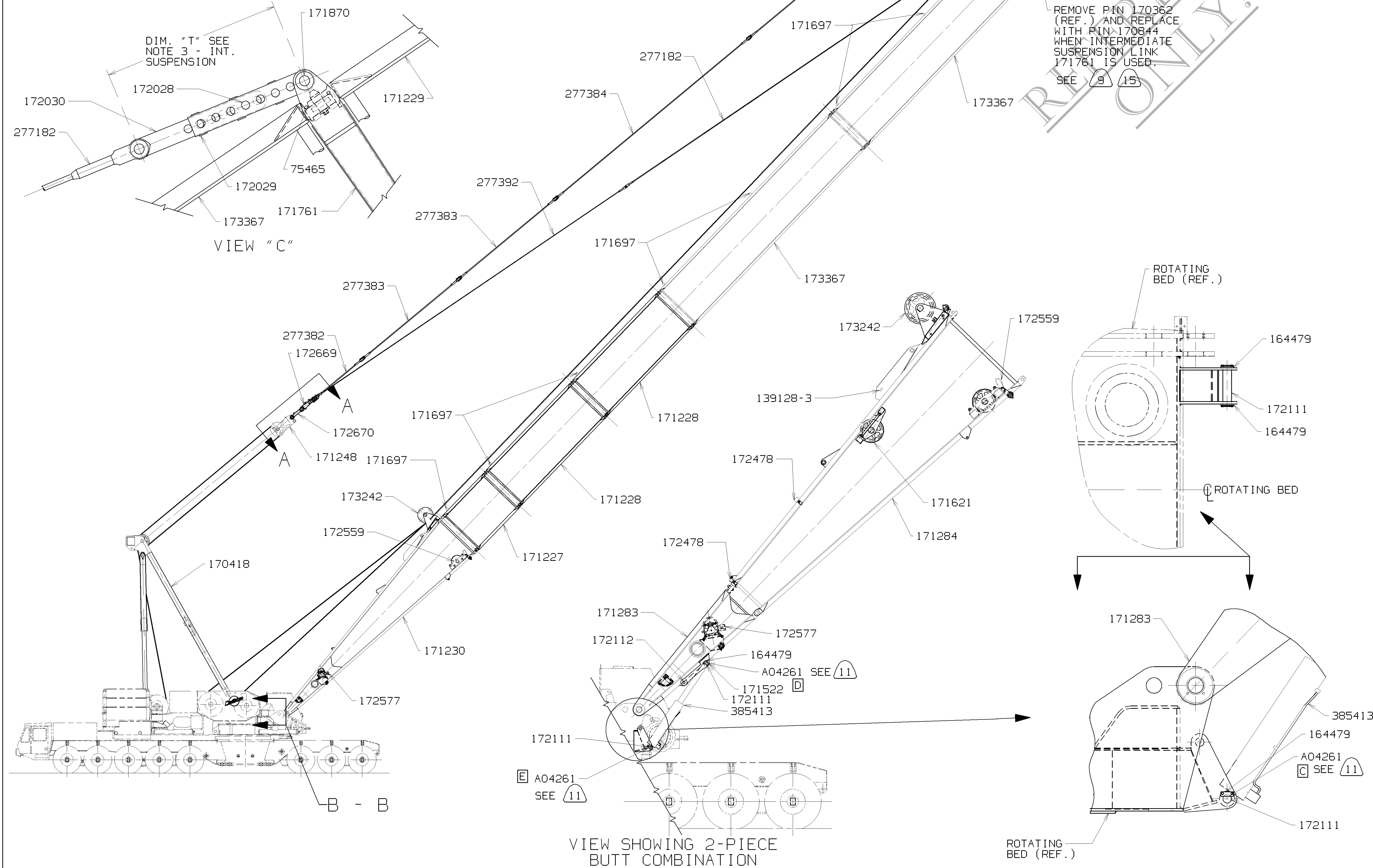


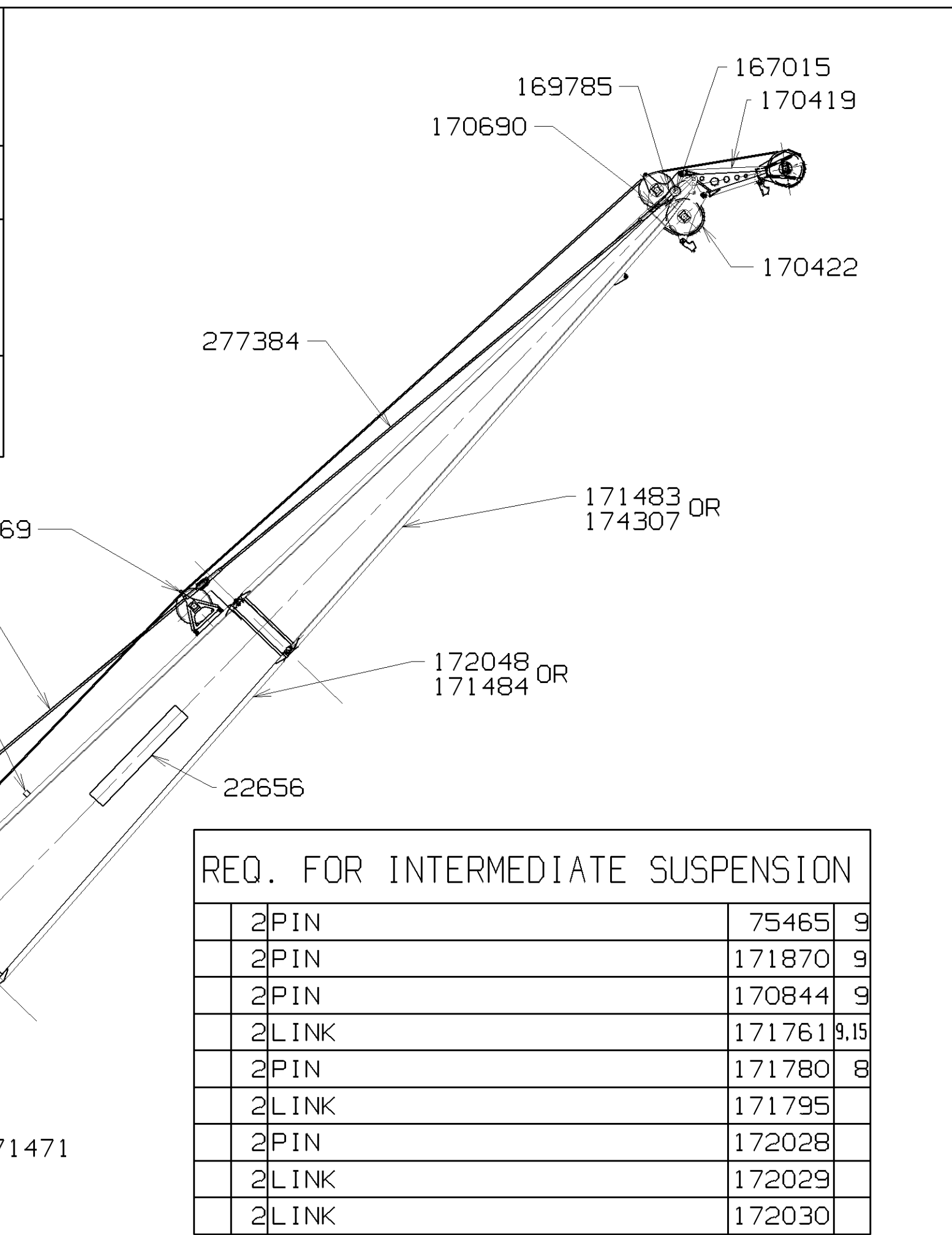
INSERTS, PENDANTS, AND TIMBERS REQ'D. FOR VARIOUS BOOM LENGTHS											
DWG. NO.	171227	171228	173367	171229	171471	277382 DWG. 78145	277383 DWG. 78145	277384 DWG. 78145	171697	666852	
BOOM LENGTH		10 FT 3.05m INSERT	20 FT 6.10m INSERT	40 FT 12.19m HEAVY INSERT	40 FT 12.19m LIGHT INSERT	10 FT 1.00 3.07m PENDANT	20 FT 1.50 6.13m PENDANT	40 FT 3.00 12.27m PENDANT	WIRE ROPE TIMBER	(OPTIONAL) PENDANT TIE DOWN STRAPS SEE (6) & (17)	
FEET	METERS										
190	57.9	OR 0 0	2 0	1 2	0 0	0 0	8 0	8 12	4 4	14 12	
200	61.0	OR 1 1	2 0	1 2	0 0	4 0	8 0	8 12	5 5	18 16	
210	64.0	0 1	1 1	2 2	0 0	0 4	4 4	12 12	5 6	16 20	
220	67.1	0 0	2 0	2 2	0 1	0 0	8 0	12 16	6 6	20 18	
230	70.1	OR 0 0	2 0	2 2	0 0	4 0	8 8	12 12	7 7	24 22	
240	73.2	OR 1 1	2 0	2 2	1 2	0 4	0 0	16 20	9 9	30 28	
250	76.2	0 0	1 1	2 2	1 1	0 0	4 4	16 20	8 9	26 28	
260	79.2	0 0	2 0	2 2	1 2	0 0	8 0	16 20	10 10	32 30	
270	82.3	OR 0 0	2 0	2 2	1 2	1 0	8 0	20 24	11 11	36 34	
280	85.3	OR 1 1	2 0	2 2	1 2	0 4	8 0	16 20	9 9	30 28	
290	88.4	0 0	1 1	2 2	1 1	0 0	4 4	20 20	10 10	32 30	
300	91.4	0 0	2 0	2 2	1 2	1 0	8 0	20 24	11 11	36 34	
310	94.5	OR 0 0	2 0	2 2	1 2	1 0	8 0	20 24	11 11	36 34	
320	97.5	OR 1 1	2 0	2 2	1 2	1 0	8 0	20 24	11 11	36 34	

- INSERT NOTES:
1. DEPENDING ON THE LENGTH OF BOOM AND WHICH INSERTS ARE REQUIRED, THIS IS THE ORDER IN WHICH THE VARIOUS INSERTS MUST BE ARRANGED.
BOOM BUTT - NEXT
ANY 10 FT. (3.05m) INSERT (171227) - NEXT
ANY 20 FT. (6.10m) INSERTS (171228) - NEXT
ANY 40 FT. (12.19m) HEAVY INSERTS (173367) - NEXT
ANY 40 FT. (12.19m) LIGHT INSERT (171471) - NEXT
BOOM TOP
 2. SEE CRANE ASSEMBLY AND RIGGING GUIDE IN THE OPERATORS MANUAL FOR INSTRUCTIONS ON JIB STOWAGE.

- GENERAL NOTES:
1. WHEN #132 JIB IS USED, RUN LOAD LINE FROM WIRE ROPE GUIDE ASSEMBLY 173242, OVER JIB STRUT SHEAVE, TO JIB POINT.

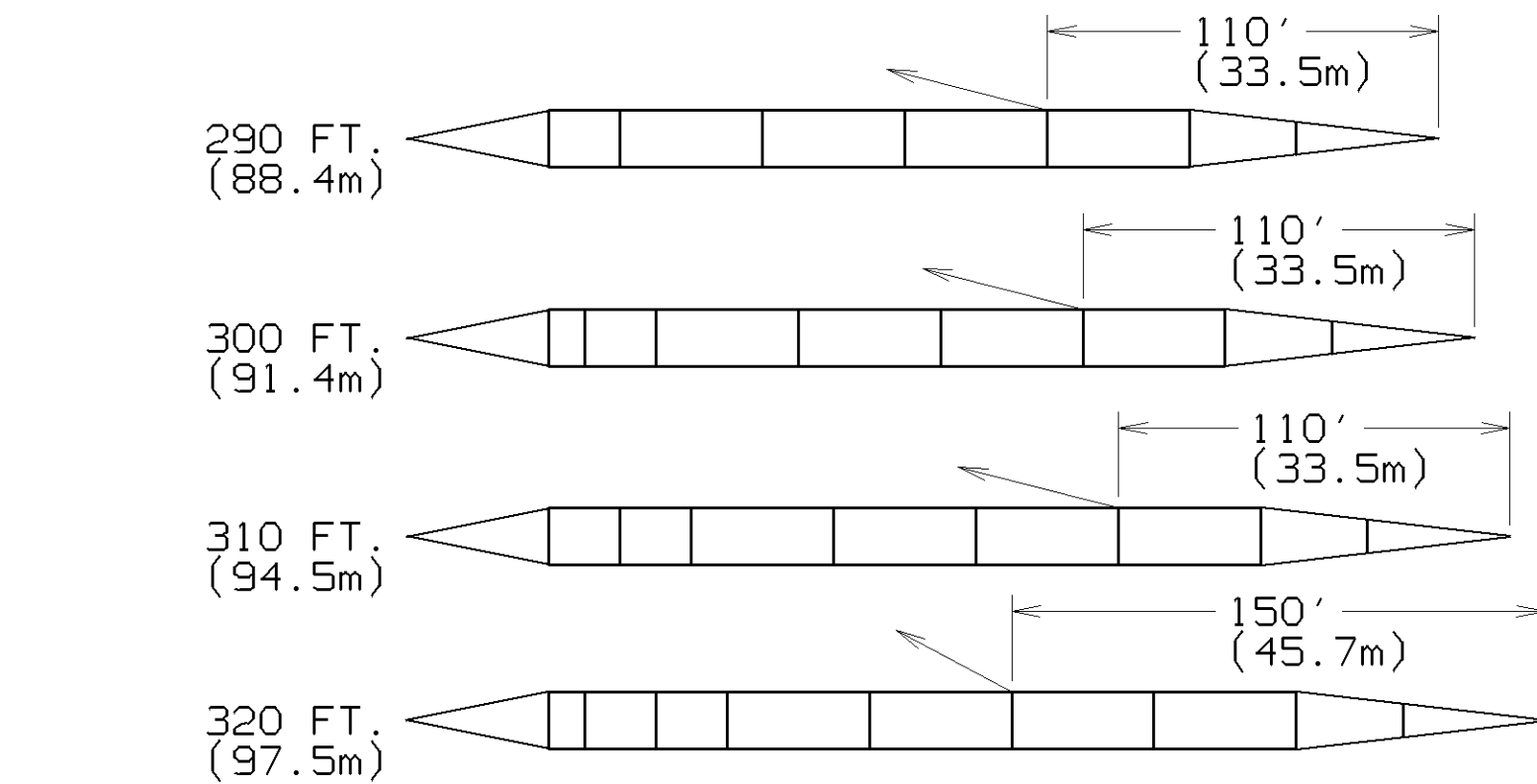


BOOM HANDLING INSTRUCTIONS			
TRAVEL SPEED NOT TO EXCEED 1/2 MPH (.80 km/h) BOOM ANGLE AT 10° OR LESS.			
GANTRY POSITION	MAX. LENGTH OF BOOM HANDLED		BOOM CONDITIONS OR LIMITATIONS
	FEET	METERS	
DOWN	40	12.19	BUTT ONLY EQUALIZER PINNED TO RAILS
UP	120	36.6	BUTT & INSERTS EQUALIZER PINNED TO RAILS. CAN CANTILEVER 80 FT. (24.4m) OF INSERTS.



PENDANTS REQ'D FOR INTERMEDIATE SUSPENSION			
DWG. NO.	277182 DWG. 77523	277392 DWG. 77535	276897 DWG. 77535
BOOM LENGTHS	68 FT - 4.00 (20.80 M) PENDANT	59 FT - 7.00 (18.20 M) PENDANT	10 FT (3.05 M) PENDANT
FEET	88.4	2	2 (SEE (16))
METERS	290	91.4	300
290	88.4	2	2 (SEE (16))
300	91.4	2	4 (SEE (16))
310	94.5	2	6 (SEE (16))
320	97.5	2	0

- INTERMEDIATE SUSPENSION NOTES:
1. INTERMEDIATE SUSPENSION REQ'D. FOR BOOM LENGTHS OF 290 FT. (88.4m) THRU 320 FT. (97.5m)
 2. SUSPENSION IS ATTACHED TO BOOM USING LINK 171761, WHICH IS LOCATED AS FOLLOWS:



3. LINKS 172029 AND 172030 SHOULD BE PINNED TOGETHER TO PROVIDE THE FOLLOWING LENGTH PRIOR TO CHECKING BOOM DEFLECTION.

BOOM LENGTH		LINK ASS'Y. LENGTH DIM. "T" ON VIEW "C"
FEET	METERS	
290	88.4	47.875 IN. (1216 mm)
300	91.4	48.750 IN. (1238 mm)
310	94.5	44.000 IN. (1118 mm)
320	97.5	51.750 IN. (1314 mm)

4. ADJUST LINKS 172029 AND 172030 WITH THE BOOM ONLY IN THE SELF-SUPPORTED HORIZONTAL POSITION (0° BOOM ANGLE), TO THE FOLLOWING IN PLANE DEFLECTIONS:

BOOM LENGTH	DEFLECTION	DEFLECTION LOCATION
FEET	METERS	
290	88.4	24.0" (610 mm)
300	91.4	27.0" (686 mm)
310	94.5	25.0" (635 mm)
320	97.5	29.0" (737 mm)

5. RIGHT AND LEFT SIDE OF BOOM MUST BE ADJUSTED AND CHECKED INDEPENDENTLY.

- (13) REMOVE WHEN JIB IS USED.
- (14) USE LOCTITE #242 OR EQUIVALENT ON MOUNTING SCREW THREADS AT ASSEMBLY. DELETE WHEN OPTIONAL ONE PIECE BUTT 171230 IS USED.
- (15) BOSS ON LINK 171761 MUST ALWAYS BE TO THE OUTSIDE OF THE BOOM. SEE SECTION D - D.
- (16) LOCATE 10 FT (3.05m) PENDANTS NEXT TO EQUALIZER.
- (17) SEE CRANE ASSEMBLY AND RIGGING GUIDE IN THE OPERATIONS MANUAL FOR INSTRUCTIONS ON PENDANT STOWAGE.
- (18) USED ON BOOM TOP AND TRANSITION INSERT. 6 FOR BOOM TOP. 6 FOR TRANSITION INSERT.
- (19) (12 FT.)-(3.66m)
- (20) (28 FT.)-(8.53m)
- (21) TOP 171483 MUST BE USED WITH TRANSITION INSERT 172048. (FACT PIN CONNECTORS)
- (22) TOP 174307 MUST BE USED WITH TRANSITION INSERT 171484. (STD. PIN CONNECTORS)

TOLERANCE UNLESS OTHERWISE SPECIFIED			
DECIMAL PLACES	FRACTION	INCHES	MILLIMETERS
(1) PLACE 0.1	1/16	±.015	±.38
(2) PLACE 0.05	1/32	±.010	±.25
(3) PLACE 0.005	1/64	±.005	±.13
(4) PLACE 0.001	1/128	±.001	±.025

BILL OF MATERIAL				ASSEMBLIES USED ON
ITEM NO.	QTY.	DESCRIPTION	UNIT	
190 FT. (57.9m) BASIC BOOM				
2	1	BOOM SIGN	22656	4-17-03 BMB A B C D E F WAS 290026
2	1	END PLATE	76095	
2	1	WASHERS	137502	
2	1	PIN	141707	
2	1	PIN	163649	
2	1	PIN	167015	
1	1	BOOM ANGLE INDICATOR ASSEMBLY	168779	
2	1	PENDANT LINK	169785	
2	1	EQUALIZER PENDANT LINK	169834	
1	1	GANTRY ASSEMBLY	170418	
1	1	BOOM POINT SHAFT ASSEMBLY (LOWER)	170422	REVISONS
4	1	PIN	170690	
1	1	EQUALIZER ASSEMBLY	171248	
1	40 FT. (12.19m)	BUTT LOWER SECTION	171283	
1	40 FT. (12.19m)	BUTT UPPER SECTION	171284	
1	LONG REACH BOOM TOP (40 FT.)-(12.19m)		171483	
OR	1	LONG REACH BOOM TOP (40 FT.)-(12.19m)	174307	
2	1	PIN	171500	
1	1	UPPER ROPE GUIDE ASSEMBLY	171669	
1	1	TIMBER (WIRE ROPE)	171707	
OR	1	TRANSITION INSERT (30 FT.)-(9.14m)	172048	
1	1	TRANSITION INSERT (30 FT.)-(9.14m)	171484	
2	1	PIN	172132	
2	1	TIMBER	172478	
2	1	PENDANT LINK	172669	
2	1	PENDANT LINK	172670	
2	1	PIN	172675	
2	1	LINK	172676	
4	1	PIN	172677	
1	1	WIRE ROPE GUIDE ASSEMBLY	173242	
2	1	LINK	174034	
4	1	PENDANT BASIC (30 FT.)-(9.14m)	276826	
2	1	PENDANT ON DWG. 74958	277187	
FOR MACHINES W/SELF-ERECT ADD THE FOLLOWING ITEMS:				
2	1	PIN	139128	
4	1	KEEPER	164479	
1	1	LINK	171522	
1	1	WIRE ROPE GUIDE ASSY CRAW. HANDLING	171621	
2	1	PIN	172111	
1	1	PIN	172112	
A	4	BUSHING	A04261	
1	1	CYLINDER	385413	
OPTIONAL PARTS				
1	1	BOOM POINT ASSEMBLY (UPPER)	170419	
1	1	BOOM BUTT (40 FT.)-(12.19 M)	171230	
1	1	TIMBER (JIB STOWAGE)	171697	
1	1	WIRE ROPE GUIDE ASSEMBLY	172559	
1	1	RIGGING WINCH ASSEMBLY	172577	
12	1	PENDANT TIE DOWN STRAP	666852	

1. 1.125 (29 mm) WIRE ROPE.
2. USED FOR GANTRY TIE DOWN.
3. ON DWG. 78145, LOCATE AS SHOWN, AFTER 277384 BELOW BOOM TOP.
4. OPTIONAL 40 FT. (12.19 M) BUTT 171230 REPLACES THE COMBINATION OF BUTT SECTIONS 171283 & 171284. ONE PIECE BUTT CANNOT BE USED WITH SELF-ERECT.
5. REQUIRED FOR LUFFING JIB, SELF-ERECT (CRAWLER HANDLING) AND RIGGING WINCH.
6. REQUIRED FOR MACHINES W/SELF-ERECT.

7

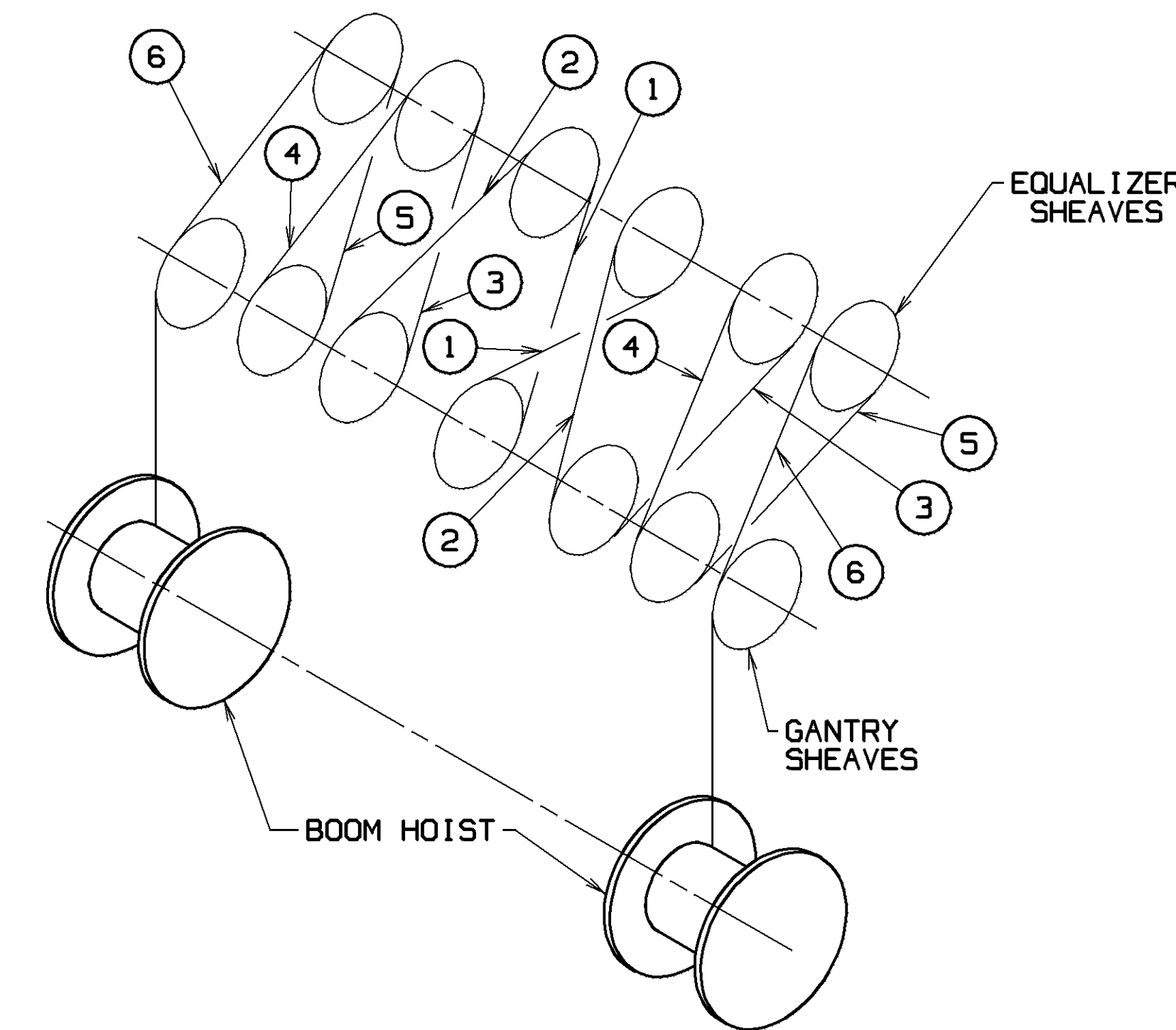
STOWAGE TIMBER REQUIRED			
STOWAGE CASE		TIMBERS (171697)	
#132 JIB IN #44 BOOM			
FEET	METERS		
40 60 - 120	12.19 18.29 - 36.6		
#133 JIB IN #44 BOOM			
FEET	METERS		
70 - 80 90 - 120 130 - 160 170 - 200	21.3 - 24.4 27.4 - 36.6 39.6 - 48.8 51.8 - 61.0		

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STOWAGE TIMBERS MUST BE REMOVED FROM BOOM SECTIONS FOR CRANE OPERATION.

8. WITH USE OF INTERMEDIATE SUSPENSION, PIN 171500 IS REPLACED BY PIN 171780. INSTALL WITH HEAD ON BOTTOM. WIRE END PLATE SCREWS TOGETHER.
9. IF MACHINE IS EQUIPPED WITH #132 JIB ASSEMBLY, LINKS 171761 AND PINS 75465, 170844 AND 171870 FROM JIB ASSEMBLY MAY BE USED.
10. BOOM BUTT HANDLING:
USED WITH 2-PIECE BOOM BUTT ONLY. MAX. COMBINATION THAT CAN BE HANDLED WITH CYLINDER 385413 IS: BUTT SECTIONS 171283 & 171284; ROPE GUIDES 173242, 172559 & 171621; RIGGING WINCH 172577; EQUALIZER 171248; BOOM STOPS 170474 REF. AND 2 PARTS OF 1.125 (29 mm) WIRE ROPE (FOR EQUALIZER HANDLING.) CYLINDER MUST BE FULLY RETRACTED FOR CRANE OPERATION.
11. INSTALL 2 BUSHINGS A04261 (1 EACH SIDE) IN LOWER PIN EYE AND 2 (1 EACH SIDE) IN UPPER PIN EYE OF CYLINDER 385413. BUSHINGS TO BE FLUSH WITH OUTSIDE FACE OF PIN EYE.
12. PIN IN PLACE ONLY DURING EQUALIZER RELOCATION FROM GANTRY STORAGE TO BOOM BUTT EQUALIZER RAIL. PIN TO BE STOWED FOR NORMAL CRANE OPERATION.

SUPERSEDES 174247 SHT. 1 OF 2 OF 11-1-94			
DATE	2-23-95	DATE	
PATTERN NO.		PATTERN NO.	
12-11	Manitowoc Cranes, Inc.	12-11	Manitowoc Cranes, Inc.
DP DP	Manitowoc, Wisconsin	DP DP	Manitowoc, Wisconsin
DP DP	MODEL M-250T	DP DP	MODEL M-250T
APP GMP		APP GMP	
1.50 SWAGED PENDANTS			
(USA)			



BOOM HOIST REEVEING DIAGRAM FOR 12 PART LINE

975 FEET (297.2m) OF 1.00" (26 mm)-6 X 26 WARRINGTON SEALE, EXTRA IMPROVED FLOW STEEL, ALTERNATE LAY, IWRC (719095) - B.S. 103,400 LBS. (46 900 kg)

OR

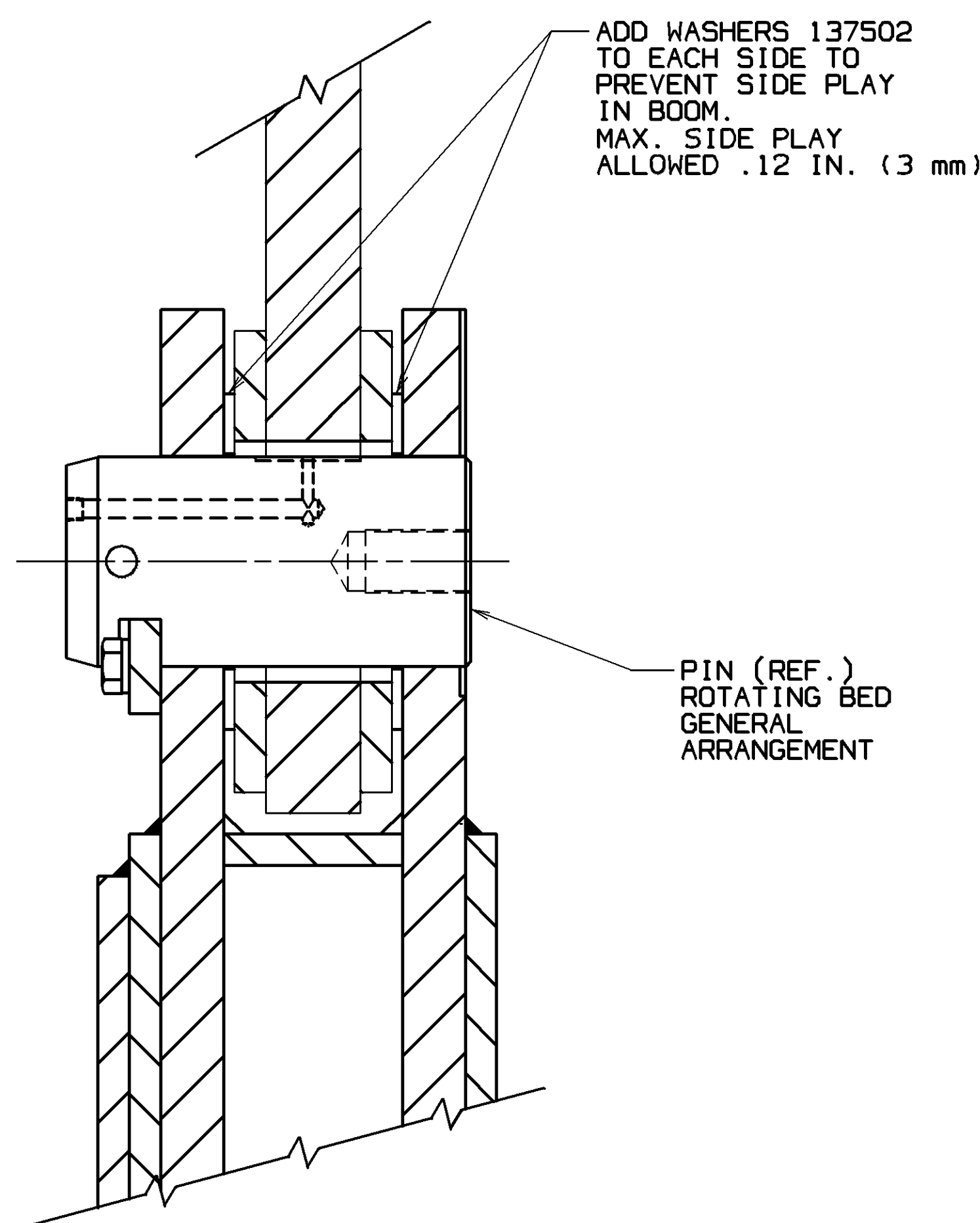
ALTERNATE WIRE ROPE

975 FEET (297.2m) OF 1.00" (26 mm)-6 X 26 WARRINGTON SEALE, EXTRA IMPROVED FLOW STEEL, REGULAR LAY, IWRC (719276) - B.S. 103,400 LBS. (46 900 kg)

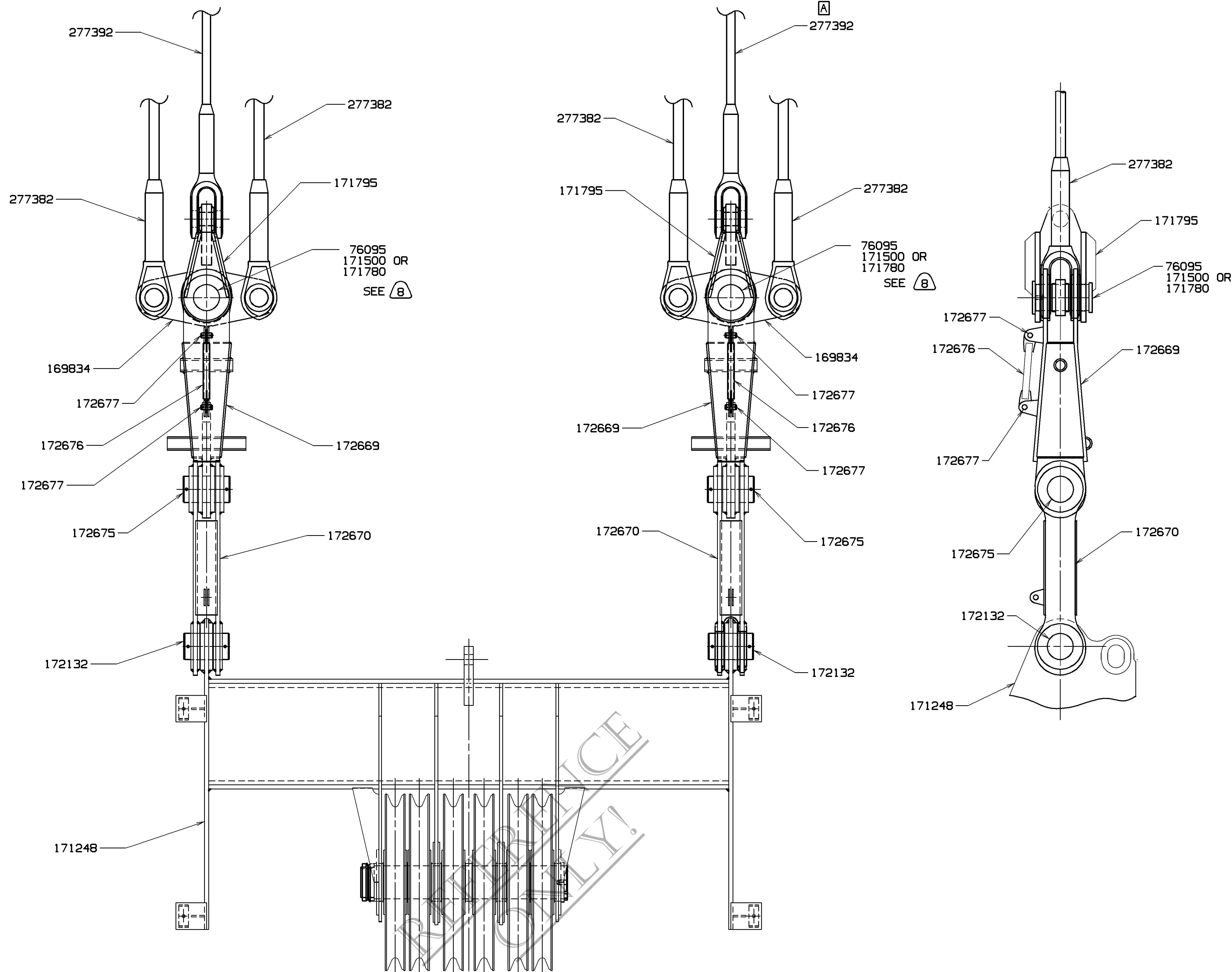
OR

ALTERNATE WIRE ROPE

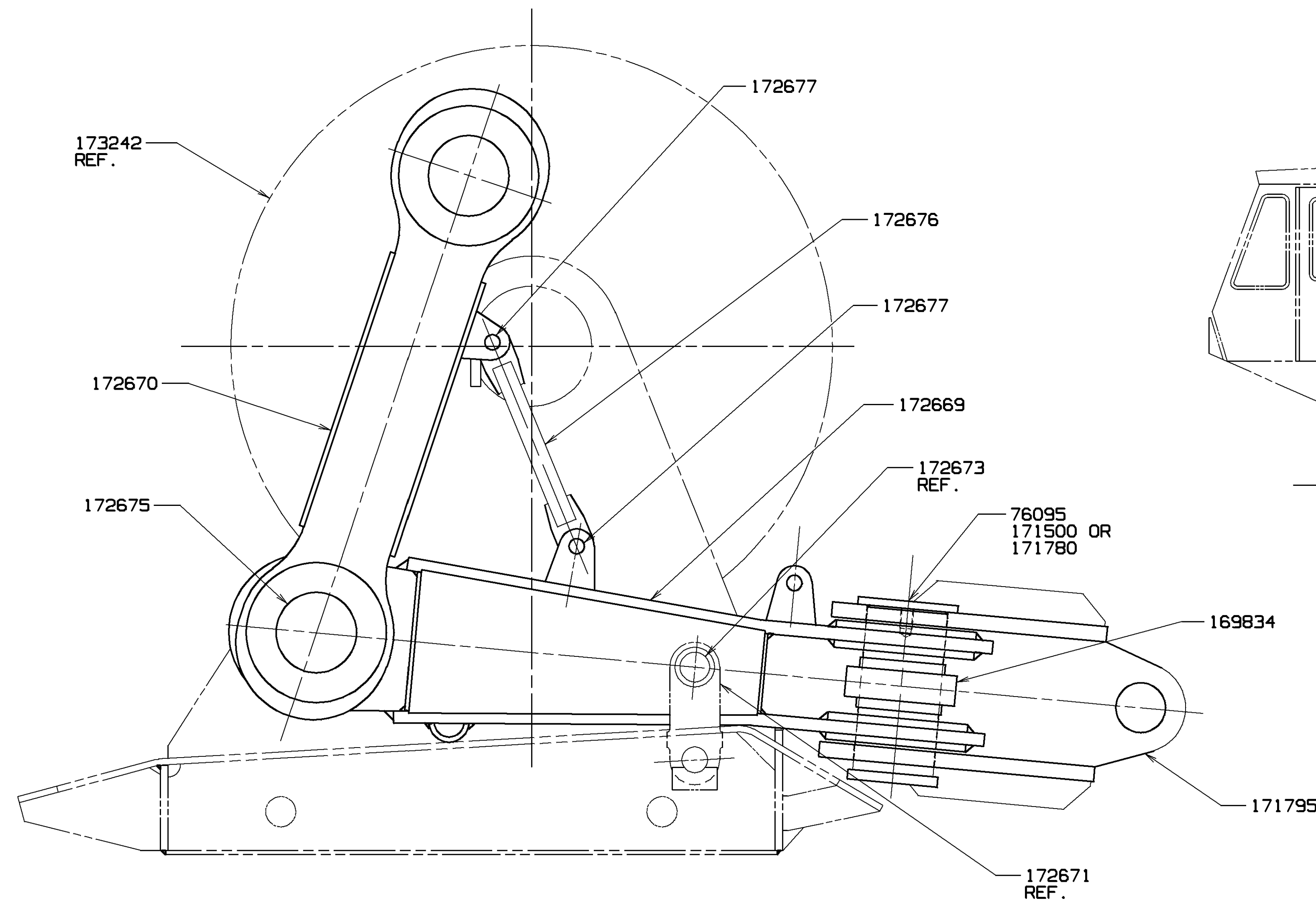
975 FEET (297.2m) OF 1.00" (26 mm) DYFORM-6 (719359) - B.S. 113,800 LBS. (51 620 kg)



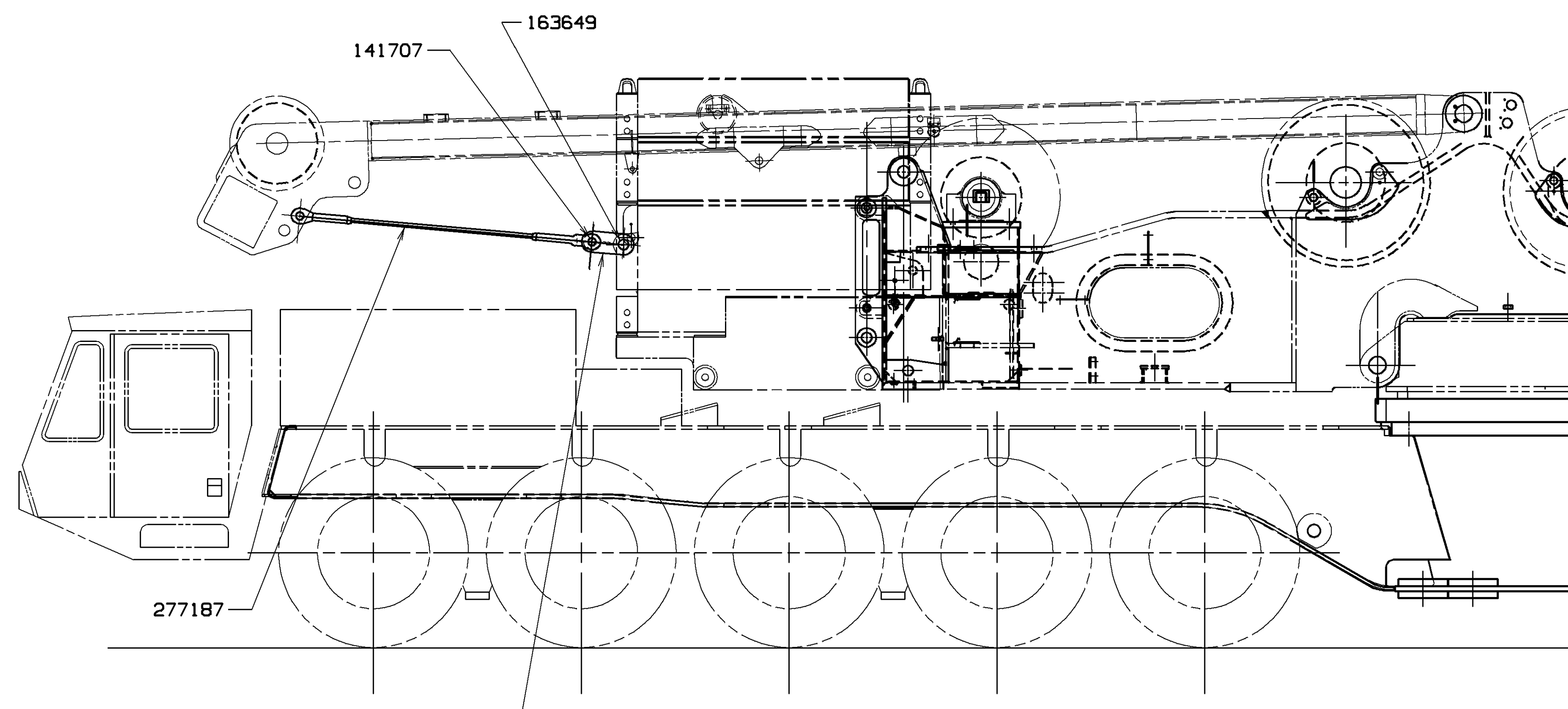
SECTION "B" - "B"



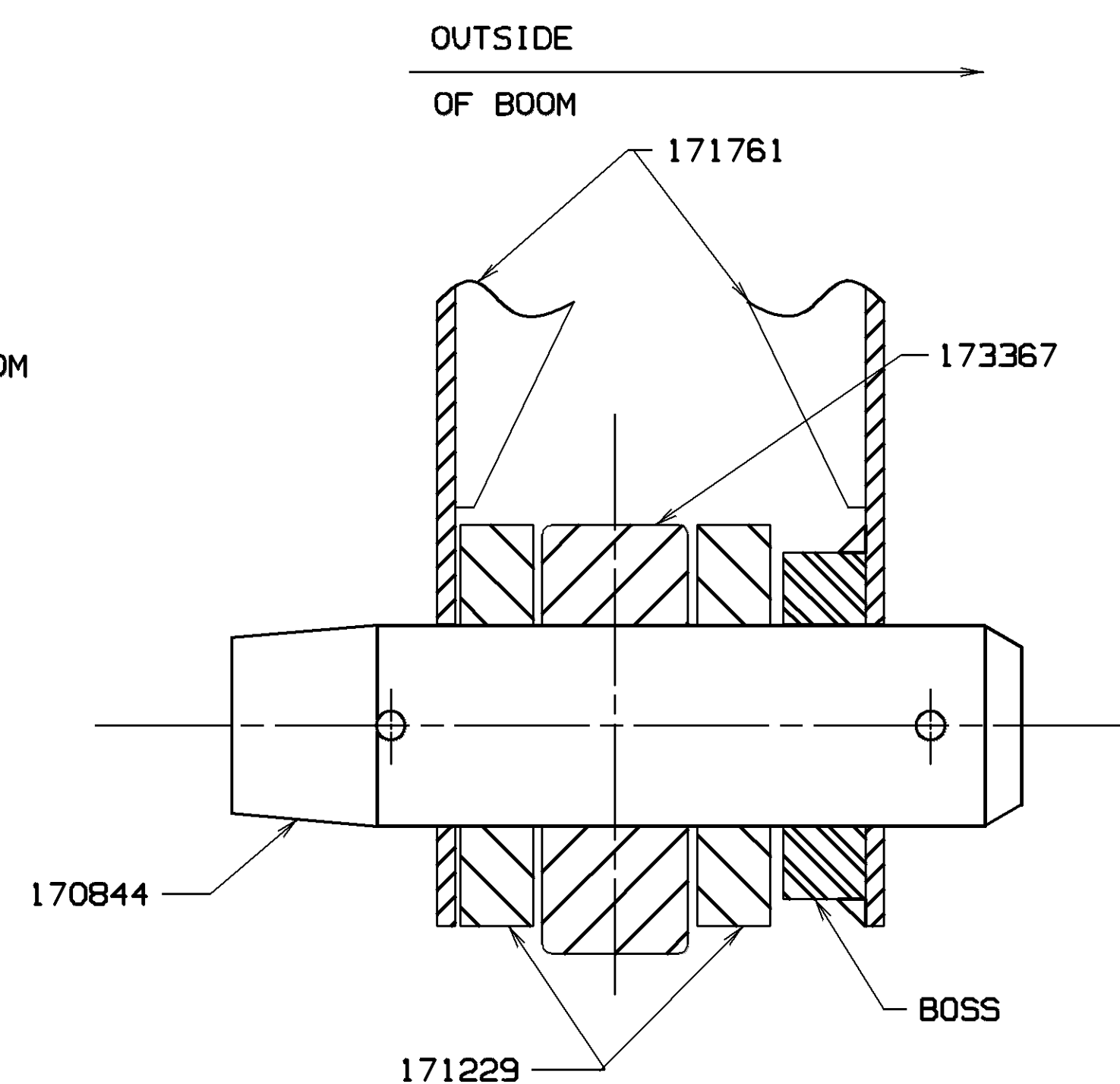
VIEW "A" - "A"



LINK STOWAGE FOR SHIPPING



VIEW SHOWING GANTRY TIE-DOWN



SECTION "D" - "D"

BILL OF MATERIAL					ASSEMBLIES USED ON
ITEM NO.	QTY.	DESCRIPTION	UNIT	MATERIAL	DATE
REVISIONS					DATE
5-13-93 DJS					174247
A WAS 276550					SHT 2 OF 2

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(1) PLACE 0.0		± 1.50		± 1.50		± 0.015		DR: DJS		Mantowoc, Wisconsin		#44A BOOM LONG REACH	
(2) PLACE 0.00		± 0.00		± 1.20		± 0.015		DR: DJS		MODEL M-250T		1.50 SWAGED PENDANTS	
(3) PLACE 0.000		± 0.000		± 1.20		± 0.015		APP: TSC		(USA)		174247	