



LUFFING JIB HOIST REEVING  
DIAGRAM FOR 10 PART LINE SEE 31

1000 FEET (304.8 M) OF .875" (22mm)-6 X 26 WARRINGTON SEALE, ACTUAL DIA .873/.900,  
EXTRA IMPROVED PLOW STEEL, ALTERNATE LAY, IWRC (719094) - B.S. 79,600 LBS. (36 106 kg)

OR  
TE WIRE ROPE

1000 FEET (304.8 M) OF .875" (22mm)-6 X 26 WARRINGTON SEALE, ACTUAL DIA .873/.900,  
EXTRA IMPROVED PLOW STEEL, REGULAR LAY, IWRC (719035) - B.S. 79.600 LBS. (36 106 kg)

OR  
ALTERNATE WIRE ROPE

1000 FEET (304.8 M) OF .875" (22mm) DYFORM-6 ACTUAL DIA .873/.900  
(719335) - B.S. 87,600 LBS. (39 735 kg)

BOOM HOIST REEVING DIAGRAM FOR 12 PART LINE

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

OR  
ALTERNATE WIRE ROPE

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

OR  
ALTERNATE WIRE ROPE

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



SECTION "E" - "E"



SECTION "J" - "J"



VIEW SHOWING 2-PIECE  
BUTT COMBINATION

## 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 MAKE UP   | 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. (24.4 M) OF INSERTS. |



| BILL OF MATERIAL          |                                                                                                                                                                                                                                                                                                                                                                                                                       |                |          |                     | ASSEMBLY<br>USED ON                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITEM NO.<br>(NOMEN. ITEM) | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                           | QUANTITY<br>IN | MATERIAL | DATE OF<br>CHG. NO. | <div><div>REVISED</div><div>REVISIONS</div></div>                                                                                                                                                                                                                                                                                                                                                                                             |
| 5                         | (29mm) WIRE ROPE.                                                                                                                                                                                                                                                                                                                                                                                                     |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | FOR GANTRY TIE DOWN.                                                                                                                                                                                                                                                                                                                                                                                                  |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | NG. 78145.                                                                                                                                                                                                                                                                                                                                                                                                            |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | COMBINATION OF BUTT SECTIONS 171283 AND<br>34 REPLACE 40 FT. (12.19 M) BUTT 171230.                                                                                                                                                                                                                                                                                                                                   |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | NG. 73026.                                                                                                                                                                                                                                                                                                                                                                                                            |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | RED FOR CRAWLER HANDLING.                                                                                                                                                                                                                                                                                                                                                                                             |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | JIB STOP ASSEMBLY FOR JIB STOP<br>TIE DOWN PROCEDURE.                                                                                                                                                                                                                                                                                                                                                                 |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | D. FOR BOOM BUTT HANDLING:                                                                                                                                                                                                                                                                                                                                                                                            |                |          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | BE USED WITH 2-PIECE BOOM BUTT ONLY. MAX.<br>CAPACITY OF 12,000 LBS. (5,443 KG).<br>ANATION THAT CAN BE HANDLED WITH CYLINDER<br>3 IS: BUTT SECTIONS 171283 & 171284; ROPE<br>S 173242, 172559 & 171621; RIGGING WINCH<br>171287; EQUALIZER 171248; BOOM STOPS 170474 REF.<br>PARTS OF 1.125 (29mm) WIRE ROPE (FOR<br>2-PIECE HANDLING) MUST BE FULLY<br>INSPECTED AND APPROVED BY THE<br>QUALITY CONTROL DEPARTMENT. |                |          |                     | <div><div>1-7-93 DJS</div><div>A) ADDED</div><div>F-19-93 LS</div><div>B) PROCEDURE</div><div>ND CORRECTED</div><div>4-14-93 DJS</div><div>C) ADDED</div><div>6-17-93 DJS</div><div>D) WAS 172103</div><div>E) WAS 172103</div><div>F) 1421022</div><div>G) WAS 1200 FT<br/>(35.8 M)</div><div>H) 93-8 LS</div><div>I) WAS 950 FT<br/>(289.8 M)</div><div>J) ADDED</div><div>K) 03-97 ACK</div><div>JADDED</div><div>ACTUAL DIA'S</div></div> |

- (1) 1.125 (29mm) WIRE ROPE.
- (2) USED FOR GANTRY TIE DOWN.
- (3) ON DWG. 78145.
- (4) THE COMBINATION OF BUTT SECTIONS 171283 AND 171284 REPLACE 40 FT. (12.19 M) BUTT 171230.
- (5) ON DWG. 73026.
- (6) REQUIRED FOR CRAWLER HANDLING.
- (7) SEE JIB STOP ASSEMBLY FOR JIB STOP ERECTION PROCEDURE.
- (8) REQ'D. FOR BOOM BUTT HANDLING:  
CAN BE 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 (29mm) WIRE ROPE (FOR EQUALIZER HANDLING). CYLINDER MUST BE FULLY RETRACTED FOR CRANE OPERATION.
- (9) INSTALL 2 BUSHINGS 290026 (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.
- (10) PIN IN PLACE ONLY DURING EQUALIZER RELOCATION FROM STORAGE TO BOOM BUTT EQUALIZER RAIL. PIN TO BE STOWED FOR NORMAL CRANE OPERATION.
- (11) REQ'D. FOR 2 PIECE BOOM BUTT. USE LOCKTITE 242 OR EQUIVALENT ON MOUNTING SCR. THDS. AT ASSEMBLY.
- (12) INSTALL WITH HEAD ON BOTTOM. WIRE END PLATE SCREWS TOGETHER.
- (13) LOCATE AS REQ'D SEE SECTION "E"-"E".
- (14) .875 (22mm) WIRE ROPE.
- (15) SHOWN IN THE FORMAT:  
TOTAL BOOM / JIB BACKSTAY  
PENDANTS ( PENDANTS )  
REQ'D REQ'D REQ'D

| STOWAGE TIMBER REQUIRED |             |                  |
|-------------------------|-------------|------------------|
| STOWAGE CASE            |             | TIMBERS (171697) |
| #133 JIB IN #44 BOOM    |             |                  |
| FEET                    | METERS      |                  |
| 70 - 80                 | 21.3 - 24.4 |                  |
| 90 - 120                | 27.4 - 36.6 |                  |
| 130 - 160               | 39.6 - 48.8 | 16               |
| 170 - 200               | 51.8 - 61.0 | 24               |
|                         |             | 32               |
|                         |             | 40               |

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

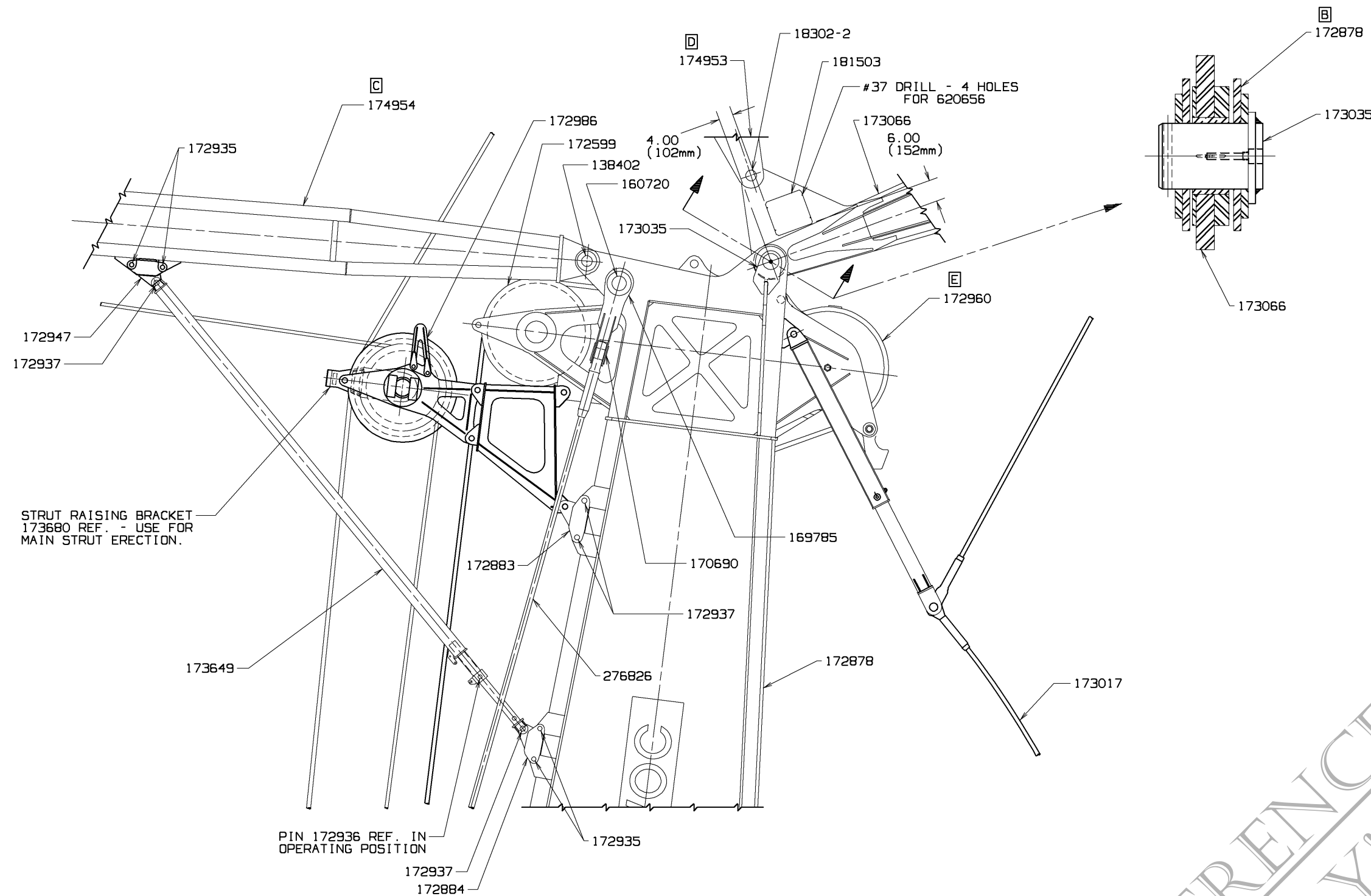
| STOWAGE TIMBER REQUIRED    |                                       |                  |
|----------------------------|---------------------------------------|------------------|
| STOWAGE CASE               |                                       | TIMBERS (171660) |
| #132 JIB IN #133 JIB       |                                       |                  |
| FEET                       | METERS                                |                  |
| 40<br>60 - 80<br>100 - 120 | 12.19<br>18.29 - 24.4<br>30.50 - 36.6 |                  |
|                            |                                       | 6<br>12<br>18    |

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

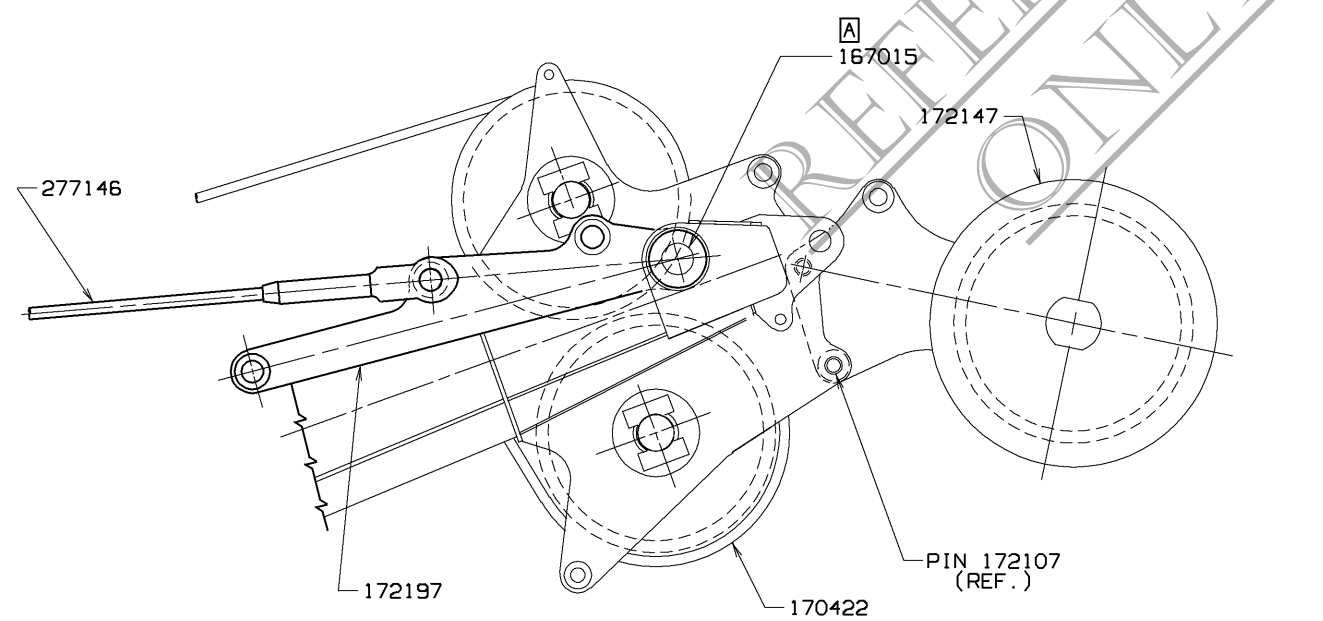
- (19) BEAM 172883 & 172884 AND ROPE CABLE ASSEMBLY 172986 MUST BE REMOVED FOR LIFT CRANE OPERATION.
- (20) REFER TO SPECIFIC CAPACITY CHART FOR APPROPRIATE BOOM & JIB COMBINATIONS.
- B (21) REFER TO LUFFING JIB RAISING PROCEDURE #7658A FOR RAISING & LOWERING BOOM & JIB.
- (22) USED ON BOOM TOP - SEE (23)
- (23) SEE CRANE ASSEMBLY & RIGGING GUIDE IN THE OPERATIONS MANUAL FOR INSTRUCTIONS ON PENDANT STORAGE.
- (24) SPREADER LOCATIONS:
- A) FOR JIBS REQUIRING ONE SPREADER:  
LOCATE AT THE FIRST PENDANT CONNECTION CLOSEST TO THE LUFFING JIB TOP.  
(REF. VIEW "P - P").
- B) FOR JIBS REQUIRING TWO SPREADERS:  
LOCATE ONE AT THE FIRST PENDANT CONNECTION CLOSEST TO THE LUFFING JIB TOP AND THE SECOND SPREADER AT THE PENDANT CONNECTION CLOSEST TO THE JIB STRUT.
- (25) PIN 173711 IS USED IN CONJUNCTION WITH SPREADER 173710 (2 PINS PER SPREADER) AND REPLACES PIN SUPPLIED WITH PENDANT. (REF. VIEW "P - P").
- (26) STAMP DATA ON 181503 AND INSTALL AFTER FINAL PAINTING.
- (27) PIN 564094 IS TO BE USED FOR MAIN STRUT ERECTION ONLY. IF WEDGE SOCKET 162233 IS USED FOR ANY LOAD LIFTING LINE, PIN 563960 (REF.) IS REQUIRED.
- (28) (12 FT.)-(3.66 M)
- (29) (28 FT.)-(8.53 M)
- C (30) USED ON LUFFING JIB TOP - SEE (23)
- H (31) LUFFING JIB ASSEMBLIES REQUIRING OUTSIDE ASSIST MUST BE 1000 FT. (304.8 M) OF JIB HOIST LINE.

|                                                                                                                                                                                                                                                     |  |                                      |      |             |      |           |  |                                     |  |                      |  |             |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------|------|-------------|------|-----------|--|-------------------------------------|--|----------------------|--|-------------|--|
| THIS PRINT REMAINS THE PROPERTY OF<br>HAWTHORNE CRANES, INC.                                                                                                                                                                                        |  | TOLERANCE UNLESS OTHERWISE SPECIFIED |      |             |      | SCALE     |  | Manitowoc Cranes, Inc.              |  | JIB RIGGING ASSEMBLY |  | PATTERN NO. |  |
| ALL INFORMATION CONTAINED HEREON IS CONFIDENTIAL.<br>IT IS LOANED, SUBJECT TO RETURN UPON DEMAND,<br>AND ON EXPRESS CONDITION THAT IT IS NOT TO BE<br>COPIED OR USED DIRECTLY OR INDIRECTLY IN ANY MANNER<br>UNAUTHORIZED BY HAWTHORNE CRANES, INC. |  | DECIMAL PLACES                       |      | FABRICATION |      | DRAWING   |  | Manitowoc, Wisconsin                |  | #44A BOOM #133 JIB   |  |             |  |
|                                                                                                                                                                                                                                                     |  | ± 10 FEET                            |      | ± 10 FEET   |      | ± 10 FEET |  | DO NOT SCALE DRAWING FOR DIMENSIONS |  |                      |  |             |  |
|                                                                                                                                                                                                                                                     |  | (1) PLACE .0,0                       | .120 | .180        | .030 |           |  |                                     |  |                      |  |             |  |
|                                                                                                                                                                                                                                                     |  | (2) PLACE .0,00                      | .060 | .120        | .015 | DR. DJS   |  |                                     |  |                      |  |             |  |
|                                                                                                                                                                                                                                                     |  | (3) PLACE .0,000                     |      |             | .005 | DC LSC    |  | MODEL M-250T                        |  | 1.50 SWAGED PENDANTS |  | Dwg. No.    |  |
|                                                                                                                                                                                                                                                     |  |                                      |      |             |      |           |  |                                     |  |                      |  | (USA)       |  |

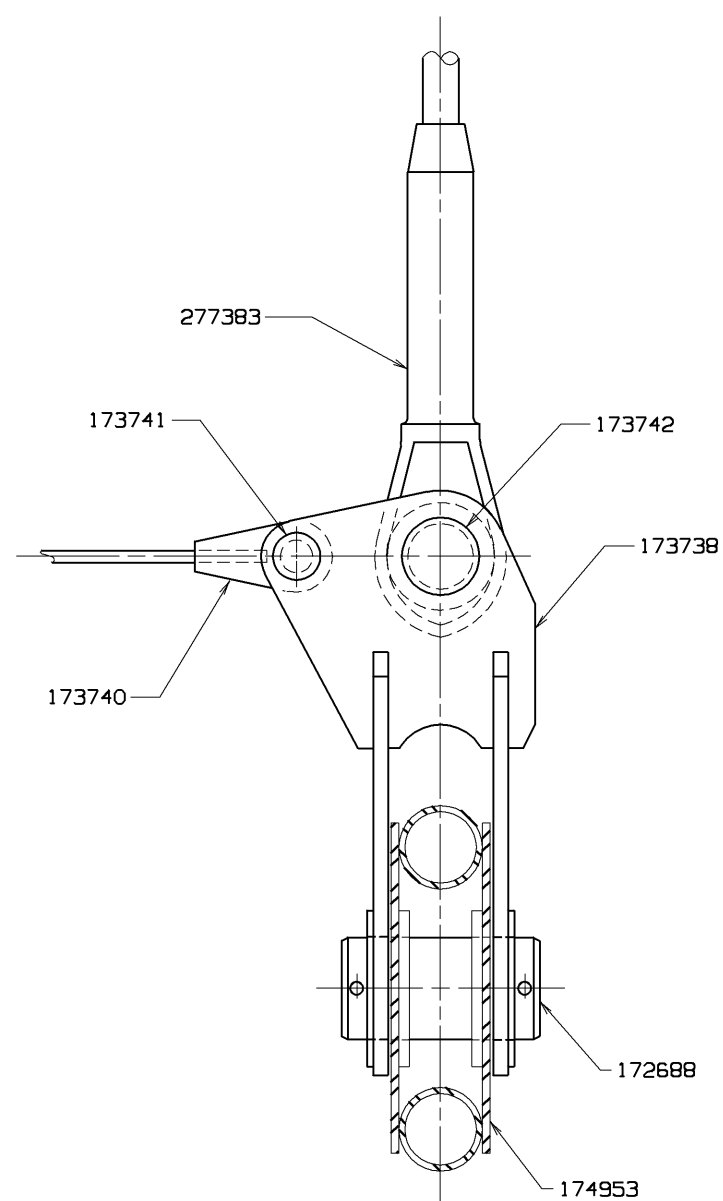




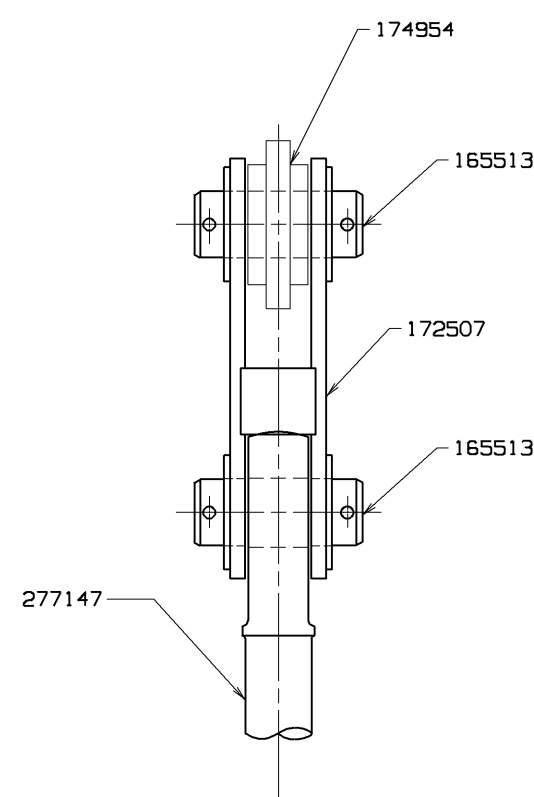
VIEW "K"



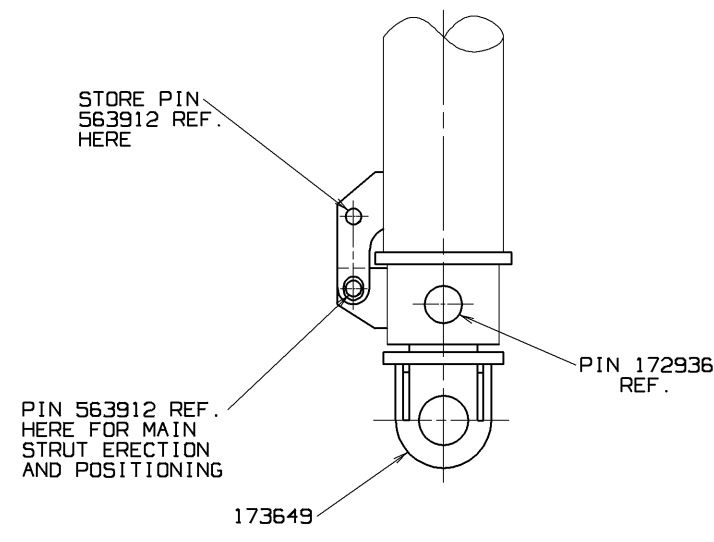
VIEW "L"



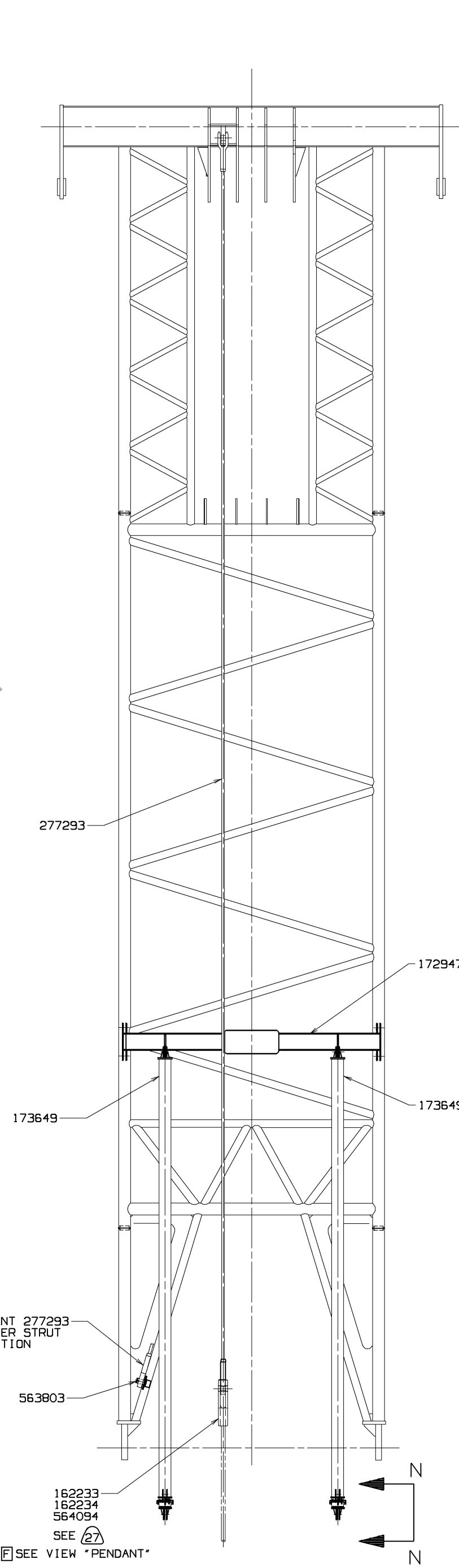
VIEW "H" - "H"



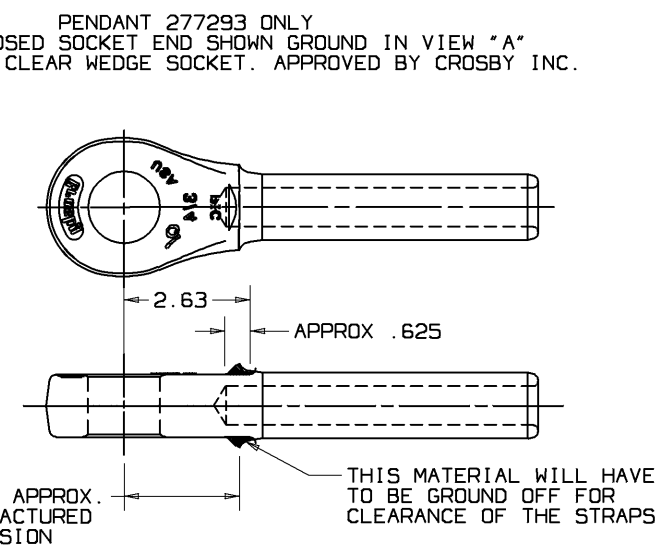
VIEW "G" - "G"



VIEW "N" - "N"



VIEW "M" - "M"



**G VIEW "PENDANT "**

## MAIN STRUT ERECTION PROCEDURE

1. ATTACH LINK 172957 AND BASIC BACKSTAY PENDANT.  
277147 TO MAIN STRUT. ATTACH STRUT STOP TUBE ASSEMBLY 173649 TO STRUT SUPPORT BEAM 172947. STRUT STOP TUBE ASSEMBLY SHOULD BE IN ITS RETRACTED POSITION WITH PIN 563912 REF. IN THE STRUT ERECTION AND POSITIONING LOCATION (SEE VIEW "N"- "N"). ATTACH GUY LINES OR OTHER MEANS TO STRUT STOP TUBE ASSEMBLY TO AID STRUT POSITIONING DURING STRUT ERECTION.
- DANGER:  
DO NOT STAND UNDER MAIN STRUT DURING ERECTION.
2. RUN A 1.125 (29 mm) ROPE FROM LEFT REAR DRUM OVER THE TOP OF THE STRUT RAISING BRACKET (173680 REF.) ON WIRE ROPE GUIDE ASSEMBLY 172986.
3. ATTACH ROPE TO SOCKET 162233 & WEDGE 162234 AND PIN SOCKET 162233 TO PENDANT 277293 WITH PIN 564094.
4. RAISE MAIN STRUT WITH LOAD LINE WHILE PAYING OUT LUFFING JIB HOIST LINE (DO NOT ALLOW LUFFING JIB HOIST LINE TO GO INTO TENSION UNTIL MAIN STRUT IS NEAR VERTICAL).
5. WHEN MAIN STRUT HAS BEEN RAISED TO A POSITION WHERE RETRACTED STRUT STOP TUBE ASSEMBLY 173649 CONTACTS THE BOOM TOP PLATEWORK. REMOVE PIN 563912 (REF.) FROM STRUT STOP TUBE ASSEMBLY. STORE AS SHOWN IN VIEW "N-N". EXTEND STRUT STOP TUBE ASSEMBLY TO STRUT SUPPORT BEAM 172884 AND CONNECT USING PIN 172937.
6. SUPPORT MAIN STRUT WITH LUFFING JIB HOIST LINE AND MOVE INTO A POSITION SUPPORTED BY RETRACTED STRUT STOP TUBE ASSEMBLY 173649. AND REINSTALL PIN 563912 (REF.) IN STRUT ERECTION AND POSITIONING LOCATION (REF. VIEW "N-N").
7. WITH STRUT RESTING ON STRUT STOP TUBE ASSEMBLY 173649. DISCONNECT SOCKET 162233 AND PIN PENDANT 277293 TO STRUT USING PIN 563803. (REF. VIEW "M-M")
8. CONNECT ALL BACKSTAY PENDANTS AND LINKS.
9. AFTER ALL BACKSTAY PENDANTS AND LINKS ARE IN PLACE AND BACKSTAY IS PINNED TO BACKSTAY PIN 172194 IN BOOM BUTT, REMOVE PIN 172936 (REF.) AND RAISE MAIN STRUT USING LUFFING JIB HOIST LINE UNTIL PIN HOLES IN STRUT STOP TUBE ASSEMBLY 173649 ALIGN IN OPERATING POSITION. (REF. VIEW "K")
- NOTE: IF THE JIB STRUT 174953 BEGINS TO RAISE BEFORE THE HOLES IN STRUT STOP TUBE ASSEMBLY 173649 ALIGN, SECURE JIB STRUT TO JIB.
10. INSERT PIN 172936 (REF.). RELAX LUFFING JIB HOIST LINE. DISCONNECT JIB STRUT FROM JIB. AND REMOVE AND STORE PIN 563912 (REF.). SEE VIEW "N-N".
11. REVERSE PROCEDURE FOR LOWERING MAIN STRUT.

PENDANT 277293 ONLY  
USED SOCKET END SHOWN GROUND IN VIEW "A"  
CLEAR WEDGE SOCKET. APPROVED BY CROSBY INC

|                                                                                                                                                                                                                                            |  |                                      |  |               |  |                       |  |                                                                               |  |             |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------|--|---------------|--|-----------------------|--|-------------------------------------------------------------------------------|--|-------------|--|
| THIS PRINT REMAINS THE PROPERTY OF<br>HAWTHORNE CRANES, INC.                                                                                                                                                                               |  | TOLERANCE UNLESS OTHERWISE SPECIFIED |  | SCALE         |  | Monitorw Cranes, Inc. |  | JIB RIGGING ASSEMBLY                                                          |  | PATTERN NO. |  |
| ALL INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS LOANED, SUPPLIED TO RETURN UPON DEMAND, AND ON EXPRESS CONDITION THAT IT IS NOT TO BE COPIED OR USED DIRECTLY OR INDIRECTLY IN ANY MANNER WHATSOEVER DETRIMENTAL TO OUR INTERESTS. |  | DECIMAL PLACES                       |  | FRACTION      |  | MACHINING             |  | DR. DJS<br>MC<br>CLS MODEL-M-250T<br>APP TSL<br>1.50 SWAGED PENDANTS<br>(USA) |  | 174043      |  |
|                                                                                                                                                                                                                                            |  | 10 FEET                              |  | 10 FEET       |  | TOLERANCE             |  |                                                                               |  |             |  |
|                                                                                                                                                                                                                                            |  | (1) PLACE 0.0                        |  | + .12 + .18   |  | + .03                 |  |                                                                               |  |             |  |
|                                                                                                                                                                                                                                            |  | (2) PLACE 0.00                       |  | + .06 + .12   |  | + .015                |  |                                                                               |  |             |  |
|                                                                                                                                                                                                                                            |  | (3) PLACE 0.000                      |  | + .012 + .018 |  | + .005                |  |                                                                               |  |             |  |
|                                                                                                                                                                                                                                            |  | KNEEL                                |  | KNEEL         |  | KNEEL                 |  |                                                                               |  |             |  |