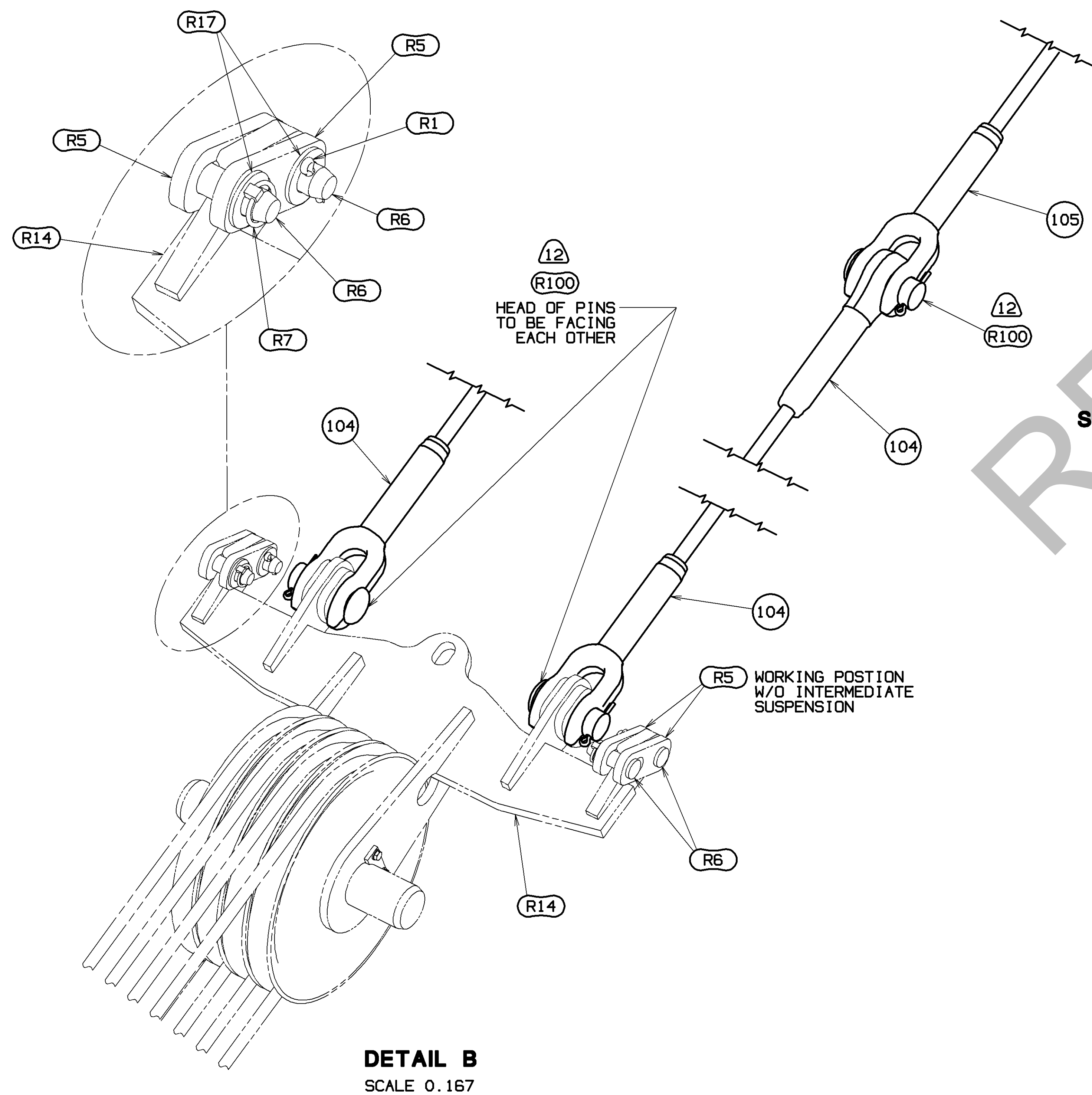
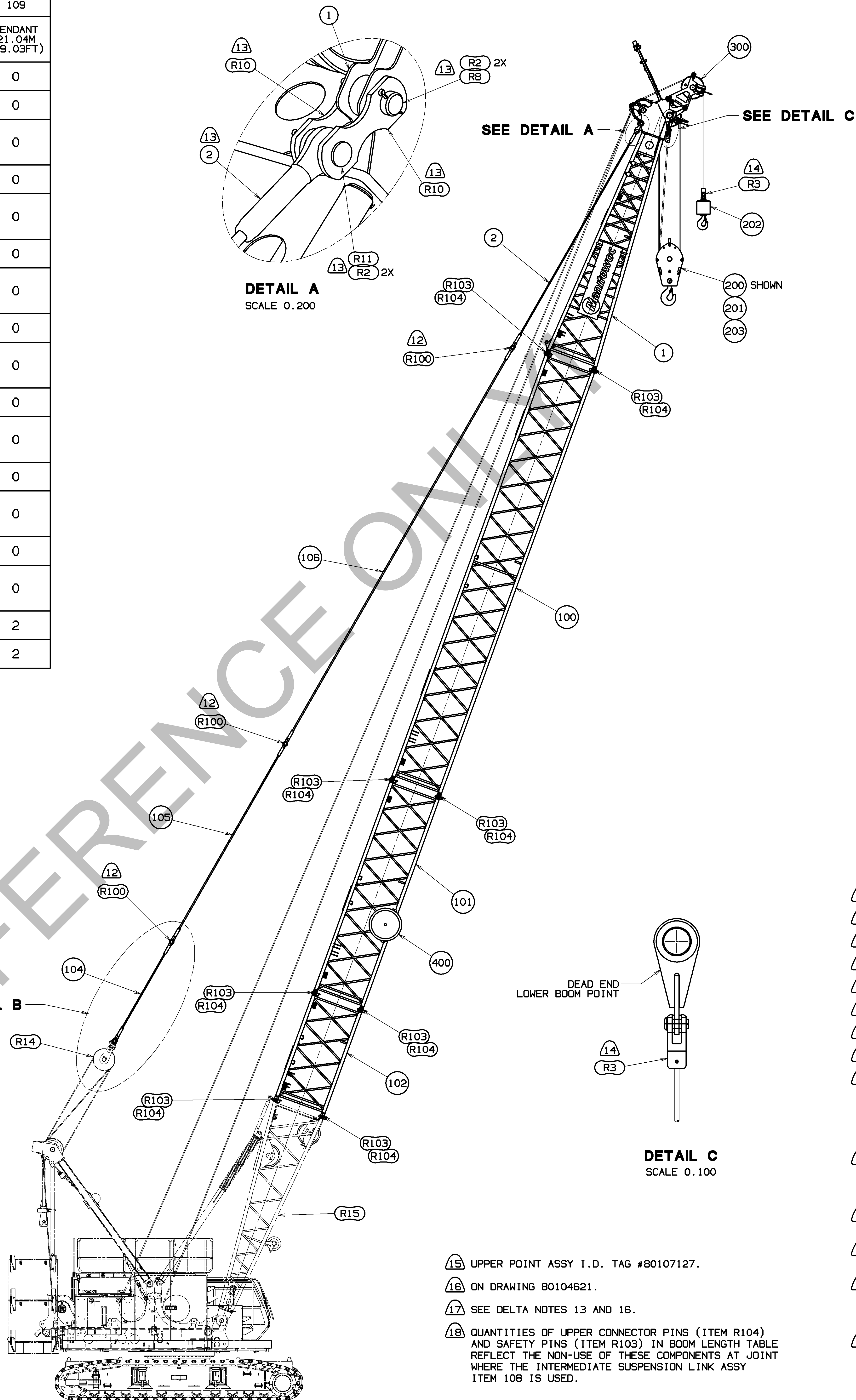


ITEMS REQ'D FOR VARIOUS BOOM LENGTHS - SEE SHEETS 2, 3 & 4 FOR BOOM MAKE-UP

ITEM NO.		#290 INSERTS			PENDANTS			PINS			INTERMEDIATE SUSP	
		100	101	102	106	105	104	R100	R104	R103	108	109
BOOM LENGTH METERS	FEET	INSERT 12M (39.4FT) ASSY	INSERT 6M (19.7FT) ASSY	INSERT 3M (9.8FT) ASSY	PENDANT 12.08M (39.64FT)	PENDANT 6.04M (19.82FT)	PENDANT 3.02M (9.91FT)	PENDANT PIN (12)	PIN HOLES	SAFETY PIN	LINK	PENDANT 21.04M (69.03FT)
		13	42.7	0	0	0	0	0	0	2	4	8
16	52.5	0	0	1	0	0	2	4	8	16	0	0
19	62.3	OR 0	1	0	0	2	0	4	8	16	0	0
22	72.2	0	1	1	0	2	2	6	12	24	0	0
25	82.0	OR 0	1	0	2	0	0	4	8	16	0	0
28	91.9	1	0	1	2	0	2	6	12	24	0	0
31	101.7	OR 1	1	0	2	2	0	6	12	24	0	0
34	111.5	1	1	1	2	2	2	8	16	32	0	0
37	121.4	OR 1	0	0	4	0	0	6	12	24	0	0
40	131.2	2	0	1	4	0	2	8	16	32	0	0
43	141.1	OR 2	1	0	4	2	0	8	16	32	0	0
46	150.9	2	1	1	4	2	2	10	20	40	0	0
49	160.8	OR 2	0	0	6	0	0	8	16	32	0	0
52	170.6	3	0	1	6	0	2	10	20	40	0	0
55	180.4	OR 3	1	0	6	2	0	10	20	40	0	0
58	190.3	3	1	1	6	2	2	12	22 (18)	44 (18)	2	2
61	200.1	3	1	2	6	2	4	14	26 (18)	52 (18)	2	2



DETAIL B  
SCALE 0.167



34.0 M (111.5 FT)  
#290 BOOM SHOWN

- 15 UPPER POINT ASSY I.D. TAG #80107127.
- 16 ON DRAWING 80104621.
- 17 SEE DELTA NOTES 13 AND 16.
- 18 QUANTITIES OF UPPER CONNECTOR PINS (ITEM R104) AND SAFETY PINS (ITEM R103) IN BOOM LENGTH TABLE REFLECT THE NON-USE OF THESE COMPONENTS AT JOINT WHERE THE INTERMEDIATE SUSPENSION LINK ASSY ITEM 108 IS USED.

- 1 TOP 7.0M I.D. TAG #80101590.
- 2 INSERT 12.0M I.D. TAG #80101581.
- 3 INSERT 6.0M I.D. TAG #80101584.
- 4 INSERT 3.0M I.D. TAG #80101586.
- 5 BUTT 6.0M I.D. TAG #84054809.
- 6 MAXIMUM NUMBER OF 3 METER INSERTS = 2.
- 7 MAXIMUM NUMBER OF 6 METER INSERTS = 1.
- 8 MAXIMUM NUMBER OF 12 METER INSERTS = 3.
- 9 STARTING WITH BOOM BUTT ASSEMBLY (R15), INSERT ASSEMBLIES MUST BE INSTALLED IN ASCENDING LENGTH, WITH THE EXCEPTION OF (1) 3.0M INSERT AFTER THE INTERMEDIATE SUSPENSION ON THE 61.0M (200.1 FT) LONG BOOM. (SEE BOOM MAKEUP SHEET 4).
- 10 58.0M (190.3 FT) AND 61.0M (200.1 FT) BOOM REQUIRES INTERMEDIATE SUSPENSION ITEM 108 AND PENDANTS ITEM 109 (ON DRAWING 80107971). SEE SHEET 6 FOR OPERATIONAL INSTRUCTIONS.
- 11 SEE BLOCK REEVING DRAWING 80109060 FOR DRUM 2 RIGGING CONFIGURATION OPTIONS AND INSTRUCTIONS.
- 12 FOR REPLACEMENT INFO ONLY. PENDANT PINS ARE FURNISHED WITH PENDANT.
- 13 LINKS (R10), PINS (R8 & R11) AND COTTER PINS (R2) STOW IN PARTS BOX 84054316, BUT CAN BE SHIPPED WITH EACH BOOM TOP PENDANT (ITEM 2) AS ONE COMPONENT.
- 14 QUANTITY 2 WHEN STOWS IN PARTS BOX 84054316 AS STANDARD EQUIPPED. QUANTITY 3 WHEN STOWS IN PARTS BOX 84054316 AS STANDARD EQUIPPED AND OPTION EQUIPPED.

BILL OF MATERIAL				ASSEMBLY USED ON
ITEM NO.	DESCRIPTION	MATERIAL	QTY	84054240
<b>BOOM RIGGING B10:290</b>				
1	TOP ASSY #290, 7.0 M	80101587	1	
2	PENDANT 32MM DIA X 6616MM LG	80113407	17	
3				
4				
5				
6				
7				
NO. REQ'D FOR THE FOLLOWING ITEMS ARE IN THE BOOM LENGTH TABLE				
100	INSERT ASSY #290 12M	80101579	2	
101	INSERT ASSY #290 6M	80101583	3	
102	INSERT ASSY #290 3M	80101585	4	
103				
104	PENDANT 32MM DIA X 3021MM LG	80104622	16	
105	PENDANT 32MM DIA X 6041MM LG	80104623	16	
106	PENDANT 32MM DIA X 12082MM LG	80104624	16	
107				
108	LINK INT SUSP ASSY	80107961	10	
109	PENDANT INTERMEDIATE SUSPENSION	80113422	10	
110				
<b>OPTION 1: HOOK BLOCKS</b>				
200	BLOCK 75MTON 3 SHEAVE	80104391		
201	BLOCK 25MTON 1 SHEAVE	80104392		
202	OVERHAUL BALL 12.5 MTON	80104395		
203	BLOCK 100MTON 4 SHEAVE	80107138		
204				
<b>OPTION 2: UPPER BOOM POINT</b>				
300	UPPER POINT ASSEMBLY	80104216	15	
<b>OPTION 3: TAGLINE</b>				
400	TAGLINE ASSY	80107275		
<b>BASIC REFERENCE ITEMS</b>				
R1	PIN COTTER 3/8 DIA X 2.25 LG	562148		
R2	PIN COTTER 3/8 DIA X 3.50 LG	562151	13	
R3	SOCKET BUTTON 22-26MM WIRE ROPE	A11041	14	
R4				
R5	LINK TIE BACK	80103859		
R6	PIN 35.00 DIA	80104008		
R7	PIN LOCKING, 38 MM U/L	80104821		
R8	PIN 66.0 DIA X 140.5 LG	80106394	13	
R9				
R10	LINK MACH #290	80112790	13	
R11	PIN 1 HOLE 63.5 DIA X 136.5 LG	80112791	13	
R12				
R13				
R14	EQUALIZER ASSY	84054318		
R15	BUTT ASSY #290 6M	84054806	5	
R16				
R17	F WASHER 36 200HV FLZN 7089	79513800	14	

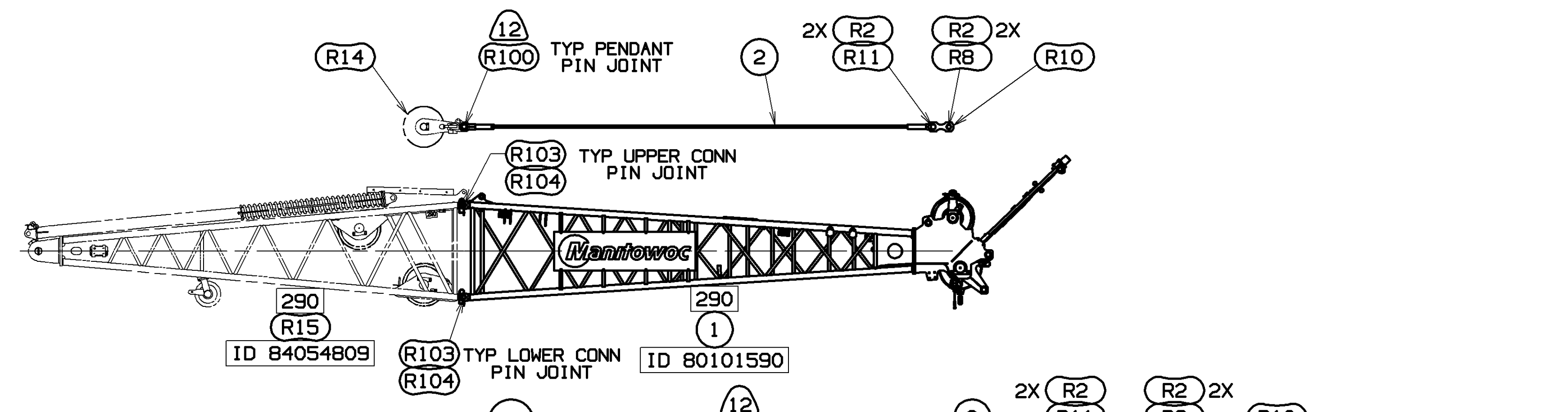
84054317  
SHT 1 OF 6

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DECIMAL PLACES	FRACTIONS	F. TO FEET	I.O. FEET	ANGLE	DR. RHY	DR. PUH	DR. JRR	DATE	REV. LNK	REV. LNK	REV. LNK
(1) PLACE 0.5	1/16	±.12	±.18	±.05	MANITOWOC	MANITOWOC	MANITOWOC	11-14-18	A	A	A
(2) PLACE 0.00	1/32	±.08	±.12	±.015	MANITOWOC	MANITOWOC	MANITOWOC				
(3) PLACE 0.000	1/64	±.03	±.04	±.008	MANITOWOC	MANITOWOC	MANITOWOC				

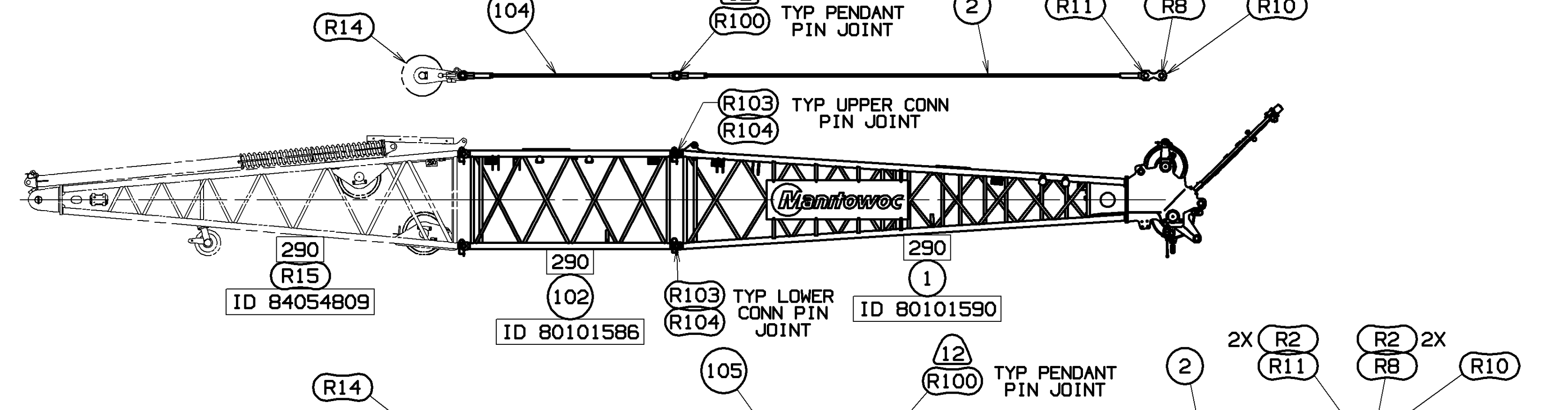
PRIVATE LABELING REQUIREMENT TO CONFORM TO ENGINEERING SPECIFICATION 8629103794 FOR COMPONENTS LISTED IN 84054316-05-006  
11-14-18  
REV. LNK  
A  
84054317  
SHT 1 OF 6



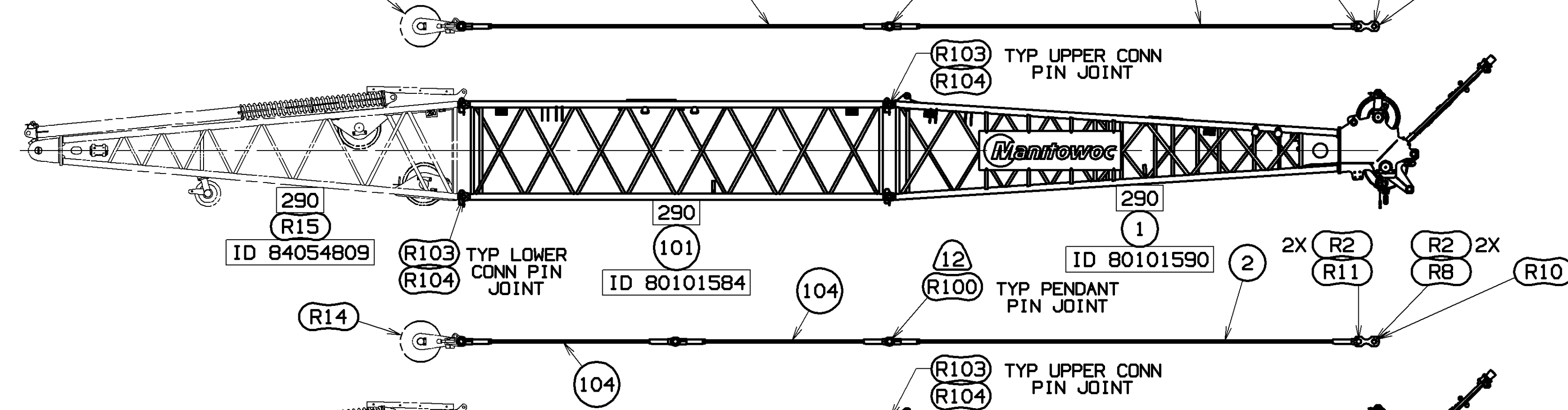
13.0 M  
(42.7 FT)



16.0 M  
(52.5 FT)

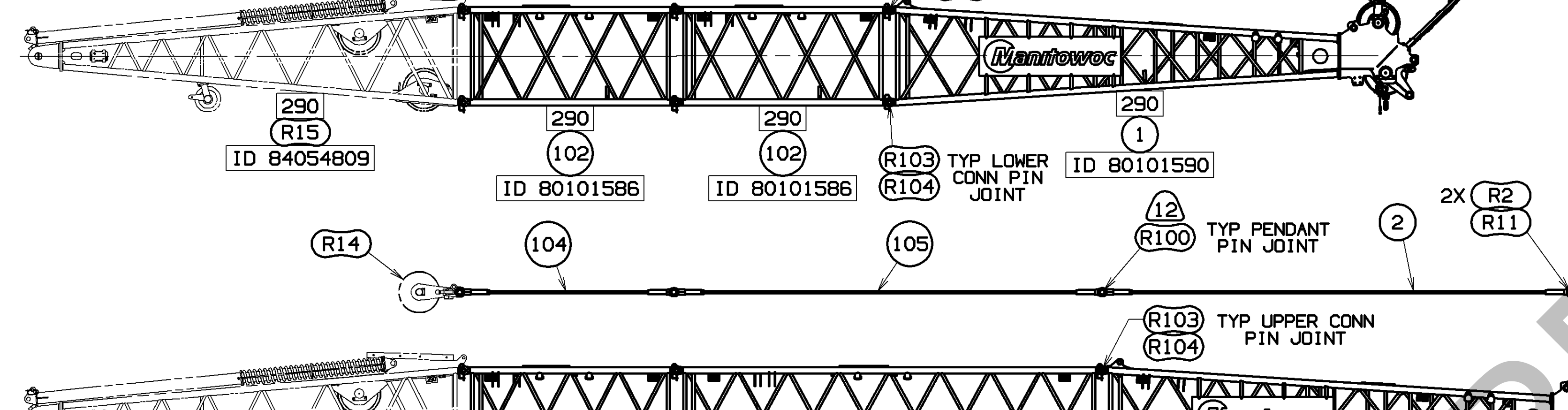


19.0 M  
(62.3 FT)

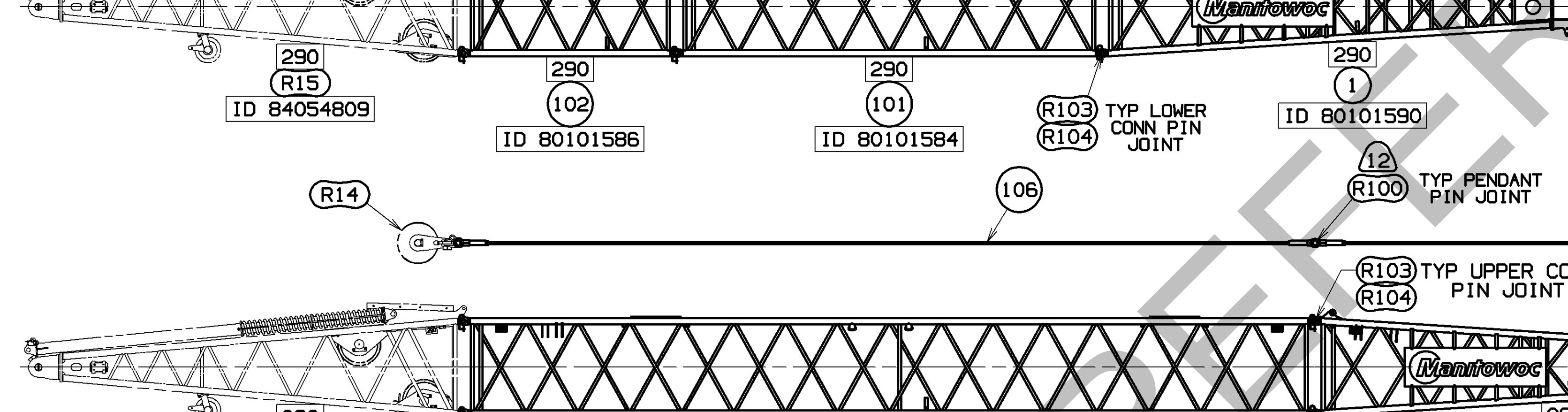


OR

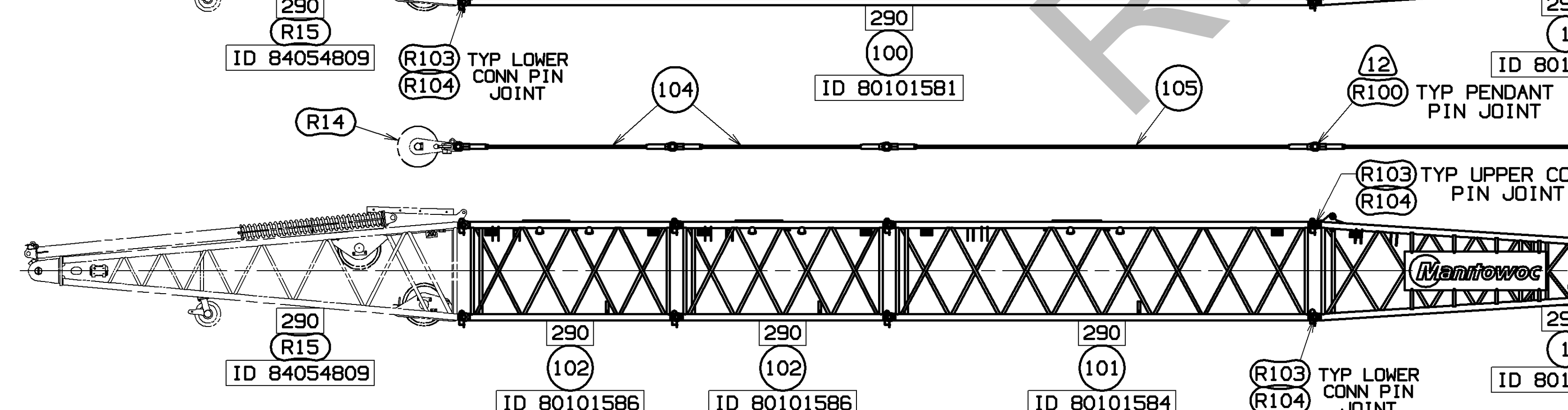
19.0 M  
(62.3 FT)



22.0 M  
(72.2 FT)

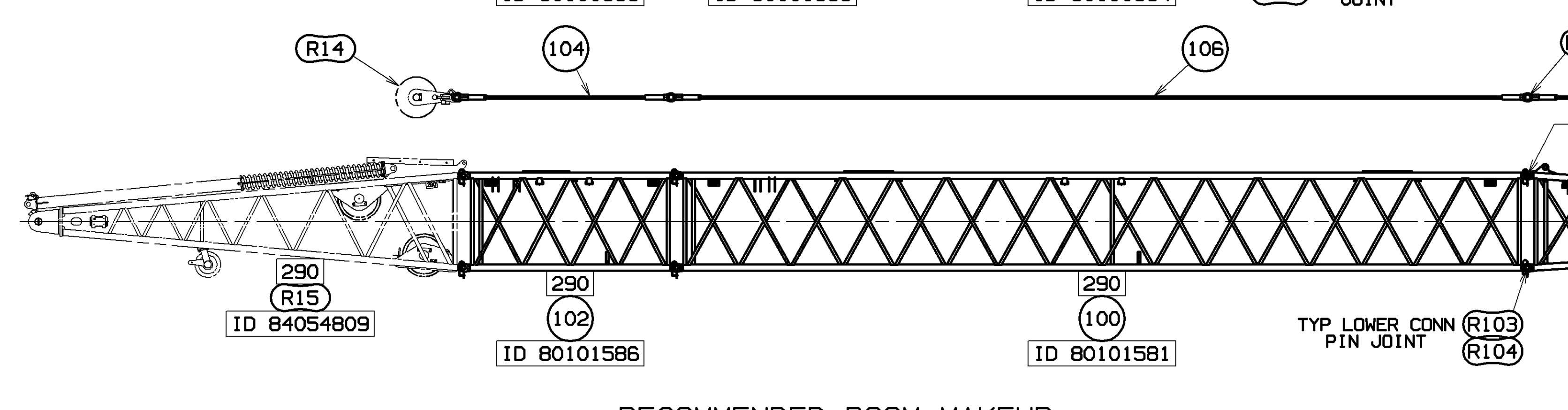


25.0 M  
(82.0 FT)

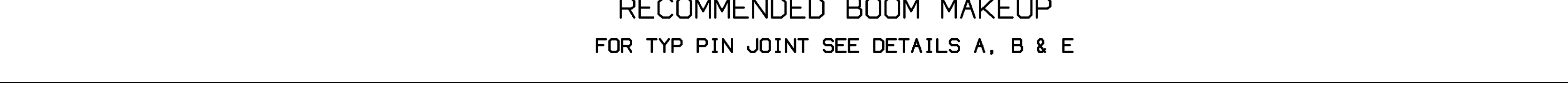


OR

25.0 M  
(82.0 FT)



28.0 M  
(91.9 FT)

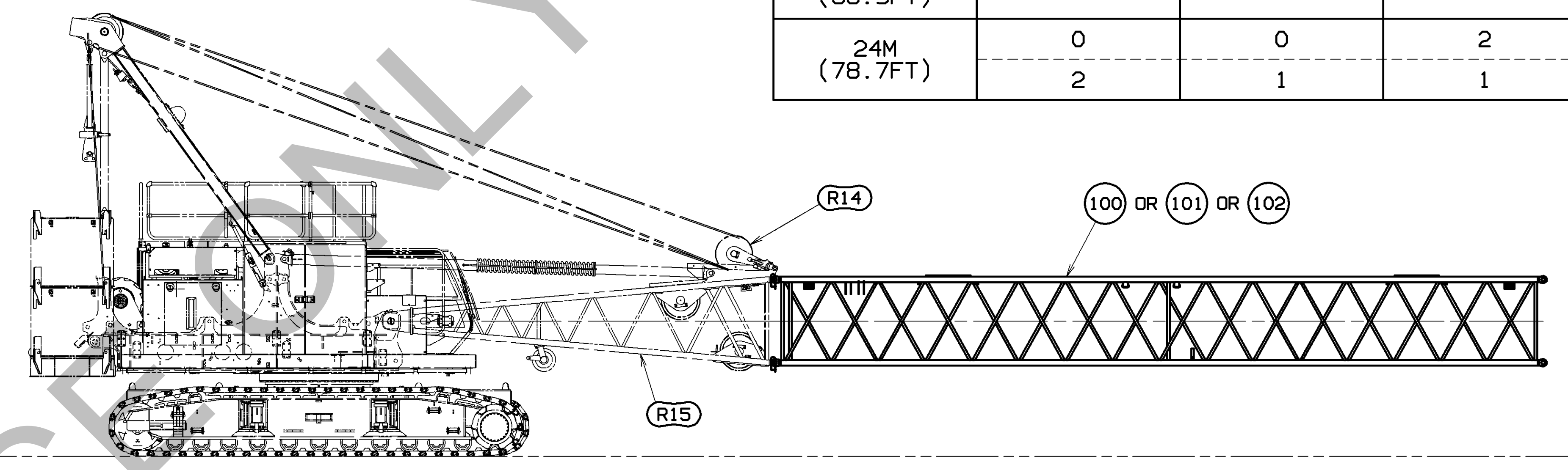


RECOMMENDED BOOM MAKEUP  
 FOR TYP PIN JOINT SEE DETAILS A, B & E

DO NOT SCALE THIS DRAWING

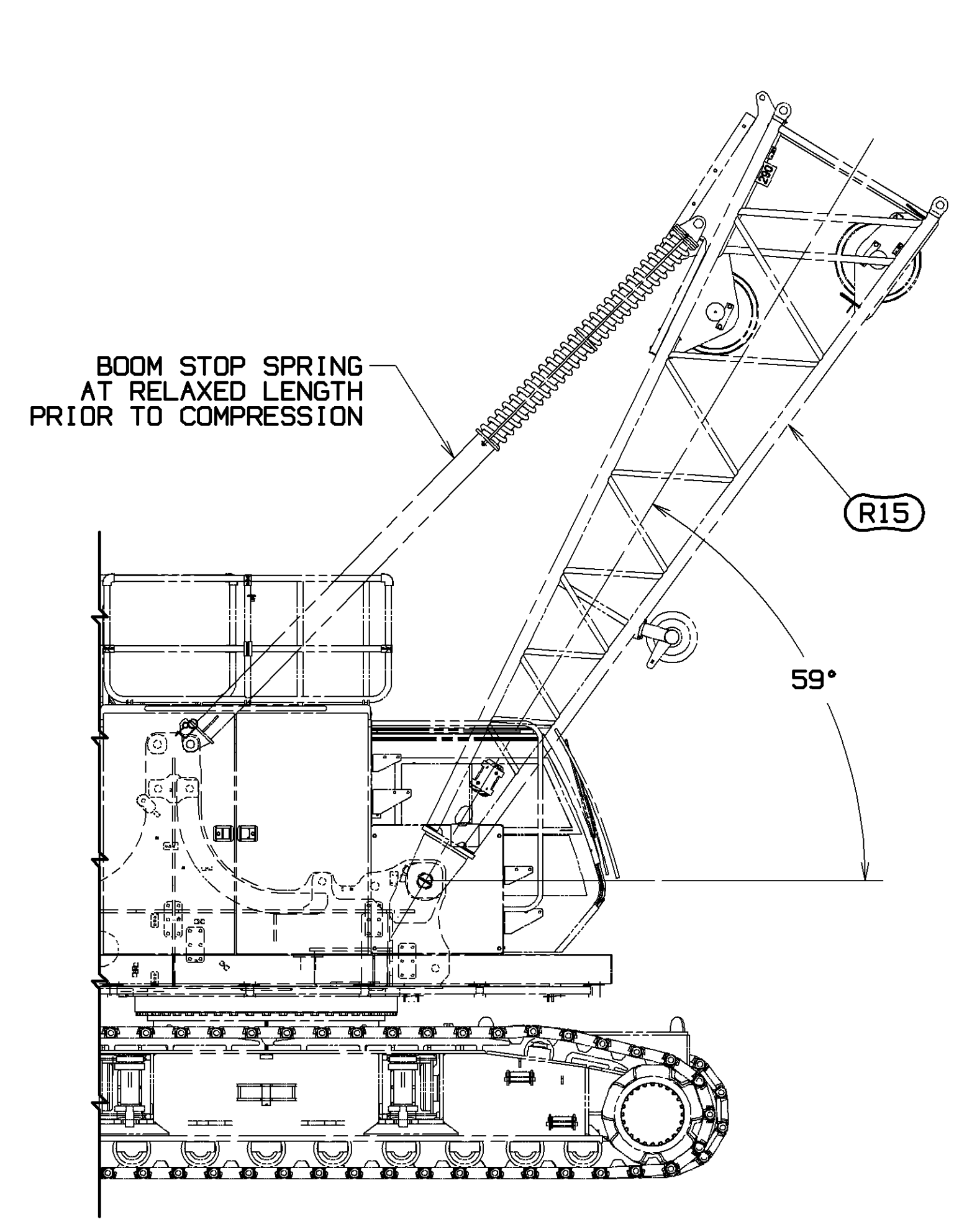
BOOM HANDLING WITH EQUALIZER  
 WITH EQUALIZER ATTACHED TO BOOM BUTT  
 MAXIMUM BOOM INSERTS THAT CAN BE CANTILEVERED  
 BEYOND 6M BOOM BUTT IS AS FOLLOWS

LENGTH	3M (9.8FT) INSERT 80101585	6M (19.7FT) INSERT 80101583	12M (39.4FT) INSERT 80101579
3M (9.8FT)	1	0	0
6M (19.7FT)	0	1	0
9M (29.5FT)	1	1	0
12M (39.4FT)	0	0	1
15M (49.2FT)	2	1	0
18M (59.1FT)	1	0	1
21M (68.9FT)	0	1	1
24M (78.7FT)	1	1	1

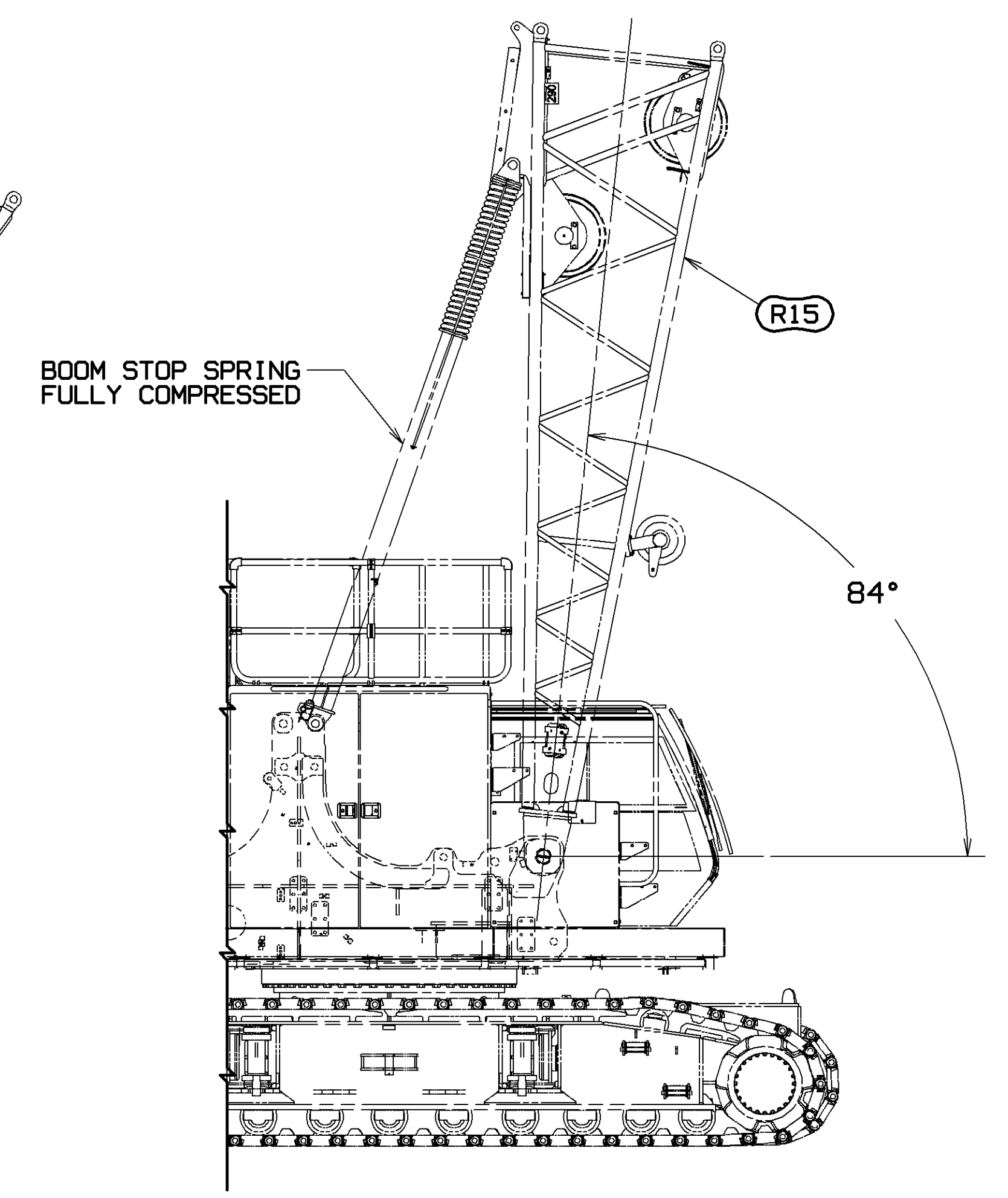


BOOM HANDLING WITH EQUALIZER PINNED TO BUTT  
 SCALE 0.020

(SEE STEP 2 AND DETAIL F ON SHEET 5 FOR BUTT TO INSERT ATTACHMENT)

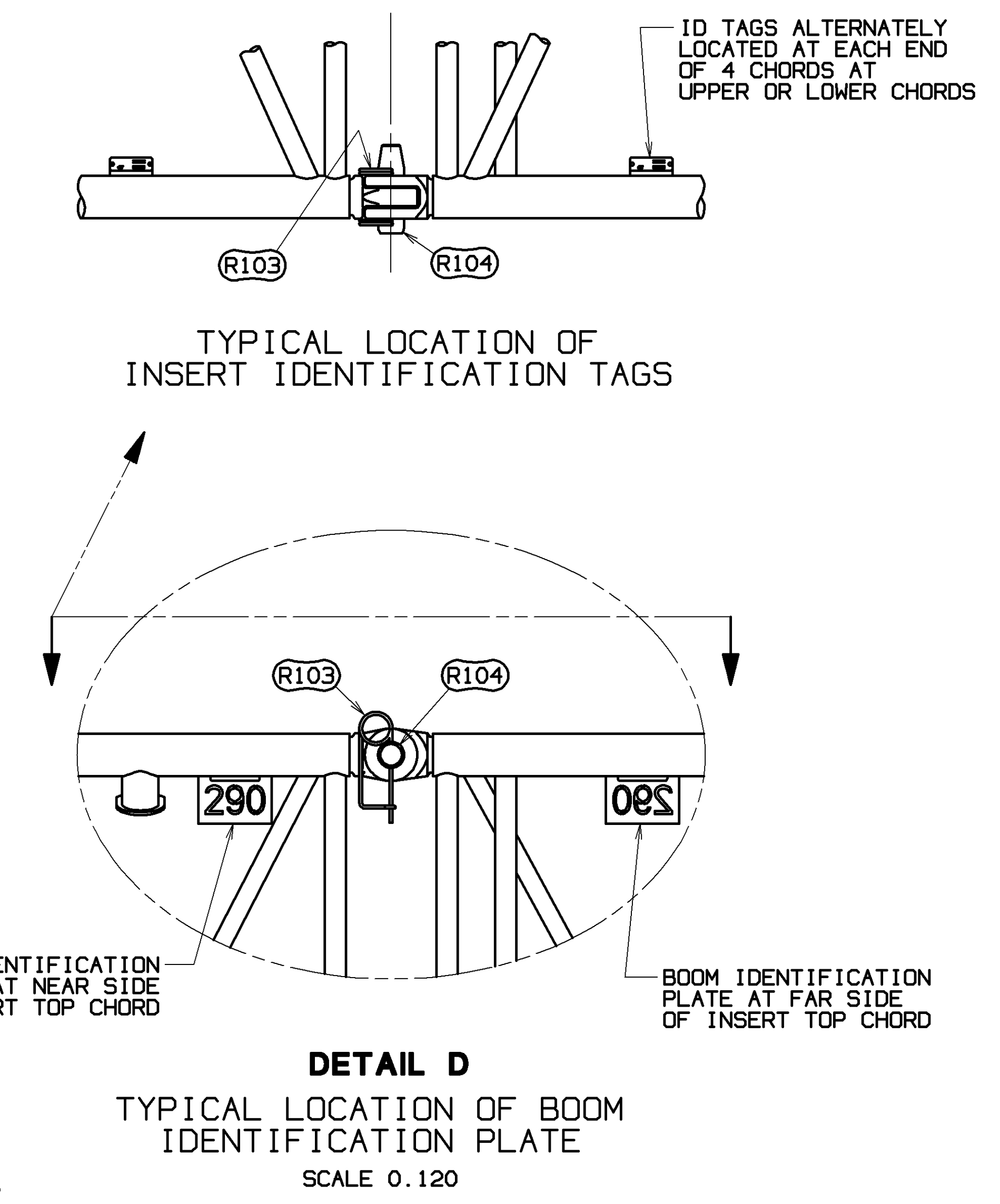
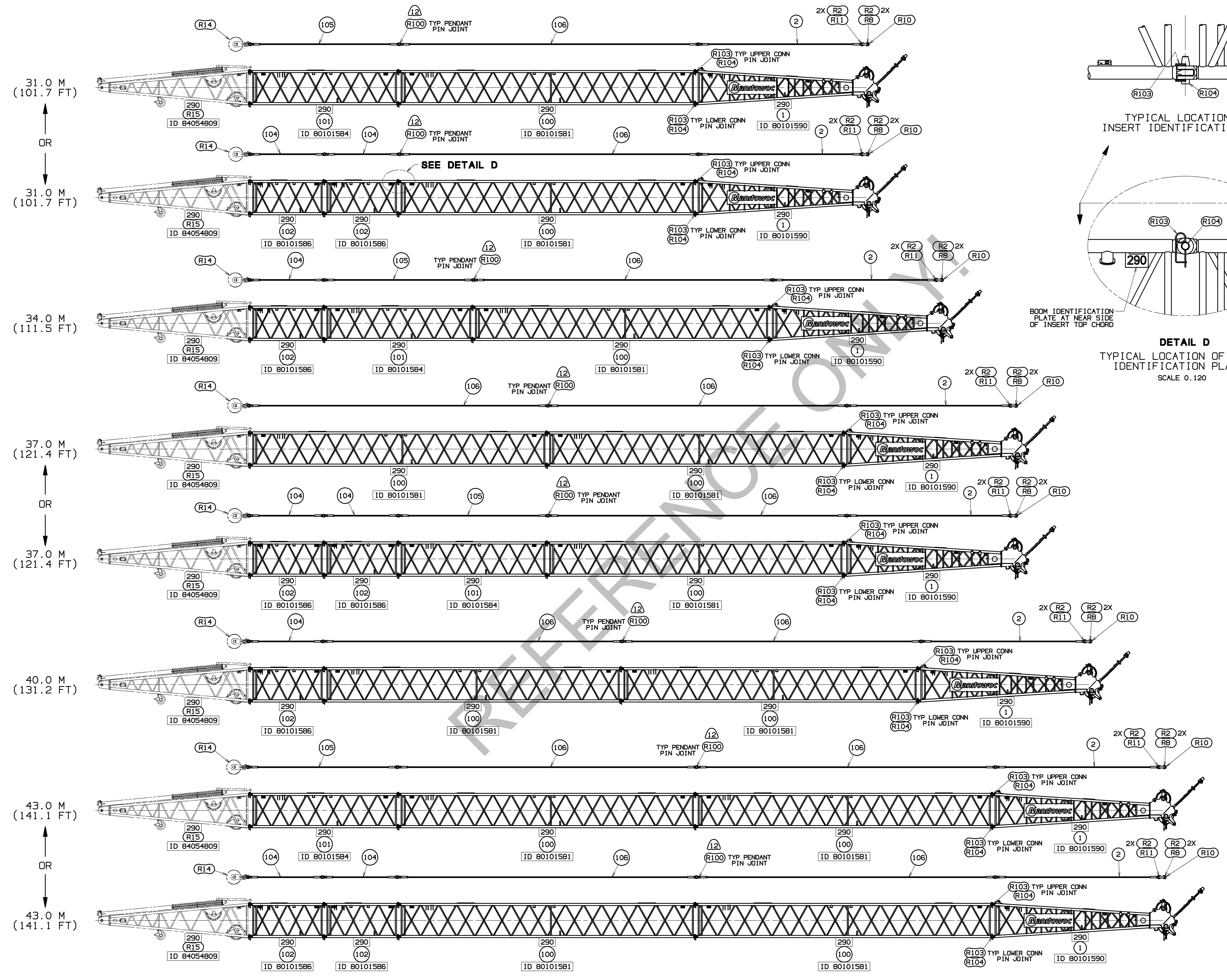


BOOM STOP  
 START OF CUSHION



BOOM STOP  
 PHYSICAL STOP





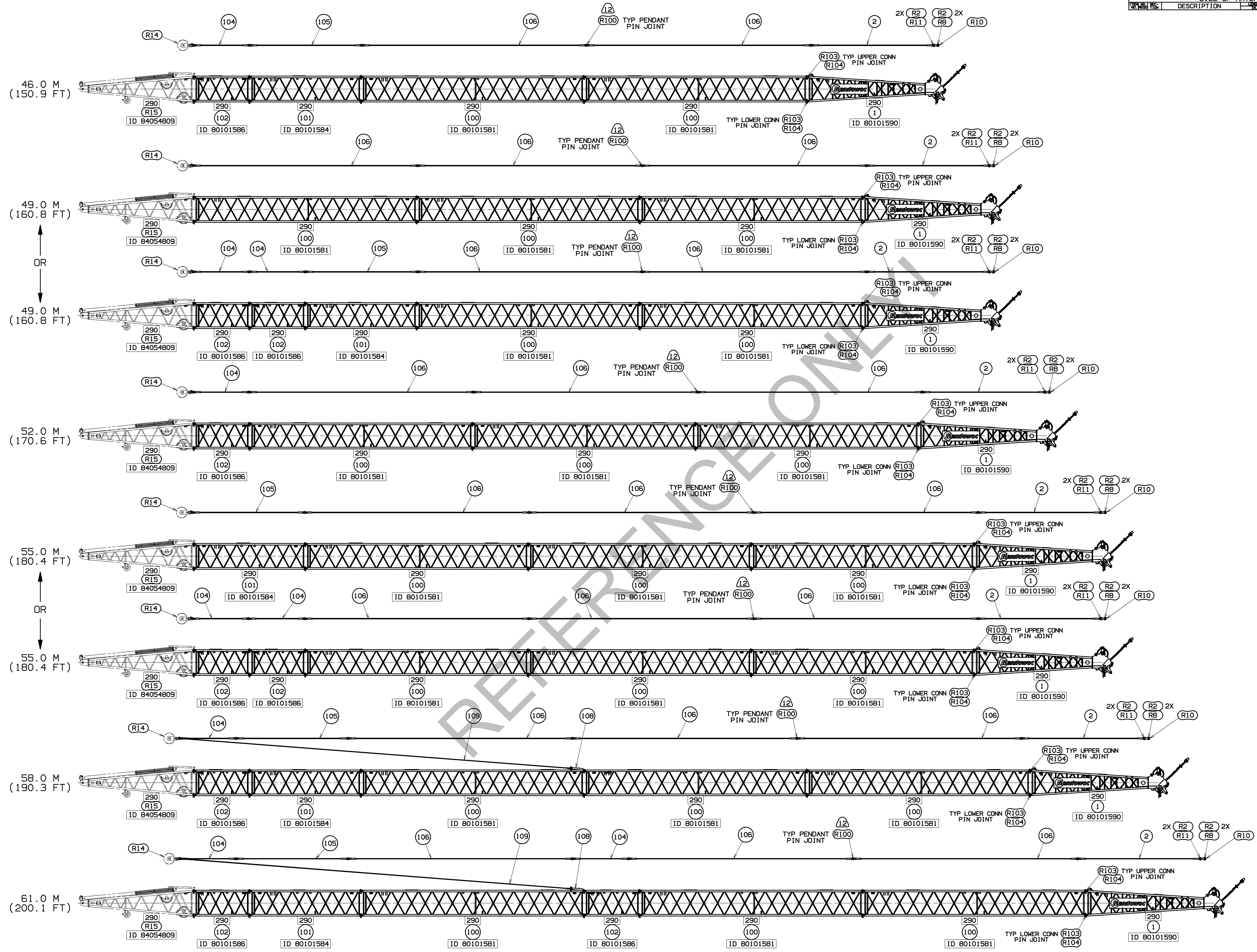
RECOMMENDED BOOM MAKEUP  
FOR TYP PIN JOINT SEE DETAILS A, B & E

TOLERANCE UNLESS OTHERWISE SPECIFIED		FABRICATION		FINISHING		MATERIAL	
DECIMAL PLACES	F. TO FEET	F. TO FEET	I. O. FEET				
(1) PLACE 0.5	±.12	±.18	±.03				
(2) PLACE 0.00	±.08	±.12	±.015				
(3) PLACE 0.000	±.008	±.012	±.006				
ANGLES	±1.30°	±1.30°	±0.90°				

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BILL OF MATERIAL		ASSEMBLIES USED IN
NO.	DESCRIPTION	MATERIAL



RECOMMENDED BOOM MAKEUP  
FOR TYP PIN JOINT SEE DETAILS A, B & E

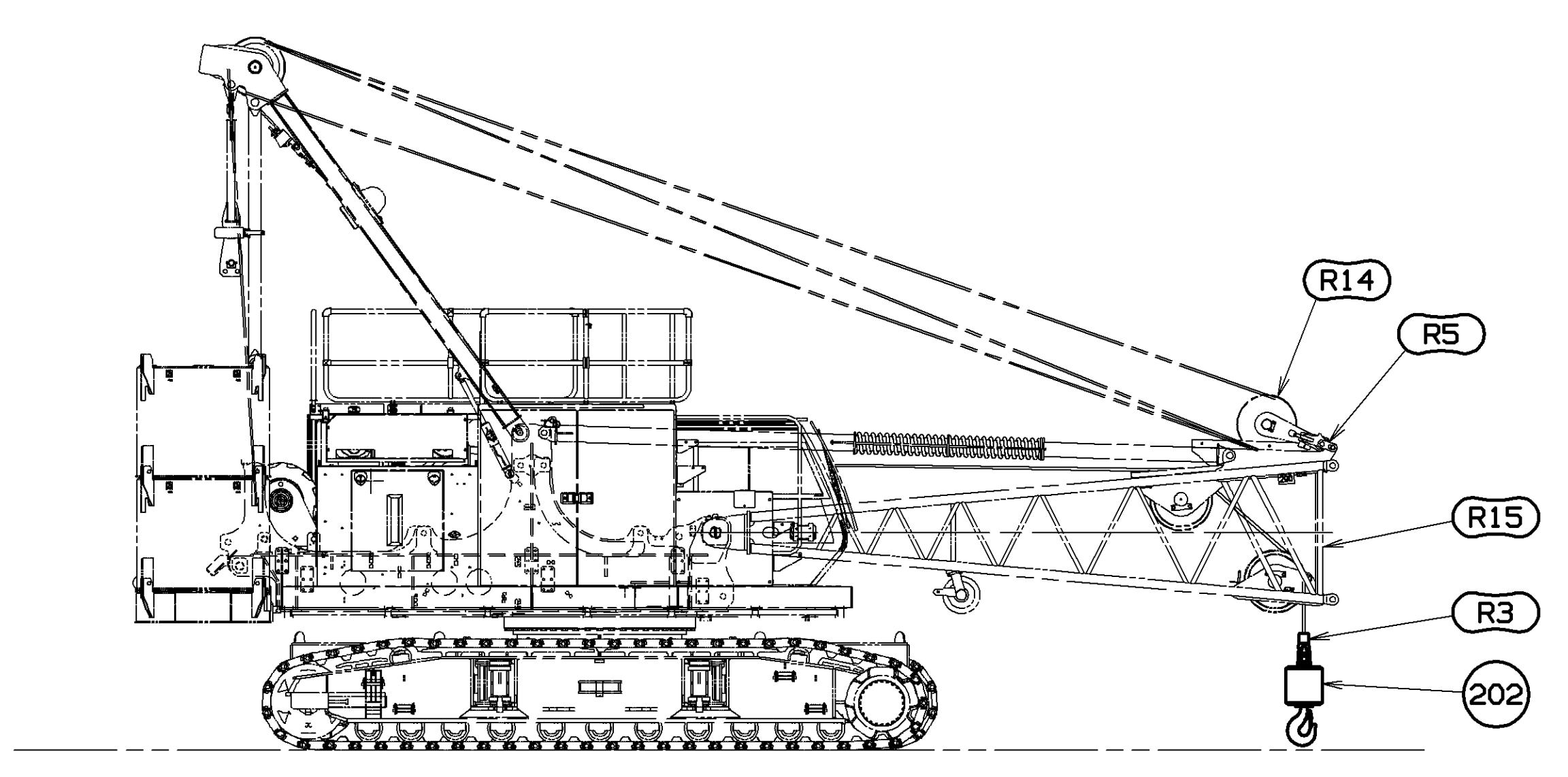
84054317  
SHT 4 OF 6

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	<small>DECIMAL PLACES</small>	<small>FABRICATION</small>		
	<small>F. 10 FEET &gt; 10 FEET</small>	<small>FINISHING</small>		
<small>(1) PLACE 0.5</small>	<small>+0.12 -0.18</small>	<small>+0.09</small>	<small>MANITOWOC CRANES, INC.</small>	<small>BOOM RIGGING</small>
<small>(2) PLACE 0.00</small>	<small>+0.08 -0.12</small>	<small>+0.015</small>	<small>DR. RHY</small>	<small>BOOM RIGGING</small>
<small>(3) PLACE 0.000</small>	<small>+0.008 -0.008</small>	<small>+0.008</small>	<small>CK. P.J.H.</small>	<small>B10:290</small>
<small>ANGLES</small>	<small>+1.30°</small>	<small>0°/30°</small>	<small>MODEL MLC100-1</small>	<small>B10:290</small>
<small>APP. JRR</small>				

PRIVATE LABELING  
REQUIREMENT TO  
CONFORM TO  
ENGINEERING  
SPECIFICATION  
S229103794 FOR  
COMPONENTS LISTED  
IN G2300-05-026

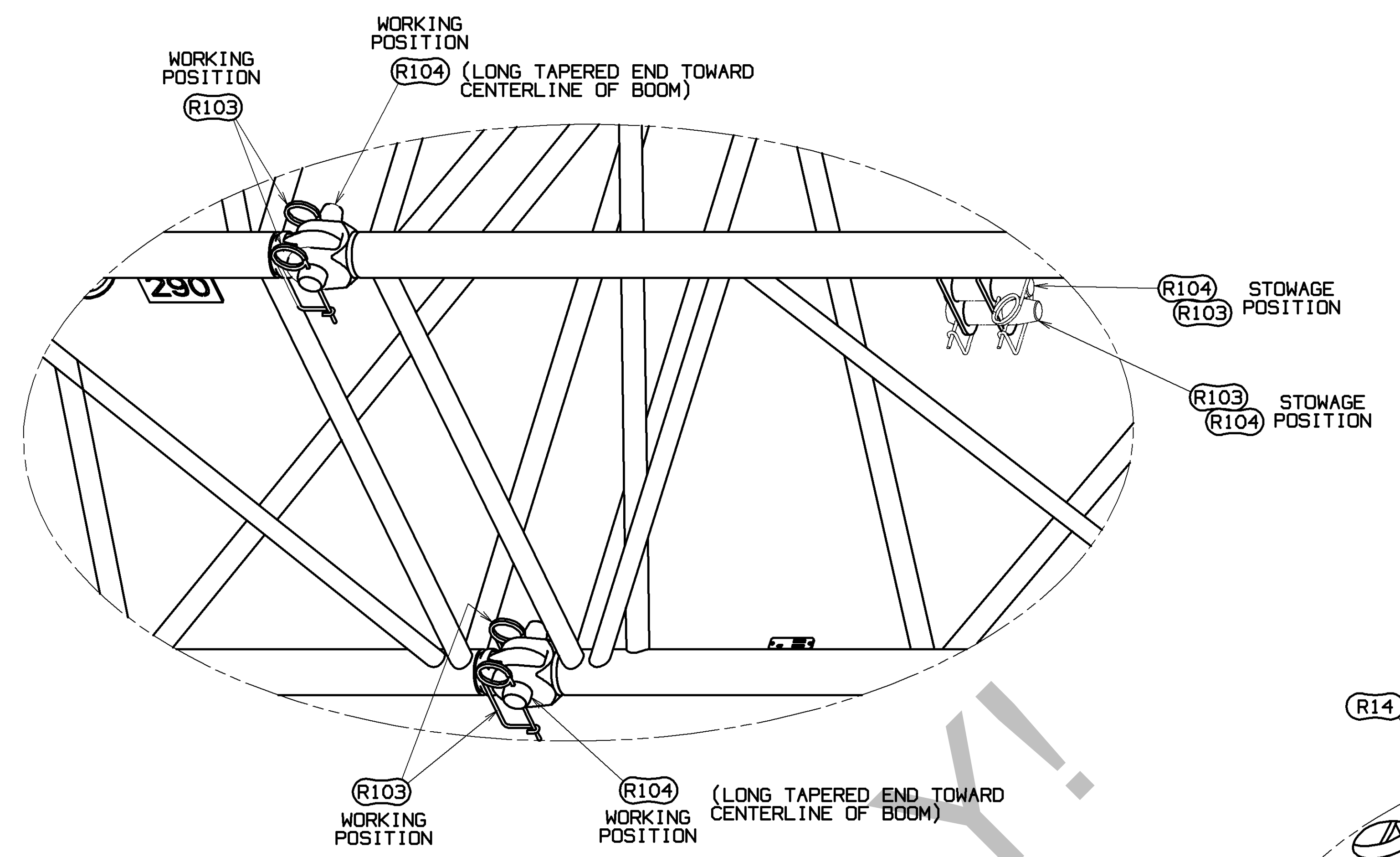


TO ASSEMBLE BOOM

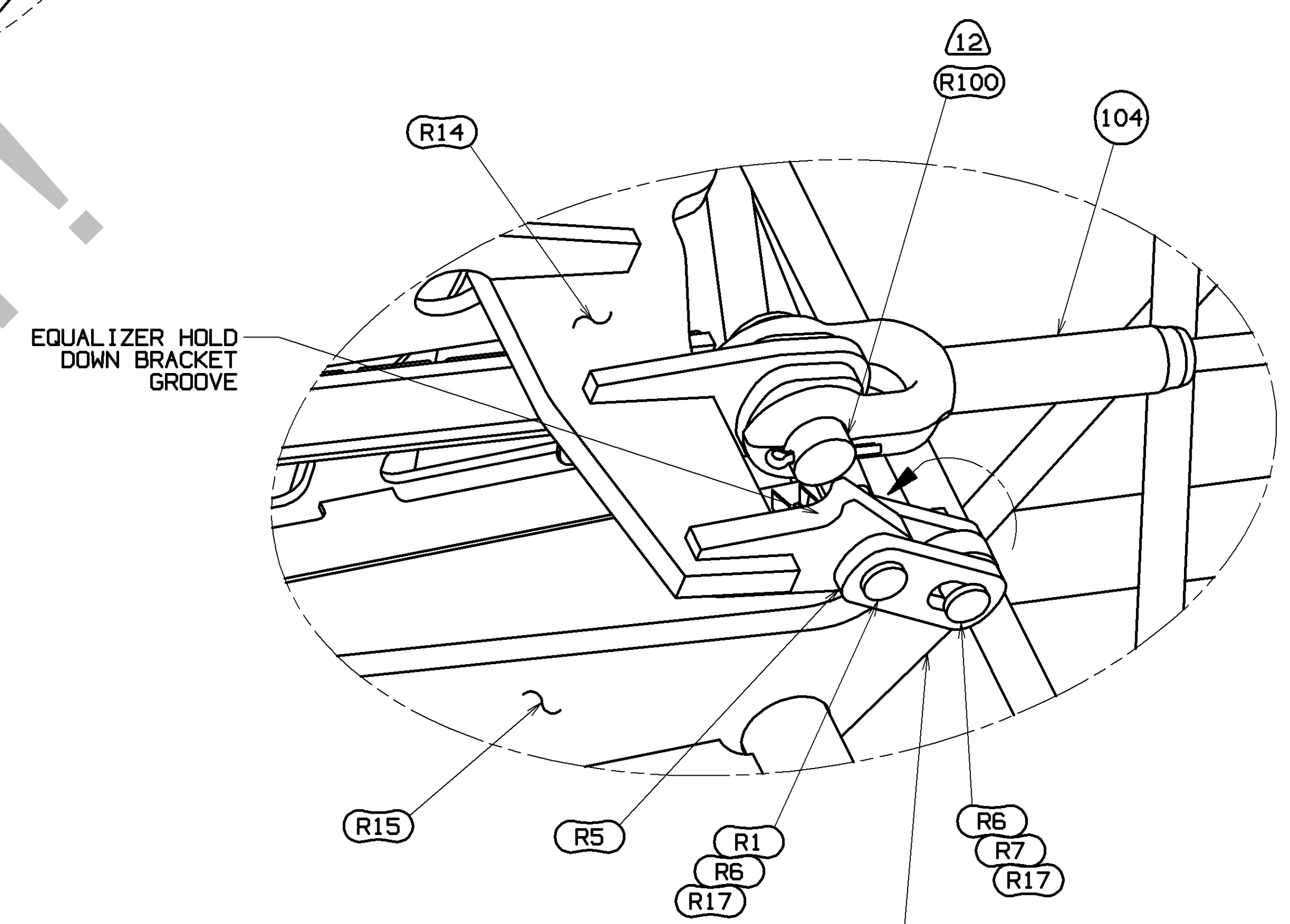


STEP 1  
MACHINE PREP FOR BOOM ASSEMBLY USING BUTT

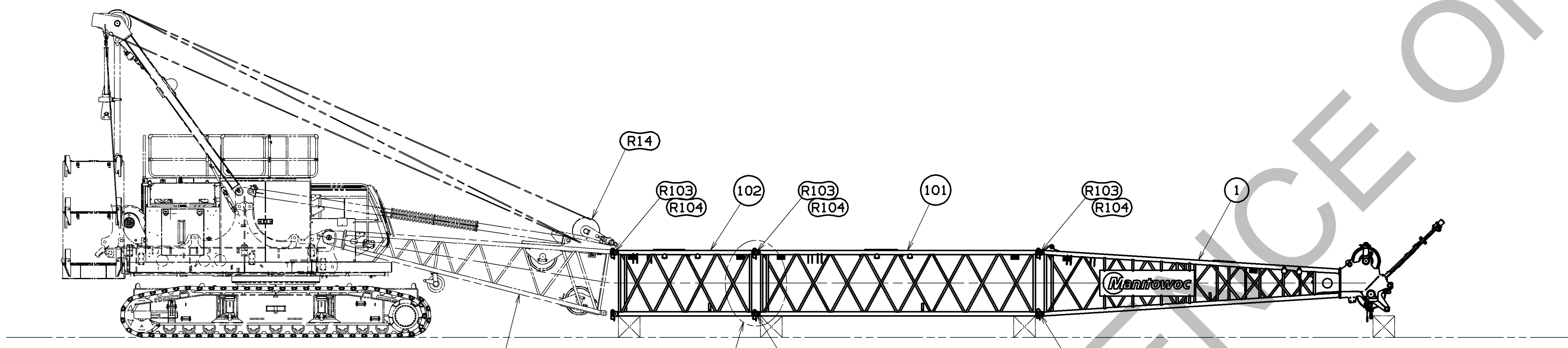
EQUALIZER (R14) TO BE PINNED TO BOOM BUTT (R15) WITH LINKS (R5). (SEE DETAIL F).  
 REEVE 1 PART LINE FROM FRONT DRUM OVER UPPER AND LOWER INTERNAL BUTT WIRE ROPE SHEAVES AND CONNECT TO WEIGHT BALL (ITEM 202) WITH SOCKET (R3).  
 ASSEMBLE BOOM COMPLETE, WITHOUT BUTT.  
 DOUBLE TAPERED PIN (R104) AND SAFETY PIN (R103) TO BE INSTALLED AT TOP CONNECTORS. (SEE DETAIL E).  
 DOUBLE TAPERED PIN (R104) AND SAFETY PIN (R103) TO BE INSTALLED AT BOTTOM CONNECTORS. (SEE DETAIL E).  
 REMOVE WEIGHT BALL (ITEM 202) PRIOR TO ASSEMBLY OF BOOM TO BUTT (STEP 2).



DETAIL E  
TYPICAL PIN CONNECTORS  
SCALE 0.150



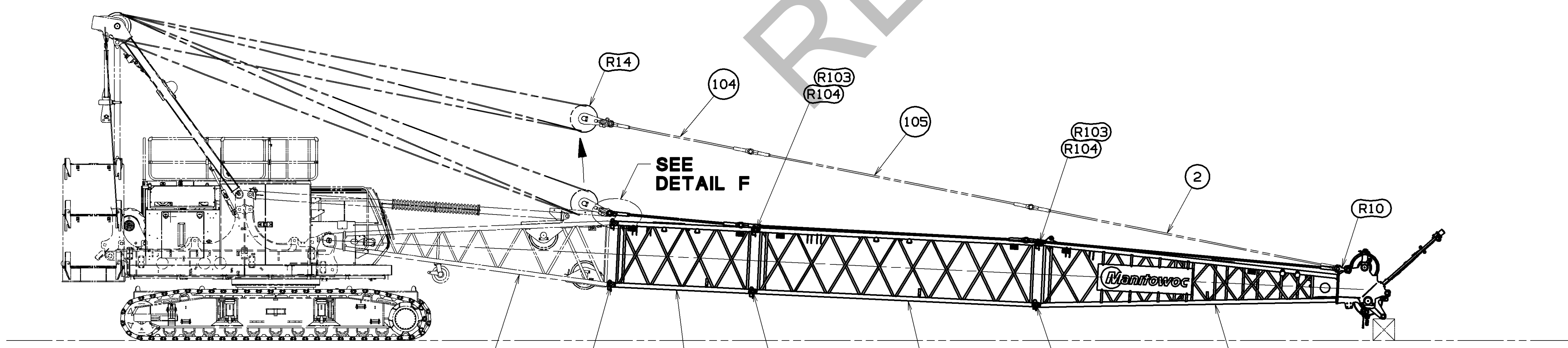
DETAIL F  
SCALE 0.250  
BOOM BUTT EAR FOR ATTACHING EQUALIZER TIE BACK LINKS (R5)



STEP 2  
BOOM CLOSING

WITH EQUALIZER (R14) STILL PINNED TO BOOM BUTT (R15) AND THE BOOM INSERTS/TOP ASSEMBLY SUPPORTED ON BLOCKING, PIN BUTT (R15) UPPER CONNECTORS TO MATING INSERT/TOP CONNECTORS WITH DOUBLE TAPERED PINS (R104) AND SAFETY PINS (R103). (SEE DETAIL E).  
 SLOWLY BOOM UP TO MATE LOWER CONNECTORS AND INSTALL DOUBLE TAPERED PINS (R104) AND SAFETY PINS (R103). (SEE DETAIL E).  
 THIS BOOM CLOSING PROCEDURE CAN BE PERFORMED FOR ALL BOOM LENGTHS (13M (42.7FT) - 61M (200.1FT)).

NOTE:  
SEE TABLE ON SHEET 2 FOR MAXIMUM BOOM INSERTS THAT CAN BE CANTILEVERED WITH EQUALIZER (R14) PINNED TO BUTT (R15).



STEP 3  
BOOM PENDANT ASSEMBLY

ASSEMBLE BOOM PENDANTS AS REQUIRED.  
 SEE DETAIL A ON SHEET 1 FOR PENDANT (ITEM 2) TO LINK (R10) AND LINK (R10) TO TOP (ITEM 1) ATTACHMENT.  
 SEE DETAIL B ON SHEET 1 FOR PENDANT TO PENDANT AND PENDANT TO EQUALIZER (R14) ATTACHMENT.  
 DETACH EQUALIZER (R14) FROM BOOM BUTT (R15) BY REMOVING PIN (R6) WITH LOCKING PIN (R7) FROM TIE BACK LINKS (R5).  
 PIVOT TIE BACK LINKS AROUND UPPER LINK PIN AND RELOCATE SLOT IN TIE BACK LINKS TO MATCH GROOVE ON EQUALIZER HOLD DOWN BRACKET. (SEE DETAIL F).  
 REATTACH PIN (R6), WASHER (R17) AND LOCKING PIN (R7) INTO SLOTTED TIE BACK LINK HOLE AND EQUALIZER HOLD DOWN BRACKET GROOVE. (SEE DETAIL B ON SHEET 1).  
 RIG BLOCK (SEE DELTA NOTE 11 ON SHEET 1) AND RAISE BOOM.

TO DISASSEMBLE BOOM

1. BOOM DOWN AND SUPPORT BOOM ON BLOCKING. UNREEVE BLOCK.
  2. ATTACH EQUALIZER (R14) TO BOOM BUTT (R15). UNPIN TIE BACK LINKS (R5) FROM STORAGE LOCATION ON EQUALIZER HOLD DOWN BRACKET (SEE DETAIL B ON SHEET 1) AND ROTATE TO REATTACH TIE BACK LINKS TO EAR ON BOOM BUTT. (SEE DETAIL F).
  3. DETACH AND STORE PENDANTS FROM EQUALIZER (R14) OUT TO BOOM TOP (ITEM 1). STORE TOP LINKS (R10), PINS (R8 & R11) AND COTTERS (R2) WITH BOOM TOP PENDANTS (ITEM 2) OR IN PARTS BOX 84054316. (SEE DETAIL A ON SHEET 1 AND DELTA NOTE 13 ON SHEET 1).
  4. SLOWLY BOOM UP TO CREATE ENOUGH TENSION TO SUPPORT BOOM BUTT (R15) WHEN LOWER CONNECTOR PINS (R104) ARE REMOVED.
  5. REMOVE PINS (R104) FROM LOWER PIN CONNECTORS AT BUTT JOINT AND BOOM DOWN TO BLOCKING. (SEE VIEW "STEP 2 BOOM CLOSING").
  6. REMOVE PINS (R104) FROM UPPER PIN CONNECTORS AT BUTT JOINT.
- WARNING:  
BOOM MUST BE PROPERLY BLOCKED TO PREVENT SHIFTING DURING PIN REMOVAL.
7. SLOWLY BACK AWAY FROM BOOM.
  8. REPEAT ASSEMBLY STEP 1 TO PREP MACHINE WITH WEIGHT BALL (ITEM 202) FOR DISASSEMBLY OF BOOM.
  9. DISASSEMBLE BOOM.

84054317  
SHT 5 OF 6

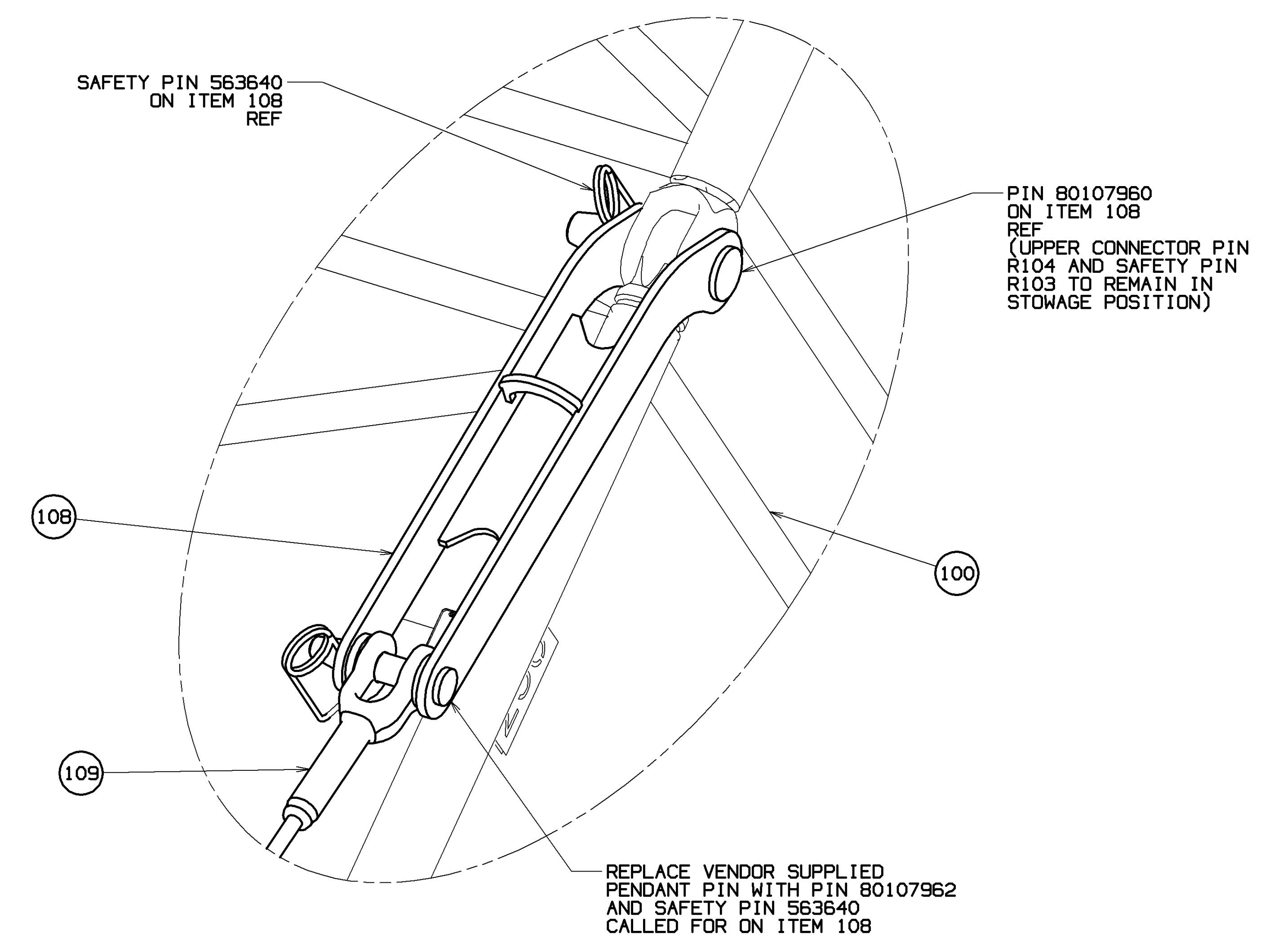
TOLERANCE UNLESS OTHERWISE SPECIFIED		MACHINING		MATERIAL	
DECIMAL PLACES	FABRICATION	F 10 FEET > 10 FEET	FINISH	DR. RHY	DR. PUH
(1) PLACE 0.5	±.12 ±.18 ±.03	±.08	±.015		
(2) PLACE 0.00	±.08 ±.12 ±.015	±.008	±.008		
(3) PLACE 0.000	±.008 ±.012 ±.008	±.004	±.004		

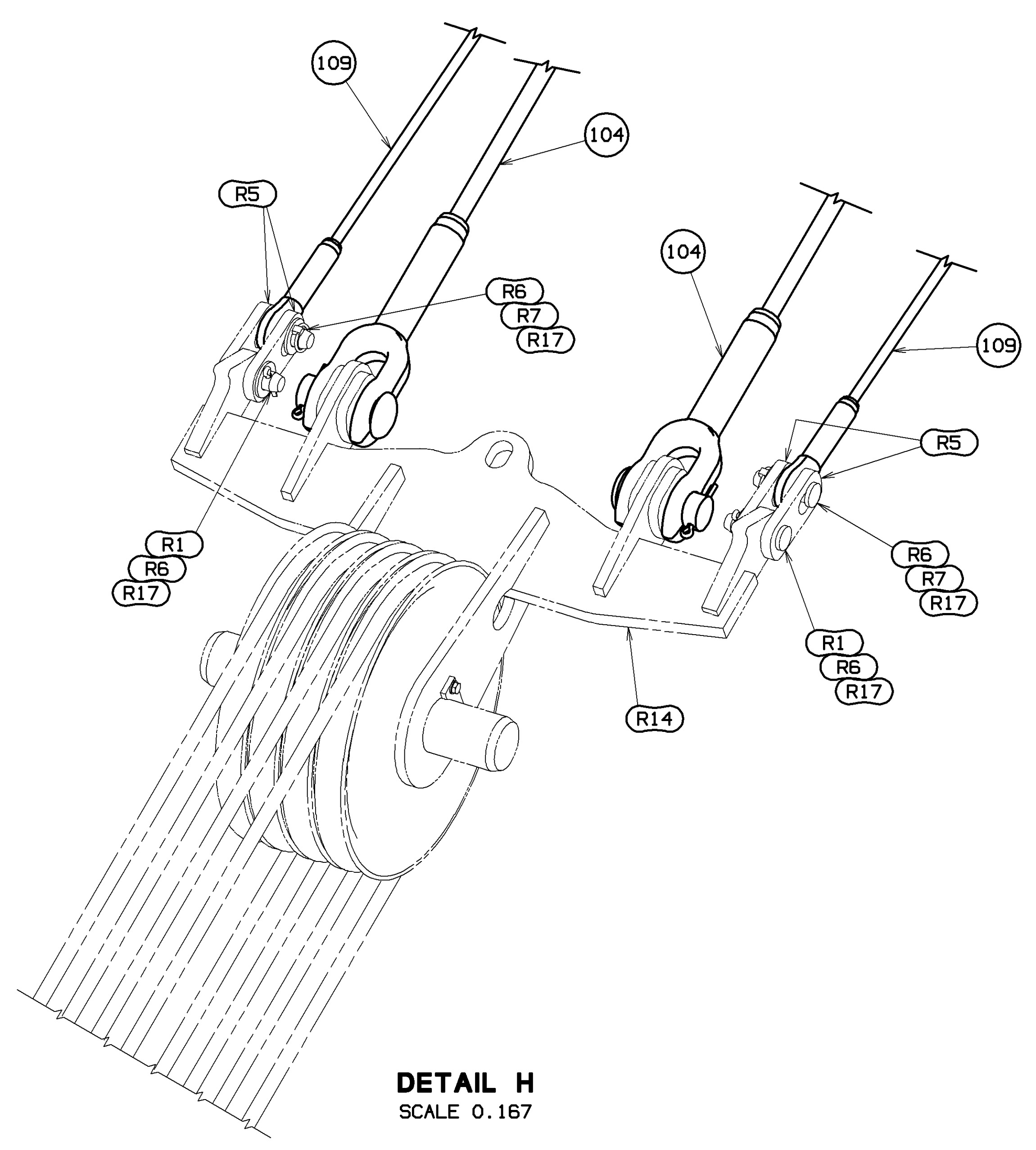
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### INTERMEDIATE SUSPENSION (ITEMS 108 AND 109) INSTALLATION

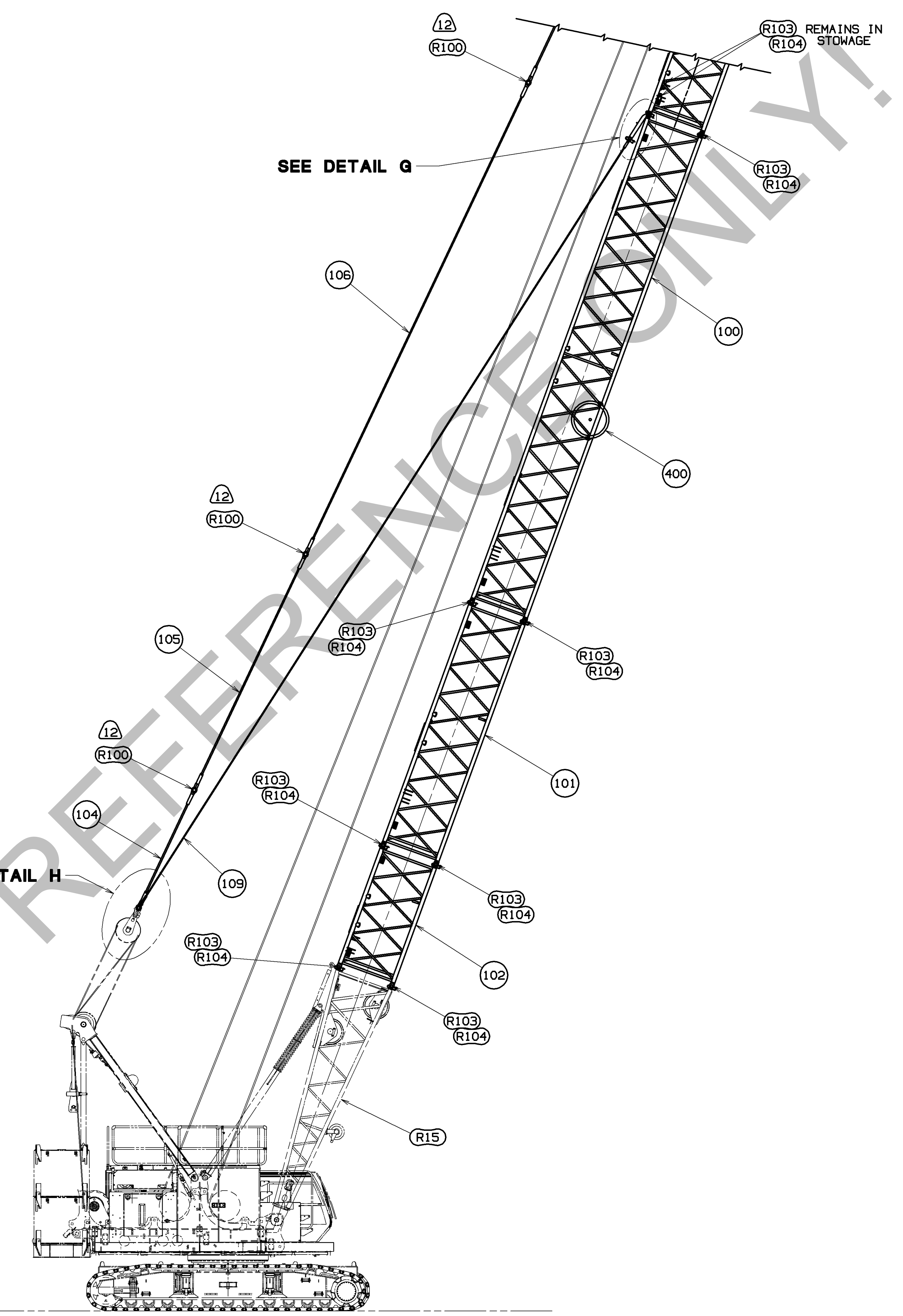
1. IF PREVIOUSLY INSTALLED, REMOVE AND STOW THE UPPER CONNECTOR PINS (R104) FROM THE JOINT TOWARD THE BOOM TOP ON THE 12M INSERT (ITEM 100) LOCATED NEAREST THE BOOM HINGE. (SEE 58M AND 61M #290 BOOM SHOWN).
  2. INSTALL INTERMEDIATE LINK ASSY (ITEM 108) AT THIS JOINT USING PIN AND SAFETY PIN PROVIDED WITH ITEM 108. (SEE DETAIL G).
  3. INSTALL PENDANT (ITEM 109) FEMALE END ONTO INTERMEDIATE LINK ASSY (ITEM 108). ATTACH USING PIN AND SAFETY PIN SUPPLIED WITH INTERMEDIATE LINK ASSY. (SEE DETAIL G).
  4. FROM EQUALIZER (R14) DETACH TIE BACK LINKS (R5) BY REMOVING PIN (R6), WASHER (R17) AND LOCKING PIN (R7). (SEE DETAIL B ON SHEET 1).
  5. PIVOT TIE BACK LINKS TOWARD BOOM TOP AND INSTALL PENDANT (ITEM 109) MALE END BETWEEN TIE BACK LINKS AND REINSTALL PIN (R6), WASHER (R17) AND LOCKING PIN (R7) THRU SLOTTED HOLE. (SEE DETAIL H).
- FOR REMOVAL OF INTERMEDIATE SUSPENSION (ITEM 108) REVERSE INSTALLATION STEPS 1 THRU 5.



**DETAIL G**  
SCALE 0.250



**DETAIL H**  
SCALE 0.167



58.0 M (190.3 FT)  
61.0 M (200.1 FT)  
#290 BOOM SHOWN

<small>THIS DRAWING IS THE PROPERTY OF MANITOWOC CRANES, INC. ALL INFORMATION CONTAINED HEREIN IS CONFIDENTIAL. IT IS LOANED, SUBJECT 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.</small>		<small>TOLERANCE UNLESS OTHERWISE SPECIFIED</small> DECIMAL PLACES    F    I.O. FEET    I.O. FEET    MACHINING (1) PLACE 0.5    ±.12    ±.18    ±.05 (2) PLACE 0.00    ±.08    ±.12    ±.015 (3) PLACE 0.000    ±.008    ±.008    ±.005 ANGLES    11.25°    40°/90°	<small>SCALE</small> 1:200 <small>DR.</small> RHY <small>CHK.</small> PUH <small>APP.</small> JRR	<b>Manitowoc Cranes, Inc.</b> Manitowoc, Wisconsin MODEL MLC100-1	BOOM RIGGING B10:290	<small>DATE</small> 11-14-18 <small>REV. LTR.</small> A
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SHT 6 OF 6

PRIVATE LABELING REQUIREMENT TO CONFORM TO ENGINEERING SPECIFICATION 8629103794 FOR COMPONENTS LISTED IN SECTION 05-1056