

86.0 M (282.2 FT)
#680 BOOM SHOWN

- 1 REQ'D FOR LUFFING JIB. LUFFING JIB WIRE ROPE GUIDES ON BOOM TOP AND 12M XH INSERT MAY REMAIN IN PLACE WITH BOOM ONLY MAKEUP. LUFFING DRUM IN BOOM BUTT MAY REMAIN IN PLACE WITH BOOM ONLY MAKEUP. ITEMS MAY BE IN OPERATING OR SHIPPING POSITION.
- 2 BUTT 6.00M I.D. TAG #81020304
- 3 INSERT 4.00M X-HEAVY I.D. TAG #81020307
- 4 INSERT 12.00M X-HEAVY W/SHEAVES I.D. TAG #81021997
- 5 TOP 10.00M I.D. TAG #81022497
- 6 INSERT 12.00M HEAVY I.D. TAG #81020425
- 7 INSERT 6.00M HEAVY I.D. TAG #81020428
- 8 INSERT 12.00 MEDIUM I.D. TAG #81021300
- 9 INSERT 12.00M MEDIUM W/SUSPENSION I.D. TAG #81035137
- 10 INSERT 12.00M HEAVY W/EQUALIZER I.D. TAG #81022605
- 11 INSERT 12.00M X-HEAVY I.D. TAG #81034978
- 12 STOWS IN STORAGE BOX 81028467.
- 13 110.0M (360.9 FT) THRU 146.0M (479.0 FT) BOOM REQUIRES INTERMEDIATE SUSPENSION ITEM R112. ITEM R112 IS OPTION 3 IN ITEM 105. 81035136. REFER TO BOOM LENGTH TABLE (SHEET 2) FOR SUSPENDER BUTTON NUMBER. SEE SHEET 10 FOR OPERATIONAL INSTRUCTIONS.
- 14 REFER TO CAPACITY CHART IF JIB BACKSTAY STRAPS AND LINKS REMAIN ON BOOM ASSY. (SEE VIEW F-F ON SHEET 2)
- 15 ITEM R2 I.D. TAG #81023432 CALLED FOR ON TOP ASSY ITEM 4 AS STANDARD EQUIPPED. FOR SHEAVE CONFIGURATION REFER TO SHEET 9.
- 16 ITEM R3 I.D. TAG #81023435 ITEM R22 I.D. TAG #81028636 CALLED FOR ON TOP ASSY ITEM 4 AS OPTION #3 EQUIPPED. FOR SHEAVE CONFIGURATION REFER TO SHEET 9.
- 17 MAY BE MADE FROM ITEM 202.
- 18 MAY BE MADE FROM ITEM 201.
- 19 USE FOR 2 PART LINE ON UPPER BOOM POINT. CAN BE USED WITH 28MM ROPE ONLY.
- 20 UPPER POINT ASSY I.D. TAG #81029770
- 21 EQUALIZER SPACER LINKS TO BE IN STOWAGE POSITION (SEE VIEW C-C ON SHEET 3)
- 22 FOR BOOM STRAP COMPONENTS ON OPTIONAL INSERT REFER TO BOOM LENGTH TABLE ON SHEET 2.
- 23 BOOM STRAPS/LINKS MUST BE REMOVED FROM INSERT PRIOR TO OPERATION.
- 24 BOOM STRAPS/LINKS MAY REMAIN ON INSERT DURING OPERATION.
- 25 REFER TO SHEET 9 FOR COMPONENT CONFIGURATION. STOWS IN PARTS BOX 81028467.
- 26 WHEN CONFIGURED WITH LUFFING JIB ATTACHMENT THE 68.0M (223.1FT) THRU 104.0M (341.2FT) BOOM MUST USE ITEM 105 12M INSERT W/SUSPENSION 81035136 BECAUSE ITEM 102 12M INSERT 81021299 DOES NOT INCLUDE BACKSTAY STRAPS.
- 27 SEE BLOCK REEVING DRAWING 81033357 FOR SINGLE DRUM RIGGING CONFIGURATION OPTIONS AND INSTRUCTIONS.
- 28 SEE BLOCK REEVING DRAWING 81033352 FOR TANDEM DRUM RIGGING CONFIGURATION OPTIONS AND INSTRUCTIONS.

BILL OF MATERIAL				ASSEMBLED USED IN
QTY	DESCRIPTION	MATERIAL	QTY	NO.
BOOM RIGGING B60:680				
1	BUTT ASSY #680, 6.0M	81020303	2	
2	INSERT ASSY #680, 4.00M	81020306	3	
3	INSERT ASSY #680 12M W/SHV	81021996	4	
4	TOP ASSY #680, 10.00M	81022496	5	
5	INSERT ASSY 680, 12M HV W/EO	81022604	10	
6				
NO. REQ'D FOR THE FOLLOWING ITEMS ARE IN THE BOOM LENGTH TABLE				
100	INSERT ASSY #680, 12.00M HEAVY	81020424	6	
101	INSERT ASSY #680, 6.00M HEAVY	81020427	7	
102	INSERT ASSY #680, 12.00M MEDIUM	81021299	8	
103				
104	INSERT ASSY #680, 12.00M X-HEAVY	81034977	11	
105	INSERT ASSY #680, 12M W/SUSP	81035136	9	
106				
OPTION 1: HOOK BLOCKS				
200	BLOCK HOOK 135MT 32WR 3SH	81023461	1	
201	BLOCK HOOK 450MT 32WR 10SH	81029960	1	
202	BLOCK HOOK 625MT 32WR 14SH	81029961	1	
203	BLOCK HOOK 325MT 32WR 7SH	81033345	1	
204	BLOCK HOOK 225MT 32WR 5SH	81033346	1	
205	BLOCK HOOK 100MT 28WR 3SH	81031987	1	
206	WEIGHT BALL 5MILE 22.2MT, 28MM & 32MM WR	81033344	1	
207	HOOK BLOCK 160MT 35H 32WR	84039500	1	
208	BLOCK 700MT 32WR 17SH	A10698	1	
OPTION 2: UPPER BOOM POINT				
300	UPPER POINT ASSY FRAME	81029769	20	
301				
BASIC REFERENCE ITEMS				
R1	PIN COTTER 3/16 DIA X 2.00 LG	562087		
R2	BOOM POINT LOWER ASSY 8 SHEAVE	81023433	15	
R3	BOOM POINT LOWER ASSY 4 SHEAVE RT	81023436	16	
R4	LINK #680 BOOM STRAP	81025609		
R5	LINK #680 BOOM STRAP	81025610		
R6	STRAP 10M #680 TOP	81025639		
R7				
R8				
R9	LADDER BOOM	81026933		
R10	MAST ASSEMBLY	81025005		
R11	EQUALIZER ASSY	81027149		
R12				
R13	STRAP 12M #680 W/EQUALIZER	81027608		
R14	PIN 1 HOLE W/HD 127.3 DIA X 122.5 LG	81027653		
R15				
R16	PIN 1 HOLE W/HD 105.0 DIA X 121.1 LG	81028258		
R17	PIN 1 HOLE W/HD 127.0 DIA X 121.1 LG	81028259		
R18	COLLAR 106.5 MM I.D.	81028260		
R19	PIN 2 HOLE 19.05 DIA X 142.0 LG	81028262		
R20	COLLAR 128.2 MM I.D.	81028264		
R21	PIN 2 HOLE 19.05 DIA X 167.8 LG	81028265		
R22	BOOM POINT LOWER ASSY 4 SHEAVE LEFT	81028637	16	
R23				
R24	LINK ASSY LOAD	81034492		
R25	LINK ASSY DEAD END	81042356	25	
R26	LINK #680 EQ TO STRAP	81042617		
R27				
R28				
R29	PIN 2 HOLE 22.2 DIA X 152.0 LG	A15390		
R30	COLLAR 128.0 I.D.	A15391		
R31				
NO. REQ'D FOR THE FOLLOWING REFERENCE ITEMS ARE IN THE BOOM LENGTH TABLE (SHEET 2)				
R100	PIN COTTER 1/4 DIA X 1.50 LG	562105		
R101	STRAP 12M #680, 681, 682	81020475		
R102	LINK #680 BOOM	81020476		
R103	PIN 1 HOLE W/HD 79.3 DIA X 121.1 LG	81020477		
R104	COLLAR 80.2MM I.D.	81020478		
R105	STRAP 6M #680	81021271		
R106				
R107				
R108				
R109	LINK CONNECTING #680 12.00M W/STRUT	81028261		
R110	STRAP 12M #680 W/STRUT	81028322		
R111	STRAP 12M #680 W/STRUT	81028323		
R112	SUSPENDER WIRE ROPE #680	81036355	13	
R113	PIN 2 HOLE 19.05 DIA X 117.0 LG	A16804		
R114				
REFERENCE ITEMS FOR ASSEMBLY AND RIGGING PURPOSE ONLY				
R200				
R201				
R202				
R203	PIN PULLER BOOM BUTT CAGE WELD	81030540	12	
R204	PIN PULLER ASSY HAND HELD	81030756	12	
R205	SLING LIFTING 100,000 LBSX10.83 FT	81038731	12	
R206				
R207				
R208	SLING LIFTING 25,000(LBS)X12.5(FT)	81040162	12	
R209	SLING 70,000 LBS 16.4 FT	81042116	12	
R210				
REFERENCE OPTION 3: BOOM TOP DEAD END				
R300	LINK ASSY DEAD END	81042356	25	
REFERENCE OPTION 4: UPPER POINT DEAD END				
R400	LINK ASSY DEAD END	81042356	25	

BOOM HOIST REEVING DIAGRAM FOR 16 PART LINE FOR REFERENCE ONLY

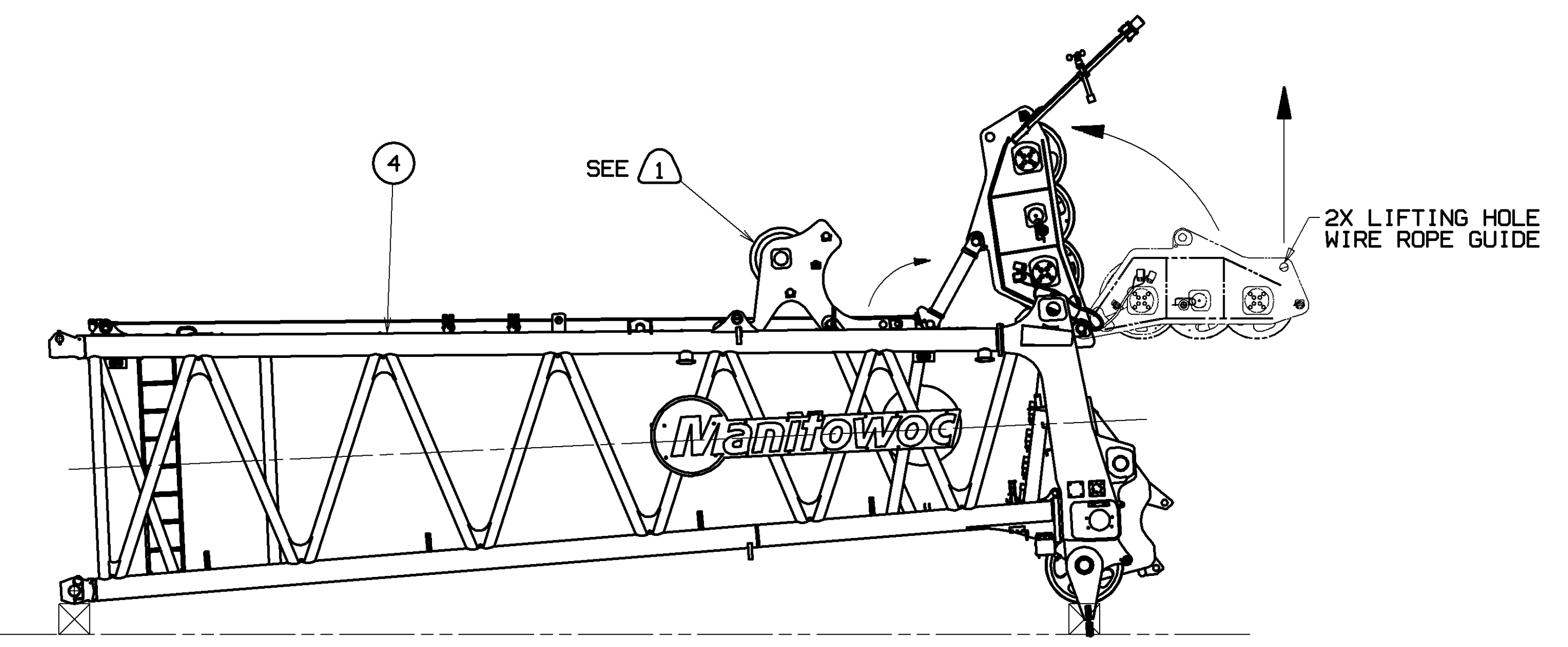
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DECIMAL PLACES FRACTIONS	1:1	A006	06-19-15
(1) PLACE 0.5 0.12 0.18 0.05	1:1	DR: AUB	REV: LNK
(2) PLACE 0.00 0.06 0.12 0.015	1:1	DR: RHV	
(3) PLACE 0.000 0.006 0.009 0.009	1:1	APP: TJA	

PRIVATE LABELING REQUIREMENT TO CONFORM TO ENGINEERING SPECIFICATION 8629103794 FOR COMPONENTS LISTED IN 86290-06-006
DATE 06-19-15
REV. LNK
B1
B2
B3
B4
81022686
SHT 1 OF 10

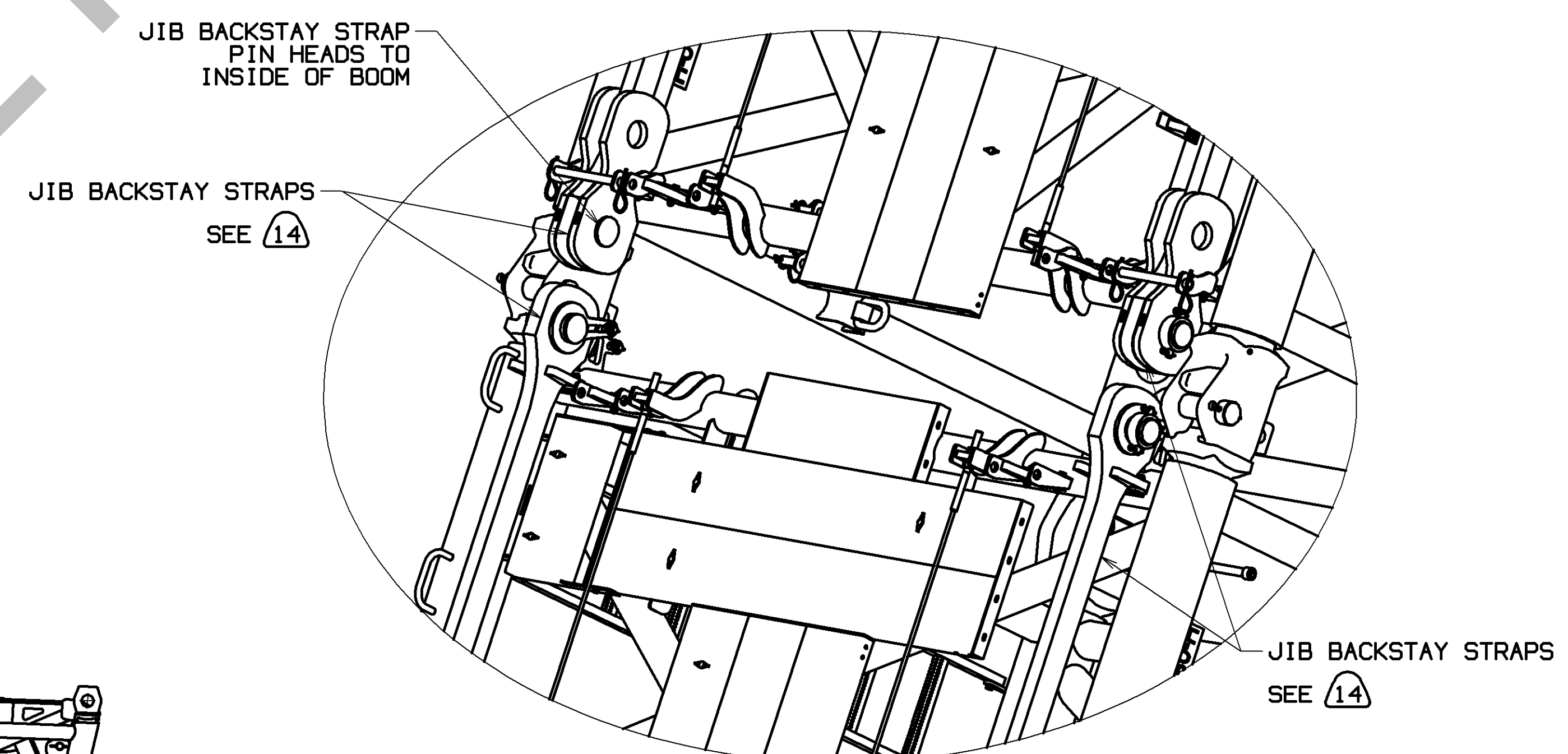
ITEMS REQ'D FOR VARIOUS BOOM LENGTHS - SEE SHEETS 3, 4, 5, & 6 FOR BOOM MAKE-UP

BILL OF MATERIAL		DESCRIPTION	MATERIAL	QTY	NO.	ASSEMBLED USED IN
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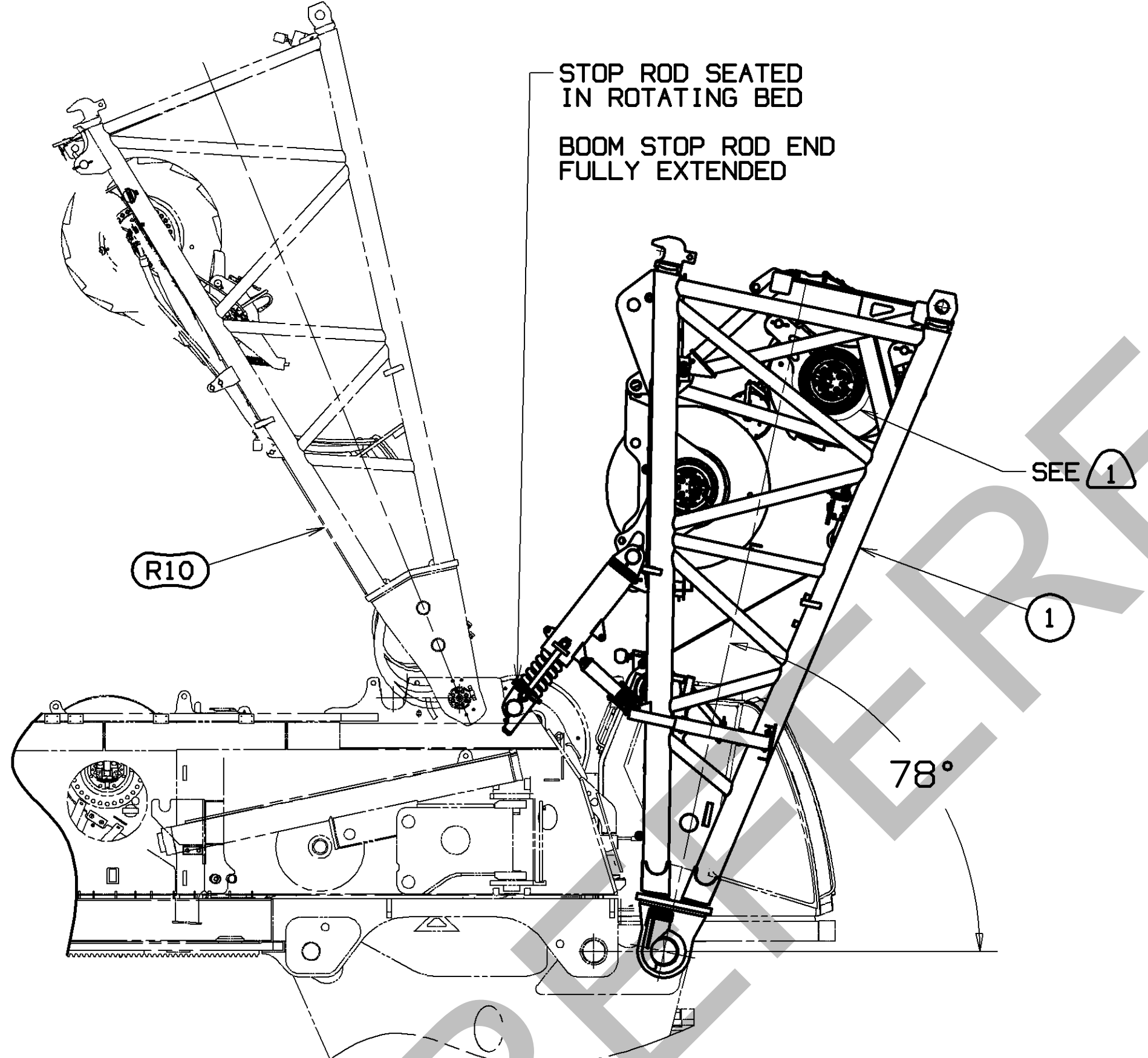
		#680 INSERTS					STRAP				LINK		PIN		COTTER	COLLAR	SUSPENDER	
ITEM NO.		X-HEAVY	HEAVY		MEDIUM													
BOOM LENGTH		104	100	101	102	105	R101	R105	R110	R111	R102	R109	R103	R113	R100	R104	R112	
METERS	FEET	INSERT 12M (39.4FT) ASSY	INSERT 12M (39.4FT) ASSY	INSERT 6M (19.7FT) ASSY	INSERT 12M (39.4FT) ASSY	INSERT 12M (39.4FT) BUSP ASSY	STRAP 12M (39.4FT)	STRAP 6M (19.7FT)	STRAP SHORT W/SUSP	STRAP LONG W/SUSP	LINK	LINK CONNECT	PIN	PIN	COTTER	COLLAR	PENDANT BUTTON NUMBER SEE 13	
44	144.4	0	0	0	0	0	0	0	0	4	0	8	8	28	8	-		
50	164.0	0	0	1	0	0	0	0	0	4	0	8	8	28	8	-		
56	183.7	1	0	0	0	0	0	0	0	4	0	8	8	28	8	-		
62	203.4	1	0	1	0	0	0	2	0	8	0	12	12	36	12	-		
68	223.1	1	0	0	OR 0 1	1 0	0 2	0 0	2 2	16 8	2 0	20 12	20 12	52 36	20 12	-		
74	242.8	1	0	1	OR 0 1	1 0	0 2	2 2	2 2	20 20	2 2	24 24	24 24	60 60	24 24	-		
80	262.5	1	1	0	OR 0 1	1 0	2 4	0 0	2 2	20 12	2 0	24 16	24 16	60 44	24 16	-		
86	282.2	1	1	1	OR 0 1	1 0	2 4	2 0	2 2	24 16	2 0	28 20	28 20	68 52	28 20	-		
92	301.8	1	2	0	OR 0 1	1 0	4 6	0 0	2 2	24 16	2 0	28 20	28 20	68 52	28 20	-		
98	321.5	1	2	1	OR 0 1	1 0	6 6	2 0	2 2	28 20	2 0	32 24	32 24	76 60	32 24	-		
104	341.2	1	3	0	OR 0 1	1 0	8 8	0 0	2 2	28 20	2 0	32 24	32 24	76 60	32 24	-		
110	360.9	1	3	1	0	1	6	2	2	32	2	36	36	84	36	4		
116	380.6	1	3	0	1	1	8	0	2	32	2	36	36	84	36	7		
122	400.3	1	3	1	1	1	8	2	2	36	2	40	40	92	40	6		
128	419.9	1	3	0	2	1	10	0	2	36	2	40	40	92	40	5		
134	439.6	1	3	1	2	1	10	2	2	40	2	44	44	100	44	4		
140	459.3	1	3	0	3	1	12	0	2	40	2	44	44	100	44	7		
146	479.0	1	3	1	3	1	12	2	2	44	2	48	48	108	48	6		



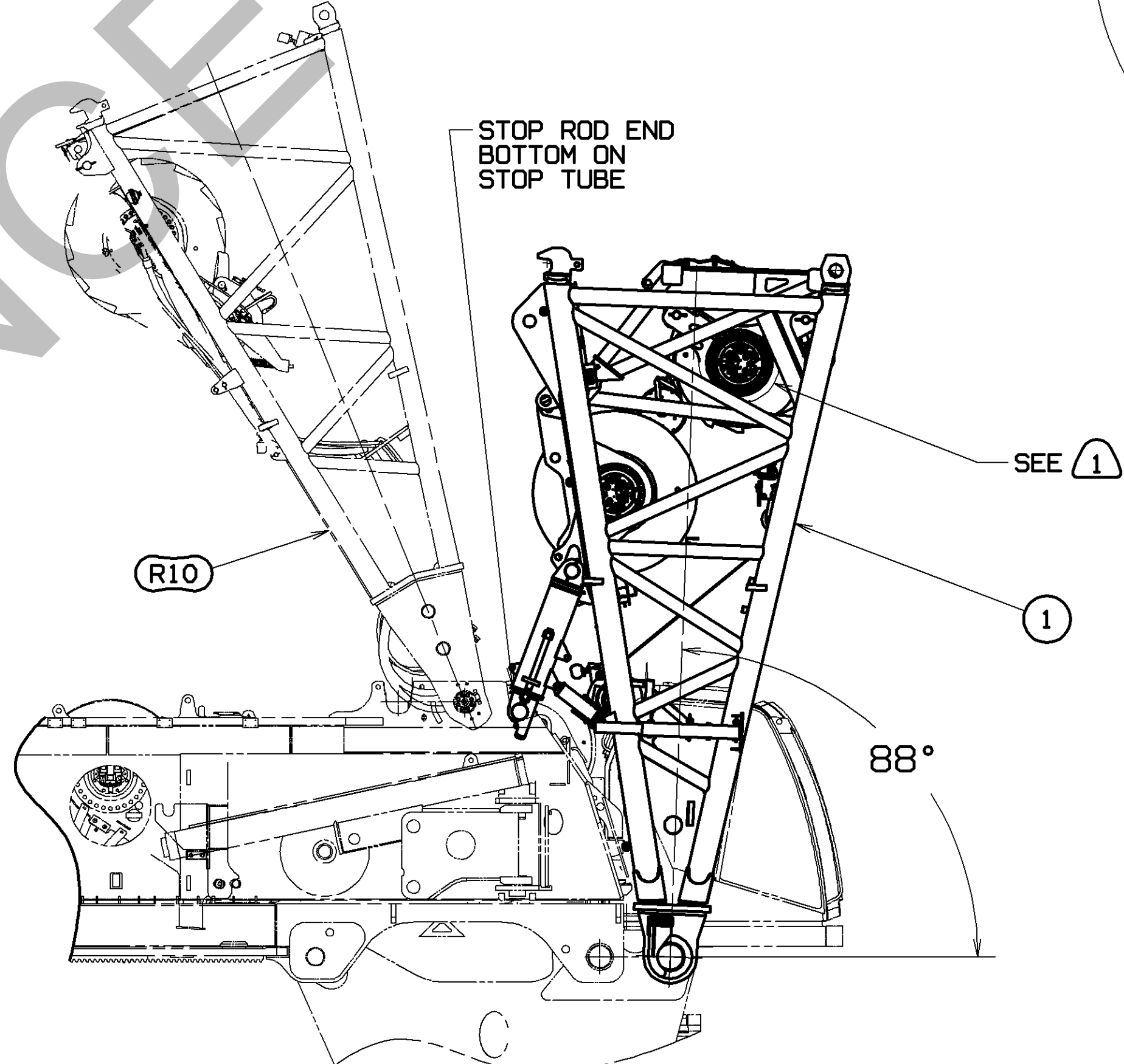
BOOM TOP WIRE ROPE GUIDE ARRANGEMENT
SCALE 0.025



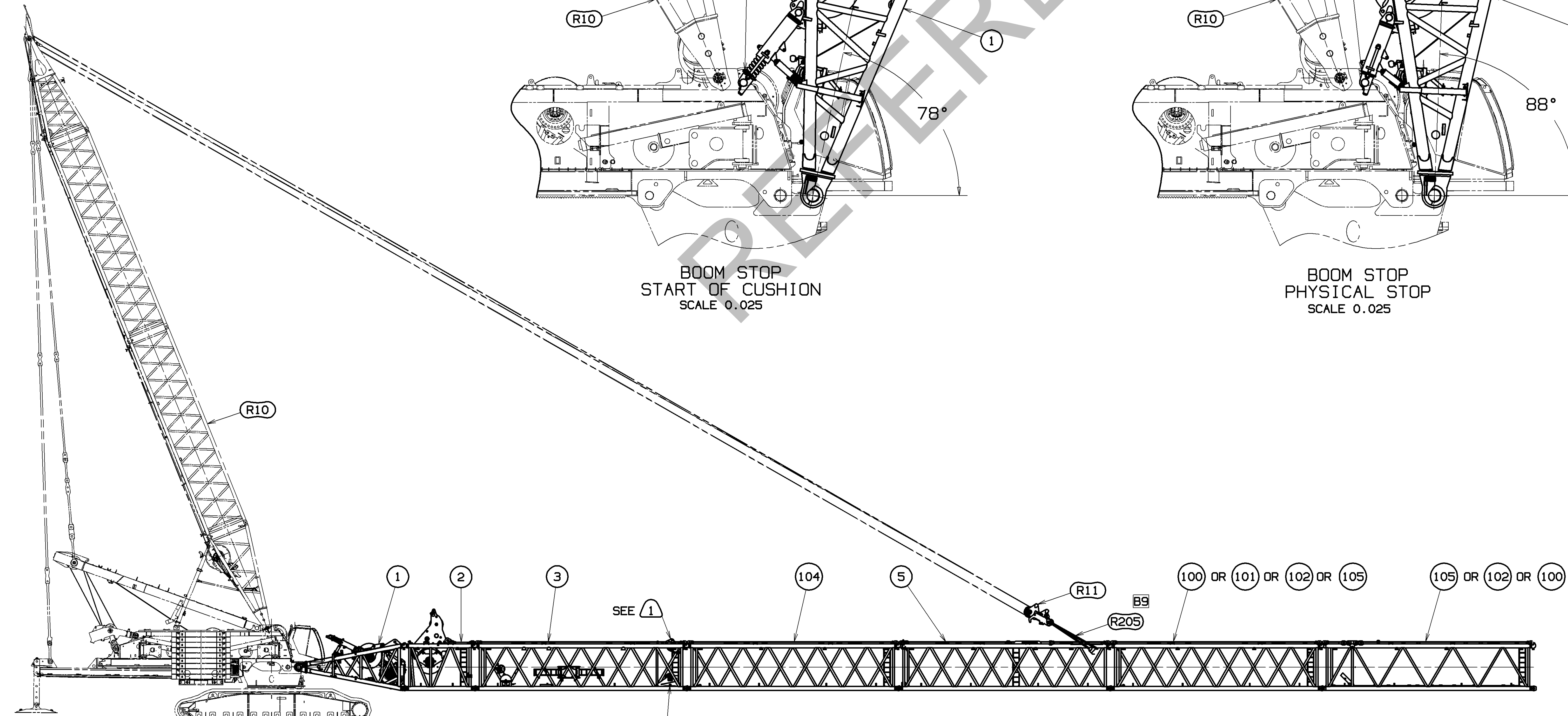
VIEW F-F
BOOM ASSY WITH BOOM STRAPS WORKING AND JIB BACKSTAY STRAPS STOWED
REFER TO CAPACITY CHART IF JIB BACKSTAY LINKS AND STRAPS MAY REMAIN ON BOOM ASSY.
(FROM SHEET 1)
SCALE 0.080



BOOM STOP
START OF CUSHION
SCALE 0.025



BOOM STOP
PHYSICAL STOP
SCALE 0.025



BOOM HANDLING WITH EQUALIZER
(SEE TABLE)

BOOM HANDLING WITH EQUALIZER				
WITH EQUALIZER ATTACHED TO BOOM INSERTS				
MAXIMUM BOOM THAT CAN BE CANTILEVERED BEYOND 12M EQUALIZER INSERT IS AS FOLLOWS.				
LENGTH	6M (19.7FT) INSERT 81020427	12M (39.4FT) INSERT 81020424	12M (39.4FT) INSERT 81021299	12M (39.4FT) INSERT 81035136
6M (19.7FT)	1	0	0	0
12M (39.4FT)	0	OR 1 0	0 1 0	0 1 0
18M (59.1FT)	1	OR 0 0	0 1 0	0 1 0
24M (78.7FT)	0	OR 2 0	0 1 0	0 1 0

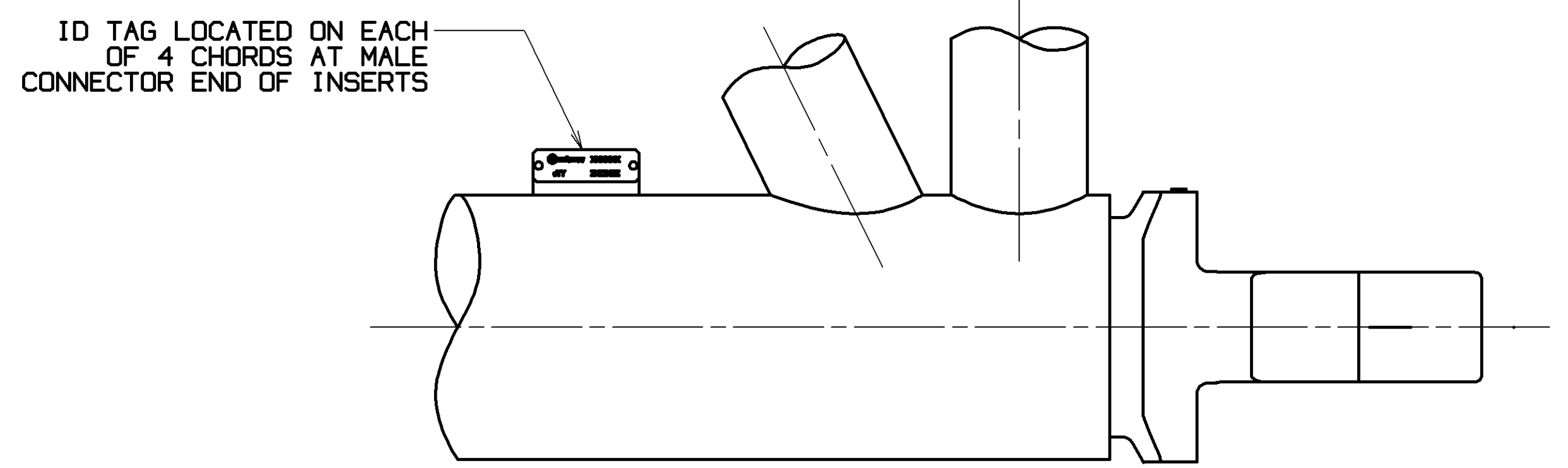
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TOLERANCE UNLESS OTHERWISE SPECIFIED:
DECIMAL PLACES FABRICATION FINISHING
(1) PLACE 0.5 ±.12 ±.18 ±.18
(2) PLACE 0.00 ±.08 ±.12 ±.015
(3) PLACE 0.000 ±.008 ±.008
ANGLES 11.3°

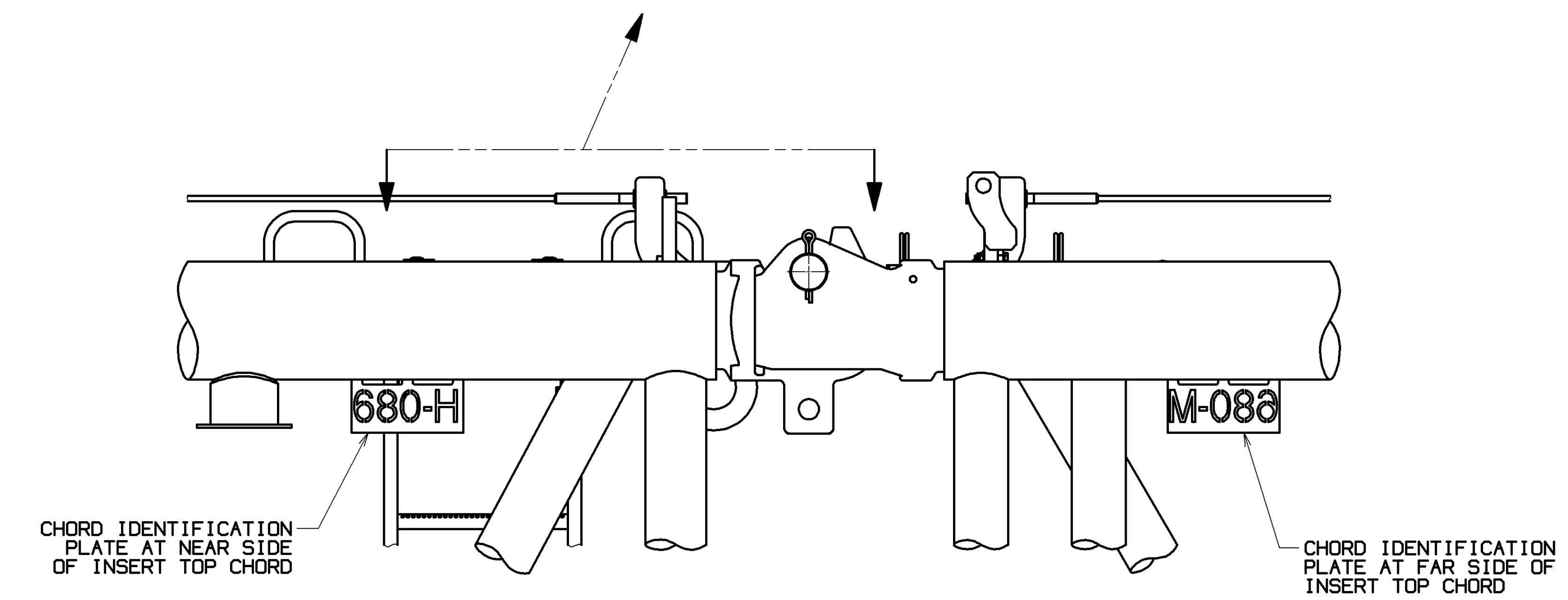
MANITOWOC CRANES, INC.
81022686
BOOM RIGGING
B60:680

DATE 06-19-15
REV. LNK (B)

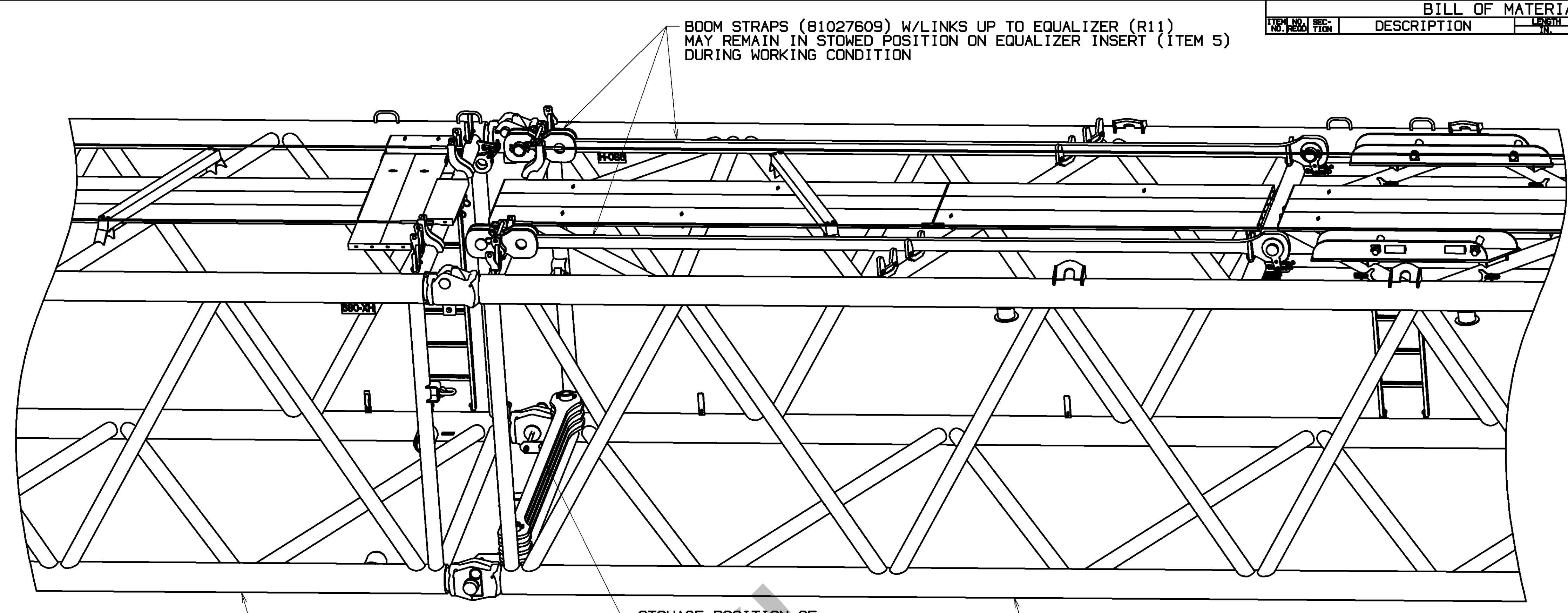
BILL OF MATERIAL		ASSEMBLIES USED ON
QTY	DESCRIPTION	MATERIAL



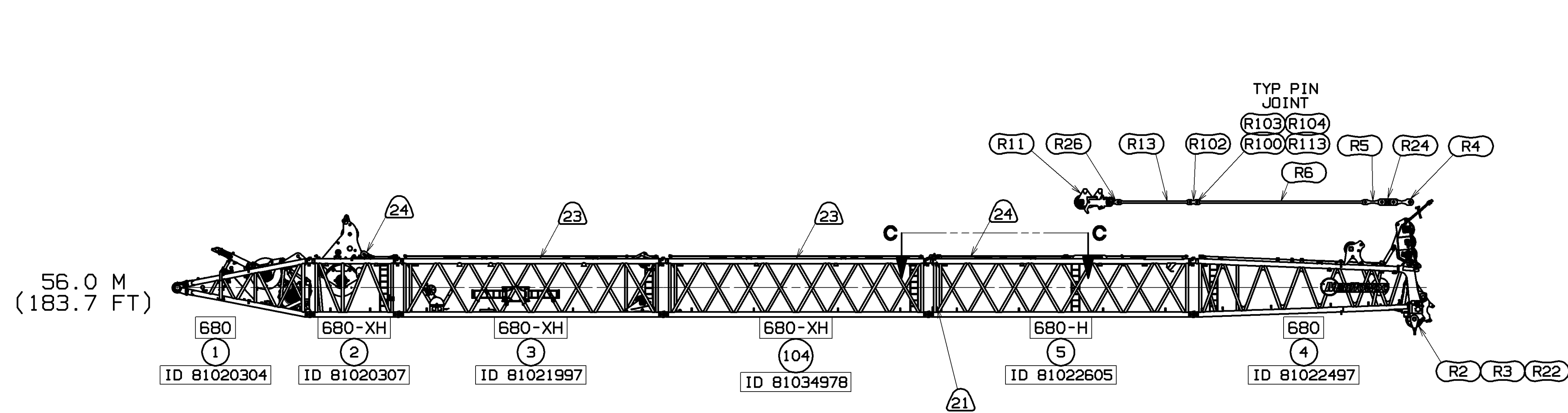
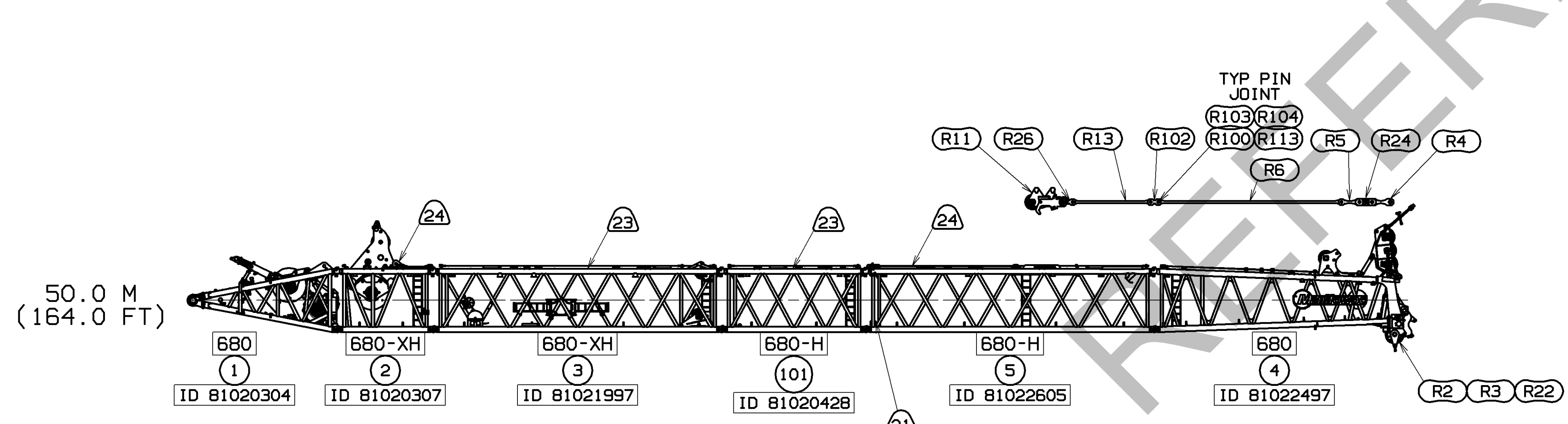
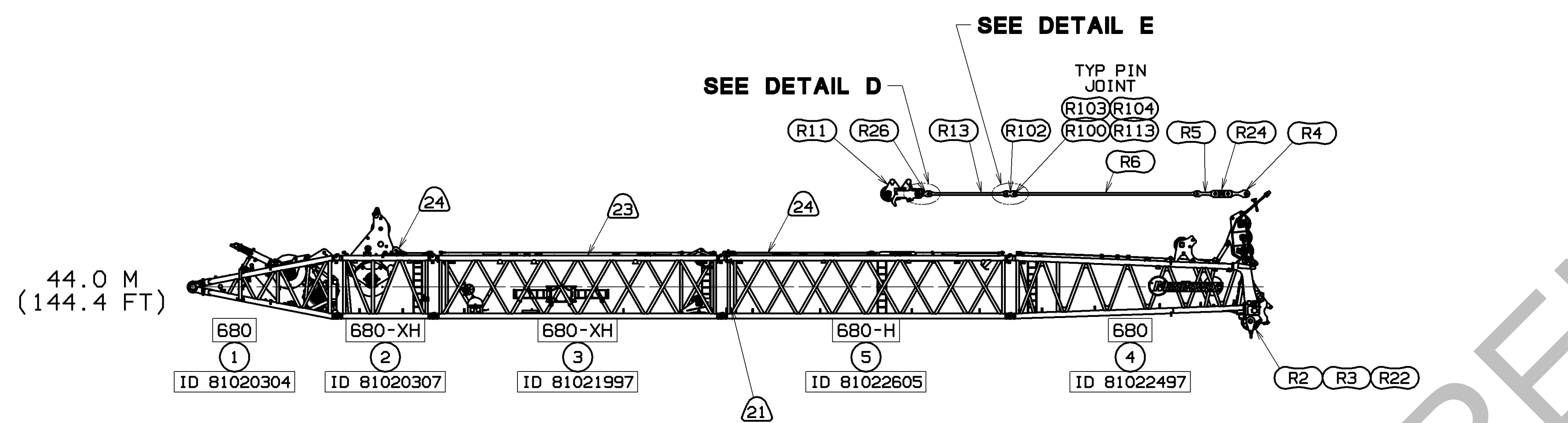
TYPICAL LOCATION OF INSERT ID TAGS
SCALE 0.250



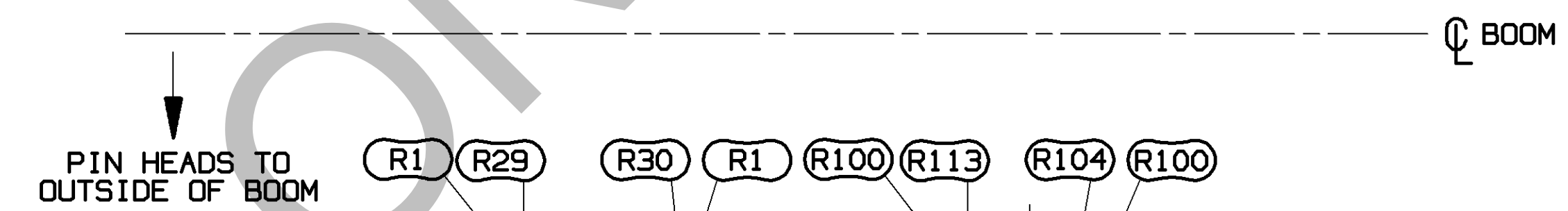
TYPICAL LOCATION OF BOOM CHORD IDENTIFICATION PLATE
SCALE 0.150



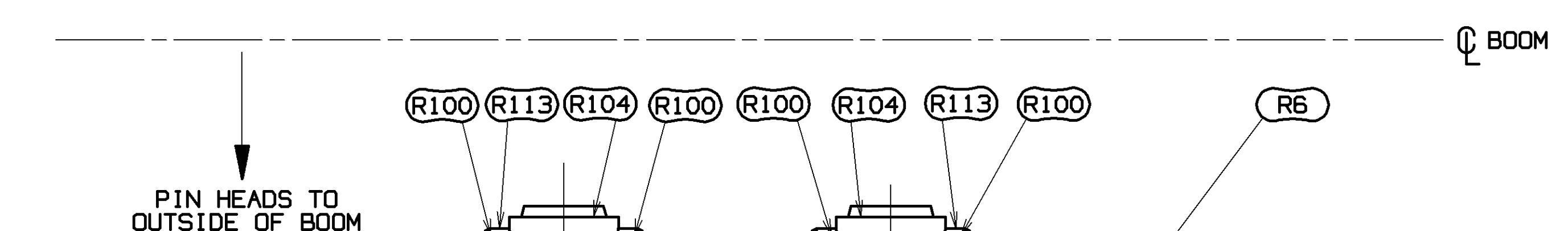
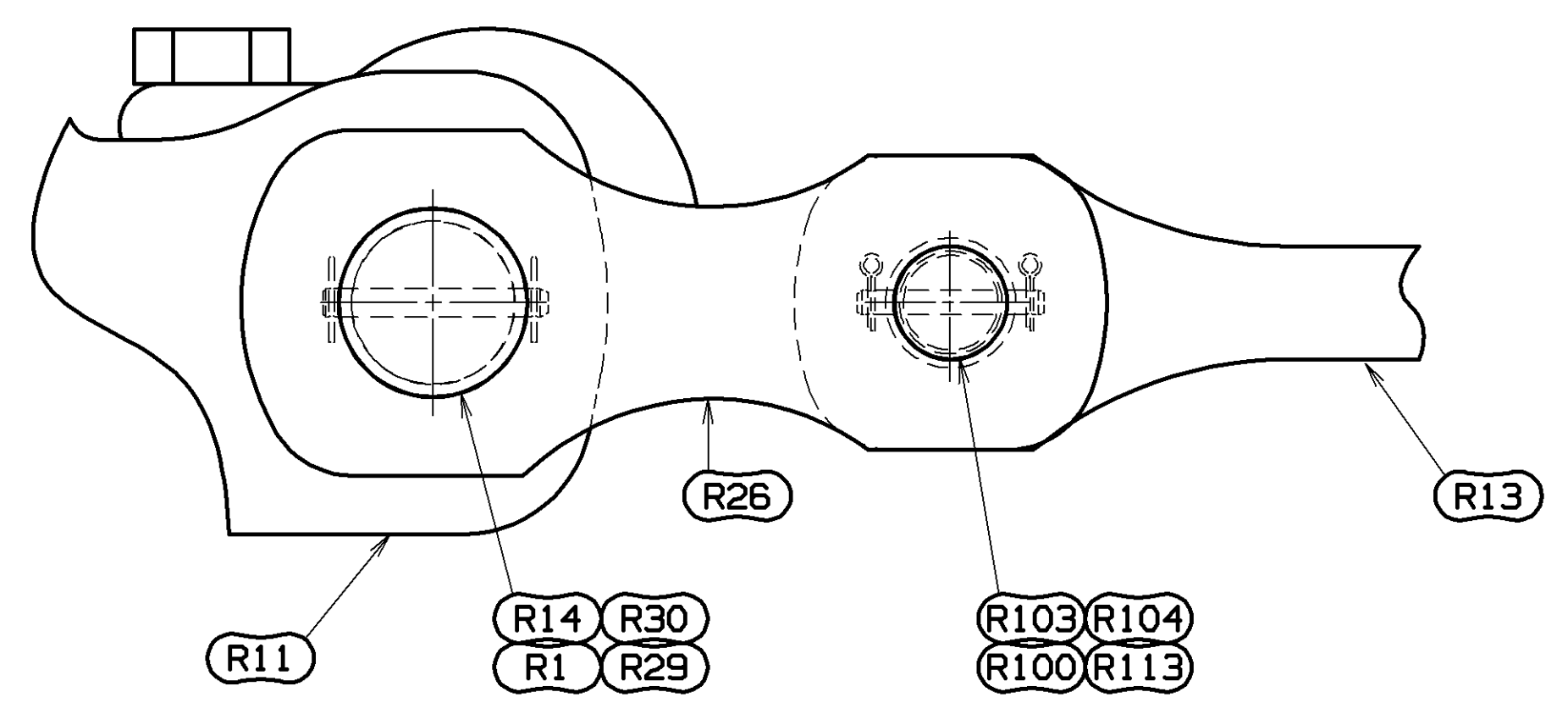
VIEW C-C
SEE DELTA NOTES 21, 23 & 24
(BACKSTAYS NOT SHOWN)
SCALE 0.050



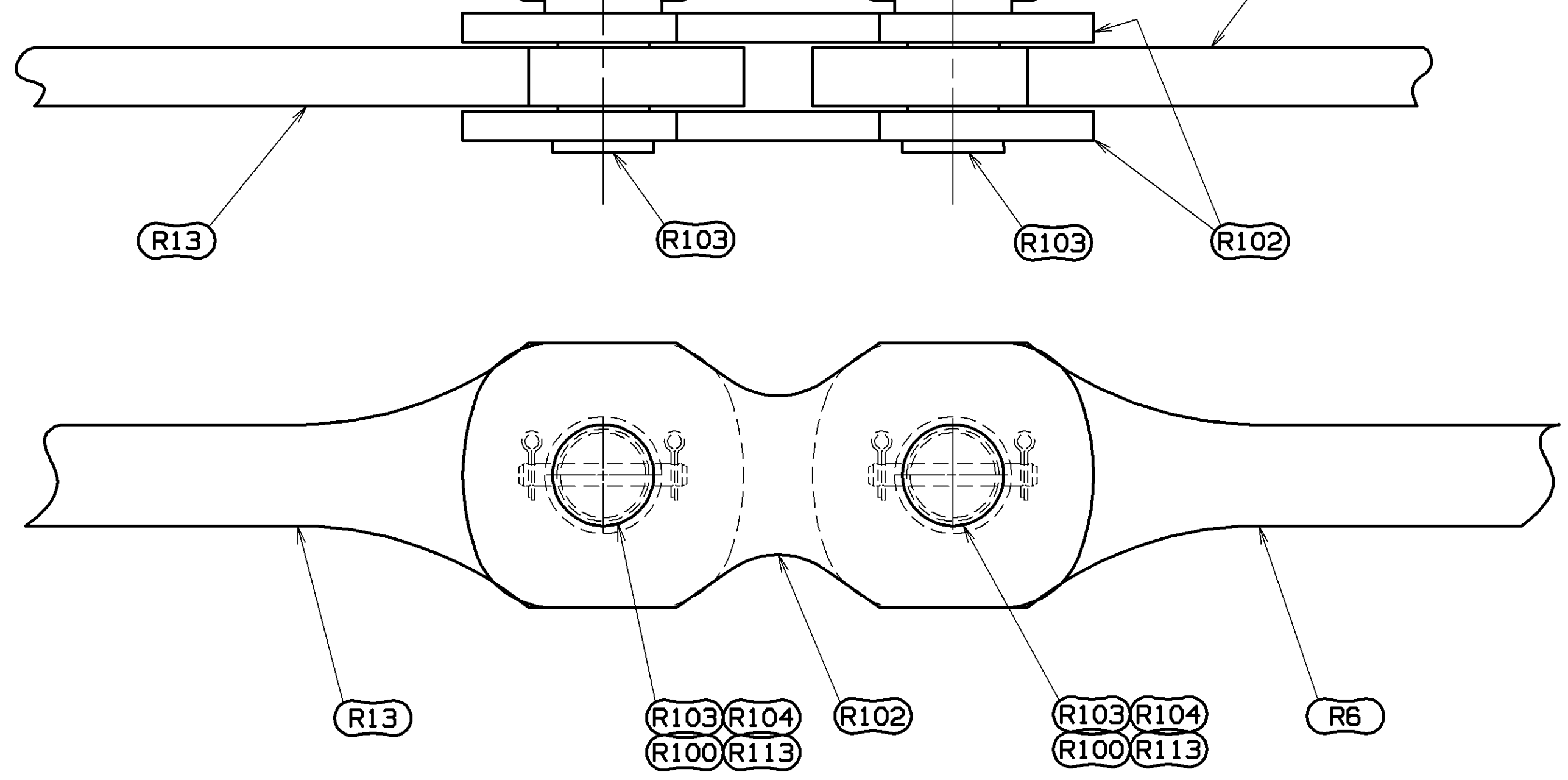
RECOMMENDED BOOM MAKEUP
FOR TYP PIN JOINT SEE SECTION B-B
AND DETAILS D, E, G, & H



DETAIL D
SCALE 0.200



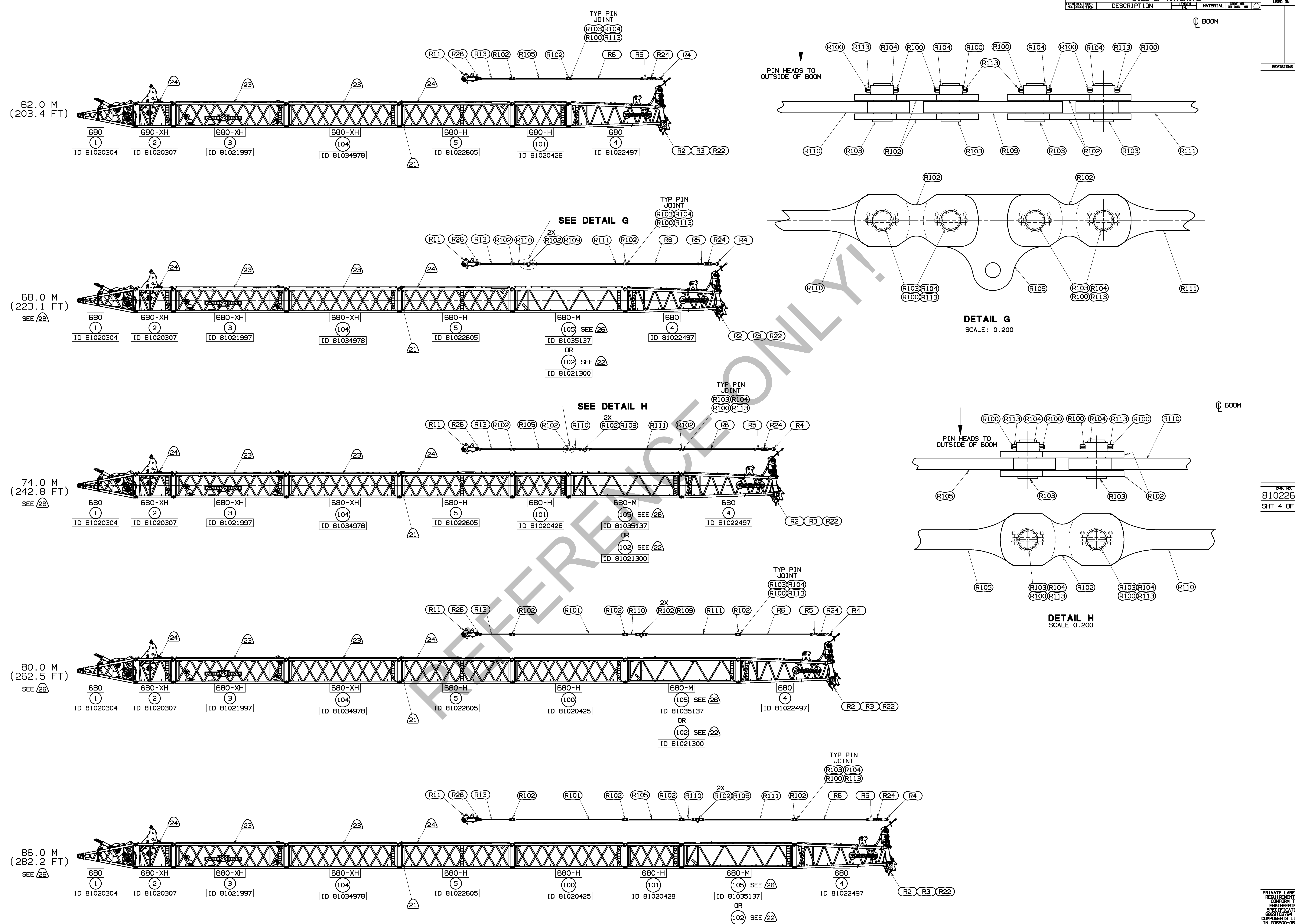
DETAIL E
SCALE 0.250



81022686
SHT 3 OF 10

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
6829103794 FOR
COMPONENTS LISTED
IN SECTION 06-1026

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		DECIMAL PLACES	FRACTIONS	FINISHING											
1) PLACE 0.5	1/16	±.015													
2) PLACE 0.00	1/32	±.010													
3) PLACE 0.000	1/64	±.008													
<small>DR. AUB</small> <small>CHK. RHW</small> <small>APP. TJA</small>	<small>MANUFACTURED BY</small> Mantowoc Cranes, Inc. <small>MODEL</small> MLC650	<small>BOOM RIGGING</small> B60:680	<small>81022686</small> SHT 3 OF 10												



62.0 M
(203.4 FT)

68.0 M
(223.1 FT)
SEE 26

74.0 M
(242.8 FT)
SEE 26

80.0 M
(262.5 FT)
SEE 26

86.0 M
(282.2 FT)
SEE 26

SEE DETAIL G

SEE DETAIL H

DETAIL G
SCALE: 0.200

DETAIL H
SCALE: 0.200

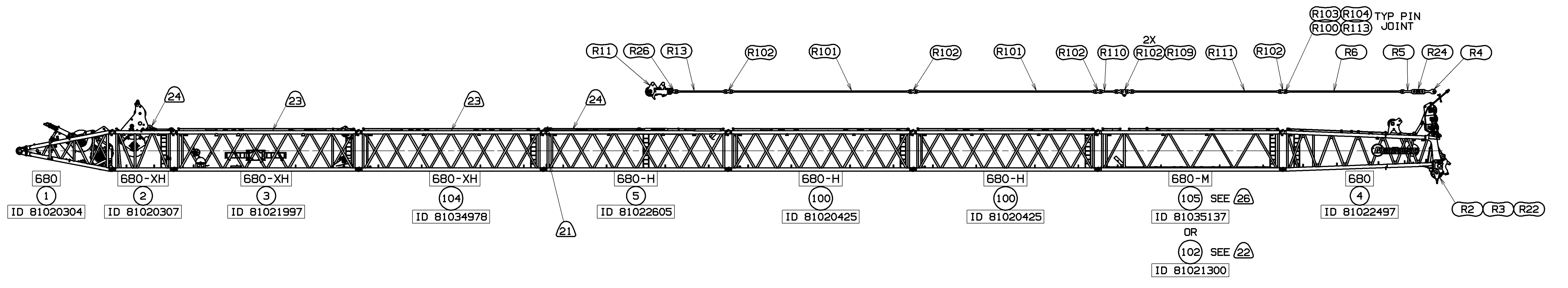
RECOMMENDED BOOM MAKEUP
FOR TYP PIN JOINT SEE SECTION B-B
AND DETAILS D,E,G & H

DECIMAL PLACES	FABRICATION	MACHINING	WELDING
(1) PLACE 0.5	±.12	±.18	±.05
(2) PLACE 0.00	±.08	±.12	±.015
(3) PLACE 0.000	±.05	±.08	±.008
ANGLES	±1.30°	±1.30°	±0.90°

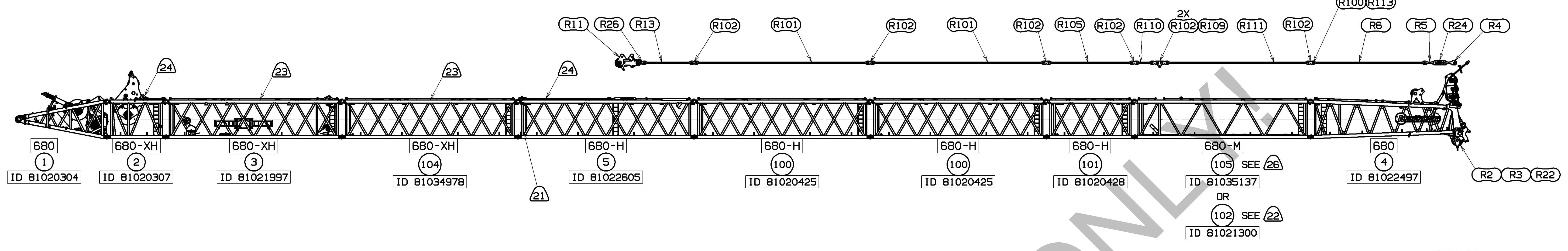
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NO.	DATE	DESCRIPTION	MATERIAL	BY	APP'D

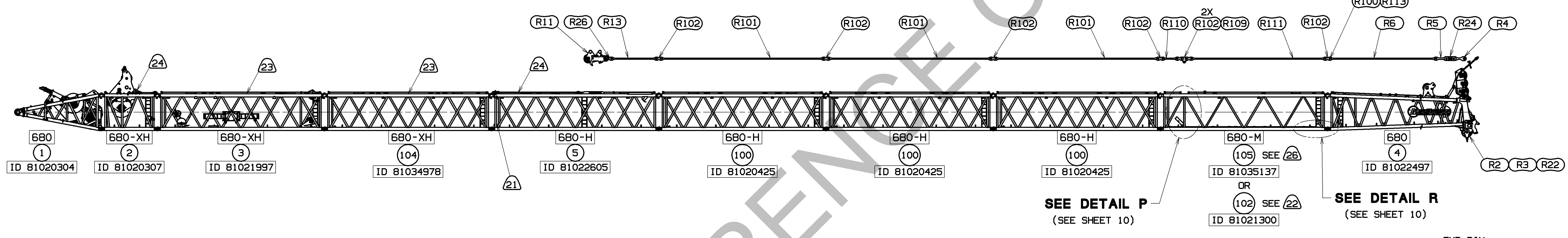
92.0 M
(301.8 FT)
SEE 26



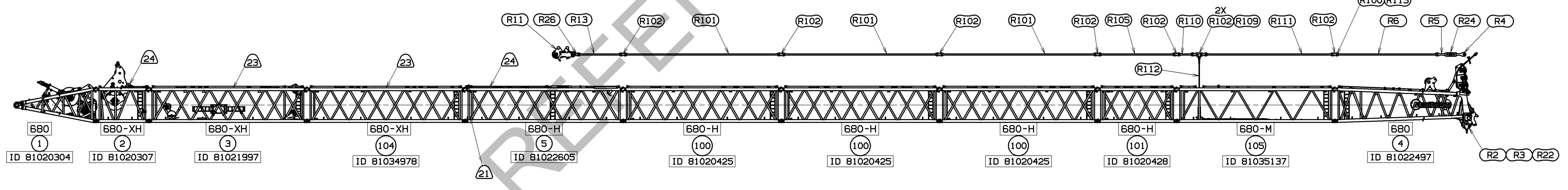
98.0 M
(321.5 FT)
SEE 26



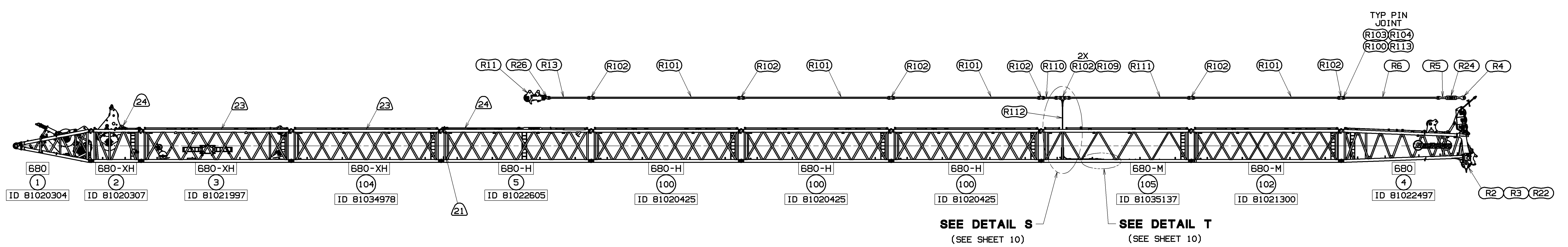
104.0 M
(341.2 FT)
SEE 26



110.0 M
(360.9 FT)



116.0 M
(380.6 FT)

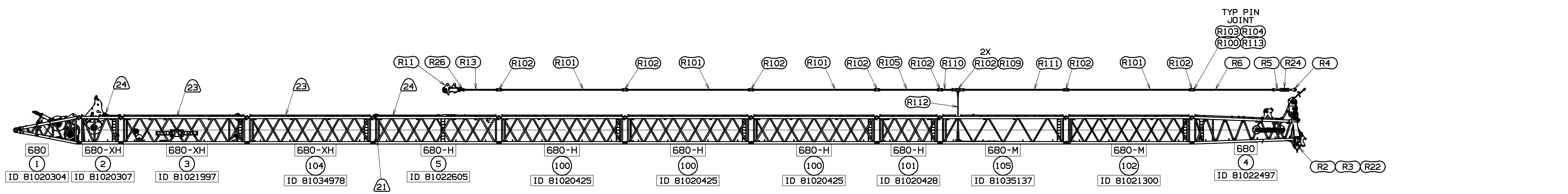


RECOMMENDED BOOM MAKEUP
FOR TYP PIN JOINT SEE SECTION B-B
AND DETAILS D, E, G, & H

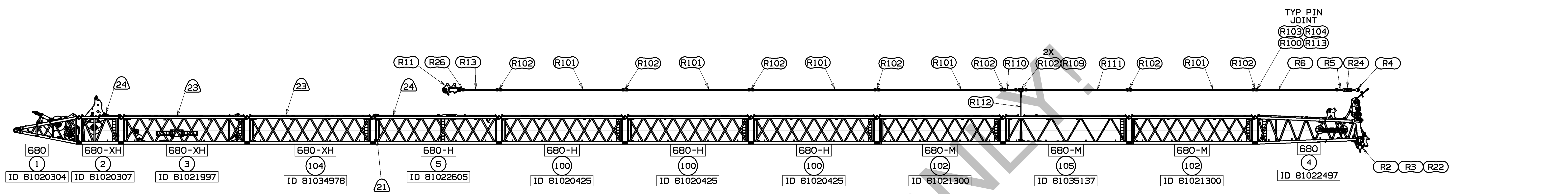
DECIMAL PLACES	FABRICATION	MACHINING	WELDING	DR. AUB	MANITOWOC, WISCONSIN	BOOM RIGGING
(1) PLACE 0.5	± 0.12	± 0.18	± 0.05			
(2) PLACE 0.00	± 0.08	± 0.12	± 0.015			
(3) PLACE 0.000	± 0.005	± 0.008	± 0.002			

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
6829103794 FOR
COMPONENTS LISTED
IN SECTION 06-05
DATE
06-19-15
REV. LTR.
(B)
81022686
SHT 5 OF 10

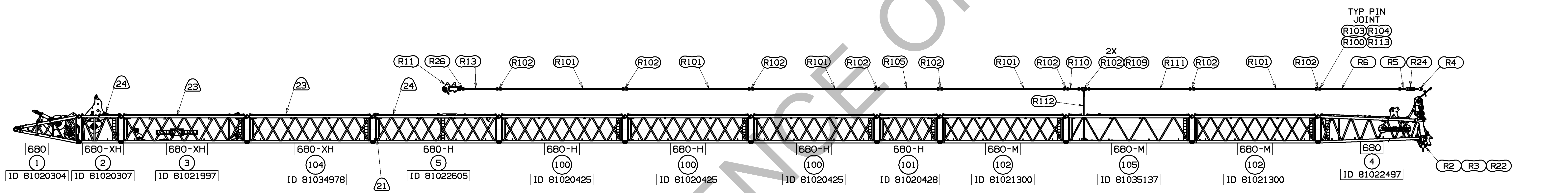
122.0 M
(400.3 FT)



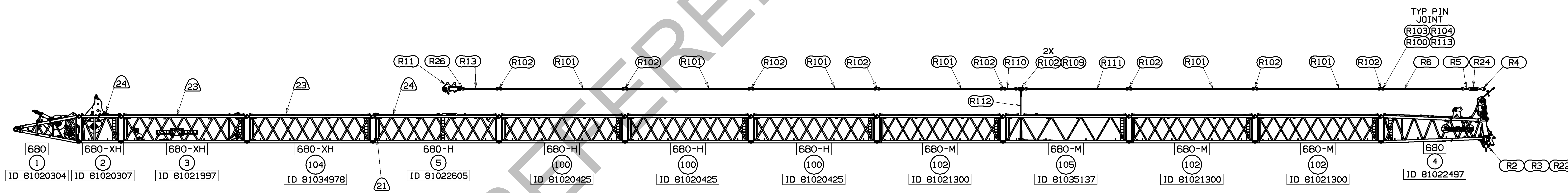
128.0 M
(419.9 FT)



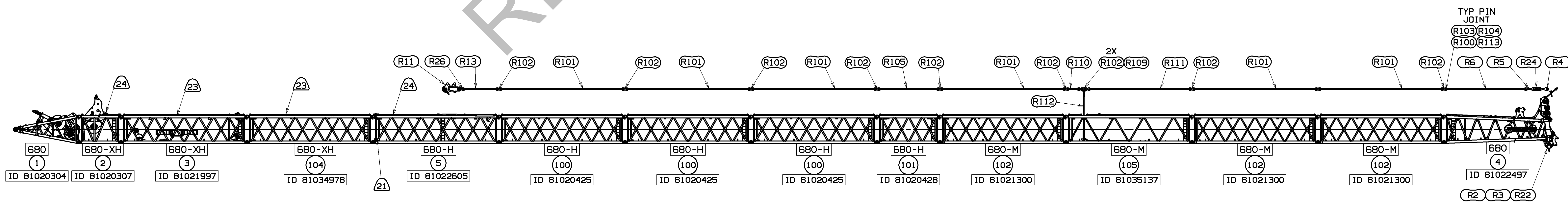
134.0 M
(439.6 FT)



140.0 M
(459.3 FT)



146.0 M
(479.0 FT)

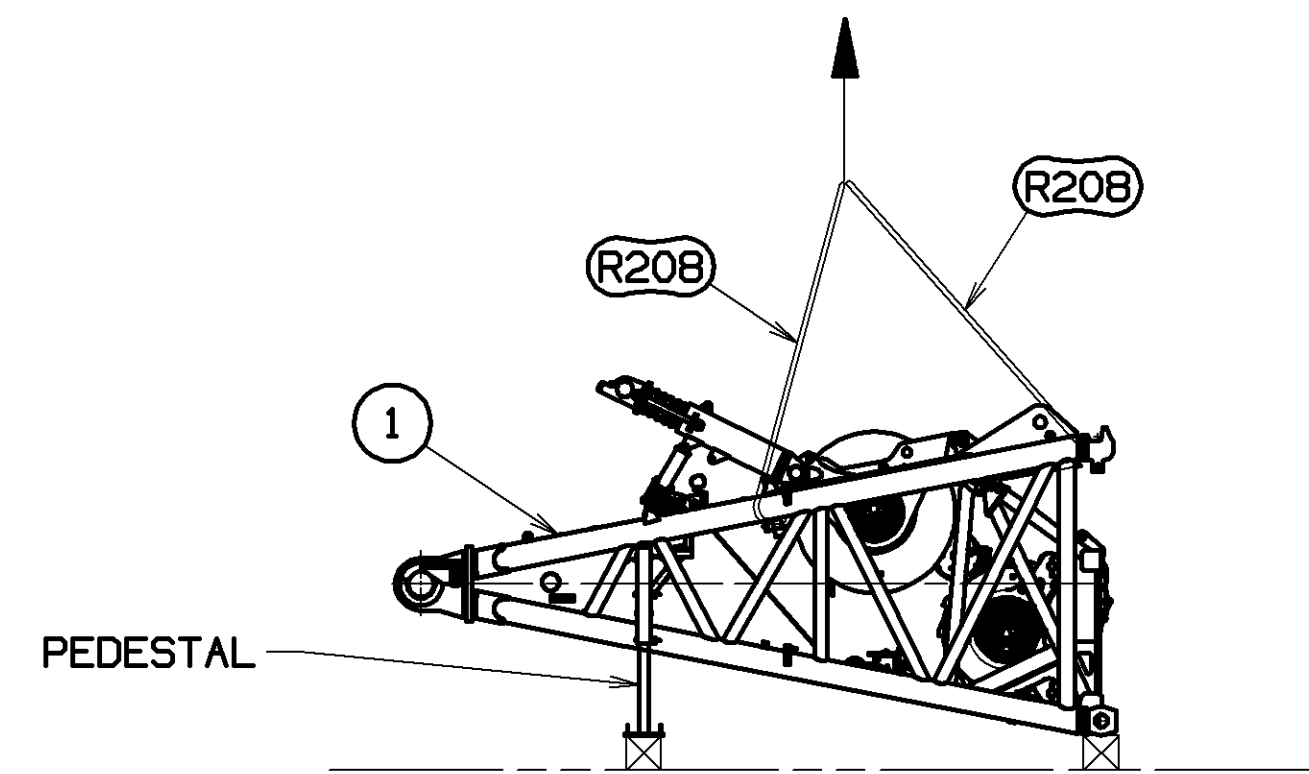


RECOMMENDED BOOM MAKEUP
FOR TYP PIN JOINT SEE SECTION B-B
AND DETAILS D,E,G, & H

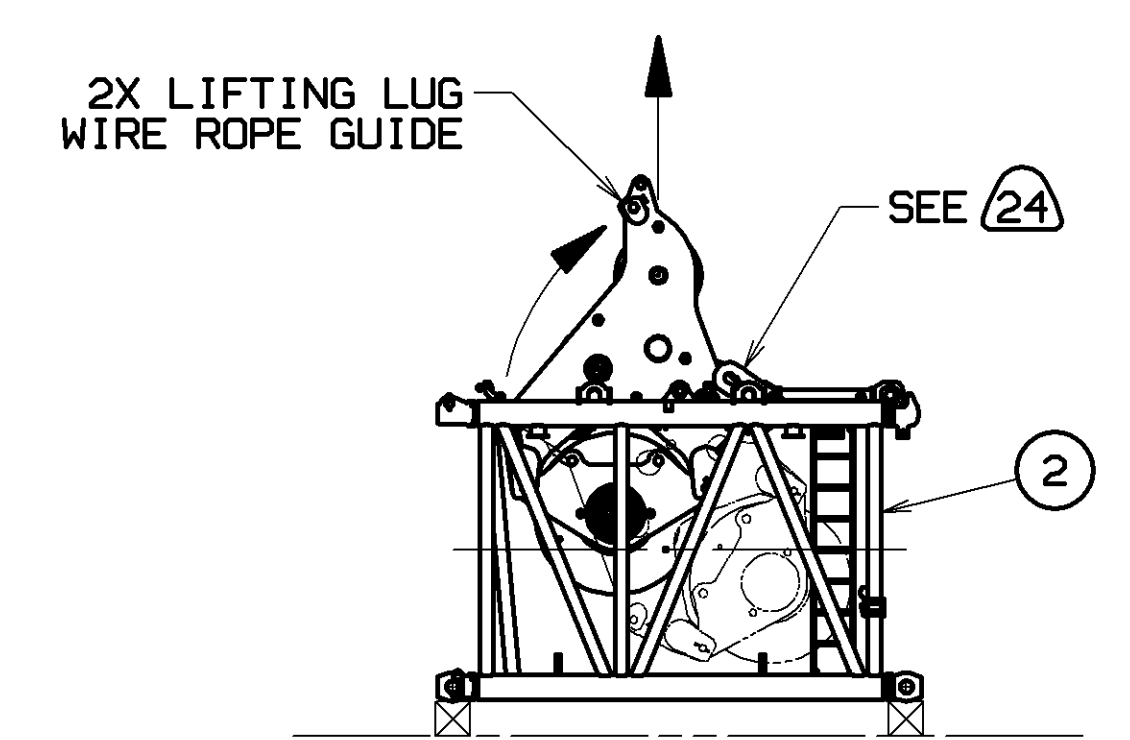
81022686
SHT 6 OF 10

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
6829103794 FOR
COMPONENTS LISTED
IN SECTION 06-106
DATE
06-19-15
REV. LTR.
B

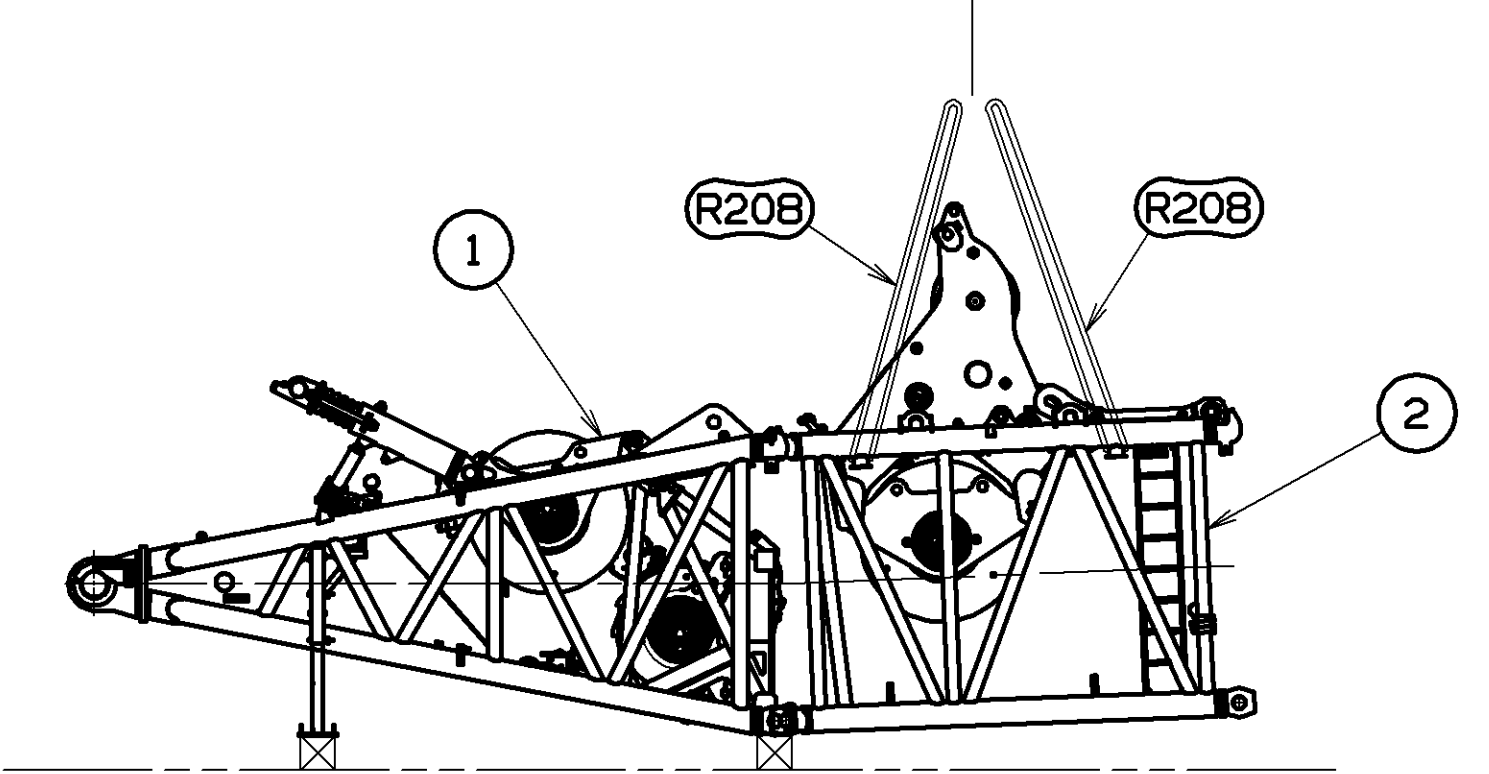
DECIMAL PLACES	FABRICATION	FINISHING	WELDING	DR. AUB	MANITOWOC, WISCONSIN	BOOM RIGGING
(1) PLACE 0.5	+0.12	+0.18	+0.03			
(2) PLACE 0.00	+0.08	+0.12	+0.015			
(3) PLACE 0.000	+0.008	+0.012	+0.006			
ANGLES	+1.30	+1.50	+0.07			



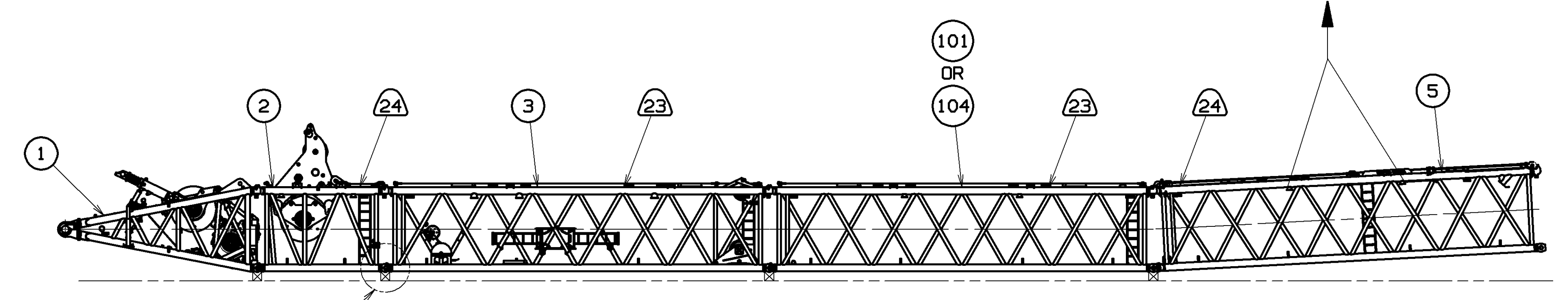
STEP 1
BOOM BUTT
 BLOCK AND POSITION BOOM BUTT (ITEM 1)
 WITH SUPPORT PEDESTAL DEPLOYED.
 SCALE: 1.015



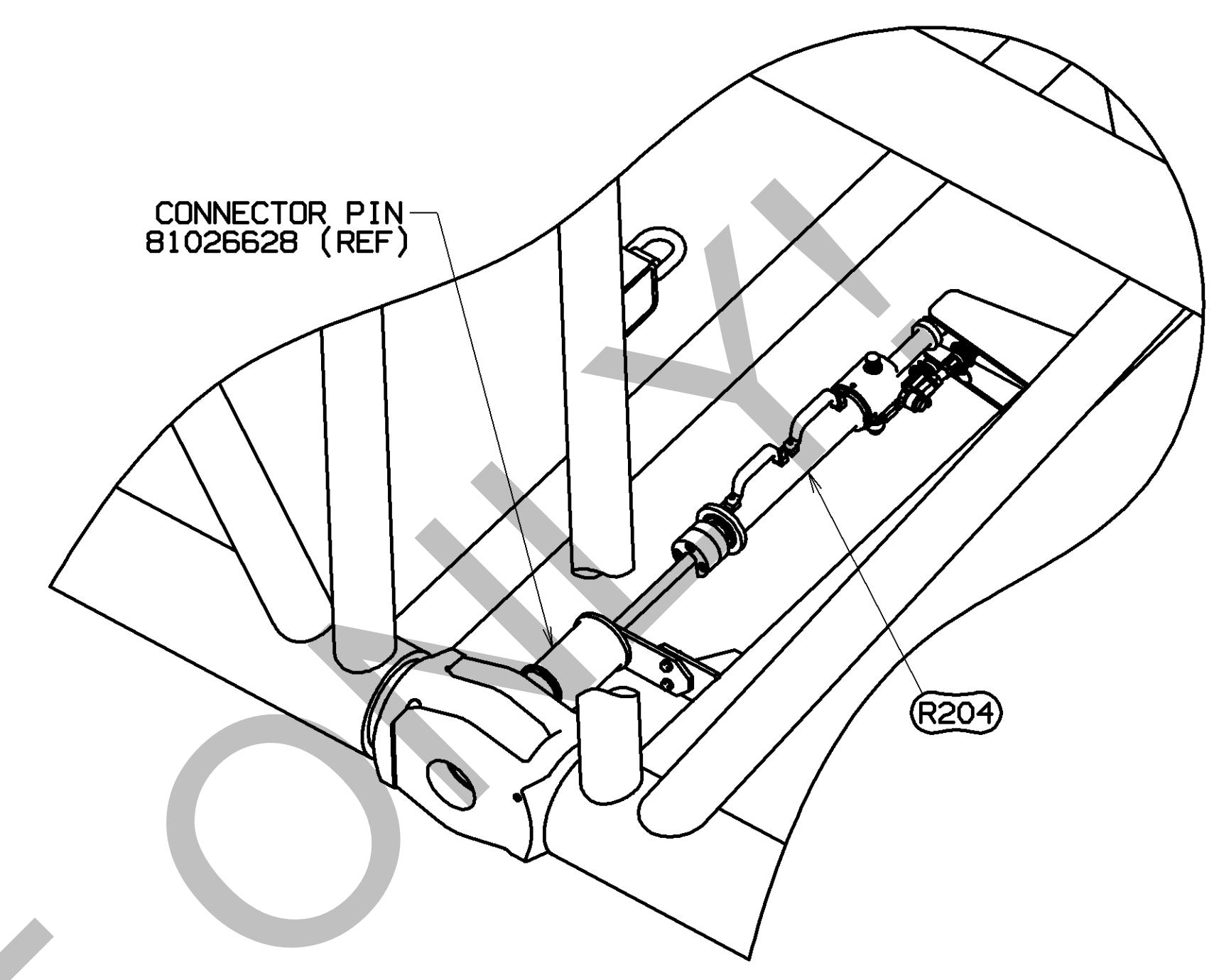
STEP 2
4M INSERT WIRE ROPE GUIDE
 POSITION 4M WIRE ROPE GUIDE INTO WORKING POSITION
 SCALE: 1.015



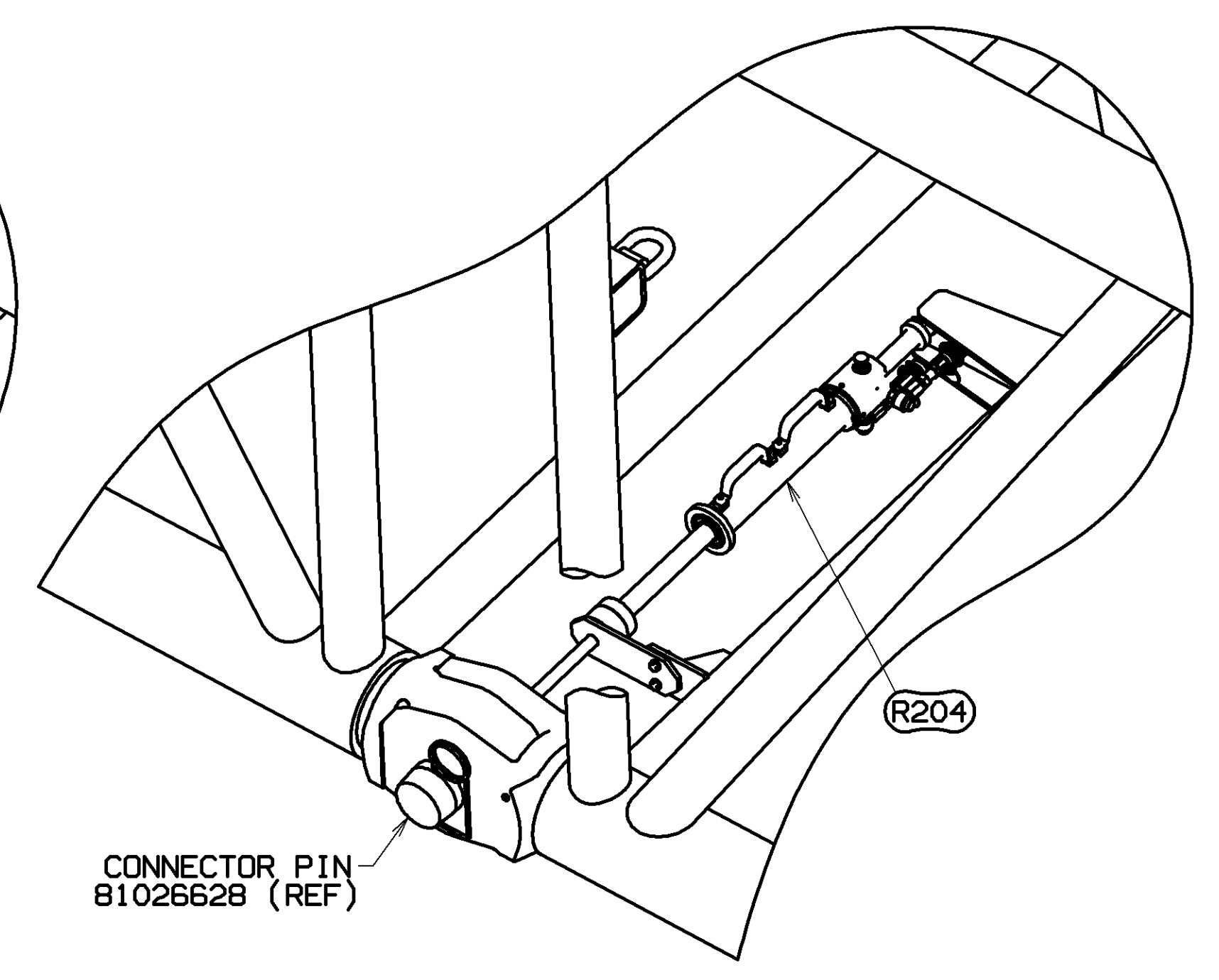
STEP 3
4M INSERT TO BOOM BUTT
 ASSEMBLE 4M INSERT (ITEM 2) TO BOOM BUTT (ITEM 1)
 USING SLINGS (R208) ON 4M INSERT SLING POSTS.
 SCALE: 1.015



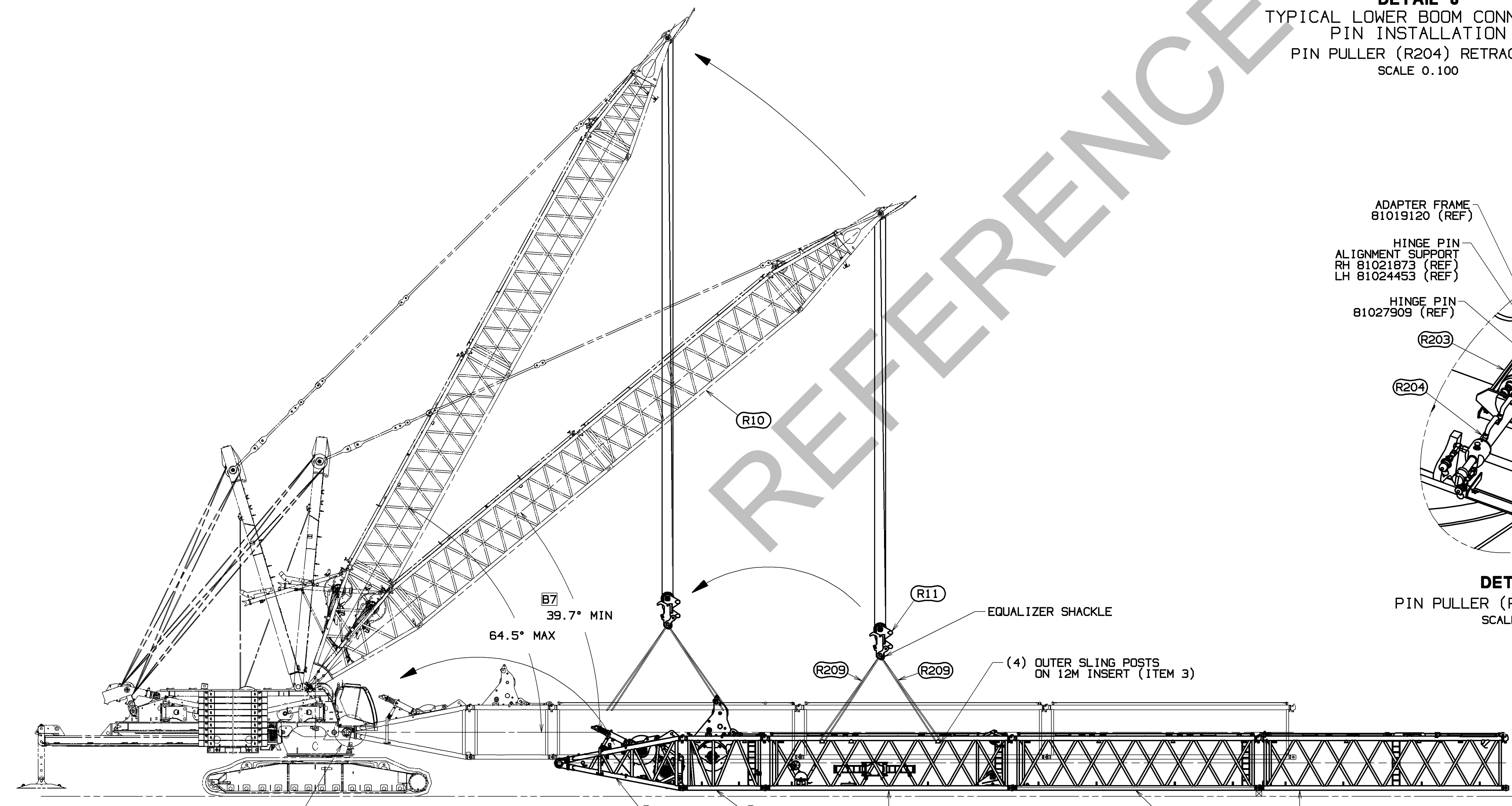
STEP 4
BOOM BUTT TO EQUALIZER INSERT ASSEMBLY
 CONTINUE TO ASSEMBLE BOOM INSERTS TO BUTT/4M ASSEMBLY UP TO AND INCLUDING
 EQUALIZER INSERT (ITEM 5). (REFER TO SHEETS 3, 4, 5 & 6 FOR REQUIRED BOOM CONFIGURATIONS).
 INSTALL LOWER BOOM CONNECTOR PINS PER DETAIL "J"
 REMOVE UNUSED BOOM STRAPS/LINKS AS INDICATED PER DELTA NOTES (21), (23) & (24) AND VIEW C-C ON SHEET 3.
 FOR STATUS OF BACKSTAY STRAPS REFER TO DELTA NOTE (14)
 RETRACT BOOM BUTT SUPPORT PEDESTAL PRIOR TO ASSEMBLY OF BOOM TO ADAPTER FRAME HINGE.



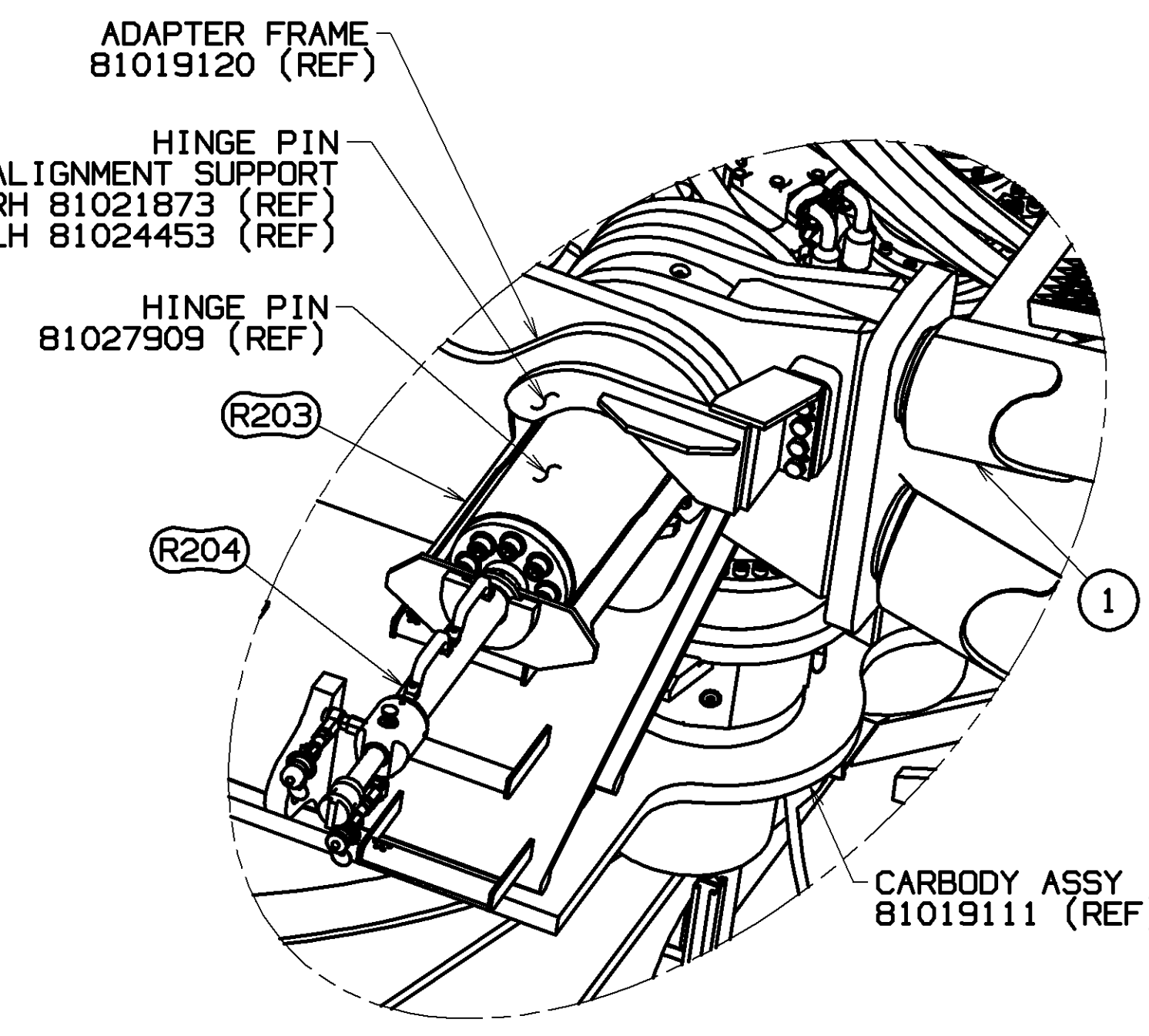
DETAIL J
 TYPICAL LOWER BOOM CONNECTOR
 PIN INSTALLATION
 PIN PULLER (R204) RETRACTED
 SCALE 0.100



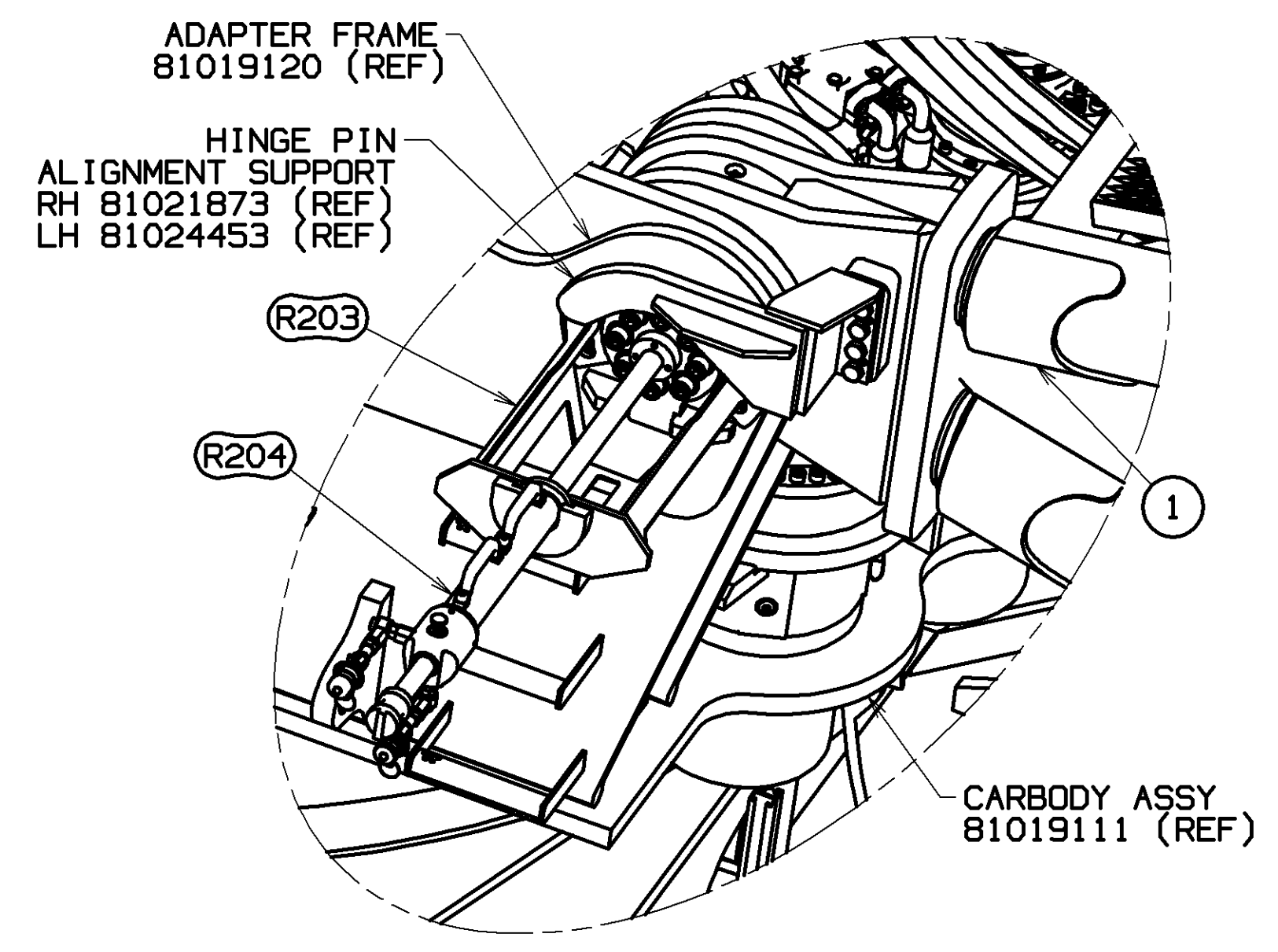
DETAIL J
 TYPICAL LOWER BOOM CONNECTOR
 PIN INSTALLATION
 PIN PULLER (R204) EXTENDED
 SCALE 0.100



STEP 5
BUTT/EQUALIZER ASSY TO ADAPTER FRAME HINGE USING FIXED MAST
 (VALID FOR 56M BOOM AND GREATER)
 ATTACH (4) SLINGS (R209) FROM EQUALIZER (R11) SHACKLES TO OUTER SLING POSTS ON 12M INSERT (ITEM 3).
 USING PREVIOUSLY ASSEMBLED FIXED MAST (R10) PER ASSEMBLY INSTRUCTIONS 81025005, ASSEMBLE THE BUTT/EQUALIZER ASSEMBLY (STEP 4) TO ADAPTER FRAME HINGE.
 POSITION HINGE PIN ALIGNMENT SUPPORT ON PIN. (SEE DETAIL K)
 POSITION PIN PULLER ASSY (R204) INTO PIN PULLER CAGE WELDMENT (R203) AND ACTIVATE CYLINDER TO INSTALL HINGE PIN INTO BUTT. (SEE DETAIL K)
 FIXED MAST OPERATING RANGE WHEN ASSEMBLING BOOM IS 39.7° TO 64.5°.
 LOWER BOOM ONTO BLOCKING AND DISCONNECT SLINGS (R209) FROM 12M INSERT (ITEM 3).

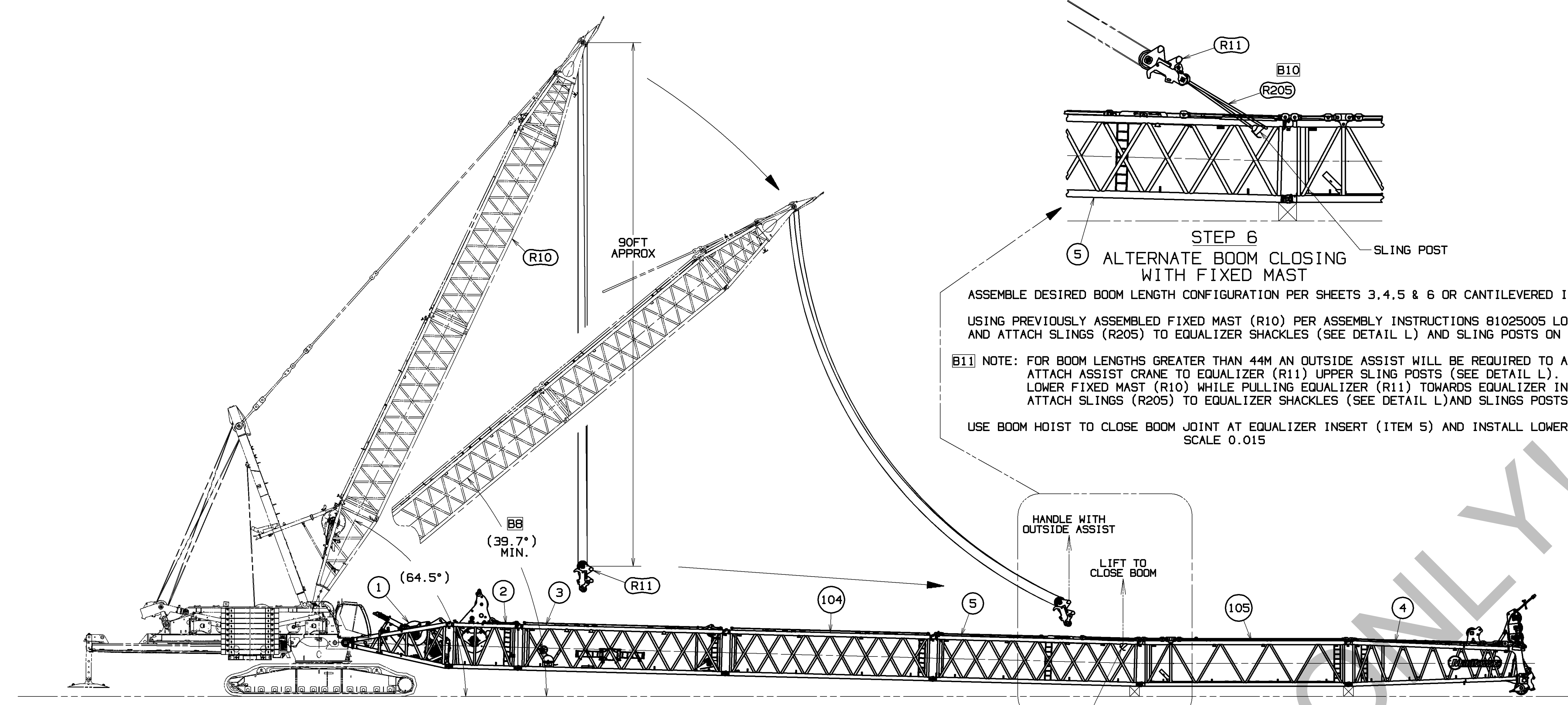


DETAIL K
 PIN PULLER (R204) RETRACTED
 SCALE 0.100



DETAIL K
 PIN PULLER (R204) EXTENDED
 SCALE 0.100

BILL OF MATERIAL				ASSEMBLED USED IN
QTY	DESCRIPTION	MATERIAL	QTY	NO.



STEP 6
5 ALTERNATE BOOM CLOSING WITH FIXED MAST

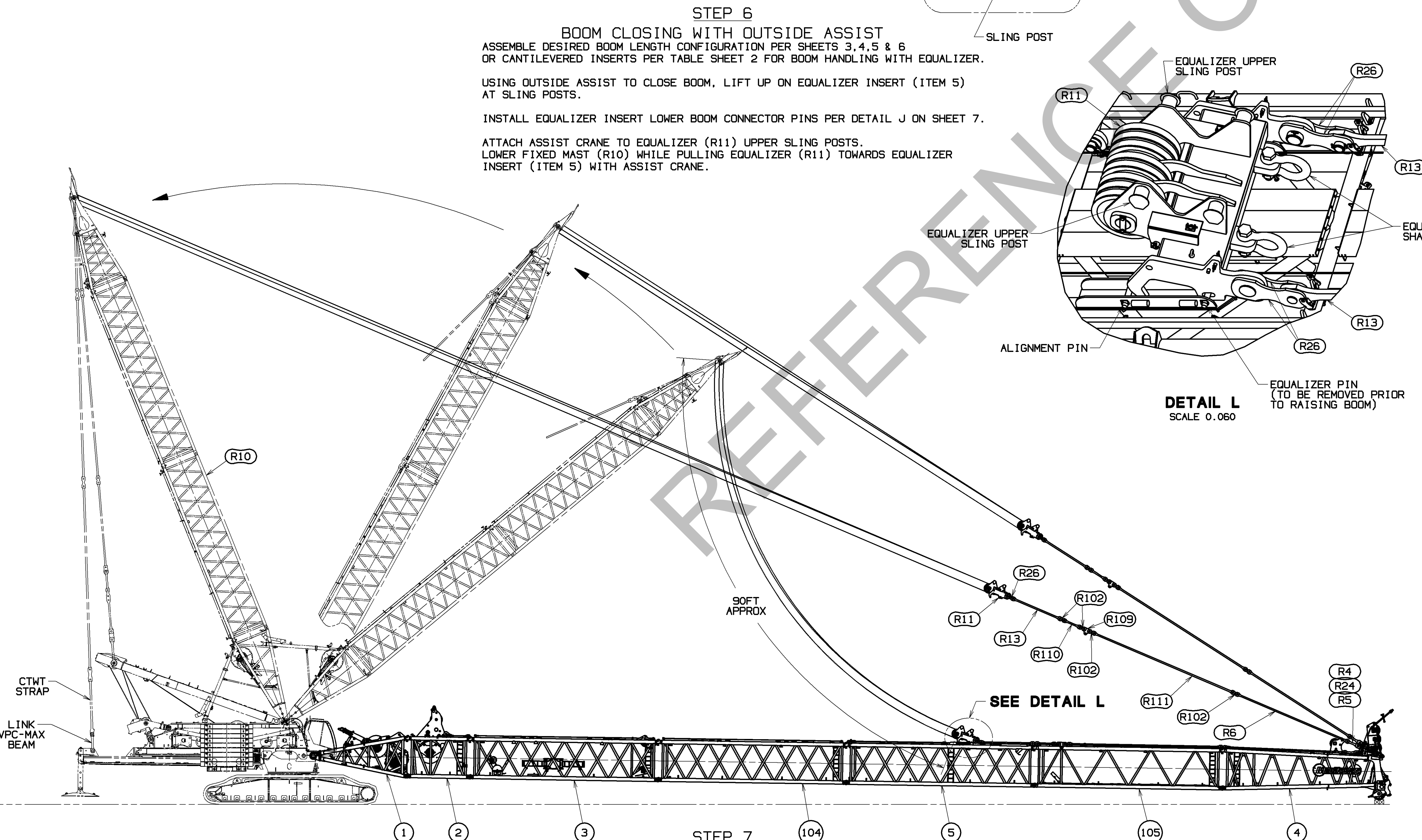
ASSEMBLE DESIRED BOOM LENGTH CONFIGURATION PER SHEETS 3,4,5 & 6 OR CANTILEVERED INSERTS PER TABLE SHEET 2 FOR BOOM HANDLING WITH EQUALIZER.

USING PREVIOUSLY ASSEMBLED FIXED MAST (R10) PER ASSEMBLY INSTRUCTIONS 81025005 LOWER FIXED MAST (R10) AND ATTACH SLINGS (R205) TO EQUALIZER SHACKLES (SEE DETAIL L) AND SLING POSTS ON EQUALIZER INSERT (ITEM 5).

B11 NOTE: FOR BOOM LENGTHS GREATER THAN 44M AN OUTSIDE ASSIST WILL BE REQUIRED TO ALIGN EQUALIZER FOR ATTACHMENT WITH SLINGS TO SLING POSTS. ATTACH ASSIST CRANE TO EQUALIZER (R11) UPPER SLING POSTS (SEE DETAIL L). LOWER FIXED MAST (R10) WHILE PULLING EQUALIZER (R11) TOWARDS EQUALIZER INSERT (ITEM 5). ATTACH SLINGS (R205) TO EQUALIZER SHACKLES (SEE DETAIL L) AND SLINGS POSTS ON EQUALIZER INSERT (ITEM 5).

USE BOOM HOIST TO CLOSE BOOM JOINT AT EQUALIZER INSERT (ITEM 5) AND INSTALL LOWER BOOM CONNECTOR PINS PER DETAIL J ON SHEET 7.

SCALE 0.015



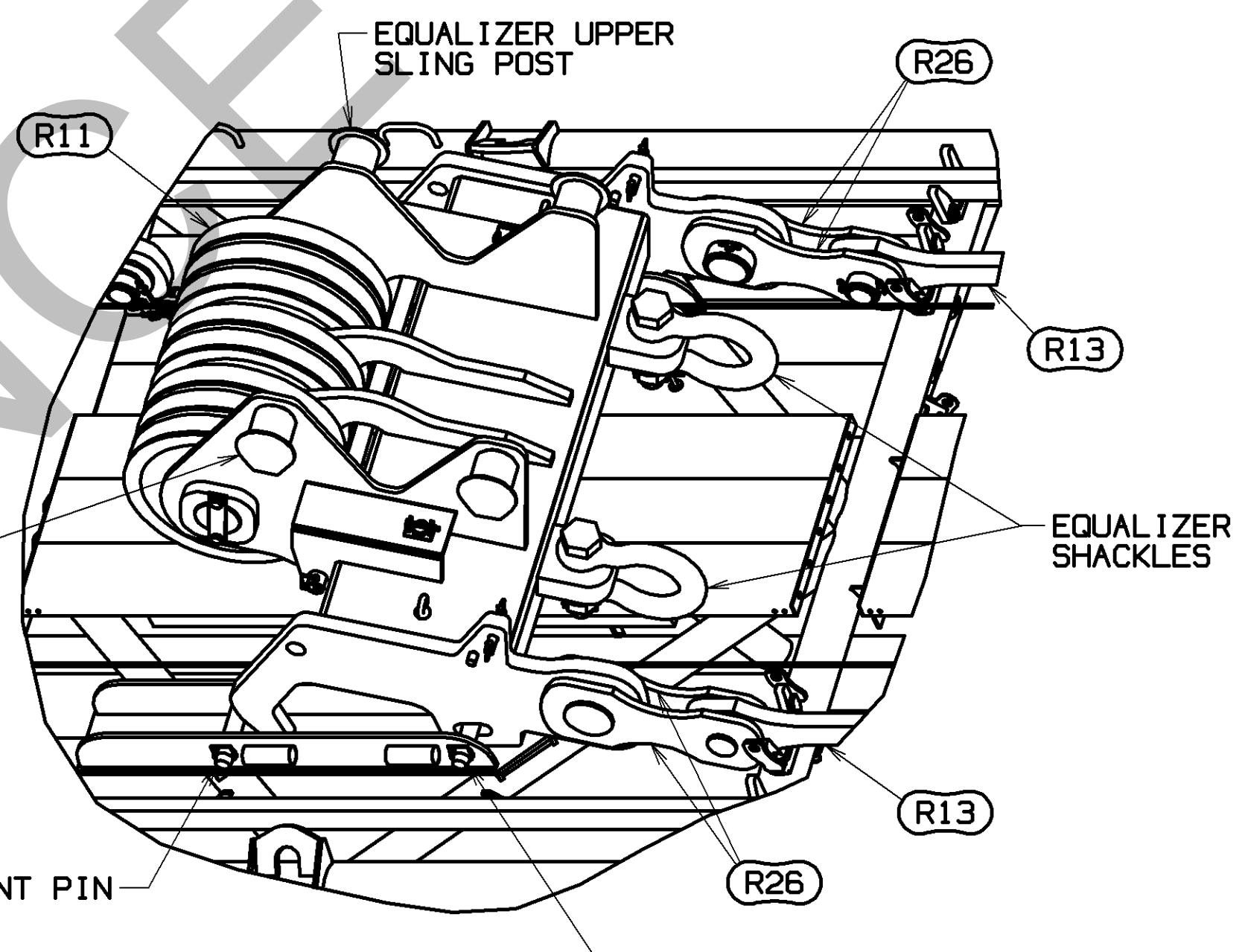
STEP 6
BOOM CLOSING WITH OUTSIDE ASSIST

ASSEMBLE DESIRED BOOM LENGTH CONFIGURATION PER SHEETS 3,4,5 & 6 OR CANTILEVERED INSERTS PER TABLE SHEET 2 FOR BOOM HANDLING WITH EQUALIZER.

USING OUTSIDE ASSIST TO CLOSE BOOM, LIFT UP ON EQUALIZER INSERT (ITEM 5) AT SLING POSTS.

INSTALL EQUALIZER INSERT LOWER BOOM CONNECTOR PINS PER DETAIL J ON SHEET 7.

ATTACH ASSIST CRANE TO EQUALIZER (R11) UPPER SLING POSTS. LOWER FIXED MAST (R10) WHILE PULLING EQUALIZER (R11) TOWARDS EQUALIZER INSERT (ITEM 5) WITH ASSIST CRANE.



DETAIL L
 SCALE 0.060

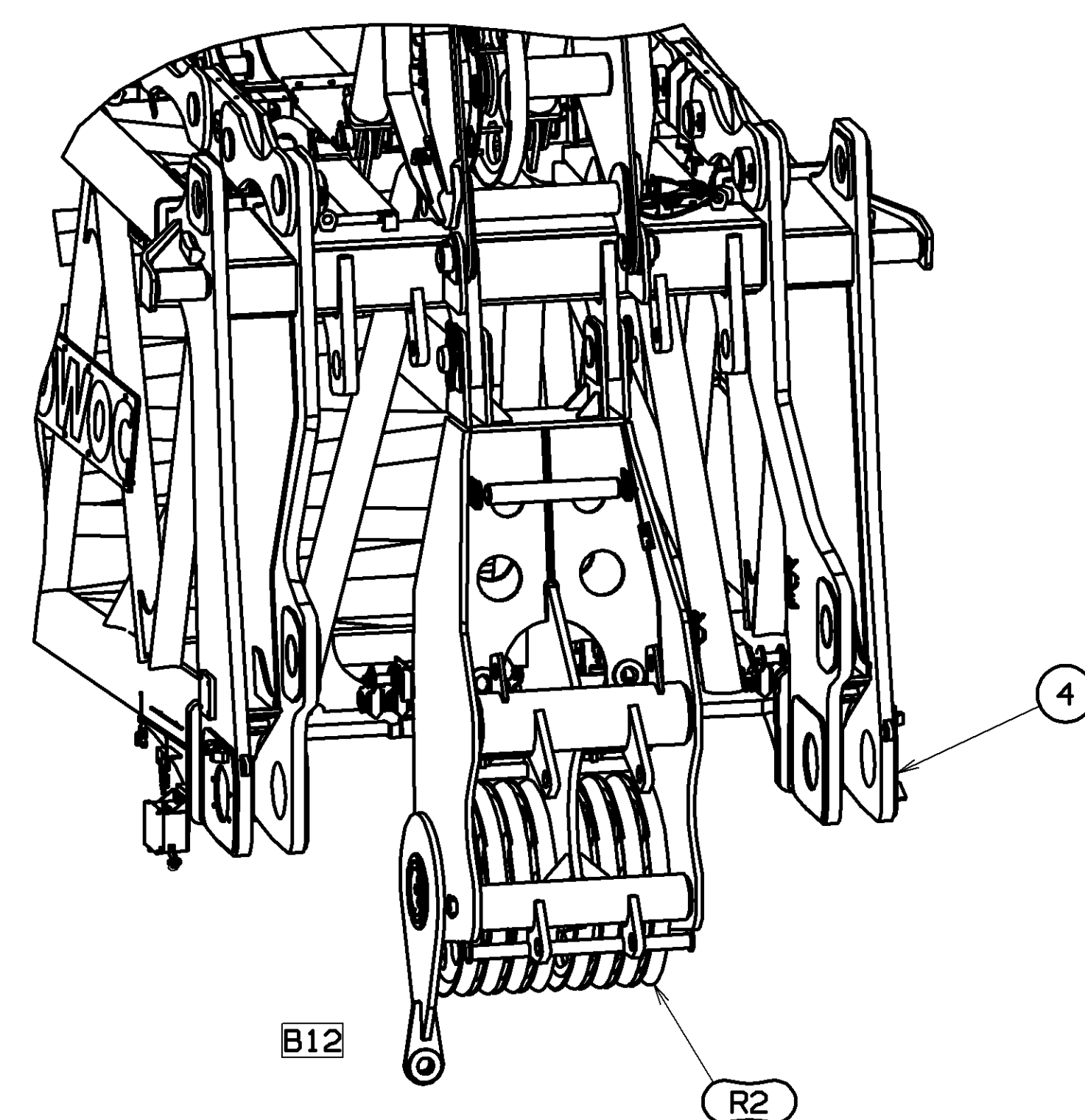
STEP 7
EQUALIZER TO STRAPS ASSEMBLY

LOWER EQUALIZER (R11) ONTO RAILS OF EQUALIZER INSERT (ITEM 5). CONNECT BOOM STRAPS/LINKS FROM BOOM TOP (ITEM 4) TO EQUALIZER INSERT (ITEM 5) IF NOT PREVIOUSLY DONE. CONNECT EQUALIZER LINKS (R26) TO BOOM STRAPS (R13). REMOVE PINS SECURING EQUALIZER TO INSERT IF INSTALLED. (PINS SECURING EQUALIZER TO INSERT (SEE DETAIL L) ARE ONLY REQUIRED WHEN CHANGING BOOM LENGTHS AND THE EQUALIZER IS NOT SUPPORTED BY AN ASSIST CRANE OR CONNECTED TO THE BOOM STRAPS). CONNECT MAST COUNTERWEIGHT STRAPS TO LINKS ON VPC-MAX BEAM PER FIXED MAST ASSEMBLY INSTRUCTIONS 81025005. BOOM UP TO DESIRED ANGLE.

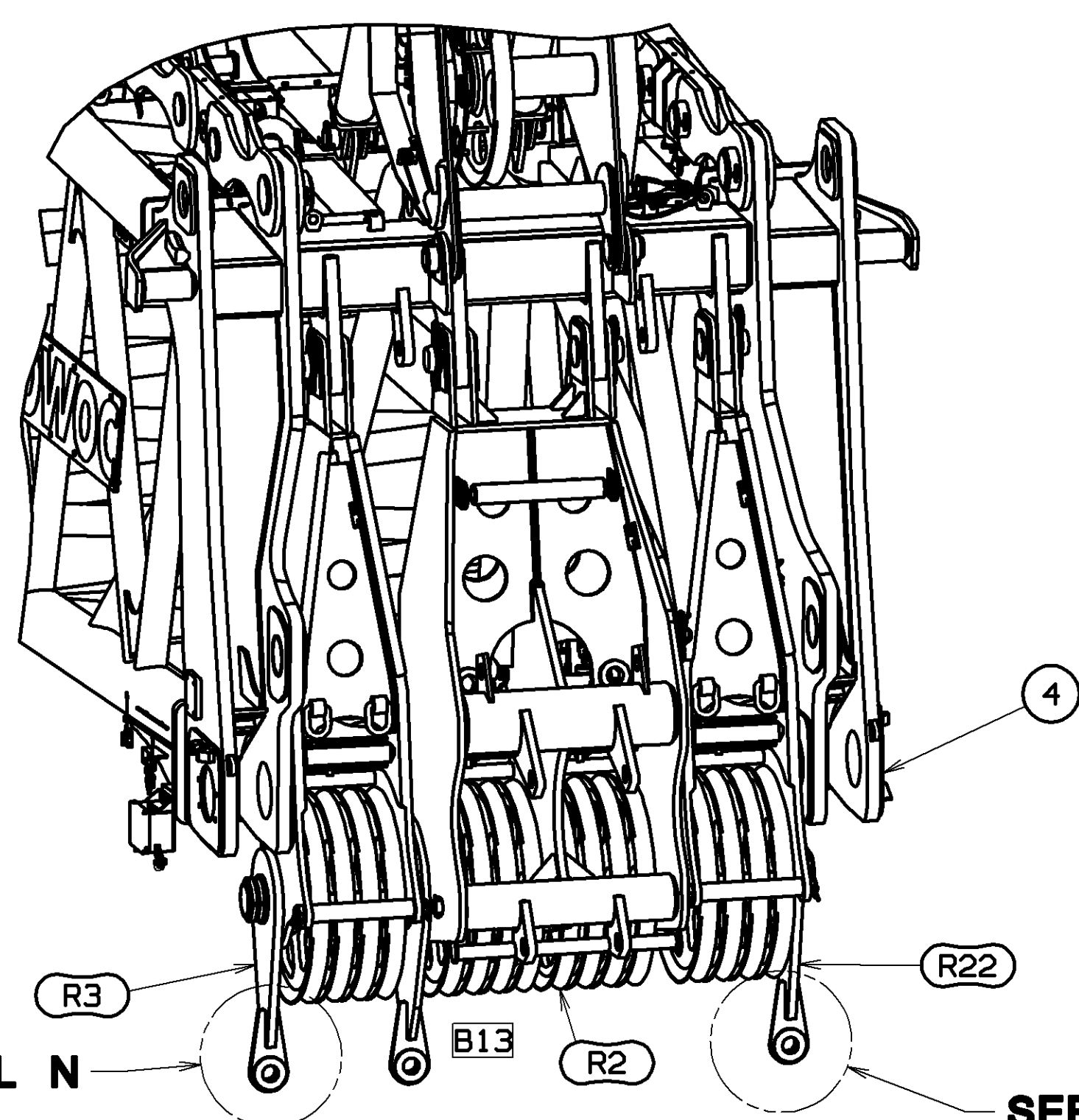
- PROCEDURE TO DISASSEMBLE BOOM**
1. BOOM DOWN AND SUPPORT BOOM ON BLOCKING.
 2. BOOM FIXED MAST (R10) 1° TOWARD MAST STOPS AND DISCONNECT MAST COUNTERWEIGHT STRAPS FROM LINKS ON VPC-MAX BEAM.
 3. PAY OUT BOOM HOIST TO LOWER EQUALIZER (R11) ONTO INSERT RAILS AND SECURE WITH EQUALIZER PIN. (SEE DETAIL L).
 4. DISCONNECT LINKS (R26) FROM EQUALIZER STRAPS (R13) AND PIN LINKS (R26) INTO STOWAGE POSITION.
 5. DISCONNECT BOOM STRAPS/LINKS AT EACH JOINT.
 6. WITH PROPER BLOCKING IN PLACE AND SUPPORT FROM ASSIST CRANE REMOVE INSERT LOWER CONNECTOR PINS AND DISENGAGE UPPER CONNECTOR PINS FROM INSERTS TOWARD BOOM TOP FROM EQUALIZER INSERT.
- WARNING:**
 BOOM MUST BE PROPERLY BLOCKED TO PREVENT SHIFTING DURING PIN REMOVAL.
7. REMOVE PINS SECURING EQUALIZER TO INSERT IF INSTALLED.
 8. FOR REMOVAL OF BOOM BUTT/EQUALIZER INSERT ASSEMBLY REVERSE INSTALLATION STEPS 1 THRU 5 ON SHEET 7.

- PROCEDURE TO DISASSEMBLE BOOM (56M THRU 146M) FOR BOOM MAKE UP RECONFIGURATIONS**
1. BOOM DOWN AND SUPPORT BOOM ON BLOCKING.
 2. PAY OUT BOOM HOIST TO LOWER EQUALIZER (R11) ONTO INSERT RAILS AND SECURE WITH EQUALIZER PIN. (SEE DETAIL L).
 3. DISCONNECT LINKS (R26) FROM EQUALIZER STRAPS (R13) AND PIN LINKS INTO STOWAGE POSITION.
 4. DISCONNECT BOOM STRAPS/LINKS NECESSARY FOR BOOM RECONFIGURATION.
 5. WITH PROPER BLOCKING IN PLACE AND SUPPORT FROM ASSIST CRANE REMOVE INSERT LOWER CONNECTOR PINS AND DISENGAGE UPPER CONNECTOR PINS PER REQUIRED CONFIGURATION.
- WARNING:**
 BOOM MUST BE PROPERLY BLOCKED TO PREVENT SHIFTING DURING PIN REMOVAL.

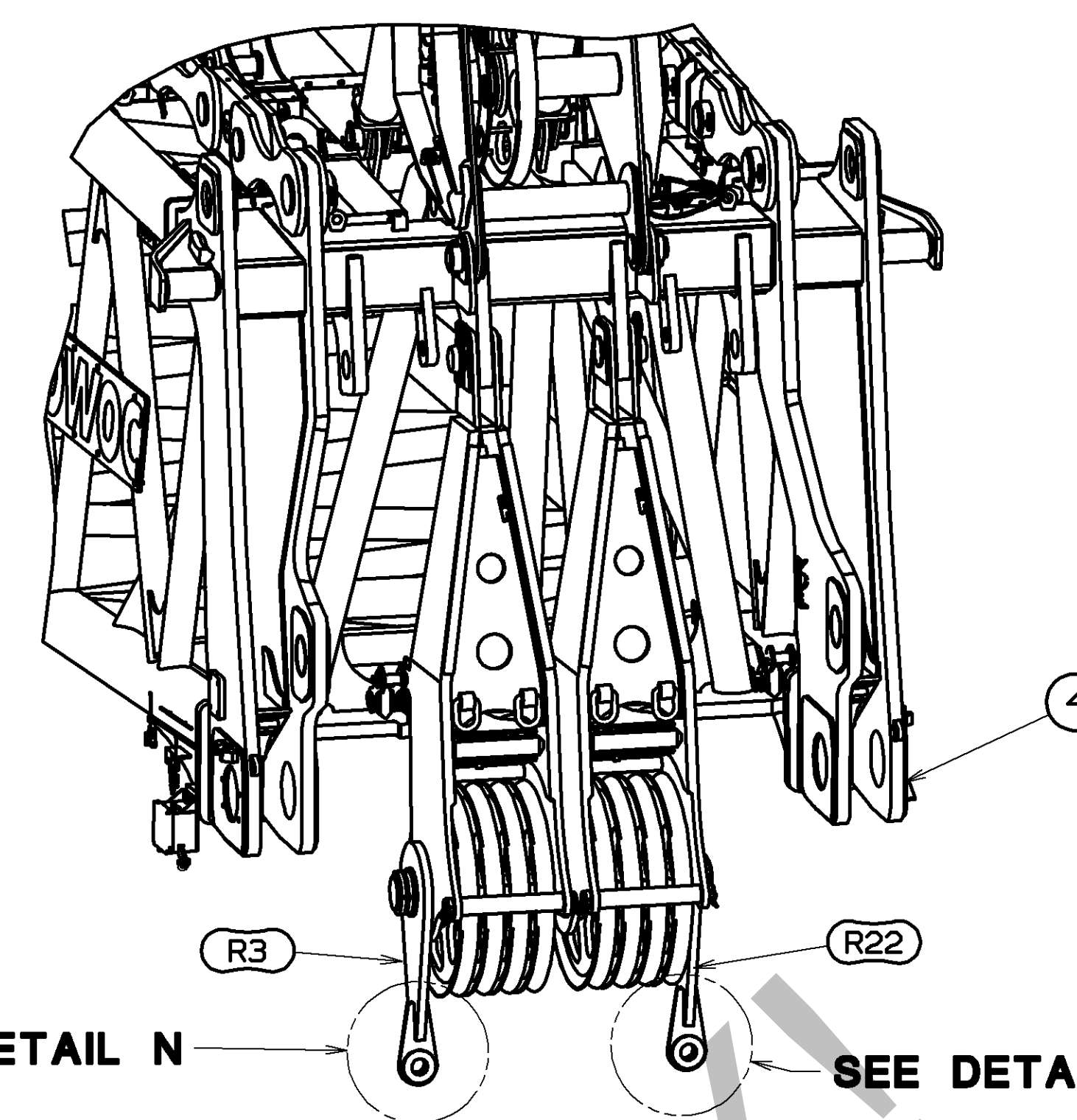
TOLERANCE UNLESS OTHERWISE SPECIFIED		SCALE	Mantowoc Cranes, Inc. Mantowoc, Wisconsin	BOOM RIGGING
DECIMAL PLACES	FRACTION	1:1000		
(1) PLACE 0.5	1/2	1:10	DR. AJB	
(2) PLACE 0.00	1/32	1:10	CHK. RHW	MODEL MLC650
(3) PLACE 0.000	1/64	1:10	APP. TJA	B60:680



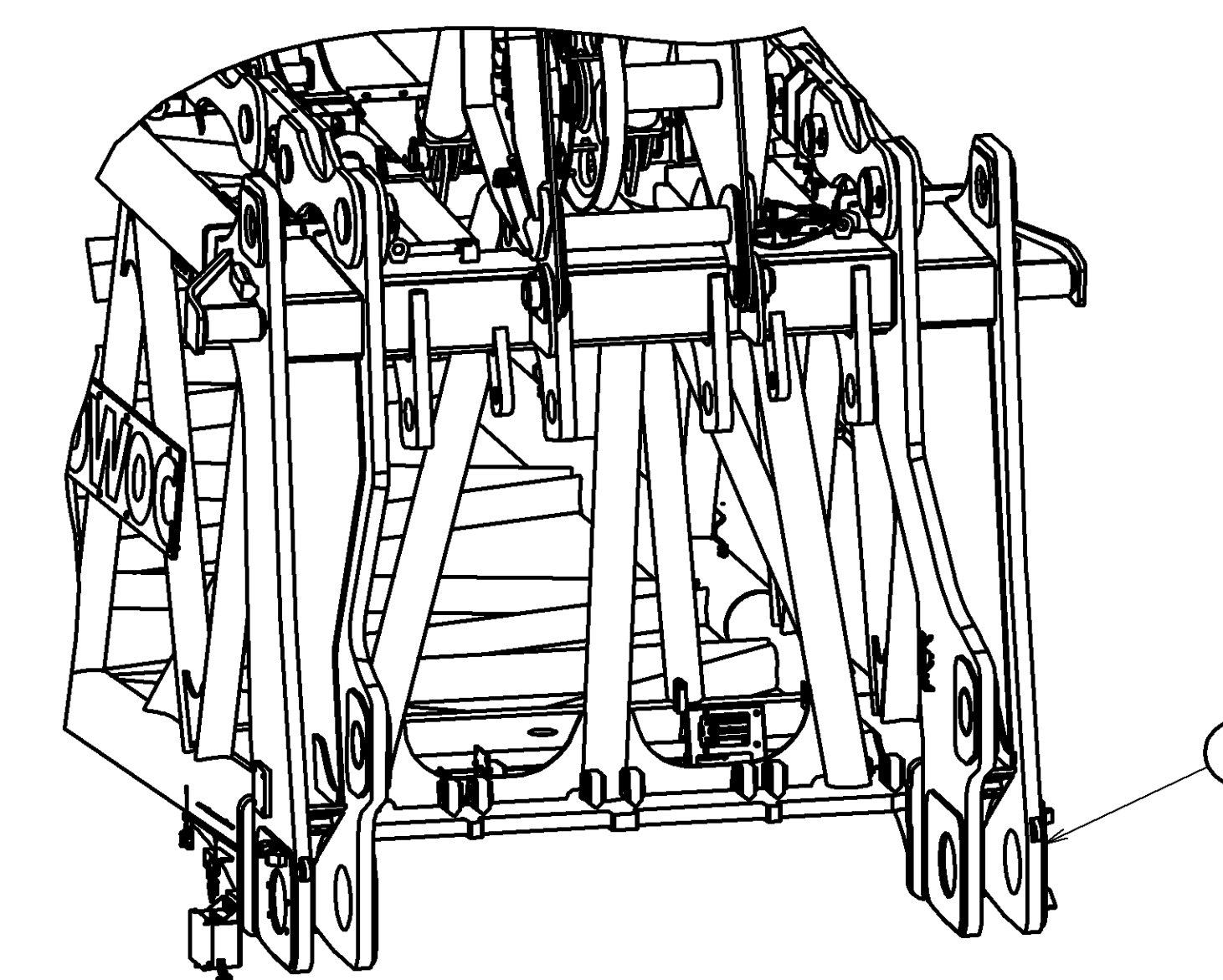
BASIC W/O OPTION CONFIGURATION
FOR BOOM ONLY
8 SHEAVE CENTER SHEAVE PACK
SCALE 0.050



BASIC W/OPTION CONFIGURATION
FOR BOOM ONLY
8 SHEAVE CENTER & (2) 4 SHEAVE SIDE PACK
SCALE 0.050

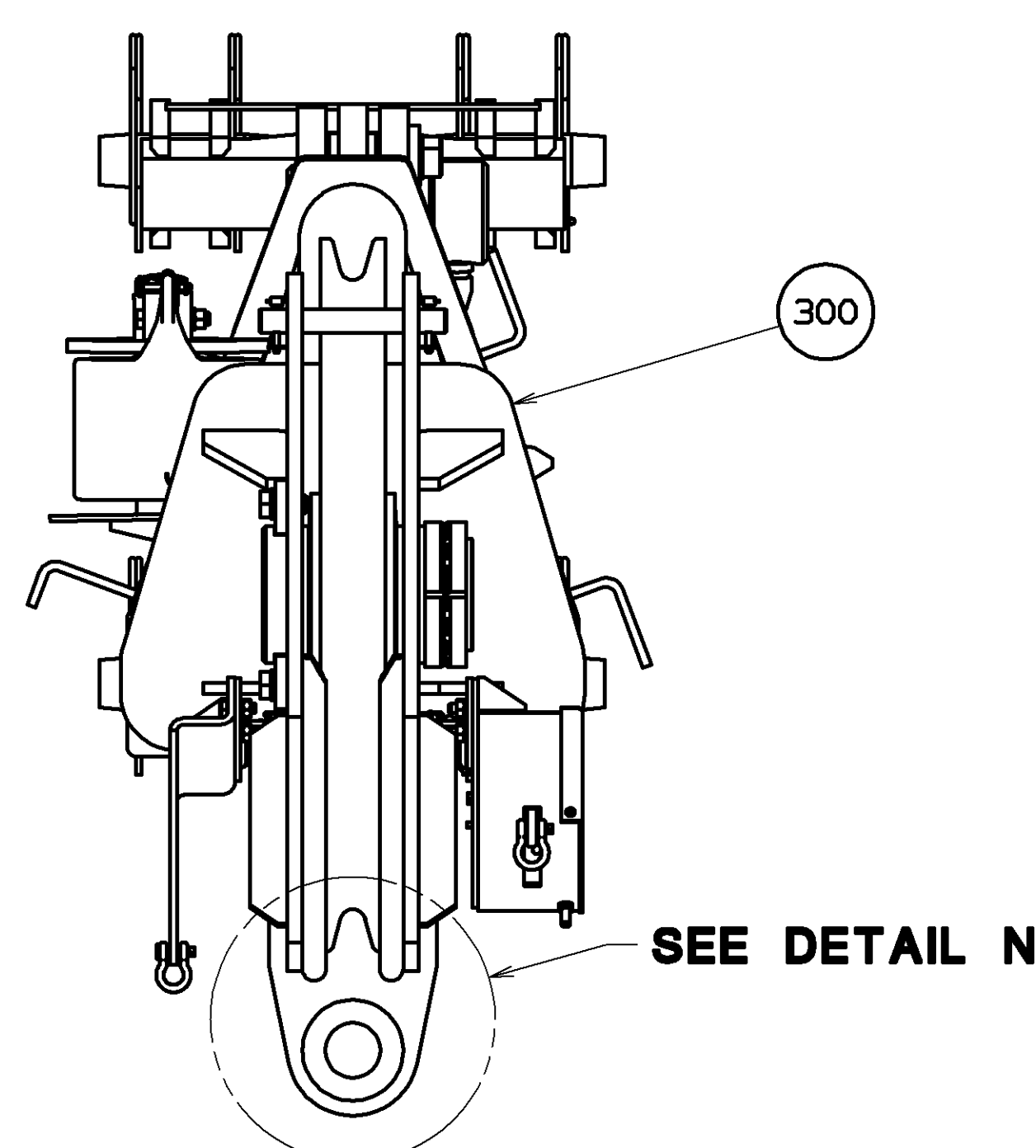


OPTION W/O BASIC CONFIGURATION
FOR BOOM ONLY OR BOOM W/LUFFING JIB
(2) 4 SHEAVE CENTER PACKS
SCALE 0.050

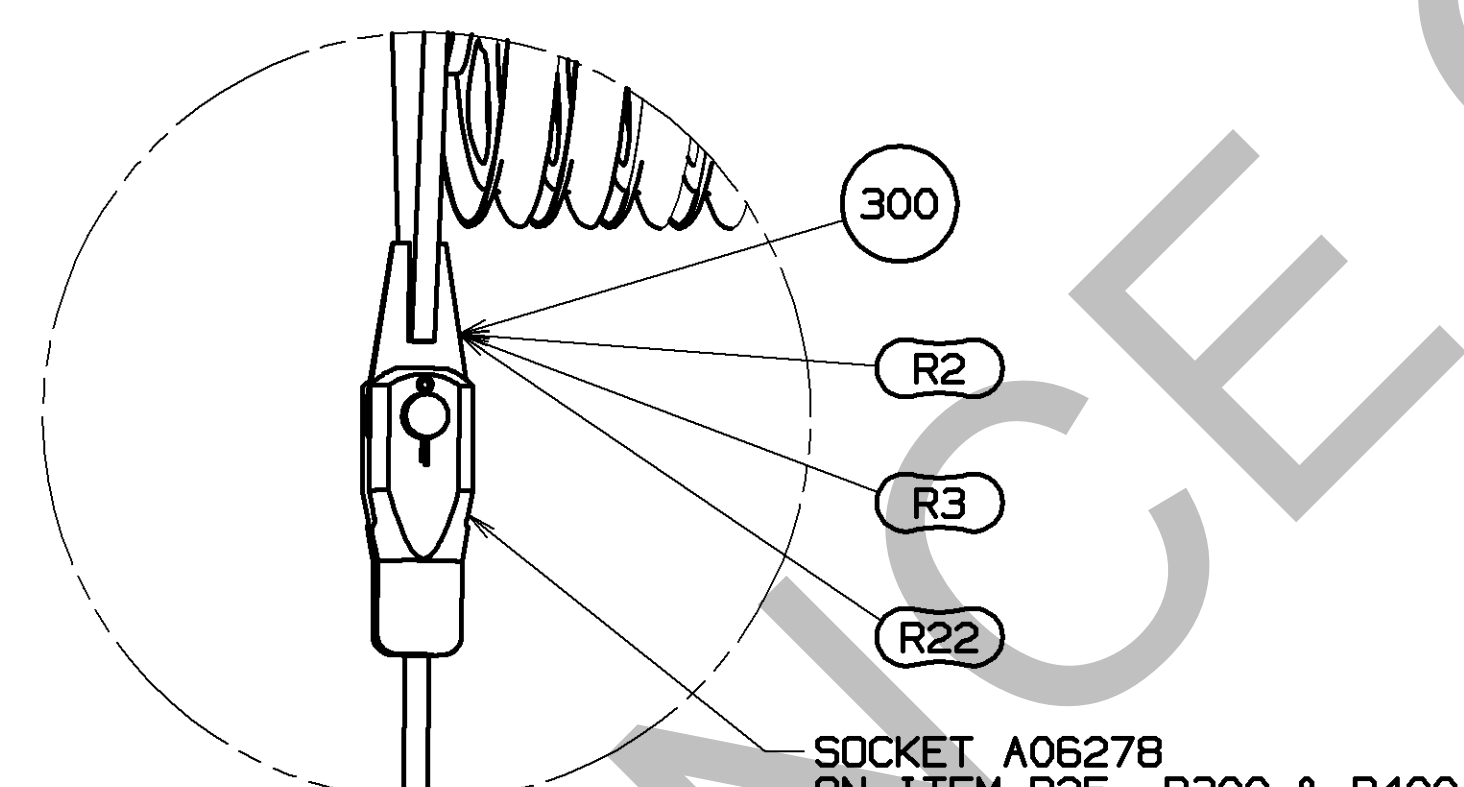


W/O BASIC AND OPTION CONFIGURATION
FOR BOOM W/LUFFING JIB
WITHOUT SHEAVE PACKS
SCALE 0.050

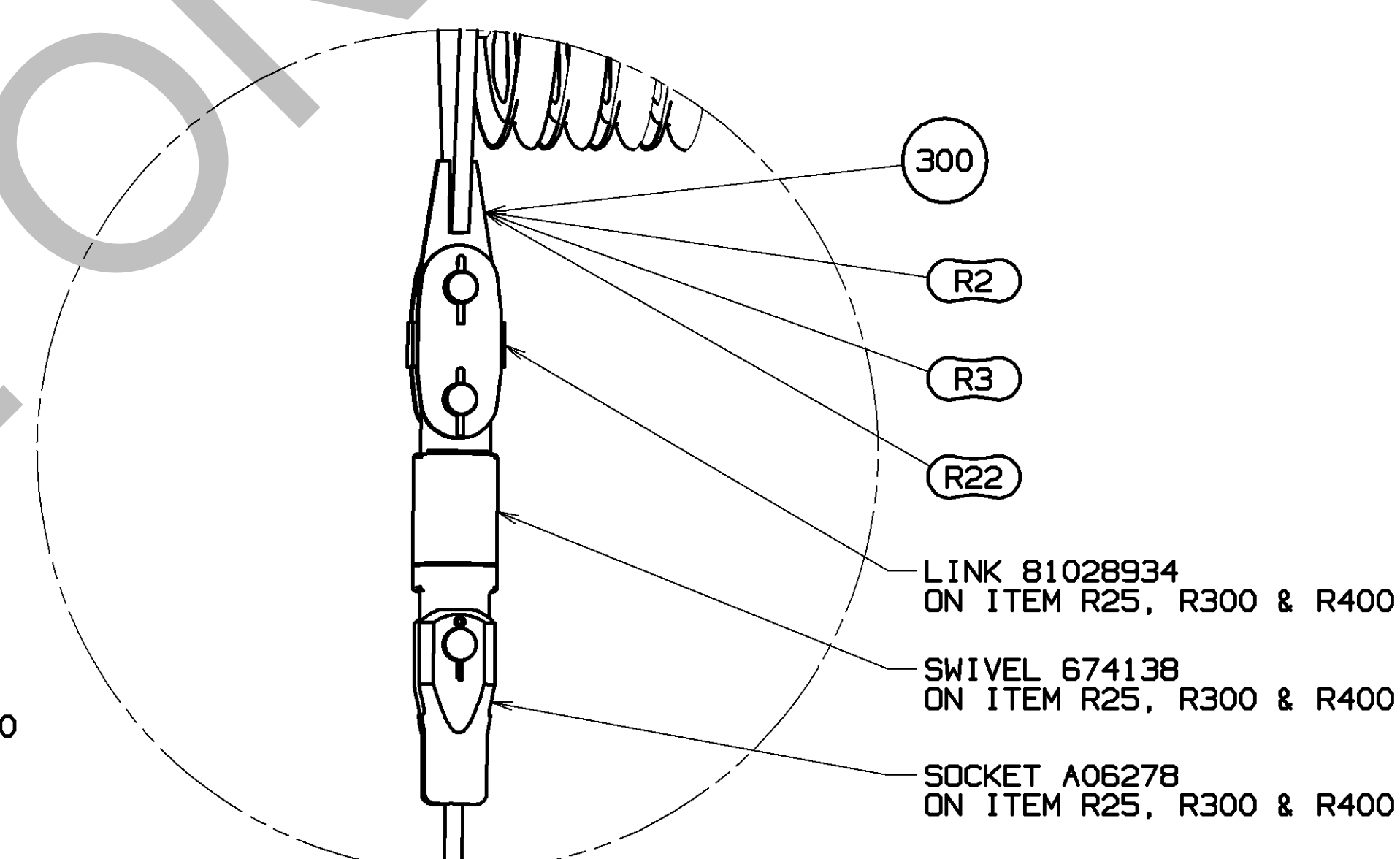
B14



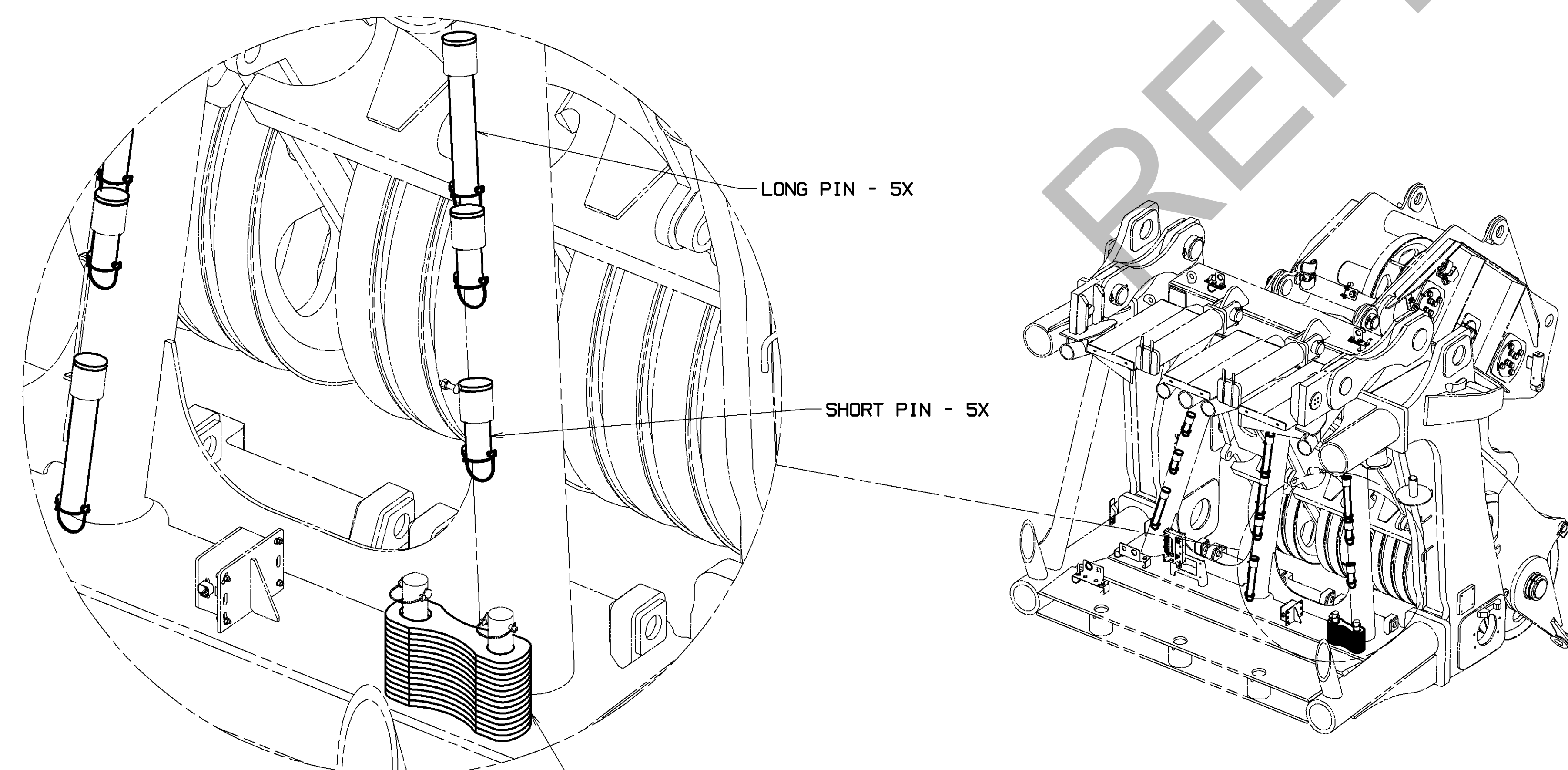
VIEW V-V
(FROM SHEET 1)
SCALE 0.150



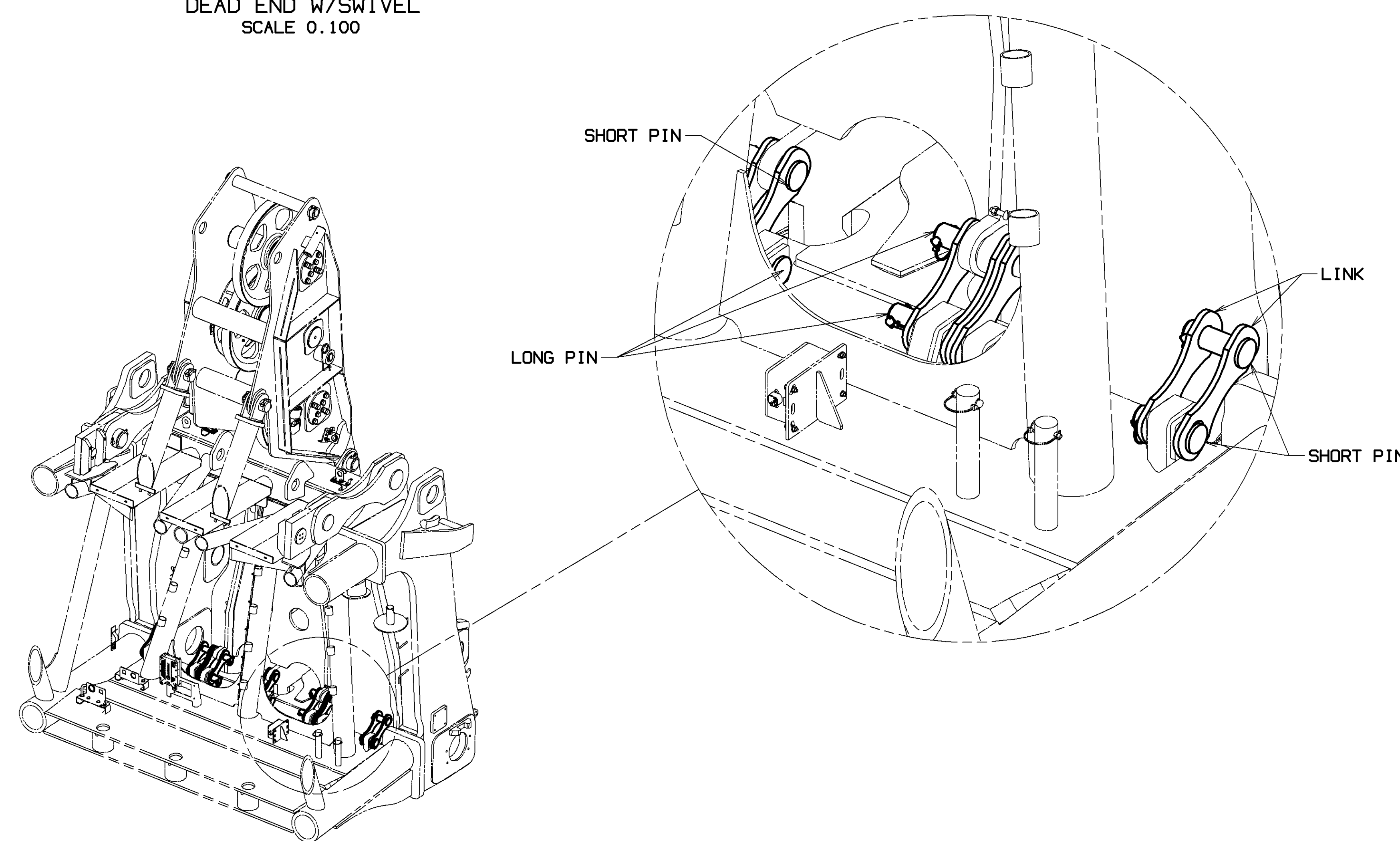
DETAIL N
ITEM R25, R300 & R400
DEAD END W/O SWIVEL
SCALE 0.100



DETAIL N
ITEM R25, R300 & R400
DEAD END W/SWIVEL
SCALE 0.100



LOWER SHEAVE POINT PINS AND LINKS IN STOWAGE POSITION.
FOR SHIPPING OF BOOM TOP WITH LOWER PLATE OR FOR
REMOVAL OF SHEAVE PACKS PER VARIOUS CONFIGURATIONS.
SCALE 0.050



LOWER SHEAVE POINT PINS AND LINKS IN WORKING POSITION
AND FOR SHIPPING OF BOOM TOP WITH
POINT CONTACTING BEARING PLATE.
SCALE 0.050

QTY. NO.
81022686
SHT 9 OF 10

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
8629103794 FOR
COMPONENTS LISTED
IN 68500-05-026
DATE
06-19-15
REV. LNK
[B]

TOLERANCE UNLESS OTHERWISE SPECIFIED				MACHINE FINISHING	MATERIAL	NOTE
DECIMAL PLACES	FRACTIONS	ANGLE	WELDING			
(1) PLACE 0.5	±.12	±.18	±.05	SEE DRAWING FOR WELDING SYMBOLS AND APP TJA	MATERIAL	NOTED
(2) PLACE 0.00	±.08	±.12	±.015			
(3) PLACE 0.000	±.008	±.012	±.008			

DR. AUB	MANITOWOC, WISCONSIN	BOOM RIGGING
CK. RHW	MODEL MLC650	B60:680
APP TJA		

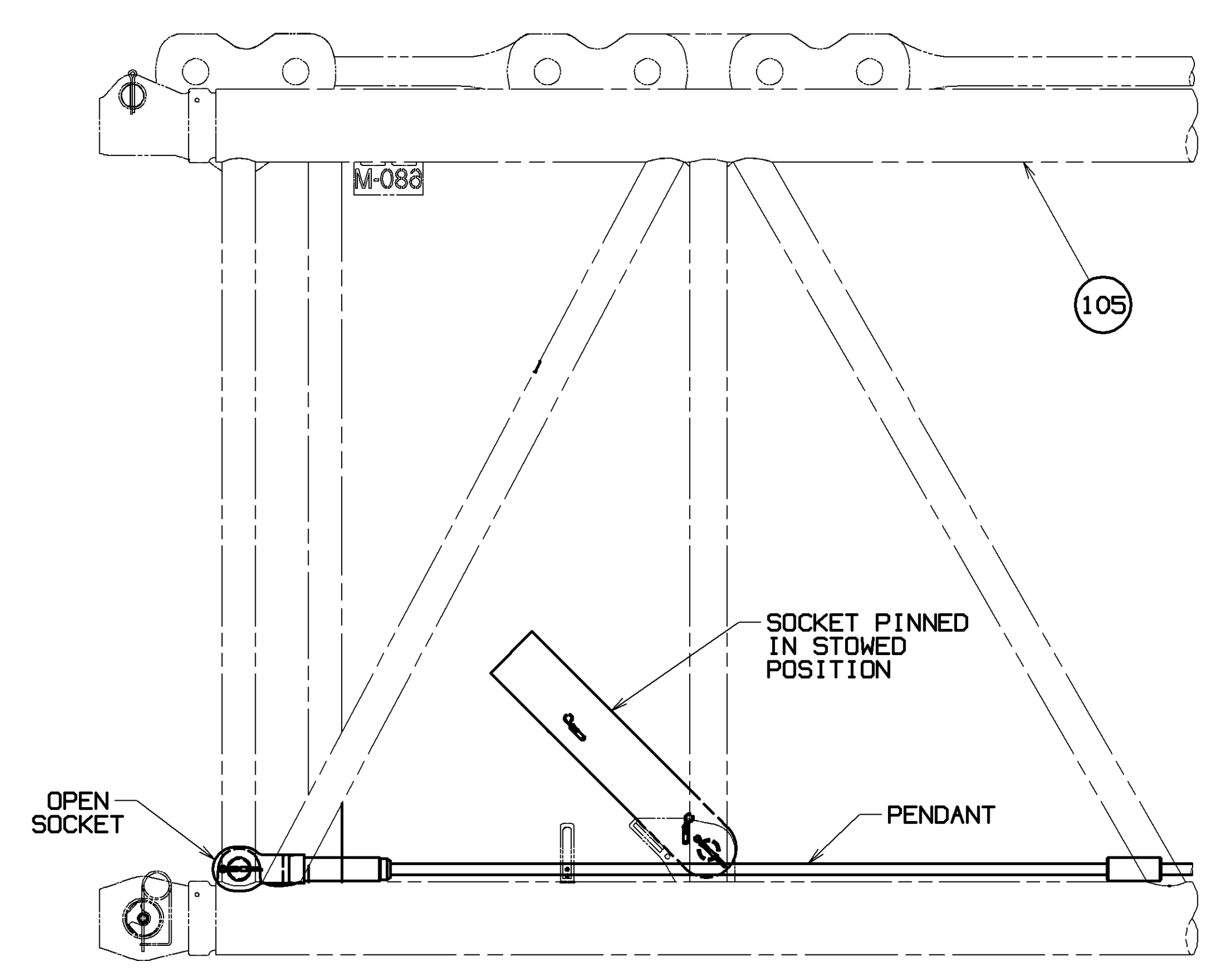
BILL OF MATERIAL				ASSEMBLIES USED ON
QTY	DESCRIPTION	MATERIAL	QTY	NO.

INTERMEDIATE SUSPENSION (R112) INSTALLATION

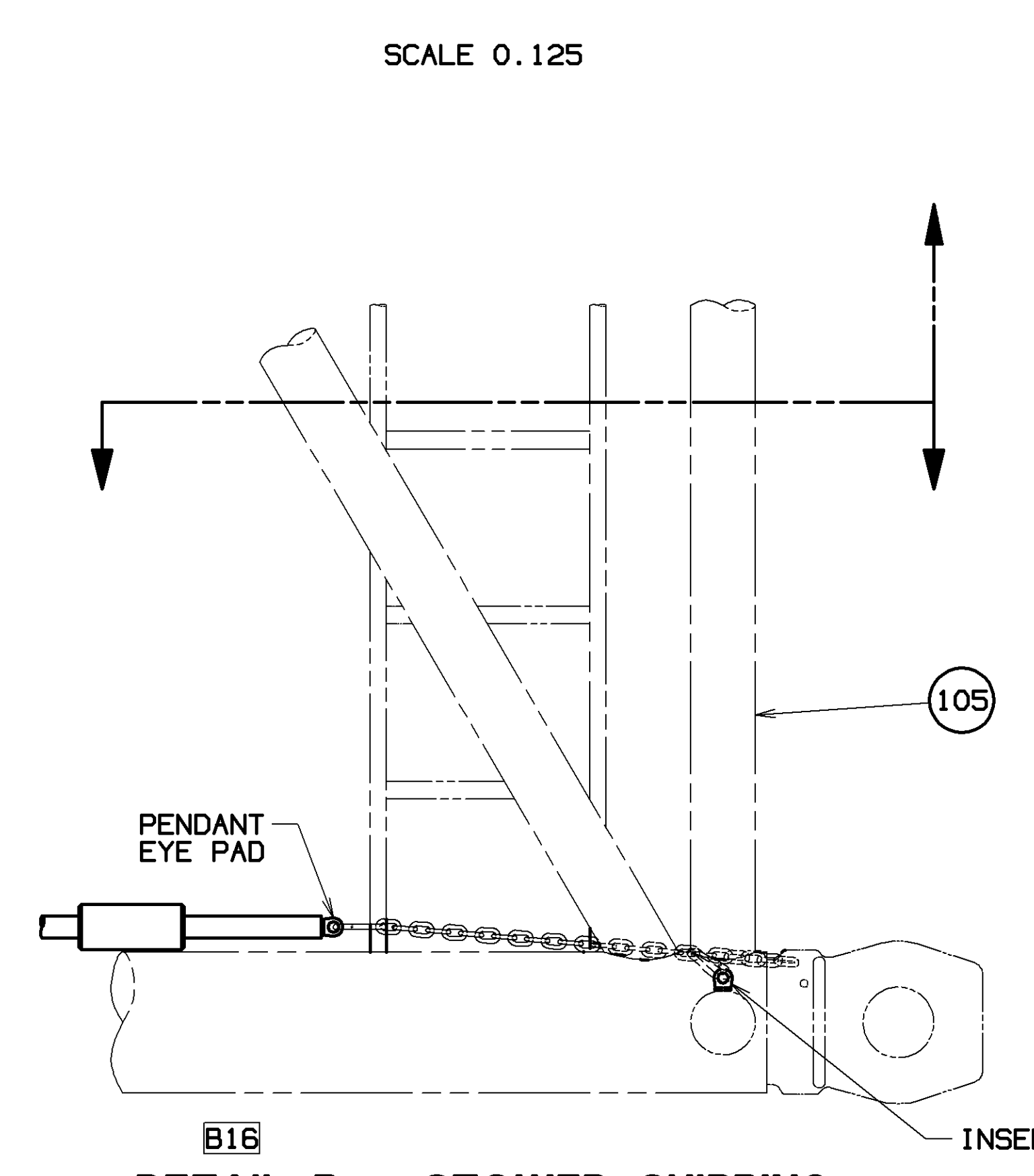
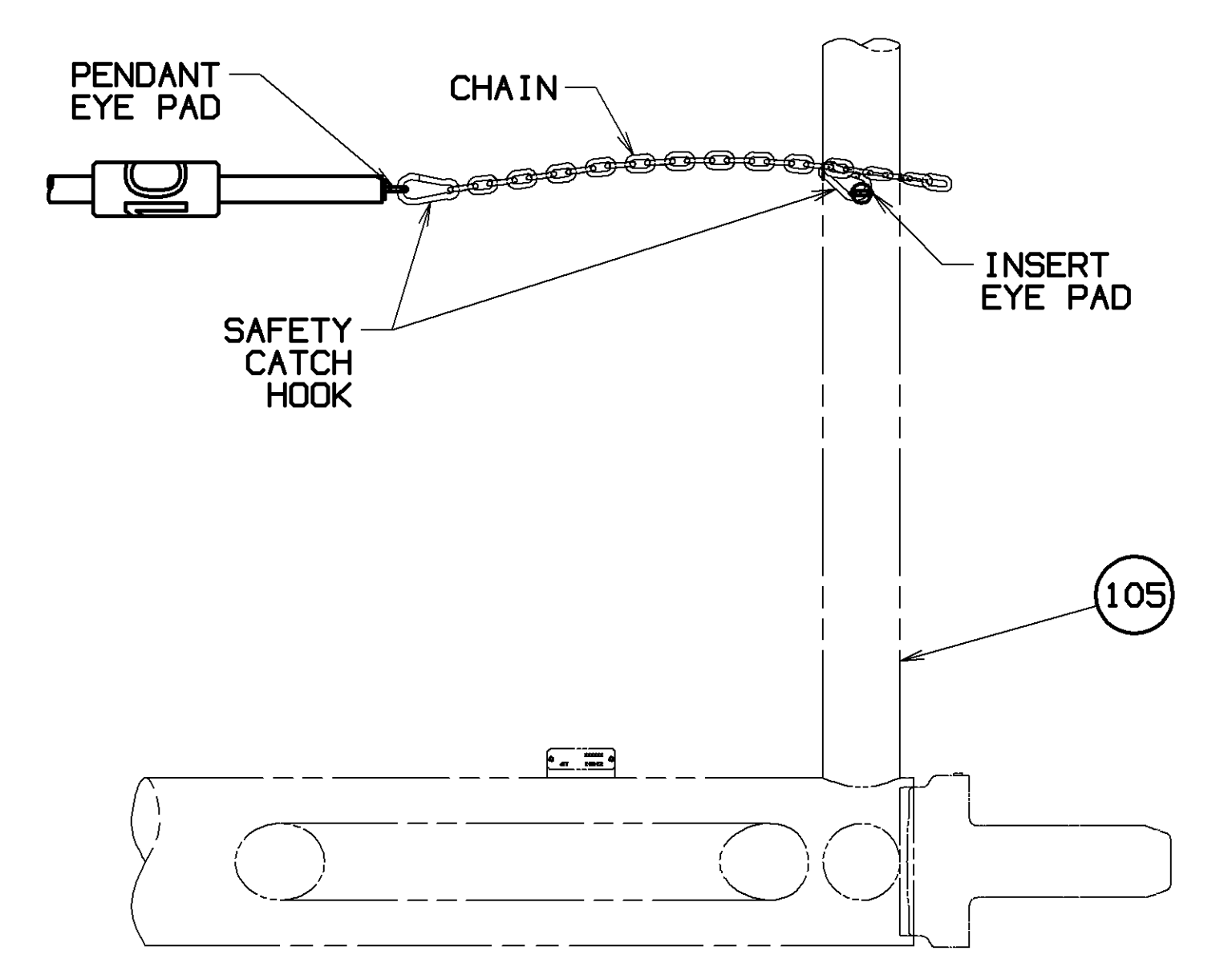
SEE BOOM MAKEUP VIEWS ON SHEETS 3, 4, 5 & 6, AND BOOM LENGTH TABLE ON SHEET 2 FOR REQUIRED SUSPENSION & WIRE ROPE BUTTON IDENTIFICATION LOCATION.

1. REMOVE MULTI-BUTTON PENDANT FROM STOWED SHIPPING POSITION. (SEE DETAIL P & R)
2. ATTACH OPEN SOCKET END OF PENDANT TO CONNECTING LINK R109 AT TOP OF INSERT ITEM 105. (SEE DETAIL S-PREPARED NON-WORKING)
3. FROM STOWED POSITION REMOVE BUTTON RETAINING HITCH PIN FROM SOCKET AND POSITION THE IDENTIFIED PENDANT BUTTON INTO SOCKET. REINSTALL BUTTON RETAINING HITCH PIN INTO SOCKET, LOCKING PENDANT IN POSITION. (SEE DETAIL S-PREPARED NON-WORKING)
4. RELOCATE SOCKET LOCKING HITCH PIN FROM SOCKET AND UPPER BRACKET HOLE TO LOWER BRACKET HOLE. (SEE DETAIL S-WORKING)
5. ATTACH PENDANT EYE PAD TO INSERT EYE PADS USING A SAFETY CATCH HOOK AT EACH END OF CHAIN. ADJUST PENDANT TENSION BY POSITIONING SAFETY CATCH HOOK IN APPROPRIATE CHAIN LINK. (SEE DETAIL T)
6. BOOM UP SLOWLY AS PENDANT BECOMES TIGHT AND SOCKET PIVOTS INTO WORKING POSITION. (SEE DETAIL S-WORKING)

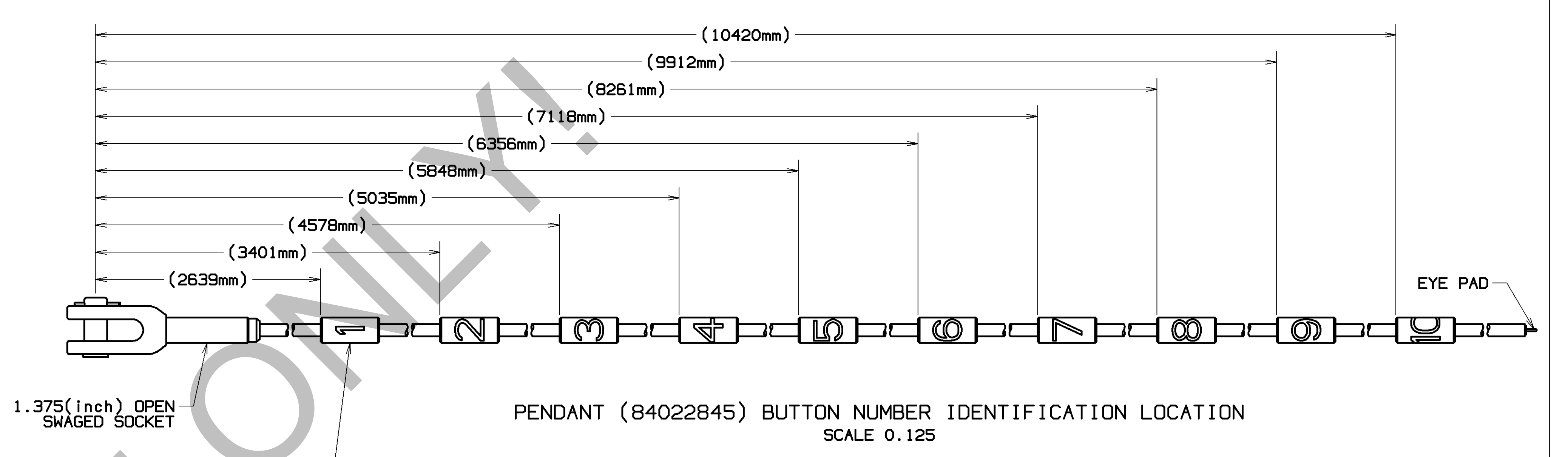
FOR REMOVAL OF INTERMEDIATE SUSPENSION REVERSE INSTALLATION STEPS 1 THRU 6, ASSURING SOCKET PIVOTS TOWARD STOWAGE POSITION.
VERIFY THAT SLACK IN PENDANT CHAIN ALLOWS FOR SOCKET TO PIVOT INTO STOWED POSITION.



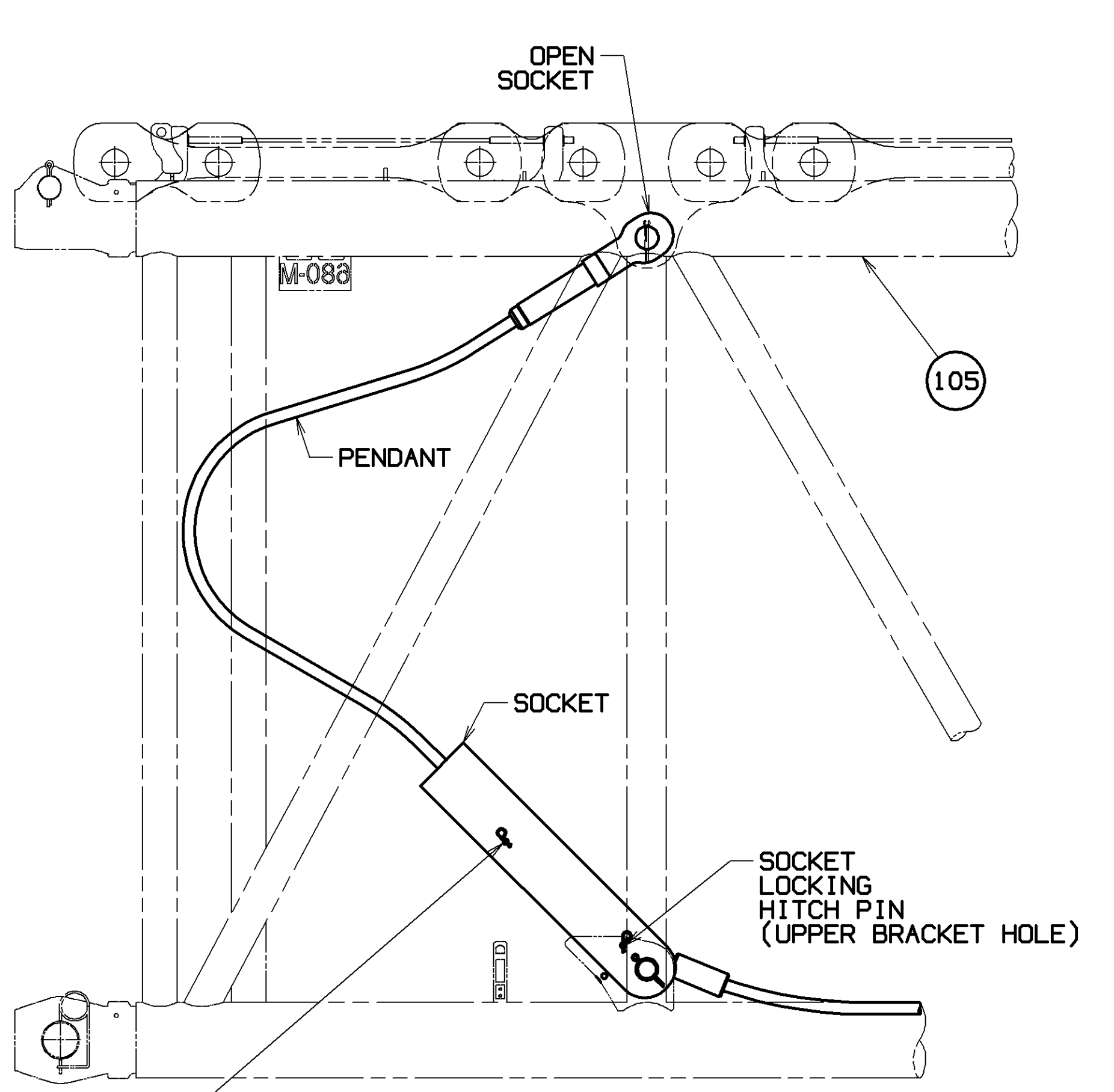
DETAIL P - STOWED SHIPPING
SUSPENSION WIRE ROPE #680
ITEM R112, 81036355
(FROM SHEET 5)
SUSPENSION PENDANTS STOWED POSITION FOR SHIPPING OR WHEN INSERT WORKING W/O SUSPENSION
SCALE 0.075



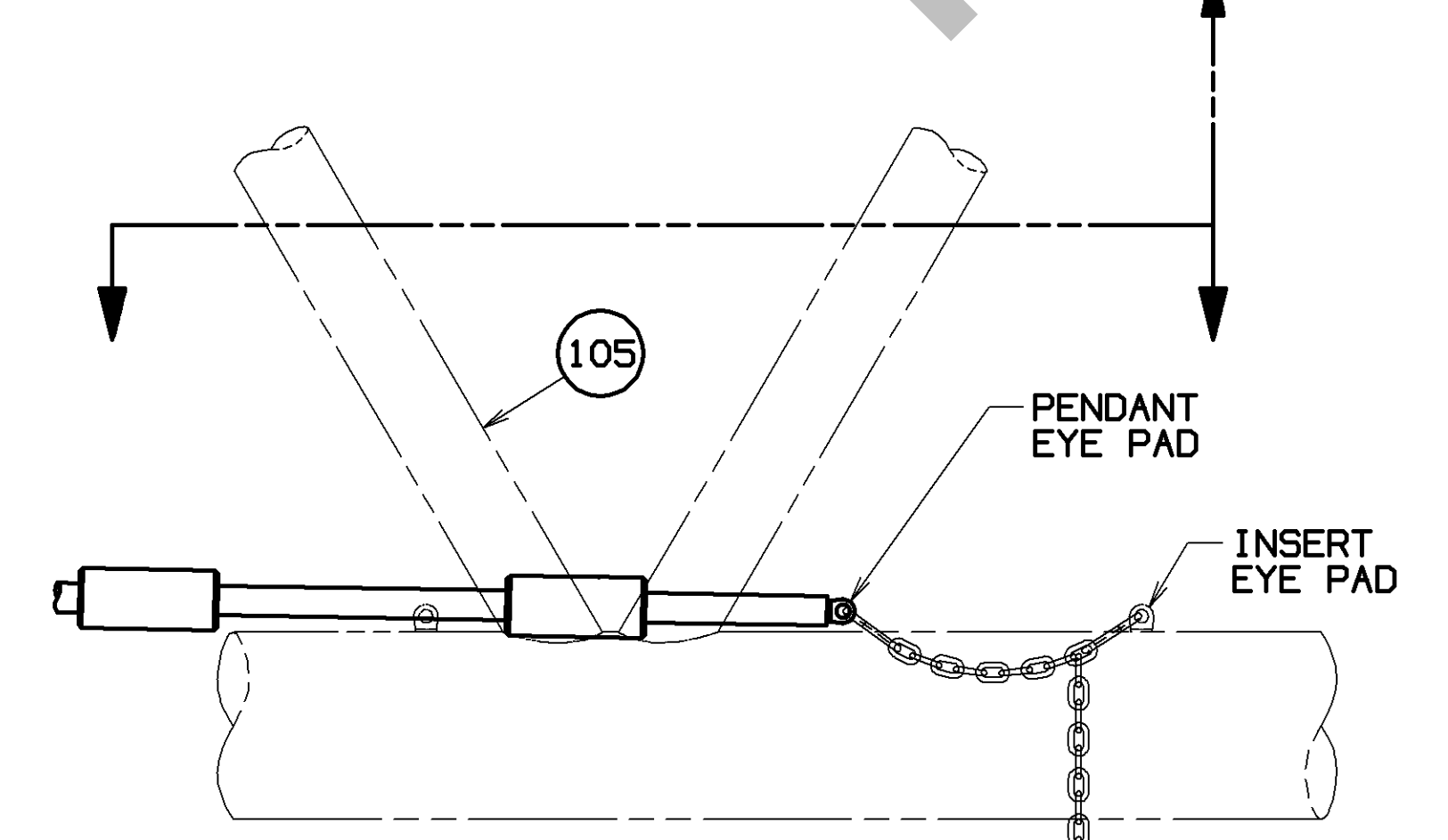
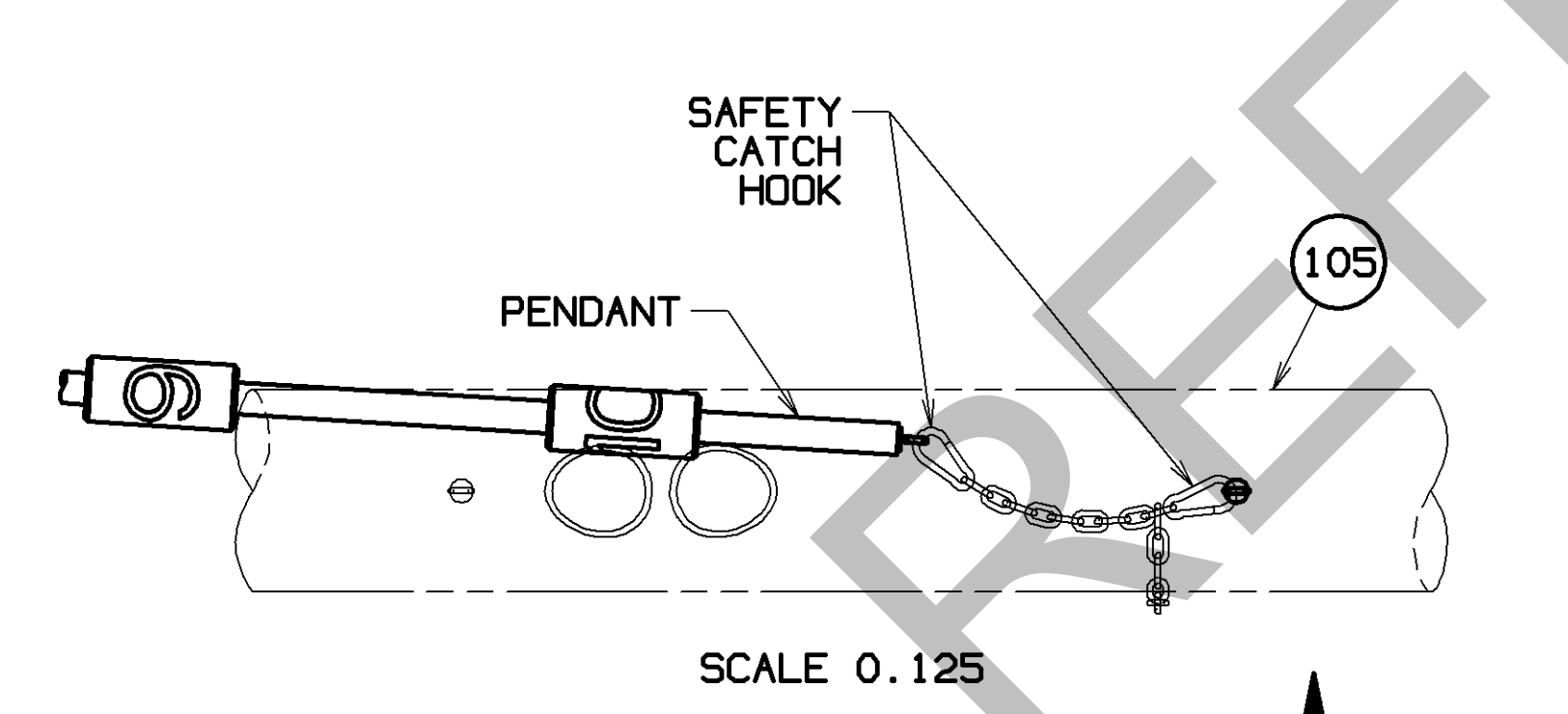
DETAIL R - STOWED SHIPPING
SUSPENSION WIRE ROPE #680
ITEM R112, 81036355
(FROM SHEET 5)
SUSPENSION PENDANTS STOWED POSITION FOR SHIPPING OR WHEN INSERT WORKING W/O SUSPENSION
SCALE 0.125



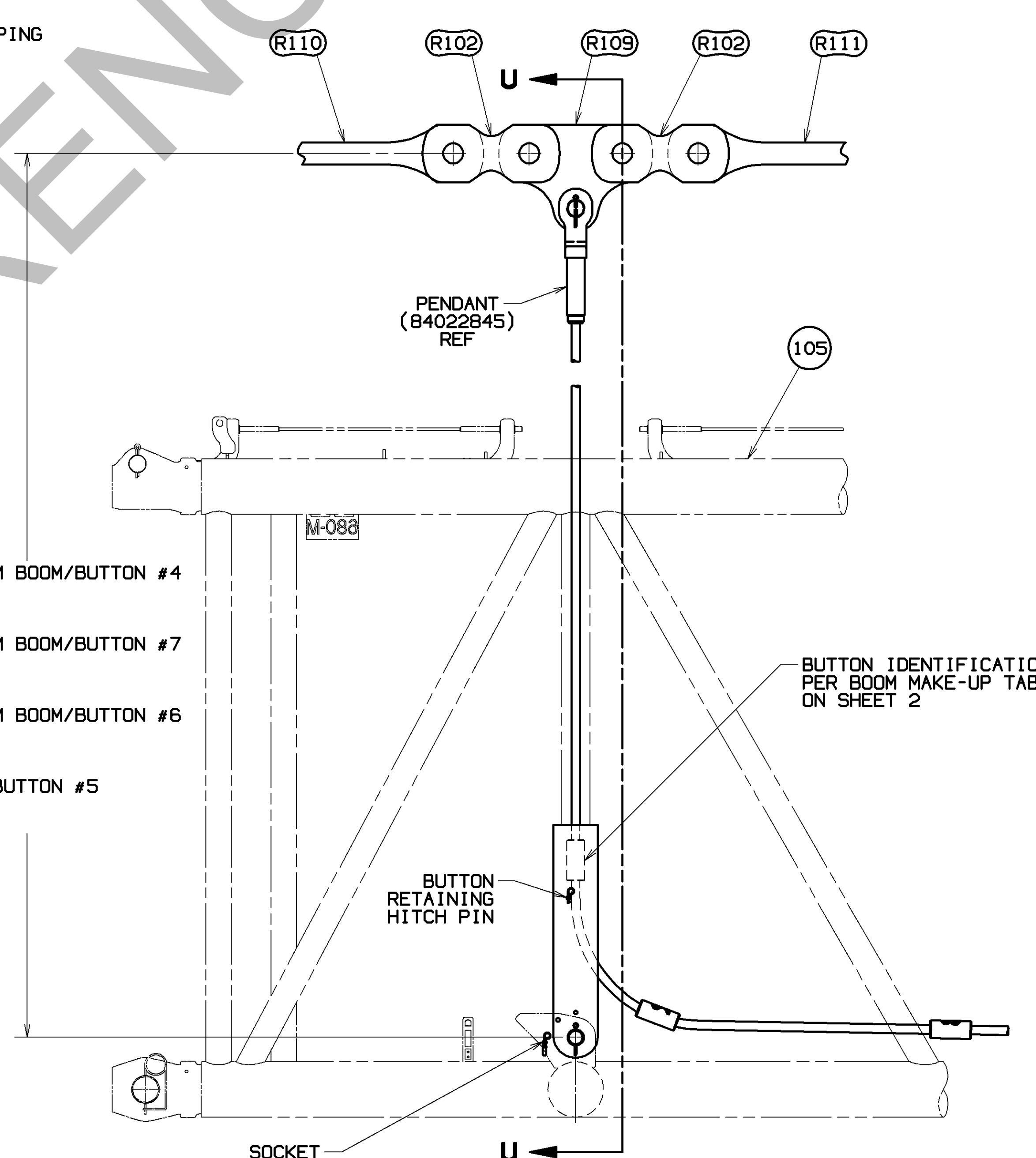
SCALE 0.125
PENDANT (84022845) BUTTON NUMBER IDENTIFICATION LOCATION



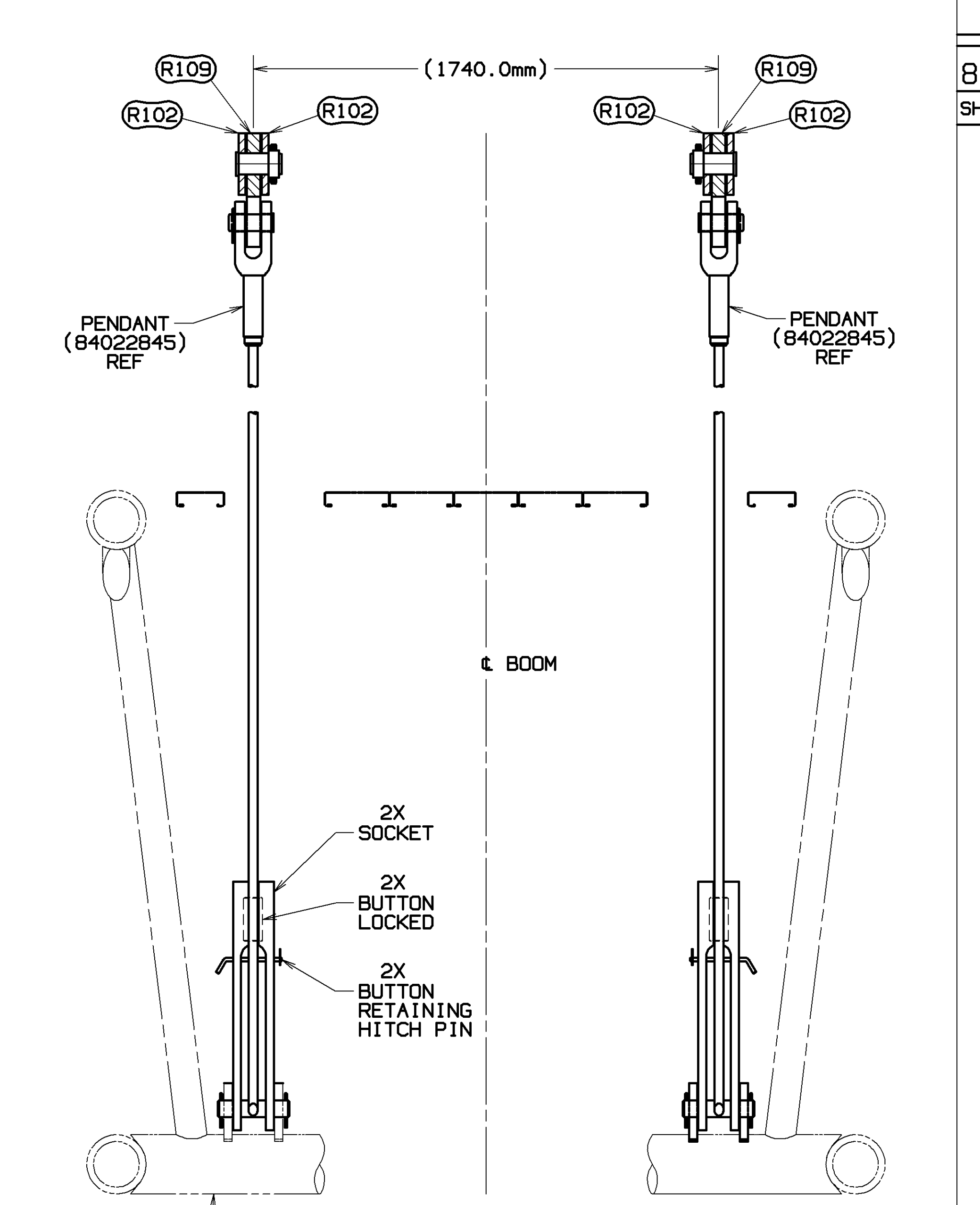
DETAIL S - PREPPED NON-WORKING
SUSPENSION WIRE ROPE #680
ITEM R112, 81036355
(FROM SHEET 5)
SUSPENSION SOCKET & ROPE LOCATION FOR PREPPED NON-WORKING BOOM LENGTHS 110M THRU 146M
SCALE 0.075



DETAIL T
SUSPENSION WIRE ROPE #680
ITEM R112, 81036355
(FROM SHEET 5)
SCALE 0.125



DETAIL S - WORKING
SUSPENSION WIRE ROPE #680
ITEM R112, 81036355
(FROM SHEET 5)
SUSPENSION SOCKET & ROPE LOCATION FOR WORKING BOOM LENGTHS 110M THRU 146M
SCALE 0.075



SECTION U-U

- 110M & 134M BOOM/BUTTON #4
8045.2mm
238.0in
- 116M & 140M BOOM/BUTTON #7
8128.0mm
320.0in
- 122M & 146M BOOM/BUTTON #6
7366.0mm
290.0in
- 128M BOOM/BUTTON #5
6858.0mm
270.0in

TOLERANCE UNLESS OTHERWISE SPECIFIED		DATE	BY	CHK	APP
DECIMAL PLACES	FABRICATION	06-19-15	DR. AJB	DR. RHW	APP. TJA
(1) PLACE 0.5	±.12 ±.18				
(2) PLACE 0.00	±.08 ±.12 ±.015				
(3) PLACE 0.000	±.008 ±.008				
ANGLES	±1.30°				
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		MODEL MLC650		B60:680	
				REV. LNK. [B]	

81022686
SHT 10 OF 10

PRIVATE LABELING REQUIREMENT TO CONFORM TO ENGINEERING SPECIFICATION 8629103794 FOR COMPONENTS LISTED IN SECTION 06-036
DATE 06-19-15
REV. LNK. [B]
81022686
SHT 10 OF 10