

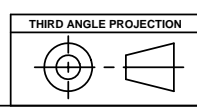
REVISIONS				
REV	SHEET/ZONE	DESCRIPTION	DATE	APPROVED
A	1/C2	ITEM 23: M1S-100-01291, LATERAL GUIDE FLEXURE WAS M1S-100-01290, LATERAL GUIDE FLEXURE ASSEMBLY	07/15/13	E. WILLIAMS
	1/A7, A8	ITEM 38 WAS U-C COMPONENTS PIN MN-407-A OR EQUIVALENT, A2 STAINLESS STEEL, SILVER PLATED. ADDED ASSEMBLY MASS NOTE.		
	24/B8	LOCAL NOTE 16: ADDED REQUIREMENT TO RECORD AND REPORT PART NUMBERS AND SERIAL NUMBERS OF PARTS AND ASSEMBLIES		
B	MULT	EXTENSIVELY REVISED ASSEMBLY SEQUENCE	01/05/16	L. STEPP
C	2/C2	ITEM 48 WAS: SPRING PLUNGER, WITH LOCKING ELEMENT	02/19/16	E. HANSEN
	MULT	REMOVED ALL PURCHASED PART REFERENCES TO MCM MASTER CARR IN PARTS LIST. ADDED NOTE 19.		
D	1/B2	ITEM 6 WAS SEASTROM PIN 5710-345-20	09/20/16	E. HANSEN
	2/A3	DELETED ITEM 31. ITEM 32 QUANTITY WAS 14.		
	3/C8	ADDED MSA IDENTIFICATION TAG TO MOVING FRAME ARM		
E	MULT	REVISED DRAWING TO SPECIFY LOCATIONS OF WHIFFLETREES 1 THROUGH 3, AND LOCATIONS OF INDIVIDUAL WARPING HARNESS ACTUATORS, DURING ASSEMBLY. ADDED WHIFFLETREES A2 AND A3, AND WARPING HARNESS ACTUATORS IDENTIFIED WITH LOCATION MARKING (Wxx), TO PARTS LIST.	06/27/18	
	2/B4	ITEM 40 WAS SOCKET HEAD CAP SCREW, M4X0.7, 14MM LONG		
	2/C2	ITEM 51 WAS SOCKET HEAD CAP SCREW, M4X0.7, 18MM LONG		
	2/C4	ADDED ITEMS 54 AND 55		
	10/C3	ADDED ITEM 26		
MULT	REVISED ASSEMBLY SEQUENCE TO REMOVE WHIFFLETREE HANDLING AND ALIGNMENT TOOL (ITEM 22) AFTER MOUNTING WHIFFLETREE TO MOVING FRAME			

MASS A1 = 47.78 KG (INFORMATION ONLY)
A2 = 65.78 KG (INFORMATION ONLY)

ITEM NO.	SHT	ZONE	QTY REQD PER ASSY	A2	A1	PART/DOCUMENT NUMBER	DESCRIPTION	REFERENCE DESIGNATION	MATERIAL/NOTES
27	10	C3				3	M1S-910-00517	STRAIGHT LEAF SPRING SPACER	DEL RIN
26	3	C8				1	M1S-100-01280 A3	ELECTRONICS BOX BRACKET - CF TO AD	
25	3	D2				1	M1S-100-01280 A2	ELECTRONICS BOX BRACKET - BE TO CF	
24	3	A4				1	M1S-100-01280 A1	ELECTRONICS BOX BRACKET - AD TO BE	
23	12	D1				1	M1S-910-00516	WHIFFLETREE POSITIONING BUSHING (SHOWN FOR REFERENCE ONLY)	ALUMINUM
22	11	D4				3	M1S-910-00412	WHIFFLETREE HANDLING / ALIGNMENT TOOL (SHOWN FOR REFERENCE ONLY)	
21	7	D6				1	M1S-910-00515	LEAF SPRING TORQUING RESTRAINT	DEL RIN
20	12	D6				1	M1S-910-00514	WARPING HARNESS ACTUATOR CENTERING GUIDE POSITIONER (SHOWN FOR REFERENCE ONLY)	DEL RIN
19	14	C3				1	M1S-910-00500	MOVING ASSEMBLY FIXTURE (SHOWN FOR REFERENCE ONLY)	
18	13	D3				1	M1S-910-00411	ACTUATOR GUIDE POSITIONING TOOL (SHOWN FOR REFERENCE ONLY)	ALUMINUM
17	12	D1				1	M1S-910-00409	WARPING HARNESS LEAF SPRING ALIGNMENT TOOL (SHOWN FOR REFERENCE ONLY)	CRES
16	4	C1				3	M1S-100-01400	LOCK ASSEMBLY	LOCATION DESIGNATION DEFINED IN M1S-100-01260
15	4	C6				1	M1S-100-01300	TOWER ASSEMBLY	
14	15	D4				1	M1S-100-01291	LATERAL GUIDE FLEXURE	ALUMINUM
13									
12									
11	15	D3				1	M1S-100-01260	MOVING FRAME ASSEMBLY	
10	10	D2				3	M1S-100-01215 A1	WARPING HARNESS LEAF SPRING ASSEMBLY	
9	6	C8				3	M1S-100-01210	LIFTING BLOCK	CRES
8	6	B3				3	M1S-100-01209	ACTUATOR ROD CLAMP	CRES
7	6	C2				3	M1S-100-01208	ACTUATOR ROD CLAMP MOUNT	CRES
6	7	D4				9	M1S-100-01207	WARPING HARNESS ACTUATOR WASHER	CRES
5	7	D4				9	M1S-100-01206	WARPING HARNESS ACTUATOR END NUT	CRES
4	14	D3				9	M1S-100-01204	WARPING HARNESS ACTUATOR CENTERING GUIDE A	CRES
3	14	D7				3	M1S-100-01202	MOVING FRAME TO MIDDLE TRIANGLE PIVOT	CRES
2									
1	4	D4				1	M1S-100-01200 A1	MOVING ASSEMBLY	

ITEM NO.	SHT	ZONE	QTY REQD PER ASSY	A2	A1	PART/DOCUMENT NUMBER	DESCRIPTION	REFERENCE DESIGNATION	MATERIAL/NOTES
74	3	C8				1	M1S-100-01200 P1	METAL IDENTIFICATION TAG, 28mm W X 91mm L	MIL-DTL-15024F, TYPE A OR L
73	9	B7				1	M1S-100-01270 A33	WARPING HARNESS ACTUATOR ASSEMBLY W33	
72	9	A7				1	M1S-100-01270 A32	WARPING HARNESS ACTUATOR ASSEMBLY W32	
71	9	B7				1	M1S-100-01270 A31	WARPING HARNESS ACTUATOR ASSEMBLY W31	
70	9	A3				1	M1S-100-01270 A23	WARPING HARNESS ACTUATOR ASSEMBLY W23	
69	9	C3				1	M1S-100-01270 A22	WARPING HARNESS ACTUATOR ASSEMBLY W22	
68	9	B3				1	M1S-100-01270 A21	WARPING HARNESS ACTUATOR ASSEMBLY W21	
67	9	D4				1	M1S-100-01270 A13	WARPING HARNESS ACTUATOR ASSEMBLY W13	
66	9	D6				1	M1S-100-01270 A12	WARPING HARNESS ACTUATOR ASSEMBLY W12	
65	9	D4				1	M1S-100-01270 A11	WARPING HARNESS ACTUATOR ASSEMBLY W11	
62	13	D4				1	M1S-100-01201 A3	WHIFFLETREE ASSEMBLY	
61	13	D8				1	M1S-100-01201 A2	WHIFFLETREE ASSEMBLY	
60	13	C8				1	M1S-100-01201 A1	WHIFFLETREE ASSEMBLY	

**PRELIMINARY
NOT FOR
PRODUCTION**



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS -TOLERANCES-

DECIMALS: X = +/- 1.0, XX = +/- .30, XXX = +/- .100
ANGULAR = +/- .30'
SURFACE FINISH = 0.8 RMS MICRON (32 MICROINCH)

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE. DO NOT SCALE DRAWING.

FINISH: N/A

DESIGNER: Alan Tubb, DATE: 5/16/2013
DRAWN: Alan Tubb, DATE: 5/16/2013
CHECKED: Eric Williams, DATE: 5/16/2013
ENGINEER: Eric Williams, DATE: 5/16/2013
APPROVED: Eric Williams, DATE: 5/16/2013

TMT Observatory Corporation
www.tmt.org

TMT M1 SSA MODULE ASSEMBLY

DWG. NO.: M1S-100-01200, REV: E, SHEET NO.: 1 of 16

SCALE: 1:3, SHEET SIZE: D

SEE SHEET 16 FOR NOTES

8 7 6 5 4 3 2 1

D

D

C

C

B

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**PRELIMINARY
NOT FOR
PRODUCTION**

55	3	B7		39		SEE NOTE 19	BUTTON HEAD SOCKET CAP SCREW, M4X0.7, 6mm LONG	A2 STAINLESS STEEL, ISO 7380
54	3	B7		39		PANDUIT TM2S8-C76 OR EQUIVALENT	TIE MOUNT, ELEVATED TEMPERATURE SERIES	TEFZEL FLUOROPOLYMER, COLOR: -76/AQUA BLUE
53	6	C2			6	CENTURY SPRING P/N TA-2269 OR EQUIVALENT	TAPERED COMPRESSION SPRING, .312" X .406" OD, .50" FREE LENGTH, .030" WIRE DIA	STAINLESS STEEL, CLOSED ENDS
52	15	A8			AR	LOCTITE 243	MEDIUM STRENGTH THREADLOCKER	
51	3	A4		12		SEE NOTE 19	SOCKET HEAD CAP SCREW, M4X0.7, 20mm LONG	A2 STAINLESS STEEL, DIN 912
50	4	B1		3		SEE NOTE 19	FLAT WASHER, M12	A2 STAINLESS STEEL, DIN 125-1A
49	4	B1		3		SEE NOTE 19	HEX NUT, M12 x 1.75	ZINC PLATED STEEL, DIN 934
48	4	B1		3		V LIER P/N SSSDM12A OR EQUIVALENT	SPRING PLUNGER, WITHOUT LOCKING ELEMENT, M12 X 1.75 THREAD, 45N INITIAL FORCE, 110N FINAL FORCE (SHOWN FOR REFERENCE ONLY)	STAINLESS STEEL BODY, DELRIN NOSE
47	4	C1		3		SEE NOTE 19	FLAT WASHER, 5.3mm ID X 11.0mm OD X 1mm THICK	NYLON 6/6, BLACK, DIN 125-1A
46	4	C1		3		SEE NOTE 19	SOCKET SHOULDER SCREW, 5mm SHOULDER DIA, 6mm SHOULDER LG, M4 THD	A2 STAINLESS STEEL, ISO 7379
45	4	C5		15		SEE NOTE 19	SOCKET HEAD CAP SCREW, M6X1.0, 20MM LONG	A2 STAINLESS STEEL, DIN 912
44	6	B3		15	12	SEE NOTE 19	SPRING LOCK WASHER, M6	A2 STAINLESS STEEL, DIN 127 B
43	6	B3		12		SEE NOTE 19	SOCKET HEAD CAP SCREW, M6X1.0 X 50MM LONG	A2 STAINLESS STEEL, DIN 912
42	14	D4		12	60	SEE NOTE 19	SPRING LOCK WASHER, M4	A2 STAINLESS STEEL, DIN 127 B
41	14	D4		48		SEE NOTE 19	SOCKET HEAD CAP SCREW, M4X0.7, 12MM LONG	A2 STAINLESS STEEL, DIN 912
40	10	D3		12		SEE NOTE 19	SOCKET HEAD CAP SCREW, M4X0.7, 16MM LONG	A2 STAINLESS STEEL, DIN 912
39	14	D4		12	60	SEE NOTE 19	FLAT WASHER, M4	A2 STAINLESS STEEL, DIN 125-1A
38	12	D7		18		SEE NOTE 19	FLAT WASHER, M3	A2 STAINLESS STEEL, DIN 125-1A
37	12	D7		18		SEE NOTE 19	SOCKET HEAD CAP SCREW, M3X0.5, 6MM LONG	A2 STAINLESS STEEL, DIN 912
36	12	D4		6		SEE NOTE 19	LARGE DIAMETER FLAT WASHER, 17mm ID X 50mm OD (SHOWN FOR REFERENCE ONLY)	A2 STAINLESS STEEL, NF E25-513
35	12	D4		6		SEE NOTE 19	HEX NUT, M16 X 2 (SHOWN FOR REFERENCE ONLY)	ZINC PLATED STEEL, DIN 934
34	12	D2		3		PENCOM P/N M6 KPS - NU-CON-WA-STL-Z OR EQUIVALENT	HEX NUT WITH CONICAL SPRING WASHER (NON-SERRATED WASHER), M6	ZINC-PLATED STEEL
33	14	D3		4	18	SEE NOTE 19	BUTTON HEAD SOCKET CAP SCREW, M3X0.5, 6mm LONG	A2 STAINLESS STEEL, ISO 7380
32	14	D5		15	12	SEE NOTE 19	FLAT WASHER, M6	A2 STAINLESS STEEL, DIN 125-1A
31								
30	15	D4		6		U-C COMPONENTS P/N MFA 616 OR EQUIVALENT	SOCKET HEAD FLAT HEAD SCREW, M6X1.0, 16MM LONG, VENTED	A2 STAINLESS STEEL
ITEM NO.	SHT	ZONE		A2	A1	PART/DOCUMENT NUMBER	DESCRIPTION	REFERENCE DESIGNATION MATERIAL/NOTES

PARTS LIST

DWG. NO. M1S-100-01200 REV E SHEET NO. 2 of 16
SCALE 1:2 SHEET SIZE D

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

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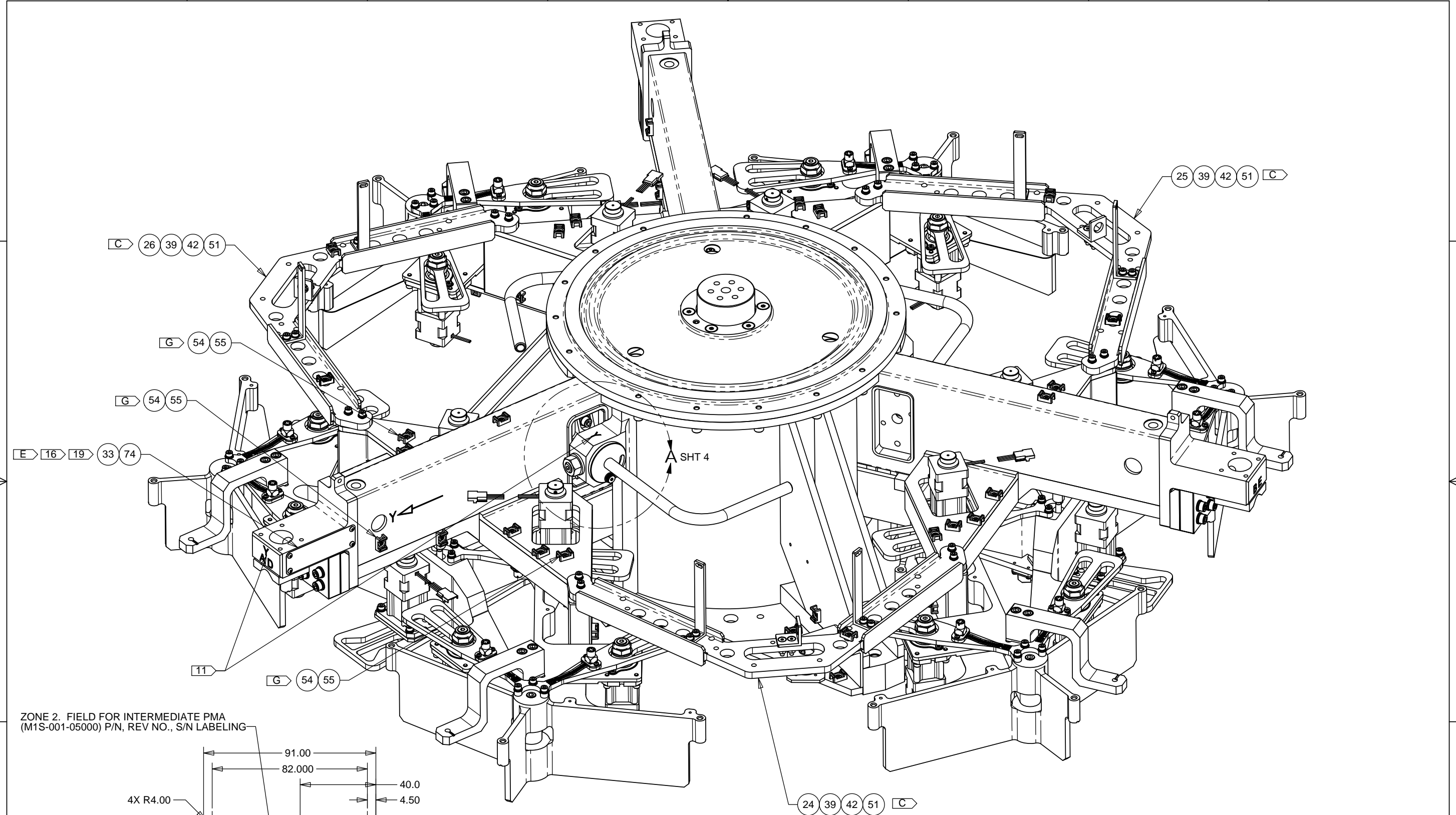
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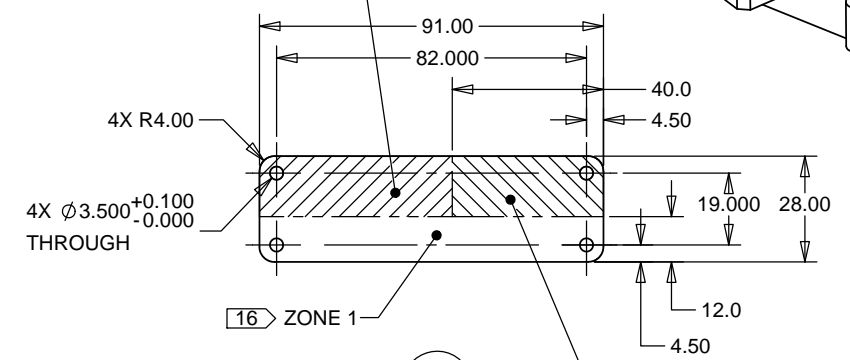
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ZONE 2. FIELD FOR INTERMEDIATE PMA
(M1S-001-05000) P/N, REV NO., S/N LABELING



P1

ZONE 3. FIELD FOR FUTURE
BAR CODE LABELING

A2
SSA MODULE

**PRELIMINARY
NOT FOR
PRODUCTION**

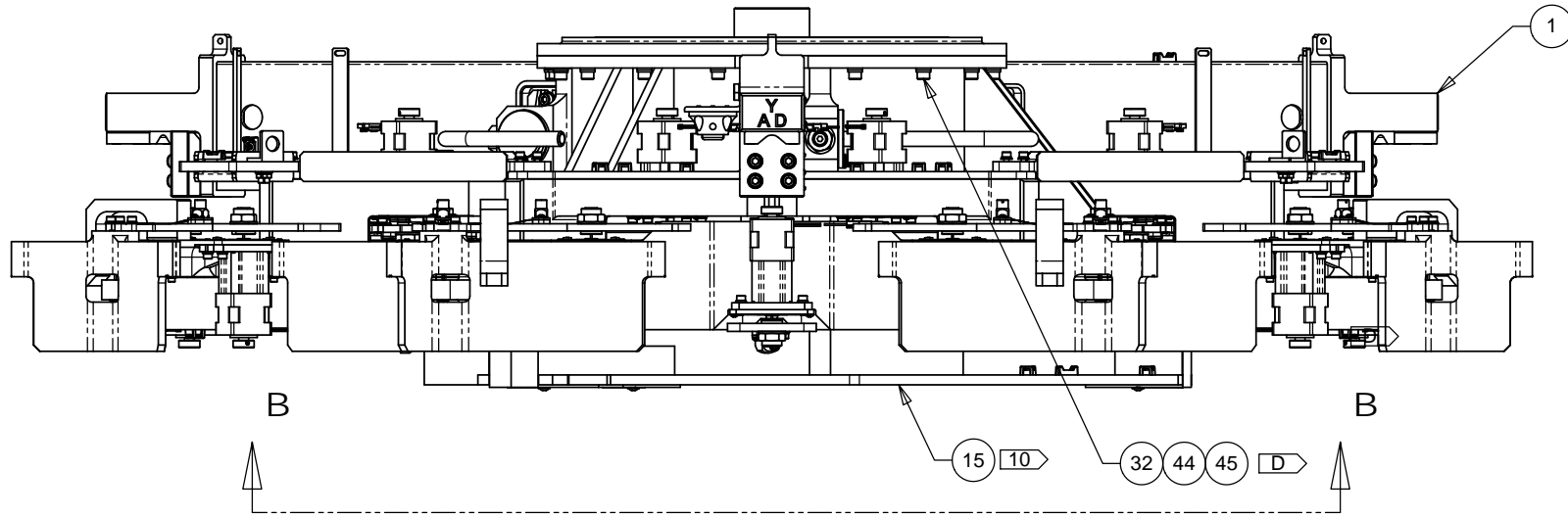
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DWG. NO. M1S-100-01200	REV E	SHEET NO. 3 of 16
SCALE 1:2	SHEET SIZE D	

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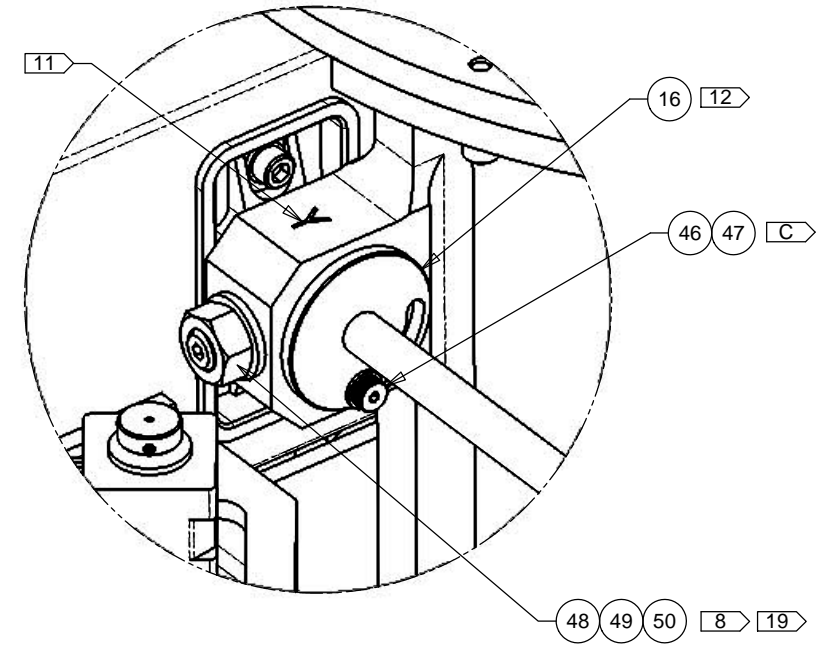


A2

SSA MODULE
INSTALL TOWER (ITEM 15) USING FLAT
WASHERS AND SCREWS (ITEMS 32 AND 45).
TIGHTEN SCREWS TO THE SPECIFIED TORQUE.

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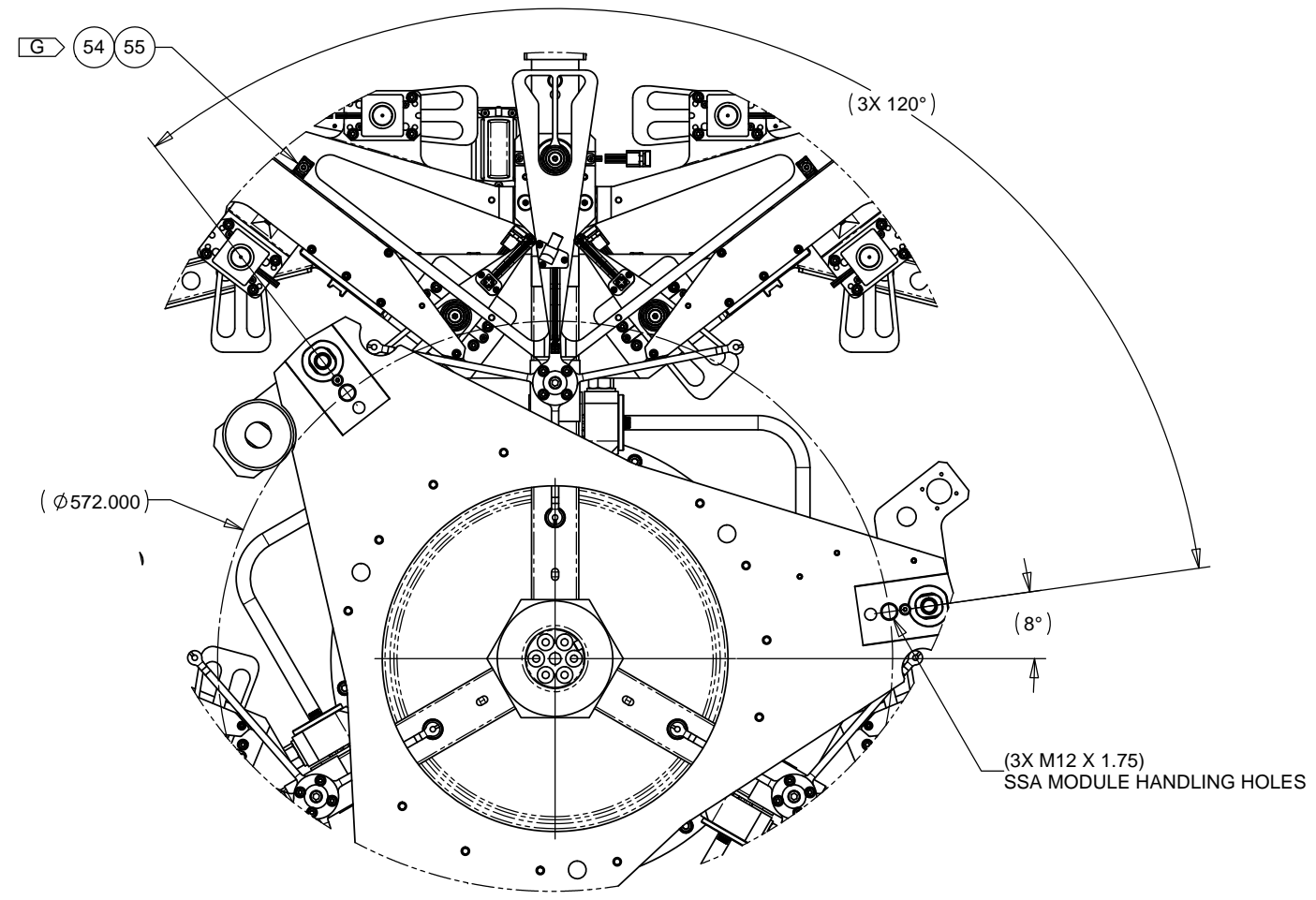
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DETAIL A
SCALE 1 : 1
SHEET 3, ZONE C5
INSTALL DESIGNATED LOCKS (ITEM 16, SEE M1S-100-01260)
USING FLAT WASHERS AND SCREWS (ITEMS 46 AND 47).
TIGHTEN SCREWS TO THE SPECIFIED TORQUE. INSTALL
SPRING PLUNGER, NUT AND WASHER (ITEMS 48, 49 AND 50).

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VIEW B-B

PRELIMINARY
NOT FOR
PRODUCTION

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8 7 6 5 4 3 2 1

DWG. NO. M1S-100-01200	REV E	SHEET NO. 4 of 16
SCALE 1:3	SHEET SIZE D	

8 7 6 5 4 3 2 1

D

D

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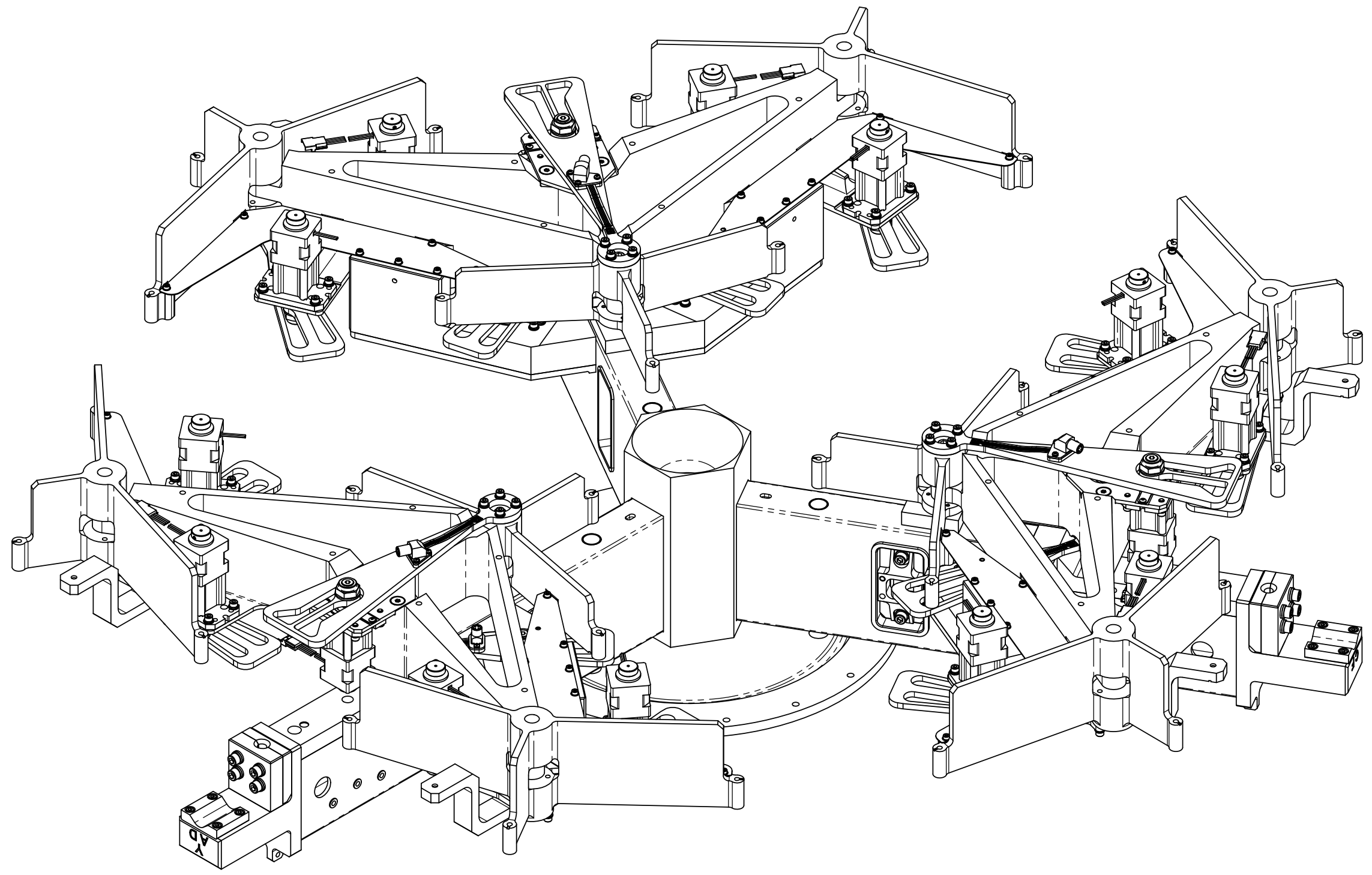
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A1

MOVING ASSEMBLY

PRELIMINARY
NOT FOR
PRODUCTION

8 7 6 5 4 3 2 1

DWG. NO.	REV	SHEET NO.
M1S-100-01200	E	5 of 16
SCALE 1:2	SHEET SIZE D	

8 7 6 5 4 3 2 1

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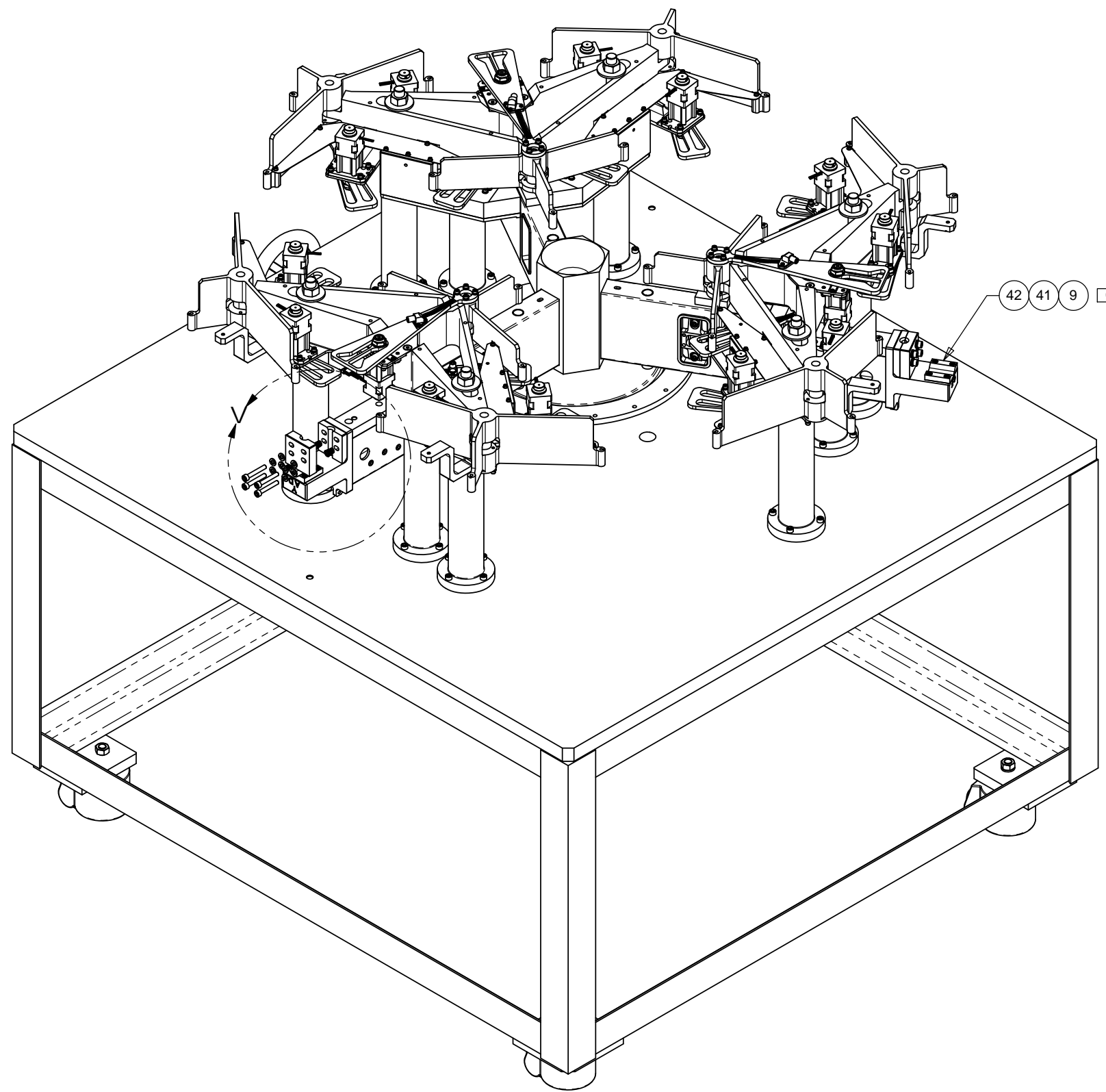
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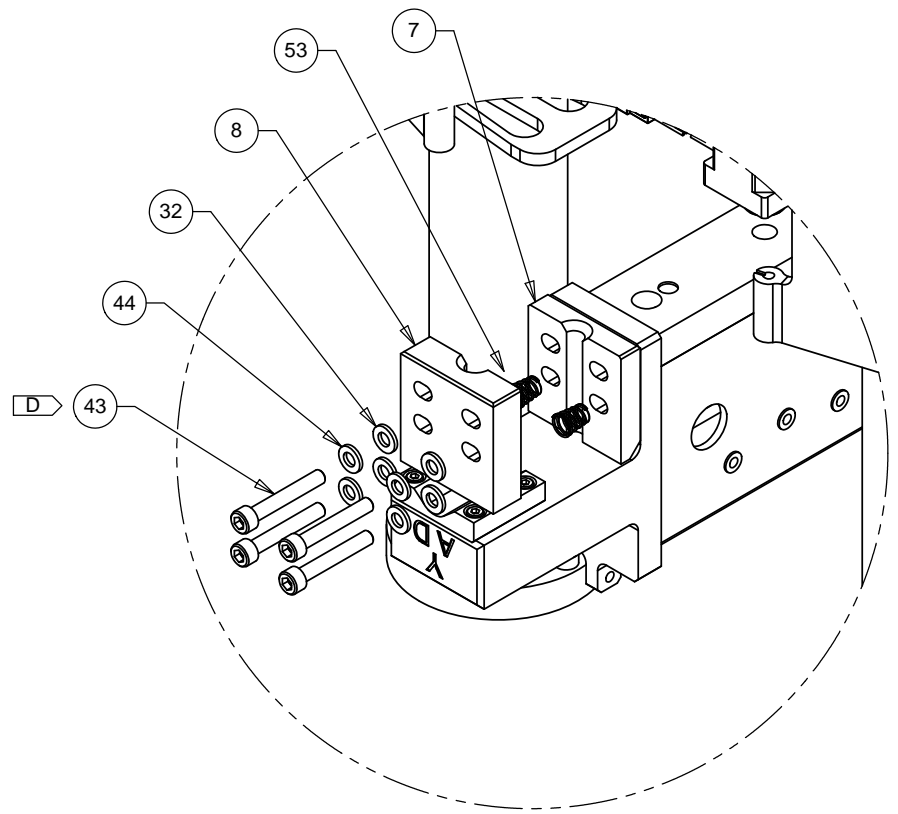


42 41 9 C

A1

STEP 7

INSTALL SPRINGS (ITEM 53) IN COUNTERBORE SLOTS BETWEEN ACTUATOR CLAMPS (ITEMS 7 AND 8) AND ATTACH CLAMPS TO THE MOVING FRAME AS SHOWN USING WASHERS, LOCK WASHER AND SCREWS (ITEMS 32, 43 AND 44). TIGHTEN SCREWS TO THE SPECIFIED TORQUE. INSTALL LIFTING BLOCKS (ITEM 9) ON THE MOVING FRAME USING SCREWS AND LOCKWASHERS (ITEMS 41 AND 42). TIGHTEN SCREWS TO THE SPECIFIED TORQUE.



**DETAIL V
SCALE 1 : 1.5**

**PRELIMINARY
NOT FOR
PRODUCTION**

DWG. NO.	REV	SHEET NO.
M1S-100-01200	E	6 of 16
SCALE 1:2	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

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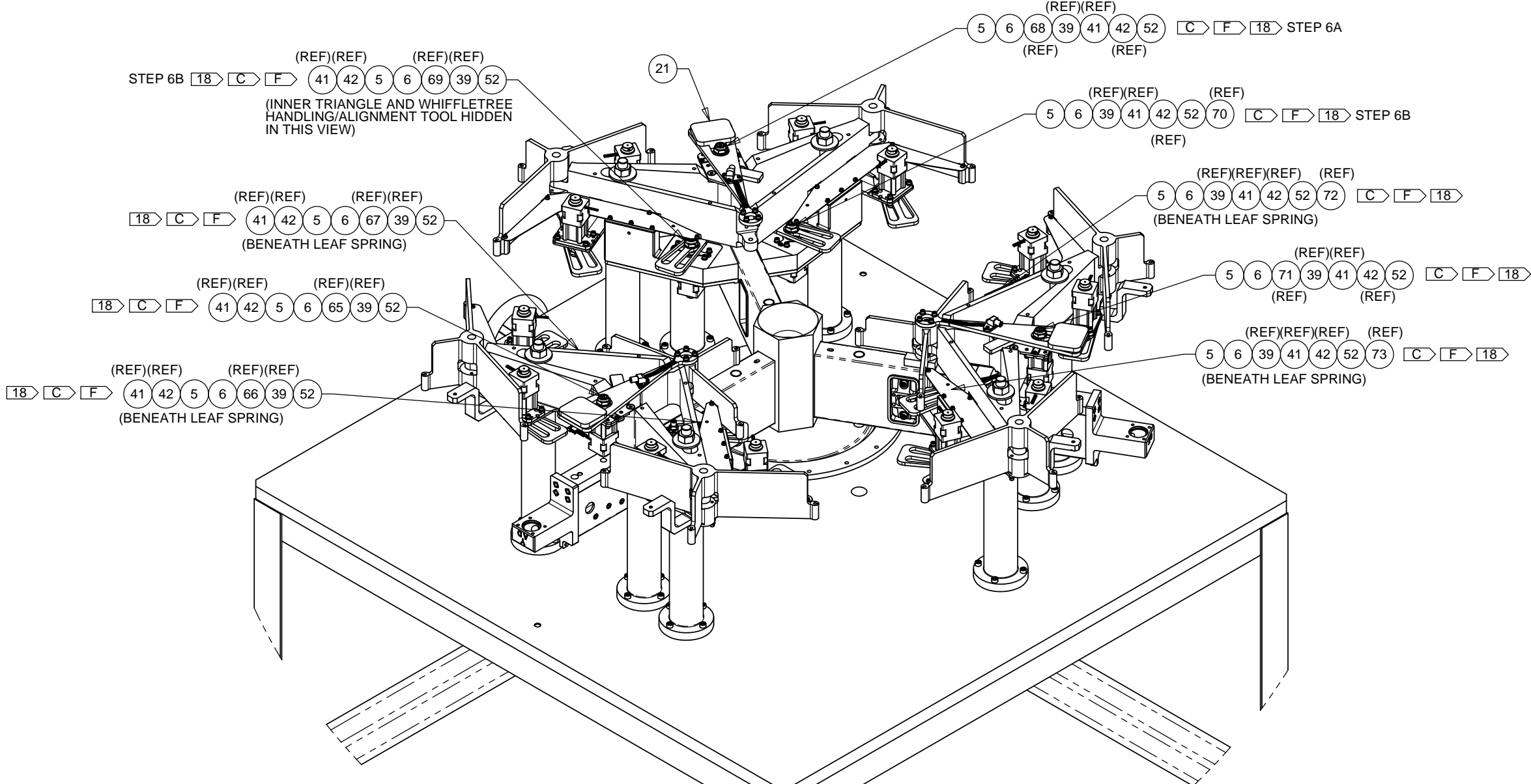
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STEP 6A:

PLACE LEAF SPRING TORQUING RESTRAINT (ITEM 21) IN THE STRAIGHT LEAF SPRING CUTOUT. INSTALL WARPING HARNESS ACTUATOR (ITEM 71) USING FLAT WASHERS, LOCK WASHERS AND SCREWS (ITEMS 39, 41 AND 42). TIGHTEN SCREWS TO THE SPECIFIED TORQUE. EXTEND THE ACTUATOR SHAFT BY TURNING THE ACTUATOR KNOB UNTIL THE BUSHING FLANGE LIGHTLY CONTACTS THE LEAF SPRING. INSTALL WASHER (ITEM 6) AND NUT (ITEM 5). TIGHTEN NUT TO THE SPECIFIED TORQUE. REMOVE LEAF SPRING ASSEMBLY TOOLS (ITEMS 21 AND 26)

STEP 6B:

INSTALL WARPING HARNESS ACTUATORS (ITEMS 72 AND 73) USING FLAT WASHERS, LOCK WASHERS AND SCREWS (ITEMS 39, 41 AND 42). TIGHTEN SCREWS TO THE SPECIFIED TORQUE. EXTEND THE ACTUATOR SHAFT BY TURNING THE ACTUATOR KNOB UNTIL THE BUSHING FLANGE LIGHTLY CONTACTS THE LEAF SPRING. INSTALL WASHER (ITEM 6) AND NUT (ITEM 5). TIGHTEN NUT TO THE SPECIFIED TORQUE. REMOVE LEAF SPRING ASSEMBLY TOOLS (ITEMS 21 AND 26)

REPEAT STEPS 6A AND 6B FOR WHIFFLETREE ASSEMBLIES A1 AND A2 (ITEMS 60 AND 62)

**PRELIMINARY
NOT FOR
PRODUCTION**

DWG. NO. M1S-100-01200	REV E	SHEET NO. 7 of 16
SCALE 1:8	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

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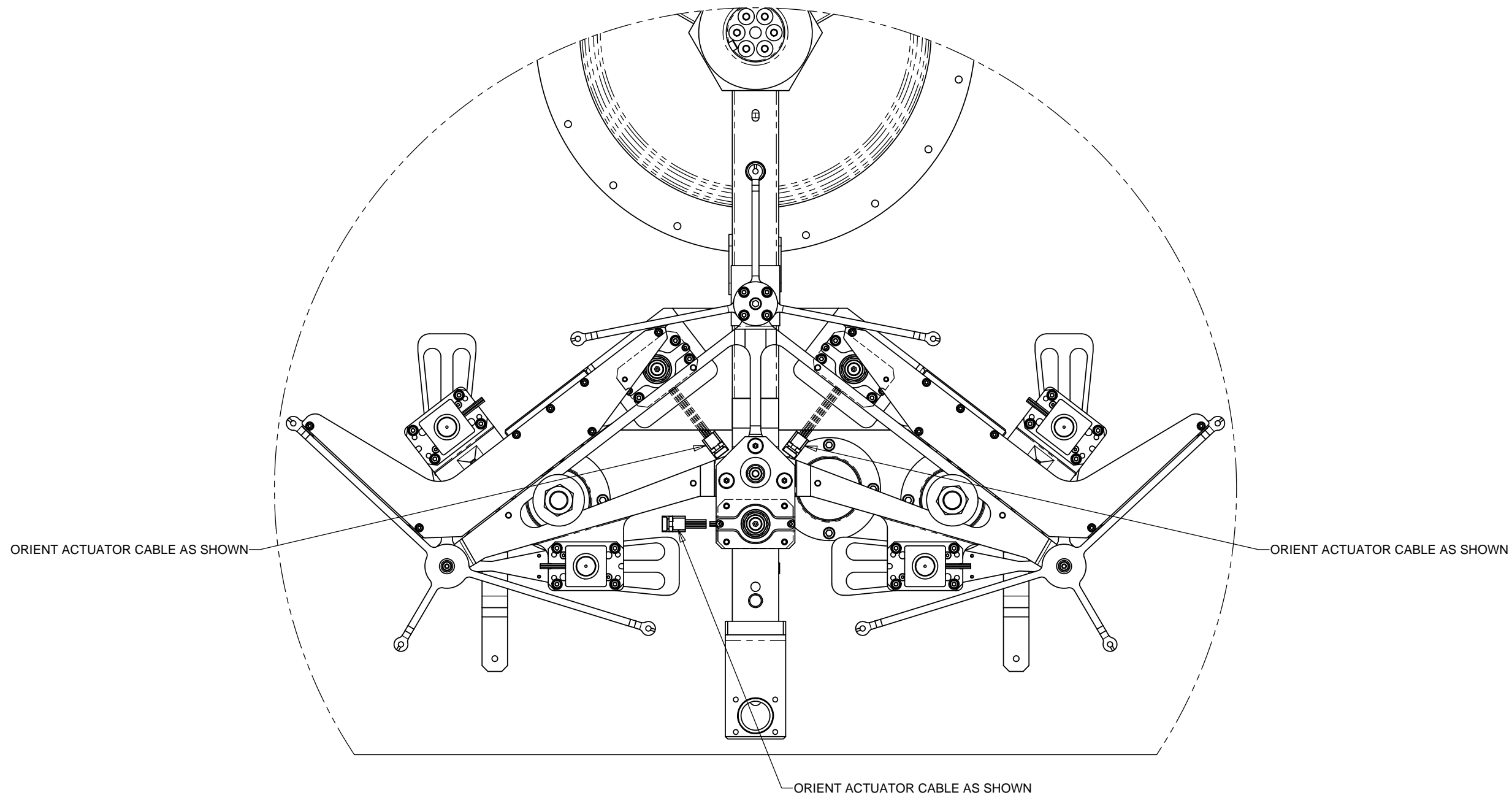
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STEP 6
INSTALL WARPING HARNESS ACTUATORS WITH THE LEADS
AND CONNECTORS ORIENTED AS SHOWN. MIDDLE TRIANGLE
WARPING HARNESS LEAF SPRING AND LEAF SPRING SPACER
HIDDEN FOR CLARITY. FOR ASSEMBLY SEQUENCE, SEE SHEET 7.

PRELIMINARY
NOT FOR
PRODUCTION

8 7 6 5 4 3 2 1

DWG. NO.	REV	SHEET NO.
M1S-100-01200	E	8 of 16
SCALE 1:2	SHEET SIZE D	

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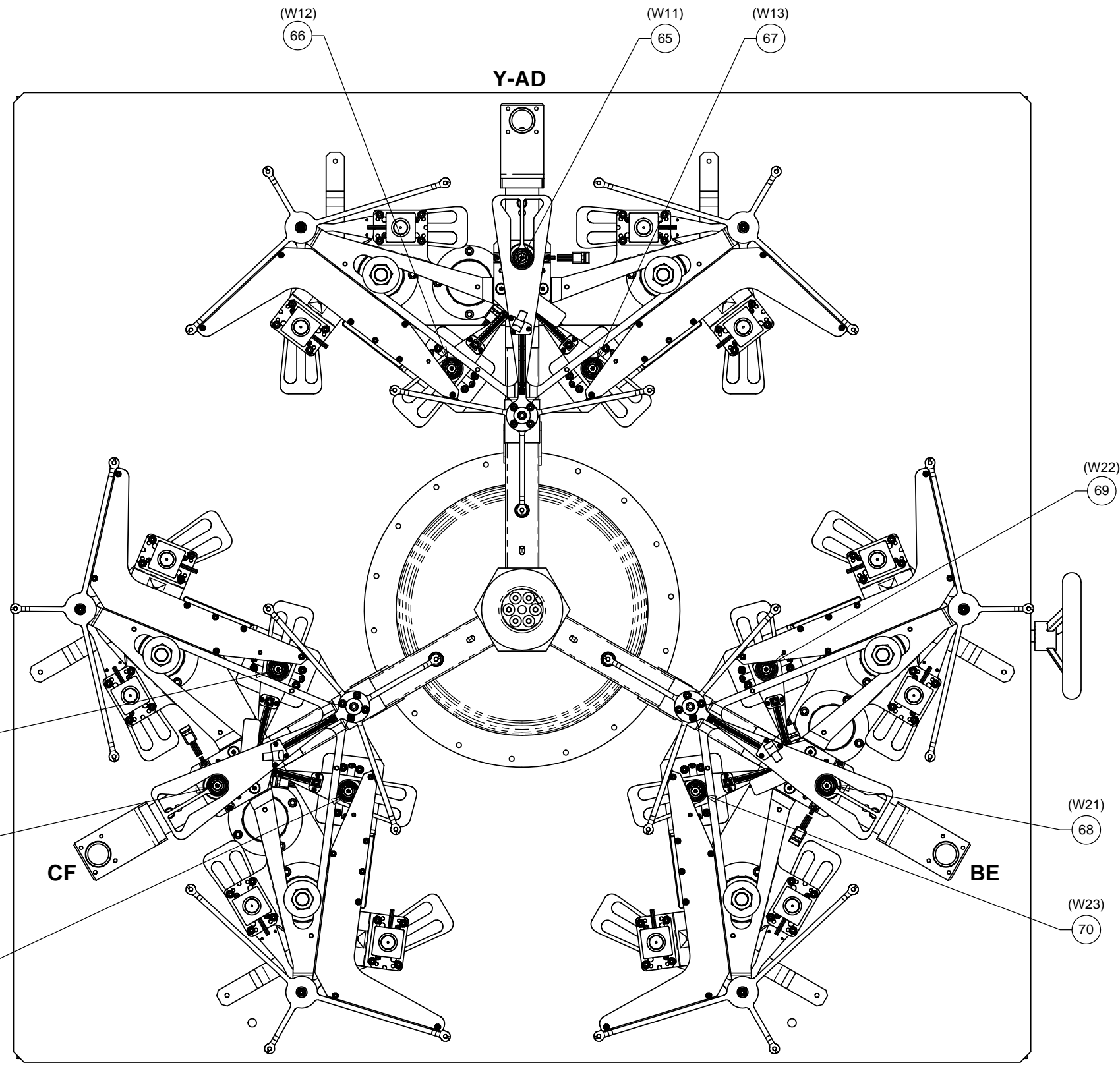
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(A1)

STEP 6
LOCATION OF WARPING HARNESS ACTUATORS.
FOR ASSEMBLY SEQUENCE, SEE SHEET 7.

PRELIMINARY
NOT FOR
PRODUCTION

DWG. NO. M1S-100-01200	REV E	SHEET NO. 9 of 16
SCALE 1:3	SHEET SIZE D	

8

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8 7 6 5 4 3 2 1

D

D

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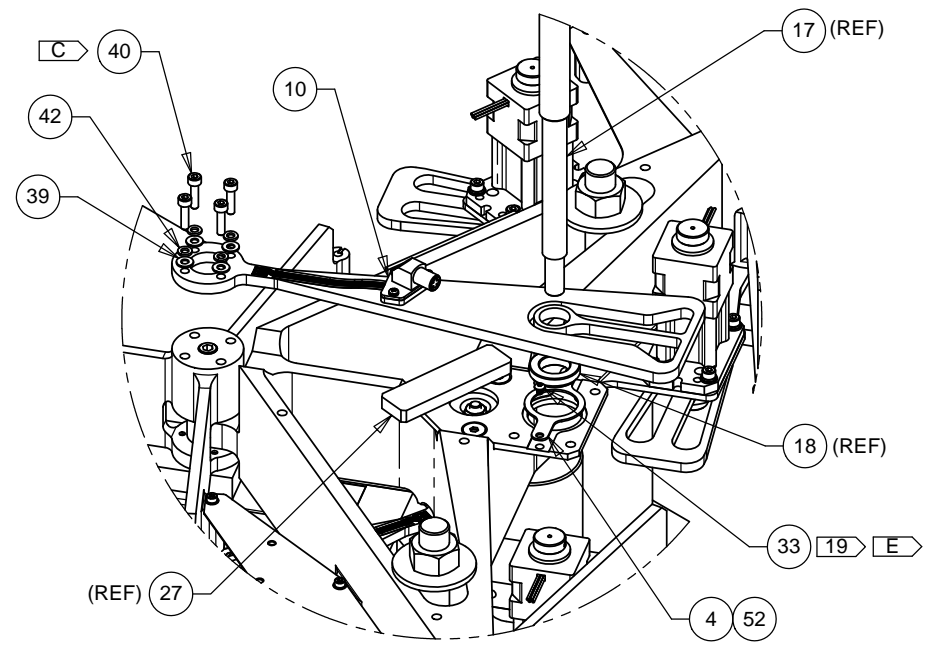
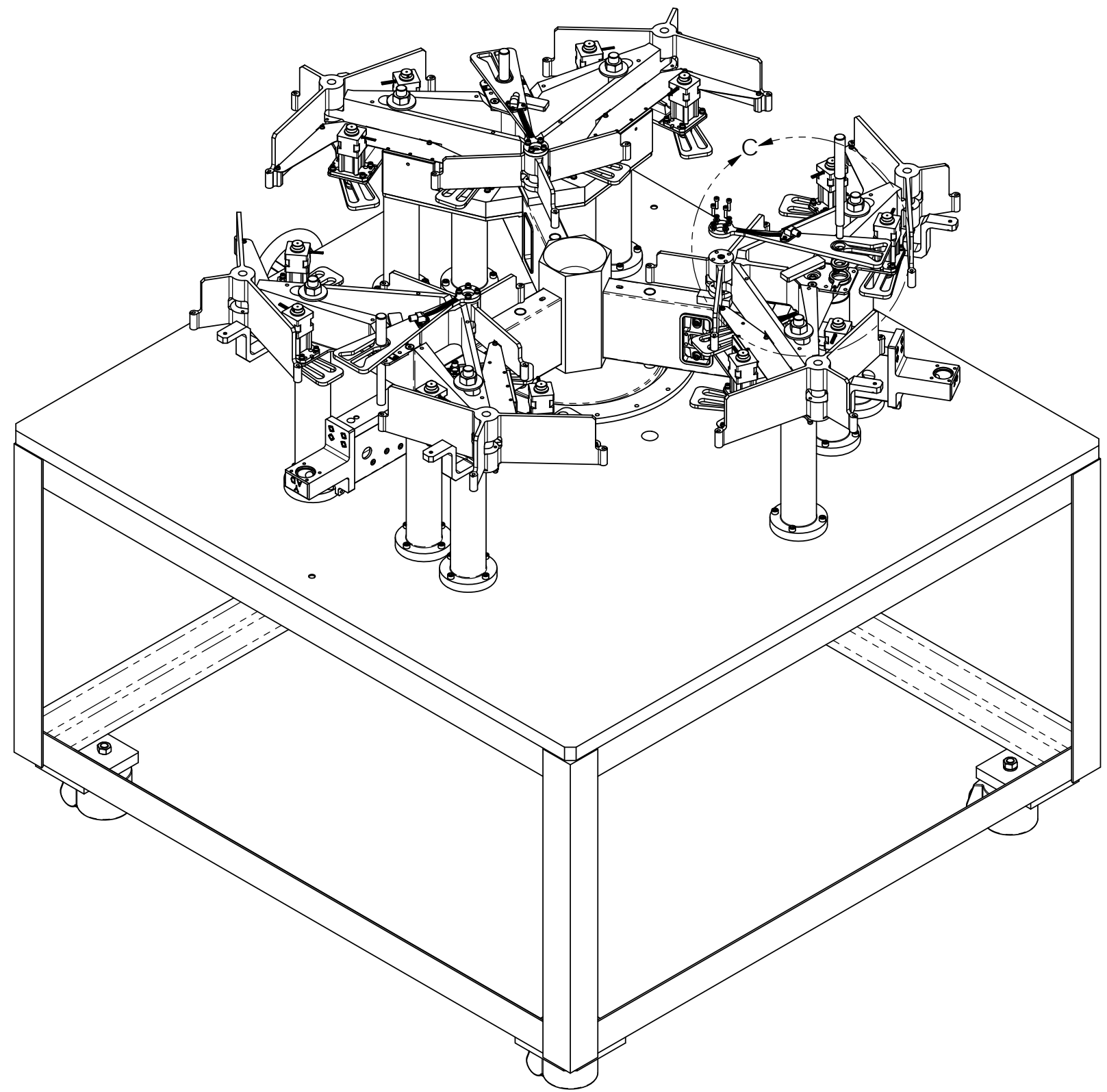
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DETAIL C
 END OF WHIFFLETREE
 HANDLING/ALIGNMENT
 TOOL SECTIONED FOR CLARITY

A1

STEP 5
 SEE NOTE 15 FOR ASSEMBLY SEQUENCE

PRELIMINARY
NOT FOR
PRODUCTION

DWG. NO. M1S-100-01200	REV E	SHEET NO. 10 of 16
SCALE 1:2	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

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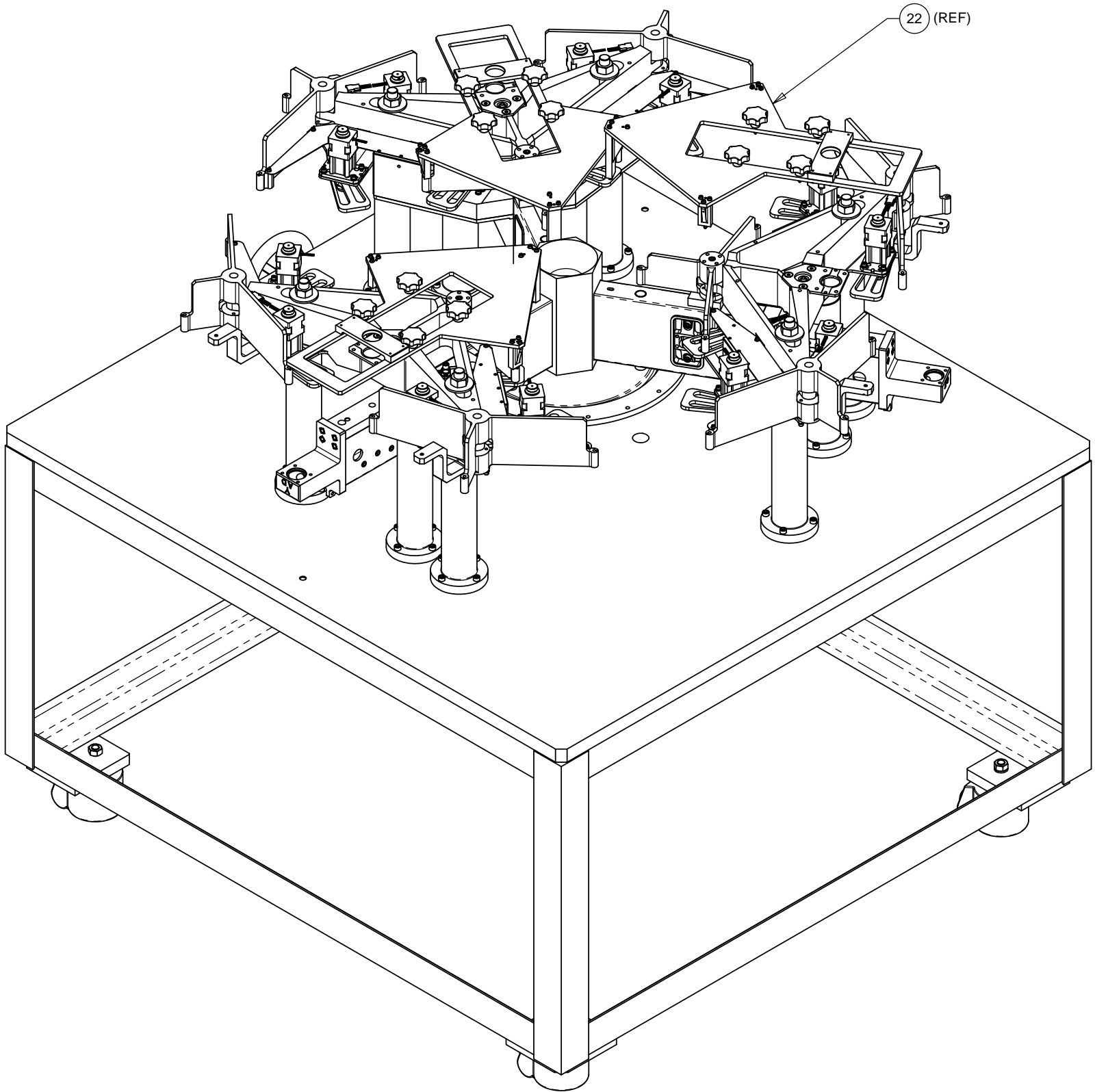
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A1

STEP 8
REMOVE 3X WHIFFLETREE HANDLING / ALIGNMENT TOOLS (ITEM 22).

PRELIMINARY
NOT FOR
PRODUCTION

DWG. NO. M1S-100-01200	REV E	SHEET NO. 11 of 16
SCALE 1:8	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

D

C

B

A

19 B 37 38 52

35 36 (REF) A

D 34

17 23 (REF)

D

C

B

A

DETAIL D
SCALE 1 : 2

A1

STEP 4
SEE NOTE 14 FOR ASSEMBLY SEQUENCE

PRELIMINARY
NOT FOR
PRODUCTION

DWG. NO. M1S-100-01200	REV E	SHEET NO. 12 of 16
SCALE 1:8	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

D

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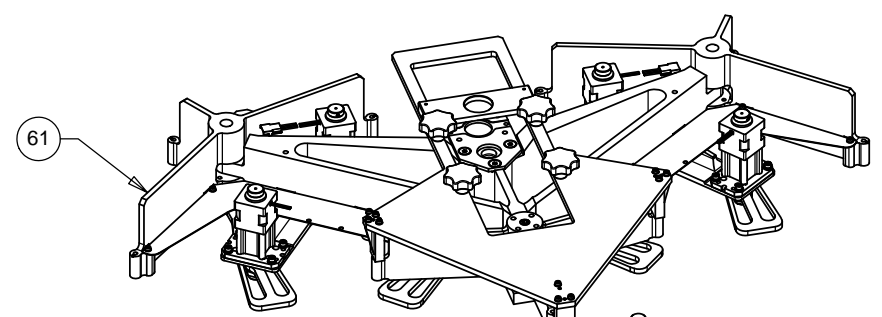
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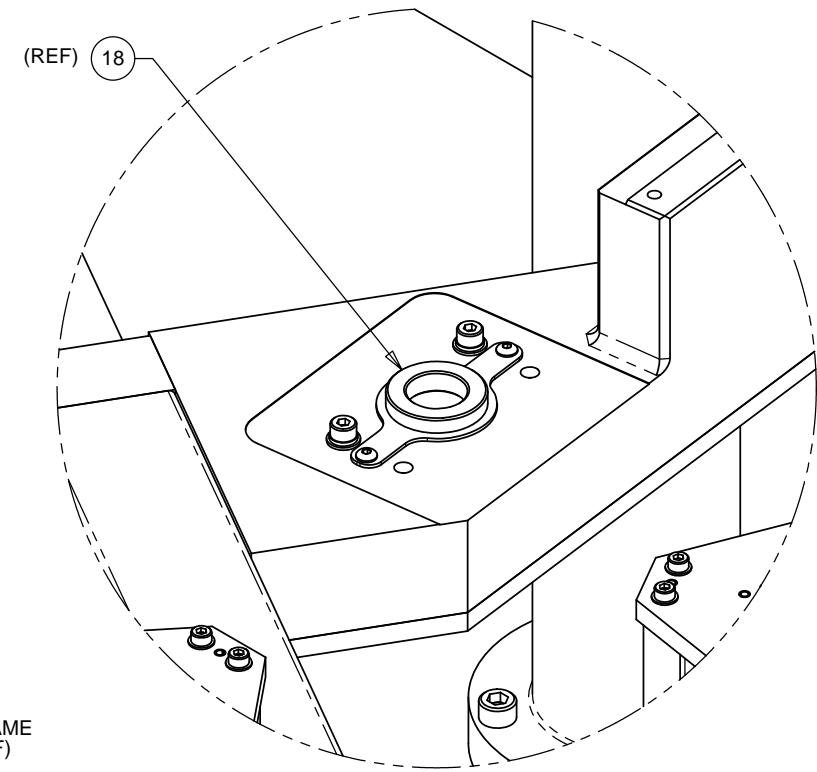
MOVING FRAME ARM BE (REF)

62

MOVING FRAME ARM CF (REF)

60

MOVING FRAME ARM Y-AD (REF)



DETAIL E
SCALE 1:1

A1

STEP 3
 PLACE POSITIONING TOOLS (ITEM 18), 6X, ON THE CENTERING GUIDES AS SHOWN. PLACE THE WHIFFLETREE ASSEMBLIES (ITEMS 60, 61 AND 62) ON THE FIXTURE POSTS, VISUALLY CENTERING THE PIVOT HOLES ON THE PIVOTS.

**PRELIMINARY
 NOT FOR
 PRODUCTION**

DWG. NO. M1S-100-01200	REV E	SHEET NO. 13 of 16
SCALE 1:4	SHEET SIZE D	

8 7 6 5 4 3 2 1

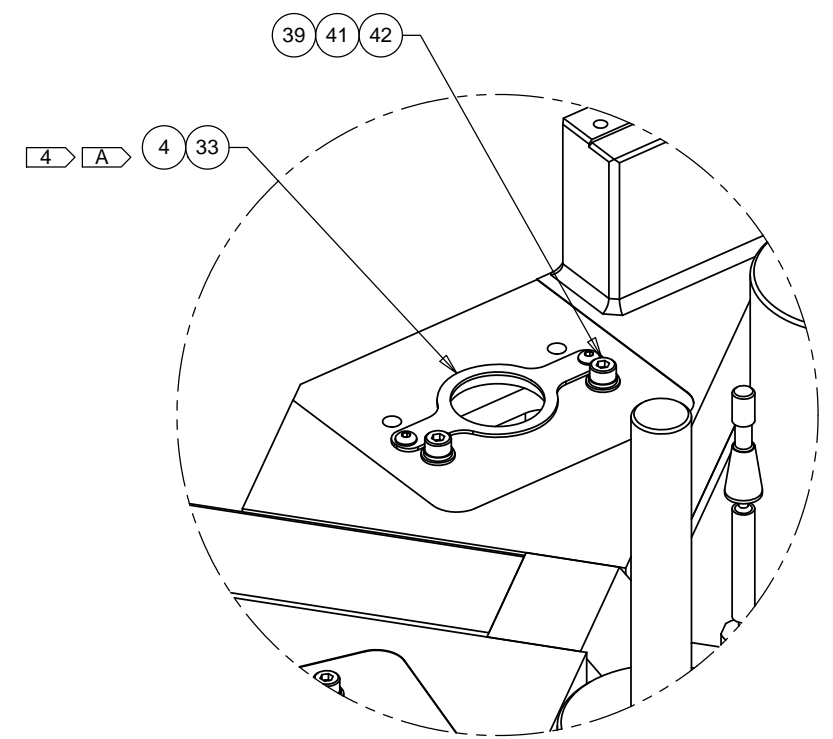
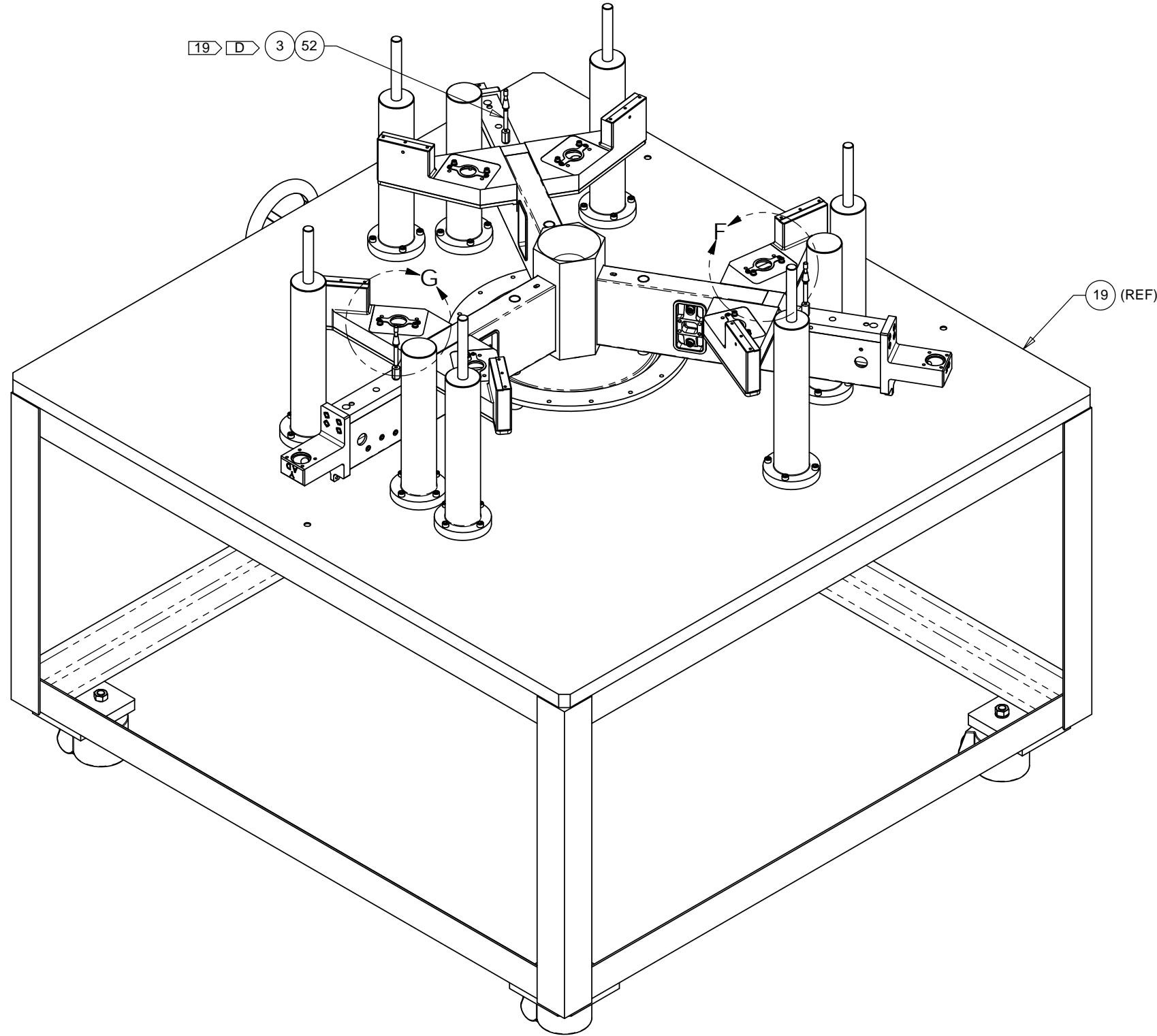
8 7 6 5 4 3 2 1

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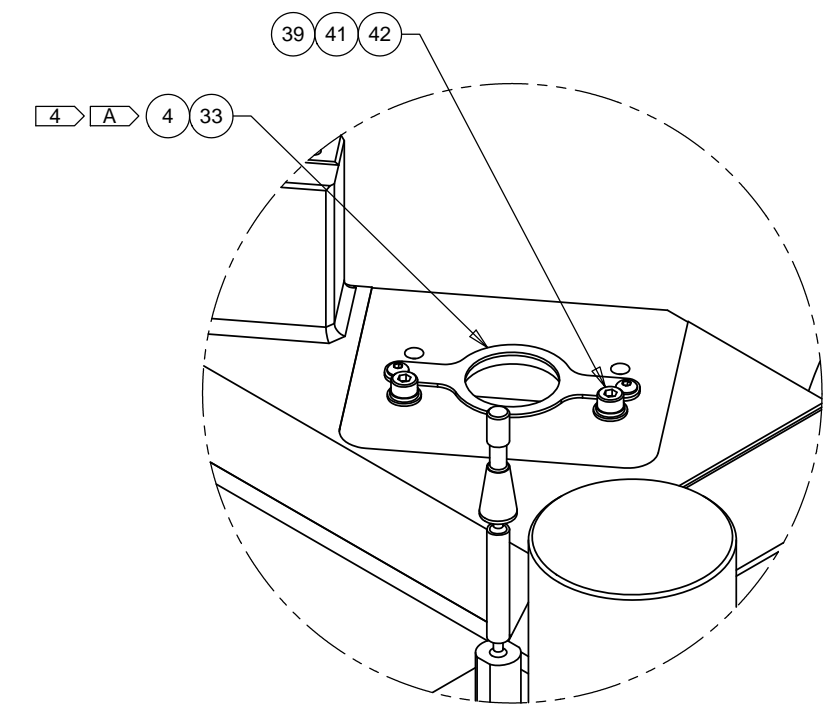
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DETAIL F
SCALE 1 : 1



DETAIL G
SCALE 1 : 1

A1

STEP 2

LOWER THE CENTRAL PLATFORM ON THE MOVING ASSEMBLY FIXTURE (ITEM 19) TO ITS LOWEST POSITION, AND PLACE THE MOVING FRAME/LATERAL GUIDE FLEXURE ASSEMBLY ON THE FIXTURE AS SHOWN. APPLY A DROP OF LOCTITE TO THREADS OF THE MIDDLE TRIANGLE PIVOTS (ITEM 3), INSTALL IN THE MOVING FRAME AND TIGHTEN TO THE SPECIFIED TORQUE. LOOSELY ATTACH WARPING HARNESS ACTUATOR CENTERING GUIDES (ITEM 4) TO THE MOVING FRAME USING SCREWS (ITEM 33). PLACE 2 SCREWS (ITEM 41) INTO HOLES AT EACH ACTUATOR LOCATION AS SHOWN IN MOVING FRAME ALONG WITH FLAT WASHERS AND LOCK WASHERS (ITEM 39 AND 42).

PRELIMINARY
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PRODUCTION

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SCALE 1:3	SHEET SIZE D	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1

D

D

C

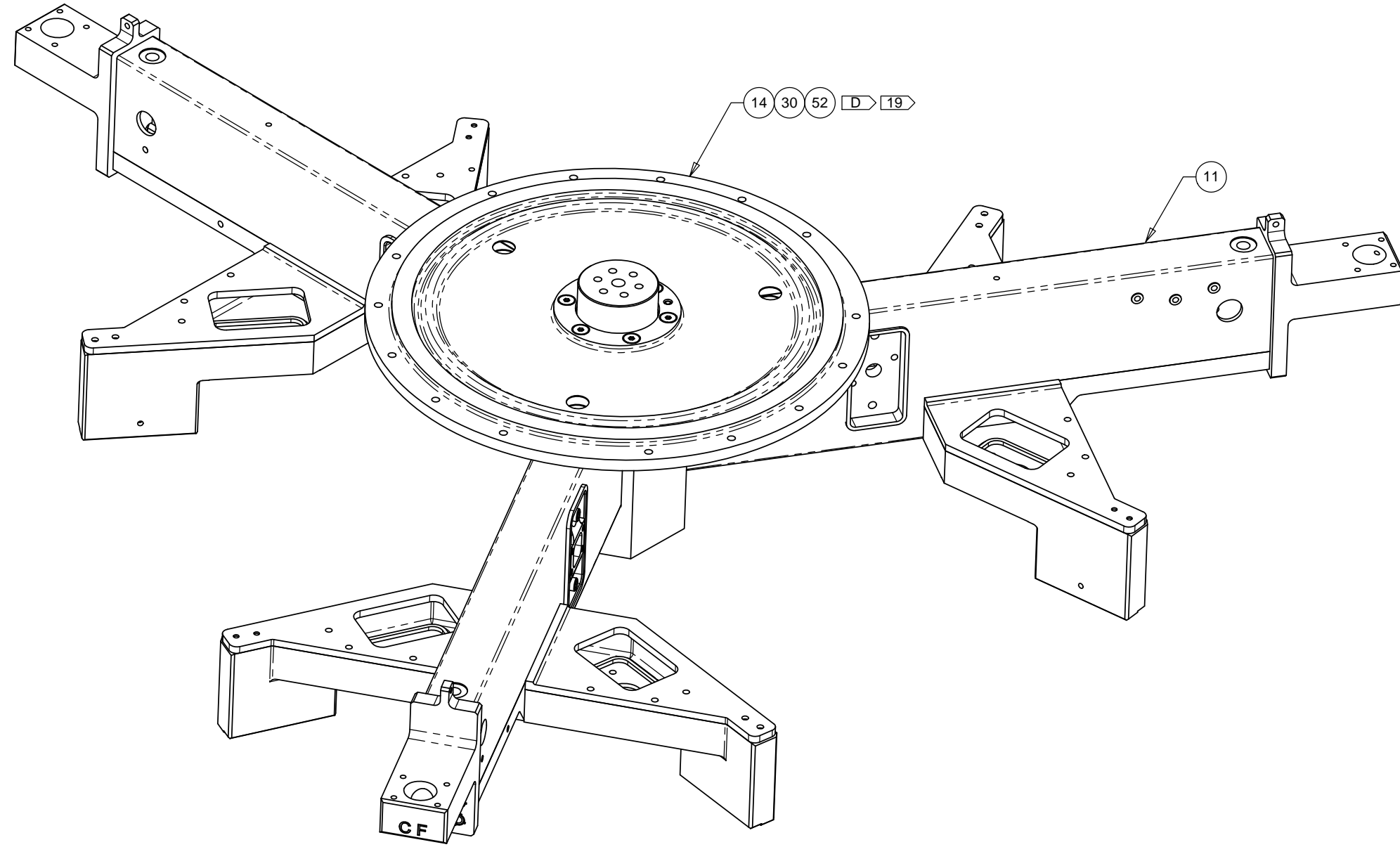
C

B

B

A

A



A1

STEP 1
INSTALL LATERAL GUIDE FLEXURE (ITEM 14) ON THE MOVING
FRAME (ITEM 11) USING VENTED SCREWS (ITEM 30) AND LOCTITE
(ITEM 52). TIGHTEN SCREWS TO THE SPECIFIED TORQUE.

PRELIMINARY
NOT FOR
PRODUCTION

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SCALE 1:2	SHEET SIZE D	

8 7 6 5 4 3 2 1

8

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4

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2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1. ALL DIMENSIONS IN MILLIMETERS.
- 2. DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994.
- 3. REFER TO TMT.OPT.TEC.10.021 FOR ASSEMBLY SEQUENCE AND PROCEDURE.

- 4) FINAL TIGHTENING OF SCREW (ITEM 33) TO SPECIFIED TORQUE IS PERFORMED ON STEP 4.
- 5) INTENTIONALLY LEFT BLANK.
- 6) ENSURE ENDS OF THE BUTTON HEAD CAP SCREWS (ITEM 33) DO NOT PROTRUDE BEYOND THE WARPING HARNESS ACTUATOR MOUNTING SURFACE.
- 7. INTENTIONALLY LEFT BLANK.
- 8) INSTALL SPRING PLUNGER (ITEM 48) UNTIL FULLY SEATED, THEN BACK OFF 1/4 TURN. TIGHTEN NUT (ITEM 49) TO 10 N-m WHILE PREVENTING PLUNGER (ITEM 48) FROM TURNING.
- 9. ASSEMBLE IN CLASS 100 000 CLEAN ROOM. FINISHED ASSEMBLY SHALL BE FREE OF DUST, OIL AND FINGERPRINTS.
- 10) TOWER ALIGNMENT IS PERFORMED AFTER SSA MODULE IS INSTALLED ON MIRROR SEGMENT.
- 11) TOWER SHALL BE POSITIONED SUCH THAT THE LOCK FLANGE LABELED "Y" IS ALIGNED WITH THE MOVING FRAME "Y" ARM.
- 12) INSTALL LOCKS IN LOCKED POSITION AS SHOWN.
- 13. AFTER ASSEMBLY, INSPECT ASSEMBLY A2 IN ACCORDANCE WITH THE SEGMENT SUPPORT ASSEMBLY (SSA) MODULE ASSEMBLY ACCEPTANCE TEST PROCEDURE (TMT.OPT.TEC.12.088).
- 14) THE ASSEMBLY SEQUENCE FOR ASSEMBLY A1, STEP 4, SHALL BE PERFORMED IN THE FOLLOWING ORDER:
 - 1) RAISE THE MOVING FRAME BY TURNING THE HANDLE ON THE SIDE OF THE FIXTURE, SO THE PIVOT CONICAL FEATURES LIGHTLY ENGAGE WITH THE MIDDLE TRIANGLE CONICAL HOLES. REPOSITION THE WHIFFLETREE ASSEMBLIES AS NECESSARY.
 - 2) AS THE MOVING FRAME IS RAISED, ALIGN THE TOOLING BALLS ON THE THREE WHIFFLETREE HANDLING / INSTALLATION TOOLS (ITEM 22) WITH THEIR RESPECTIVE PRECISION SLOTS IN THE MOVING FRAME ARMS.
 - 3) CONTINUE RAISING THE MOVING FRAME UNTIL THE WHIFFLETREES ARE LIFTED SLIGHTLY ABOVE THE FIXTURE POSTS. LOWER THE MOVING FRAME UNTIL THE WHIFFLETREES JUST REST ON THE POSTS. INSTALL WHIFFLETREE POSITIONING BUSHING (ITEM 23) IN THE 30mm DIAMETER HOLE IN THE HANDLING/INSTALLATION FIXTURE, AND INSTALL WARPING HARNESS LEAF SPRING ALIGNMENT TOOL (ITEM 17) THROUGH THE WHIFFLETREE POSITIONING BUSHING (ITEM 23) HOLE, FULLY ENGAGING THE END BOSS WITH THE CORRESPONDING HOLE IN THE MOVING FRAME. LIGHTLY RESTRAIN THE WHIFFLETREES IN PLACE USING FLAT WASHERS AND HEX NUTS (ITEMS 35 AND 36).
 - 4) INSTALL NUT WITH CAPTIVE CONICAL WASHER (ITEM 34). TIGHTEN NUT TO THE SPECIFIED TORQUE (D).
 - 5) ATTACH THE SHEET FLEXURES TO THE MOVING FRAME USING FLAT WASHERS, SCREWS AND LOCTITE (ITEMS 37, 38 AND 52). TIGHTEN SCREWS TO THE SPECIFIED TORQUE (E).
 - 6) INSTALL CENTERING GUIDE POSITIONERS (ITEM 20) THROUGH THE WARPING HARNESS LEAF SPRING HOLES, AND ENSURE THEY FULLY ENGAGE WITH THE INNER DIAMETERS OF THE POSITIONING TOOLS (ITEM 18).
 - 7) ATTACH THE CENTERING GUIDES TO THE MOVING FRAME BY TIGHTENING SCREWS (ITEM 33) TO THE SPECIFIED TORQUE (E).
 - 8) REMOVE THE CENTERING GUIDE POSITIONERS AND ALIGNMENT TOOLS (ITEMS 17, 18 AND 20).
- 15) THE ASSEMBLY SEQUENCE FOR ASSEMBLY A1, STEP 5, SHALL BE PERFORMED IN THE FOLLOWING ORDER:
 - 1) LOOSELY ATTACH THE CENTERING GUIDE (ITEM 4) TO THE MIDDLE TRIANGLE USING SCREWS (ITEM 33).
 - 2) PLACE POSITIONING TOOL (ITEM 18) ON THE CENTERING GUIDE AS SHOWN.
 - 3) PLACE ROUND END OF THE WARPING HARNESS LEAF SPRING (ITEM 10) ON THE TOP SURFACE OF THE WHIFFLETREE INNER TRIANGLE AND LOOSELY INSTALL WARPING HARNESS LEAF SPRING TO INNER TRIANGLE USING FLAT WASHERS, LOCK WASHERS AND SCREWS (ITEMS 39, 40 AND 42).
 - 4) INSERT LEAF SPRING SPACER (ITEM 22) BETWEEN THE LEAF SPRING (ITEM 10) AND THE WHIFFLETREE MIDDLE TRIANGLE.
 - 5) INSERT ALIGNMENT TOOL (ITEM 17) THROUGH THE LEAF SPRING AND THE POSITIONING TOOL, FULLY ENGAGING THE END BOSS WITH THE CORRESPONDING HOLE IN THE MOVING FRAME.
 - 6) ATTACH THE CENTERING GUIDES TO THE MOVING FRAME BY TIGHTENING SCREWS (ITEM 33) TO THE SPECIFIED TORQUE (E).
 - 7) REMOVE THE CENTERING GUIDE POSITIONER AND ALIGNMENT TOOL.
 - 8) REPEAT FOR WHIFFLETREES A1 AND A2 (ITEMS 60 AND 61).
- 16) PERMANENTLY LABEL PER MIL-DTL-15024F, TYPE A OR L, IN ZONE 1 AS SHOWN "M1S-100-01200 REV_" (CURRENT REVISION) "S/N NXXXXX" (WHERE N IS A VENDOR DESIGNATION LETTER ASSIGNED BY TMT AND XXXXX IS A UNIQUE 5 DIGIT SERIAL NUMBER FOR EACH ASSEMBLY. THE VENDOR DESIGNATION AND THE STARTING SERIAL NUMBER SHALL BE IN ACCORDANCE WITH THE VALUES PROVIDED IN THE PURCHASE ORDER).
- 17. RECORD AND REPORT PART NUMBER, REVISION NUMBER AND SERIAL NUMBER OF ITEMS 3 THROUGH 9, 11, 14 THROUGH 16, 24 AND 25 FOR EACH ASSEMBLY. RECORD AND REPORT PART NUMBER, REVISION NUMBER, SERIAL NUMBER AND LOCATION OF LEAF SPRINGS AND WARPING HARNESS ACTUATORS (ITEMS 10 AND 65 THROUGH 73) FOR EACH ASSEMBLY.
- 18) APPLY A DROP OF LOCTITE (ITEM 52) TO THE THREADED PORTION OF THE WARPING HARNESS ACTUATOR BUSHING (ITEMS 12 AND 13) NEAR DURING ASSEMBLY.
- 19) APPLY A DROP OF LOCTITE (ITEM 52) TO THREADS OF INDICATED ITEMS DURING ASSEMBLY.
- 20. ALL PURCHASED PARTS SHALL MEET SPECIFICATION SHOWN. PURCHASED PART SUPPLIERS SHALL BE APPROVED BY TMT PROJECT OFFICE PRIOR TO PURCHASE AND ASSEMBLY.

TABLE A
INSTALLATION TORQUES

ITEM OR NOTE	TORQUE (N-m)	NOTES
A	FINGER TIGHT	
B	1.0+/-0.1	M3 FASTENERS
C	2.3±0.1	M4 FASTENERS
D	8.5±0.5	M6 FASTENERS
E	0.75±0.1	M3 BUTTON HEAD CAP SCREW FASTENERS
F	5.0±0.5	M16 WARPING HARNESS ACTUATOR END NUT
G	1.0+/-0.1	M4 TIE MOUNT SOCKET BUTTON HEAD FASTENERS

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SCALE 1:2	SHEET SIZE D	

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4

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