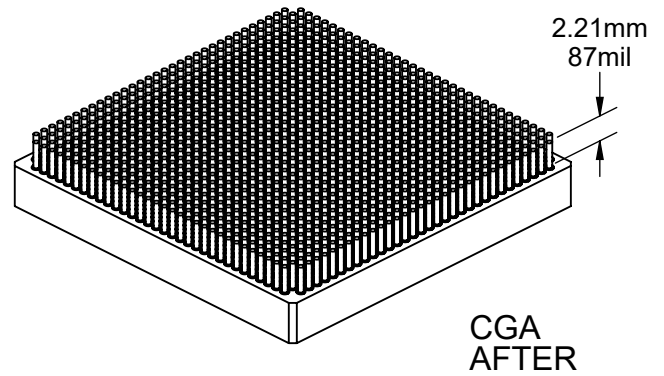
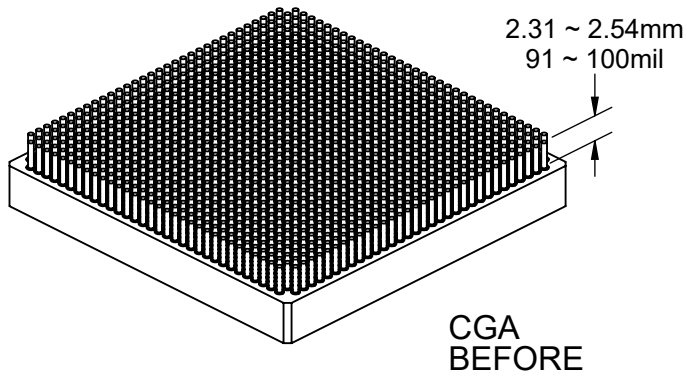
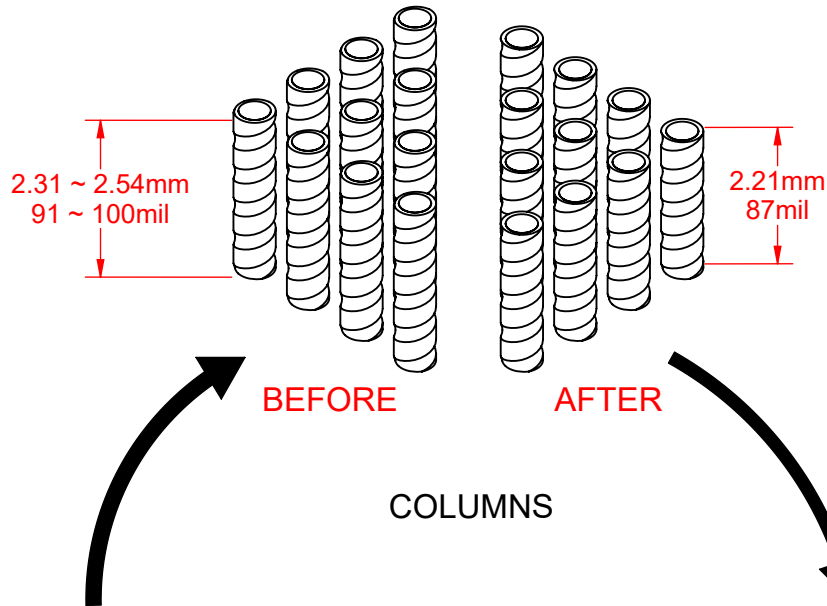


CCGA COLUMN PLANARIZATION

•CUTTING •LAPPING •POLISHING

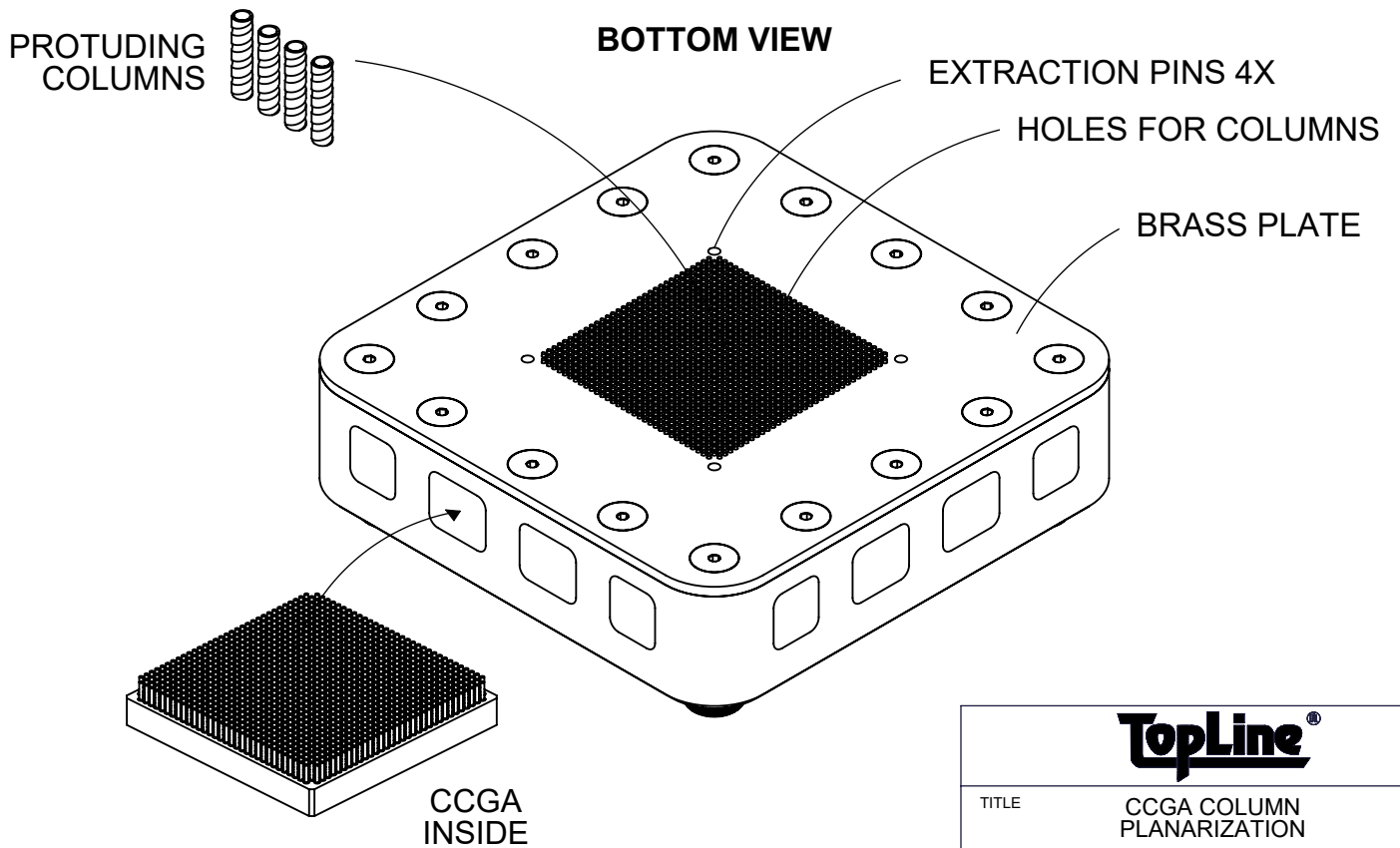
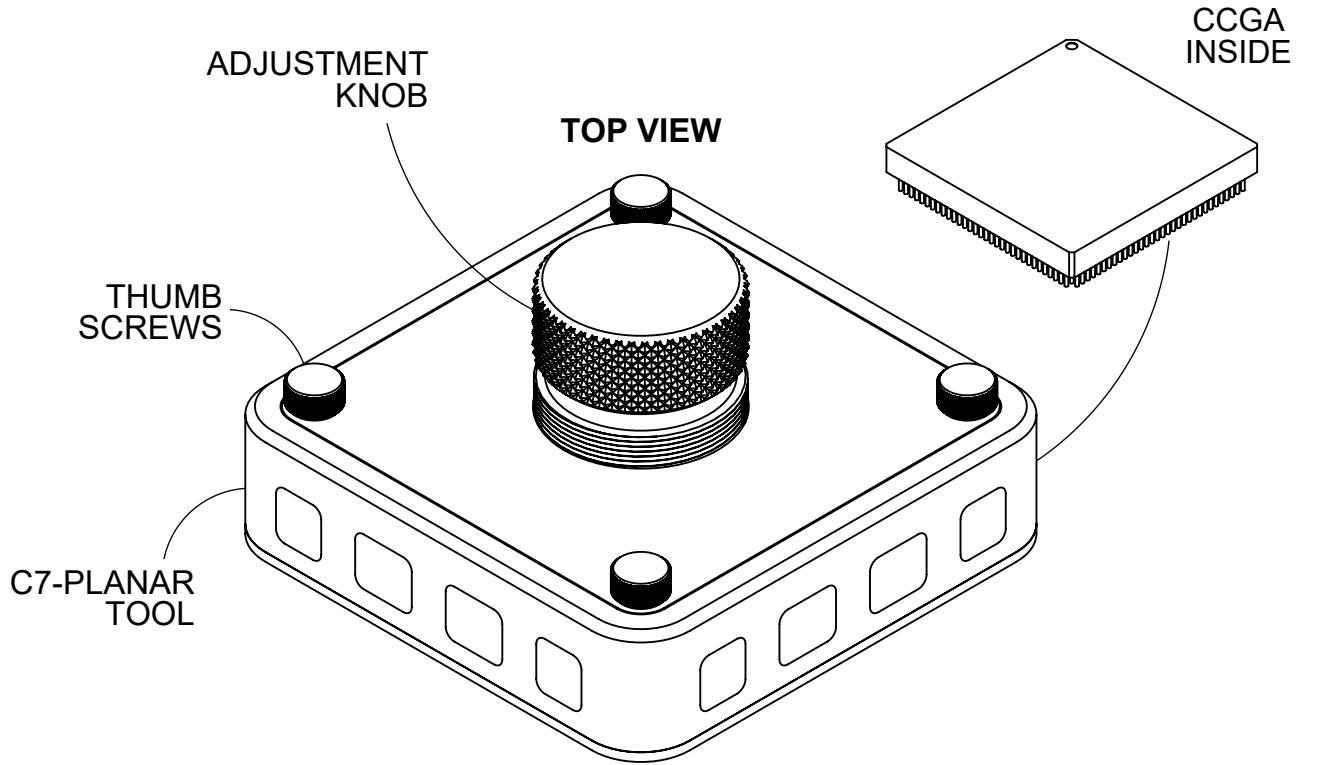


APPROVALS	DATE	TopLine®			
DRAWN T. Au	10/12/16				
ENG M. Hart	10/12/16	TITLE CCGA COLUMN PLANARIZATION			
MFG					
QA		SCALE	SIZE	DRAWING NO.	REV
CUST		2:3	A	001992	A
REVISED		DO NOT SCALE DRAWING			SHEET 1 OF 28

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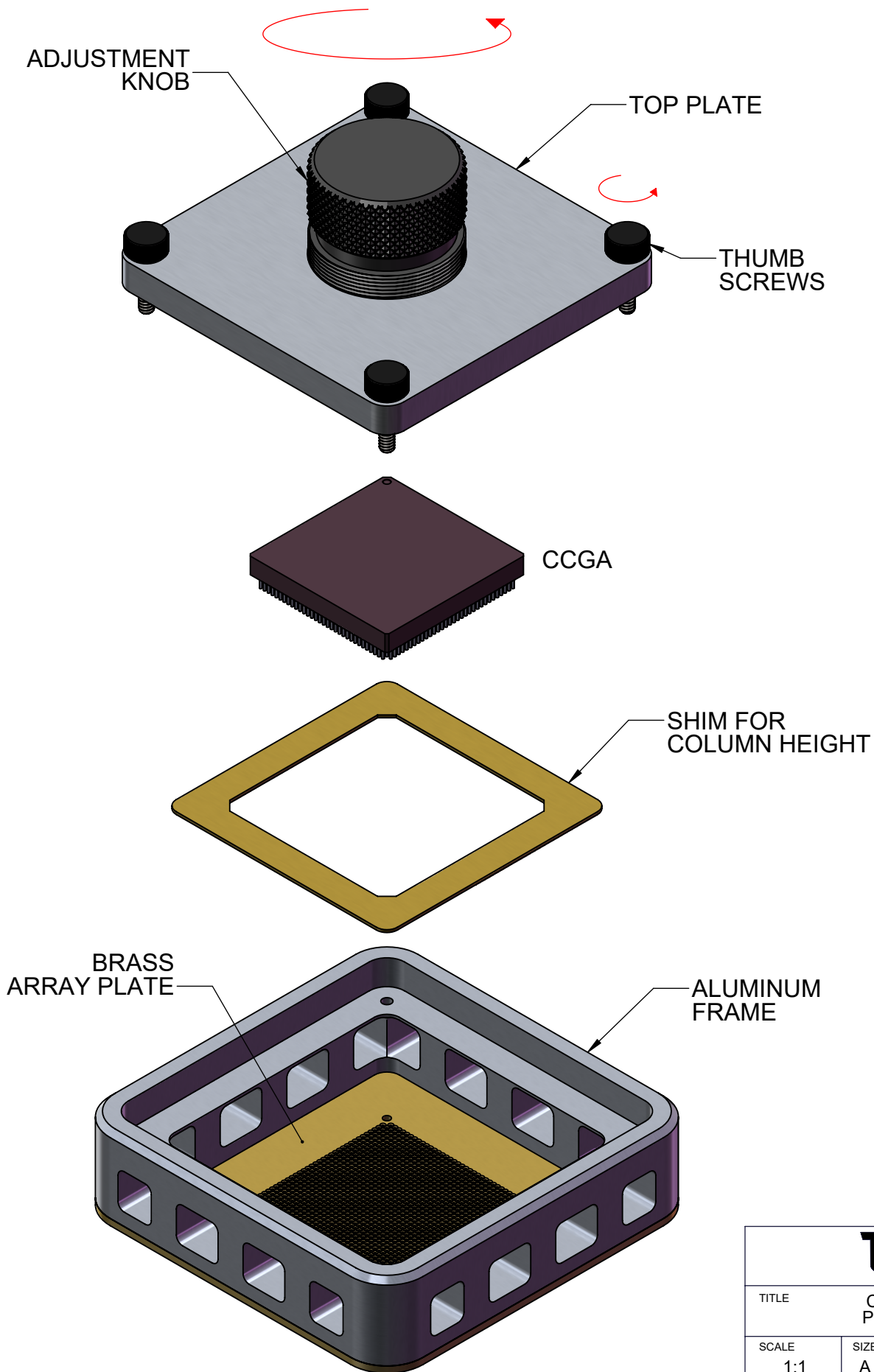
STEP	PROCESS EXPLANATION	PAGE
1	REMOVE THUMBSCREW	5
2	REMOVE COVER PLATE	6
3	APPLY TEFLON DISC TO BOTTOM OF ADJUST KNOB	7
4	INSERT SHIM	8
5	SEAT SHIM ON BRASS PLATE	9
6	SHIM THICKNESS	10
7	BRASS PLATE MOUNTED TO FRAME	11
8	BRASS PLATE WITH COUNTERSINK	12
9	PLACE CCGA ONTO BRASS PLATE	13
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QUICK VIEW



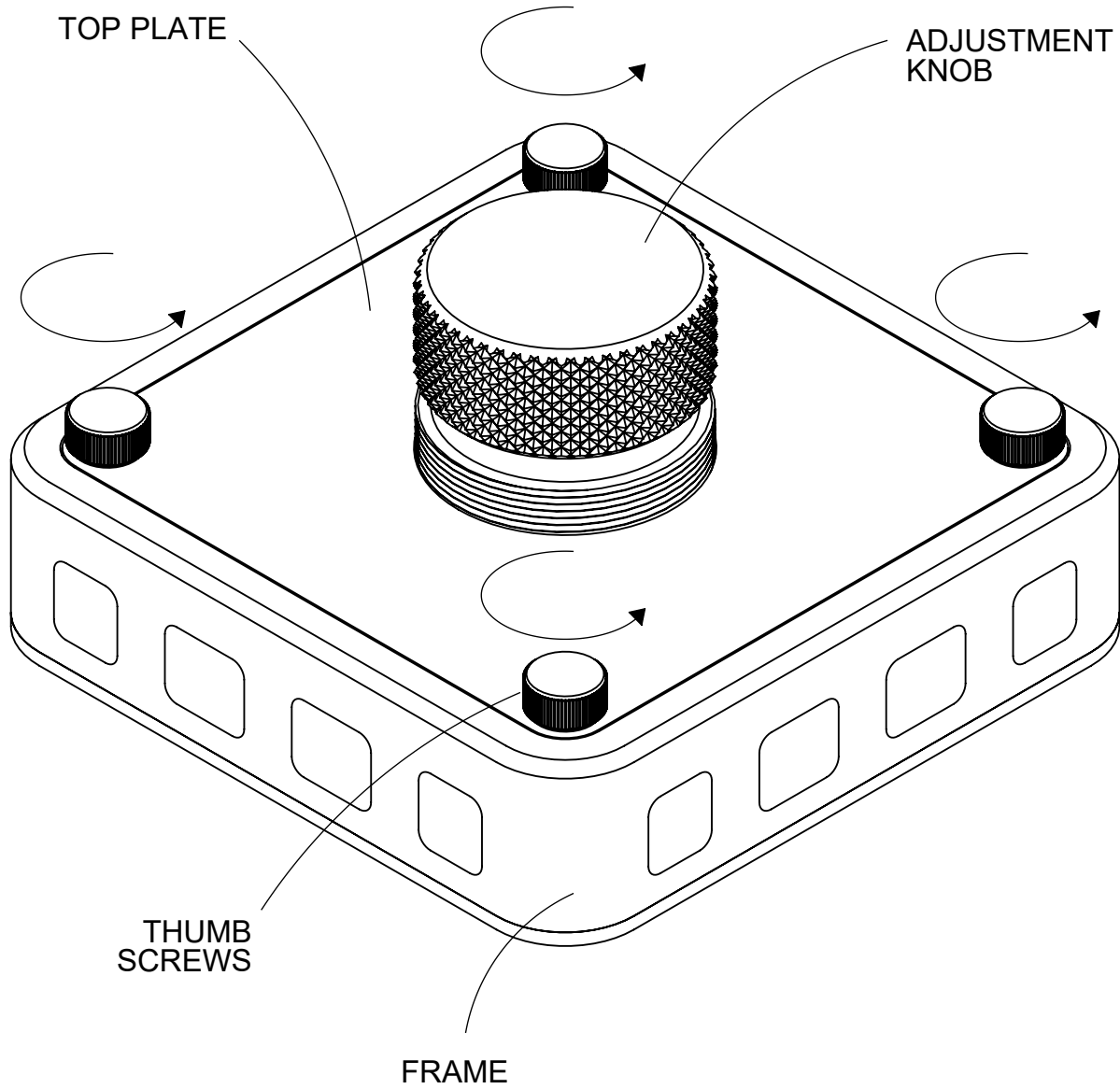
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TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
1:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 3 OF 28

EXPLODED VIEW



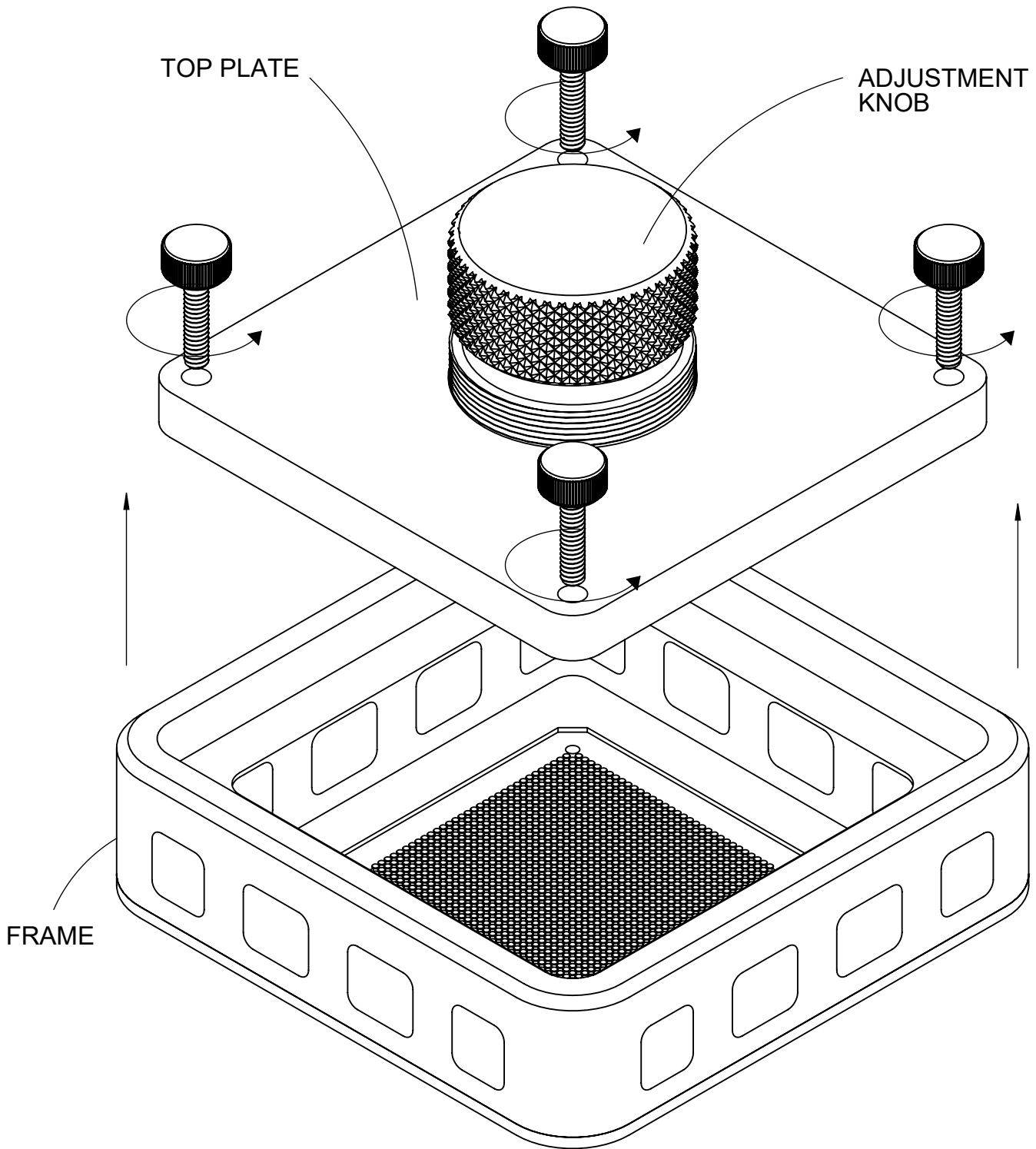
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TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
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DO NOT SCALE DRAWING			SHEET 4 OF 28

STEP 1 REMOVE THUMBSCREWS



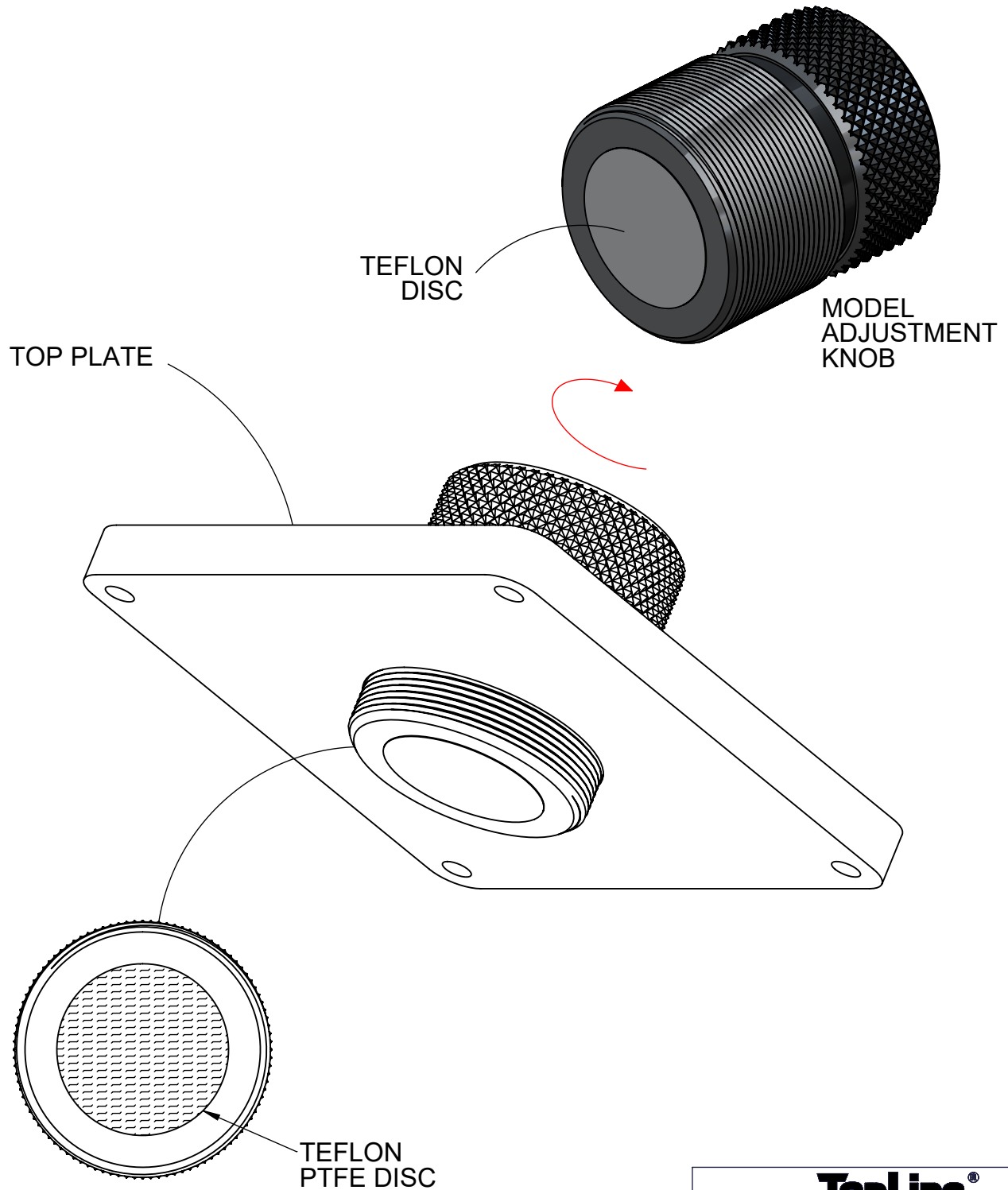
TopLine[®]			
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SCALE	SIZE	DRAWING NO.	REV
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DO NOT SCALE DRAWING			SHEET 5 OF 28

STEP 2 REMOVE COVER



TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 6 OF 28

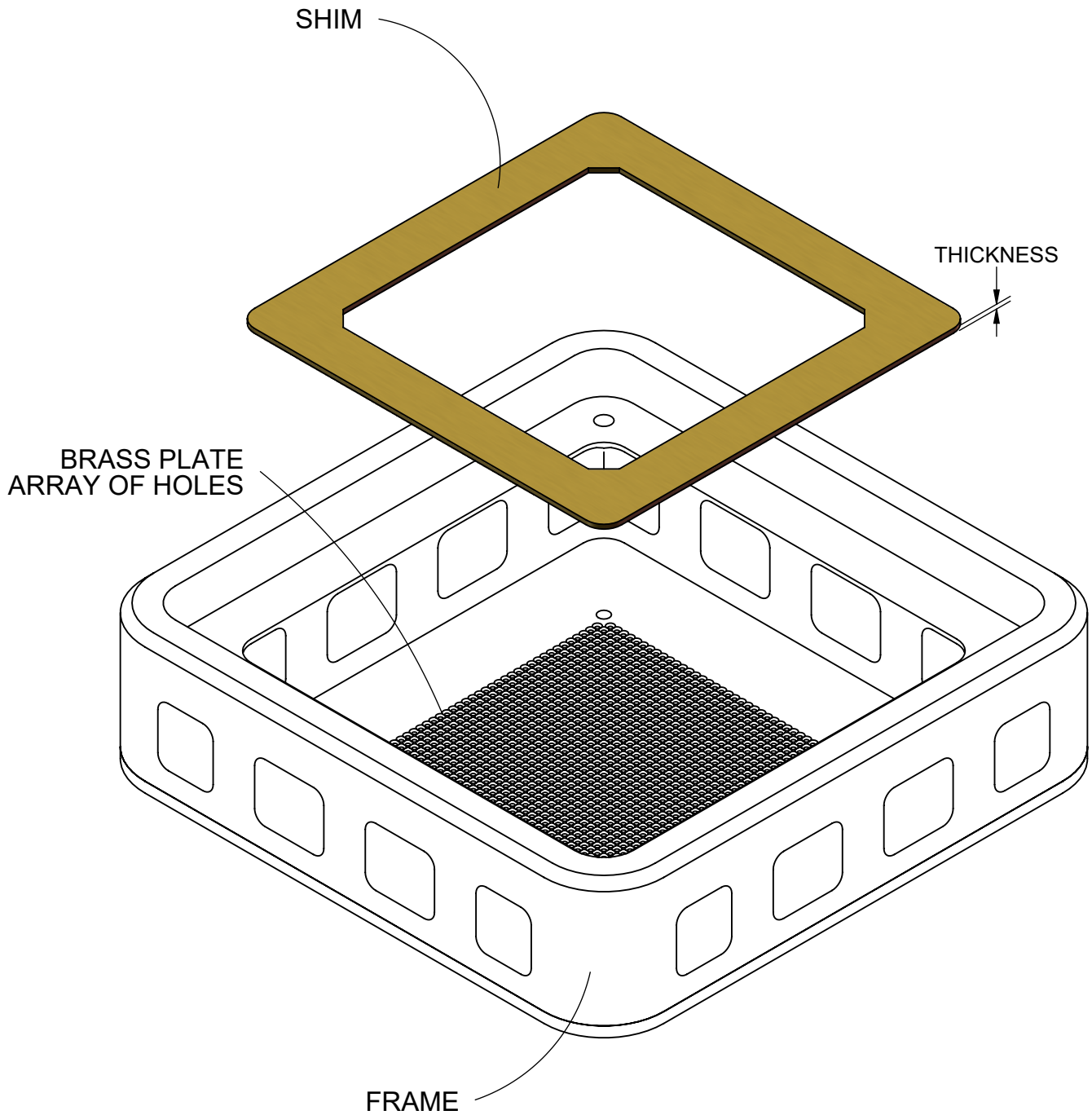
STEP 3 APPLY TEFLON DISC BOTTOM OF ADJUSTMENT KNOB



NOTE:
REPLACE TEFLON DISC AFTER 100 CCGA
OR AS REQUIRED.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
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DO NOT SCALE DRAWING			SHEET 7 OF 28

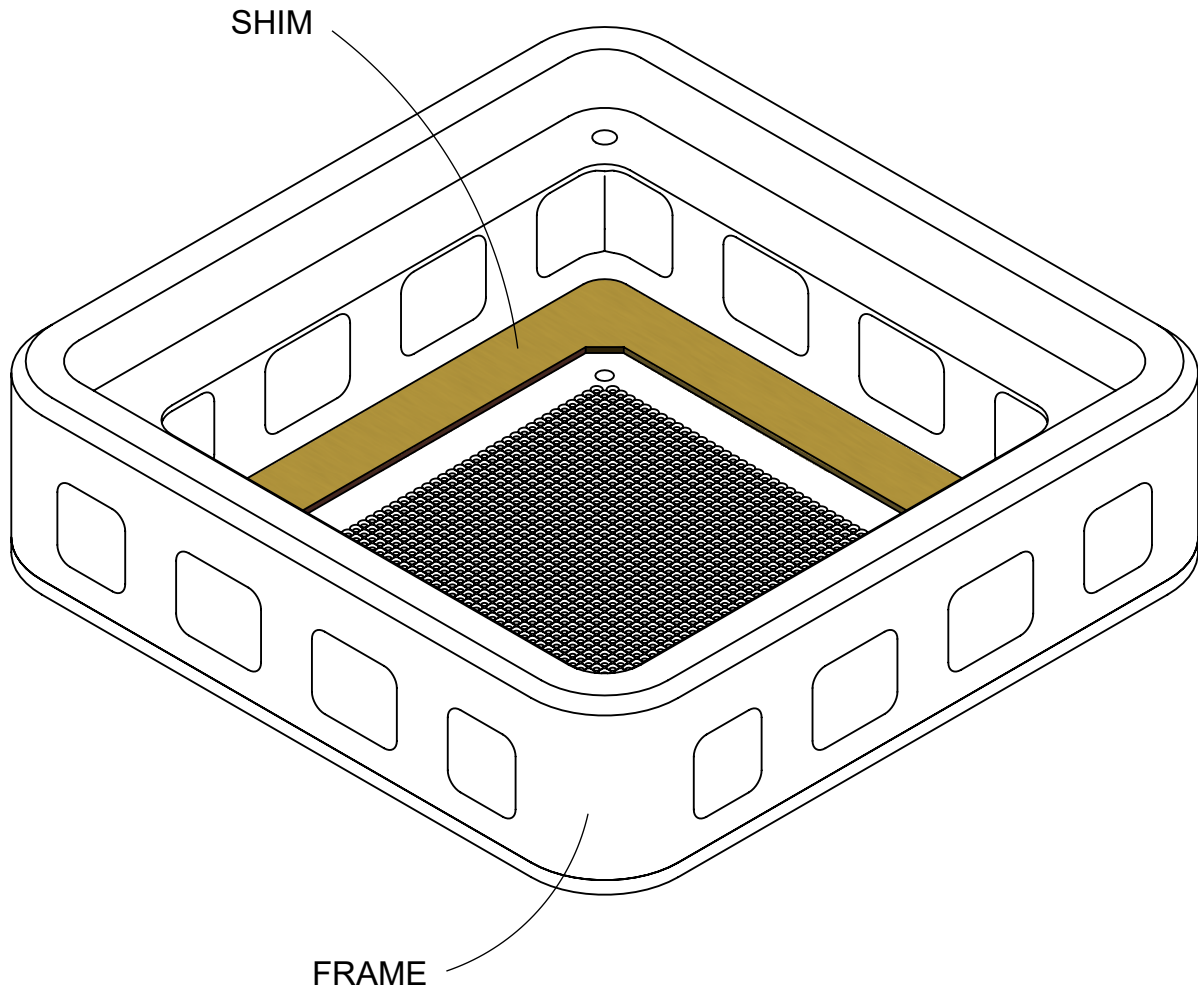
STEP 4 INSERT SHIM



NOTE:
1) SHIM THICKNESS DETERMINES COLUMN LENGTH.
2) SEE SHIM THICKNESS INSTRUCTIONS. (STEP 6)

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
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DO NOT SCALE DRAWING			SHEET 8 OF 28

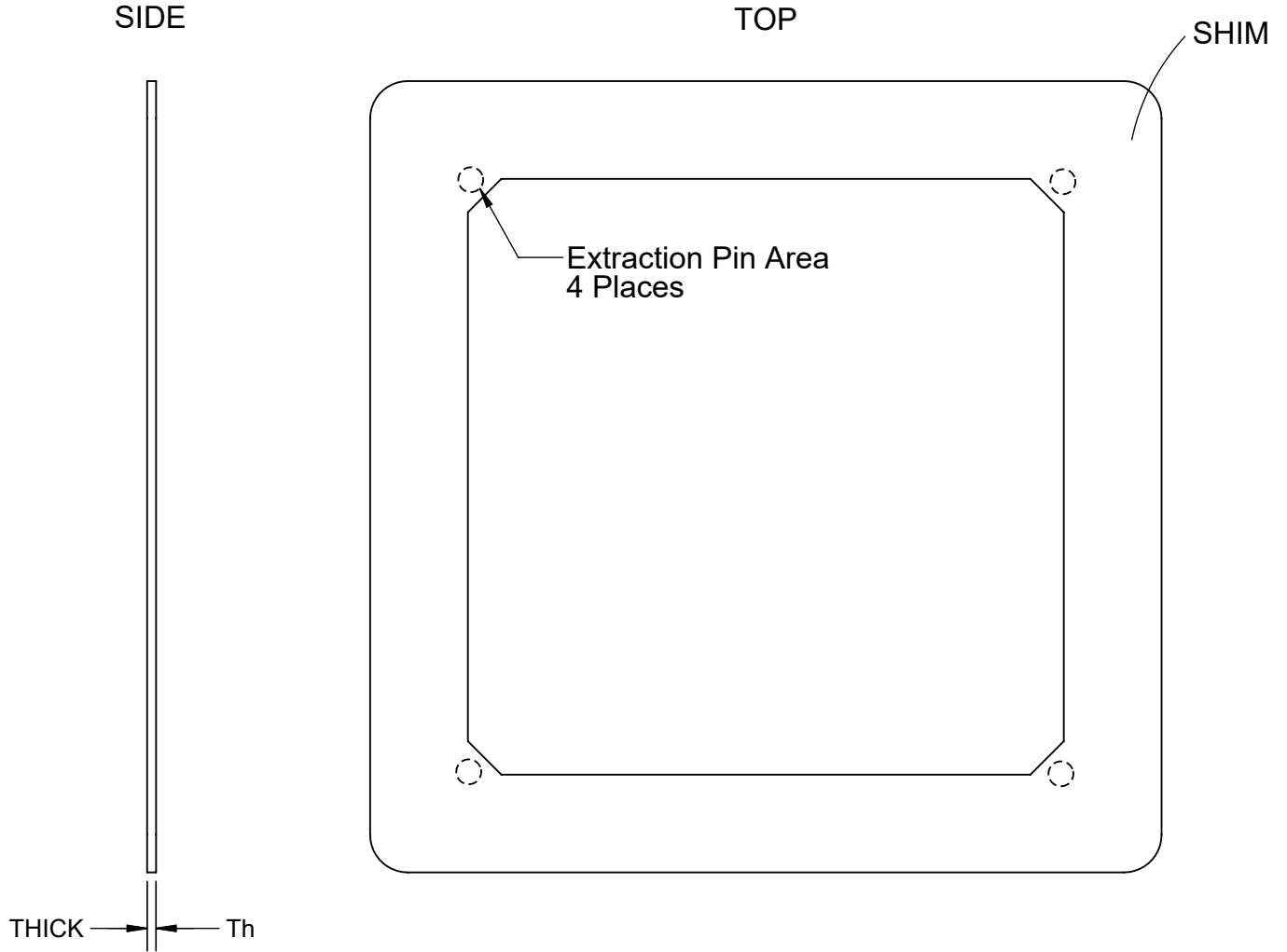
STEP 5 SHIM SEATED ON BRASS PLATE



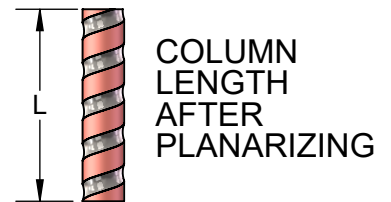
NOTE:
1) POSITION SHIM ON TOP OF BRASS PLATE.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 9 OF 28

STEP 6 SHIM THICKNESS



COLUMN (L) LENGTH		SHIM THICKNESS (Th)	
INCH	METRIC	INCH	METRIC
0.087"	2.21mm	0.025"	0.63mm
0.062"	1.57mm	NONE	NONE
0.100"	2.54mm	0.040"	1.00mm
0.112"	2.85mm	0.050"	1.27mm
0.124"	3.15mm	0.062"	1.57mm
0.137"	3.45mm	0.075"	1.90mm
0.158"	3.86mm	0.090"	2.28mm
0.162"	4.15mm	0.100"	2.54mm



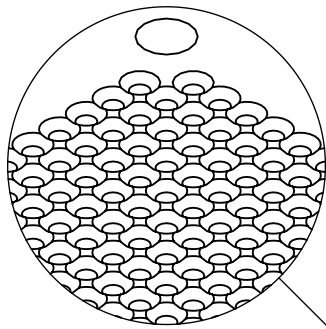
CONTACT TOPLINE FOR OTHER SHIM THICKNESS.

NOTES:

- 1) CONTROLLING DIMENSION IS INCHES.
- 2) COLUMN LENGTH IS EQUAL TO THE THICKNESS OF THE SHIM PLUS THE THICKNES OF THE BRASS ARRAY PLATE.
- 3) SHIM MATERIAL: BRASS OR PLASTIC.

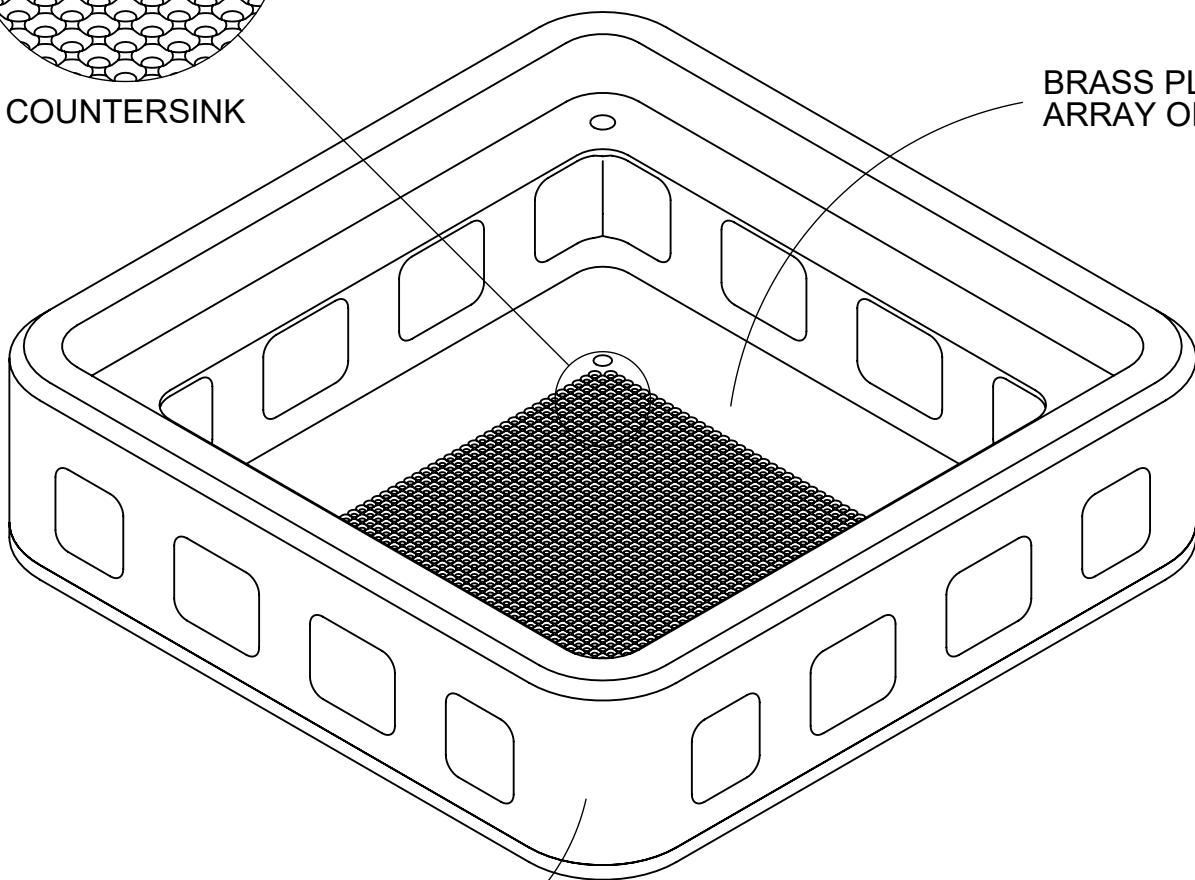
TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 10 OF 28

STEP 7 BRASS PLATE MOUNTED ON FRAME

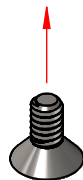


COUNTERSINK

BRASS PLATE
ARRAY OF HOLES



FRAME



FLAT HEAD
SCREWS
16 PLACES

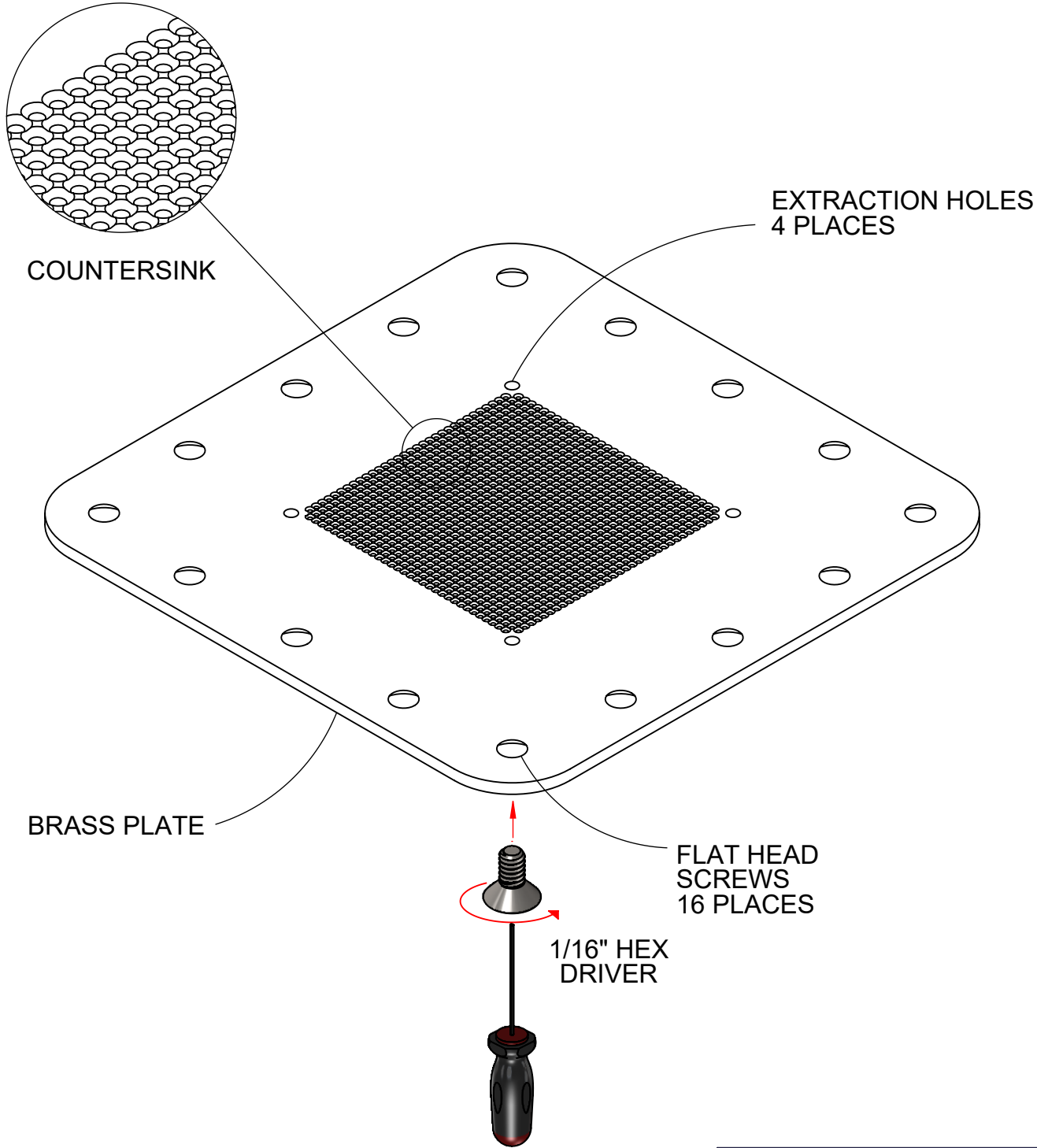
1/16" HEX
DRIVER

NOTE:

- 1) INSPECT ARRAY OF HOLES TO BE FREE OF DEBRIS.
- 2) ARRAY PATTERN MUST MATCH CCGA PADS.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 11 OF 28

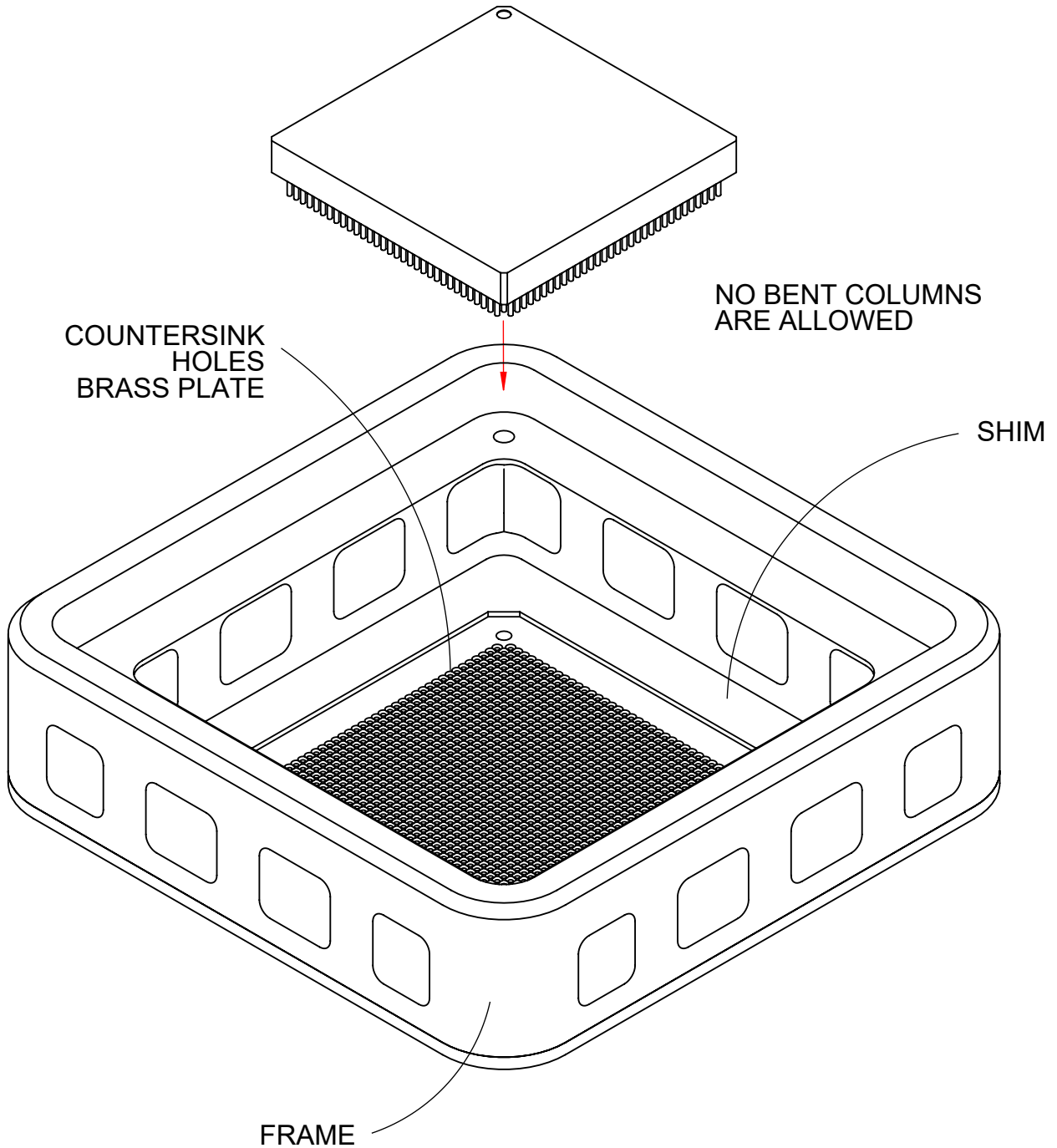
STEP 8 BRASS PLATE



- NOTE:
- 1) INSPECT ARRAY OF HOLES TO BE FREE OF DEBRIS.
 - 2) ARRAY PATTERN MUST MATCH CCGA PADS.
 - 3) EXTRACTION HOLES MATCH CCGA PACKAGE OUTLINE.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 12 OF 28

STEP 9 PLACE CCGA ON BRASS PLATE



NOTE:

- 1) 100% INSPECT COLUMNS BEFORE PLACING IN TOOL.
- 2) DO NOT ATTEMPT TO PLACE CCGA WITH BENT COLUMN.

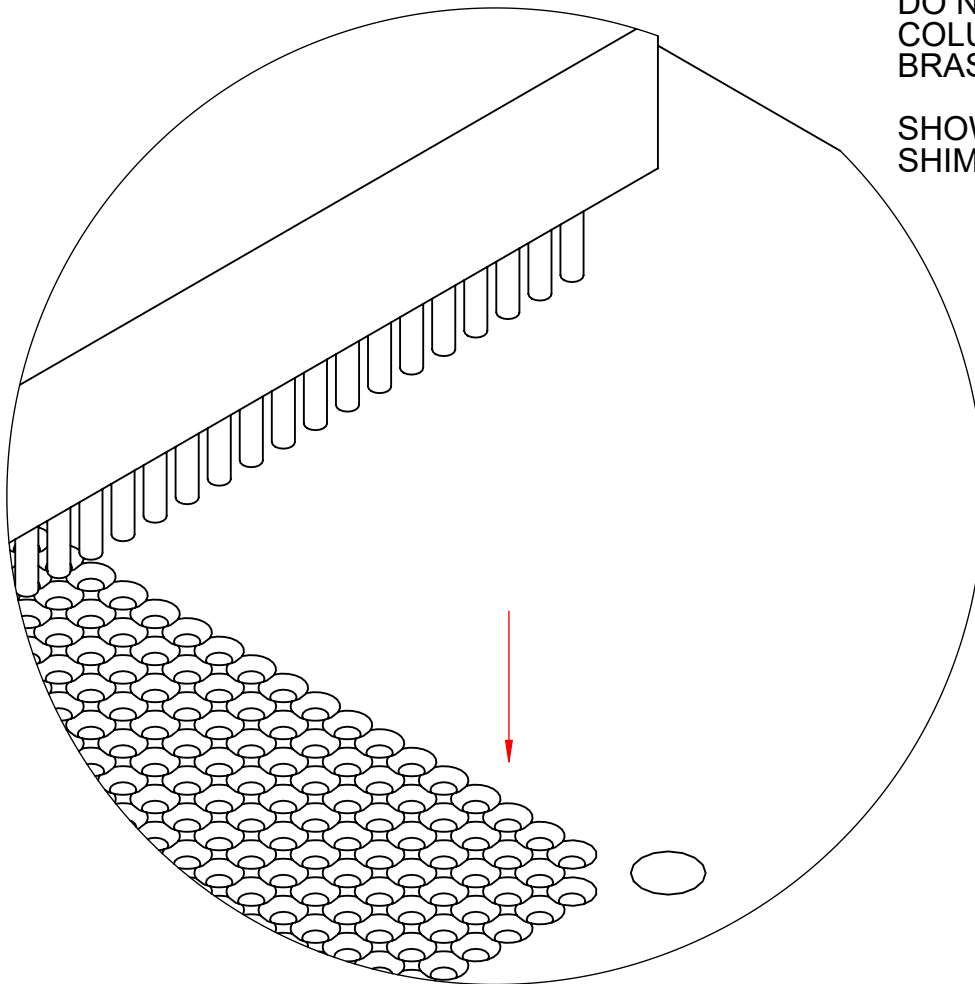
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TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 13 OF 28

STEP 10 GENTLY GUIDE COLUMNS INTO COUNTER SINK HOLES

NO BENT COLUMNS
ARE ALLOWED

DO NOT FORCE
COLUMNS INTO
BRASS PLATE

SHOWN WITHOUT
SHIM FOR CLARITY



NOTE:

- 1) DO NOT FORCE COLUMNS INTO HOLES.
- 2) IF CCGA DOES NOT IMMEDIATELY SEAT, REMOVE CCGA AND INSPECT IF ANY COLUMN IS BENT.

TopLine[®]

TITLE CCGA COLUMN
PLANARIZATION

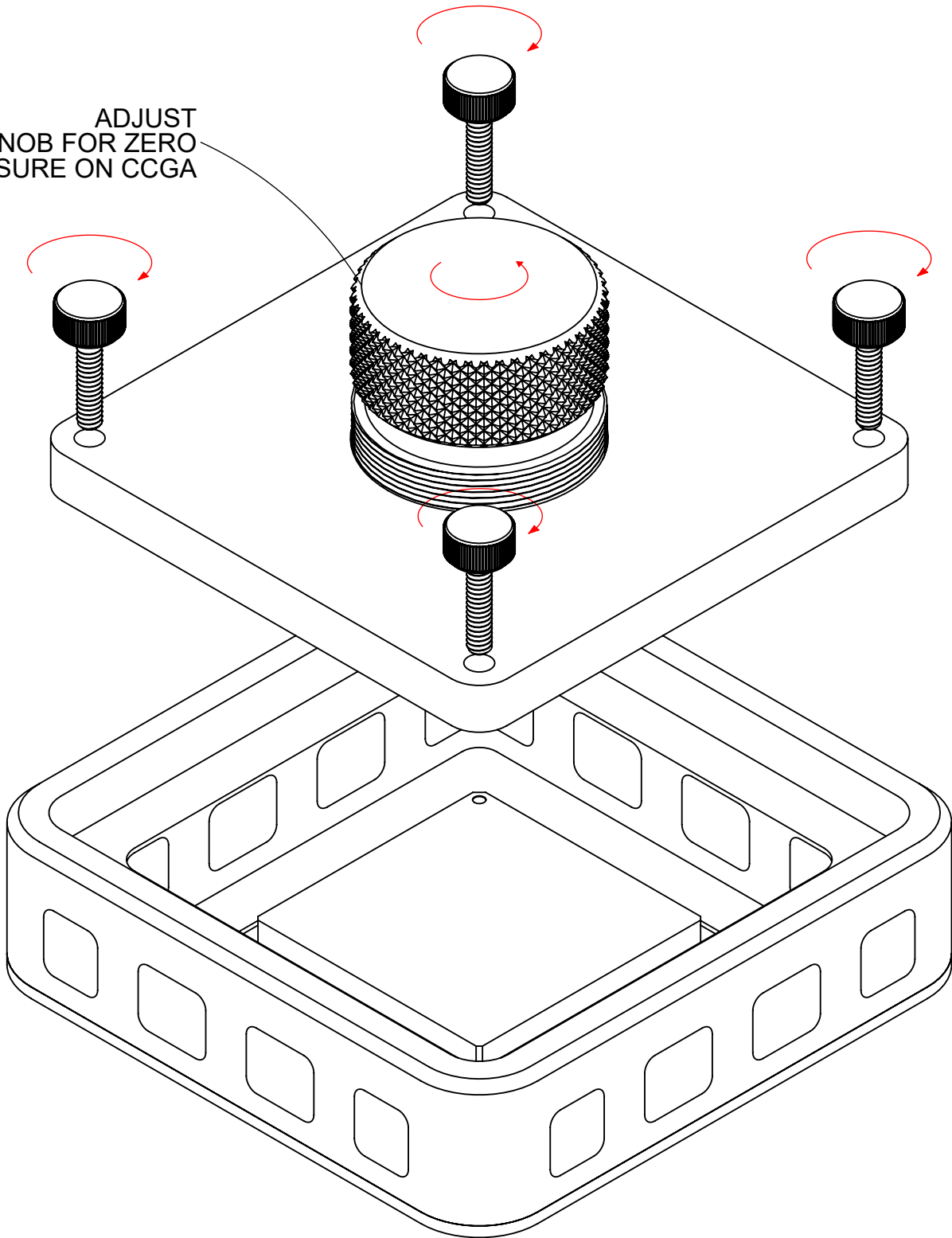
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DO NOT SCALE DRAWING

SHEET 14 OF 28

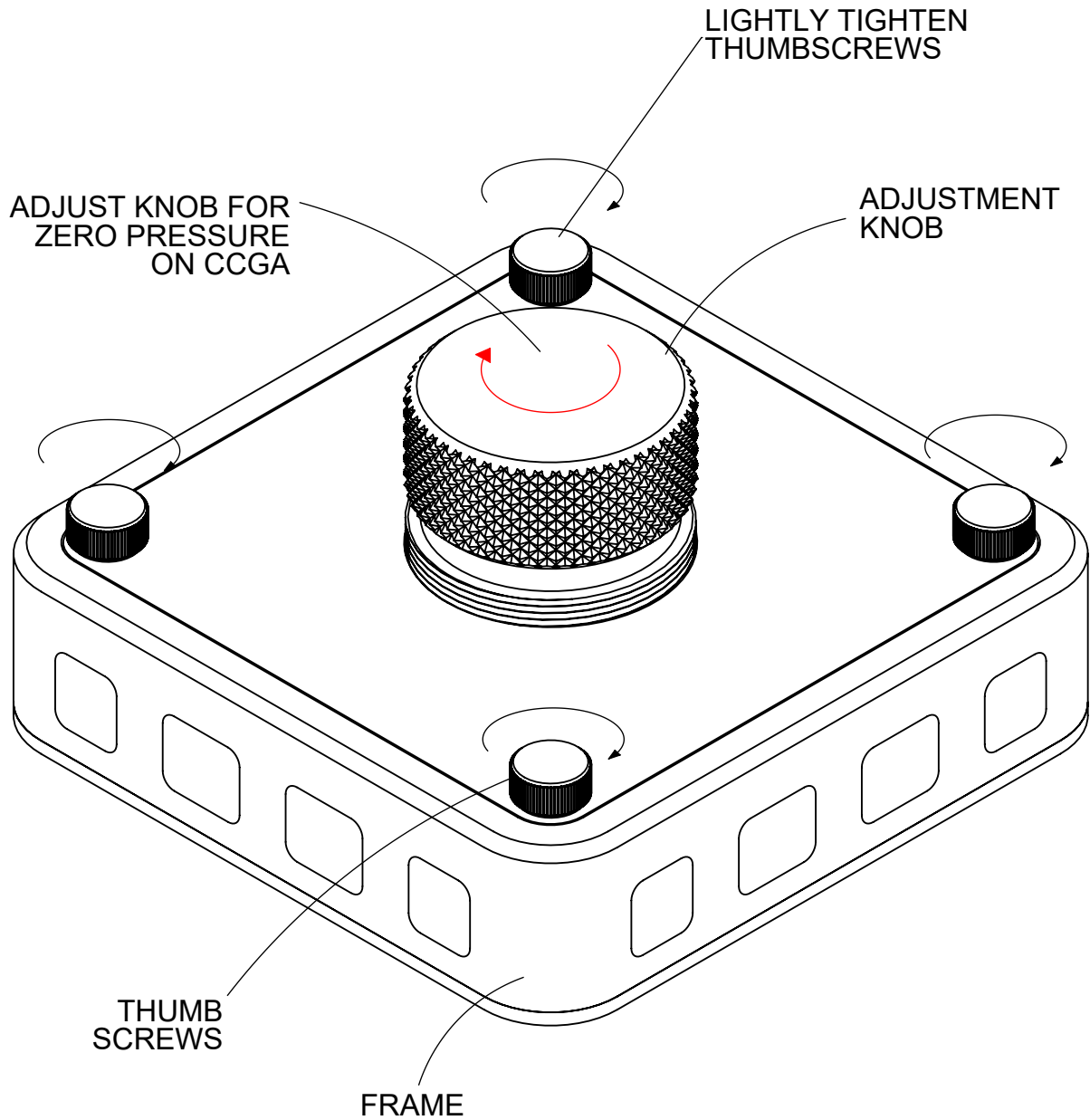
STEP 11 PLACE COVER ON FRAME

ADJUST
KNOB FOR ZERO
PRESSURE ON CCGA



TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 15 OF 28

STEP 12 TIGHTEN THUMBSCREWS



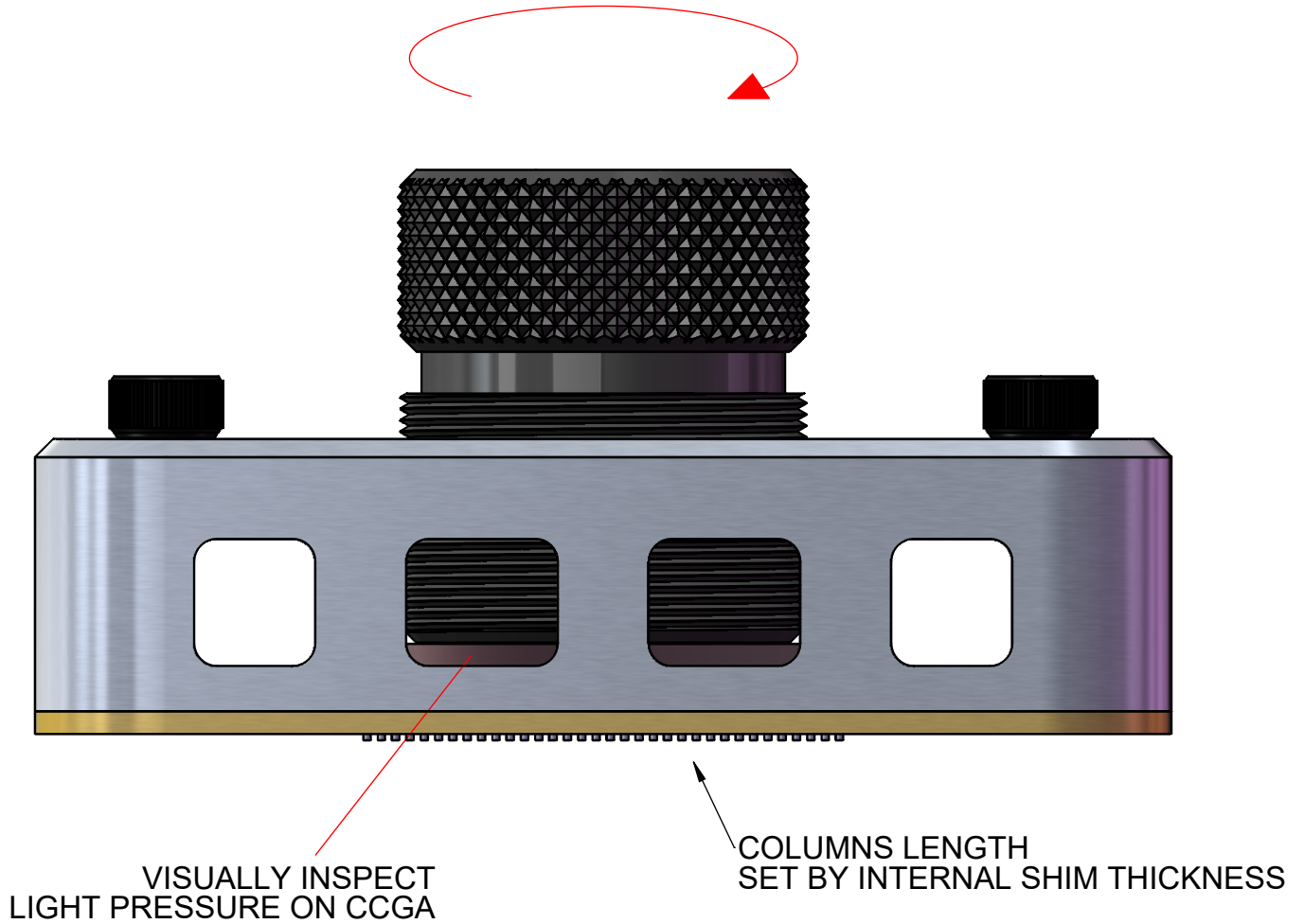
NOTE:

1) THE KNOB SHOULD LIGHTLY TOUCH TOP OF CCGA TO PREVENT MOVEMENT OF CCGA INSIDE THE TOOL.

2) DO NOT OVERLY TIGHTEN THE LARGE KNOB.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 16 OF 28

STEP 13 VISUALLY INSPECT



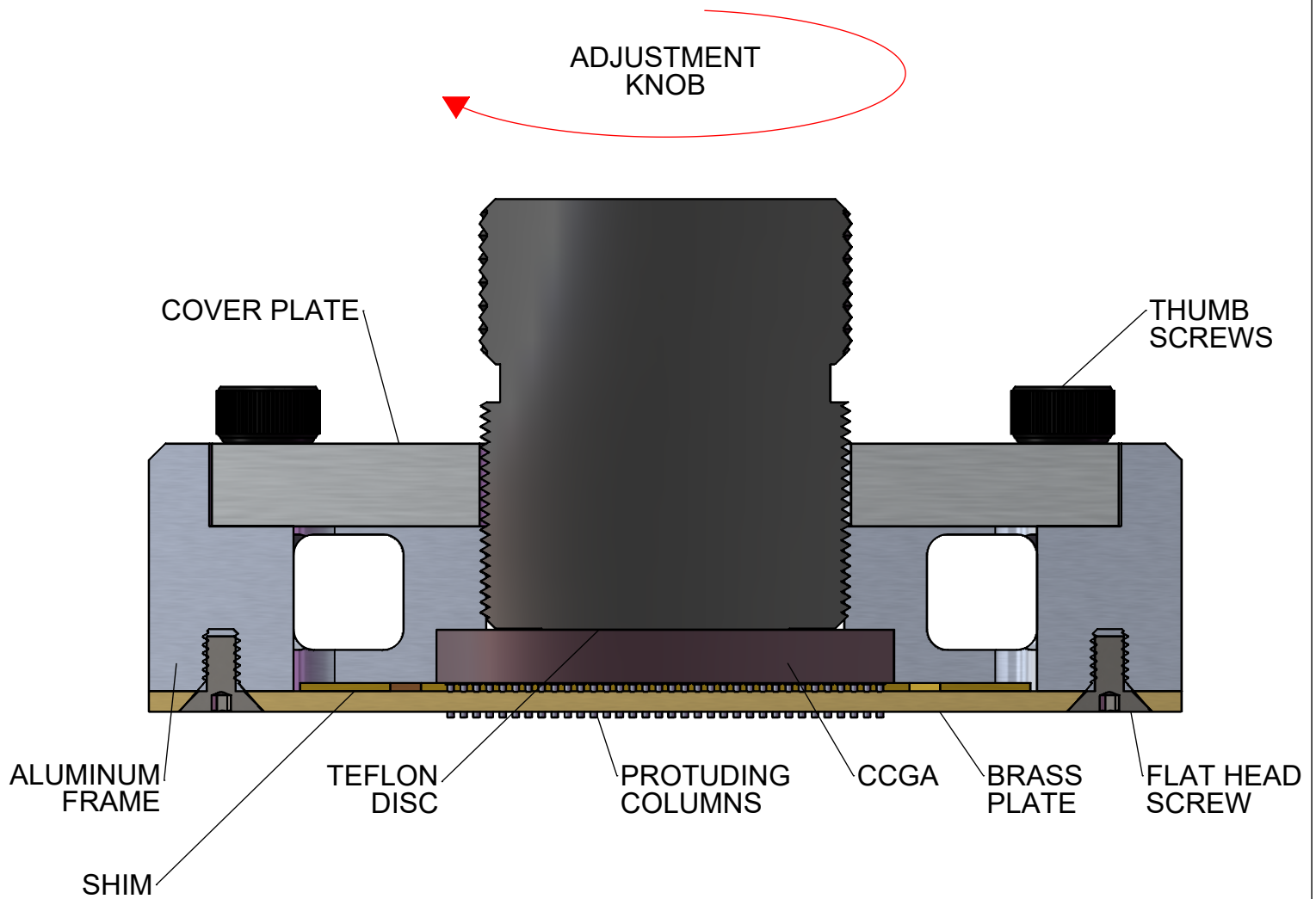
NOTE:

1) THE KNOB SHOULD LIGHTLY TOUCH TOP OF CCGA TO PREVENT MOVEMENT OF CCGA INSIDE THE TOOL.

2) DO NOT OVERLY TIGHTEN.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
2:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 17 OF 28

STEP 14 SECTIONAL VIEW

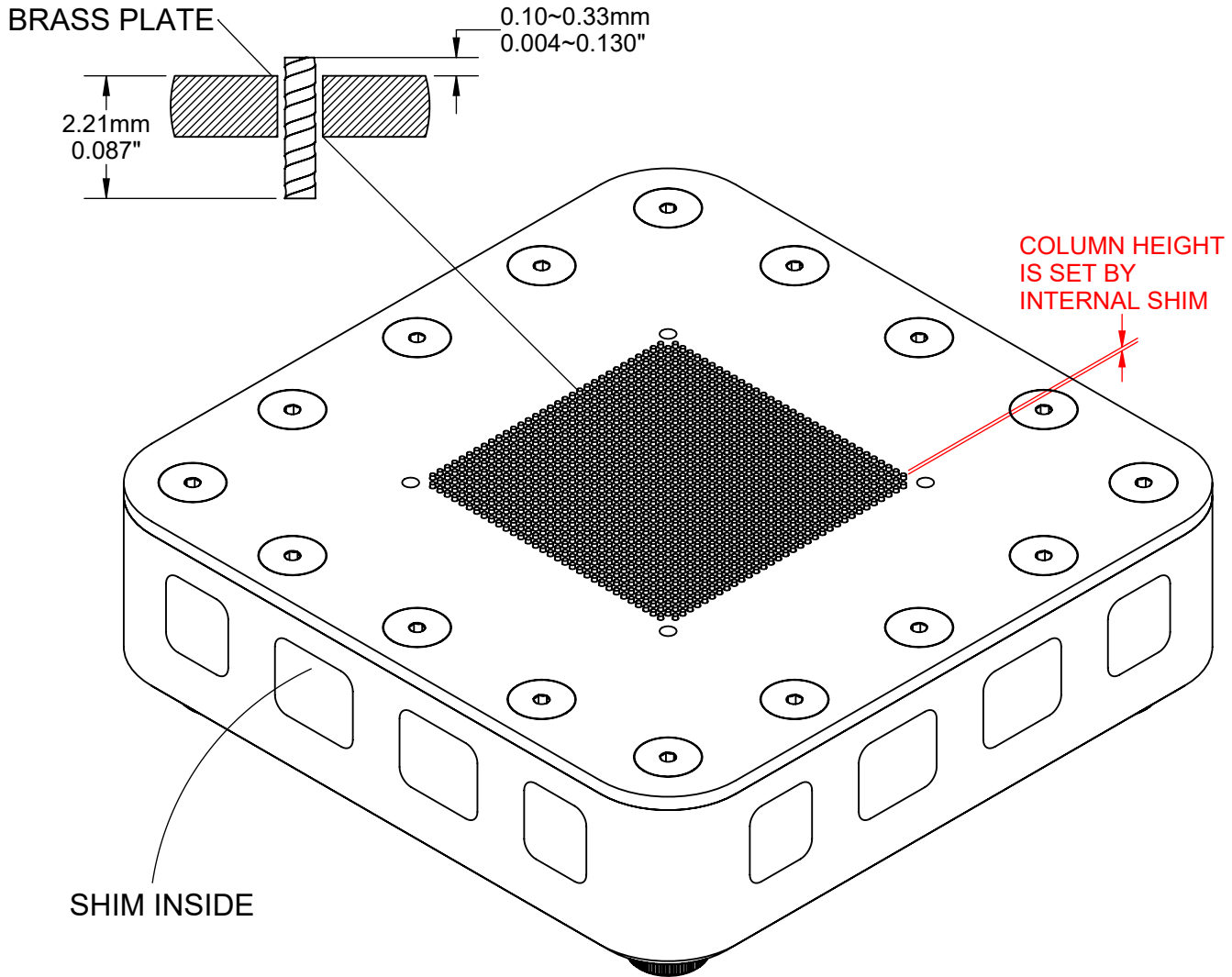


NOTE:

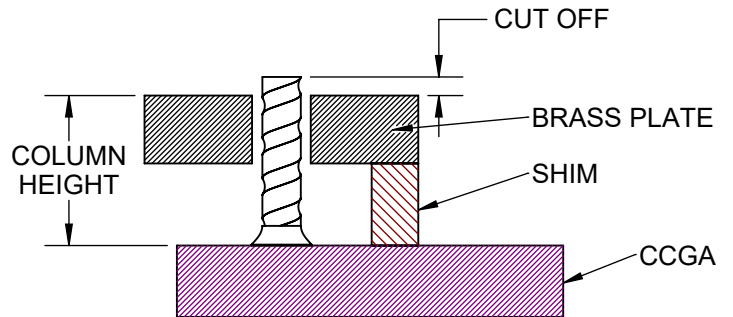
- 1) THE KNOB SHOULD LIGHTLY TOUCH TOP OF CCGA TO PREVENT MOVEMENT OF CCGA INSIDE THE TOOL.
- 2) DO NOT OVERLY TIGHTEN.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
2:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 18 OF 28

STEP 15 COLUMNS PROTRUDE ABOVE BRASS PLATE



SEE STEP 6 TO SELECT SHIM THICKNESS

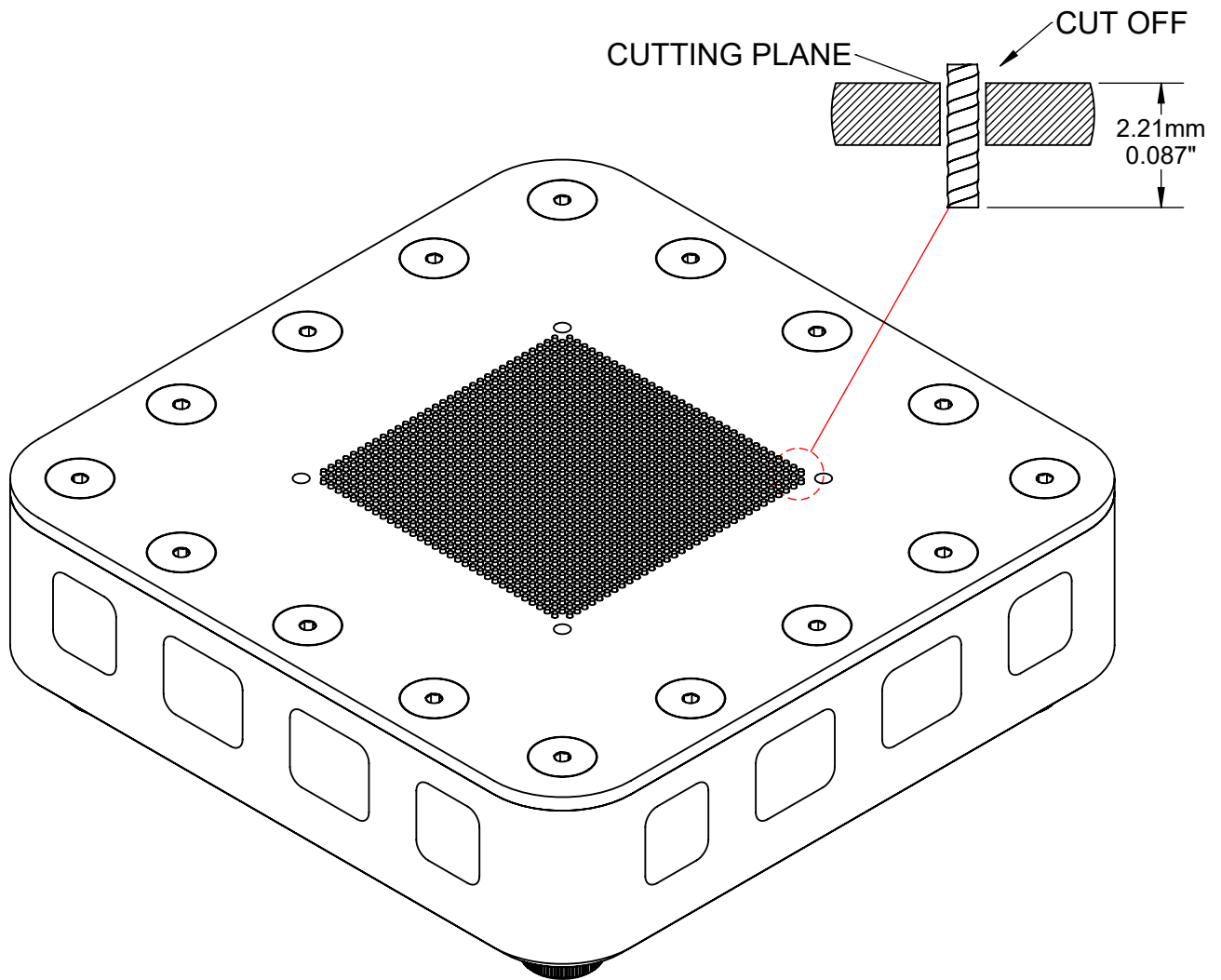


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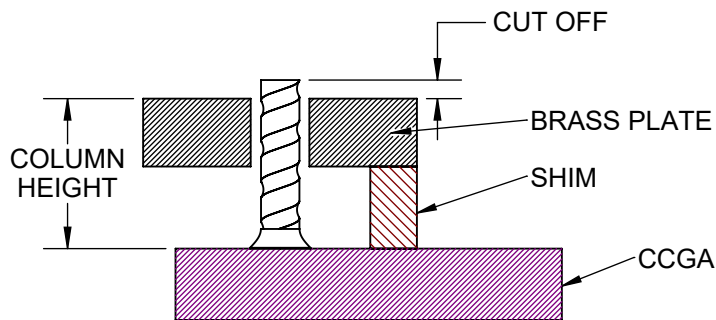
- 1) COLUMNS PROTRUDE ABOVE PLANE OF BRASS PLATE.
- 2) PROTRUDING COLUMNS ARE CUT USING A SHARP BLADE, OR BY LAPPING ON ROTATING SPINNING WHEEL WITH GRIT PAPER SiC (Silicon Carbide).

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 19 OF 28

STEP 16 OPTIONAL METHOD CUT WITH SHARP BLADE



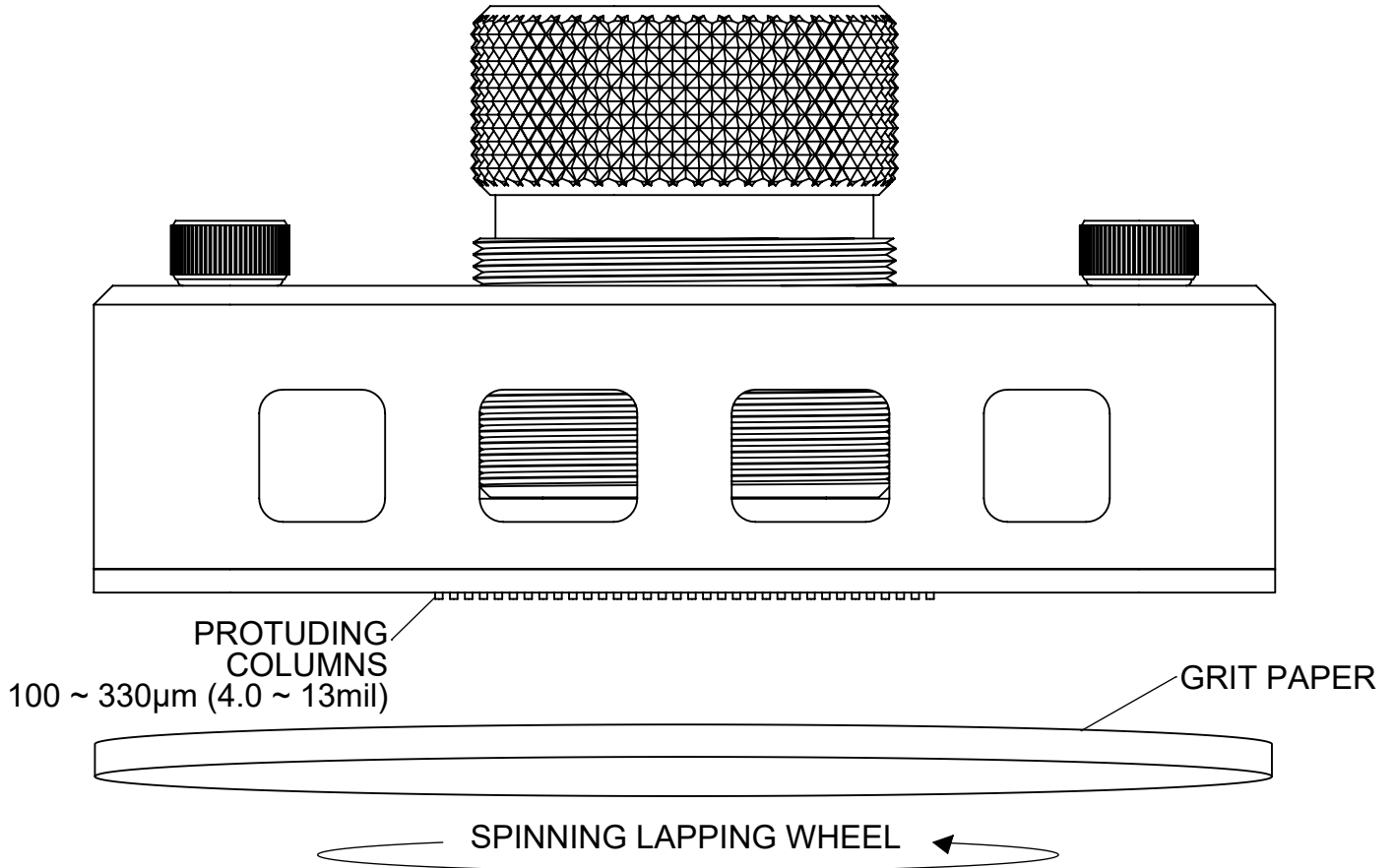
SEE STEP 6 TO SELECT SHIM THICKNESS



NOTE:
1) ALTERNATIVE CUTTING METHOD USING RAZOR BLADE
OR CUTTING KNIFE.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 20 OF 28

STEP 17 PLANARIZE COLUMNS WITH LAPPING WHEEL

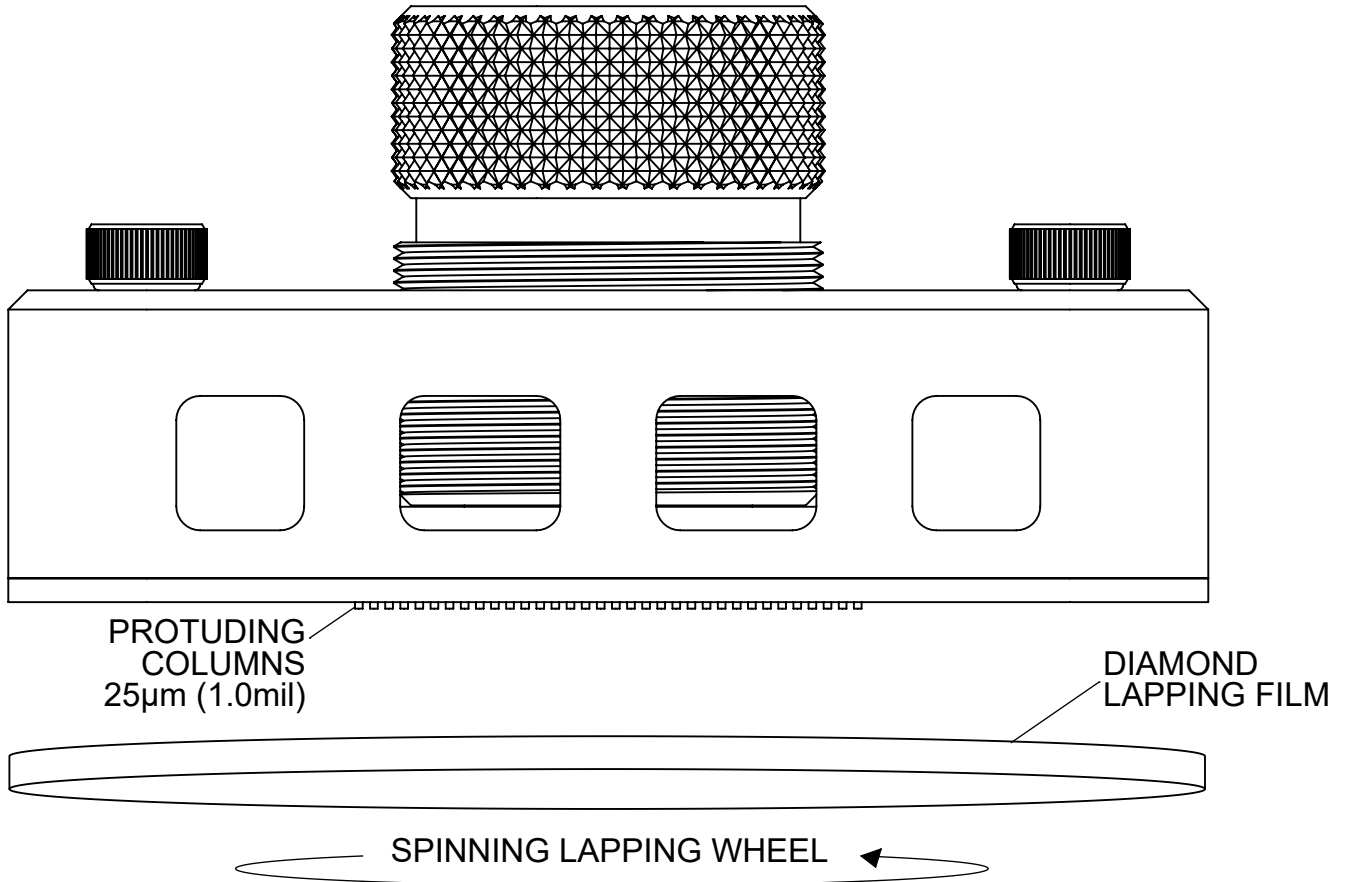


NOTE:

1) TOUCH SURFACE OF BRASS PLATE ONTO SPINNING LAPPING WHEEL WITH SiC (Silicon Carbide) ABRASSIVE GRIT PAPER.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
2:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 21 OF 28

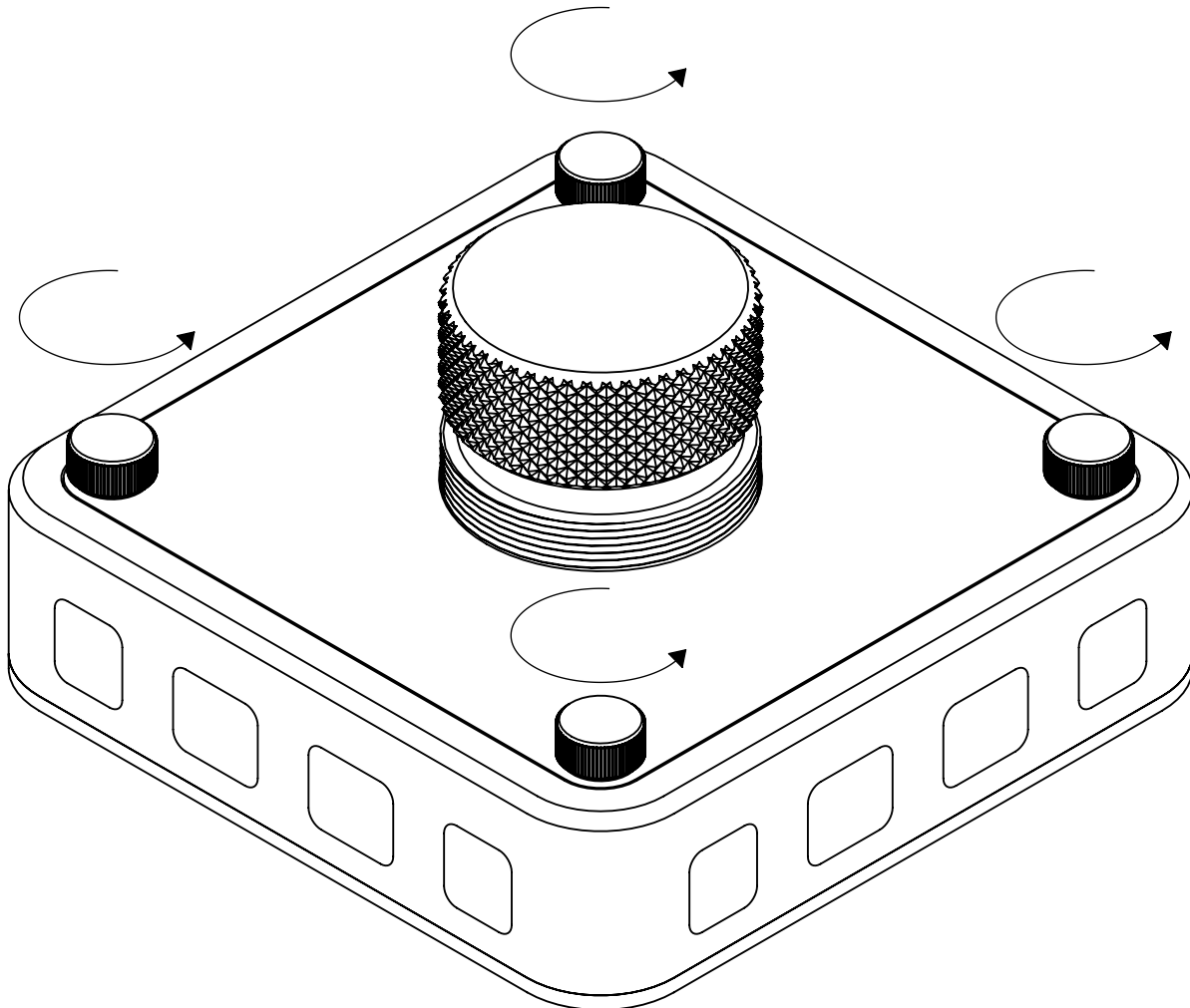
STEP 18 REMOVE THUMB SCREWS



NOTE:
1) AFTER CUTTING, POLISH TIPS OF COLUMNS USING DIAMOND LAPPING FILM.

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
2:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 22 OF 28

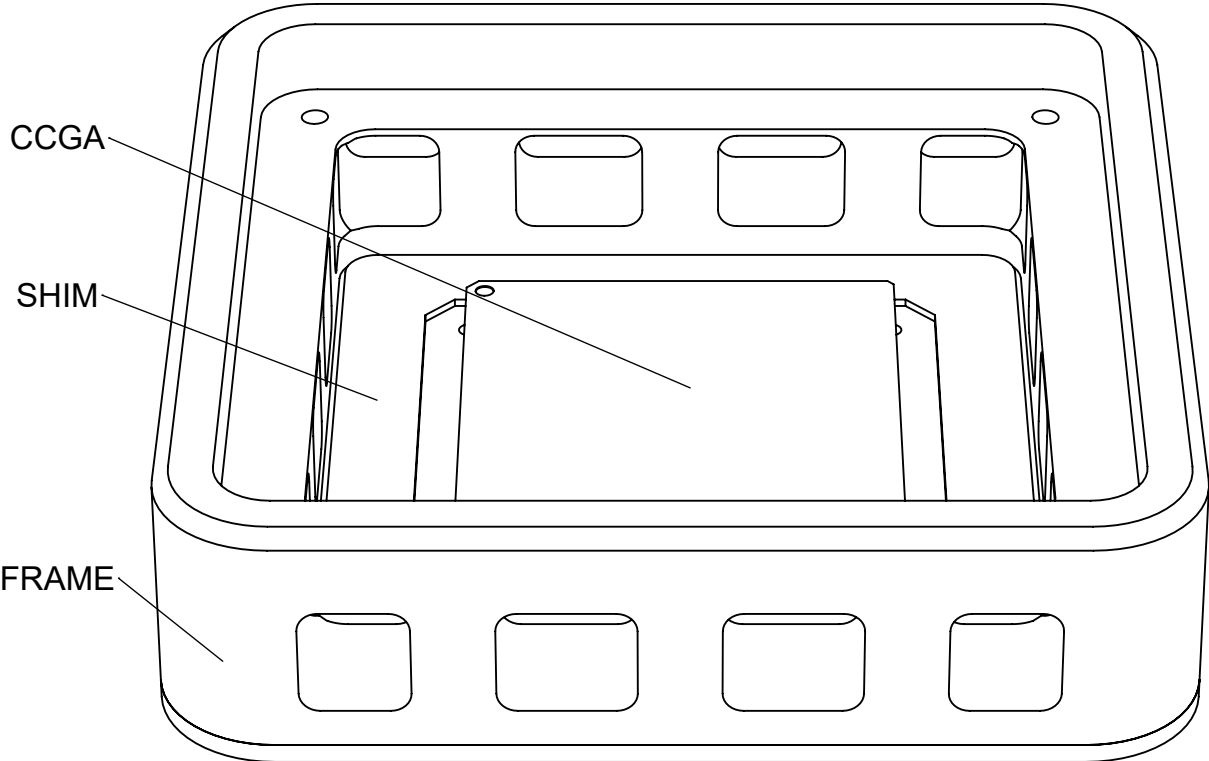
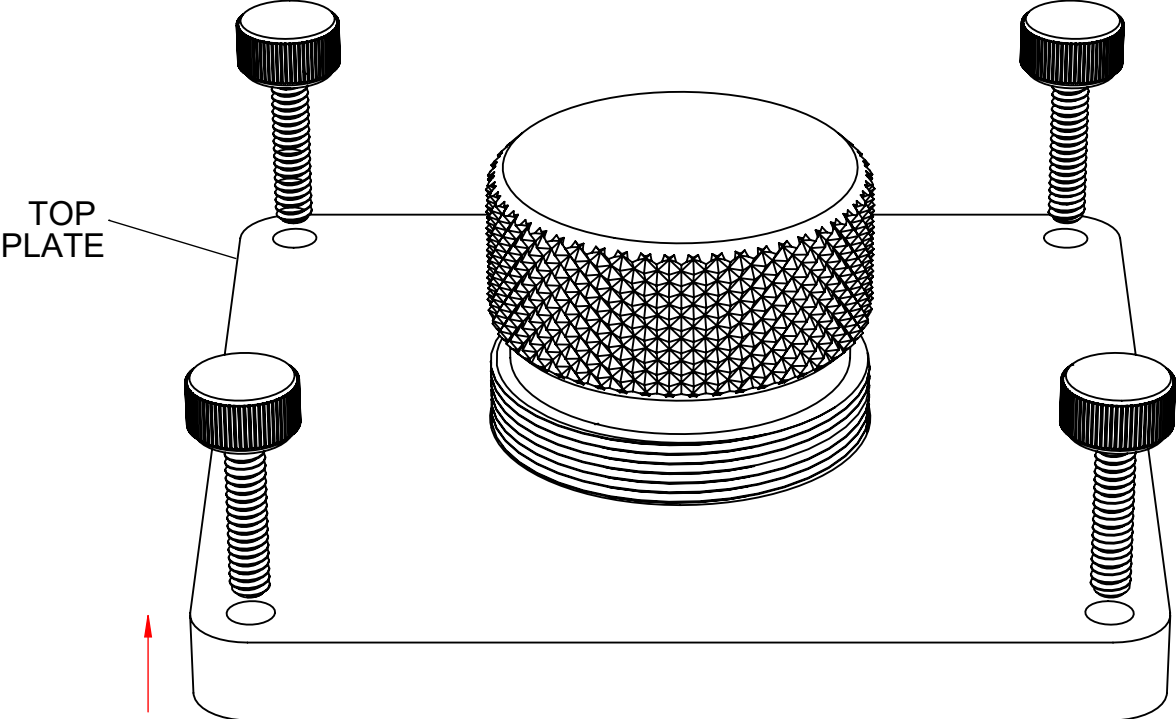
STEP 19 REMOVE THUMBSCREWS



NOTE:
1) UNSCREW ALL THUMBSCREWS.
2) NOT NECESSARY TO UNSCREW LARGE KNOB.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
3:2	A	001992	A
DO NOT SCALE DRAWING			SHEET 23 OF 28

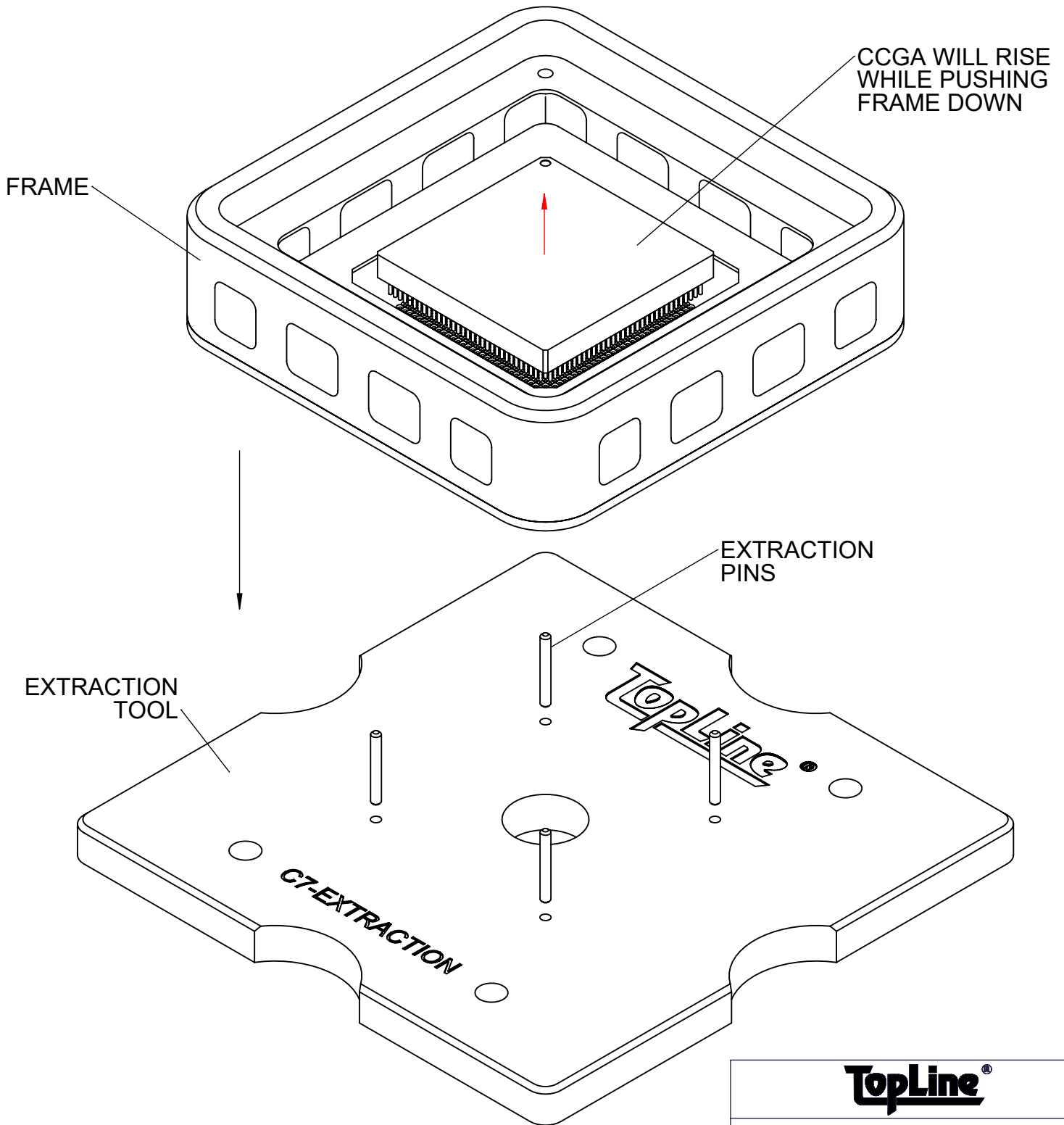
STEP 20 REMOVE THE COVER



NOTE:
1) REMOVE TOP PLATE.
2) USE EXTRACTION TOOL TO REMOVE CCGA.

TopLine[®]			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
2:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 24 OF 28

STEP 21
POSITION FRAME OVER
EXTRACTION PINS.
ALLOW THE CCGA TO GENTLY RISE.

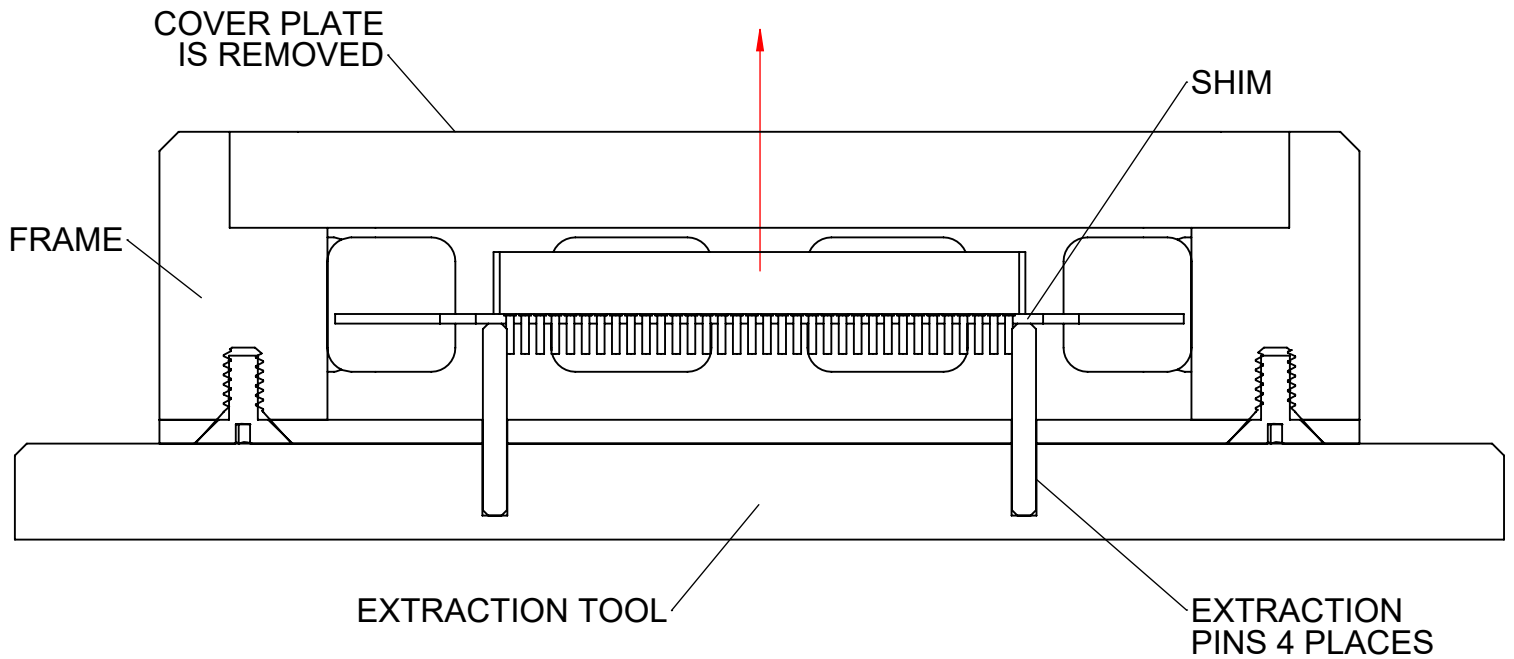


NOTE:
 1) KEEP EXTRACTION TOOL FLAT ON WORK BENCH.
 2) USE HANDS TO SEAT ALUMINUM FRAME ONTO EXTRACTION PINS

TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
1.25:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 25 OF 28

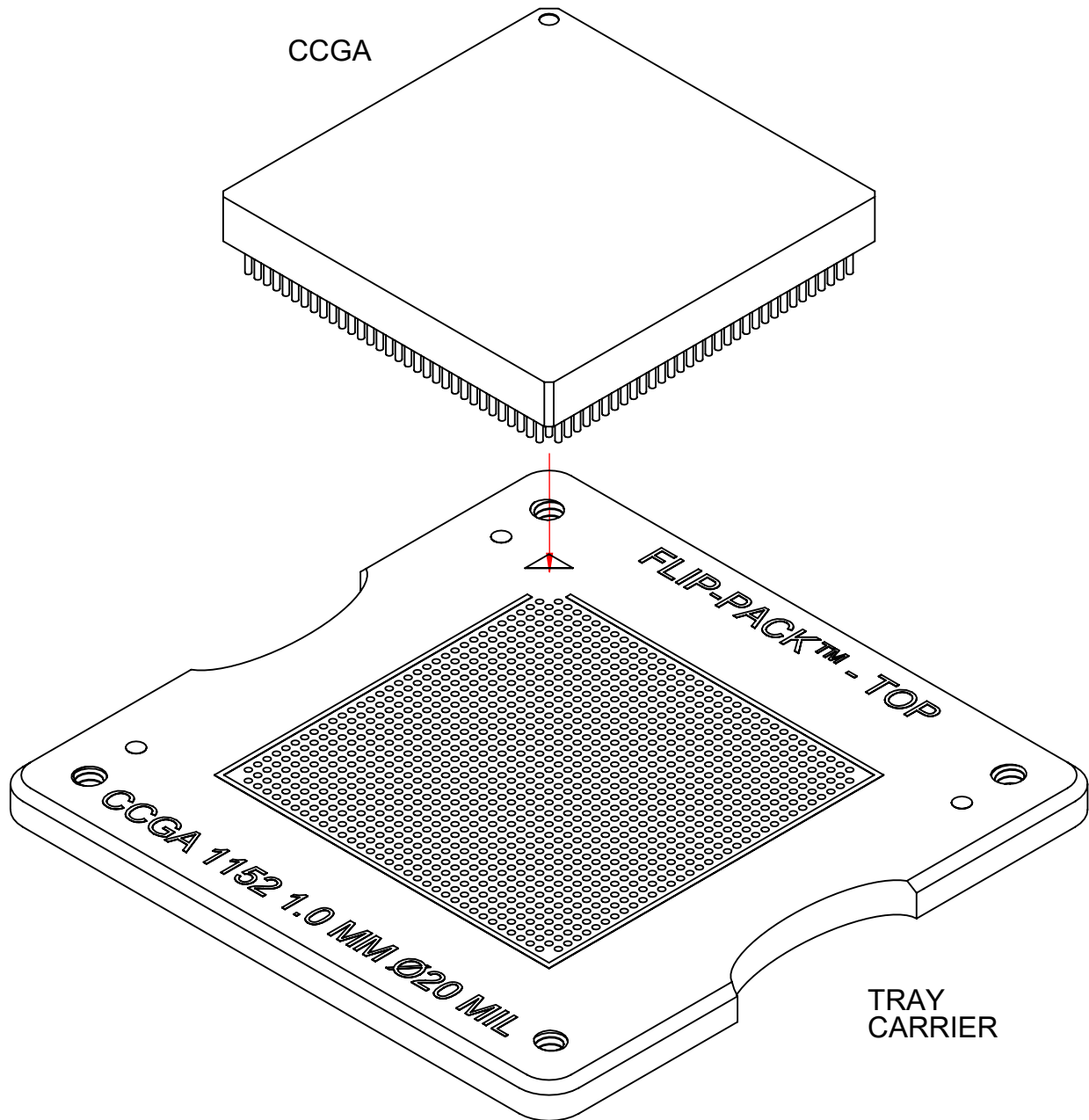
STEP 22 SECTIONAL VIEW EXTRACTING CCGA

CCGA LIFTING



TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
1.25:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 26 OF 28

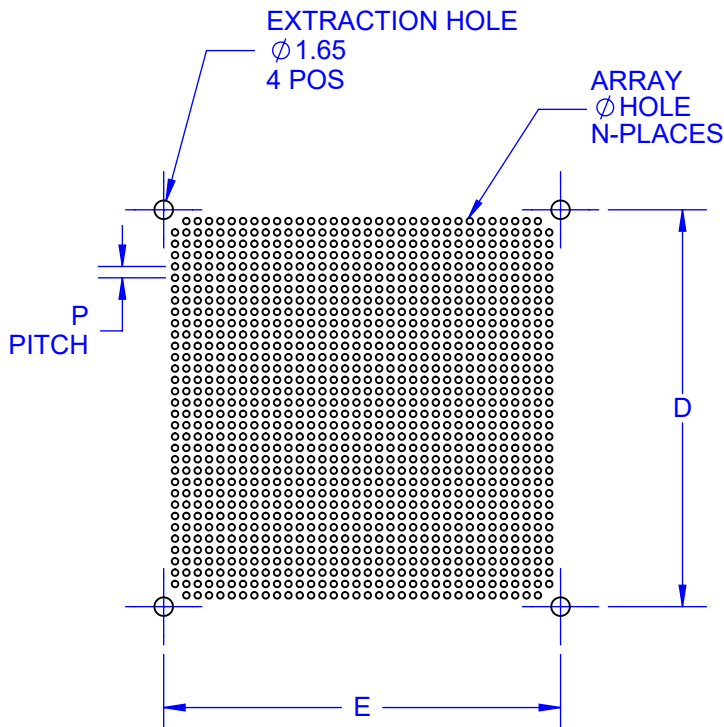
STEP 23 PLACE CCGA IN TRAY CARRIER



TopLine®			
TITLE		CCGA COLUMN PLANARIZATION	
SCALE	SIZE	DRAWING NO.	REV
1.25:1	A	001992	A
DO NOT SCALE DRAWING			SHEET 27 OF 28

SPARE PARTS

NBR	ITEM	DESCRIPTION AND NOTES	DETAIL DWG
1	TEFLON PAD	REDUCES MARRING OF CCGA. REPLACE AFTER 100 CCGA, OR AS REQUIRED	704006
2	SCREW DRIVER	SCREW DRIVER FOR 1/16" HEX HEAD SCREWS	704000
3	FLAT HEAD SCREWS	HEX-FLAT HEAD STAINLESS STEEL SCREWS 4-40 THREAD 1/4" LONG (1/16" HEX SLOT)	704042
4	THUMB SCREWS	PLASTIC KNURL HEAD THUMB SCREWS 4-40 THREAD 1/2" LONG	704028
5	PRESSURE ADJUSTMENT THREADED KNOB	THREADED KNOB SCREW 1.125-32 THREAD	700200
6	SHIM	0.025" THICK (0.63mm) FOR 0.087" (2.21mm) LONG COLUMN	700250*
7	BRASS ARRAY PLATE	PATTERN OF ARRAY AND LOCATION OF EXTRACTION HOLES ARE SPECIFIC TO CCGA DEVICE.	CALL
8	ALUMINUM FRAME	UNIVERSAL LAPPING TOOL HOLDER 3.125" x 0.750"	700240
9	COVER PLATE	UNIVERSAL TOP PLATE LAPPING TOOL HOLDER 2.743" x 0.250"	700241
10	CCGA EXTRACTION TOOL	GENTLY LIFTS CORNERS OF CCGA SUBSTRATE TO EXTRACT AND REMOVE CCGA FROM LAPPING TOOL	CALL



TopLine[®]			
TITLE CCGA COLUMN PLANARIZATION			
SCALE 1.25:1	SIZE A	DRAWING NO. 001992	REV A
DO NOT SCALE DRAWING			SHEET 28 OF 28