

VLBA ACQUISITION MEMO #349

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS 01886

2 February 1993

Telephone: 508-692-4764
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To: VLBA Data Acquisition Group

From: Alan E.E. Rogers, Ken Wilson
G. Peck H. Hinteregger

Subject: Thin tape upgrade - summary of parts, drawings, assembly and test

VLBA Acquisition Memo #290 describes the preliminary version of the upgrade - use only with caution - as some details have changed. This is an updated version of VLBA Acquisition Memo #333.

Drawings:

	<u>Drawing #'s</u>	<u>ACAD File Names</u>
I/O Sleeve	C6310-101 Rev D ..	6310101D
"E" Casting	D6310-105 Rev C ..	6310105C
(also known as vacuum spacer)		
Vacuum Door	C6310-108 Rev C ...	6310108C
Vacuum Front Door Plate .	C6310-109 Rev B ...	6310109B
Mods. to Loading Blocks ..	A6310-112	A6310112
"E"-Casting Assy & Install. .	D6310-113	D6310113
Vacuum Door Assy & Install	C6310-114A	6310114A
Edge Bearing Plate	A6310-83A	A631083A

Part Numbers:

Precision Plate

Backing Plate

(modified according to Dwg. 6310-82 Rev A)

I/O Roller

Idler Rollers

Loading Blocks

Alumina Plates

Metrum - 16827015-001

Metrum - 16827014-002

Metrum - 16812759-005

Metrum - 16821285-004

Metrum - 16776407-003

Coors - To Dwg. A6310-83A

Costs:

See VLBA Acquisition Memo #331.

Assembly:

E-Casting

Front Door

I/O Rollers

Drawing - D6310-113

Drawing - C6310-114

As in VLBA Acquisition Memo 290 but use die-cut 10 mil shim washers.

Alignment:

Reel Table VLBA Acquisition Memo 290

Tape Clearance:

See Attached Drawing as an aid to understanding clearances -
Labelled - Nominal Tape Clearances, Rev A, Sept '92

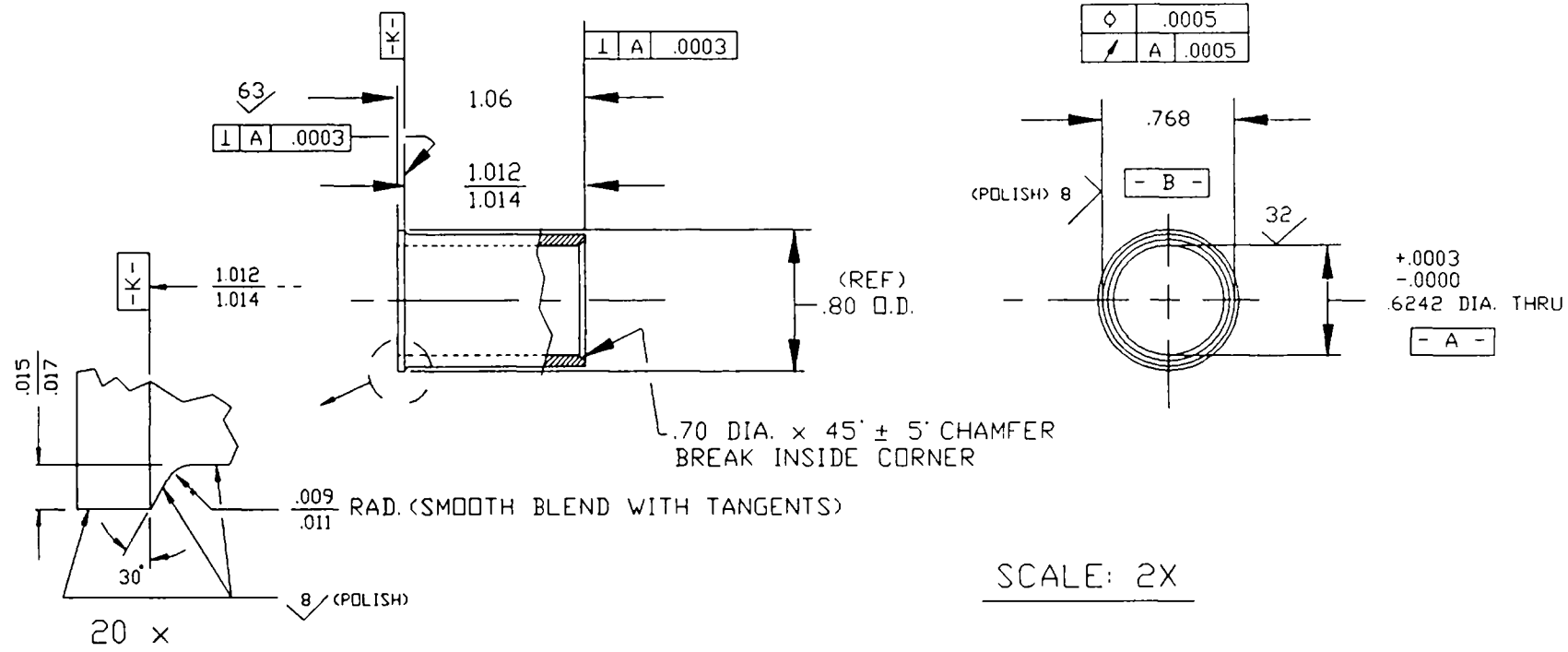
Tests:

Forward/reverse shift	VLBA Acquisition memo	151
Speed Shift	" "	" "
Vacuum Shift	" "	" "
Flip Test	" "	" "
Front Door Margin	" "	330

Special Notes and Cautions:

- 1] Be sure alumina plates are clean, especially in the area which is epoxied. **Be sure the epoxy bond is good** - for if the bond breaks the plate can be pulled out by the vacuum enough to damage tapes.
- 2] The slope in the depth of the vacuum column should be 4 ± 0.8 mils per inch. Check that depths at points C (1.25" from points A', A", B', B", along the inside edges of the bearing plates) is close to 5 mils greater than at those points, and, in any case, between 1.0065" and 1.0085". The depth along the outside edge of the 3" square bearing plate is nominally 12 mils greater than along the inside edge, that is, $1.0145" \pm .0029"$ (worst case sum of errors).
- 3] Ignore other tests in VLBA Acquisition Memo #'s 151 and 330 as they are either obsolete or unnecessary. Do only forward-reverse, speed shift, vacuum shift, and flip test from Memo 151. Do only the door shim test in Memo 330 (only remove idler if there is a problem with door margin).

CHANGE LETTER	DRAWN BY	CHK'D BY	APP'D BY	DATE	DCN & DESCRIPTION
C	RJC	HFH	AEER	6/92	TIGHTENED TOLERANCES
D	RJC	HFH	AEER	6/92	2 (POLISH) FINISH NOW 8 (POLISH)



- USER NOTES:**
1. PREVENTS EDGE DAMAGE TO THIN TAPE WITH REASONABLE PACK MISALIGNMENT TOLERANCE.
 2. ✓ TAPE BEARING SURFACE TO MINIMIZE FRICTION.
 3. LENGTH OF ✓ SURFACE ALLOWS .050 TAPE EDGE MISALIGNMENT AT 5" DISTANCE WITHOUT BINDING (IF TAPE IS FREE TO SLIDE).
 4. FLANGE DETAIL TO MINIMIZE TAPE ENTRY/EXIT CONTACT LENGTH.

NOTES

NO RACK MARKS OR RAISED SCRATCHES PERMITTED ON **-B-**.

MATERIAL
ALUM. #6061-T6 PER
00-A-225/8

CHEM AND/OR HEAT TREATMENT
NONE

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
FRACTIONAL ± 1/64
DECIMAL XX ± .01
DECIMAL XXX ± .005
ANGULAR ± 0'30"
3. SURFACE ROUGHNESS
PER MIL-E13-10
4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX.
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.

USED ON

DRAWN BY	H. HINTEREGGER	DATE	1/92
DRAWN BY	R. CADY	DATE	1/92
CHECKED BY			
PROJECT			
ENGINEER			
MAT'L & PROCESS			
STRUCTURES			
THERMAL			
Mech. ANALYSIS			

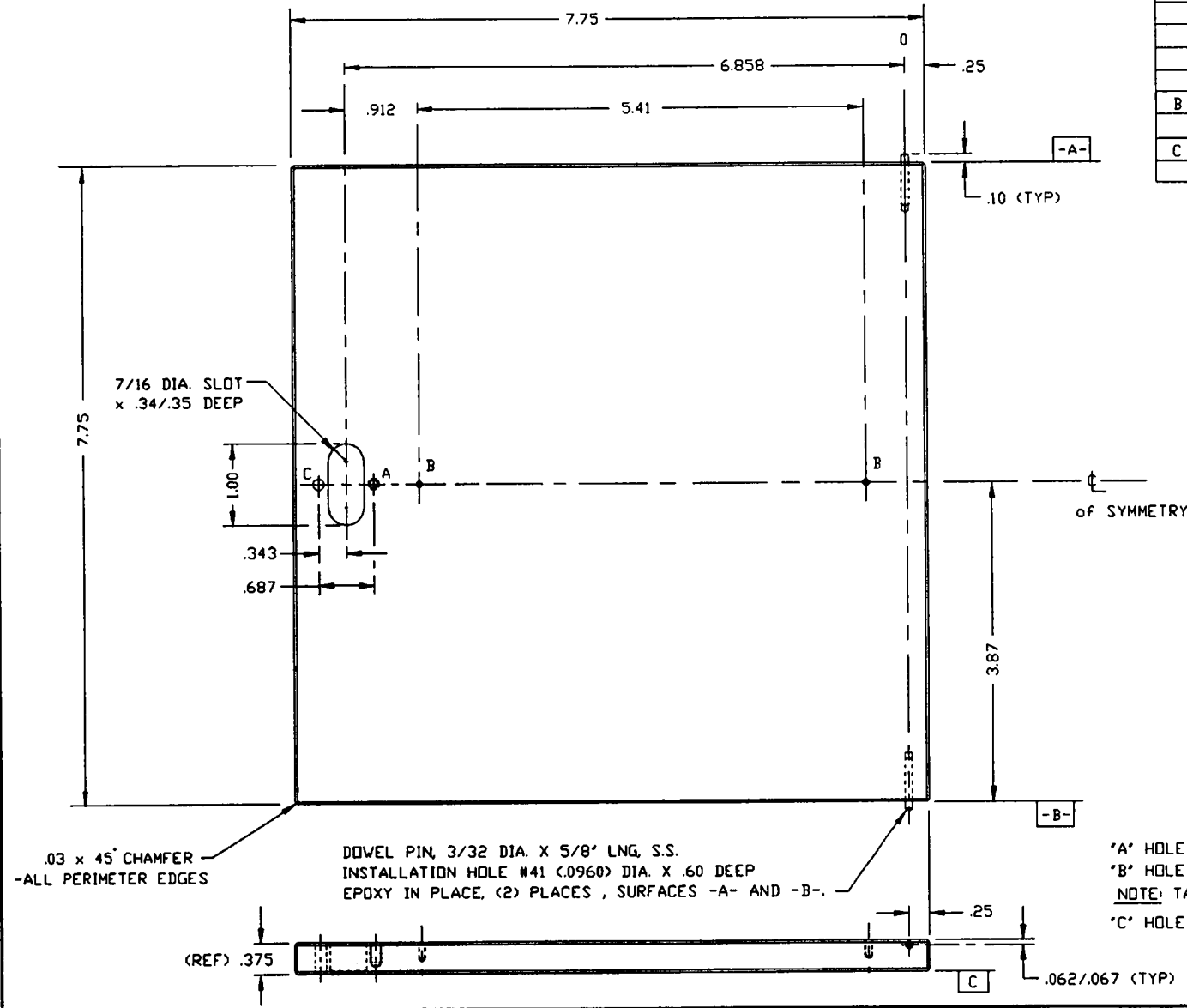
NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

SLEEVE, TURNAROUND ROLLER
(1 INCH THIN TAPE)

6310101D	C	6310-101	D
BVG SIZE		BVG NO.	REV

C-6310-101 D

CHANGE LETTER	OWN BY	CHK'D BY	APP'D BY	DATE	DCM & DESCRIPTION
A	RJC	HFH	HFH	8/92	5.41 WAS 5.44 .912 IS NEW. NO FINISH WAS GLASS BEAD IMPACT BLAST. ANODIZING NOTE IS NEW. NOTE #1 CHANGE 'A' DWG. DESIGNATION IS NEW.
B	RJC	HFH	HFH	9/92	HOLE 'C' WAS PREVIOUSLY ANOTHER HOLE 'A'
C	RJC	HFH	HFH	1/93	'NOTES' AREA: C-6310-109A IS NOW C-6310-109B.



HOLE DATA

'A' HOLE - #6-32 TAP x .25 DEEP (1) HOLE
 'B' HOLE - #2-56 TAP x .18 DEEP (2) REQ'D (DEBURR)
 NOTE: TAP DRILLS MUST NOT BREAK THRU SURFACE -C-.
 'C' HOLE - 9/64 DRILL THRU (1) HOLE

NOTES

1. FOR 'TAPE EDGE BEARING PLATE FOR VACUUM DOOR' DWG. SEE C-6310-109B.

MATERIAL
ALUM. #6061-T6, 3/8" THK

FINISH AND/OR HEAT TREATMENT
BRUSHED FINISH, UNIFORM APPEARANCE

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS FRACTIONAL > 1/64 DECIMAL .XXX & .005 ANGULAR & RFS
3. SURFACE ROUGHNESS PER MIL-STD-10
4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX.
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.

USED ON

DESIGNED BY H. HINTEREGGER **DATE** 1/92

DRAWN BY R. JCADY **DATE** 1/92

CHECKED BY

APPROVALS

PROJECT _____
 ENGINEER _____
 MTL. & PROCESS _____
 STRUCTURES _____
 THERMAL _____
 MECH. ANALYSIS _____

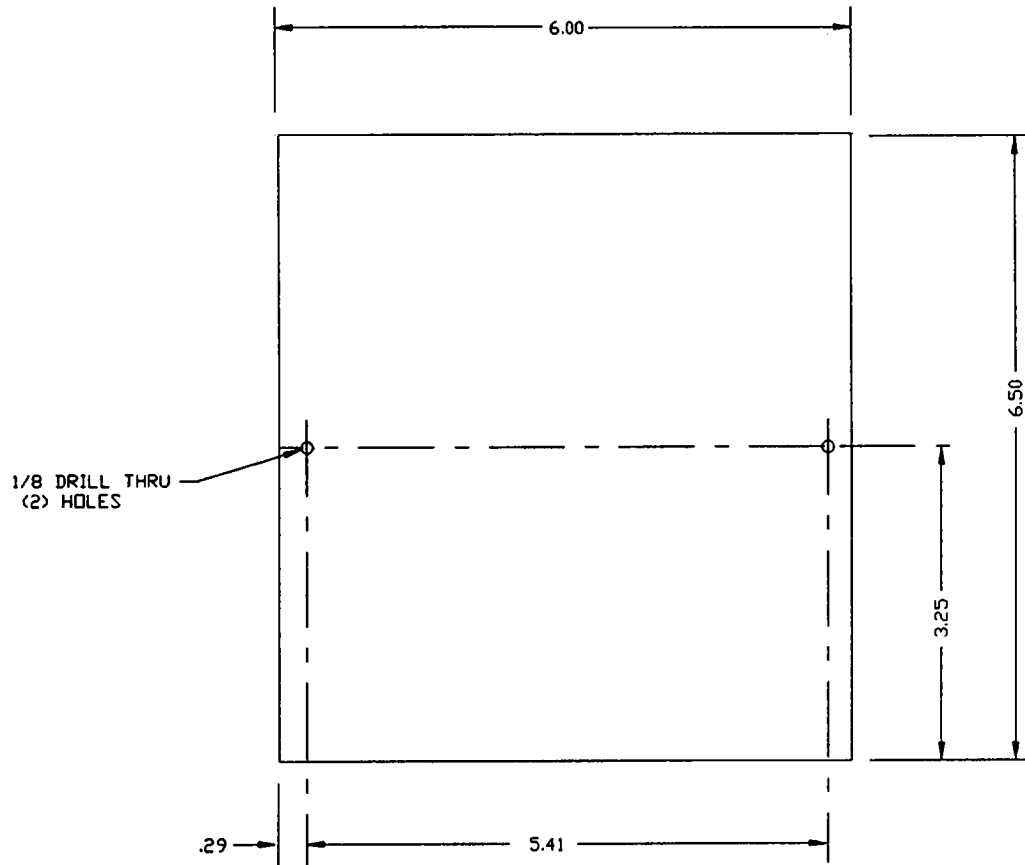
NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

VACUUM DOOR

6310108C	C	6310-108	C
CAD FILE	DWG. SIZE	DWG. NO.	REV.

C-6310-108

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DCM & DESCRIPTION
A	RJC	HFH	HFH	8/92	.29 WAS .28, 5.41 WAS 5.44
					NO FINISH WAS GLASS BEAD IMPACT BLAST. NOTE #1 REFERS
					TO CHANGE 'A' ON DOOR DWG.
B	RJC	HFH	HFH	1/93	*NOTES* AREA : C-6310-108A IS NOW C-6310-108C.



C - 6310-109 B

NOTES

1. FOR 'VACUUM DOOR' DRAWING SEE C-6310-108C
2. PLATE FLATNESS TO BE .002/INCH

MATERIAL
.062 ALUMINUM, #6061-T6

FINISH AND/OR HEAT TREATMENT
NONE

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
FRACTIONAL ± 1/64
DECIMAL .XX ± .01
DECIMAL .XXX ± .005
ANGULAR ± 0°30'
3. SURFACE ROUGHNESS
PER MIL-STD-10
4. REMOVE BURRS AND BREAK EDGES 1/64 MAX.
THREADS PER MIL-STD-9
DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.

63 ✓

USED ON

NEXT ASSEMBLY	
WEIGHT	
SCALE	FULL
CLASSIFICATION	

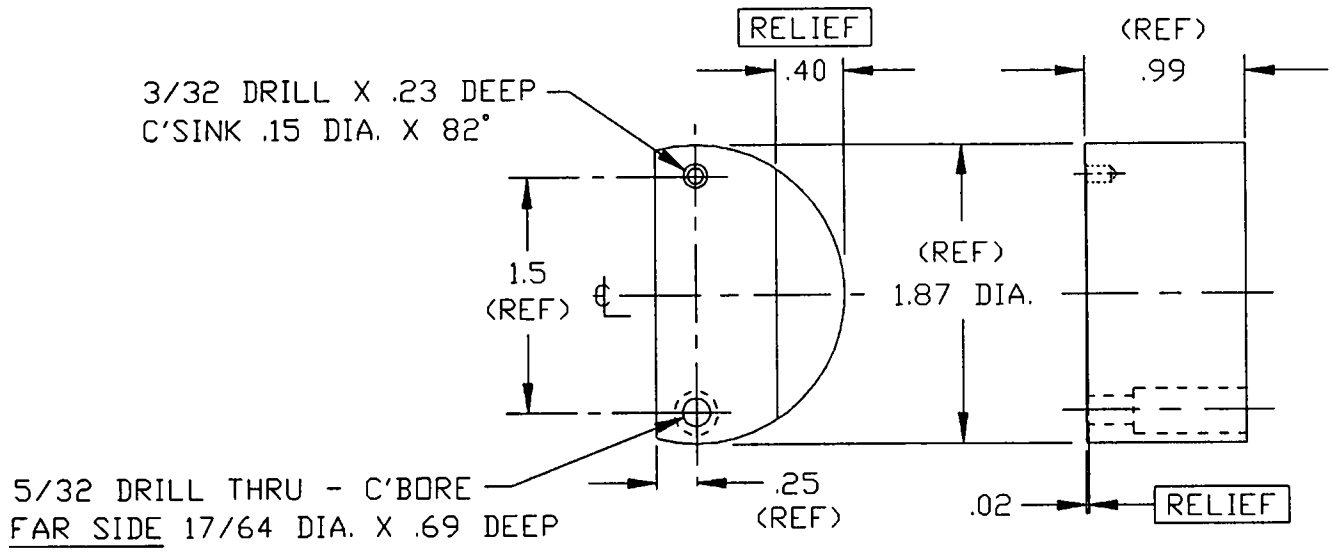
DRAWN FOR	H.HINTEREGGER	DATE	8/92
DRAWN BY	R.GADY	DATE	8/92
CHECKED BY			
PROJECT			
ENGINEER			
MAT'L & PROCESS			
STRUCTURES			
THERMAL			
MECH ANALYSIS			

NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

**TAPE EDGE BEARING PLATE
FOR VACUUM DOOR**

6310109B	C	6310-109	B
CAD FILE	DWG SIZE	DWG NO.	REV.

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	D.C.N. & DESCRIPTION

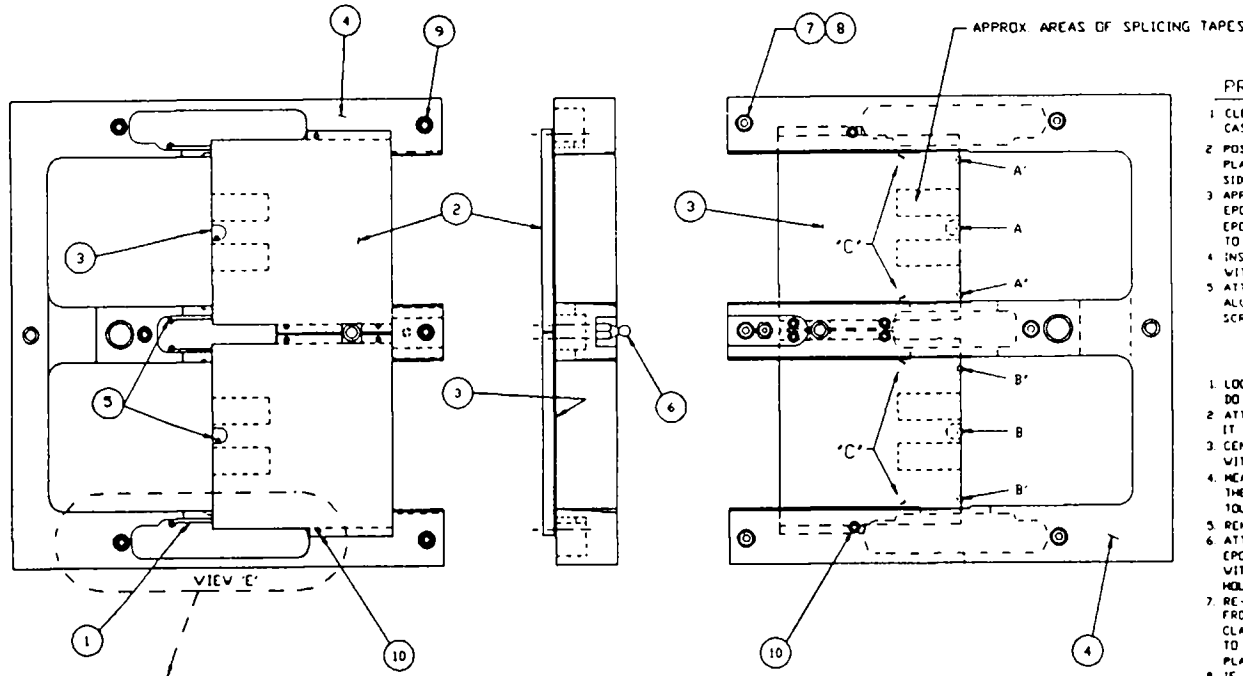


MAT'L - METRUM #16776407 - 003
ALUM. #6061-T6

FINISH - NONE

SHOP NOTES: UNLESS OTHERWISE SPECIFIED 1. DIMENSIONS ARE IN INCHES 2. TOLERANCE ON DIMENSIONS FRACTIONAL $\pm 1/64$ DECIMAL .XX $\pm .01$ DECIMAL .XXX $\pm .005$ ANGULAR $\pm 0'30"$ 3. SURFACE ROUGHNESS PER MIL-STD-10 32 ✓ 4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX. 5. SCREW THREADS PER MIL-STD-9 6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CON- VERSION COATING.	USED ON	DRAWN FOR H.HINTEREGGER	DATE 9/92	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS		
		DRAWN BY R.J.CADY	9/92			
		CHECKED BY		PROJECT		
				ENGINEER		
				MATL. & PROCESS		
				STRUCTURES		
			THERMAL	A6310112	A	6310 - 112
			MECH. ANALYSIS		DWG. SIZE	DWG. NO.
						REV.

REV	BY	CHKD	DATE	DESCRIPTION
A	RJC	HTH	12/93	PARTS MAY DVG A-6310-83A WAS 10-504599, PARTS MAY DVG D-6310-105C WAS -105A



PREPARATION OF 'E' CASTING FOR INSTALLATION

- CLEAN PARTS TO BE BONDED WITH ALCOHOL. ATTACH BEARING CLAMP PLATES TO 'E' CASTING WITHOUT ALUMINA PLATES. TIGHTEN SECURELY.
- POSITION VACUUM COLUMN WINDOWS IN PLACE, ALIGNING THEM AGAINST BEARING PLATES. SECURE WINDOWS IN PLACE WITH A DROP OF SUPER GLUE OR DOUBLE SIDED TAPE. REMOVE BEARING CLAMP PLATES.
- APPLY A BEAD OF RECOMMENDED EPOXY ALONG THE ENDS OF EACH WINDOW. EPOXY NOT ALLOWED IN PORTION OF WINDOW VISIBLE THRU SPACER OPENING. EPOXY NOT TO PROTRUDE OUTSIDE OF WINDOW CUTOUT. ALLOW EPOXY TO SET FOR 24 HOURS.
- INSERT #6-32 x 7/8" LONG SCREWS WITH LOCKWASHERS AND SECURE IN PLACE WITH O-RINGS. ATTACH FRICTION CATCH STUD.
- ATTACH BEARING CLAMP PLATES WITH #2-56 x 3/8" LONG SCREWS. PLACE ALUMINA PLATES BETWEEN BEARING CLAMP PLATES AND 'E' CASTING AND TIGHTEN SCREWS JUST ENOUGH TO KEEP ALUMINA PLATES FROM FALLING OUT.

HARD POINT ASSEMBLY

- LOOSEN BEARING CLAMP PLATE SCREWS BEING CAREFUL THAT ALUMINA PLATES DO NOT FALL OUT.
- ATTACH 'E' CASTING TO A PRECISION PLATE (METRUM 1607015-001) CHECKING TO SEE THAT IT IS SITTING FIRMLY AGAINST THE PRECISION PLATE. TIGHTEN 'E' CASTING SCREWS.
- CENTER ALUMINA PLATES IN CAVITIES (APPROX EQUAL CLEARANCE ON EACH SIDE) AND TEST WITH 2 MIL TO 3 MIL SHD STOCK. TIGHTEN BEARING CLAMP SCREWS TO 8 IN OZ.
- MEASURE DEPTH OF 'E' CASTING WITH DEPTH MICROMETER AT POINTS A, A', AND B, B'. THEY SHOULD ALL AGREE TO WITHIN 1 MIL BETWEEN 1000'S AND 1000'S. IF NOT WITHIN TOLERANCE TRY TO DETERMINE REASON - SEEK ADVICE IF NECESSARY.
- REMOVE 'E' CASTING LEAVING BEARING CLAMP SCREWS TIGHT.
- ATTACH 2 PIECES OF SPLICING TAPE TO ALUMINA PLATE, (1) ABOVE AND (1) BELOW EPOXY SLOT IN BEARING CLAMP PLATE. WRAP TAPE AROUND EDGE OF ALUMINA PLATE, WITH TAPE UNDER TENSION, ATTACH TO BACK OF BEARING CLAMP PLATE. THIS WILL HOLD ALUMINA PLATE SECURELY AGAINST BEARING CLAMP PLATE.
- RE-INSTALL 'E' CASTING AND MEASURE DEPTHS AT POINTS A AND B. A CHANGE OF 1 MIL FROM SQUEEZING OUT A WITHIN-SPEC LACK OF FLATNESS IN THE ALUMINA AND BEARING CLAMP PLATES IS POSSIBLE IF A GREATER CHANGE IS OBSERVED START OVER AND TRY TO FIND CAUSE (ROTATE OR FLIP ALUMINA PLATE, EXCHANGE AND FLIP BEARING CLAMP PLATES FOR EXAMPLE).
- IF DIMENSIONS ARE ACCEPTABLE AGAIN REMOVE 'E' CASTING, LEAVING BEARING CLAMP PLATE SCREWS TIGHT. ALSO LEAVE TAPE IN PLACE.
- PLACE A DROP OF RECOMMENDED EPOXY IN SLOT OF BOTH BEARING CLAMP PLATES SO THAT ALUMINA PLATE BONDS TO BEARING CLAMP PLATE. EPOXY SHOULD NOT WICK IN BETWEEN ALUMINA PLATE AND BEARING CLAMP PLATE. LET EPOXY SET FOR 24 HOURS.
- FINALLY, REMOVE TAPE AND REINSTALL 'E' CASTING. TAKE MEASUREMENTS AS IN STEP 4. IF ALL MEASUREMENTS ARE WITHIN SPEC, ASSEMBLY IS COMPLETE AND SHOULD BE INTERCHANGEABLE BETWEEN MACHINES WITHOUT HARDPOINT ADJUSTMENT.

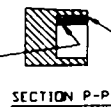
NOTES

- THE DEPTH AT A AND B SHOULD BE CHECKED PERIODICALLY AS PREVENTIVE MAINTENANCE.
- WHEN AN ALUMINA PLATE DEVELOPS SIGNIFICANT WEAR AT THE EDGE BEARING ARCS 'C', IT CAN BE REUSED BY BREAKING THE EPOXY TIE-DOWN POINT BY TWISTING THE ALUMINA PLATE OFF THE CLAMP PLATE, CLEANING THE EPOXY RESIDUE OFF, ROTATING THE HARD PLATE 90 DEG OR 270 OR FLIPPING IT OVER FOR 4 ADDITIONAL WEAR POSITIONS, AND REPEATING THE HARDPOINT ASSEMBLY INSTRUCTIONS. SIGNIFICANT WEAR AND SCRATCHES .0005" DEEP, CAN ONLY BE DIRECTLY EVALUATED BY INSPECTION OF THE HARD-PLUS-CLAMP PLATE SUBASSEMBLY UNDER A HIGH-POWER MICROSCOPE. OTHER SYMPTOMS SUCH AS AN INCREASE IN THE AMPLITUDE OF THE INTERCHANGE TRACKING SIGNATURE MAY INDICATE HARD POINT WEAR ONLY THE CENTRAL EDGE BEARING ARCS ADJACENT TO THE MIDDLE LEG OF THE 'E' CASTING AFFECT TRACKING.

PARTS LIST

FIND #	QTY	PART #	DESCRIPTION	SOURCE
1	4	MAY DVG A-6310-115	WINDOW, VAC COLUMN	MONKS
2	2	MAY DVG A-6310-82A	PLATE BEARING CLAMP	MONKS
3	2	MAY DVG A-6310-83A	ALUMINA BEARING PLATE	COORS
4	1	D-6310-105C	VACUUM SPACER ('E' CASTING)	MONKS
5	AS REQ	TRA-BOND 2116	LOW VAPOR EPOXY	TRA-COM
6	1	P116-370-6-SS	STUD CATCH #6-32	TINNERMAN / EATON
7	6	#6-32 x 7/8" L'NG	S'X'T HD CAP SC'W, SS	LAVSON
8	6	#6	SPL'T L'W'SHR, SS	LAVSON
9	6	006	1/8 ID x 1/4 OD VITON O-RING	LAVSON
10	4	#2-56 x 3/8" L'NG	S'X'T HD CAP SC'W, SS	LAVSON

VIEW 'E' OF WINDOW AREA WITH ALUMINA BEARING PLATE AND CLAMP BEARING PLATE NOT SHOWN.



NOTES

MATERIAL:	FINISH AND/OR HEAT TREATMENT:	QUANTITIES:	REVISIONS:	DATE:	APPROVED:	DATE:	APPROVED:

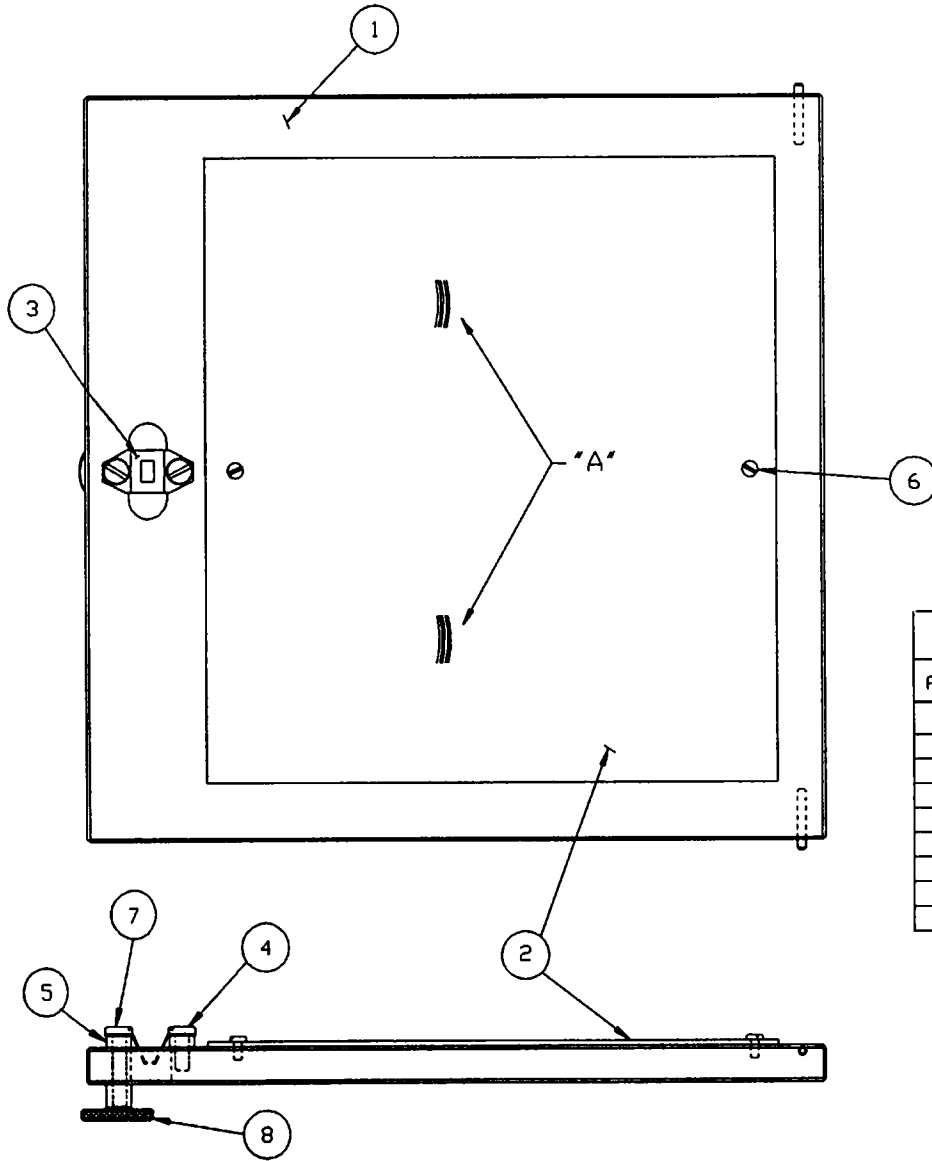
CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DCN & DESCRIPTION
A	RJC	HFH	HFH	1/93	PT # HAY C6310-108A IS NOW HAY C6310-108C & HAY C6310-109A IS NOW HAY C6310-109B.

FRONT DOOR ASSEMBLY

- CHECK TAPE EDGE BEARING PLATE FOR BURRS. IF NECESSARY, CLEAN PLATE WITH SCOTCHBRITE AND RAZOR BLADE TO REMOVE BURRS.
- ATTACH FRICTION CATCH WITH $1/8"$ THICK STANDOFFS BETWEEN DOOR AND CATCH. ASSEMBLE CATCH AND STANDOFFS TO DOOR WITH #6-32 PAN HEAD SCREWS.
- ATTACH TAPE EDGE BEARING PLATE TO DOOR WITH #2-56 PAN HEAD SCREWS.

NOTE

TAPE EDGE CONTACT AREAS 'A', CAN BE ALLOWED TO WEAR TO A DEPTH OF .002" (MEASURE WITH STRAIGHTEDGE AND SHIM SLIVER PROBE). THE BEARING PLATE SHOULD THEN BE TURNED 180; FOLLOWED BY 2 ADDITIONAL WEAR CYCLES ON THE OTHER SIDE. AFTER 4 WEAR CYCLES THE BEARING PLATE MUST BE REPLACED.



PARTS LIST

FIND #	Q'NT'Y	PART #	DESCRIPTION	M'F'T'R
1	1	HAY C6310-108C	VACUUM DOOR	MONKS
2	1	HAY C6310-109B	TAPE EDGE BEARING PLATE	MONKS
3	1	C22803SS-012	RECEPTACLE, FRICTION CATCH	EATON
4	1	#6-32 x 3/8" L'NG	PAN HEAD SCREW, S.S.	LAWSON
5	2	8500	.125 R'ND CLEAR STANDOFF	H.H.SMITH
6	2	#2-56 x 3/16" L'NG	PAN HEAD SCREW, S.S.	LAWSON
7	1	#6-32 x 3/4" L'NG	PAN HEAD SCREW, S.S.	LAWSON
8	1	PD1-7	KNURLED THUMB NUT	BERG

C - 6310 - 114 A

NOTES

MATERIAL

FINISH AND/OR HEAT TREATMENT

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS ARE IN INCHES
- TOLERANCE ON DIMENSIONS FRACTIONAL: $1/64$ DECIMAL: $.XX \pm .01$ ANGULAR: $\pm 0.50^\circ$
- SURFACE ROUGHNESS PER MIL-STD-18
- REMOVE BURRS AND BREAK SHARP EDGES $1/64"$ MAX.
- SCREW THREADS PER MIL-STD-9
- ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.

USED ON

DRAWN FOR
RHINTEREGGER

DATE
9/98

DRAWN BY
R.JCARY

DATE
9/92

CHECKED BY

PROJECT

ENGINEER

MATL. & PROCESS

STRUCTURES

THERMAL

Mech ANALYSIS

NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

ASSEMBLY - VACUUM DOOR

NEXT ASSEMBLY

WEIGHT

SCALE FULL

CLASSIFICATION

6310114A

CAD FILE

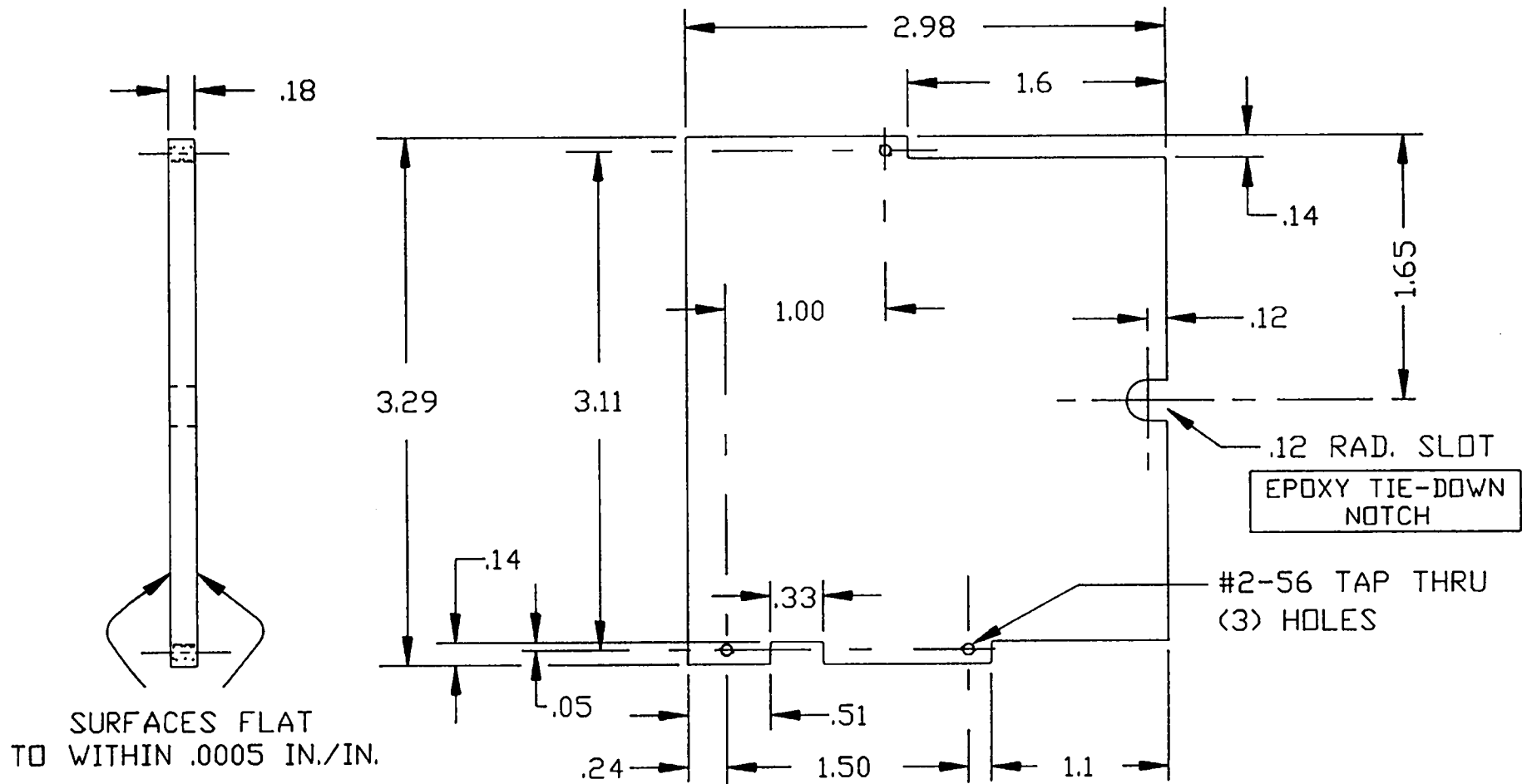
DWG SIZE

6310 -114

DWG NO.

A

REV.



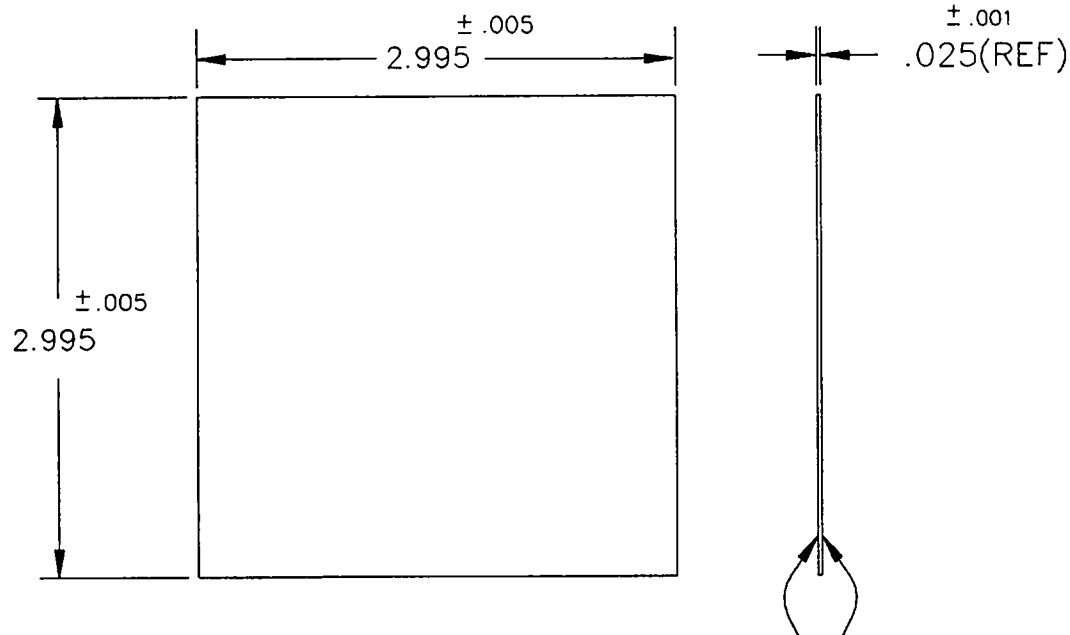
SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
FRACTIONAL $\pm 1/64$
DECIMAL .XX $\pm .01$
DECIMAL .XXX $\pm .005$
ANGULAR $\pm 0^{\circ}30'$
3. SURFACE ROUGHNESS
PER MIL-STD-10
4. REMOVE BURRS AND BREAK
SHARP EDGES $1/64$ MAX.
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY
BEFORE PLATING OR CON-
VERSION COATING.

63 ✓

USED ON	DRAWN FOR	H.HINTEREGGER	DATE	9/92	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS			
	DRAWN BY	R.CADY	9/92					
NEXT ASSEMBLY	CHECKED BY	HFH	9/92		BEARING PLATE CLAMP (REVISED WITH ADDITION OF EPOXY TIE-DOWN NOTCH)			
	PROJECT	AEER	9/92					
WEIGHT	ENGINEER	HFH	9/92					
SCALE	HATL. & PROCESS	ALUM. JIG PLATE						
CLASSIFICATION	STRUCTURES							
	THERMAL				A631082A	A	A-6310-82	A
	MECH. ANAL.				FILE NAME	DWG. SIZE	DWG. NO.	REV.

CHANGE LETTER	DW'N BY	CHK'D BY	APP'D	DATE	D.C.N. & DESCRIPTION
A	RJC	HFH	HFH	2/93	PREVIOUS 3.000 ± .003 DIMENSION IS NOW
					2.995 ± .005 (TO INSURE PROPER FIT)



COORS CERAMIC COMPANY
ELECTRONICS DIVISION
17750 WEST 32nd AVENUE
GOLDEN, COLORADO 80401
FAX. NO. (303) 277-4779
TELEPHONE: (303) 278-4000

MAT'L: ± .001
ALUMINA .025 THICKNESS
SUPERSTRATE 99.6% ULTRAGRADE

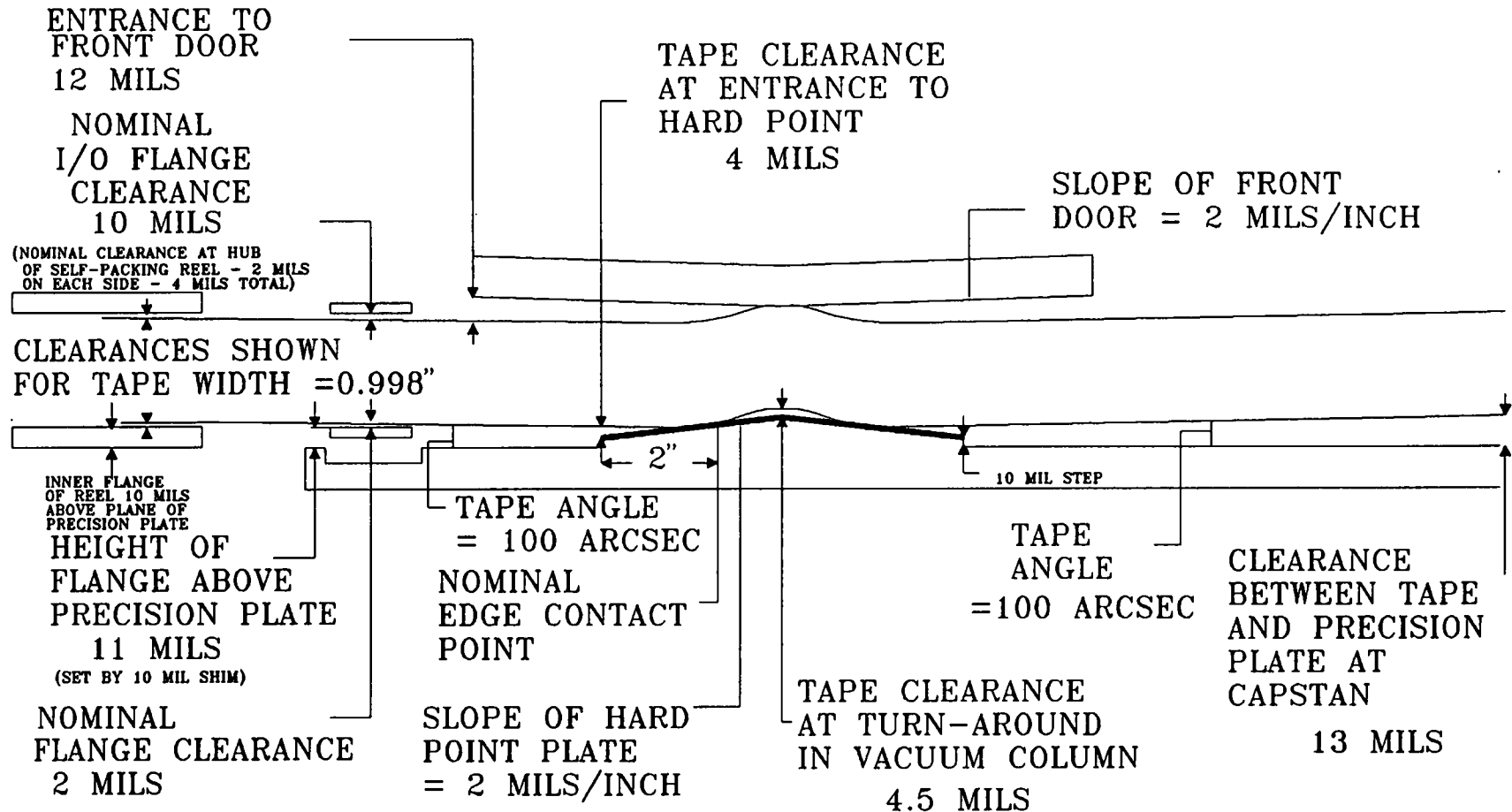
FINISH:
SURFACE FINISH 2μIN. CLA, BOTH FACES
PART TO BE EDGE GROUND

SURFACES FLAT & PARALLEL
TO .0005 IN./IN.

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS ARE IN INCHES
- TOLERANCE ON DIMENSIONS
FRACTIONAL ± 1/64
DECIMAL .XX ± .01
DECIMAL .XXX ± .005
ANGULAR ± 0'30'
- SURFACE ROUGHNESS
PER MIL-STD-10 ✓
- REMOVE BURRS AND BREAK
SHARP EDGES 1/64 MAX.
- SCREW THREADS PER MIL-STD-9
- ALL DIMENSIONS TO APPLY
BEFORE PLATING OR CON-
VERSION COATING.

USED ON	DRAWN FOR	H.HINTEREGGER	DATE	12/89	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS				
	DRAWN BY	C.KOSTKA	DATE	12/89					
	CHECKED BY								
	NEXT ASSEMBLY	PROJECT			ALUMINA EDGE BEARING PLATE, MODIFICATION TO HONEYWELL PRECISION PLATE				
WEIGHT	ENGINEER								
SCALE	MAT'L. & PROCESS								
CLASSIFICATION	STRUCTURES								
	APPROVALS	APPROVALS	APPROVALS	APPROVALS	APPROVALS	APPROVALS	APPROVALS	APPROVALS	APPROVALS
		MECH. ANALYSIS			A631083A	A	A-6310-83	A	
					FILE NAME	DWG. SIZE	DWG. NO.	REV.	



TAPE PATH IS SHOWN FOLDED OUT ABOUT THE CENTER OF THE LOOP TURN-AROUND
NOT DRAWN TO SCALE

NOMINAL TAPE CLEARANCES