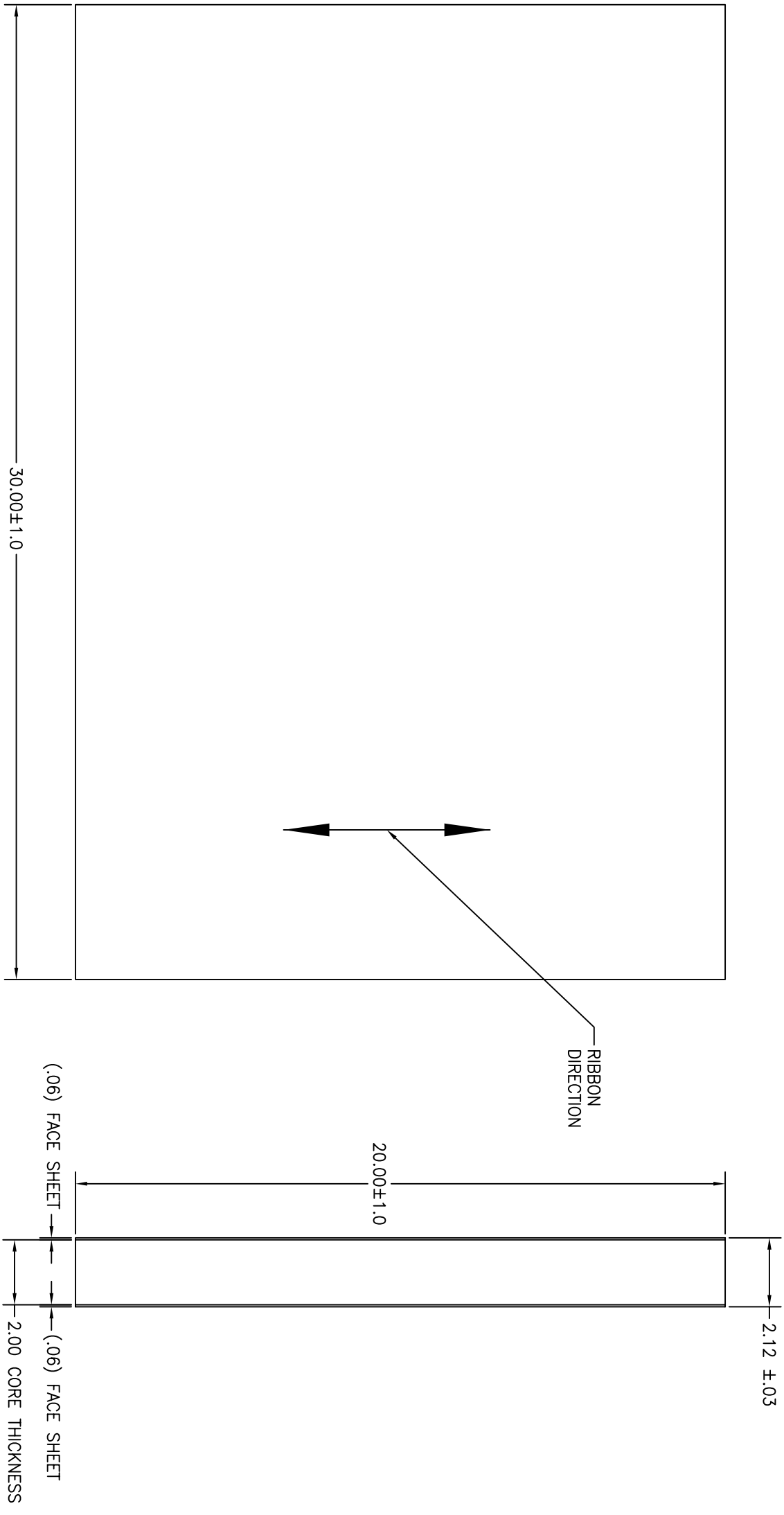


NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: M46J OR SIMILAR
- COMPOSITE SHEET: .06 NOMINAL
- CURED PLY THICKNESS
- 60% FIBER VOLUME
- LAYUP: QUASI ISOTROPIC

REV	DATE	APPROVAL



PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY
NON-FLIGHT HARDWARE

ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3		AR FM73	ADHESIVE FILM		
2		AR SEE NOTE 1	SHEET, COMPOSITE		
1		AR 3.1-3/16-5056P	CORE, EXPANDED, 3.1 PCF, 2.0" THK	ALUM 5056	
-			PANEL ASSEMBLY		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xxx ±.005 ±.1" ±1/16" FRACTIONS 63/100

REMOVE ALL BIRDS AND SHARP EDGES R .010 OR CHAMFER MAX
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ϕ
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: MAMAKOS
 DRAWN: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1

TITLE: PANEL
 COMPOSITE/HONEYCOMB

GD 3210501
 SCALE: 1/2
 SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

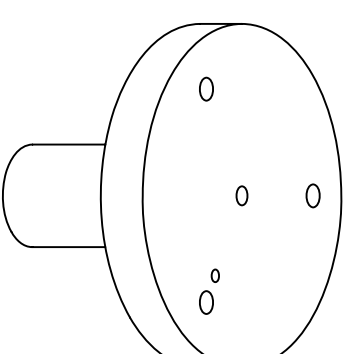
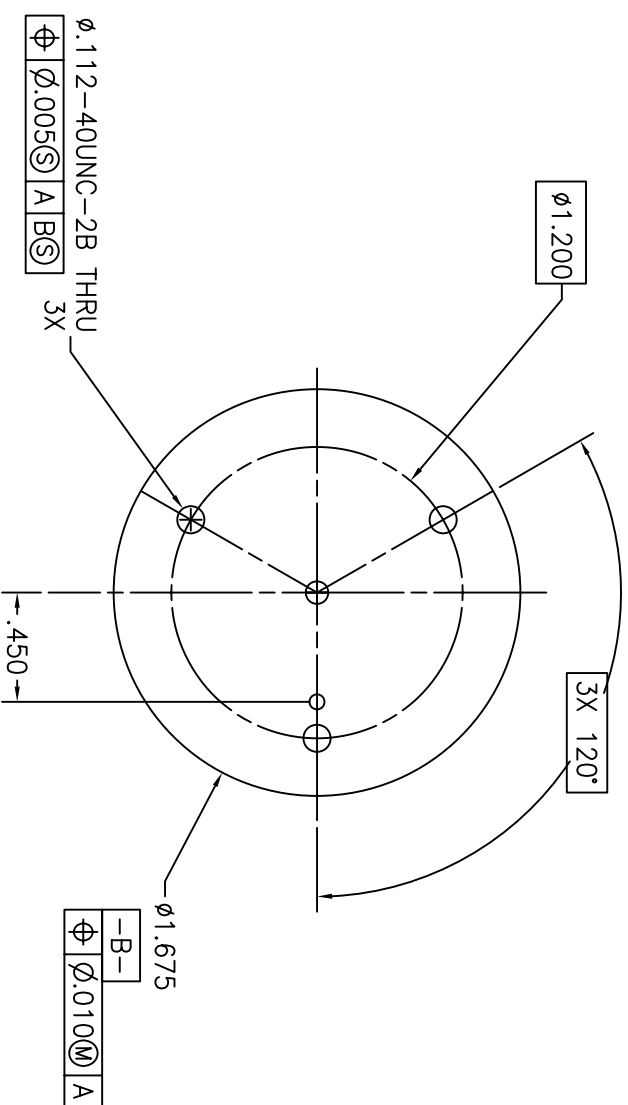
4
3
2
1

4
3
2
1

GD3210501

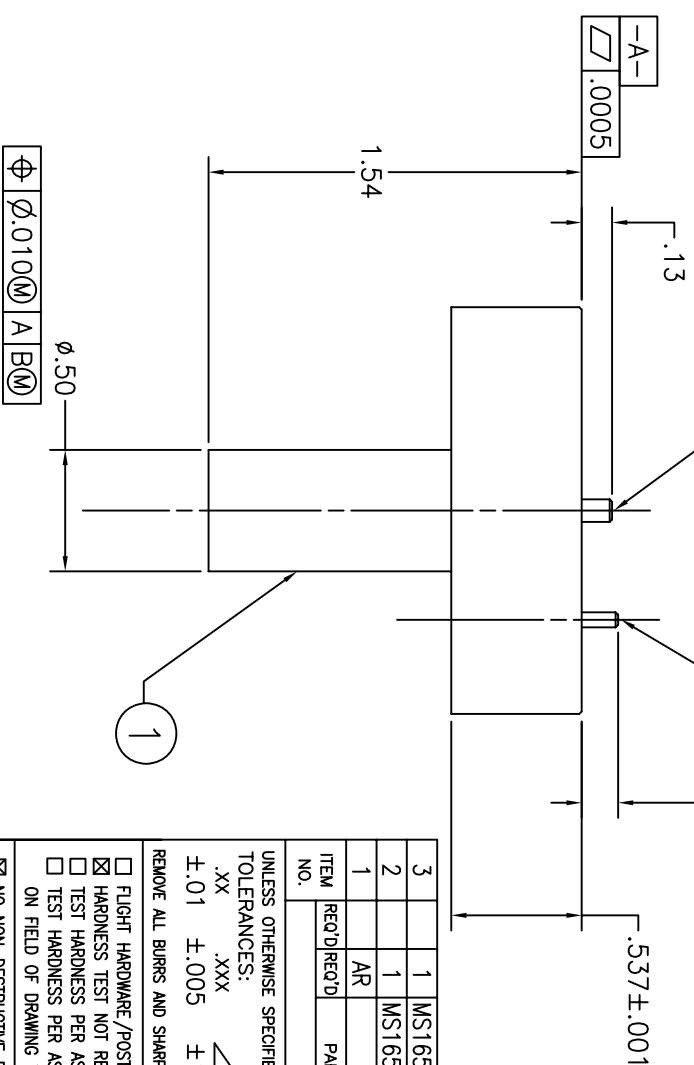
NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2
ACHIEVE .0003-.0005
SLIP FIT

INSTALL ITEM 3
ACHIEVE .0003-.0005 INTERFERENCE FIT



ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3			1 MS16555--603	PIN,DOWEL 0.0625 x .312 LG	GRES	
2			1 MS16555-617	PIN, DOWEL 0.0938 x .312 LG	GRES	
1			AR	ROD/BAR	TI 6AL4V	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX FRACTIONS 63
±.01 ±.005 ±1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS 0
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 FITTING, BENCH SPECTROMETER COLLIMATORS AFT OPTICS BENCH
DRAWN MAMAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

CODE	SCALE	WT	SH1	OF
GC	9220612	2/1	1	1

GC9220612

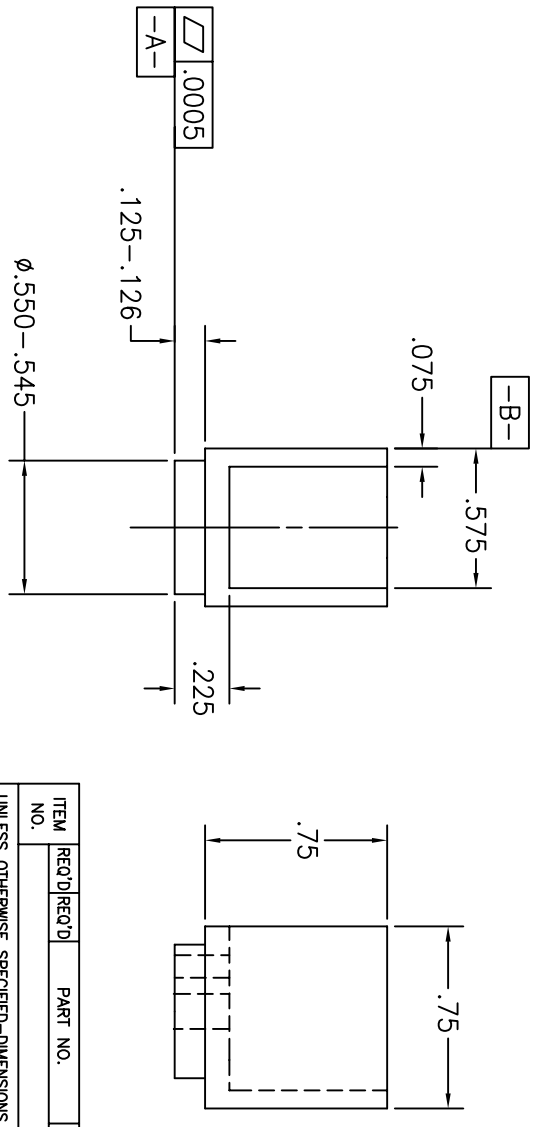
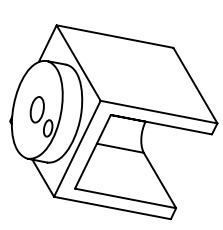
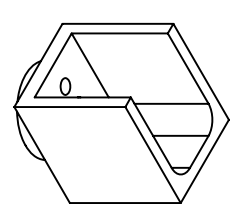
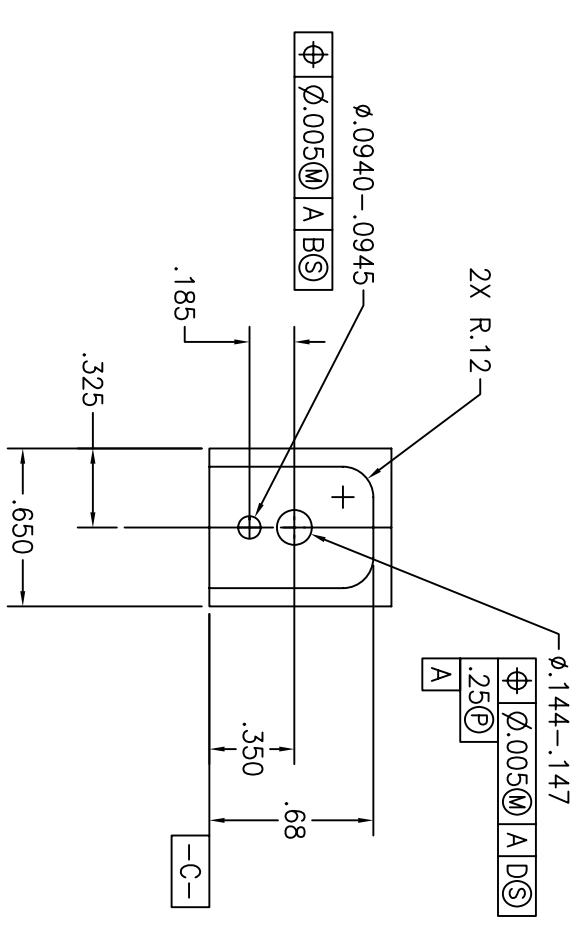
FOLD LINE

1

REV	ZONE	DESCRIPTION	DATE	APPROVAL

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED			
APPROVED			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL ON FIELD OF DRAWING THUS \odot	
<input type="checkbox"/> REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	TOLERANCES:	FRACTIONS	63
.XXX	.XXX	$\pm 1'$	$\pm 1/16$
$\pm .01$	$\pm .005$		

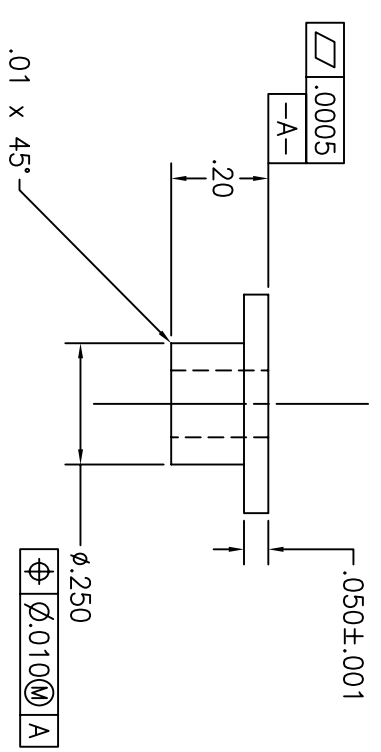
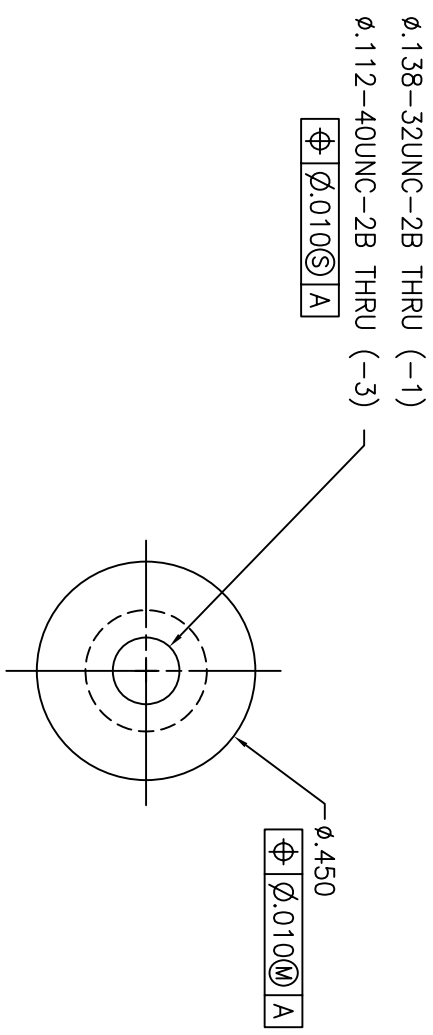
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

GC9220418 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: TITANIUM 6AL4V

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

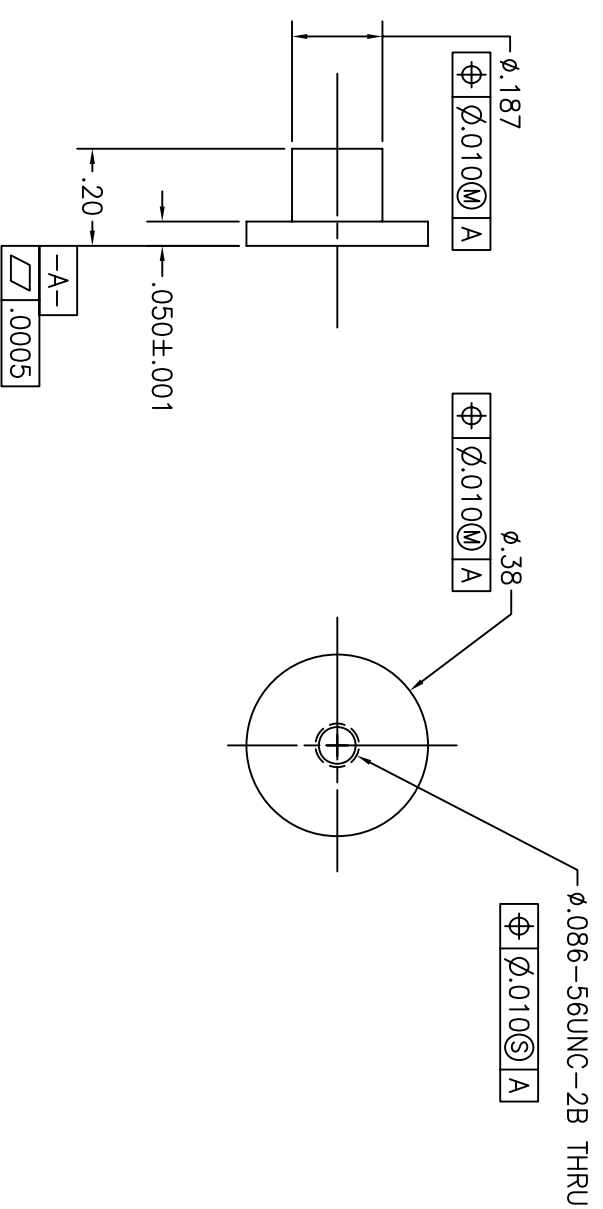
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XXX .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 DESIGNER NAME: MAMAKOS
 DRAWN: MAMAKOS
 CHECKED:
 APPROVED:
 APPROVED-ENGINEER:
 APPROVED-STRESS:
 APPROVED-ENGINEER:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1
 TITLE: FITTING NO.6 INSERT RECEIVER TELESCOPE
 CODE: GC 9220419
 SCALE: 4/1
 WT: SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: TITANIUM 6AL4V

REVISION			
SYM	ZONE	DESCRIPTION	DATE



ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

DESIGNER NAME: MAMAKOS
 DATE: _____
 DRAWN BY: MAMAKOS
 CHECKED: _____
 APPROVED: _____

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1

CODE	SCALE	WT	SH1	OF
GC	9220420	4/1	1	1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

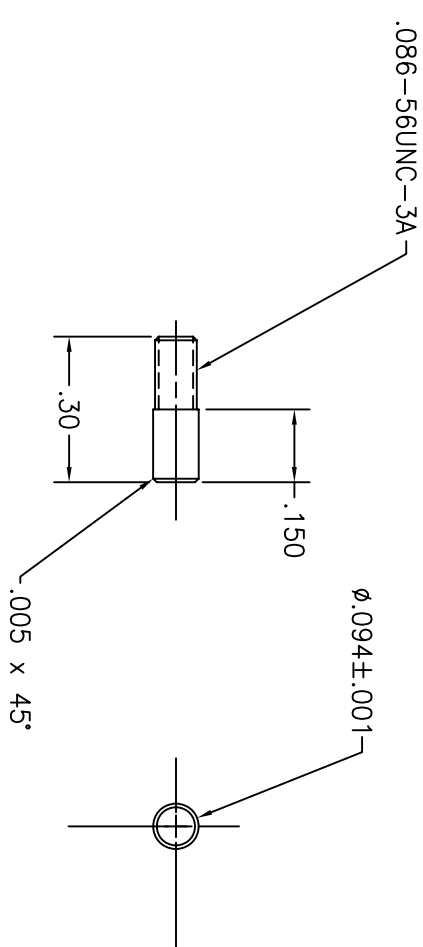
GC9220420 1

FOLD LINE

FOLD 3/4

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: CRES 300 SERIES

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1° ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	DESIGNER	NAME	INIT	DATE	TITLE PIN THREADED BONDED FITTING RECEIVER TELESCOPE
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	DRAWN	MAMAKOS			
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED				
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	APPROVED				
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	APPROVED				
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-STRESS				
	APPROVED-ENGINEER				

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

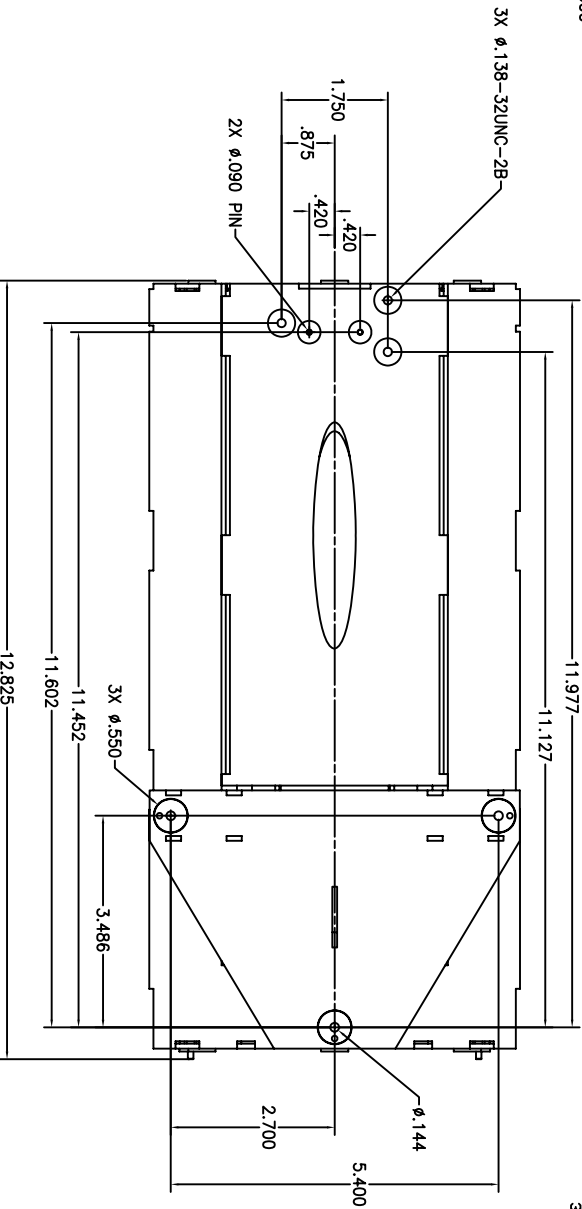
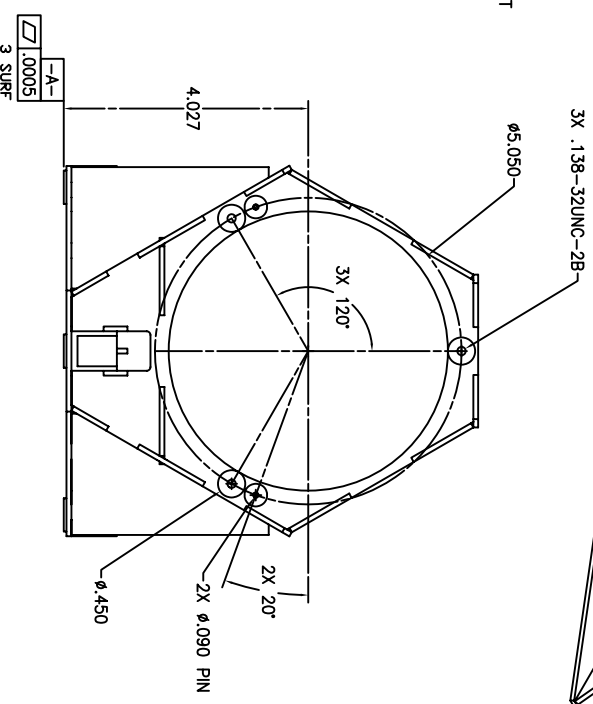
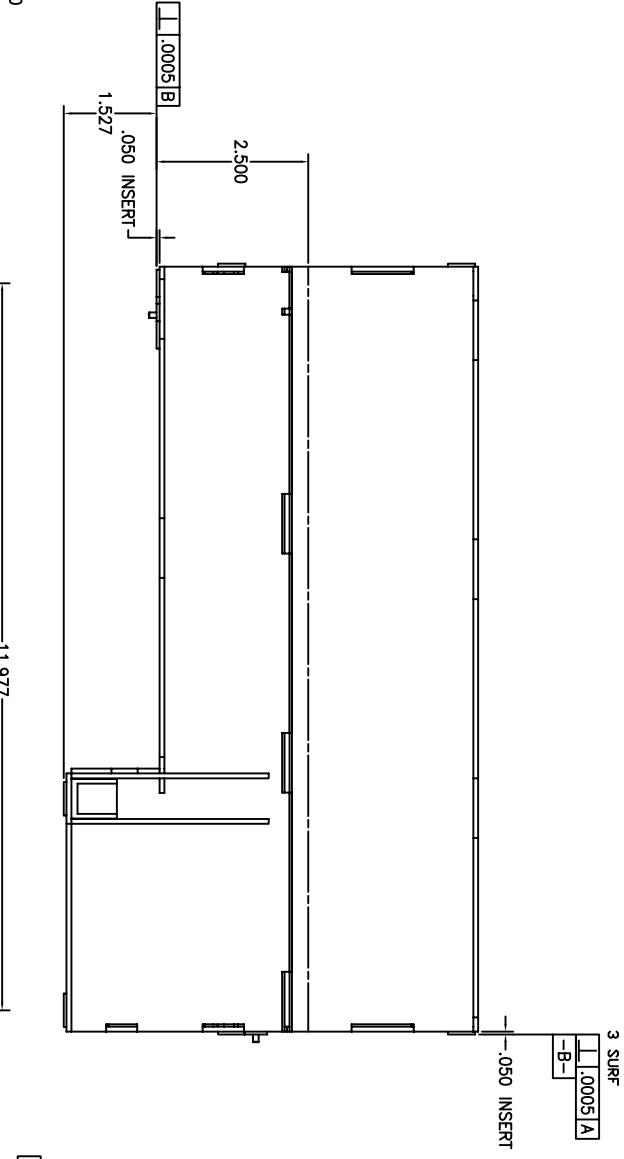
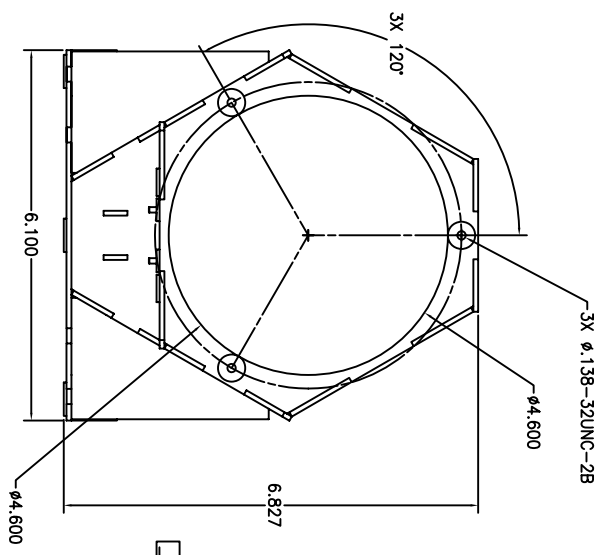
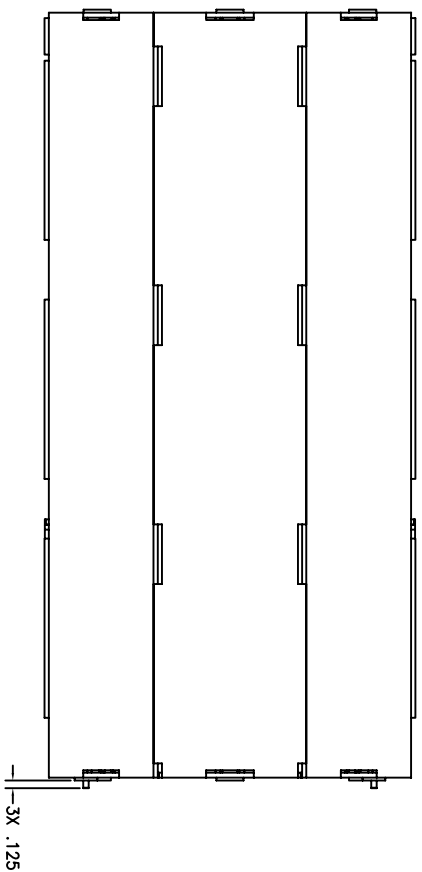
CODE	SCALE	WT	SH1	OF	1
GC	9220421	4/1			
NEXT ASSY					
USED ON					

GC9220421 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
1 ALL DIMENSIONS ARE REFERENCE ONLY



4 3 2 1 4 3 2 1

REV	DATE	DESCRIPTION	BY	APP'D

PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY

REV	DATE	DESCRIPTION	BY	APP'D

DESIGNER	DATE	BY	APP'D

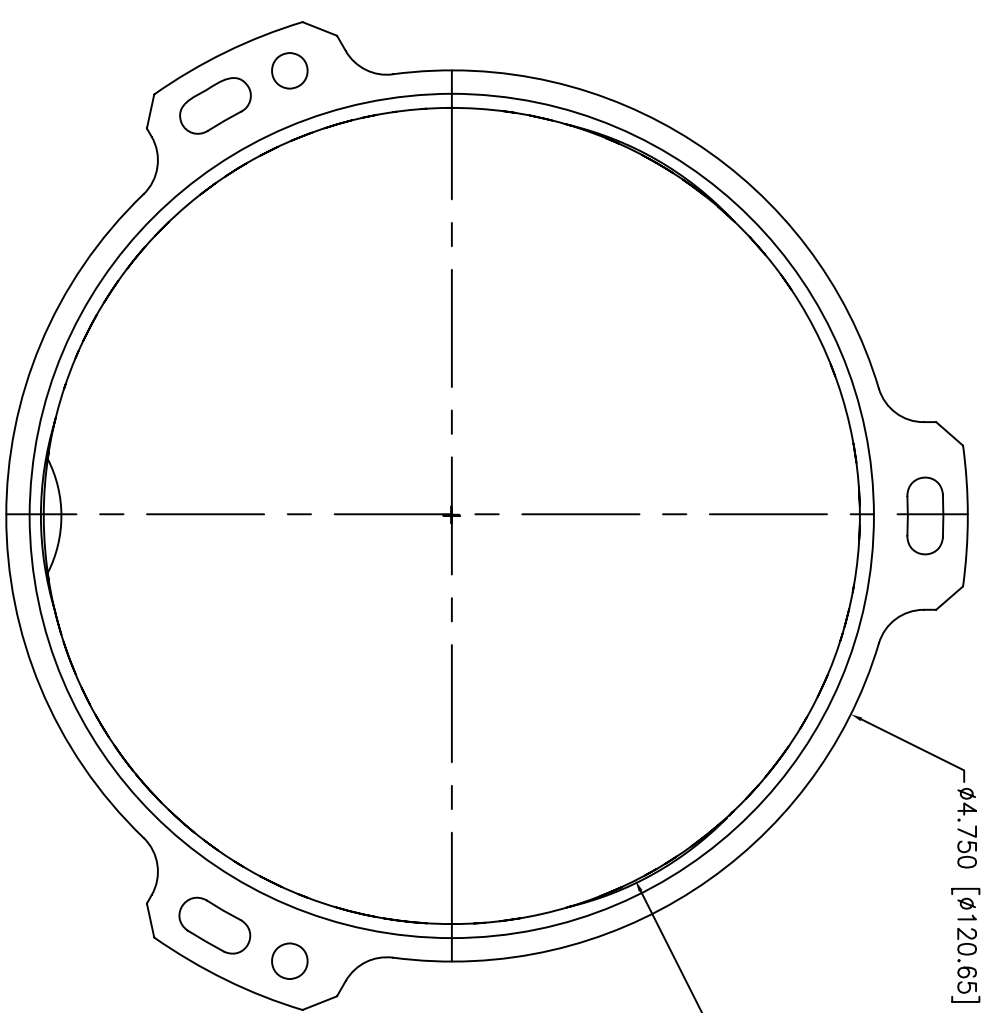
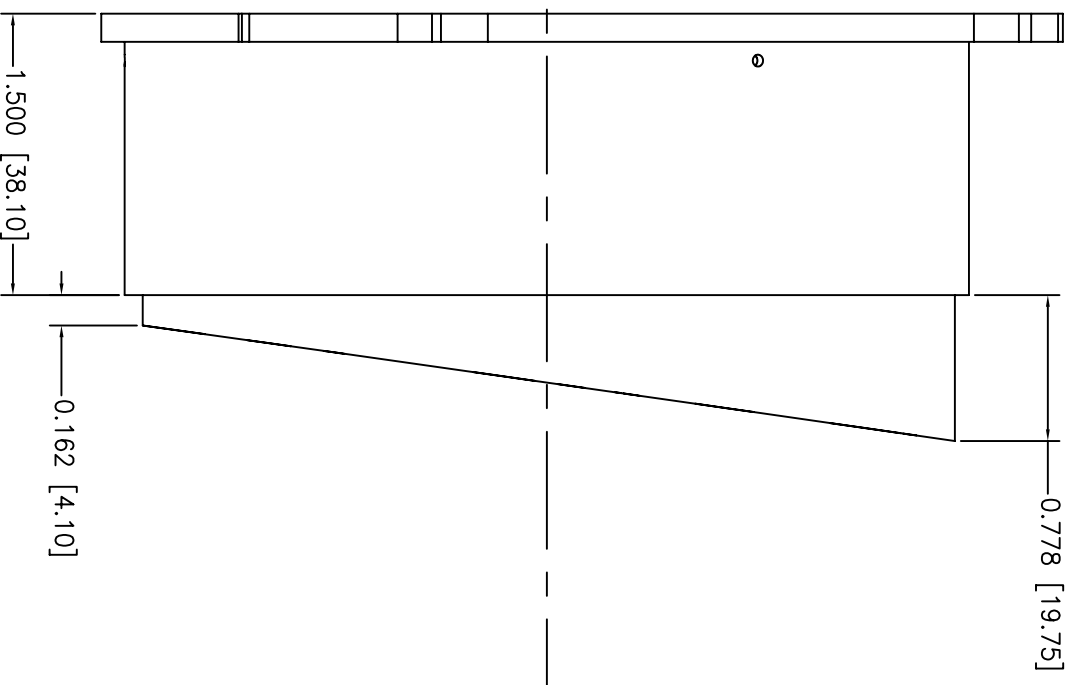
TESTING AND REVIEW	DATE	BY	APP'D

DATE	BY	APP'D

DATE	BY	APP'D

GE9220424 1 1

SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL



PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY

4

4

3

3

2

2

1

1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME:

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.xx			FRACTIONS	63	
±.01	±.005	±.1	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R. 0.10 OR CHAMFER MAX.					
<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQD					
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot					
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD					
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER	INT	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Goddard Space Flight Center GREENBELT, MARYLAND	
MAJAKOS				DRAWING INTERPRETED PER GSFC-X673-64-1	
CHECKED				TITLE	
APPROVED				ASSEMBLY	
APPROVED				PRIMARY MIRROR MOUNT	
APPROVED-ENGINEER				SVIP RECEIVER TELESCOPE	
APPROVED-STRESS				GD	9220425
CODE	SCALE	WT	SHT OF 1		
	2/1		1		

GD9220425

FOLD LINE

A

B

C

D

A

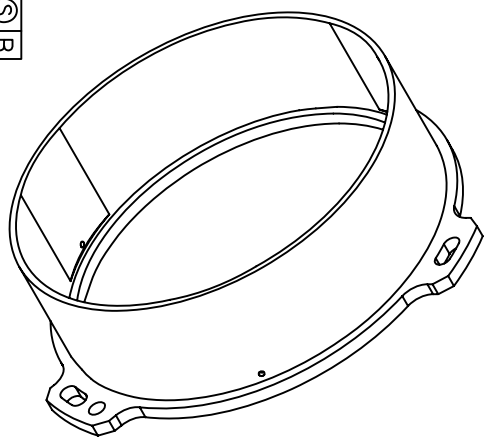
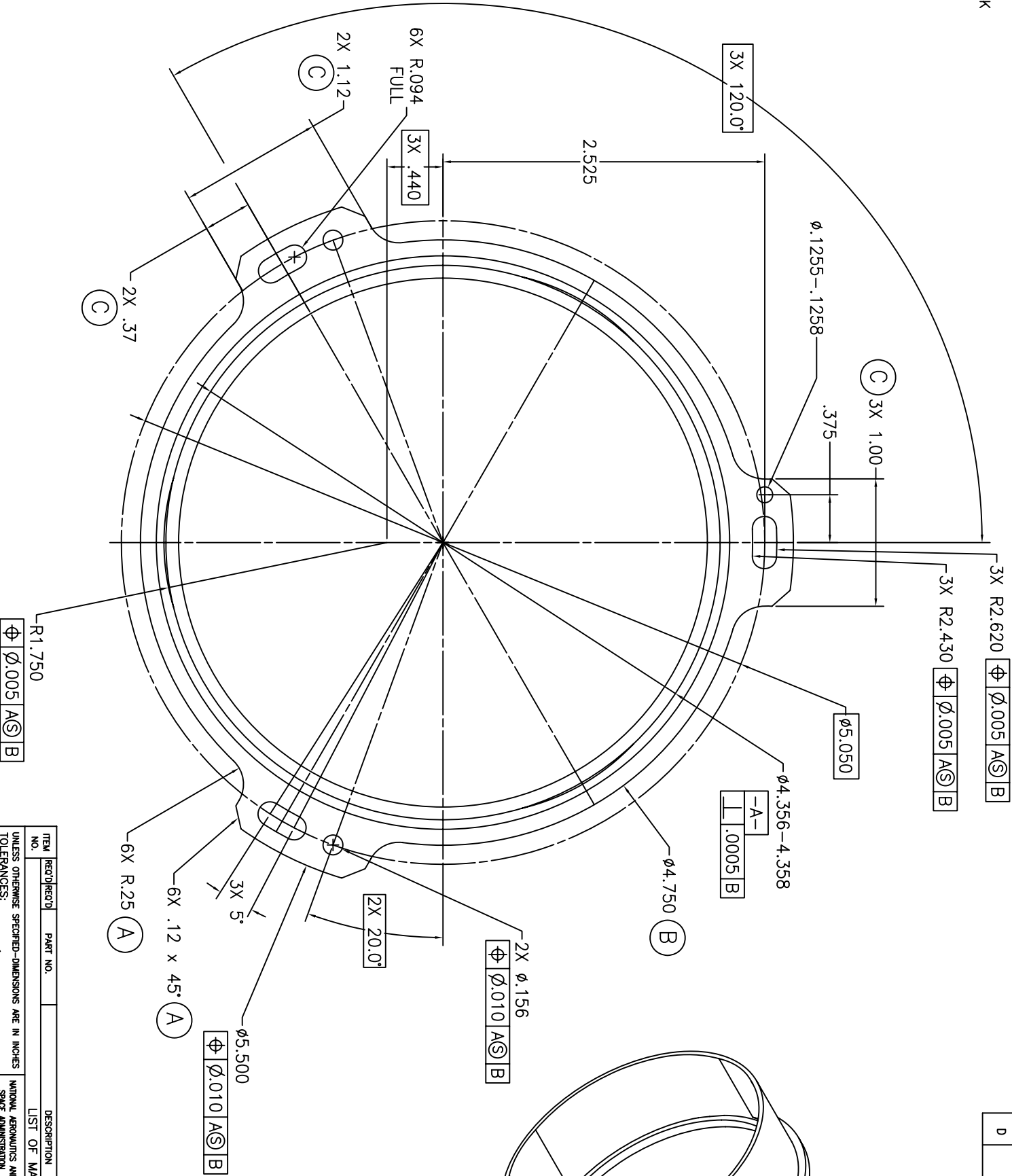
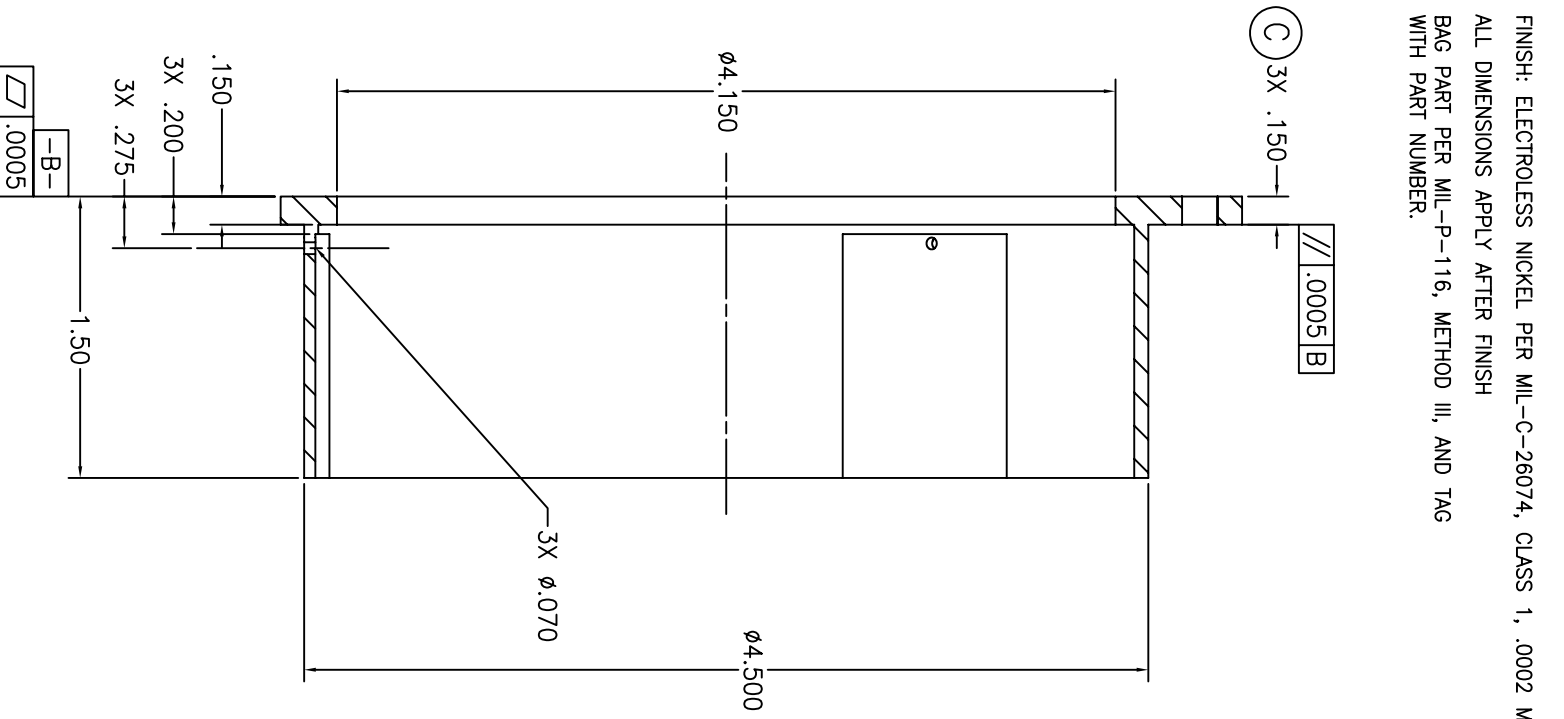
B

C

D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS. HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL 600°F ±20°F FOR 1 HOUR OVEN COOL 200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM#	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED MISSING DIMENSIONS		
B		ADDED MISSING DIMENSIONS		
C		ADDED MISSING DIMENSIONS		
D		$\phi 125$ TOOLING HOLE		

A B C D

3

2

1

A

D

923

C

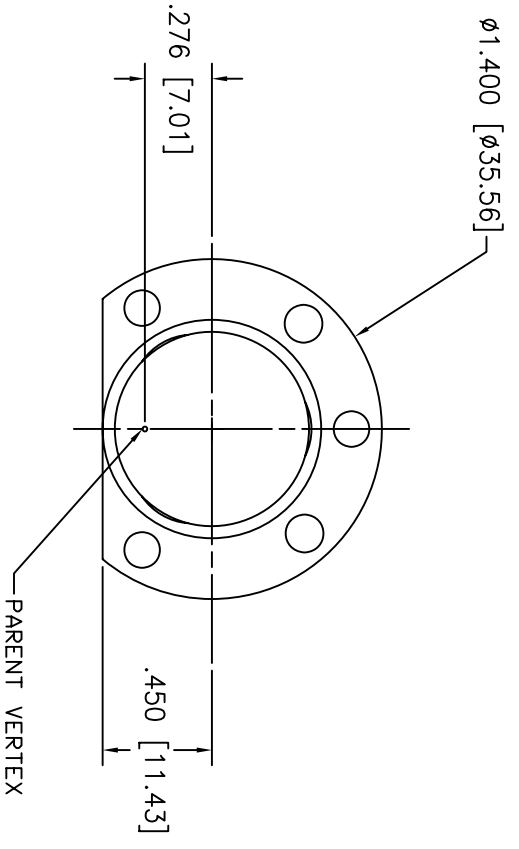
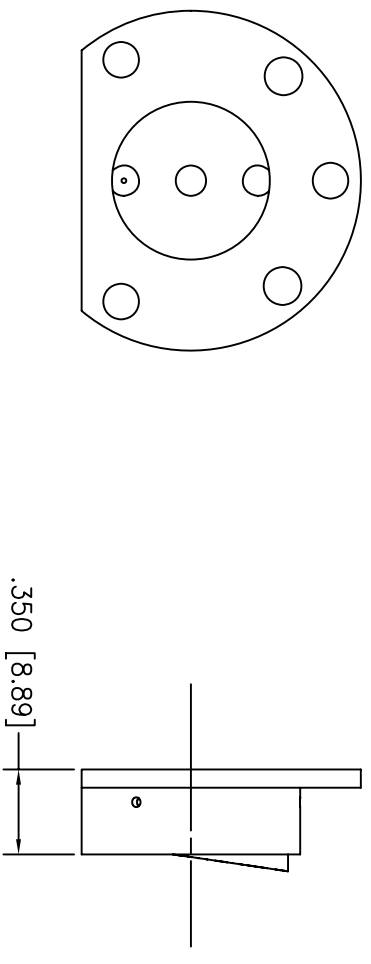
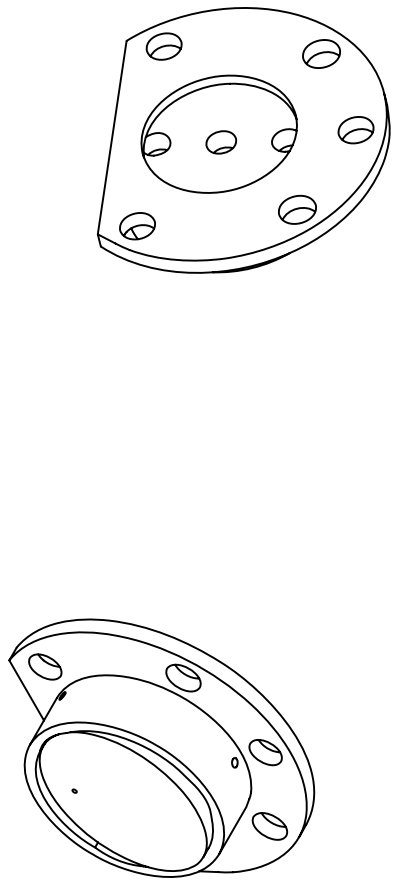
GD9220426

ITEM NO.	RECD/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XX	.XXX	FRACTIONS	$\frac{63}{16}$		
$\pm .01$	$\pm .005$	$\pm 1'$	$\pm 1/16$		
REMOVE ALL BARS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LIST OF MATERIAL					
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
Goddard Space Flight Center GREENBELT, MARYLAND					
NAME	INT	DATE	TITLE		
DESIGNER			DRAWING INTERPRETED PER GSFC-X673-64-1		
MAKAKOS			MOUNT		
CHECKED			PRIMARY MIRROR		
APPROVED			RECEIVER TELESCOPE		
APPROVED-STRESS					
APPROVED-ENGINEER					
CODE	SCALE	WT	SH		
GD	9220426		OF 1		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED
 1 ALL DIMENSIONS ARE REFERENCED

REVISION			
SYM	ZONE	DESCRIPTION	DATE



*PRELIMINARY RELEASE
 FOR ENGINEERING INFORMATION ONLY*

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

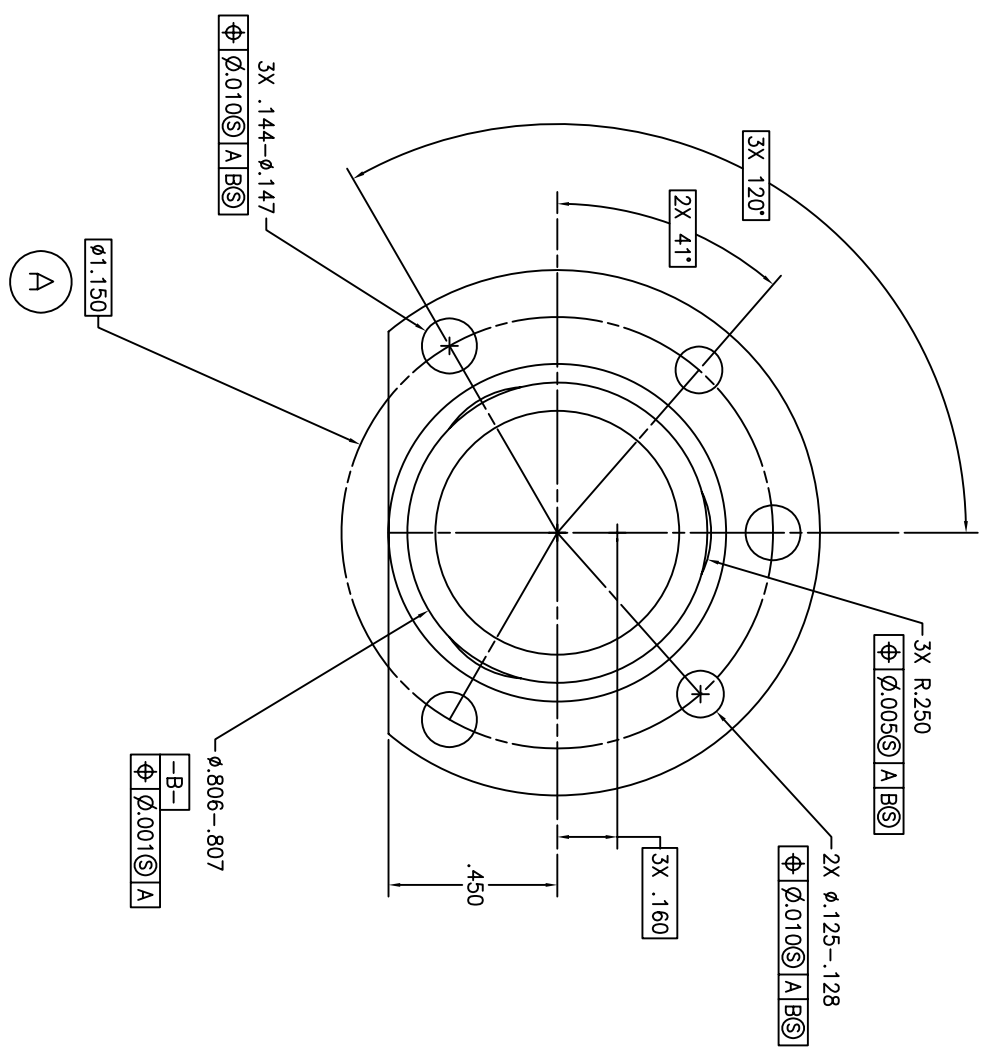
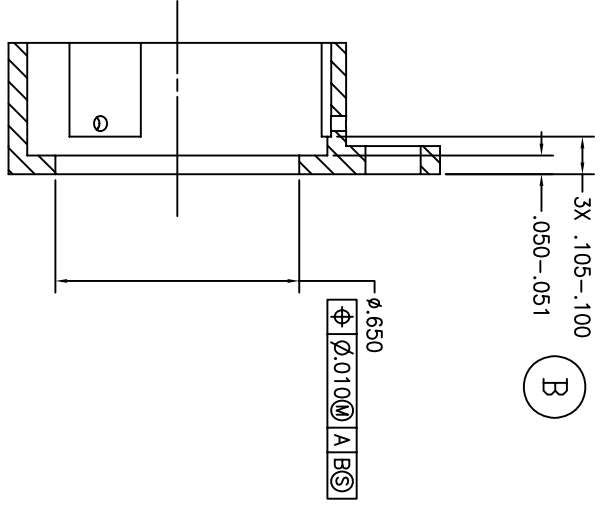
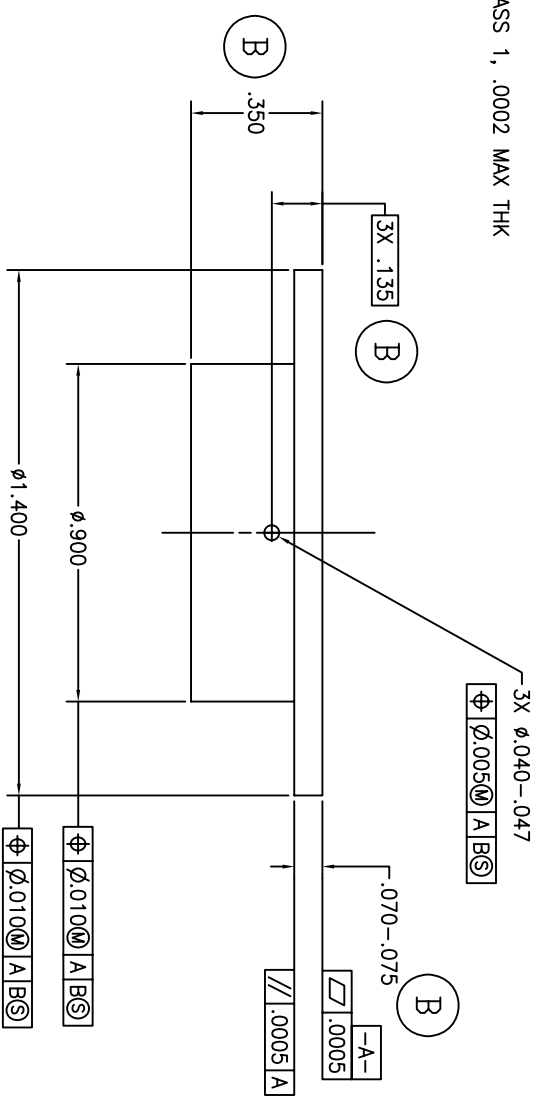
ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .xxx \angle FRACTIONS 63 \checkmark					
$\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$					
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	DESIGNER	MAMAKOS	DATE	TITLE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED	DRAWN	MAMAKOS		ASSEMBLY
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED			SECONDARY MIRROR
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot	APPROVED			SVIP RECEIVER TELESCOPE
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	APPROVED			
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE _____	APPROVED-STRESS			
		APPROVED-ENGINEER			
	NEXT ASSY	USED ON			

GC9220428 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

REV	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED 1.150 DIM		
B		.070-.075 WAS .95-.100 .050-.051 WAS .075-.076 .105-.100 WAS .125-.120 3X .135 WAS 3X .160 .350 WAS .375		



THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

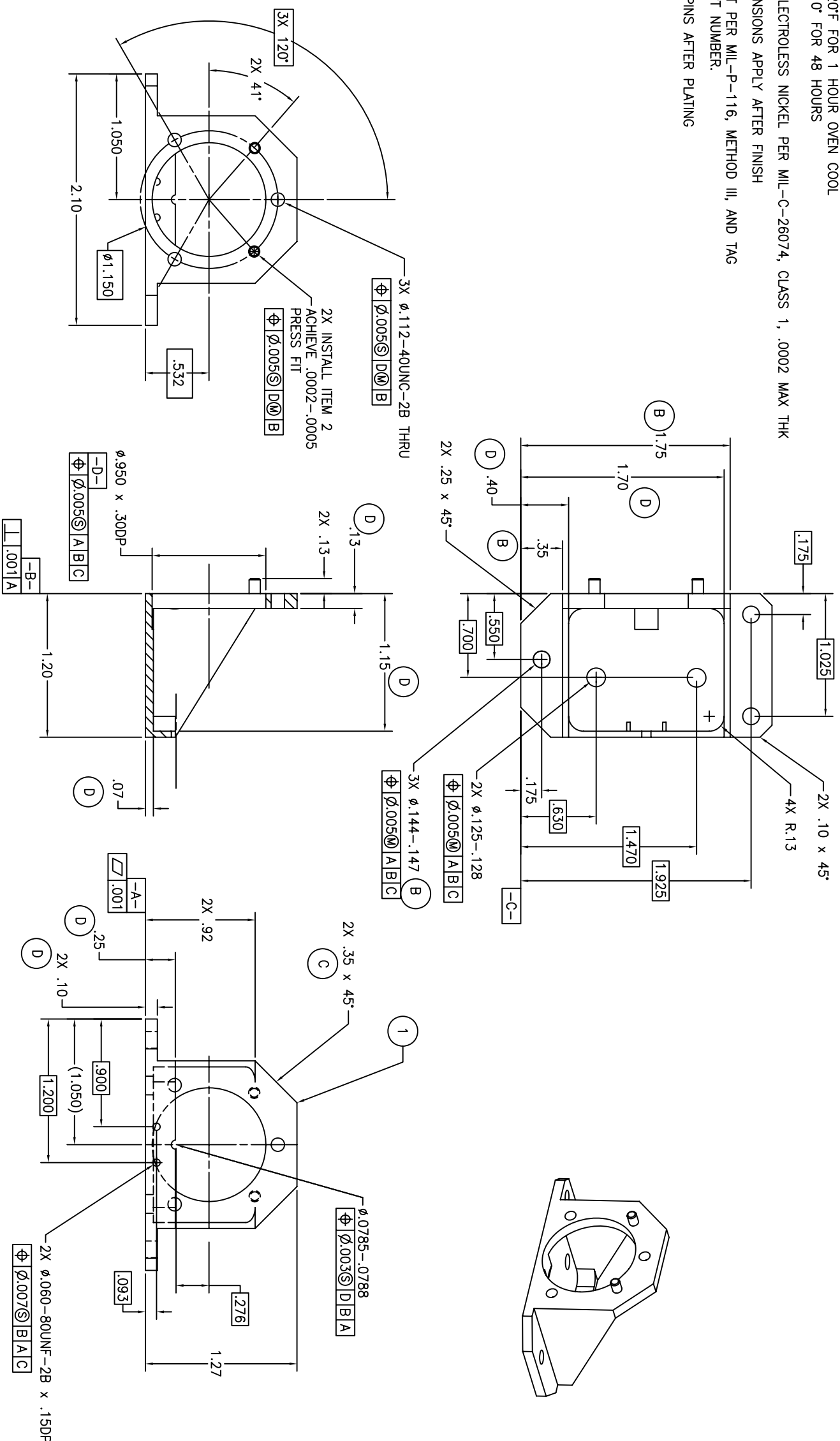
ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX FRACTIONS 63 ±.01 ±.005 ±.1° ±1/16		
REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. <input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ☐ <input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____					
LIST OF MATERIAL			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
DESIGNER NAME			Goddard Space Flight Center GREENBELT, MARYLAND		
DRAWN BY			DRAWN BY		
CHECKED			CHECKED		
APPROVED			APPROVED		
APPROVED-STRESS			APPROVED-STRESS		
APPROVED-ENGINEER			APPROVED-ENGINEER		
TITLE			DRAWING INTERPRETED PER GSFC-4673-64-1		
CELL			CELL		
SECONDARY MIRROR			SECONDARY MIRROR		
RECEIVER TELESCOPE			RECEIVER TELESCOPE		
CODE			CODE		
SCALE			SCALE		
WT			WT		
SHT OF 1			SHT OF 1		

GD9220429

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.
- 6 INSTALL PINS AFTER PLATING

SM	ZONE	DESCRIPTION	DATE	APPROVAL
B		ADDED MISSING DIMENSIONS Ø.144-.147 WAS Ø.140-.144		
C		ADDED CHAMFER DIM		
D		.25 WAS .300, 2X .10 WAS 2X .15 .07 WAS .12, 1.15 WAS 1.13 .13 WAS .28, .40 WAS .48 1.70 WAS 1.63		



ITEM NO.	RECD/REC'D	PART NO.	DESCRIPTION	SEE NOTE	MATERIAL	MATERIAL SPEC.
2		MS16555-617	Ø.094 x .312 LG DOWEL PIN	CRS 416		
1	AR		BAR/PLATE	1		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES:
 .XX .XXX FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS Ø

NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS

APPROVED-STRESS: _____
 APPROVED-ENGINEER: _____

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

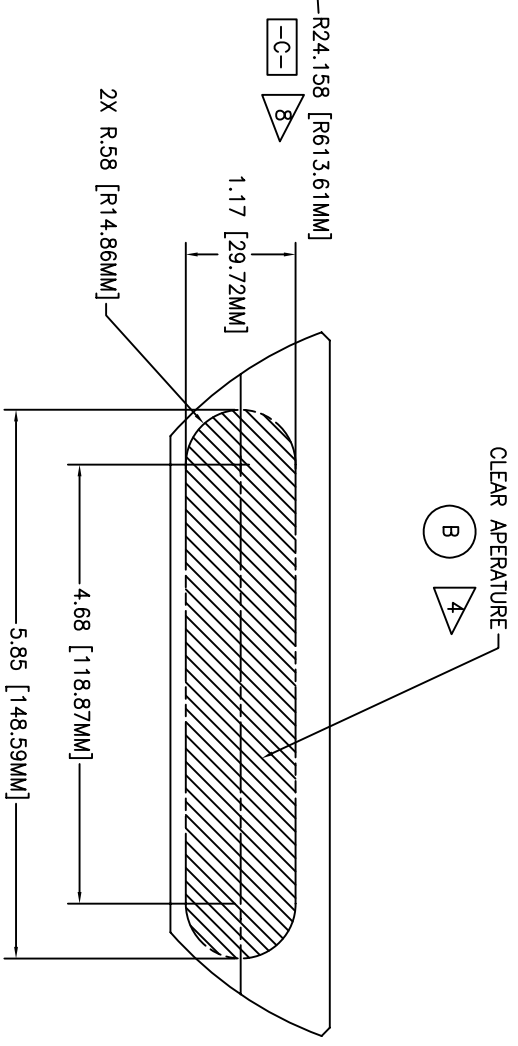
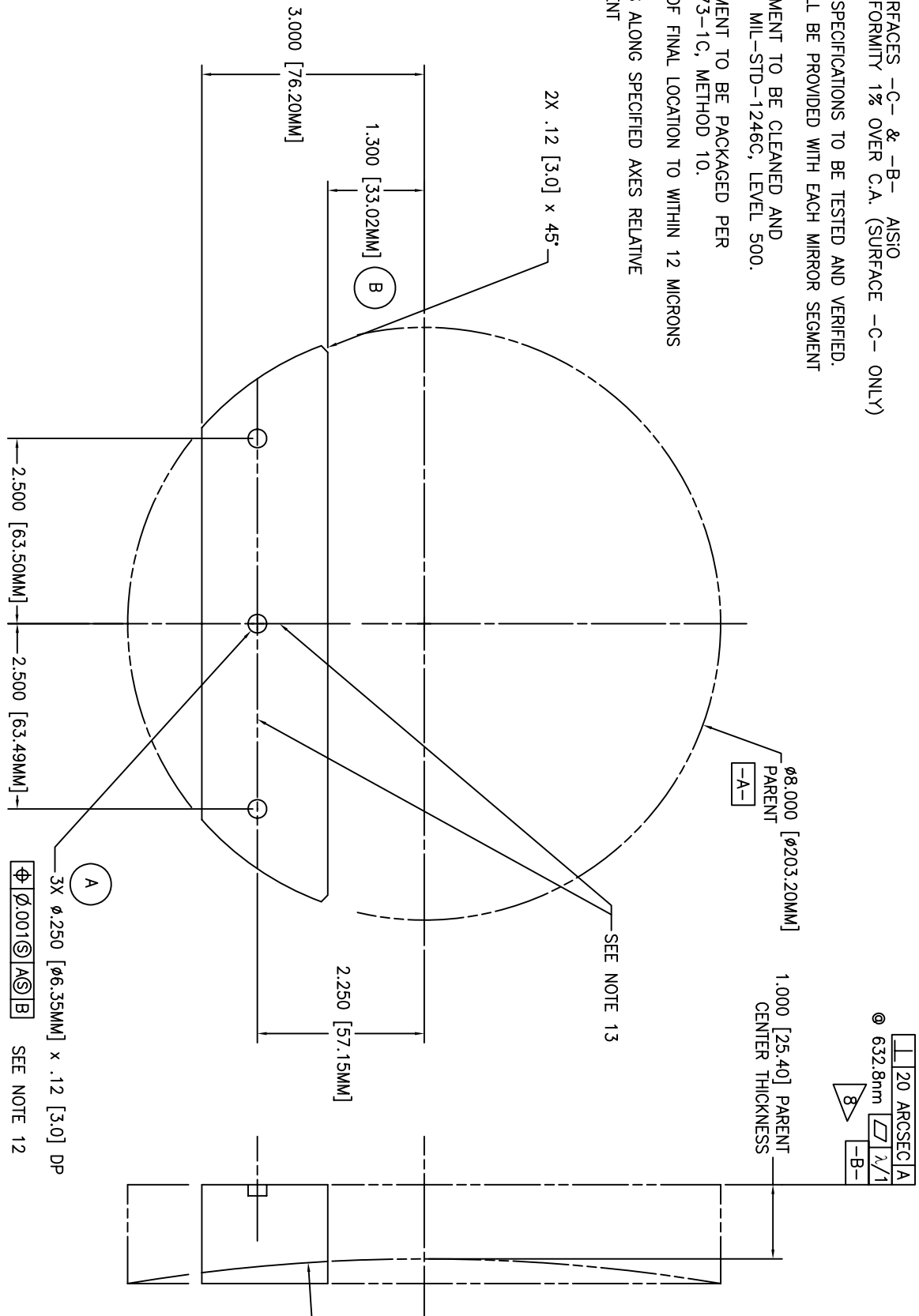
**MOUNT
 SECONDARY MIRROR
 RECEIVER TELESCOPE**

GD 9220430

SCALE: 1/2" = 1"
 WT. _____
 SH1 OF 1

SM#	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED NOTES 12 & 13 DIM 1.00 WAS 1.50 3X WAS 1X		
B		CLARIFIED C.A. AREA DIM 1.30 WAS 1.00		

- NOTES: UNLESS OTHERWISE SPECIFIED
- MATERIAL: ZERODUR
 - FOCAL LENGTH: 306.807mm ±1%
 - ALL OPTICAL SPECIFICATIONS TO BE TESTED AND VERIFIED.
 - SURFACE QUALITY: SCRATCH AND DIG 60/40 OVER CLEAR APERTURE
 - CONIC CONSTANT: -1.0
 - SURFACE FIGURE ERROR: LAMBDA/10 RMS @632.8nm OVER C.A.
 - SURFACE MICRO ROUGHNESS: 80 A OVER C.A.
 - COATING: SURFACES -C- & -B- AISIO COATING UNIFORMITY 1% OVER C.A. (SURFACE -C- ONLY)
 - ALL OPTICAL SPECIFICATIONS TO BE TESTED AND VERIFIED. RESULTS SHALL BE PROVIDED WITH EACH MIRROR SEGMENT
 - MIRROR SEGMENT TO BE CLEANED AND BAGGED PER MIL-STD-1246C, LEVEL 500.
 - MIRROR SEGMENT TO BE PACKAGED PER MIL-STD-2073-1C, METHOD 10.
 - KNOWLEDGE OF FINAL LOCATION TO WITHIN 12 MICRONS
 - SCRIBE LINES ALONG SPECIFIED AXES RELATIVE TO THE PARENT



ITEM NO.	RECD/REVCD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
24					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XX .XXX FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX. S. TOLERANCES

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ☐

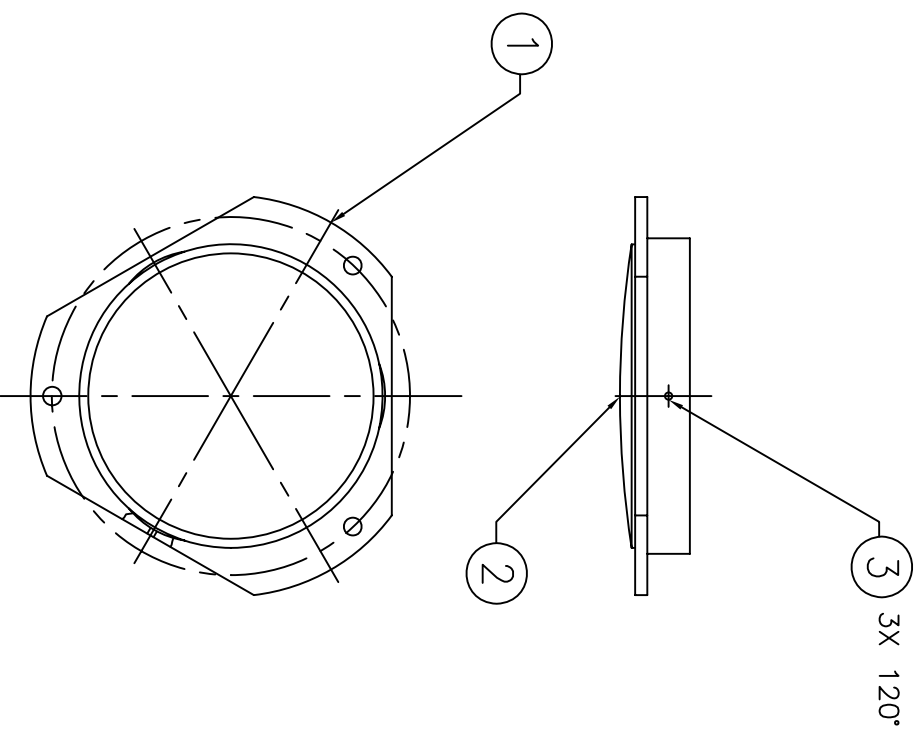
NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INT	DATE	TITLE
DESIGNER			MIRROR, PRIMARY BEAM COMBINER CONCAVE PARABOLOID
DRAWN			
MAKED			
CHECKED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 SOURCE OF SUPPLY:
A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
ST. PAUL, MN 55144
612-733-1110



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3			AR 2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2			GC9220461	MIRROR, SECONDARY		
1			GD9220462	MOUNT, CELL		
-	-	-	GC9220460	ASSEMBLY, SECONDARY MIRROR CELL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xxx \angle FRACTIONS \angle 63
 ± 0.1 ± 0.05 $\pm 1'$ $\pm 1/16$
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	DESIGNER B MAMAKOS	DATE	TITLE ASSEMBLY SECONDARY MIRROR BEAM COMBINER
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	DRAWN MAMAKOS		
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED B MAMAKOS		
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot	APPROVED		
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	APPROVED-STRESS		
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-ENGINEER		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2004
 FILE NAME: _____

CODE	GC	SCALE	1/1	WT		SH1	OF	1
NEXT ASSY		USED ON	SVP					

GC9220460 1

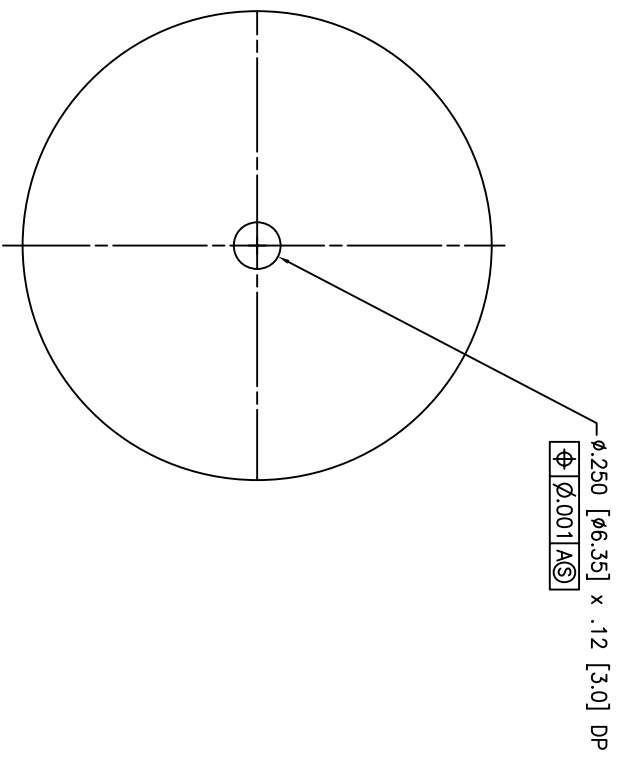
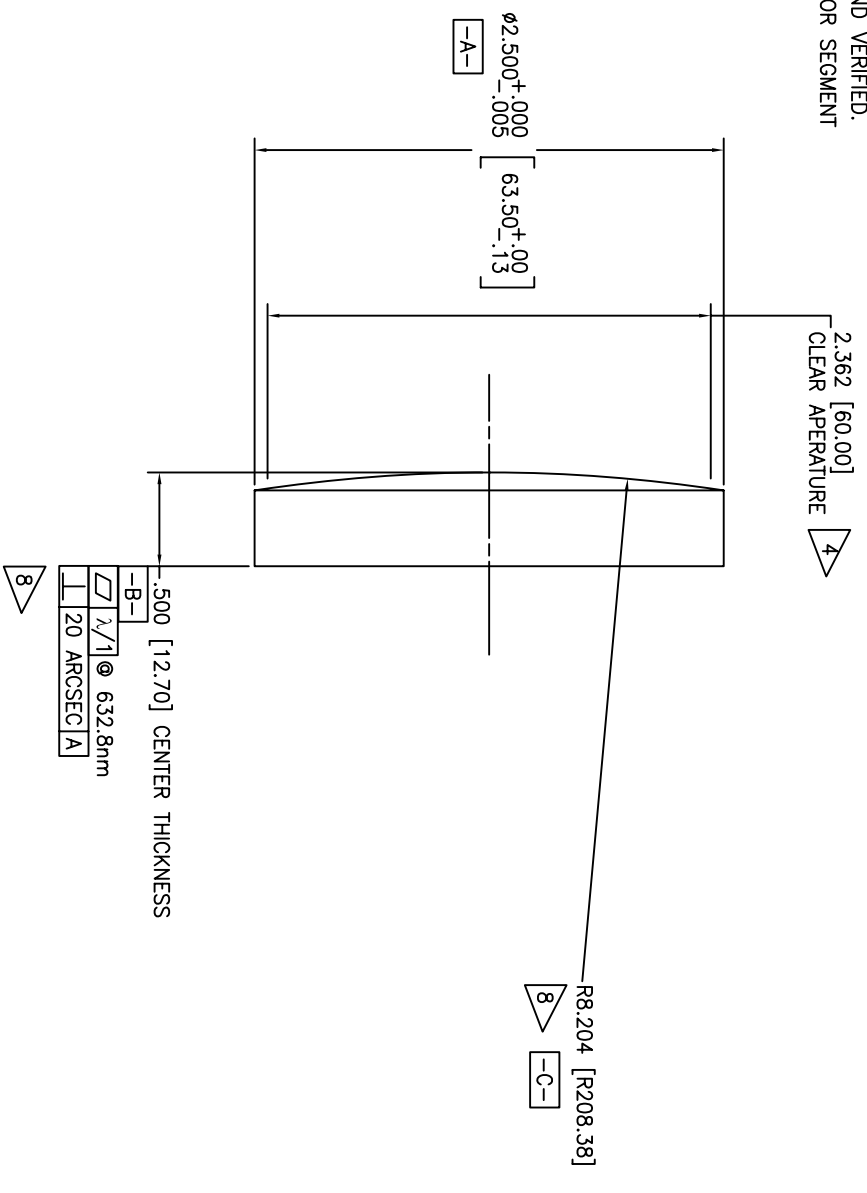
FOLD LINE

3 3 3

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. FOCAL LENGTH: 104.19 mm ±1.0%
3. CLEAR APERTURE: 60mm

4. SURFACE QUALITY: SCRATCH AND DIG 60/40 OVER CLEAR APERTURE
5. CONIC CONSTANT: -1.856 ±0.01
6. SURFACE FIGURE ERROR: LAMBDA/8 RMS @632.8nm OVER C.A.
7. SURFACE MICRO ROUGHNESS: 80 A OVER C.A.
8. COATING: SURFACES -C- & -B- AISIO COATING UNIFORMITY 1% OVER C.A. (SURFACE -C- ONLY)
9. ALL OPTICAL SPECIFICATIONS TO BE TESTED AND VERIFIED. RESULTS SHALL BE PROVIDED WITH EACH MIRROR SEGMENT
10. MIRROR SEGMENT TO BE CLEANED AND BAGGED PER MIL-STD-1246C, LEVEL 500.
11. MIRROR SEGMENT TO BE PACKAGED PER MIL-STD-2073-1C, METHOD 10.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220461

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XX	.XXX	FRACTIONS	63		
±.01	±.005	±1"	±1/16		
REMOVE ALL BARRS AND SHARP EDGES R. 0.10 OR CHAMFER MAX. S. TOLERANCES					
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DESIGNER	NAME
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DRAWN	NAME
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CHECKED	NAME
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APPROVED	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	APPROVED-STRESS	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	APPROVED-ENGINEER	
TITLE					
MIRROR, SECONDARY					
BEAM COMBINER					
CONVEX HYPERBOLOID					
GD	9220461	SCALE	2/1	WT	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME:

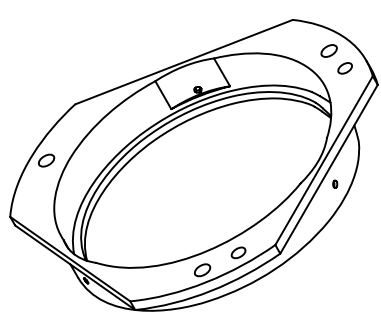
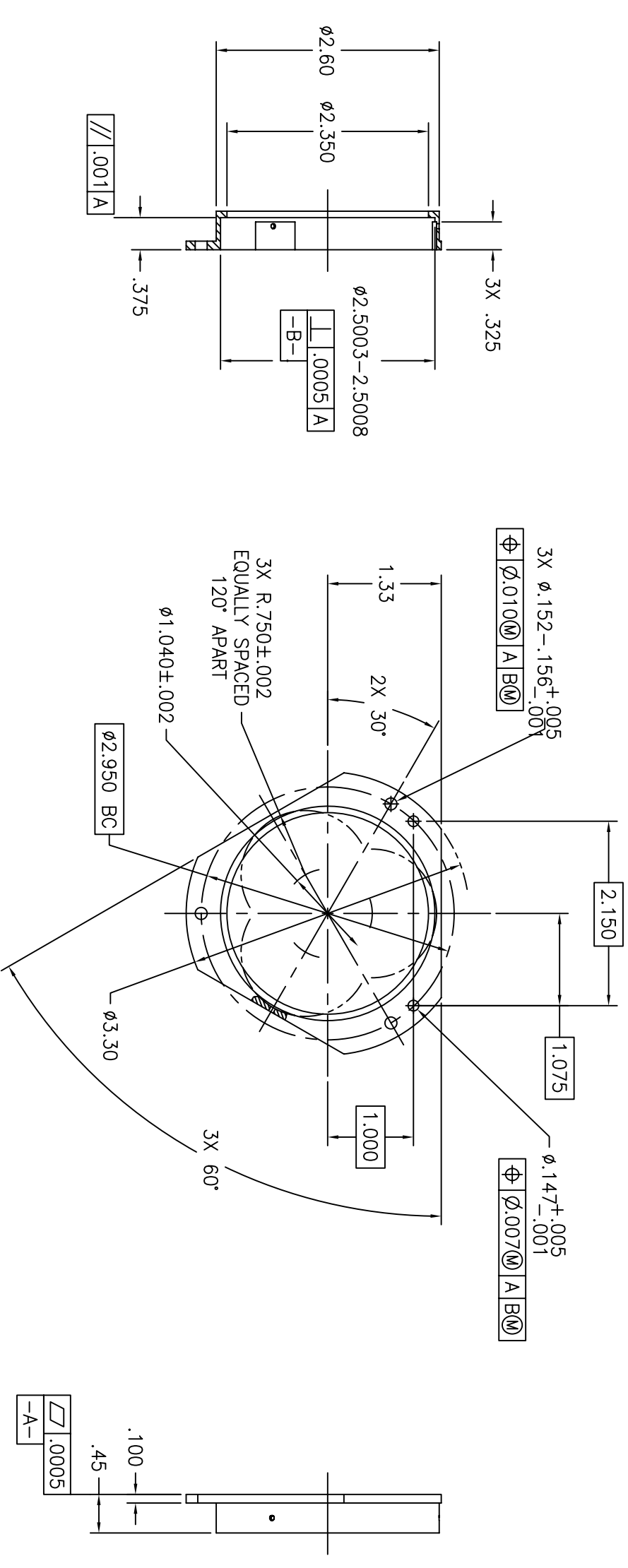
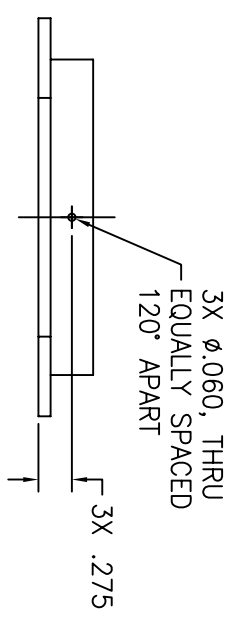
4 3 2 1

A B C D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN $.03 \pm .01$ OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F ($+0^{\circ}/-20^{\circ}\text{F}$) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .XXX FRACTIONS 63						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						

NAME	INIT	DATE	TITLE
DESIGNER B MAMAKOS			CELL SECONDARY MIRROR BEAM COMBINER
DRAWN J GUZEK			
CHECKED B MAMAKOS			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2004
 FILE NAME:

CODE	SCALE	WT	SH1	OF
GC	1/1		1	1

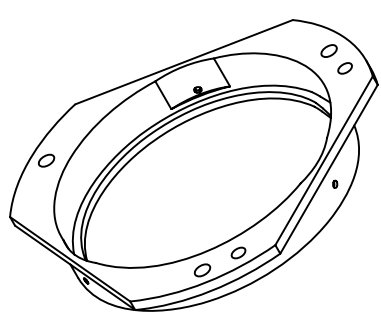
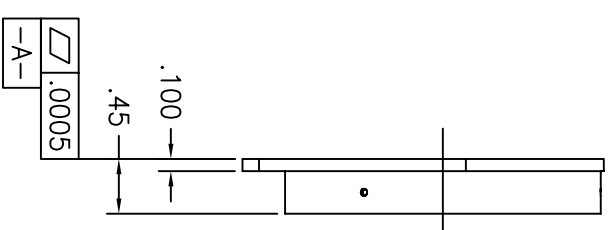
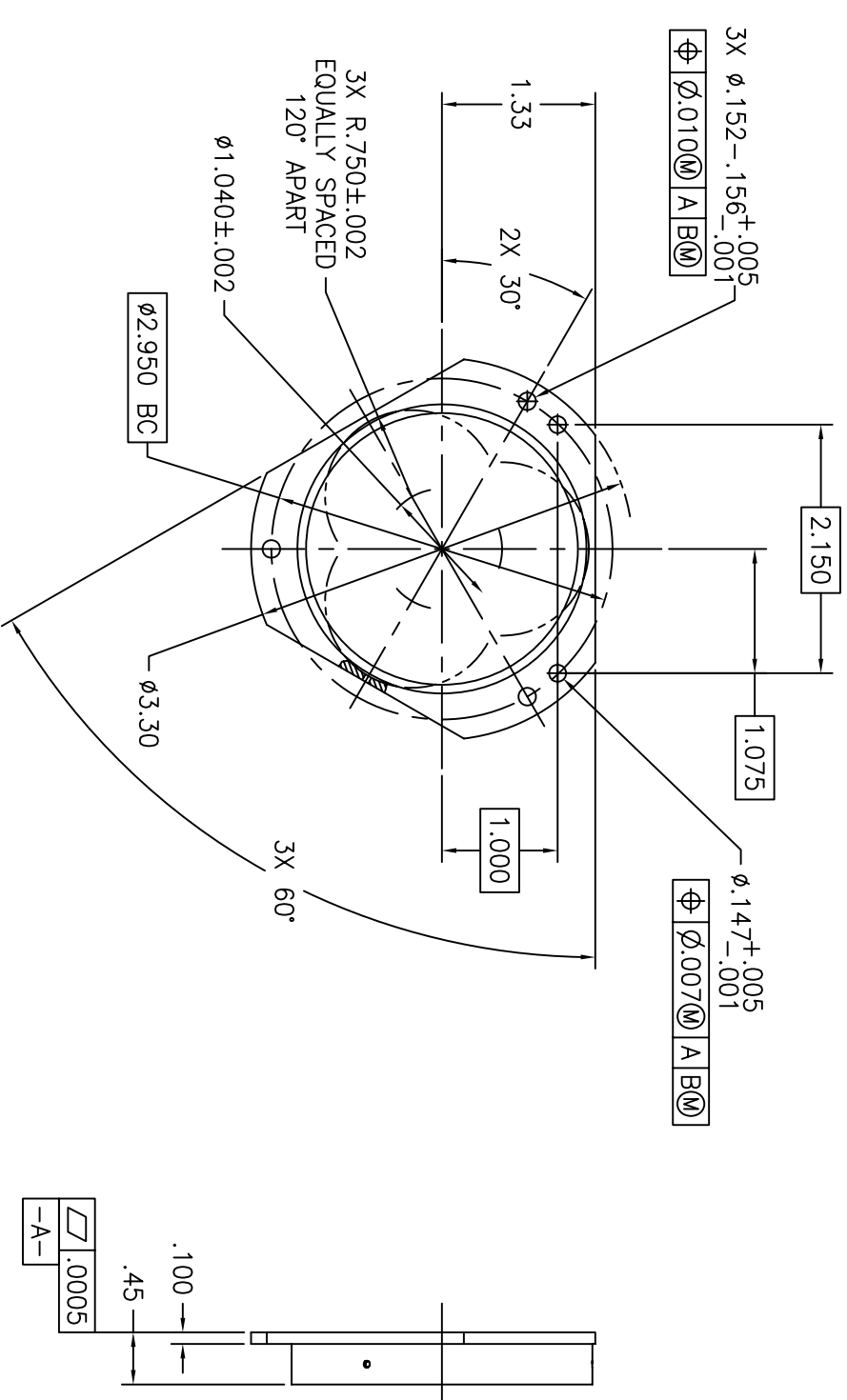
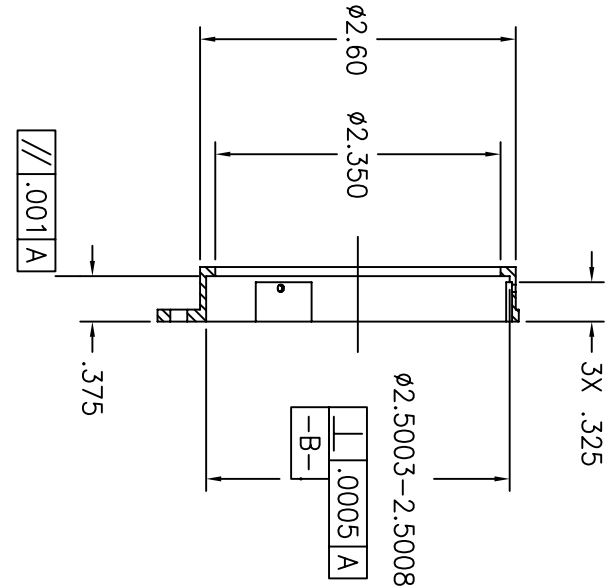
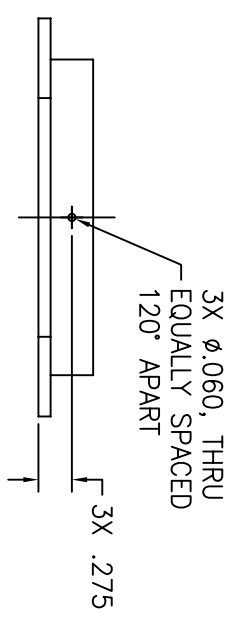
CG

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS.
STRESS RELIEVE AT 1200°F (+0°/-20°F) FOR 5 HOURS
FURNACE COOL TO ROOM TEMPERATURE
FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TiFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-1116, METHOD III, AND TAG
WITH PART NUMBER.

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX $\frac{\text{---}}{\text{---}}$ FRACTIONS 63 $\frac{\text{---}}{\text{---}}$

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

NAME	INIT	DATE	TITLE
DESIGNER B MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 CELL SECONDARY MIRROR BEAM COMBINER
DRAWN J GUZEK			
CHECKED B MAMAKOS			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	APPROVED
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	APPROVED-STRESS
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	APPROVED-ENGINEER
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot	
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2004
FILE NAME: _____

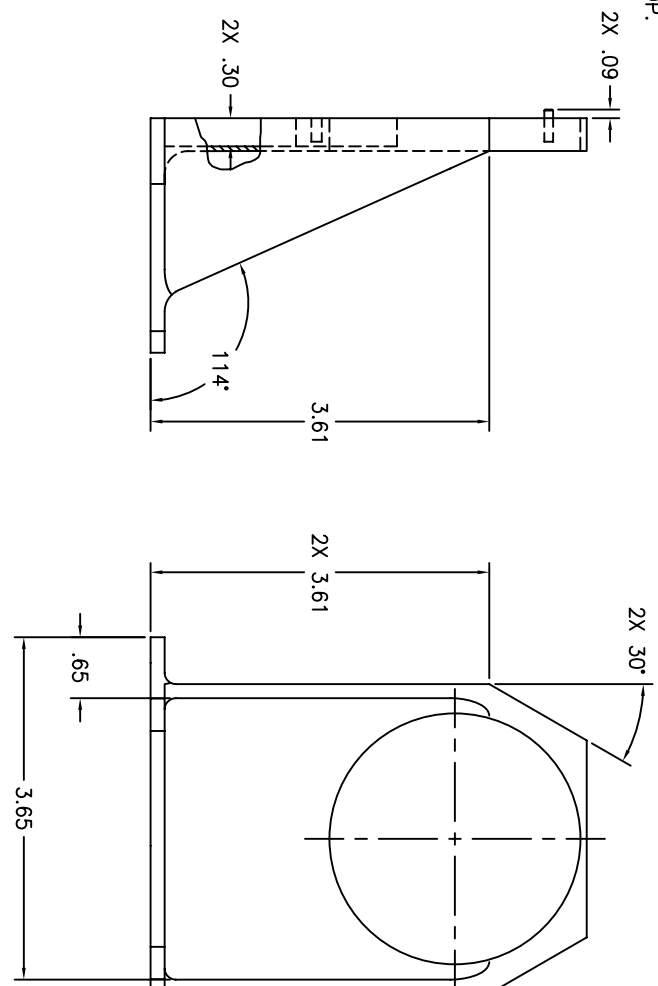
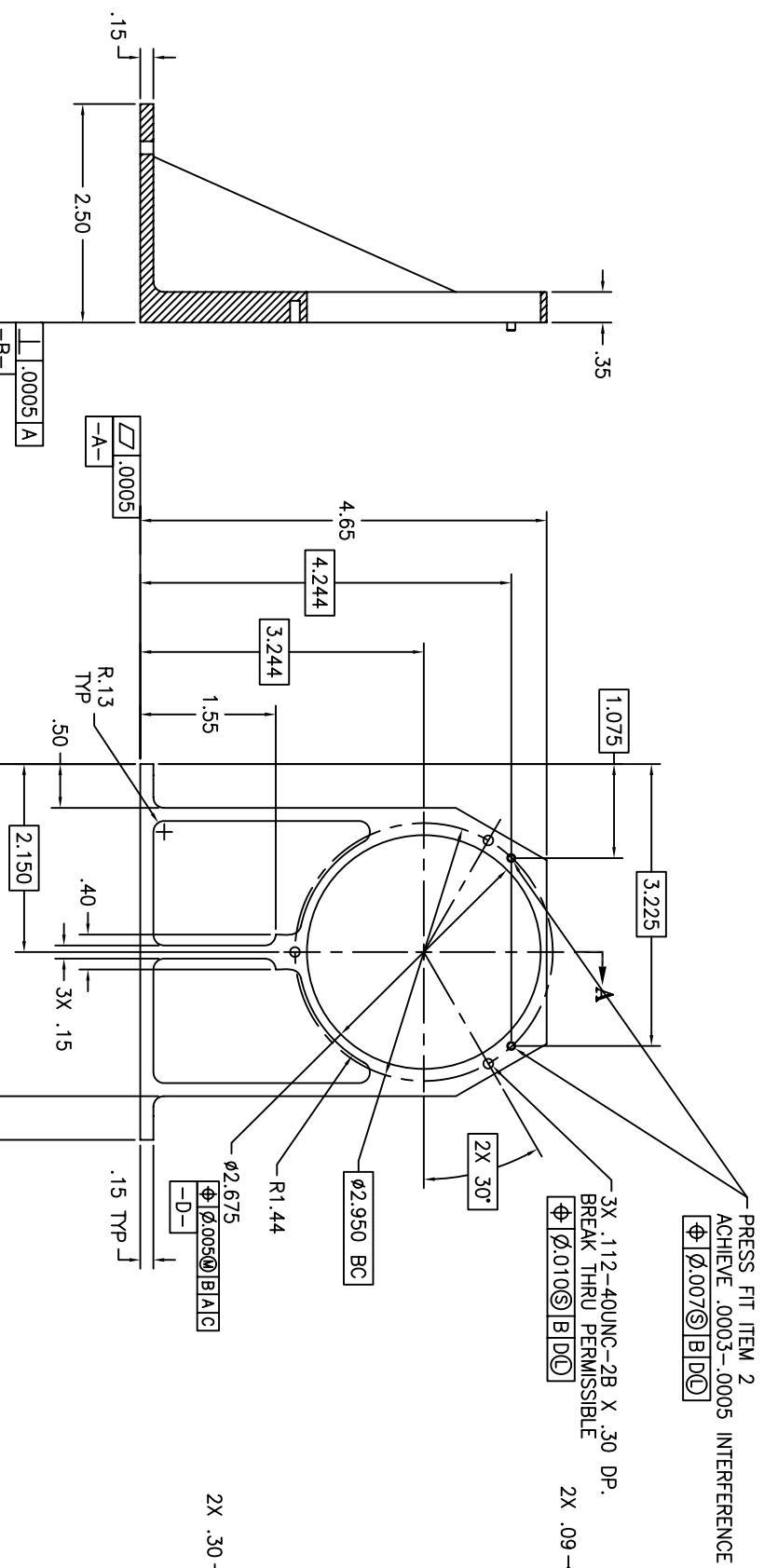
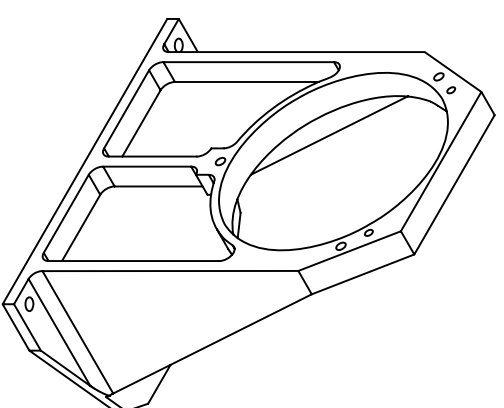
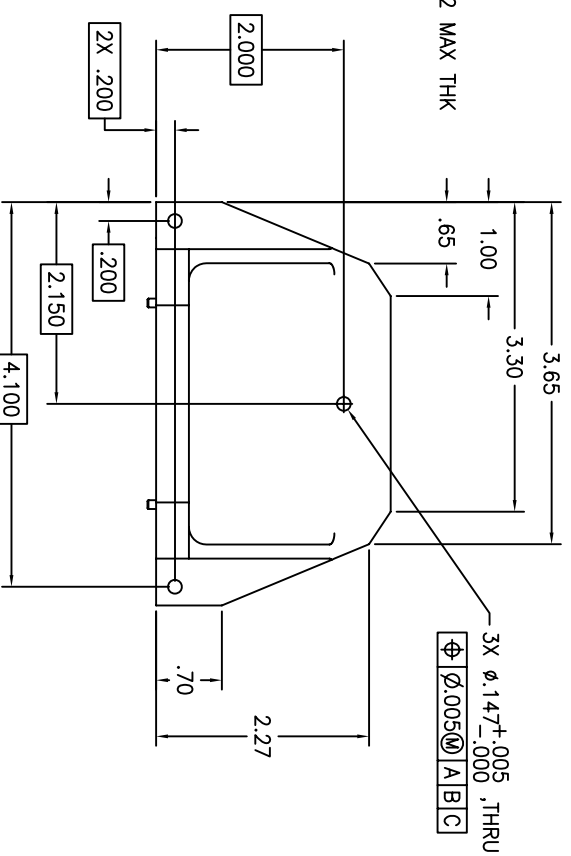
CODE	SCALE	WT	SH1	OF
GC	9220462	1/1	1	1

FOLD 3/4

CG

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450F ±20F FOR 1 HOUR OVEN COOL
600F ±20F FOR 1 HOUR OVEN COOL
200F ±10' FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SECTION A-A

A

B

C

D

4

3

2

1

SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2		MS16555-17	PIN, DOWEL, ϕ .0939-.0941, .25L	CRES	
1	AR	BAR, SHEET		INVAR 36	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XX .XXX FRACTIONS 63/100
 \pm .01 \pm .005 \pm .1' \pm 1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. B MAXIMAKOS

DESIGNER: J. GILZEK
CHECKED: B. MAXIMAKOS
APPROVED:

FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
HARDNESS TEST NOT REQUIRED
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
NOI REQUIRED PER S-313-009 CODE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND
DRAWING INTERPRETED PER GSFC-X673-64-1

NAME: INT: DATE:

TITLE: MOUNT SECONDARY MIRROR BEAM COMBINER

APPROVED-STRESS:

APPROVED-ENGINEER:

SOFTWARE: AutoCAD VERSION: 2004
FILE NAME:

GD9220463

23

C

D

A

4

3

2

1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2004
FILE NAME:

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2		MS16555-17	PIN, DOWEL, ϕ .0939-.0941, .25L	CRES	
1	AR	BAR, SHEET		INVAR 36	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XX .XXX FRACTIONS 63/100
 \pm .01 \pm .005 \pm .1' \pm 1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. B MAXIMAKOS

DESIGNER: J. GILZEK
CHECKED: B. MAXIMAKOS
APPROVED:

FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
HARDNESS TEST NOT REQUIRED
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
NOI REQUIRED PER S-313-009 CODE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND
DRAWING INTERPRETED PER GSFC-X673-64-1

NAME: INT: DATE:

TITLE: MOUNT SECONDARY MIRROR BEAM COMBINER

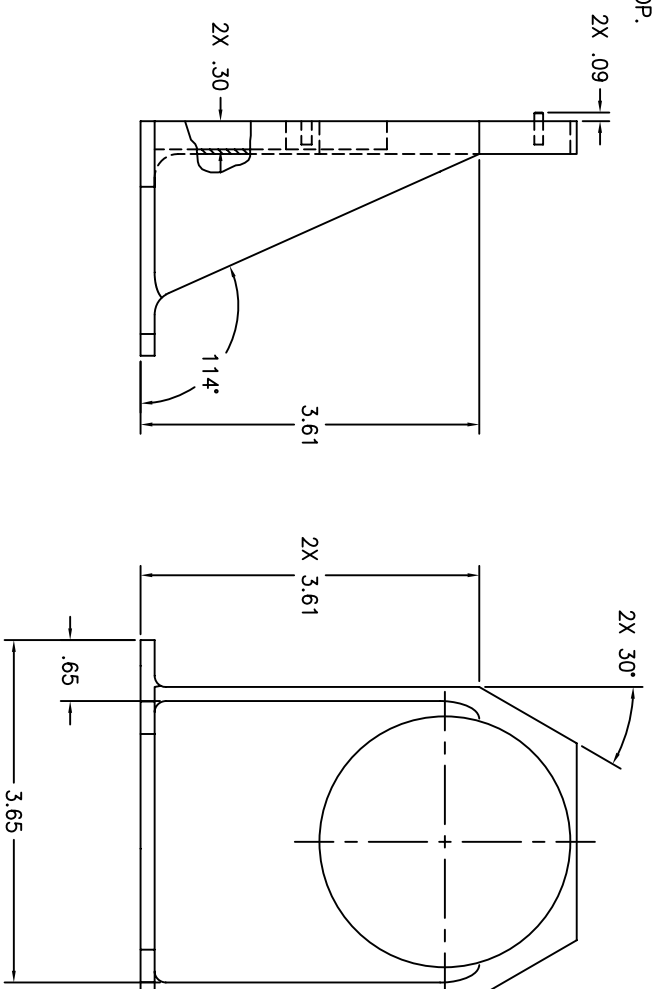
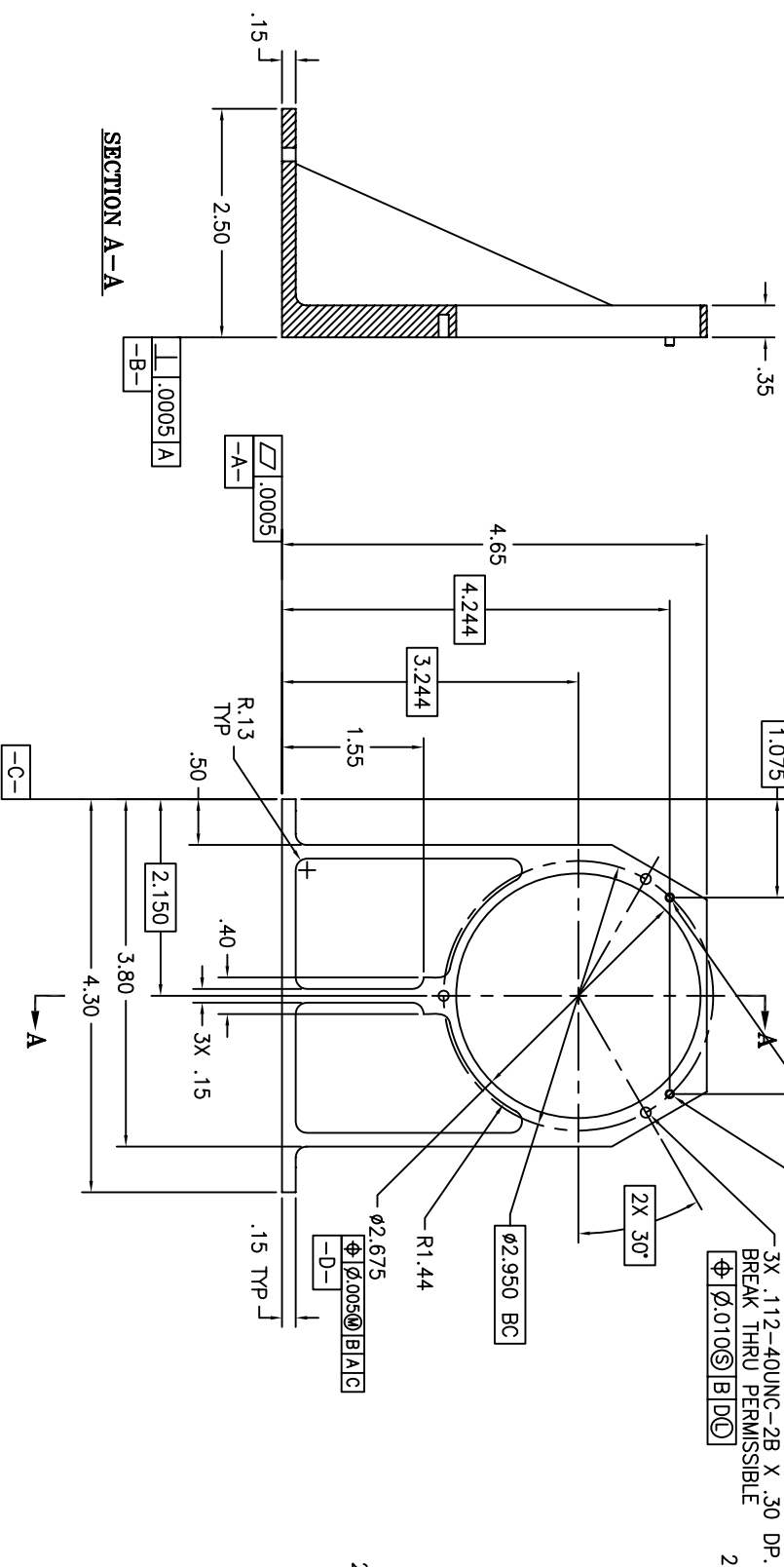
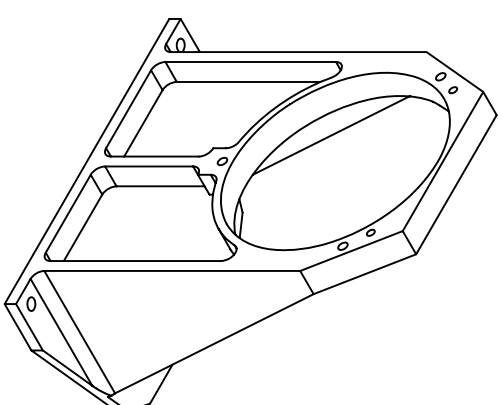
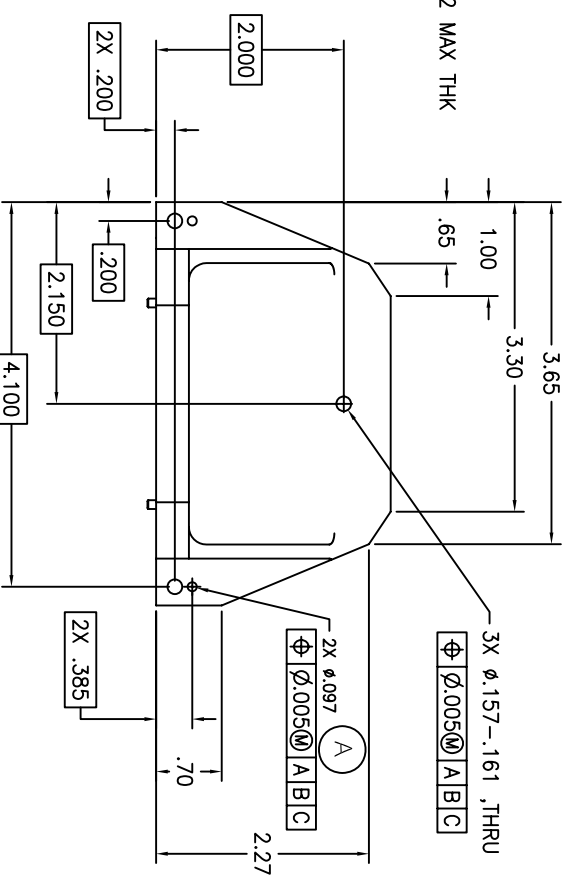
APPROVED-STRESS:

APPROVED-ENGINEER:

SOFTWARE: AutoCAD VERSION: 2004
FILE NAME:

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450F ±20F FOR 1 HOUR OVEN COOL
600F ±20F FOR 1 HOUR OVEN COOL
200F ±10' FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SECTION A-A

SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED 2X Ø.097 HOLES, Ø.157-.161 WAS Ø.147		

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2		MS16555-17	PIN, DOWEL, Ø.0939-.0941, .25L	CRES	
1	AR		BAR, SHEET	INVAR 36	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XX .XXX FRACTIONS 63
±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
DESIGNER: B. MAMAKOS
DRAWN: J. GILZEK
CHECKED: B. MAMAKOS
APPROVED: B. MAMAKOS

FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD
HARDNESS TEST NOT REQUIRED
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
TEST HARDNESS PER ASTM E-18 WHERE INDICATED
ON FIELD OF DRAWING THIS ☐

NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD
NOE REQUIRED PER S-313-009 CODE

APPROVED-STRESS: APPROVED-ENGINEER: APPROVED-ENGINEER

GD 9220463
SCALE: 1/1 WT SH1 OF 1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2004
FILE NAME: _____

A B C D

A B C D

4 3 2 1

4 3 2 1

GD9220463

A

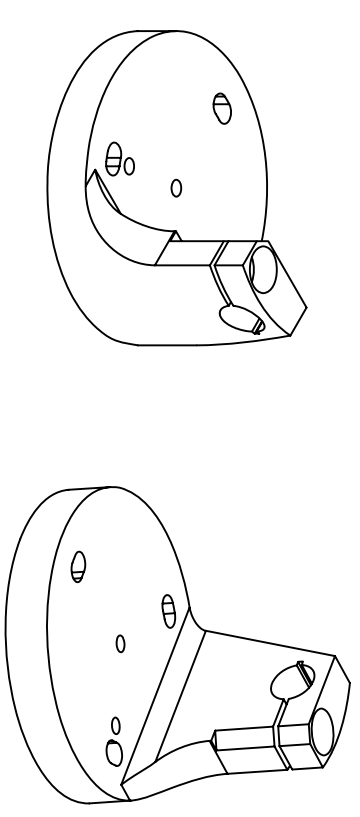
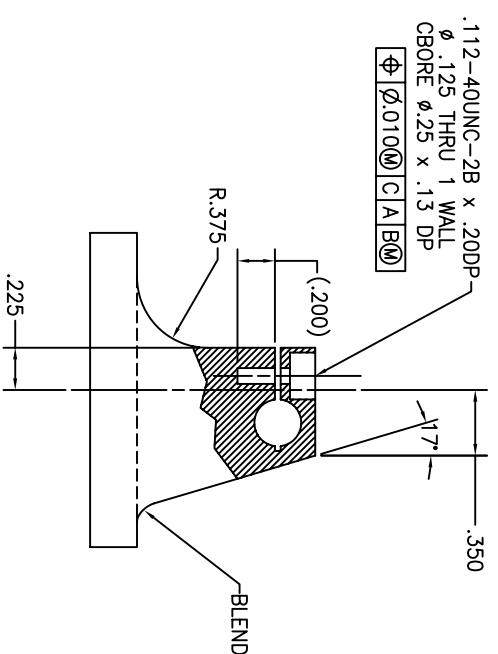
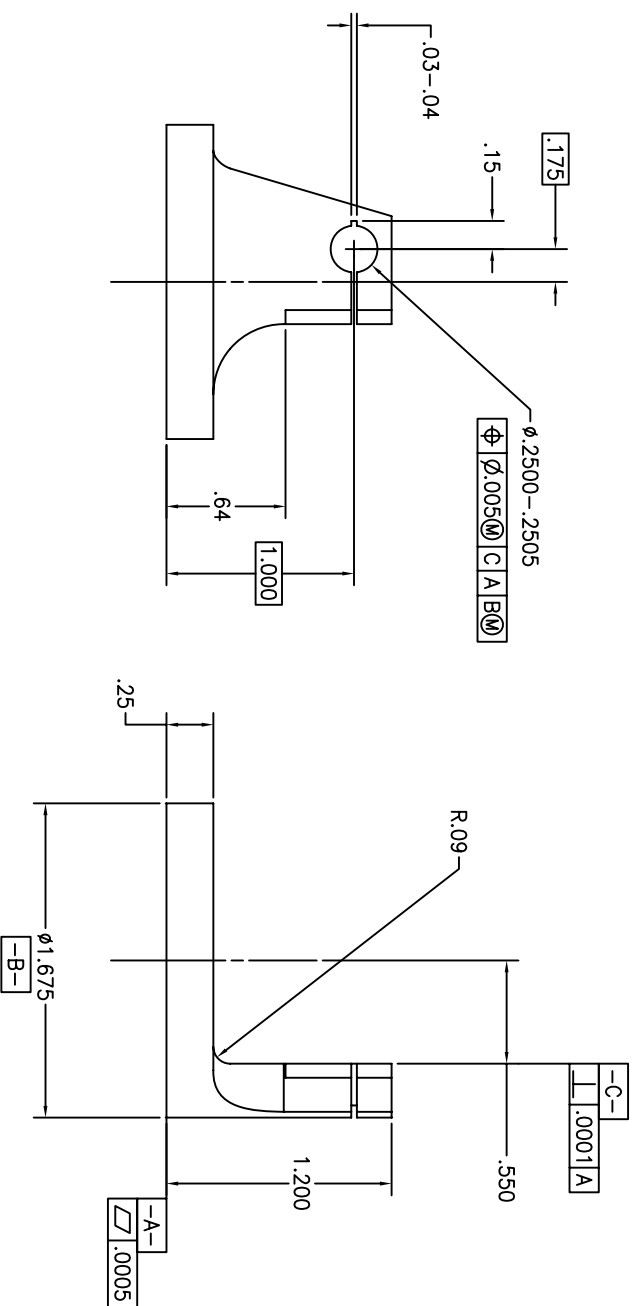
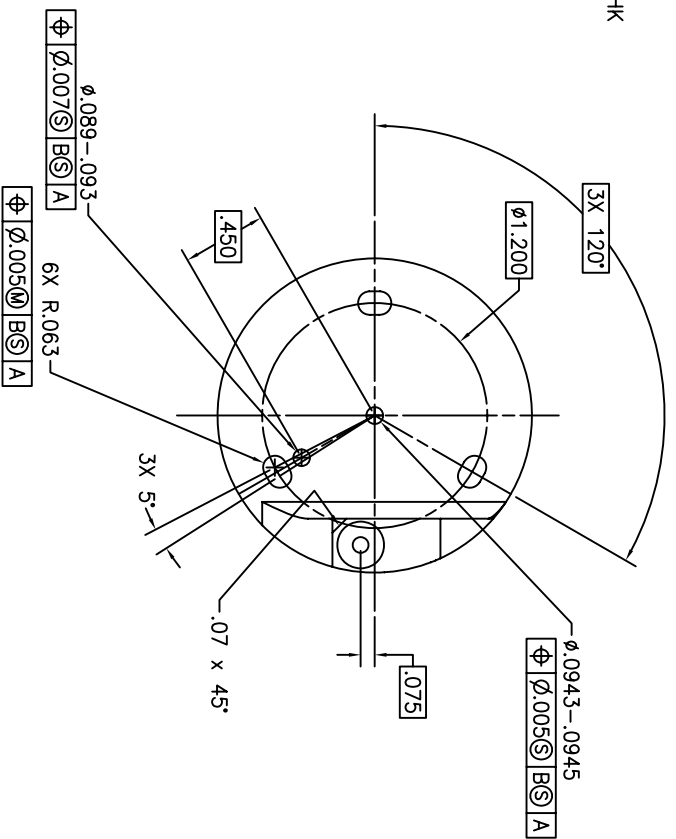
23

C

D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220466

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .xxx .005 .010 .005 .010 .005 .010 FRACTIONS 63 REMOVE ALL BURS AND SHARP EDGES R.010 OR CHAMFER MAX. FLIGHT HARDWARE/POST FAB HARDNESS TEST REQD HARDNESS TEST NOT REQUIRED TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL ON FIELD OF DRAWING THIS \odot NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD NOE REQUIRED PER S-313-009 CODE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	GREENBELT, MARYLAND
LIST OF MATERIAL					
Goddard Space Flight Center					
DRAWING INTERPRETED PER GSFC-4673-64-1					
DESIGNER	NAME	INT	DATE	TITLE	
MAIAKOS	MAIAKOS			BASE MOUNT	
CHECKED	MAIAKOS			FOLD MIRROR CHANNELS 2&3	
APPROVED				BEAM COMBINER	
APPROVED-STRESS					
APPROVED-ENGINEER					
CODE	GD	SCALE	9220466	WT	SHT OF 1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

A B C D

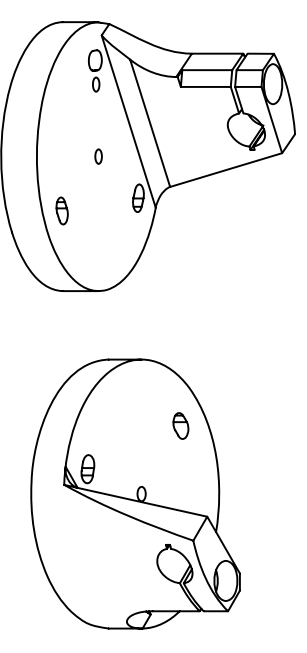
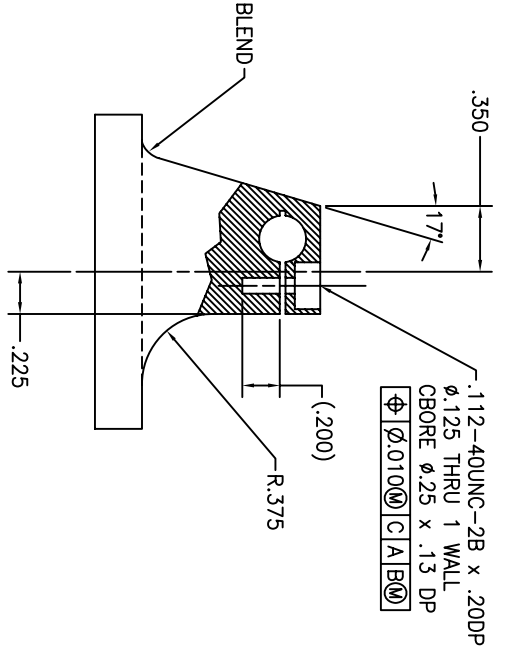
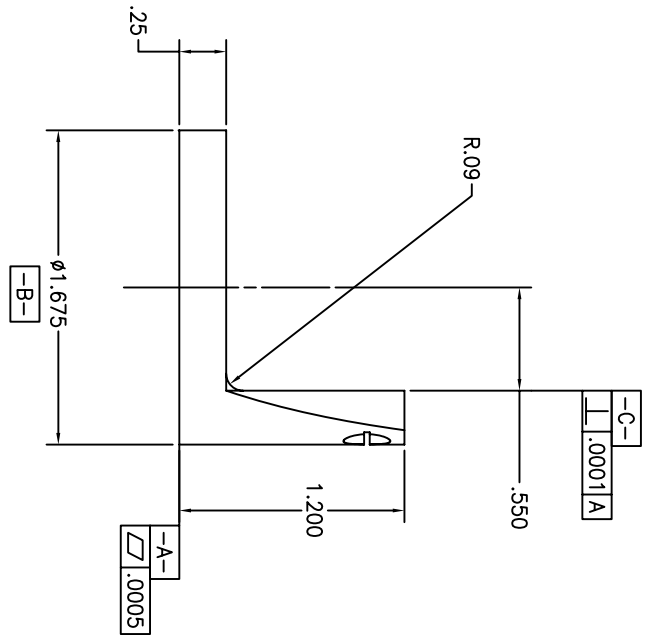
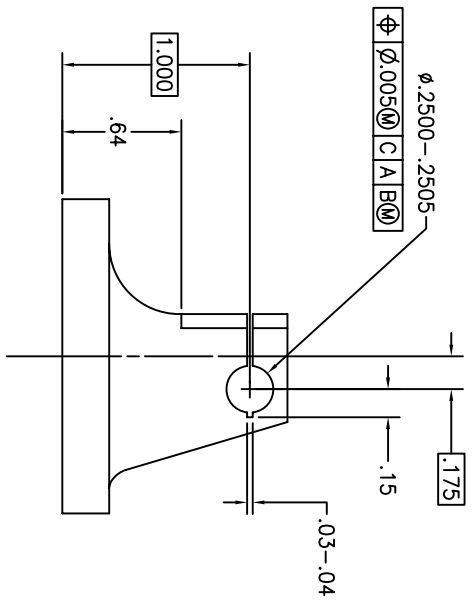
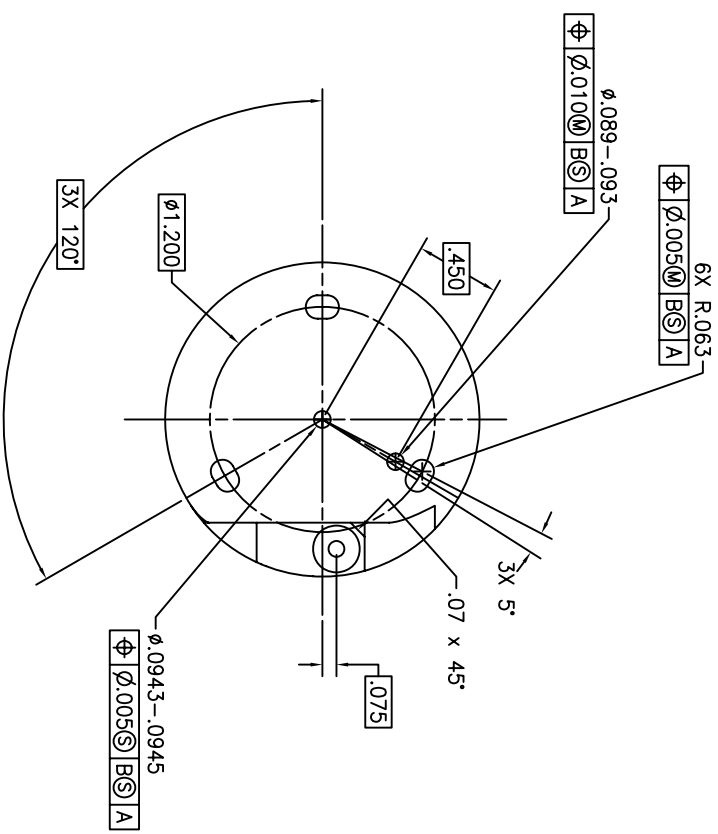
A B C D

4 3 2 1

4 3 2 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220467

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .xxx / FRACTIONS .63 ±.01 ±.005 ±.1' ±1/16	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Goddard Space Flight Center GREENBELT, MARYLAND
			REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. <input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS <input type="checkbox"/> <input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	DESIGNER	DATE
			DRAWN	CHECKED	TITLE
			APPROVED	APPROVED	BASE MOUNT
			APPROVED-STRESS	APPROVED-ENGINEER	FOLD MIRROR CHANNEL 1
			USED ON		BEAM COMBINER
					GD 9220467
					SCALE 1/1" WT
					SHT OF 1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

4 3 2 1

A B C D

4

3

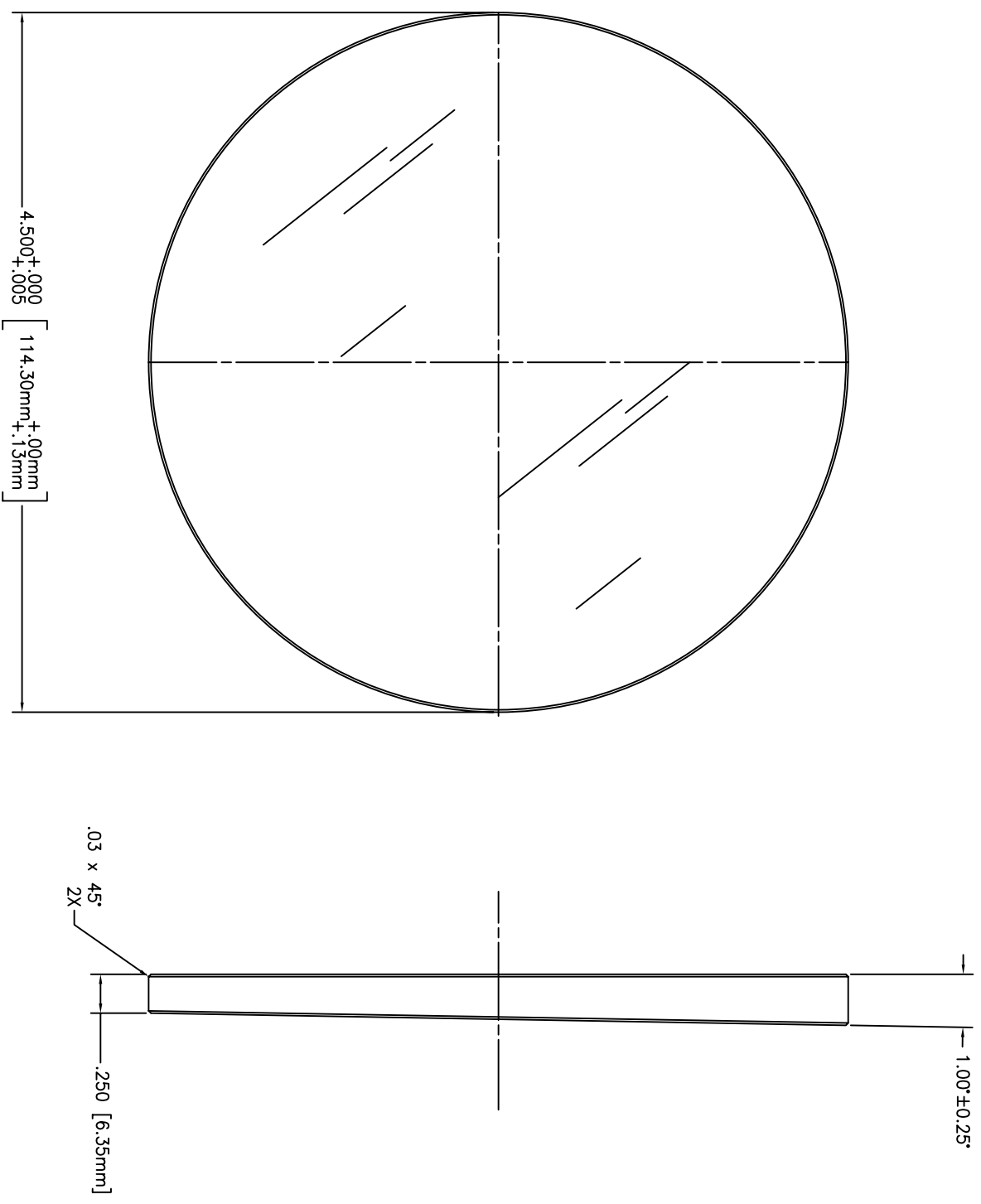
2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: BK7
- 2 TRANSMITTED WAVEFRONT:
- 3 SURFACE QUALITY:

REV	DATE	APPROVAL



*PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY*

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

4

3

2

1

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
				UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES		
				TOLERANCES:		
				.xxx xxx < FRACTIONS 63		
				±.01 ±.005 ±.1' ±1/16		
				REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX		
				<input type="checkbox"/> FLIGHT HARDWARE/POST FLY HARDNESS TEST REQ'D		
				<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED		
				<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL		
				ON FIELD OF DRAWING THIS <input type="checkbox"/>		
				<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D		
				<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____		
				DESIGNER NAME		
				DRAWN NAME		
				CHECKED		
				APPROVED		
				APPROVED-STRESS		
				APPROVED-ENGINEER		
				DATE		
				TITLE		
				WINDOW, WEDGED		
				WINDOW CELL SUB-ASSEMBLY		
				RECEIVER TELESCOPE		
				CODE	GD	9220469
				SCALE	1/1	WT
				SHT OF	1	1

GD9220469

1

29

A

B

C

D

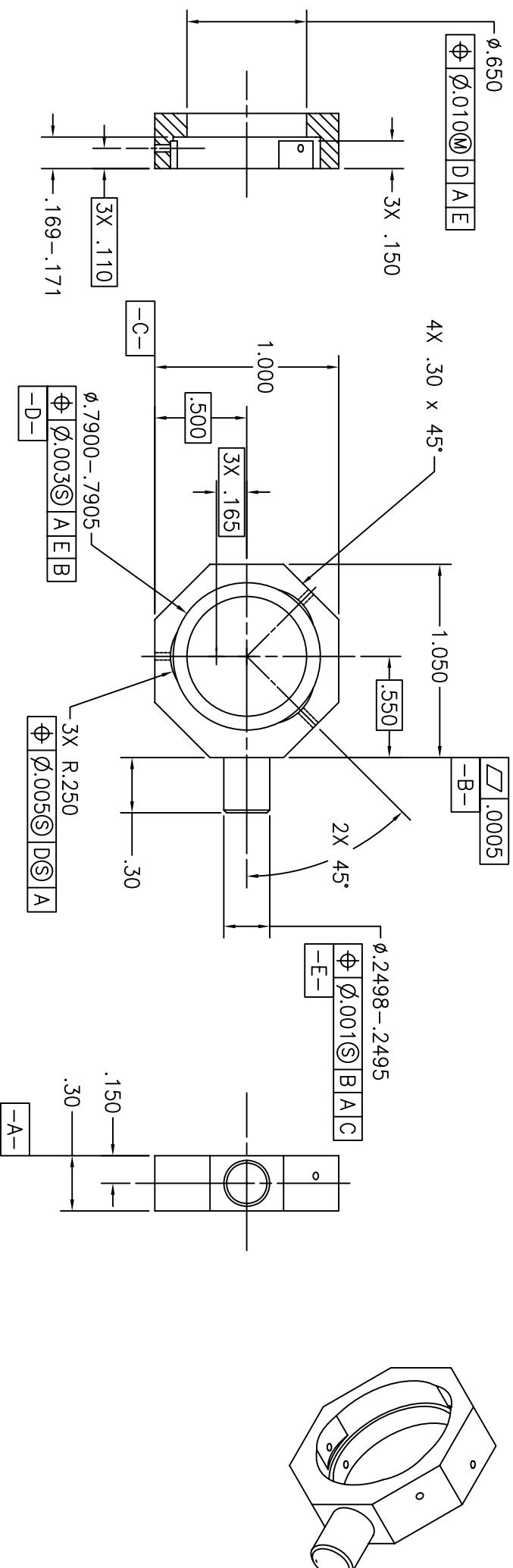
A

C

D

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
 - 3 ALL DIMENSIONS APPLY AFTER FINISH
 - 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED CHAMFER DIM		
B		ADDED 2X .086-56UNC HOLES		



2X ϕ .086-56UNC-2B x .10 DP
N.S & F.S
BREAK THRU PERMISSIBLE

3X ϕ .040

SHARP CORNER
RELIEF PERMISSIBLE

.02 x 45°

DESCRIPTION: LIST OF MATERIAL

ITEM NO. REQ'D/REC'D PART NO. MATERIAL MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX FRACTIONS 63
 \pm .01 \pm .005 \pm 1' \pm 1/16

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

DESIGNER NAME: MAMAKOS
INIT: DATE: DATE: DATE: DATE:
DRAWN: MAMAKOS
CHECKED: APPROVED: APPROVED:
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

TITLE: MOUNT, CELL FOLD MIRROR BEAM COMBINER

DRAWING INTERPRETED PER GSFC-X673-64-1

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot

NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

APPROVED-STRESS: APPROVED-ENGINEER:

CODE: GC 9220470
SCALE: 2/1
WT: SH1 OF 1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

4

3

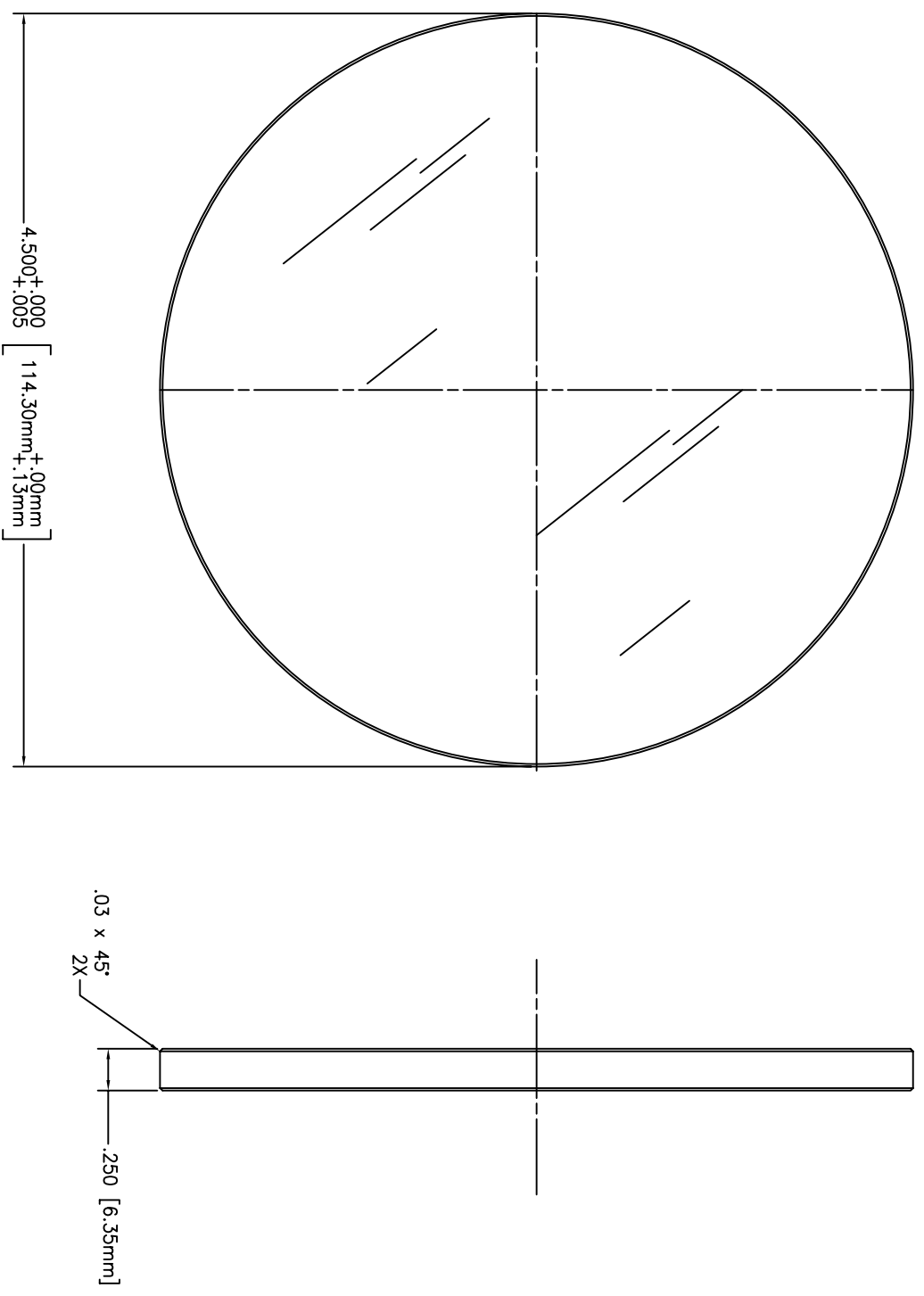
2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: BK7
- 2 TRANSMITTED WAVEFRONT:
- 3 SURFACE QUALITY:

REV	DATE	APPROVAL



*PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY*

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

4

3

2

1

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED—DIMENSIONS ARE IN INCHES
TOLERANCES: .xx .xxx .x .1' ±1/16 63
±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX
 FLIGHT HARDWARE/POST FLIGHT HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ○
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE _____

NAME	INT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
DRAWN MAMAKOS			ND FILTER
CHECKED			FILTER CELL SUB-ASSEMBLY
APPROVED			RECEIVER TELESCOPE
APPROVED			
APPROVED—STRESS			
APPROVED—ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

GD 9220472
SCALE: 1/1 WT SH1 OF 1

25

1

GD9220472

1

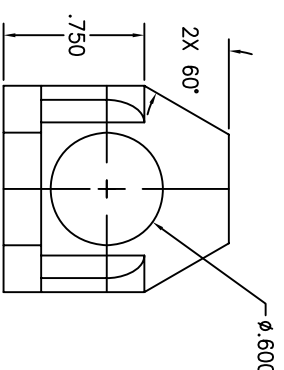
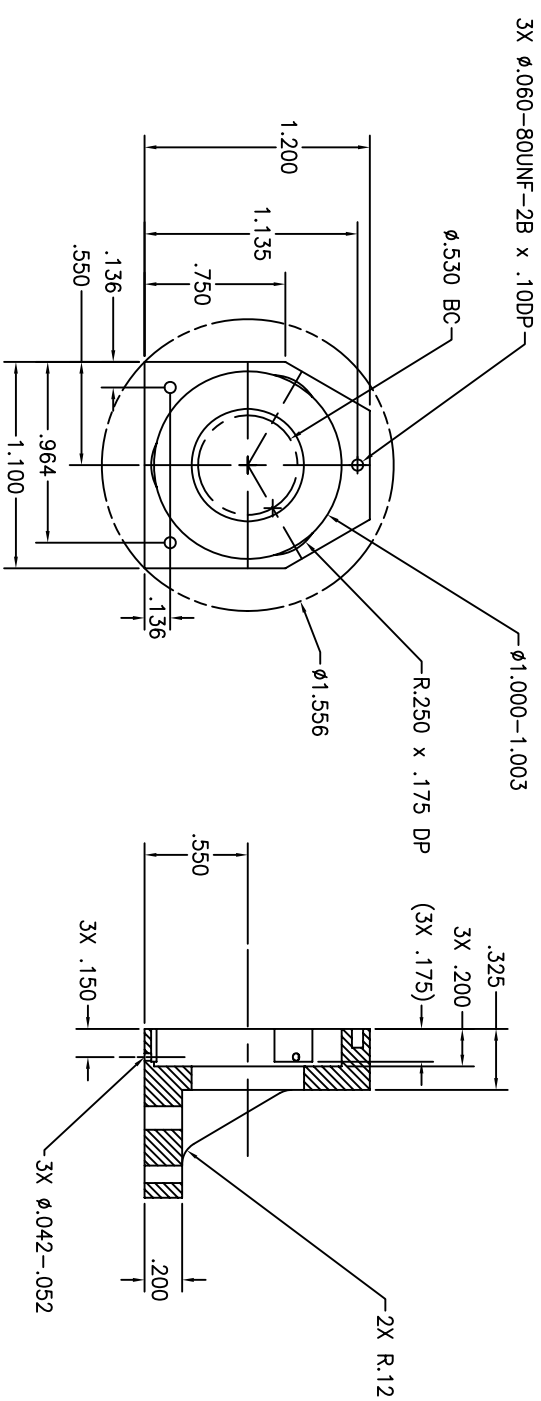
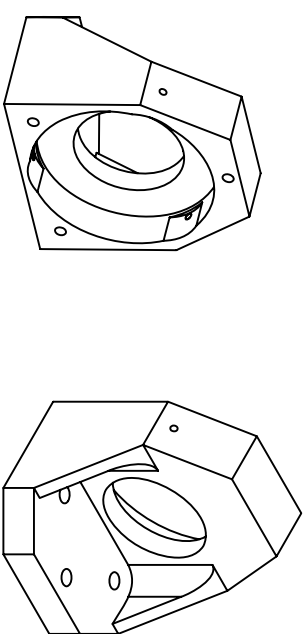
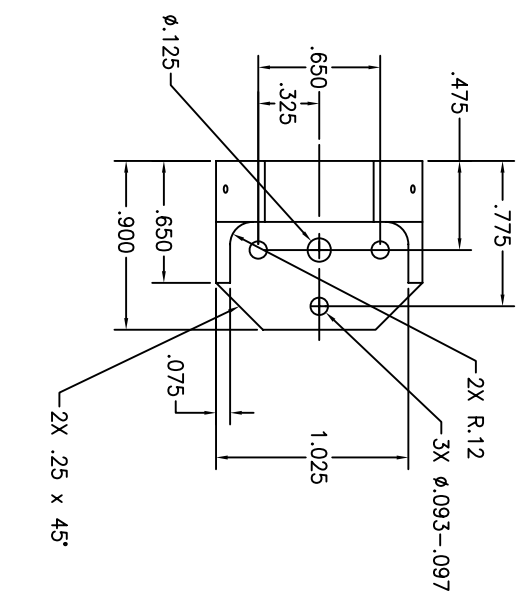
25

C

D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS. HEAT TREAT PER MLA-924-LPROC-15 FINAL MACHINE PER DRAWING
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	FRACTIONS 63
TOLERANCES:	
.XX .XXX	±1/16
±.01 ±.005	±.01

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.	DESIGNER	DATE
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD	DRAWN	
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	MANA/KOS	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED	APPROVED	
<input type="checkbox"/> ON FIELD OF DRAWING THIS <input type="checkbox"/>	APPROVED	
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD	APPROVED-STRESS	
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-ENGINEER	

THIS DRAWING WAS PRODUCED USING	
SOFTWARE: AutoCAD	VERSION: 2000i
FILE NAME: SK4210405	

GD	9220480	SCALE: 1/1	WT	SH1 OF 1
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GD9220480

4

3

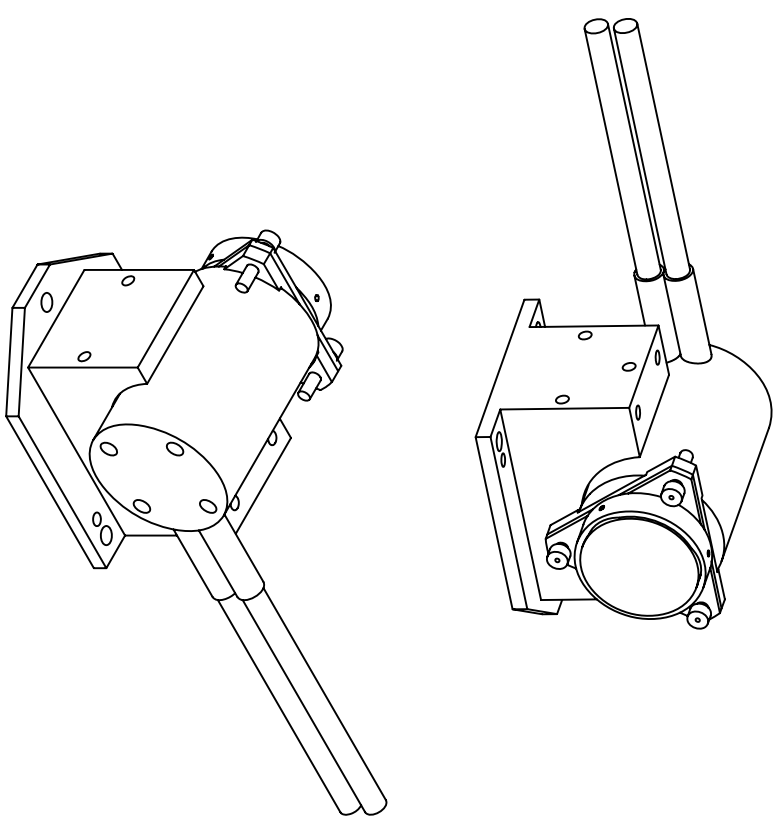
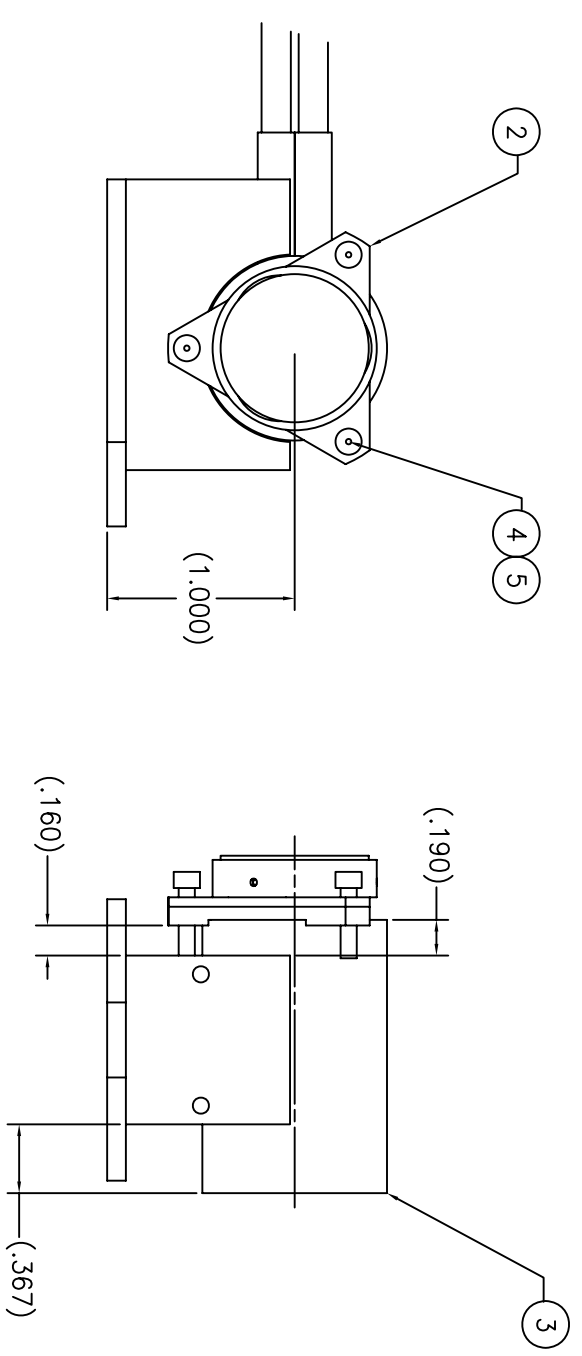
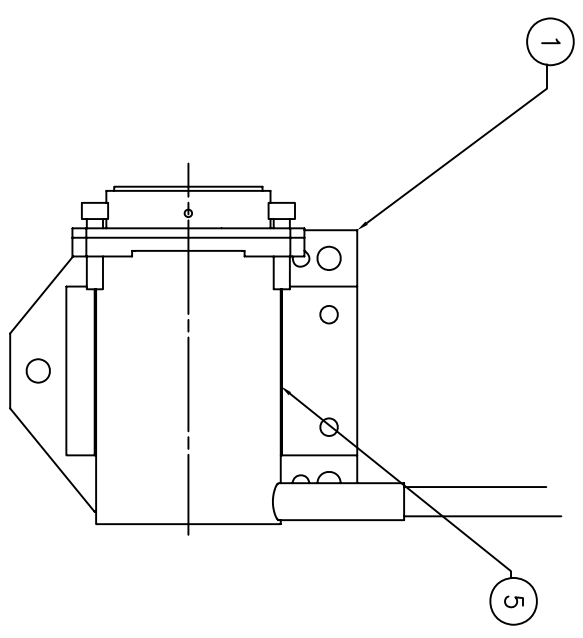
2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1 3M ADHESIVES, COATINGS AND SEALERS DIVISION
ST. PAUL, MN 55144
612-733-1110

REV	ZONE	DESCRIPTION	DATE	APPROVAL



ITEM NO.	QTY	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
5	1		AR 2216	GRAY EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
3	1		NAS620C2	WASHER REDUCED OD, NO.2	CRS	
3	1		NAS1352C02-4	SCREW, SOC HD CAP .086-56UNC x .25L	CRS	
1	1		GD9220482	TIP-TILT MECHANISM ASSEMBLY		
1	1		GD9220485	MIRROR MOUNT ASSEMBLY		
1	1		GD9220488	MOUNT, TIP-TILT MECHANISM	TITANIUM	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .xxx .xxx FRACTIONS 63
±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ○
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: NAME INT DATE
 DRAWN: NAME INT DATE
 CHECKED: NAME INT DATE
 APPROVED: NAME INT DATE
 APPROVED-STRESS: NAME INT DATE
 APPROVED-ENGINEER: NAME INT DATE

TITLE: ASSEMBLY
 TIP-TILT MECHANISM
 SVIP

GD 9220481
 SCALE: 1/1 WT
 SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4

3

2

1

GD9220481

1

23

C

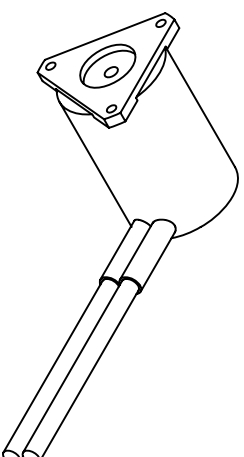
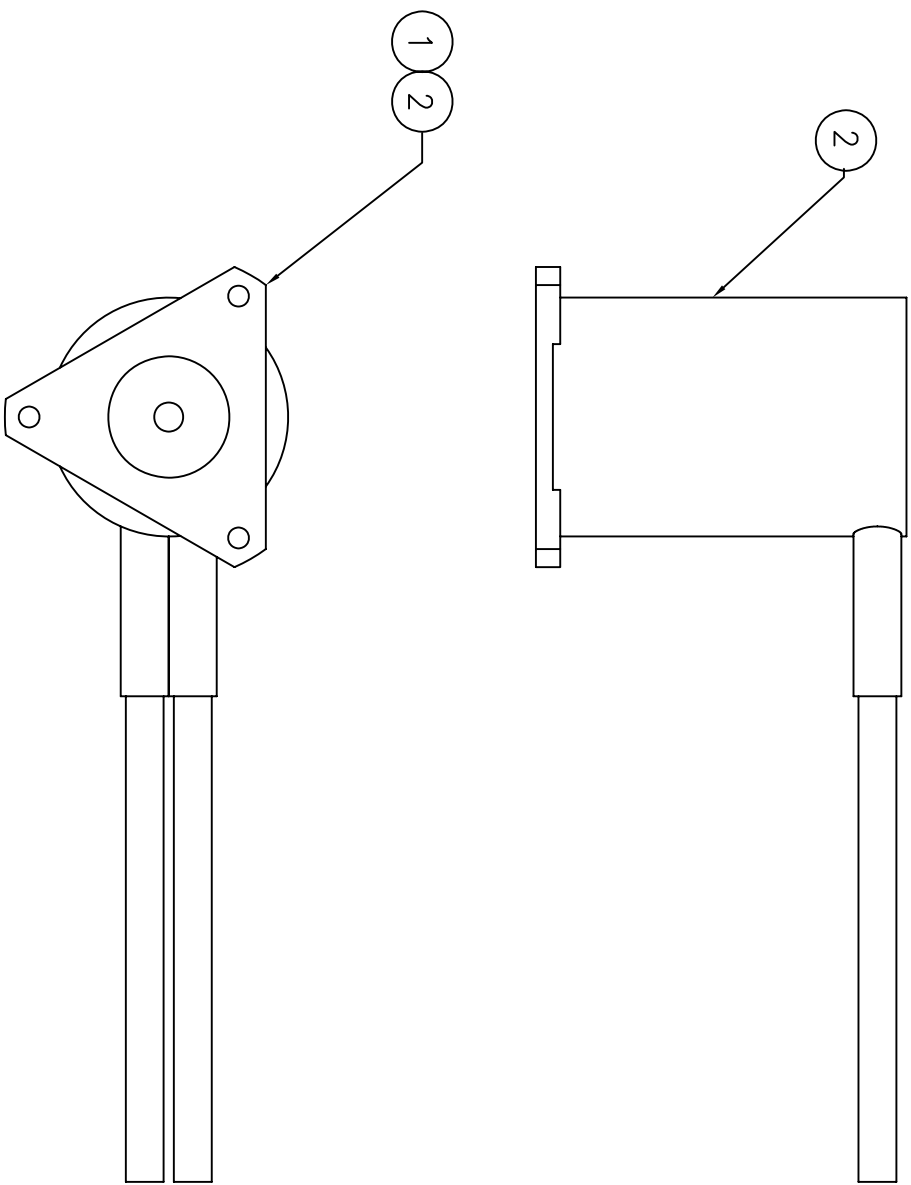
D

A

NOTES: UNLESS OTHERWISE SPECIFIED

1 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3		AR 2216 GRAY	EPOXY, GRAY		SEE NOTE 1
2	1	GC9220483	TIP-TILT MECHANISM SCD		
1	1	GC9220484	ADAPTER, MIRROR MOUNT ASSEMBLY		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX $\frac{\text{ }{\text{ }{\text{ }}}$ FRACTIONS $\frac{63}{\text{ }{\text{ }{\text{ }}}$
 $\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE _____

NAME	INIT	DATE	TITLE
DESIGNER			DRAWING INTERPRETED PER GSFC-X673-64-1
DRAWN			
CHECKED			
APPROVED			ASSEMBLY
APPROVED			TIP-TILT MECHANISM
APPROVED			SVIP
APPROVED-STRESS			
APPROVED-ENGINEER			

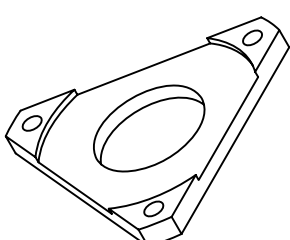
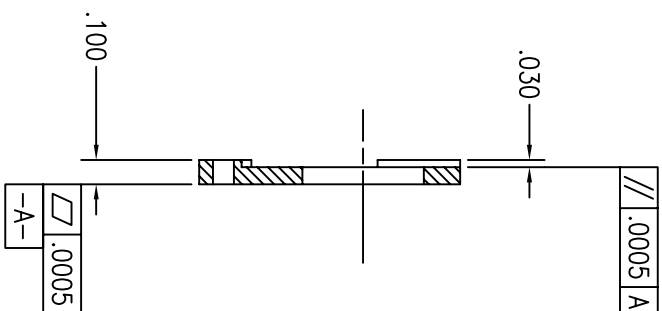
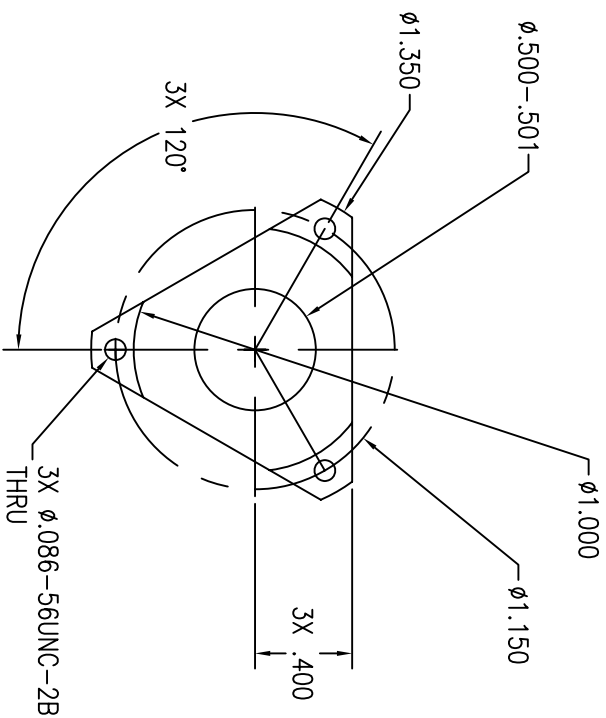
GC9220482 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
ALL DIMENSIONS APPLY AFTER PLATING.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

GC9220484 1

FOLD LINE

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1° ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NAME	INIT	DATE	TITLE
DESIGNER B MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 ADAPTER MIRROR MOUNT TIP-TILT MECHANISM
DRAWN B MAMAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: SK4210401

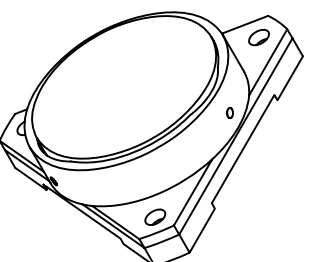
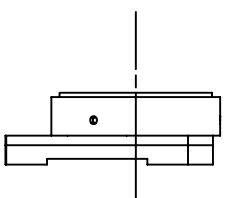
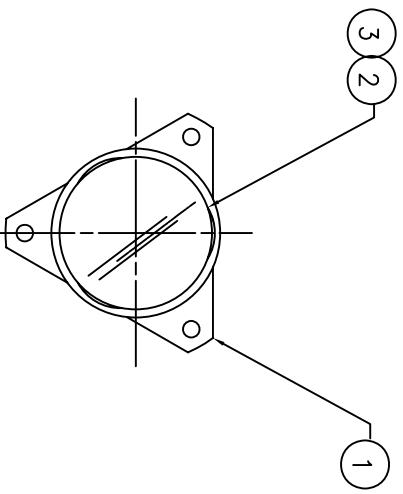
ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110

REVISION		DATE	APPROVAL
SWM	ZONE	DESCRIPTION	



ITEM NO.	RECD/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3		AR 2216 GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2		GC9220486	FOLD MIRROR		
1		GC9220487	MOUNT, MIRROR	TITANIUM	
-		-	ASSEMBLY		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xxx FRACTIONS 63
 ±.01 ±.005 ±.1* ±.1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-008 CODE

NAME	INIT	DATE	TITLE
DESIGNER			DRAWING INTERPRETED PER GSFC-X673-64-1
DRWEN			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND

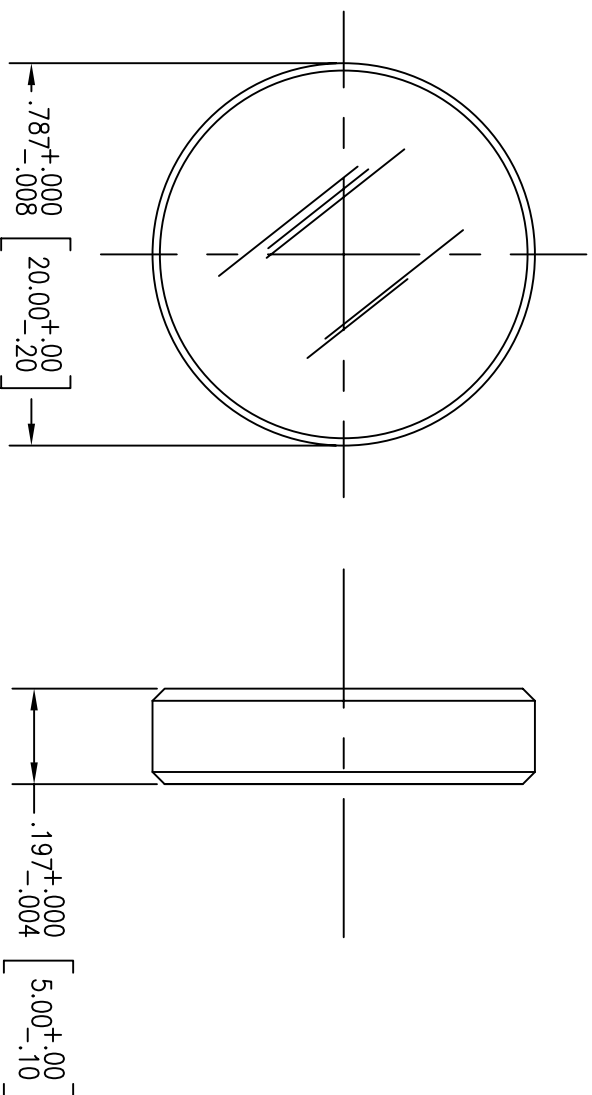
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AUTOCAD VERSION: 2000i
 FILE NAME: _____
 NEXT ASSY: _____ USED ON: _____
 CODE: GC SCALE: 2/1 WT: _____ SH1 OF 1

GC9220485 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. COATING: ALUMINUM OVERCOAT WITH MgF2
3. FLATNESS: $\lambda/10$
4. SURFACE QUALITY: SCRATCH AND DIG 40-20 OVER CLEAR APERTURE PER MIL-0-13830.
5. PARALLELISM: < 3 ARCMIN
6. ALL DIMENSIONS ARE REFERENCE ONLY
7. SOURCE OF SUPPLY:
OPTO-SIGMA
2001 DEERE DRIVE
SANTA ANA, CA 92705
949-851-5881
PRODUCT NUMBER: 033-0560



SOURCE CONTROL DRAWING

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX .XXX $\frac{1}{16}$ FRACTIONS 125
 $\pm .01$ $\pm .005$ $\pm 1'$ $\pm 1/16$

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	NAME	INIT	DATE	TITLE
MAMAKOS	MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
	CHECKED			FOLD MIRROR
	APPROVED			TIP-TILT/BEAM COMBINER
	TOLAND			SVIP
	APPROVED			
	APPROVED-STRESS			
	APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME:

CODE	SCALE	WT	SH1	OF
GC	9220486	4/1	1	1

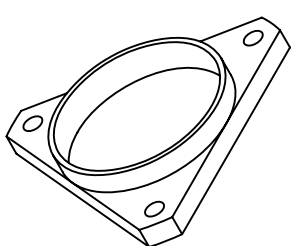
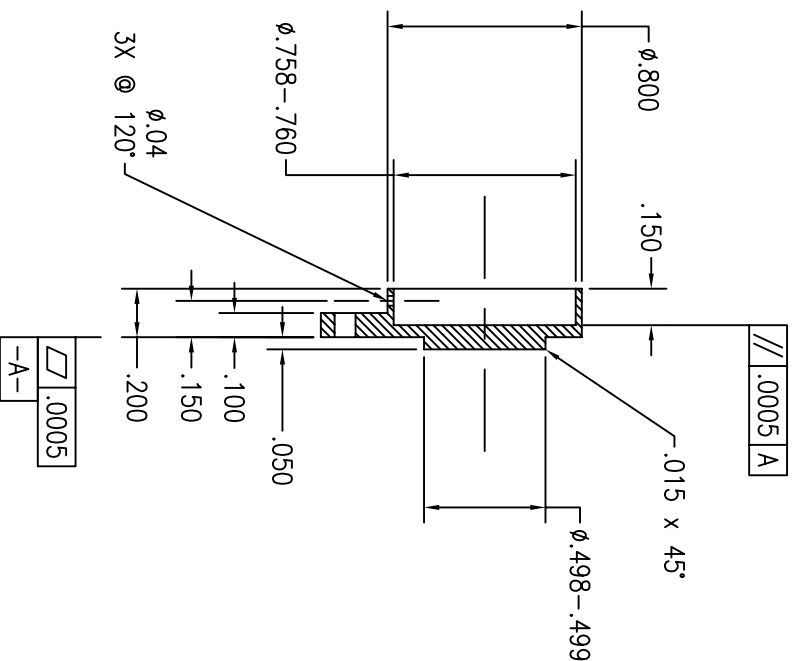
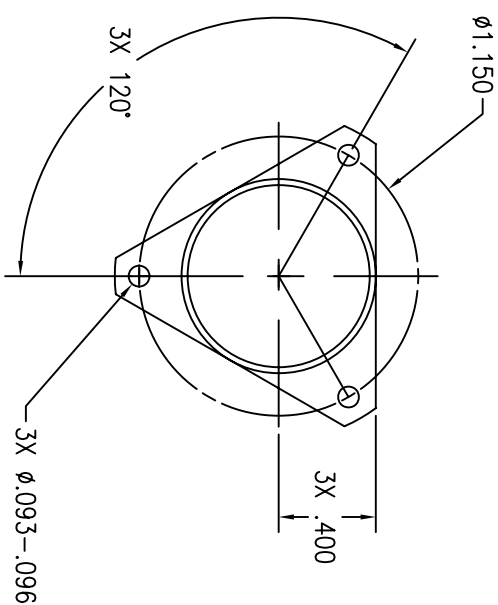
FOLD LINE

GC9220486 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

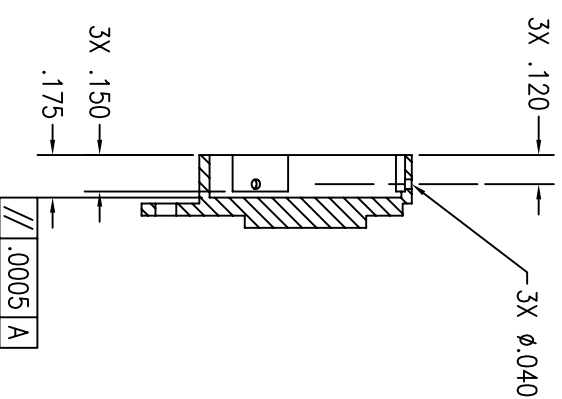
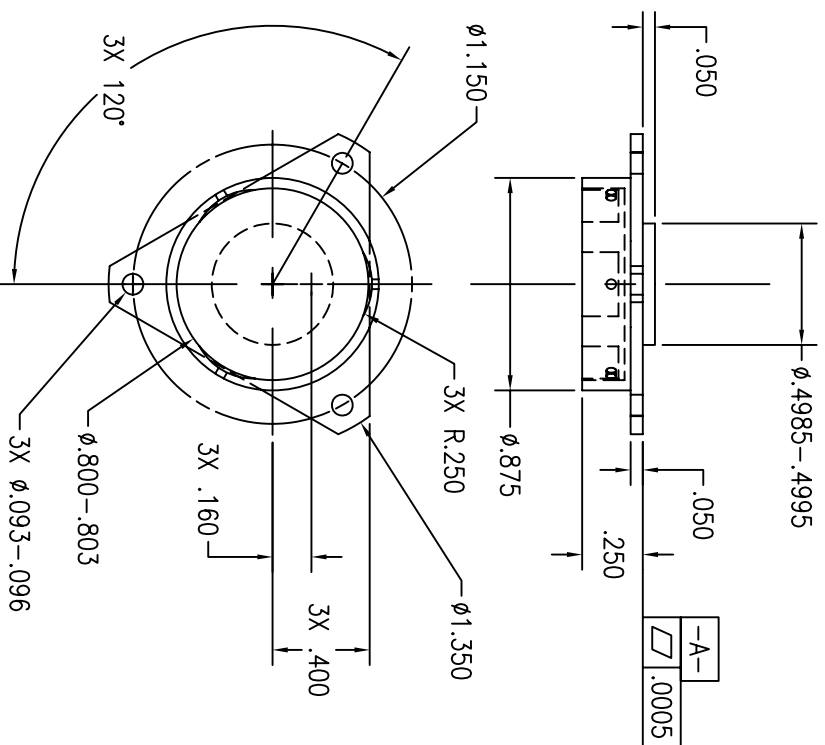
NAME	INIT	DATE	TITLE
DESIGNER B MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 MOUNT, MIRROR TIP-TILT MECHANISM
CHECKED			
APPROVED			
APPROVED			

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES			
TOLERANCES:	.XXX	FRACTIONS	63
	±.01	±1'	±1/16
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.			
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D		
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ		
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D		
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE		
APPROVED-STRESS			
APPROVED-ENGINEER			
CODE	GC	9220487	
SCALE	2/1	WT	
SH1	OF	1	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: SK4210402

GC9220487 1 FOLD LINE

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		INCREASED BORE DIAMETER		

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES:						
.XXX	XXX	✓	FRACTIONS	63	✓	
±.01	±.005	±1°	±1/16			
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D					
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED					
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ					
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D					
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE					
DESIGNER	NAME	INIT	DATE	TITLE		
B MAMAKOS	B MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1		
CHECKED				MOUNT, MIRROR		
APPROVED				TIP-TILT MECHANISM		
APPROVED						
APPROVED-STRESS						
APPROVED-ENGINEER						

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: SK4210402

FOLD
LINE

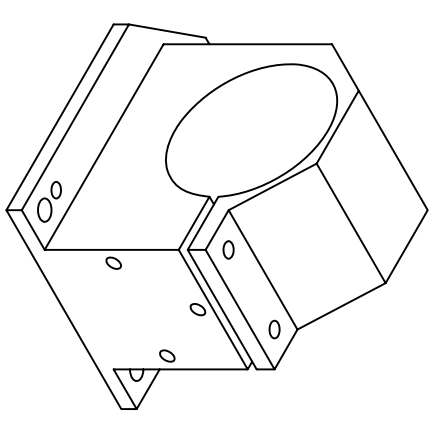
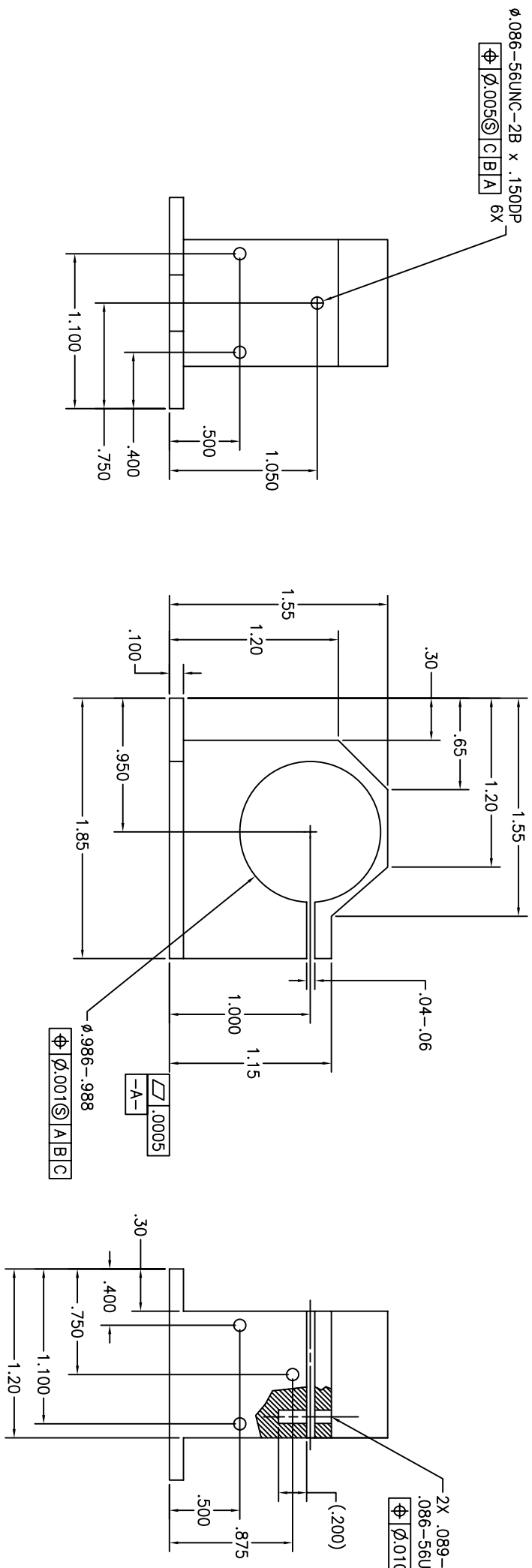
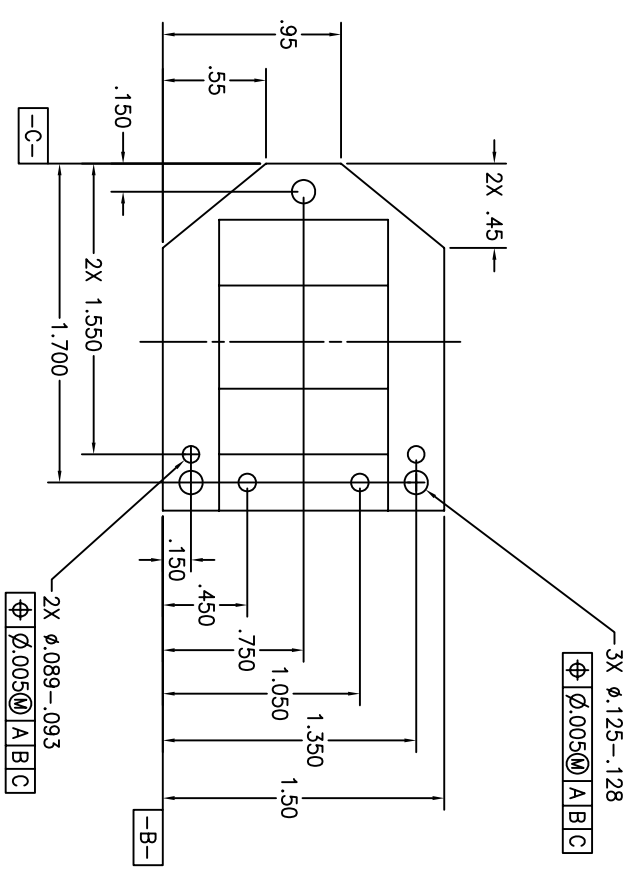
GC9220487

A

FOLD
LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: TITANIUM 6AL4V
 2 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.

SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL



GD9220488

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16		
LIST OF MATERIAL					
DESIGNER	NAME	INT	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND	
DRAWN	NAME			DRAWING INTERPRETED PER GSFC-X673-64-1	
CHECKED	NAME			TITLE MOUNT, CLAMP TIP-TILT MECHANISM SVIP	
APPROVED				APPROVED	
APPROVED-STRESS				APPROVED	
APPROVED-ENGINEER				APPROVED	
CODE	GD	SCALE	9220488	WT	SHT OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

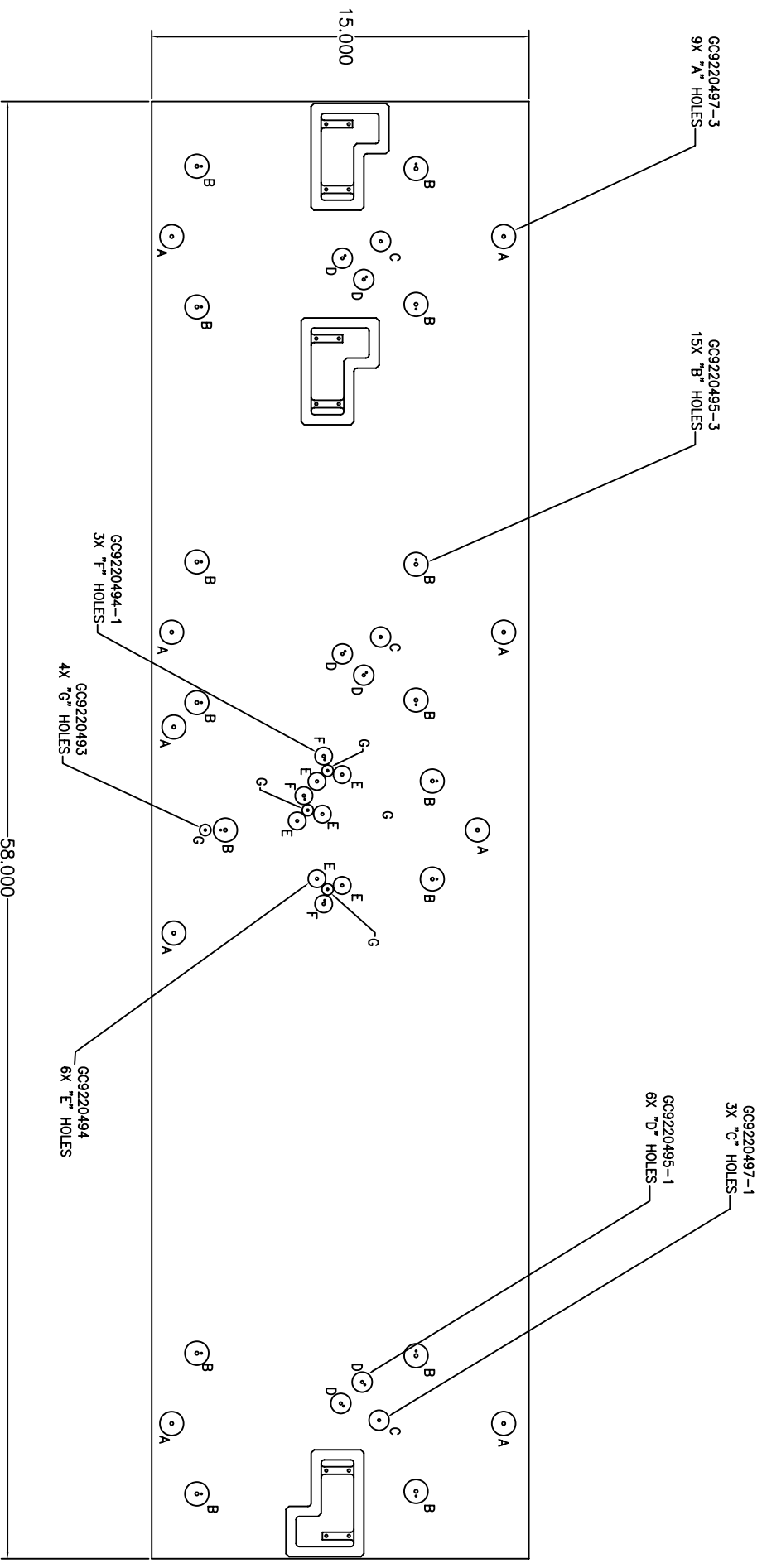
A B C D

A B C D

4 3 2 1

4 3 2 1

REV	DATE	DESCRIPTION
1		



PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY

REV	DATE	DESCRIPTION
1		

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	LIST OF MATERIAL		

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	Goddard Space Flight Center	GENERAL PURPOSE	

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	SUB-ASSEMBLY RECEIVER BENCH		
2	SVIP		

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	GE 9220490		
2	SVIP		

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	GE 9220490		
2	SVIP		

NO.	DESCRIPTION	MATERIAL	QUANTITY
1	GE 9220490		
2	SVIP		

4 3 2 1

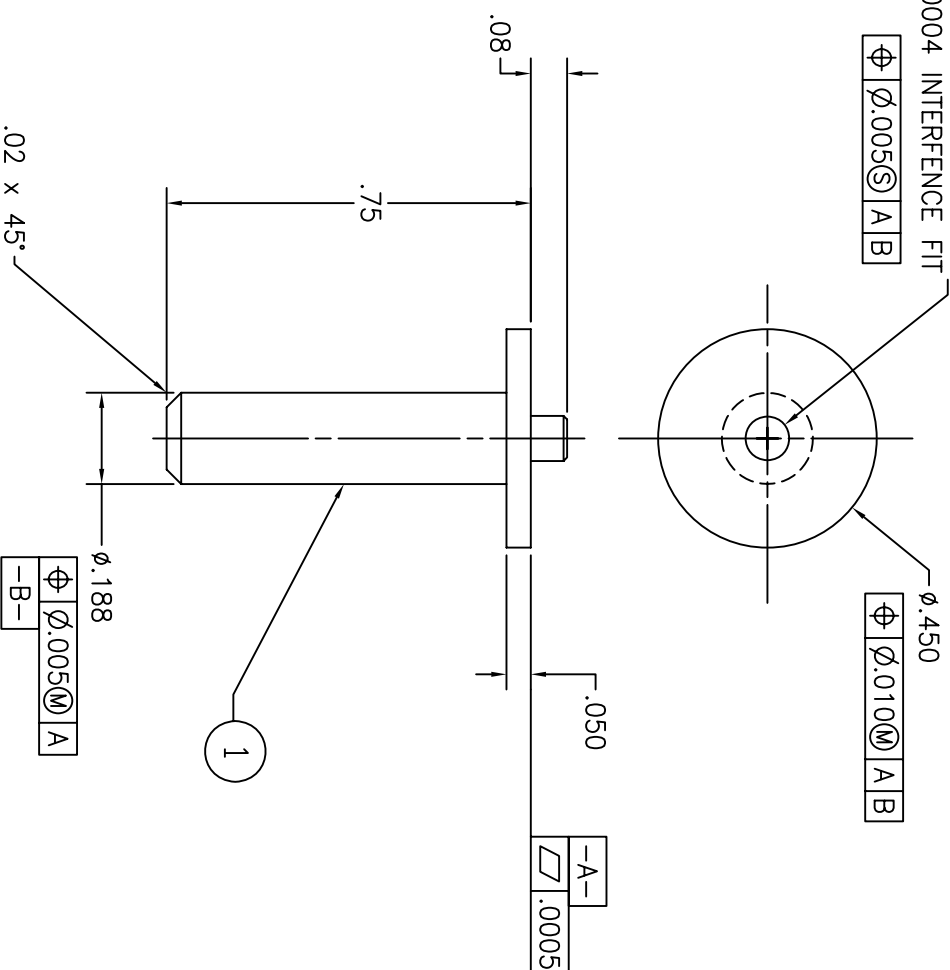
A B C D

4 3 2 1

A B C D

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
 - 3 ALL DIMENSIONS APPLY AFTER FINISH
 - 4 INSTALL ITEM 2 AFTER FINISH
 - 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

INSTALL ITEM 2
ACHIEVE .0002-.0004 INTERFERENCE FIT



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED FINISH NOTE		
B		ADDED ITEM 2		

2	1	MS16555-617	PIN, DOWEL Ø.094 x .31 LG	QRES	
1	-		BAR	SEE NOTE 1	
ITEM NO.	REQ'D	REC'D	PART NO.	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES:

.XXX .XXX FRACTIONS 63
±.01 ±.005 ±1' ±1/16

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉

DESIGNER NAME MAMAKOS
DRAWN MAMAKOS
CHECKED
APPROVED
APPROVED-ENGINEER

NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

APPROVED-STRESS
APPROVED-ENGINEER

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

GC	9220493	SCALE	4/1	WT	SH1	OF 1
NEXT ASSY	USED ON	SVIP				

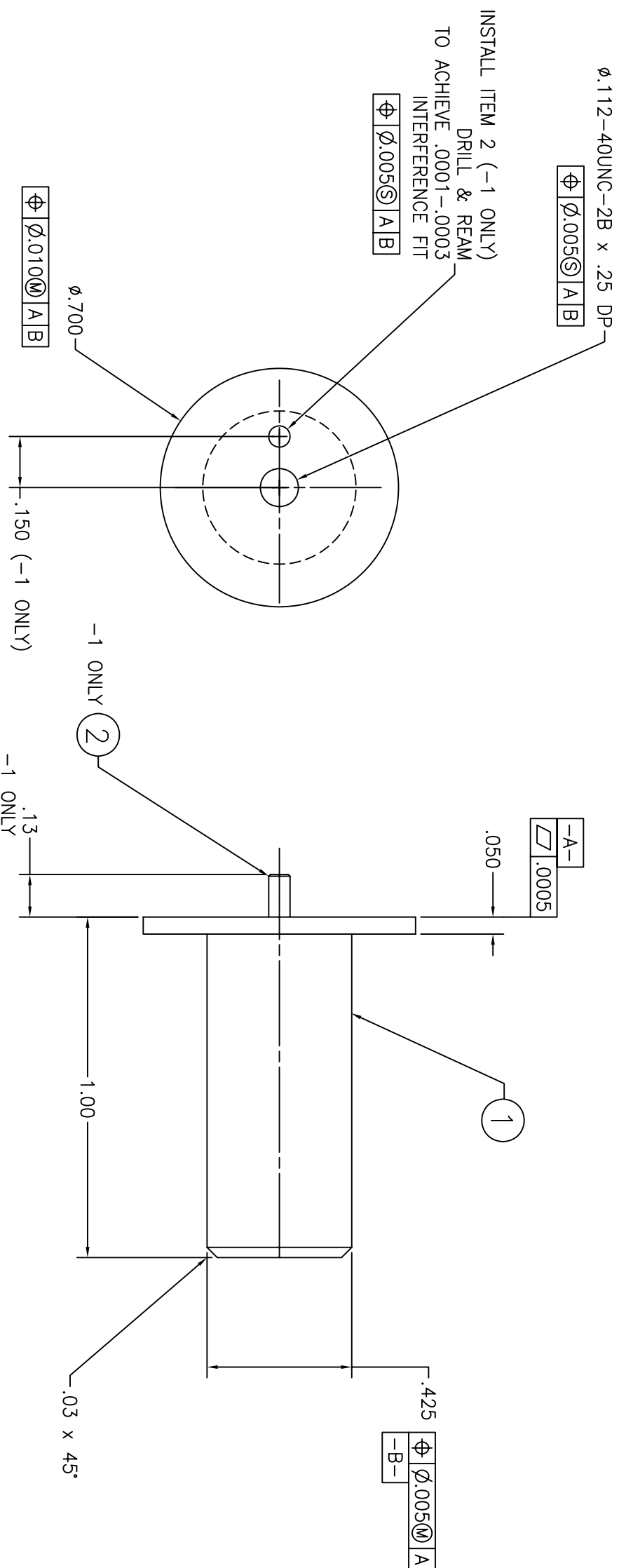
GC9220493

B

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 2 ALL DIMENSIONS APPLY AFTER FINISH
- 3 INSTALL ITEM 2 AFTER FINISH (-1 ONLY)
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REVISION			
SYM	ZONE	DESCRIPTION	DATE
A		ADDED FINISH NOTE	

ITEM NO.	QTY	DESCRIPTION	PART NO.	UNIT	MATERIAL	MATERIAL SPEC.
1	1	MS16555-603	PIN, DOWEL 0.062 x .312 LG		CRES 416	
2	1	AR	BAR/ROD		T1 6AL-4V	
3	1					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 INSERT, 4-40UNC THREAD/PINNED BEAM COMBINER FOLDS
DRAWN MAMAKOS			
CHECKED			
APPROVED			

<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	APPROVED-STRESS
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	APPROVED-ENGINEER
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS 0	
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

NEXT ASSY	USED ON	SCALE 4/1	WT	SH1 OF 1
		GC	9220494	

GC9220494 A

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 2 ALL DIMENSIONS APPLY AFTER FINISH
- 3 INSTALL ITEMS 2 & 3 AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

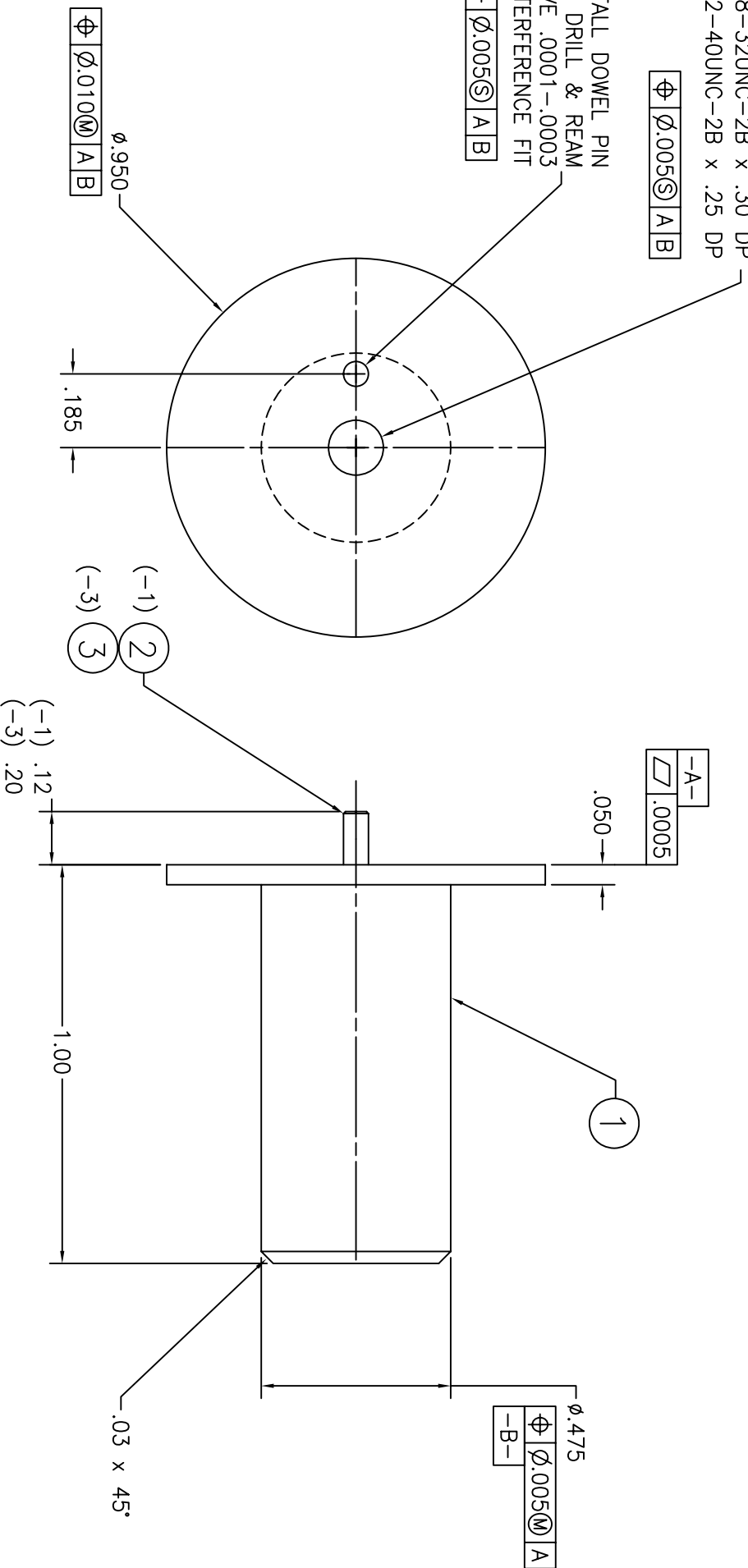
(-3) ϕ .138-32UNC-2B x .30 DP
 (-1) ϕ .112-40UNC-2B x .25 DP

ϕ .005 A/B

INSTALL DOWEL PIN
 DRILL & REAM
 TO ACHIEVE .0001-.0003
 INTERFERENCE FIT

ϕ .005 A/B

ϕ .010 A/B



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED FINISH NOTE		
B		ADDED 1.00 DIM		
C		ADDED NOTE 3		

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3	-	1	MS16555-603	PIN, DOWEL ϕ .062 x .375 LG	CRES 416	
2	1	-	MS16555-603	PIN, DOWEL ϕ .062 x .312 LG	CRES 416	
1	AR	AR		BAR/ROD	T1 6AL-4V	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 \pm .01 \pm .005 \pm 1' \pm 1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	NAME	INT	DATE	TITLE
MAMAKOS	MAMAKOS			INSERT, TABULATED THREADED/PINNED SVIP RECEIVER BENCH
	CHECKED			
	APPROVED			
	APPROVED			
	APPROVED-STRESS			
	APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

CODE	SCALE	WT	SH1	OF
GC	9220495	4/1	1	1

GC9220495 C

FOLD LINE

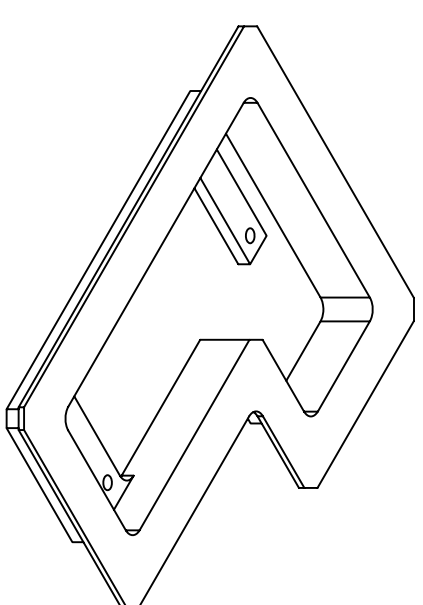
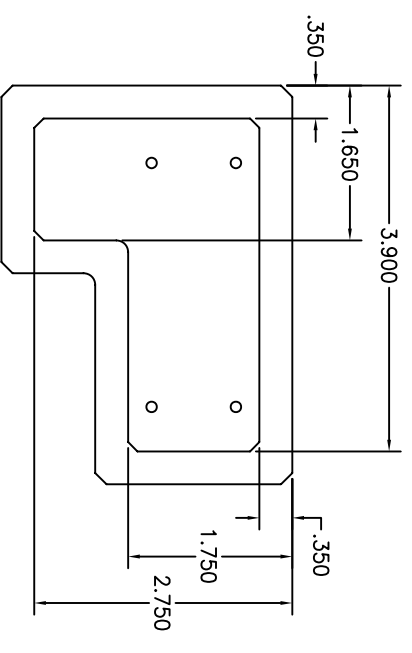
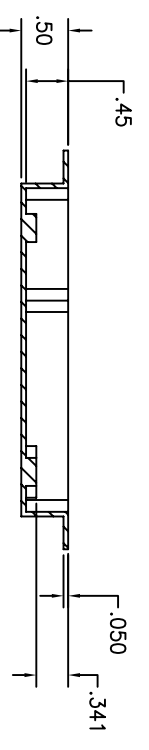
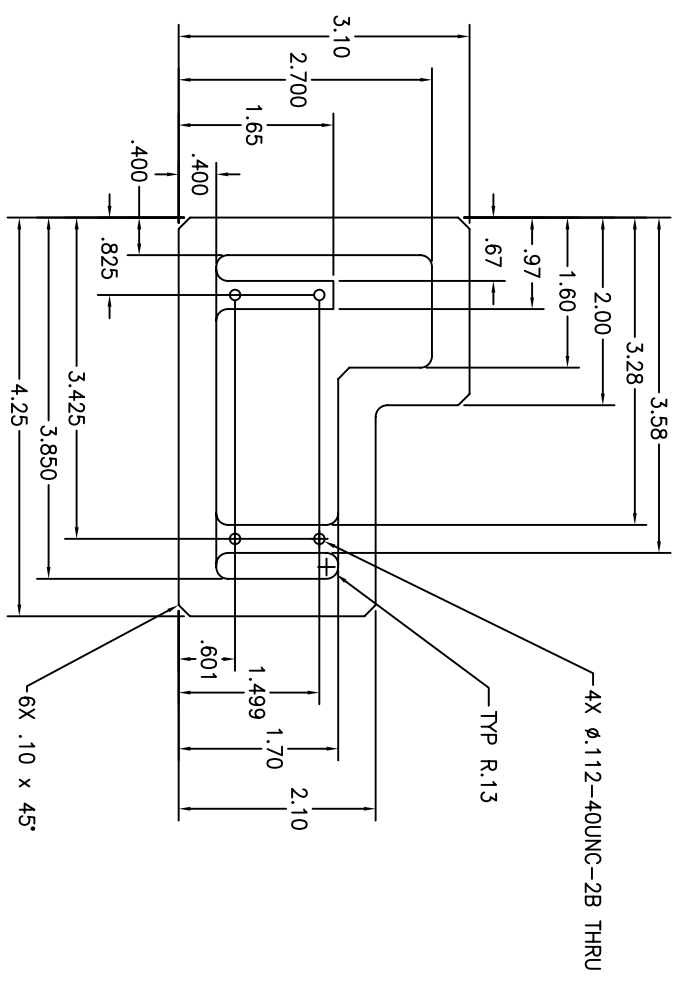
4

3

2

1

SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL



4

3

2

1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

ITEM NO.	RECD/RECD	PART NO.	PLATE	DESCRIPTION	T1 GALV	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XX .XXX FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE _____

DESIGNER	NAME	INT	DATE	TITLE

DESIGNER: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS
 APPROVED-STRESS: MAMAKOS
 APPROVED-ENGINEER: MAMAKOS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1
 FITTING
 PISTON MECHANISM
 SVIP

GD 9220496
 SCALE: 1/1 WT SH1 OF 1

GD9220496

923

A

B

C

D

A

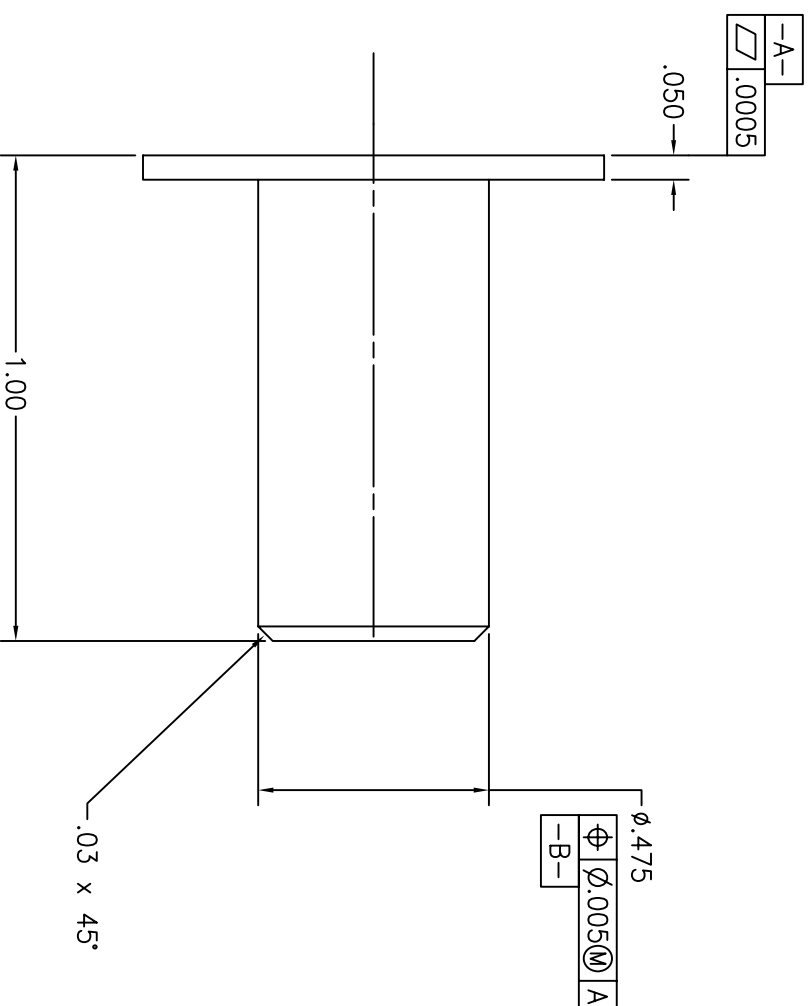
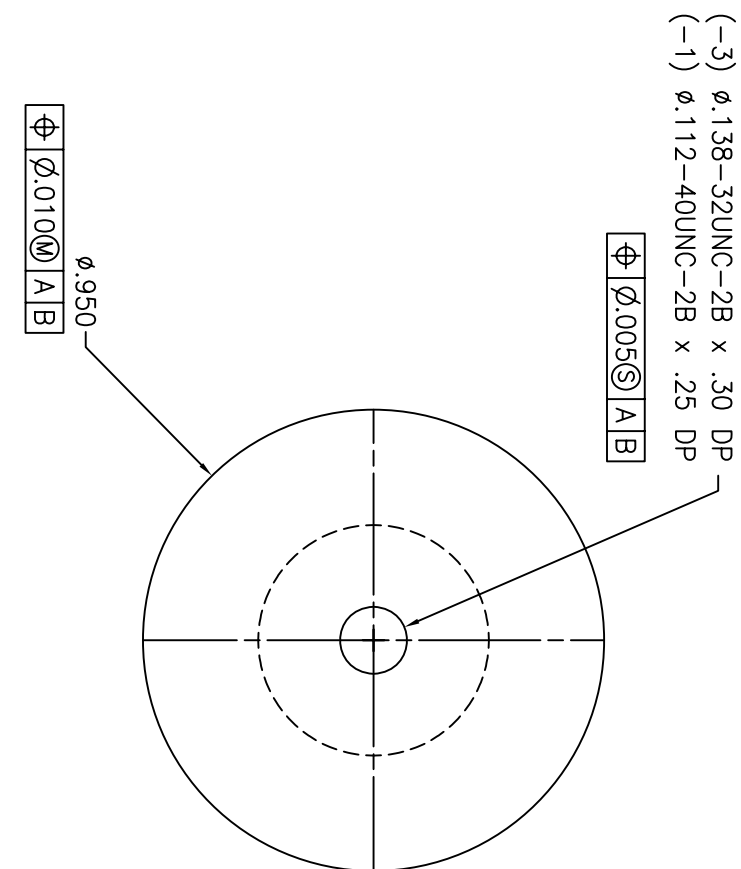
1

C

D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 2 ALL DIMENSIONS APPLY AFTER FINISH
- 3 INSTALL ITEMS 2 & 3 AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



REVISION			
SYM	ZONE	DESCRIPTION	DATE

ITEM NO.	AR	REQD	REC'D	PART NO.	BAR/ROD	TI 6AL-4V	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

DESIGNER	NAME	INIT	DATE	TITLE
MAMAKOS	MAMAKOS			INSERT, TABULATED
				THREADED
				SVIP RECEIVER BENCH

DESIGNER	NAME	INIT	DATE	TITLE

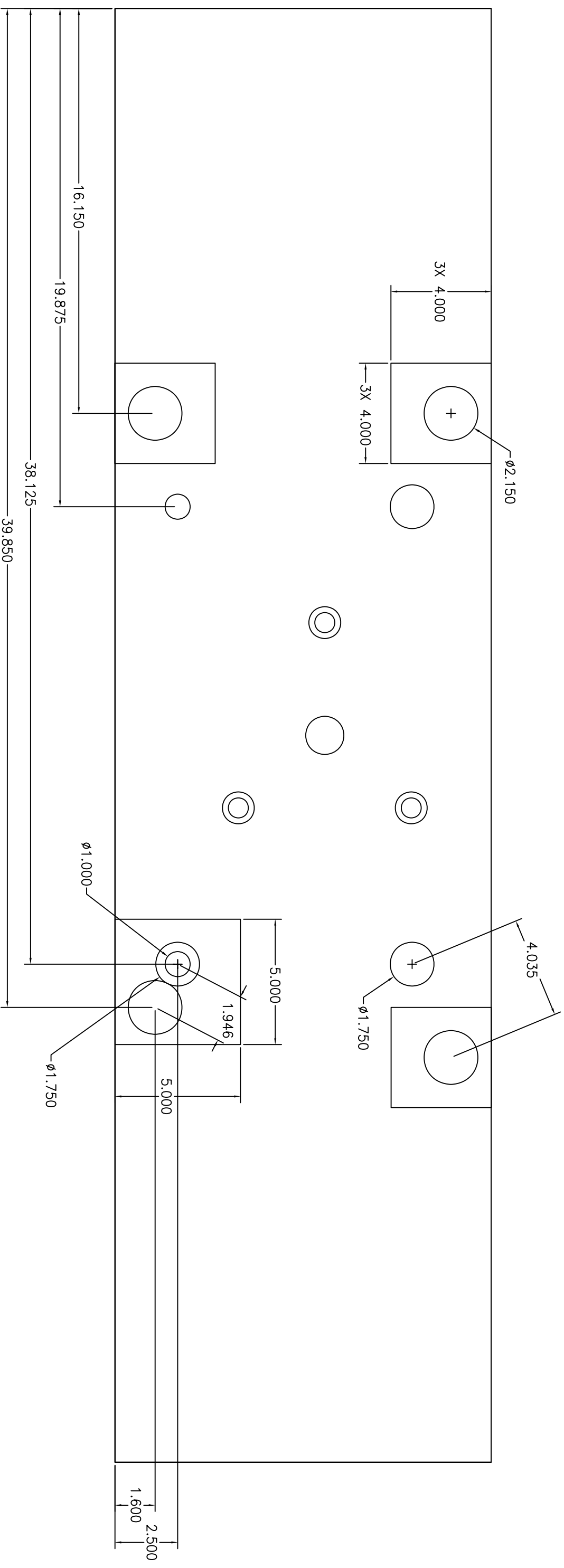
DESIGNER	NAME	INIT	DATE	TITLE

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

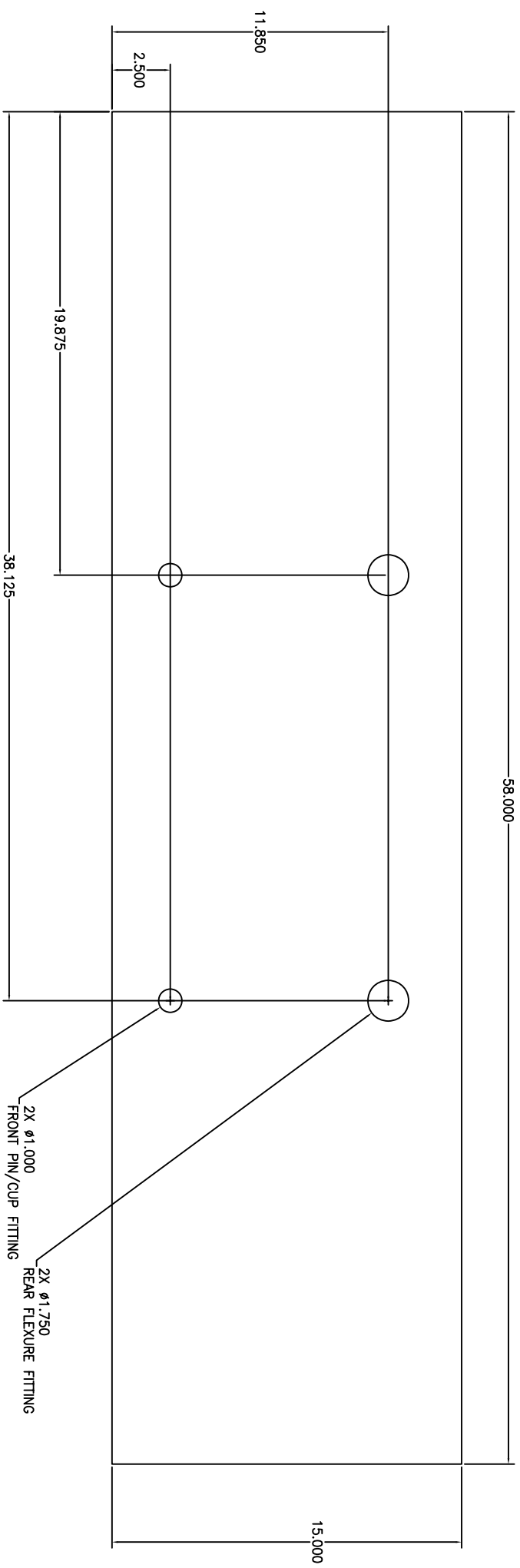
GC9220497

FOLD LINE

1



REV	DATE	DESCRIPTION	DATE	APPROVAL



THE DRAWING FILE NUMBER IS:
 SYSTEM: AutoCAD VERSION: 2000i
 FILE NAME:

PART IDENTIFIED		PART NO.		DESCRIPTION		MATERIAL	MATERIAL SPEC.
NO.		QUANTITY		LIST OF MATERIAL			
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES TOLERANCES: 2X ±.005 1X ±.010 FRACTIONS 3/4" ±1/16"							
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APPROVED-DESIGNER		APPROVED		TITLE			
NEXT ASSY		SIGNATURE		DRAWING INTERPRETED PER GFC-9873-44-1			
USED ON		DATE		FACE SHEET, BOTTOM			
				MAIN BENCH			
				SVIP			
				GFC		9220499	
				SCALE: 1/2"		SHEET 1 OF 1	

GE9220499

4

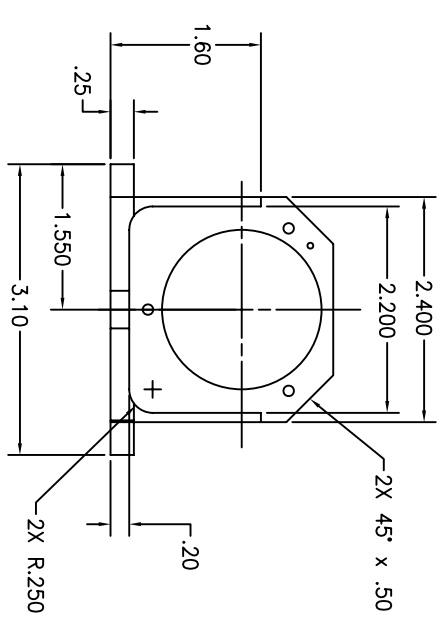
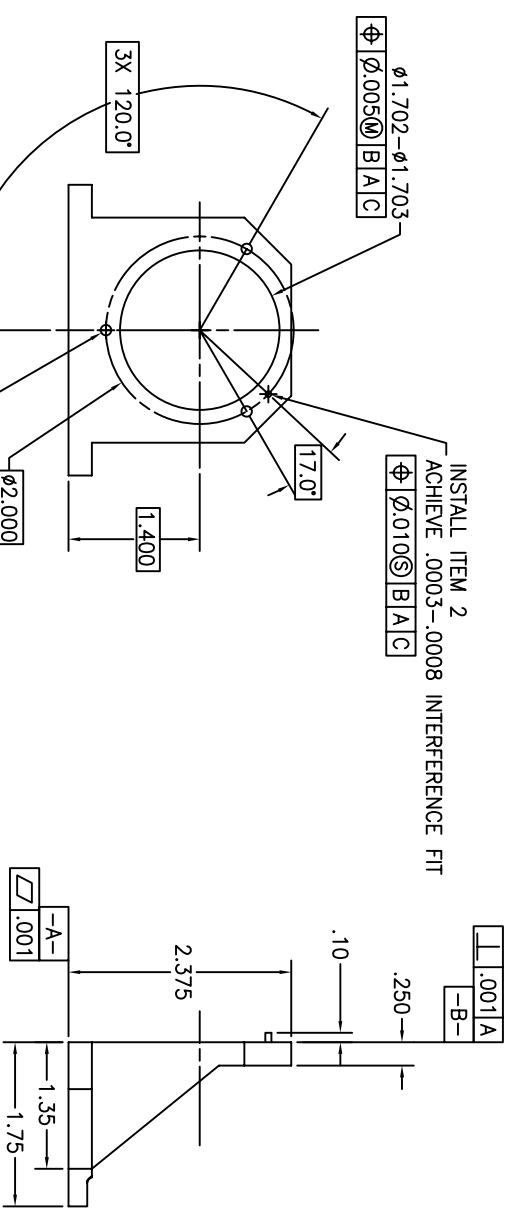
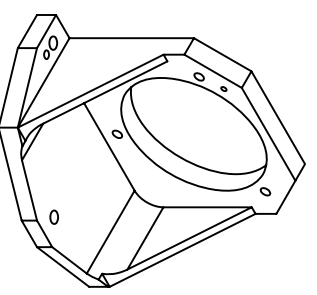
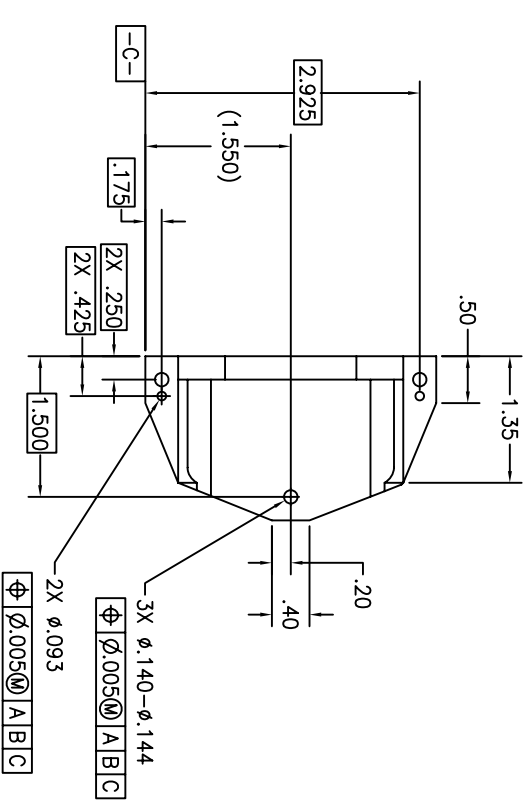
3

2

1

SM	ZONE	DESCRIPTION	DATE	APPROVAL

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200F (+0°/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
 - 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
 - 4 ALL DIMENSIONS APPLY AFTER FINISH
 - 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



GD9220502

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NO.	ITEM	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2	1	MS16555--603	PIN/DOWEL	Ø.0625 x .312 LG	CRES	
1	AR		PLATE/BAR	Ti 6AL4V		

NAME	INT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-4673-64-1
DRAWN MAMAKOS			MOUNT
CHECKED			FOLD 1
APPROVED			SVIP

CODE	SCALE	WT	SH	OF
GD	9220502		1	1

4

3

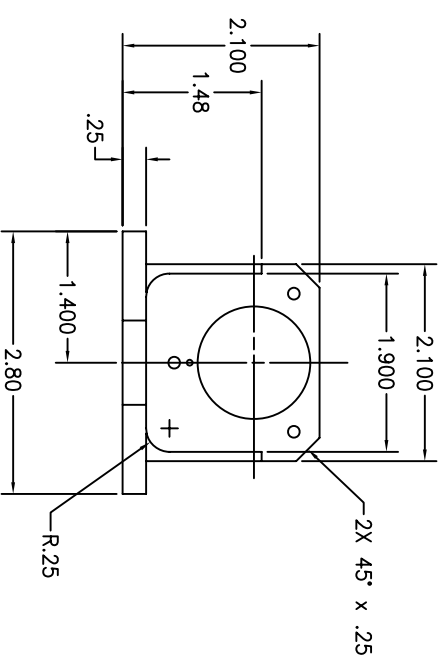
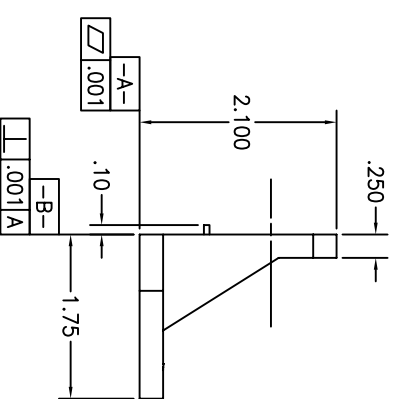
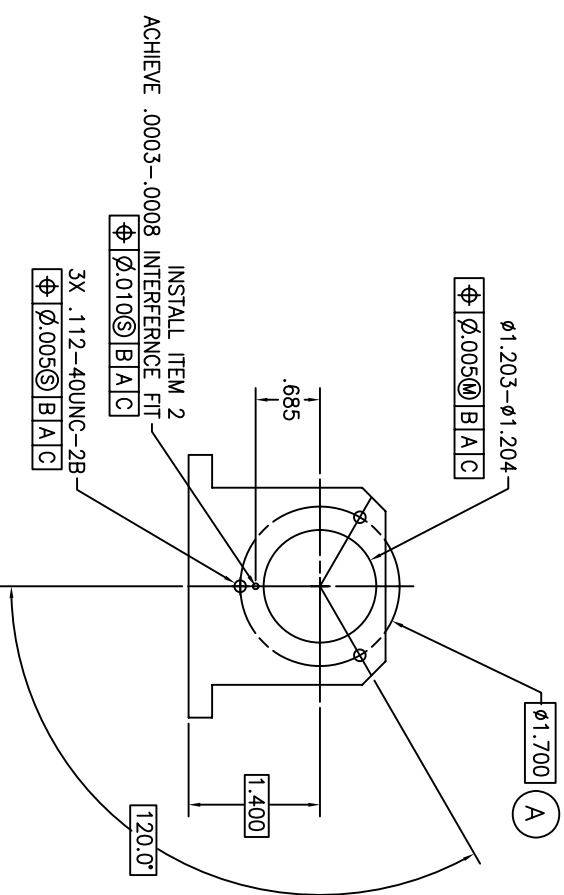
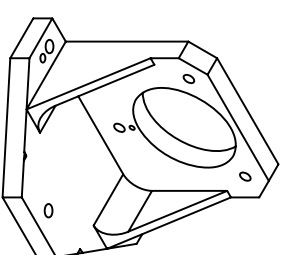
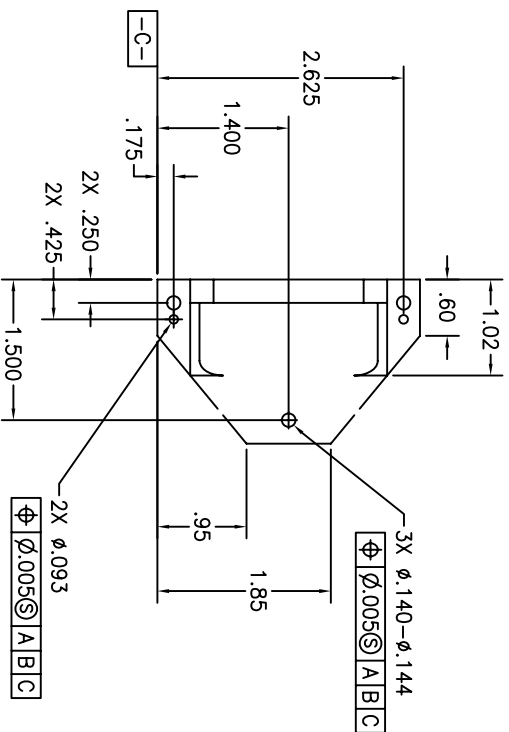
2

1

GD9220502

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F (+0/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2
ACHIEVE .0003-.0008 INTERFERENCE FIT

3X .112-40UNC-2B
Ø.005 B A C

Ø1.203-Ø1.204
Ø.005 B A C

Ø1.700 (A)

3X Ø.140-Ø.144
Ø.005 A B C

2X Ø.093
Ø.005 A B C

2X 45° x .25

R.25

SMI ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
A	1	ADDED Ø1.700 DIM		

2	1	MS16555--603 PIN/DOWEL Ø.0625 x .312 LG	CRES	
1	AR	ROD/BAR	TI 6AL4V	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	FRACTIONS	63
TOLERANCES:	XXX	±1/16
±.01 ±.005 ±.1		

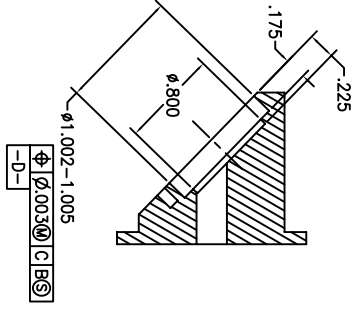
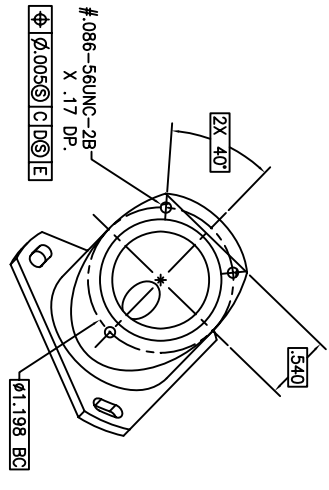
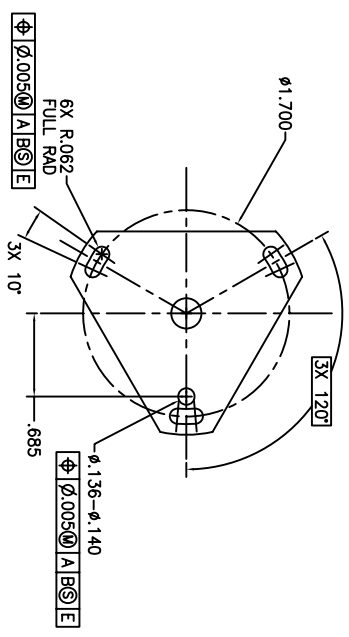
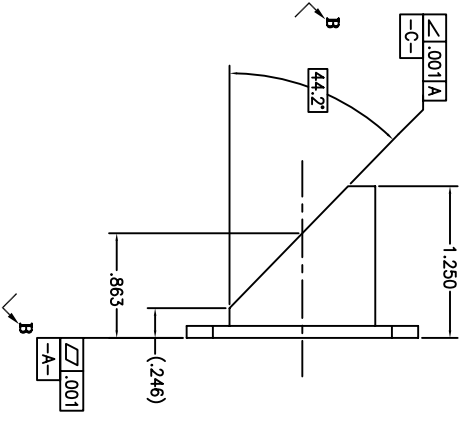
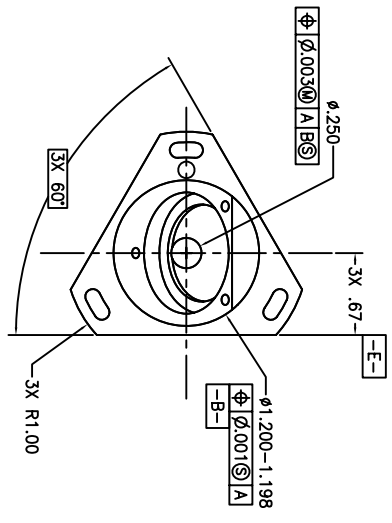
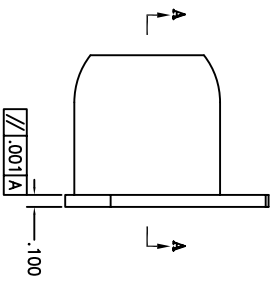
DESIGNER	NAME	INT	DATE
MMARKOS	MMARKOS		

DRAWN	CHECKED	APPROVED	APPROVED-STRESS
MMARKOS	MMARKOS		

GD	9220503	SCALE 1/1	WT	SH1 OF 1
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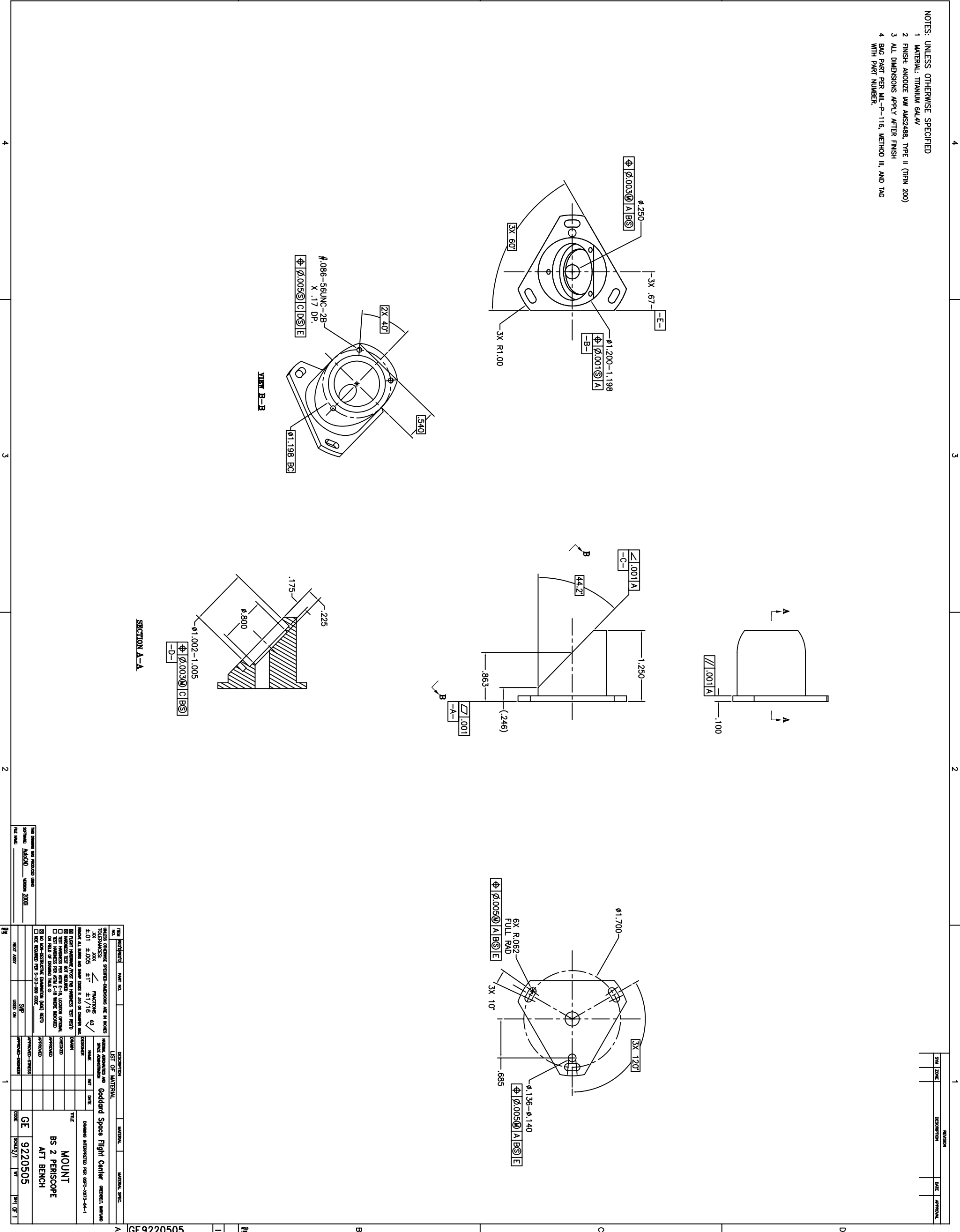
THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: TITANIUM 6AL4V
 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
 3 ALL DIMENSIONS APPLY AFTER FINISH
 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

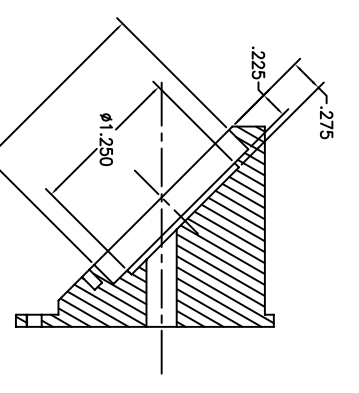
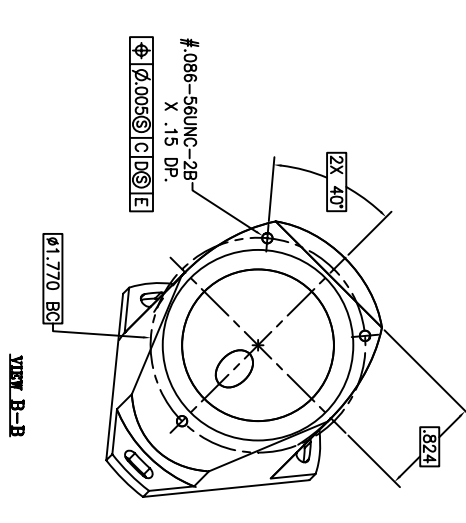
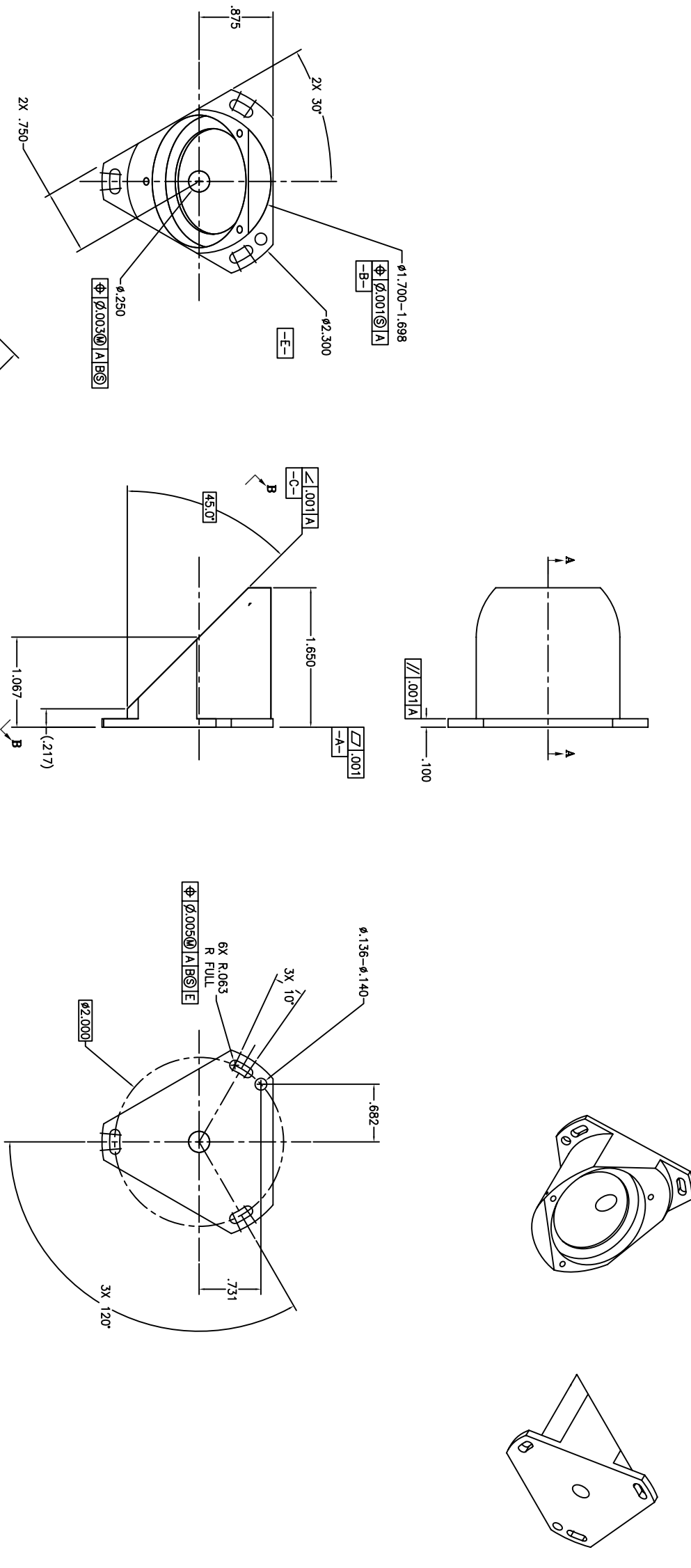


SECTION A-A

REV	DESCRIPTION	DATE	BY	CHKD	APP'D
1	INITIAL DESIGN	10/1/00	JM		
2	REVISED PER COMMENTS	10/1/00	JM		
3	REVISED PER COMMENTS	10/1/00	JM		
4	REVISED PER COMMENTS	10/1/00	JM		
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99	REVISED PER COMMENTS	10/1/00	JM		
100	REVISED PER COMMENTS	10/1/00	JM		



- NOTES: UNLESS OTHERWISE SPECIFIED
- MATERIAL: TITANIUM 6AL4V
 - FINISH: ANODIZE IAW AMS2488, TYPE II (TRFN 200)
 - ALL DIMENSIONS APPLY AFTER FINISH
 - BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REV	DATE	DESCRIPTION	BY	APP
1				

REV	DATE	DESCRIPTION	BY	APP
1				

DATE: 2001	DESIGNER: MICHAEL	APPROVED: [Signature]
TITLE: MOUNT, MIRROR BS 1 PERISCOPE AFT OPTICS	CHECKED: [Signature]	DATE: 2001
DRAWING INTERPRETED PER: GSFC-3873-44-1	APPROVED: [Signature]	DATE: 2001
APPROVED: [Signature]	APPROVED: [Signature]	DATE: 2001

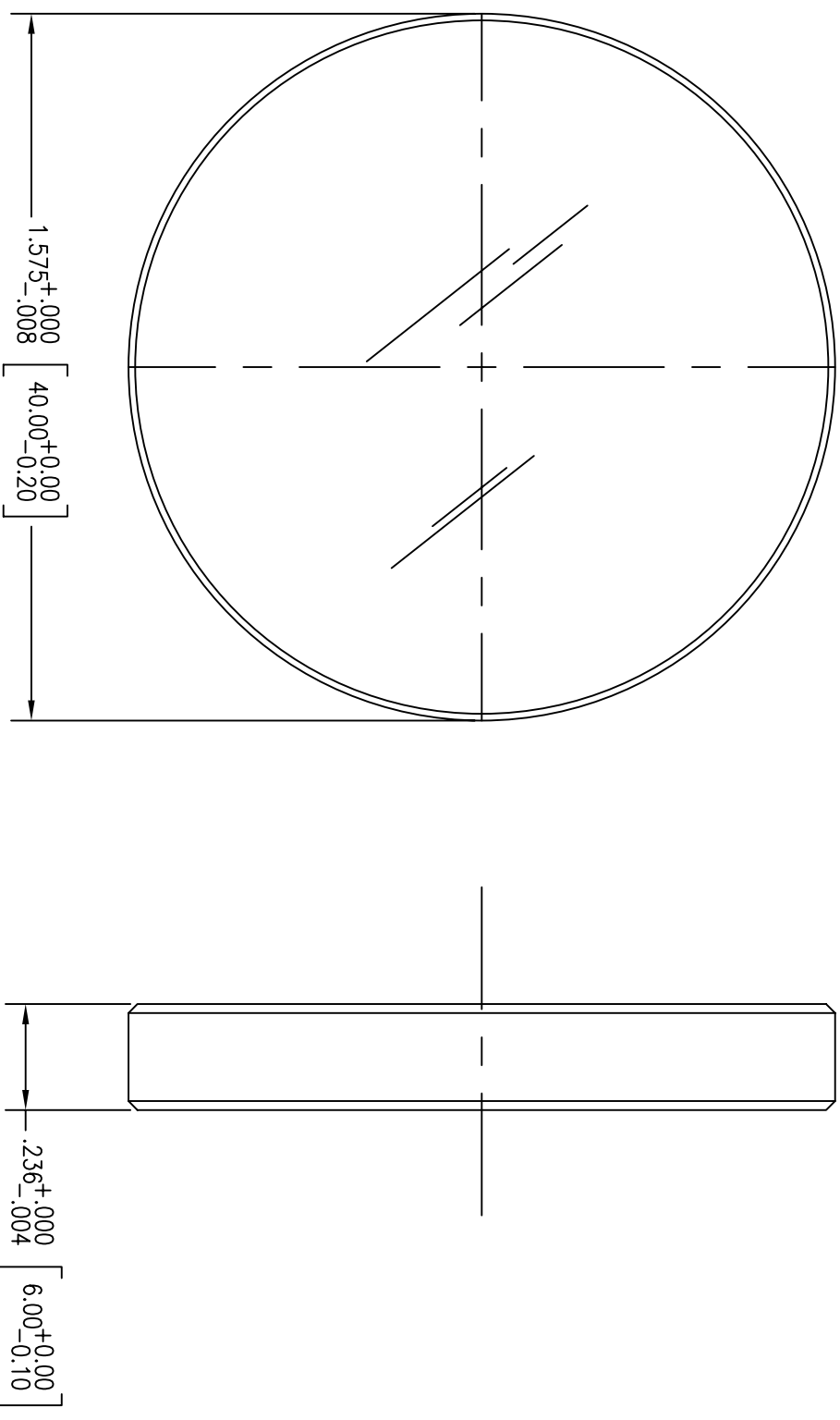
GE	9220508	1
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GE9220508 1

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. COATING: ALUMINUM OVERCOAT WITH MgF2
3. FLATNESS: $\lambda/10$
4. SURFACE QUALITY: SCRATCH AND DIG 40-20 OVER CLEAR APERTURE PER MIL-0-13830.
5. PARALLELISM: < 3 ARCMIN
6. ALL DIMENSIONS ARE REFERENCE ONLY
7. SOURCE OF SUPPLY:
 OPTO-SIGMA
 2001 DEERE DRIVE
 SANTA ANA, CA 92705
 949-851-5881
 PRODUCT NUMBER: 033-0680

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



SOURCE CONTROL DRAWING

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX ±.01 ±.005 ±.1' FRACTIONS 125' REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 MIRROR, FLAT LARGE PERISCOPE
CHECKED			
APPROVED			
APPROVED			

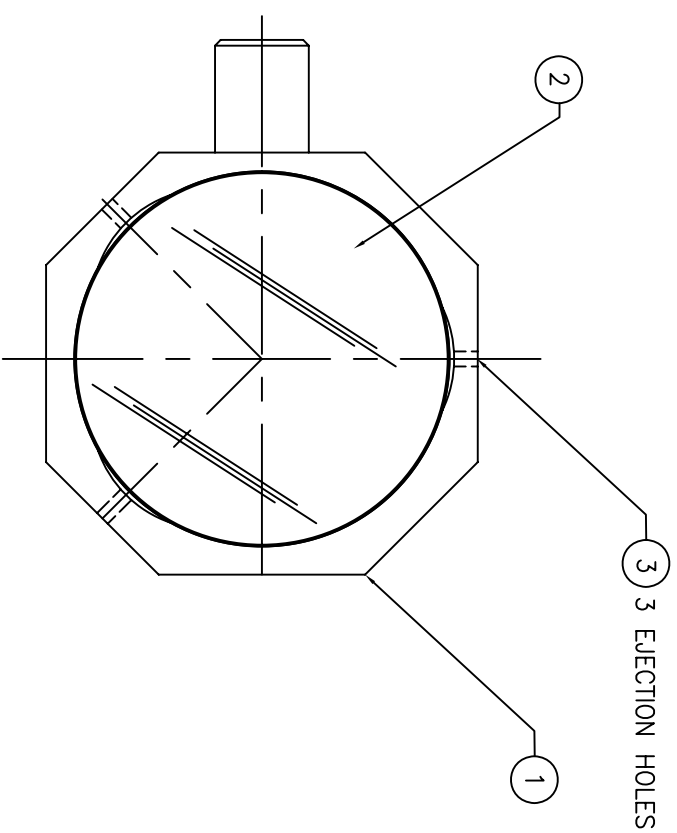
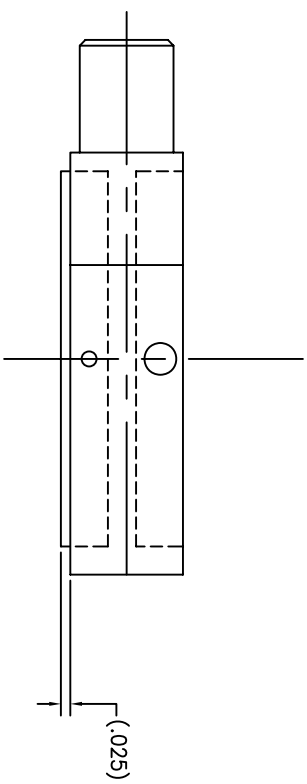
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	APPROVED-STRESS	GC	9220509	SCALE 4/1	WT	SH1 OF 1
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-ENGINEER					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL							
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ							

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME:

GC9220509 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY		SEE NOTE 1
2	1	GD9220512	BEAMSPLITTER 1		FUSED SILICA
1	1	GD9220511	MOUNT, BS1		
-	-	GD9220510	ASSEMBLY, BS1		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .4 FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX.
 DESIGNER: B. MANAKOS
 DRAWN: MANAKOS
 CHECKED: MANAKOS

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS \odot

NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

APPROVED-STRESS: _____
 APPROVED-ENGINEER: _____

GD 9220510
 SCALE: 1/1 WT
 SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

A B C D

A B C D

4 3 2 1

4 3 2 1

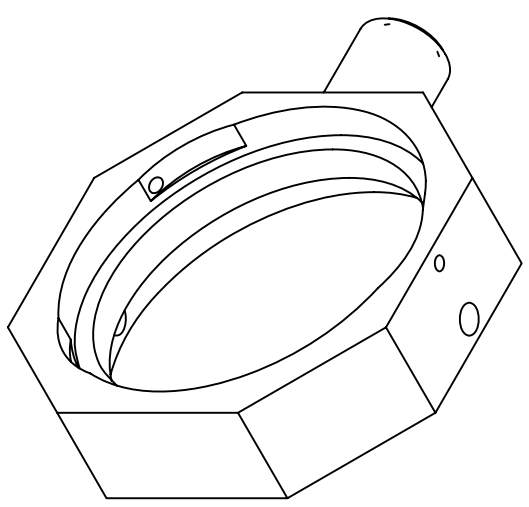
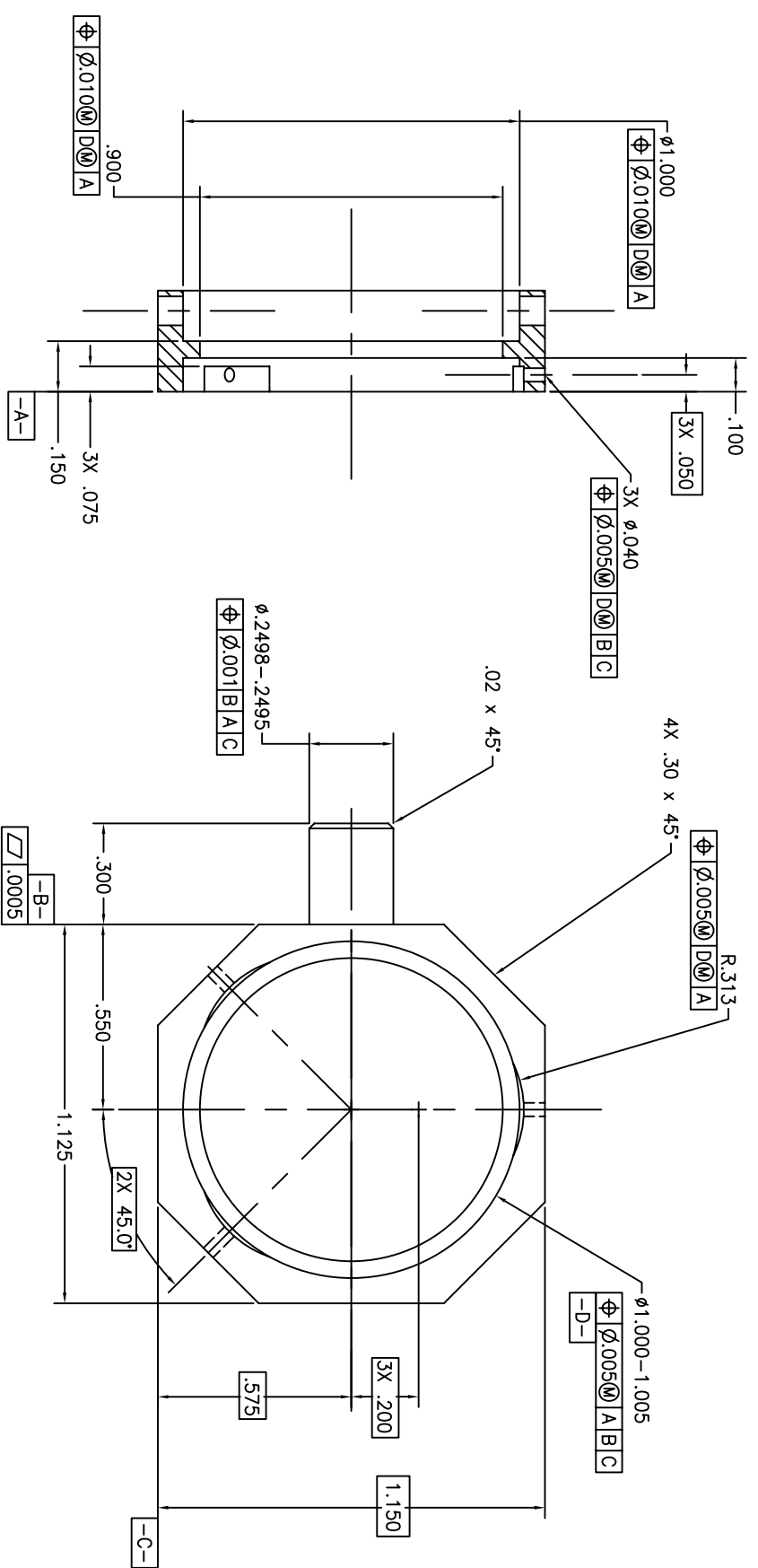
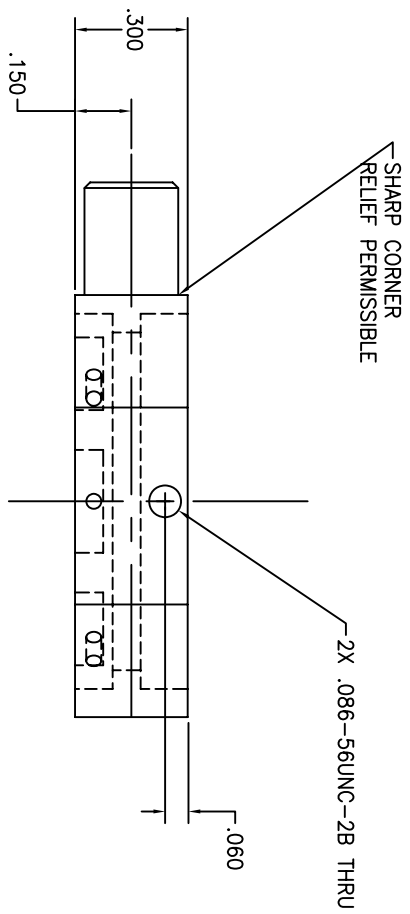
GD9220510

1

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XX .XXX FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 B MAXIMAKOS
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \varnothing
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	INT	DATE	TITLE
B MAXIMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
MAKAKOS			MOUNT
CHECKED			BS1
APPROVED			SVIP AFT OPTICS
APPROVED-STRESS			
APPROVED-ENGINEER			

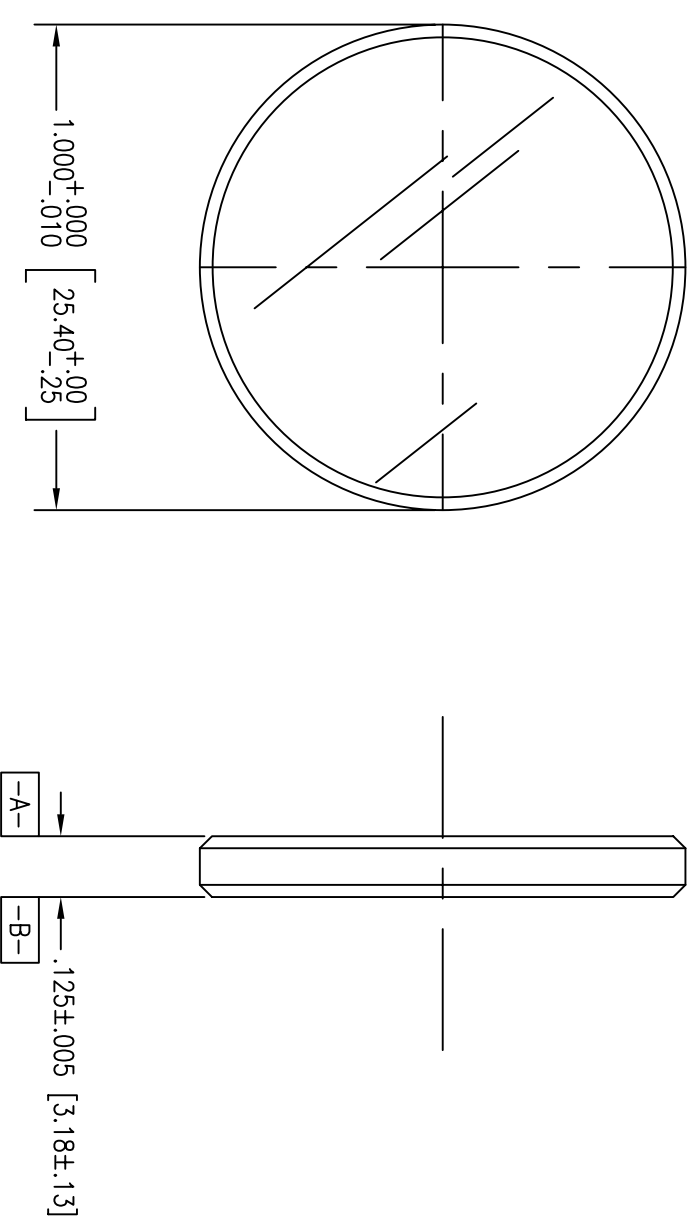
GD	9220511	SCALE 1/1	WT	SHT OF 1
GD9220511				

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: FUSED SILICA PLANO-PLANO
- 2 COATING: 45° RANDOM POLARIZATION SURFACE -A-: R>70% FROM 1250nm-1650nm
T>75% 430nm-727nm
T>90% @ 453nm (BEST EFFORT T>95%)
SURFACE -B-: AR<1% @442nm-462nm
- 3 FLATNESS: LAMBDA/10 WAVE PV @ 632nm (SURFACE -A- & -B-)
- 4 SURFACE QUALITY: SCRATCH AND DIG 10/5
- 5 PARALLELISM: <1 ARCMIN

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		<5 ARCMIN WAS <1 ARCSEC		
B		<1 ARCMIN WAS <5 ARCMIN		



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .XXX .XXX FRACTIONS 125						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D					
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED					
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ					
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D					
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE					

DESIGNER	NAME	INIT	DATE	TITLE
TOURNIS	MAMAKOS			BEAMSPLITTER 1
CHECKED				AFT OPTICS
APPROVED	TOURNIS			SVIP
APPROVED				
APPROVED-STRESS				
APPROVED-ENGINEER				

CODE	GC	SCALE	9220512	WT		SH1	OF	1
DRAWING INTERPRETED PER GSFC-X673-64-1								

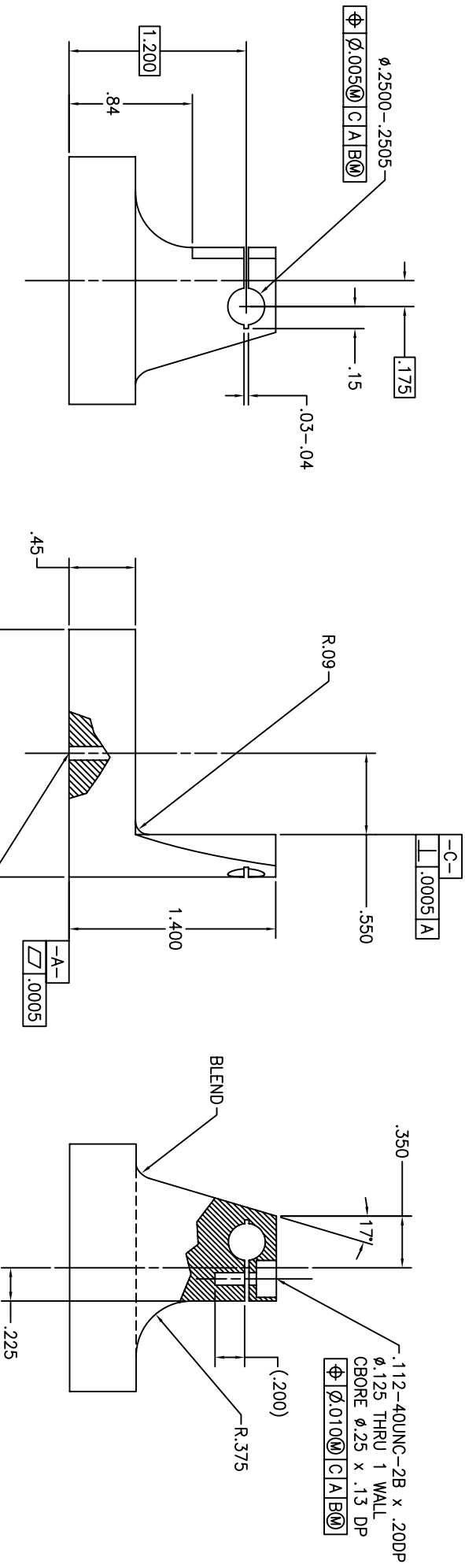
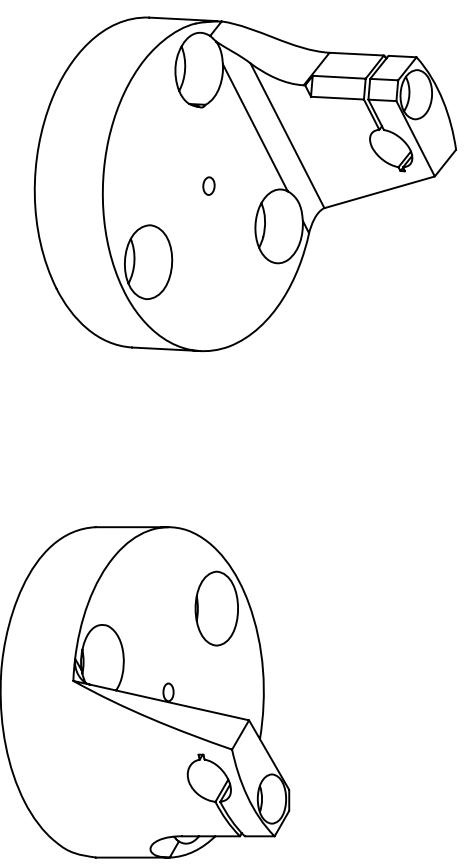
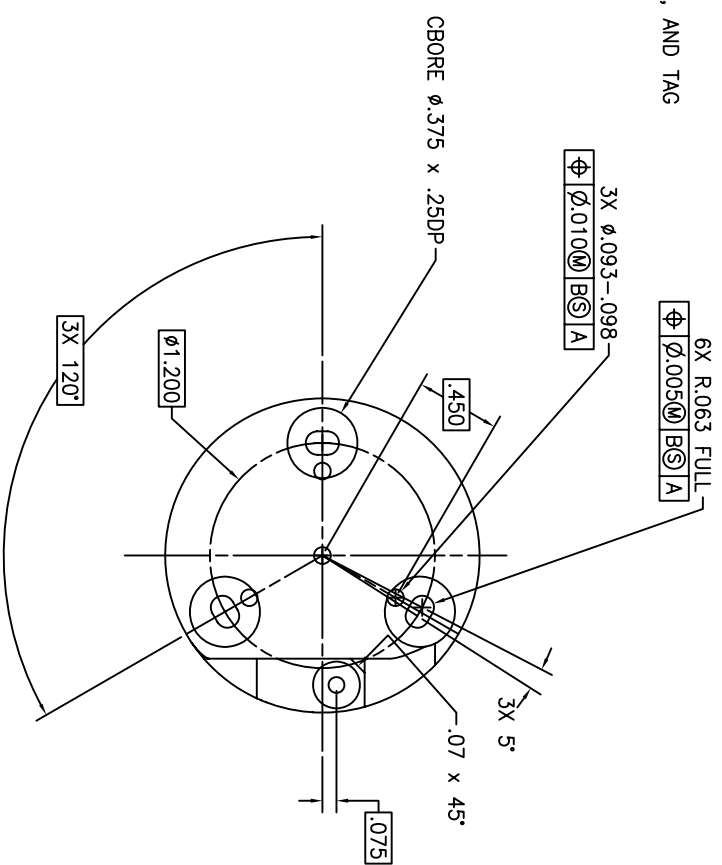
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

GC9220512 B

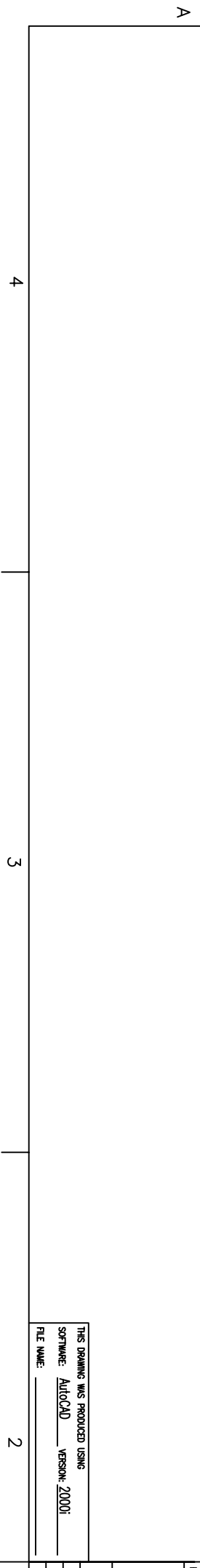
FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



Ø.0943-.0945 x .150P MIN
DRILL THRU PERMISSIBLE
Ø.005 BS A



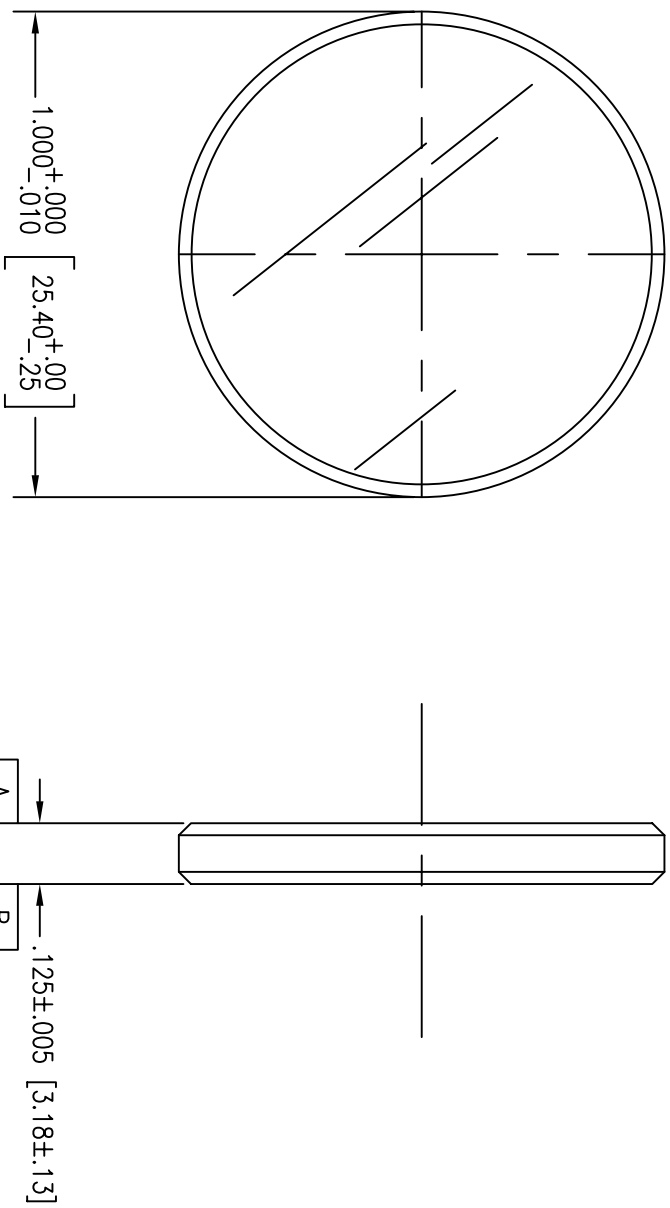
SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED 3X Ø.093-.098		

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .XX .XXX FRACTIONS 63					
±.01 ±.005 ±.1' ±1/16					
REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS <input type="checkbox"/> <input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER	NAME	INT	DATE	APPROVED	TITLE
				APPROVED	BASE MOUNT FOLD MIRROR AFT OPTICS
DRAWN	CHECKED	APPROVED	APPROVED	APPROVED-STRESS	
				APPROVED-ENGINEER	
FILE NAME:	SOFTWARE:	VERSION:	SCALE:	WT	SHT OF 1
GD9220513	AutoCAD	2000i	1/1		1

GD9220513 A 24

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: FUSED SILICA
- 2 COATING:
SURFACE -A-: R>90% AVERAGE FROM 1250nm-1650nm
T>90% AVERAGE 430nm-750nm
SURFACE -B-: AR COATED
- 3 FLATNESS: 1/10 WAVE PV TBD
- 4 SURFACE QUALITY: D-D PER MIL-C-48497A
- 5 PARALLELISM: <1 ARCSEC
- 6 ANGLE OF INCIDENCE: 45°
- 7 SUGGESTED SOURCE OF SUPPLY:
BARR ASSOCIATES
2 LYBERTY WAY
WESTFORD, MA 01886



REVISION

SYM	ZONE	DESCRIPTION	DATE	APPROVAL

GC9220514

FOLD LINE

*PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY*

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES:
.XXX .XXX / FRACTIONS 125 / ✓
±.01 ±.005 ±1° ±1/16

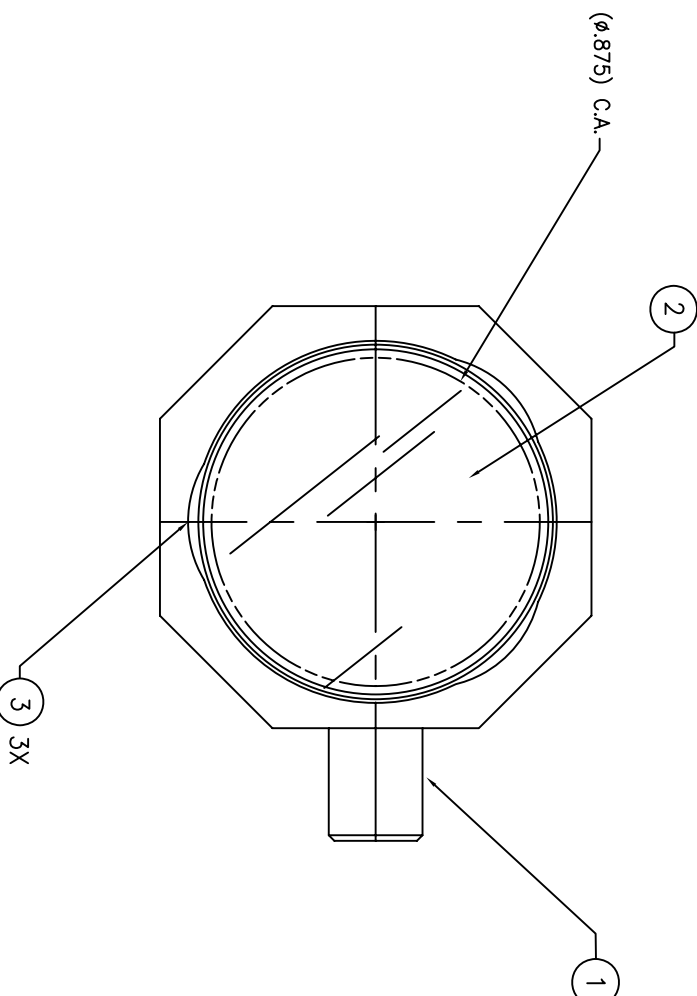
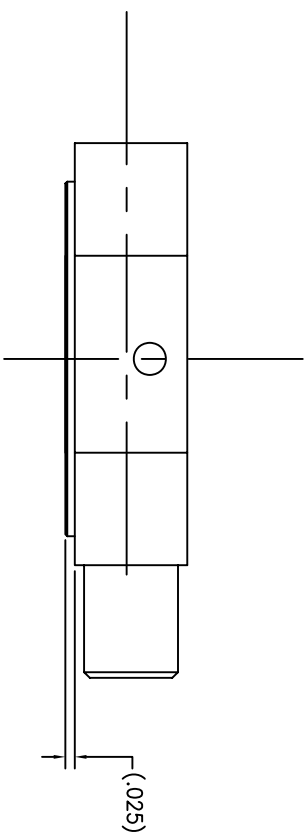
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

- FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
- HARDNESS TEST NOT REQUIRED
- TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
- TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ○
- NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
- NDE REQUIRED PER S-313-009 CODE _____

NAME	INT	DATE	TITLE	
DESIGNER TOURNOS			DRAWING INTERPRETED PER GSFC-X673-64-1 DICHROIC, BS1 SPECTROMETER CHANNEL 430-727nm Transmit	
DRAWN MAMAKOS				
CHECKED				
APPROVED TOURNOS				
APPROVED-ENGINEER				
APPROVED-STRESS				
GC	9220514	SCALE: INTS	WT	SH1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220517	BEAMSPLITTER 2		
1	1	GD9220516	MOUNT, BS2		
-	-	GD9220515	ASSEMBLY, BS2		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xx .xxx $\frac{1}{16}$ FRACTIONS $\frac{.03}{.01}$ $\frac{.01}{.005}$ $\frac{.01}{.005}$ $\frac{.01}{.005}$

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX. B MAX/MIN/KOS

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \emptyset

NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: B MAX/MIN/KOS
 DRAWN: MAX/MIN/KOS
 CHECKED: MAX/MIN/KOS
 APPROVED: MAX/MIN/KOS

APPROVED-STRESS: MAX/MIN/KOS
 APPROVED-ENGINEER: MAX/MIN/KOS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND

TITLE: ASSEMBLY BEAM SPLITTER 2 SVIP AFT OPTICS

GD 9220515
 CODE: 544 SCALE: 1/1 WT: SH1 OF 1

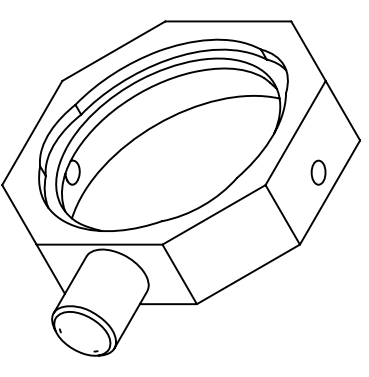
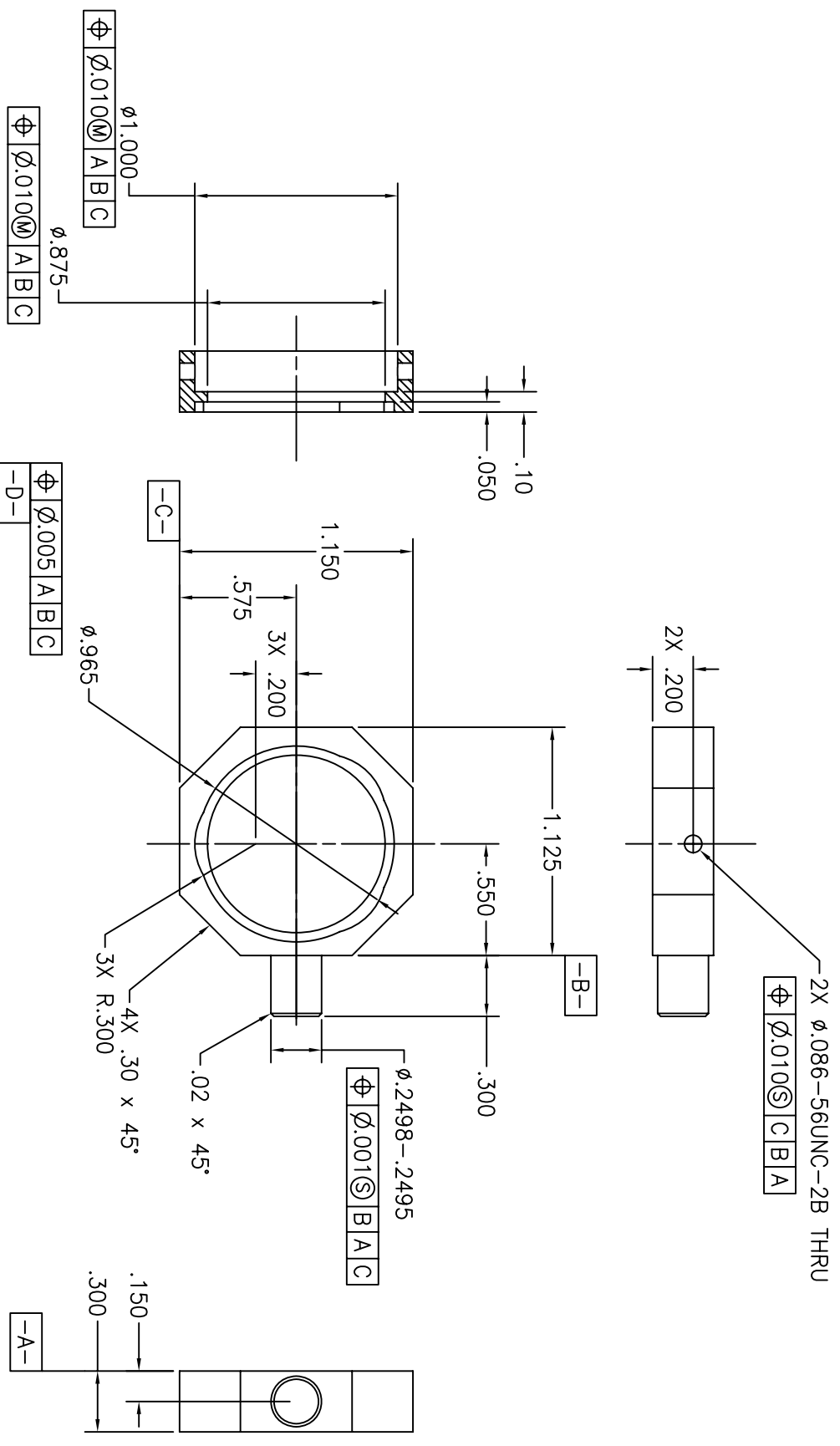
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4 3 2 1

D C B A

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 MOUNT, CELL BS2 TIP-TILT CHANNEL
CHECKED			
APPROVED			
APPROVED			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot	
<input type="checkbox"/> REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.	
APPROVED-STRESS	
APPROVED-ENGINEER	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	TOLERANCES:	FRACTIONS	63
.XXX	\pm 1'	\pm 1/16	
\pm .01	\pm .005		
THIS DRAWING WAS PRODUCED USING	SOFTWARE: AutoCAD	VERSION: 2000i	
FILE NAME:			
NEXT ASSY	USED ON	SYMP	

GC9220516 1 FOLD LINE

4

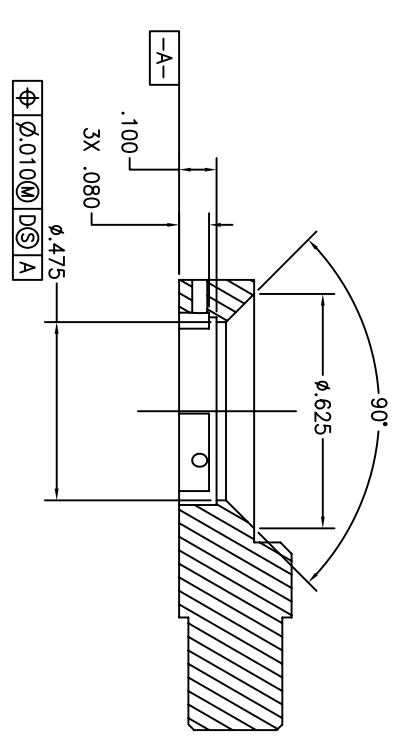
3

2

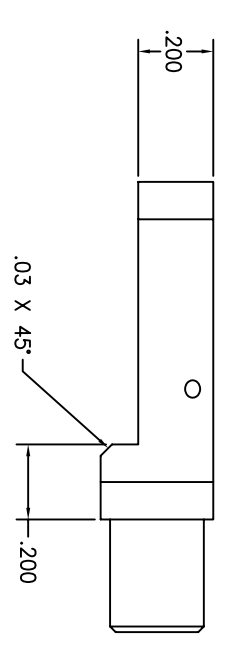
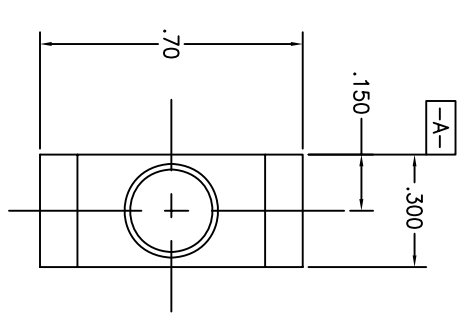
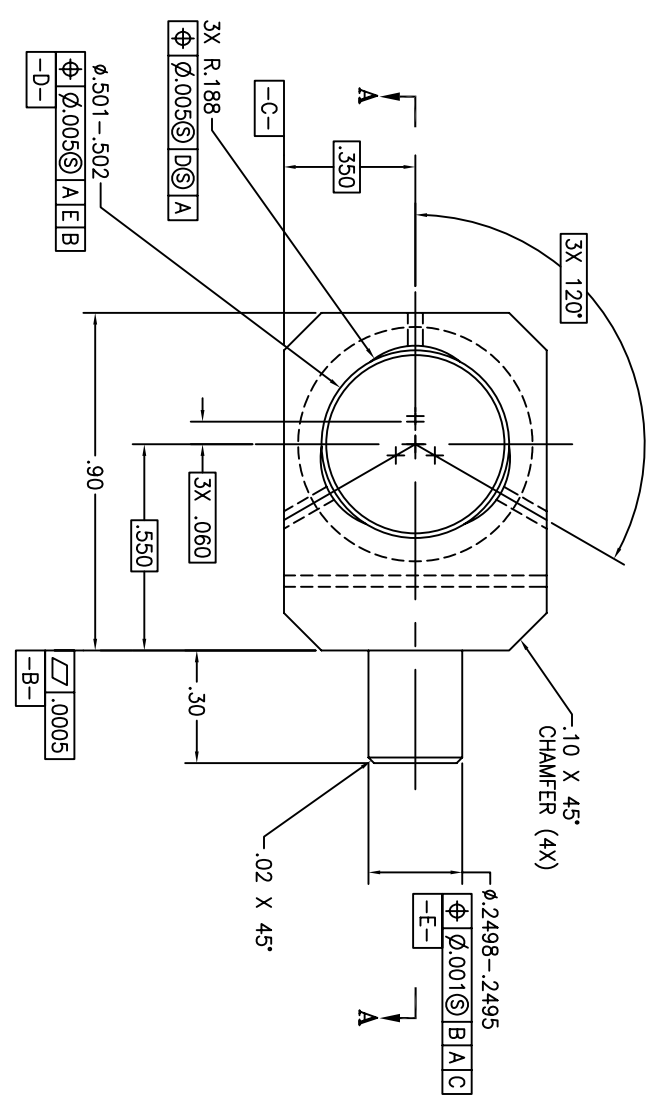
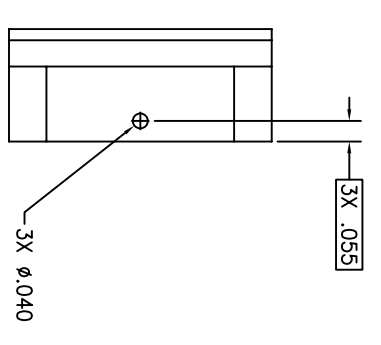
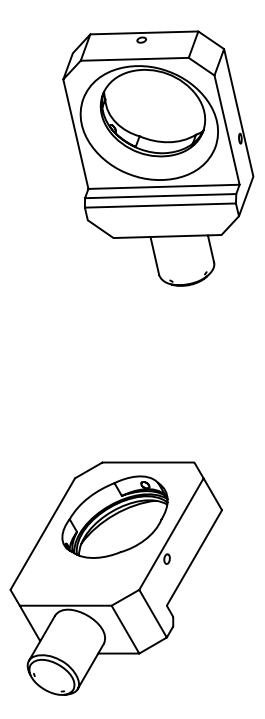
1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SECTION A-A



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220521

1

923

C

D

A

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

NAME	INT	DATE	TITLE
DESIGNER			DRAWING INTERPRETED PER GSFC-4673-64-1
CHECKED			CELL MOUNT
APPROVED			BS 3
APPROVED-STRESS			DFS23 CHANNEL
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	TOLERANCES:	FRACTIONS	DECIMALS
.XX .XXX	±.01 ±.005	1/16 3/32	.03 .015 .005

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQD
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD
 NDE REQUIRED PER S-313-009 CODE _____

SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4

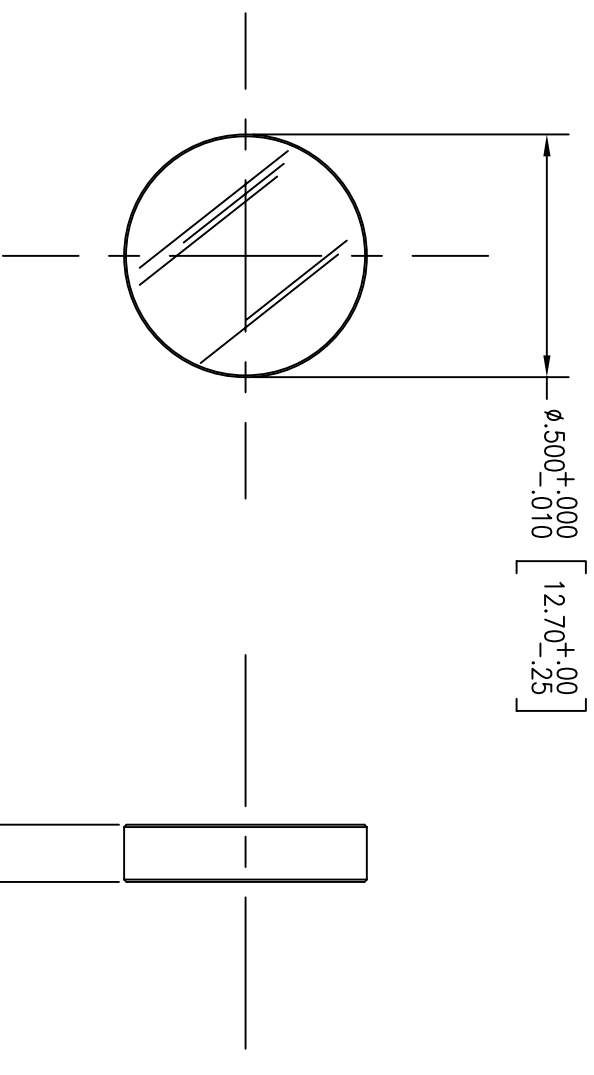
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7 (PLANO-PLANO)
2. COATING: SURFACE -A- BROADBAND 50/50 +/-5% @45° INCIDENCE
(OPERATING RANGE 500-730nm)
SURFACE -B- AR COATING <1% WITHIN 500-730nm
(OPERATING RANGE 500-730nm)
3. FLATNESS: LAMBDA/10 PV WAVE @632nm OVER CA
4. SURFACE QUALITY: SCRATCH AND DIG 20/10 OVER CA
5. CLEAR APERTURE >90% OD
6. PARRALLELISM: 30 ±10 ARCMIN



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

*PRELIMINARY RELEASE
FOR ENGINEERING INFORMATION ONLY*

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .xxx FRACTIONS 125						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉				DESIGNER TOURNOS	INIT	DATE
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____				DRAWN MAMAKOS	CHECKED	TITLE BEAM SPLITTER 50/50 DFS CHANNELS BS3
APPROVED				APPROVED-STRESS	APPROVED-ENGINEER	CODE GC
NEXT ASSY				USED ON	SCALE	9220522
						WT
						SH1 OF 1

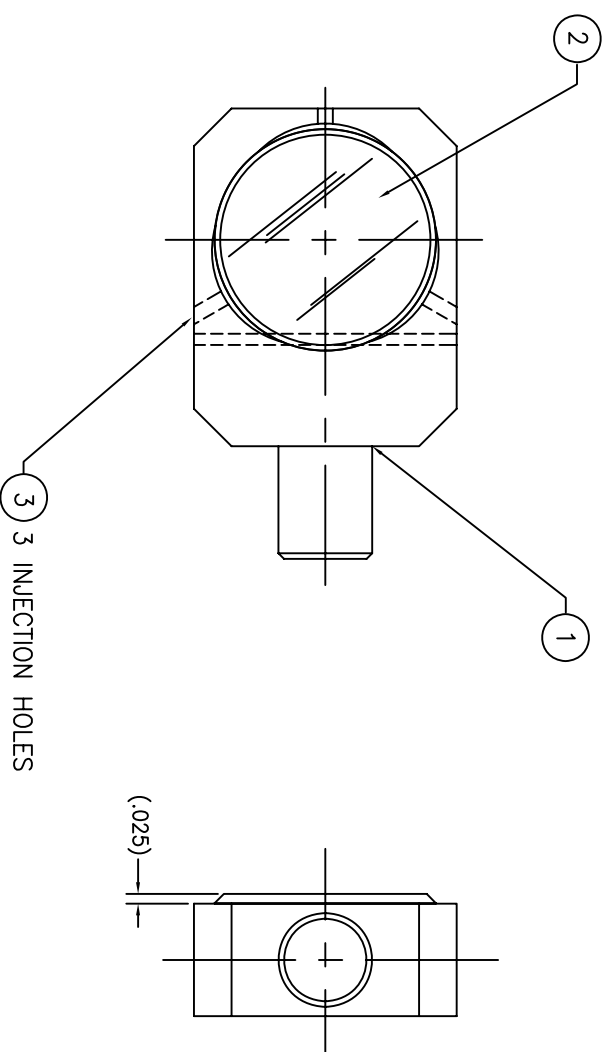
GC9220522

FOLD LINE

1

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220527	FOLD MIRROR, DFS CHANNEL		
1	1	GD9220526	MOUNT, FOLD 3		
-	-	GD9220525	ASSEMBLY, FOLD 3		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx FRACTIONS .63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX. B MAXIMOS
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS @
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER B MAXIMOS	DRAWN MAXIMOS	CHECKED	APPROVED	APPROVED-STRESS	APPROVED-ENGINEER
DATE					
TITLE ASSEMBLY FOLD MIRROR 3 SVIP AFT OPTICS BS12					
CODE/44	GD	9220525	SCALE/1	WT	SHT OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4 3 2 1

A B C D A C D

GD9220525

1

3 3 3

4

3

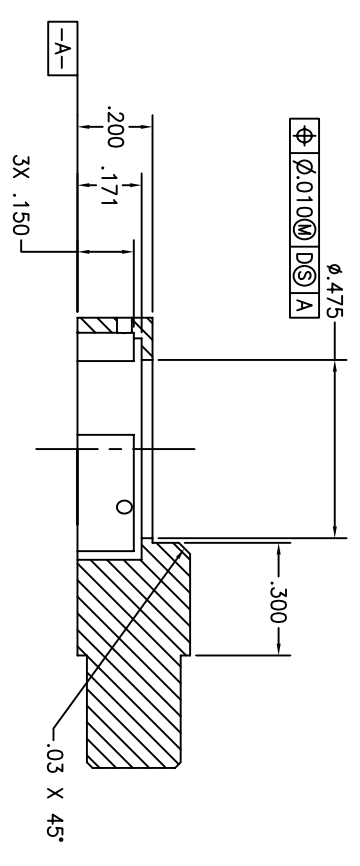
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2 4

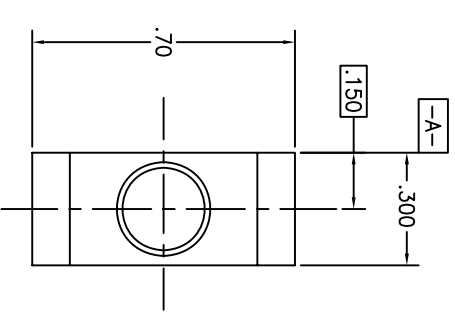
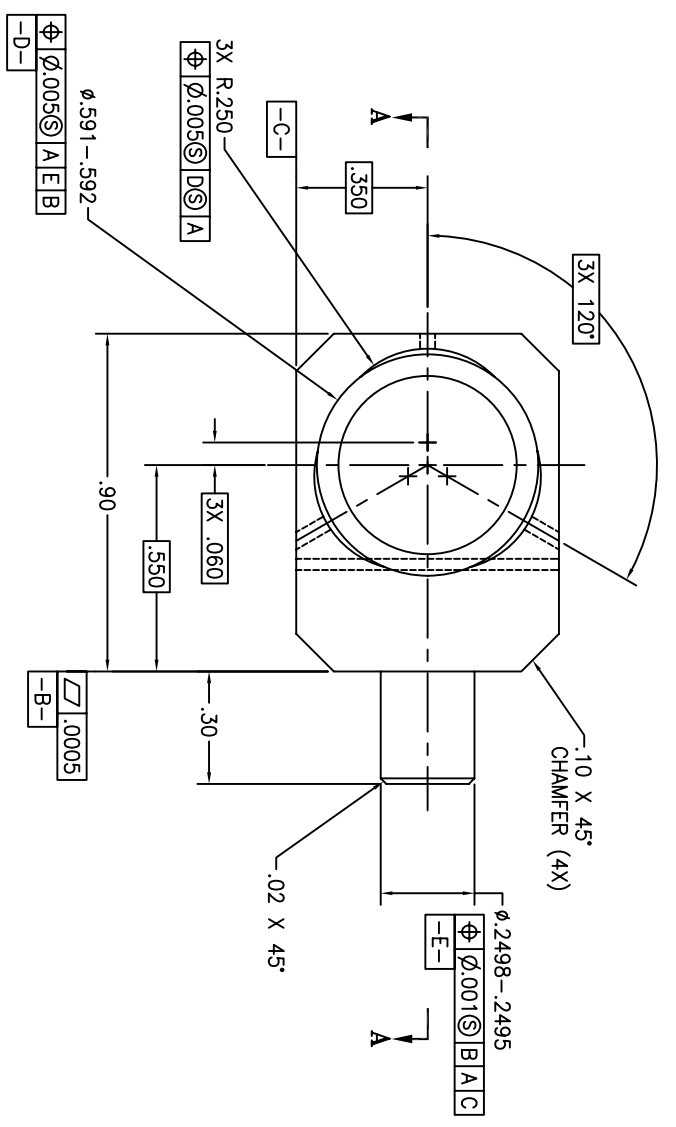
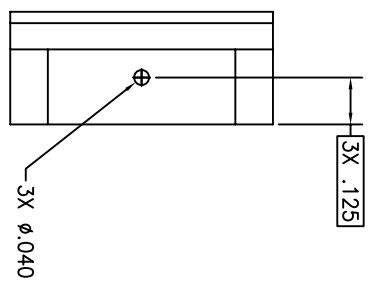
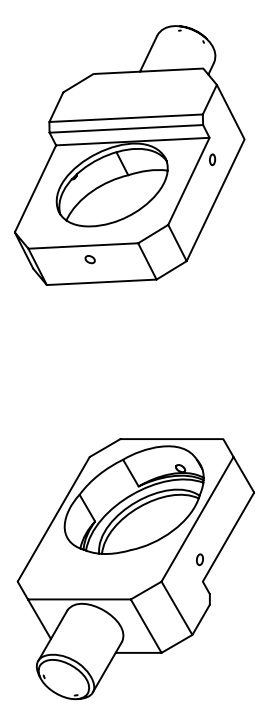
1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SECTION A-A



SM	ZONE	DESCRIPTION	DATE	APPROVAL

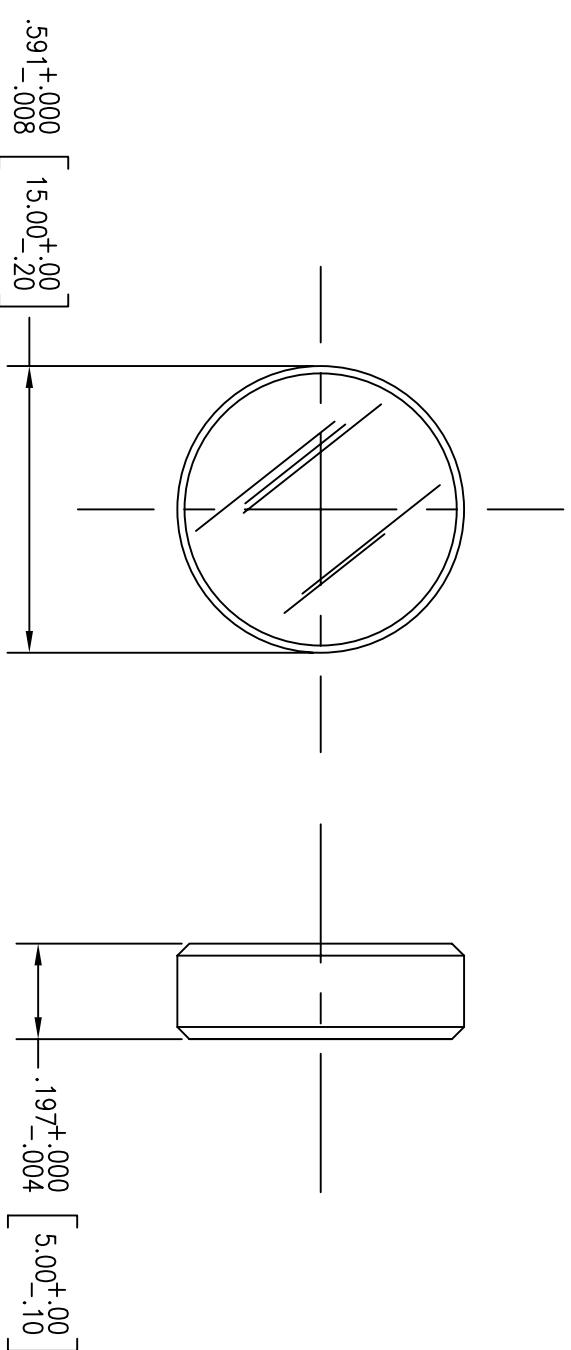
GD9220526

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .xxx < FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	GREENBELT, MARYLAND
			REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.		
			<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD		
			<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED		
			<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL		
			<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ☐		
			<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD		
			<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE		
			DESIGNER		
			CHECKED		
			APPROVED		
			APPROVED-STRESS		
			APPROVED-ENGINEER		
			NAME		
			INT		
			DATE		
			TITLE		
			GD		
			9220526		
			SCALE 4/1		
			WT		
			SHT OF 1		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. COATING: ALUMINUM OVERCOAT WITH MgF2
3. FLATNESS: $\lambda/10$
4. SURFACE QUALITY: SCRATCH AND DIG 40-20 OVER CLEAR APERTURE PER MIL-0-13830.
5. PARALLELISM: < 3 ARCMIN
6. ALL DIMENSIONS ARE REFERENCE ONLY
7. SOURCE OF SUPPLY:
OPTO-SIGMA
2001 DEERE DRIVE
SANTA ANA, CA 92705
949-851-5881
PRODUCT NUMBER: 033-0480



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

SOURCE CONTROL DRAWING

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES							
TOLERANCES: .XXX \angle FRACTIONS 125 \angle							
±.01 ±.005 ±1° ±1/16							
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.							
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			DESIGNER	NAME	INIT	DATE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED			DRAWN	MAMAKOS		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			CHECKED			
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot			APPROVED			
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			APPROVED			
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE			APPROVED-STRESS			
				APPROVED-ENGINEER			
				USED ON	SVIP		
				NEXT ASSY			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

FOLD LINE

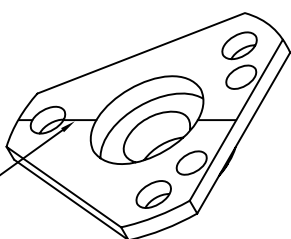
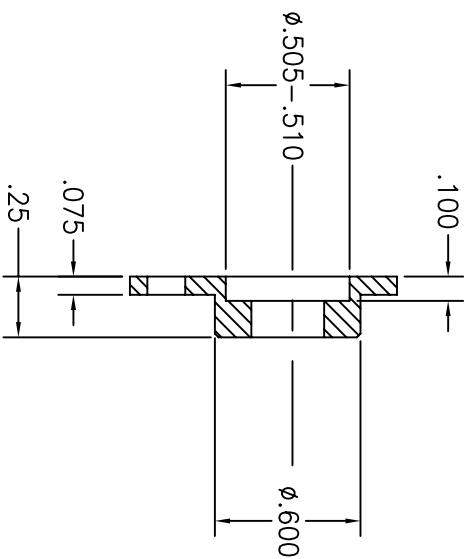
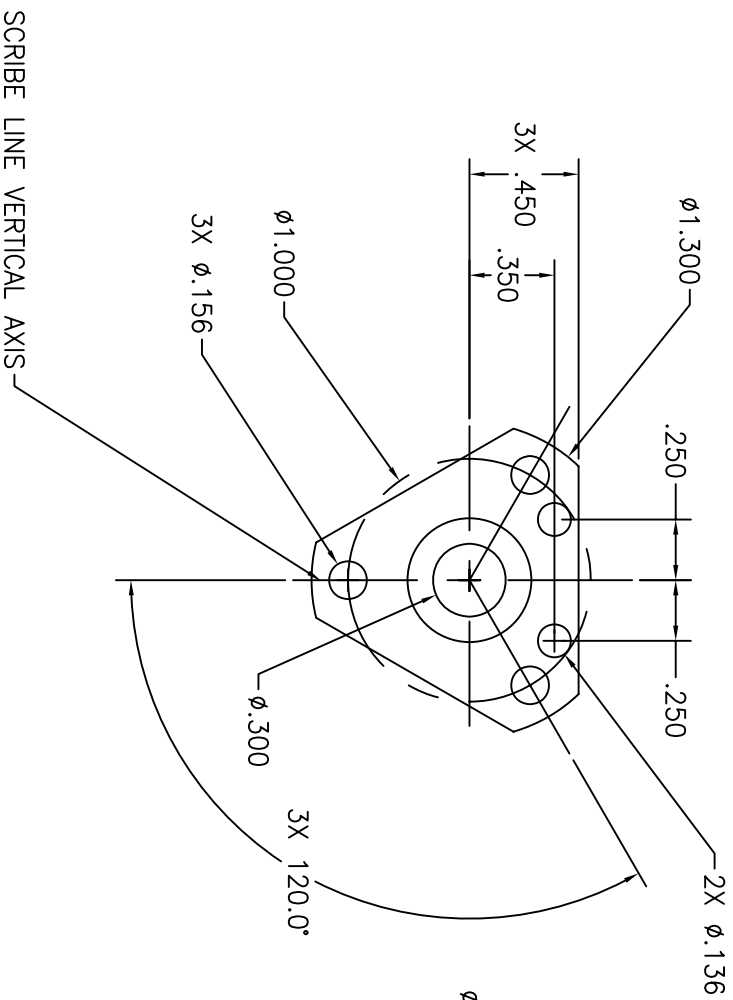
GC9220527 1

FOLD LINE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND
DRAWING INTERPRETED PER GSFC-X673-64-1
TITLE
FOLD MIRROR
DFS CHANNELS
SVIP
CODE GC SCALE 4/1 WT SH1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SCRIBE LINE

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .XXX FRACTIONS 63						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D		DESIGNER	NAME	INIT	DATE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED		MAMAKOS	MAMAKOS		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL		CHECKED			
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ		APPROVED			
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D		APPROVED			
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE		APPROVED-STRESS			
	NEXT ASSY		APPROVED-ENGINEER			

TITLE
CELL, SLIT
SPECTROMETER
SVIP

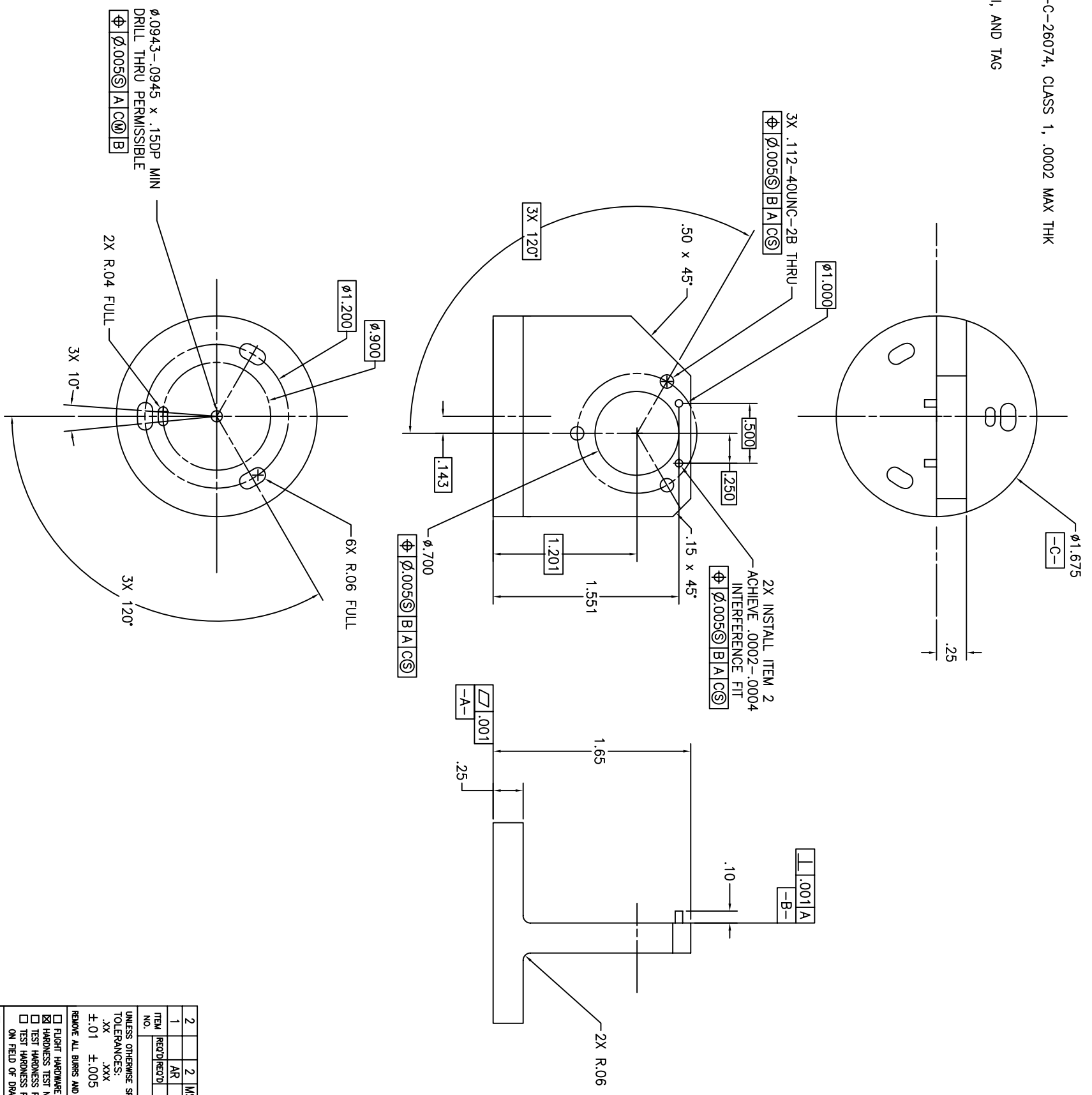
THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2002
FILE NAME:

GC9220528 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
A		1	ADDED 1.551 DIMENSION		

2	MS16555-603	PIN/DOWEL Ø.0625 x .312 LG	CRES	SEE NOTE 1	
1	AR	ROD/BAR	MATERIAL		

DESIGNER	NAME	INT	DATE
CHECKED	NAME		
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

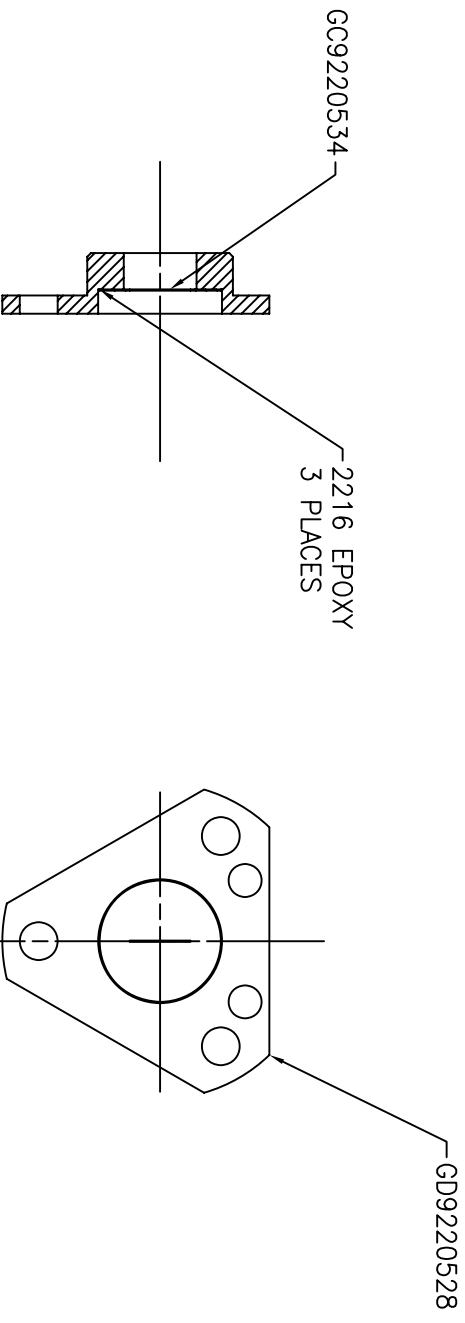
GD	9220529	SCALE 2/1	WT	SHT OF 1
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THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

4 3 2 1

GD9220529 A 2 1

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



FOLD LINE

GC9220530 1

ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .XX .XXX $\frac{1}{16}$ FRACTIONS $\frac{63}{1000}$					
±.01 ±.005 ±.1° ±1/16					
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ					
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER NAME			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
DRAWN			Goddard Space Flight Center GREENBELT, MARYLAND		
CHECKED			DRAWING INTERPRETED PER GSFC-X673-64-1		
APPROVED			TITLE		
APPROVED			CELL, SLIT ASSEMBLY SVIP		
APPROVED-STRESS			CODE		
APPROVED-ENGINEER			GC 9220530		
NEXT ASSY			SCALE 2/1		
USED ON			WT		
			SH1 OF 1		
			REV		
			-		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

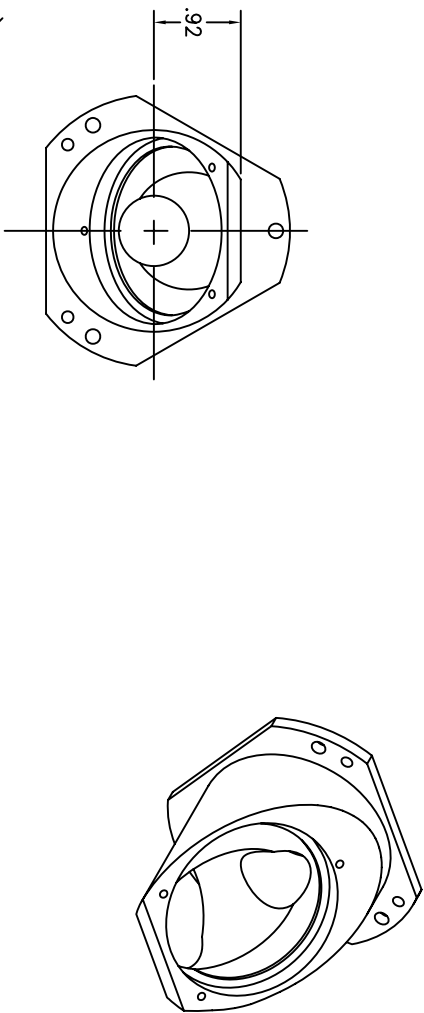
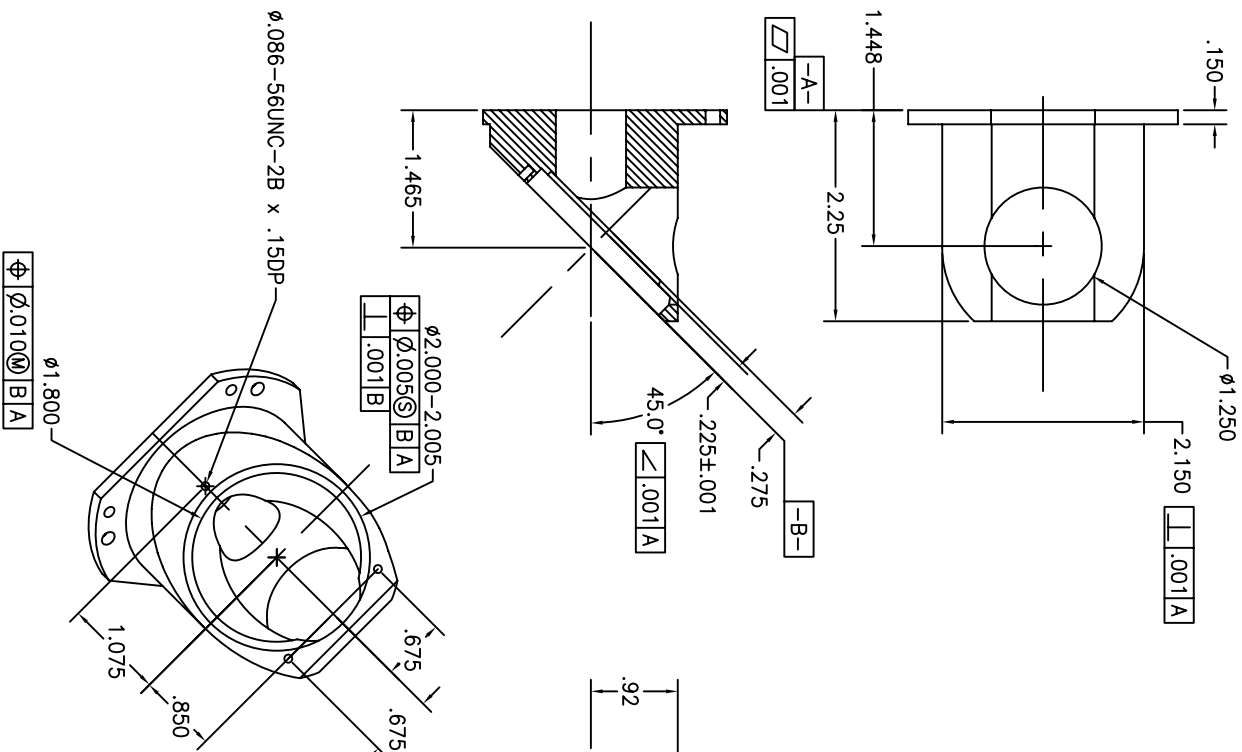
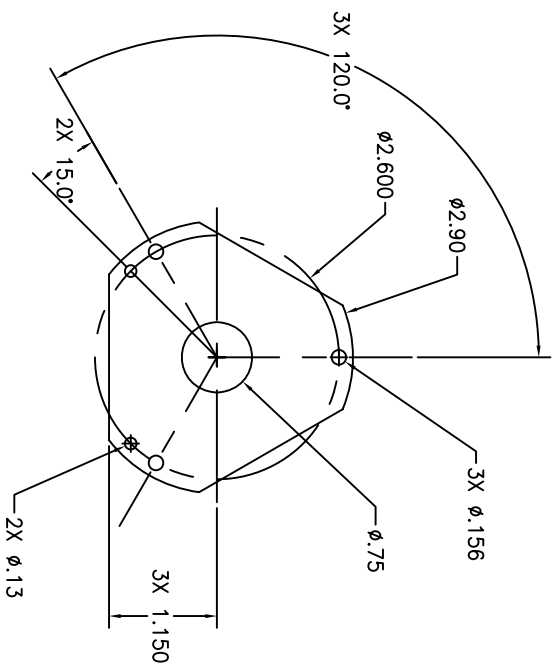
4

3

2

1

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
 - 3 ALL DIMENSIONS APPLY AFTER FINISH
 - 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

GD9220532

1

923

ITEM NO.	REC'D/REV'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XX .XXX FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND

DESIGNER: NAME INT DATE
 DRAWN: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: APPROVED

TITLE: MOUNT, CELL
 BEAMSPLITTER NO.1
 SVIP

REV	CODE	SCALE	WT	SH	OF
1	GD	9220531	1/1	1	1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

A

B

C

D

4

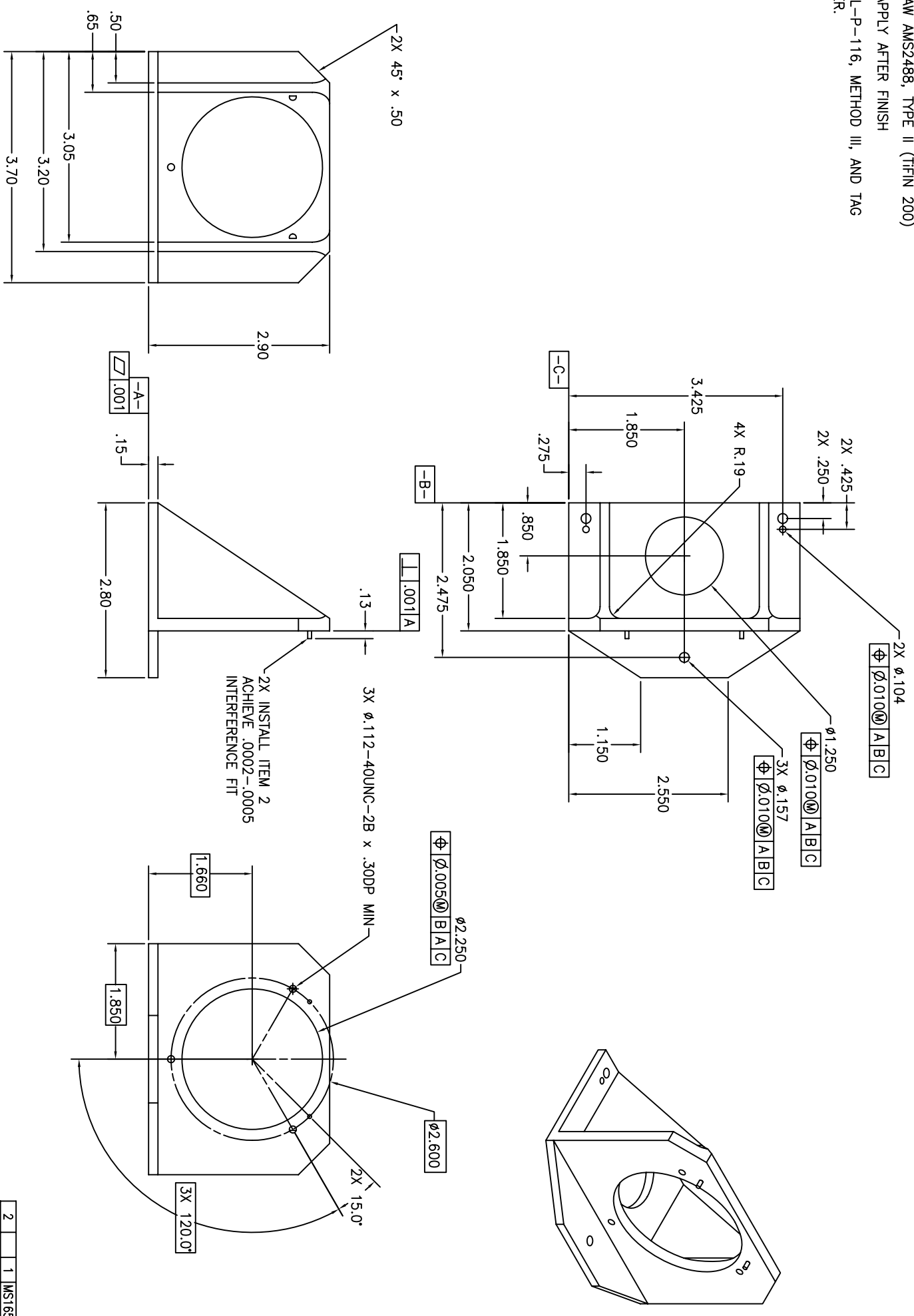
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F (+0°/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	CRES	TI GALV	MATERIAL SPEC.
1	AR	MS16555--603	PIN/DOWEL $\phi 0.625 \times .312$ LG			
2						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: FRACTIONS 6/32
 .XX .XXX .XXX ±.01 ±.005 ±.1° ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ϕ
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED MAMAKOS			MOUNT BEAM SPLITTER SVIP
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

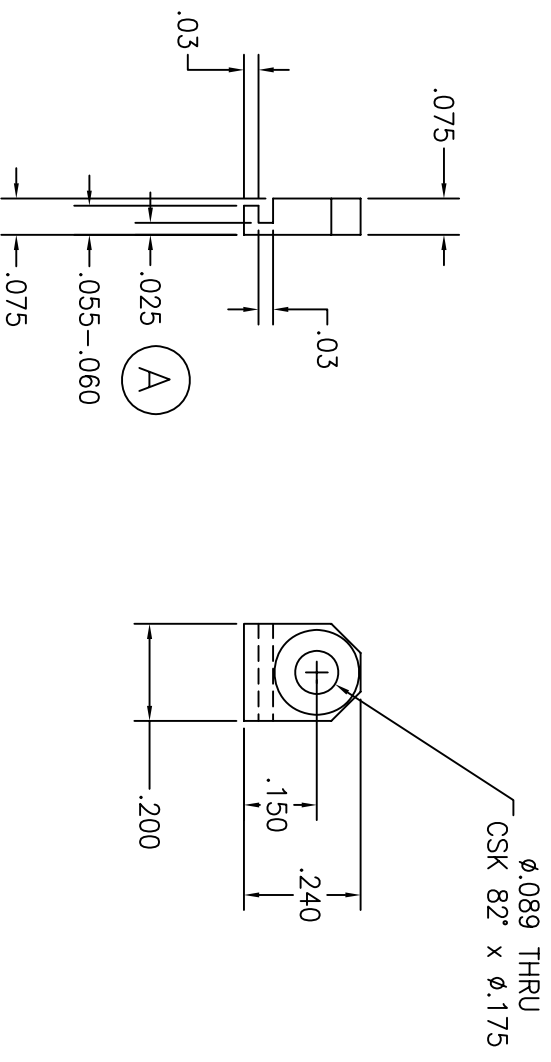
REV	CODE	SCALE	WT	SH	OF
1	GD	9220532	1/1	1	1

4 3 2 1

GD9220532 1 2 3 4

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: BLACK DELRIN

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED MISSING DIMENSION .025		



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XXX .XXX $\frac{\text{---}}{\text{---}}$ FRACTIONS 63
 $\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

- FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
- HARDNESS TEST NOT REQUIRED
- TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
- TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
- NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
- NDE REQUIRED PER S-313-009 CODE

DESIGNER MAMAKOS	NAME	INIT	DATE	TITLE DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED				
APPROVED				
APPROVED				
APPROVED-STRESS				
APPROVED-ENGINEER				
CODE 544	GC	SCALE 4/1	WT	SH1 OF 1
NEXT ASSY	SVIP	USED ON		REV —

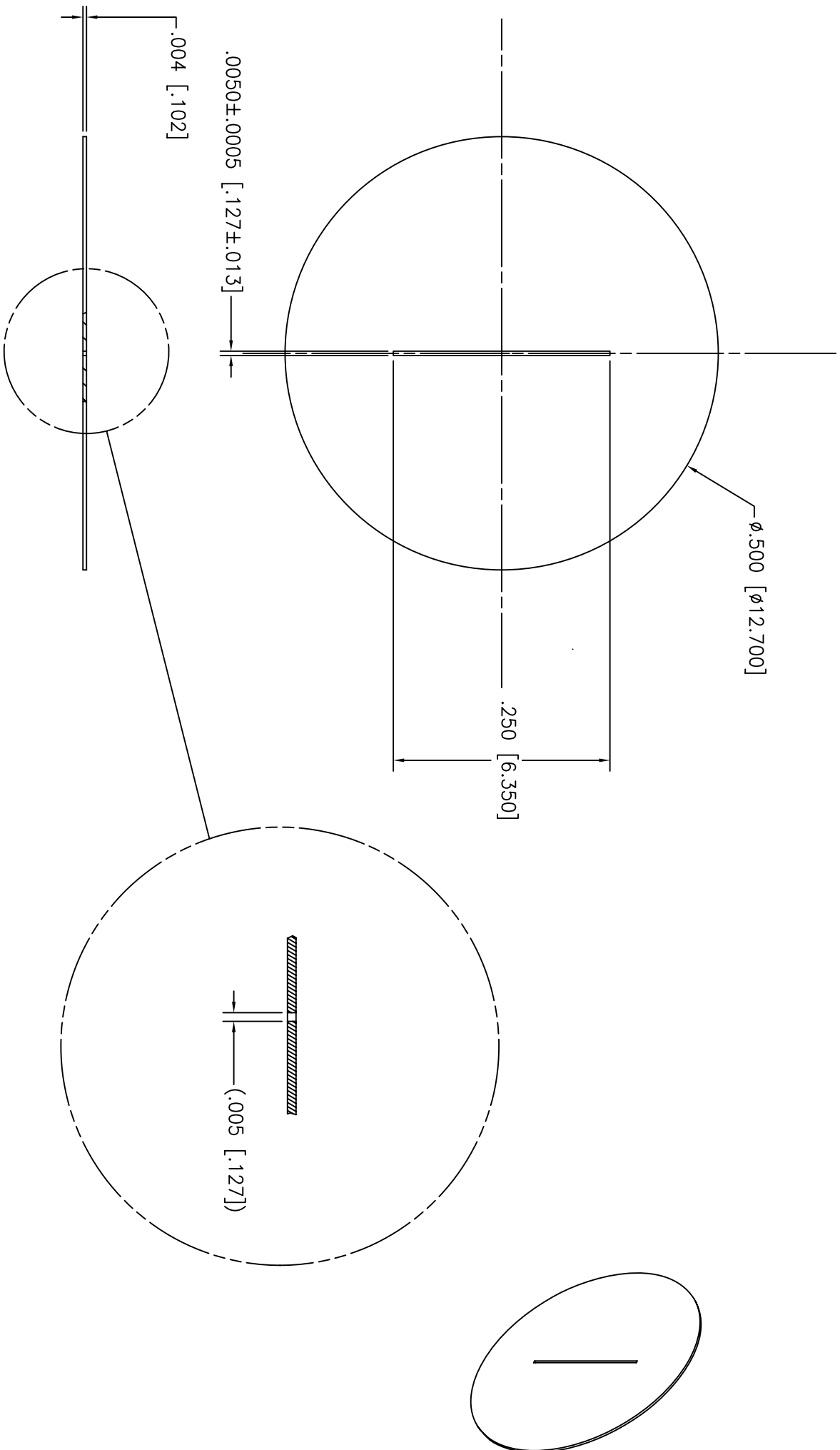
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC9220533 A

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: CRES 300 SERIES**
 2 ALL DIMENSIONS APPLY AFTER FINISH



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

LIST OF MATERIAL			
NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 SLIT SPECTROMETER
CHECKED MAMAKOS			
APPROVED			
APPROVED			

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES:	.XXX	✓	FRACTIONS	63	✓	
±.01	±.005	±1'	±1/16			
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D						
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED						
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL						
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉						
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D						
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE						
APPROVED-STRESS						
APPROVED-ENGINEER						
CODE	GC	SCALE	9220534	WT		SH1 OF 1
NEXT ASSY		USED ON	SVP			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

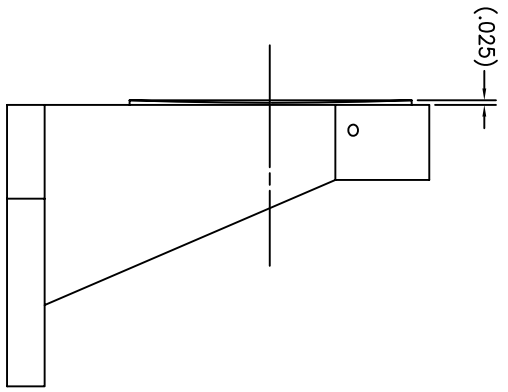
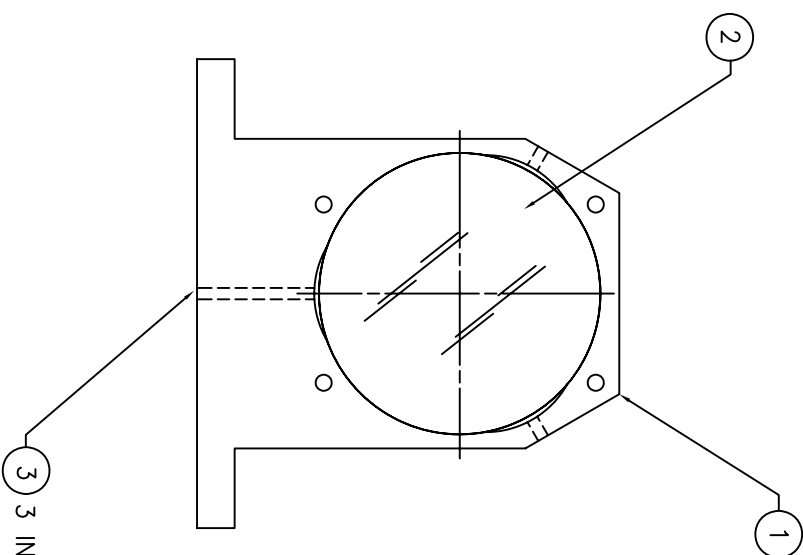
GC9220534 A

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220537	COLLIMATOR, SPECTROMETER		
1	1	GD9220571	MOUNT, COLLIMATOR		
-	-	GD9220535	ASSEMBLY, SPECTROMETER COLLIMATOR		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX.
 B. MAXIMAKOS
 DESIGNER
 NAME INT DATE
 DRAWN
 MAXIMAKOS
 CHECKED
 APPROVED
 APPROVED-ENGINEER

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

APPROVED-STRESS
 APPROVED-ENGINEER
 TITLE
 ASSEMBLY
 COLLIMATOR, SPECTROMETER
 SVIP AFT OPTICS

GD 9220535
 SCALE 1/1 WT
 SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

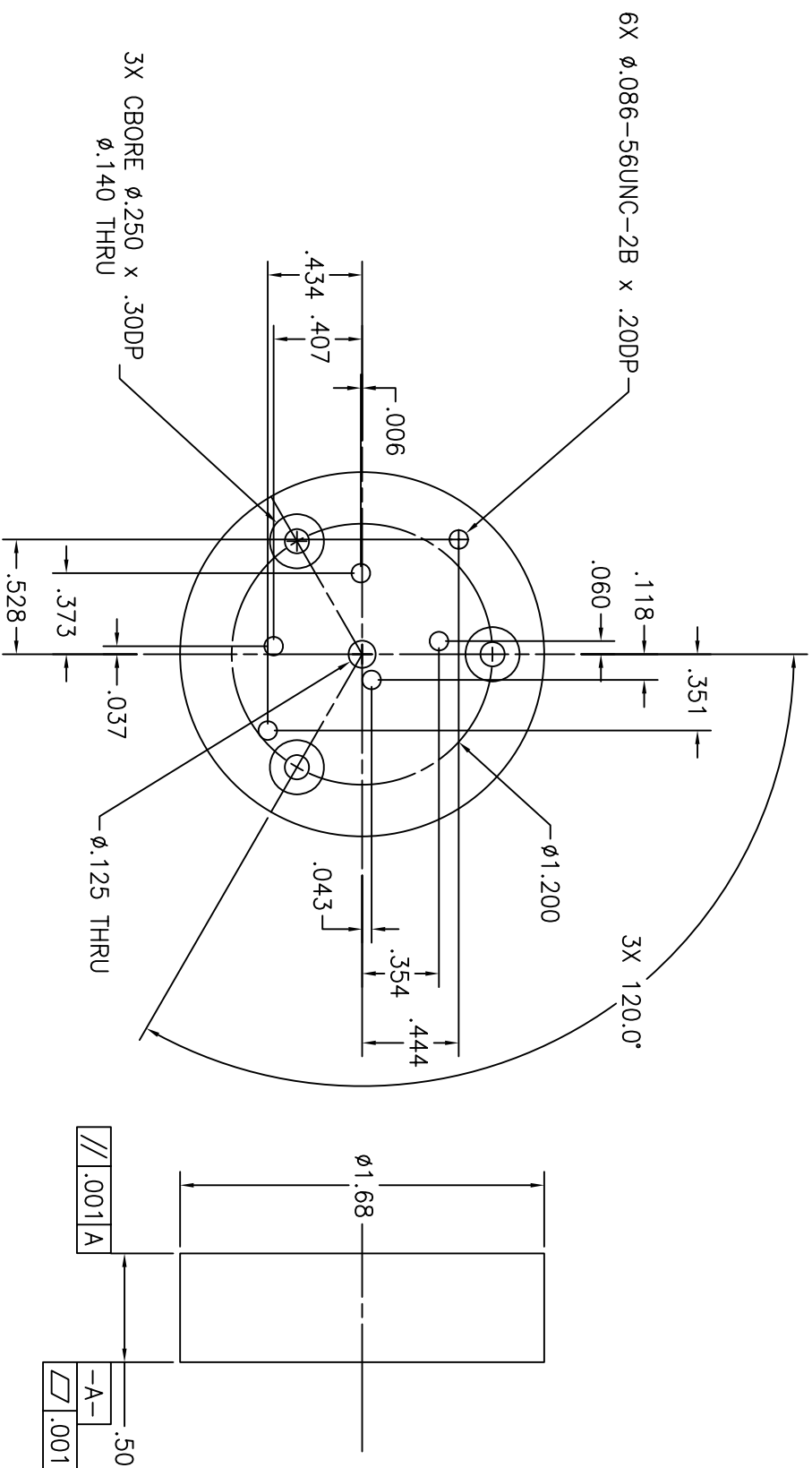
4 3 2 1

A B C D

GD9220535

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REVISION			
SYM	ZONE	DESCRIPTION	DATE

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .XXX FRACTIONS 63						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						

NAME	INIT	DATE	TITLE
DESIGNER			DRAWING INTERPRETED PER GSFC-X673-64-1
DRAWN			
CHECKED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉	<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED APPROVED-STRESS APPROVED-ENGINEER	TITLE SPACER PRISM MOUNT	CODE: 544 GC	SCALE: 2/1 9220537	WT SH1 OF 1	REV 1
---	--	--	--	------------------------	------------------------------	----------------	-----------------

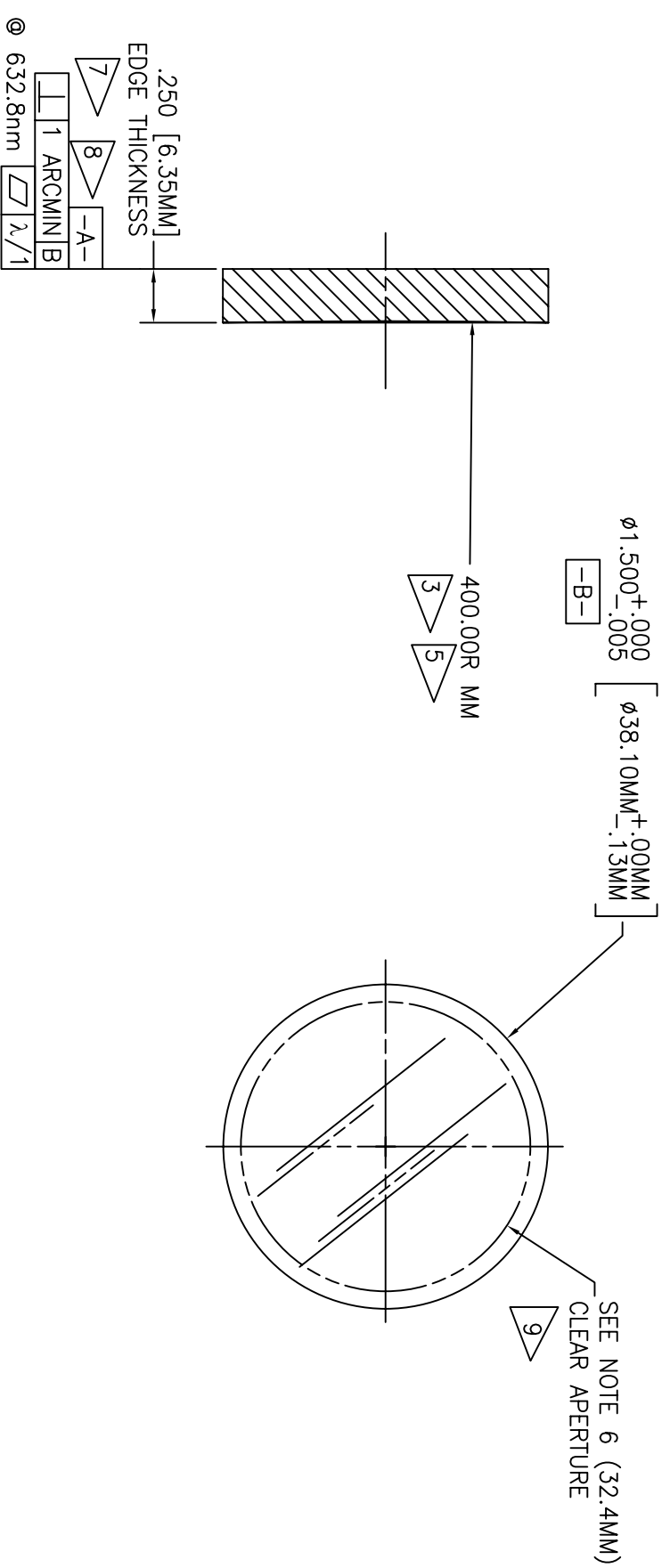
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC9220537 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: BK7 OR S-BSL7
- 2 RADIUS OF CURVATURE: 400.00 mm ±0.5%
- 3 SURFACE FIGURE ERROR: 0.1 WAVE PV @ 632.8nm ($\lambda/10$) OVER CA
- 4 MICRO ROUGHNESS: 80A RMS
- 5 COATING: PROTECTED ALUMINUM (OPERATING WAVELENGTH 1.25 TO 1.63 MICRONS)
- 6 CLEAR APERTURE: 85% OF OUTER DIAMETER (32.4MM)
- 7 SURFACE -A- TO BE POLISHED TO 1 WAVE PV @ 632.8nm
- 8 COATING: PROTECTED ALUMINIUM @ 550nm
- 9 SURFACE QUALITY: SCRATCH AND DIG 60/40 OVER CLEAR APERTURE
- 10 CHAMFER: 0.50MM x 45°, ALL EDGES



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
-		RELEASED FOR MANUFACTURE		

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 COLLIMATOR, ON-AXIS SPECTROMETER SVIP AFT OPTICS
DRAWN MAMAKOS			
CHECKED			
APPROVED			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot	
<input type="checkbox"/> REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	FRACTIONS	63	
TOLERANCES:			
.XXX	$\pm 1'$	$\pm 1/16$	
$\pm .01$	$\pm .005$	$\pm 1/16$	
DESIGNER	INIT	DATE	
APPROVED-STRESS			
APPROVED-ENGINEER			
CODE	SCALE	WT	SH1 OF 1
GC	9220537		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

GC9220537 1

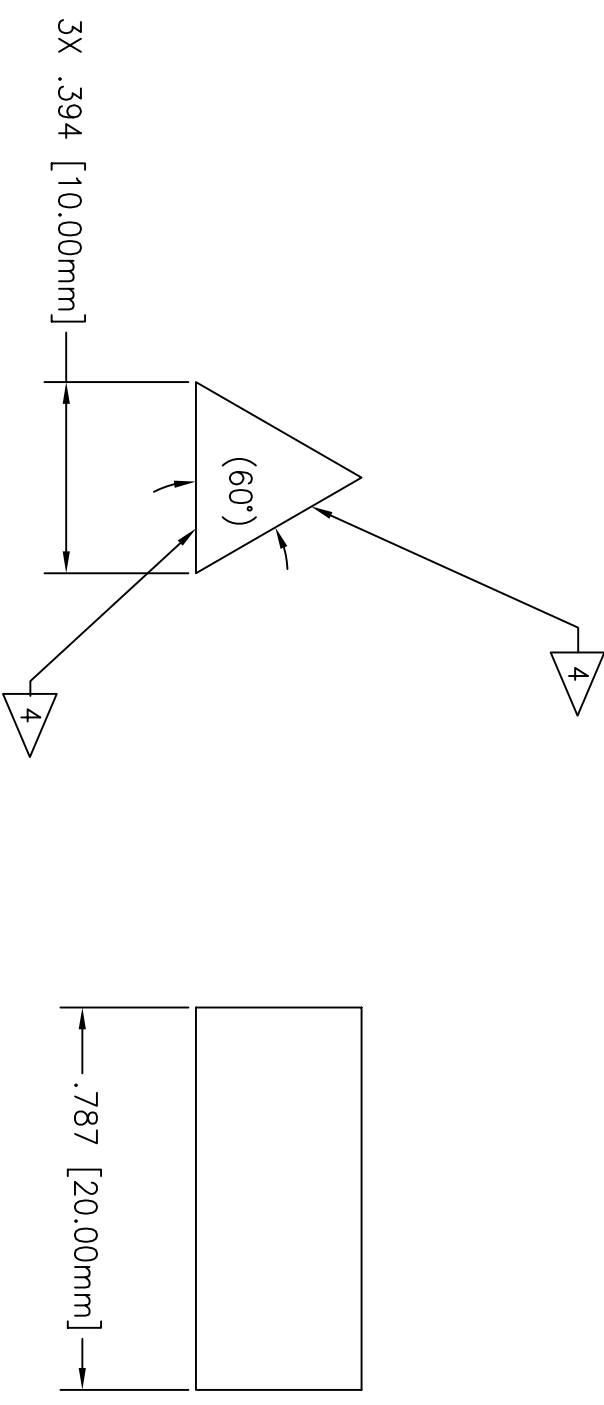
FOLD LINE

3 B 3

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 FUSED SILICA
- 2 WEDGE PRISM (TIA, ARC MIN): 0.5
- 3 SCRATCH-DIG: 60-40
- 4 COATING: NIR BBAR (OPERATING WAVELENGTH 1.25 TO 1.63 MICRONS)
IRREGULARITY 0.5 FRINGE

5 SUGGESTED SOURCE OF SUPPLY
OPTIMAX SYSTEMS, INC
6367 DEAN PARKWAY
ONTARIO, NY 14519-8939
877-396-7846



REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	

ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
XX	.XXX	✓	FRACTIONS	63	✓
±.01	±.005	±1°	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ				
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D				
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE				
	DESIGNER	NAME	INIT	DATE	
	DRAWN	NAME			
	CHECKED	NAME			
	APPROVED				
	APPROVED				
	APPROVED-STRESS				
	APPROVED-ENGINEER				
	CODE	TITLE			
	GC	PRISM			
	9220540	SPECTROMETER CHANNEL			
	SCALE	4/1	WT		

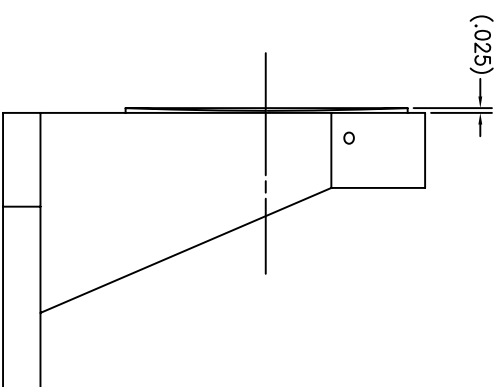
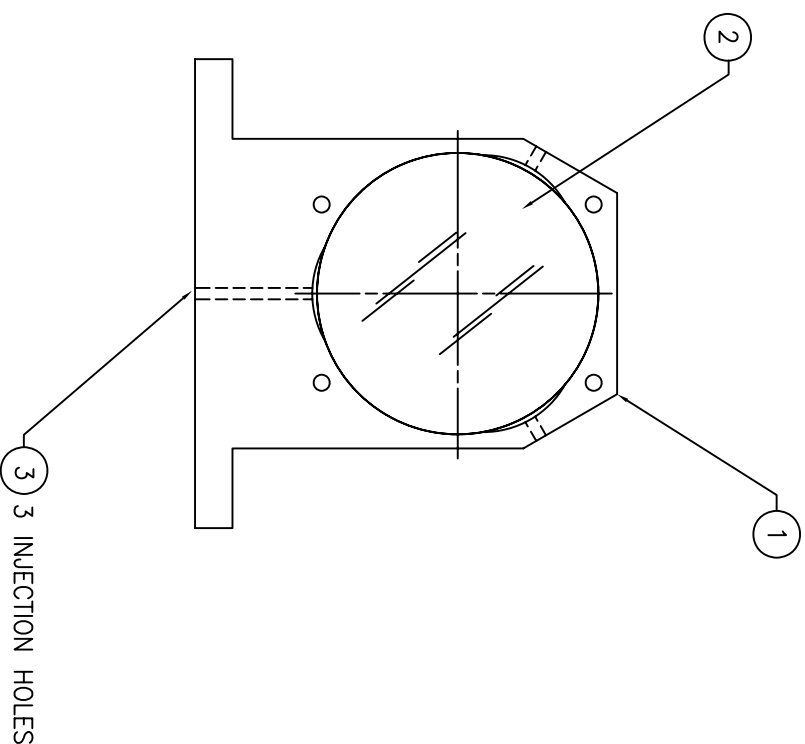
GC9220540 1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220543	MIRROR, FOCUSING, SPECTROMETER		
1	1	GD9220571	MOUNT, COLLIMATOR		
-	-	GD9220541	ASSEMBLY, FOCUSING MIRROR, SPECTROMETER		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX. B MAXIMOS
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

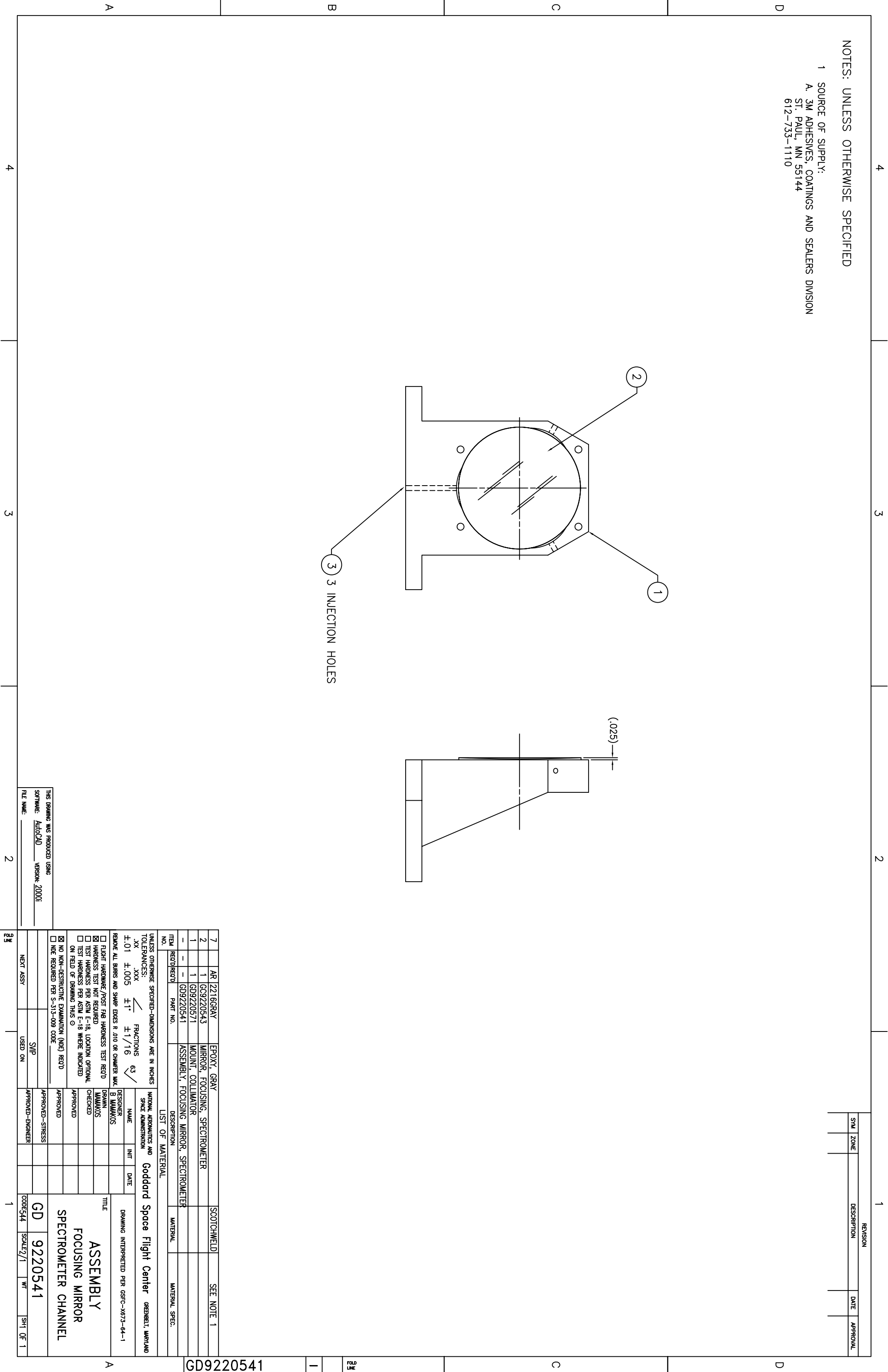
DESIGNER: B MAXIMOS
 CHECKED: MAXIMOS
 APPROVED: APPROVED

APPROVED-STRESS: APPROVED
 APPROVED-ENGINEER: APPROVED

USED ON: SNIP
 NEXT ASSY: GD9220541

GD 9220541
 SCALE: 2/1
 WT: _____
 SH1 OF 1

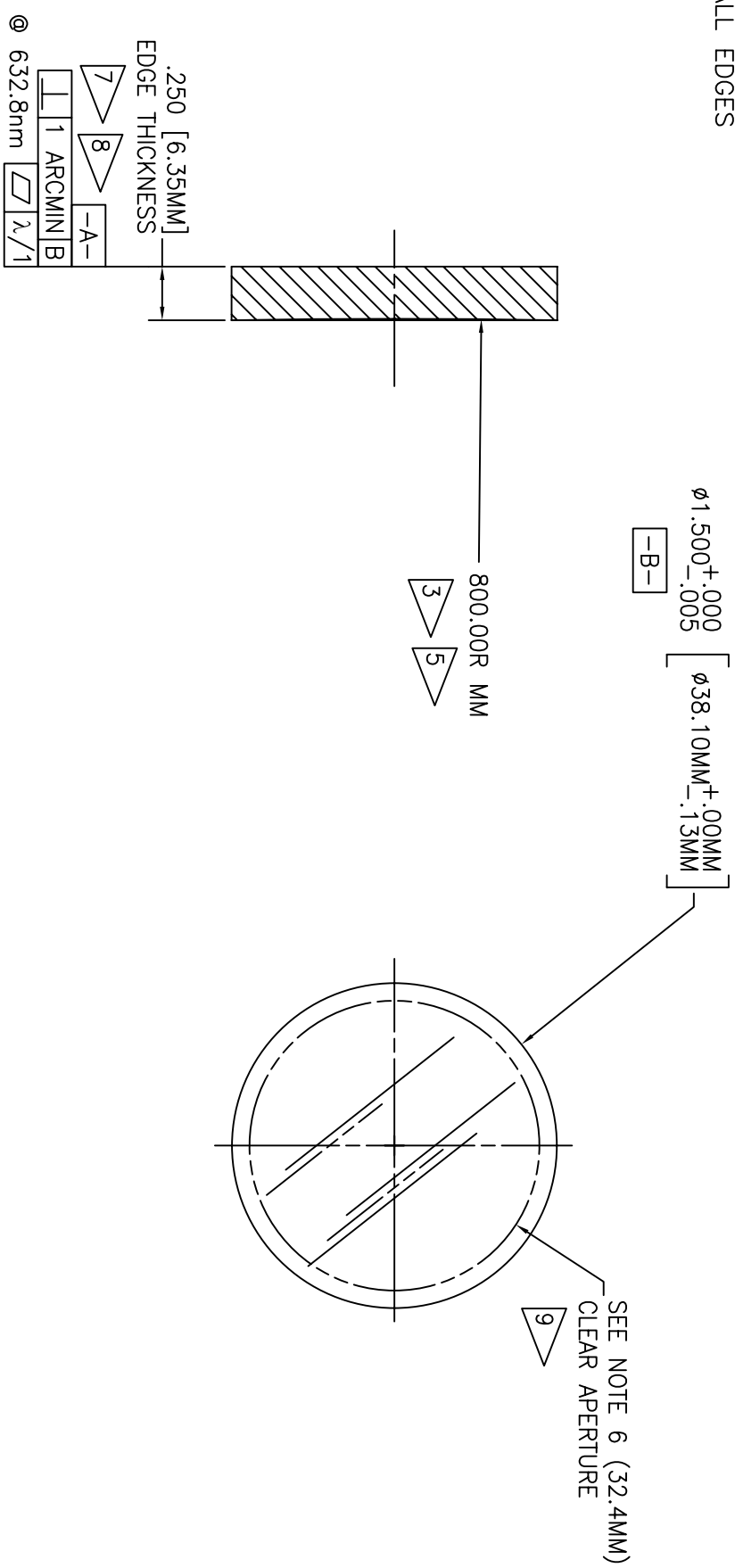
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____



GD9220541

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: BK7 OR S-BSL7
- 2 RADIUS OF CURVATURE: 800.00 MM ±0.5%
- 3 SURFACE FIGURE ERROR: 0.1 WAVE PV @ 632.8nm (lambda/10) OVER CA
- 4 MICRO ROUGHNESS: 80A RMS
- 5 COATING: PROTECTED ALUMINUM (OPERATING WAVELENGTH 1.25 TO 1.63 MICRONS)
- 6 CLEAR APERATURE: 85% OF OUTER DIAMETER (32.4MM)
- 7 SURFACE -A- TO BE POLISHED TO 1 WAVE PV @ 632.8nm
- 8 COATING: PROTECTED ALUMINUM @ 550nm
- 9 SURFACE QUALITY: SCRATCH AND DIG 60/40 OVER CLEAR APERATURE
- 10 CHAMFER: 0.50MM x 45°, ALL EDGES



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
-		RELEASED FOR MANUFACTURE		

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES:						
.XX	.XXX	✓	FRACTIONS	63	✓	
±.01	±.005	±1'	±1/16			
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			DESIGNER	NAME	INIT
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED			DRAWN	MAMAKOS	
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			CHECKED		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ			APPROVED		
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			APPROVED		
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE			APPROVED-STRESS		
				APPROVED-ENGINEER		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
Goddard Space Flight Center GREENBELT, MARYLAND						
DRAWING INTERPRETED PER GSFC-X673-64-1						
TITLE						
FOCUSING MIRROR SPECTROMETER SVIP AFT OPTICS						
CODE	GC	9220543	SCALE	2/1	WT	SH1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

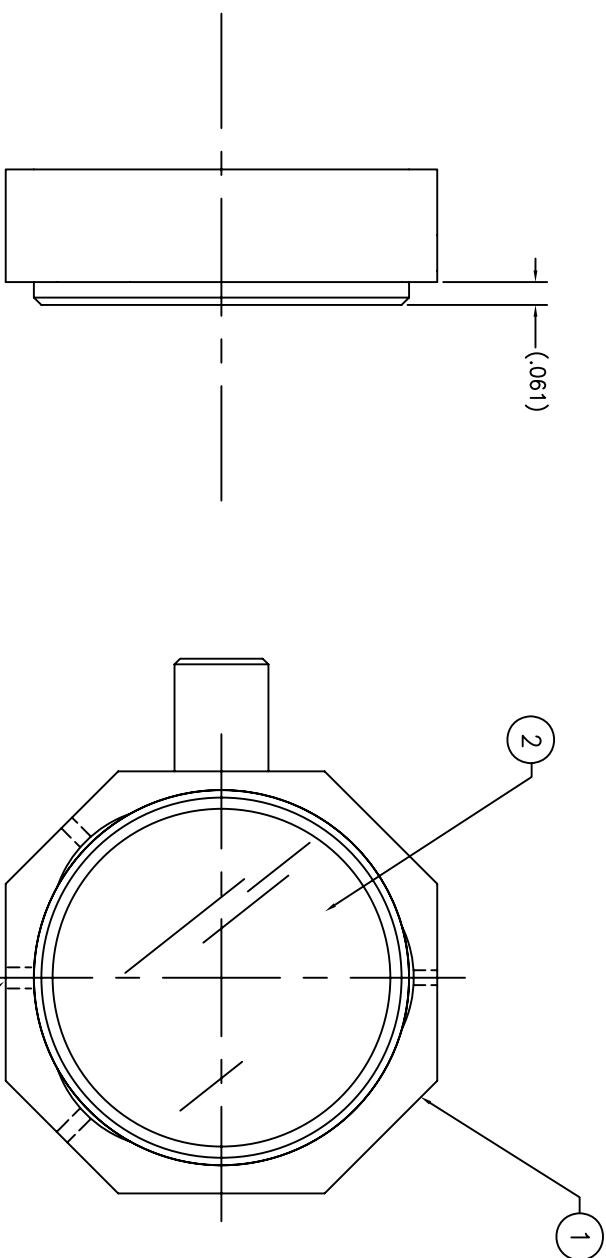
GC9220543 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



3 INJECTION HOLES

SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220546	MIRROR, FOCUSING, SPECTROMETER		
1	1	GD9220545	MOUNT, FOLD MIRROR, SPECTROMETER		
-	-	GD9220544	ASSEMBLY, FOLD MIRROR, SPECTROMETER		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX. B MAXIMOS
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: B MAXIMOS
 CHECKED: MAXIMOS
 APPROVED: APPROVED

APPROVED-STRESS: APPROVED
 APPROVED-ENGINEER: APPROVED

GD 9220544
 SCALE: 1/1
 WT: SH1 OF 1

GD9220544
 ASSEMBLY
 FOLD MIRROR 1 INCH
 SVIP SPECTROMETER CHANNEL

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: 2

A B C D

A C D

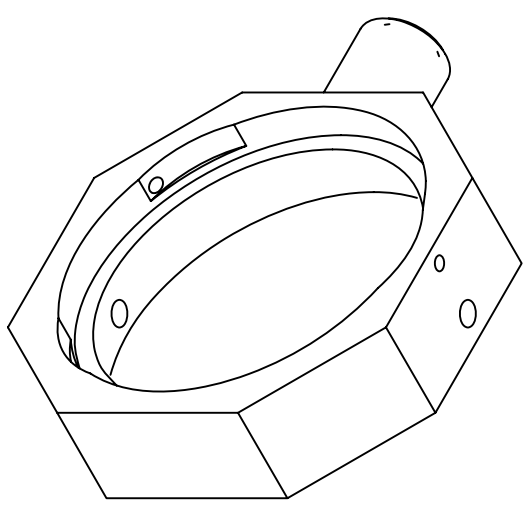
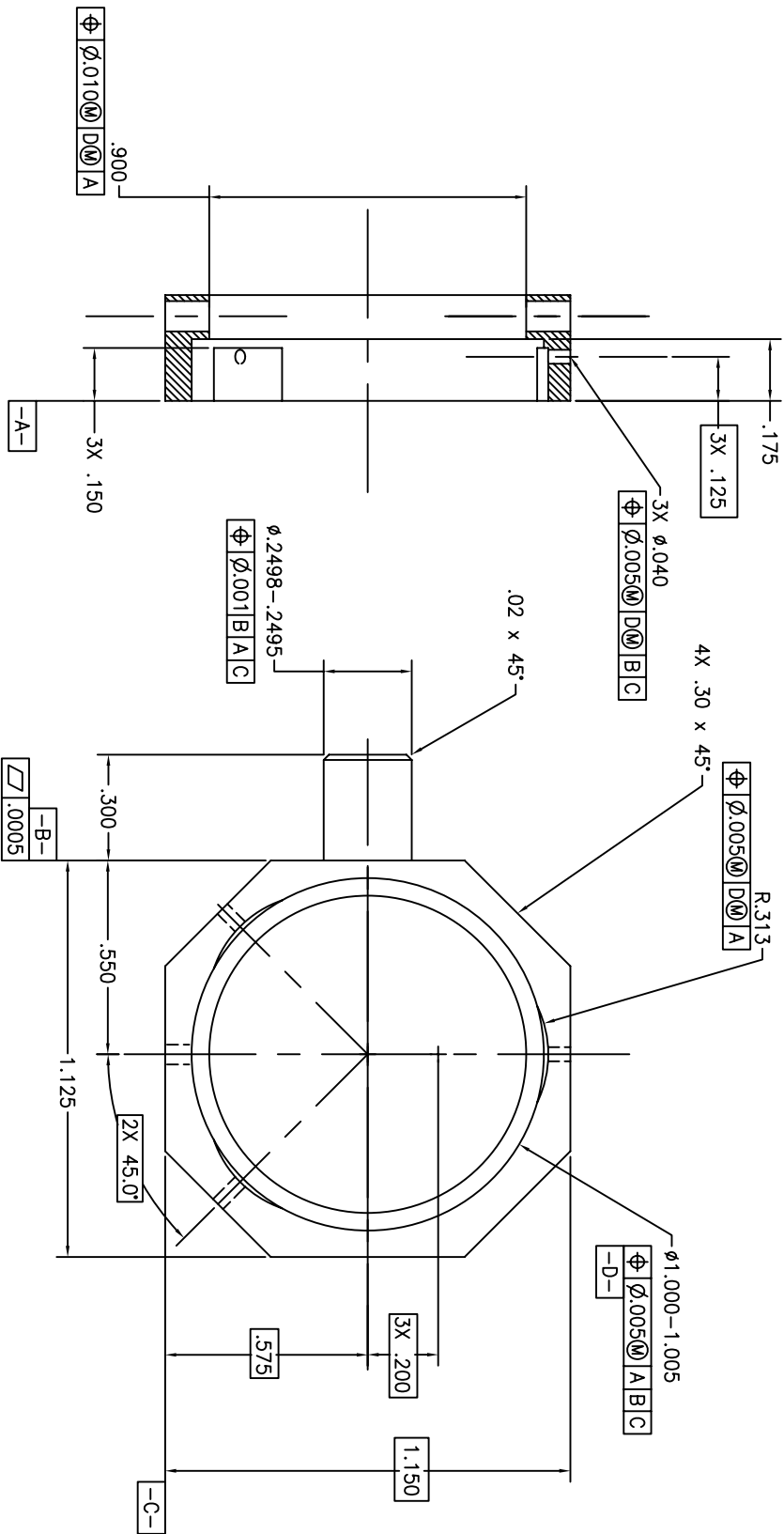
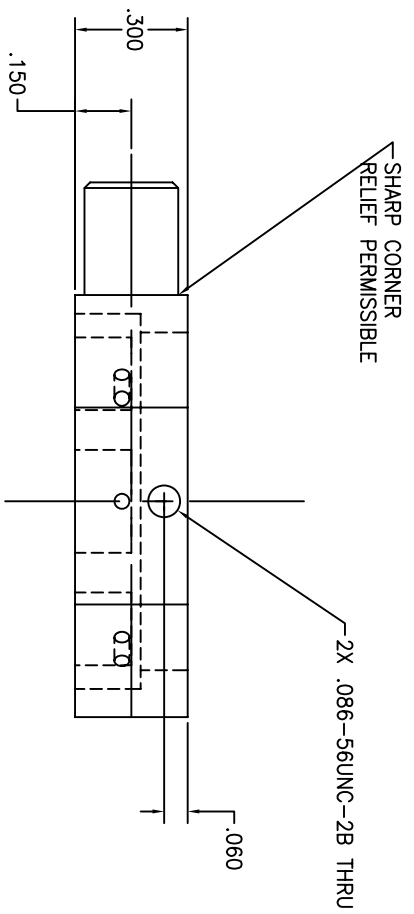
4 3 2 1

4 3 2 1

GD9220544 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REV	SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	
TOLERANCES:	FRACTIONS 63
.XX .XXX	±1/16
±.01 ±.005	±1'

REMOVE ALL BURS AND SHARP EDGES R.010 OR CHAMFER MAX.	
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D	DESIGNER B. MAMAKOS
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	DRAWN MAMAKOS
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ☐	APPROVED
<input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D	APPROVED
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-STRESS
	APPROVED-ENGINEER

THIS DRAWING WAS PRODUCED USING	
SOFTWARE: AutoCAD	VERSION: 2000i
FILE NAME:	

GD	9220545	SCALE 1/1	WT	SH1 OF 1
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A

B

C

D

A

1

C

D

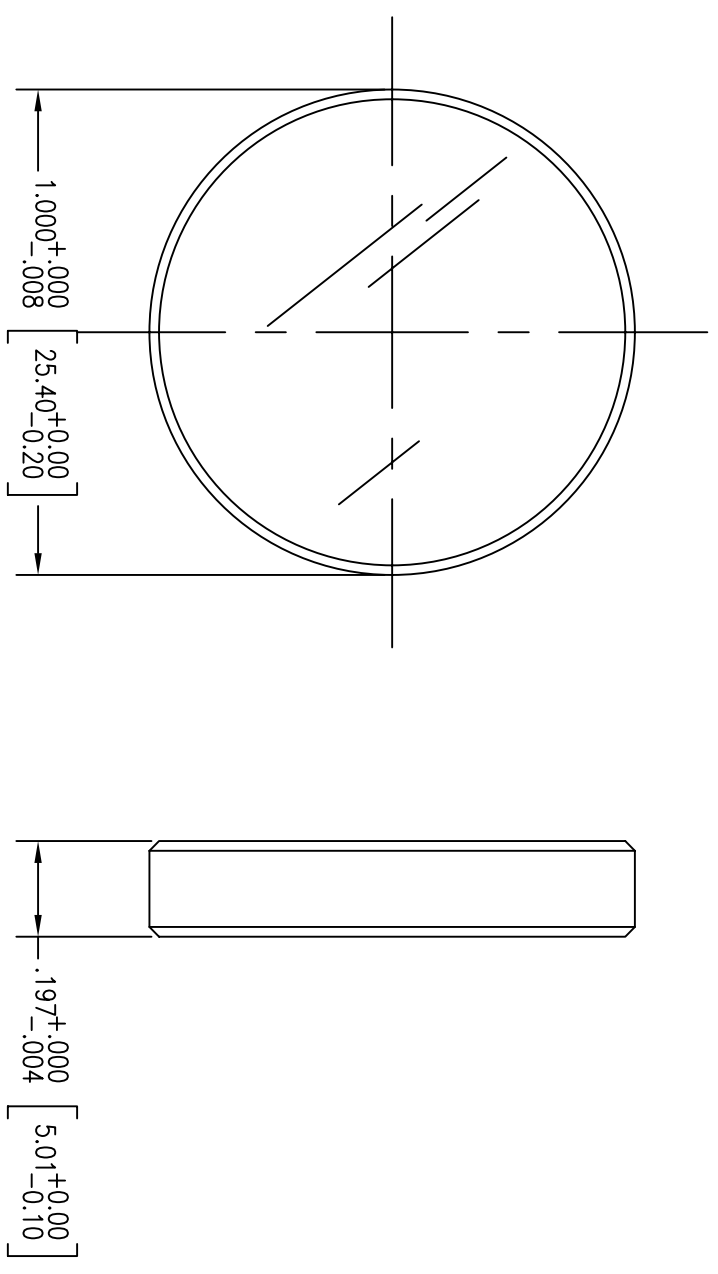
GD9220545

9236

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. COATING: ALUMINUM OVERCOAT WITH MgF2
3. FLATNESS: $\lambda/10$
4. SURFACE QUALITY: SCRATCH AND DIG 40-20 OVER CLEAR APERTURE PER MIL-0-13830.
5. PARALLELISM: < 3 ARCMIN
6. ALL DIMENSIONS ARE REFERENCE ONLY
7. SOURCE OF SUPPLY:
OPTO-SIGMA
2001 DEERE DRIVE
SANTA ANA, CA 92705
949-851-5881
PRODUCT NUMBER: 033-0660

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



SOURCE CONTROL DRAWING

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES							
TOLERANCES: .XXX $\frac{\quad}{\quad}$ FRACTIONS 125 $\frac{\quad}{\quad}$							
$\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$							
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.							
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			DESIGNER	NAME	INIT	DATE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED			DRAWN	MAMAKOS		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			CHECKED			
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot			APPROVED			
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			APPROVED			
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE _____			APPROVED-STRESS			
				APPROVED-ENGINEER			
				USED ON	SVIP		
				NEXT ASSY			
				TITLE			
				MIRROR, FLAT			
				FOLD 2			
				SVIP			
				DRAWING INTERPRETED PER GSFC-X673-64-1			
				NATIONAL AERONAUTICS AND SPACE ADMINISTRATION			
				Goddard Space Flight Center GREENBELT, MARYLAND			
				CODE			
				GC 9220546			
				SCALE 4/1			
				WT			
				SH1 OF 1			

GC9220546 1

FOLD LINE

4

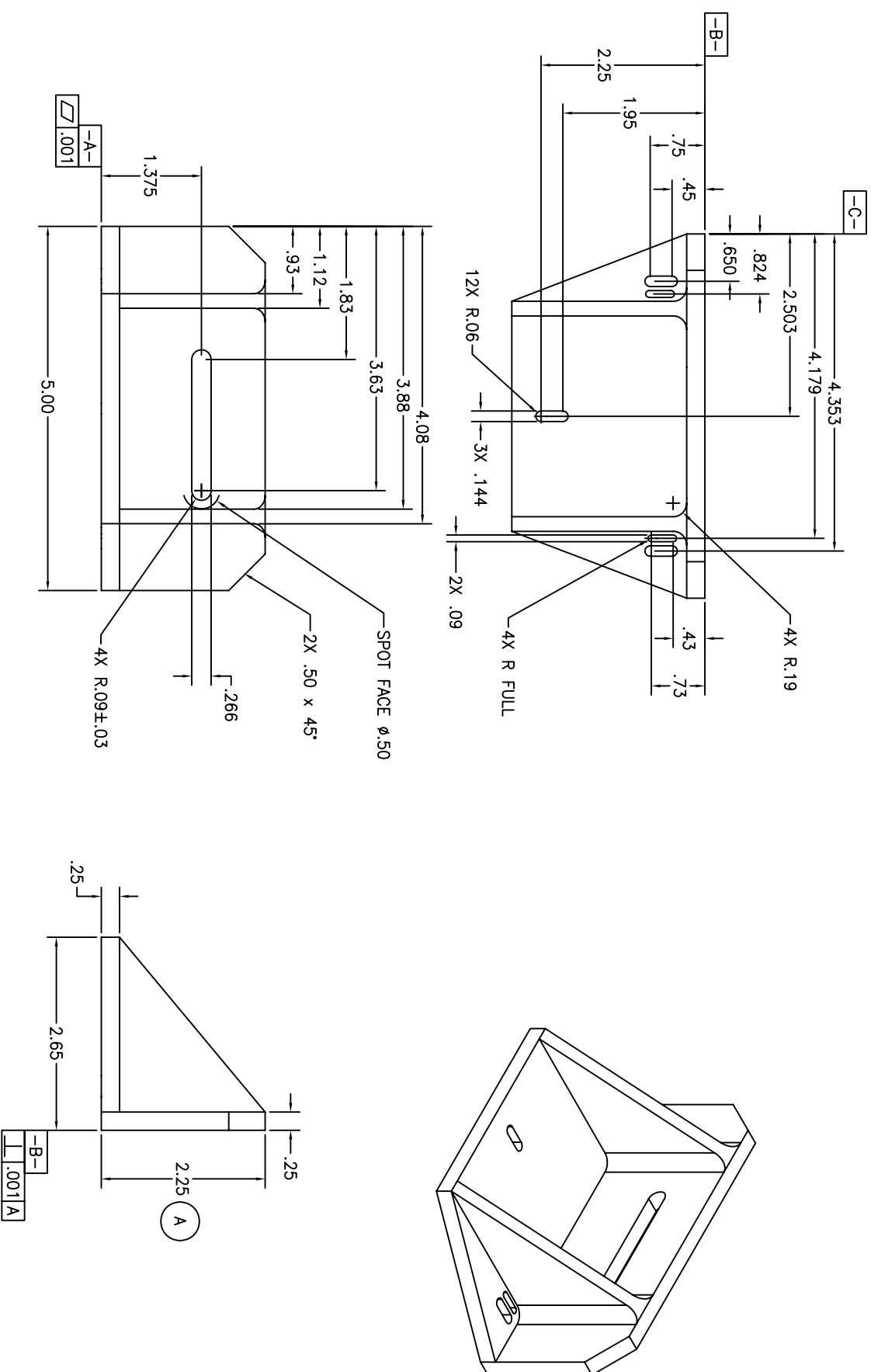
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F (+0°/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED 2.25 DIM		

GD9220548

A

23

C

D

A

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX FRACTIONS 63/100 ±.01 ±.005 ±.1' ±1/16		

NAME	INT	DATE	TITLE
DESIGNER: MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
DRAWN: MAMAKOS			MOUNT
CHECKED:			SPECTROMETER CAMERA
APPROVED:			SVIP AFT OPTICS

REMOVED ALL BURS AND SHARP EDGES R. 010 OR CHAMFER MAX.	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	HARDNESS TEST NOT REQUIRED	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL ON FIELD OF DRAWING THIS ☐	NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D	NOE REQUIRED PER S-313-009 CODE
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

APPROVED-STRESS	APPROVED-ENGINEER	CODE	SCALE	WT	SH	OF
		GD	9220548	1/1		1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

REV	DESCRIPTION
24	NEXT ASSY

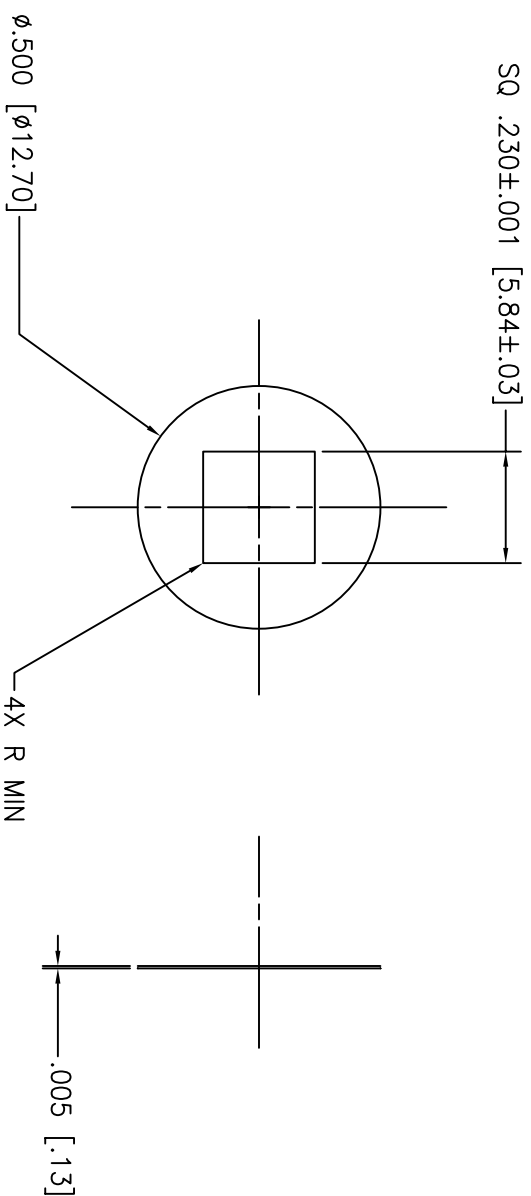
4

3

2

1

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: CRES 300 SERIES
 - 2 ALL DIMENSIONS APPLY AFTER FINISH



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

FOLD LINE

A

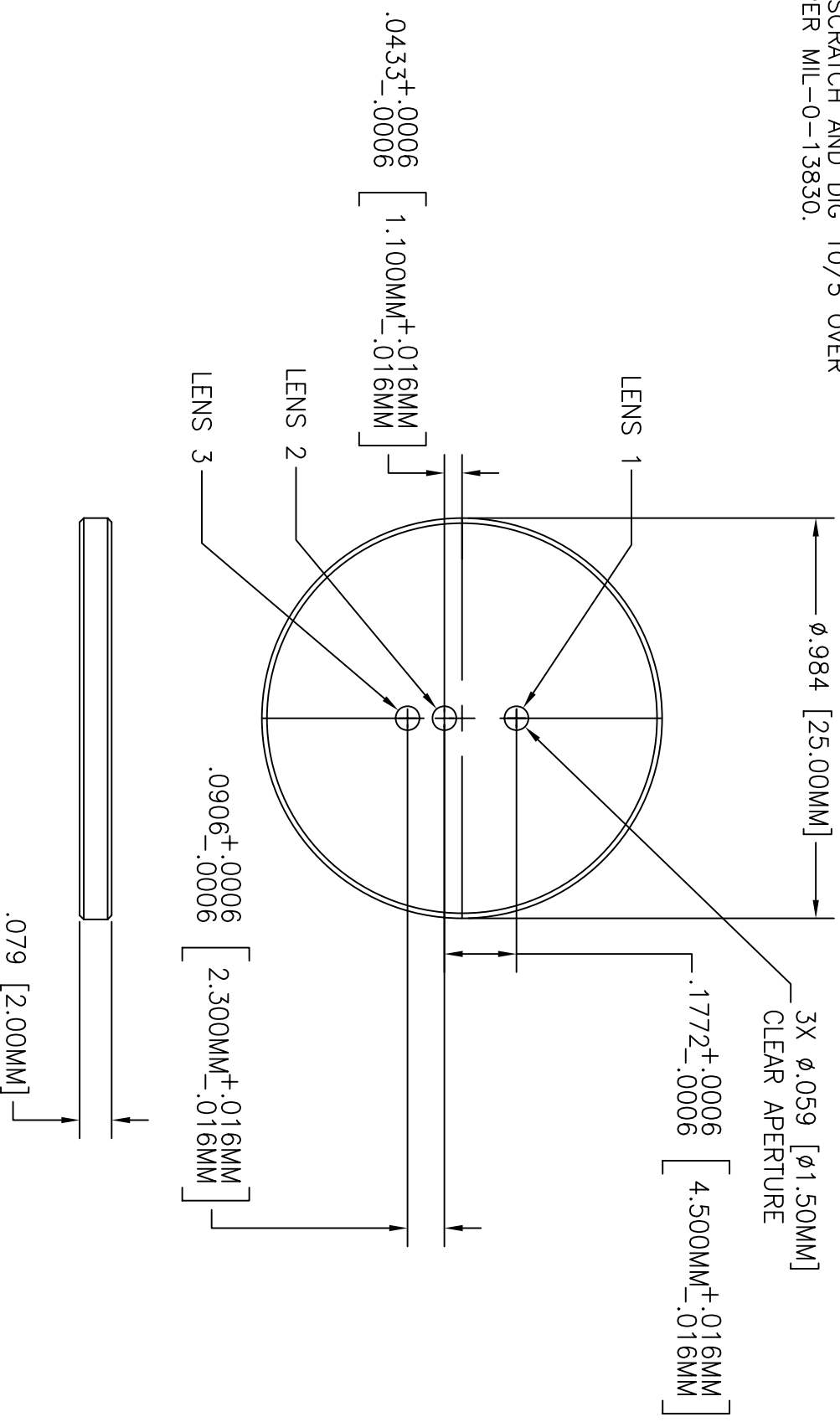
GC9220557

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .XXX .XXX .XXX FRACTIONS 63						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			DESIGNER NAME	INIT	DATE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED			DRAWN MAMAKOS		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			CHECKED		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉			APPROVED		
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			APPROVED		
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE _____			APPROVED-STRESS		
				APPROVED-ENGINEER		
	NEXT ASSY		USED ON			
			SVP			
				TITLE		
				MASK		
				FIELD LENS		
				TIP-TILT CHANNEL		
				DRAWING INTERPRETED PER GSFC-X673-64-1		
				NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
				Goddard Space Flight Center GREENBELT, MARYLAND		
				CODE GC		
				SCALE 4/1		
				WT		
				SH1 OF 1		

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: BK7
2. COATING: AR COATING [400nm to 700nm]
3. FOCAL LENGTH 38.5 MM ±2%
4. CLEAR APERTURE; 1.5MM PER LENS
5. SURFACE QUALITY: SCRATCH AND DIG 10/5 OVER CLEAR APERTURE PER MIL-0-13830.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
-		RELEASE FOR MANUFACTURING		

ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XXX	✓	FRACTIONS	63		
±.01	±.005	±1'	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉				
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D				
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE				
DESIGNER	NAME	INIT	DATE	TITLE	
	MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1	
CHECKED				LENS ARRAY	
APPROVED				TIP-TILT CHANNEL	
APPROVED					
APPROVED-STRESS					
APPROVED-ENGINEER					

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

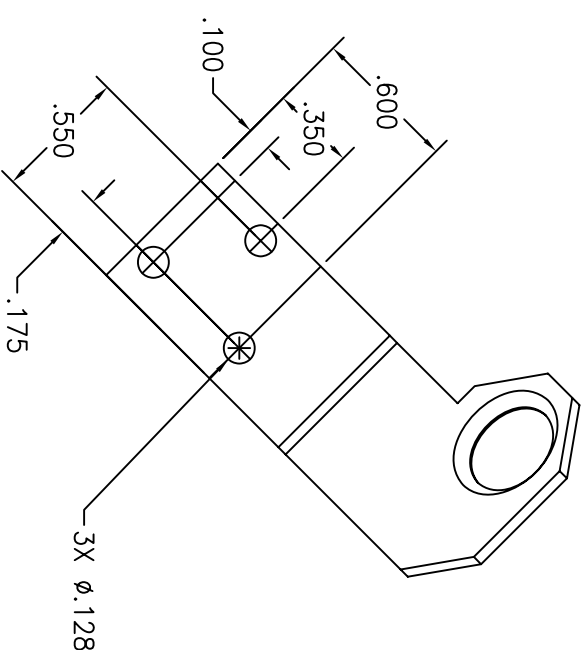
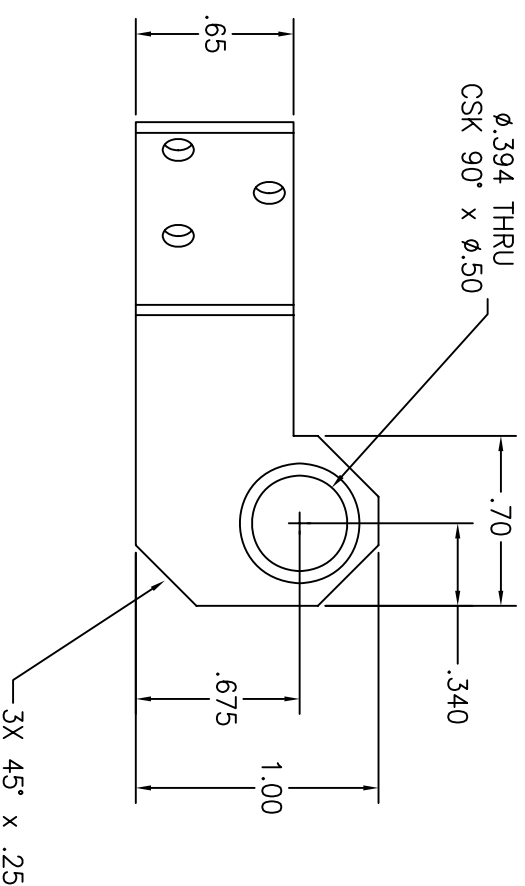
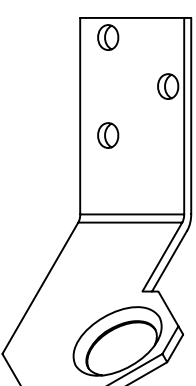
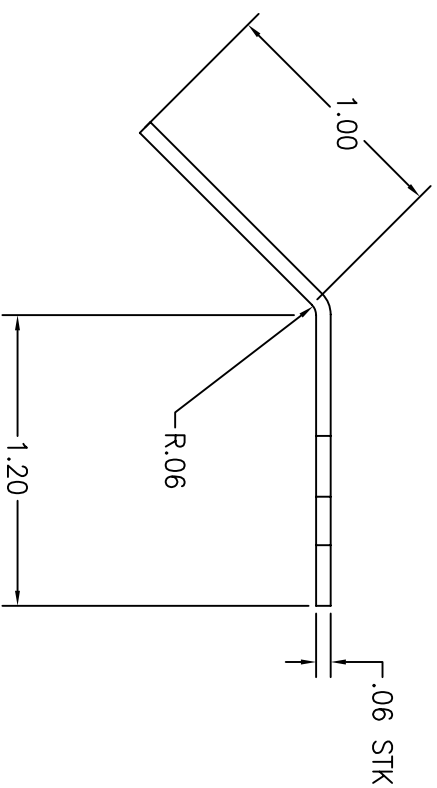
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Goddard Space Flight Center GREENBELT, MARYLAND				
CODE	GC	SCALE	4/1	WT	SH1 OF 1
GC	9220562				

GC9220562 1 FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 5052-H32
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2, DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES							
TOLERANCES:							
.XXX	XXX	✓	FRACTIONS	63	✓		
±.01	±.005	±1'	±1/16				
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.							
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D					DESIGNER	NAME
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED					DRAWN	DATE
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					CHECKED	
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ					APPROVED	
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D					APPROVED	
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE					APPROVED-STRESS	
				APPROVED-ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
Goddard Space Flight Center GREENBELT, MARYLAND						
DRAWING INTERPRETED PER GSFC-X673-64-1						
TITLE						
APERTURE						
TIPTILT STOP, CHANNEL 2&3						
SVIP						

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC	9220566	SCALE 1/2	WT	SH1	OF 1	REV
CODE 544						—
NEXT ASSY	USED ON	SVIP				

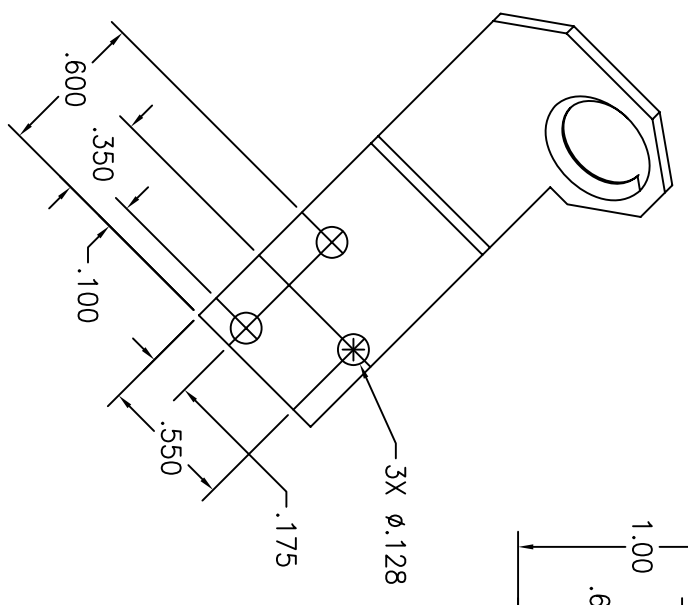
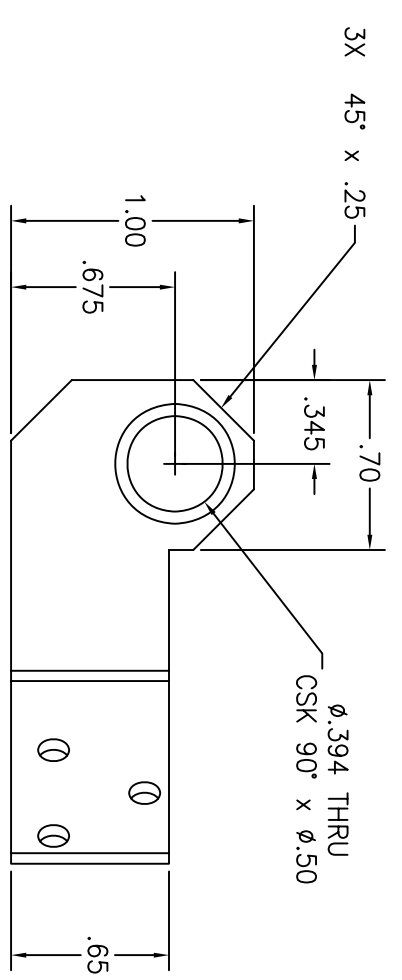
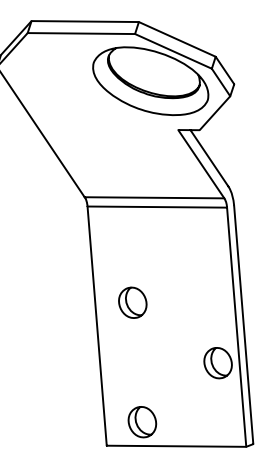
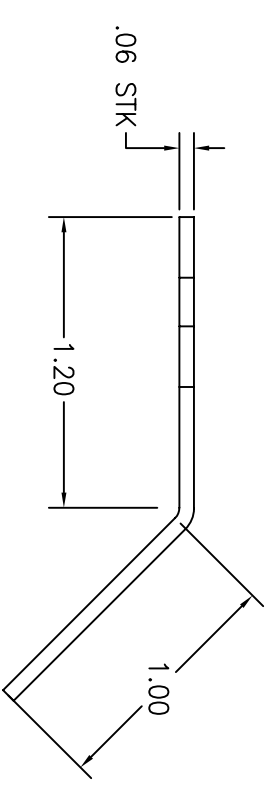
GC9220566 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 5052-H32
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2, DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 APERTURE TIPTILT STOP, CHANNEL 1 SVIP
CHECKED			
APPROVED			
APPROVED			

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.	
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	
TOLERANCES:	
.XXX	FRACTIONS
±.01	±1'
±.005	±1/16
63	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

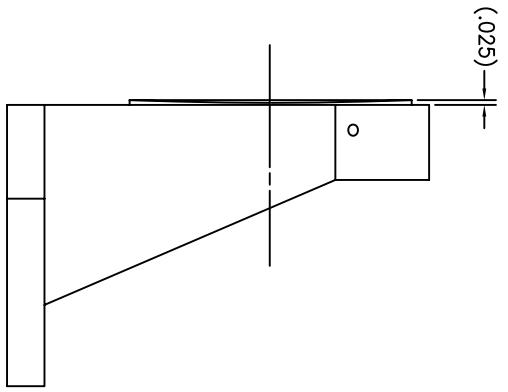
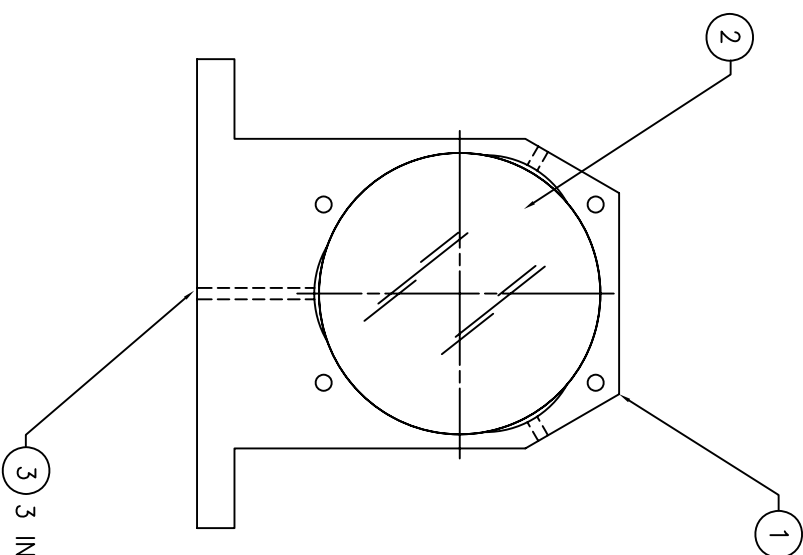
GC9220567 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY	SCOTCHWELD	SEE NOTE 1
2	1	GD9220572	COLLIMATOR MIRROR DFS12		
1	1	GD9220571	MOUNT, COLLIMATOR		
-	-	GD9220570	ASSEMBLY, COLLIMATOR DFS12		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx $\frac{1}{16}$ FRACTIONS $\frac{.03}{16}$
 $\pm .01$ $\pm .005$ $\pm .1$ $\pm 1/16$

REMOVE ALL BURS AND SHARP EDGES R. .010 OR CHAMFER MAX.
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: B. MAMAKOS
 DRAWN: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS

APPROVED-STRESS: APPROVED
 APPROVED-ENGINEER: APPROVED

GD 9220570
 SCALE: 1/1 WT
 SH1 OF 1

GD9220570
 1
 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

A B C D 4

A C D 1

4

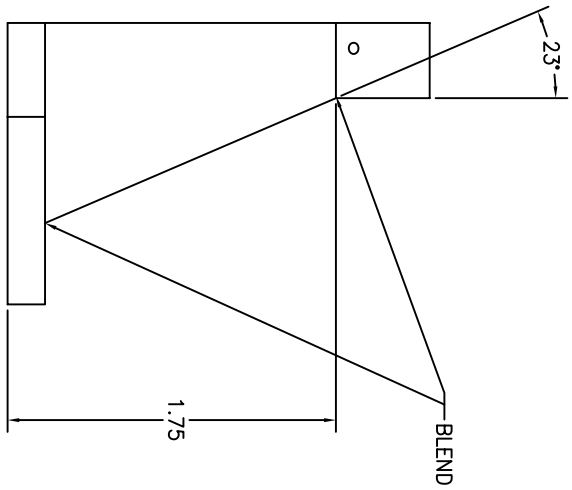
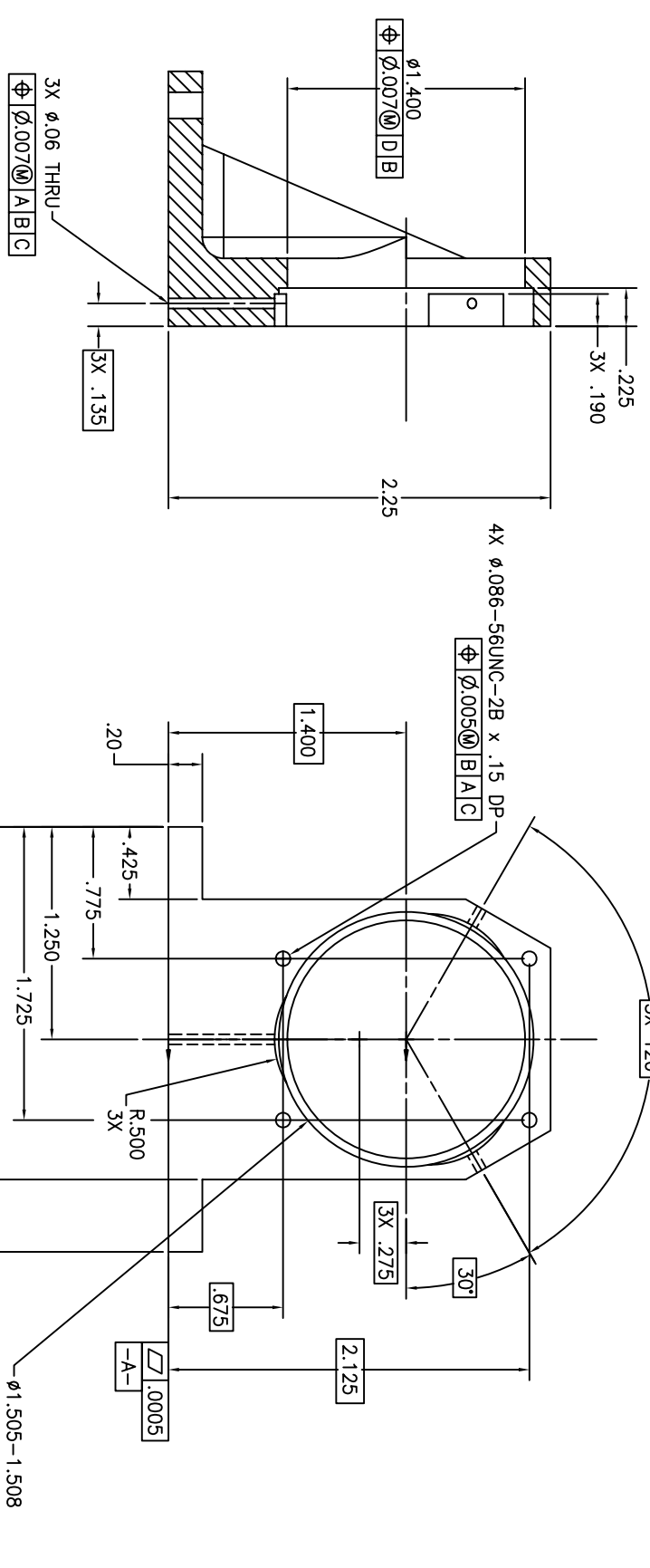
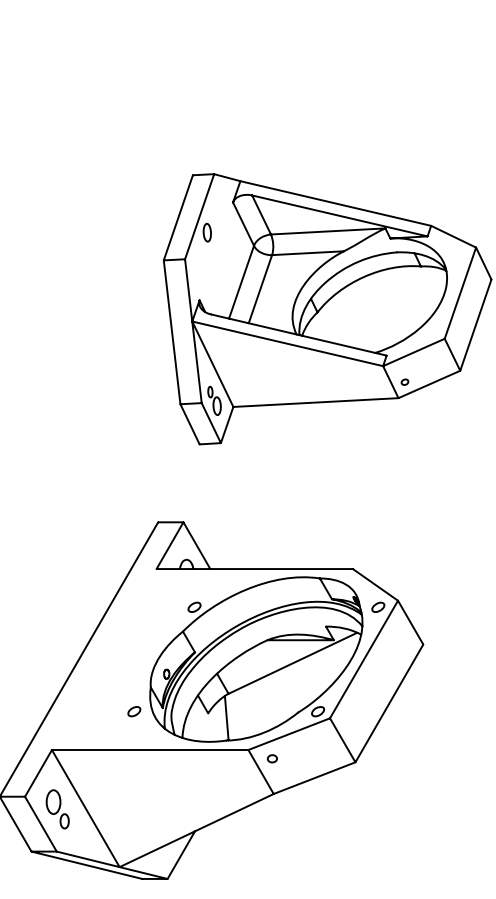
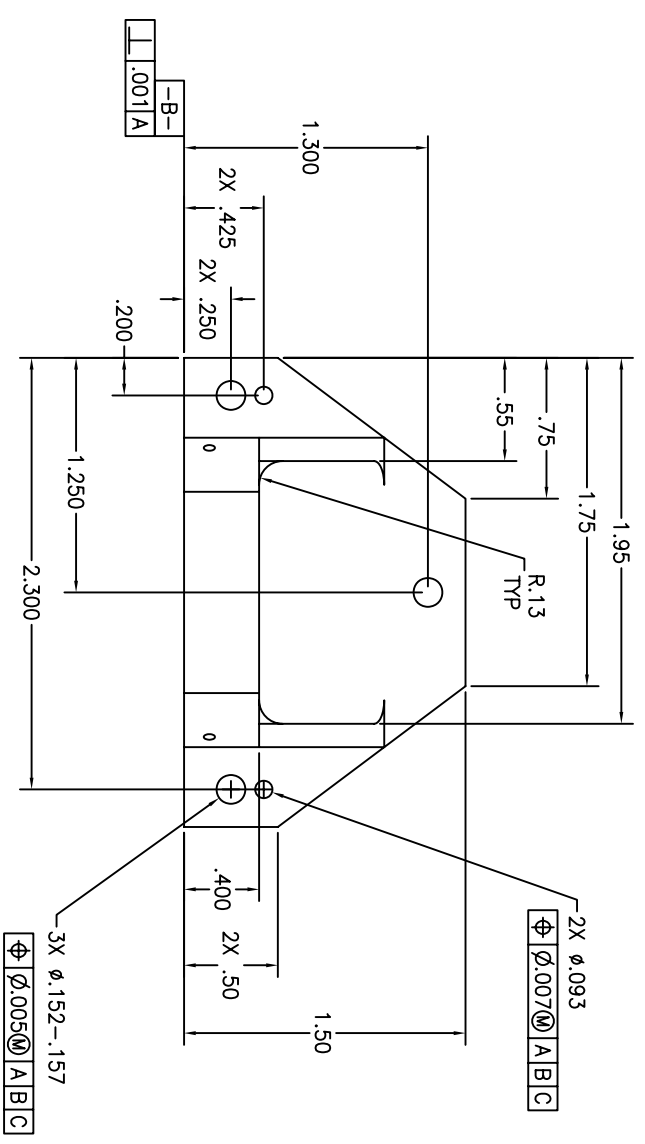
3

2

1

REV	SYMBOL	ZONE	DESCRIPTION	DATE	APPROVAL

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F (+0°/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
 - 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
 - 4 ALL DIMENSIONS APPLY AFTER FINISH
 - 5 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R.010 OR CHAMFER IAW
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ○
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	DATE	TITLE

GD 9220571
 SCALE: 1/1 WT
 SH1 OF 1

A

B

C

D

4

3

2

1

GD9220571

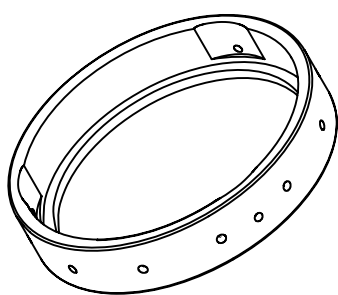
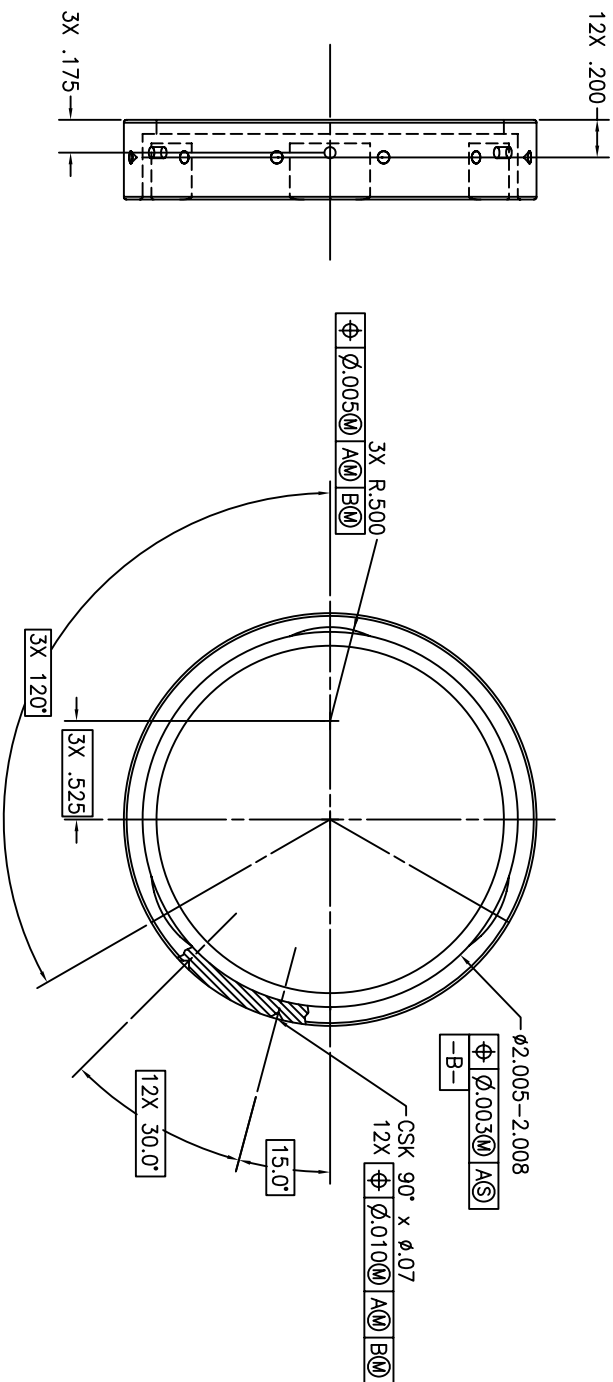
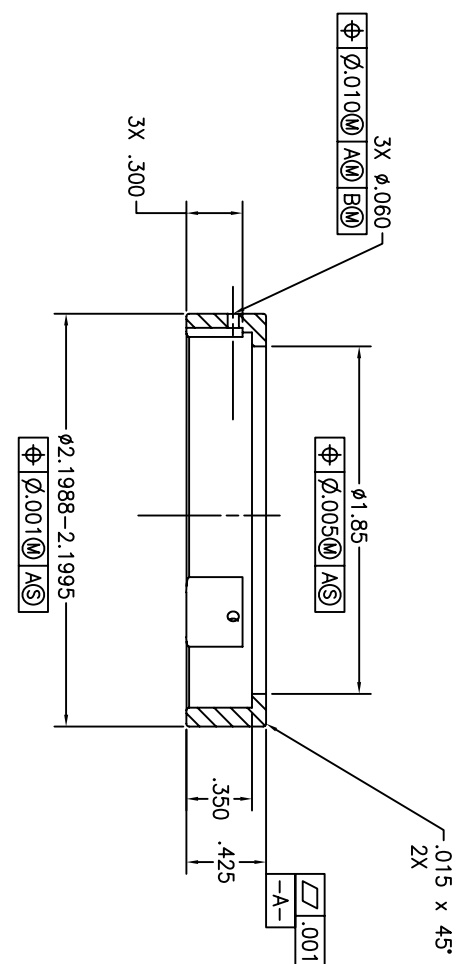
23

C

D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16		
			REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D HARDNESS TEST NOT REQUIRED TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS O NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D NOE REQUIRED PER S-313-009 CODE		
			DESIGNER: MAMAKOS DRAWN: MAMAKOS CHECKED: MAMAKOS APPROVED: MAMAKOS		
			APPROVED-STRESS: MAMAKOS APPROVED-ENGINEER: MAMAKOS		
			TITLE: CELL, GRATING DFS SENSOR		
			GD 9220578		
			SCALE: 2/1		
			WT		
			SHT OF 1		

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

4

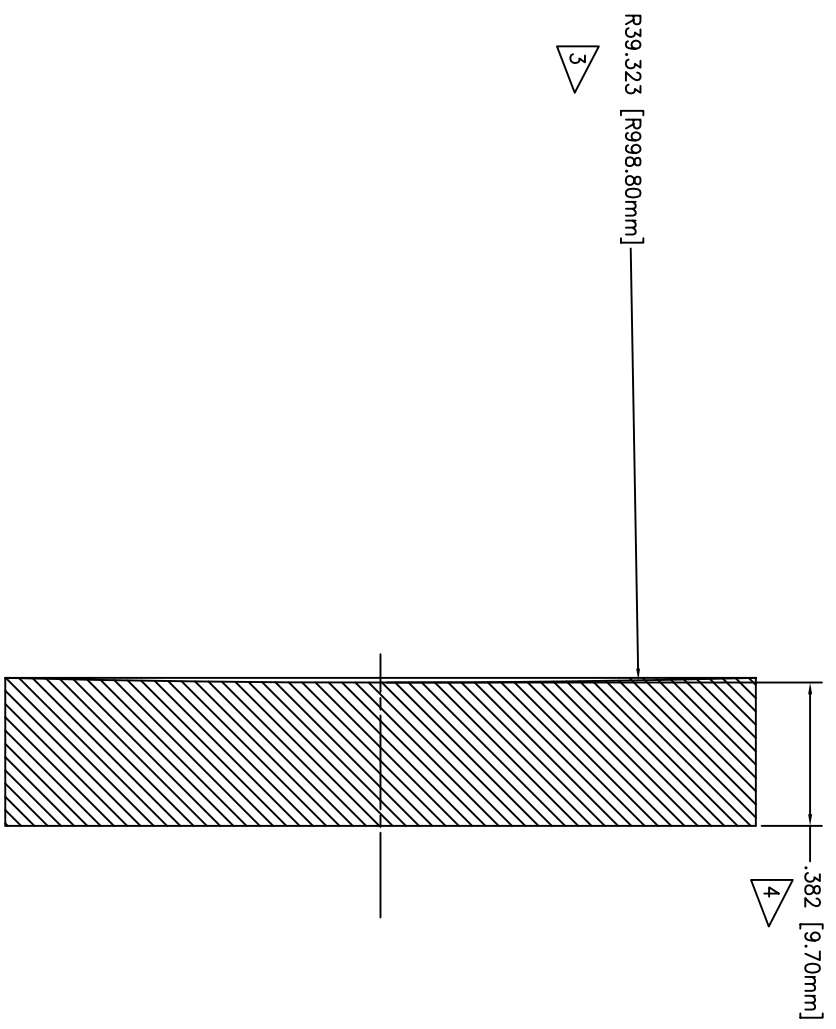
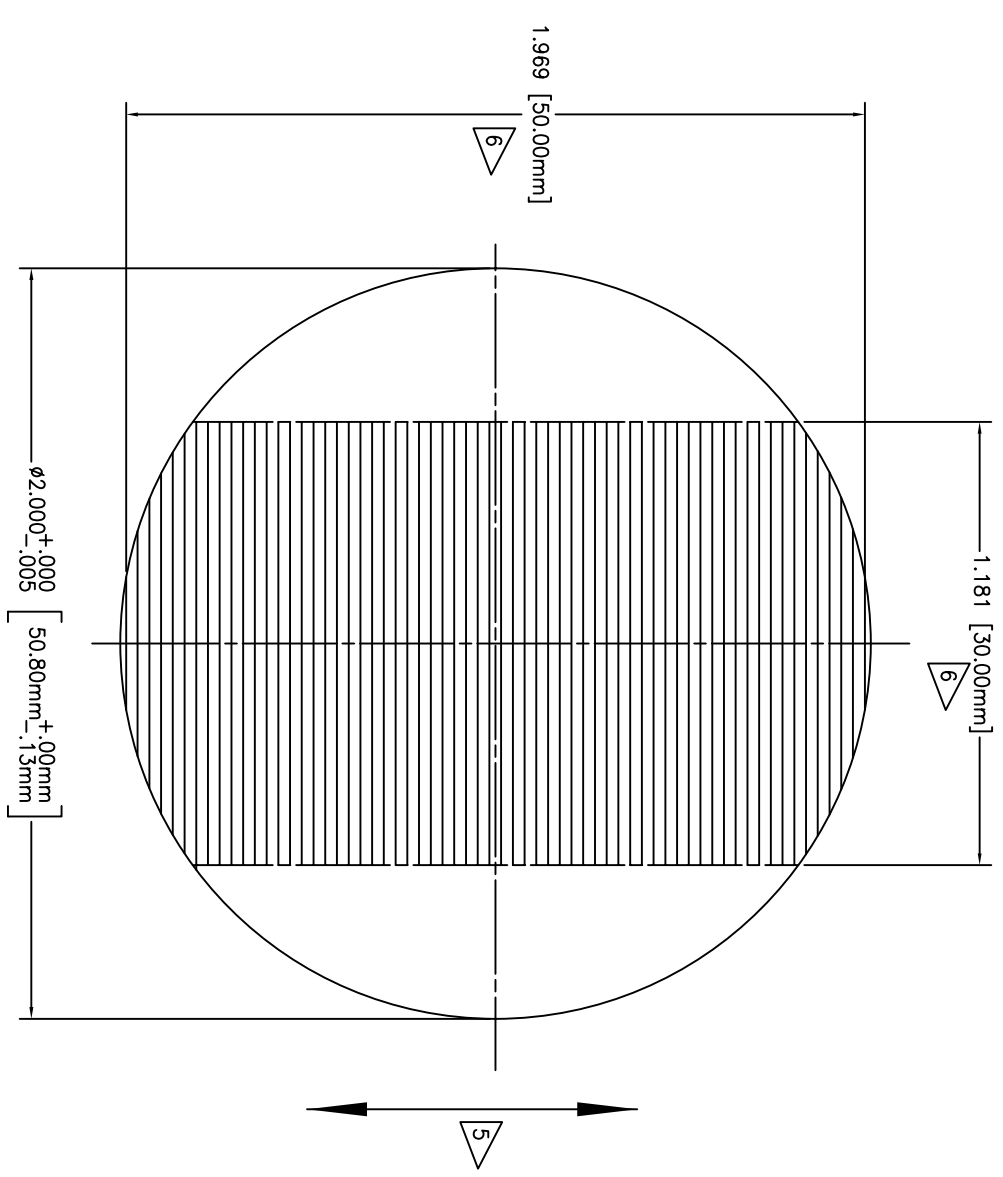
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: FUSED SILICA
- 2 FOCAL LENGTH: 499.4mm
- 3 RADIUS OF CURVATURE: 998.8 mm
- 4 CENTER THICKNESS: 9.80 mm
- 5 GROOVE DENSITY: 133.6 g/mm
- 6 GRATING MASK AREA: 30mm x 59mm
- 7 COATING: ALUMINUM



REV	DATE	DESCRIPTION	ZONE	SYM

GD9220579

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .xx .xxx .xxx FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16		
REMO: ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX. <input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED <input type="checkbox"/> ON FIELD OF DRAWING THIS ☐ <input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER	NAME	INT	DATE	APPROVED	TITLE
MMANAKOS	MMANAKOS				GRATING DFS12 CHANNEL SVIP
CHECKED					
APPROVED					
APPROVED-STRESS					
APPROVED-ENGINEER					
CODE	SCALE	WT	SHT OF		
GD	9220579		1		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

4

3

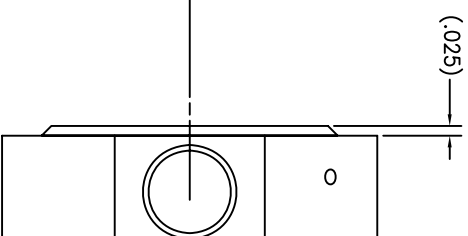
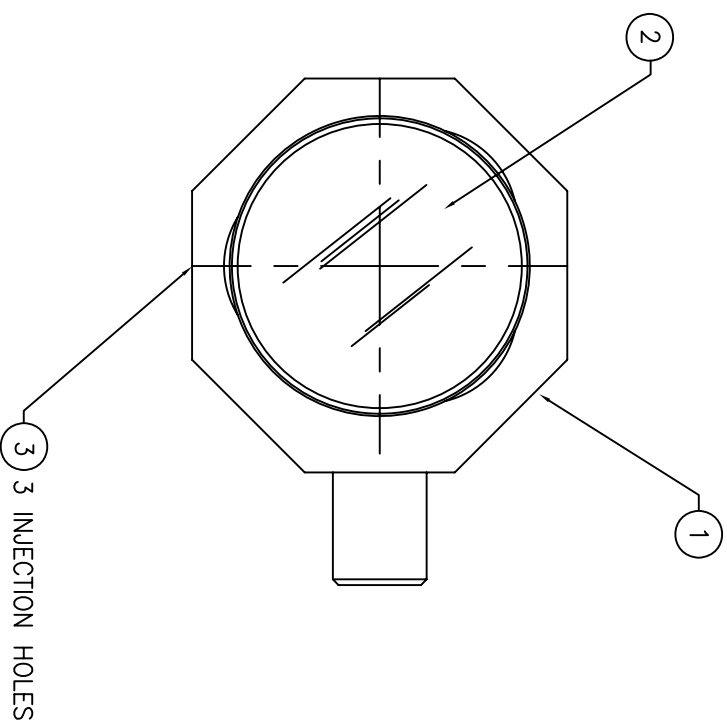
2

1

GD9220579

NOTES: UNLESS OTHERWISE SPECIFIED

1 SOURCE OF SUPPLY:
 A. 3M ADHESIVES, COATINGS AND SEALERS DIVISION
 ST. PAUL, MN 55144
 612-733-1110



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220580

1

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
7	AR	2216GRAY	EPOXY, GRAY		
2	1	GD9220486	MIRROR, FOLD		SEE NOTE 1
1	1	GD9220470	MOUNT, CELL		
-	-	GD9220580	ASSEMBLY, FOLD MIRROR		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .xx .xxx .1' .1/16' .03'
 ±.01 ±.005 ±.1' ±1/16'

REMOVE ALL BURRS AND SHARP EDGES R. 010 OR CHAMFER MAX. B. MAXIMOS
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: B. MAXIMOS
 DRAWN: MAXIMOS
 CHECKED: APPROVED
 APPROVED: APPROVED

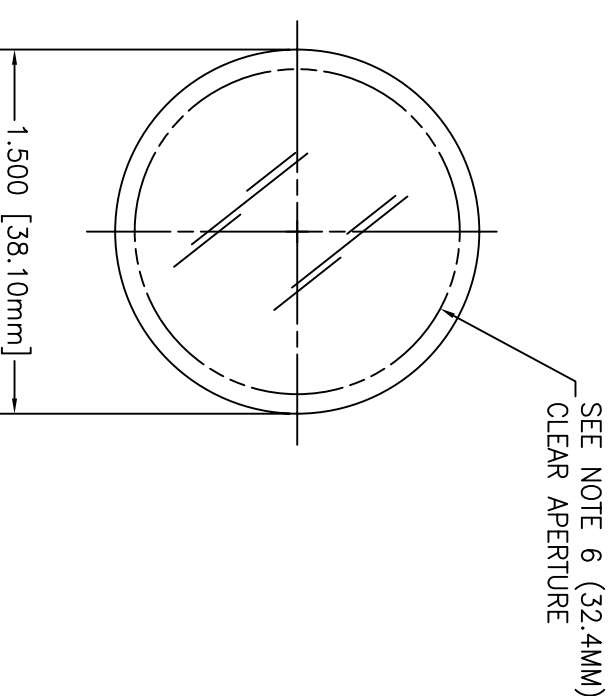
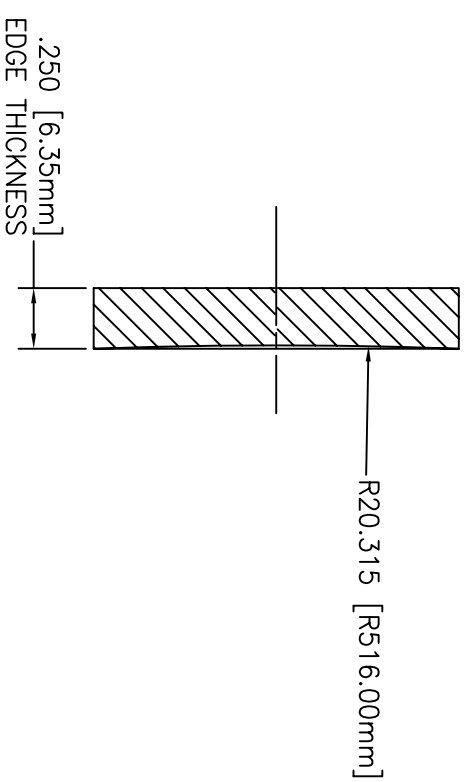
APPROVED-STRESS: APPROVED-ENGINEER
 USED ON: NEXT ASSY

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: GD9220580
 CODE: GD9220580 SCALE: 1/1 WT: SH1 OF 1

A B C D 4 3 2 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: BK7
- 2 RADIUS OF CURVATURE: 516.00 mm ±.5%
- 3 SURFACE FIGURE ERROR: .05 w RMS @ 632.8nm ($\lambda/20$) OVER CA
- 4 MICRO ROUGHNESS: 80A RMS
- 5 COATING: PROTECTED ALUMINUM (OPERATING WAVELENGTH 0.5-0.727 MICRONS)
- 6 CLEAR APERTURE: 85% OF OUTER DIAMETER (32.4MM)
- 7 CHAMFER: 0.50MM x 45°, ALL EDGES



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES:						
.XXX			✓	FRACTIONS	63	✓
±.01			±1'	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 COLLIMATOR DFS23 SVIP AFT OPTICS
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

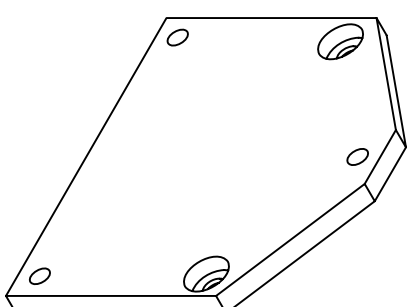
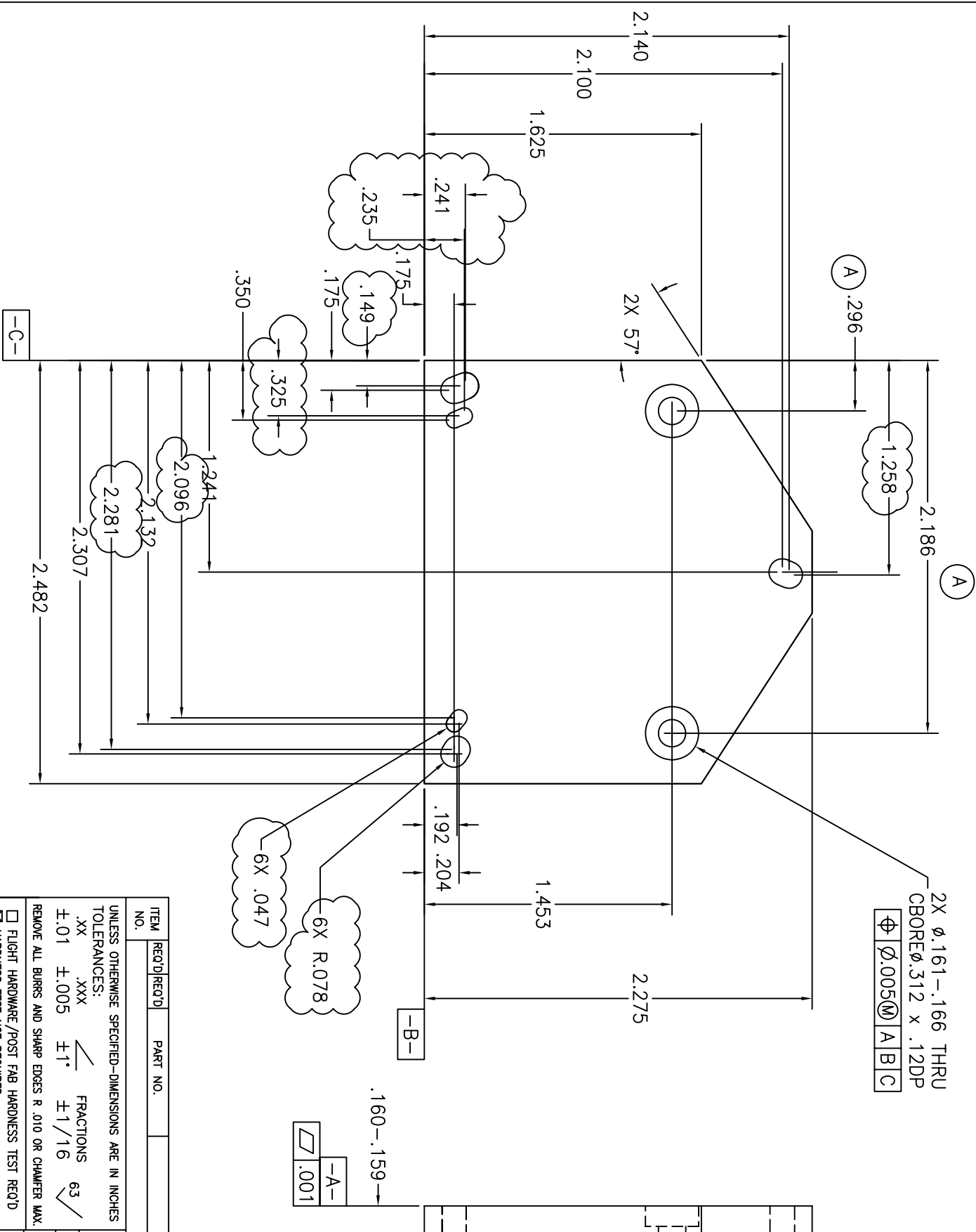
GC9220592 A

FOLD LINE

3 3 4

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

GC9220607 A

FOLD LINE

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

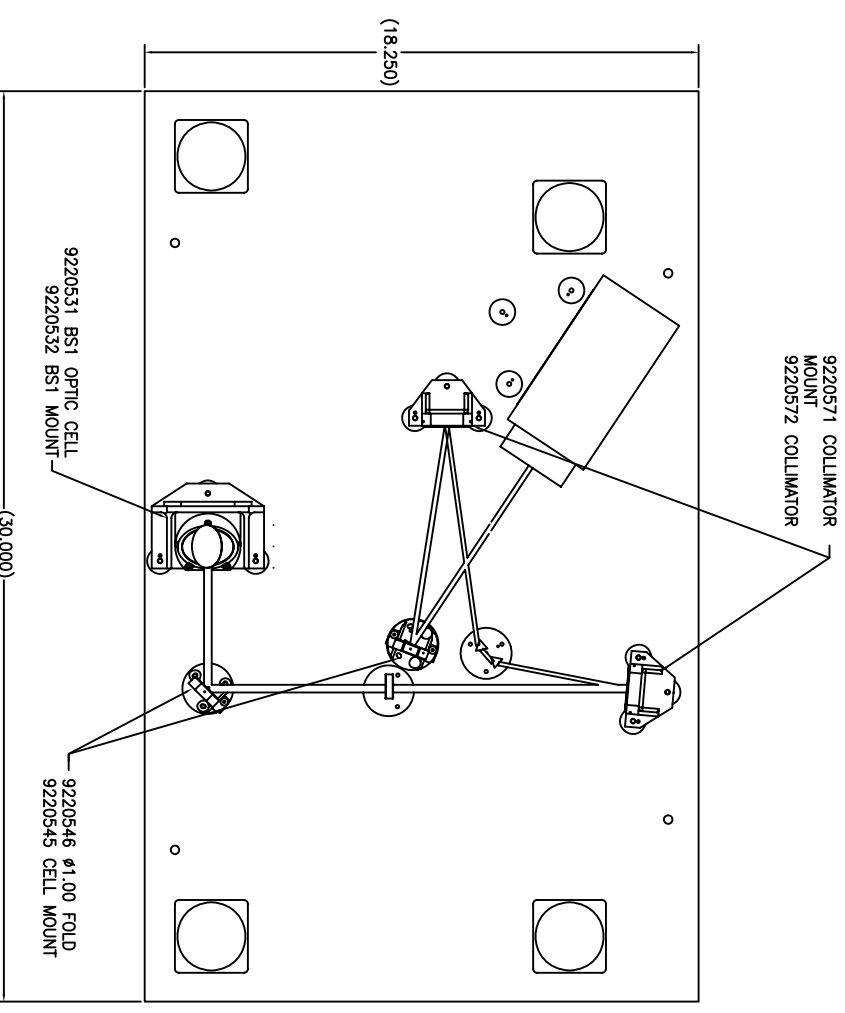
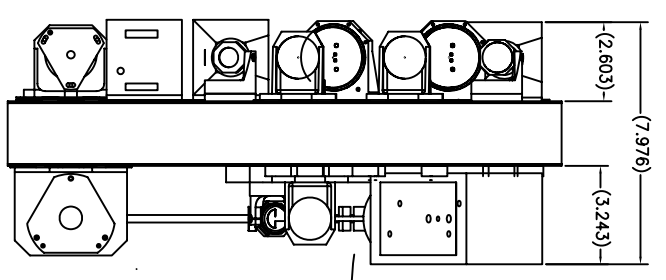
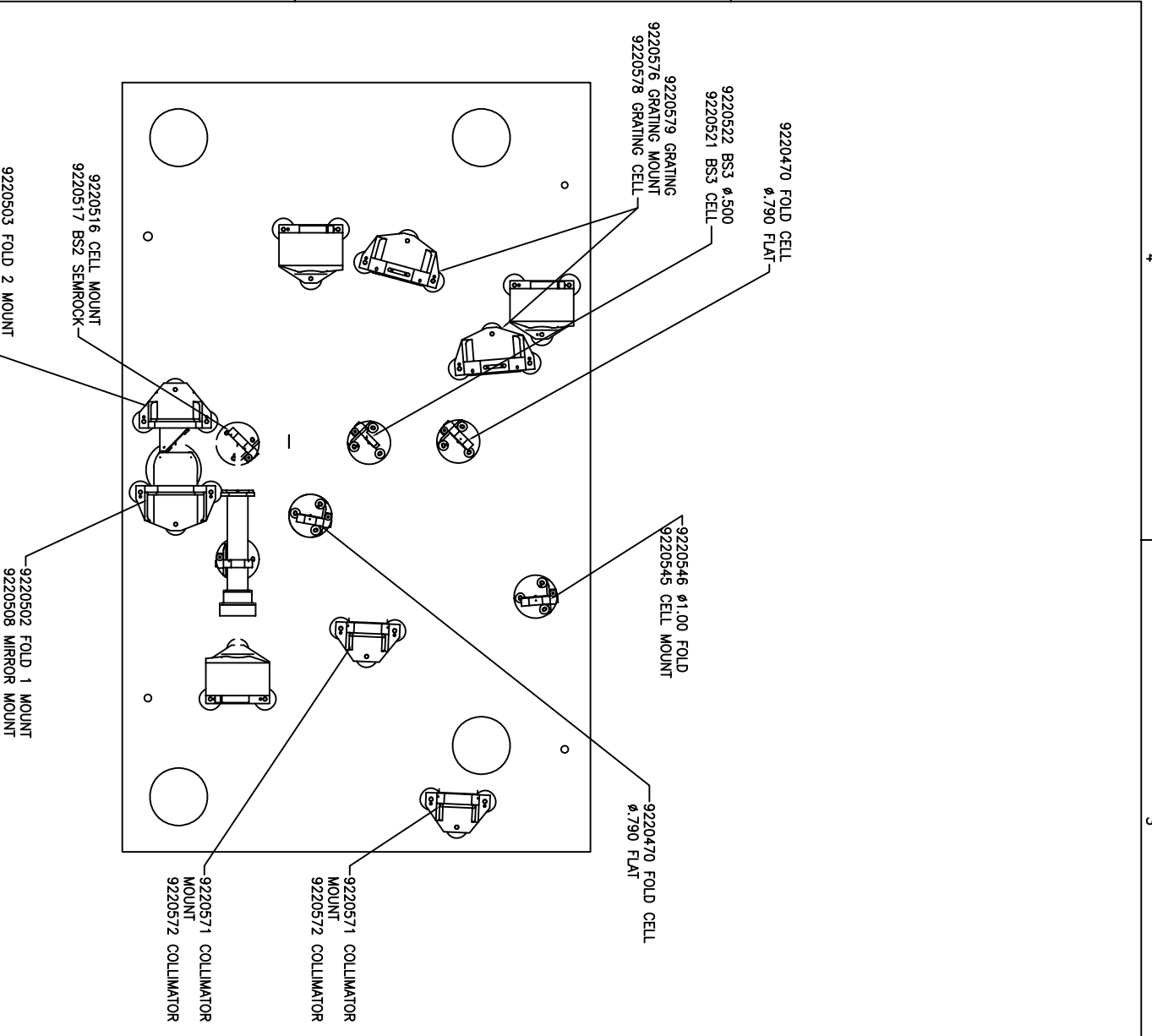
NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			PLATE, ADAPTER DFS 1-2 CAMERA SVIP AFT OPTICS
DRAWN MAMAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XXX ±.01 FRACTIONS ±1/16 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	
APPROVED	
APPROVED-STRESS	
APPROVED-ENGINEER	
CODE	GC 9220607
SCALE	2/1
WT	
SH1 OF 1	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:



PRELIMINARY RELEASE
FOR ENGINEERING
INFORMATION ONLY

REV	DESCRIPTION	PART NO.	MATERIAL	MATERIAL SPEC.
1	AFT OPTICS SUB-ASSEMBLY	9220610		

DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

REV	DESCRIPTION	PART NO.	MATERIAL	MATERIAL SPEC.
1	AFT OPTICS SUB-ASSEMBLY	9220610		

DATE	BY	CHECKED	APPROVED
08/24/72			

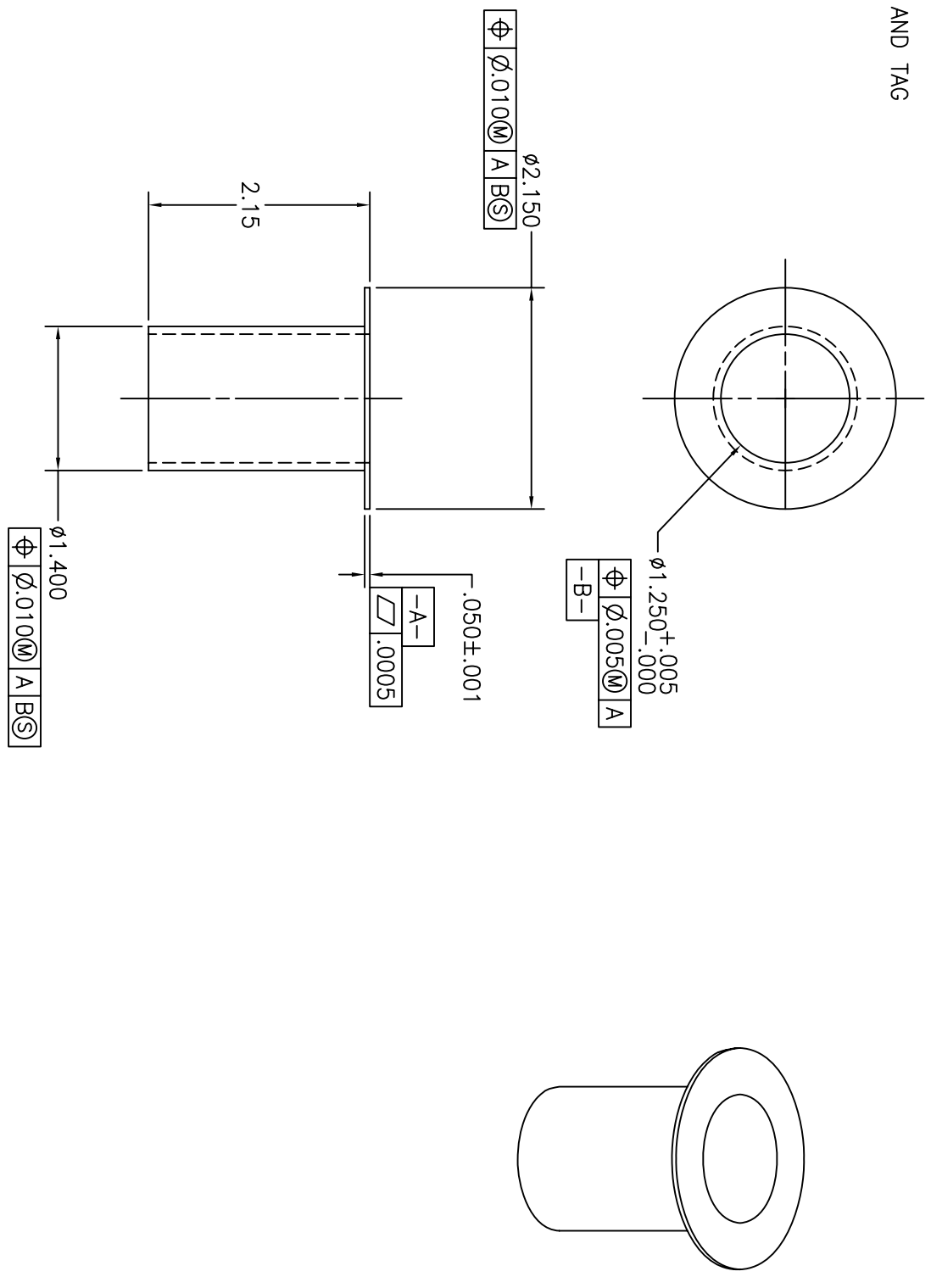
DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

DATE	BY	CHECKED	APPROVED
08/24/72			

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XXX	XXX	FRACTIONS	63		
±.01	±.005	±1°	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ				
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D				
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE				
DESIGNER	NAME	INIT	DATE	TITLE	
MAMAKOS	MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1	
CHECKED				INSERT	
APPROVED				ALIGNMENT HUB	
APPROVED				AFT OPTICS BENCH	
APPROVED-STRESS					
APPROVED-ENGINEER					

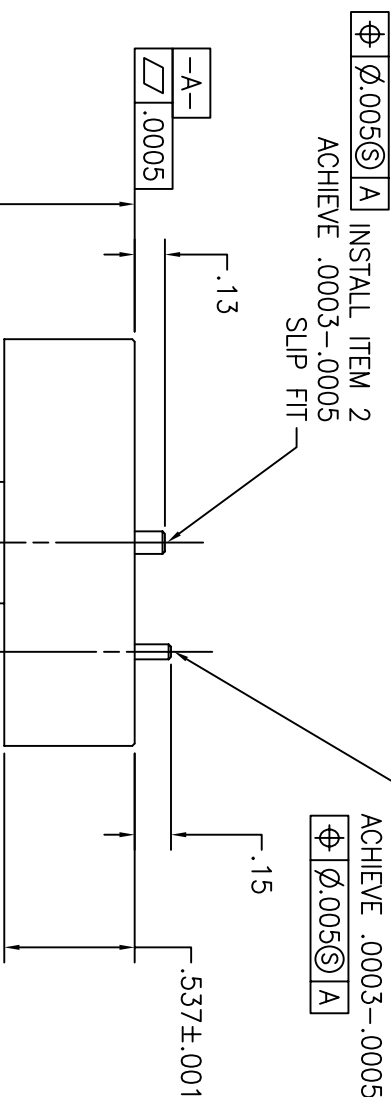
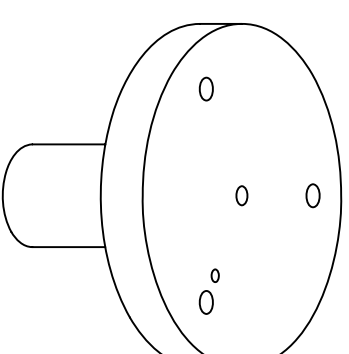
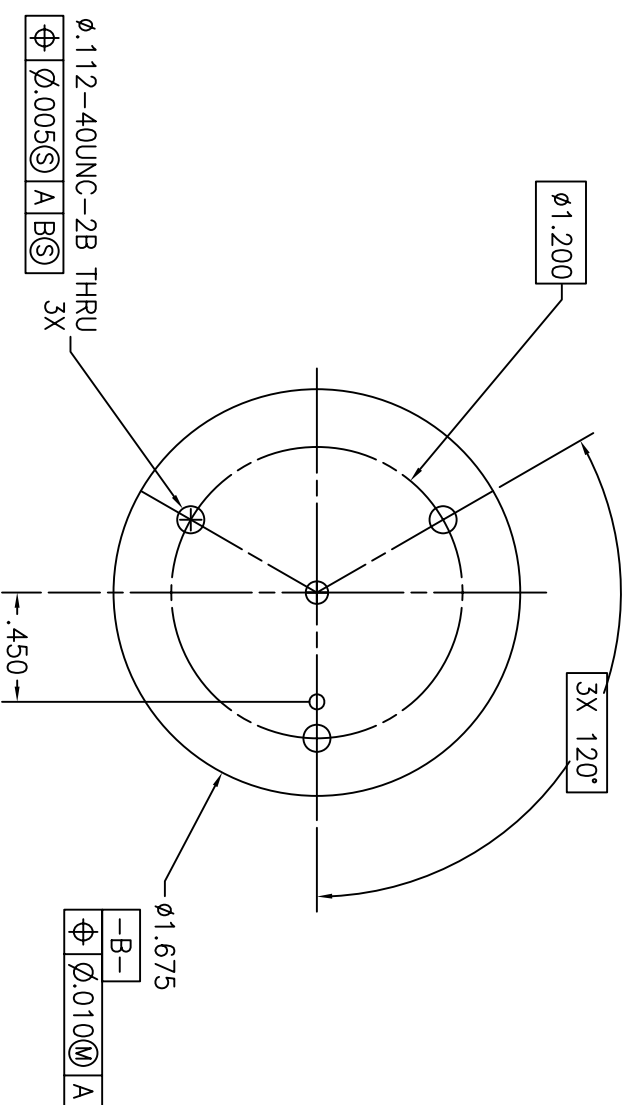
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

CODE	SCALE	WT	SH1	OF	REV
GC	9220611	1/1		1	1
NEXT ASSY	USED ON				

GC9220611 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2
ACHIEVE .0003-.0005
SLIP FIT

INSTALL ITEM 3
ACHIEVE .0003-.0005 INTERFERENCE FIT

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3			1 MS16555--603	PIN,DOWEL 0.0625 x .312 LG	GRES	
2			1 MS16555-617	PIN, DOWEL 0.0938 x .312 LG	GRES	
1			AR	ROD/BAR	TI 6AL4V	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX FRACTIONS 63
±.01 ±.005 ±1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS 0
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 FITTING, BENCH SPECTROMETER COLLIMATORS AFT OPTICS BENCH
DRAWN MAMAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

CODE	SCALE	WT	SH1	OF
GC	9220612	2/1	1	1

GC9220612

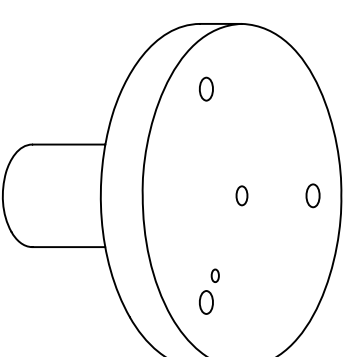
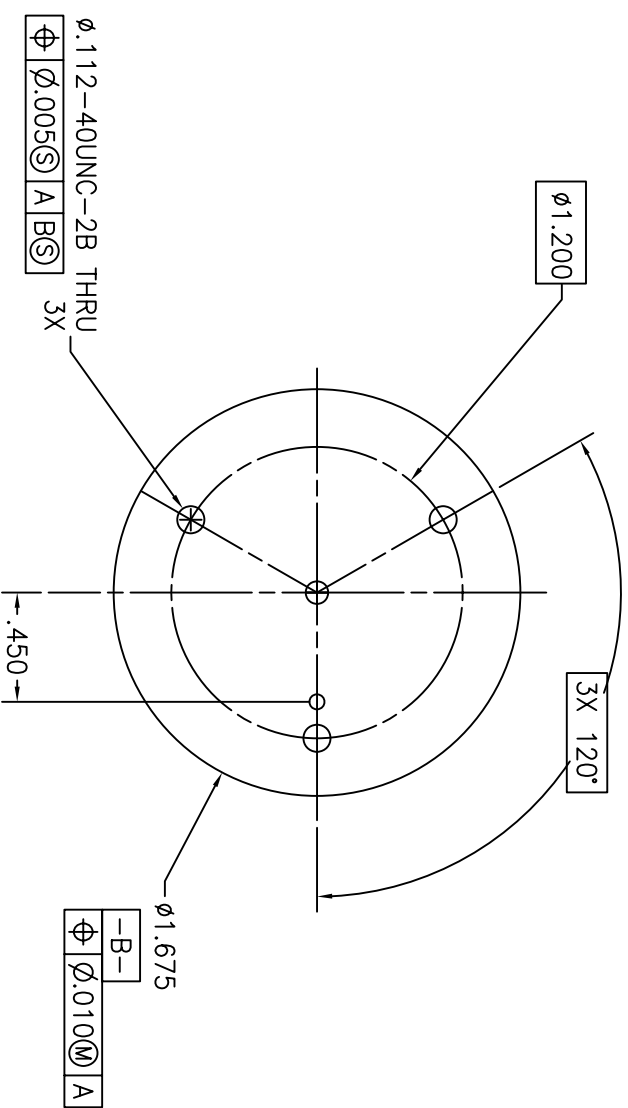
FOLD LINE

1

REV	ZONE	DESCRIPTION	DATE	APPROVAL

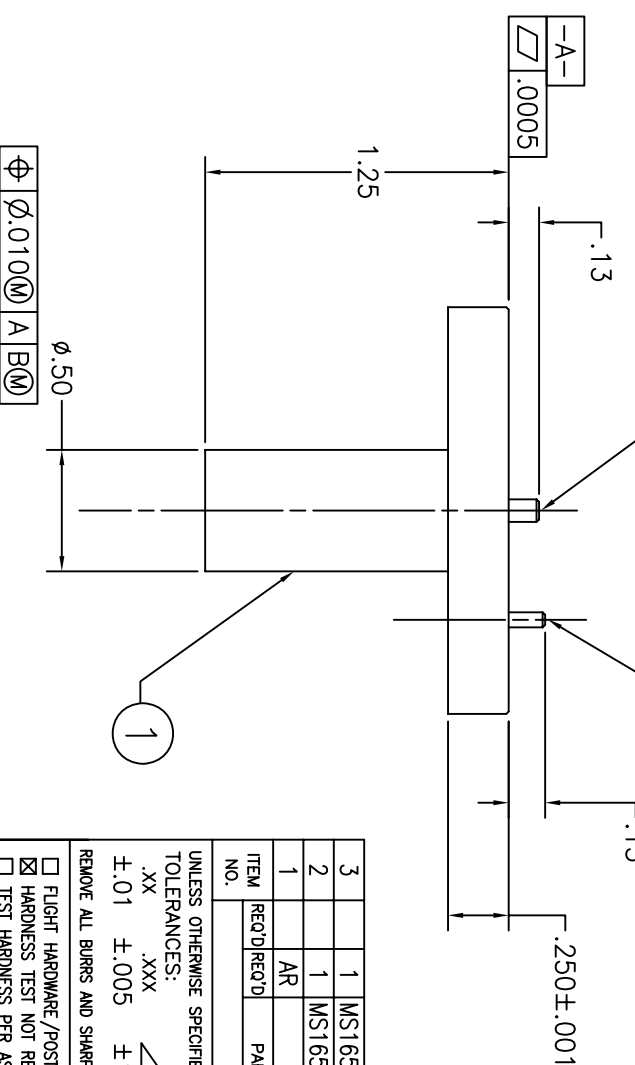
NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2
ACHIEVE .0003-.0005
INTERFERENCE FIT

INSTALL ITEM 3
ACHIEVE .0003-.0005 INTERFERENCE FIT



ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3		MS16555--603	PIN,DOWEL 0.0625 x .312 LG	GRES	
2		MS16555-617	PIN, DOWEL 0.0938 x .312 LG	GRES	
1	AR		ROD/BAR	TI 6AL4V	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX FRACTIONS 63
±.01 ±.005 ±1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS 0
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 FITTING, BENCH BEAMSPLITTER FOLDS AFT OPTICS BENCH
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

CODE	SCALE	WT	SH1	OF
GC	2/1		1	1

GC9220613

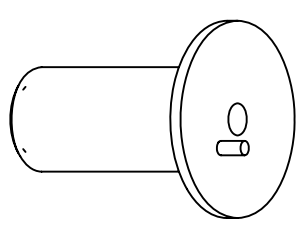
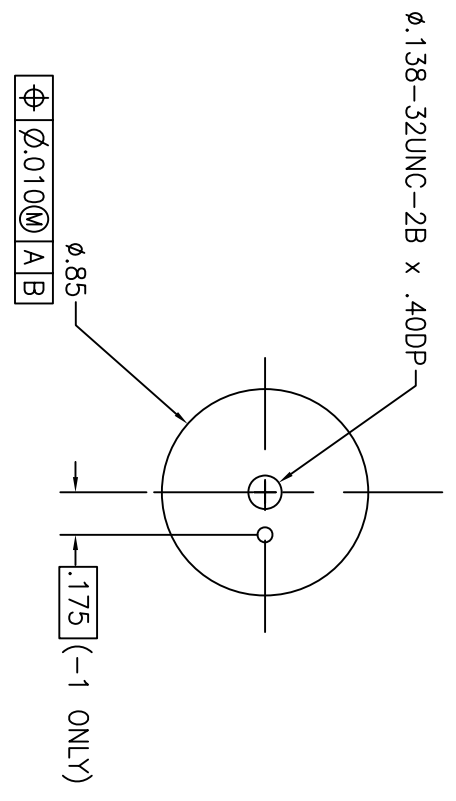
FOLD LINE

1

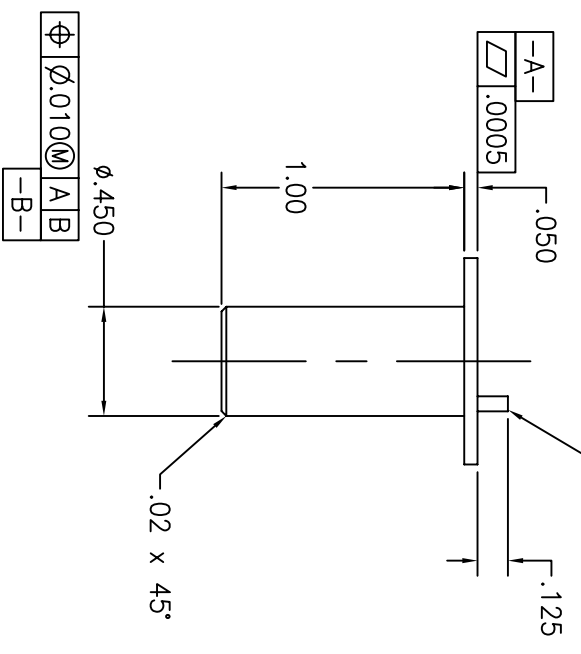
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 INSTALL ITEM 2 AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2 (-1 ONLY)
ACHIEVE .0003-.0005 INTERFERENCE FIT
Φ .005(S) A



ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1	AR	MS16555--603	PIN/DOWEL Ø.0625 x .312 LG	CRES	
2	-	1	ROD/BAR	TI 6AL4V	
3	-1				

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .XXX ±.01 FRACTIONS ±1/16 63
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
DESIGNER NAME: MAMAKOS
CHECKED: MAMAKOS
APPROVED: MAMAKOS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND
DRAWING INTERPRETED PER GSFC-X673-64-1

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
HARDNESS TEST NOT REQUIRED
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
TEST HARDNESS PER ASTM E-18 WHERE INDICATED
ON FIELD OF DRAWING THUS ⊙
NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
NDE REQUIRED PER S-313-009 CODE

CODE	SCALE	WT	SH	OF
GC	9220614	2/1	1	1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME:

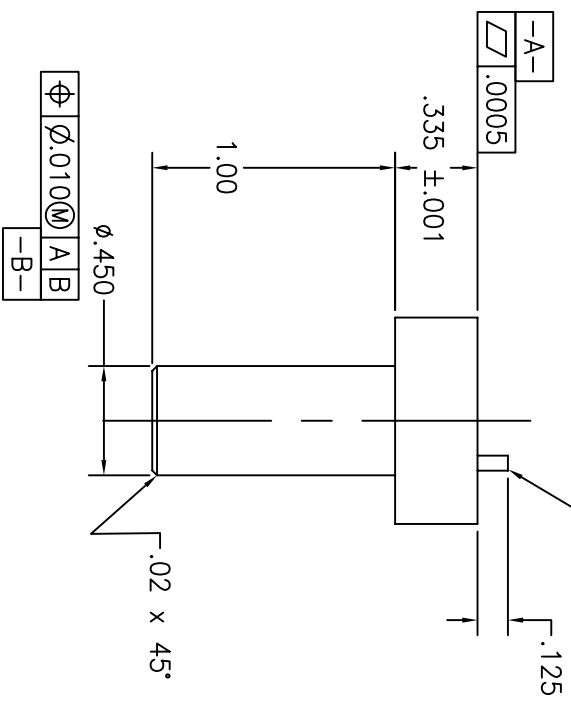
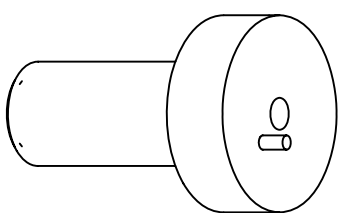
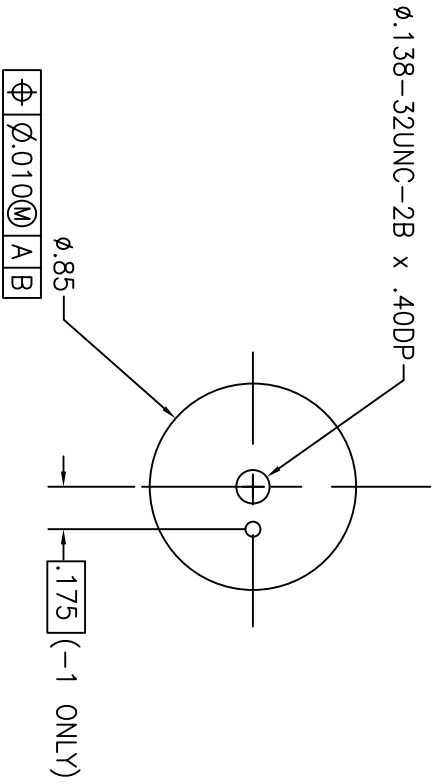
GC9220614 1 FOLD LINE

SYMBOL	ZONE	DESCRIPTION	DATE	APPROVAL

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TiFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 INSTALL ITEM 2 AFTER FINISH
- 5 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1	AR	MS16555--603	PIN/DOWEL 0.0625 x .312 LG	GRES	
2	-	1	ROD/BAR	TI 6AL4V	
3	-1				

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES		TOLERANCES:		FRACTIONS	
.XXX	✓	±.01	±.005	1/16	63
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input type="checkbox"/>	HARDNESS TEST NOT REQUIRED	<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE
DESIGNER	NAME	INIT	DATE	TITLE	
MAMAKOS	MAMAKOS			FITTING	
CHECKED	CHECKED			SPECTROMETER FOLDS	
APPROVED	APPROVED			AFT OPTICS BENCH	
APPROVED	APPROVED				
APPROVED-STRESS	APPROVED-STRESS				
APPROVED-ENGINEER	APPROVED-ENGINEER				

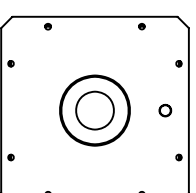
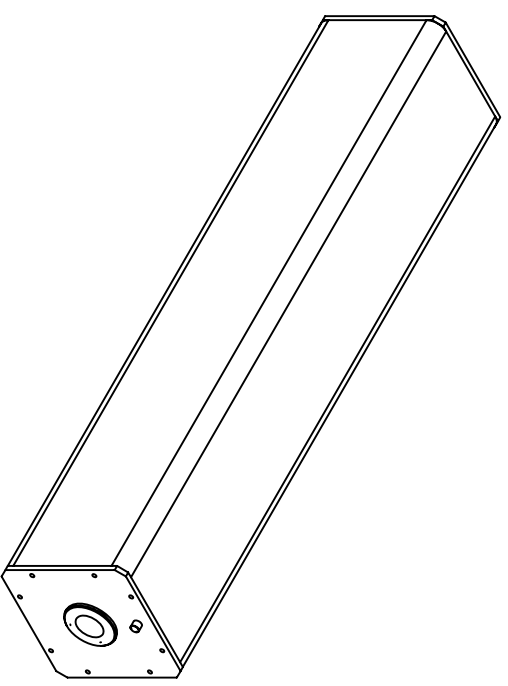
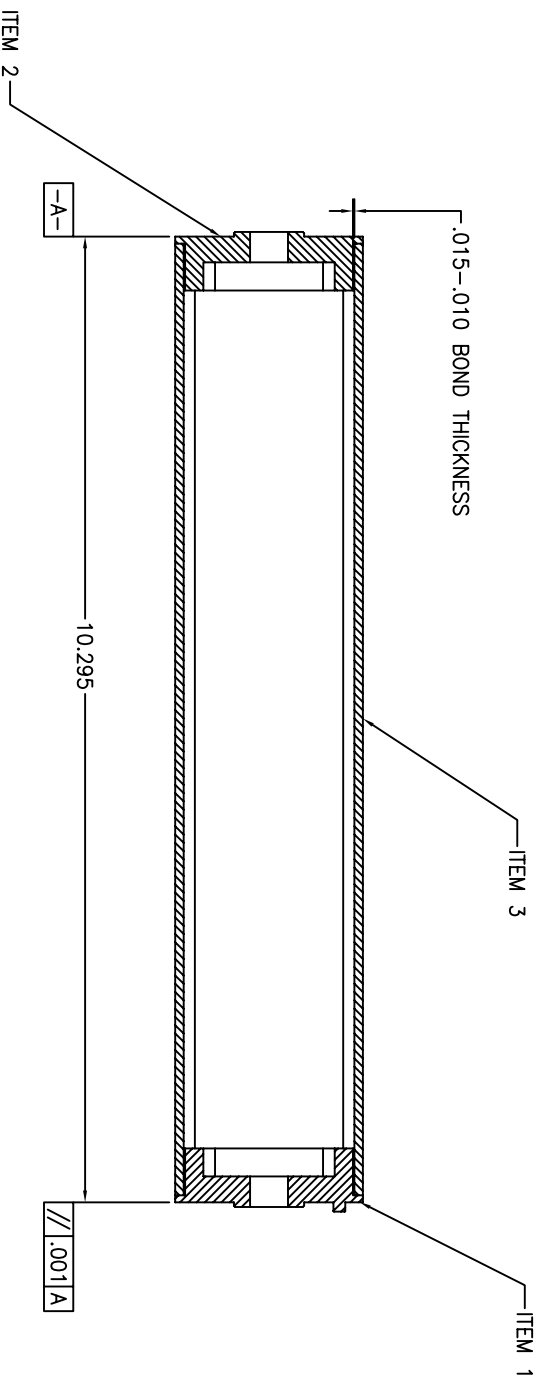
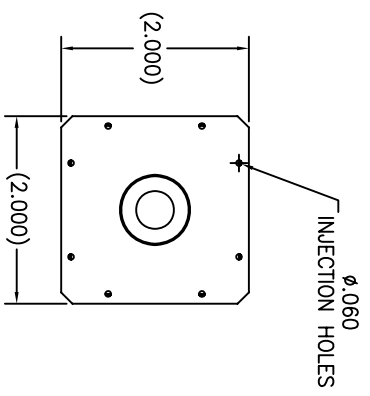
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

CODE	SCALE	WT	SH1	OF
GC	2/1		1	1

GC9220615 1 FOLD LINE

REVISION			
SYM	ZONE	DESCRIPTION	DATE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 ALL DIMENSIONS ARE REFERENCE ONLY



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
		1			

ITEM NO.	REC'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
3	1	9220627	STRUT		
2	1	GC9220626-2	FITTING, SUPPORT STRUT		
1	1	GC9220626-1	FITTING, SUPPORT STRUT		
-			ASSEMBLY		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .4 FRACTIONS 63
 ±.01 ±.005 ±.1 ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER: MAMAKOS
 DRAWN: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-4673-64-1
 TITLE: ASSEMBLY SUPPORT STRUT SVIP BENCHES

APPROVED-STRESS: APPROVED
 APPROVED-ENGINEER: APPROVED
 CODE: GD 9220625
 SCALE: 1/1 WT. SH. OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4 3 2 1

A B C D

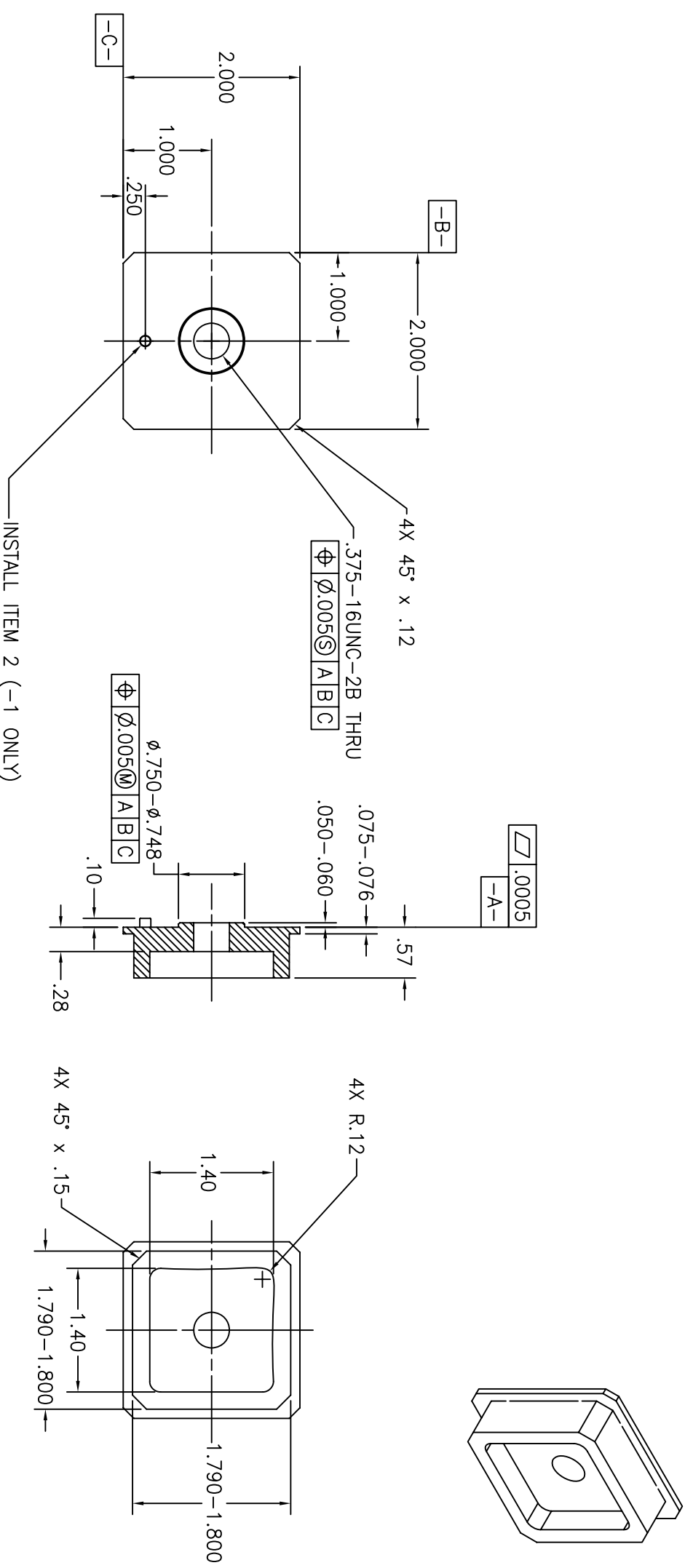
4 3 2 1

GD9220625

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.

REVISION			
SYM	ZONE	DESCRIPTION	DATE



ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2	-	1	MS16555-625	PIN, DOWEL Ø125 x .38LG	GRES	
1				PLATE	TIBALV	
-3	-	-1				

LIST OF MATERIAL			
NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED MAMAKOS			
APPROVED			
APPROVED			

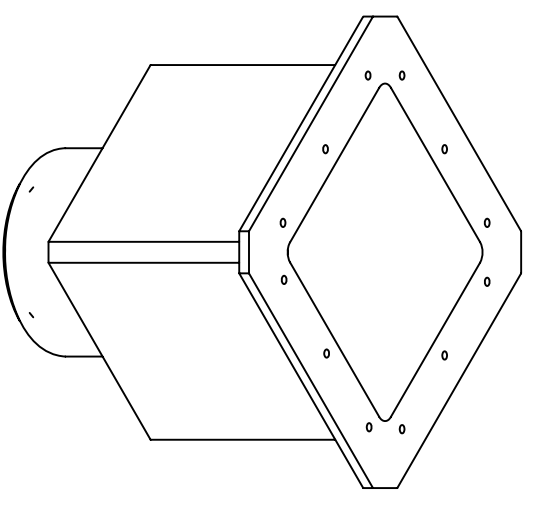
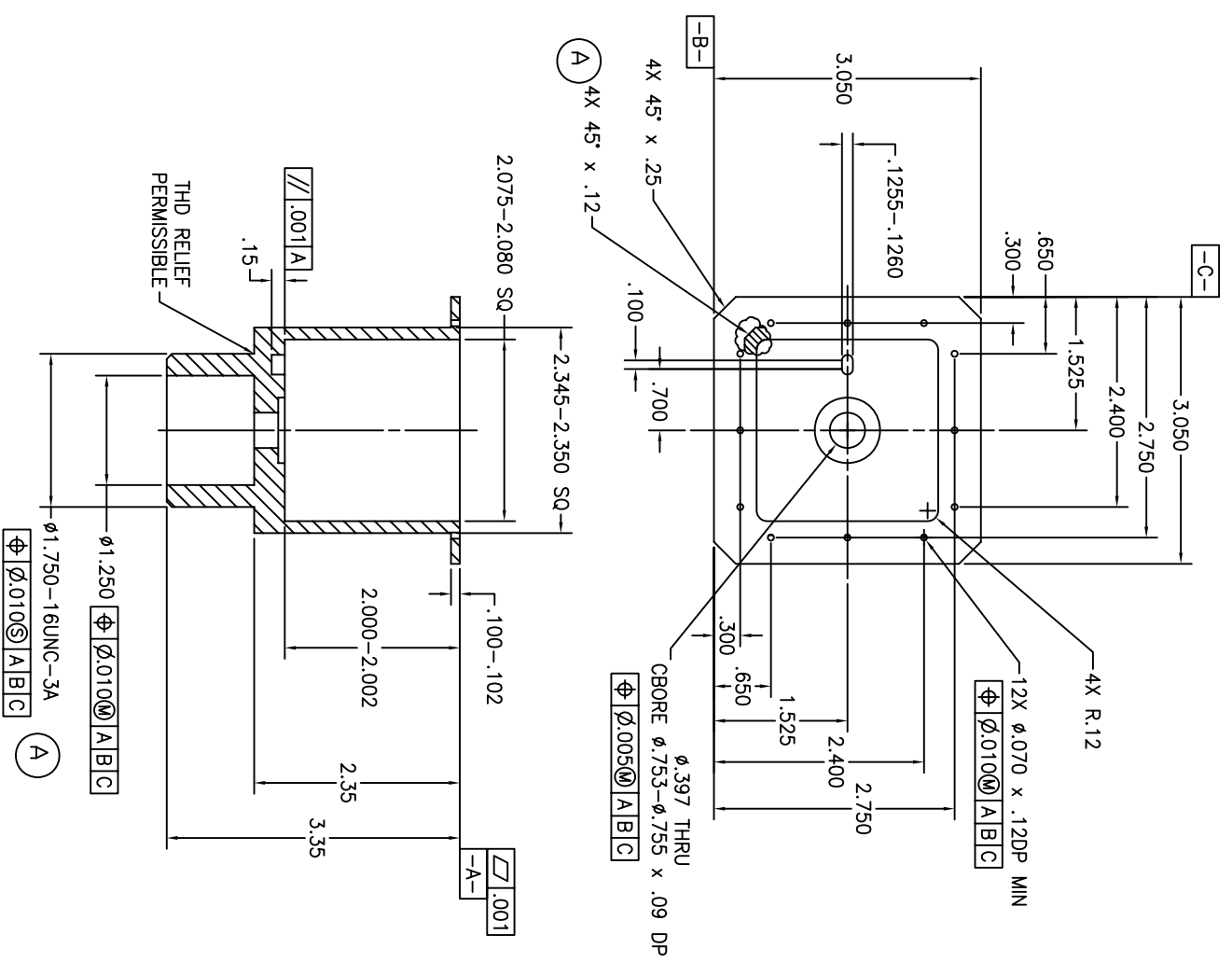
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION			
Goddard Space Flight Center GREENBELT, MARYLAND			
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	FRACTIONS	63	
TOLERANCES: .XXX ±.01 ±.005 ±.01	✓	±1/16	✓
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.			
<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED			
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ			
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

CODE	SCALE	WT	SH1	OF	REV
GC	9220626	1/1	1	1	-

GC9220626 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6
 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		1.75-16UNC WAS 1.75-20UN, ADDED		
		.12 X 45		

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .XX .XXX .XXX FRACTIONS 63					
±.01 ±.005 ±.1' ±1/16					
REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D					
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot					
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D					
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER			NAME		
DRAWN			DATE		
CHECKED			DATE		
APPROVED			DATE		
APPROVED-STRESS			DATE		
APPROVED-ENGINEER			DATE		
NEXT ASSY			DATE		
USED ON			DATE		
CODE			SCALE		
REV			SH1 OF 1		

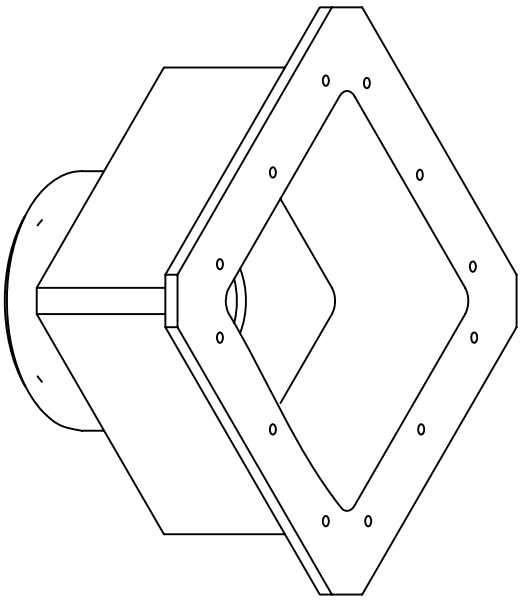
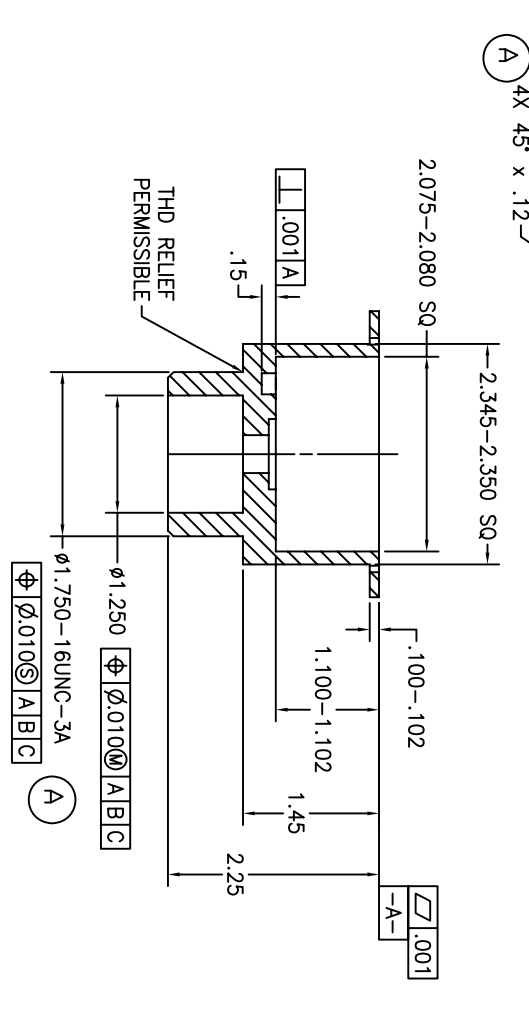
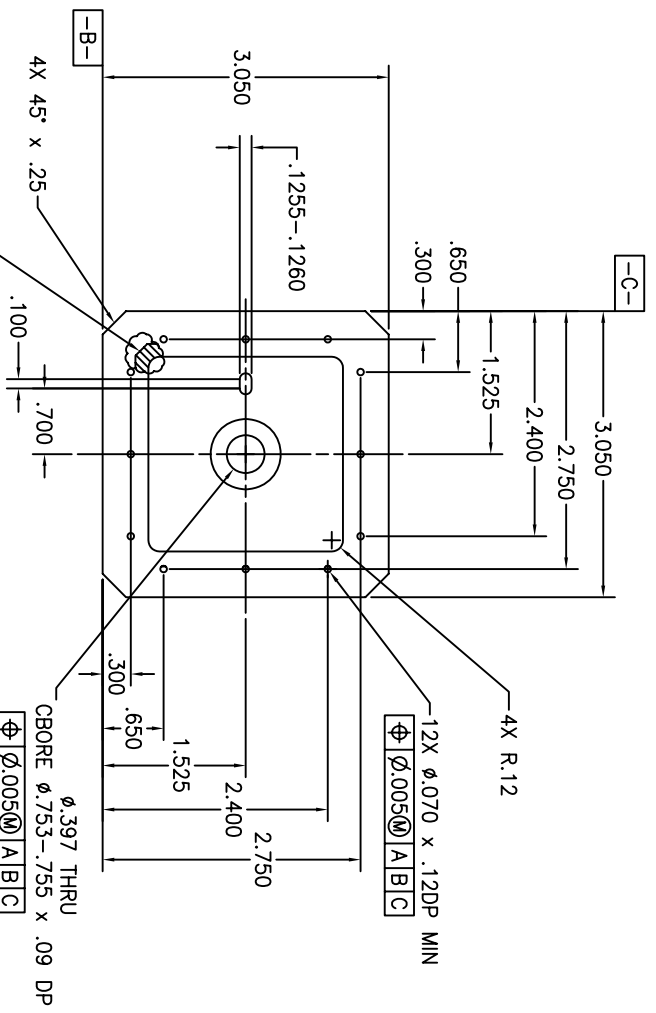
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME:

4 3 2 1

GD9220628 A 923 C D

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6
 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.

SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		1.75-16UNC WAS 1.75-20UN, ADDED .12 X 45°		



4 3 2 1

ITEM NO.		RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES:						
.XX	.XXX	✓	FRACTIONS	63		
±.01	±.005	±.1'	±.1/16	✓		
REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.						
FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D						
HARDNESS TEST NOT REQUIRED						
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL						
ON FIELD OF DRAWING THIS ○						
NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D						
NOE REQUIRED PER S-313-009 CODE						
DESIGNER		NAME	INT	DATE	TITLE	
DRAWN		NAME			DRAWING INTERPRETED PER GSFC-4673-64-1	
CHECKED		NAME			INSERT, BENCH	
APPROVED		NAME			SUPPORT STRUT	
APPROVED-STRESS		NAME			SVIP AFT BENCH	
APPROVED-ENGINEER		NAME			REV	
NEXT ASSY		NAME			GD 9220629	
USED ON		NAME			SCALE 1/1 WT SH1 OF 1	

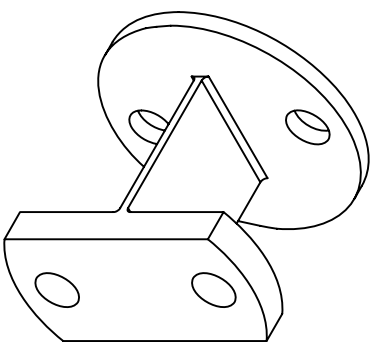
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		Goddard Space Flight Center		GREENBELT, MARYLAND	
GD 9220629		SCALE 1/1		WT SH1 OF 1	

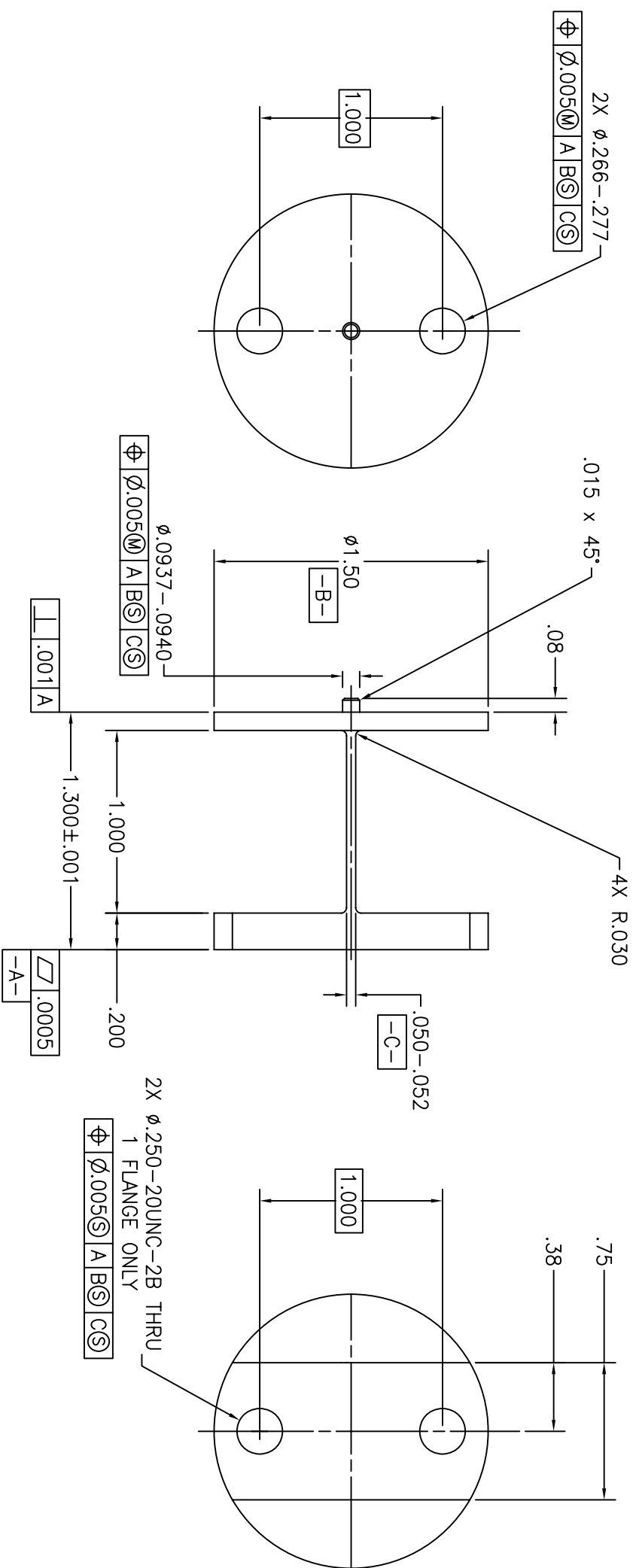
GD9220629 A 2 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 MACHINE TO WITHIN .03±.01 OF FINAL DIMENSIONS. STRESS RELIEVE AT 1200°F (+0°/-20°F) FOR 5 HOURS FURNACE COOL TO ROOM TEMPERATURE FINAL MACHINE
- 3 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



GC9220630 1 FOLD LINE

ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1° ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1

DESIGNER NAME: MAMAKOS
 DATE: _____
 CHECKED: MAMAKOS
 APPROVED: _____

TITLE: FLEXURE OPTIC BENCH SVIP
 DRAWING INTERPRETED PER GSFC-X673-64-1
 CODE: GC 9220630
 SCALE: 2/1
 WT: _____
 SH1 OF 1

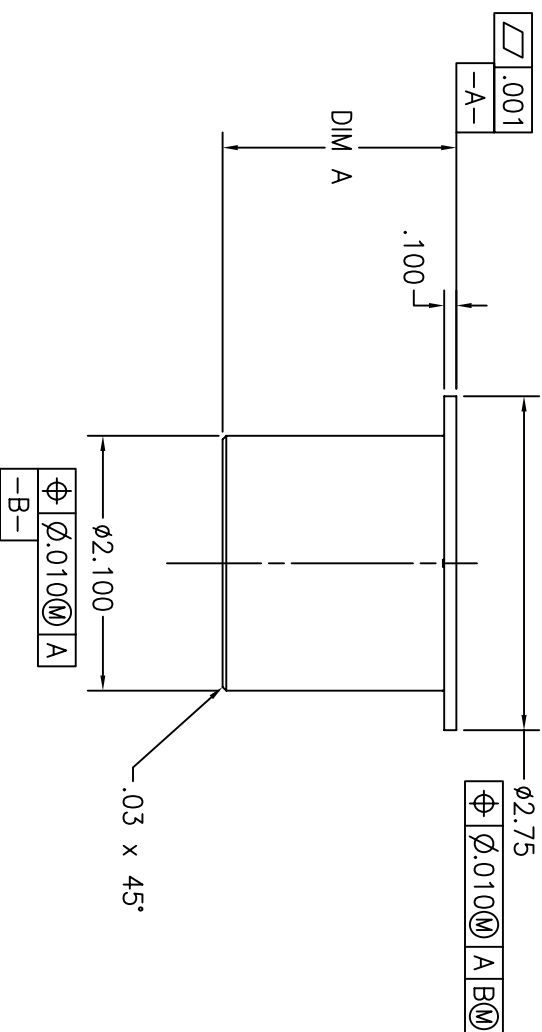
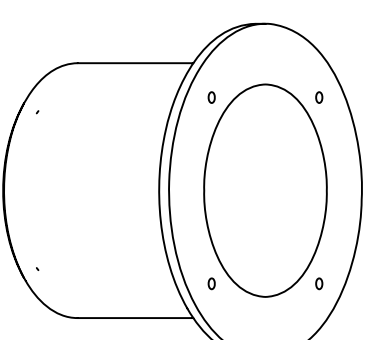
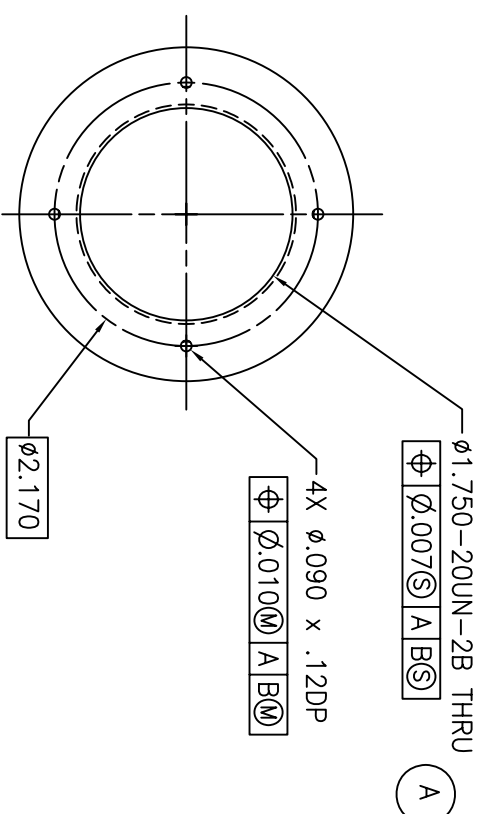
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL
A		1.75-20UN WAS 1.75-16UNC		



TABULATION	
DASH NO	DIM A
-1	1.92
-3	.82
-5	2.82

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
Goddard Space Flight Center GREENBELT, MARYLAND						
DRAWING INTERPRETED PER GSFC-X673-64-1						

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES

TOLERANCES: .XXX $\frac{\quad}{\quad}$ FRACTIONS 63

$\pm .01$ $\pm .005$ $\pm 1'$ $\pm 1/16$

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D

HARDNESS TEST NOT REQUIRED

TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL

TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot

NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D

NDE REQUIRED PER S-313-009 CODE

DESIGNER NAME: MAMAKOS

CHECKED: MAMAKOS

APPROVED: MAMAKOS

INIT: MAMAKOS

DATE: MAMAKOS

TITLE: SPOOL, THREADED BENCH STRUT INSERT SVIP

CODE: GC 9220631

SCALE: 1/1

WT: MAMAKOS

SH1 OF 1

REV: MAMAKOS

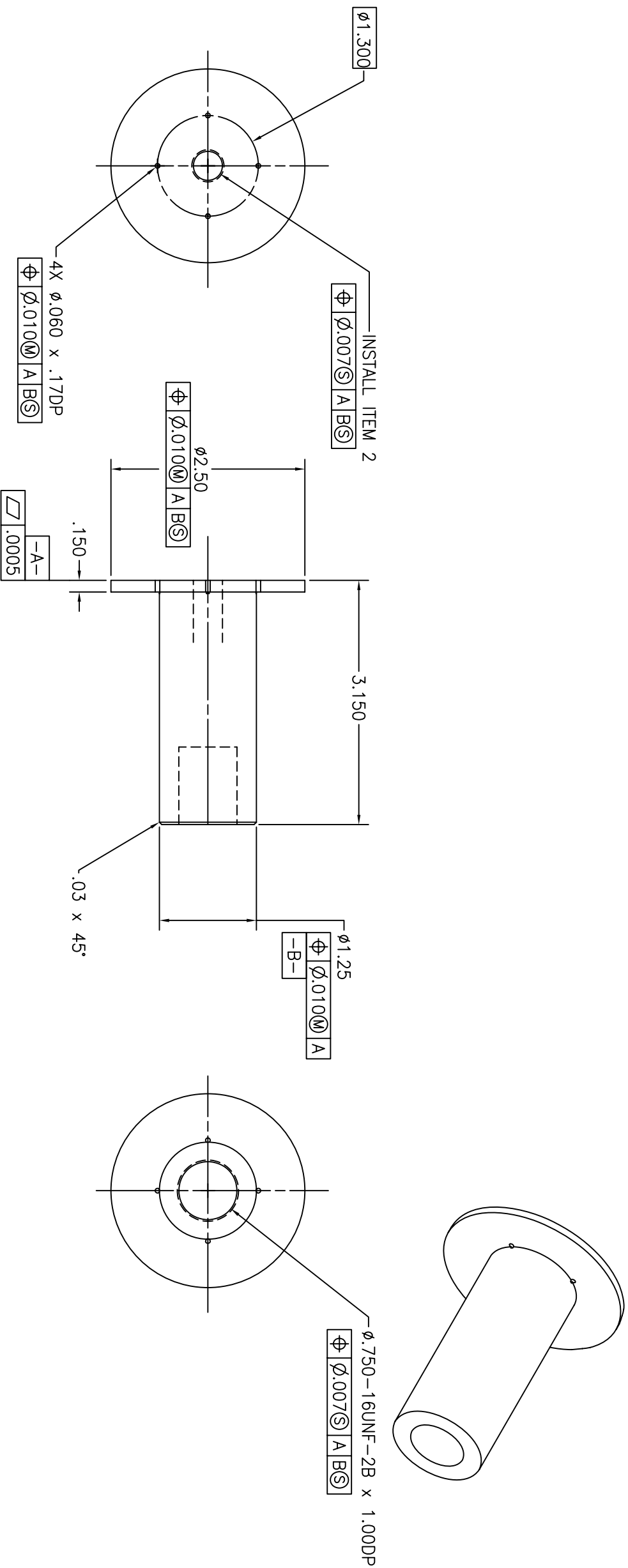
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC9220631 A

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.
- 3 INSTALL ITEM 2 PER MS33537



REVISION			
SYM	ZONE	DESCRIPTION	DATE

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2			1185-6BN562	INSERT, THREADED 3/8-16UNC-2B x .56L	PH BRONZE	
1				ROD	ALUM ALY 6061-T6	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES

TOLERANCES: .XXX FRACTIONS 63

±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			INSERT, BENCH SOLAR TRACKER INTERFACE SVIP MAIN BENCH
DRAWN MAMAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

DRAWING INTERPRETED PER GSFC-X673-64-1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2002
FILE NAME: _____

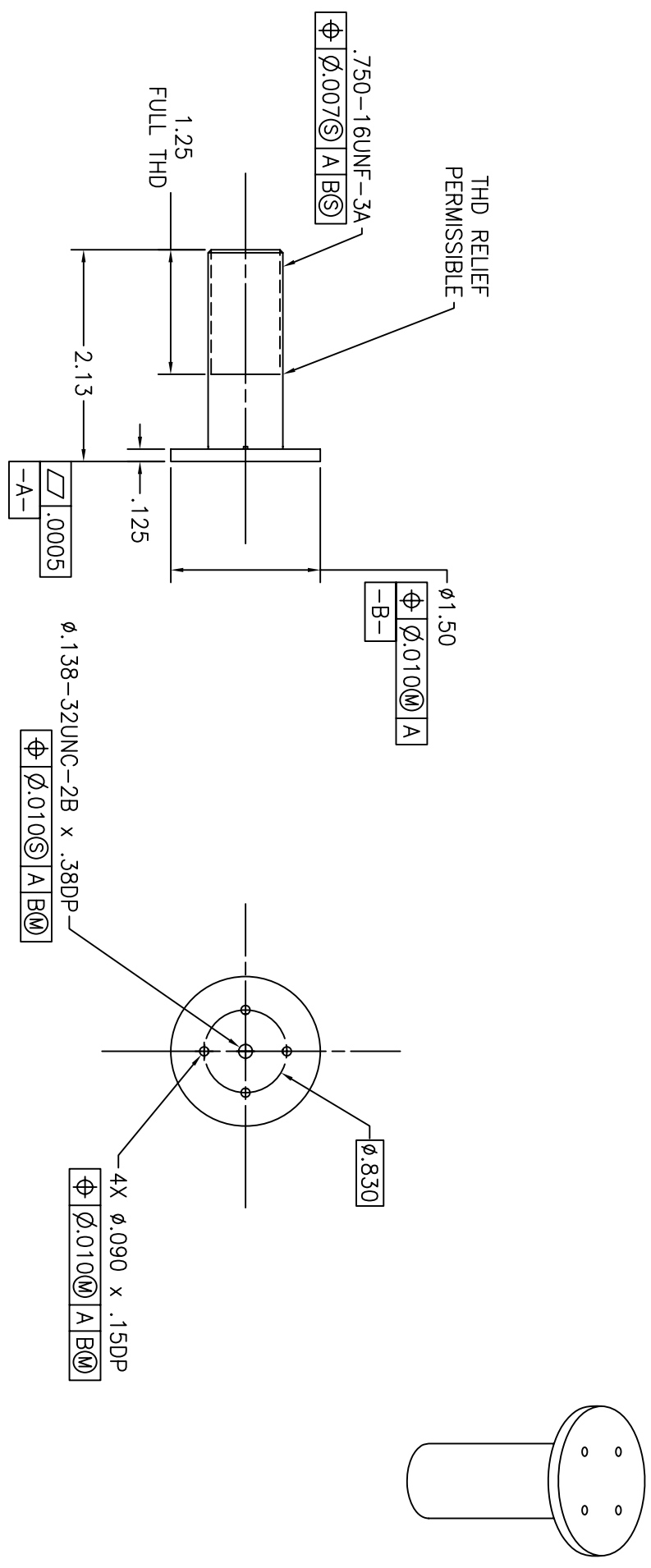
CODE	SCALE	WT	SH1	OF	REV
GC	1/1		1	1	
9220633					

GC9220633 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

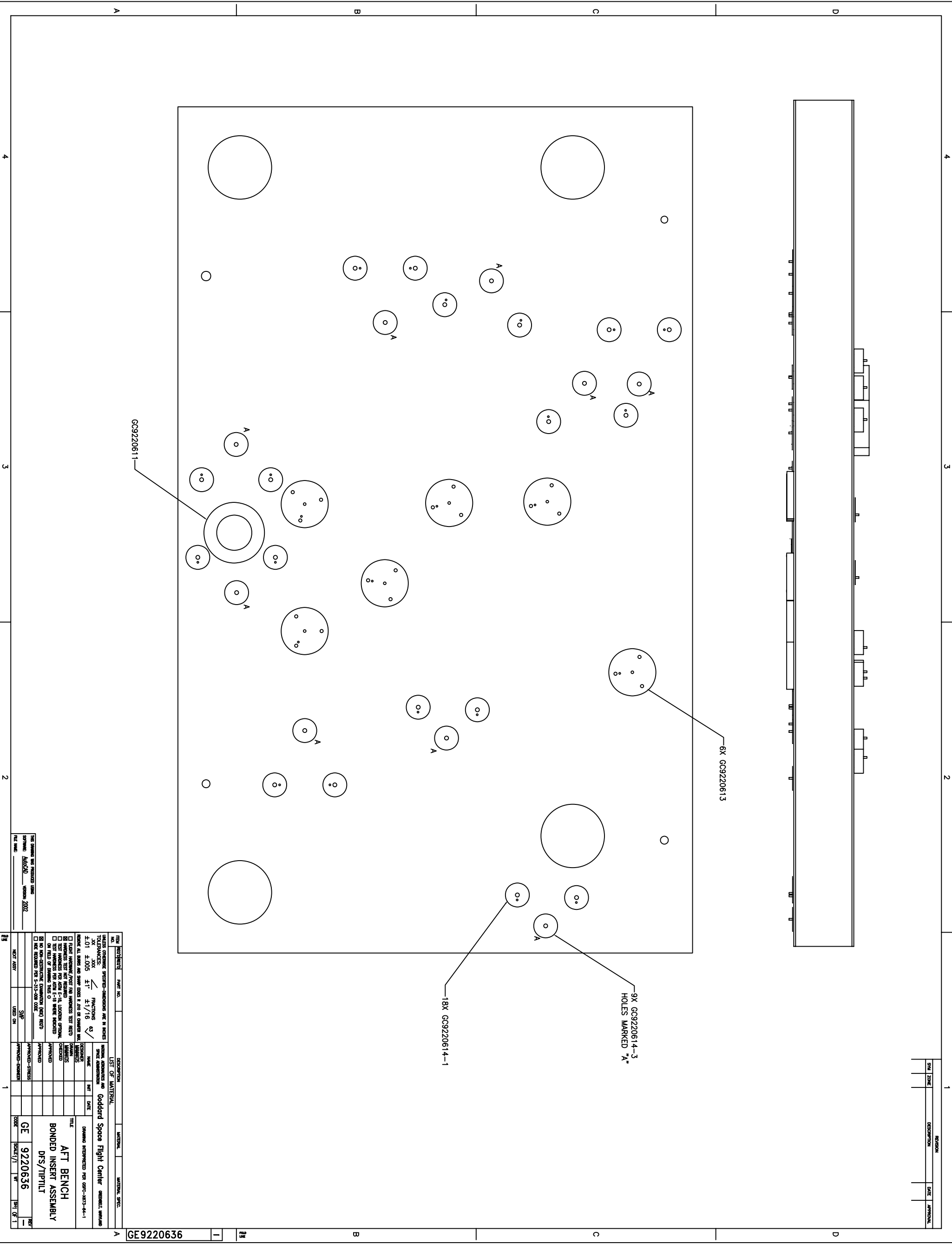
LIST OF MATERIAL			
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	TOLERANCES:	FRACTIONS	63
.XXX	$\pm .01$	$\pm 1'$	$\pm 1/16$
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.			
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	DESIGNER	DATE
		MAMAKOS	
		DRAWN	
		MAMAKOS	
		CHECKED	
		APPROVED	
		APPROVED	
		APPROVED-STRESS	
		APPROVED-ENGINEER	

TITLE			
DRAWING INTERPRETED PER GSFC-X673-64-1			
INSERT, SPOOL			
SOLAR TRACKER INTERFACE			
SVIP MAIN BENCH			
CODE	SCALE	WT	SH1 OF 1
GC	9220634	1/1	1
REV			

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC9220634 1

FOLD LINE



REV	DESCRIPTION	DATE	BY	CHKD
1				

NO.	DESCRIPTION	MATERIAL	QUANTITY	UNIT
1	GC9220611		1	
2	GC9220613		6	
3	GC9220614-1		18	
4	GC9220614-3		9	

DATE	2002	BY	
DRAWN		CHECKED	
DESIGNED		APPROVED	
TESTED		APPROVED	
MANUFACTURED		APPROVED	
ASSEMBLED		APPROVED	
INSPECTED		APPROVED	
RELEASED		APPROVED	
DATE		BY	
DATE		BY	
DATE		BY	

DATE	2002	BY	
DRAWN		CHECKED	
DESIGNED		APPROVED	
TESTED		APPROVED	
MANUFACTURED		APPROVED	
ASSEMBLED		APPROVED	
INSPECTED		APPROVED	
RELEASED		APPROVED	
DATE		BY	
DATE		BY	
DATE		BY	

GC9220636

AFT BENCH
BONDED INSERT ASSEMBLY
DFS/TIP/TILT

DATE: 2002
 DRAWN: []
 CHECKED: []
 DESIGNED: []
 TESTED: []
 MANUFACTURED: []
 ASSEMBLED: []
 INSPECTED: []
 RELEASED: []

4

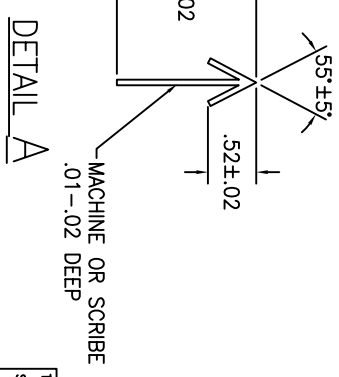
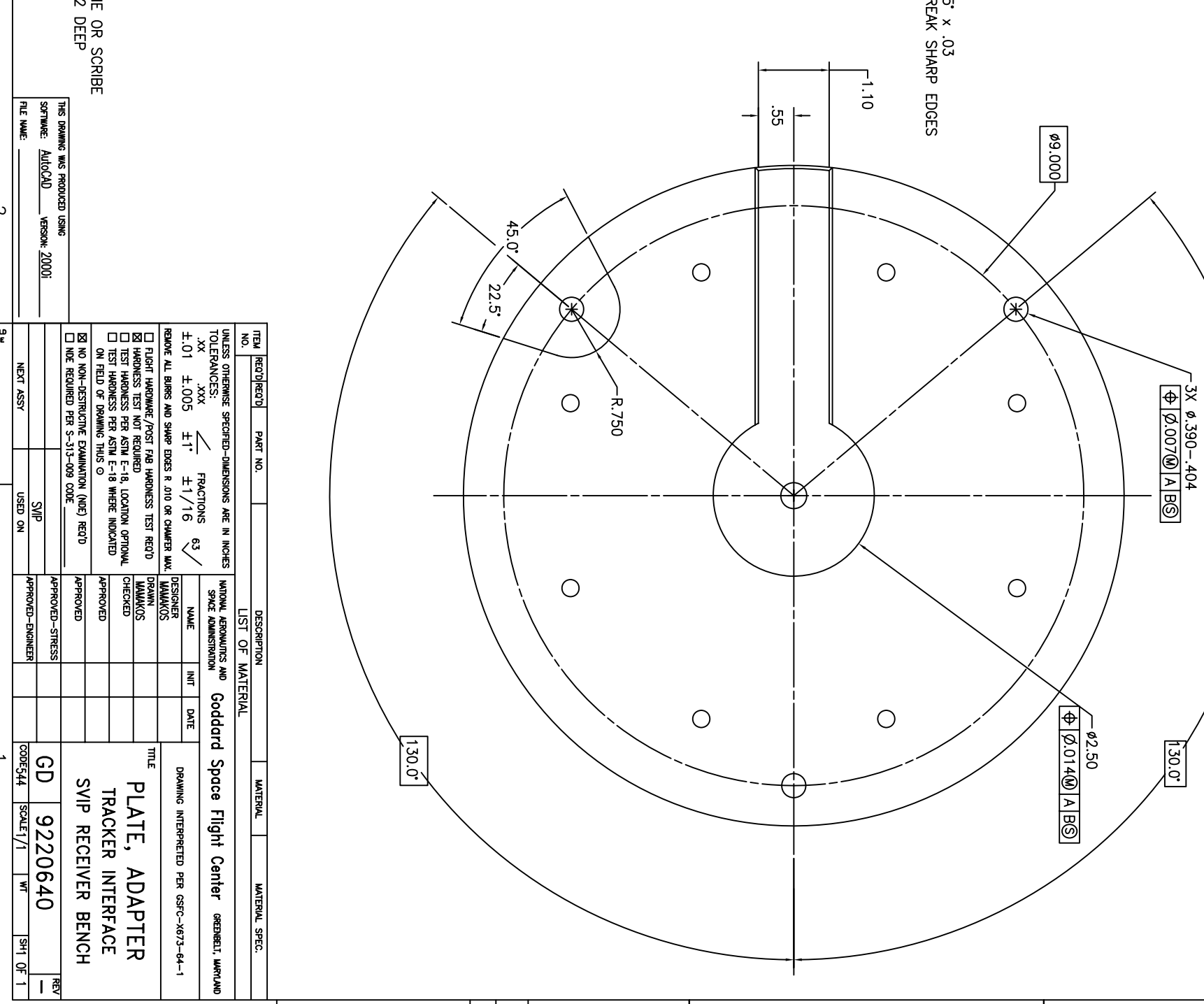
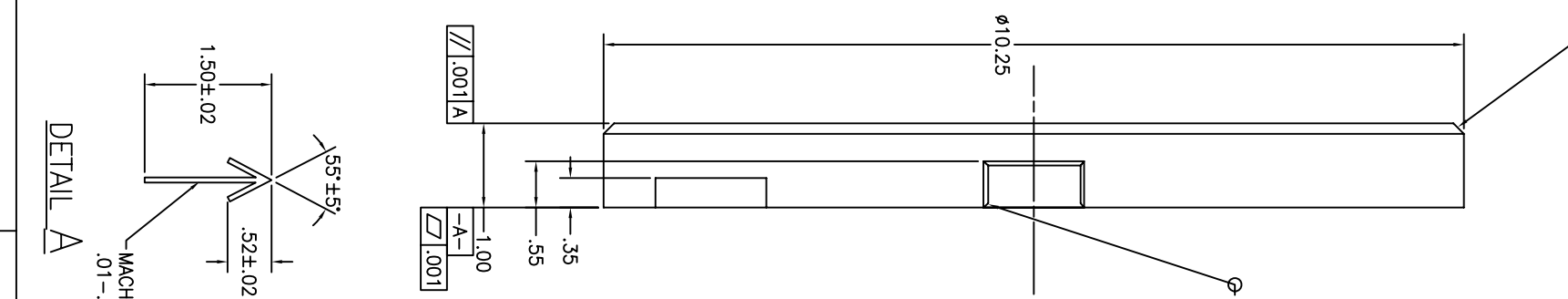
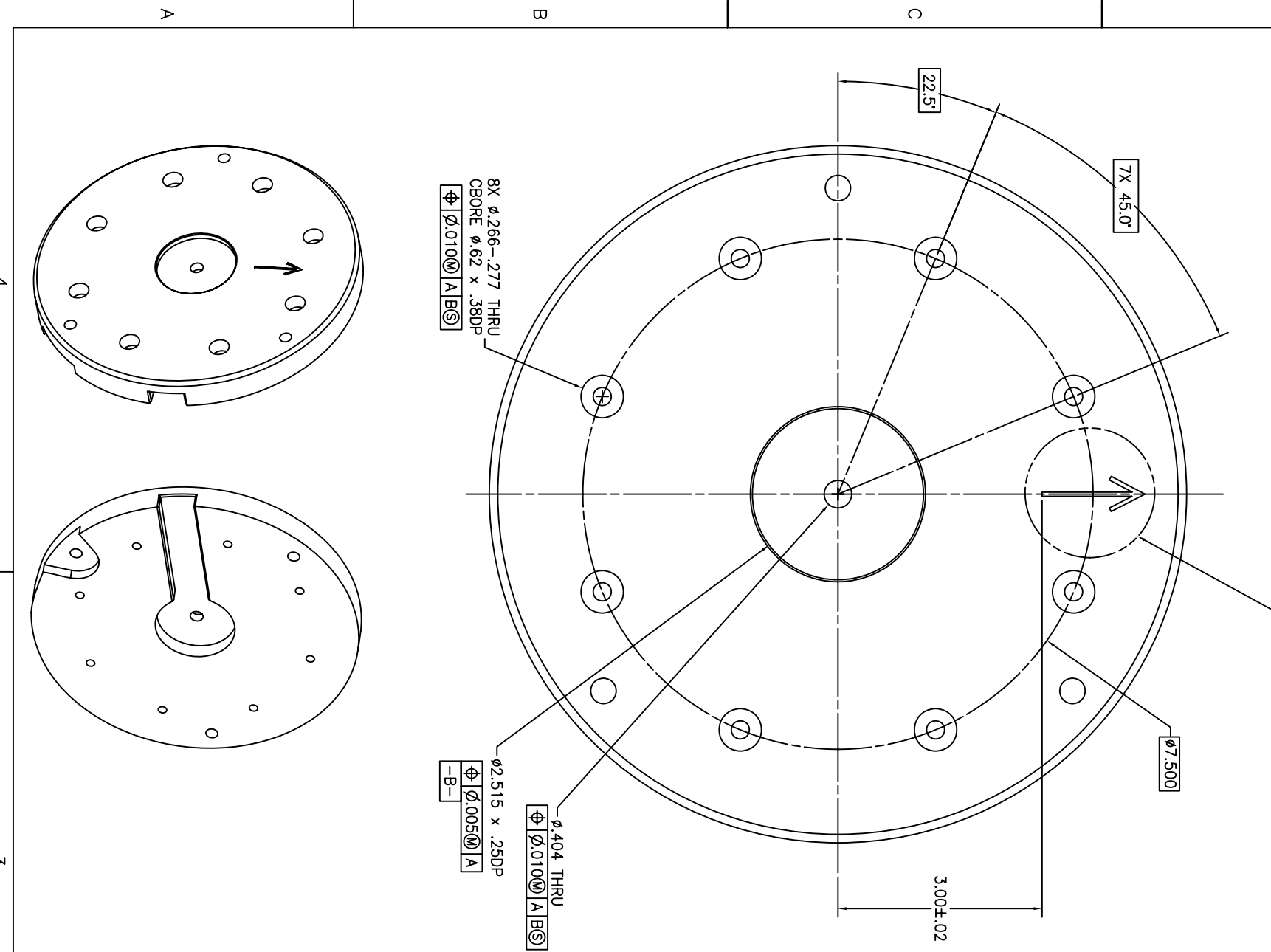
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2

1

REV	ZONE	DESCRIPTION	DATE	APPROVAL

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
 - 3 ALL DIMENSIONS APPLY AFTER FINISH
 - 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .XX FRACTIONS 63					
±.01 ±.005 ±.1' ±1/16					
REMOVE ALL BURRS AND SWAMP EXCES R .010 OR CHAMFER W/45°					
<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST RECD <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ					
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) RECD <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____					
DESIGNER	INT	DATE	APPROVED-DESIGNER	APPROVED-STRESS	APPROVED-ENGINEER
TITLE			DRAWING INTERPRETED PER GSFC-X673-64-1		
PLATE, ADAPTER					
TRACKER INTERFACE					
SVIP RECEIVER BENCH					
CODE:544	SCALE:1/1	WT	SH1 OF 1	REV	
GD	9220640				

GD9220640

FOLD LINE

A

B

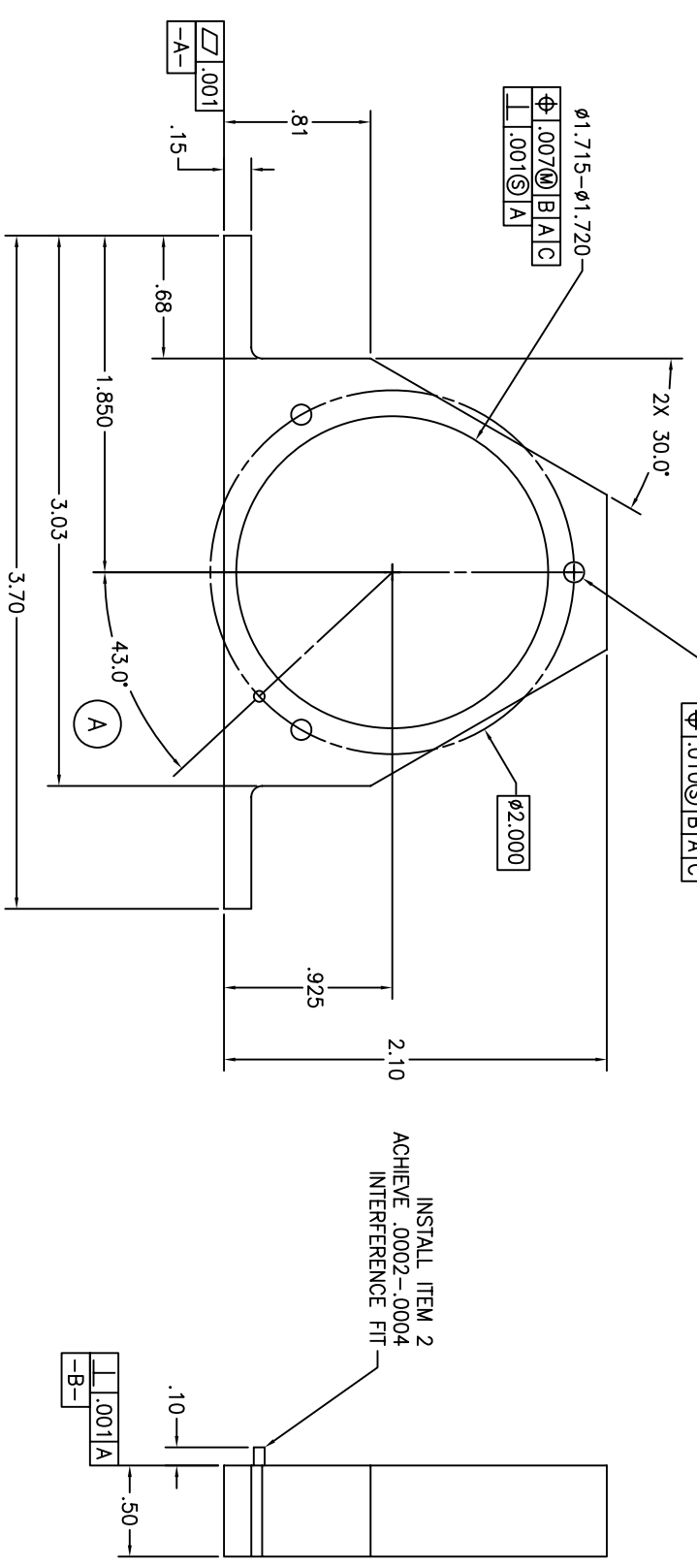
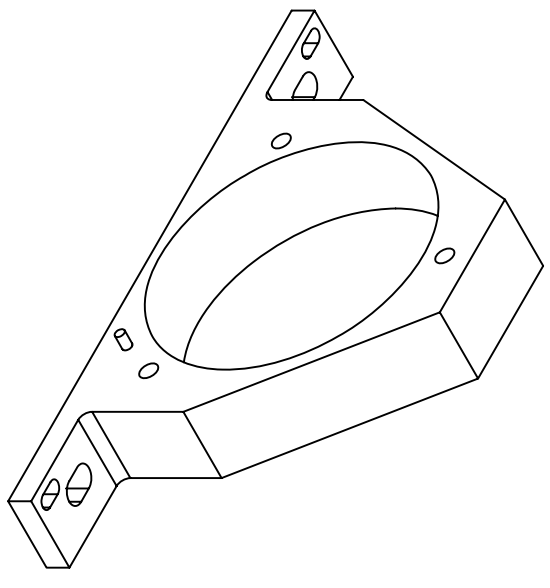
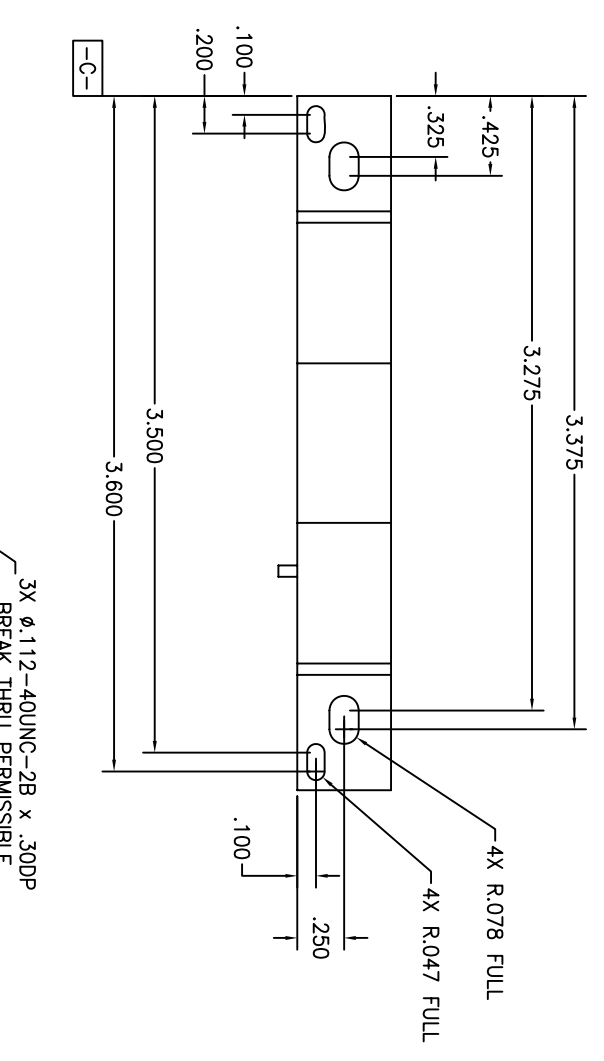
C

D

1

SMI ZONE		DESCRIPTION	DATE	APPROVAL
A		ADDED 43° DIM		

- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: TITANIUM 6AL4V
 - 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
 - 3 ALL DIMENSIONS APPLY AFTER FINISH
 - 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



INSTALL ITEM 2
 ACHIEVE .0002-.0004
 INTERFERENCE FIT

2	1	MS16555--603	PIN/DOWEL ϕ 0625 x .312 LG	CRES	SEE NOTE 1	
1	AR		PLATE			

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2	1	MS16555--603	PIN/DOWEL ϕ 0625 x .312 LG	CRES	SEE NOTE 1
1	AR		PLATE		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .4
 ±.01 ±.005 ±.1' ±1/16' 63'
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 DESIGNER: MAMAKOS
 DRAWN: MAMAKOS
 CHECKED: MAMAKOS
 APPROVED: MAMAKOS

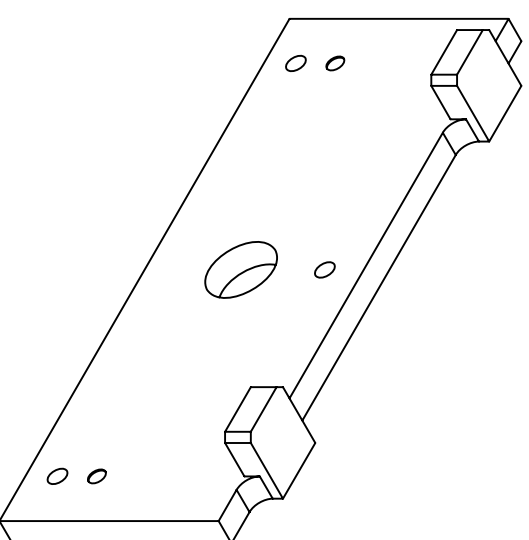
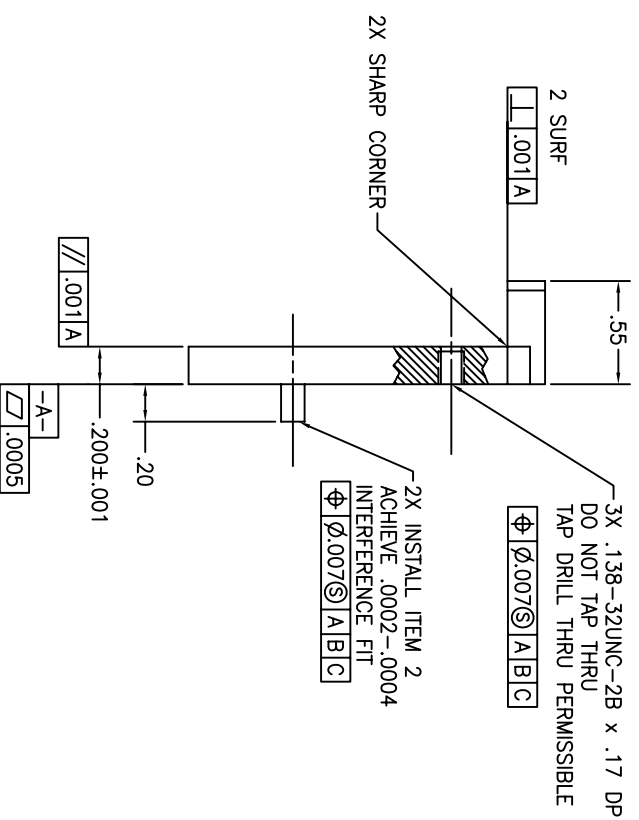
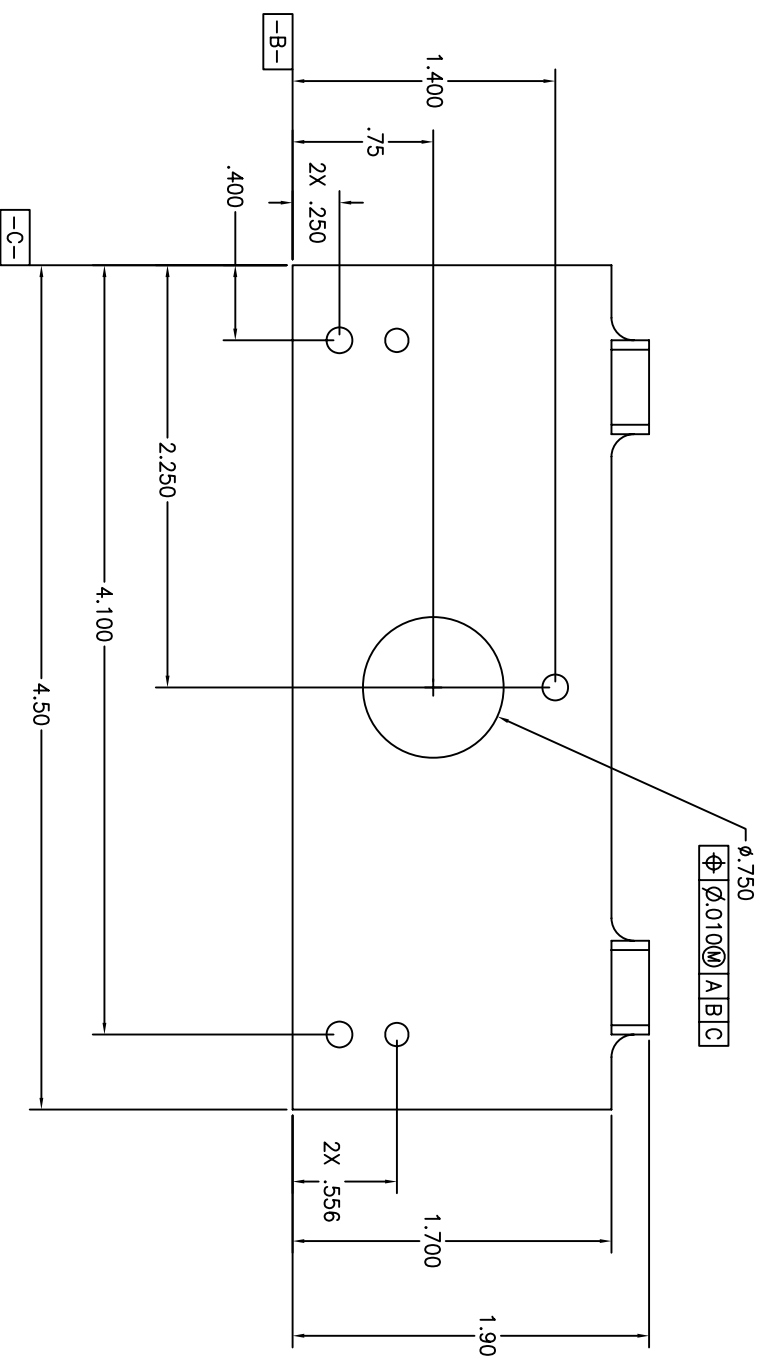
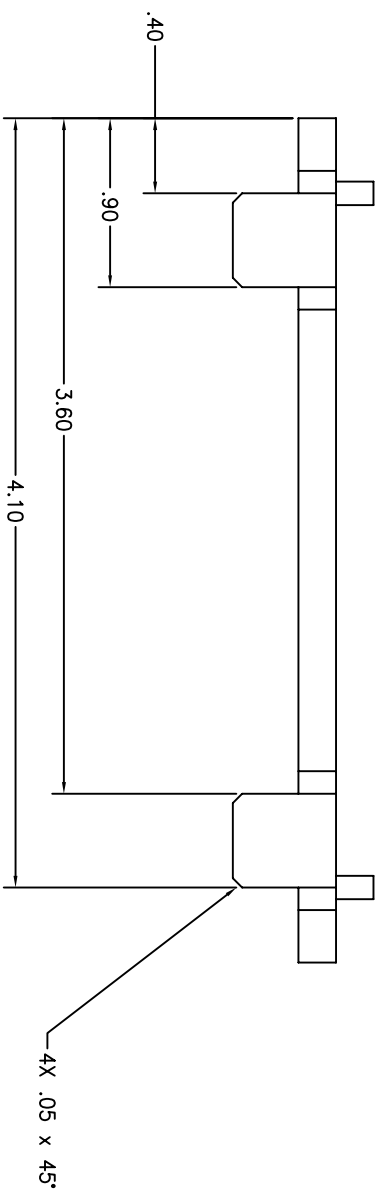
FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED
 ON FIELD OF DRAWING THIS ϕ
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	INT	DATE	TITLE	CODE	SCALE	WT	SH	OF
MAMAKOS			PLATE, MOUNTING FOLD 0 SVIP	GD	9220651		1	1
APPROVED-ENGINEER	APPROVED-STRESS							
APPROVED-ENGINEER	APPROVED-STRESS							

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.
- 6 INSTALL PINS AFTER PLATING



REV	DATE	APPROVAL
1		

2	MS16555-618	Ø.094 x .375 LG DOWEL PIN	CRES 416
1	AR	PLATE	SEE NOTE 1

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	FRACTIONS 63
TOLERANCES:	
.XX .XXX	±1/16
±.01 ±.005 ±.1	

DESIGNER	INIT	DATE
MMAKIOS		

DRAMA	CHECKED
MMAKIOS	

GD	9220652	SCALE 1/1	WT	SH1 OF 1
----	---------	-----------	----	----------

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME:

A B C D

A B C D

4 3 2 1

4 3 2 1

GD9220652

4

3

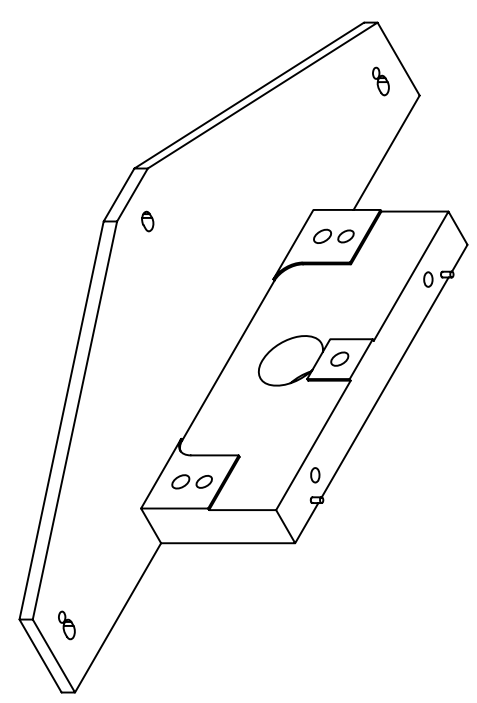
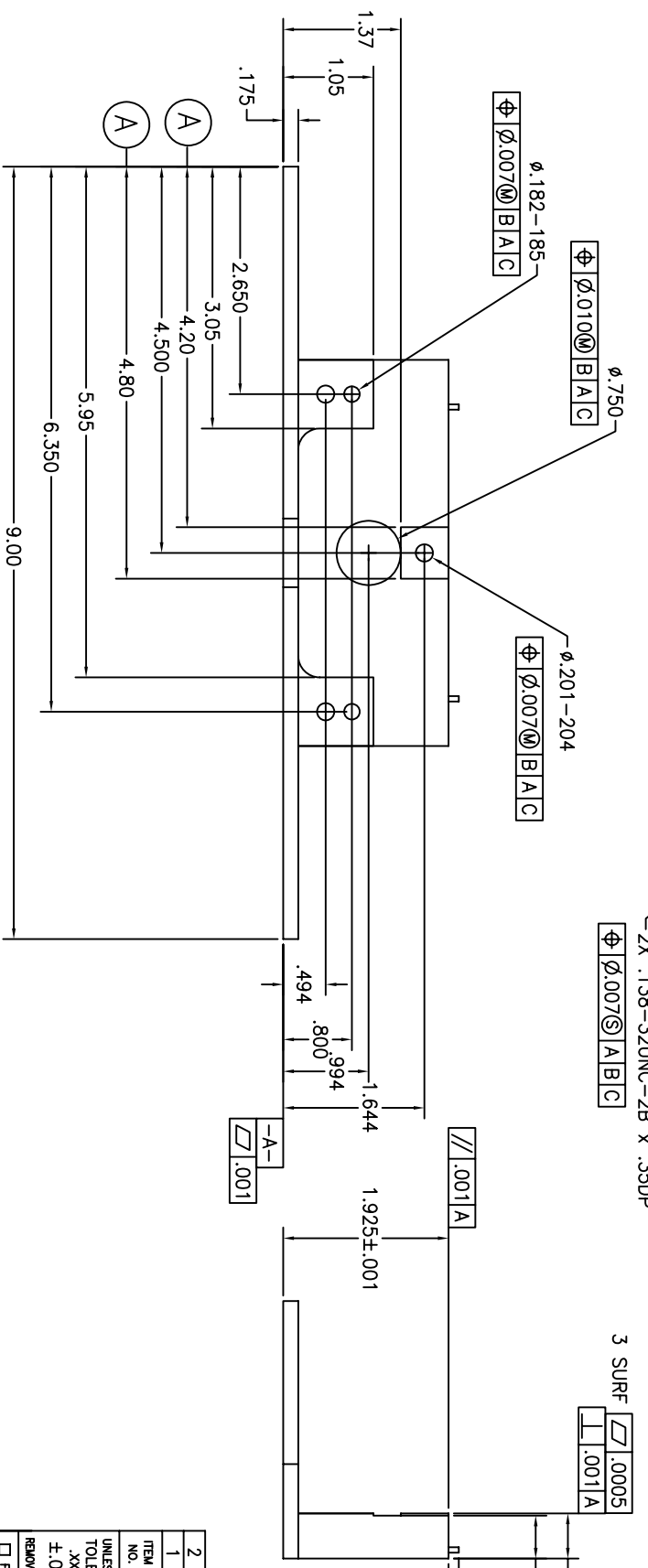
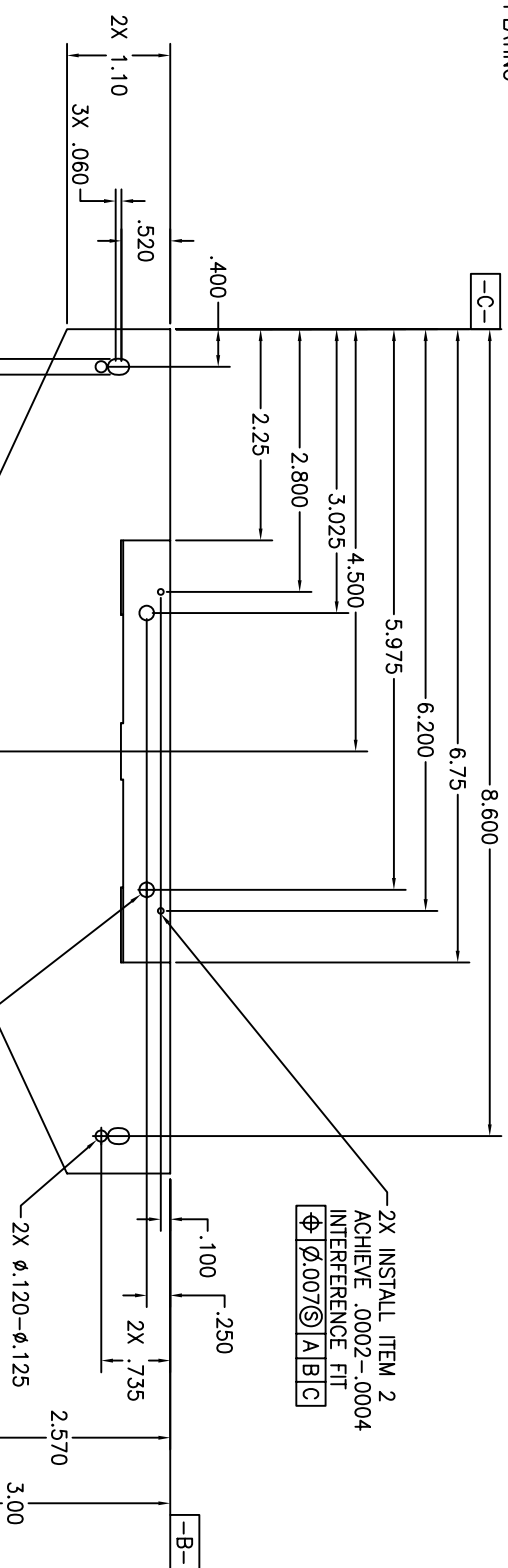
2

1

SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED MISSING DIMENSIONS		

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: INVAR 36
- 2 MACHINE TO WITHIN .03 OF FINAL DIMENSIONS.
HEAT TREATMENT: 1450°F ±20°F FOR 1 HOUR OVEN COOL
600°F ±20°F FOR 1 HOUR OVEN COOL
200°F ±10° FOR 48 HOURS
- 3 FINISH: ELECTROLESS NICKEL PER MIL-C-26074, CLASS 1, .0002 MAX THK
- 4 ALL DIMENSIONS APPLY AFTER FINISH
- 5 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.
- 6 INSTALL PINS AFTER PLATING



2	1	MS16555--603 PIN/DOWEL Ø.0625 x .312 LG	CRES	SEE NOTE 1	MATERIAL SPEC.
1		PLATE			

LIST OF MATERIAL		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		Goddard Space Flight Center		GREENBELT, MARYLAND	
NAME	INT	DATE	TITLE	CODE	SCALE	WT	SH
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1	GD	9220653		1
CHECKED							
APPROVED							
APPROVED-STRESS							
APPROVED-ENGINEER							

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XX FRACTIONS .63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4

3

2

1

GD9220653

A

2#

C

D

A

4

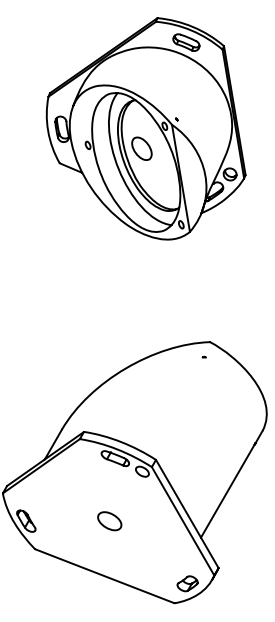
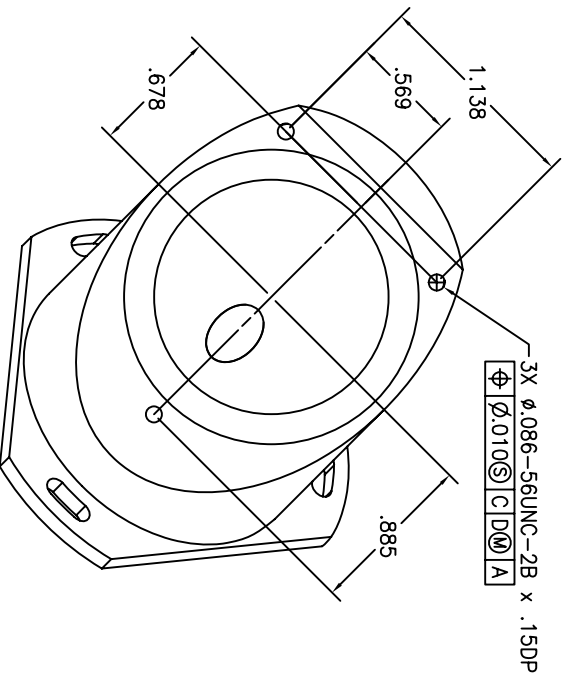
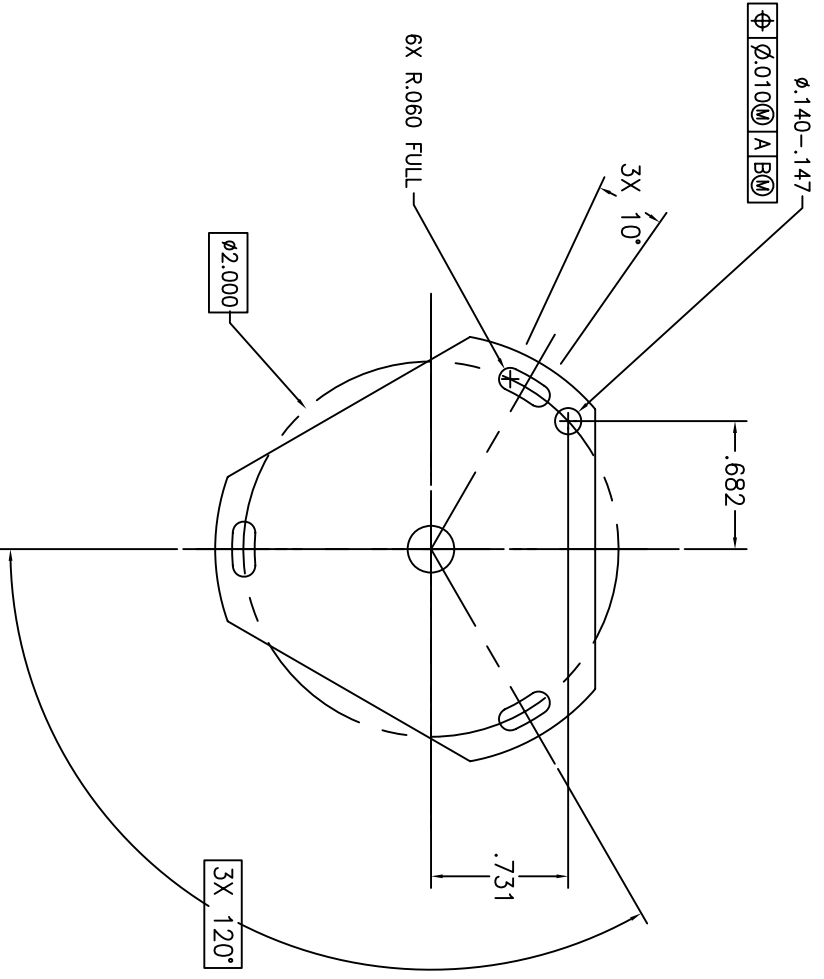
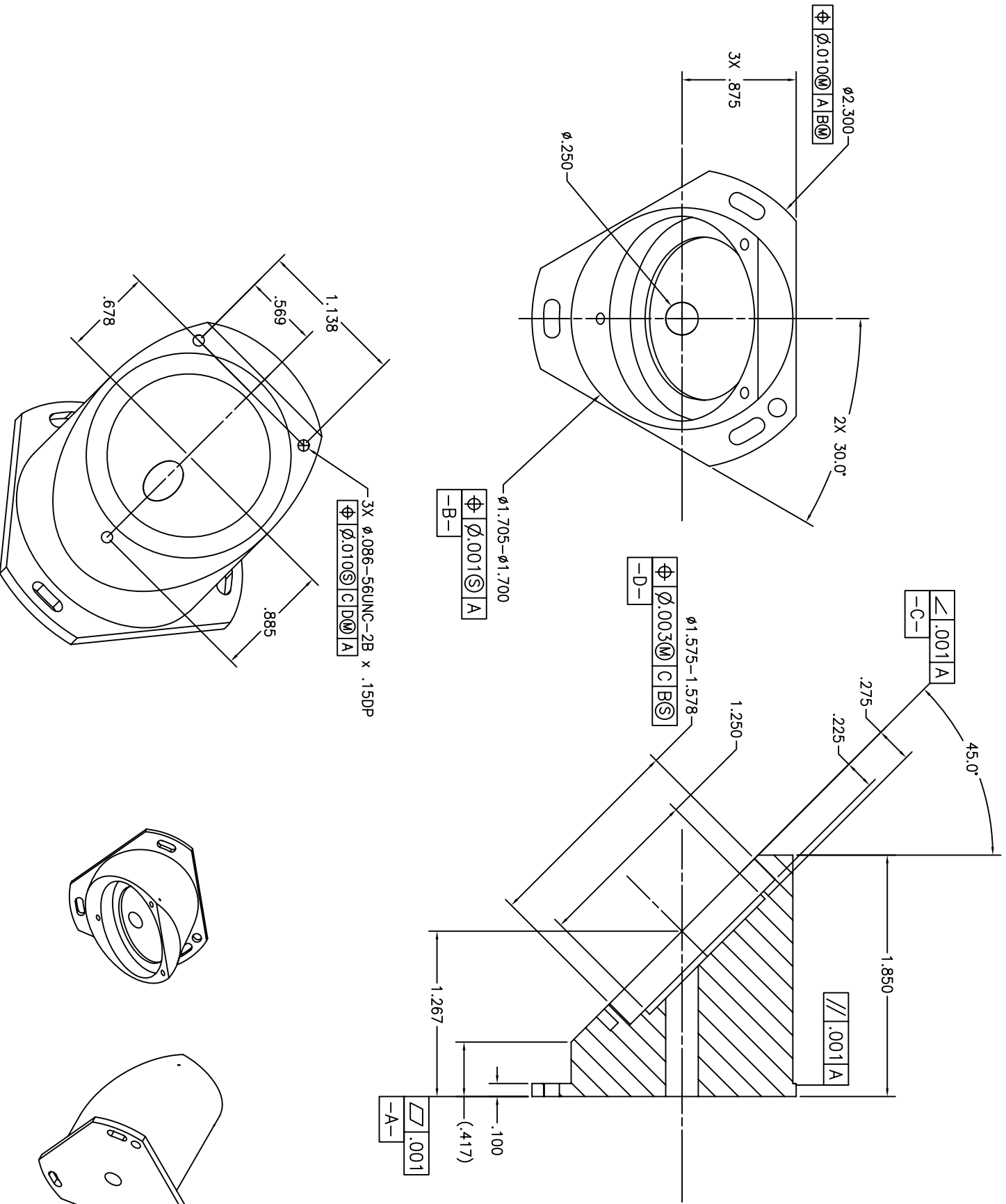
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220654

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX .XXX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16		
LIST OF MATERIAL					
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND					
DESIGNER	INT	DATE	NAME	TITLE	DRAWING INTERPRETED PER GSFC-X673-64-1
MMANAKOS			MMANAKOS	MOUNT	
CHECKED			MMANAKOS	FOLD MIRROR 0	
APPROVED				SVIP	
APPROVED					
APPROVED-STRESS					
APPROVED-ENGINEER					
CODE	SCALE	WT	SH	OF	REV
GD	9220654		1		1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

4

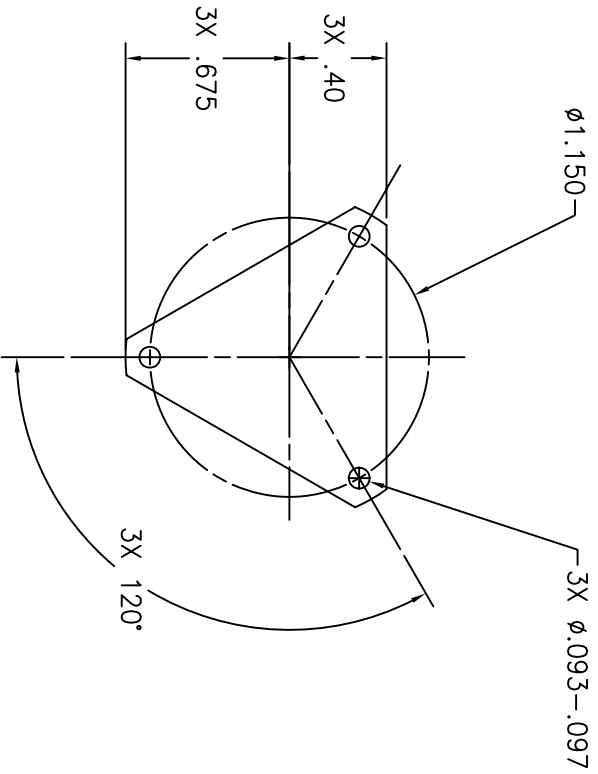
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: XX .XXX $\frac{\angle}{\angle}$ FRACTIONS $\frac{63}{\angle}$					
$\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$					
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot				
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D				
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE				
			DESIGNER MAMAKOS		
			DRAWN MAMAKOS		
			CHECKED		
			APPROVED		
			APPROVED		
			APPROVED-STRESS		
			APPROVED-ENGINEER		
			TITLE MASS SIMULATOR TIP-TILT MOUNT SVIP		
		GC	9220701		
		SCALE	2/1	WT	
				SH	1 OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

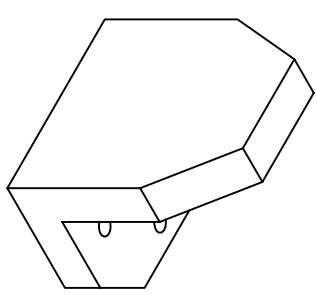
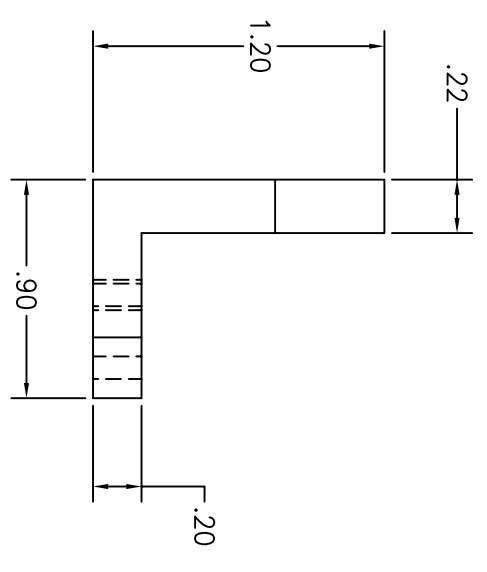
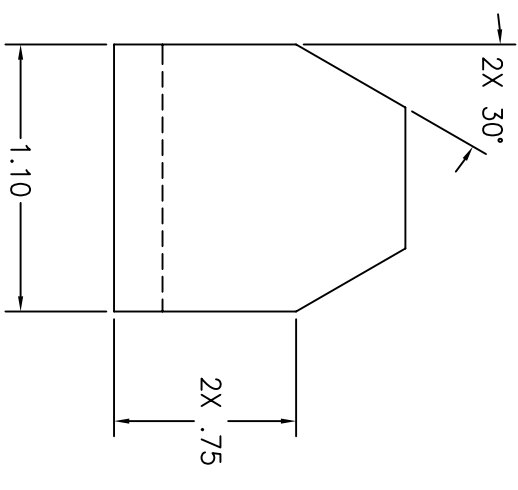
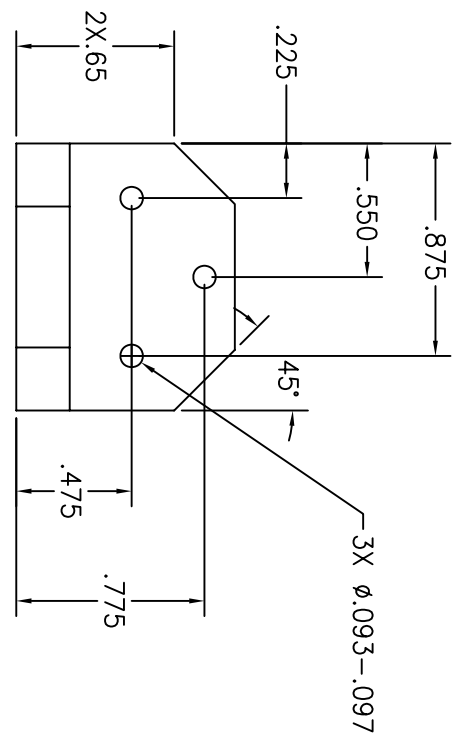
GC9220701 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: CRES 300 SERIES

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XXX ±.01 FRACTIONS ±1/16
 ±.01 ±.005 ±1° ±1/16 63
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ⊙
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND
 DRAWING INTERPRETED PER GSFC-X673-64-1
 TITLE: MASS SIMULATOR PISTON MIRROR MOUNT SVIP

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

APPROVED-STRESS	APPROVED-ENGINEER	CODE	SCALE	WT	SH	OF
		GC	2/1		1	1
NEXT ASSY	USED ON	GC 9220702				
		SVIP				

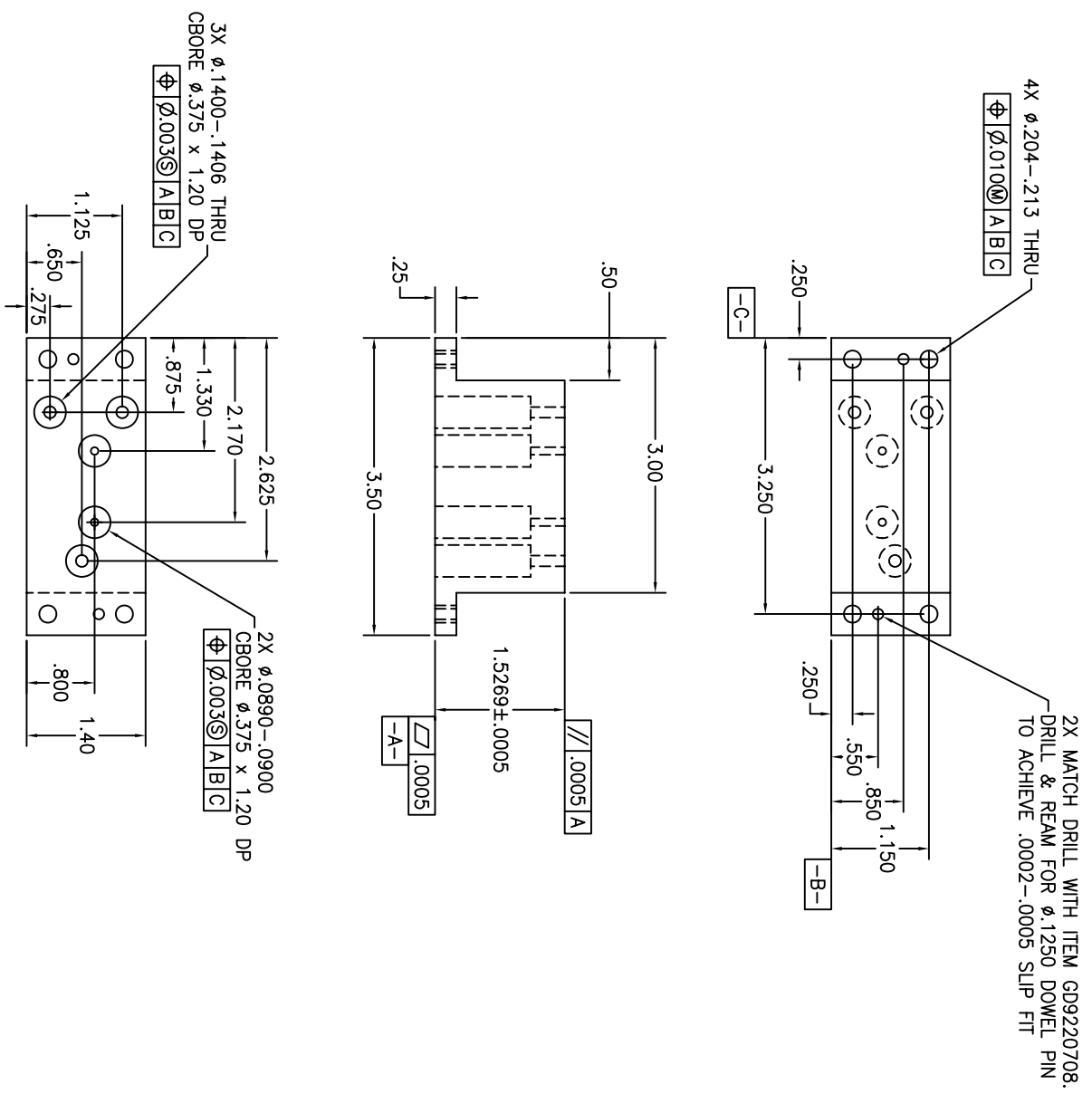
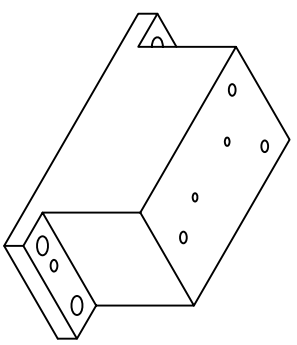
GC9220702 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6

SM	ZONE	DESCRIPTION	DATE	APPROVAL



THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

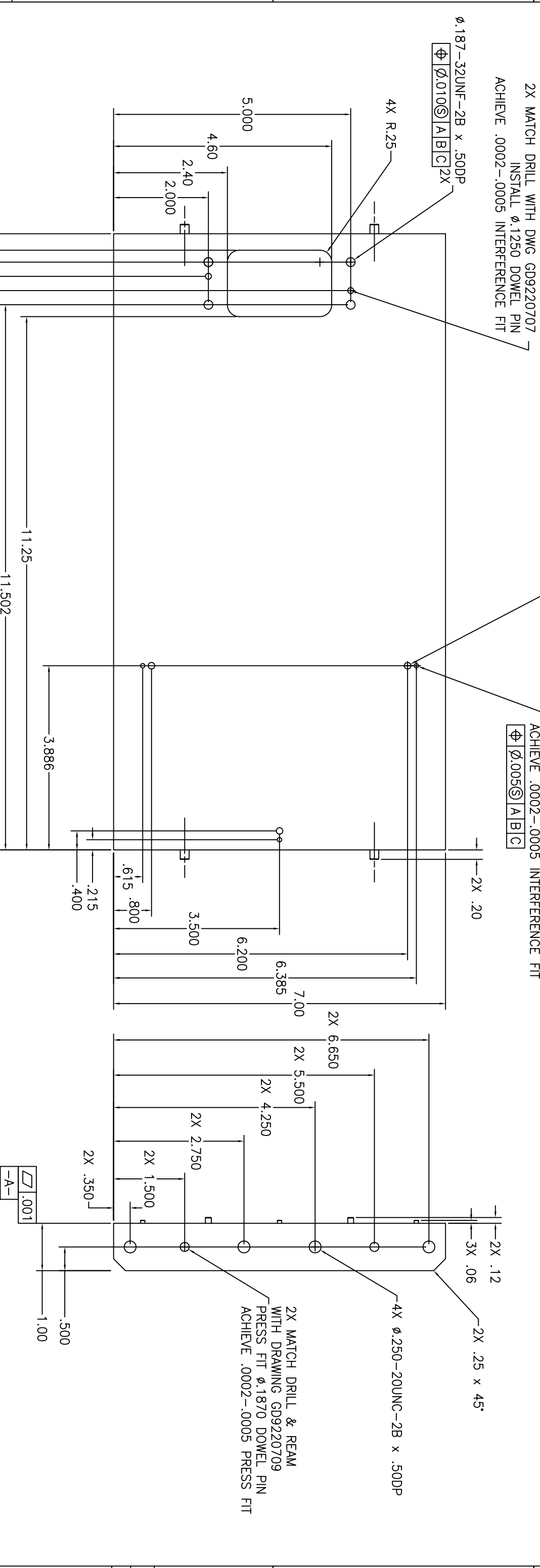
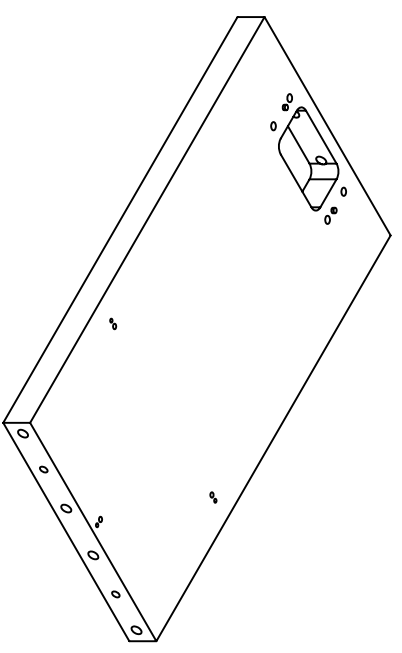
ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX .XXX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16 REMOVE ALL BURRS AND SHARP EDGES R. 010 OR CHAMFER MAX. <input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQD <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ϕ <input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____ NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND DRAWING INTERPRETED PER GSFC-X673-64-1 TITLE BLOCK, SPACER TELESCOPE ASSY FIXTURE SECONDARY MOUNT DESIGNER NAME INT DATE MAMAKOS CHECKED APPROVED APPROVED-STRESS APPROVED-ENGINEER CODE GD SCALE 1/1 WT SH1 OF 1		

4 3 2 1

A B C D A

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6

SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
		1			



OPPOSITE SIDE IDENTICAL

ITEM NO.	RECD/REVCD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			BASE PLATE TELESCOPE ASSY FIXTURE SVIP		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XX .XXX FRACTIONS 6/32
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ϕ
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INT	DATE	TITLE
DESIGNER MAMAKOS			BASE PLATE TELESCOPE ASSY FIXTURE SVIP
CHECKED MAMAKOS			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

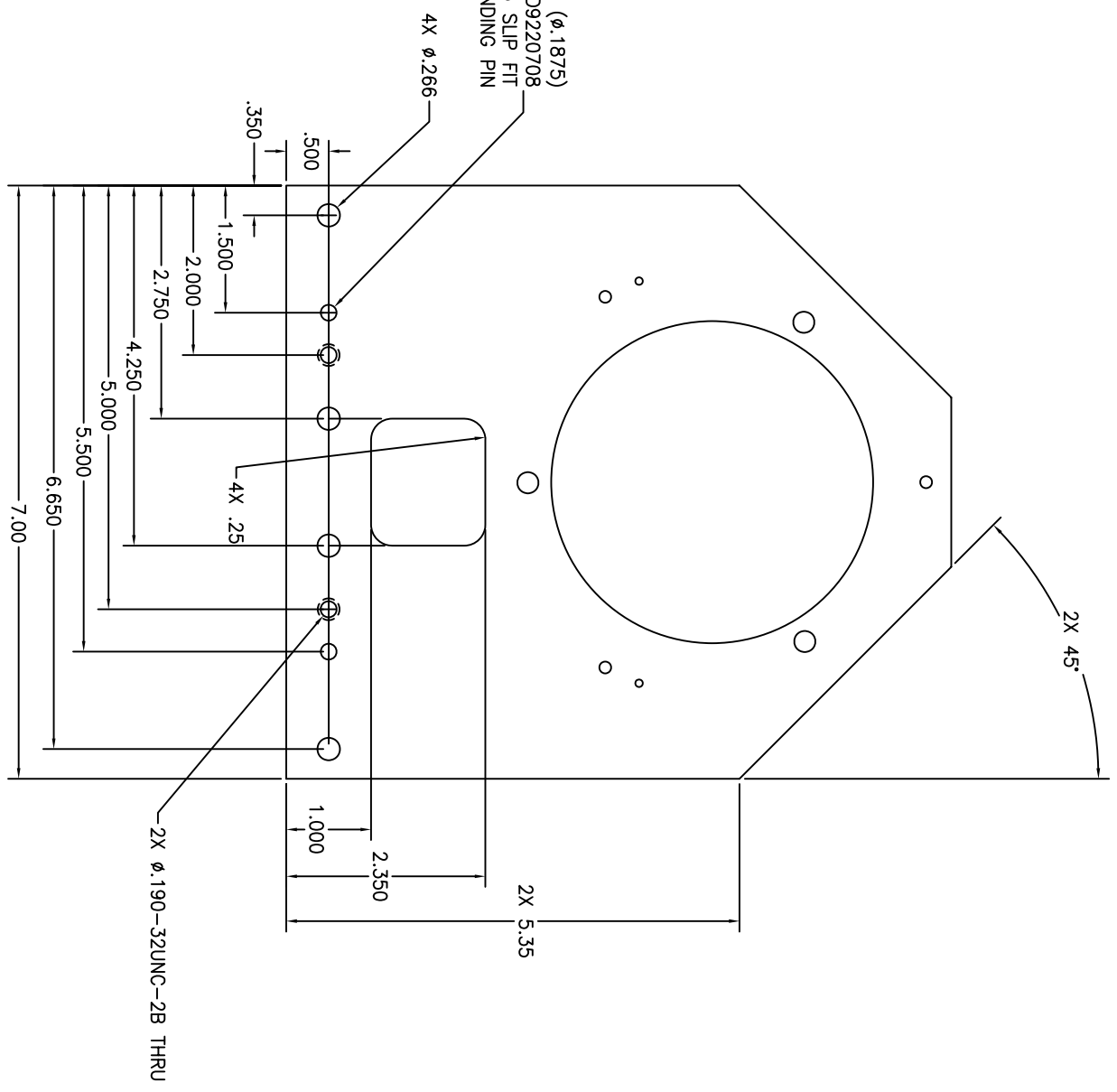
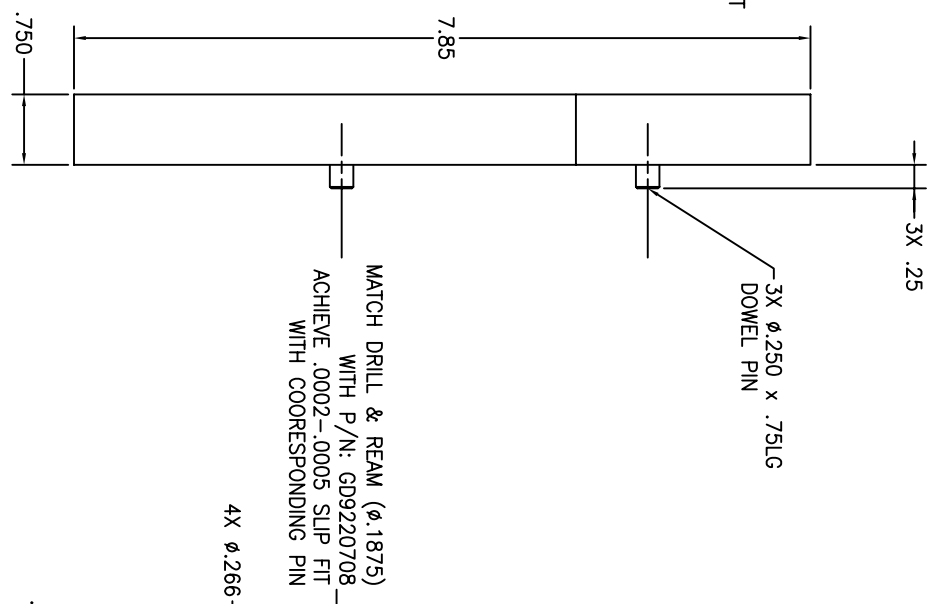
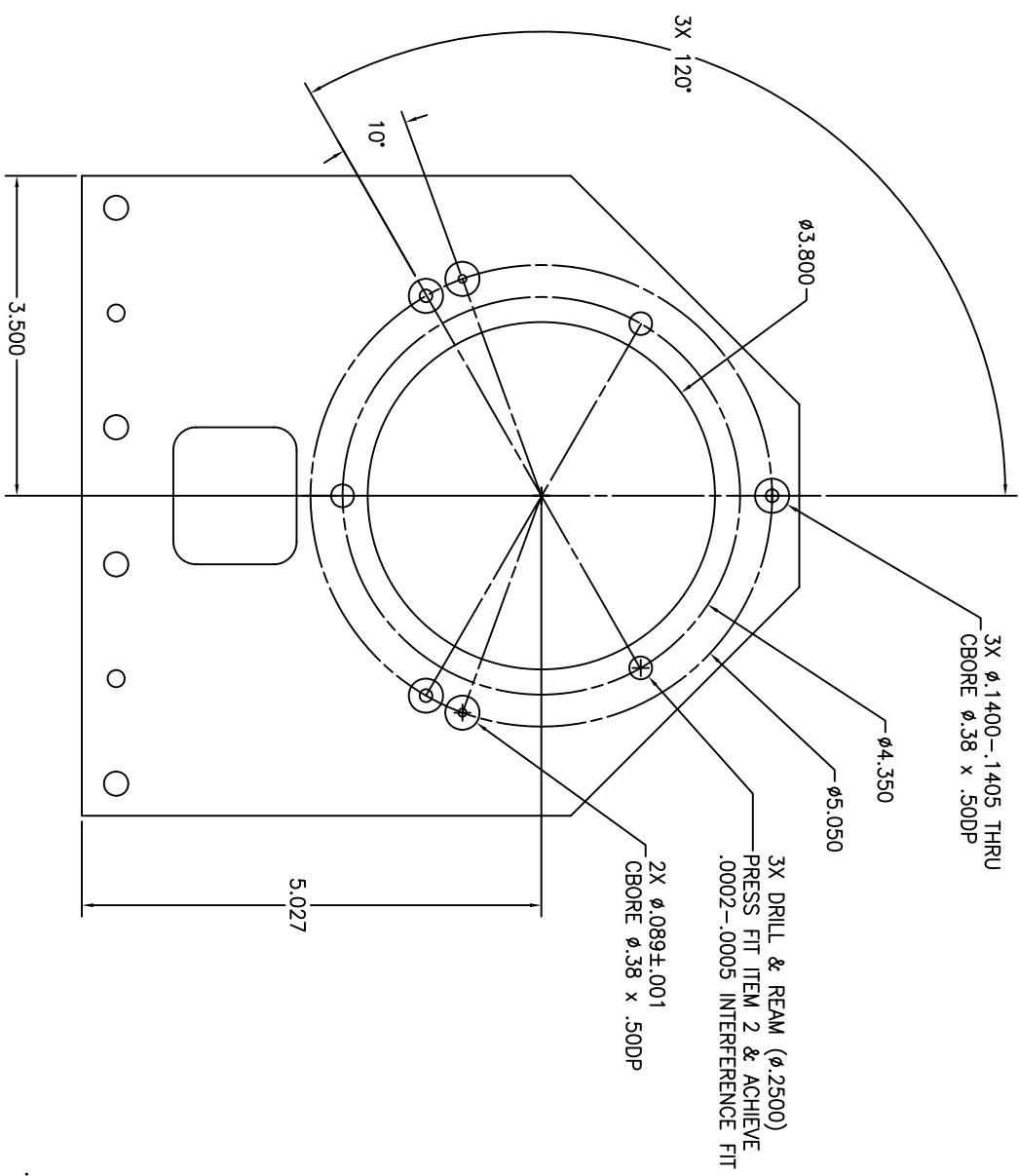
SOFTWARE: AutoCAD	VERSION: 2000i
FILE NAME:	
THIS DRAWING WAS PRODUCED USING	
GD	9220708
SCALE: 1/1	WT
SH1 OF 1	

.001	A
.001	B

-B-	.001	A
-----	------	---

GD9220708

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6



SM	ZONE	DESCRIPTION	DATE	APPROVAL

4 3 2 1

A C D

ITEM NO.	RECD/REV	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES		TOLERANCES:	
.XX	.XXX	FRACTIONS	63
±.01	±.005	±"	±1/16

REMOVE ALL BURRS AND SHARP EDGES R. 010 OR CHAMFER MAX.	DESIGNER	DATE
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D	DRAWN	
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	MAKING	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED	
<input type="checkbox"/> ON FIELD OF DRAWING THIS <input type="checkbox"/>	APPROVED	
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D	APPROVED	
<input type="checkbox"/> NOE REQUIRED PER S-313-009 CODE	APPROVED-STRESS	
	APPROVED-ENGINEER	

THIS DRAWING WAS PRODUCED USING	SOFTWARE: AutoCAD	VERSION: 2000i
FILE NAME:		

GD9220709	1	24	1
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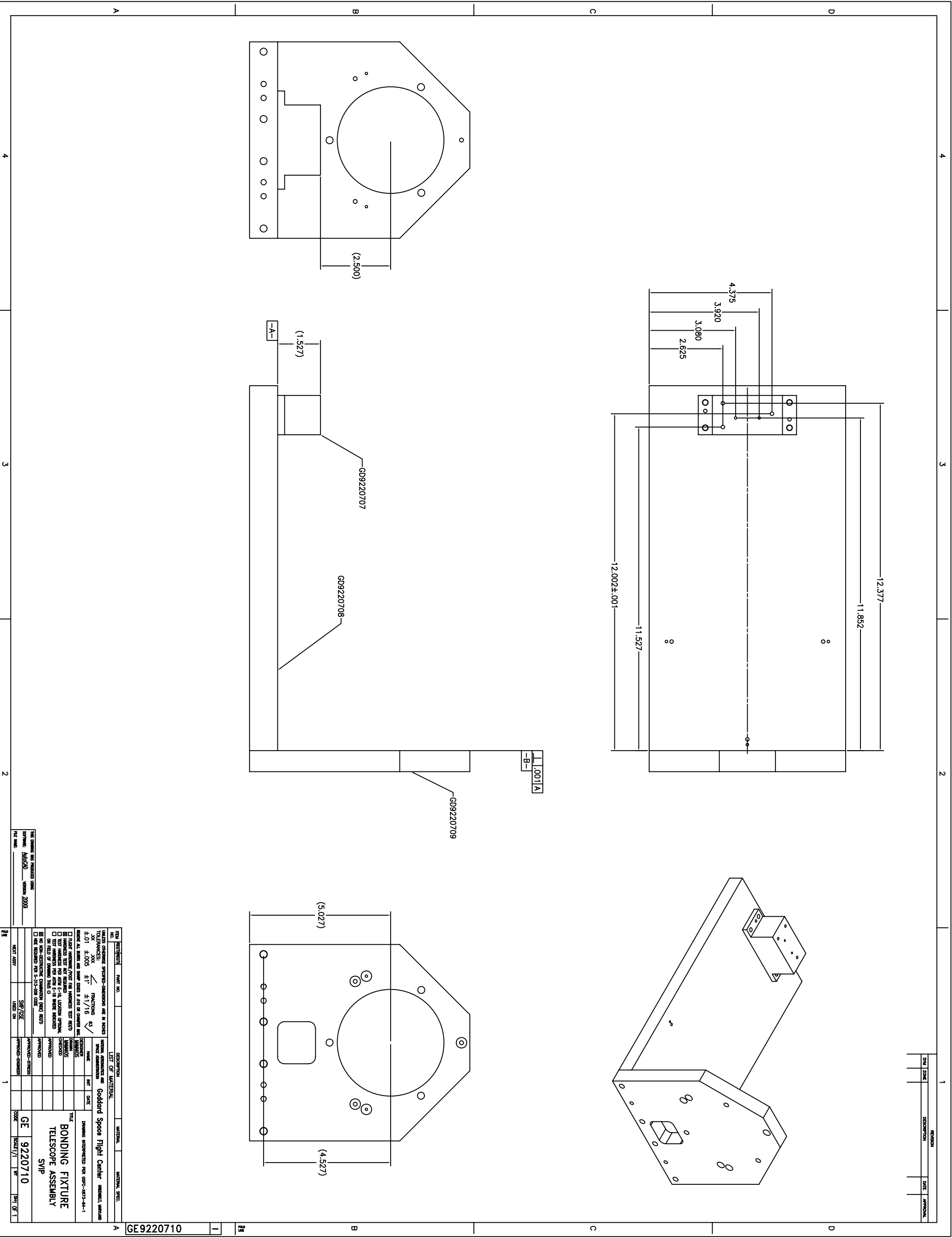
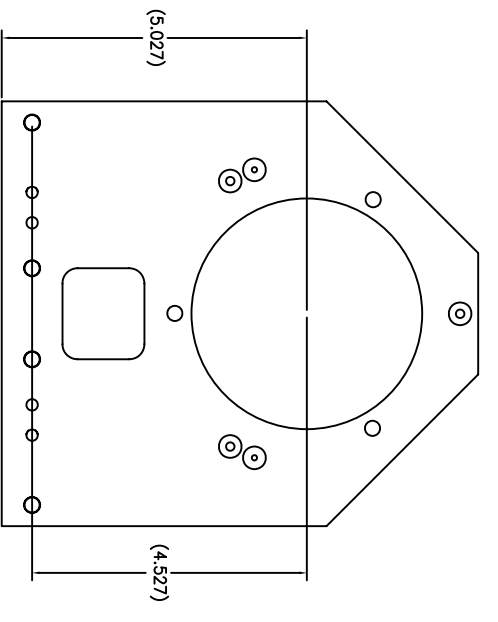
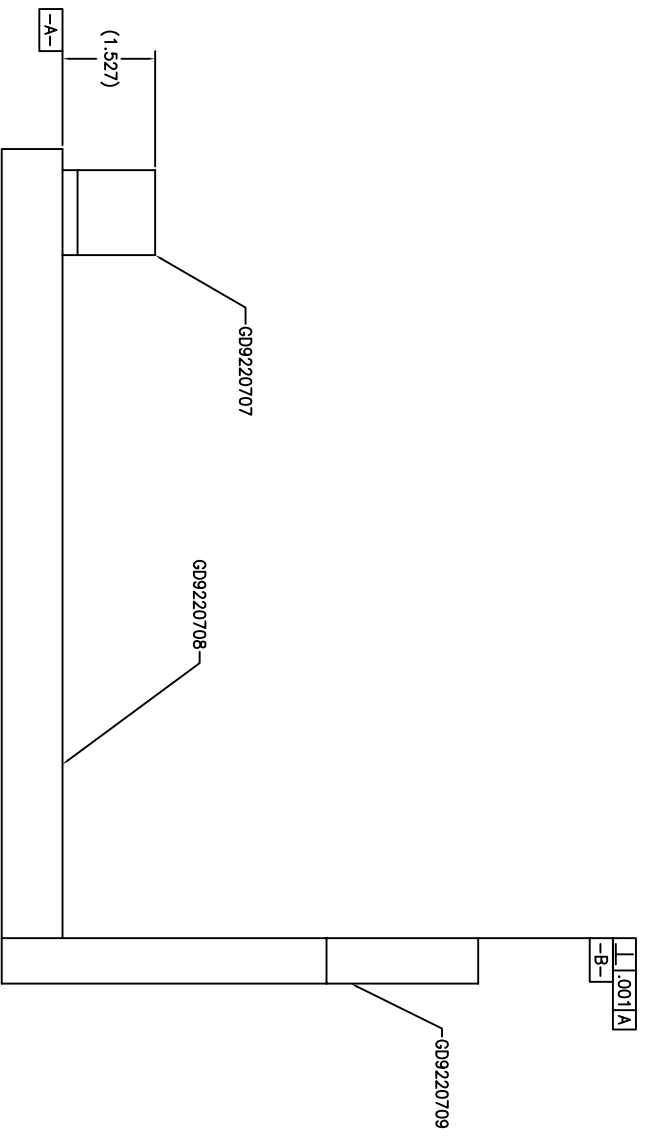
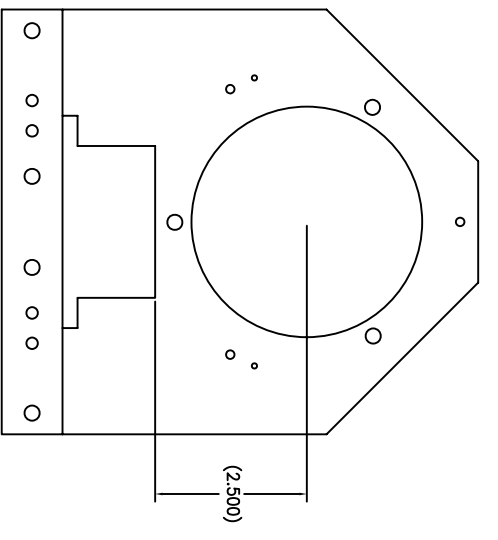
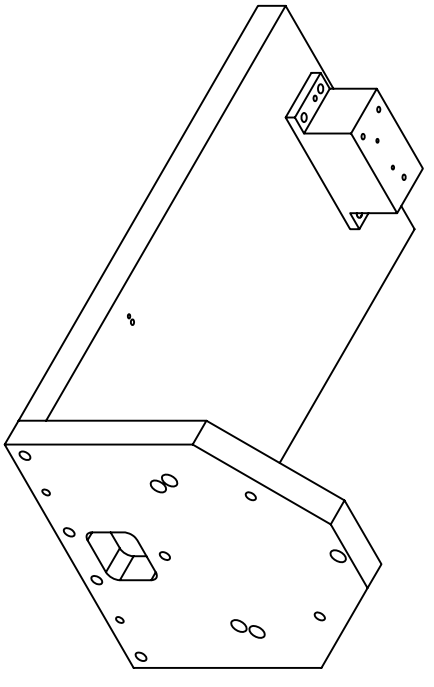
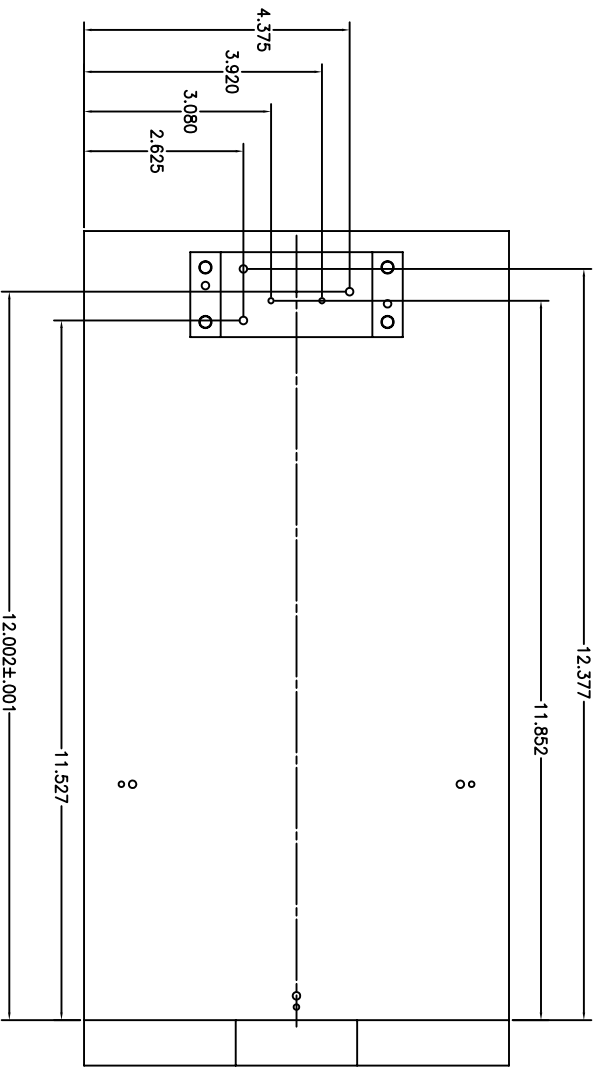
A B C D

A C D

GD9220709
 PLATE, FIXTURE
 TELESCOPE PRIMARY

4 3 2 1

4 3 2 1



REV	DESCRIPTION	DATE	BY	CHKD	APP'D
1					

DESIGNER	DATE	BY	CHKD

DATE	BY	CHKD

DATE	BY	CHKD

DATE	BY	CHKD

DATE	BY	CHKD

DATE	BY	CHKD

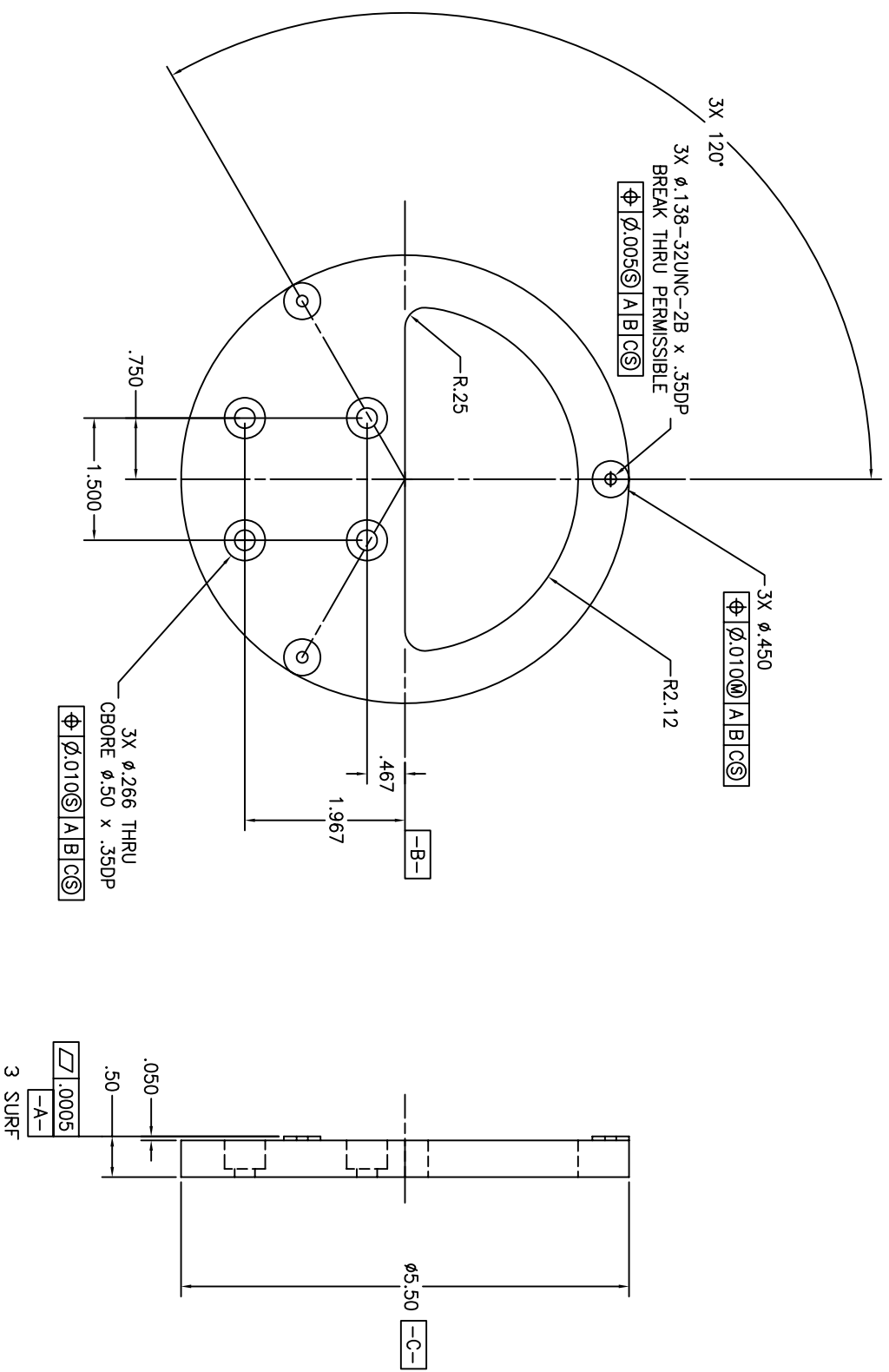
THIS DRAWING HAS BEEN REVISED SINCE
 DATE: 2001
 BY: [Signature]
 CHECKED: [Signature]

GE9220710

**BONDING FIXTURE
 TELESCOPE ASSEMBLY
 SVP**

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUMINUM ALLOY 6061-T6
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220715

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.								
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: <table border="0"> <tr> <td>.XX</td> <td>.XXX</td> <td>FRACTIONS</td> <td>63</td> </tr> <tr> <td>±.01</td> <td>±.005</td> <td>±1'</td> <td>±1/16</td> </tr> </table>	.XX	.XXX	FRACTIONS	63	±.01	±.005	±1'	±1/16	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Goddard Space Flight Center GREENBELT, MARYLAND
.XX	.XXX	FRACTIONS	63										
±.01	±.005	±1'	±1/16										
LIST OF MATERIAL													
DESIGNER	NAME	INT	DATE	TITLE									
MAIAKOS	MAIAKOS			DRAWING INTERPRETED PER GSFC-4673-64-1									
CHECKED				DRAWING INTERPRETED PER GSFC-4673-64-1									
APPROVED				DRAWING INTERPRETED PER GSFC-4673-64-1									
APPROVED-ENGINEER				DRAWING INTERPRETED PER GSFC-4673-64-1									
APPROVED-STRESS				DRAWING INTERPRETED PER GSFC-4673-64-1									
APPROVED-ENGINEER				DRAWING INTERPRETED PER GSFC-4673-64-1									
CODE	SCALE	WT	SH	OF									
GD	9220715		1	1									

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

A B C D

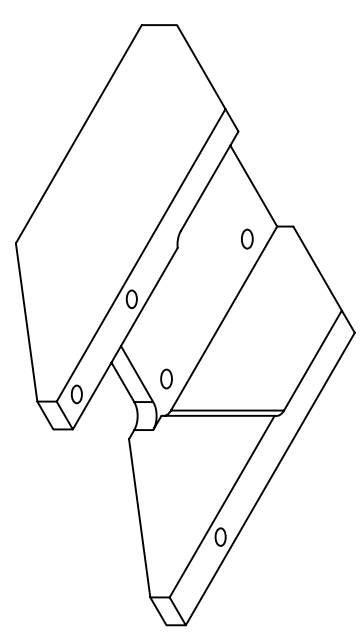
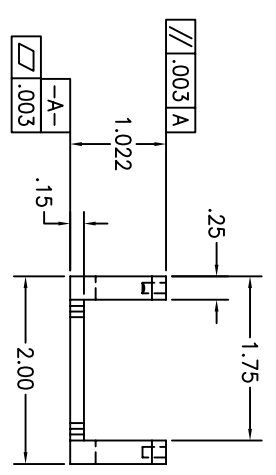
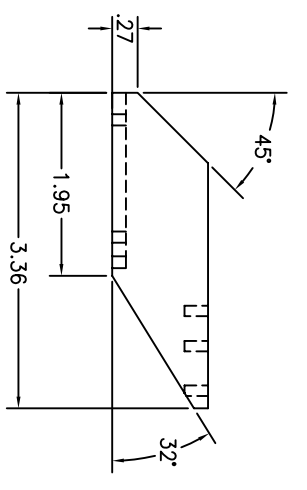
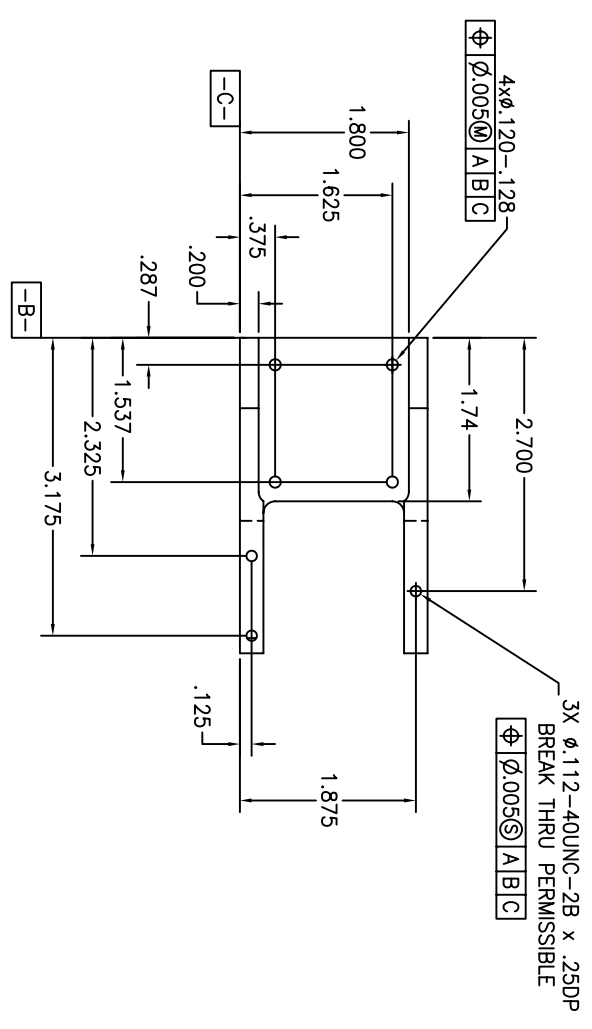
A B C D

4 3 2 1

4 3 2 1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUMINUM ALLOY 6061-T6
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
		1			

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX .XXX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16		

NAME	INT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED MAMAKOS			MOUNT
APPROVED			SECONDARY MIRROR FIXTURE
APPROVED-STRESS			SVIP
APPROVED-ENGINEER			

<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	<input type="checkbox"/> NOE REQUIRED PER S-313-009 CODE
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL ON FIELD OF DRAWING THIS ☐	
<input type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D	

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

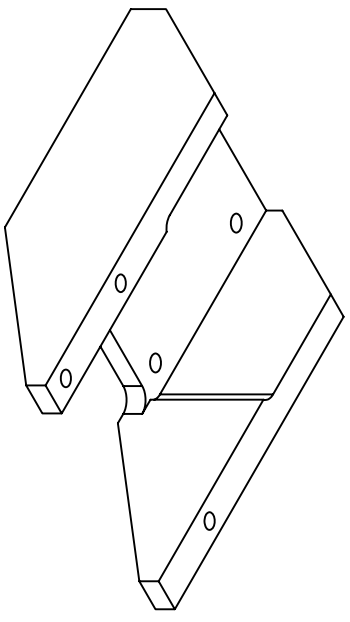
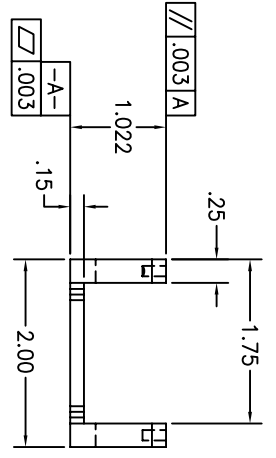
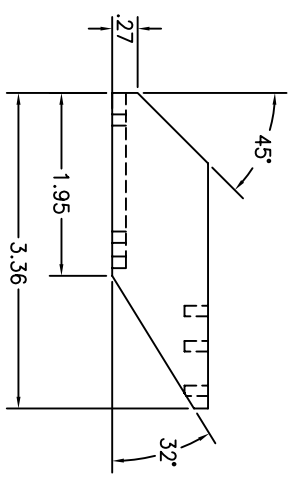
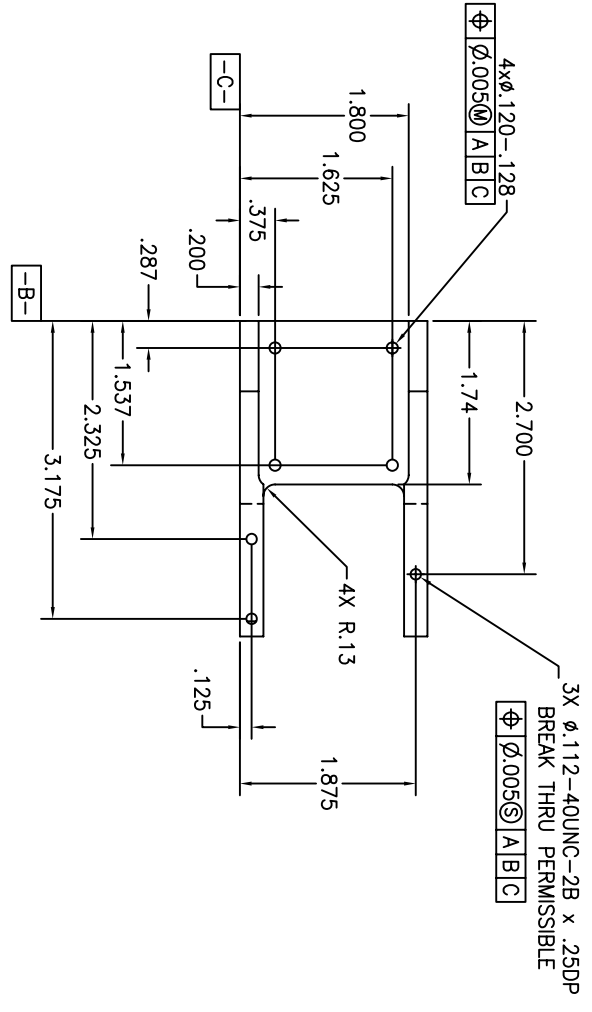
GD	9220716	SCALE: 1/1	WT	SHT OF 1
GD	9220716			

GD9220716

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUMINUM ALLOY 6061-T6
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH

SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED 4X R. 13		

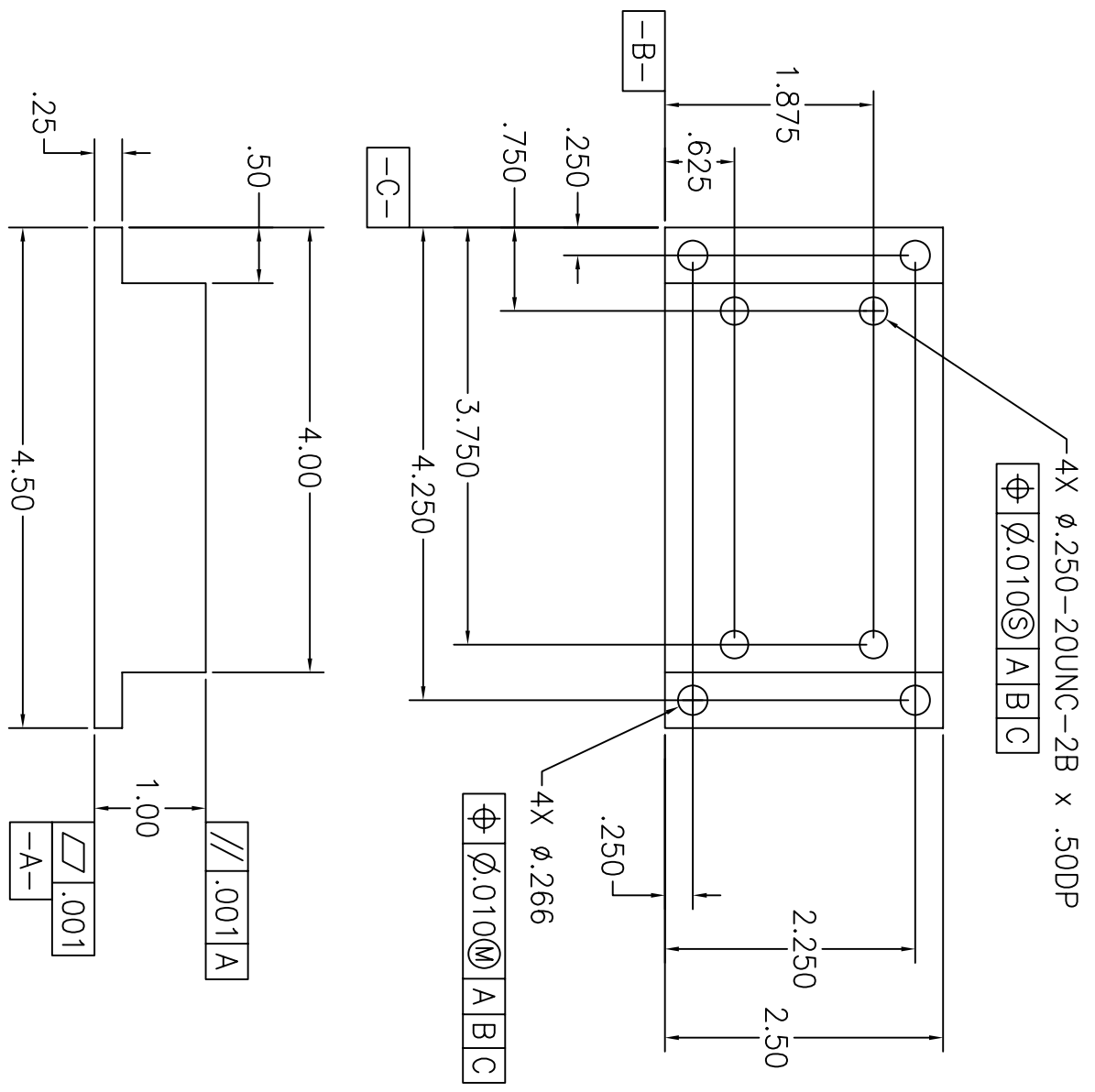


ITEM NO.	REC'D/REV'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .xx .xxx .xxx FRACTIONS 63/100					
±.01 ±.005 ±.1' ±1/16					
REMOVE ALL BURS AND SHARP EDGES R. .010 OR CHAMFER MAX.					
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot <input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER	NAME	INT	DATE	TITLE	
MAWAKOS	MAWAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1	
CHECKED	CHECKED			MOUNT	
APPROVED	APPROVED			SECONDARY MIRROR FIXTURE	
	APPROVED-STRESS			SVIP	
	APPROVED-ENGINEER				
GD	9220716	SCALE 1/1	WT	SHT OF 1	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUMINIUM ALLOY 6061-T6
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH



REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			SPACER TRANSLATION STAGE PRIMARY MIRROR FIXTURE
CHECKED			
APPROVED			
APPROVED			

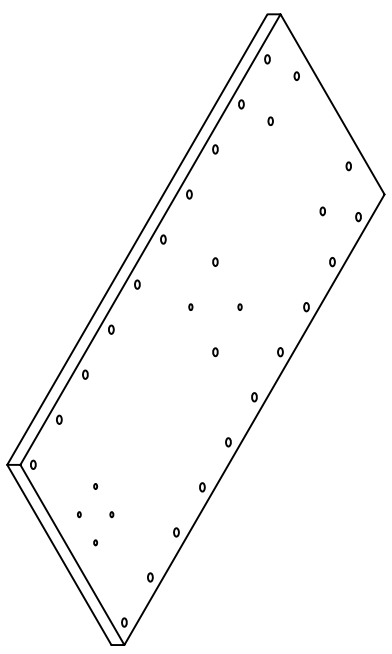
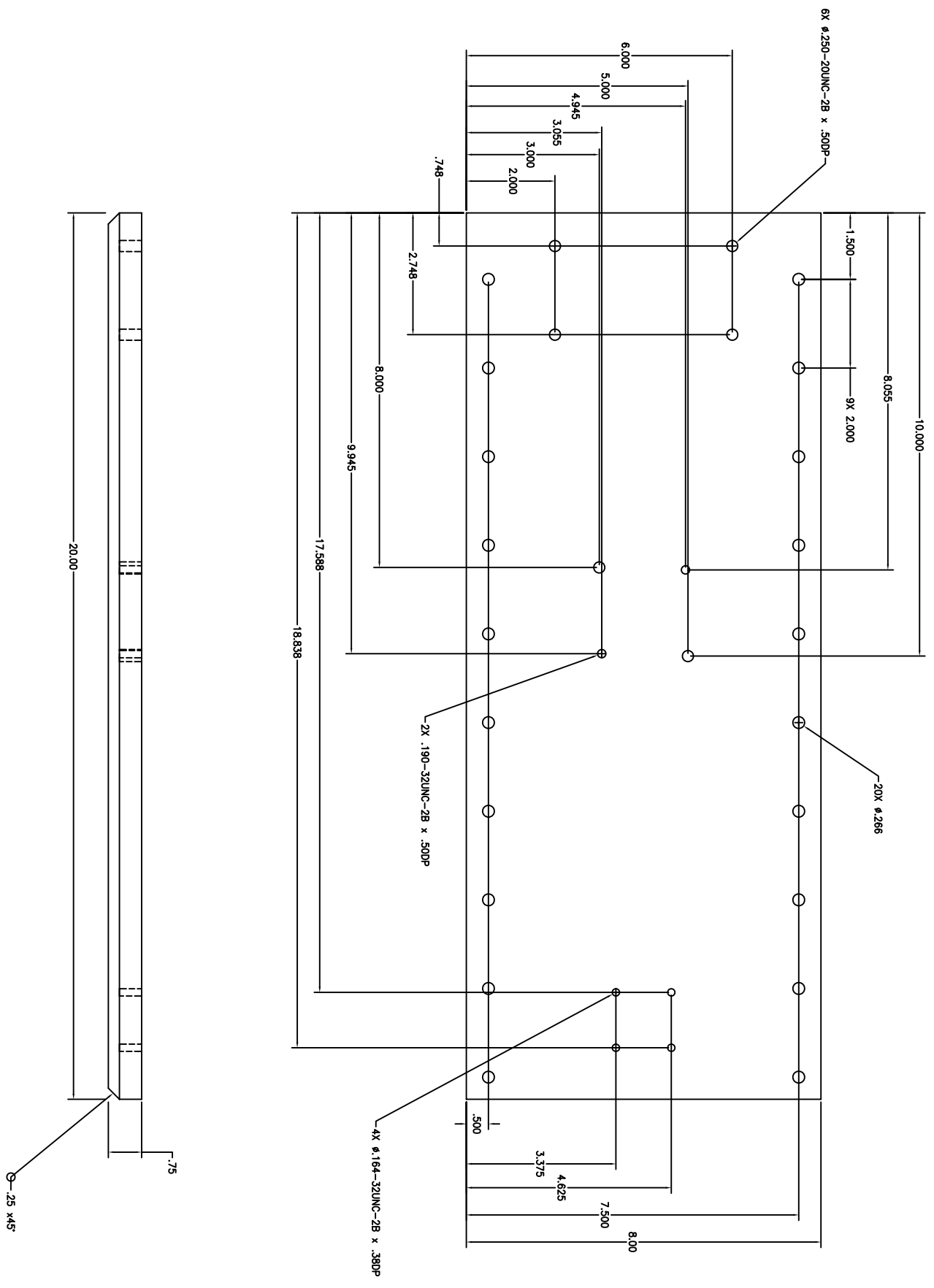
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	
TOLERANCES:	FRACTIONS 63
.XXX	±1/16
±.01	±.005
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.	
<input checked="" type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

APPROVED-STRESS			CODE	GC	9220717	SCALE	1/1	WT		SH1	OF	1
APPROVED-ENGINEER			NEXT ASSY			USED ON						

GC9220717 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUMINUM ALLOY 6061-T6
 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
 3 ALL DIMENSIONS APPLY AFTER FINISH



REV	DATE	DESCRIPTION	BY	APP'D
1				

GE9220718

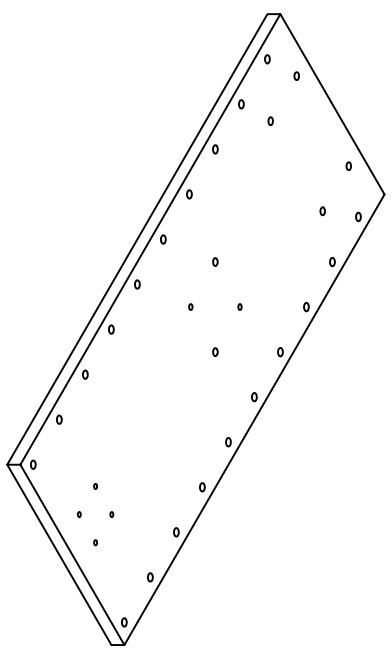
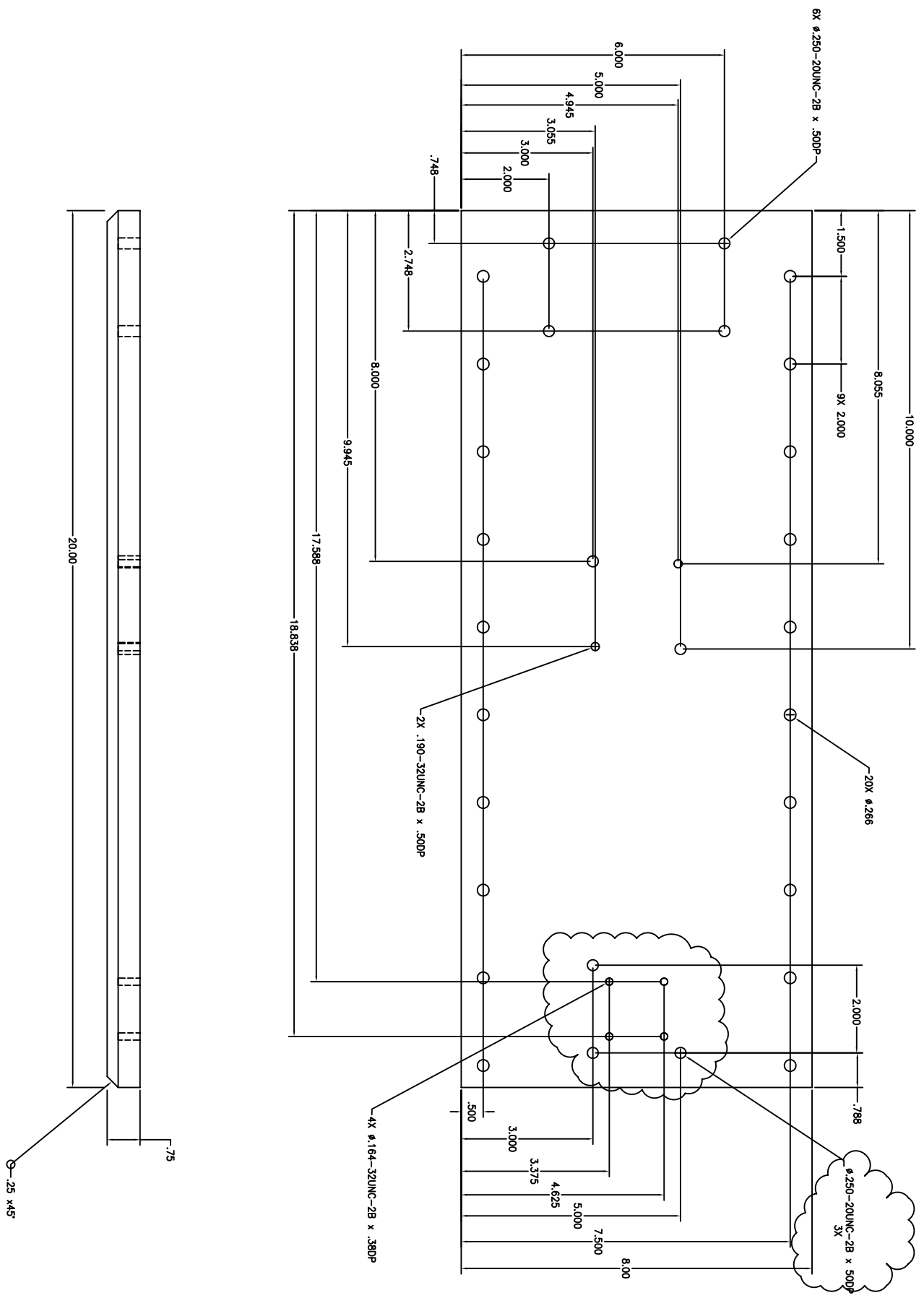
REV	DATE	DESCRIPTION	BY	APP'D
1				

DESIGNATION	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
TELESCOPE CHARACTERIZATION SVIP	9220718	Goddard Space Flight Center		

DATE	BY	APP'D
2001		

DATE	BY	APP'D
2001		

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUMINUM ALLOY 6061-T6
 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
 3 ALL DIMENSIONS APPLY AFTER FINISH



REV	DATE	DESCRIPTION	BY	APP'D
1				

REV	DATE	DESCRIPTION	BY	APP'D
1				

DESIGNER	DATE	SCALE
DRWING INTERPRETER		
CHECKED		
APPROVED		
APPROVED - FITNESS		

TITLE	GE 9220718
PROJECT	9220718
REV	1

ITEM NO.	DESCRIPTION	PART NO.	QUANTITY	UNIT
1	TELESCOPE CHARACTERIZATION			

DATE	2001
BY	
APP'D	

GE9220718

4

3

2

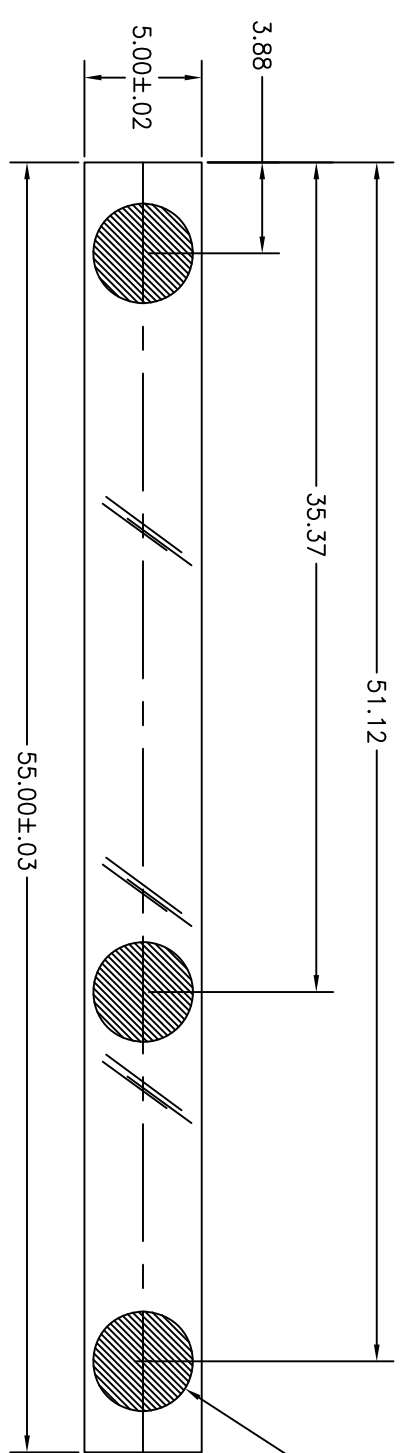
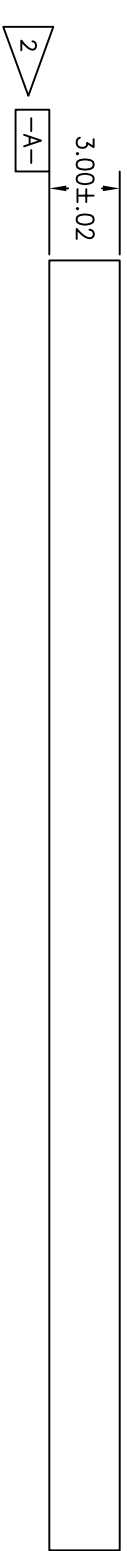
1

NOTES: UNLESS OTHERWISE SPECIFIED

1 MATERIAL: FUSED SILICA

2 WAVEFRONT: ~LAMBDA/10 LOCALLY @ 633nm
LAMBDA/4 PV OVER CLEAR APERTURE

SM#	ZONE	DESCRIPTION	DATE	APPROVAL
A		633nm wgs 1064nm		
B		ADDED LOCALIZED C.A. LOCATIONS		



3X Ø4.25
2 LAMBDA/10 LOCALLY @ 633nm

4

3

2

1

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

ITEM NO.	RECD/REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .xx .xxx FRACTIONS 63/16					
±.01 ±.005 ±.1' ±1/16					
REMOVE ALL BURS AND SHARP EDGES R. 0.10 OR CHAMFER MAX. PETRONE					
FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D					
HARDNESS TEST NOT REQUIRED					
TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
ON FIELD OF DRAWING THIS 0					
NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D					
NOE REQUIRED PER S-313-009 CODE					
DESIGNER			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
DRAWN			Goddard Space Flight Center		
CHECKED			GREENBELT, MARYLAND		
APPROVED			DRAWING INTERPRETED PER GSFC-X673-64-1		
APPROVED-STRESS			TITLE		
APPROVED-ENGINEER			OPTICAL FLAT		
NEXT ASSY			SVIP TEST ARTICLE		
USED ON			GD		
			9220720		
			SCALE 1/4" = 1"		
			WT		
			SHT OF 1		

GD9220720

923

A

B

C

D

A

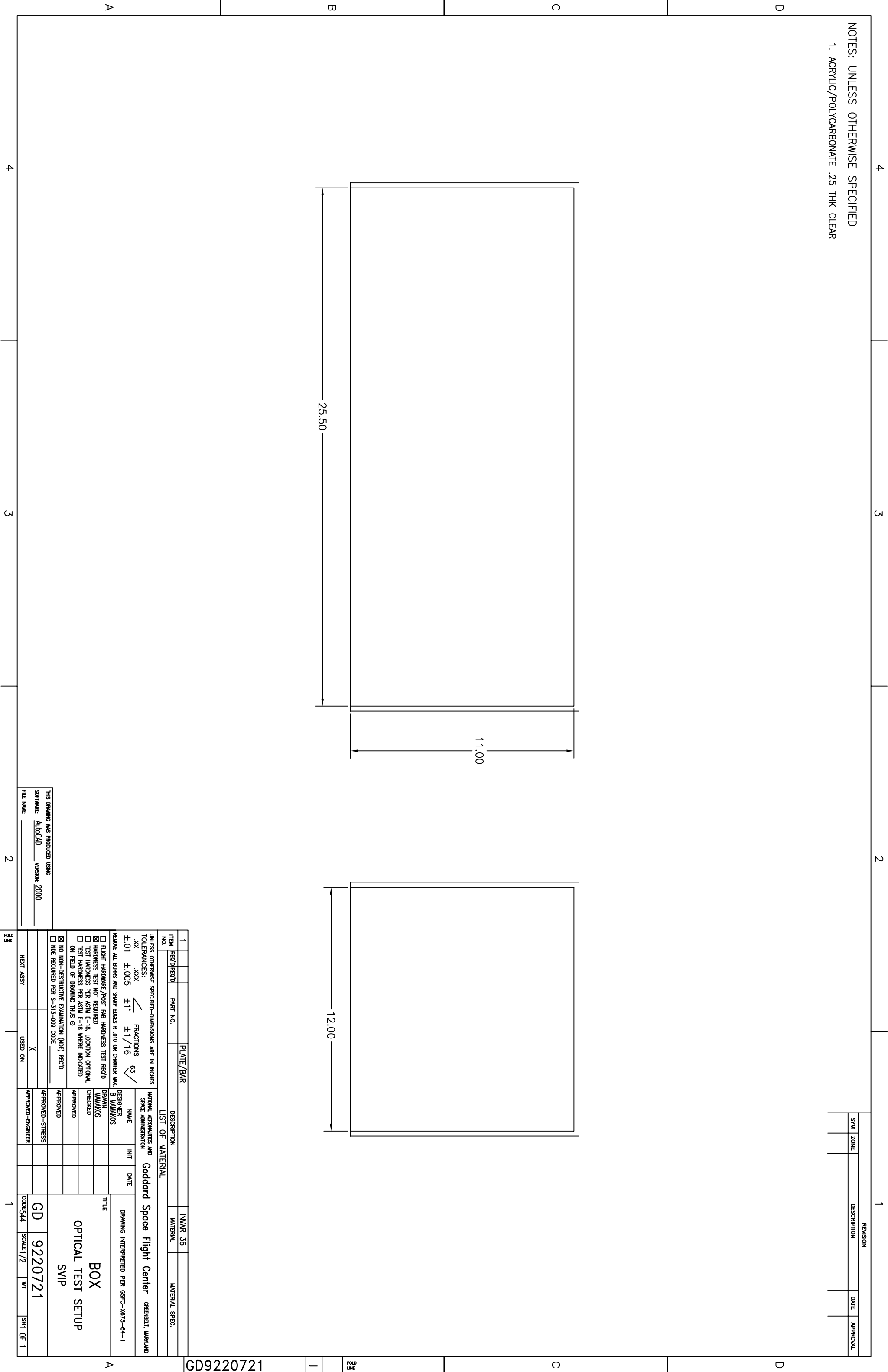
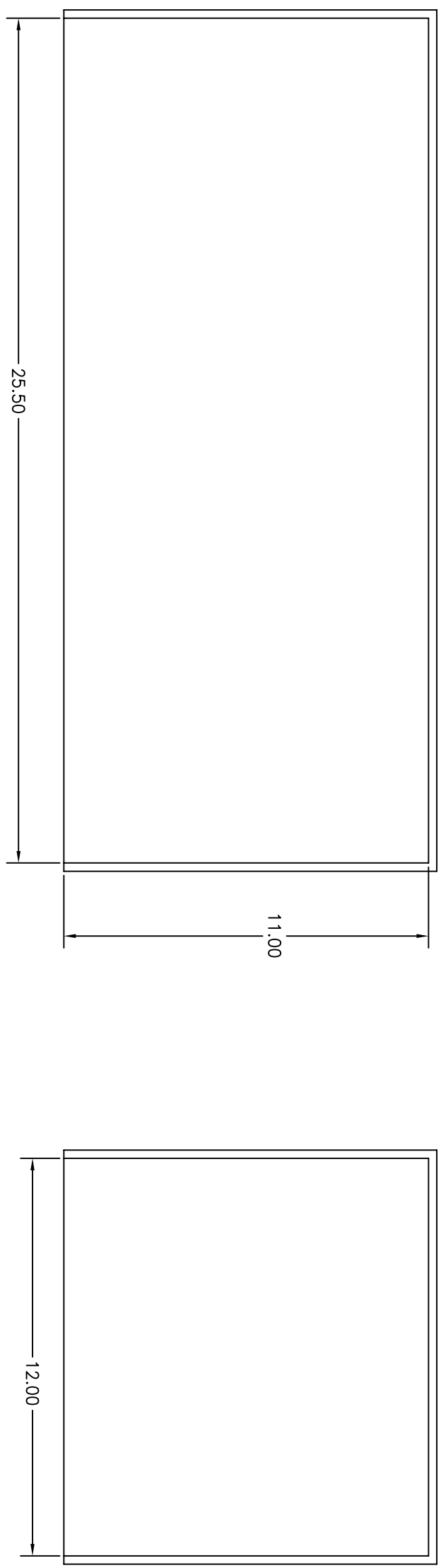
B

C

D

NOTES: UNLESS OTHERWISE SPECIFIED
 1. ACRYLIC/POLYCARBONATE .25 THK CLEAR

REVISION		DATE	APPROVAL
SM	ZONE	DESCRIPTION	



1	REC'D/REC'D	PART NO.	PLATE/BAR	INVAR 36	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.xx	.xxx	FRACTIONS 63/			
±.01	±.005	±.1'	±1/16		
REMOVE ALL BURS AND SHARP EDGES R. 0.10 OR CHAMFER MAX. B MAXIMOS					
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \emptyset				
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D				
<input type="checkbox"/>	NDI REQUIRED PER S-313-009 CODE				
DESIGNER: B MAXIMOS					
DRAWN: MAXIMOS					
CHECKED:					
APPROVED:					
APPROVED-STRESS:					
APPROVED-ENGINEER:					
USED ON: X					
NEXT ASSY:					
TITLE: DRAWING INTERPRETED PER GSFC-X673-64-1					
BOX					
OPTICAL TEST SETUP					
GD	9220721	SCALE: 1/2	WT:	SHT OF 1	

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME:

A B C D

A C D

4 3 2 1 1 2 3 4

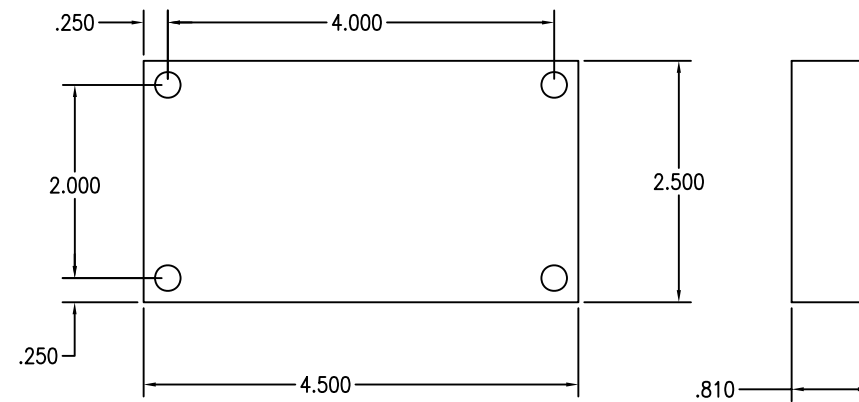
GD9220721

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUMINIUM ALLOY 6061-T6
- 2 FINISH: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2 DYED BLACK
- 3 ALL DIMENSIONS APPLY AFTER FINISH

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



GC9220722

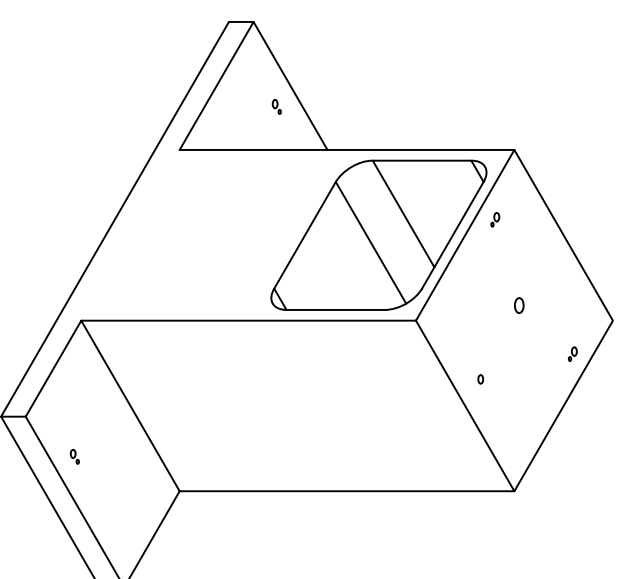
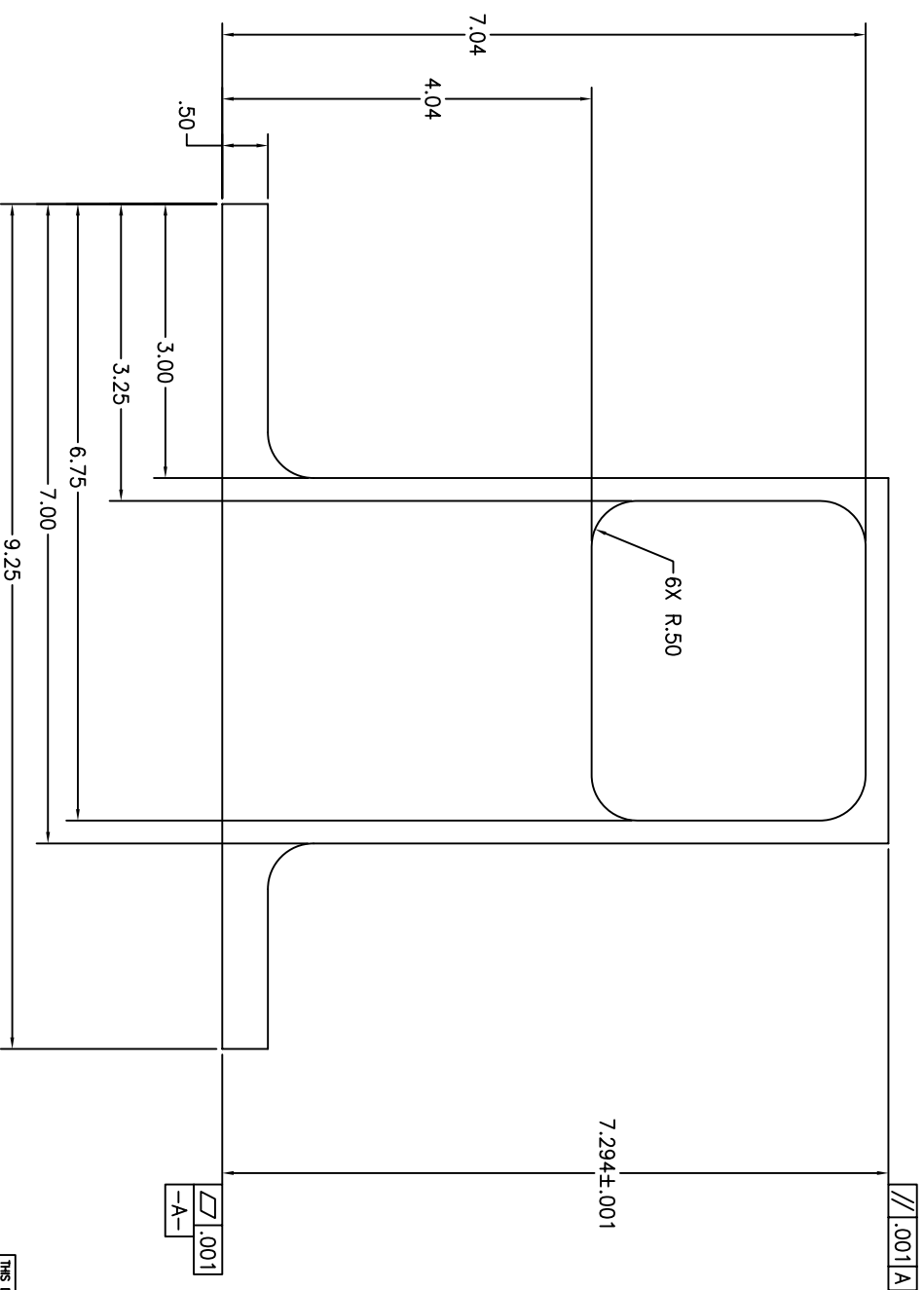
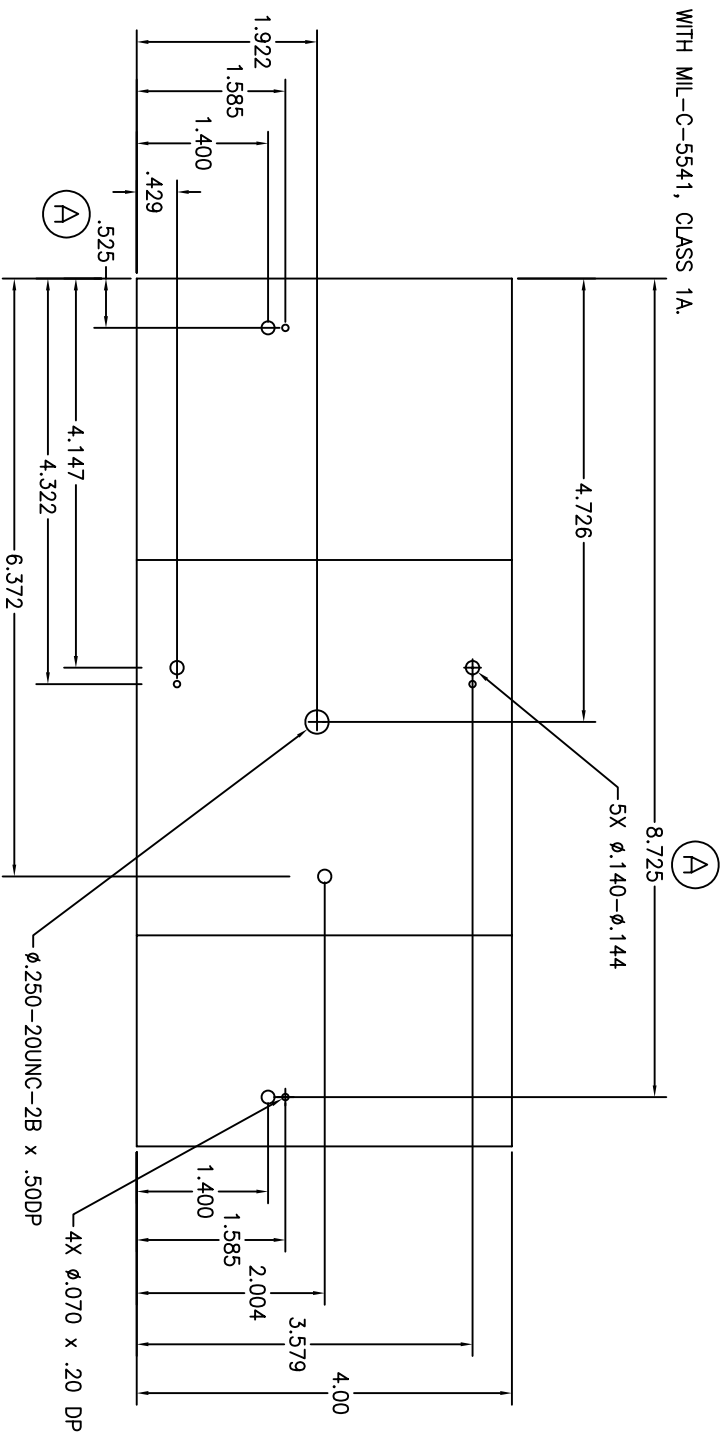
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

ITEM NO.	REQ'D	REQ'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES				NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND		
TOLERANCES:				DRAWING INTERPRETED PER GSFC-X673-64-1		
.XX .XXX FRACTIONS 63 ✓				DESIGNER MAMAKOS		
±.01 ±.005 ±1' ±1/16				DRAWN MAMAKOS		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.				CHECKED		
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D				APPROVED		
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED				APPROVED		
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL				APPROVED-STRESS		
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ○				APPROVED-ENGINEER		
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D				GC 9220722		
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE				CODE SCALE 1/1 WT SH1 OF 1		
NEXT ASSY		USED ON				

END

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED MISSING DIM	7/11/05	

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XX	.XXX	∕	FRACTIONS	∕	63
±.01	±.005	±.1	±.1	±.1/16	∕
REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D					
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL					
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS Ø					
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D					
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE					
DESIGNER			NAME	INT	DATE
DRAWN			NAME	INT	DATE
CHECKED			NAME	INT	DATE
APPROVED			NAME	INT	DATE
APPROVED-STRESS			NAME	INT	DATE
APPROVED-ENGINEER			NAME	INT	DATE
NEXT ASSY			NAME	INT	DATE
USED ON			NAME	INT	DATE
TITLE			DRAWING INTERPRETED PER GSFC-X673-64-1		
GD			BOND FIXTURE		
9220723			BENCH SPACER		
SCALE 1/1			SVIP		
WT			REV		
SH1 OF 1			1		

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME: _____

GD9220723

A

30

C

D

A

A

B

C

D

4

3

2

1

A

4

3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. SUGGESTED SOURCE
THORLABS, INC
435 ROUTE 206 NORTH, NEWTON, NJ 07860
973-579-7227
PART NUMBER: MB1218

REV	DATE	APPROVAL
1		

Ø.138-32UNC-2B THRU
3X

6.987

3.500

(.500)

(12.000)

8.700

6.000

3.300

(18.000)

ALTERED PART DRAWING

GD9220725

4

3

2

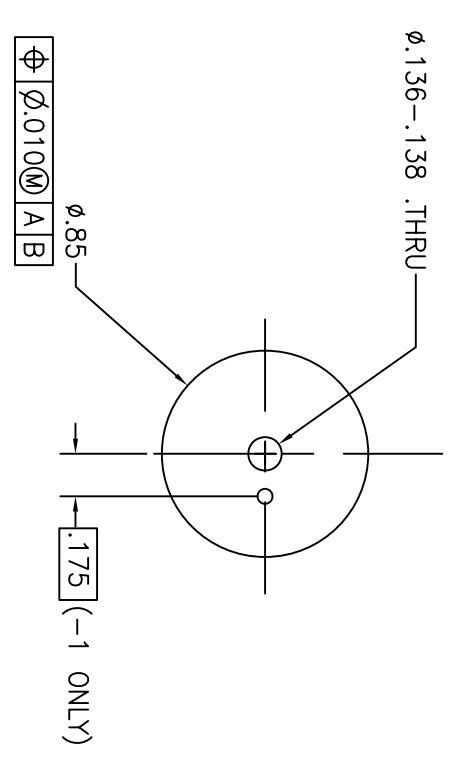
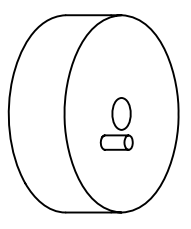
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THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

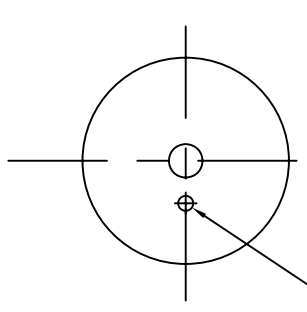
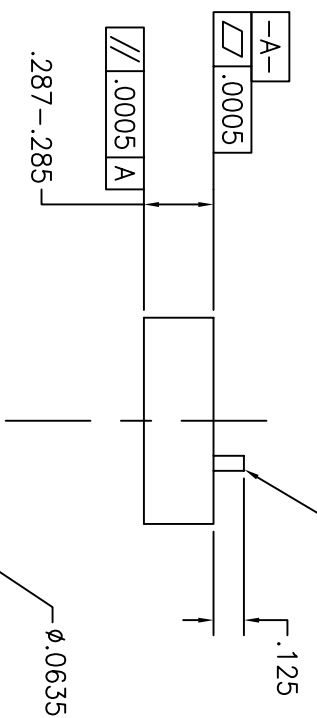
ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES: .xxx .xxx .xxx FRACTIONS 63					
±.01 ±.005 ±.1' ±.1/16					
REMOVE ALL BIRDS AND SHARP EDGES R .010 OR CHAMFER MAX					
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS Ø <input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____					
DESIGNER	NAME	INIT	DATE	DRAWING INTERPRETED PER GSFC-X673-64-1	
DRAWN	NAME			TITLE	
CHECKED	NAME			PLATE	
APPROVED				TELESCOPE ALIGNMENT FIXTURE	
APPROVED				SVIP	
APPROVED-STRESS				GD	9220725
APPROVED-ENGINEER				SCALE: 1/1	WT
					SH1 OF 1

GD9220725

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



INSTALL ITEM 2, (-1 ONLY)
ACHIEVE .0003-.0005 INTERFERENCE FIT
 $\phi \varnothing .005 \text{ (S)}</math> A$



ITEM NO.	REQ'D/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
2	-	1	MS16555--602 PIN/DOWEL $\phi .0625$ x .25 LG	GRES	
1	AR		ROD/BAR	AL ALY 6061-T6	

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES: .xxx .xxx FRACTIONS $\frac{63}{1000}$
 $\pm .01$ $\pm .005$ $\pm 1^\circ$ $\pm 1/16$
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

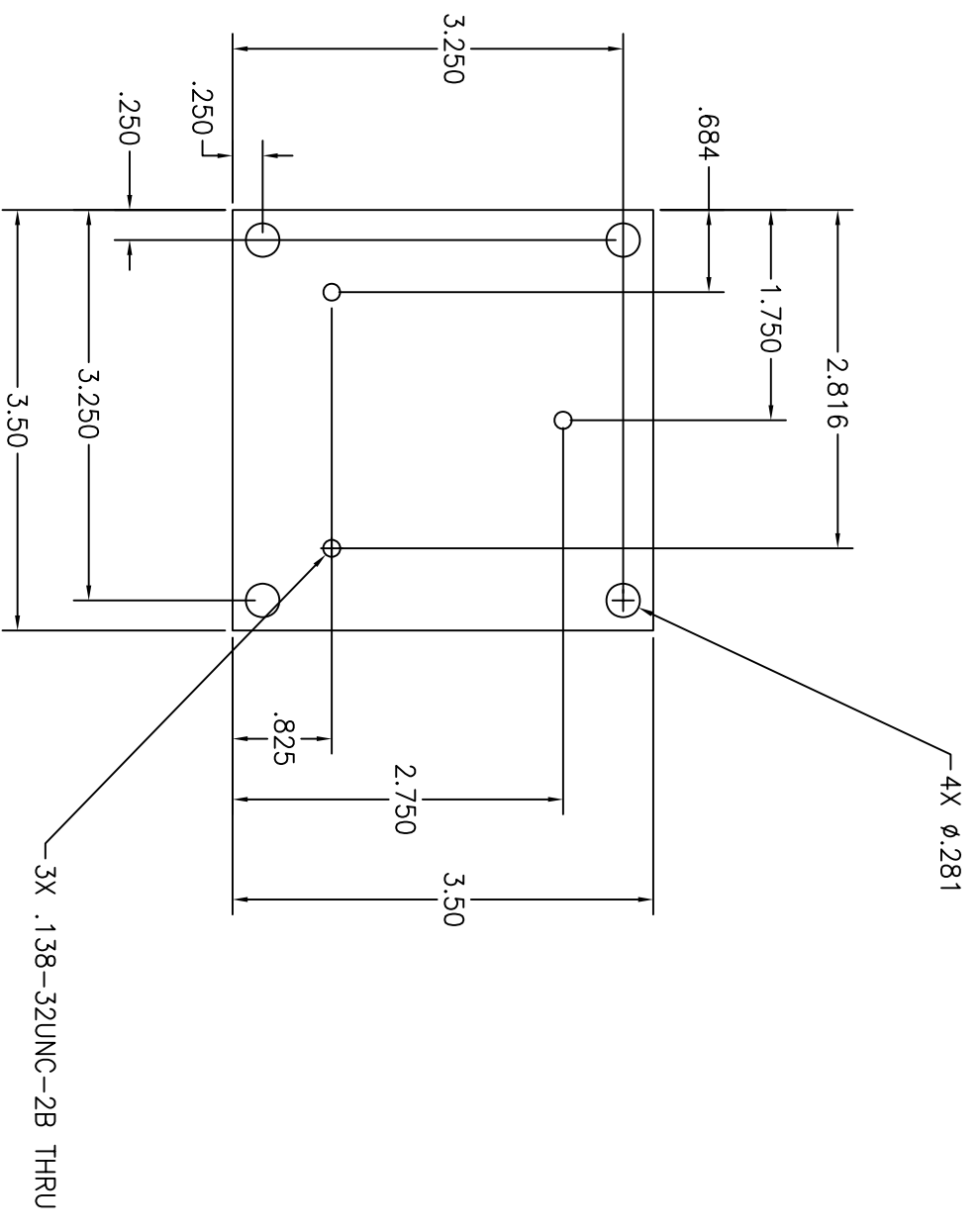
NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 SPACER BS1 BENCH INSERT INSERT BONDING FIXTURE
DRAWN MAMAKOS			
CHECKED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

CODE	SCALE	WT	SH1	OF 1
GC	9220730	2/1		1

GC9220730 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: CRES 303/304



ITEM NO.	REQ'D	REQ'D	PART NO.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES			
TOLERANCES:			
.XX	.XXX	∠	FRACTIONS 63
±.01	±.005	±1°	±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ

NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

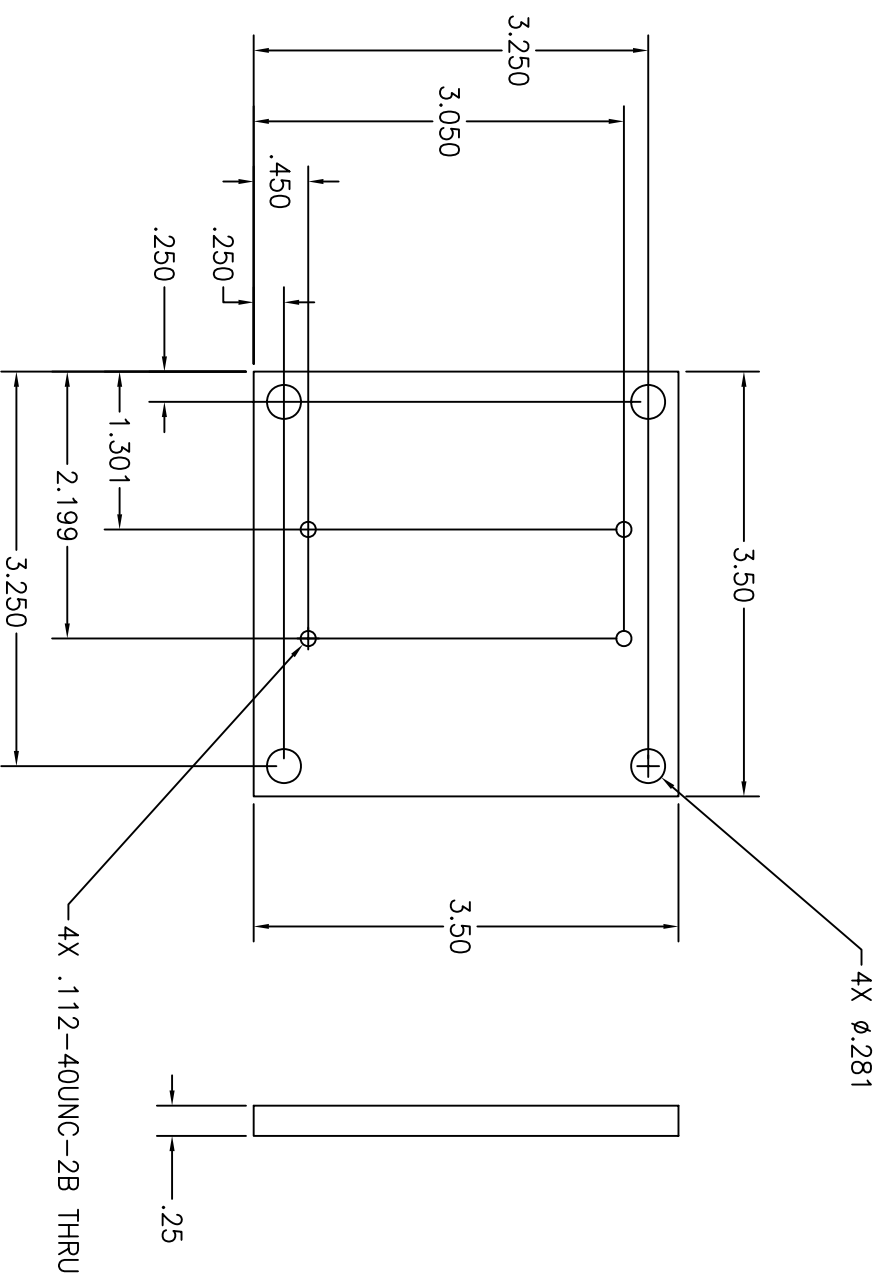
NO.	DESCRIPTION	DATE	BY
1	SYNOPSIS		
2	SYNOPSIS		
3	SYNOPSIS		
4	SYNOPSIS		
5	SYNOPSIS		
6	SYNOPSIS		
7	SYNOPSIS		
8	SYNOPSIS		
9	SYNOPSIS		
10	SYNOPSIS		
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95	SYNOPSIS		
96	SYNOPSIS		
97	SYNOPSIS		
98	SYNOPSIS		
99	SYNOPSIS		
100	SYNOPSIS		

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

1 MATERIAL: CRES 303/304

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL					

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 PLATE, ADAPTER DFS CAMERA FIXTURE SVIP
CHECKED MAMAKOS			
APPROVED			
APPROVED			

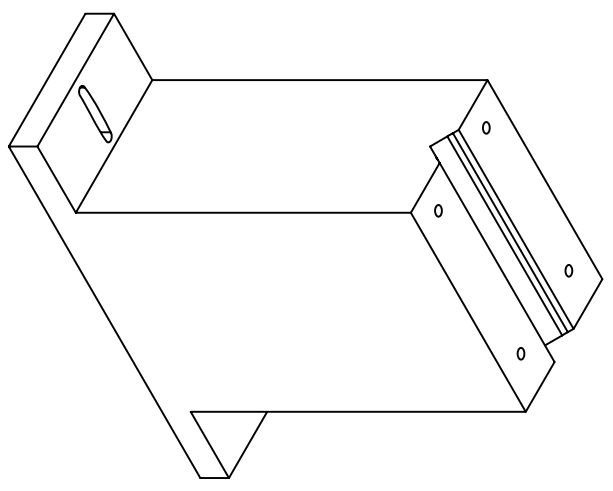
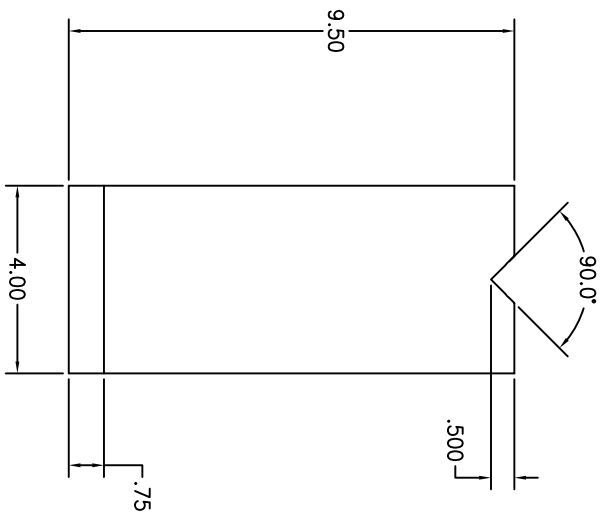
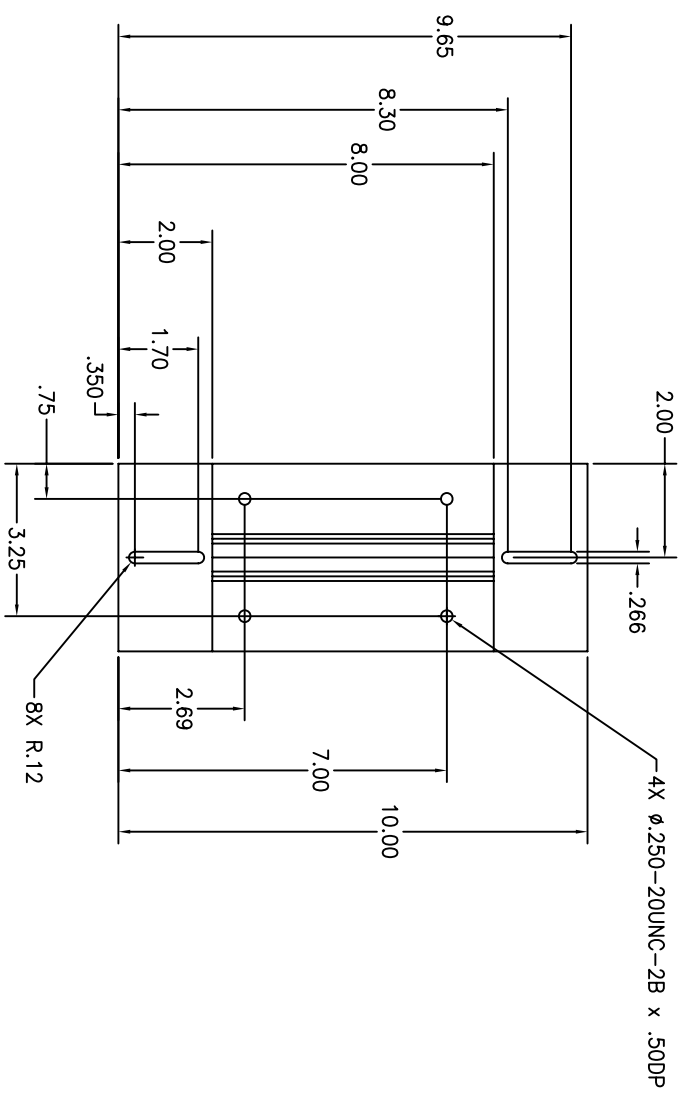
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	APPROVED-STRESS	
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	APPROVED-ENGINEER	
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL		
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ		
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D		
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE		
THIS DRAWING WAS PRODUCED USING	SOFTWARE: AutoCAD	VERSION: 2002
FILE NAME:		

GC9220741 1 FOLD LINE

FOLD LINE

SM	ZONE	DESCRIPTION	DATE	APPROVAL

4 3 2 1



ITEM NO.	REC'D/REV'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURS AND SHARP EDGES R.010 OR CHAMFER MAX.
 FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS Ø
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	INT	DATE	TITLE
MAWAKOS			STANDOFF LARGE FLAT SVIP
MAWAKOS			
CHECKED			
APPROVED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			

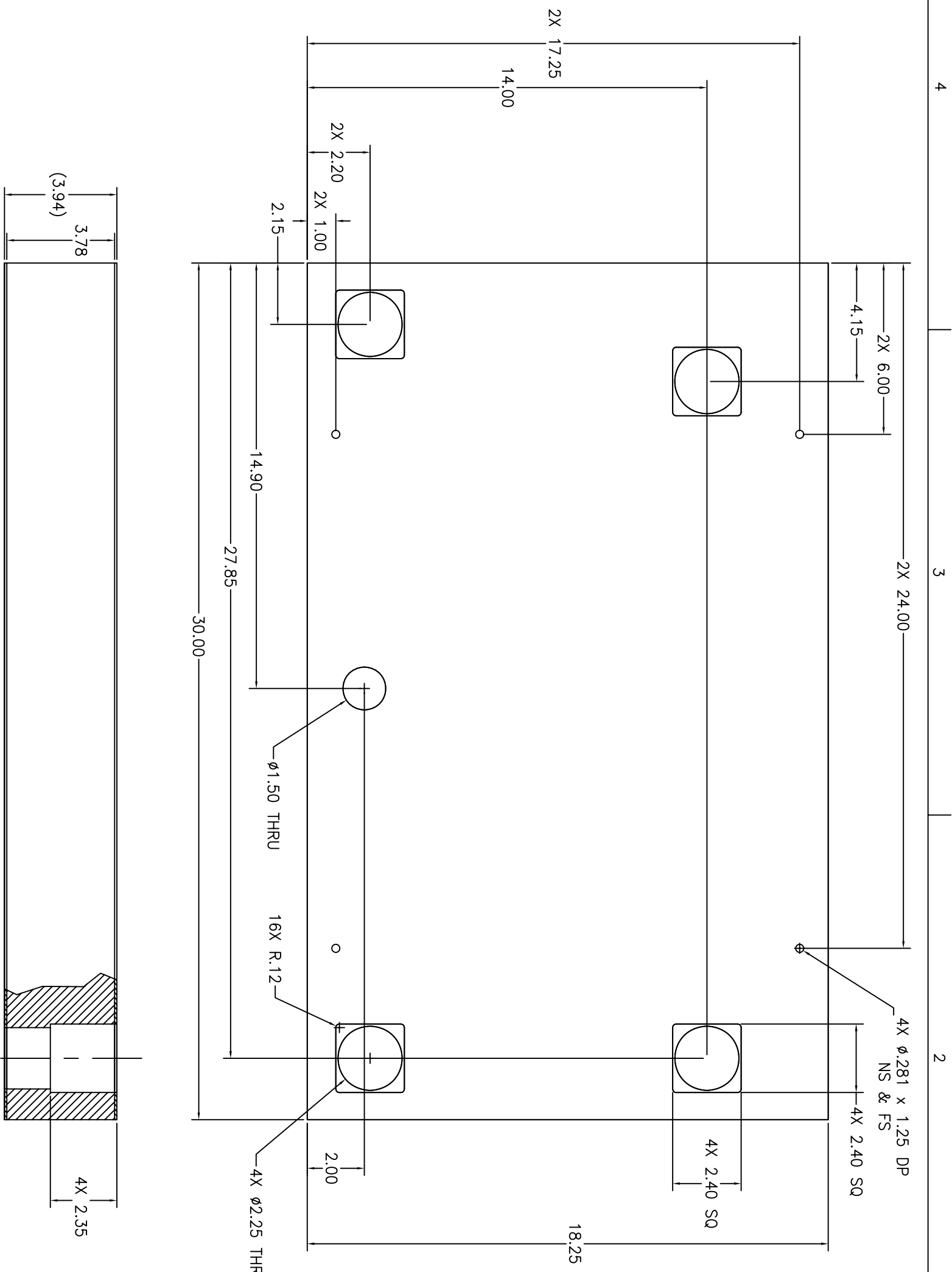
REV	CODE	SCALE	WT	SHT OF
	GD	9220745	1/2	1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME:

4 3 2 1

GD9220745

SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
		1			



GD9220750

ITEM NO.	RECD/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .XX .XXX FRACTIONS 6/32
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	INT	DATE	TITLE
MAIAKOS			BENCH ROUTER DRAWING TEST BENCH
CHECKED			
APPROVED			
APPROVED-STRESS			
APPROVED-ENGINEER			
CODE	SCALE	WT	SH
GD	9220750	1/2	OF 1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

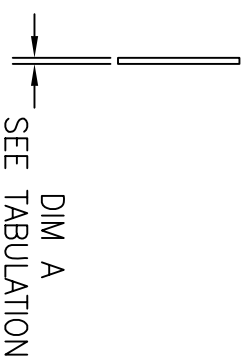
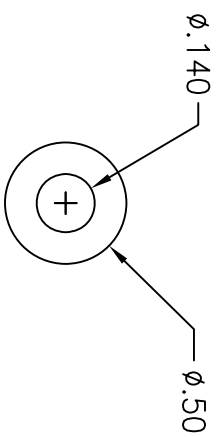
4 3 2 1

A B C D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: SHIM STOCK CRES 302
- 2 SUGGESTED SOURCE OF SUPPLY:
MCMASTER-CARR
P.O. BOX 440
NEW BRUNSWICK, NJ 08903
732-329-3200

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



TABULATION	
DASH NO.	DIM "A"
-1	.0005 ±5%
-3	.001 ±5%
-5	.002 ±5%
-7	.005 ±5%
-9	.010 ±5%
-11	.015 ±5%
-13	.020 ±5%

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2002
FILE NAME: _____

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES				LIST OF MATERIAL		
TOLERANCES: .xxx .xxx <input checked="" type="checkbox"/> FRACTIONS 63				NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
±.01 ±.005 ±1' ±1/16				Goddard Space Flight Center GREENBELT, MARYLAND		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.				DRAWING INTERPRETED PER GSFC-X673-64-1		
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ⊙				DESIGNER MAMAKOS	INIT	DATE
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____				CHECKED	APPROVED	
				APPROVED		
				APPROVED-STRESS		
				APPROVED-ENGINEER		
NEXT ASSY				USED ON	CODE544	SCALE4/1
					GC	9220751
					WT	SH1 OF 1
					REV	-

GC9220751 1

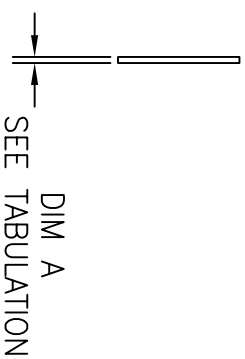
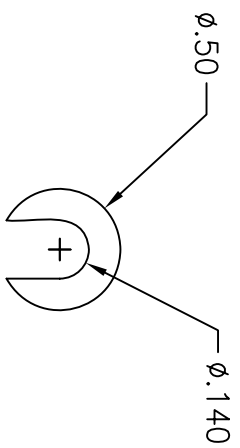
FOLD LINE

3/3

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: SHIM STOCK CRES 302
- 2 SUGGESTED SOURCE OF SUPPLY:
 MCMASTER-CARR
 P.O. BOX 440
 NEW BRUNSWICK, NJ 08903
 732-329-3200

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



TABULATION	
DASH NO.	DIM "A"
-1	.0005 ±5%
-3	.001 ±5%
-5	.002 ±5%
-7	.005 ±5%
-9	.010 ±5%
-11	.015 ±5%
-13	.020 ±5%

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.	
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES							
TOLERANCES: .xxx .xxx / FRACTIONS 63							
±.01 ±.005 ±1' ±1/16							
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.							
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			DESIGNER	NAME	INIT	DATE
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED			DRAWN	MAMAKOS		
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			CHECKED			
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉			APPROVED			
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			APPROVED			
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE _____			APPROVED-STRESS			
				APPROVED-ENGINEER			
NEXT ASSY				USED ON			

LIST OF MATERIAL
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center GREENBELT, MARYLAND

TITLE
SHIM, SLOTTED OPTIC MOUNT NO 6 FASTENER
 DRAWING INTERPRETED PER GSFC-X673-64-1

CODE 544
 SCALE 4/1
 WT
 SH1 OF 1
 REV -

GC9220752

1

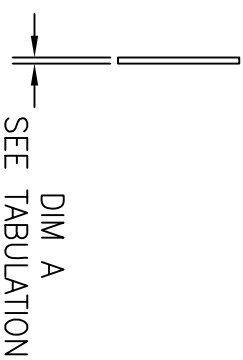
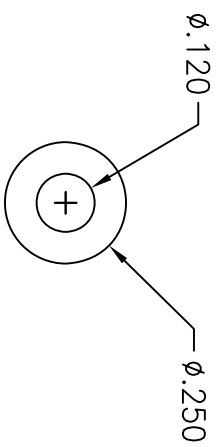
FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: SHIM STOCK CRES 302
- 2 SUGGESTED SOURCE OF SUPPLY:
 MCMASTER-CARR
 P.O. BOX 440
 NEW BRUNSWICK, NJ 08903
 732-329-3200

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



TABULATION	
DASH NO.	DIM "A"
-1	.0005 ±5%
-3	.001 ±5%
-5	.002 ±5%
-7	.005 ±5%
-9	.010 ±5%
-11	.015 ±5%
-13	.020 ±5%

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .xxx .xxx / FRACTIONS 63						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
				DESIGNER NAME	INIT	DATE
				DRAWN MAMAKOS		
				CHECKED		
				APPROVED		
				APPROVED		
				APPROVED-STRESS		
				APPROVED-ENGINEER		
				TITLE		
				SHIM OPTIC MOUNT SVIP		
				DRAWING INTERPRETED PER GSFC-X673-64-1		
		CODES44		GC		9220753
		SCALE4/1		WT		SH1 OF 1
		NEXT ASSY		USED ON		REV
						-

GC9220753 1

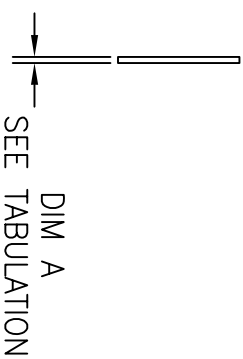
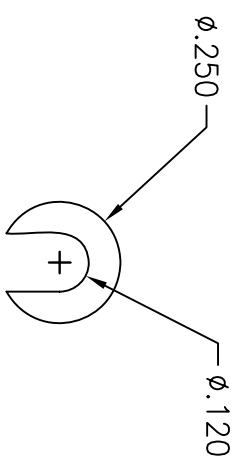
FOLD LINE

FOLD

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: SHIM STOCK CRES 302
- 2 SUGGESTED SOURCE OF SUPPLY:
 MCMASTER-CARR
 P.O. BOX 440
 NEW BRUNSWICK, NJ 08903
 732-329-3200

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



TABULATION	
DASH NO.	DIM "A"
-1	.0005 ±5%
-3	.001 ±5%
-5	.002 ±5%
-7	.005 ±5%
-9	.010 ±5%
-11	.015 ±5%
-13	.020 ±5%

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

ITEM NO.	REQ'D	RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES						
TOLERANCES: .xxx .xxx ✓ FRACTIONS 63 ✓						
±.01 ±.005 ±1' ±1/16						
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.						
<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ⊙				NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND		
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE _____				DRAWING INTERPRETED PER GSFC-X673-64-1		
DESIGNER NAME: MAMAKOS				TITLE: SHIM, SLOTTED OPTIC MOUNT SVIP		
DRAWN MAMAKOS				CODE: GC		
CHECKED				SCALE: 4/1		
APPROVED				WT		
APPROVED				SH1 OF 1		
APPROVED-STRESS				REV -		
APPROVED-ENGINEER				GC 9220754		
NEXT ASSY				USED ON		

GC9220754 1

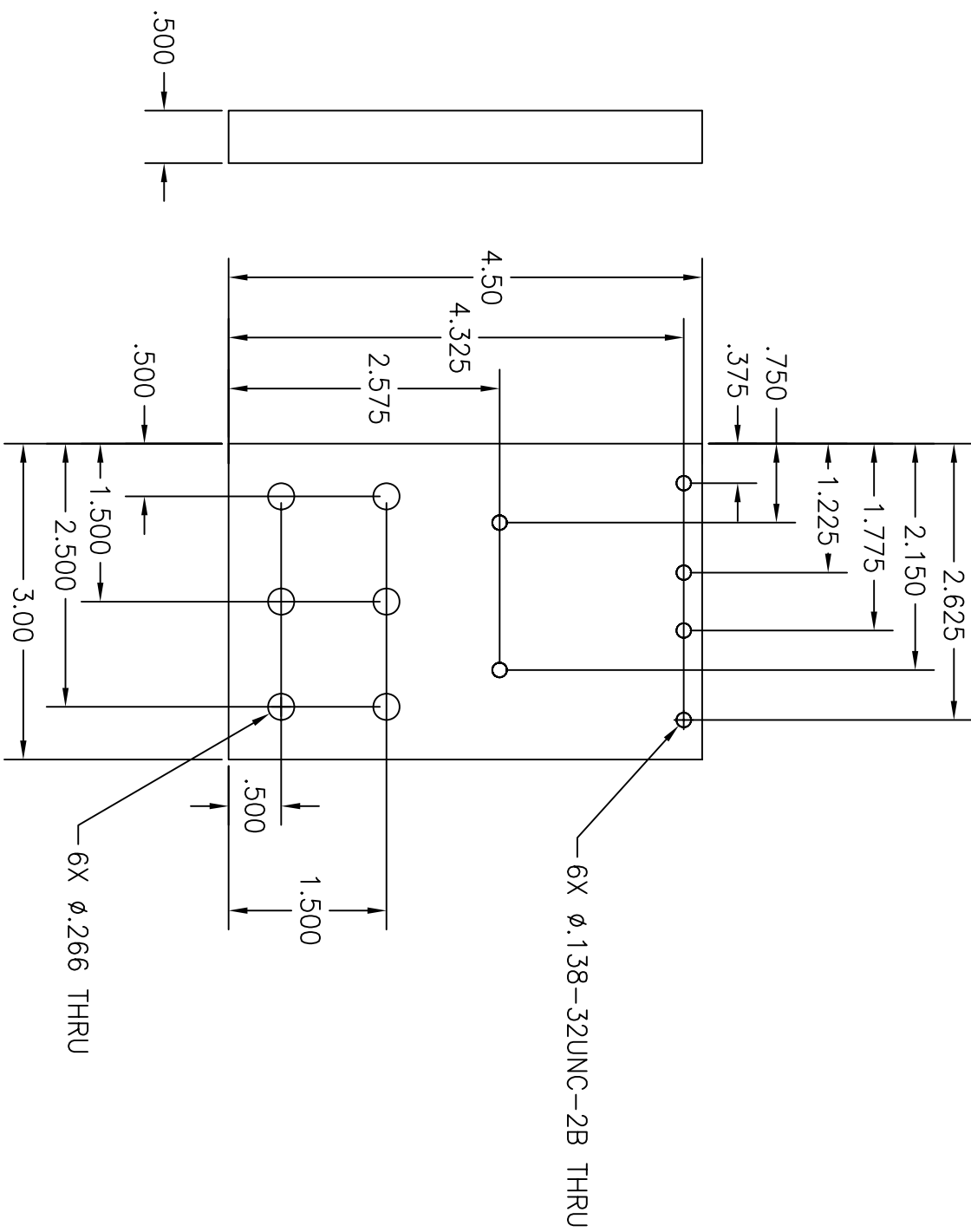
FOLD LINE

3/3

NOTES: UNLESS OTHERWISE SPECIFIED

1 MATERIAL: ALUM ALY 6061-T6

REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
				LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16

REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

<input type="checkbox"/> FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D	DRAWN	NAME	INIT	DATE	TITLE PLATE ADAPTER, SECONDARY SLED SVIP
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	CHECKED	MAMAKOS			
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	APPROVED				
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ	APPROVED				
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	APPROVED				
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-STRESS				
	APPROVED-ENGINEER				

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 Goddard Space Flight Center GREENBELT, MARYLAND

DRAWING INTERPRETED PER GSFC-X673-64-1

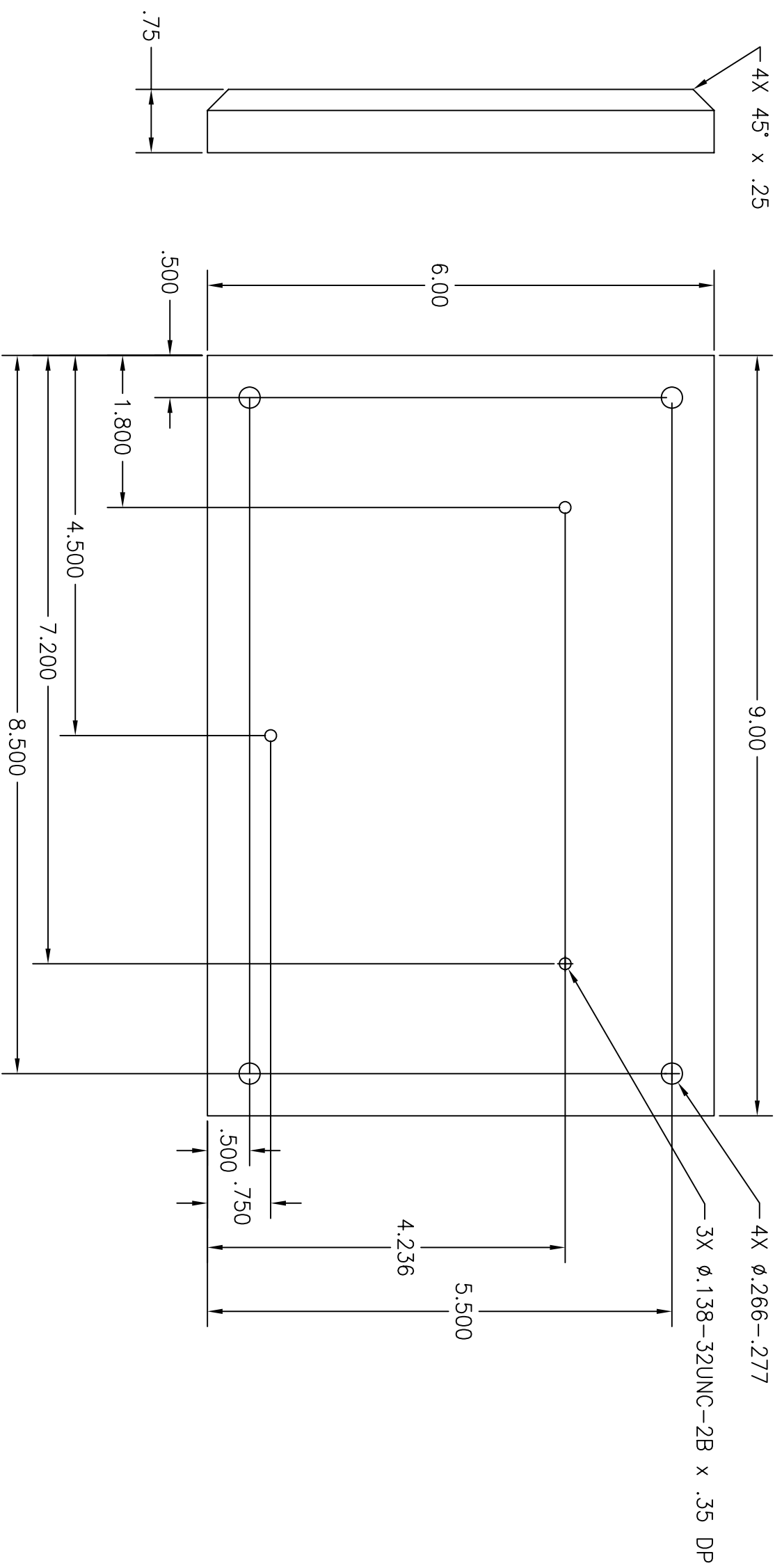
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

CODE	SCALE	WT	SH1	OF	REV
544	1/1		1	1	1

GC9220755 1 FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX $\frac{1}{16}$ FRACTIONS 63
 $\pm .01$ $\pm .005$ $\pm 1'$ $\pm 1/16$
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS \odot
 NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
 NDE REQUIRED PER S-313-009 CODE

NAME	INIT	DATE	TITLE
DESIGNER MAMAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1 PLATE TELESCOPE ASSEMBLY SVIP
CHECKED			
APPROVED			
APPROVED			

APPROVED-STRESS	APPROVED-ENGINEER	CODE	SCALE	WT	SH1	OF	REV
		GC	1/1	9220756	1	1	-

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME:

FOLD
3/4

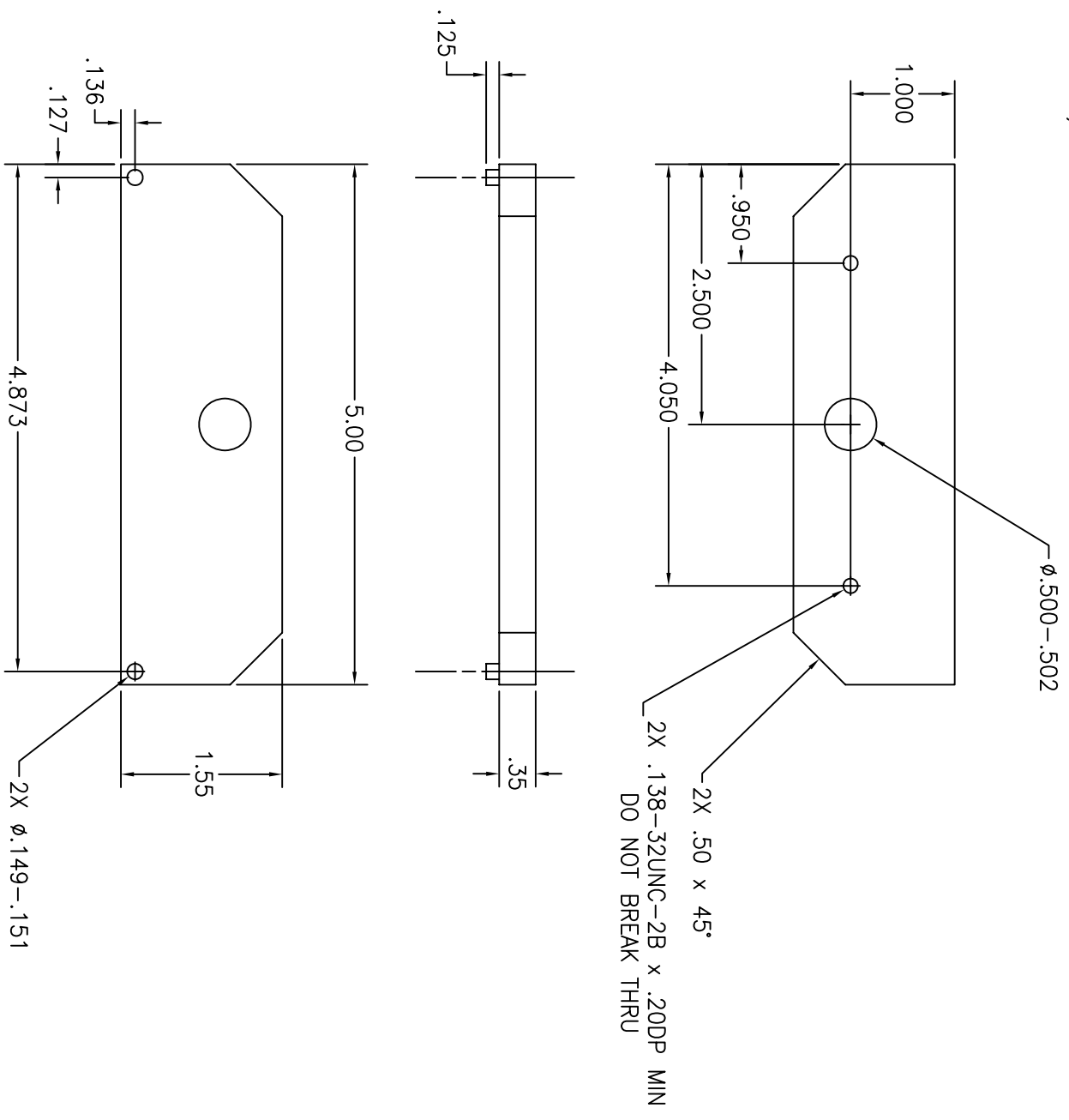
GC9220756 1

FOLD
LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.

REVISION		DATE	APPROVAL
SYM	ZONE	DESCRIPTION	



ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
LIST OF MATERIAL						

NAME	INIT	DATE	TITLE
DESIGNER			DRAWING INTERPRETED PER GSFC-X673-64-1
DRAWN			
CHECKED			
APPROVED			

APPROVED-STRESS	APPROVED-ENGINEER	CODE	SCALE	WT	SH1	OF	REV
		GC	1/1		1	1	-

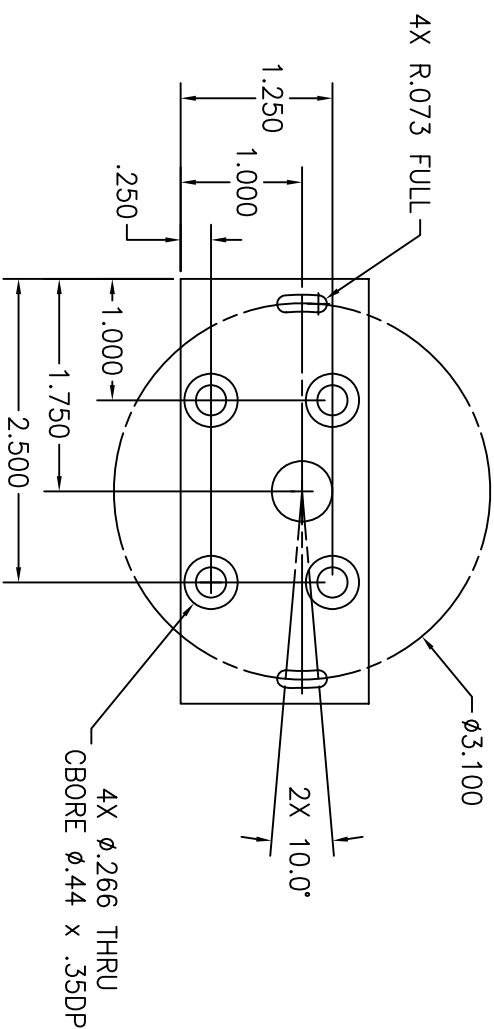
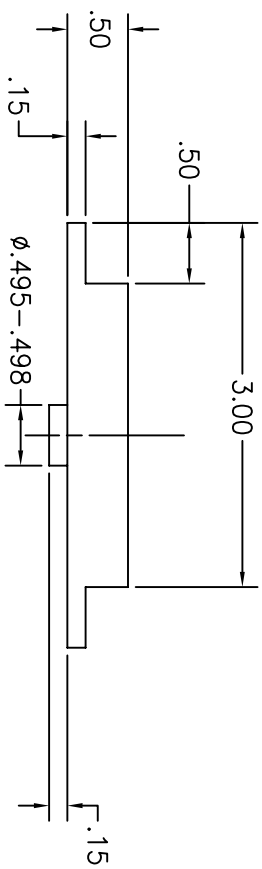
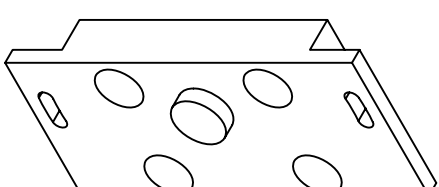
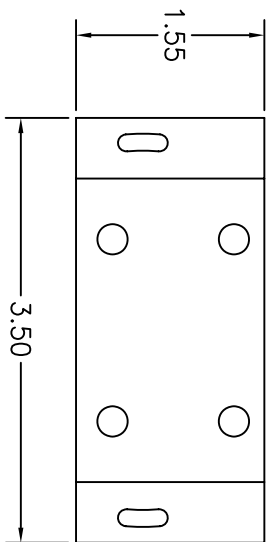
UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES							
TOLERANCES:							
.XXX	✓	FRACTIONS	63				
±.01	✓	±1'	±1/16				
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.							
<input type="checkbox"/>	FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D						
<input checked="" type="checkbox"/>	HARDNESS TEST NOT REQUIRED						
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL						
<input type="checkbox"/>	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ						
<input checked="" type="checkbox"/>	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D						
<input type="checkbox"/>	NDE REQUIRED PER S-313-009 CODE						
THIS DRAWING WAS PRODUCED USING							
SOFTWARE: AutoCAD VERSION: 2002							
FILE NAME: _____							

GC9220757 1

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: ALUM ALY 6061-T6
- 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



REVISION			
SYM	ZONE	DESCRIPTION	DATE

ITEM NO.	REQ'D/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES					
TOLERANCES:					
.XXX	✓	FRACTIONS	63	✓	
±.01		±1'	±1/16		
REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.					
<input type="checkbox"/>		FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D			
<input checked="" type="checkbox"/>		HARDNESS TEST NOT REQUIRED			
<input type="checkbox"/>		TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL			
<input type="checkbox"/>		TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS Ⓞ			
<input checked="" type="checkbox"/>		NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D			
<input type="checkbox"/>		NDE REQUIRED PER S-313-009 CODE			
		DESIGNER	MAMAKOS		
		NAME			
		INIT			
		DATE			
		DESIGNER	MAMAKOS		
		CHECKED			
		APPROVED			
		APPROVED			
		APPROVED-STRESS			
		APPROVED-ENGINEER			

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
Goddard Space Flight Center GREENBELT, MARYLAND					
DRAWING INTERPRETED PER GSFC-X673-64-1					
TITLE					
PLATE, FIXTURE					
TRANSLATION STAGE					
ALIGNMENT FIXTURE					

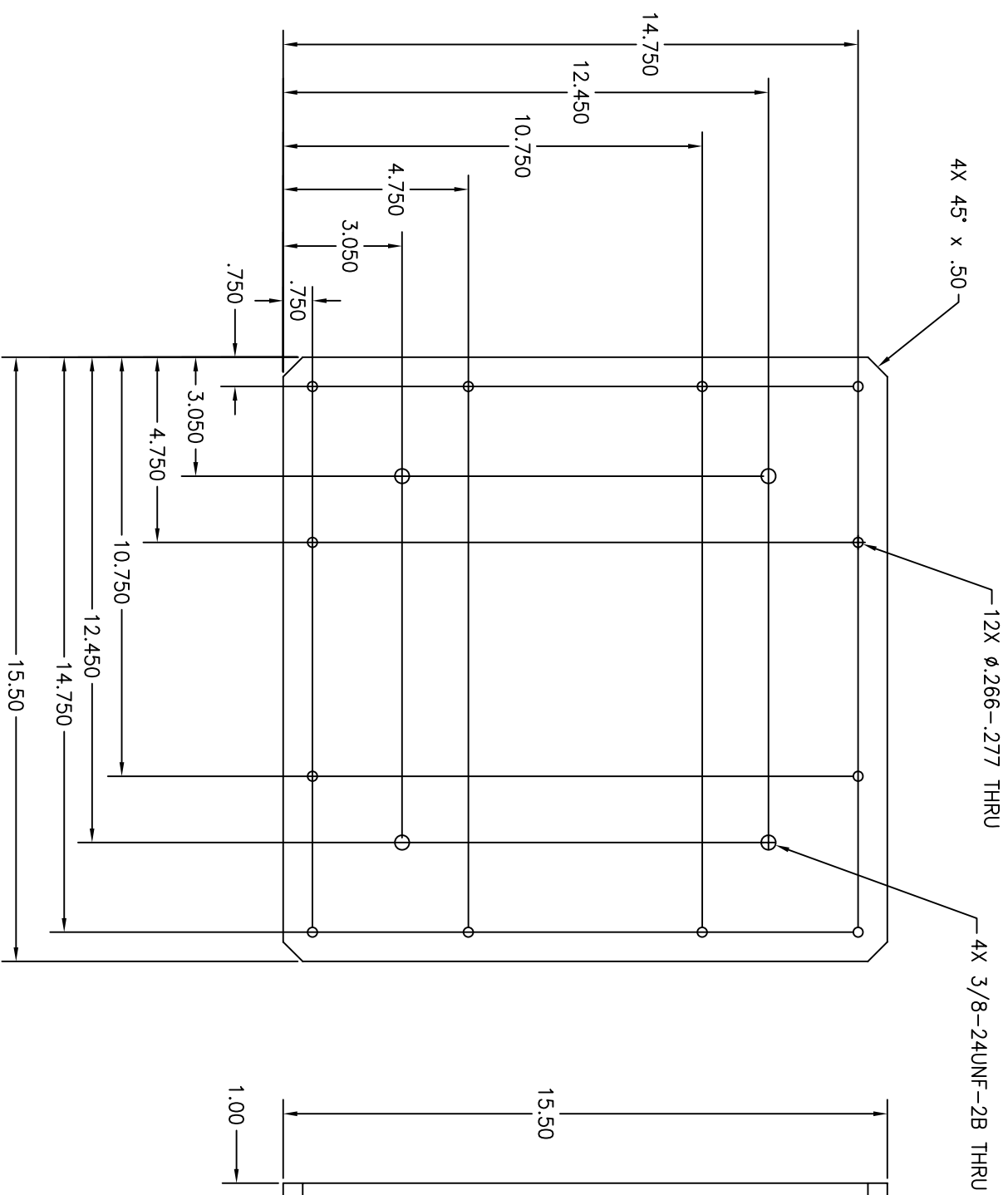
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

GC9220758 1

FOLD LINE

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: ALUM ALY 6061-T6
 2 FINISH: IRRDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



SM	ZONE	REVISION	DESCRIPTION	DATE	APPROVAL
		1			

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			PLATE, BASE TRACKER ASSEMBLY SVIP		

NAME	INT	DATE	TITLE
DESIGNER: MAMAKOS			PLATE, BASE TRACKER ASSEMBLY SVIP
DRAWN: MAMAKOS			
CHECKED:			
APPROVED:			
APPROVED-STRESS:			
APPROVED-ENGINEER:			

GD	9220759	SCALE: 1/2	WT	SH1 OF 1
----	---------	------------	----	----------

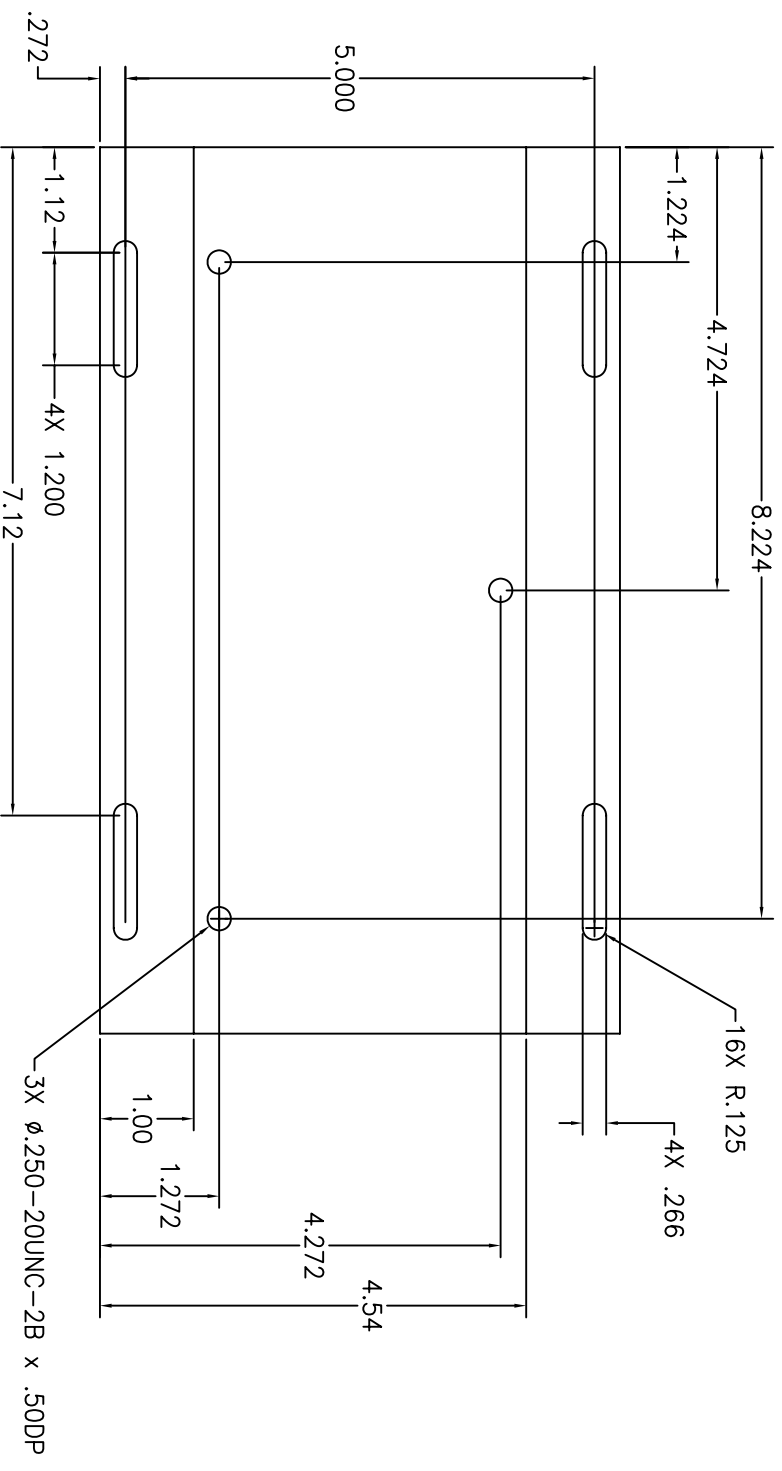
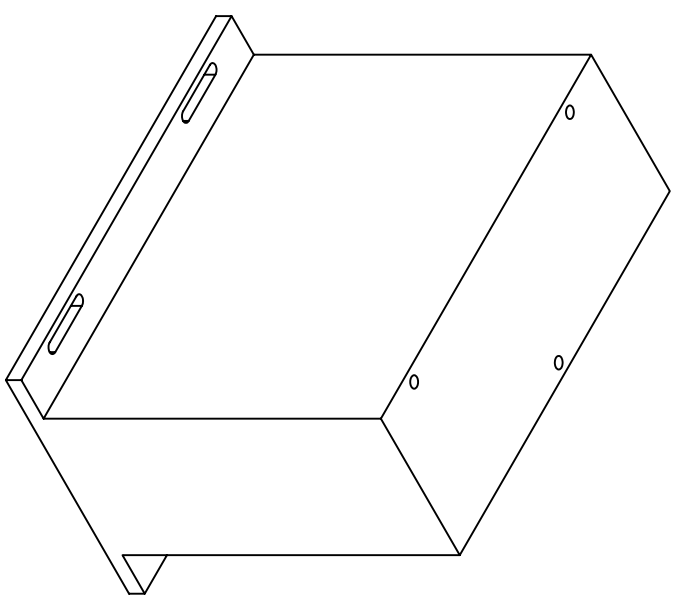
THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

4 3 2 1

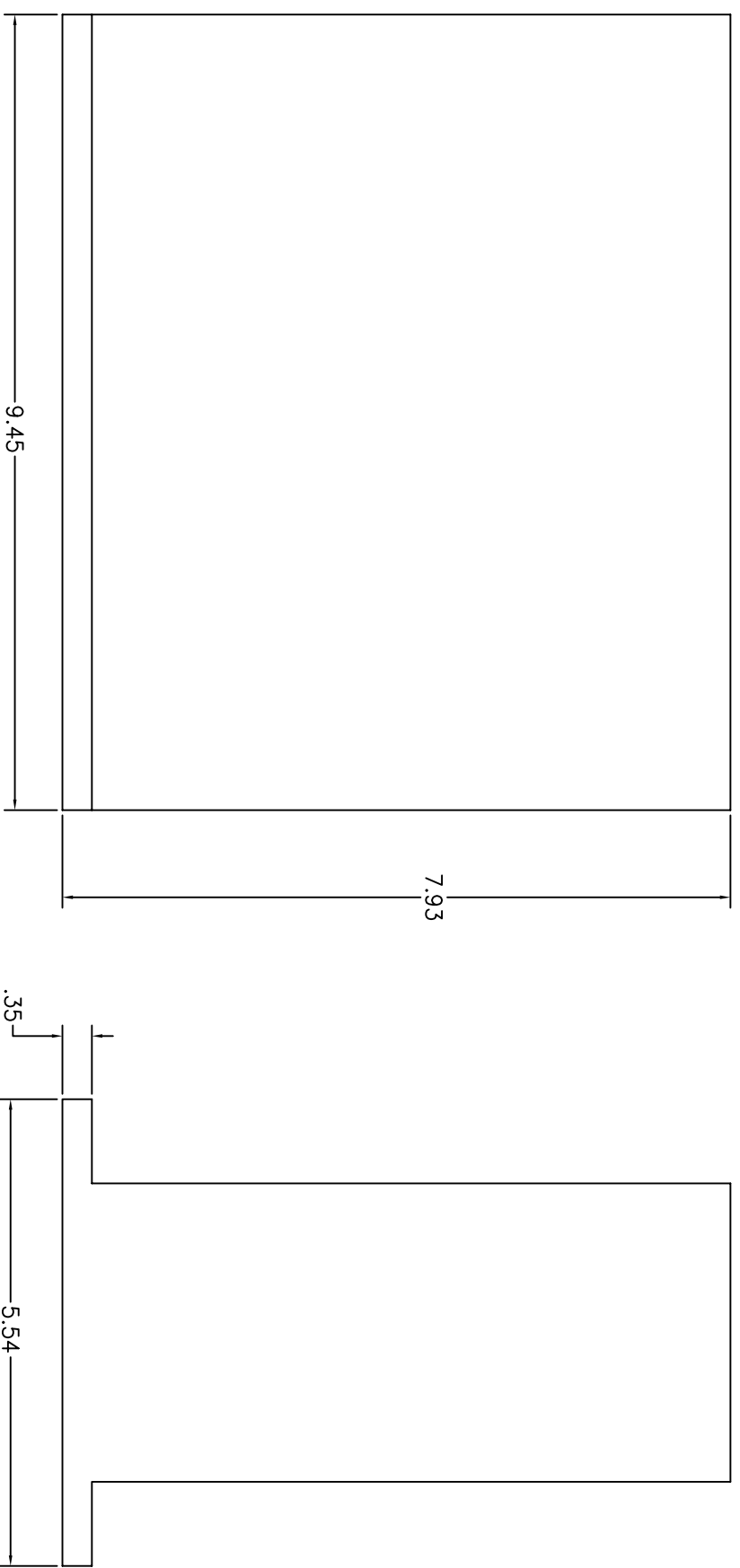
GD9220759 1 923 C D

SM	ZONE	DESCRIPTION	DATE	APPROVAL

REVISION	DATE	APPROVAL
1		



- NOTES: UNLESS OTHERWISE SPECIFIED
- 1 MATERIAL: ALUM ALY 6061-T6
 - 2 FINISH: IRRIDITE IN ACCORDANCE WITH MIL-C-5541, CLASS 1A.



ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
1			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .xx .xxx .xxx FRACTIONS .63 ±.01 ±.005 ±.1' ±.1/16		
LIST OF MATERIAL					
DESIGNER	NAME	INT	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Goddard Space Flight Center GREENBELT, MARYLAND	
CHECKED	MAWAKOS			DRAWING INTERPRETED PER GSFC-X673-64-1	
APPROVED				TITLE MOUNT, STANDOFF 6 INCH OPTIC MOUNT SVIP	
APPROVED-ENGINEER				CODE:GD	REV: -
APPROVED-STRESS				9220760	
APPROVED-ENGINEER				SCALE:1/1	WT
USED ON					SH1 OF 1
NEXT ASSY					

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000
FILE NAME: _____

4 3 2 1

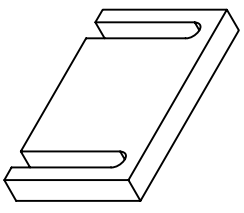
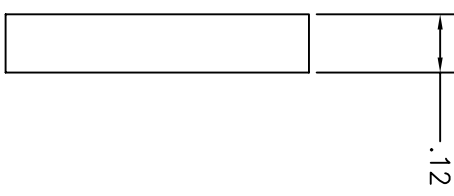
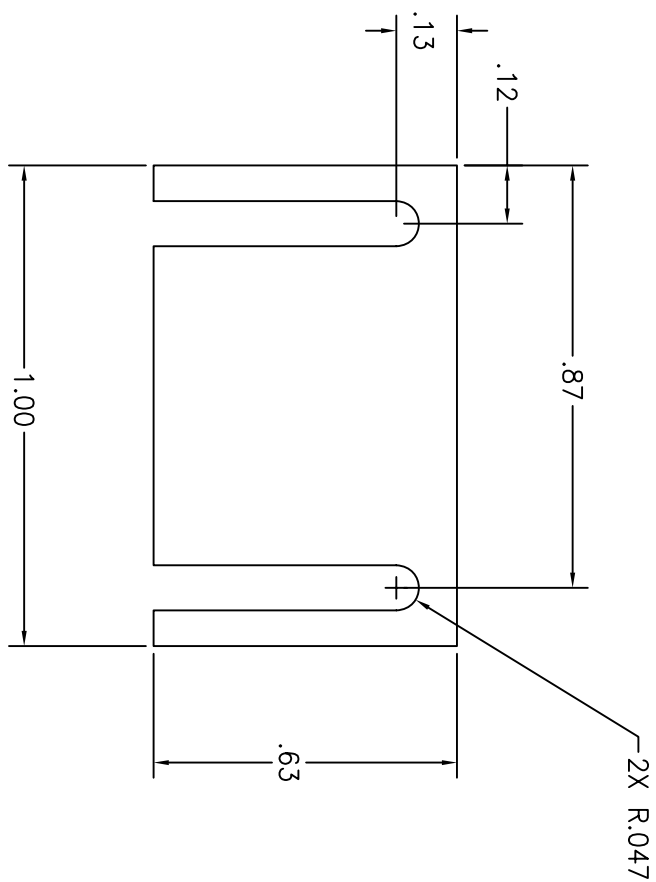
A B C D A C D

GD9220760

1

23

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: BLACK DELRIN



REVISION				
SYM	ZONE	DESCRIPTION	DATE	APPROVAL

GC9220761 1

FOLD LINE

ITEM NO.	REQ'D	REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES: .XXX FRACTIONS 63
 ±.01 ±.005 ±1' ±1/16
 REMOVE ALL BURRS AND SHARP EDGES R .010 OR CHAMFER MAX.

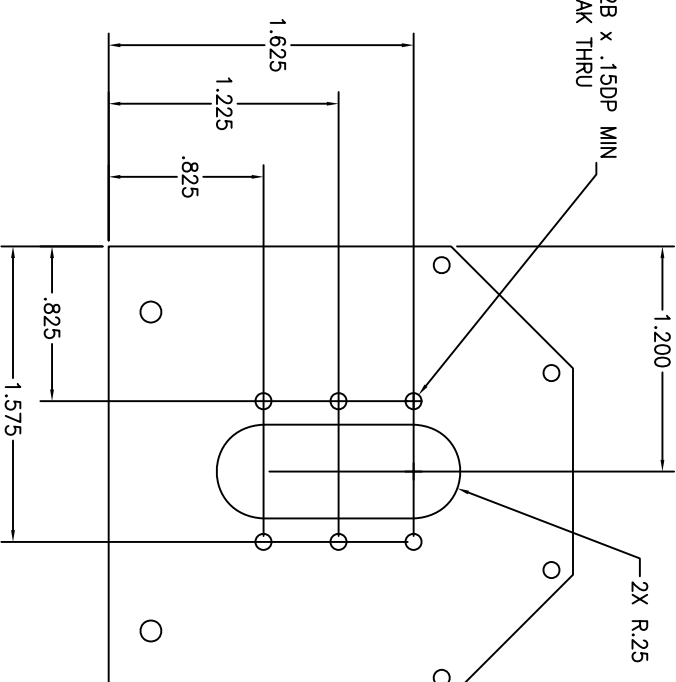
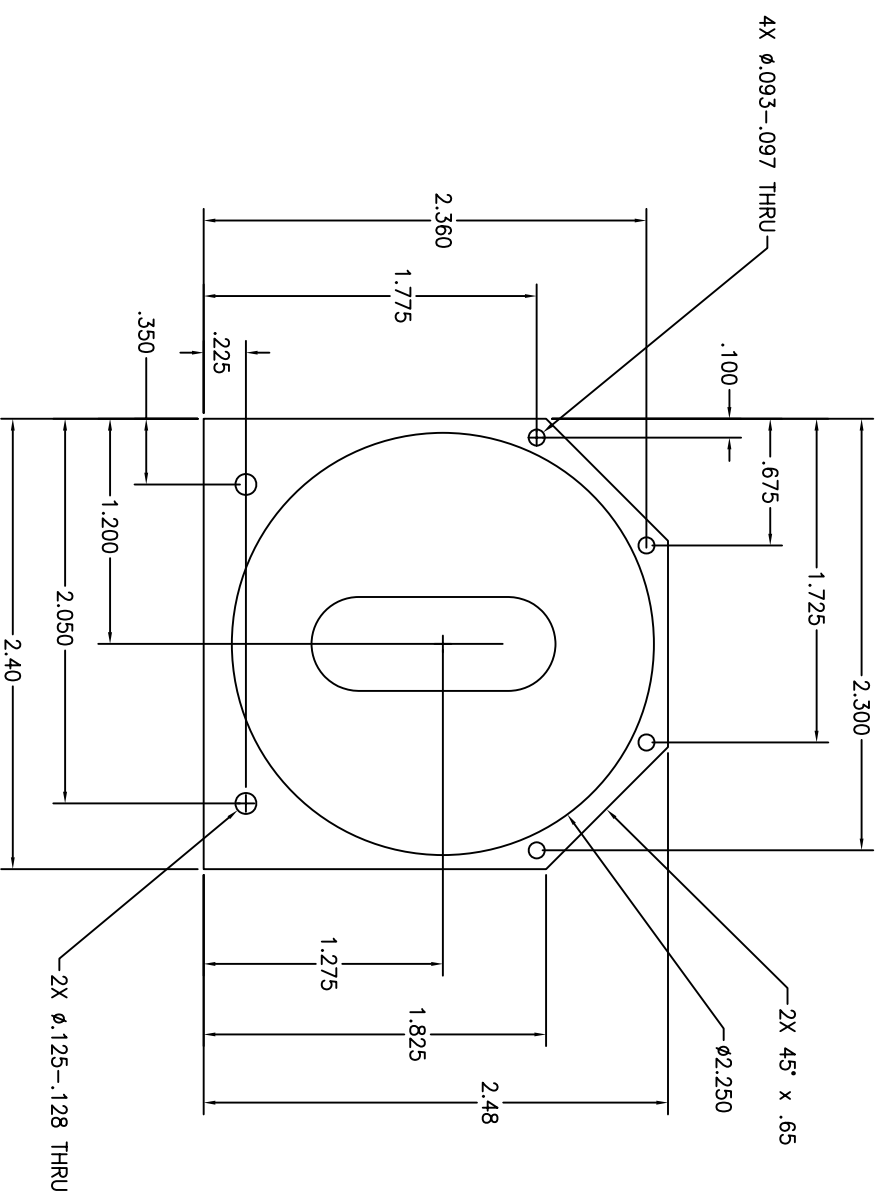
- FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
- HARDNESS TEST NOT REQUIRED
- TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
- TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THUS ☉
- NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
- NDE REQUIRED PER S-313-009 CODE _____

DESIGNER	NAME	INIT	DATE	TITLE
	MAMAKOS			BEAM BLOCK
				DFS GRATING
				SVIP

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2002
 FILE NAME: _____

FOLD LINE

NOTES: UNLESS OTHERWISE SPECIFIED
1 MATERIAL: BLACK DELRIN



SM	ZONE	DESCRIPTION	DATE	APPROVAL
A		ADDED MISSING DIMENSIONS		

ITEM NO.	RECD/RECD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES TOLERANCES: .XX .XXX FRACTIONS 63 ±.01 ±.005 ±.1' ±1/16 REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX. <input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQ'D <input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED <input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL <input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS <input type="checkbox"/> <input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D <input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE		
LIST OF MATERIAL			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Goddard Space Flight Center GREENBELT, MARYLAND	
DESIGNER	NAME	INT	DATE	TITLE	DRAWING INTERPRETED PER GSFC-X673-64-1
CHECKED	MMANAKOS			COVER DFS GRATING SVIP	
APPROVED					
APPROVED-STRESS					
APPROVED-ENGINEER					
REV	GD	9220762	SCALE 2/1	WT	SH1 OF 1
REV	A				

THIS DRAWING WAS PRODUCED USING
SOFTWARE: AutoCAD VERSION: 2000i
FILE NAME: _____

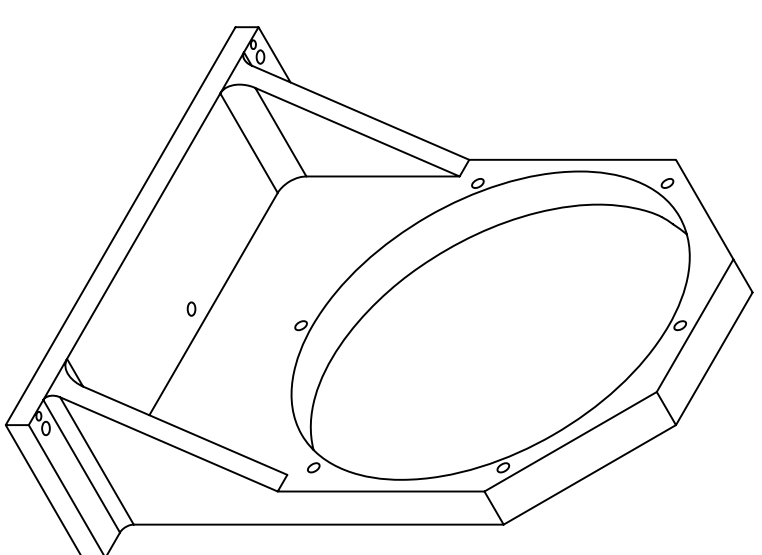
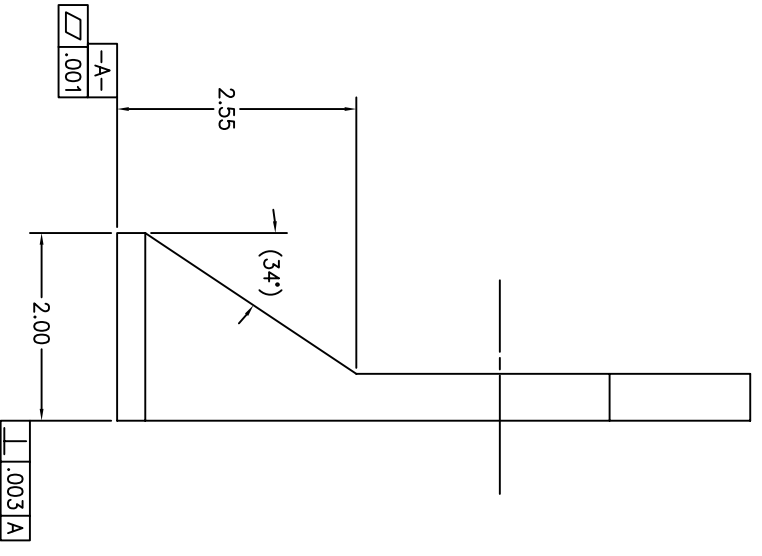
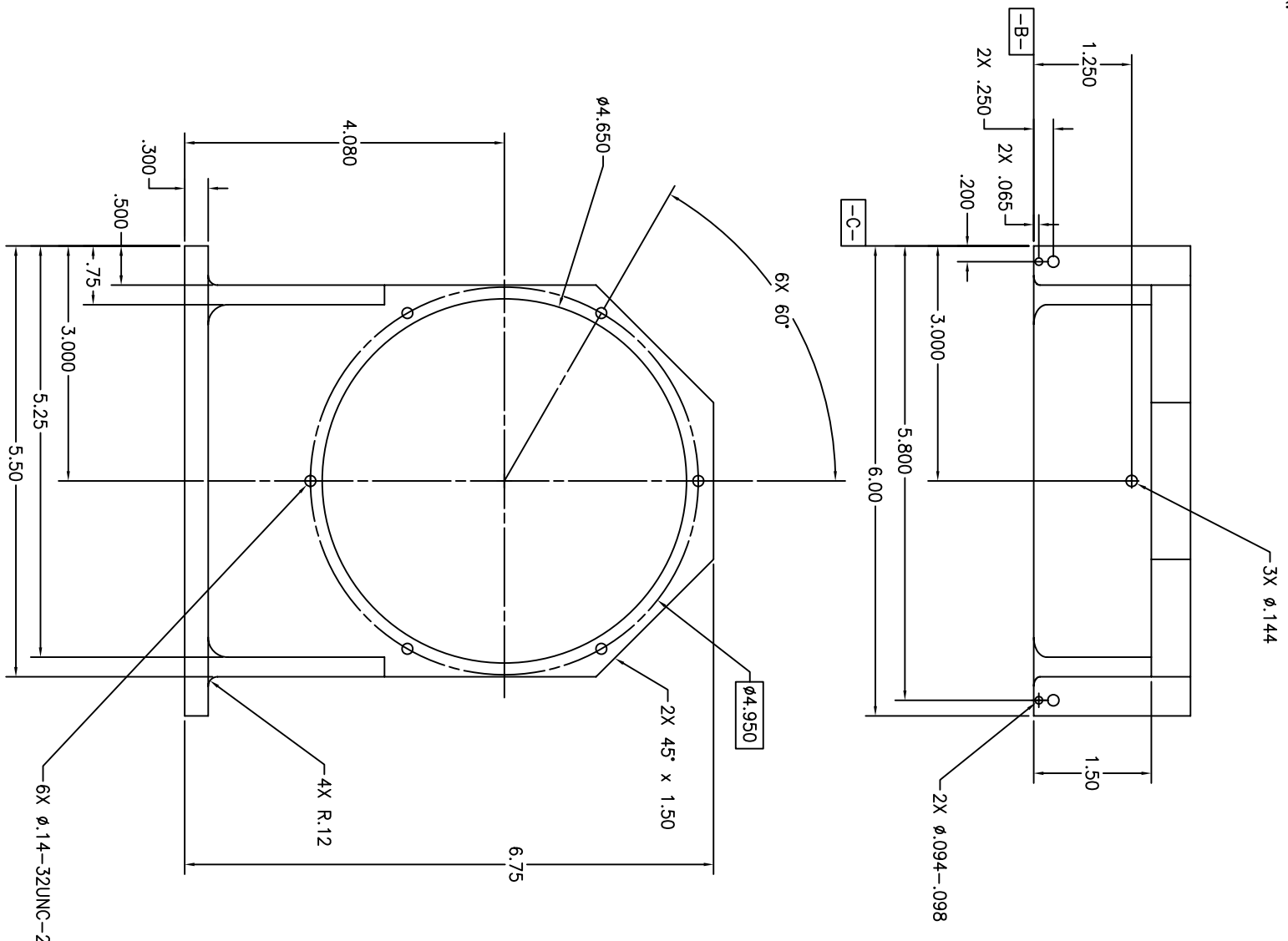
GD9220762

4 3 2 1

A B C D

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

ITEM NO.	RECD/REQD	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	TOLERANCES:	FRACTIONS	63
.XX	.XXX	±1/16	✓
±.01	±.005	±1'	

REMOVE ALL BURS AND SHARP EDGES R .010 OR CHAMFER MAX.	DESIGNER	DATE	TITLE
<input checked="" type="checkbox"/> FLIGHT HARDWARE /POST FAB HARDNESS TEST REQD	MMANAKOS		MOUNT
<input checked="" type="checkbox"/> HARDNESS TEST NOT REQUIRED	DRAWN		EXTERNAL FILTER WINDOW
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL	CHECKED		SVIP
<input type="checkbox"/> TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS ☐	APPROVED		
<input checked="" type="checkbox"/> NO NON-DESTRUCTIVE EXAMINATION (NDI) REQD	APPROVED-STRESS		
<input type="checkbox"/> NDE REQUIRED PER S-313-009 CODE	APPROVED-ENGINEER		

THIS DRAWING WAS PRODUCED USING	SOFTWARE	AutoCAD	VERSION	2000i
FILE NAME:				

GD	9220763	SCALE	1/1	WT		SH	OF	1

GD9220763

4

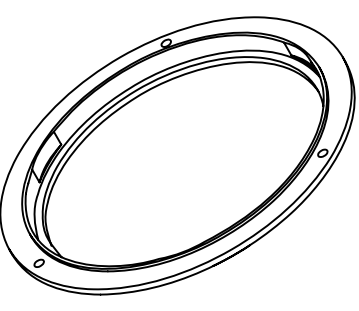
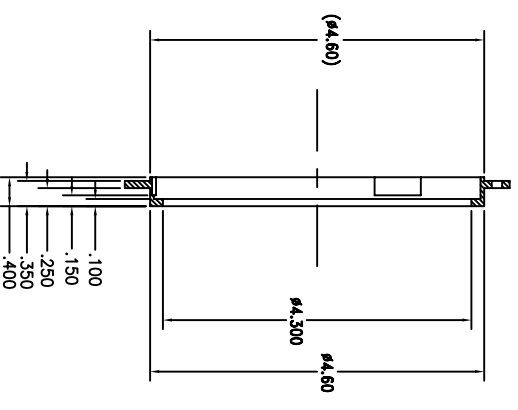
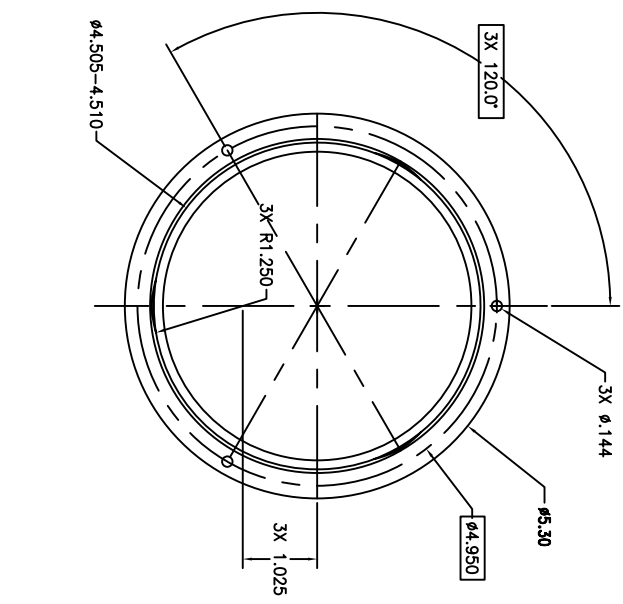
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 MATERIAL: TITANIUM 6AL4V
- 2 FINISH: ANODIZE IAW AMS2498, TYPE II (TFIN 200)
- 3 ALL DIMENSIONS APPLY AFTER FINISH
- 4 BAG PART PER MIL-P-116, METHOD III, AND TAG WITH PART NUMBER.



REV	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220764

REV	ZONE	DESCRIPTION	DATE	APPROVAL

NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.

NO.	PART NO.	DESCRIPTION	DATE	APPROVAL

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES	UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
TOLERANCES:	TOLERANCES:
.XX .XXX	FRACTIONS 63
±.01 ±.005 ±.1	±1/16
REMOVE ALL BARS AND SHAW EXES R 210 OR CHAMFER W/45	REMOVE ALL BARS AND SHAW EXES R 210 OR CHAMFER W/45
RIGHT HARDWARE/POST FOR HARDNESS TEST REQ'D	RIGHT HARDWARE/POST FOR HARDNESS TEST REQ'D
HARDNESS TEST NOT REQUIRED	HARDNESS TEST NOT REQUIRED
TEST HARDNESS PER ASTM E-18, LOCATION OPTIMAL	TEST HARDNESS PER ASTM E-18, LOCATION OPTIMAL
TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS O	TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS O
NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D	NO NON-DESTRUCTIVE EXAMINATION (NDE) REQ'D
NDE REQUIRED PER S-515-008 CODE	NDE REQUIRED PER S-515-008 CODE

APPROVED-STRESS	APPROVED
APPROVED-DRAWN	APPROVED
APPROVED-ENGINEER	APPROVED

GD	9220764	SCALE: 1/1	WT	REV
CODE: 544				

GD9220764	1	1
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THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000
 FILE NAME:

4

3

2

1

GD9220764

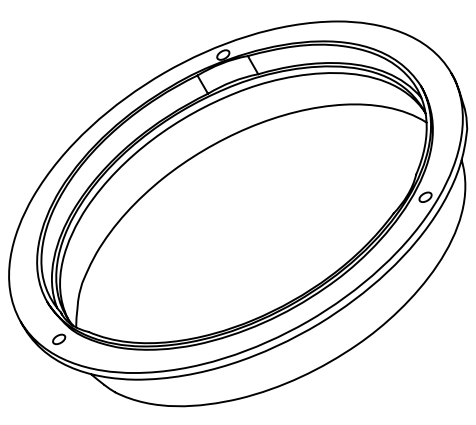
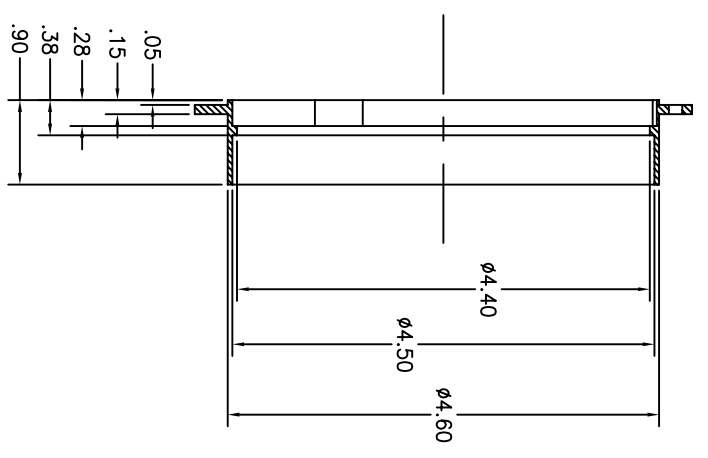
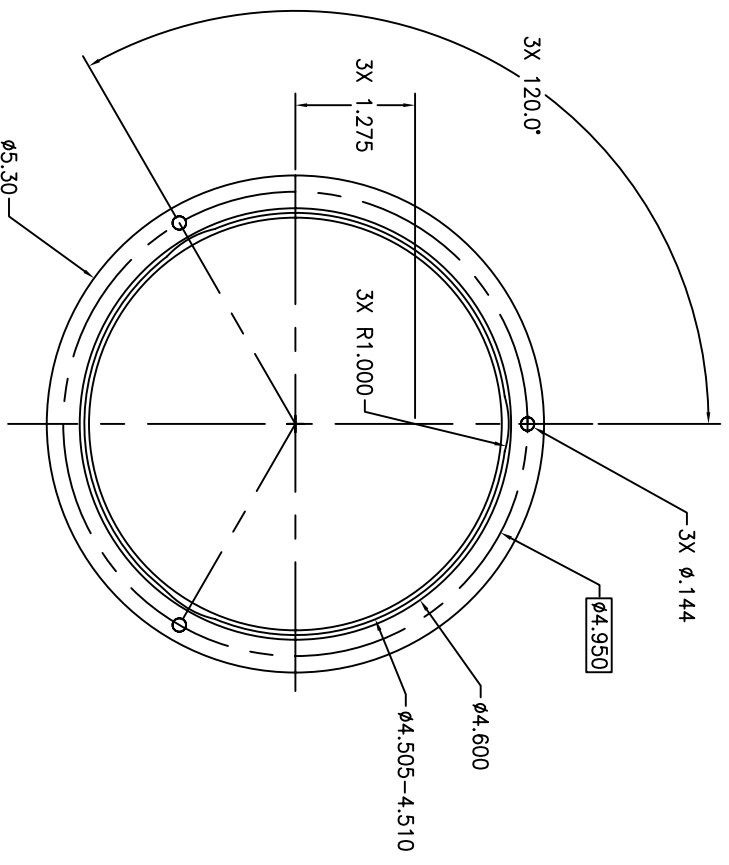
4

3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED
 1 MATERIAL: TITANIUM 6AL4V
 2 FINISH: ANODIZE IAW AMS2488, TYPE II (TIFIN 200)
 3 ALL DIMENSIONS APPLY AFTER FINISH
 4 BAG PART PER MIL-P-1116, METHOD III, AND TAG WITH PART NUMBER.



SM	ZONE	DESCRIPTION	DATE	APPROVAL

GD9220765

1

END

C

D

ITEM NO.	RECD/REC'D	PART NO.	DESCRIPTION	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL		

UNLESS OTHERWISE SPECIFIED-DIMENSIONS ARE IN INCHES
 TOLERANCES:
 .xx .xxx .xxx FRACTIONS 63
 ±.01 ±.005 ±.1' ±1/16

REMOVE ALL BARS AND SHARP EDGES R .010 OR CHAMFER MAX.
 FLIGHT HARDWARE/POST FAB HARDNESS TEST REQ'D
 HARDNESS TEST NOT REQUIRED
 TEST HARDNESS PER ASTM E-18, LOCATION OPTIONAL
 TEST HARDNESS PER ASTM E-18 WHERE INDICATED ON FIELD OF DRAWING THIS 0
 NO NON-DESTRUCTIVE EXAMINATION (NDI) REQ'D
 NDE REQUIRED PER S-313-009 CODE

DESIGNER	NAME	INT	DATE	TITLE

DESIGNER	CHECKED	APPROVED	APPROVED-STRESS	APPROVED-ENGINEER

CODE	SCALE	WT	SH	REV
GD	9220765	1/1	1	1

THIS DRAWING WAS PRODUCED USING
 SOFTWARE: AutoCAD VERSION: 2000i
 FILE NAME: _____

A

B

C

D

4

3

2

1

A