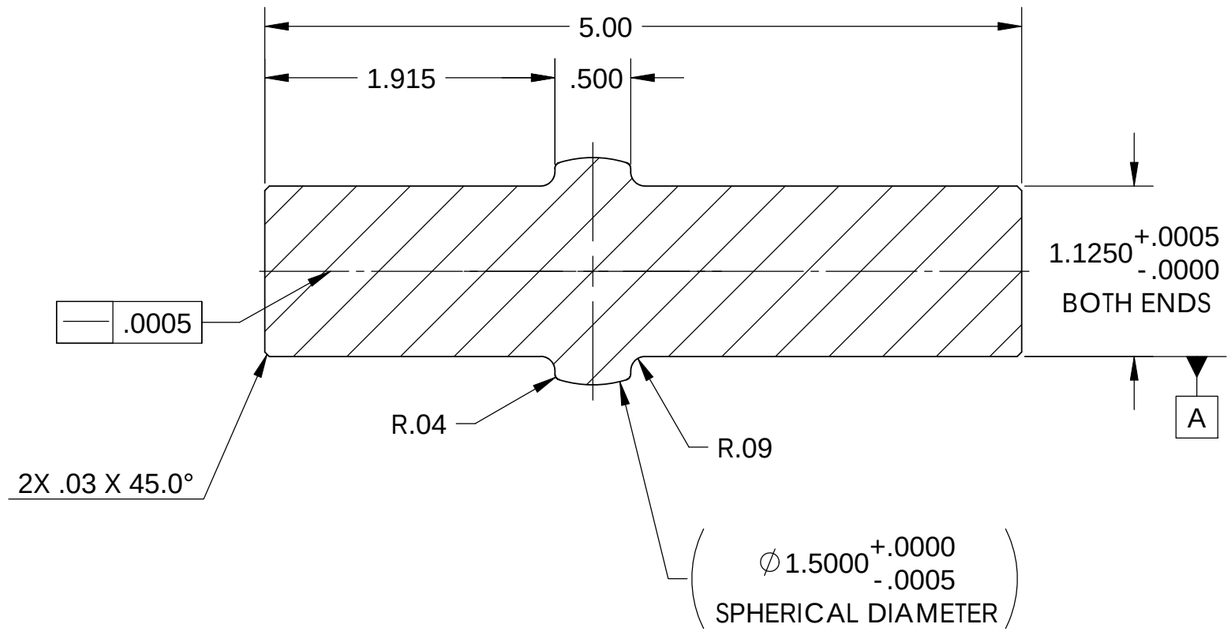
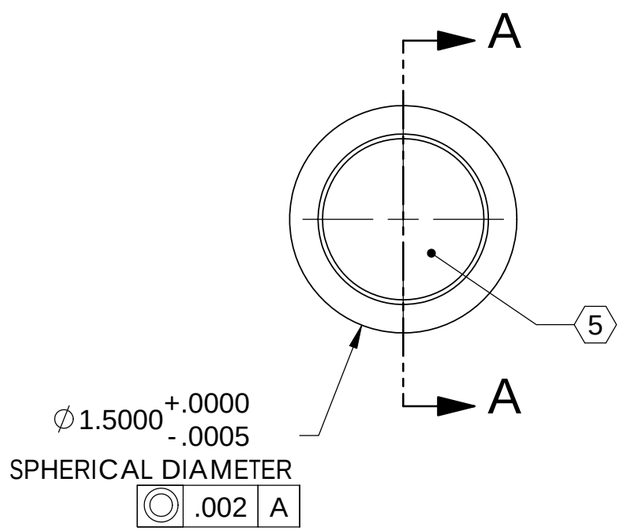
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.6 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. HEAT TREAT TO RC57 PER AMS-H-6875A.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Jul. 2007		
v2	09 Apr.2009		
v3	01 Mar. 2010	E1000115	E1000025

SECTION A-A





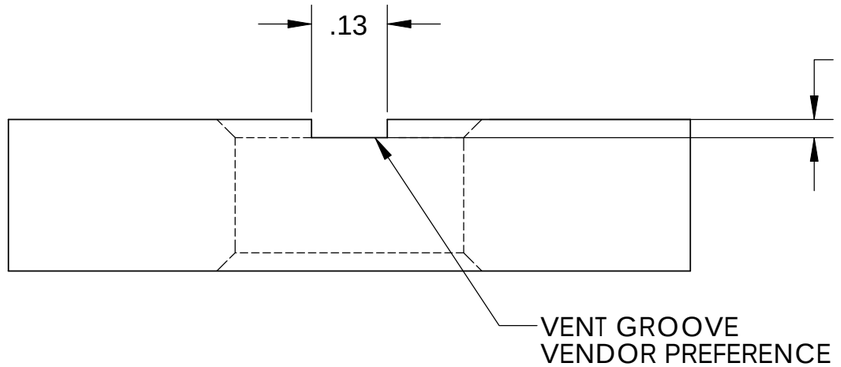
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)									
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME: LOCKER SPHERICAL PIN				
	MATERIAL: AISI 440C PER AMS 5630	FINISH: 16 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER: ASI 19 Jul. 2007	SIZE: B	DWG. NO.: D047935	REV.: v3	
			NEXT ASSY: D1000854, D1000855		DRAFTER: M.HILLARD 01 Mar. 2010				
					CHECKER: F.MATICHARD 01 Mar. 2010				
					APPROVAL: K.MASON 01 Mar. 2010	SCALE: 1:1	PROJECTION:	SHEET 1 OF 1	

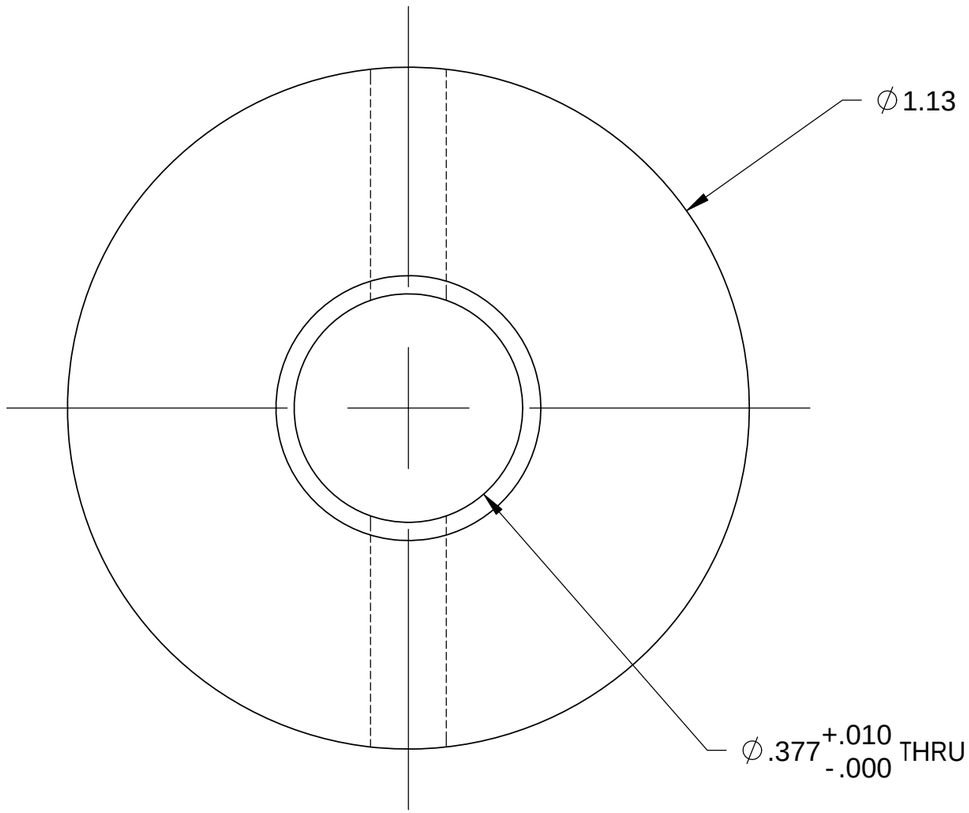
D047935_Locker_Spherical_Pin, PART PDM REV: V2-001, DRAWING PDM REV: X-004

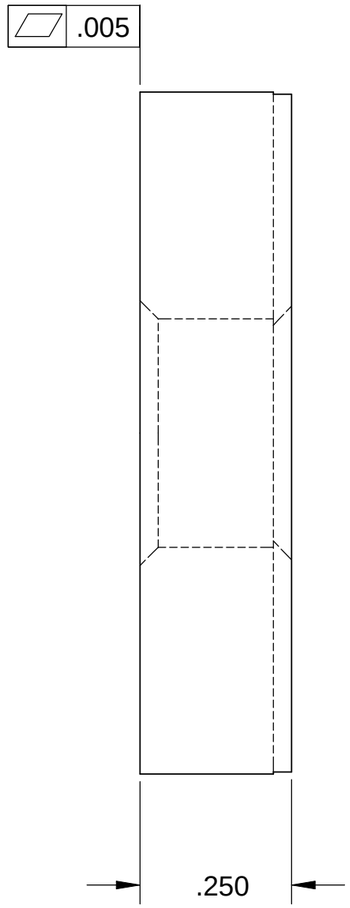
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.063 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	23 Dec. 2004		
v2	01 Mar. 2010	E1000115	E1000025







D047942 washer-adjustable foot, PART PDM REV: X-005, DRAWING PDM REV: X-002

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 304, 316 OR 302 SSTL	FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM	NEXT ASSY
ADVANCED LIGO	SEI	D1000854, D1000855

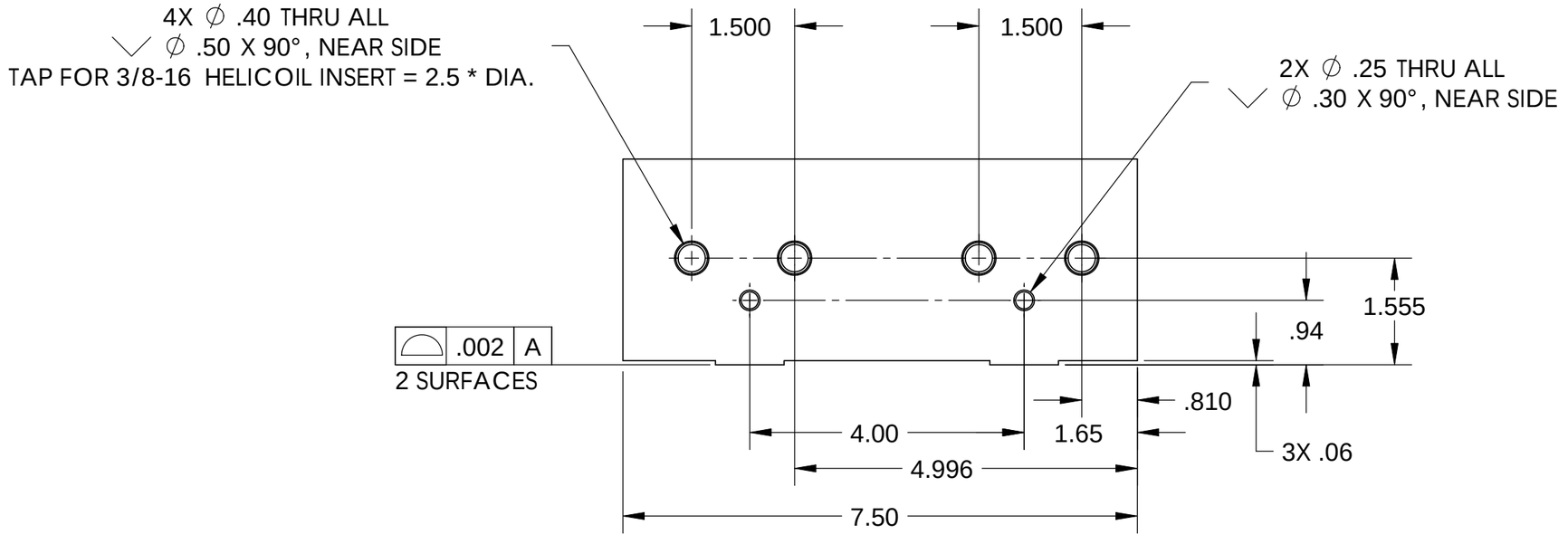
PART NAME: WASHER ADJUSTABLE FOOT, aLIGO BSC ISI

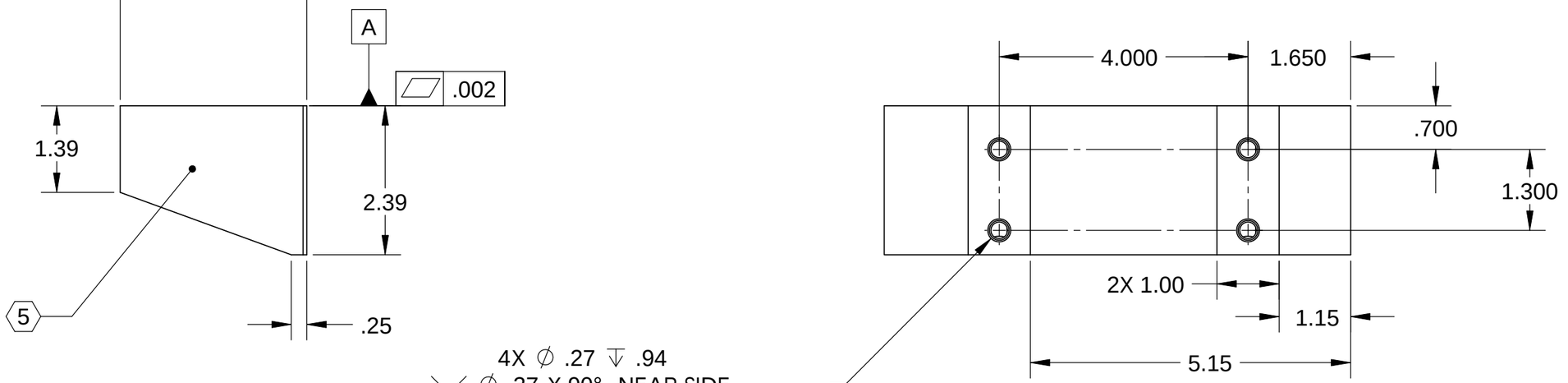
			SIZE	DWG. NO.	REV.
DESIGNER	ASI	23 Dec. 2004	B	D047942	v2
DRAFTER	M.HILLARD	01 Mar. 2010			
CHECKER	F.MATICHARD	01 Mar. 2010			
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 4:1	PROJECTION:	SHEET 1 OF 1

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 4.01 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.





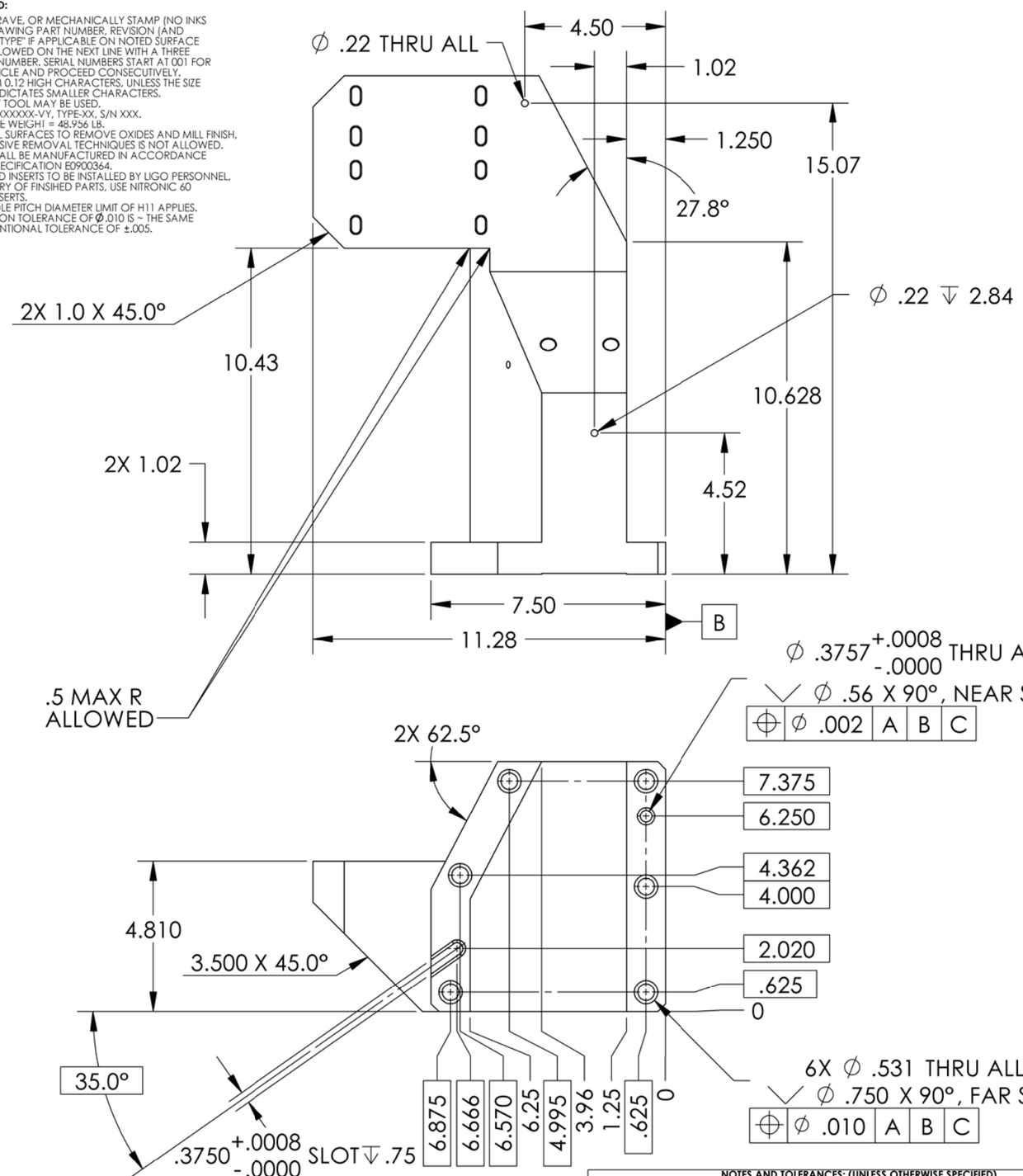
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)								
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME	LARGE VERT. ACTUATOR POST BRIDGE, STAGE 0-1, aLIGO BSC ISI		
	MATERIAL: 6061-T6 Al	FINISH: N/A µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER	S.BARNUM	22 Feb. 2010	SIZE: B
			NEXT ASSY: D0901103		DRAFTER	M.HILLARD	22 Feb. 2010	DWG. NO.: D0901183
					CHECKER	F.MATICHARD	22 Feb. 2010	REV.: v1
					APPROVAL	K.MASON	22 Feb. 2010	SCALE: 1:2
								PROJECTION:
								SHEET 1 OF 1

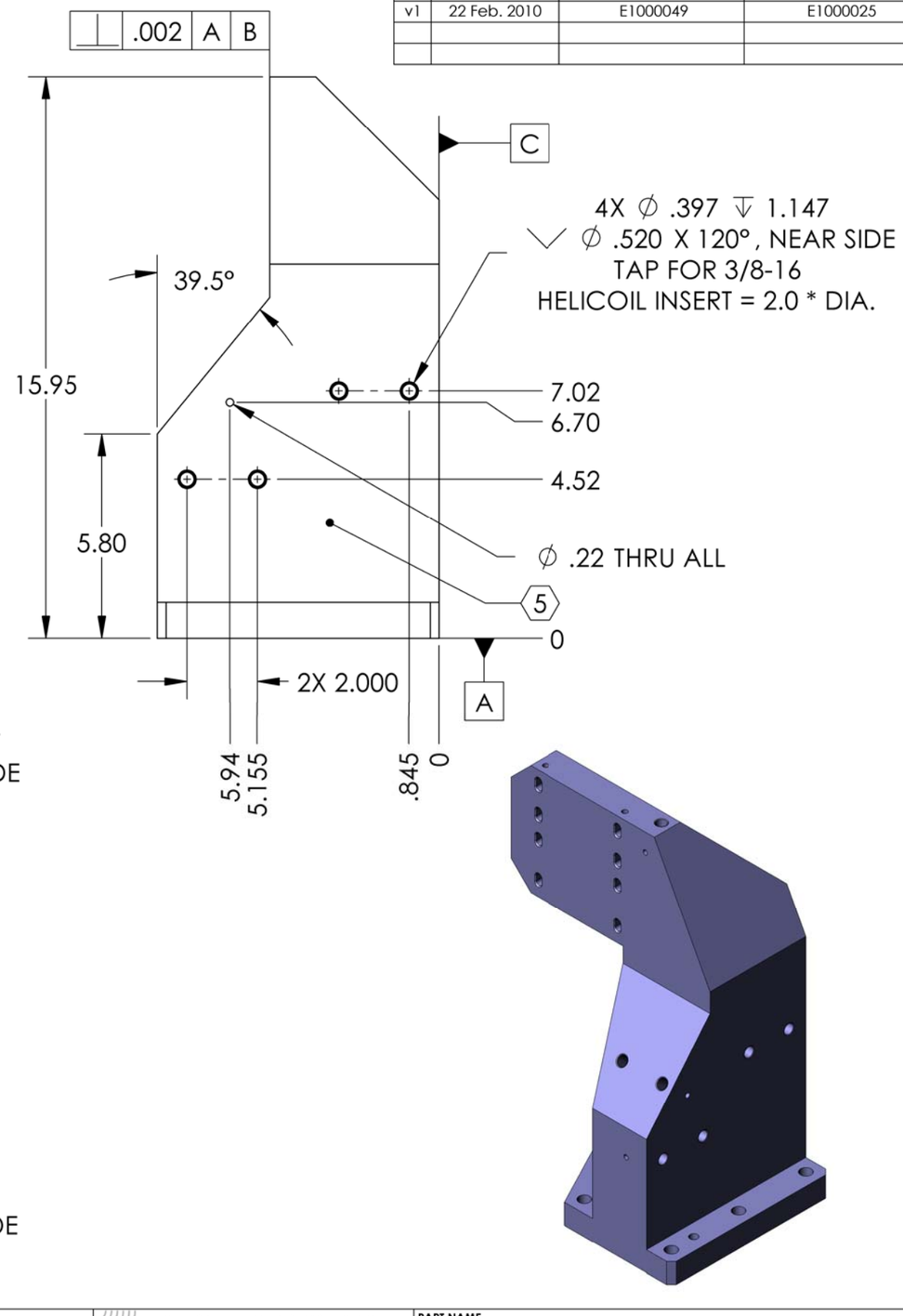
D0901183 Large Vert. Actuator Post Bridge, Stage 0-1, aLIGO BSC ISI, PART PDM REV: X-010, DRAWING PDM REV: X-002

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS. UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 48.956 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS. USE NITRONIC 60 THREADED INSERTS.
10. A TAPPED HOLE PITCH DIAMETER LIMIT OF H11 APPLIES.
11. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025





NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

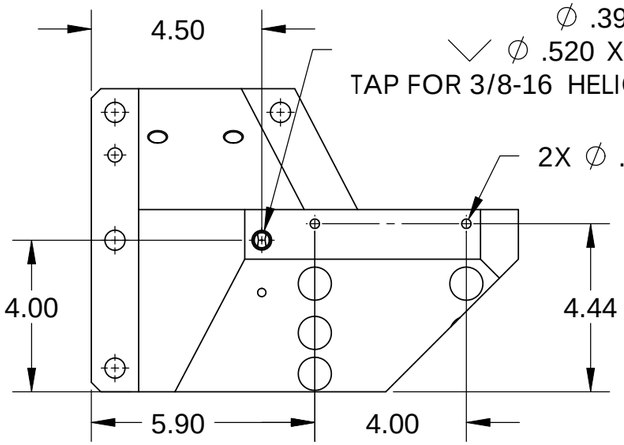
SYSTEM	SUB-SYSTEM	NEXT ASSY
ADVANCED LIGO	SEI	D0901182

PART NAME: ACTUATOR POST STAGE 0-1, aLIGO BSC ISI

DESIGNER	S.BARNUM	22 Feb. 2010	SIZE: B
DRAFTER	M.HILLARD	22 Feb. 2010	DWG. NO.: D0901554
CHECKER	F.MATICHARD	22 Feb. 2010	REV.: v1
APPROVAL	K.MASON	22 Feb. 2010	SCALE: 1:4

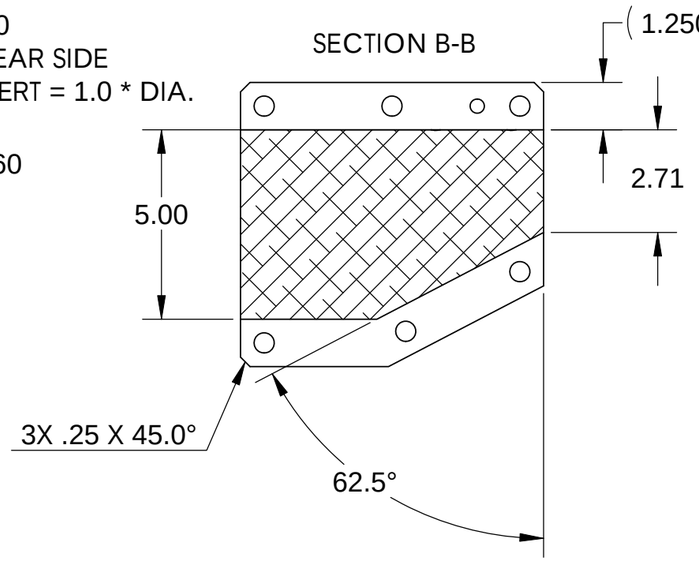
PROJECTION: SHEET 1 OF 2

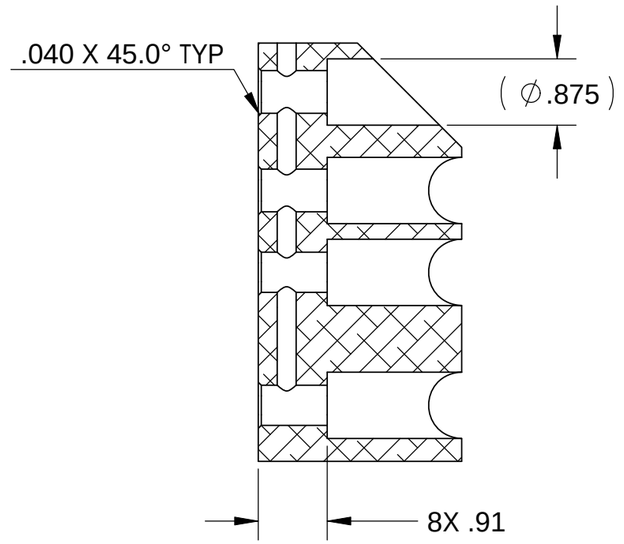
D0901554 Actuator Post Stage0-1, PART PDM REV: X-022, DRAWING PDM REV: X-008

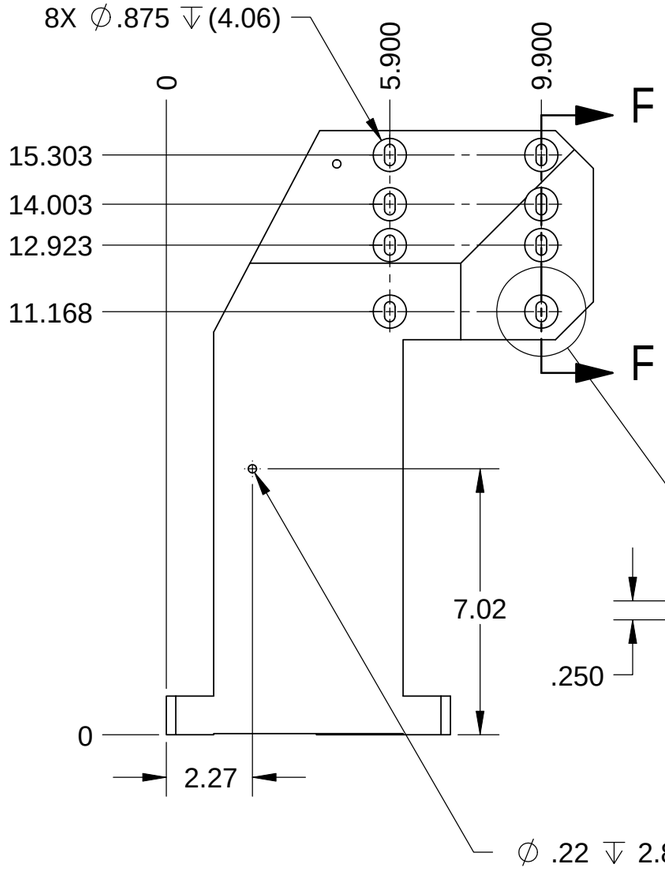


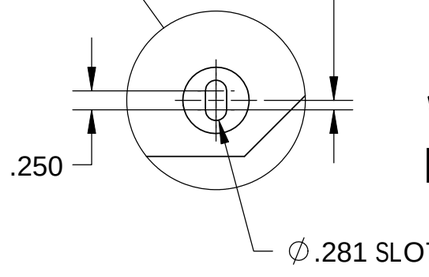
⌀ .397 ↧ .880
⌵ ⌀ .520 X 120°, NEAR SIDE
TAP FOR 3/8-16 HELICOIL INSERT = 1.0 * DIA.

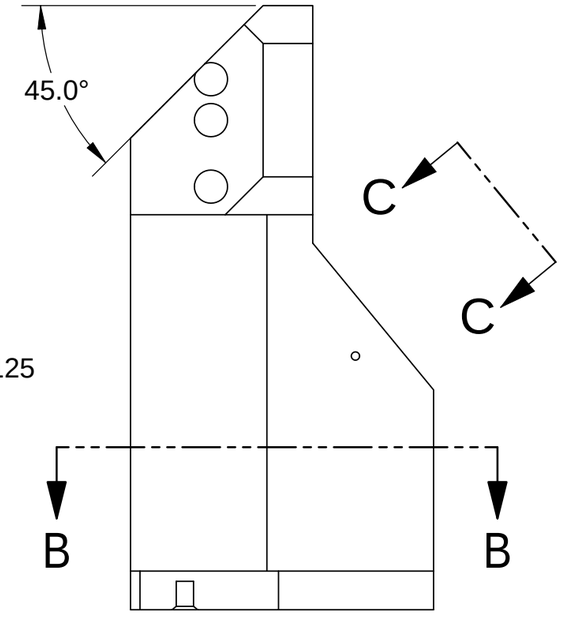
2X ⌀ .25 ↧ 4.60

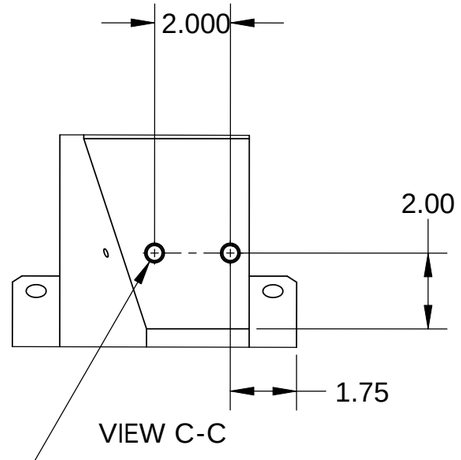












2X ⌀ .397 ↧ 1.147
⌵ ⌀ .520 X 120°, NEAR SIDE
TAP FOR 3/8-16 HELICOIL INSERT = 2.0 * DIA.

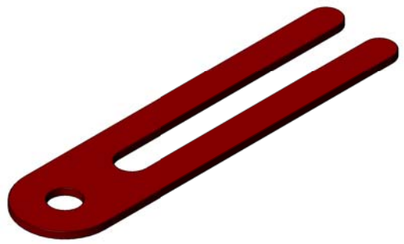
LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	
SIZE B	DWG. NO. D0901554	REV. v1
SCALE: 1:4	PROJECTION:	SHEET 2 OF 2

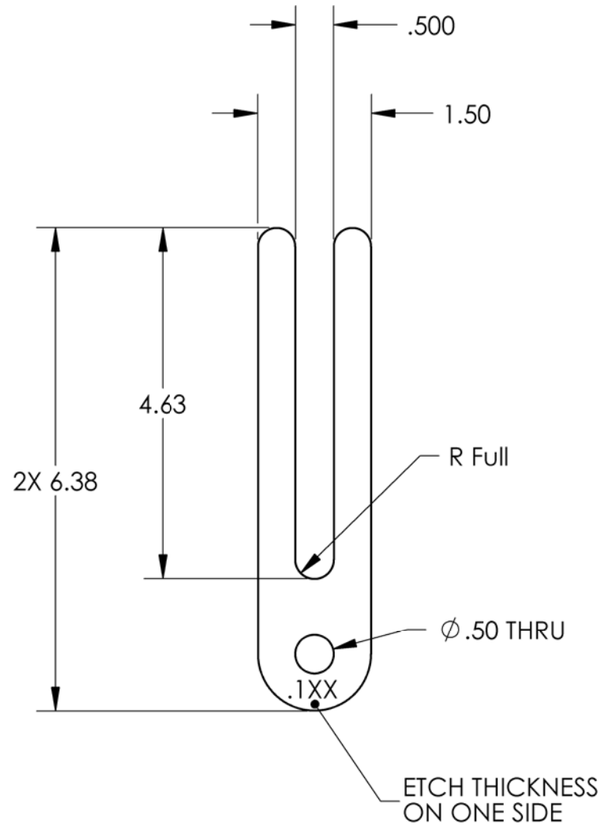
D0901554 Actuator Post Stage0-1, PART PDM REV: X-022, DRAWING PDM REV: X-008

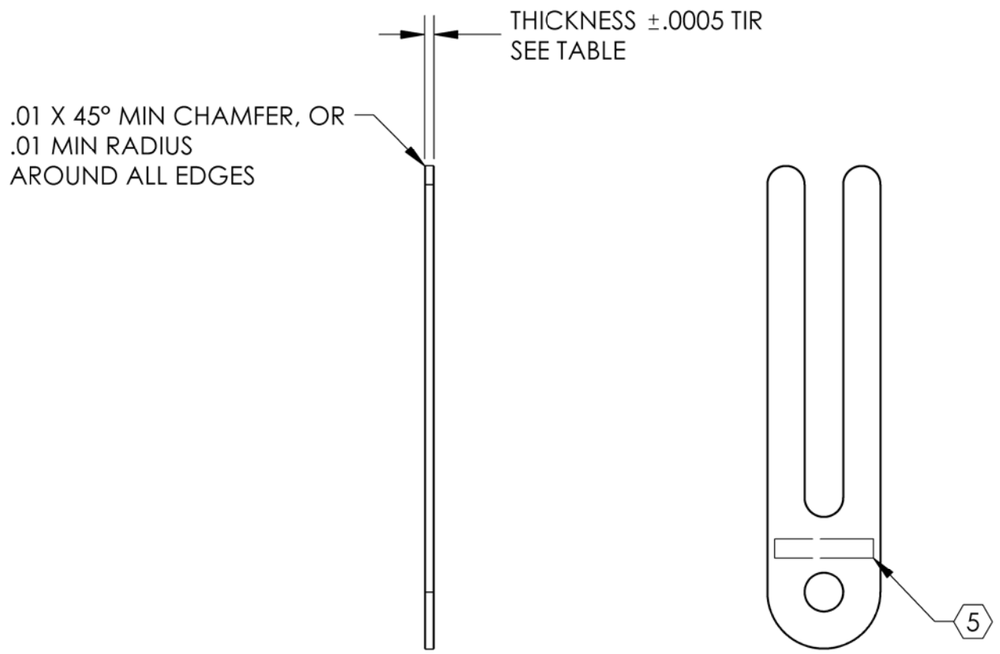
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIENT OR 'TYPE' (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
   EXAMPLE (PART): 001-V1
   EXAMPLE (TAG): DXXXXXXX-VY, TYPE-XX, QTY:TBD
6. APPROXIMATE WEIGHT = 0.24 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ELECTROPOLISH TO FINISH.
10. MECHANICALLY SCRIBE OR ETCH SHIM THICKNESS AS INDICATED.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025







CONFIGURATION TABLE	
LIGO Type	THICKNESS
-00	.120
-01	.121
-02	.122
-03	.123
-04	.124
-05	.125
-06	.126
-07	.127
-08	.128
-09	.129
-10	.130

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .01
.XXX ± .005

ANGULAR ± 0.5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, R.02 MIN.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 304 SSTL
FINISH: 16 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D1000852

PART NAME: STAGE 0-1, LOCKER, BASE SHIM SPACER

DESIGNER	S.BARNUM	17 Aug 2009	
DRAFTER	M.HILLARD	01 Mar. 2010	
CHECKER	F.MATICHARD	01 Mar. 2010	
APPROVAL	K.MASON	01 Mar. 2010	

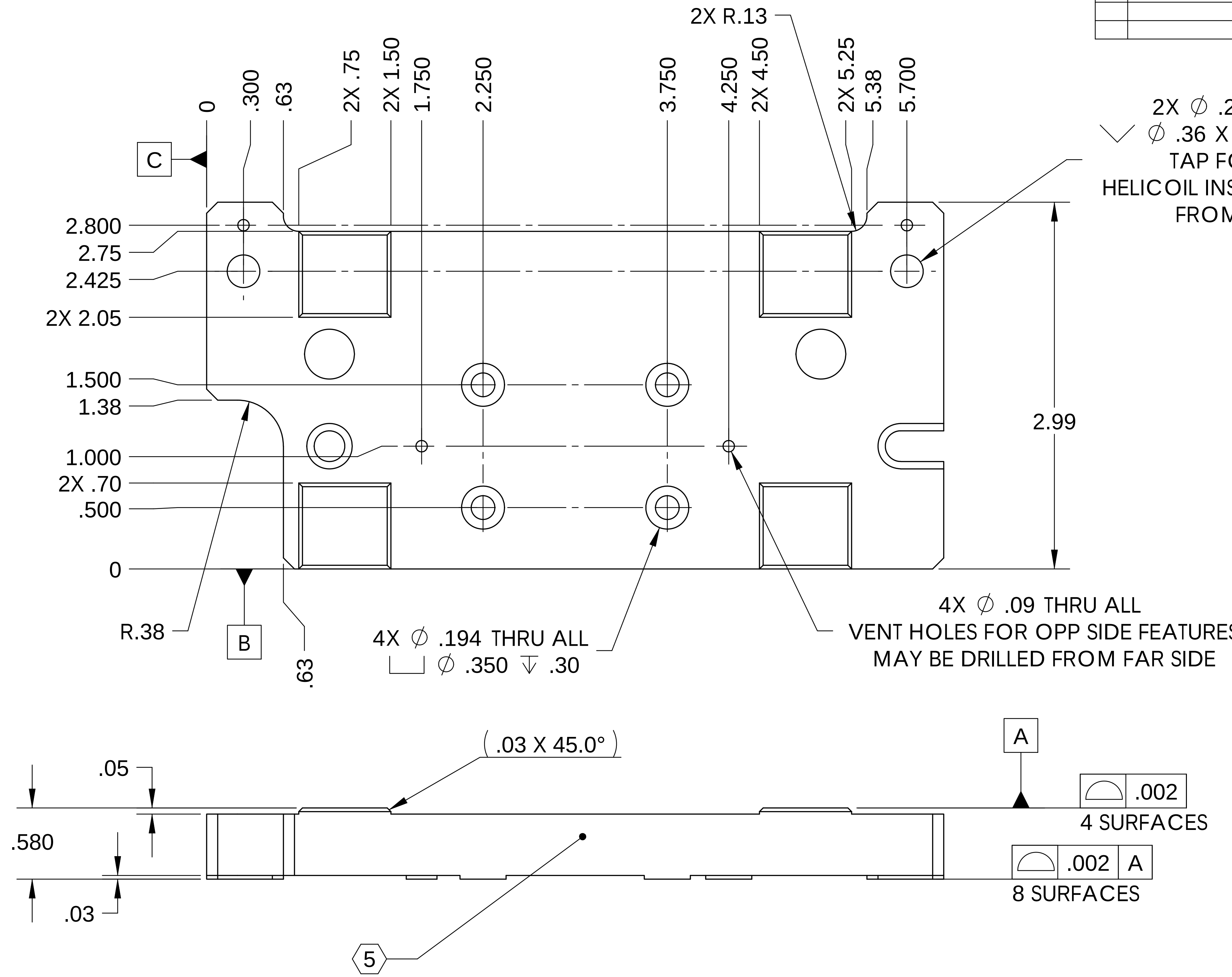
SIZE: B — DWG. NO.: D0901805 — REV.: v1
SCALE: 1:2 — PROJECTION: — SHEET 1 OF 1

D0901805_StageC-1, Locker, Base Shim Spacer, PART PDM REV: X-005, DRAWING PDM REV: X-004

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.7 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF ∅.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.



BOTTOM VIEW SEE SHEET 2

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)		
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

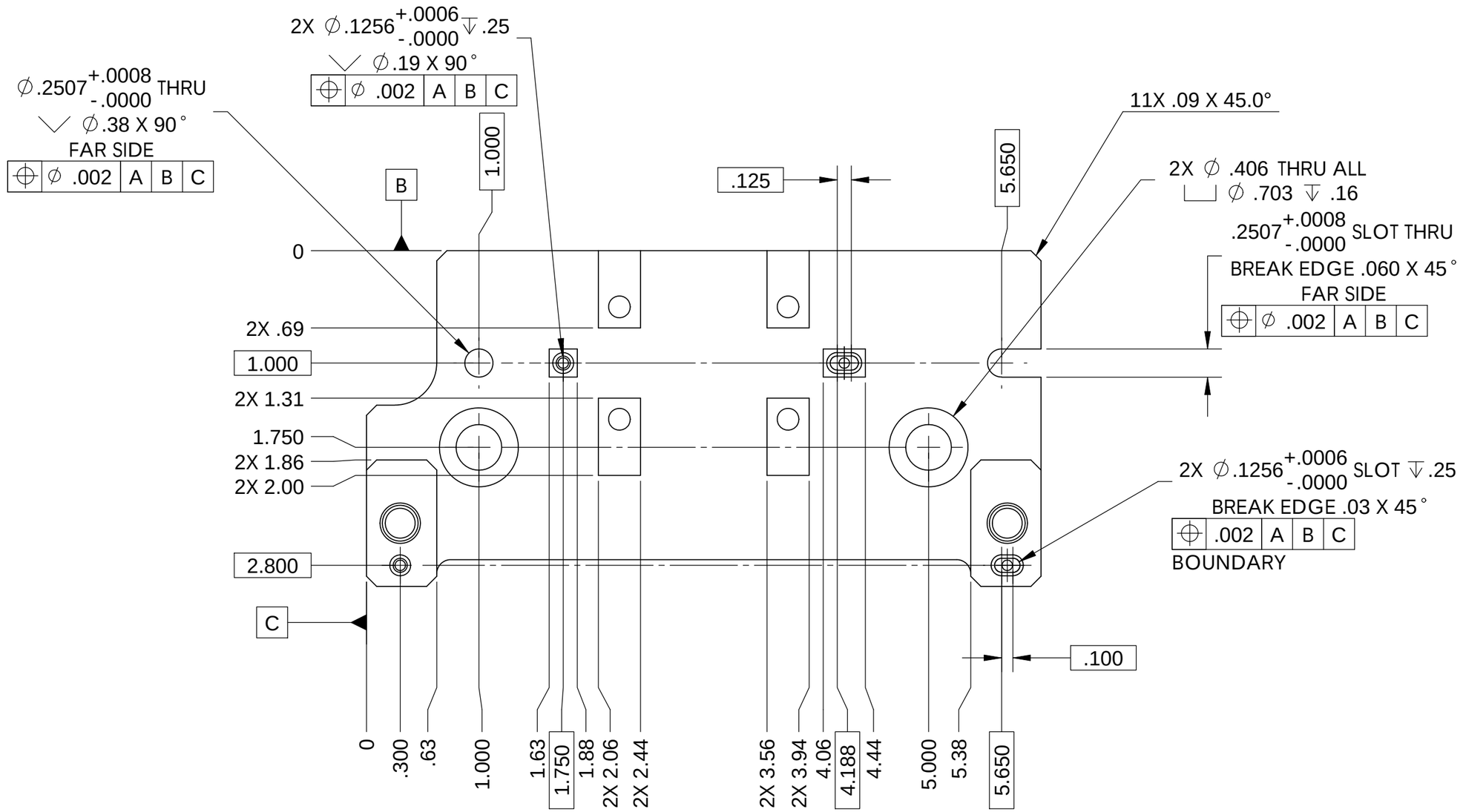
PART NAME	MAGNET TO STAGE2 INTERPOSER, aLIGO BSC ISI
SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SEI
NEXT ASSY	D0902530

DESIGNER	S.BARNUM	19 Mar. 2010
DRAFTER	M.HILLARD	19 Mar. 2010
CHECKER	F.MATICHARD	19 Mar. 2010
APPROVAL	K.MASON	19 Mar. 2010

SIZE: B | DWG. NO.: D0902134 | REV.: v1

SCALE: 1:1 | PROJECTION: | SHEET 1 OF 2

D0902134_Small Horizontal Actuator Magnet to Stage2 Interposer, PART PDM REV: X-019, DRAWING PDM REV: X-003



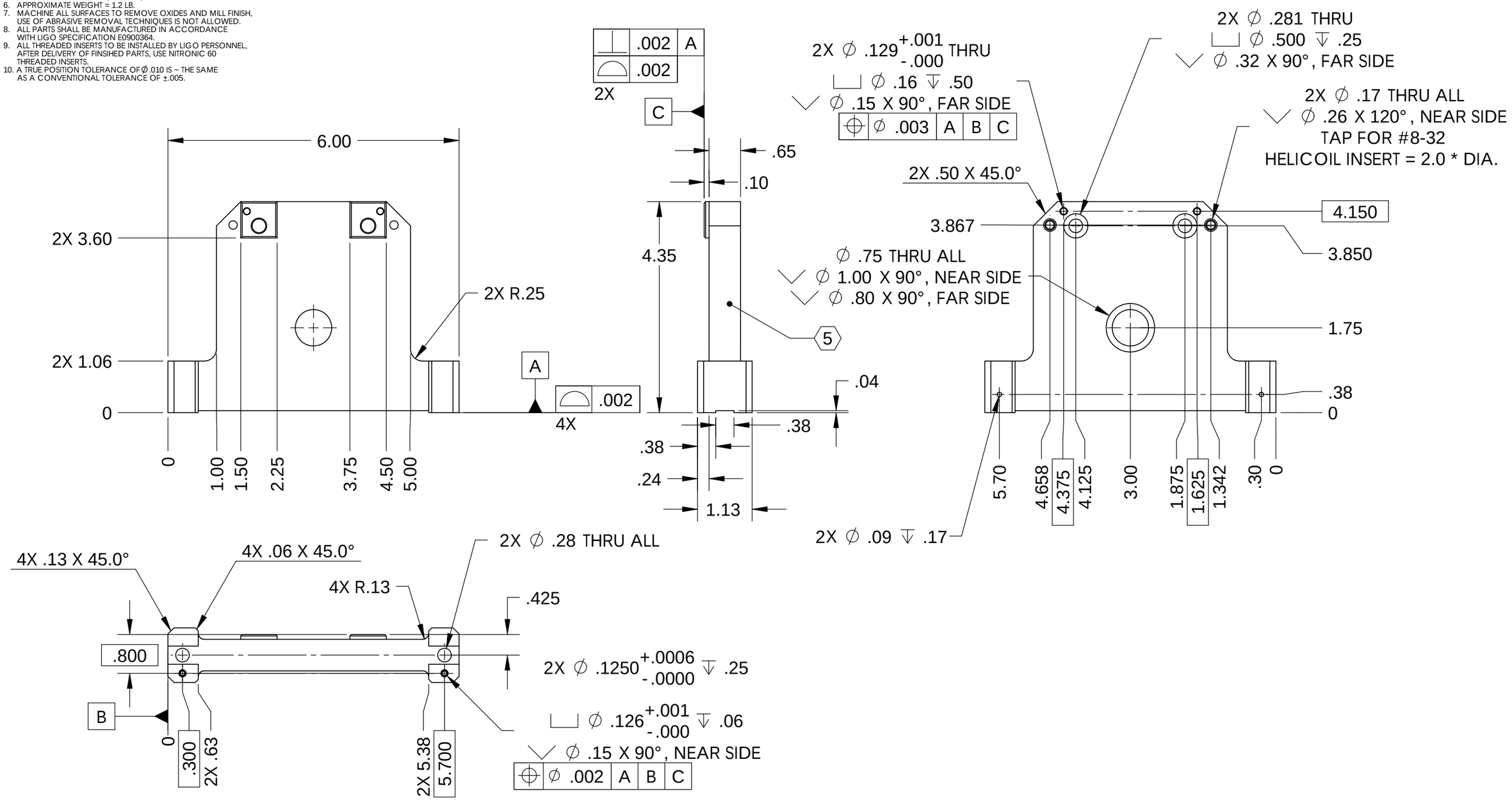
D0902134_Small Horizontal Actuator Magnet to Stage2 Interposer, PART PDM REV: X-019, DRAWING PDM REV: X-003

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D0902134	REV. v1	
SCALE: 1:1	PROJECTION:	SHEET 2 OF 2	

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.2 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM
ADVANCED LIGO	SEI

NEXT ASSY: D1000717

PART NAME: MAGNET ASSEMBLY TO BOBBIN TOOLING BRACKET, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010	
DRAFTER	M.HILLARD	19 Mar. 2010	
CHECKER	F.MATICHARD	19 Mar. 2010	
APPROVAL	K.MASON	19 Mar. 2010	

SIZE: B — DWG. NO.: D0902136 — REV.: v1

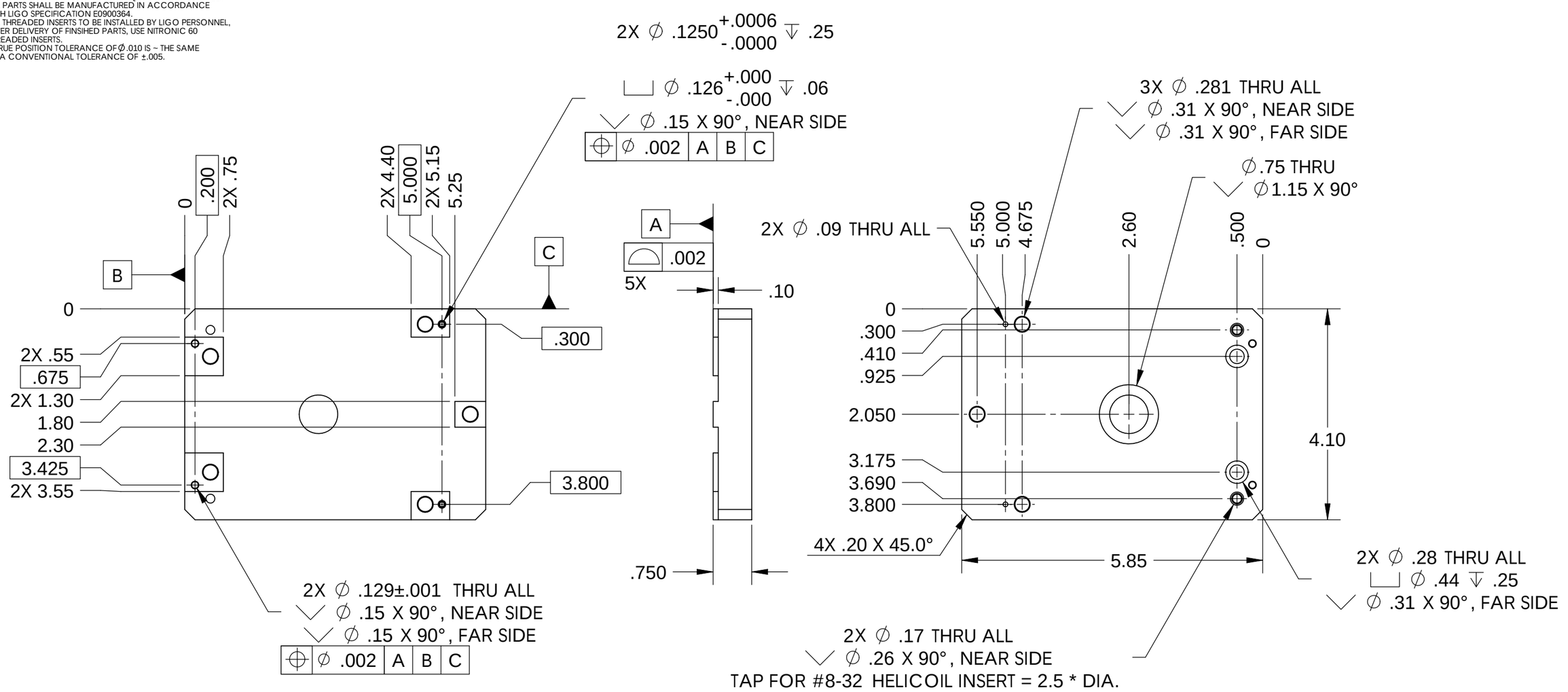
SCALE: 1:2 — PROJECTION: — SHEET 1 OF 1

D0902136 Small Horizontal Actuator, Tooling Bracket, PART PDM REV: X-015, DRAWING PDM REV: X-002

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.666 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.



D0902137 Small vertical Actuator Tooling Bracket, PART PDM REV: X-014, DRAWING PDM REV: X-001

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM
ADVANCED LIGO	SEI

NEXT ASSY: D1000642

PART NAME: MAGNET ASSEMBLY TO BOBBIN TOOLING BRACKET VERTICAL, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010
DRAFTER	M.HILLARD	19 Mar. 2010
CHECKER	F.MATICHARD	19 Mar. 2010
APPROVAL	K.MASON	19 Mar. 2010

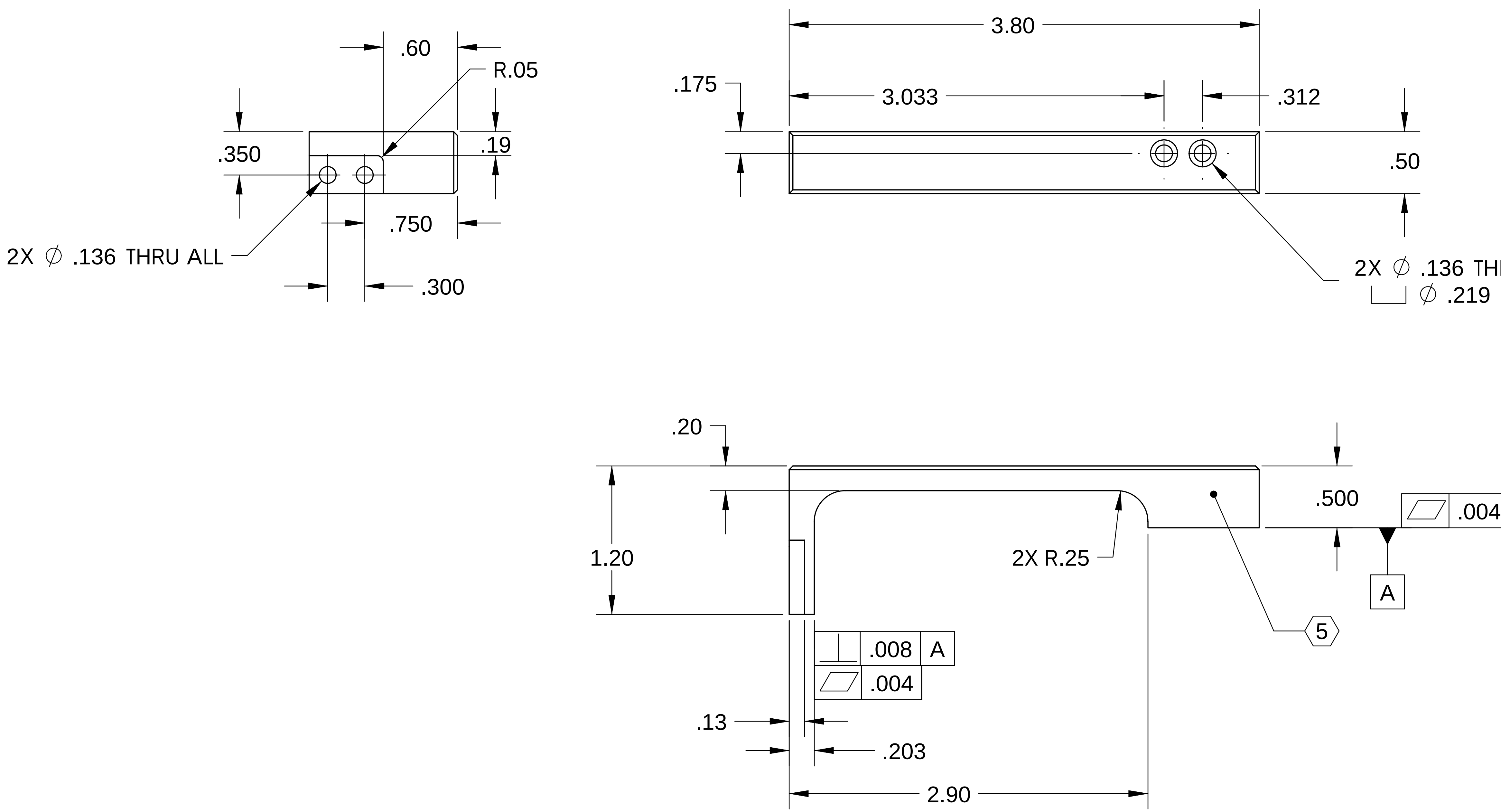
SIZE: B — DWG. NO.: D0902137 — REV.: v1

SCALE: 1:2 — PROJECTION: — SHEET 1 OF 1

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.19 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005
ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL EDGES AND CORNERS .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: COPPER

FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO | SUB-SYSTEM: SEI

NEXT ASSY: D0902531

PART NAME: SMALL ACTUATOR THERMAL BAR RIGHT, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010
DRAFTER	M.HILLARD	19 Mar. 2010
CHECKER	F.MATICHARD	19 Mar. 2010
APPROVAL	K.MASON	19 Mar. 2010

SIZE: B | DWG. NO. D0902153 | REV. v1

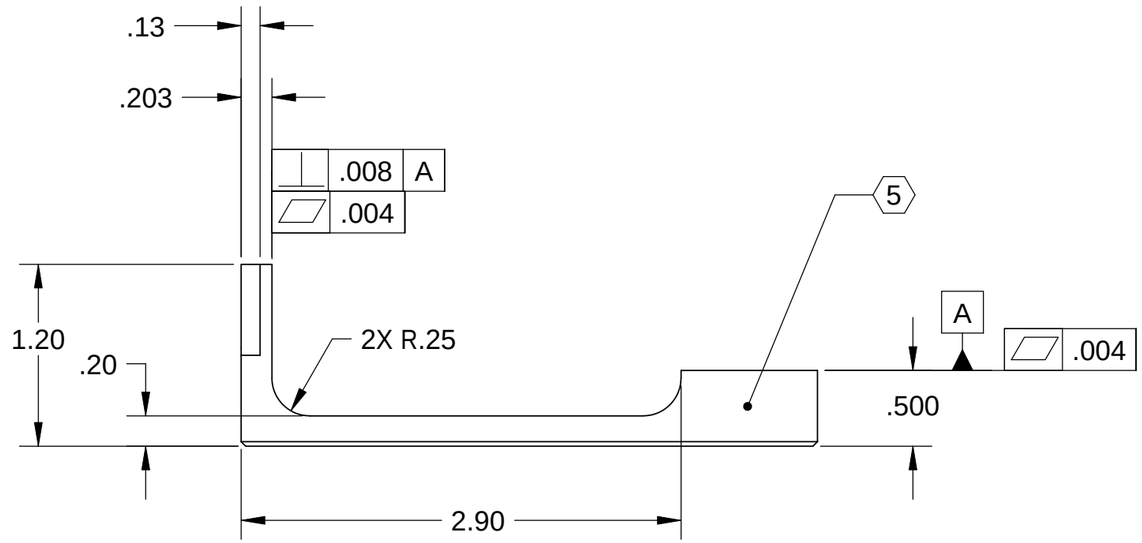
SCALE: 1:1 | PROJECTION: | SHEET 1 OF 1

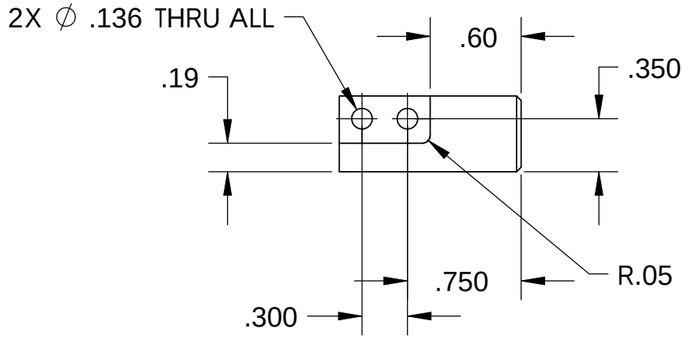
D0902153 Small Actuator Thermal Bar Right, PART PDM REV: X-009, DRAWING PDM REV: X-003

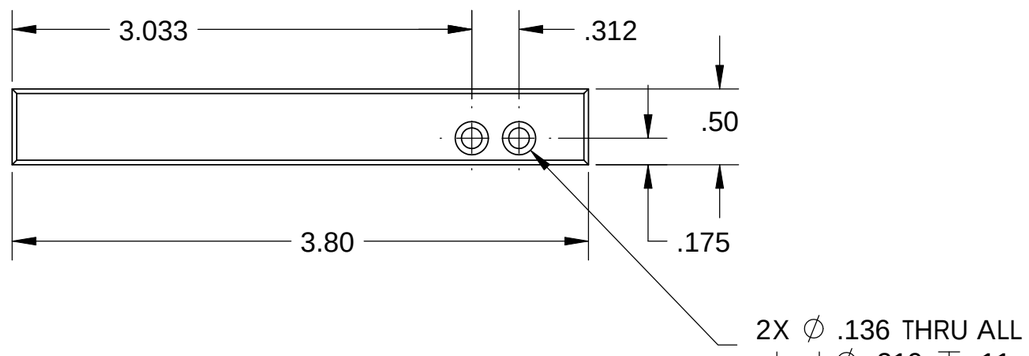
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.19 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025







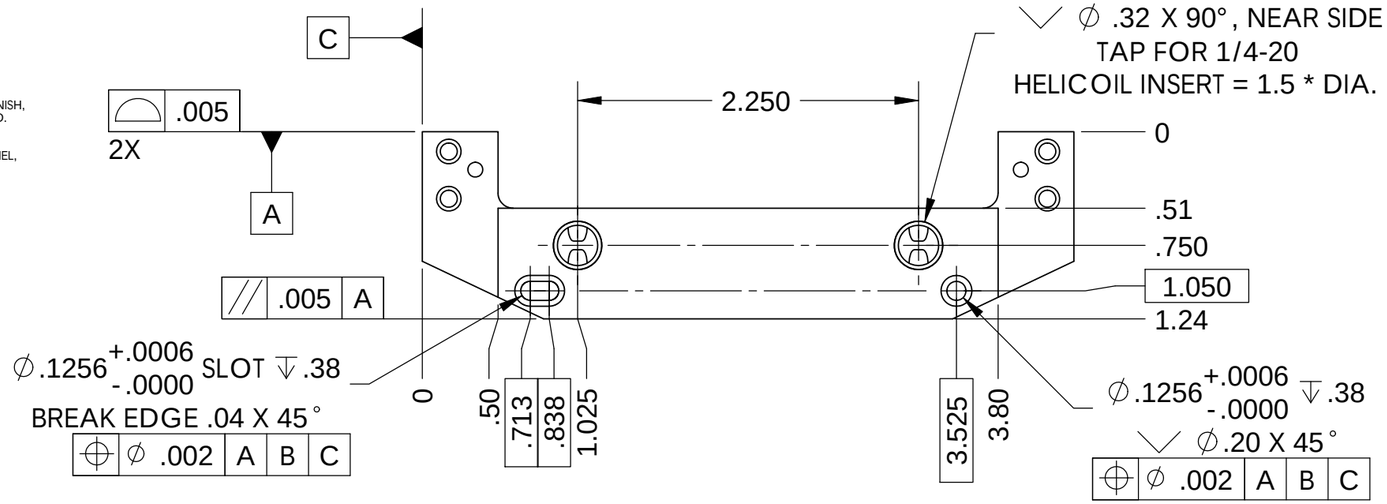
D0902154 Small Actuator Thermal Bar Left, PART PDM REV: X-010, DRAWING PDM REV: X-004

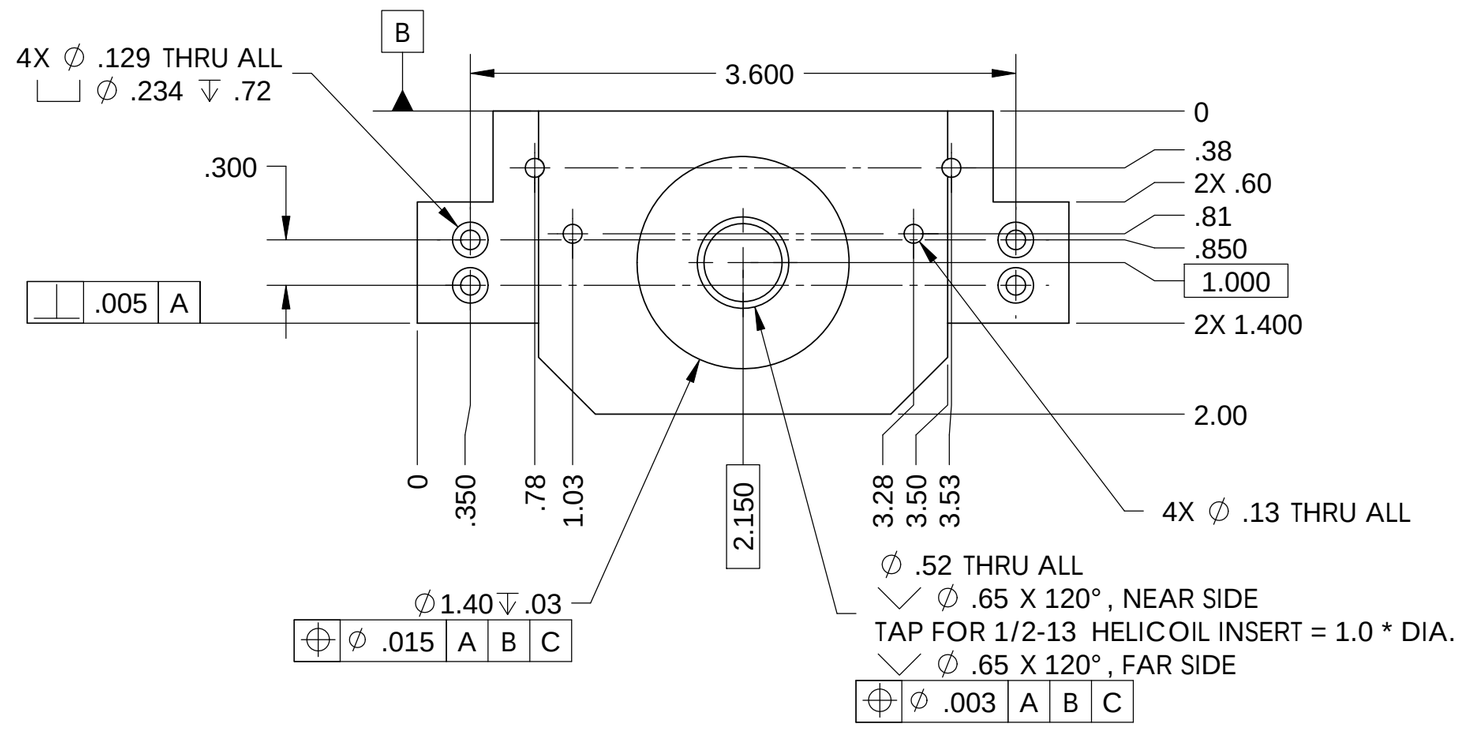
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	PART NAME: SMALL ACTUATOR THERMAL BAR LEFT, aLIGO BSC ISI	
	MATERIAL: COPPER	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO / SUB-SYSTEM: SEI	DESIGNER S.BARNUM 19 Mar. 2010	SIZE: B / DWG. NO.: D0902154 / REV.: v1
			NEXT ASSY: D0902531	DRAFTER M.HILLARD 19 Mar. 2010	
				CHECKER F.MATICHARD 19 Mar. 2010	
				APPROVAL K.MASON 19 Mar. 2010	SCALE: 1:1 / PROJECTION: / SHEET 1 OF 1

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.45 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025





D0902155 Small Actuator Bobbin Coil Bracket, PART PDM REV: X-023, DRAWING PDM REV: X-005

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL EDGES AND CORNERS .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 6061-T6 Al

FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO

SUB-SYSTEM: SEI

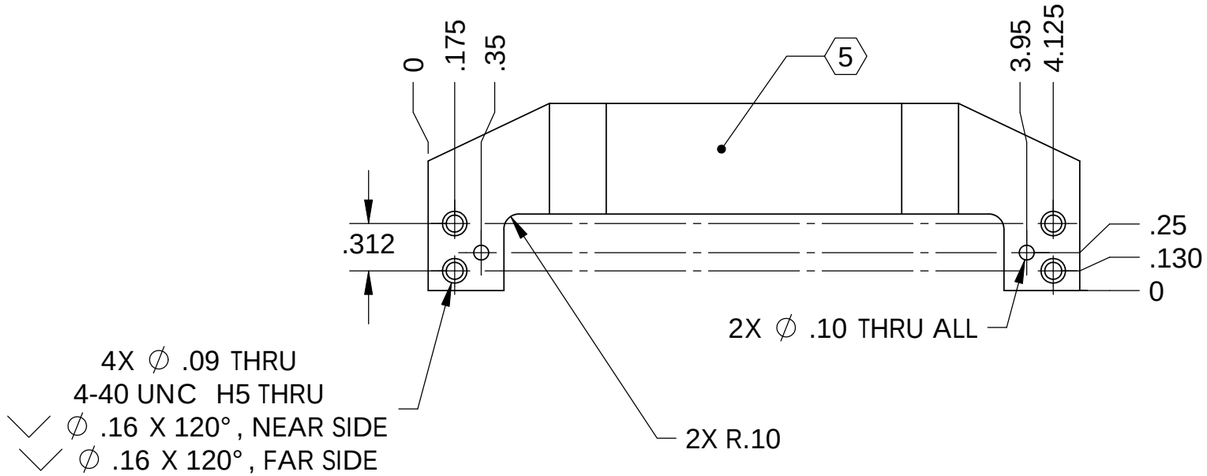
NEXT ASSY: D0902531, D0902530

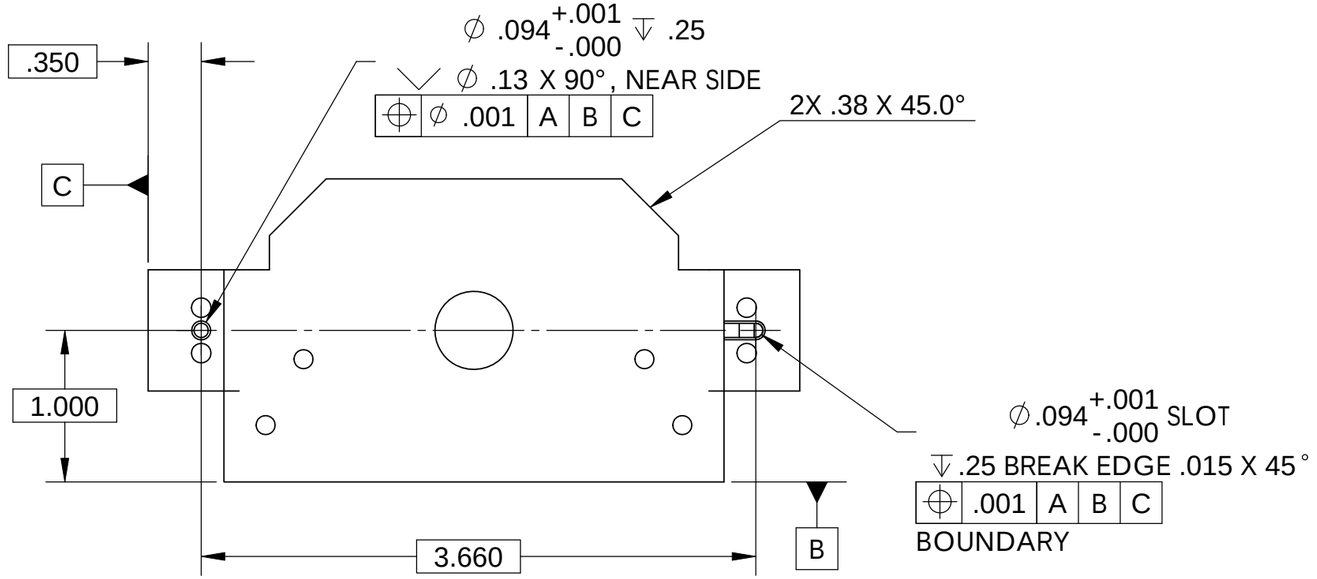
PART NAME: SMALL ACTUATOR BOBBIN COIL BRACKET, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010
DRAFTER	M.HILLARD	19 Mar. 2010
CHECKER	F.MATICHARD	19 Mar. 2010
APPROVAL	K.MASON	19 Mar. 2010

SIZE: B — DWG. NO.: D0902155 — REV.: v1

SCALE: 1:1 — PROJECTION: — SHEET 1 OF 2





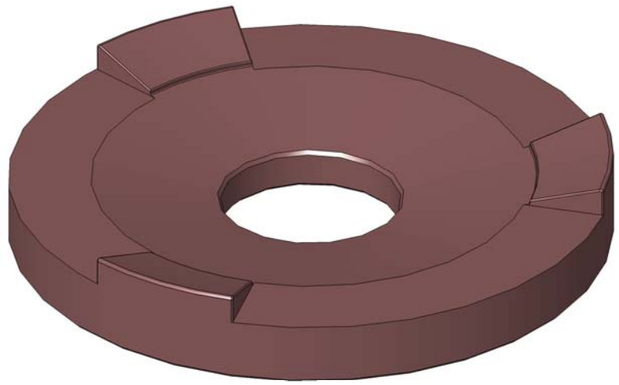
D0902155 Small Actuator Bobbin Coil Bracket, PART PDM REV: X-023, DRAWING PDM REV: X-005

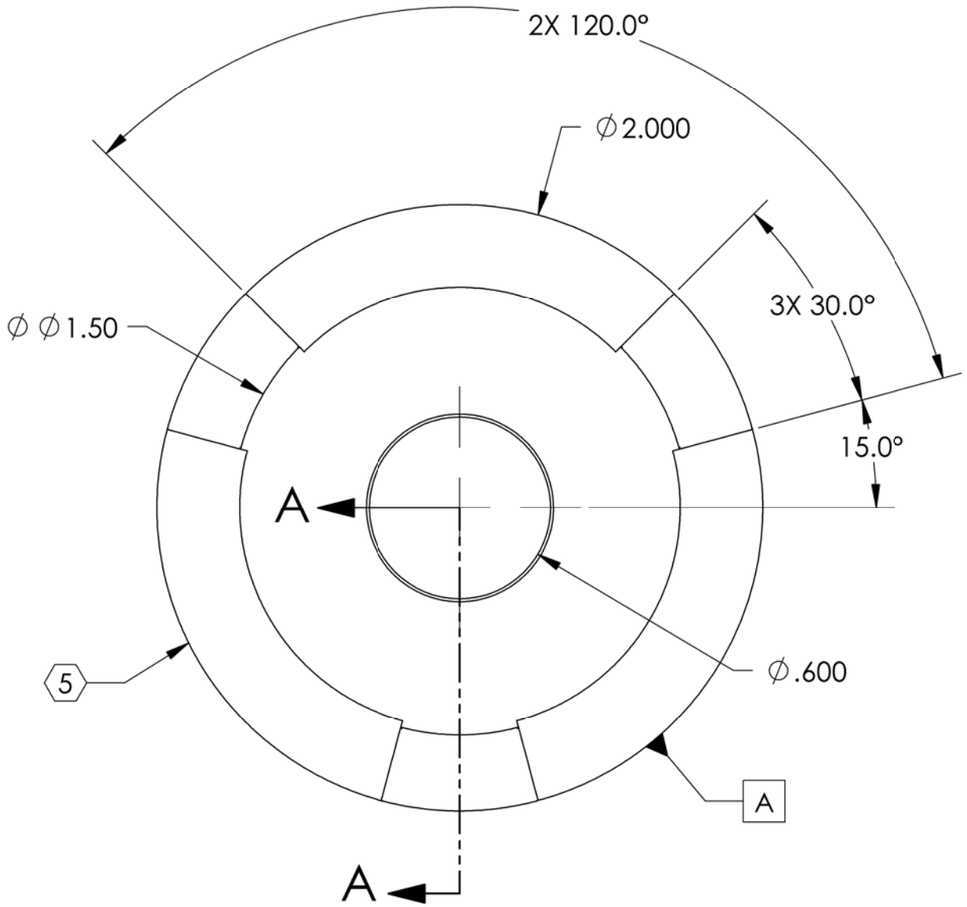
LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D0902155	REV. v1	
SCALE: 1:1	PROJECTION:	SHEET 2 OF 2	

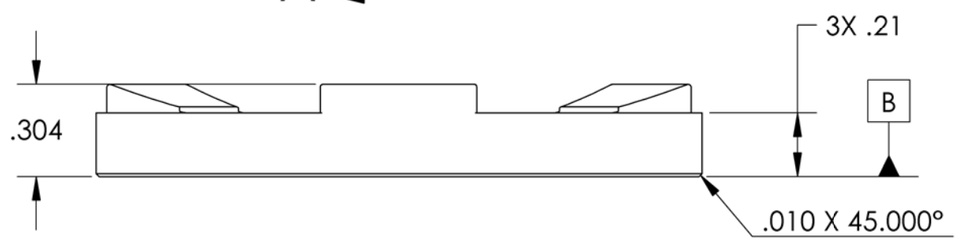
NOTES CONTINUED:

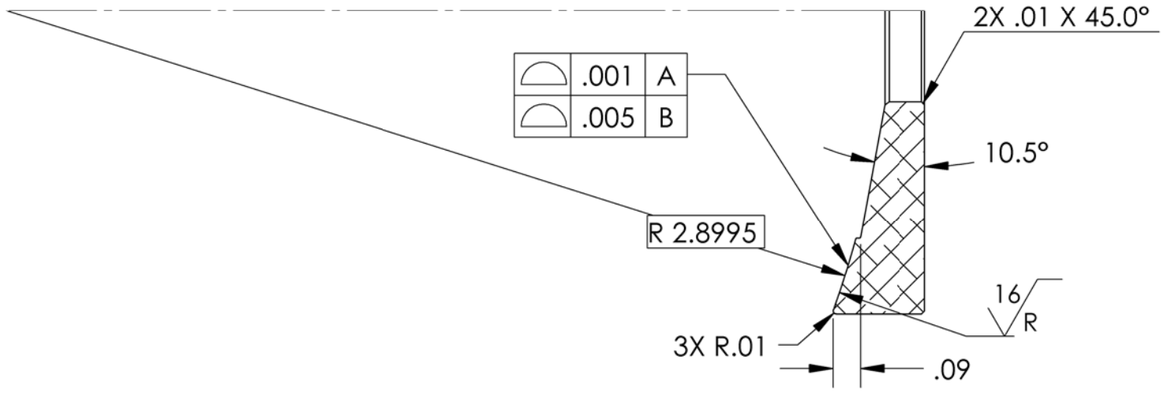
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.075 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. FINISH: ELECTROPOLISH ALL DIMS APPLY AFTER FINISHING.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025









SECTION A-A

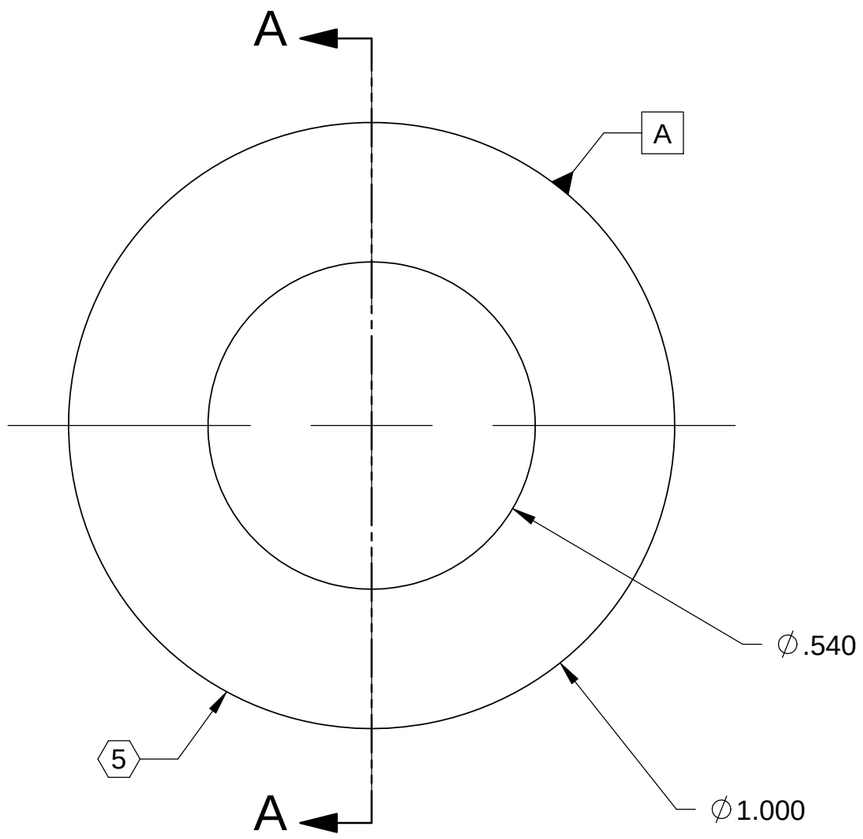
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 304 SSTL	FINISH: 32 µinch	LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY SYSTEM: ADVANCED LIGO SUB-SYSTEM: SEI NEXT ASSY: D0902530, D0902531	PART NAME: SPHERICAL WASHER, 2 IN. OD CONCAVE, aLIGO BSC ISI DESIGNER S.BARNUM '9 Mar. 2010 DRAFTER M.HILLARD '9 Mar. 2010 CHECKER F.MATICHARD '9 Mar. 2010 APPROVAL K.MASON '9 Mar. 2010 SIZE B · DWG. NO. D0902156 · REV. v1 SCALE: 2:1 · PROJECTION: · SHEET 1 OF 1

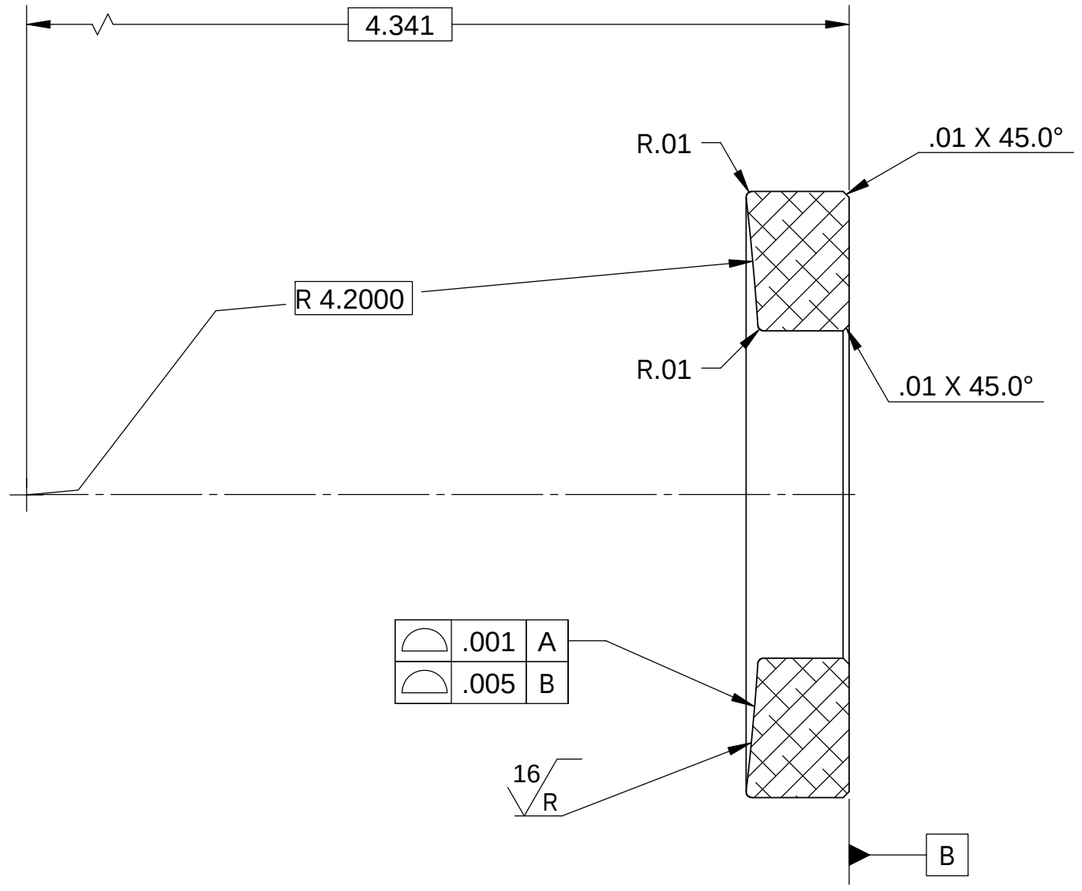
D0902156 Spherical Washer, 2 in OD Concave, aLIGO BSC ISI, PART PDM REV: X-006, DRAWING PDM REV: X-004

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIENT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
   EXAMPLE (PART): 001-V1
   EXAMPLE (TAG): DXXXXXXX-VY, TYPE-XX, QTY:TBD
6. APPROXIMATE WEIGHT = 0.012 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. FINISH: ELECTROPOLISH ALL DIMS APPLY AFTER FINISHING.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025





SECTION A-A

D0902157 Spherical Washer, 1 in OD Concave , aLIGO BSC ISI, PART PDM REV: X-002, DRAWING PDM REV: X-002

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL EDGES AND CORNERS .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 304 SSTL
FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D0902530, D0902531

PART NAME: SPHERICAL WASHER, 1 IN. OD CONCAVE, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010
DRAFTER	M.HILLARD	19 Mar. 2010
CHECKER	F.MATICHARD	19 Mar. 2010
APPROVAL	K.MASON	19 Mar. 2010

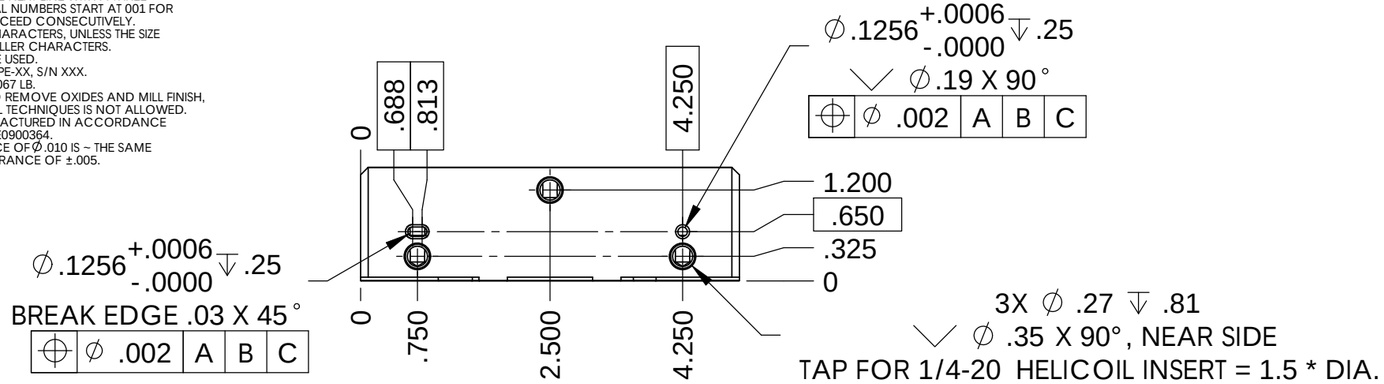
SIZE: B — DWG. NO.: D0902157 — REV.: v1
SCALE: 4:1 — PROJECTION: — SHEET 1 OF 1

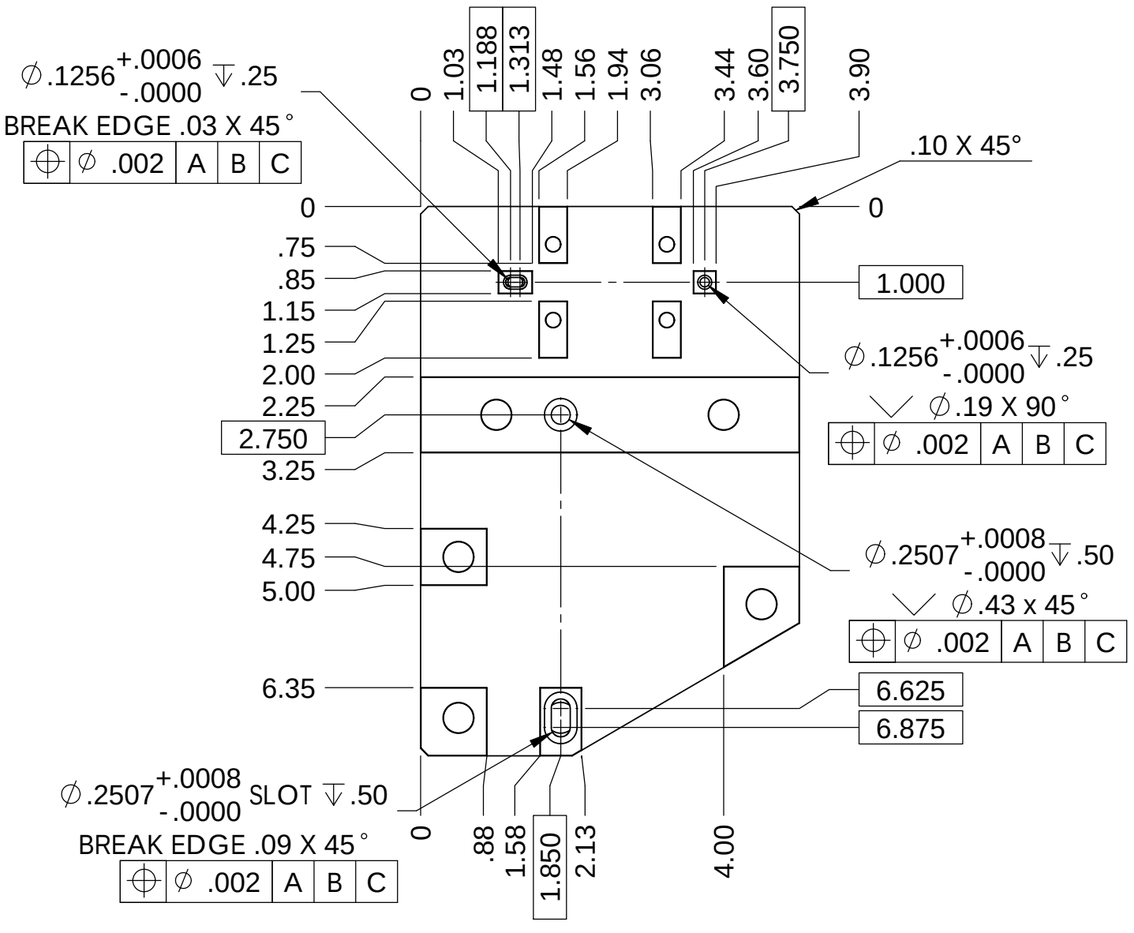
NOTES CONTINUED:

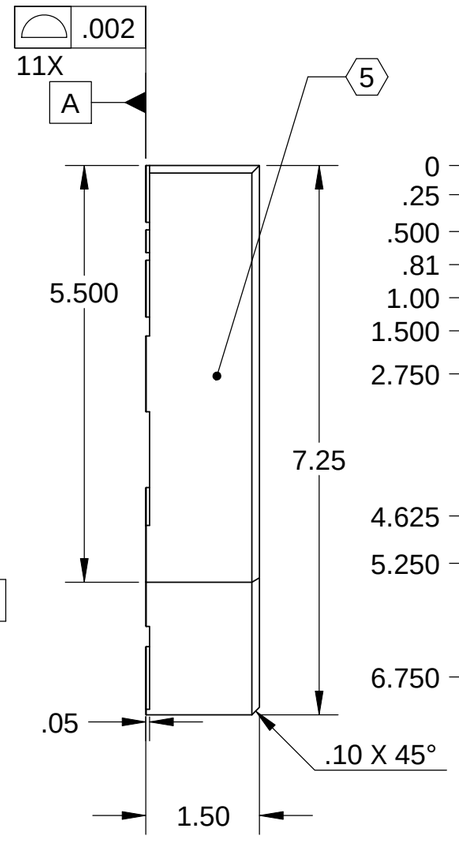
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 2.067 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

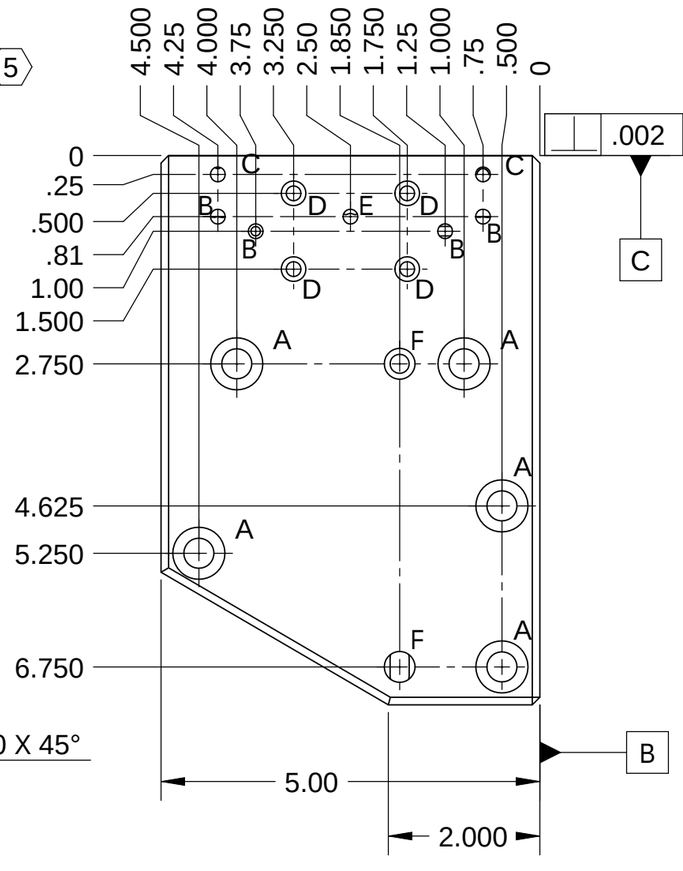
REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025

TAG	SIZE	QUANTITY
A	Ø .397 THRU ALL ⌴ Ø .688 ↧ .38	5
B	Ø .194 ↧ 1.25	4
C	Ø .194 ↧ .90	2
D	Ø .194 THRU ALL ⌴ Ø .325 ↧ .23	4
E	Ø .194 ↧ .40	1
F	Ø .406 ↧ 1.00	2









NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	
			NEXT ASSY: D0902531		

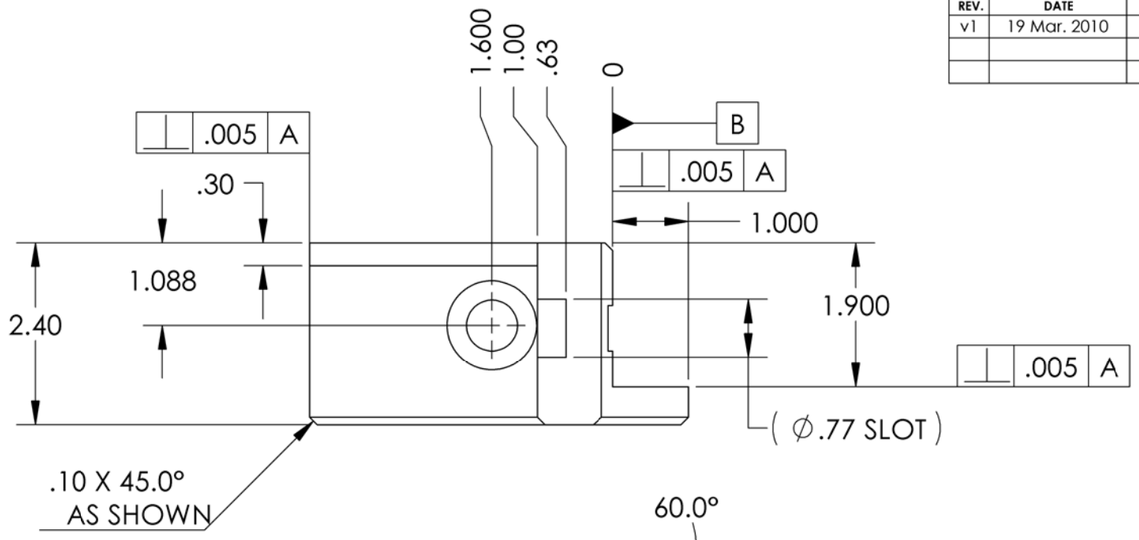
PART NAME	SMALL VERTICAL ACTUATOR MAGNET MOUNT, aLIGO BSC ISI				
DESIGNER	S.BARNUM	19 Mar. 2010	SIZE: B	DWG. NO.: D0902161	REV.: v1
DRAFTER	M.HILLARD	19 Mar. 2010			
CHECKER	F.MATICHARD	19 Mar. 2010			
APPROVAL	K.MASON	19 Mar. 2010	SCALE: 1:2	PROJECTION:	SHEET 1 OF 1

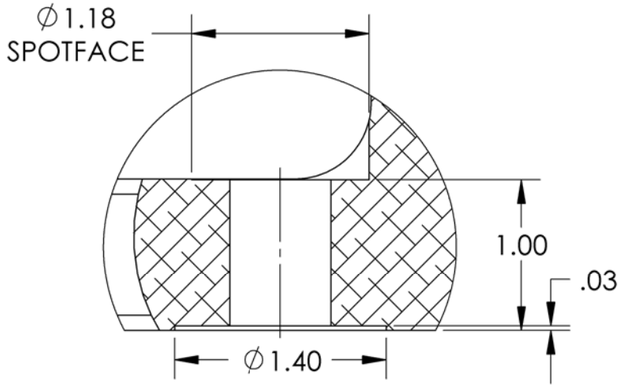
D0902161 Small Vertical Actuator Magnet Mount, PART PDM REV: X-020, DRAWING PDM REV: X-005

NOTES CONTINUED:

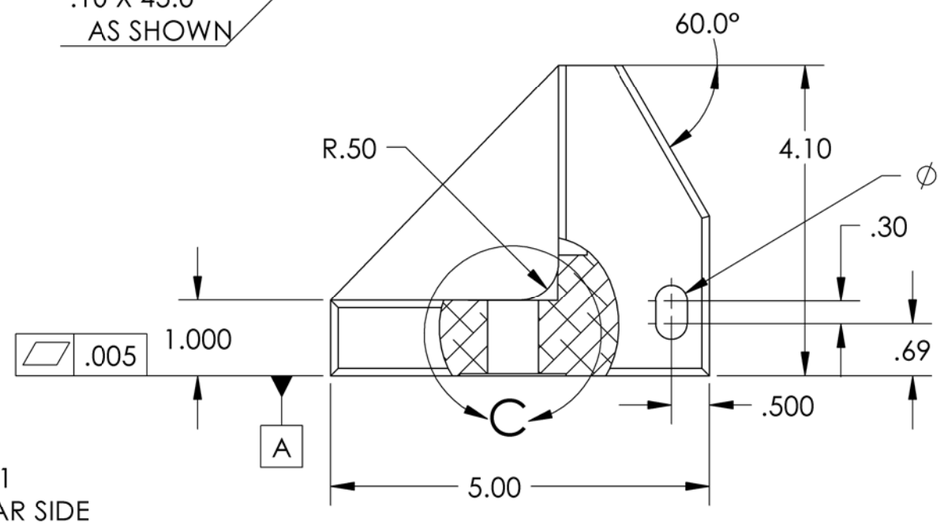
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.800 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

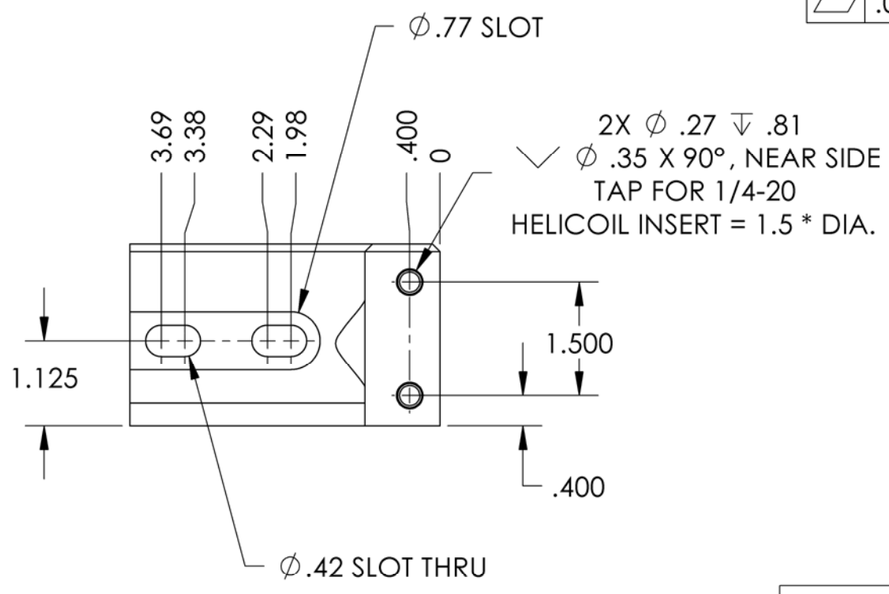
REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025

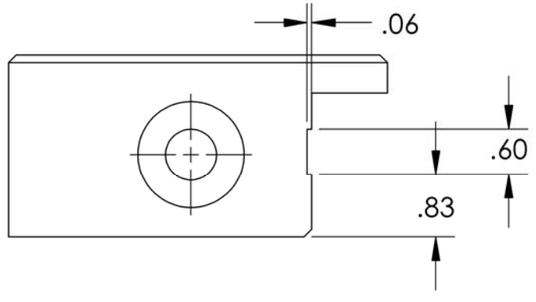


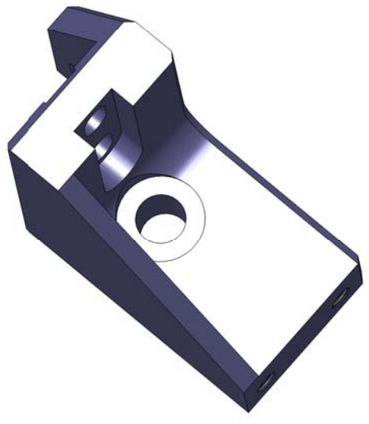


DETAIL C
SCALE 1 : 1









NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)							
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME	SMALL HORIZONTAL ACTUATOR SLIDE BRACKET, aLIGO BSC ISI	
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER: S.BARNUM '9 Mar. 2010	SIZE: B	DWG. NO.: D0902162 REV.: v1
			NEXT ASSY: D0902530		DRAFTER: M.HILLARD '9 Mar. 2010		
					CHECKER: F.MATICHARD '9 Mar. 2010		
					APPROVAL: K.MASON '9 Mar. 2010	SCALE: 1:2	PROJECTION: SHEET 1 OF 1

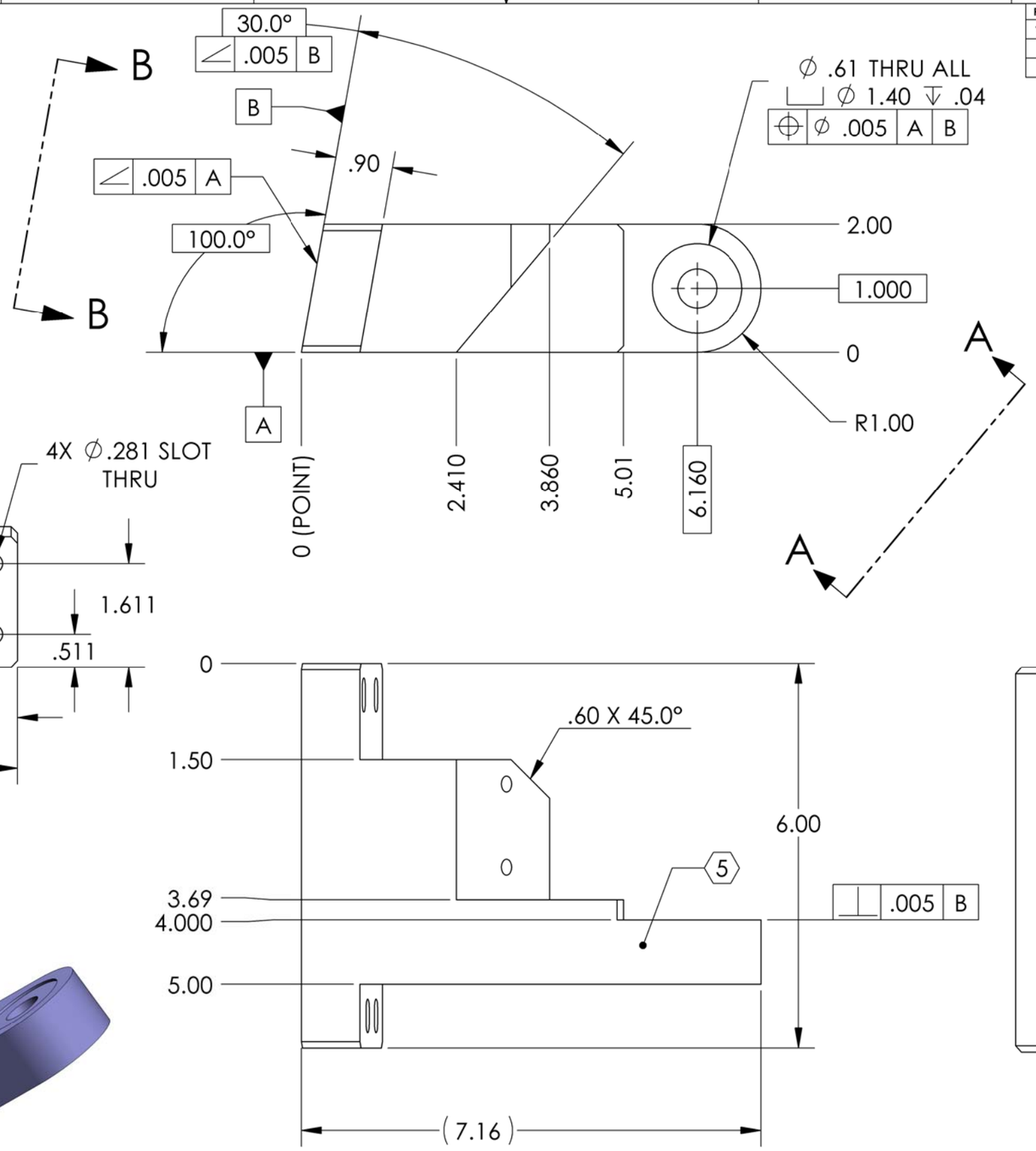
D0902162- Small Horizontal Actuator Slide bracket, PART PDM REV: X-014, DRAWING PDM REV: X-003

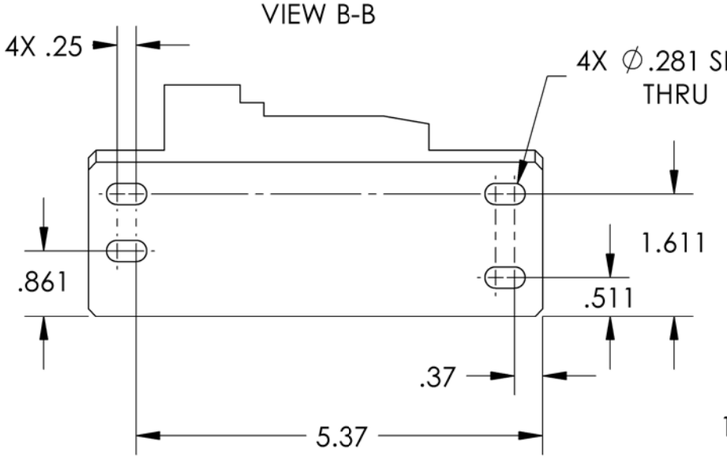
NOTES CONTINUED:

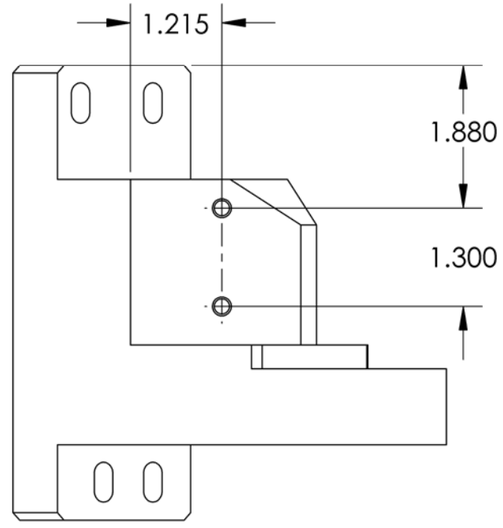
(5) SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.

6. APPROXIMATE WEIGHT = 1.481 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TAPPED HOLE PITCH DIAMETER LIMIT OF H11 APPLIES.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

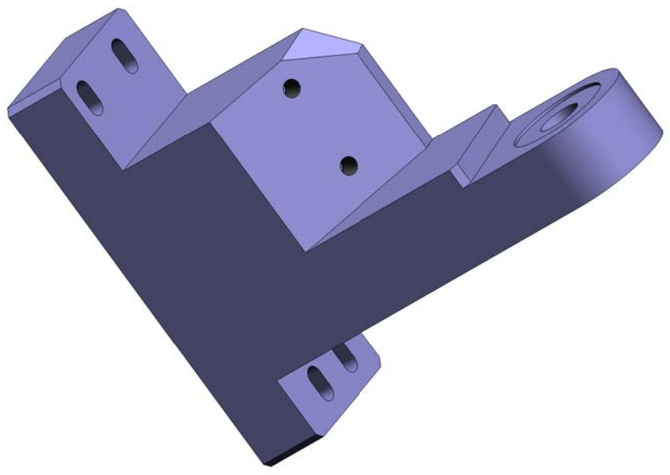
REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025







VIEW A-A



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	NEXT ASSY: D0901182	SYSTEM: ADVANCED LIGO / SUB-SYSTEM: SEI

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PART NAME: SMALL ACTUATOR VERTICAL BRACKET, aLIGO BSC ISI

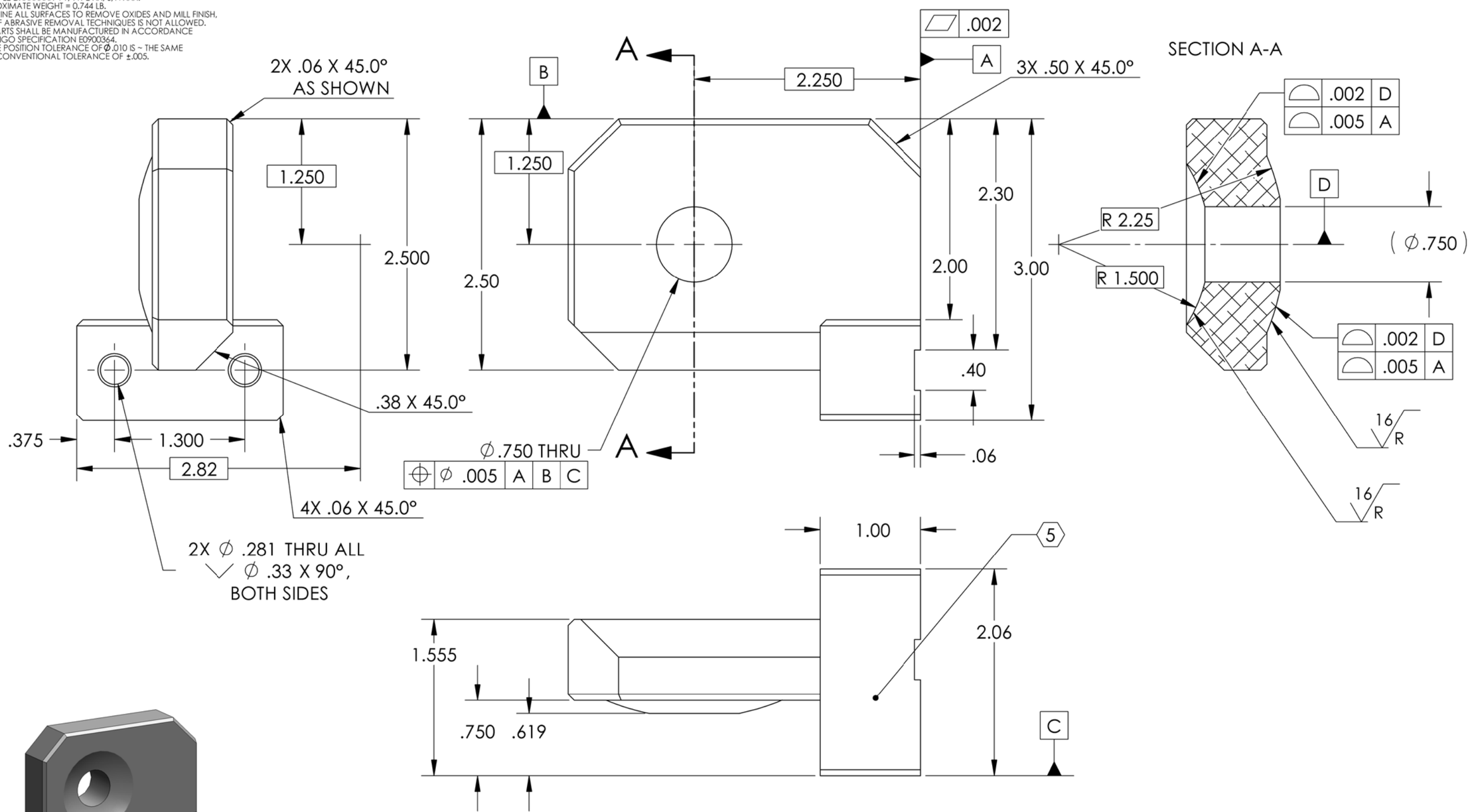
DESIGNER	S.BARNUM	19 Mar. 2010	SIZE: B	DWG. NO.: D0902236	REV.: v1
DRAFTER	M.HILLARD	19 Mar. 2010			
CHECKER	F.MATICHARD	19 Mar. 2010			
APPROVAL	K.MASON	19 Mar. 2010	SCALE: 1:2	PROJECTION:	SHEET 1 OF 1

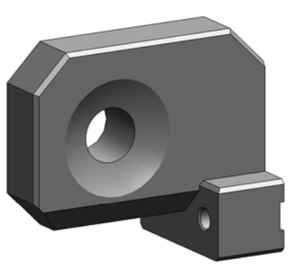
D0902236 Small Actuator Vertical bracket, PART PDM REV: X-014, DRAWING PDM REV: X-004

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.744 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.





NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL CORNERS AND EDGES .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO | SUB-SYSTEM: SEI | NEXT ASSY: D0902534

PART NAME: STAGE 1-2, VERTICAL DISPLACEMENT SENSOR MOUNT

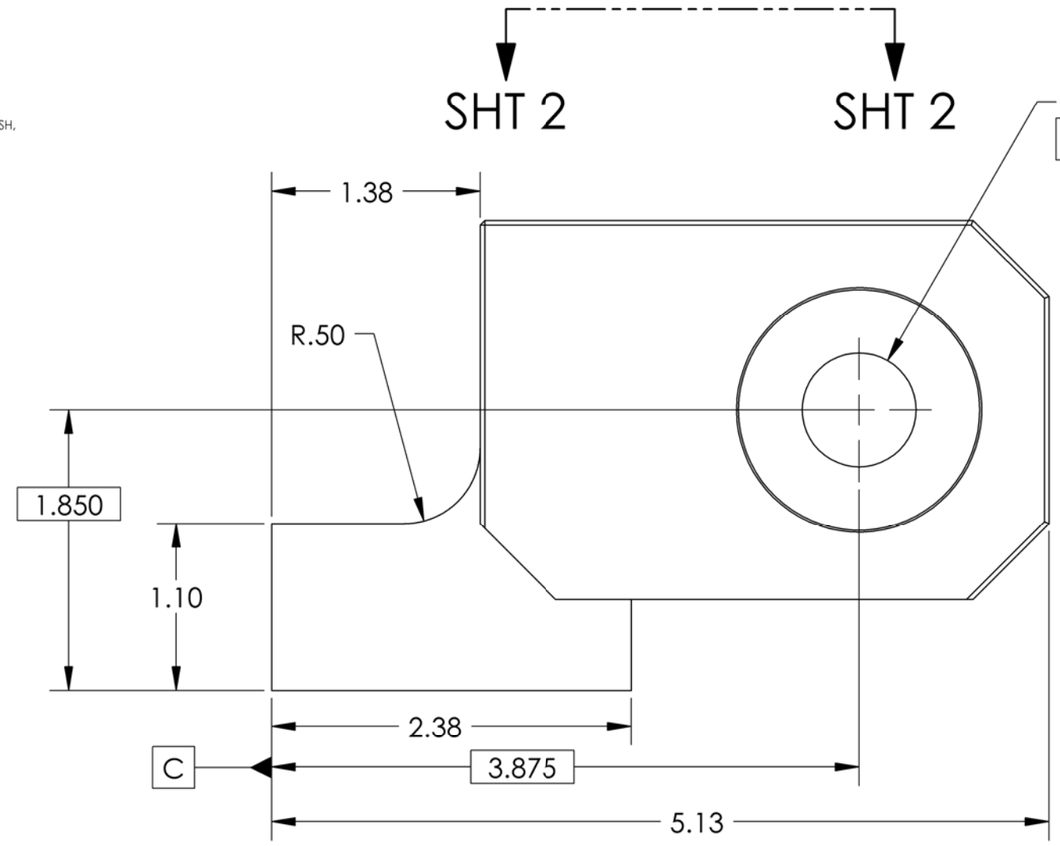
DESIGNER	S.BARNUM	01 Mar.2010	SIZE: B	DWG. NO.: D0902249	REV.: v1
DRAFTER	M.HILLARD	01 Mar. 2010			
CHECKER	F.MATICHARD	01 Mar. 2010			
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:1	PROJECTION:	SHEET 1 OF 1

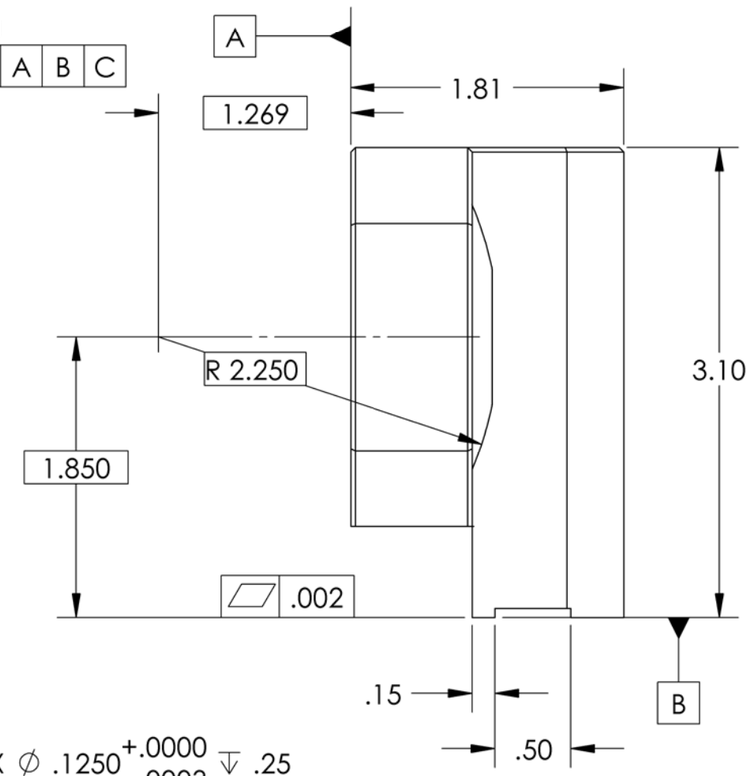
D0902249 Stage1-2 Vertical Displacement Sensor Mount, PART PDM REV: X-009, DRAWING PDM REV: X-003

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR 'TYPE' IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY. TYPE-XX. S/N XXX.
6. APPROXIMATE WEIGHT = 1.045 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025



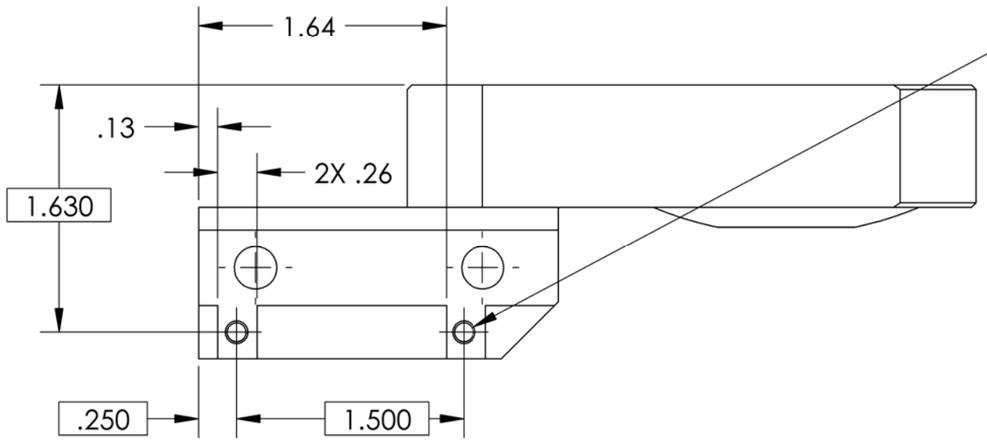


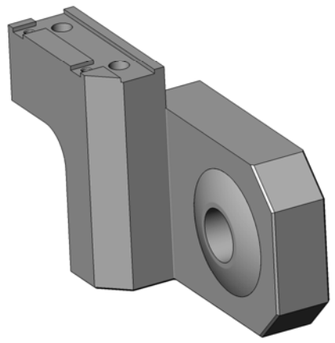
2X Ø .1250 +.0000 -.0003 ↧ .25

⌴ Ø .126 +.001 -.000 ↧ .06

Ø .15 X 90°, NEAR SIDE

Ø .002 A B C





NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL CORNERS AND EDGES .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

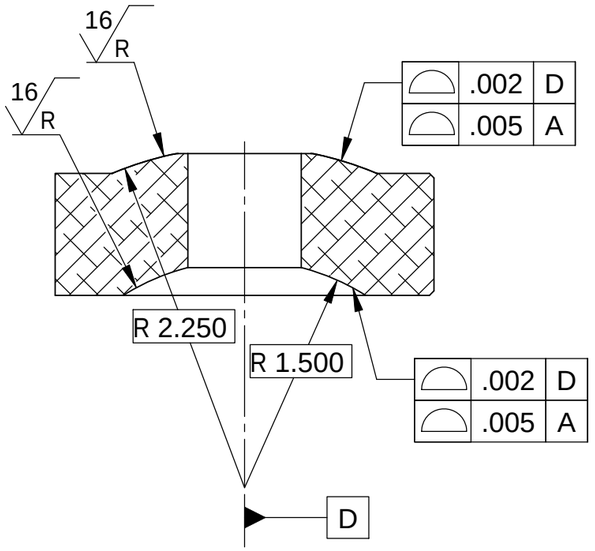
SYSTEM: ADVANCED LIGO | SUB-SYSTEM: SEI | NEXT ASSY: D0902529

PART NAME: STAGE 1-2, HORIZONTAL DISPLACEMENT SENSOR MOUNT

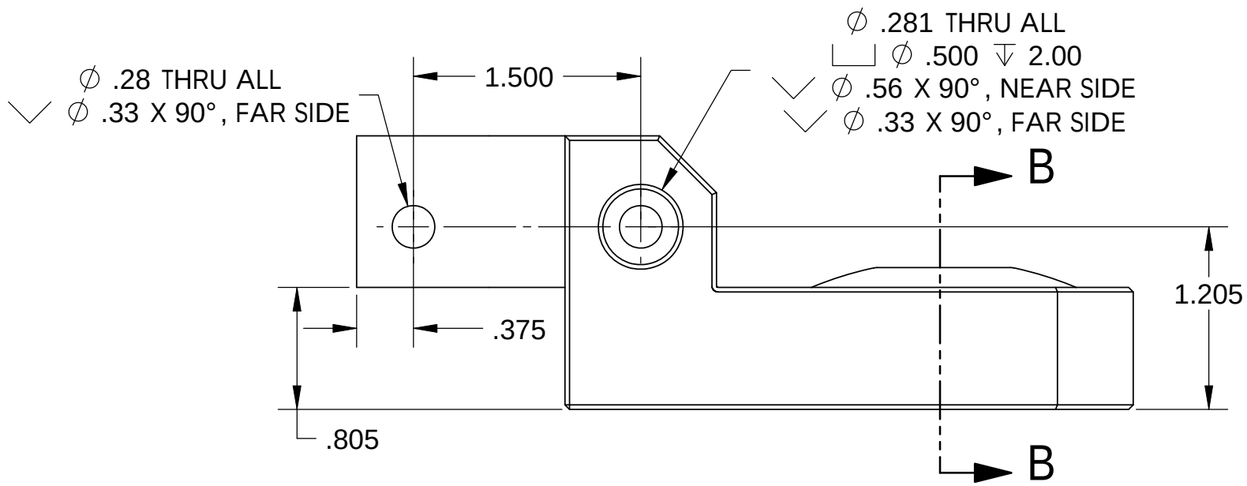
DESIGNER	S.BARNUM	01 Mar. 2010	SIZE: B
DRAFTER	M.HILLARD	01 Mar. 2010	DWG. NO.: D0902250
CHECKER	F.MATICHARD	01 Mar. 2010	REV.: v1
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:1

PROJECTION: SHEET 1 OF 2

D0902250 STAGE 1-2, HORIZONTAL DISPLACEMENT SENSOR MOUNT, PART PDM REV: X-014, DRAWING PDM REV: X-002



SECTION B-B

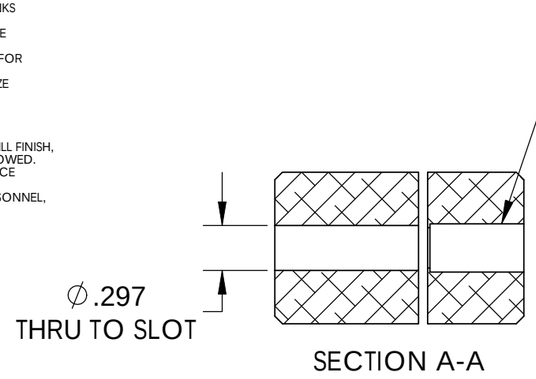


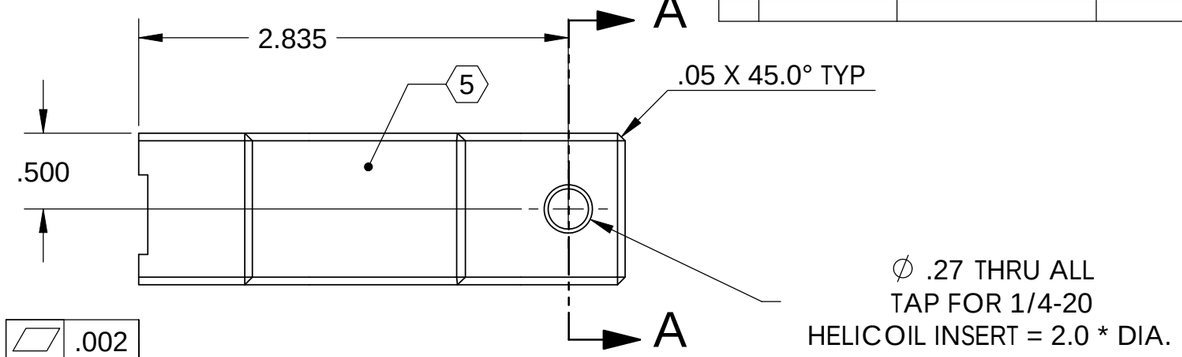
LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
SIZE B	DWG. NO. D0902250		REV. v1
SCALE: 1:1	PROJECTION:	SHEET 2 OF 2	

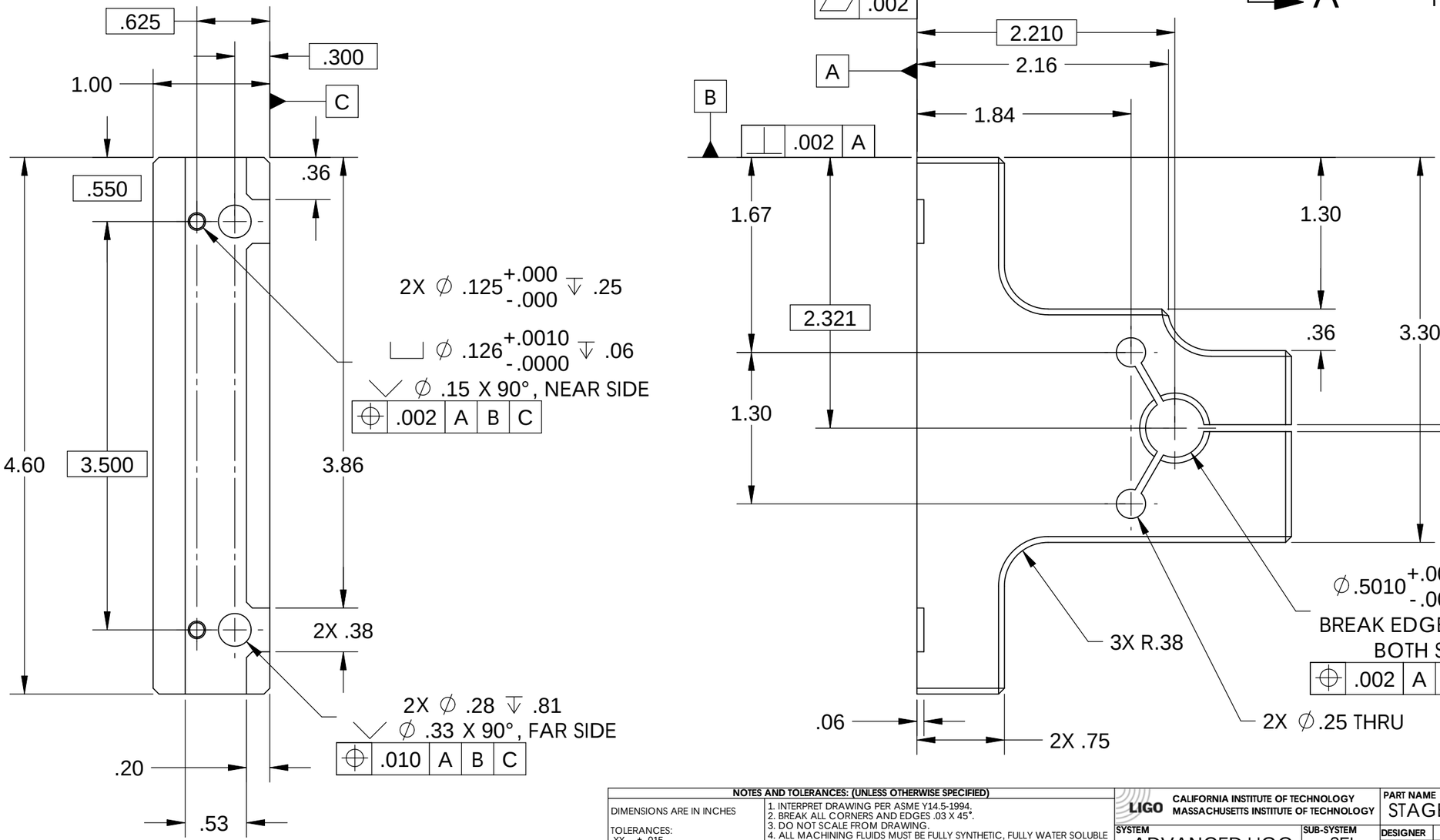
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.72 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025







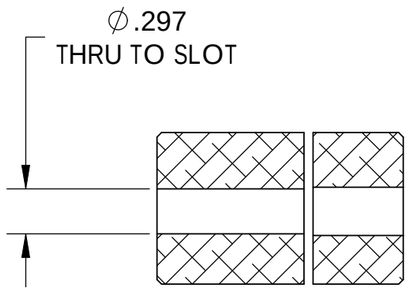
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL CORNERS AND EDGES .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	PART NAME: STAGE 1-2, VERTICAL SENSOR TARGET MOUNT	
	MATERIAL: 6061-T6 Al	FINISH: 32 µinch	SYSTEM: ADVANCED LIGO / SUB-SYSTEM: SEI	DESIGNER S.BARNUM 01 Mar. 2010 DRAFTER M.HILLARD 01 Mar. 2010 CHECKER F.MATICHARD 01 Mar. 2010 APPROVAL K.MASON 01 Mar. 2010	SIZE: B / DWG. NO.: D0902251 / REV.: v1 SCALE: 1:1 PROJECTION: SHEET 1 OF 1
			NEXT ASSY: D0902534		

D0902251 Stage1-2 Vertical Sensor Target Mount, PART PDM REV: X-009, DRAWING PDM REV: X-002

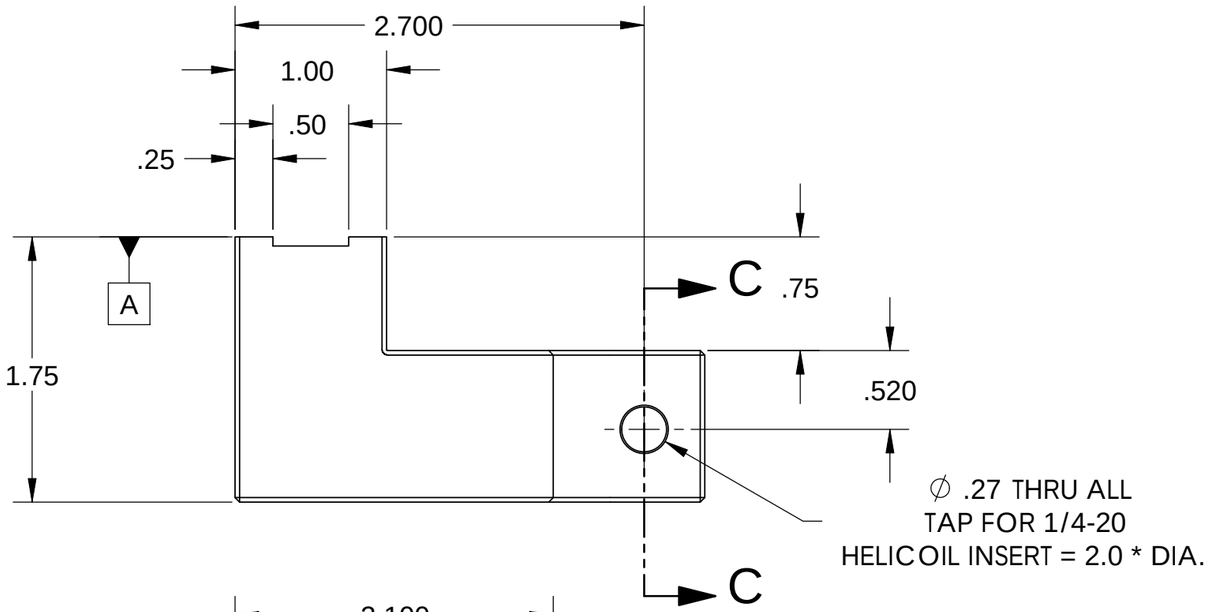
REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

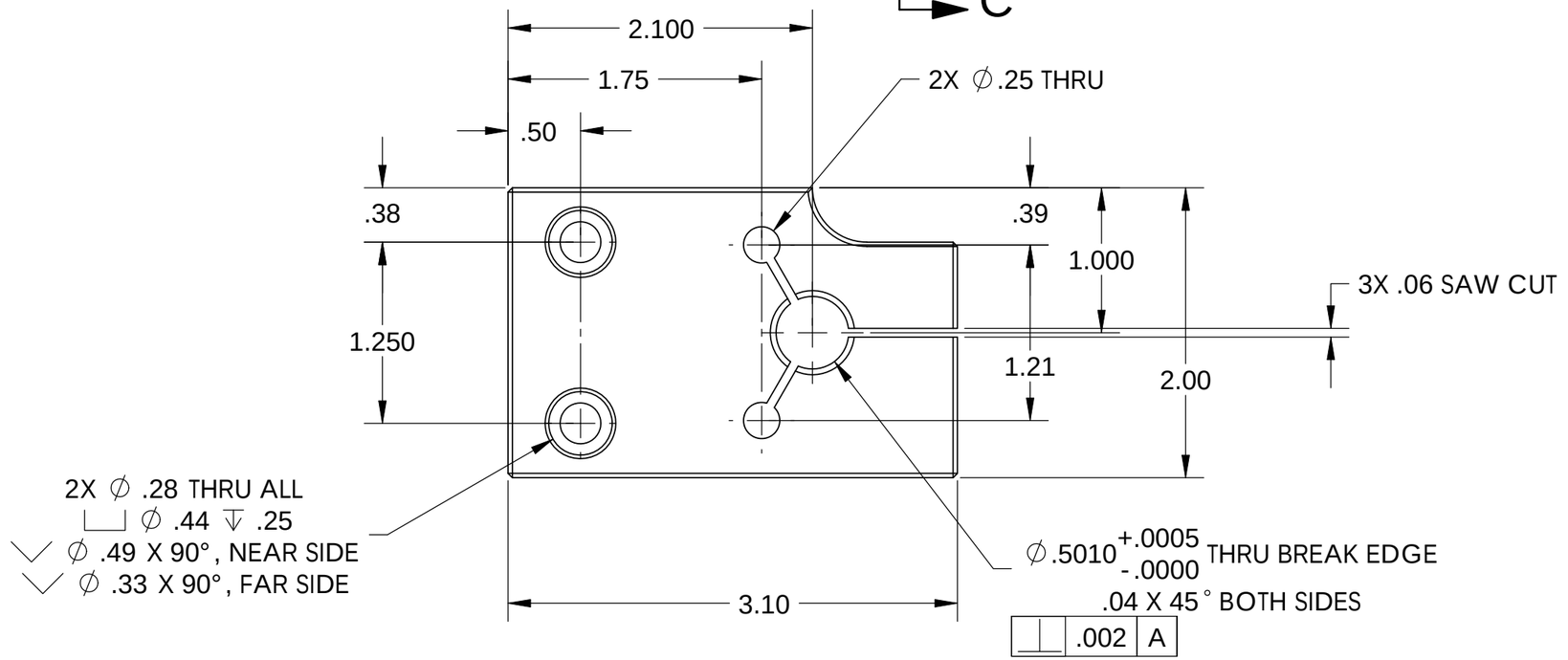
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.64 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.



SECTION C-C





D0902252 STAGE 1-2 HORIZONTAL SENSOR TARGET MOUNT, PART PDM REV: X-009, DRAWING PDM REV: X-004

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL CORNERS AND EDGES .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM	NEXT ASSY
ADVANCED LIGO	SEI	D0902529

PART NAME: STAGE 1-2 HORIZONTAL SENSOR TARGET MOUNT

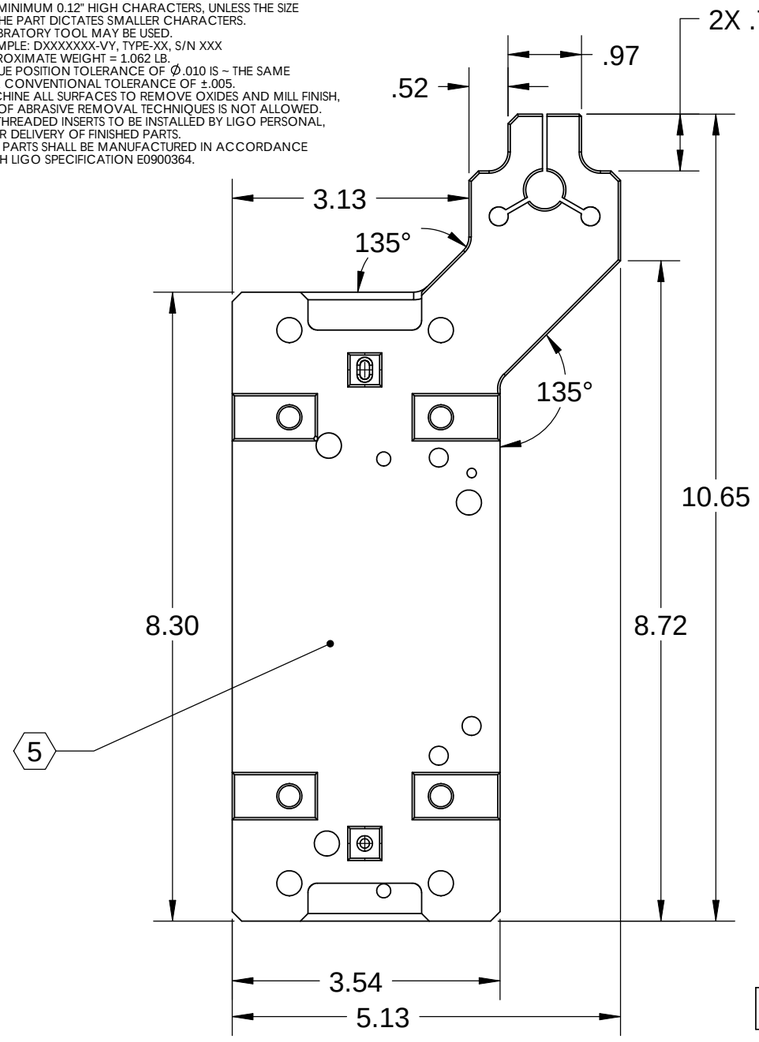
DESIGNER	S.BARNUM	01 Mar. 2010	SIZE: B
DRAFTER	M.HILLARD	01 Mar. 2010	DWG. NO.: D0902252
CHECKER	F.MATICHARD	01 Mar. 2010	REV.: v1
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:1

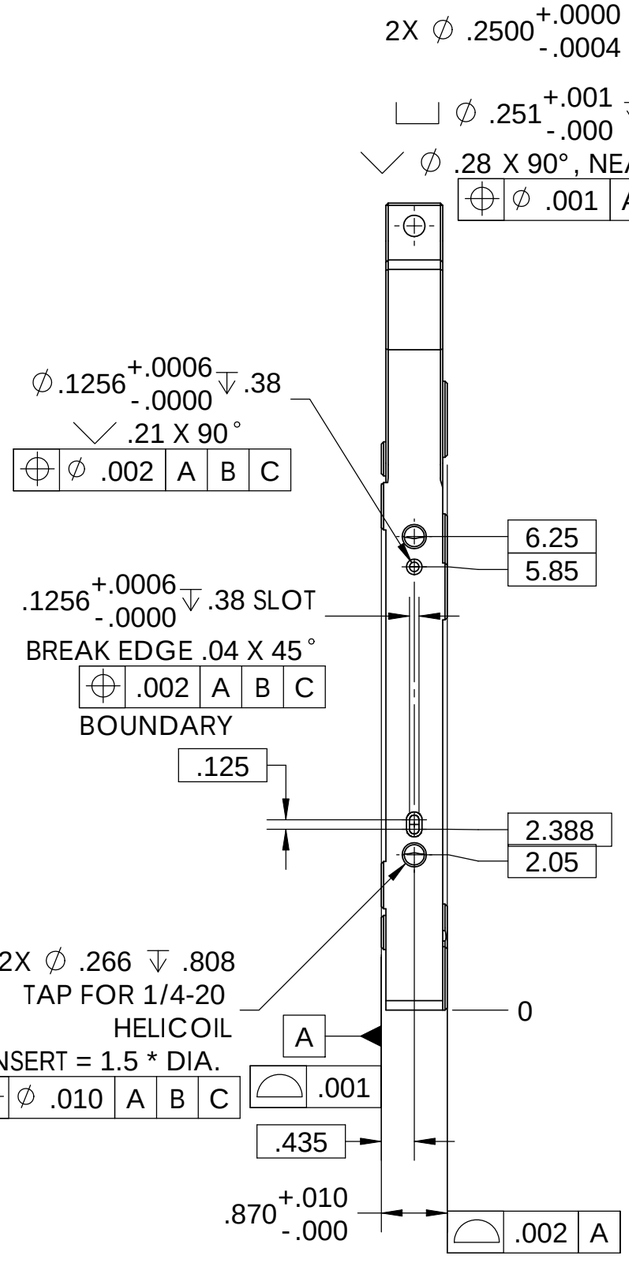
PROJECTION: SHEET 1 OF 1

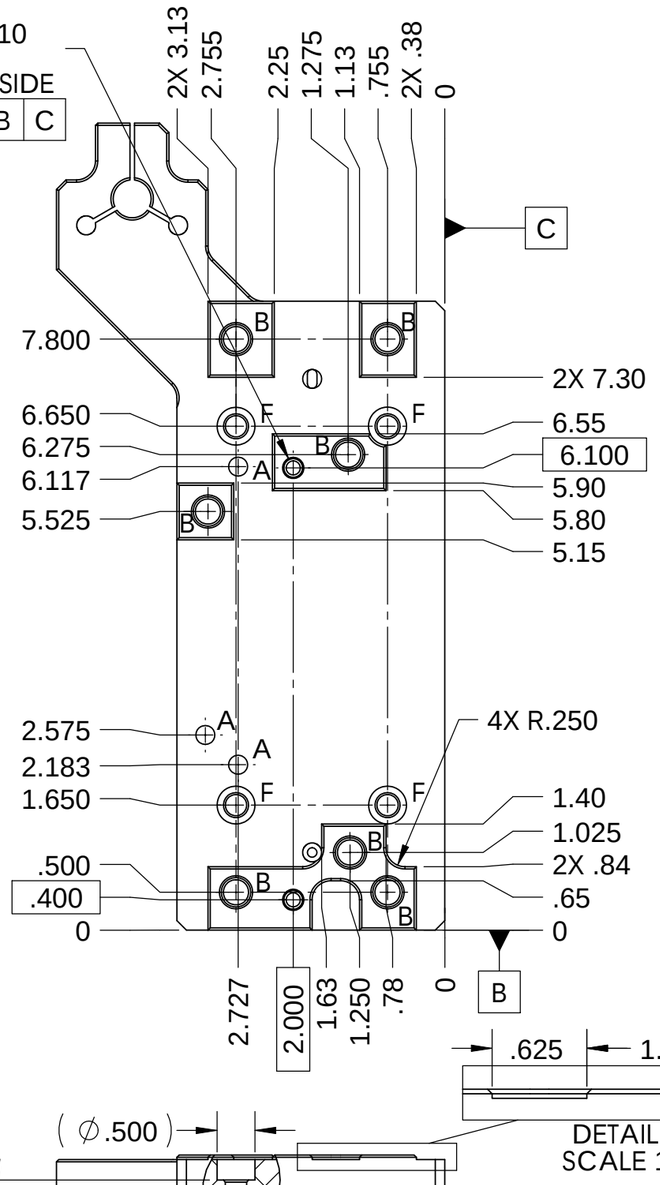
REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE: DXXXXXXX-VY, TYPE-XX, S/N XXX
6. APPROXIMATE WEIGHT = 1.062 LB.
7. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.
8. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONAL, AFTER DELIVERY OF FINISHED PARTS.
10. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.







FRONT VIEW FOR BACKSIDE DETAILS VIEW SEE SHEET 2

TAG	SIZE	QTY
A	Ø .250 THRU ALL	3
B	Ø .332 THRU ALL ⌵ Ø .44 X 90°, NEAR SIDE TAP FOR 5/16-18 HELICOIL INSERT = 2.0 * DIA. ⌵ Ø .44 X 90°, FAR SIDE	7
F	Ø .281 THRU ALL ⌴ Ø .500 (↧ .33) ⌵ Ø .331 X 82°, MID SIDE ⌵ Ø .331 X 82°, FAR SIDE	4

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± 0.5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL CORNERS AND EDGES .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 6061-T6 Al
FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D0901103 & D0901102

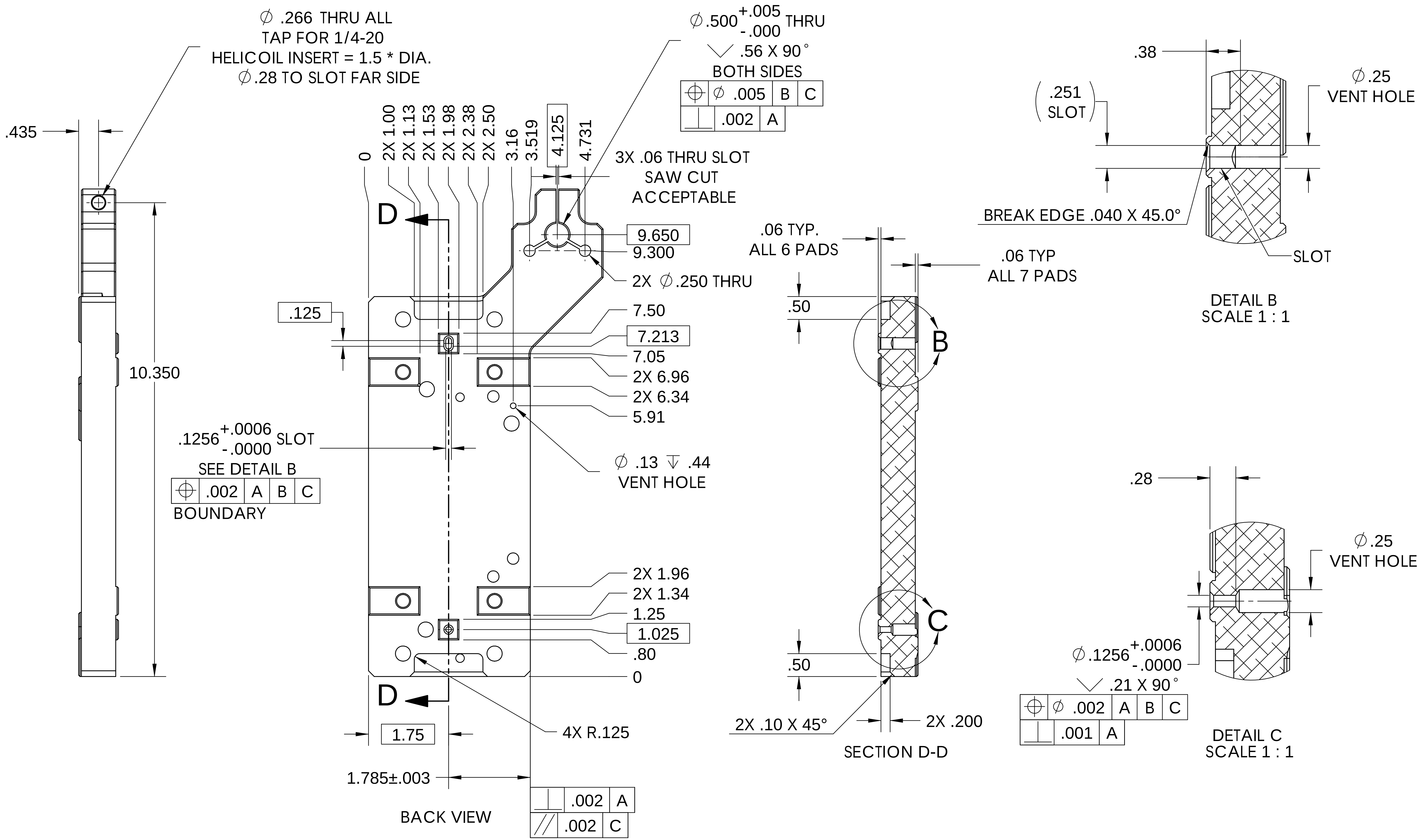
PART NAME: ACTUATOR MAGNET BRACKET, STAGE 0-1, aLIGO BSC ISI

DESIGNER	S.BARNUM	22 Feb. 2010	
DRAFTER	M.HILLARD	22 Feb. 2010	
CHECKER	F.MATICHARD	22 Feb. 2010	
APPROVAL	K.MASON	22 Feb. 2010	

SIZE: B — DWG. NO.: D0902310 — REV.: v1

SCALE: 1:2 — PROJECTION: — SHEET 1 OF 2

D0902310 Stage0-1 Horizontal Actuator Magnet Bracket, PART PDM REV: X-022, DRAWING PDM REV: X-010



LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SIZE	DWG. NO.	REV.
B	D0902310	v1

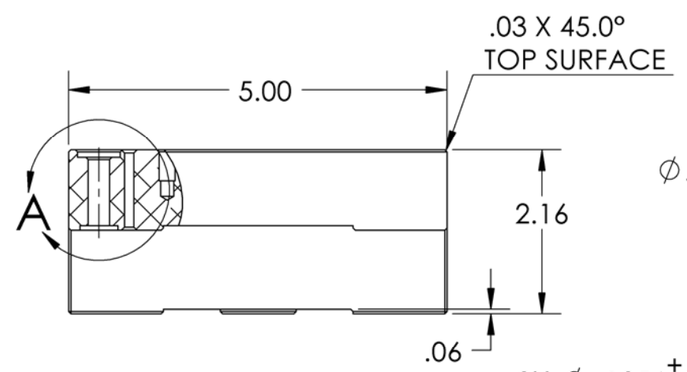
SCALE: 1:2 PROJECTION: SHEET 2 OF 2

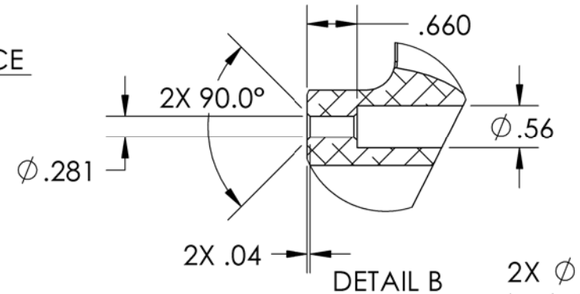
D0902310 Stage0-1 Horizontal Actuator Magnet Bracket, PART PDM REV: X-022, DRAWING PDM REV: X-010

NOTES CONTINUED:

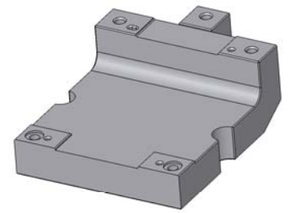
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED.
   EXAMPLE: DXXXXXXX-VY, TYPE-XX, S/N XXX
6. APPROXIMATE WEIGHT = 3.07 LB.
7. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.
8. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONAL, AFTER DELIVERY OF FINISHED PARTS.
10. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

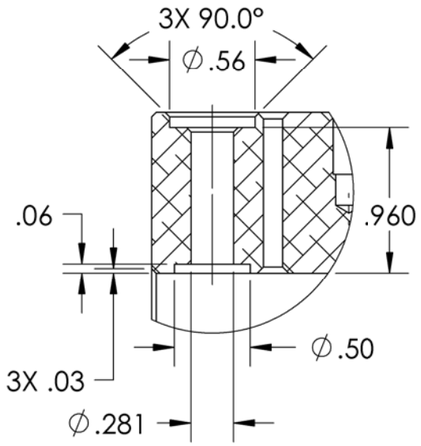
REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025



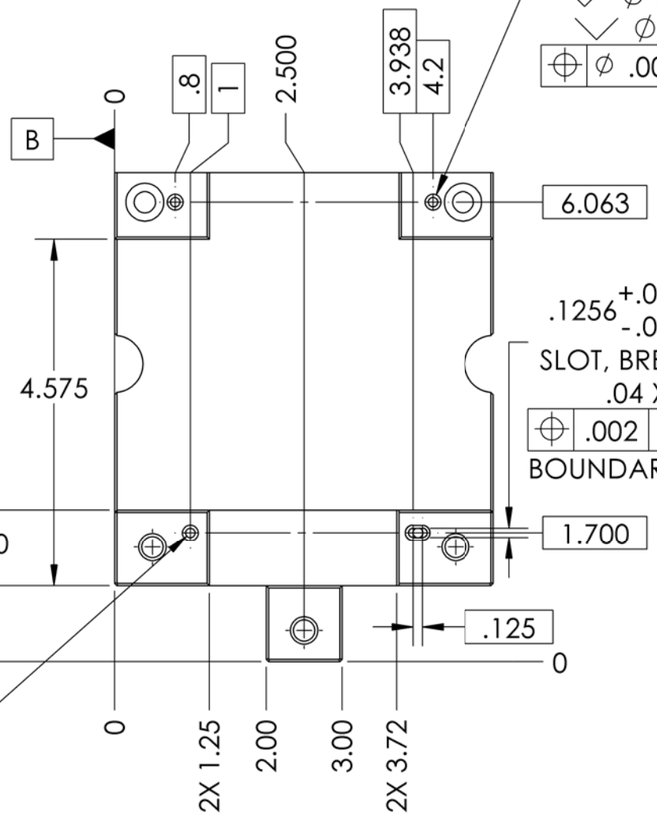


DETAIL B
3X





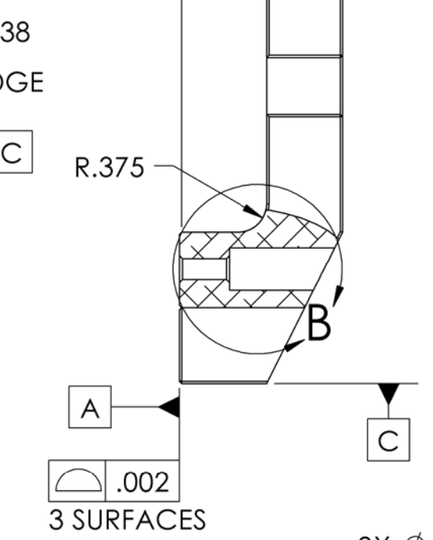
2X
DETAIL A
SCALE 1 : 1



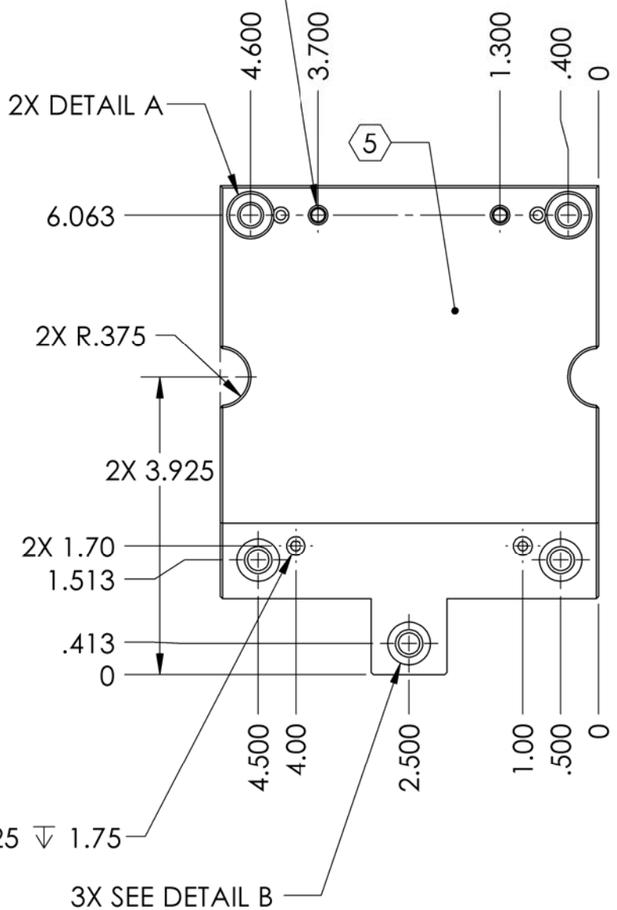
2X Ø .1256 +.0006 -.0000 THRU ALL
Ø .21 X 90°, NEAR SIDE
Ø .21 X 90°, FAR SIDE
Ø .001	A	B	C

.1256 +.0006 -.0000 ↧ .38
SLOT, BREAK EDGE
.04 X 45°
.002	A	B	C
BOUNDARY

Ø .1256 +.0006 -.0000 ↧ .375
Ø .210 X 90°, NEAR SIDE
Ø .001	A	B	C



2X Ø .17 ↧ .61
Ø .26 X 90°
TAP FOR #8-32
HELICOIL
INSERT = 2.0 * DIA.



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL CORNERS AND EDGES .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 63 µinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM	NEXT ASSY
ADVANCED LIGO	SEI	D1000290

PART NAME: ACTUATOR TOOLING BAR, STAGE 0-1, aLIGO BSC ISI

DESIGNER	S.BARNUM	22 Feb. 2010	SIZE: B
DRAFTER	M.HILLARD	22 Feb. 2010	DWG. NO.: D0902342
CHECKER	F.MATICHARD	22 Feb. 2010	REV.: v1
APPROVAL	K.MASON	22 Feb. 2010	SCALE: 1:2

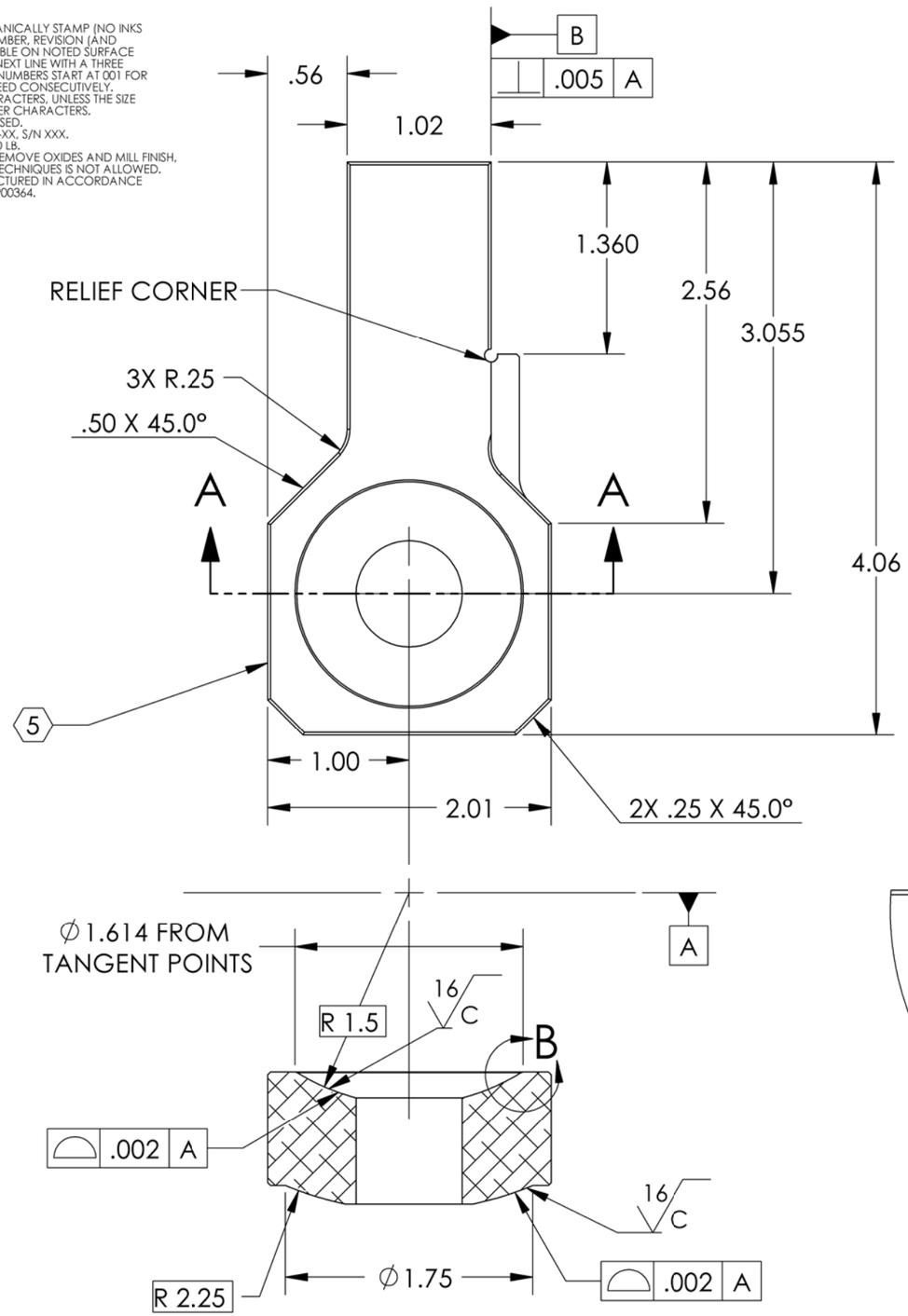
PROJECTION: SHEET 1 OF 1

D0902342 Stage0-1 Actuator Tooling Bar, PART PDM REV: X-008, DRAWING PDM REV: X-004

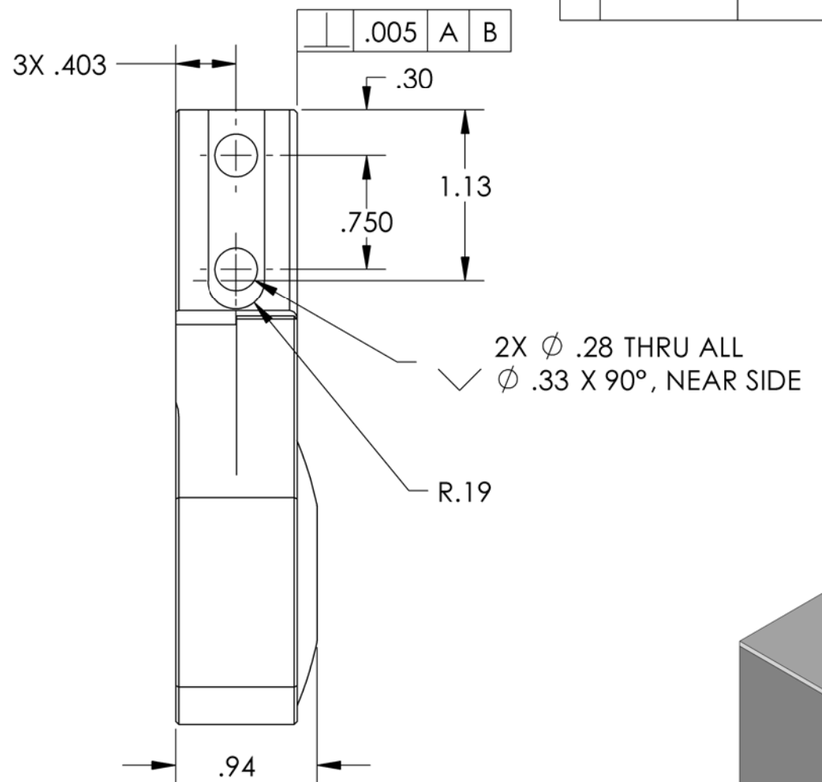
NOTES CONTINUED:

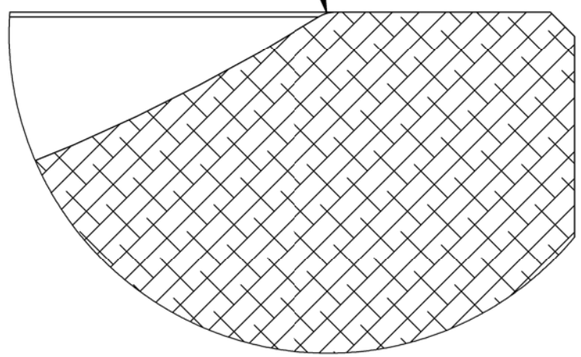
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.410 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

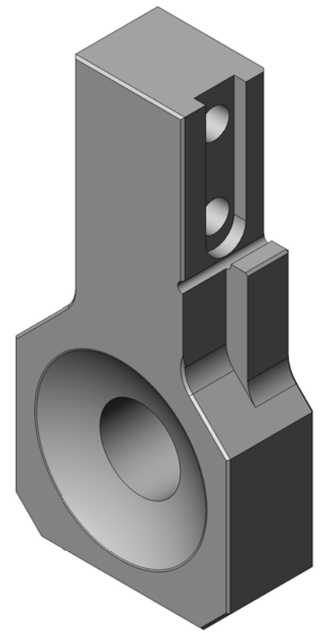


SECTION A-A





DETAIL B
SCALE 8 : 1



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK EDGES AND CORNERS .06 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

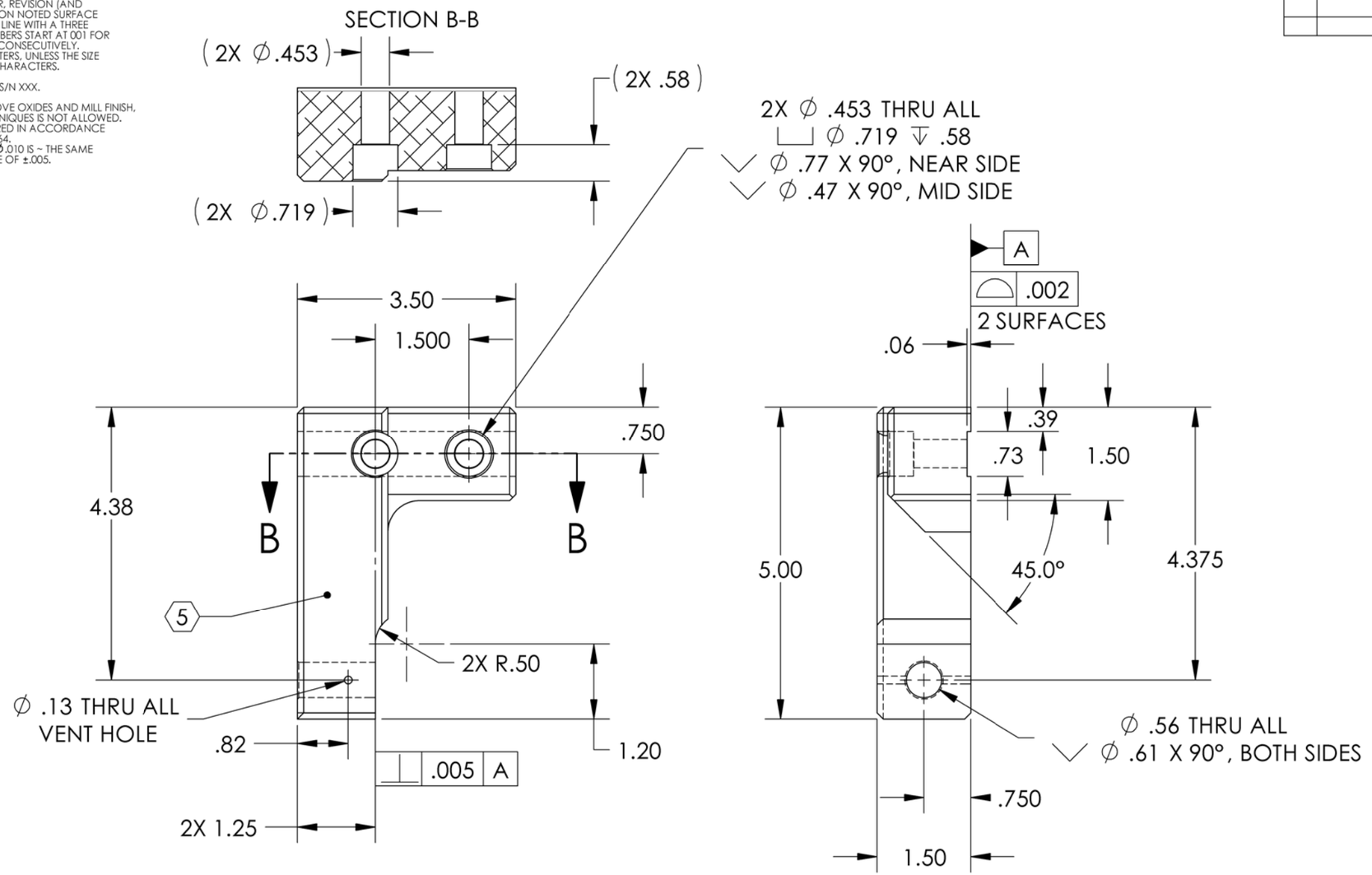
SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	PART NAME: DISPLACEMENT SENSOR MOUNT, STAGE 0-1, aLIGO BSC ISI	
NEXT ASSY: D1000478		DESIGNER: S.BARNUM 01 Mar. 2010	SIZE: B
		DRAFTER: M.HILLARD 01 Mar. 2010	DWG. NO.: D0902356
		CHECKER: F.MATICHARD 01 Mar. 2010	REV.: v1
		APPROVAL: K.MASON 01 Mar. 2010	SCALE: 1:1 PROJECTION: SHEET 1 OF 1

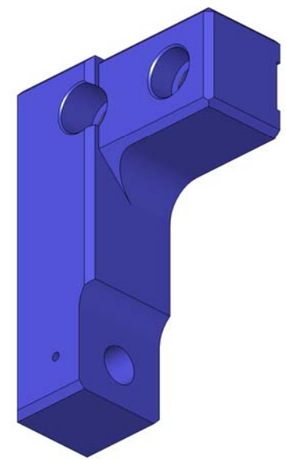
D0902356 Stage0-1 Vertical Displacement Sensor Mount, PART PDM REV: X-015, DRAWING PDM REV: X-003

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.30 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025





NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY SYSTEM: ADVANCED LIGO SUB-SYSTEM: SEI NEXT ASSY: D0901103	PART NAME: LARGE VERT. ACTUATOR CONNECTOR RIGHT, STAGE 0-1, aLIGO BSC ISI

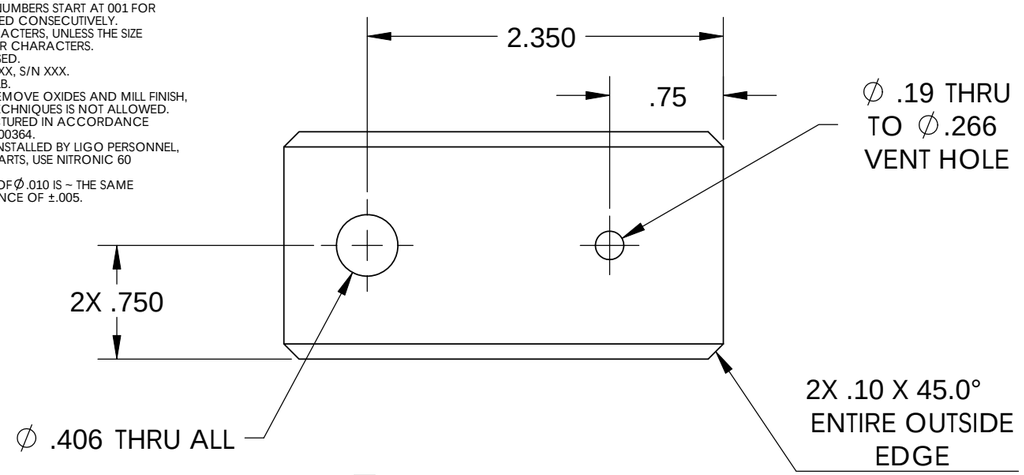
DESIGNER	S.BARNUM	22 Feb. 2010	SIZE	DWG. NO.		REV.
DRAFTER	M.HILLARD	22 Feb. 2010	B	D0902422		v1
CHECKER	F.MATICHARD	22 Feb. 2010				
APPROVAL	K.MASON	22 Feb. 2010	SCALE: 1:2	PROJECTION:	SHEET 1 OF 1	

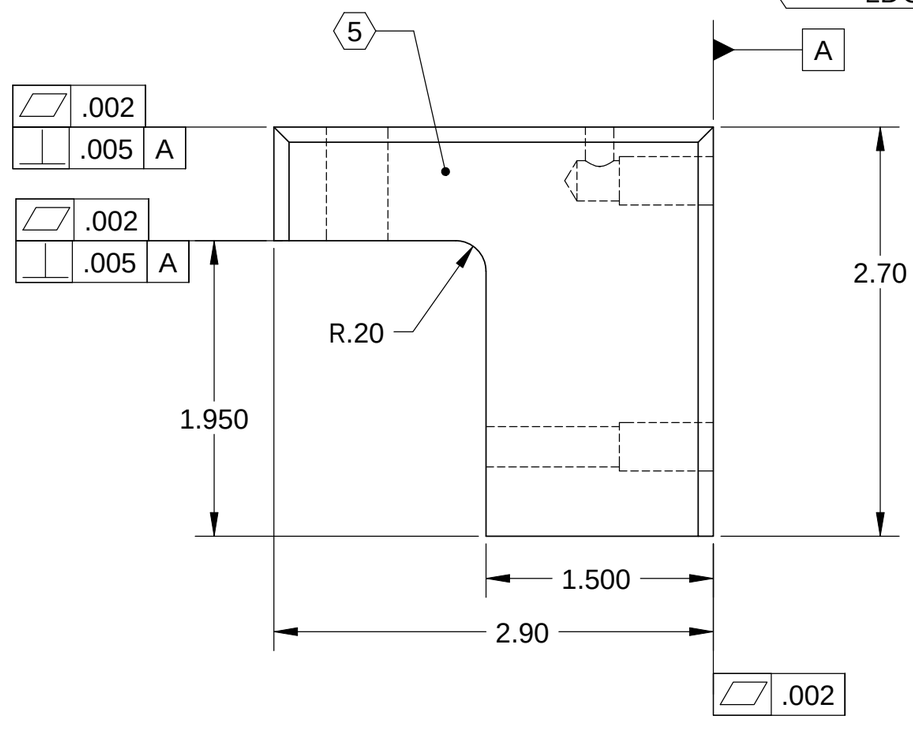
D0902422 Large Vert. Actuator Connector Right, Stage 0-1, aLIGO BSC ISI, PART PDM REV: X-008, DRAWING PDM REV: X-009

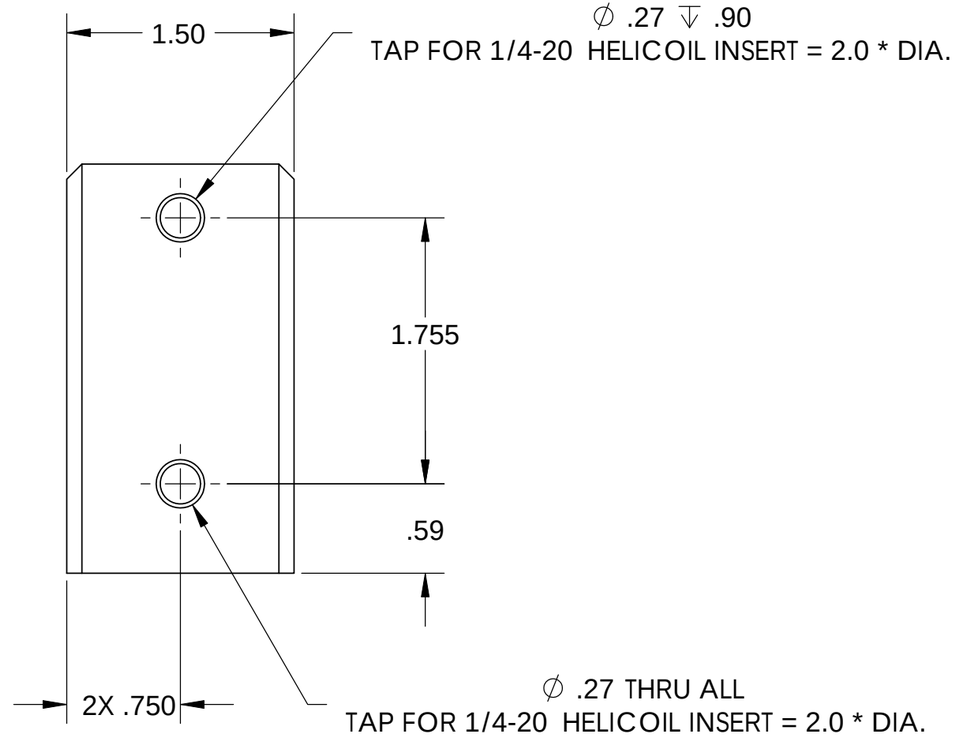
REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.71 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.







NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	PART NAME	HORIZONTAL ACTUATOR L CONNECTOR, STAGE 0-1, aLIGO BSC ISI
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER S.BARNUM 22 Feb. 2010
			NEXT ASSY: D0901102		DRAFTER M.HILLADR 22 Feb. 2010
					CHECKER F.MATICHARD 22 Feb. 2010
					APPROVAL K.MASON 22 Feb. 2010

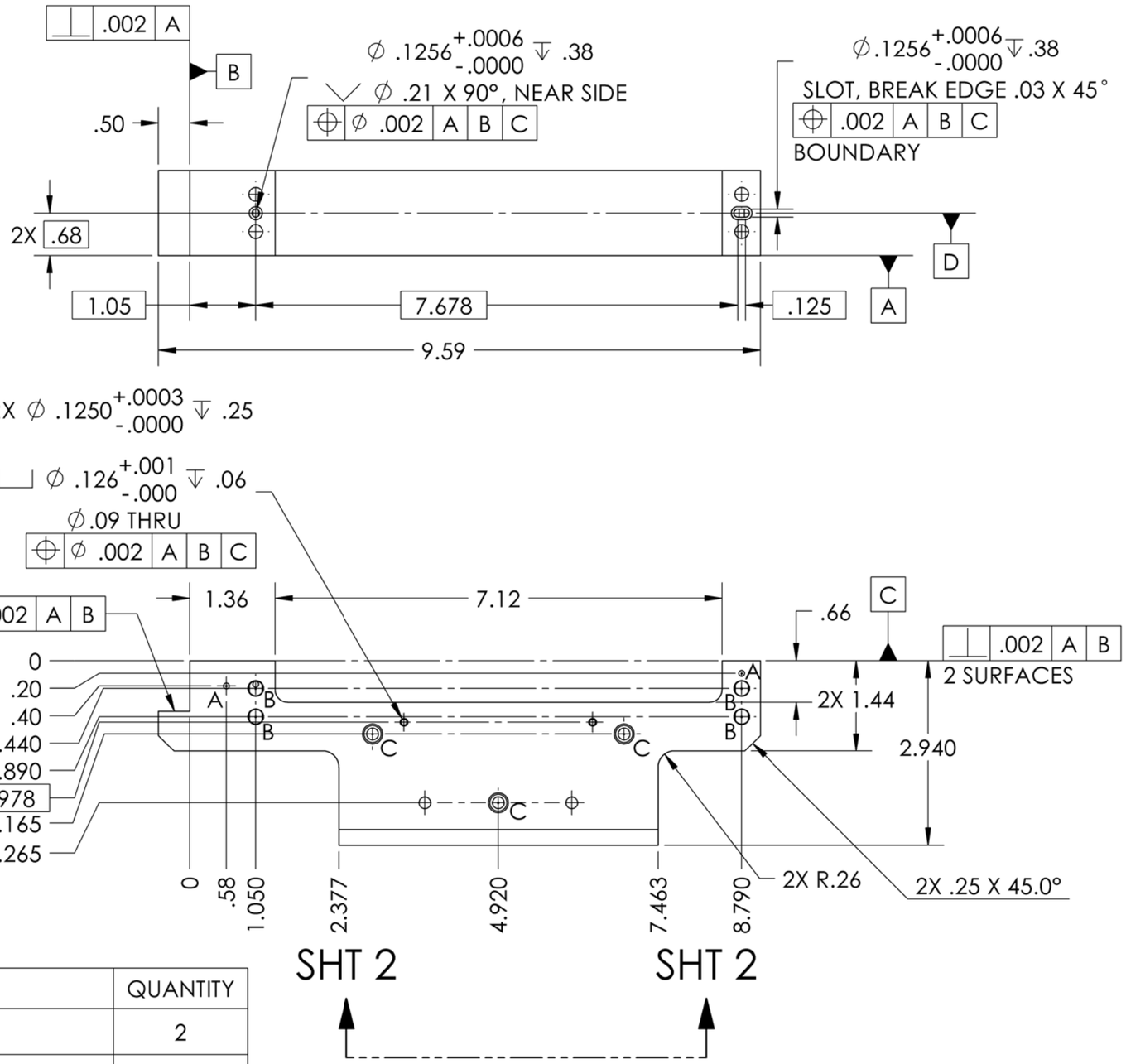
SIZE: B | DWG. NO.: D0902424 | REV.: v1 | SCALE: 1:1 | PROJECTION: | SHEET 1 OF 1

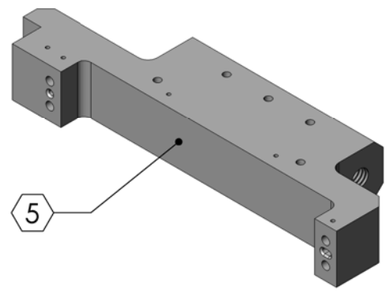
D0902424 Stage0-1 Horizontal Actuator L Connector, PART PDM REV: X-005, DRAWING PDM REV: X-005

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 2.013 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025





TAG	SIZE	QUANTITY
A	∅ .09 THRU ALL	2
B	∅ .201 THRU ⌵ ∅ .25 X 90°, NEAR SIDE TAP FOR #10-32 HELICOIL INSERT = 1.5 * DIA.	4
C	∅ .272 ↧ .94 TAP FOR 1/4-20 HELICOIL INSERT = 2.0 * DIA.	3

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± 0.5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, R.02 MIN.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 6061-T6 Al
FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

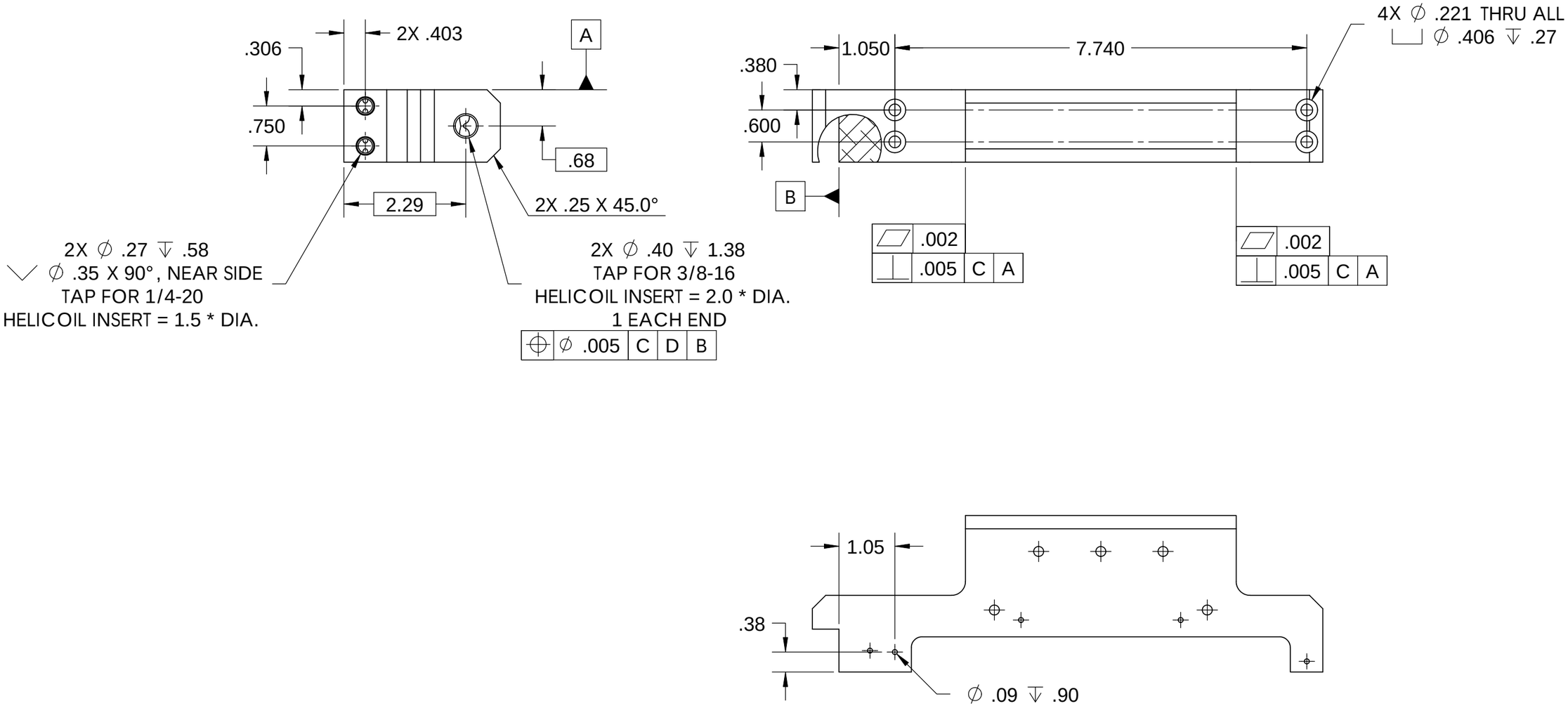
SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D0901103

PART NAME: Large Vert. Actuator Coil Bracket, Stage 0-1, aLIGO BSC ISI

DESIGNER	S.BARNUM	22 Feb. 2010	
DRAFTER	M.HILLARD	22 Feb. 2010	
CHECKER	F.MATICHARD	22 Feb. 2010	
APPROVAL	K.MASON	22 Feb. 2010	

SIZE: B — DWG. NO.: D0902426 — REV.: v1
SCALE: 1:2 — PROJECTION: — SHEET 1 OF 2

D0902426 Large Vert. Actuator Coil Bracket, Stage 0-1, aLIGO BSC ISI, PART PDM REV: X-008, DRAWING PDM REV: X-008



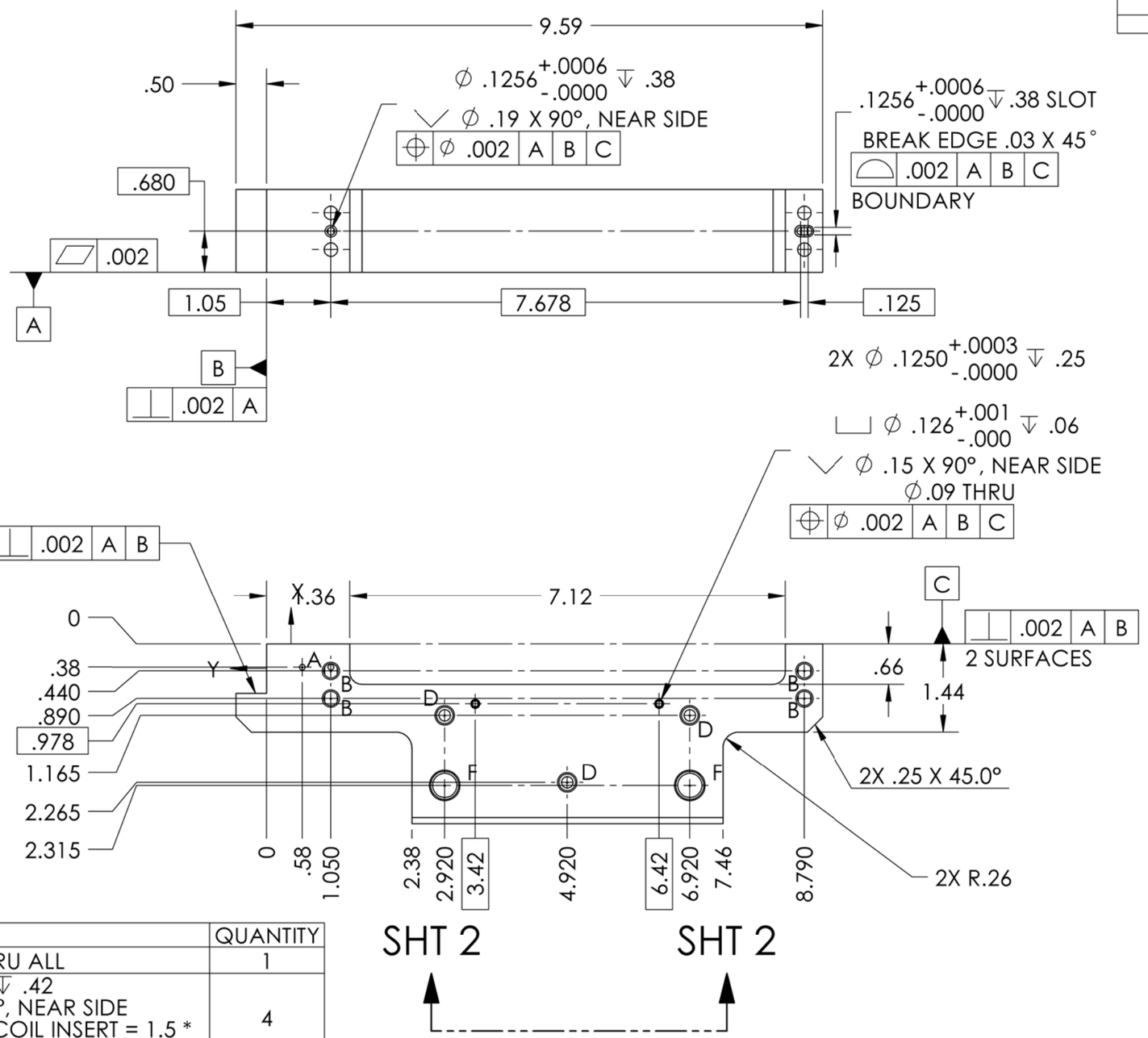
D0902426 Large Vert. Actuator Coil Bracket, Stage 0-1, aLIGO BSC ISI, PART PDM REV: X-008, DRAWING PDM REV: X-008

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D0902426	REV. V1	
SCALE: 1:2	PROJECTION:	SHEET 2 OF 2	

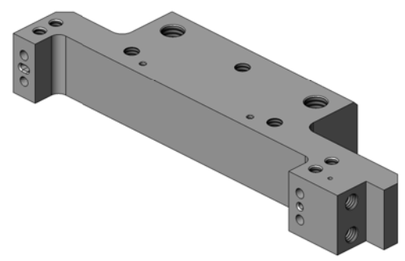
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 2.047 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025



TAG	SIZE	QUANTITY
A	∅ .09 THRU ALL	1
B	∅ .201 ↧ .42 ⌵ ∅ .28 X 90°, NEAR SIDE TAP FOR #10-32 HELICOIL INSERT = 1.5 * DIA.	4
D	∅ .272 ↧ .94 TAP FOR 1/4-20 HELICOIL INSERT = 2.0 * DIA.	3
F	∅ .40 ↧ 1.36 ⌵ ∅ .50 X 90°, NEAR SIDE TAP FOR 3/8-16 HELICOIL INSERT = 2.0 * DIA.	2



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± 0.5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, R.02 MIN.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 6061-T6 Al
FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

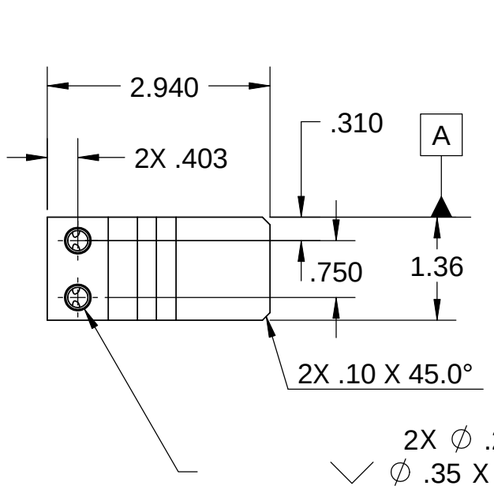
SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D0901102

PART NAME: ACTUATOR COIL BRACKET HORIZONTAL, STAGE 0-1, aLIGO BSC ISI

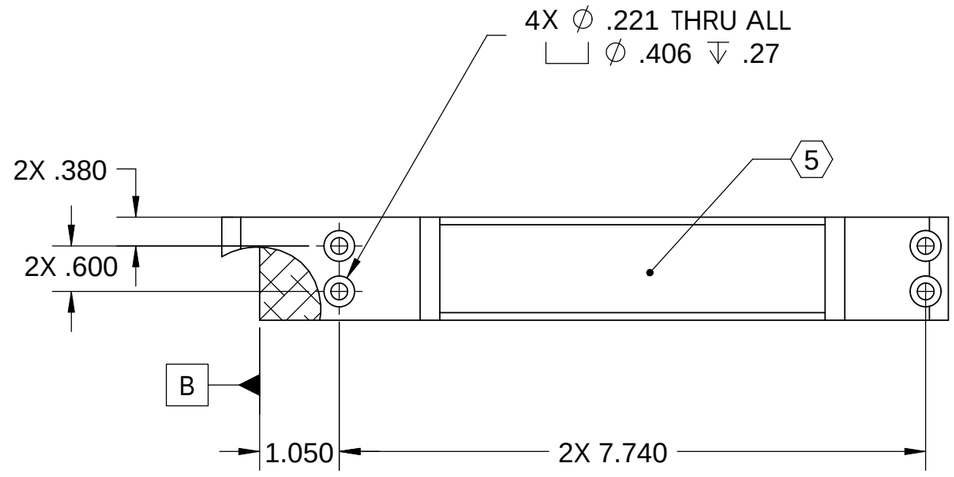
DESIGNER	S.BARNUM	22 Feb. 2010	
DRAFTER	M.HILLARD	22 Feb. 2010	
CHECKER	F.MATICHERD	22 Feb. 2010	
APPROVAL	K.MASON	22 Feb. 2010	

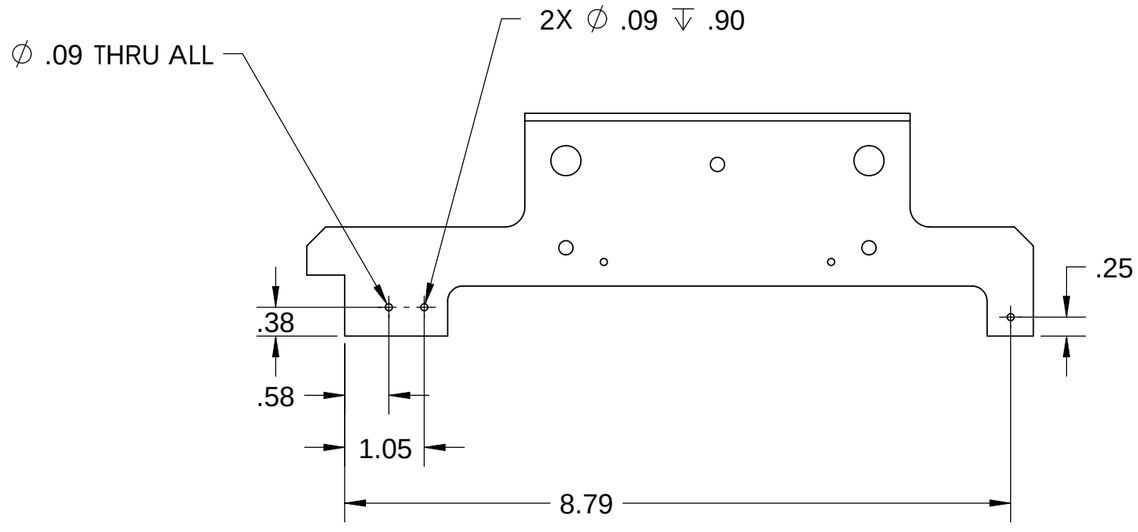
SIZE: B — DWG. NO.: D0902427 — REV.: v1
SCALE: 1:2 — PROJECTION: — SHEET 1 OF 2

D0902427 Stage0-1 Actuator Coil Bracket - Horizontal, PART PDM REV: X-008, DRAWING PDM REV: X-009



2X ⌀ .266 ↧ .58
⌵ ⌀ .35 X 90°, NEAR SIDE
TAP FOR 1/4-20 HELICOIL INSERT = 1.5 * DIA.





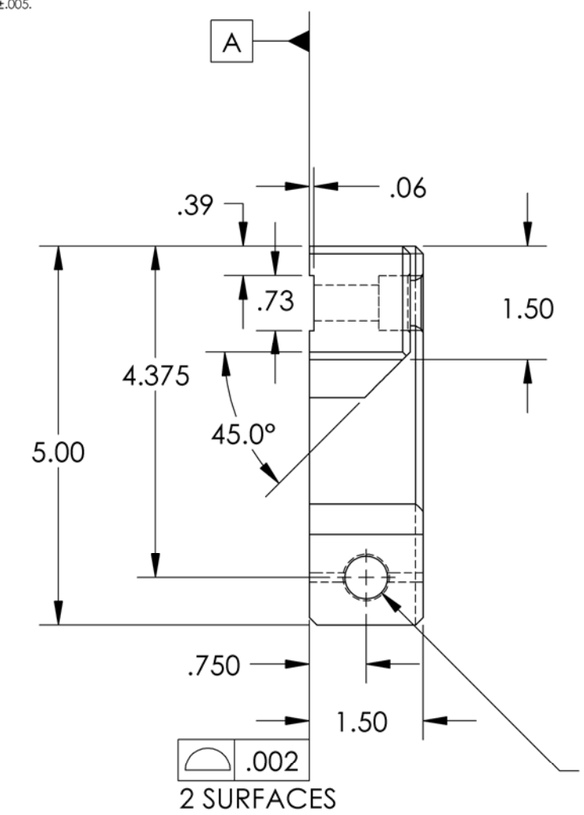
D0902427 Stage0-1 Actuator Coil Bracket - Horizontal, PART PDM REV: X-008, DRAWING PDM REV: X-009

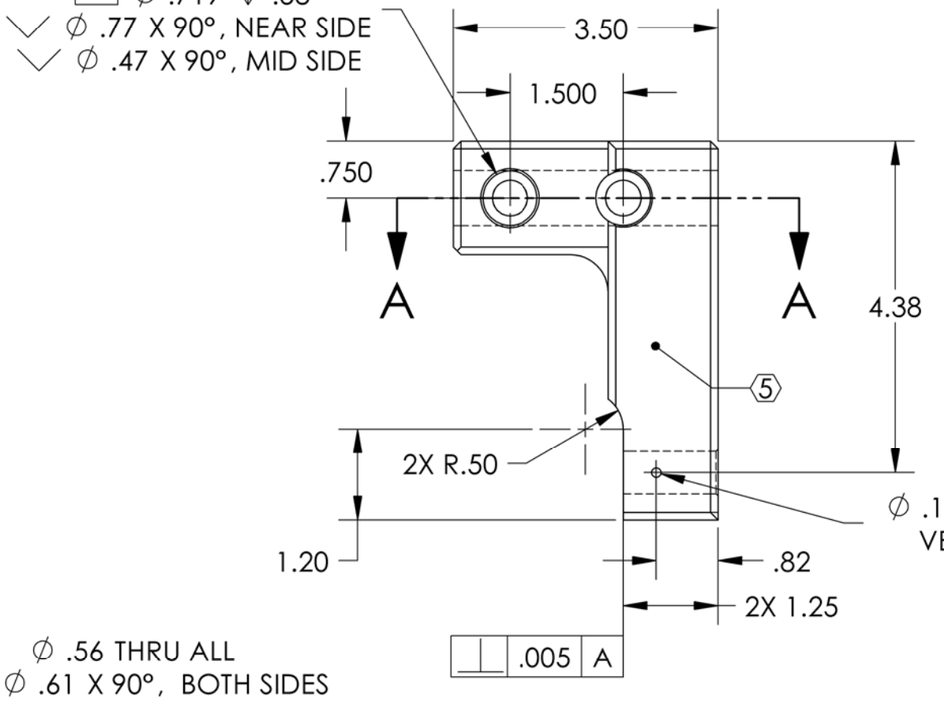
LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY			
SIZE B	DWG. NO. D0902427		REV. V1
SCALE: 1:2	PROJECTION:		SHEET 2 OF 2

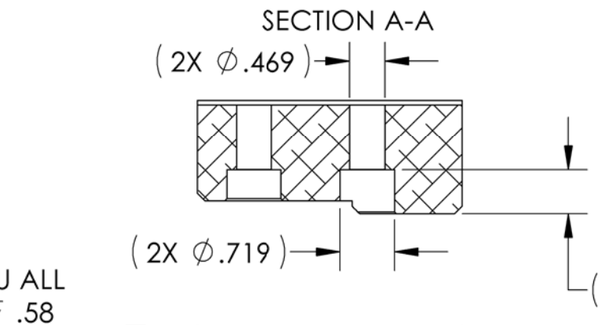
NOTES CONTINUED:

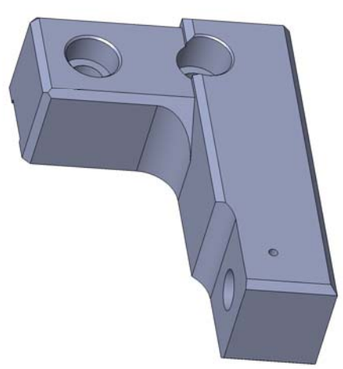
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.30 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.

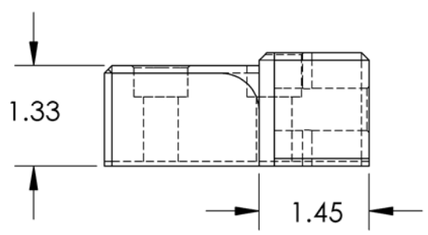
REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025











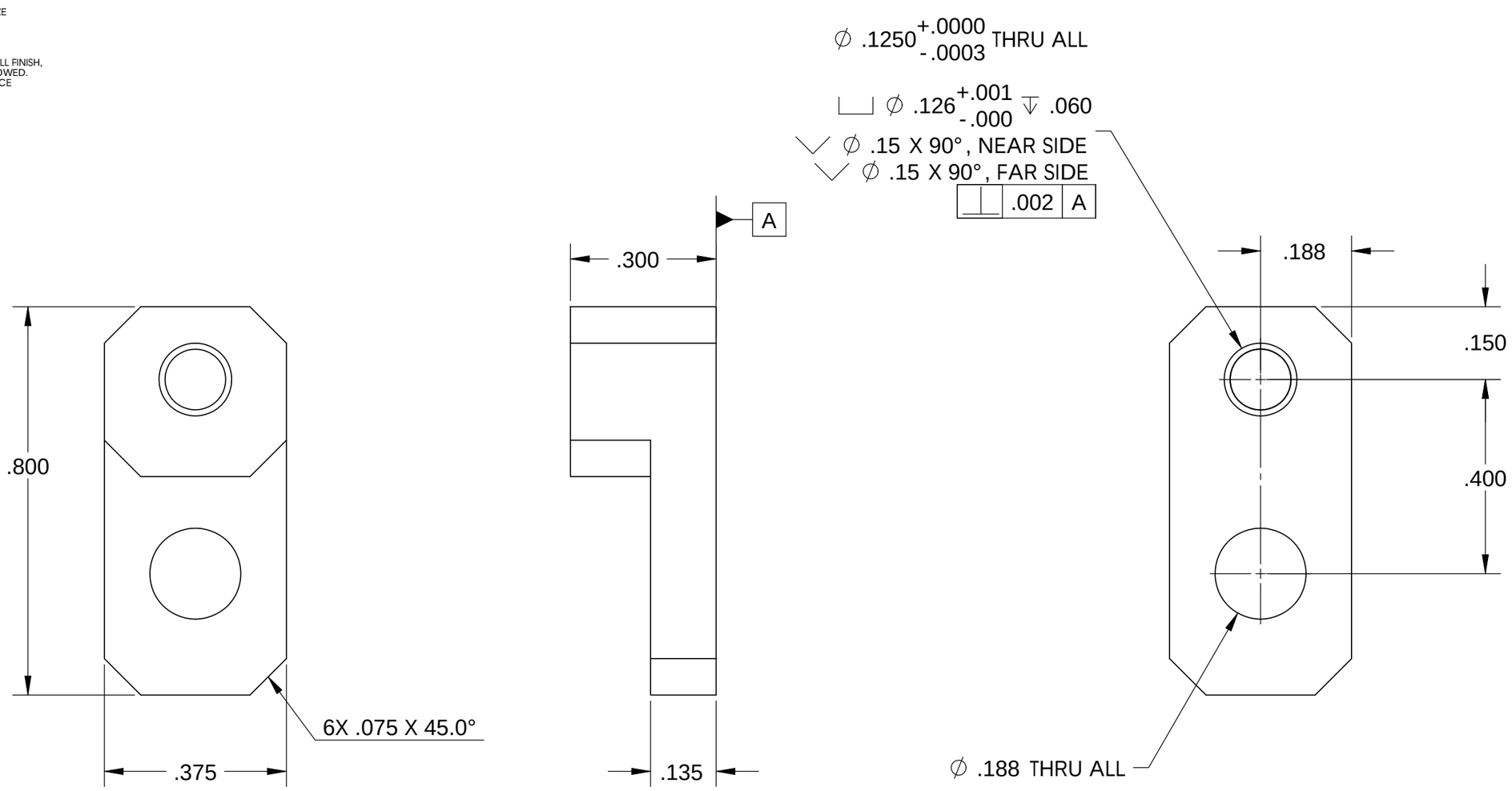
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	PART NAME	LARGE VERT. ACTUATOR CONNECTOR LEFT, STAGE 0-1, aLIGO BSC ISI
	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	
			NEXT ASSY: D0901103	DESIGNER: S.BARNUM 22 Feb. 2010	SIZE: B DWG. NO.: D0902428 REV.: v1
				DRAFTER: M.HILLARD 22 Feb. 2010	
				CHECKER: F.MATICHARD 22 Feb. 2010	
				APPROVAL: K.MASON 22 Feb. 2010	SCALE: 1:2 PROJECTION: SHEET 1 OF 1

D0902428 Large Vert. Actuator Connector Left, Stage 0-1, aLIGO BSC ISI, PART PDM REV: X-006, DRAWING PDM REV: X-007

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.002 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY	PART NAME: PIN CARRIER, SMALL PIN KEY, aLIGO BSC ISI	
	MATERIAL: 6061-T6 Al	FINISH: 32 µinch	SYSTEM: ADVANCED LIGO / SUB-SYSTEM: SEI	NEXT ASSY: D0902434	

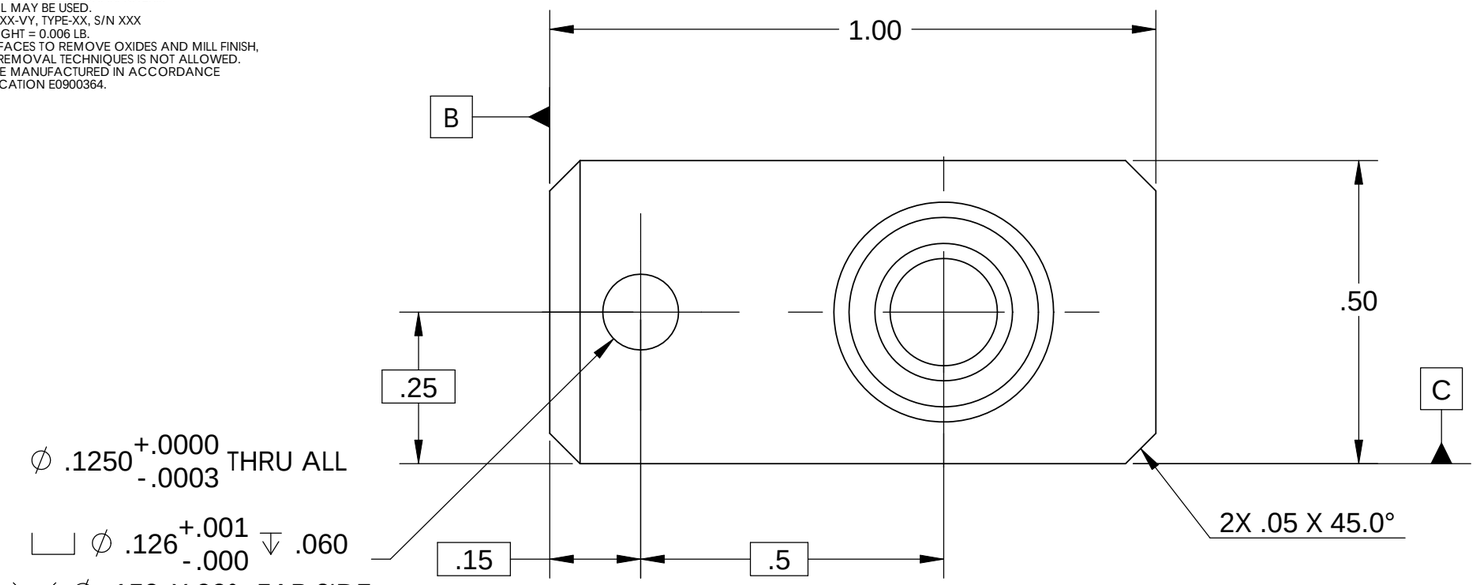
DESIGNER	S.BARNUM	01 Mar. 2010	SIZE: B	DWG. NO.: D0902435	REV.: v1
DRAFTER	M.HILLARD	01 Mar. 2010			
CHECKER	F.MATICHARD	01 Mar. 2010			
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 4:1	PROJECTION:	SHEET 1 OF 1

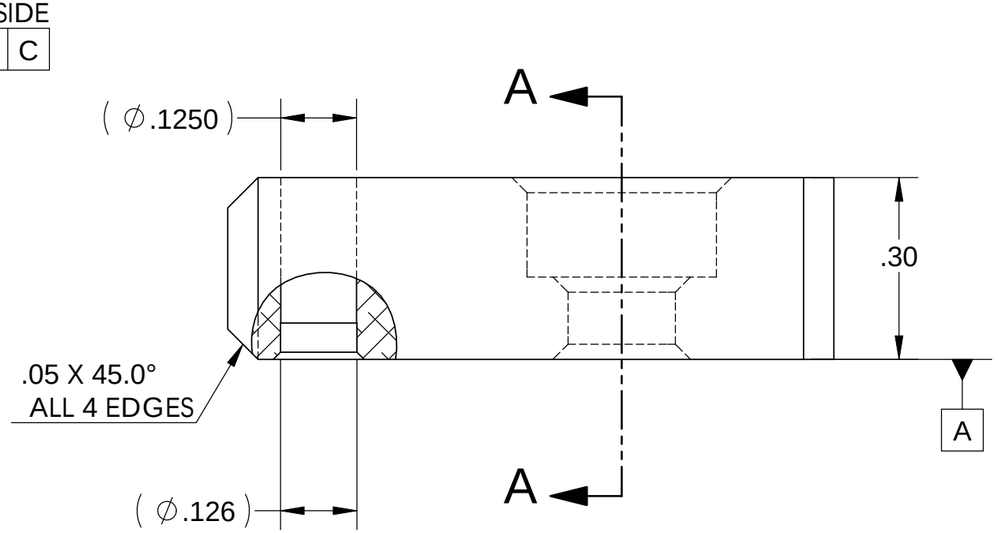
D0902435 Pin Carrier for Small Pin-Key, PART PDM REV: X-004, DRAWING PDM REV: X-003

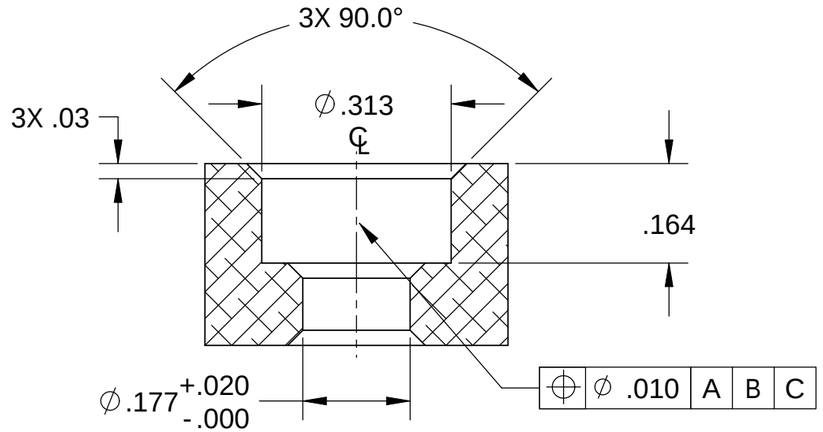
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED.
   EXAMPLE: DXXXXXXX-VY, TYPE-XX, S/N XXX
6. APPROXIMATE WEIGHT = 0.006 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025







SECTION A-A

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)					
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± 0.5˚	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 63 µinch	NEXT ASSY: D0902433	SYSTEM: ADVANCED LIGO / SUB-SYSTEM: SEI

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PART NAME: PIN CARRIER FOR LARGE PIN KEY. aLIGO BSC ISI

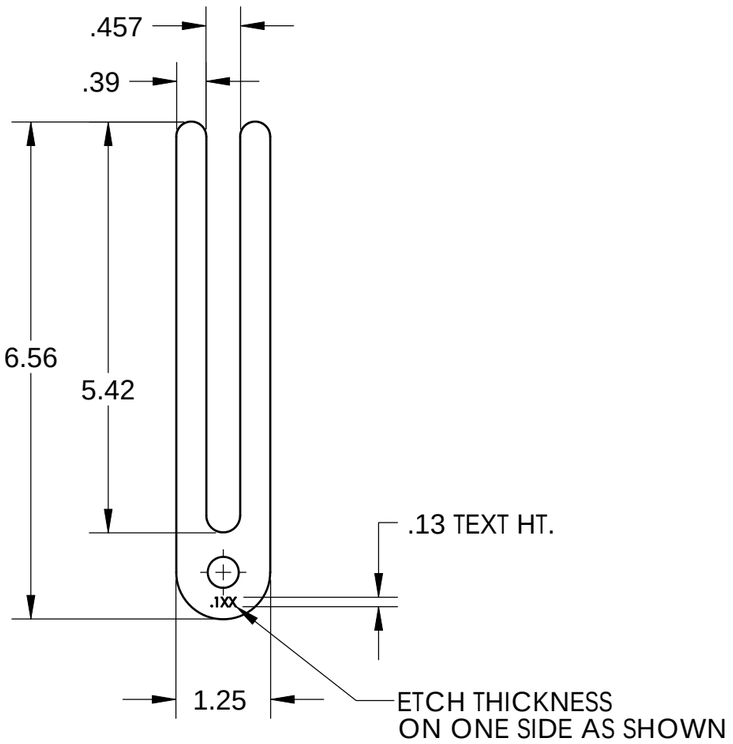
DESIGNER	S.BARNUM	22 Feb. 2010	SIZE: B	DWG. NO.: D0902436	REV.: v1
DRAFTER	M.HILLARD	22 Feb. 2010			
CHECKER	F.MATICHARD	22 Feb. 2010			
APPROVAL	K.MASON	22 Feb. 2010	SCALE: 4:1	PROJECTION:	SHEET 1 OF 1

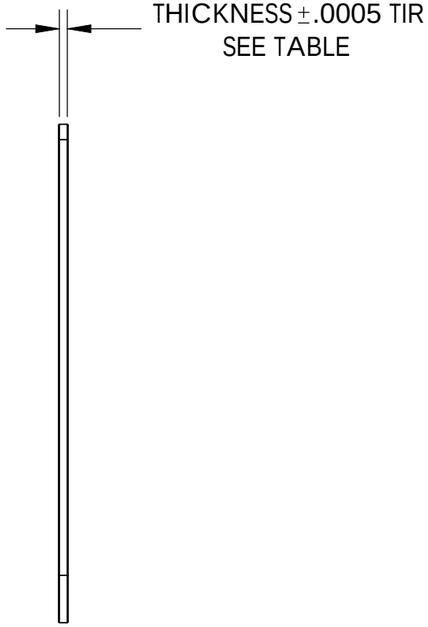
D0902436 Pin Carrier for Large Pin-Key, PART PDM REV: X-004, DRAWING PDM REV: X-004

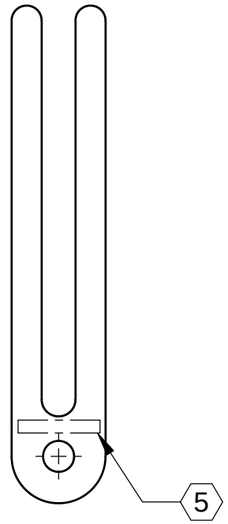
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIENT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
   EXAMPLE (PART): 001-V1
   EXAMPLE (TAG): DXXXXXXX-VY, TYPE-XX, QTY:TBD
6. APPROXIMATE WEIGHT = 0.20 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025







LIGO TYPE	Thickness
-00	0.120
-01	0.121
-02	0.122
-03	0.123
-04	0.124
-05	0.125
-06	0.126
-07	0.127
-08	0.128
-09	0.129
-10	0.130

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, R.02 MIN.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 304 SSTL
FINISH: 16 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D1000855

PART NAME: STAGE 1-2 LOCKER, BASE SHIM SPACER, aLIGO BSC ISI

DESIGNER	S.BARNUM	17 Aug 2009	
DRAFTER	M.HILLARD	01 Mar. 2010	
CHECKER	F.MATICHARD	01 Mar. 2010	
APPROVAL	K.MASON	01 Mar. 2010	

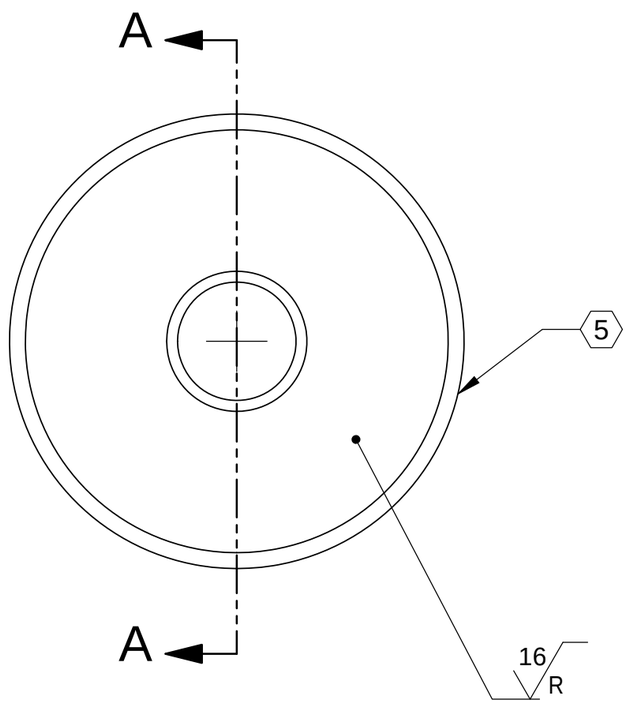
SIZE: B | DWG. NO.: D0902551 | REV.: v1
SCALE: 1:2 | PROJECTION: | SHEET 1 OF 1

D0902551_Stage1-2 Locker, Base Shim Spacer, PART PDM REV: X-004, DRAWING PDM REV: X-001

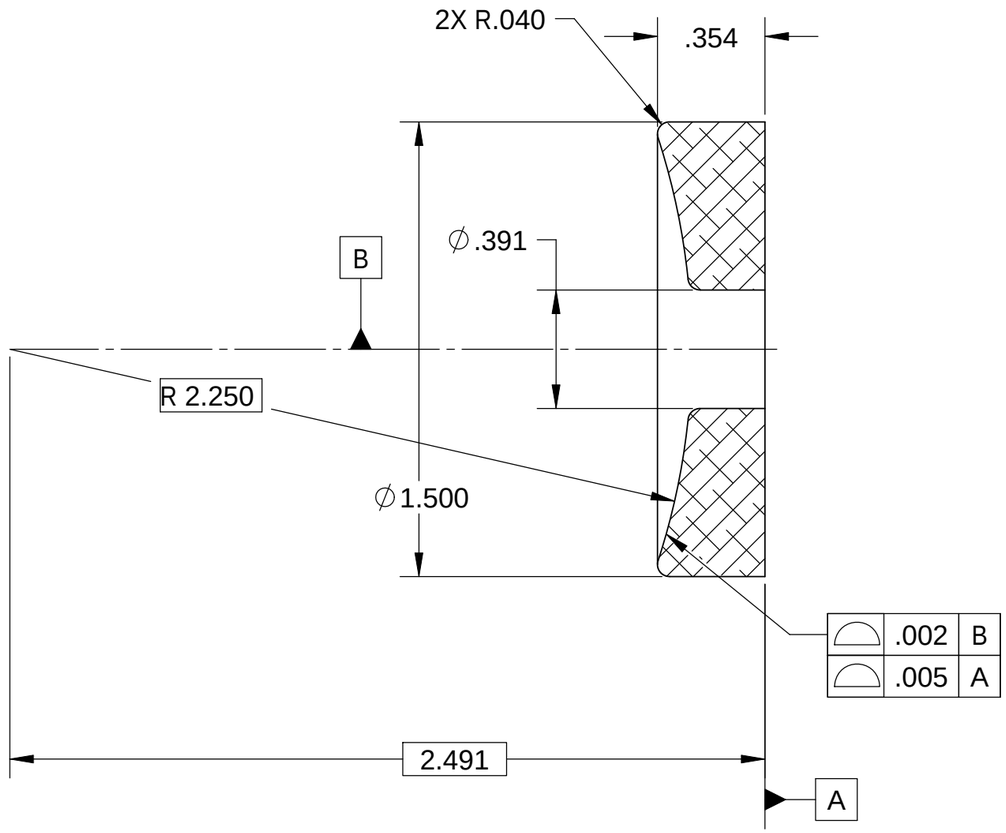
REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.05 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.



SECTION A-A



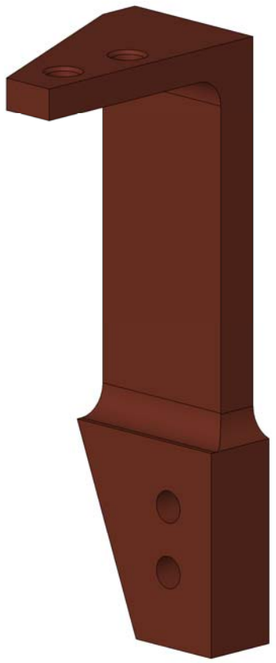
D0902610 Sensor Head Spherical Washer, PART PDM REV: X-008, DRAWING PDM REV: X-005

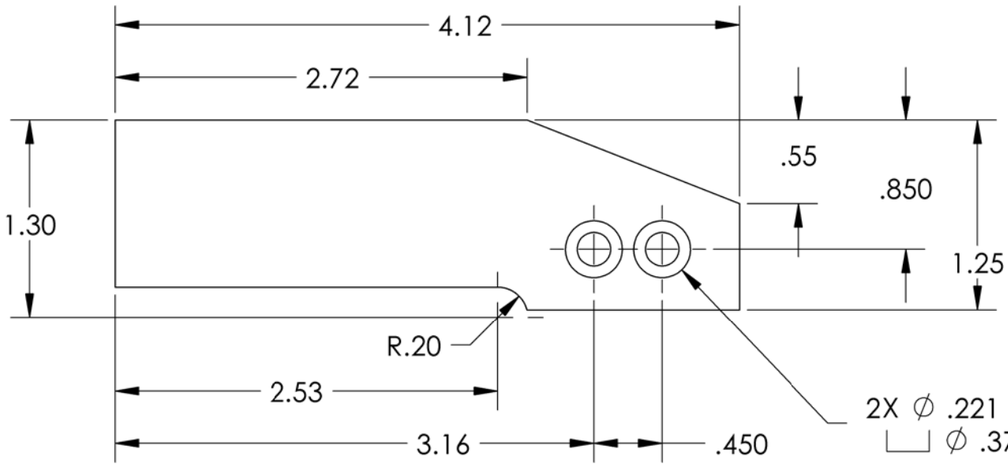
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)											
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME: SENSOR HEAD SPHERICAL WASHER, aLIGO BSC ISI					
	MATERIAL: 6061-T6 Al	FINISH: 32 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	NEXT ASSY: D1000467	DESIGNER	S.BARNUM	01 Mar. 2010	SIZE: B	DWG. NO.: D0902610	REV.: v1
						DRAFTER	M.HILLARD	01 Mar.2010			
						CHECKER	F.MATICHARD	01 Mar. 2010			
						APPROVAL	K.MASON	01 Mar. 2010	SCALE: 2:1	PROJECTION:	SHEET 1 OF 1

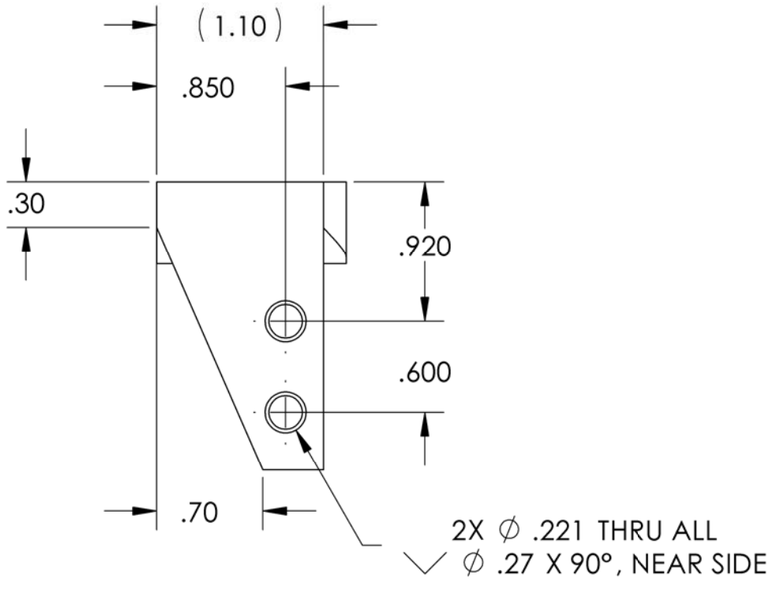
NOTES CONTINUED:

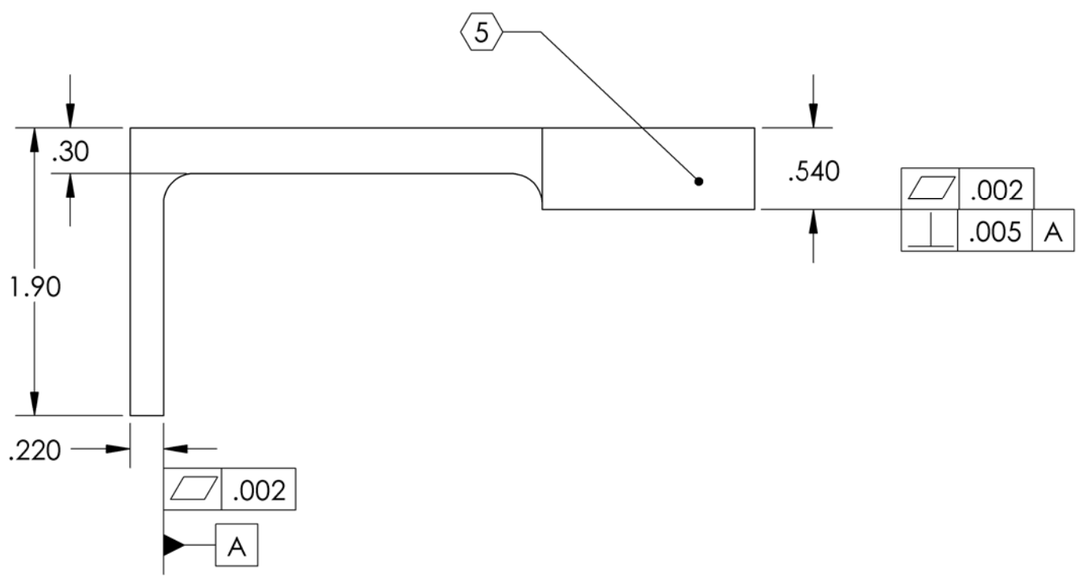
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED.
   EXAMPLE: DXXXXXXX-VY, TYPE-XX, S/N XXX
6. APPROXIMATE WEIGHT = 0.59 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025









NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: COPPER	FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

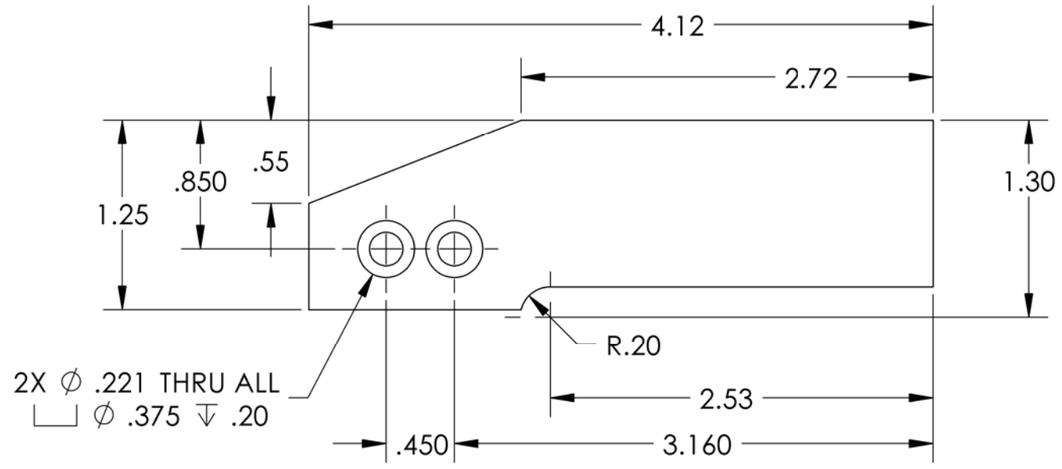
SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	PART NAME: THERMAL BAR, LEFT, LARGE ACTUATOR, aLIGO BSC ISI				
NEXT ASSY: D0901102, D0901103		DESIGNER	A.STEIN	22 Feb. 2010	SIZE: B	DWG. NO.: D1000175 REV: v1
		DRAFTER	M.HILLARD	22 Feb. 2010		
		CHECKER	F.MATICHARD	22 Feb. 2010		
		APPROVAL	K.MASON	22 Feb. 2010	SCALE: 1:1	PROJECTION: SHEET 1 OF 1

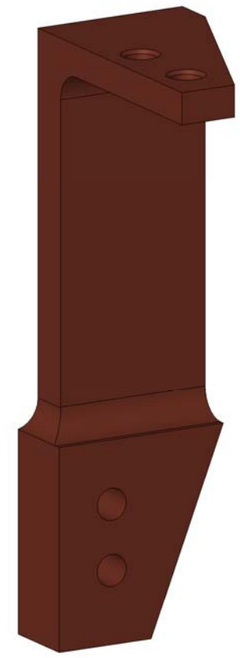
D1000175_THERMAL BAR, LEFT, LARGE ACTUATOR, aLIGO BSC ISI, PART PDM REV: X-003, DRAWING PDM REV: X-003

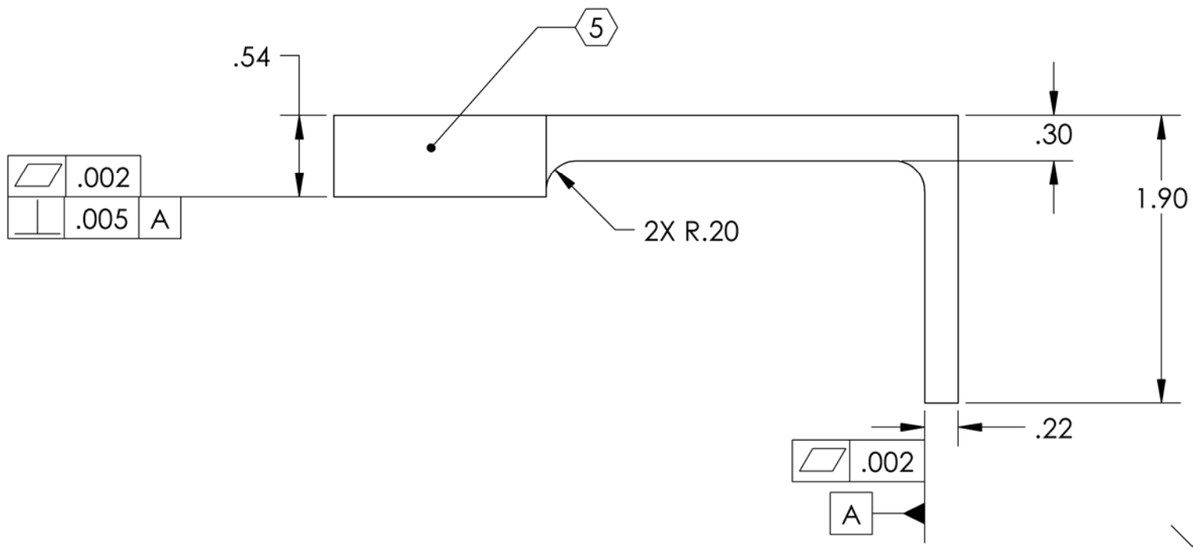
NOTES CONTINUED:

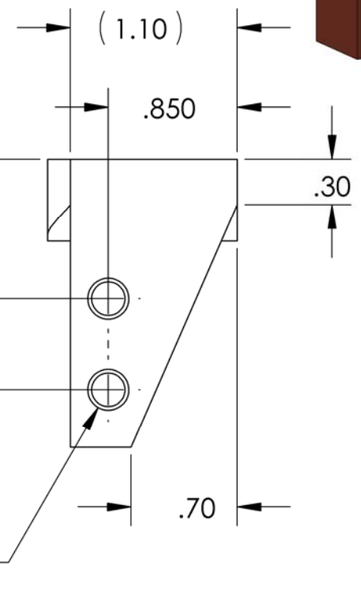
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIANT OR "TYPE" IF APPLICABLE) ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12" HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED.
   EXAMPLE: DXXXXXXX-VY, TYPE-XX, S/N XXX
6. APPROXIMATE WEIGHT = 0.59 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	22 Feb. 2010	E1000049	E1000025









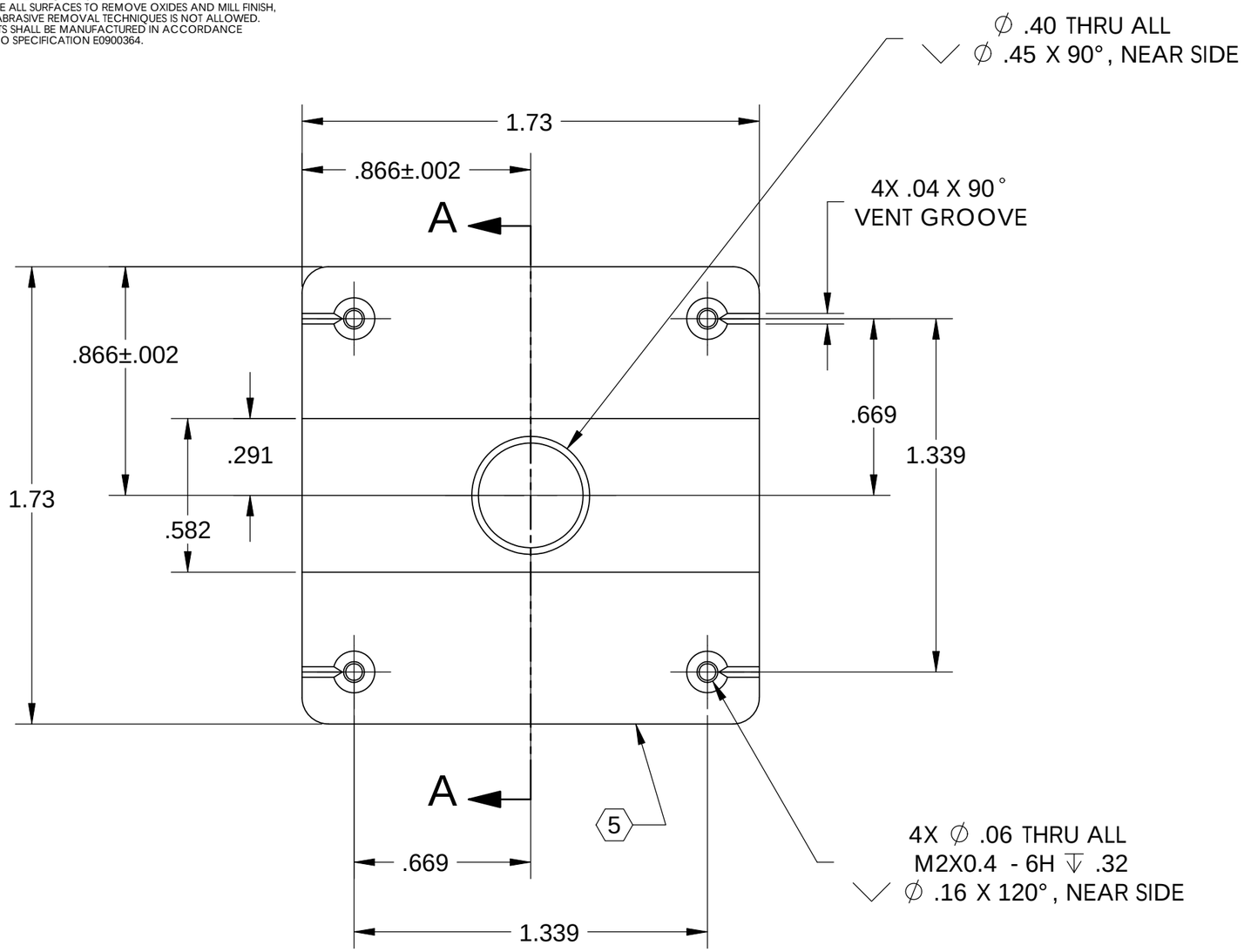
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)									
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME: THERMAL BAR, RIGHT, LARGE ACTUATOR, aLIGO BSC ISI				
	MATERIAL: COPPER	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER: A.STEIN 22 Feb. 2010	SIZE: B	DWG. NO.: D1000176	REV.: v1	
			NEXT ASSY: D0901102, D0901103		DRAFTER: M.HILLARD 22 Feb. 2010				
					CHECKER: F.MATICHARD 22 Feb. 2010				
					APPROVAL: K.MASON 22 Feb. 2010	SCALE: 1:1	PROJECTION:	SHEET 1 OF 1	

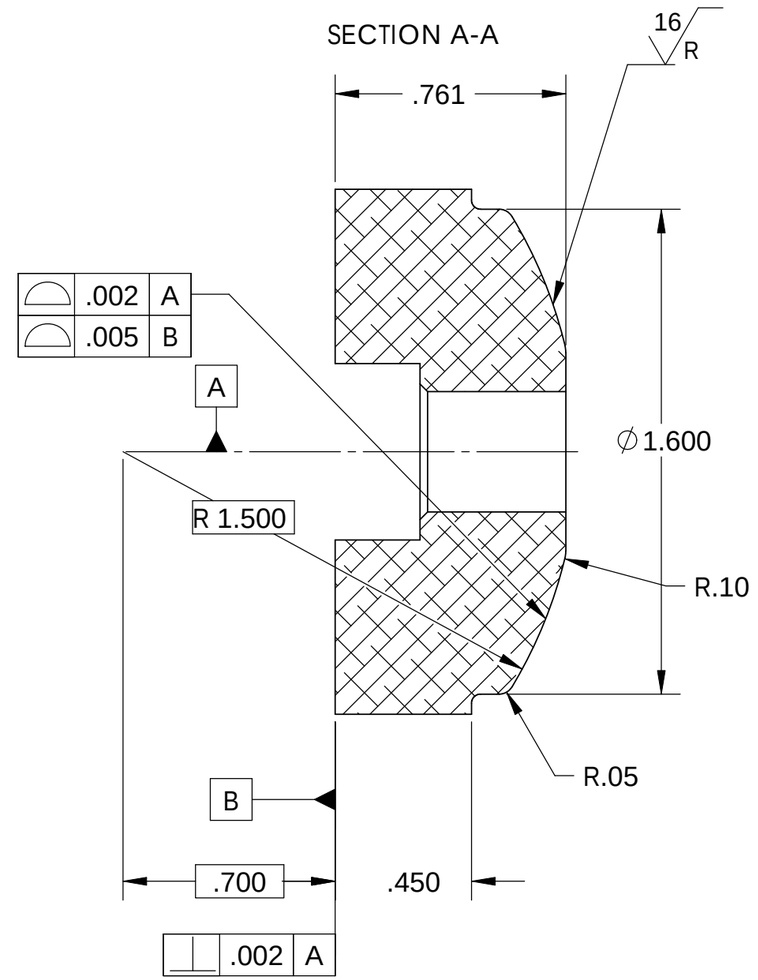
D1000176_THERMAL BAR, RIGHT, LARGE ACTUATOR, aLIGO BSC ISI, PART PDM REV: X-002, DRAWING PDM REV: X-003

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.14 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025





D1000469 POSITION SENSOR BASE, aLIGO BSC ISI, PART PDM REV: X-004, DRAWING PDM REV: X-003

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 6061-T6 Al	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

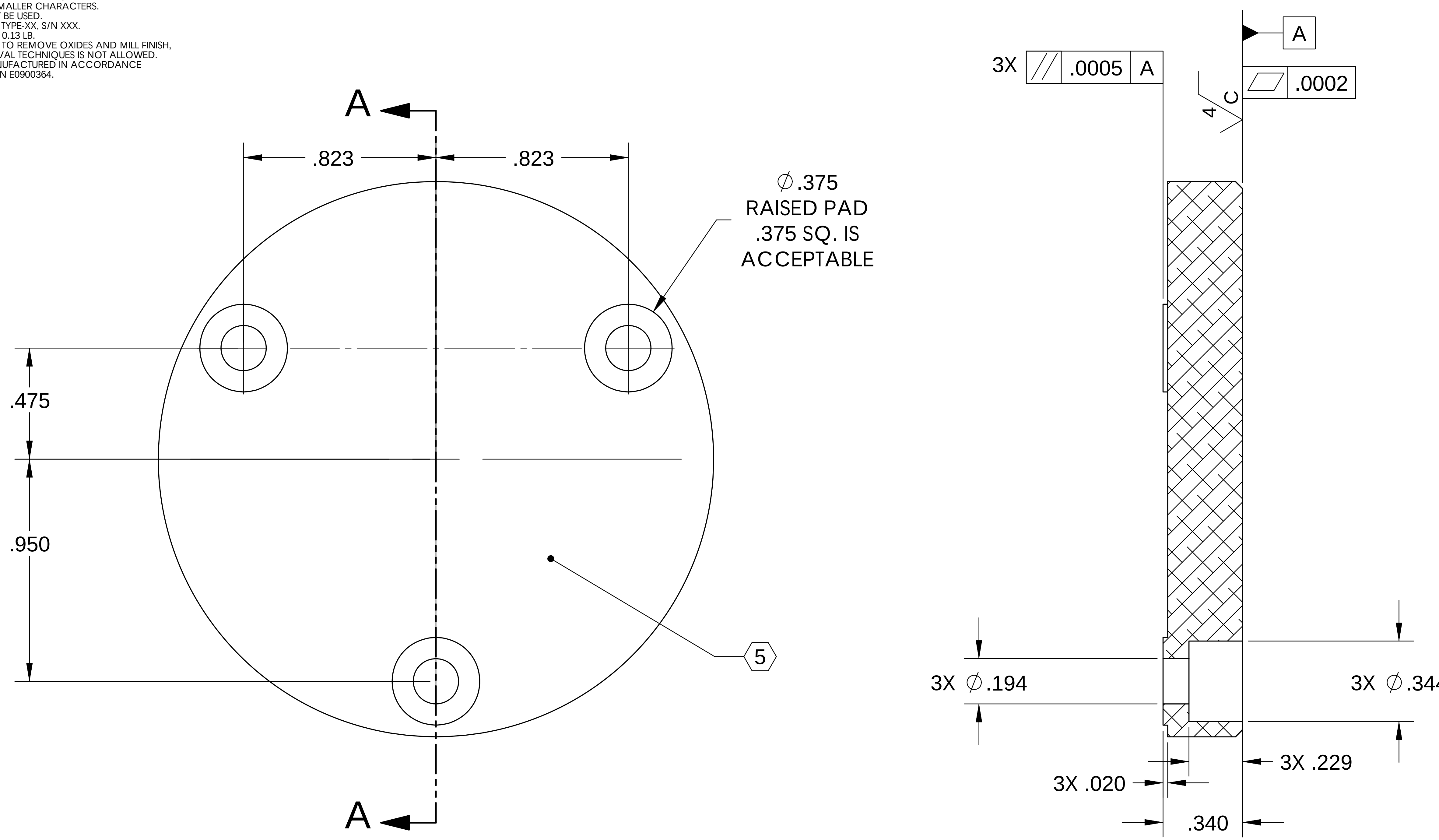
SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	NEXT ASSY: D1000467	PART NAME: POSITION SENSOR BASE, aLIGO BSC ISI

DESIGNER	S.BARNUM	01 Mar. 2010	SIZE: B	DWG. NO.: D1000469	REV.: v1	
DRAFTER	M.HILLARD	01 Mar. 2010				
CHECKER	F.MATICHARD	01 Mar. 2010				
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 2:1	PROJECTION:	SHEET 1 OF 1	

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.13 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.



SECTION A-A

D1000470 POSITION SENSOR TARGET, aLIGO BSC ISI, PART PDM REV: X-001, DRAWING PDM REV: X-001

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005
ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. REMOVE ALL SHARP EDGES, R.02 MIN.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 1100-H14
FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D1000468

PART NAME: POSITION SENSOR TARGET, aLIGO BSC ISI

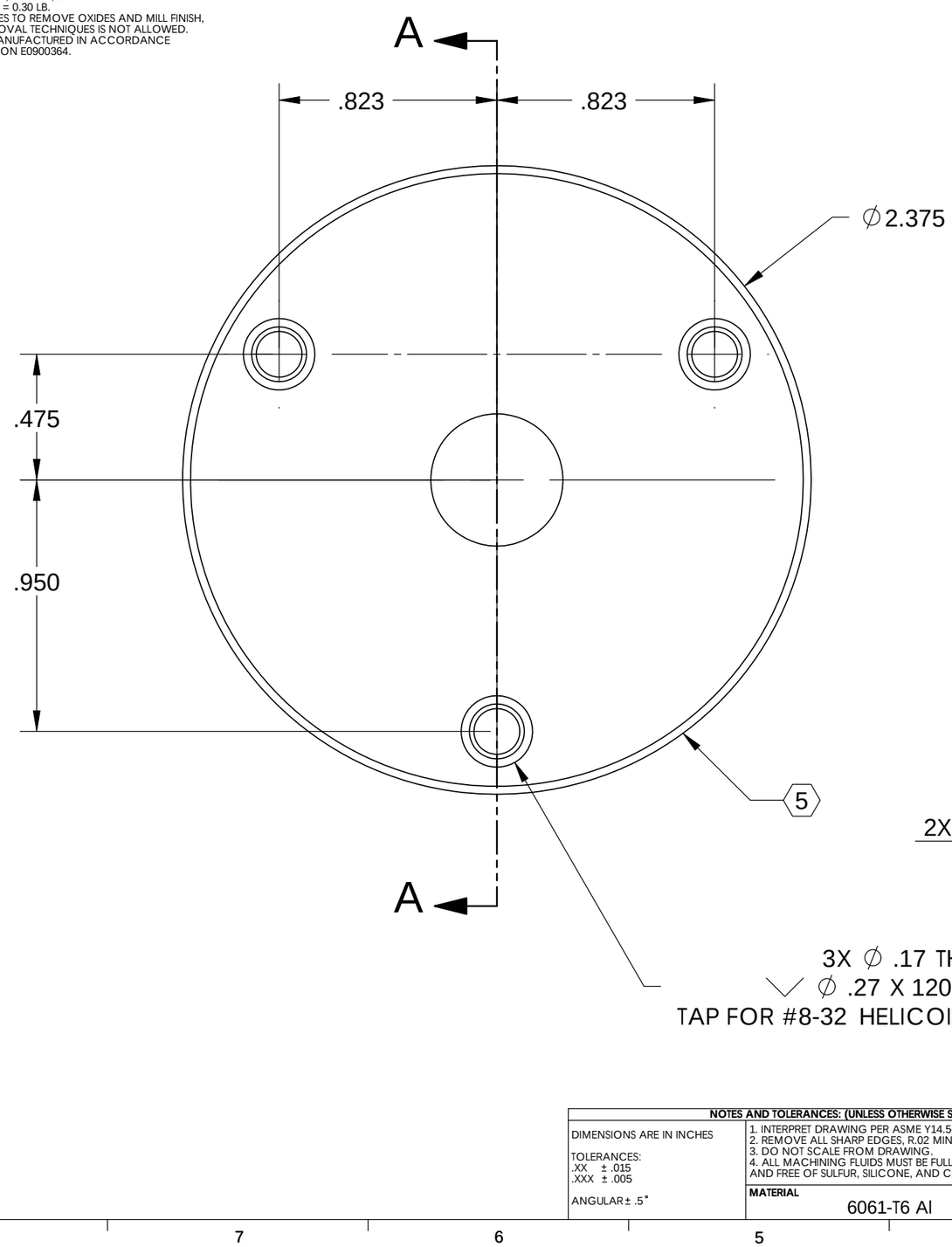
DESIGNER	S.BARNUM	01 Mar. 2010
DRAFTER	M.HILLARD	01 Mar. 2010
CHECKER	F.MATICHARD	01 Mar. 2010
APPROVAL	K.MASON	01 Mar. 2010

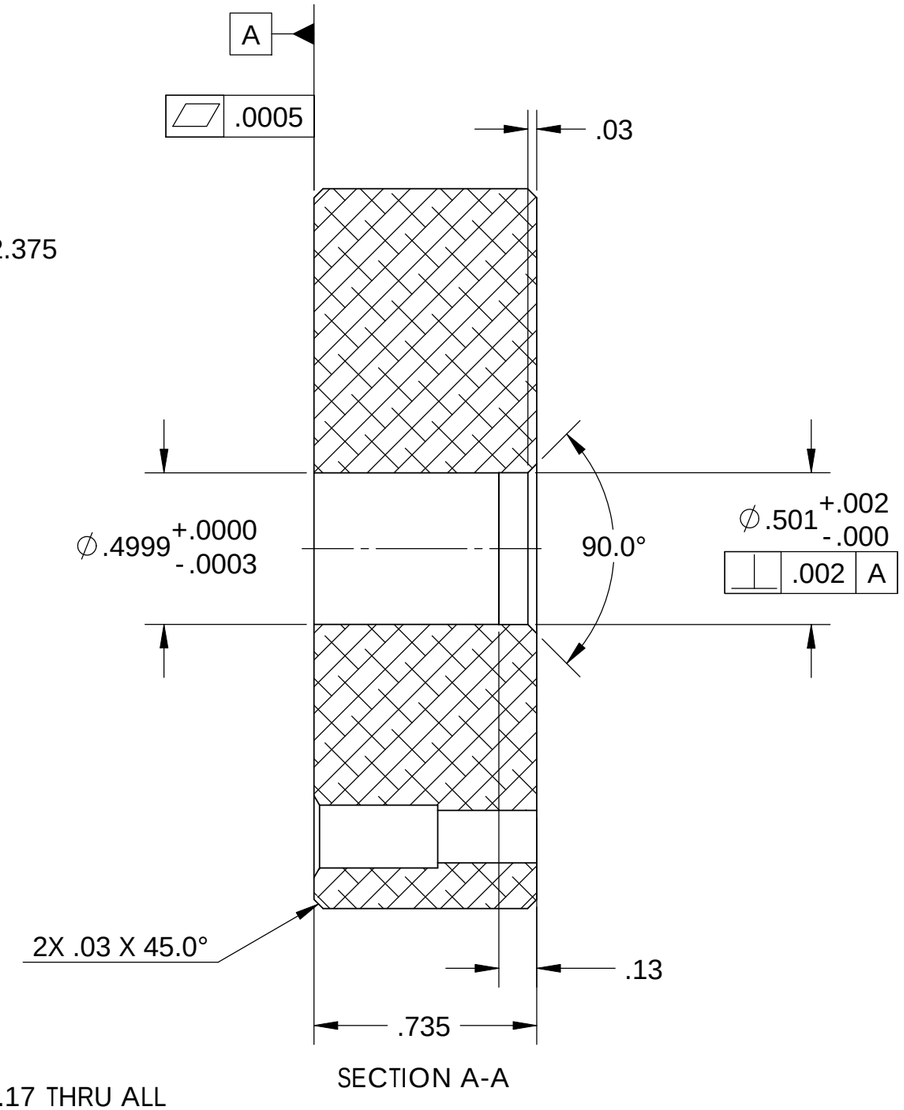
SIZE: B | DWG. NO.: D1000470 | REV.: v1
SCALE: 2:1 | PROJECTION: | SHEET 1 OF 1

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.30 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.





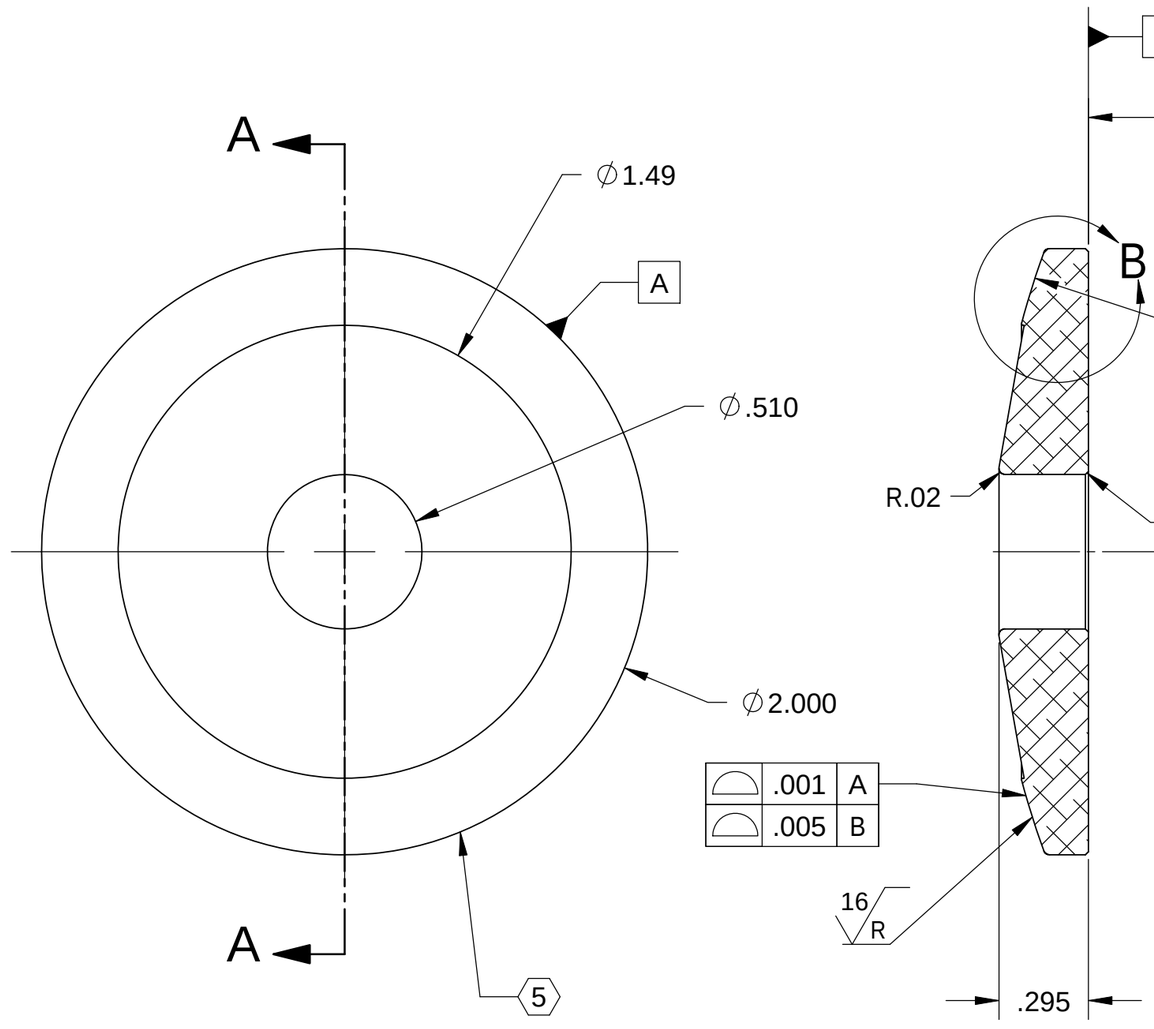
D1000472 POSITION SENSOR TARGET BODY, aLIGO BSC ISI, PART PDM REV: X-004, DRAWING PDM REV: X-004

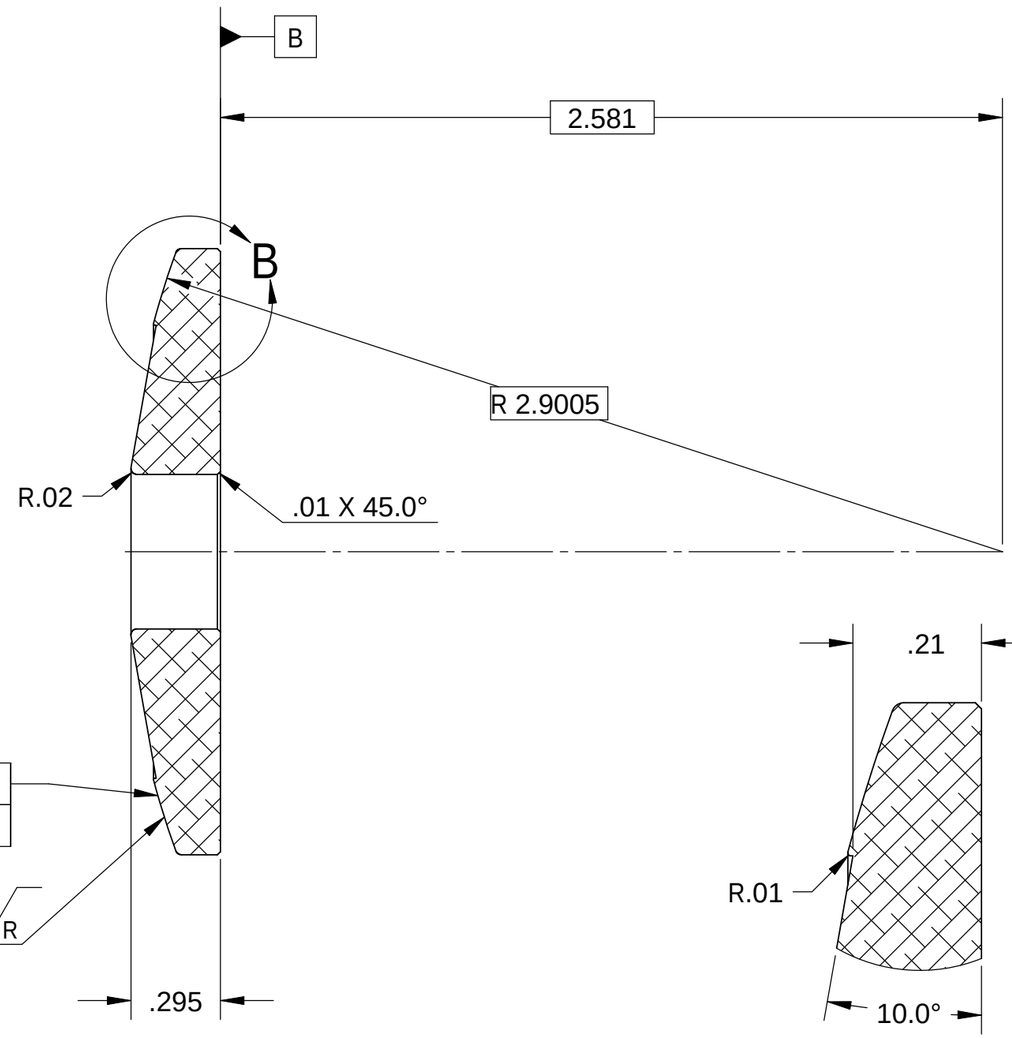
NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)							
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME: POSITION SENSOR TARGET BODY, aLIGO BSC ISI		
	MATERIAL: 6061-T6 Al	FINISH: 32 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER: S.BARNUM 01 Mar. 2010	SIZE: B	DWG. NO.: D1000472 REV: v1
			NEXT ASSY: D1000468		DRAFTER: M.HILLARD 01 Mar. 2010 CHECKER: F.MATICHARD 01 Mar. 2010 APPROVAL: K.MASON 01 Mar. 2010	SCALE: 2:1	PROJECTION: SHEET 1 OF 1

NOTES CONTINUED:

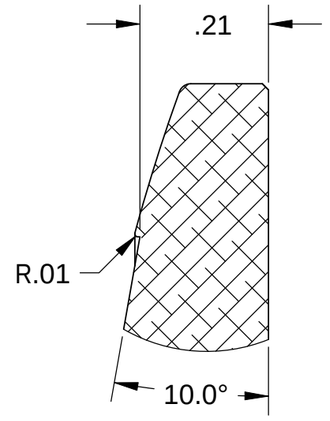
5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.084 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. FINISH: ELECTROPOLISH ALL DIMS APPLY AFTER FINISHING.

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025





SECTION A-A



DETAIL B
SCALE 4 : 1

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005

ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL EDGES AND CORNERS .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 304 SSTL
FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO
SUB-SYSTEM: SEI
NEXT ASSY: D0902530, D0902531

PART NAME: SPHERICAL WASHER, 2 IN. OD CONVEX, aLIGO BSC ISI

DESIGNER	S.BARNUM	19 Mar. 2010	
DRAFTER	M.HILLARD	19 Mar. 2010	
CHECKER	F.MATICHARD	19 Mar. 2010	
APPROVAL	K.MASON	19 Mar. 2010	

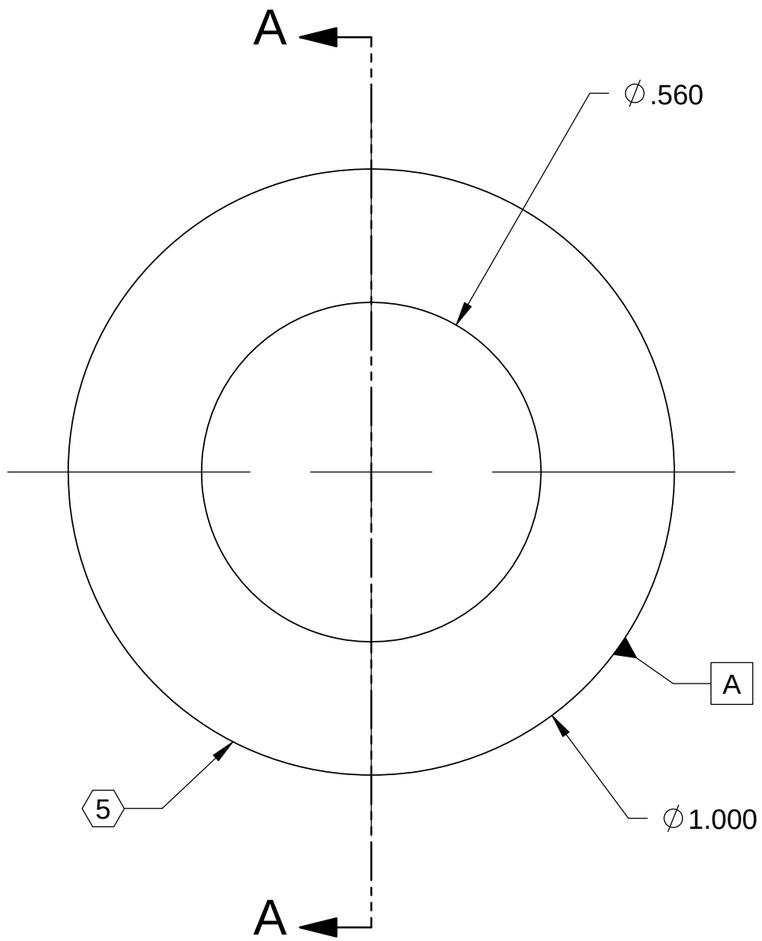
SIZE: B — DWG. NO.: D1000678 — REV.: v1
SCALE: 2:1 — PROJECTION: — SHEET 1 OF 1

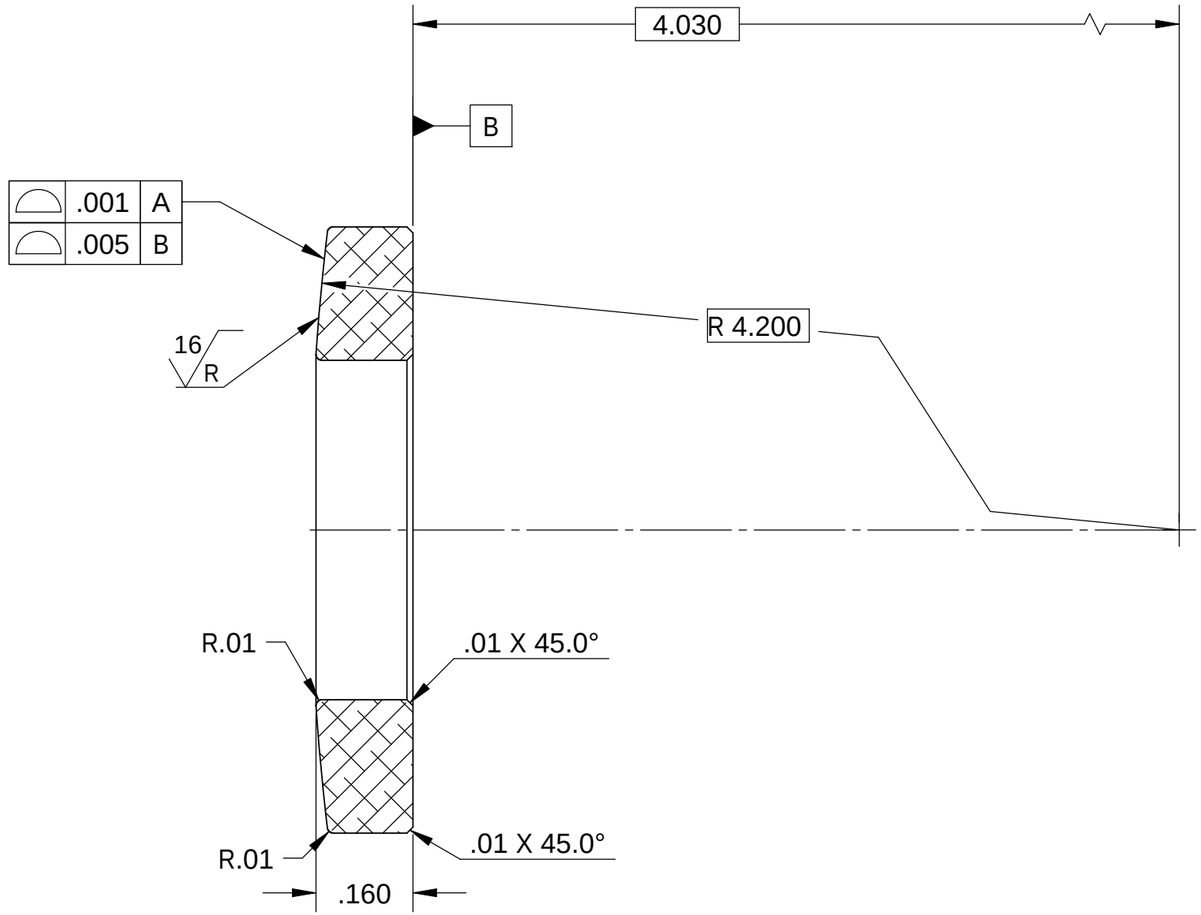
D1000678 Spherical Washer, 2 in OD Convex, aLIGO BSC ISI, PART PDM REV: X-005, DRAWING PDM REV: X-006

REV.	DATE	DCN #	DRAWING TREE #
v1	19 Mar. 2010	E1000049	E1000025

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO DYES OR INKS) A UNIQUE THREE DIGIT SERIAL NUMBER & REVISION NUMBER ON EACH PART. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. BAG AND TAG PARTS WITH THEIR DRAWING PART NUMBER, REVISION, VARIENT OR "TYPE" (IF APPLICABLE), AND QUANTITY. IF PARTS ARE TO SMALL TO SCRIBE, BAGGING AND TAGGING ALONE IS SUFFICIENT.
   EXAMPLE (PART): 001-V1
   EXAMPLE (TAG): DXXXXXXX-VY, TYPE-XX, QTY:TBD
6. APPROXIMATE WEIGHT = 0.011 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. FINISH: ELECTROPOLISH ALL DIMS APPLY AFTER FINISHING.





SECTION A-A

D1000679 Spherical Washer, 1 in OD Convex , aLIGO BSC ISI, PART PDM REV: X-002, DRAWING PDM REV: X-002

NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: 304 SSTL	FINISH: 32 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM	SUB-SYSTEM	NEXT ASSY
ADVANCED LIGO	SEI	D0902530, D0902531

PART NAME: SPHERICAL WASHER, 1 IN. OD CONVEX, aLIGO BSC ISI

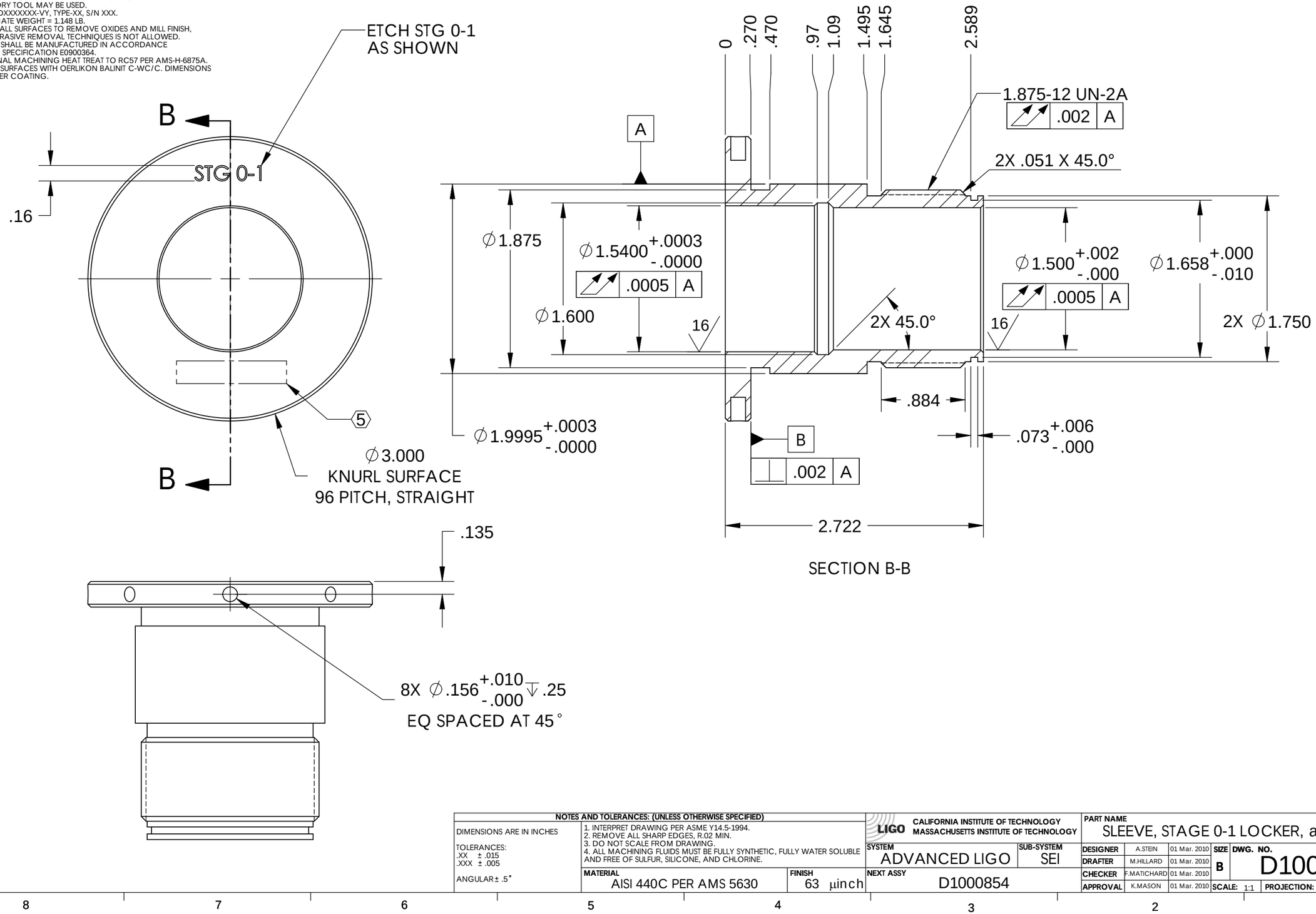
DESIGNER	S.BARNUM	19 Mar. 2010	
DRAFTER	M.HILLARD	19 Mar. 2010	
CHECKER	F.MATICHARD	19 Mar. 2010	
APPROVAL	K.MASON	19 Mar. 2010	

SIZE: B | DWG. NO.: D1000679 | REV.: v1 | SCALE: 4:1 | PROJECTION: | SHEET 1 OF 1

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.148 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. BEFORE FINAL MACHINING HEAT TREAT TO RC57 PER AMS-H-6875A.
10. COAT ALL SURFACES WITH OERLIKON BALINIT C-WC/C. DIMENSIONS APPLY AFTER COATING.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.	MATERIAL: AISI 440C PER AMS 5630	FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PART NAME	SLEEVE, STAGE 0-1 LOCKER, aLIGO BSC-ISI		
SYSTEM	ADVANCED LIGO	SUB-SYSTEM	SEI
NEXT ASSY	D1000854		

DESIGNER	A.STEIN	01 Mar. 2010	SIZE	DWG. NO.	REV.
DRAFTER	M.HILLARD	01 Mar. 2010	B	D1000860	v1
CHECKER	F.MATICHARD	01 Mar. 2010			
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:1	PROJECTION:	SHEET 1 OF 1

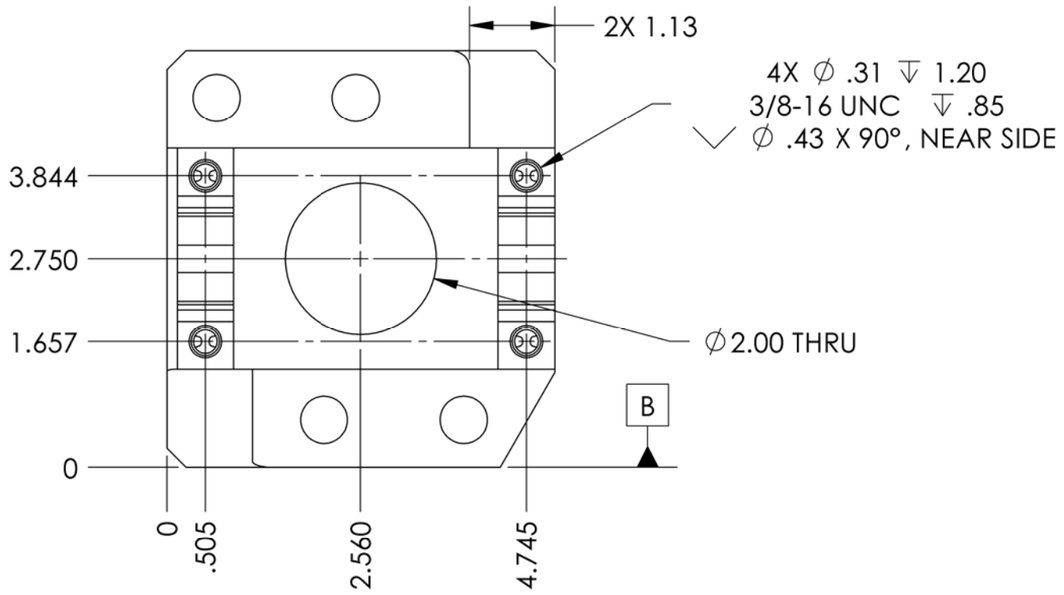
D1000860, Stage 0-1 Locker, aLIGO BSC-ISI, PART PDM REV: X-007, DRAWING PDM REV: X-006

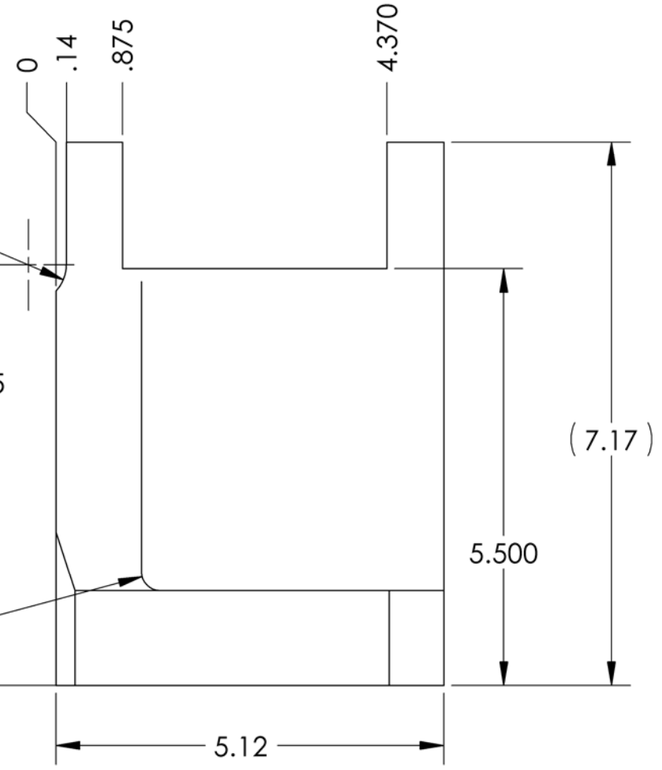
NOTES CONTINUED:

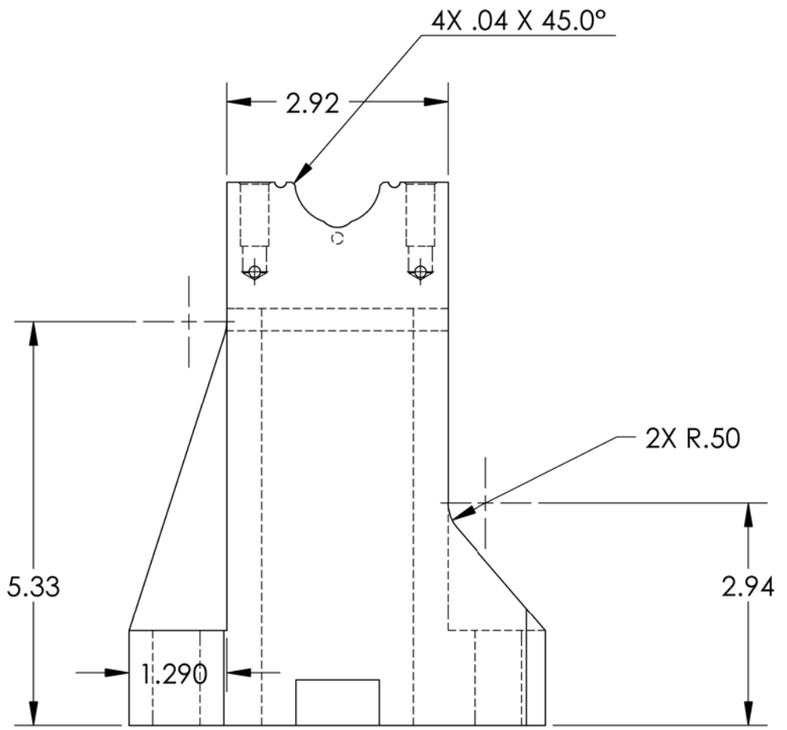
(5) SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.

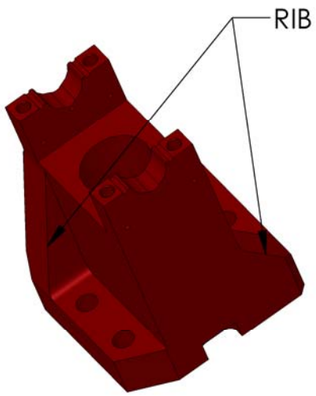
6. APPROXIMATE WEIGHT = 11.641 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TAPPED HOLE PITCH DIAMETER LIMIT OF H11 APPLIES.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025



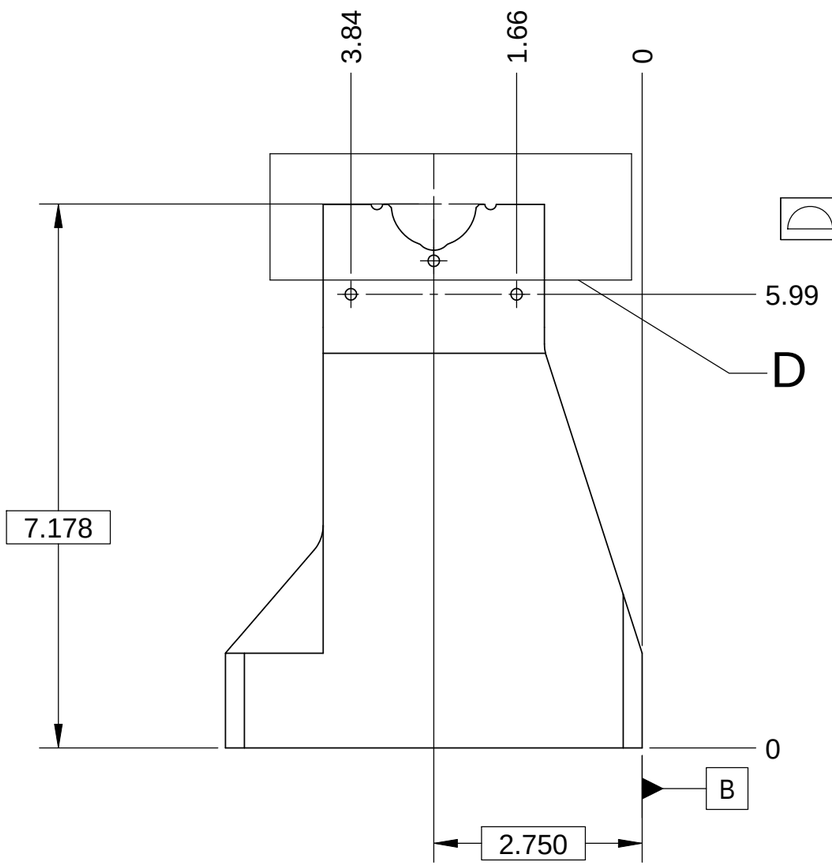


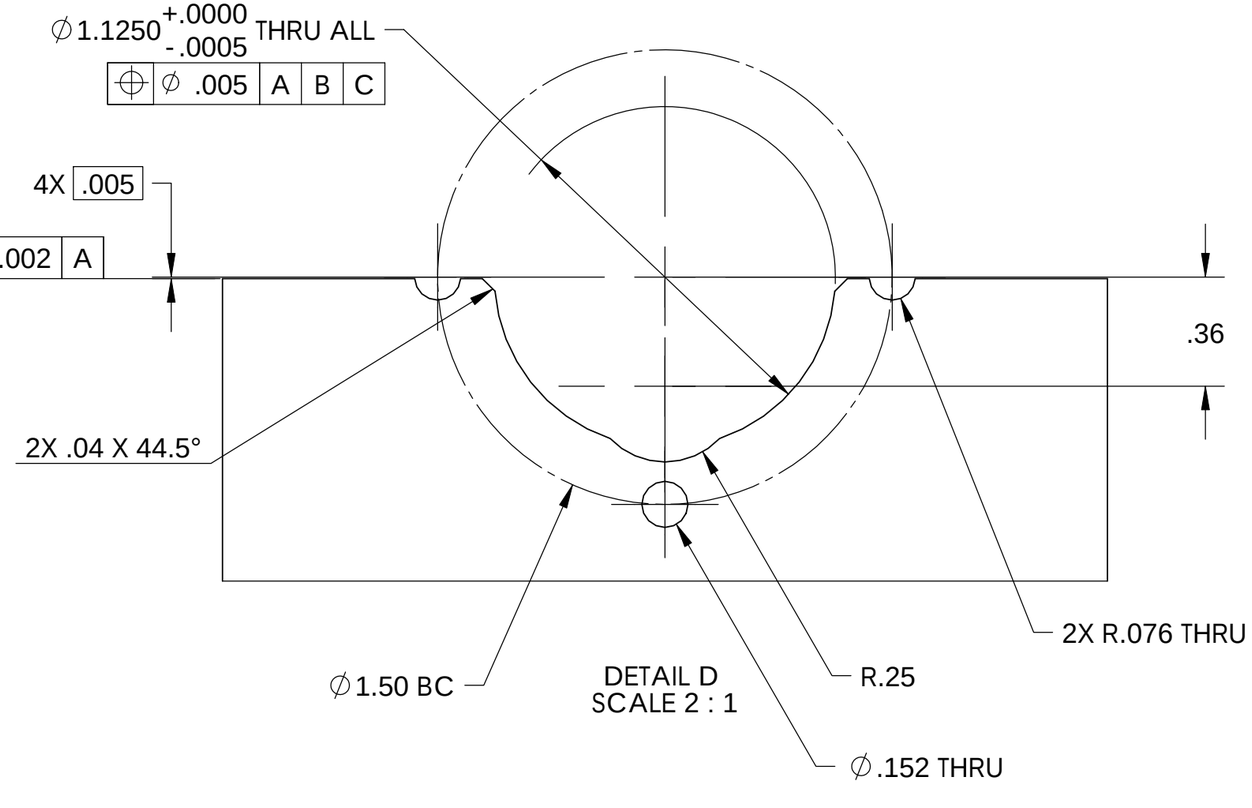


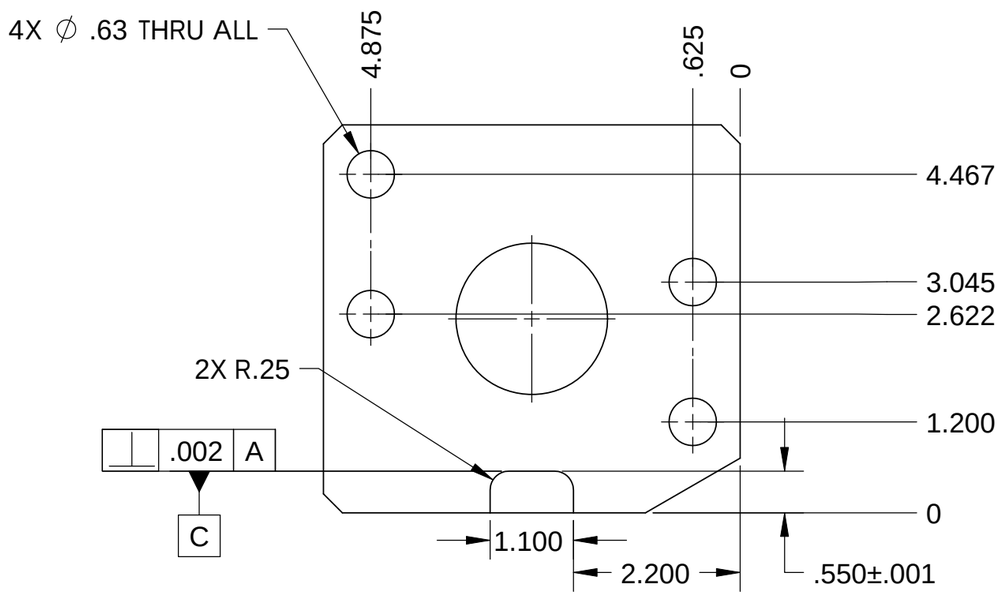


NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)											
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. BREAK ALL EDGES AND CORNERS .03 X 45°. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		PART NAME: POST, STAGE 0-1 LOCKER, aLIGO BSC ISI					
	MATERIAL: 304 SSTL	FINISH: 63 µinch	SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI	DESIGNER	A.STEIN	01 Mar. 2010	SIZE: B	DWG. NO.: D1000861	REV.: v1
			NEXT ASSY: D1000854		DRAFTER	M.HILLARD	01 Mar. 2010			
					CHECKER	F.MATICHARD	01 Mar. 2010			
					APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:2	PROJECTION:	SHEET 1 OF 2

D1000861 Post, Stage 0-1 Locker, aLIGO BSC-ISI, PART PDM REV: X-005, DRAWING PDM REV: X-004







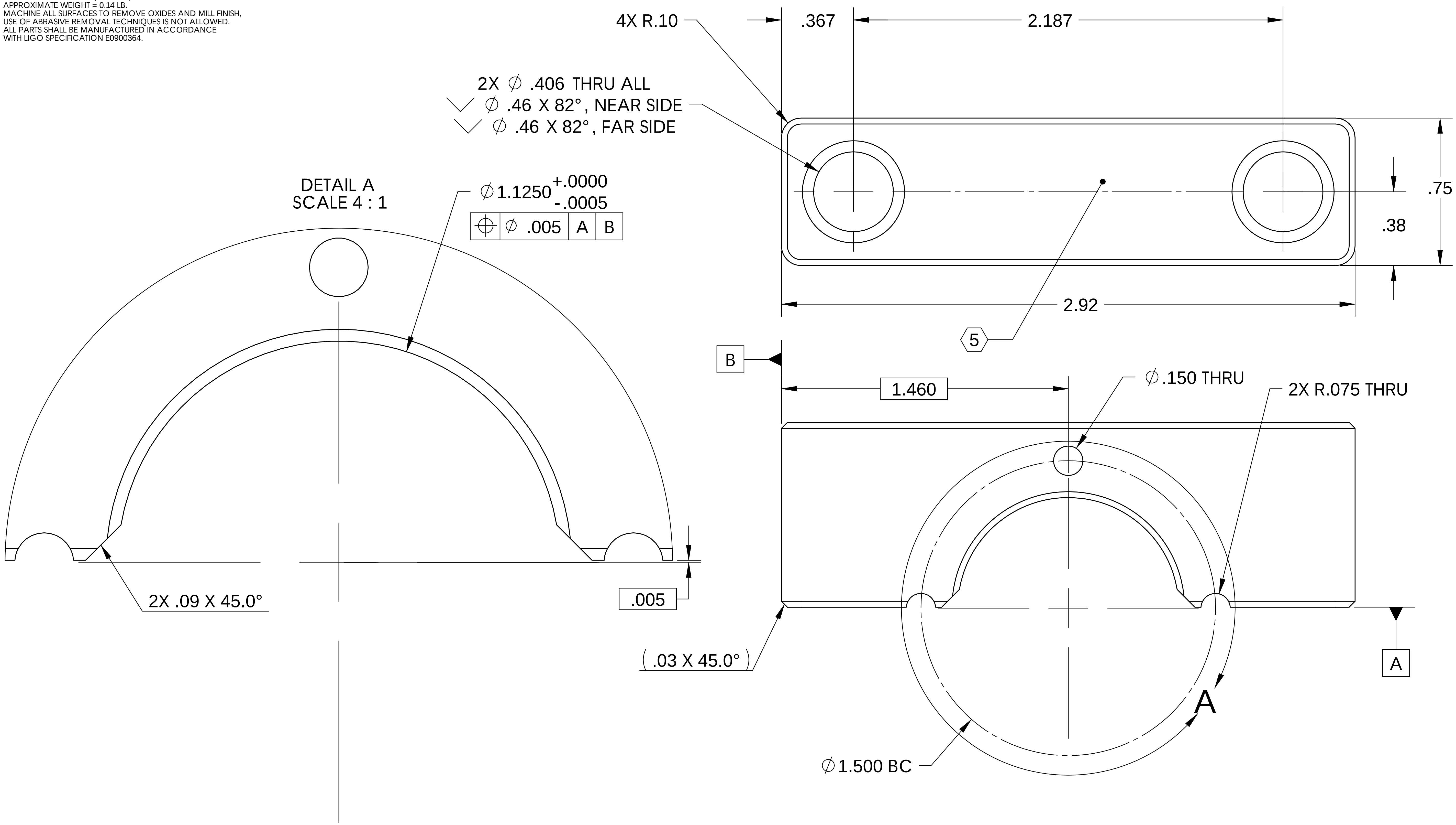
D1000861 Post, Stage 0-1 Locker, aLIGO BSC-ISI, PART PDM REV: X-005, DRAWING PDM REV: X-004

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SIZE B	DWG. NO. D1000861	REV. v1	
SCALE: 1:2	PROJECTION:	SHEET 2 OF 2	

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 0.14 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)

DIMENSIONS ARE IN INCHES

TOLERANCES:
.XX ± .015
.XXX ± .005
ANGULAR ± .5°

1. INTERPRET DRAWING PER ASME Y14.5-1994.
2. BREAK ALL EDGES AND CORNERS .03 X 45°.
3. DO NOT SCALE FROM DRAWING.
4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.

MATERIAL: 2024-T351 Al

FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO | SUB-SYSTEM: SEI

NEXT ASSY: D1000854, D1000855

PART NAME: PIN CAP, LOCKER, aLIGO BSC-ISI

DESIGNER	A.STEIN	01 Mar. 2010
DRAFTER	M.HILLARD	01 Mar. 2010
CHECKER	F.MATICHARD	01 Mar. 2010
APPROVAL	K.MASON	01 Mar. 2010

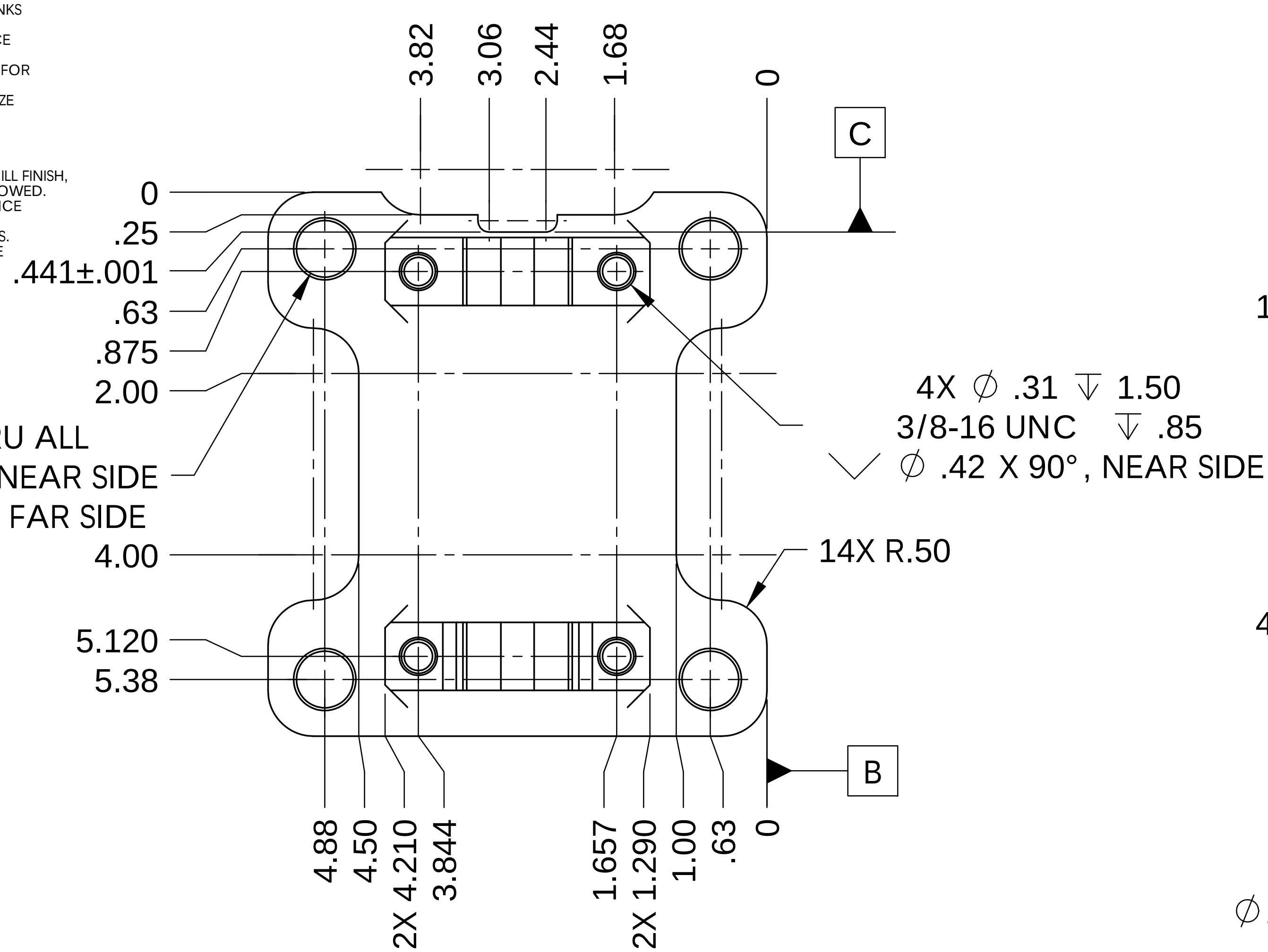
SIZE: B | DWG. NO.: D1000862 | REV.: v1

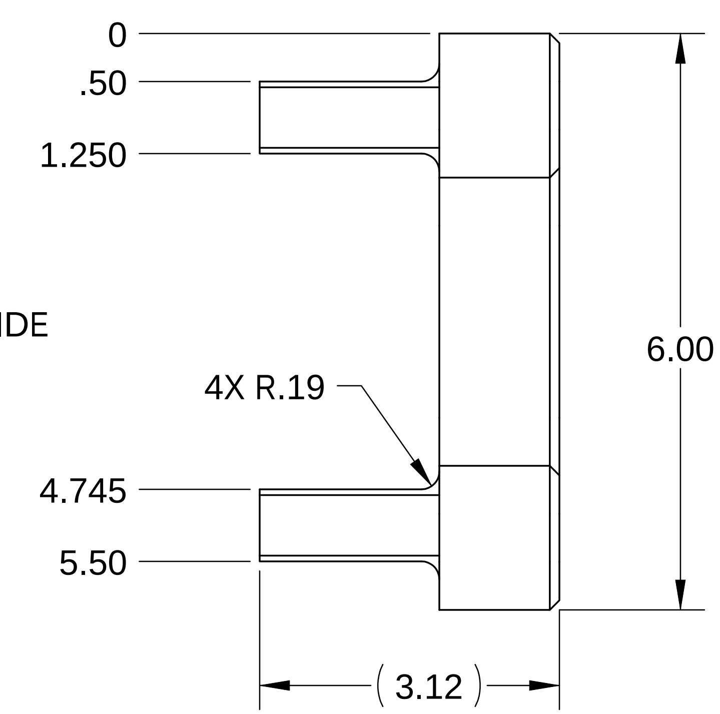
SCALE: 2:1 | PROJECTION: | SHEET 1 OF 1

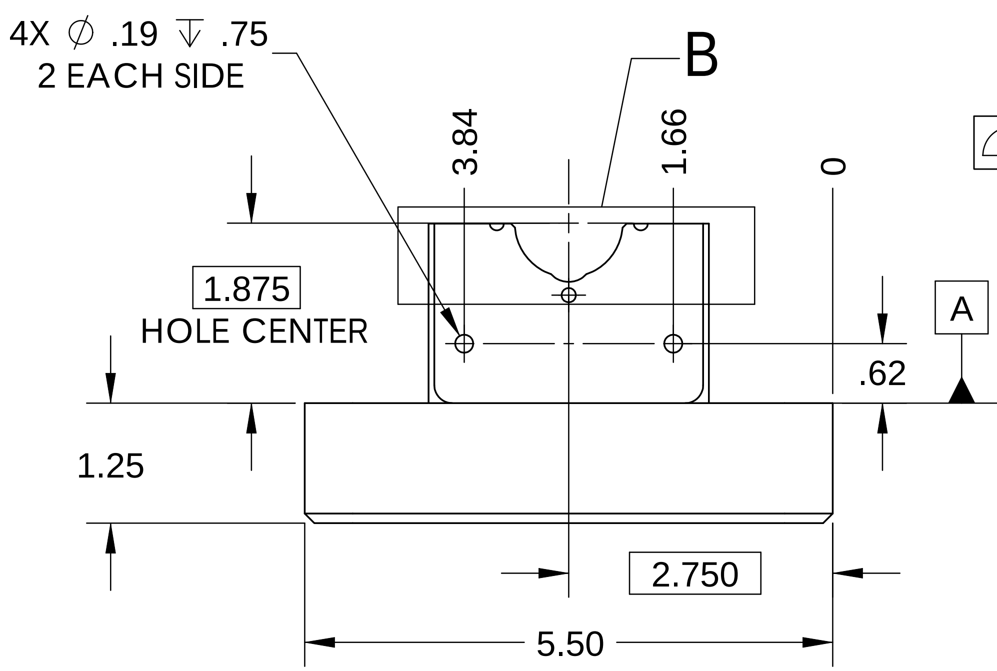
REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025

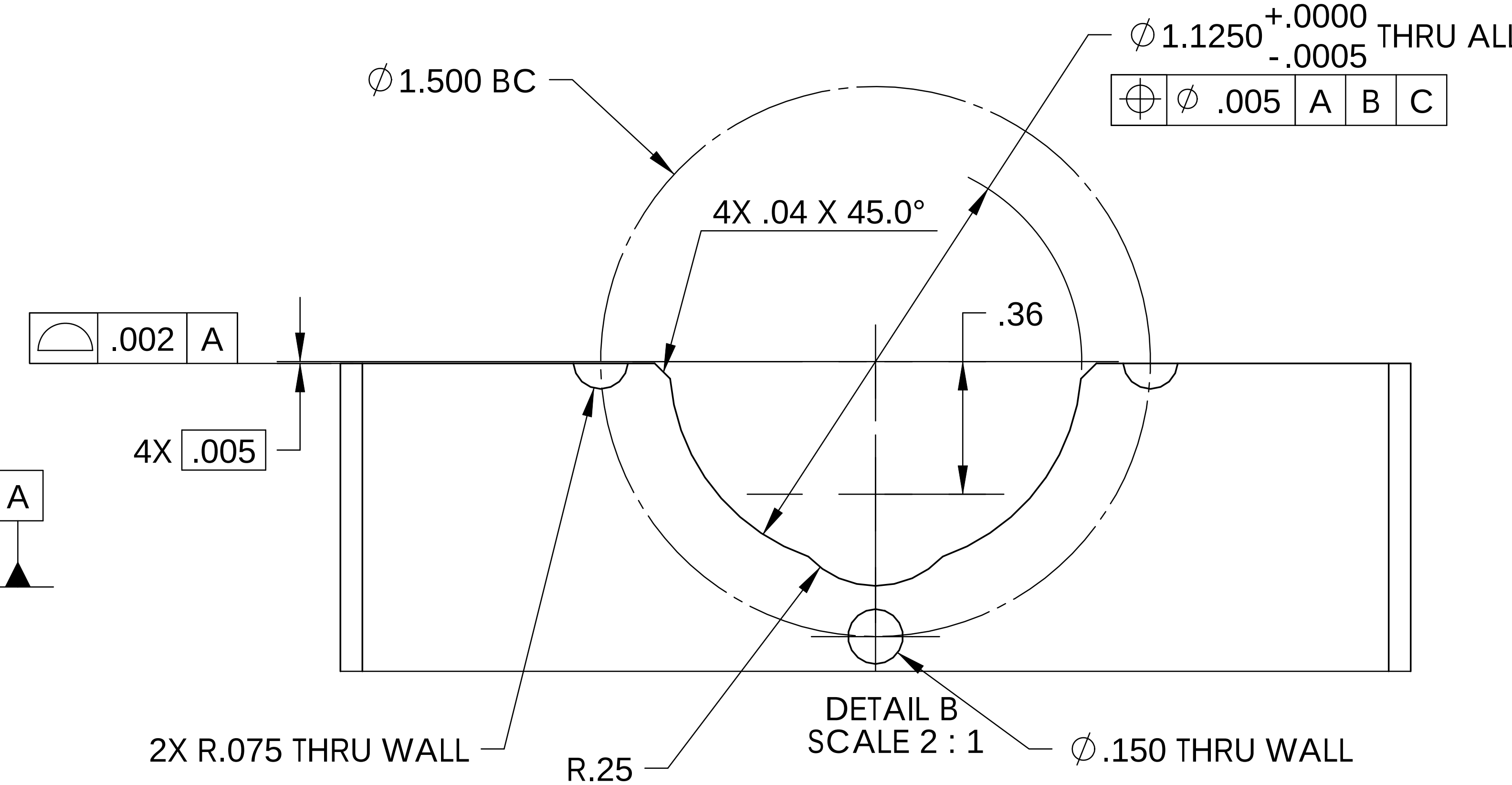
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 3.8 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. A TAPPED HOLE PITCH DIAMETER LIMIT OF H11 APPLIES.
10. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.









NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)	
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.
MATERIAL: 2024-T351 Al	FINISH: 63 µinch

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

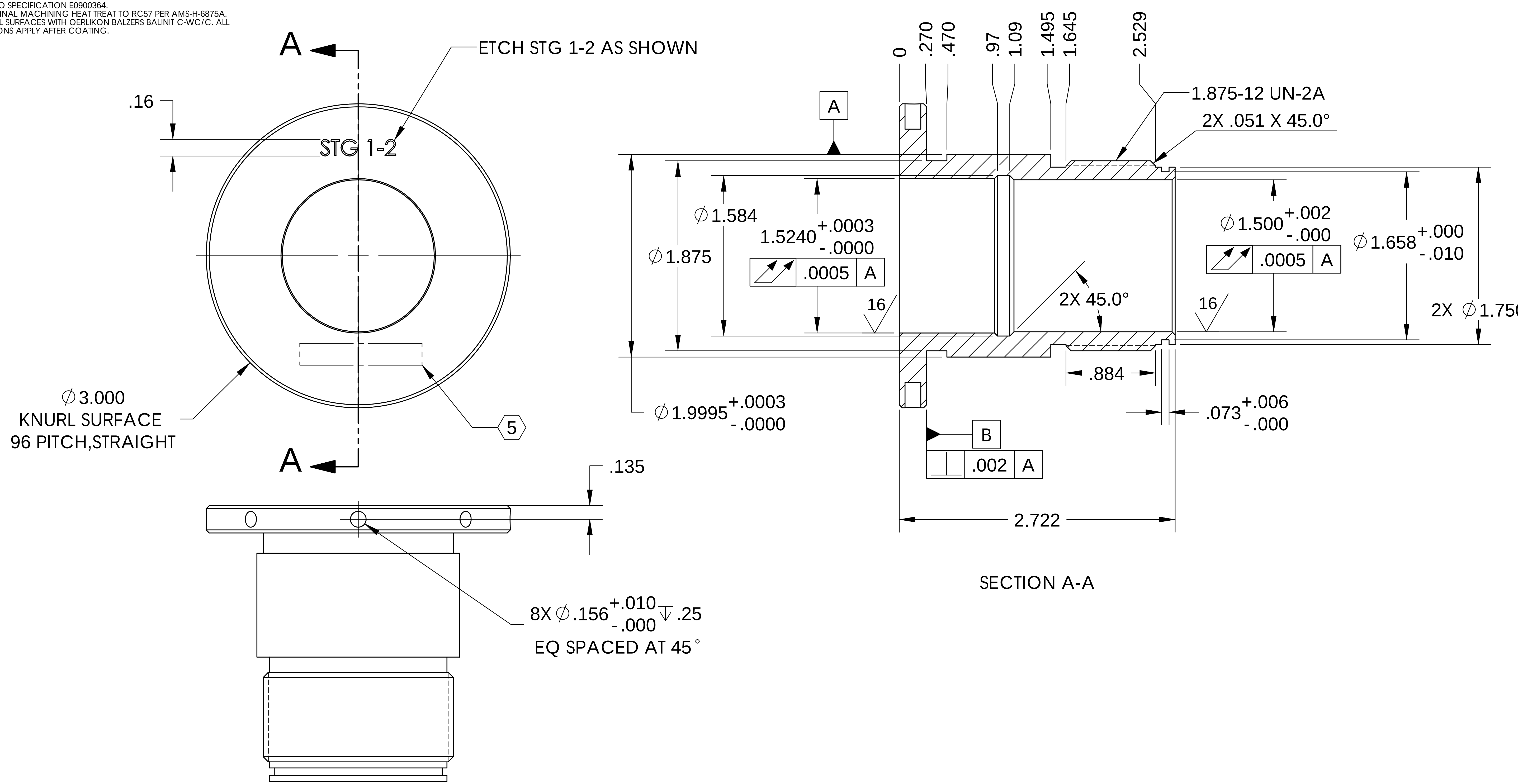
SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI			
NEXT ASSY: D1000855				
PART NAME	POST, STAGE 1-2 LOCKER, aLIGO BSC-ISI			
DESIGNER	A.STEIN	01 Mar. 2010	SIZE: B	DWG. NO.: D1000873
DRAFTER	M.HILLARD	01 Mar. 2010		REV.: v1
CHECKER	F.MATICHARD	01 Mar. 2010		
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:2	PROJECTION: SHEET 1 OF 1

D1000873 Post, Stage 1-2 Locker, aLIGO BSC-ISI, PART PDM REV: X-005, DRAWING PDM REV: X-003

NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.161 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. BEFORE FINAL MACHINING HEAT TREAT TO RC57 PER AMS-H-6875A.
10. COAT ALL SURFACES WITH OERLIKON BALZERS BALINIT C-WC/C. ALL DIMENSIONS APPLY AFTER COATING.

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)	
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.
	MATERIAL: AISI 440C PER AMS 5630 — FINISH: 63 µinch

LIGO — CALIFORNIA INSTITUTE OF TECHNOLOGY / MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SYSTEM: ADVANCED LIGO — SUB-SYSTEM: SEI

NEXT ASSY: D1000855

PART NAME: Sleeve, Stage 1-2 Locker, aLIGO BSC-ISI

DESIGNER	A.STEIN	01 Mar. 2010
DRAFTER	M.HILLARD	01 Mar. 2010
CHECKER	F.MATICHERD	01 Mar. 2010
APPROVAL	K.MASON	01 Mar. 2010

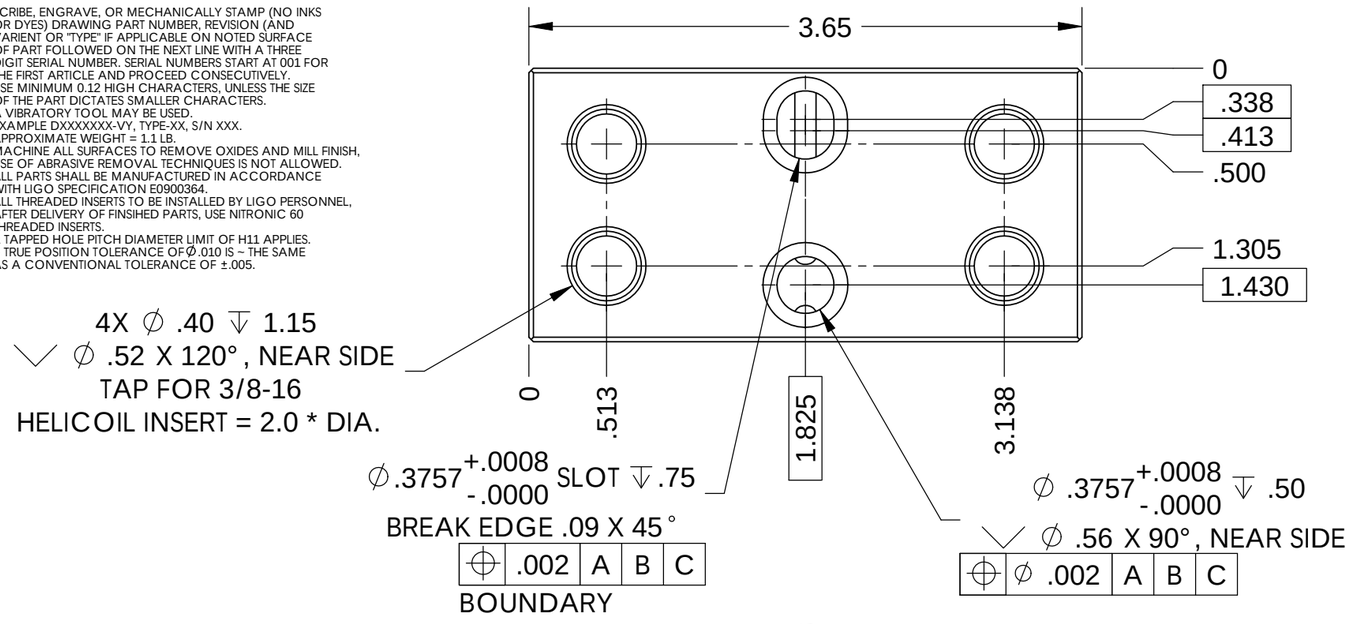
SIZE: B — DWG. NO.: D1000875 — REV.: v1

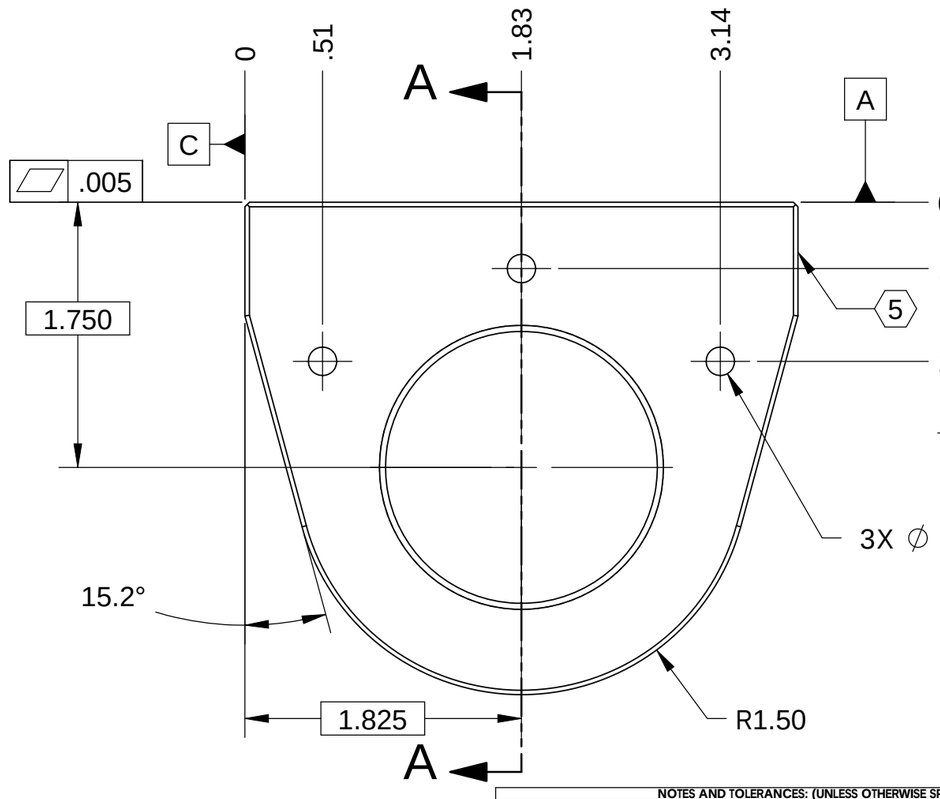
SCALE: 1:1 — PROJECTION: — SHEET 1 OF 1

REV.	DATE	DCN #	DRAWING TREE #
v1	01 Mar. 2010	E1000115	E1000025

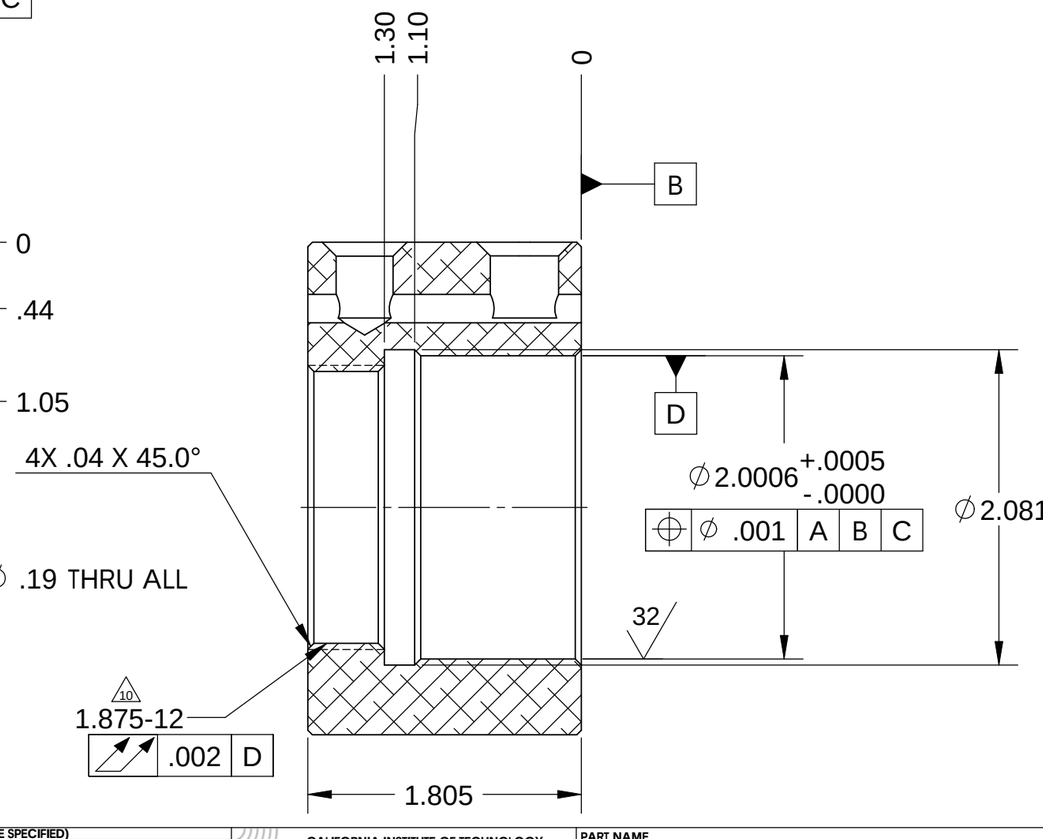
NOTES CONTINUED:

5. SCRIBE, ENGRAVE, OR MECHANICALLY STAMP (NO INKS OR DYES) DRAWING PART NUMBER, REVISION (AND VARIENT OR "TYPE" IF APPLICABLE ON NOTED SURFACE OF PART FOLLOWED ON THE NEXT LINE WITH A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST ARTICLE AND PROCEED CONSECUTIVELY. USE MINIMUM 0.12 HIGH CHARACTERS, UNLESS THE SIZE OF THE PART DICTATES SMALLER CHARACTERS. A VIBRATORY TOOL MAY BE USED. EXAMPLE DXXXXXXX-VY, TYPE-XX, S/N XXX.
6. APPROXIMATE WEIGHT = 1.1 LB.
7. MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH, USE OF ABRASIVE REMOVAL TECHNIQUES IS NOT ALLOWED.
8. ALL PARTS SHALL BE MANUFACTURED IN ACCORDANCE WITH LIGO SPECIFICATION E0900364.
9. ALL THREADED INSERTS TO BE INSTALLED BY LIGO PERSONNEL, AFTER DELIVERY OF FINSIHED PARTS, USE NITRONIC 60 THREADED INSERTS.
10. A TAPPED HOLE PITCH DIAMETER LIMIT OF H11 APPLIES.
11. A TRUE POSITION TOLERANCE OF Ø.010 IS ~ THE SAME AS A CONVENTIONAL TOLERANCE OF ±.005.





SECTION A-A



NOTES AND TOLERANCES: (UNLESS OTHERWISE SPECIFIED)			
DIMENSIONS ARE IN INCHES TOLERANCES: .XX ± .015 .XXX ± .005 ANGULAR ± .5°	1. INTERPRET DRAWING PER ASME Y14.5-1994. 2. REMOVE ALL SHARP EDGES, R.02 MIN. 3. DO NOT SCALE FROM DRAWING. 4. ALL MACHINING FLUIDS MUST BE FULLY SYNTHETIC, FULLY WATER SOLUBLE AND FREE OF SULFUR, SILICONE, AND CHLORINE.		
MATERIAL: 2024-T351 Al		FINISH: 63 µinch	

LIGO	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY		
SYSTEM: ADVANCED LIGO	SUB-SYSTEM: SEI		
NEXT ASSY: D1000854, D1000855			

PART NAME: HOUSING LOCKER SLEEVE, aLIGO BSC ISI					
DESIGNER	A.STEIN	01 Mar. 2010	SIZE: B	DWG. NO.: D1000908	REV.: v1
DRAFTER	M.HILLARD	01 Mar. 2010			
CHECKER	F.MATICHARD	01 Mar. 2010			
APPROVAL	K.MASON	01 Mar. 2010	SCALE: 1:1	PROJECTION:	SHEET 1 OF 1

D1000908 HOUSING LOCKER SLEEVE, aLIGO BSC ISI, PART PDM REV: X-005, DRAWING PDM REV: X-007