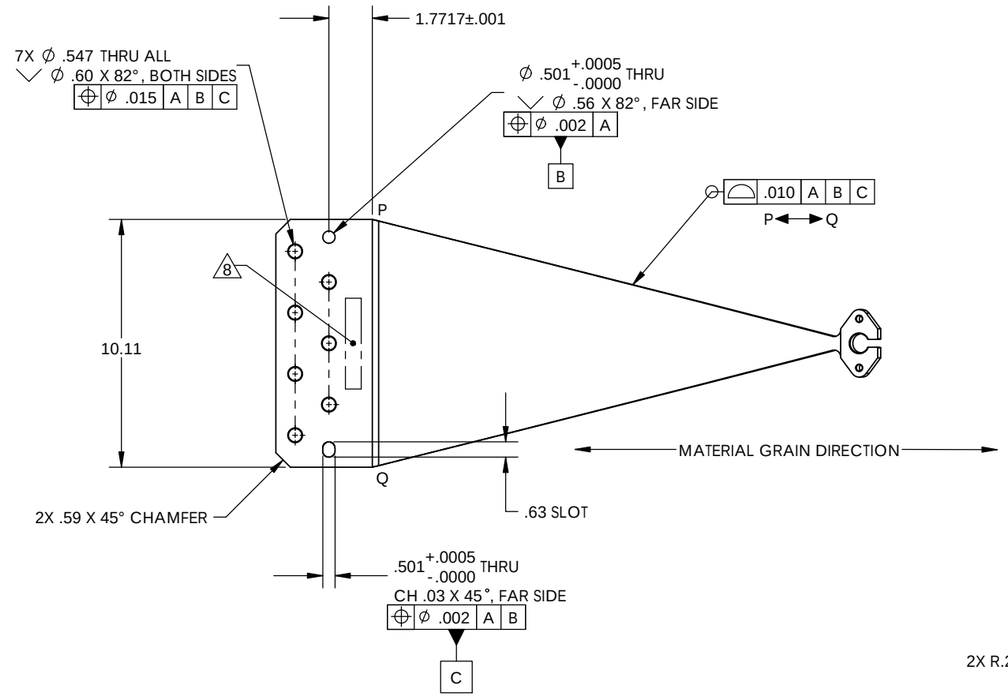
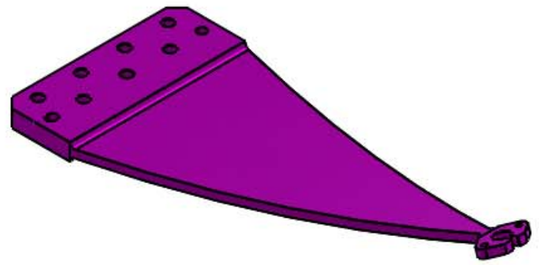
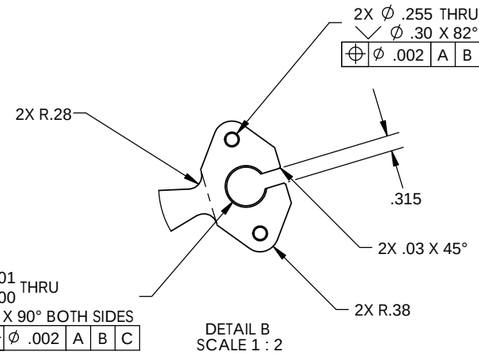
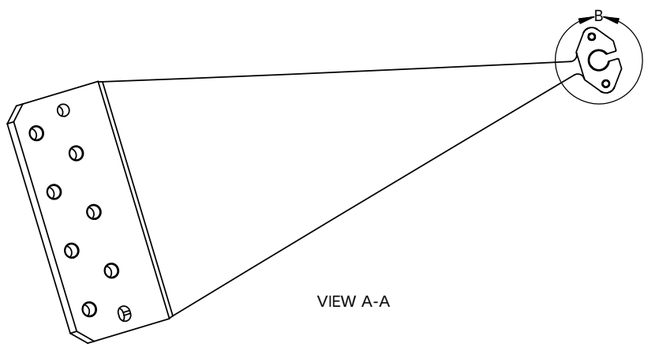
REVISION HISTORY				
REV	DATE	ECO	APPROVAL	DESCRIPTION
V1 / C	11 Jul 2007	1068	Dan Bryce	Release for Enhanced LIGO.
V2	20 Mar 2009		A. Stein	Release for Advanced LIGO. Added chamfer to bottom mounting surface. Added c'sinks.
V3	7 NOV 2018		KMASON	REMOVED NOTE 9 CALLING OUT NICKEL PLATING



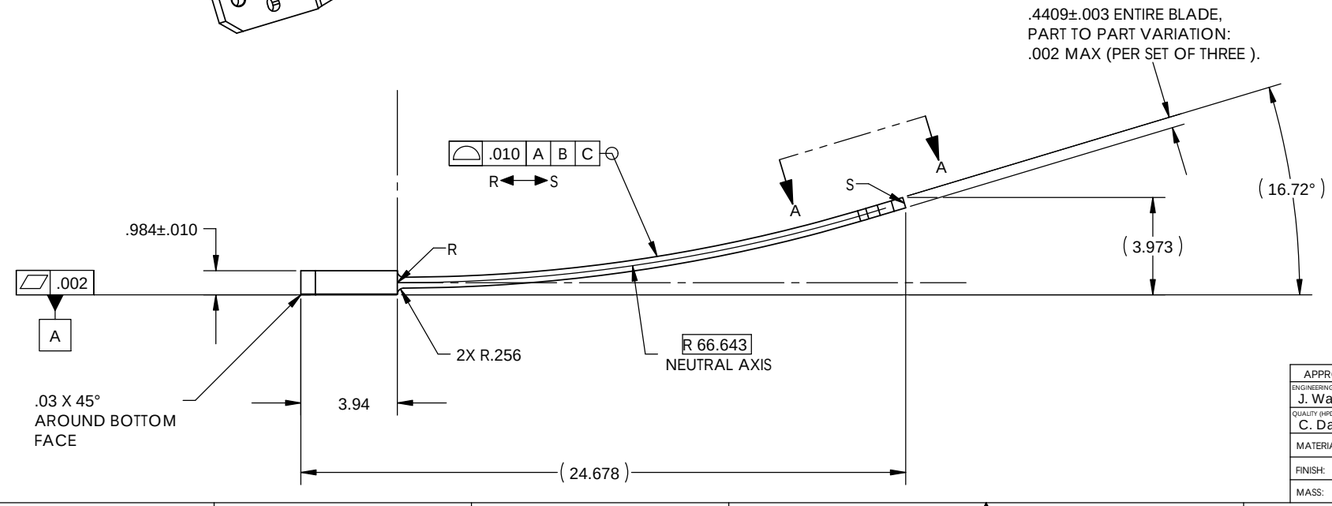




DETAIL B
SCALE 1 : 2



VIEW A-A



MACHINING NOTES:

1) MACHINE ALL SURFACES TO REMOVE OXIDES AND MILL FINISH. ABRASIVE REMOVAL TECHNIQUES (OTHER THAN DRESSED BLANCHARD GRINDING) ARE NOT ACCEPTABLE.

2) ALL MACHINING FLUIDS MUST BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE, AND SILICONE, SUCH AS CINCINNATI MILACRON CIMTECH 410.

3) THOROUGHLY CLEAN PART TO REMOVE ALL OIL, GREASE, DIRT, AND CHIPS.

4) MATERIAL GRAIN DIRECTION MUST BE ORIENTED AS SHOWN.

5) ALL SPRINGS FOR 1 HAM ISI (3 SPRINGS PER SYSTEM) MUST BE MACHINED FROM ONE BLOCK OF MARAGING 300 (MIL-S-46850D). BEGIN WITH MATERIAL IN SOLUTION ANNEALED STATE. INTERMEDIATE MACHINING AND STRAIN RELIEF STEPS ARE ACCEPTABLE.

6) ROUGH MACHINE, THEN HEAT TREAT AS FOLLOWS (INERT ATMOSPHERE REQUIRED):

- HEAT TO 480°C, SOAK FOR 40 MINUTES
- AGE FOR 4-6 HOURS
- AIR COOL TO ROOM TEMP

FINAL HARDNESS: 50-55 HRC.

7) MACHINE TO FINAL DIMENSIONS.

8) WHERE INDICATED, MECHANICALLY SCRIBE, STAMP, OR ENGRAVE THE FOLLOWING INFORMATION AS SHOWN BELOW: **PART NUMBER-REVISION** (AND **TYPE** IF INDICATED), FOLLOWED ON THE NEXT LINE WITH A UNIQUE 3-DIGIT **SERIAL NUMBER** STARTING AT 001 FOR THE FIRST PART AND INCREMENTING THEREAFTER. USE 0.38" TALL CHARACTERS UNLESS PART SIZE DICTATES SMALLER.

D071100-V2
S/N - ###

POST-MACHINING NOTES:

P1) CLEAN TO LIGO STANDARDS, CLASS A. BAKING PROCESSES MUST NOT ALTER MECHANICAL PROPERTIES.

APPROVALS	DATE
ENGINEERING (HPD): J. Waterman	6/15/2007
QUALITY (HPD): C. Danaher	6/15/2007
MATERIAL: **See Notes**	
FINISH: **See Notes**	
MASS: **23.1 lbs**	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES:
.XX ±.015 .XXX ±.005
ANG TOL: ± 1° SURFACE ROUGHNESS: 63
REMOVE ALL SHARP EDGES, LEAVE .005 X 45° MIN CHAMFER, OR .005 MIN RADIUS.
THIS PRINT & THE EMBEDDED CAD MODEL ARE THE DOCUMENTATION OF RECORD. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS IN THE MODEL ARE BASIC, WITH TOLERANCES GIVEN BY: .010 A B C

ORIGINAL DESIGN BY: **High Precision Devices**
1668 Valtec Lane, Suite C, Boulder, Colorado 80301
Phone: (303) 447-2558 Fax: (303) 447-2548 Web Site: www.hpd-online.com
MODIFIED BY: LIGO

DESCRIPTION: **Spring**
P/N: **D071100** CONFIG: **-**
CAD FILE NAME: D071100_Spring
PROJECT: HAM ISI, Advanced LIGO
SIZE **C** SCALE: **1:4** DRAWN BY: **Jonas Waterman (HPD)** DATE PRINTED: **11/7/2018** SHEET **1** OF **1** REV **V3**