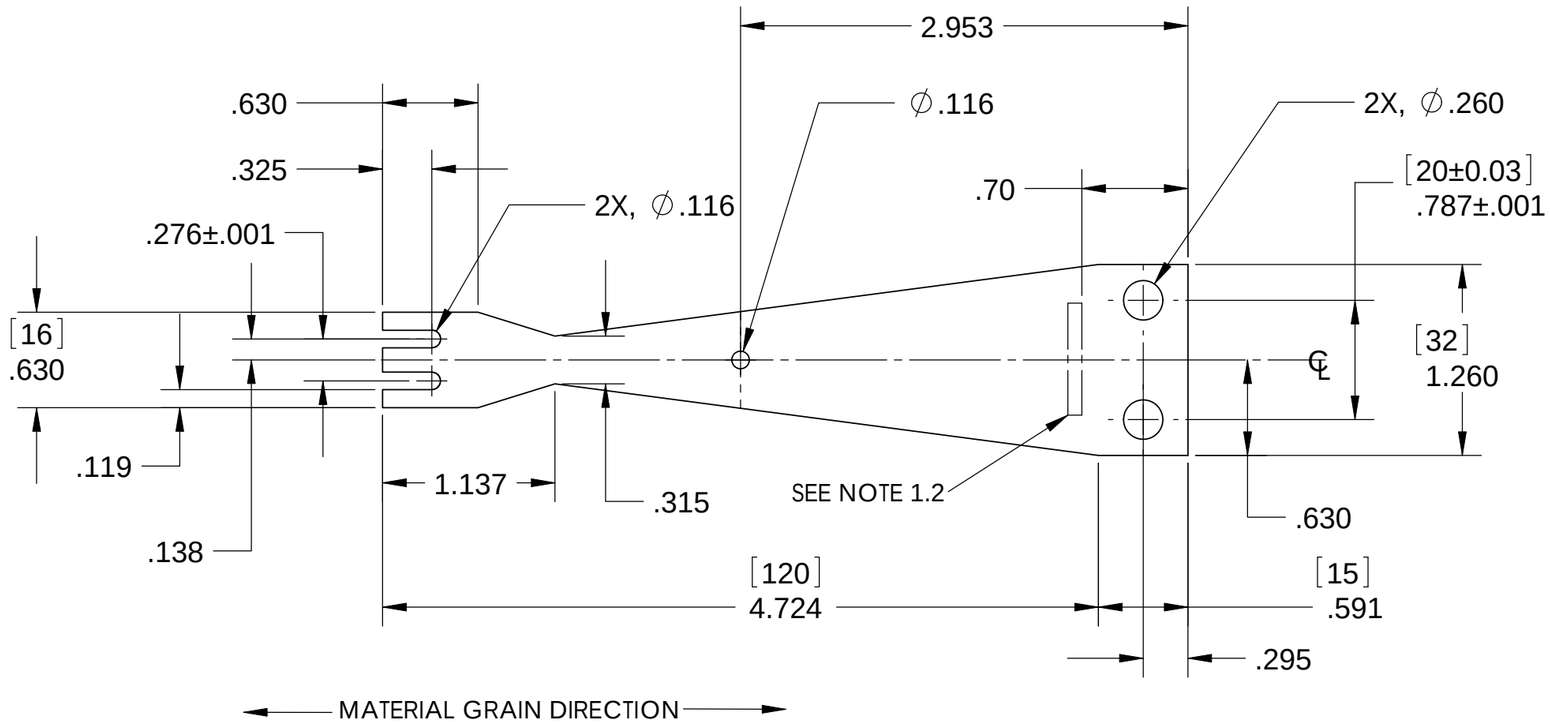
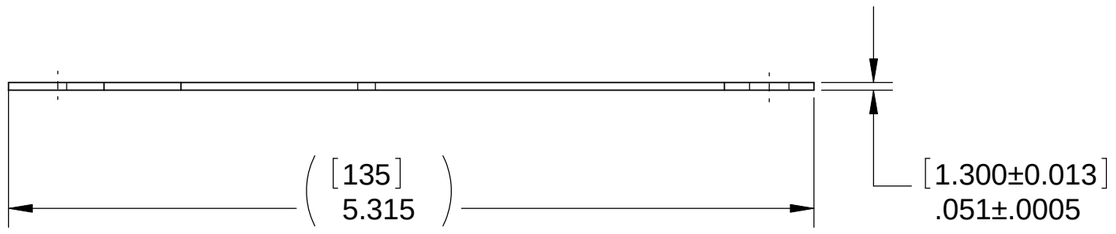
| REV. | DATE | DCN # | DRAWING TREE # |
|---|---|---|---|
| 04 | 04 NOV 03 | BLADE TIP HOLES CONVERTED TO SLOTS FOR EASE OF ASSEMBLY. | |
| 08 | 10 JAN 08 | UPDATED PER LATEST COMPUTATIONS | |
| A | 1 FEB 08 | RELEASED FOR RFQ | |
| B | 17 APR 08 | E080169-00 | |
| C | 24 APR 08 | E080179-00 | |
| v1 | 01 APR 09 | E0900101-v1 | |




VIEWS PRIOR TO FORMING

**PARTS LIST**

**MANUFACTURING NOTES: (UNLESS OTHERWISE SPECIFIED)**

1.1 FABRICATE PER BLADE PROCESS SPECIFICATION, LIGO-E0900023-v4

1.2 ENGRAVE OR MECHANICALLY STAMP (NO DYES OR INKS) DRAWING PART NUMBER AND REVISION IN NOTED LOCATION 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 0.07" HIGH CHARACTERS.

EXAMPLE:
D020615-v1 SN 001

A VIBRATORY TOOL MAY BE USED.

1.3 REMOVE ALL SHARP EDGES, R.02 MIN.

**OTHER NOTES (FOR INTERNAL USE)**

2.1 SHAPE FACTOR FOR LOWER BLADE = 1.55 AND YOUNGS MODULUS USED IS 1.86e11 Pa.
2.2 LOAD ON LOWER BLADE (FLAT) = 6.09 KG AND UNCOUPLED LOAD = 3.0525 kg. (MIDDLE & BOTTOM MASSES NOT IDENTICAL.)
2.3 PREDICTED UNCOUPLED SUSPENSION FREQUENCY = 3.18 Hz
2.4 PREDICTED FIRST BLADE INTERNAL FREQUENCY = 340 Hz
2.5 MAXIMUM STRESS = 795 MPa
2.6 MID TO MID DEFLECTION = 48.9 mm
2.7 LENGTH IS 120mm (135mm INCLUDING CLAMPING LENGTH), THICKNESS is 1.3mm AND WIDTH IS 32mm.
2.8 RADIUS IS 138.2mm CALCULATED USING BLADE EQUATIONS.
2.9 IN THE CURVED SKETCH IN SW PART ADD MID TO MID DEFLECTION AND ADJUST RADIUS UNTIL ATTAIN DESIRED LENGTH.
2.10 IN SW PART, BLADE IS DRAWN WITH SHEET METAL AND EXTRUDED VERTICALLY DOWNWARDS.
2.11 ON SW DRAWING, SOLIDWORKS RADIUS VALUE IS THE VALUE MEASURED DIRECT FROM SW USING THE DIMENSION TOOL.

DUAL DIMENSIONS [mm] INCHES

TOLERANCES FOR INCHES:
.XX ± 0.01
.XXX ± 0.005
ANGULAR ± 0.5°

**MATERIAL**
MARAGING STEEL C250

**FINISH**

| | NAME | DATE |
|---|---|---|
| DRAWN | B.KIRSNER | 18 JAN 2008 |
| CHECKED | CIT | 18 JAN 2008 |
| UPDATED | B. MOORE | 20 MAR 2009 |
| CHECKED | N. ROBERTSON D. COYNE R. LOSE | 30 MAR 2009 |

CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**SYSTEM** ADVANCED LIGO
**SUB-SYSTEM** RM SUS OVERALL ASSY
**NEXT ASSY** HLTS
**PART NAME** RM LOWER BLADE

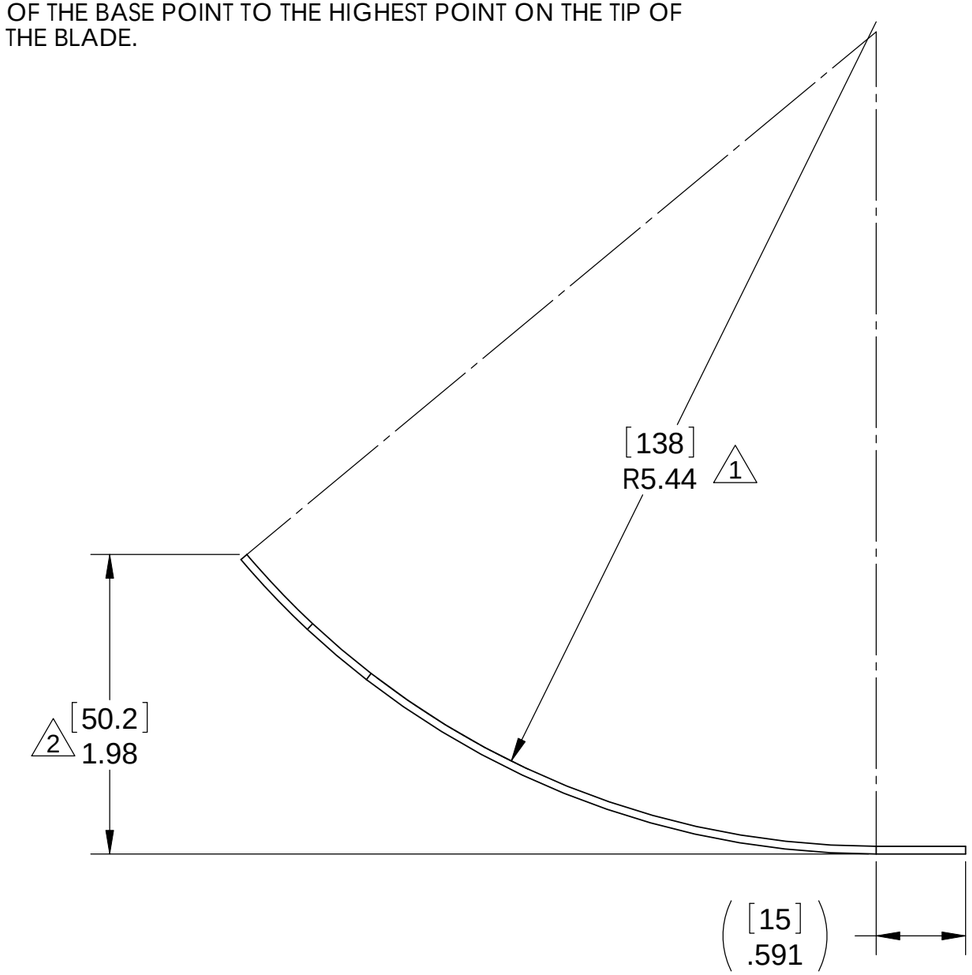
**SIZE** B | **DWG. NO.** D020615 | **REV.** v1

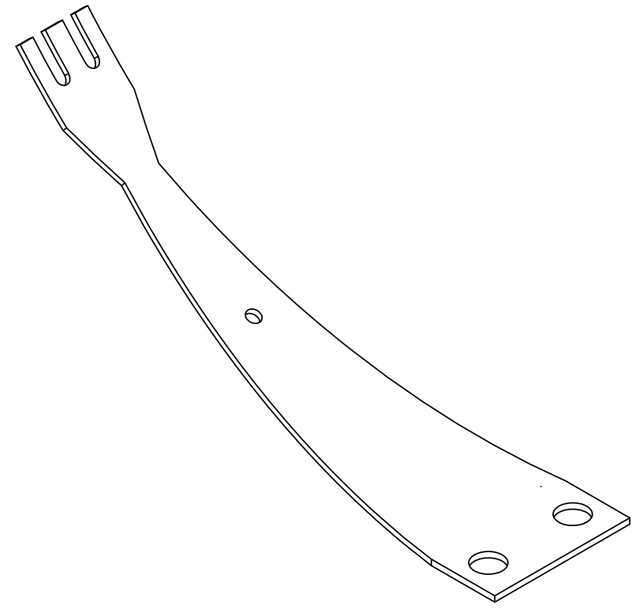
**SCALE:** NTS | **PROJECTION:** | SHEET 1 OF 2

FILE NAME/LOCATION:

| REV. | DATE | DCN # | DRAWING TREE # |
|---|---|---|---|
| v1 | | SEE SHEET 1 | |

1. THE RADIUS OF CURVATURE IS THE INSIDE RADIUS.
2. THE OVERALL DEFLECTION IS MEASURED FROM THE BOTTOM OF THE BASE POINT TO THE HIGHEST POINT ON THE TIP OF THE BLADE.



VIEWS AFTER FORMING AND HEAT TREATMENT

**PARTS LIST**

DUAL DIMENSIONS [mm] INCHES

TOLERANCES FOR INCHES:
.XX ± 0.01
.XXX ± 0.005
ANGULAR ± 0.5°

**MATERIAL** MARAGING STEEL C250

**FINISH**

| | NAME | DATE |
|---|---|---|
| DRAWN | B.KIRSNER | 18 JAN 2008 |
| CHECKED | CIT | 18 JAN 2008 |
| UPDATED | B. MOORE | 20 MAR 2009 |
| CHECKED | N. ROBERTSON D. COYNE L. WARE | 30 MAR 2009 |

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**SYSTEM** ADVANCED LIGO

**SUB-SYSTEM** RM SUS OVERALL ASSY

**NEXT ASSY** HLTS

**PART NAME** RM LOWER BLADE

| SIZE | DWG. NO. | REV. |
|---|---|---|
| B | D020615 | v1 |

**SCALE:** NTS **PROJECTION:** SHEET 2 OF 2

FILE NAME/LOCATION: