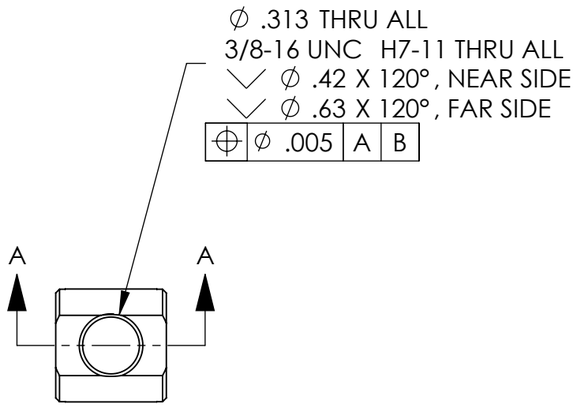
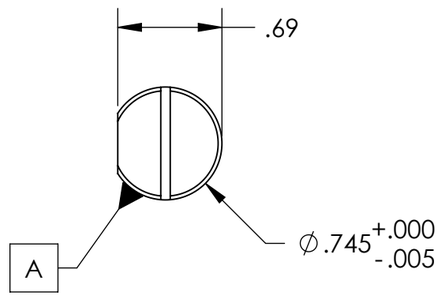
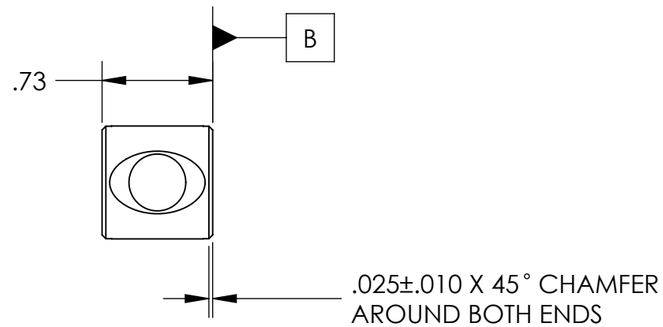
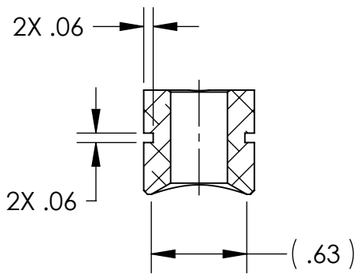
| REVISION HISTORY | | | | |
|---|---|---|---|---|
| REV | DATE | ECO | APPROVAL | DESCRIPTION |
| V1 / C | 3 Jul 2007 | 1067 | Daniel Bryce | Release for Enhanced LIGO. |
| V2 | 10 Mar 2009 | | A. Stein | Release for Advanced LIGO. Eliminated 6061 w/ Heli-Coil configurations. |
| | | | | |




SECTION 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.

POST-MACHINING NOTES:

P1) CLEAN TO LIGO STANDARDS, CLASS A.

# LIGO Type 00

| APPROVALS | DATE |
|---|---|
| ENGINEERING (HPD): D. Senders | 6/15/2007 |
| QUALITY (HPD): C. Danaher | 6/15/2007 |
| MATERIAL: **2024-T351** | |
| FINISH: **None** | |
| MASS: **0.02 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

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: **Barrel Nut**

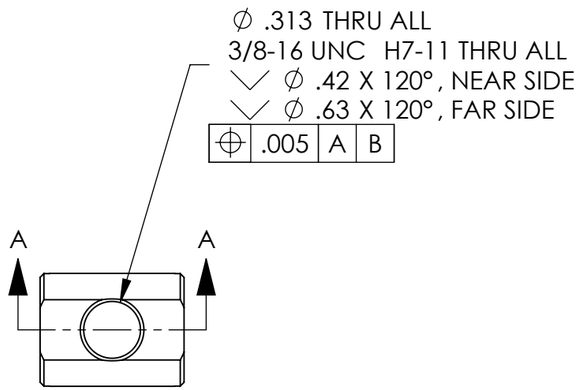
P/N: **D071250** CONFIG: **3/8-16 x .75L**

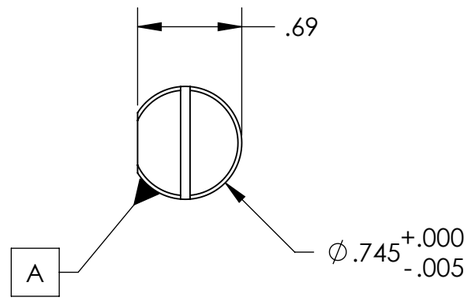
CAD FILE NAME: D071250_Barrel_Nut

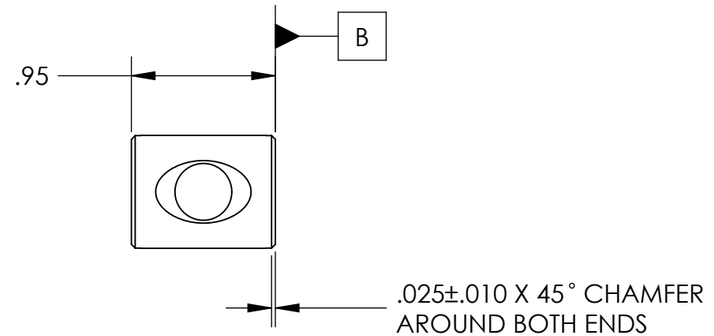
PROJECT: HAM ISI, Advanced LIGO

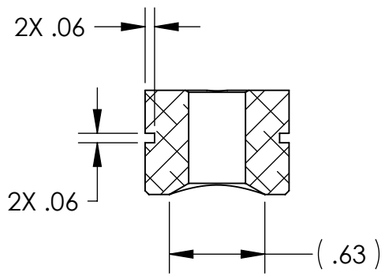
| SIZE | SCALE: | DRAWN BY: | REV |
|---|---|---|---|
| **B** | **1:1** | **Dave Senders (HPD)** | **V2** |
| | SHEET **1** OF **3** | DATE PRINTED: **3/25/2009** | |

Model: #D071250 Rev: V2 Dwg: #D071250 Rev: X-006

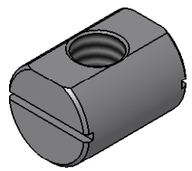



SECTION A-A



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.

POST-MACHINING NOTES:

P1) CLEAN TO LIGO STANDARDS, CLASS A.

# LIGO Type 01

| APPROVALS | DATE |
|---|---|
| ENGINEERING (HPD): D. Senders | 6/15/2007 |
| QUALITY (HPD): C. Danaher | 6/15/2007 |
| MATERIAL: **2024-T351** | |
| FINISH: **None** | |
| MASS: **0.03 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

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: **Barrel Nut**

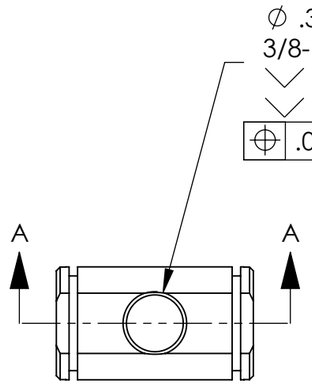
P/N: **D071250** CONFIG: **3/8-16 x 1.0L**

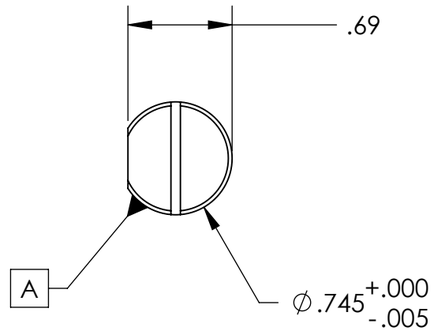
CAD FILE NAME: D071250_Barrel_Nut

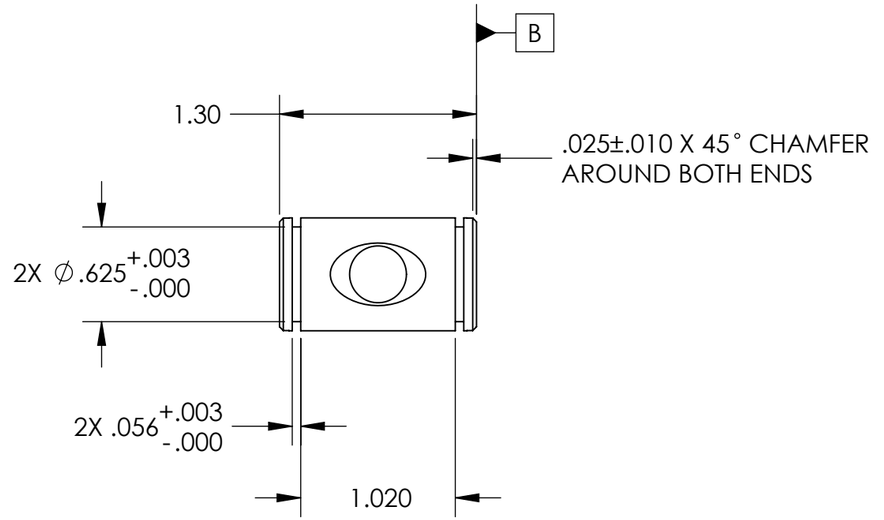
PROJECT: HAM ISI, Advanced LIGO

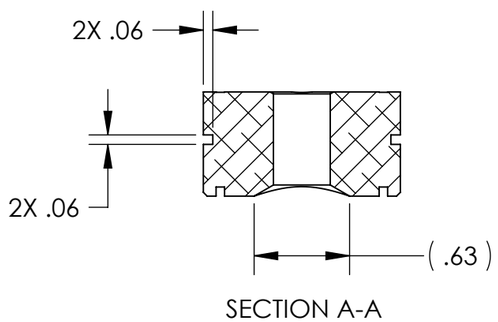
| SIZE | SCALE: | DRAWN BY: | REV |
|---|---|---|---|
| **B** | **1:1** | **Dave Senders (HPD)** | **V2** |
| | SHEET **2** OF **3** | DATE PRINTED: **3/25/2009** | |

Model: #D071250 Rev: V2 Dwg: #D071250 Rev: X-006

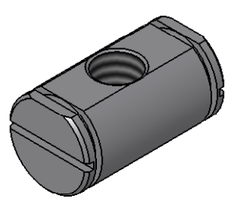



SECTION A-A



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.

POST-MACHINING NOTES:

P1) CLEAN TO LIGO STANDARDS, CLASS A.

# LIGO Type 02

| APPROVALS | DATE |
|---|---|
| ENGINEERING (HPD): D. Senders | 6/15/2007 |
| QUALITY (HPD): C. Danaher | 6/15/2007 |
| MATERIAL: **2024-T351** | |
| FINISH: **None** | |
| MASS: **0.05 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

ORIGINAL DESIGN BY:
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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: **Barrel Nut**

P/N: **D071250** CONFIG: **3/8-16 x 1.3L Ret.**

CAD FILE NAME: D071250_Barrel_Nut

PROJECT: HAM ISI, Advanced LIGO

| SIZE | SCALE | DRAWN BY | REV |
|---|---|---|---|
| **B** | **1:1** | **Dave Senders (HPD)** | **V2** |

SHEET **3** OF **3** DATE PRINTED: **3/25/2009**

Model: #D071250 Rev: V2 Dwg: #D071250 Rev: X-006