



*LIGO Laboratory / LIGO Scientific Collaboration*

E1000390-v2

*LIGO*

12 Apr. 2011

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Small Actuator Sensor Assembly Procedure

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Distribution of this document:  
Advanced LIGO Project

This is an internal working note  
of the LIGO Laboratory.

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**Clean room standards**

For a clean assembly all LIGO standards should be followed, as presented in the latest version of the **LIGO Contamination Control Plan (E0900047)**. Clean room garb including UHV gloves should be worn when working with parts.

All tools that come in contact with assembly should be cleaned to class B standards.

Assembly will be done under a portable clean room. Any time a part of the assembly is not covered by the portable clean room or not being actively worked on it should be covered with appropriate clean covers. (C3 polyester or equivalent).

**Torque Values for Bolts:**

Standard torque values according to manufacturer standards for screw material should be used.

**Parts prep work: alignment pins and helicoils**

To facilitate assembly, parts requiring pins may to be prepared before assembly and will be listed to allow preliminary preparation of the parts, after cleaning and before starting general assembly. See E1000402 Current Rev.

Helicoils:

1. D0902251
2. D0902252

Dowels:

1. D0902250
2. D0902249
3. D0902251

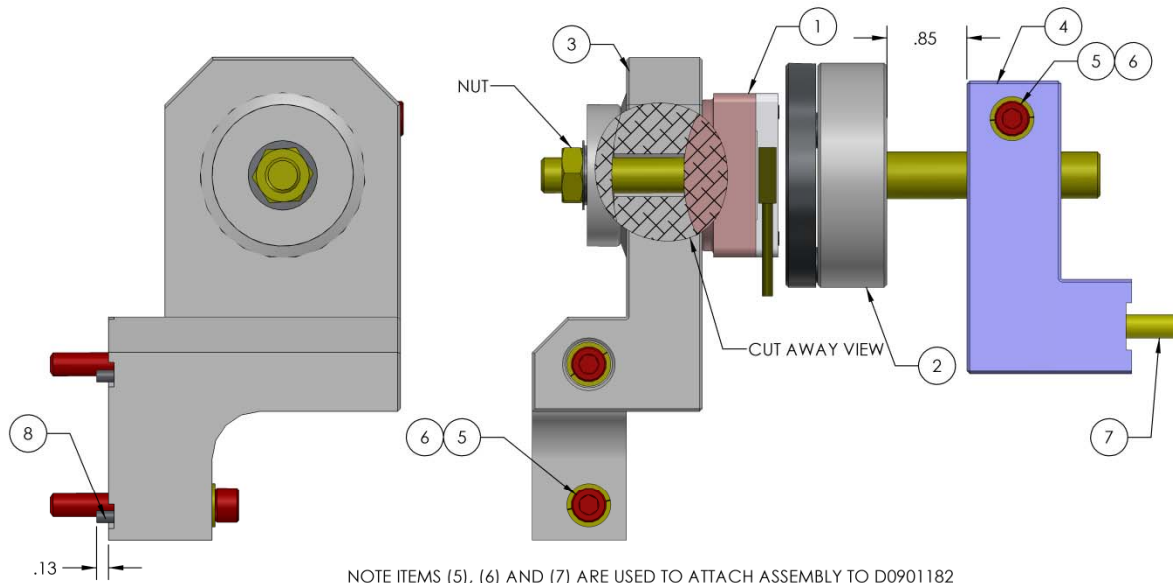
**Weight**

Approximated weights are provided in this assembly procedure as an indication for safety purpose.

See document:

E1000402 Part Prepreparation

## Assembly for D0902529 Stage 1-2 Horizontal Sensor Assembly



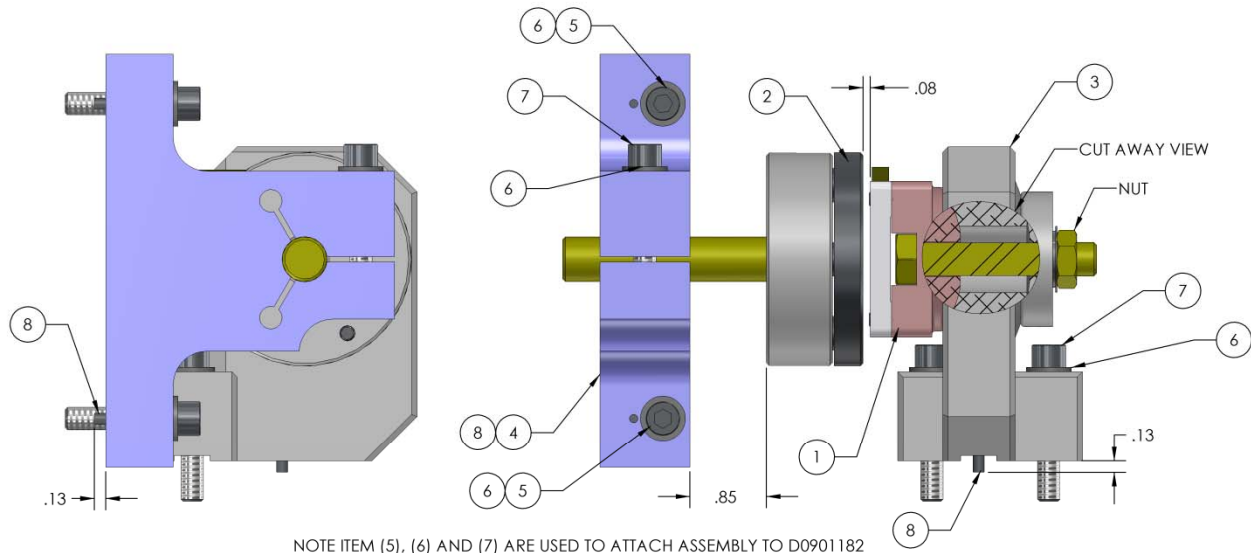
8	McMASTER_90145A481	DOWEL PIN .125 DIA X .43 LG.	18-8 SSSL	2
7	HOLOKROME_78070	Screw shcs 1/4-20 UNC-3A X 2" lg.	300 SSSL	2
6	UC_COMPONENTS_WFV-25	Vented Washer, .255 ID X .468 OD X .032 THK #1/4	18-8 SSSL	3
5	Holokrome_78068	SCREW, SHCS 1/4-20 x 1.75 lg.	304, 316 OR 302 SSSL	3
4	D0902252	STAGE 1-2 HORIZONTAL SENSOR TARGET MOUNT	6061-T6 Al	1
3	D0902250	STAGE 1-2, HORIZONTAL DISPLACEMENT SENSOR MOUNT	6061-T6 Al	1
2	D1000468	POSITION SENSOR TARGET ASSEMBLY, aLIGO BSC ISI	SEE BOM	1
1	D1000467	POSITION SENSOR ASSEMBLY, aLIGO BSC ISI	SEE BOM	1
ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	REQ

### Reference D0902529

Note the 2 halves of this assembly are independent of each other and may be assembled as such.

1. Press Items (8) into Item (3) (D0902250) Displacement Sensor Mount to dimension shown Qty 2.
2. Remove nut and washers from Item (1) (D1000467) Position Sensor Assy place Item (3) between the two Spherical halves as shown in cut away view, place nut and washers back as previously supplied tighten nut.
3. Insert Item (2) (D1000468) Position Sensor Target Assy into Item (4) (D0902250) Sensor Target Mount as shown Install Item (6) vented washer and Item (5) screw as shown, tighten screw to secure.

## Assembly for D0902534 Stage 1-2 Vertical Sensor Assembly



8	McMASTER_90145A481	DOWEL PIN .125 DIA X .43 LG.	18-8 SSSL	4
7	HOLOKROME_78066	Screw 1/4-20 x 1.5 lg SHCS	18-8 SS	3
6	McMASTER_90313A203	WASHER FLAT .26 ID X .50 OD X .05 THK	18-8 SSSL	5
5	HOLOKROME_78064	Screw 1/4-20 x 1.25" SHCS	18-8 SS	2
4	D0902251	STAGE 1-2, VERTICAL SENSOR TARGET MOUNT	6061-T6 Al	1
3	D0902249	STAGE 1-2, VERTICAL DISPLACEMENT SENSOR MOUNT	6061-T6 Al	1
2	D1000468	POSITION SENSOR TARGET ASSEMBLY, αLIGO BSC ISI	SEE BOM	1
1	D1000467	POSITION SENSOR ASSEMBLY, αLIGO BSC ISI	SEE BOM	1
ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	REQ

### Reference D0902534

Note the 2 halves of this assembly are independent of each other and may be assembled as such.

1. Press Items (8) into Item (3) (D0902249) Displacement Sensor Mount to dimension shown Qty 2. Press Items (8) into Item (4) (D0902251) Sensor Target Mount to dimension shown Qty 2.
2. Remove nut and washers from Item (1) (D1000467) Position Sensor Assy place Item (3) between the two Spherical halves as shown in cut away view, place nut and washers back as previously supplied tighten nut.
3. Insert Item (2) (D1000468) Position Sensor Target Assy into Item (4) (D0902251) Sensor Target Mount as shown Install Item (6) vented washer and Item (7) screw as shown, tighten screw to secure.