

INTRALINK NAME: D080403_ASS_PRO

REV.	DATE	DCN #	DRAWING TREE #

STEP	DESCRIPTION	PART#	QTY	TIME
1		D080430	1	
2	ADD WIRE THREAD INSERTS INTO BASE PLATE.	1-4,20X1-50_UMC.THREAD.INSERT	19	
		3-8,16X10_UMC.THREAD.INSERT	4	
3	ADD WIRE THREAD INSERTS INTO BOTTOM OF BASE	1-4,20X1-50_UMC.THREAD.INSERT	4	
		1-4,20X10_UMC.THREAD.INSERT	8	
4	ADD WIRE THREAD INSERTS INTO LH TOP PLATE	1-4,20X1-50_UMC.THREAD.INSERT	16	
		D080411	2	
5	ADD THREAD INSERTS INTO PITCH ADJUSTER BLOCK	1-4,20X1-50_UMC.THREAD.INSERT	4	
		1-4,20X10_UMC.THREAD.INSERT	1	
		D080398	1	
6	ADD PITCH ADJUSTER COMPONENTS TO BASE PLATE	1-4,20_UMC,1-001INCH	4	
		1-4,20_UMC,2-001INCH	4	
		1-4,20_UMC,X,0-100_GRUBSCREW	1	
		D080359-100,0	4	
		D080405	1	
7	ADD THREAD INSERTS INTO WIRE CLAMP	1-4,20X10_UMC.THREAD.INSERT	4	
		D080420	1	
8	ADD THREAD INSERTS INTO BASE STIFFENER	1-4,20X1-50_UMC.THREAD.INSERT	5	
		D080406	1	
9	ADD BASE PLATE STIFFENERS AND WIRE CLAMPS.	1-4,20_UMC,1-001INCH	10	
		1-4,20_UMC,2-001INCH	2	
		1-4,20_UMC,2-001INCH,ROUND	2	
		D080406	1	
		D080420	1	
10	ADD THREAD INSERTS INTO TOP MASS SPACER	1-4,20X1-50_UMC.THREAD.INSERT	2	
		1-4,20X10_UMC.THREAD.INSERT	2	
		D080397	1	
11	ADD TOP MASS SPACERS.	1-4,20_UMC,1-001INCH	8	
		D080397	3	
12	ADD BLADE TIP Z POSITION ADJUSTER	D080414	2	
13	ADD THREAD INSERTS INTO BLADE ADJUSTER	1-4,20X1-50_UMC.THREAD.INSERT	2	
		3-8,16X1-50_UMC.THREAD.INSERT	2	
		D080415	1	
14	ADD BLADES AND CLAMPS	1-4,20_UMC,2-001INCH,ROUND	4	
		3-8,16_UMC,1-25INCH	4	
		3-8,16_UMC,2-25INCH	4	
		3-8,SPHERICAL,WASHER	4	
		D080236	2	
		D080404-000	2	
		D080415	1	
15	STRAIGHTEN FIRST BLADE	D080236_FLAT	1	
		SURFACE_TABLE	1	
16	ADD THREAD INSERT INTO STOP BRIDGE	1-4,20X1-50_UMC.THREAD.INSERT	1	
		D080399	1	
17	ADD STOP BRIDGE	1-4,20_UMC,1-001INCH	2	
		1-4,20_UMC,2-001INCH,ROUND	1	
		D080236_FLAT	1	

18	ADD ADDITIONAL BLADE CLAMPS	1-4,20_UMC,1-001INCH	4	
		1-4,20_UMC,2-001INCH,ROUND	3	
		D080399	2	
19	ADD TOP PLATES	1-4,20_UMC,1-001INCH	8	
20	ADD TOP PITCH ADJUSTER	1-4,20_UMC,1-001INCH	4	
		1-4,20_UMC,2-001INCH	4	
		1-4,20_UMC,X,0-100_GRUBSCREW	1	
		D080359-100,0	4	
		D080398	1	
		D080405	1	
21	ADD THREAD INSERT INTO ECD MAGNET MOUNT PLATE	1-4,20X10_UMC.THREAD.INSERT	1	
		D080408	1	
22	ADD THREAD INSERT INTO OSEM AND ECD UNIT BACKBONE	1-4,20X10_UMC.THREAD.INSERT	1	
		D080407	1	
		D080400	1	
23	ASSEMBLE BACKBONE	D080400	1	
		D080401	8	
		D080407	1	
		D080408	2	
		D080413	2	
		D080418	1	
		TD-1084-231	9	
24	ADD ALL 4 ECD AND OSEM UNITS AND END FLAG UNIT	1-4,20_UMC,1-001INCH	8	
		D080409	4	
		D080401	24	
		D080407	2	
		D080408	5	
		D080413	6	
		D080417	1	
		D080418	4	
		TD-1084-231	28	
25	ADD THREAD INSERT INTO OSEM BRACKET	1-4,20X1-50_UMC.THREAD.INSERT	1	
		D080412	1	
26	ADD FINAL OSEM MAGNET FLAG ASSEMBLY	1-4,20_UMC,1-001INCH	3	
		D080416	1	
		D080417	1	
27	ADD ADDITIONAL MASS / SUPPORT MEMBER	1-4,20_UMC,1-001INCH	4	
		D080421	2	

NOTES: (UNLESS OTHERWISE SPECIFIED)

- REMOVE ALL SHARP EDGES, R.02 MIN.
- DO NOT SCALE FROM DRAWING.
- ALL MACHINING FLUIDS SHALL BE WATER SOLUBLE AND FREE OF SULFUR, CHLORINE AND SILICONE, SUCH AS CINCINNATI MELACROM'S CINTECH 410 (STAINLESS STEEL)
- SCRIBE, ENGRAVE OR STAMP DRAWING PART NUMBER ON NOTED SURFACE OF PART AND A THREE DIGIT SERIAL NUMBER. SERIAL NUMBERS START AT 001 FOR THE FIRST PART AND PROCEED CONSECUTIVELY. USE .07" HIGH CHARACTERS. EXAMPLE: 000105-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN mm (INCHES)
TOLERANCES:
X, Y, Z ± .001 (INCHES)
ANGULAR ±

MATERIAL: _____
FINISH: _____
W/GR (initial) Ra = _____

DRAWN	NAME	DATE
M BALOWIN		

CHECKED	DATE

APPROVED	DATE

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY
FOR, GLASSBORO UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLIATION LABORATORIES

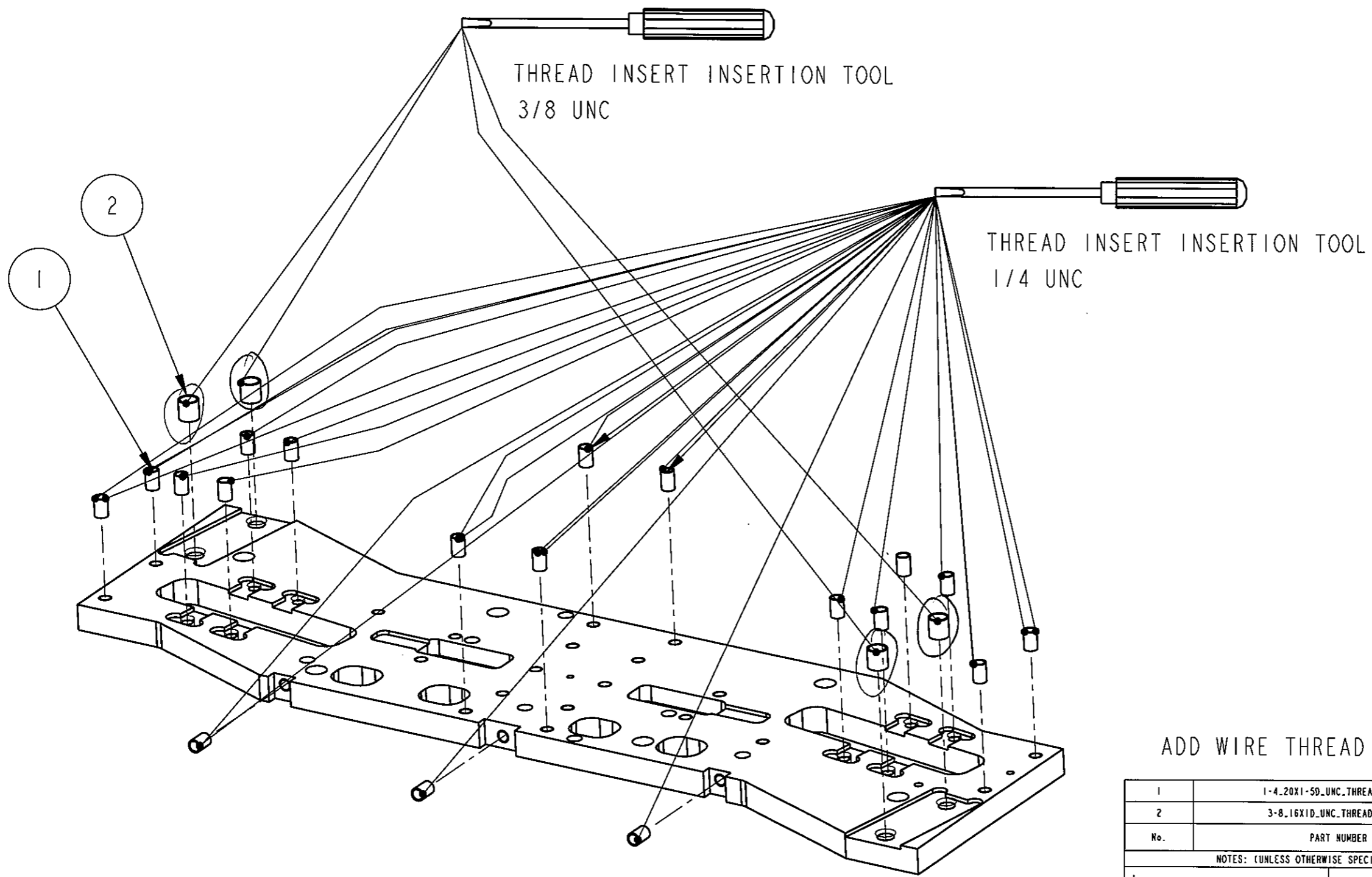
SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY **THIS**
PART NAME **TOP MASS ASSEMBLY SEQUENCE**

SCALE 1:21 PROJECTION: SHEET 1 OF 2



REV.	DATE	DCN #	DRAWING TREE #

D
C
B
A

D
C
B
A

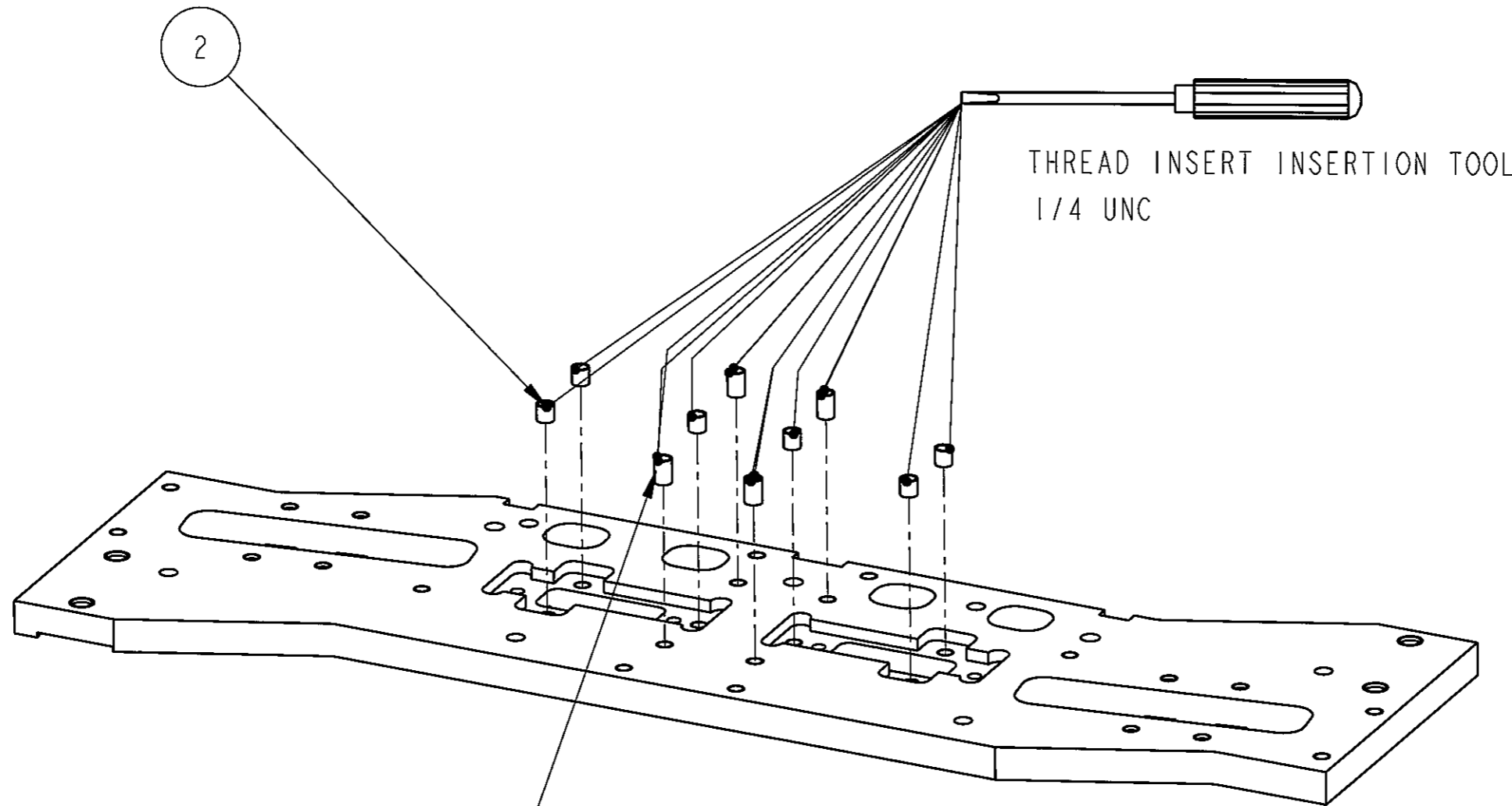


ADD WIRE THREAD INSERTS INTO BASE PLATE.

1	1-4_20X1-50_UNC_THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	19
2	3-8_16X1D_UNC_THREAD_INSERT	3/8-16 x 1D UNC THREAD INSERT	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	
		PART NAME	
		NAME	DATE
		DRAWN	26/02/07
		CHECKED	
		APPROVED	
		STY B	DRG. NO. D060403_ASS_PRO
			REV A
SCALE 1:2 PROJECTION:  SHEET 2 OF 2			

8 7 6 5 4 3 2

REV.	DATE	DCN #	DRAWING TREE #



ADD WIRE THREAD INSERTS INTO BOTTOM OF BASE

1	I-4.20X1-50.UNC.THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	4
2	I-4.20X10.UNC.THREAD_INSERT	1/4-20 x 10 UNC THREAD INSERT	6
No.	PART NUMBER	PART DESCRIPTION	NO. RECD

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.

PROCESS PLAN
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NOT TO BE USED FOR MANUFACTURE

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY
IGR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY

PART NAME

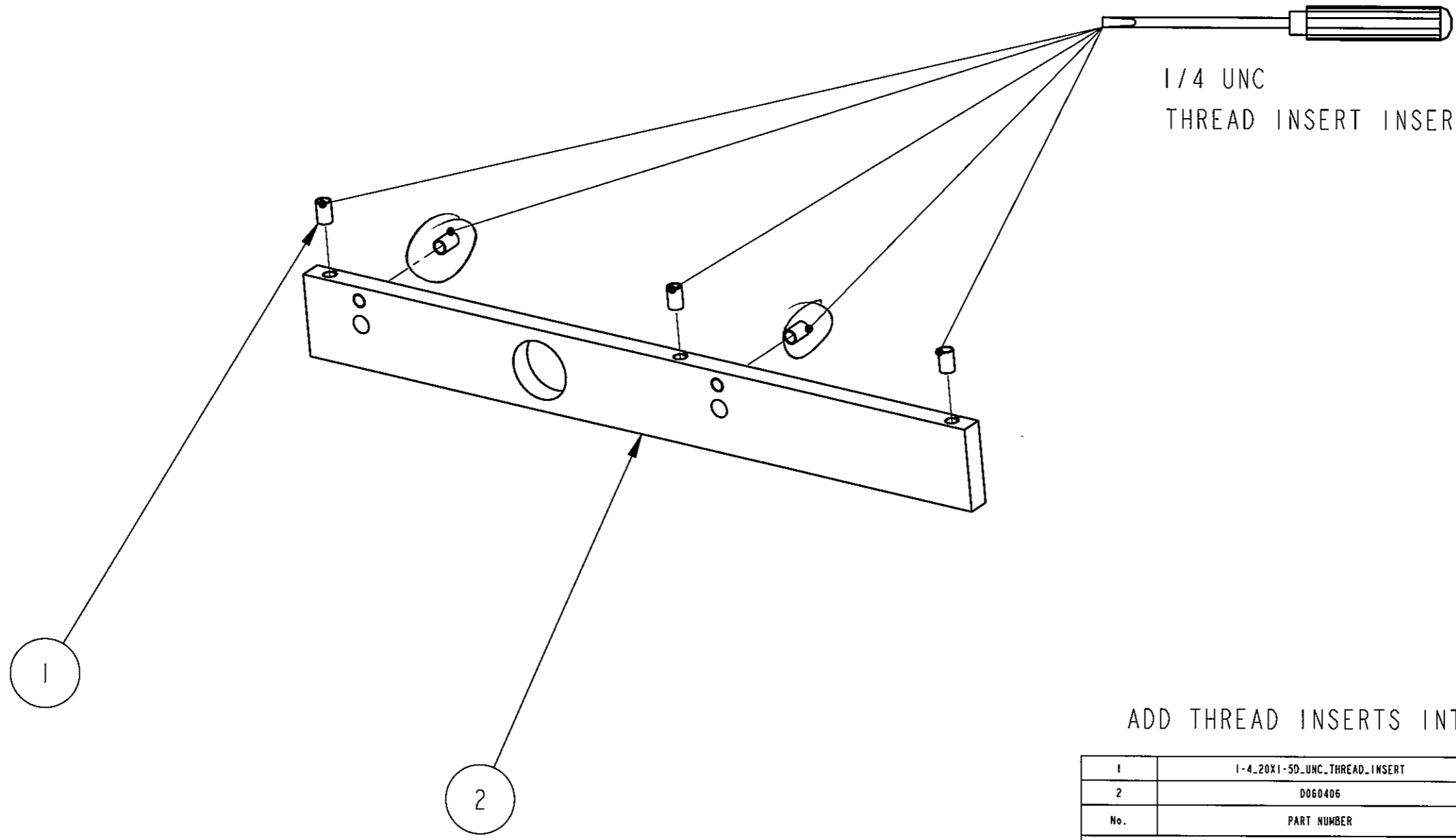
	NAME	DATE
DRAWN		26/02/07
CHECKED		
APPROVED		

SCALE 1:2 PROJECTION: SHEET 3 OF 2

DRG. NO. **D060403.ASS.PRO** REV **A**

INTRALINK NAME: D060403_ASS_PRO

REV.	DATE	DCN #	DRAWING TREE #



ADD THREAD INSERTS INTO BASE STIFFENER

1	1-4_20X1-50_UNC_THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	5
2	D060406	BASE PLATE STIFFENER	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

NOTES: (UNLESS OTHERWISE SPECIFIED)

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SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY

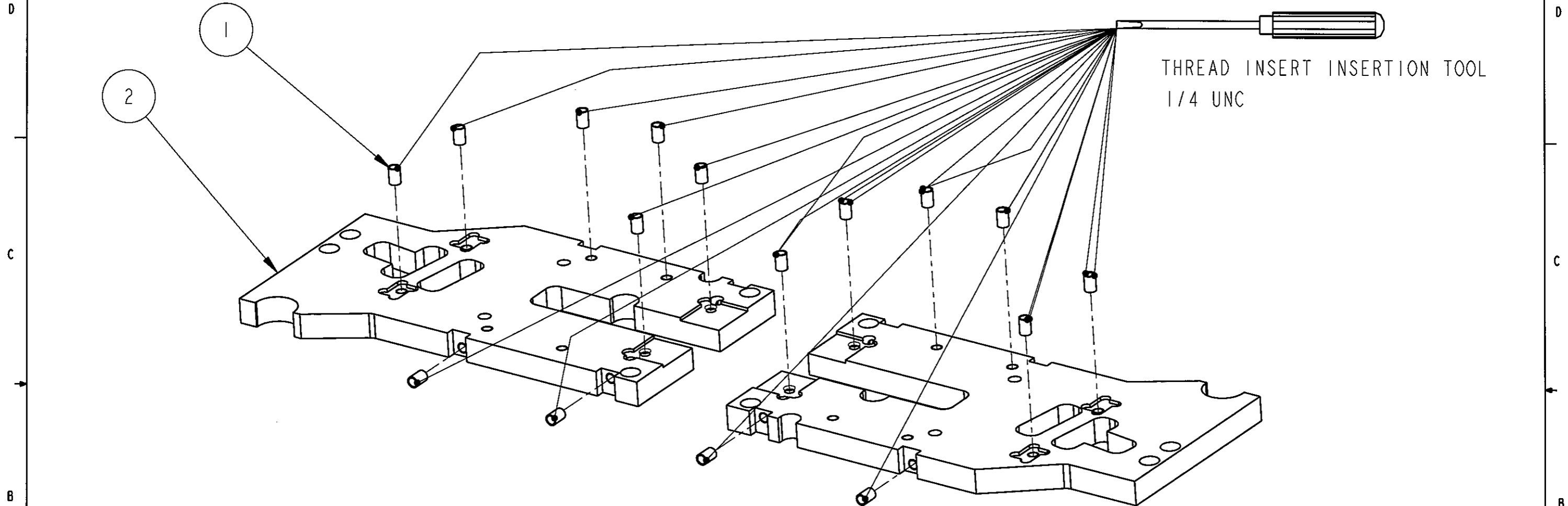
PART NAME **TOP MASS ASSEMBLY SEQUENCE**

DRAWN	M BALDWIN	27/02/07
CHECKED	---	---/---/---
APPROVED	---	---/---/---

SCALE 1:2 PROJECTION: SHEET 8 OF 21

INTRALINK NAME: D060403.ASS_PRO

REV.	DATE	DCN #	DRAWING TREE #



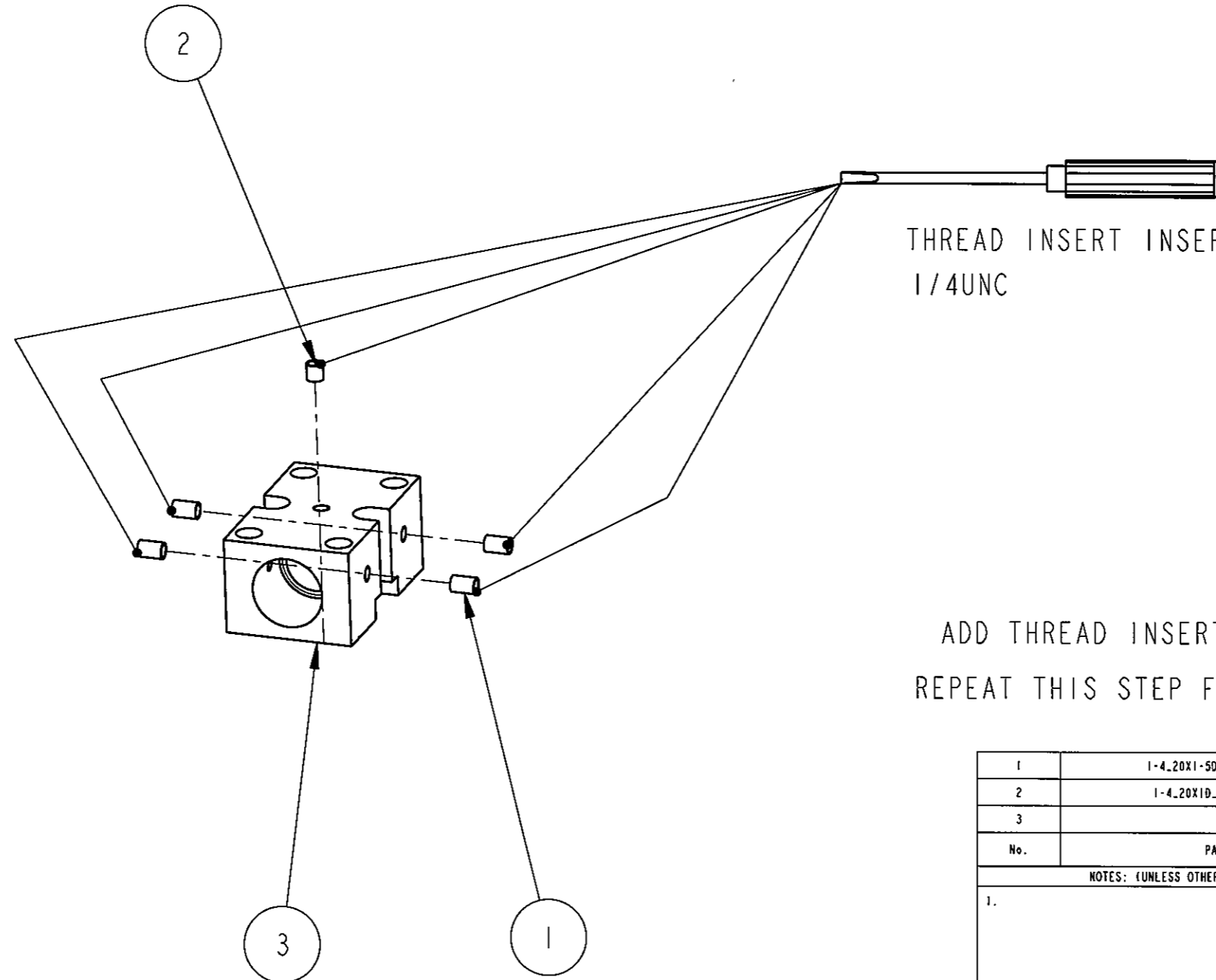
ADD WIRE THREAD INSERTS INTO LH TOP PLATE

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	I-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	16
2	D060411	TOP PLATE	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

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	SYSTEM ADVANCED LIGO		
	SUB-SYSTEM SUS		
	NEXT ASSY		
PART NAME TOP MASS ASSEMBLY SEQUENCE			
	NAME	DATE	REV
	M BALDWIN	26/02/07	
	CHECKED	---	
	APPROVED	---	
	SIZE	DRG. NO. D060403.ASS_PRO	A
SCALE 1:2 PROJECTION: SHEET 4 OF 2			

REV.	DATE	DCN #	DRAWING TREE #



THREAD INSERT INSERTION TOOL
1/4UNC

ADD THREAD INSERTS INTO PITCH ADJUSTER BLOCK
REPEAT THIS STEP FOR BOTH PITCH ADJUSTER BLOCKS

1	1-4_20X1-50_UNC_THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	4
2	1-4_20X1D_UNC_THREAD_INSERT	1/4-20 x 1D UNC THREAD INSERT	1
3	D060398	PITCH ADJUSTER & MASS	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

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SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY

PART NAME **TOP MASS ASSEMBLY SEQUENCE**

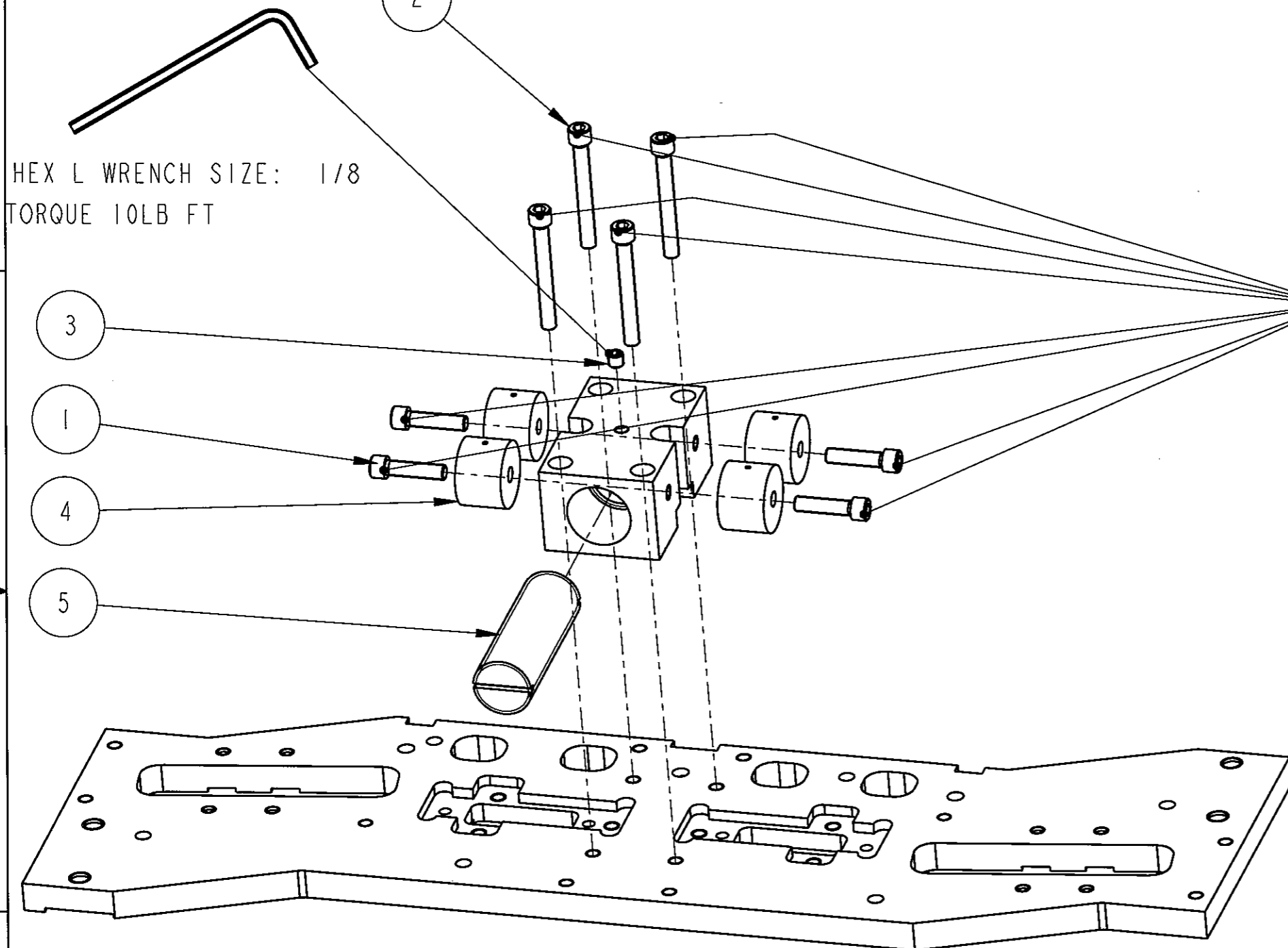
NAME	DATE	SIZE	REV
DRAWN M BALDWIN	27/02/07	B	A.
CHECKED ---	--/--/--		
APPROVED ---	--/--/--		

DRG. NO. **D060403_ASS_PRO**

SCALE 1:2 PROJECTION: SHEET 5 OF 2

INTRALINK NAME: D060403_ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #



HEX L WRENCH SIZE: 1/8
TORQUE 10LB FT

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

ADD PITCH ADJUSTER COMPONENTS TO BASE PLATE
NOTE:
EXACT QUANTITY OF ADDED MASS WILL
NEED TO WORKED OUT AT END.

1	1-4_20 UNC_1-00 INCH	1/4" 20 UNC X 1" CAP HEAD	4
2	1-4_20 UNC_2-00 INCH	1/4" 20 UNC X 2" CAP HEAD	4
3	1-4_20 UNC_X_0-188 GRUBSCREW	1/4" 20 UNC X 0.188" GRUBSCREW	1
4	D060359-100_0	ADDITIONAL MASS	4
5	D060405	PITCH ADJUSTER	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

NOTES: (UNLESS OTHERWISE SPECIFIED)

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SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY

PART NAME **TOP MASS ASSEMBLY SEQUENCE**

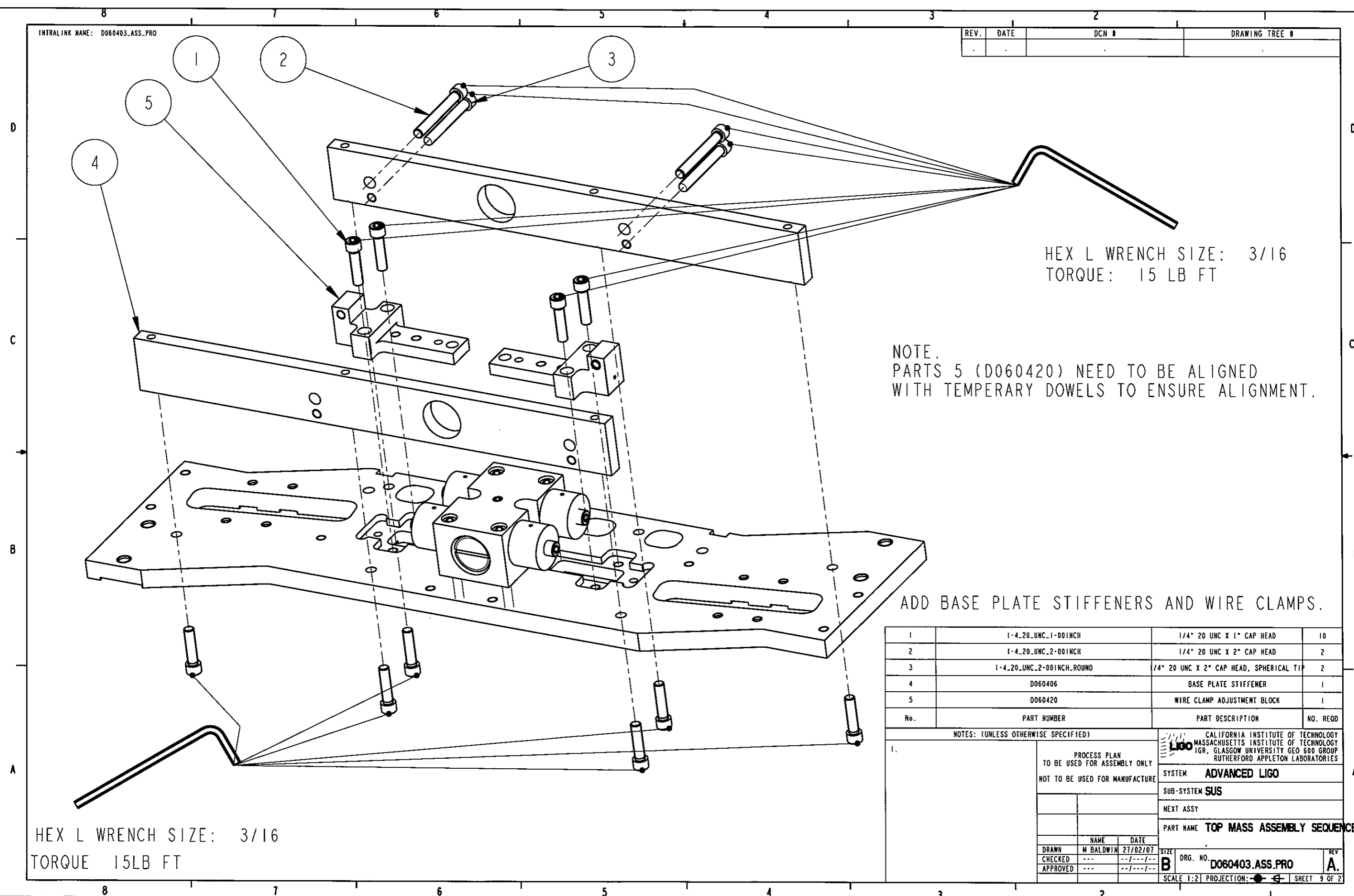
NAME	DATE	SIZE	REV
DRAWN M BALDWIN	28/02/07	B	A
CHECKED ---	---/---/---		
APPROVED ---	---/---/---		

DRG. NO. **D060403_ASS.PRO**

SCALE 1:2 PROJECTION: SHEET 6 OF 2

INTRALINK NAME: D060403.ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #



HEX L WRENCH SIZE: 3/16
TORQUE: 15 LB FT

NOTE.
PARTS 5 (D060420) NEED TO BE ALIGNED
WITH TEMPERARY DOWELS TO ENSURE ALIGNMENT.

ADD BASE PLATE STIFFENERS AND WIRE CLAMPS.

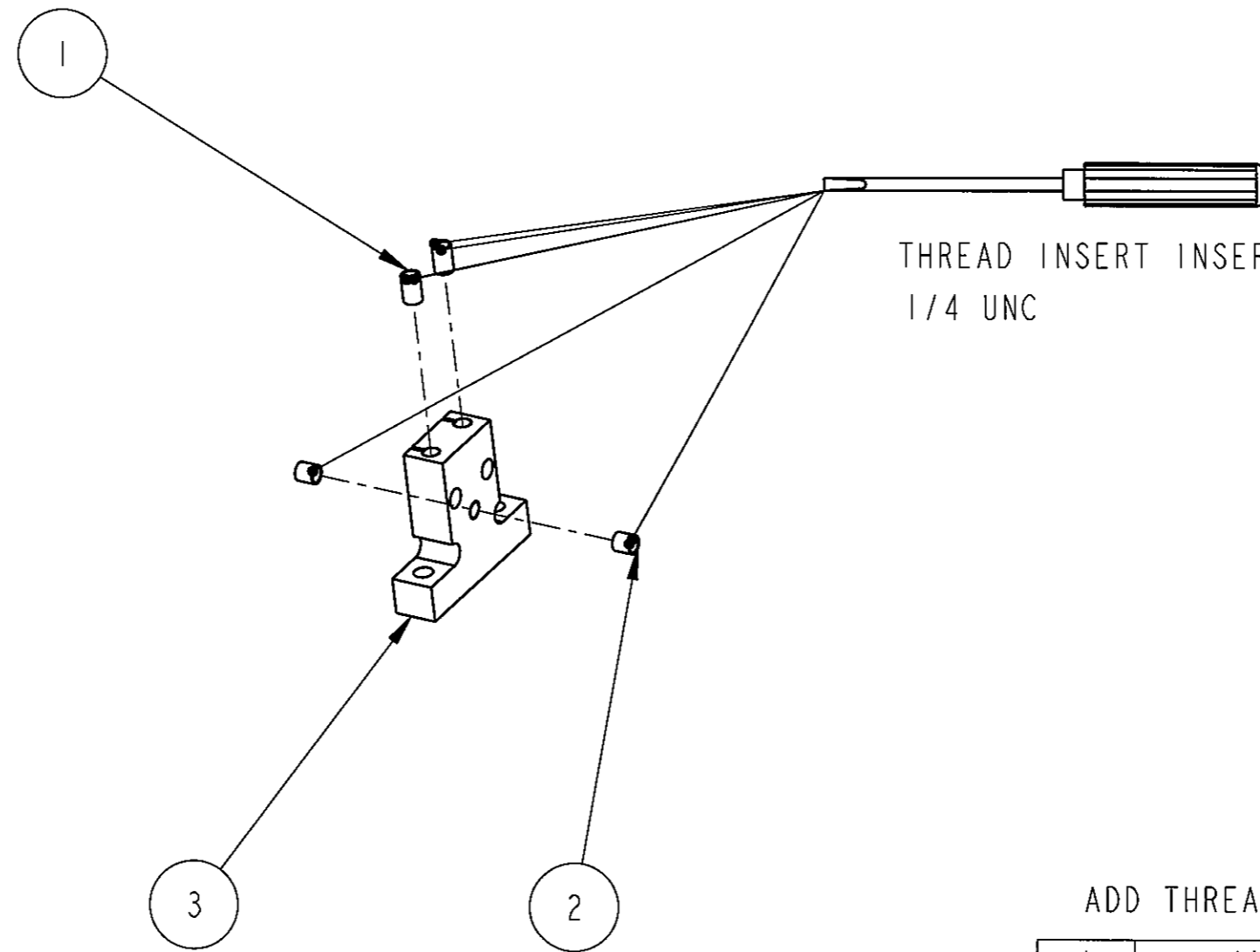
1	1-4.20 UNC.1-00INCH	1/4" 20 UNC X 1" CAP HEAD	10
2	1-4.20 UNC.2-00INCH	1/4" 20 UNC X 2" CAP HEAD	2
3	1-4.20 UNC.2-00INCH.ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	2
4	D060406	BASE PLATE STIFFENER	1
5	D060420	WIRE CLAMP ADJUSTMENT BLOCK	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

NOTES: (UNLESS OTHERWISE SPECIFIED)

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	SYSTEM ADVANCED LIGO															
		SUB-SYSTEM SUS														
		NEXT ASSY														
		PART NAME TOP MASS ASSEMBLY SEQUENCE														
	<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRAWN M BALDWIN</td> <td>27/02/07</td> </tr> <tr> <td>CHECKED ---</td> <td>--/---/---</td> </tr> <tr> <td>APPROVED ---</td> <td>--/---/---</td> </tr> </tbody> </table>	NAME	DATE	DRAWN M BALDWIN	27/02/07	CHECKED ---	--/---/---	APPROVED ---	--/---/---	<table border="1"> <thead> <tr> <th>SIZE</th> <th>DRG. NO.</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td>B</td> <td>D060403.ASS.PRO</td> <td>A.</td> </tr> </tbody> </table>	SIZE	DRG. NO.	REV	B	D060403.ASS.PRO	A.
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SIZE	DRG. NO.	REV														
B	D060403.ASS.PRO	A.														
SCALE 1:2		PROJECTION:	SHEET 9 OF 21													

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

REV.	DATE	DCN #	DRAWING TREE #



THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERTS INTO TOP MASS SPACER

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4.20X1.5D.UNC.THREAD.INSERT	1/4-20 x 1.5D UNC THREAD INSERT	2
2	1-4.20X1D.UNC.THREAD.INSERT	1/4-20 x 1D UNC THREAD INSERT	2
3	D060397	TOP MASS SPACER	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.

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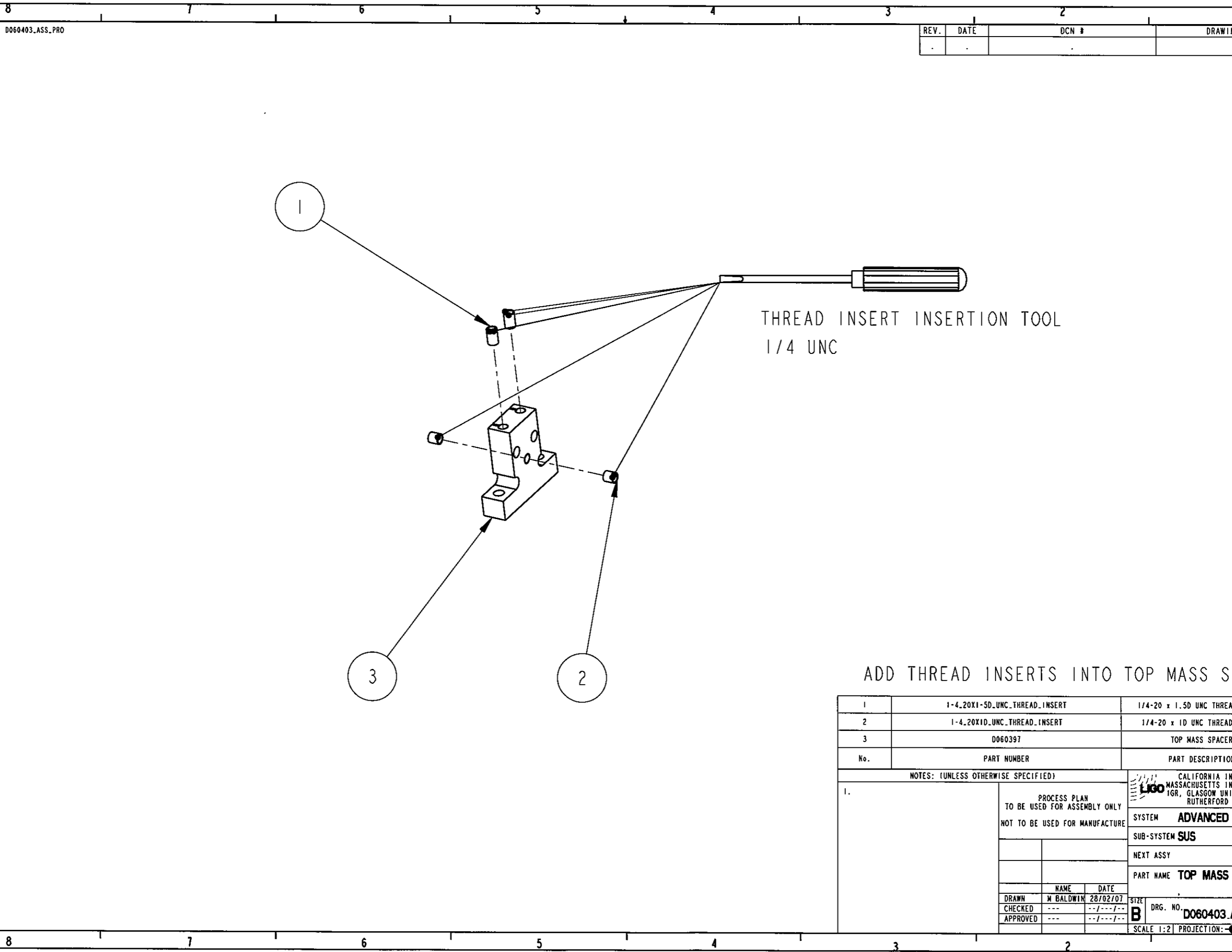
SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY
PART NAME **TOP MASS ASSEMBLY SEQUENCE**

	NAME	DATE
DRAWN	M BALDWIN	28/02/07
CHECKED	---	--/--/--
APPROVED	---	--/--/--

SCALE 1:2 | PROJECTION: | SHEET 10 OF 17

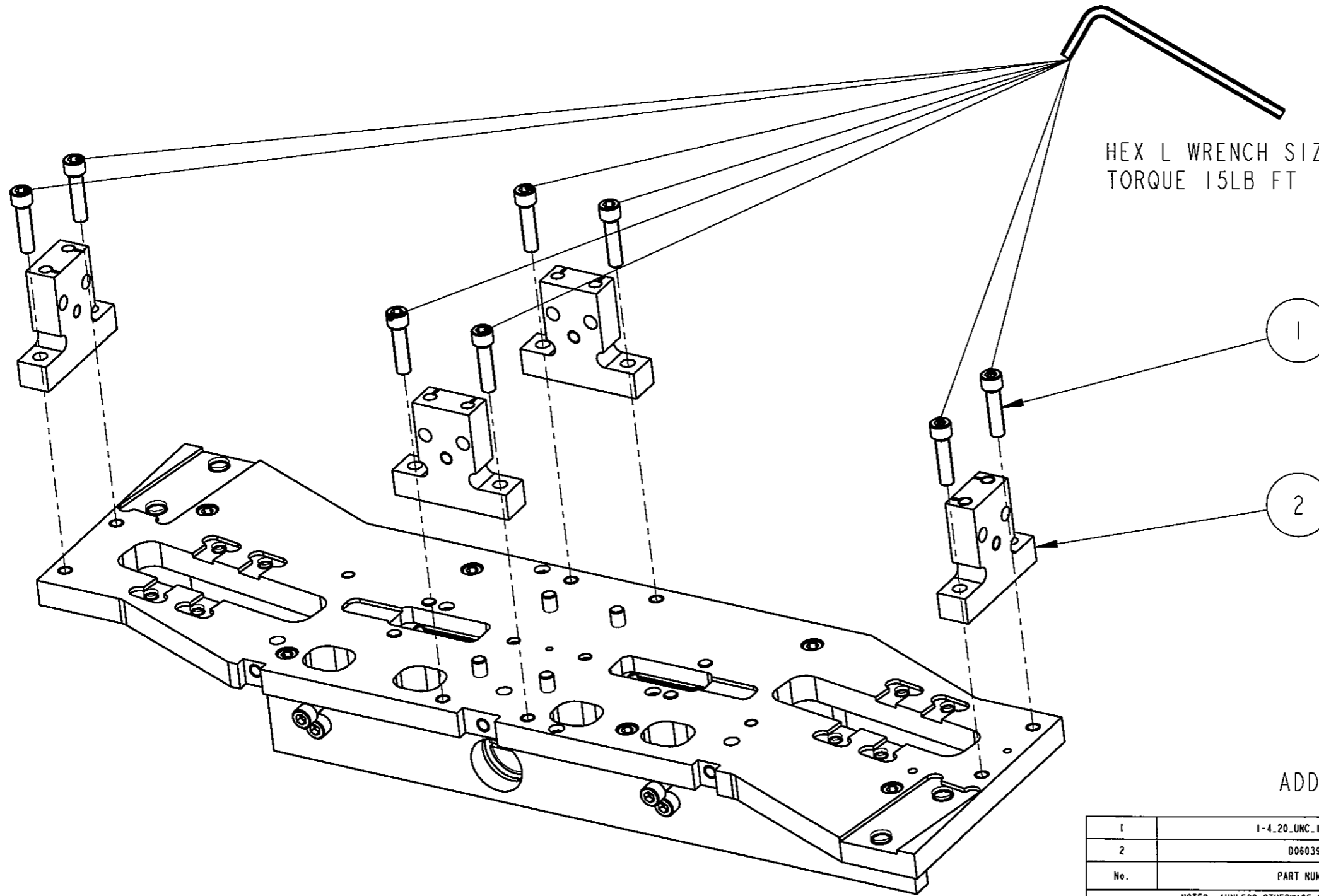
D
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D
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B
A



INTRALINK NAME: D060403.ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #



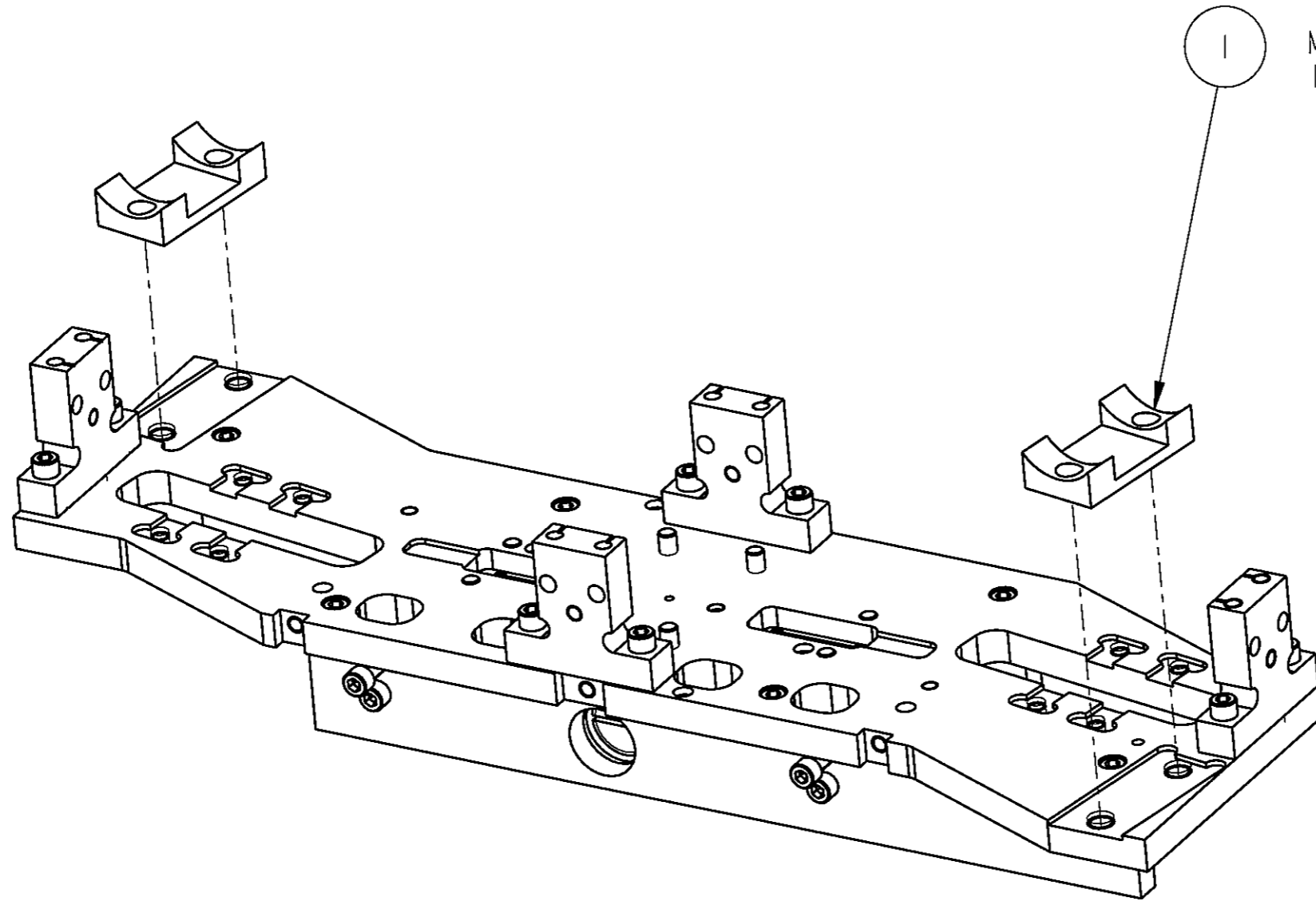
HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

ADD TOP MASS SPACERS.

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4.20 UNC-1-001NCH	1/4" 20 UNC X 1" CAP HEAD	8
2	D060397	TOP MASS SPACER	3



NOTES: (UNLESS OTHERWISE SPECIFIED)			
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PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY	
		PART NAME TOP MASS ASSEMBLY SEQUENCE	
NAME	DATE	SIZE	REV
DRAWN M BALDWIN	28/02/07	B	A
CHECKED ---	---/---/---	DRG. NO. D060403.ASS.PRO	
APPROVED ---	---/---/---	SCALE 1:2 PROJECTION: SHEET 11 OF 17	

REV.	DATE	DCN #	DRAWING TREE #

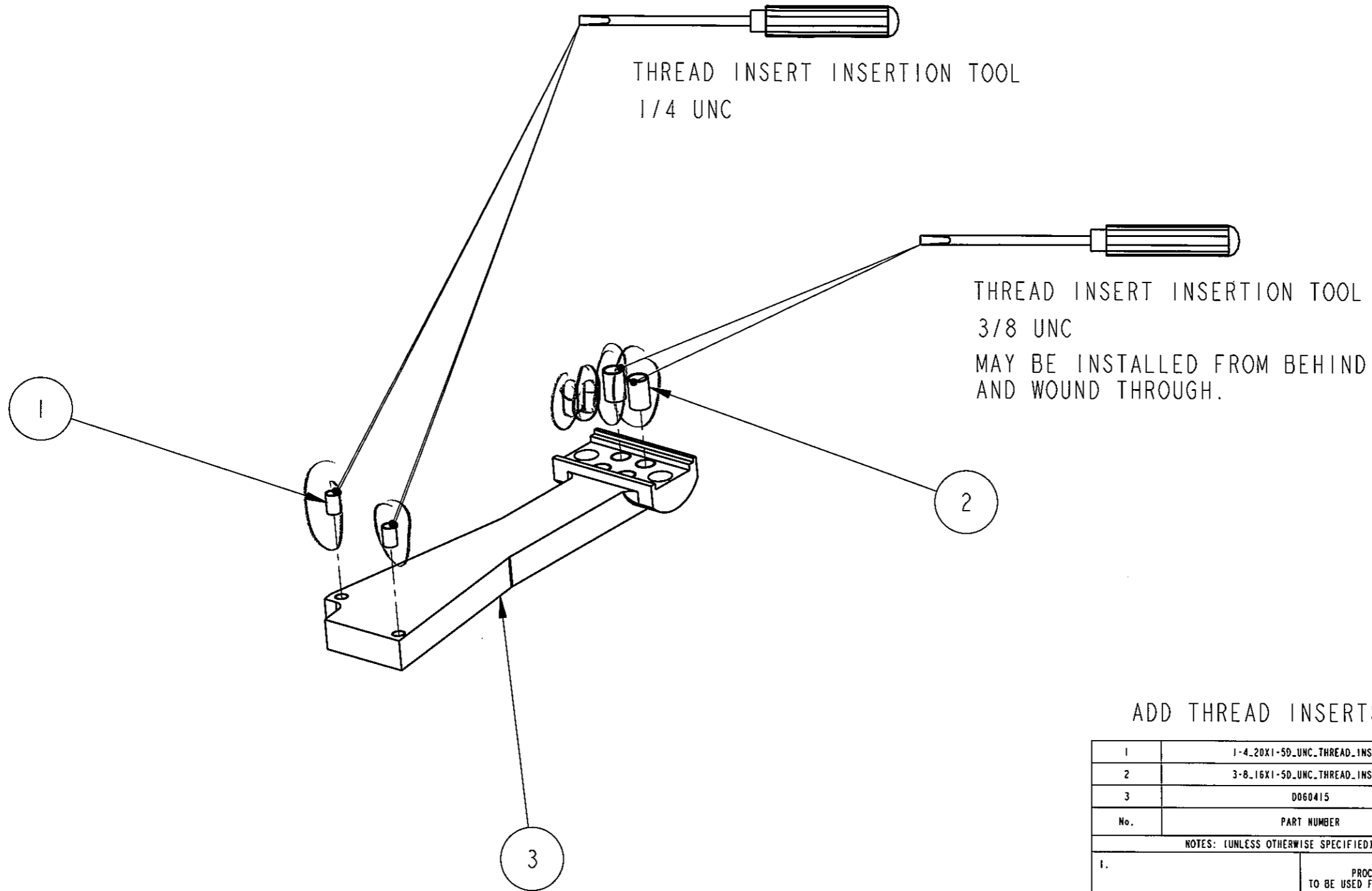


1 MAY NEED TO BE TAPPED IN WITH RUBBER Mallet.

ADD BLADE TIP Z POSITION ADJUSTER

1	D060414	BLADE TIP Z POSITION ADJ	2													
No.	PART NUMBER	PART DESCRIPTION	NO. REQD													
NOTES: (UNLESS OTHERWISE SPECIFIED)																
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES														
		SYSTEM ADVANCED LIGO														
		SUB-SYSTEM SUS														
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SIZE	ORG. NO.	REV														
B	D060403.ASS.PRO	A.														
SCALE 1:2 PROJECTION:  SHEET 12 OF 17																

REV.	DATE	DCN #	DRAWING TREE #



ADD THREAD INSERTS INTO BLADE ADJUSTER

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20X1-5D_UNC.THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	2
2	3-8_16X1-5D_UNC.THREAD_INSERT	3/8-16 x 1.5D UNC THREAD INSERT	2
3	D060415	BLADE TIP Z POSITION ADJ	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

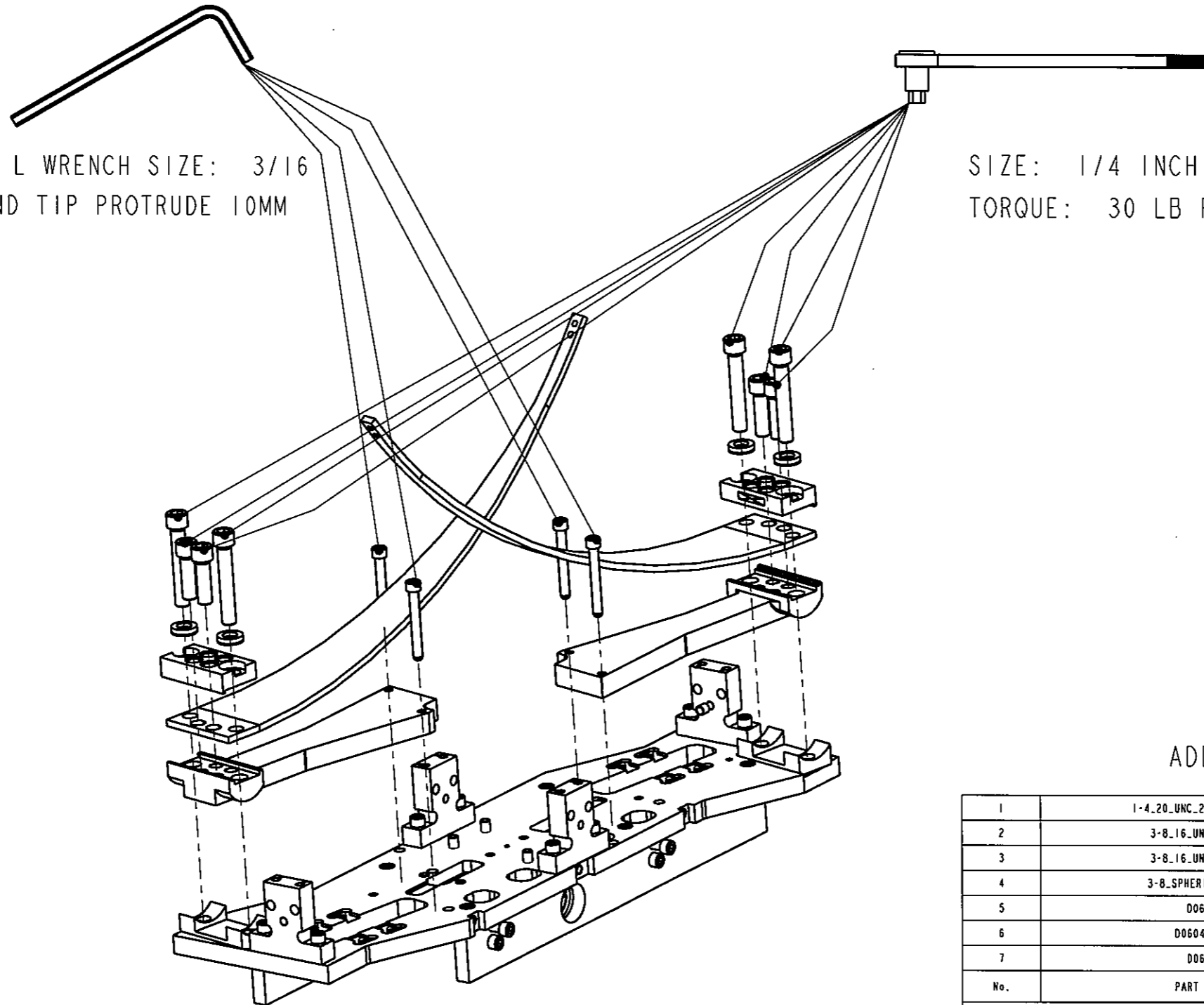
1.

PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
SYSTEM ADVANCED LIGO		
SUB-SYSTEM SUS		NEXT ASSY
PART NAME TOP MASS ASSEMBLY SEQUENCE		REV
NAME	DATE	SIZE
DRAWN M BALDWIN	28/02/07	B
CHECKED ---	---/---/---	ORG. NO. D060403.ASS.PRO
APPROVED ---	---/---/---	SCALE 1:2 PROJECTION: SHEET 13 OF 17

REV.	DATE	DCN #	DRAWING TREE #

HEX L WRENCH SIZE: 3/16
ROUND TIP PROTRUDE 10MM

SIZE: 1/4 INCH
TORQUE: 30 LB FT



ADD BLADES AND CLAMPS

1	1-4_20 UNC 2-00 INCH ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	4
2	3-8_16 UNC 1-25 INCH	3/8 16 UNC X 1.25" CAP HEAD	4
3	3-8_16 UNC 2-25 INCH	3/8" 16 UNC X 2.25" CAP HEAD	4
4	3-8_SPHERICAL WASHER	3/8 SPHERICAL WASHER	4
5	D060236	MIDDLE BLADE SPRING	2
6	D060404-000	BLADE CLAMP	2
7	D060415	BLADE TIP Z POSITION ADJ	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

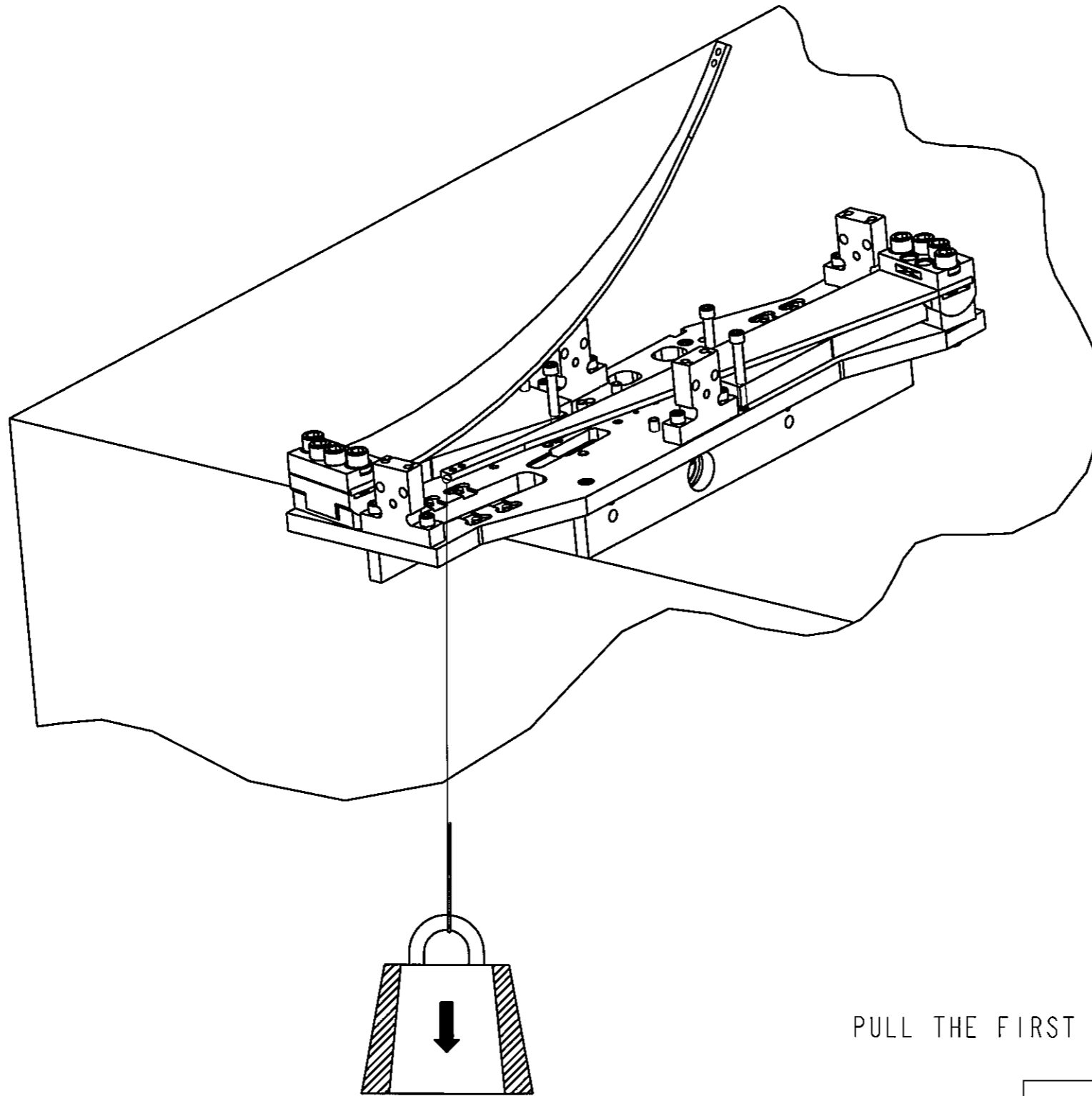
NOTES: (UNLESS OTHERWISE SPECIFIED)

NOTE.
ALL 3/8 BOLTS MUST BE TORQUED UP TO THE RQUIRED TO THE RQUIRED TORQUE.
A TORQUE WRENCH IS NEEDED FOR THIS.

1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
	SYSTEM ADVANCED LIGO	
	SUB-SYSTEM SUS	
	NEXT ASSY	
PART NAME TOP MASS ASSEMBLY SEQUENCE		
NAME M BALDWIN	DATE 01/03/07	SIZE B
DRAWN ---	CHECKED ---	DRG. NO. D060403_ASS.PRO
APPROVED ---	REV A	SCALE 3:10 PROJECTION: SHEET 14 OF 17



INTRALINK NAME: D060403_ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #

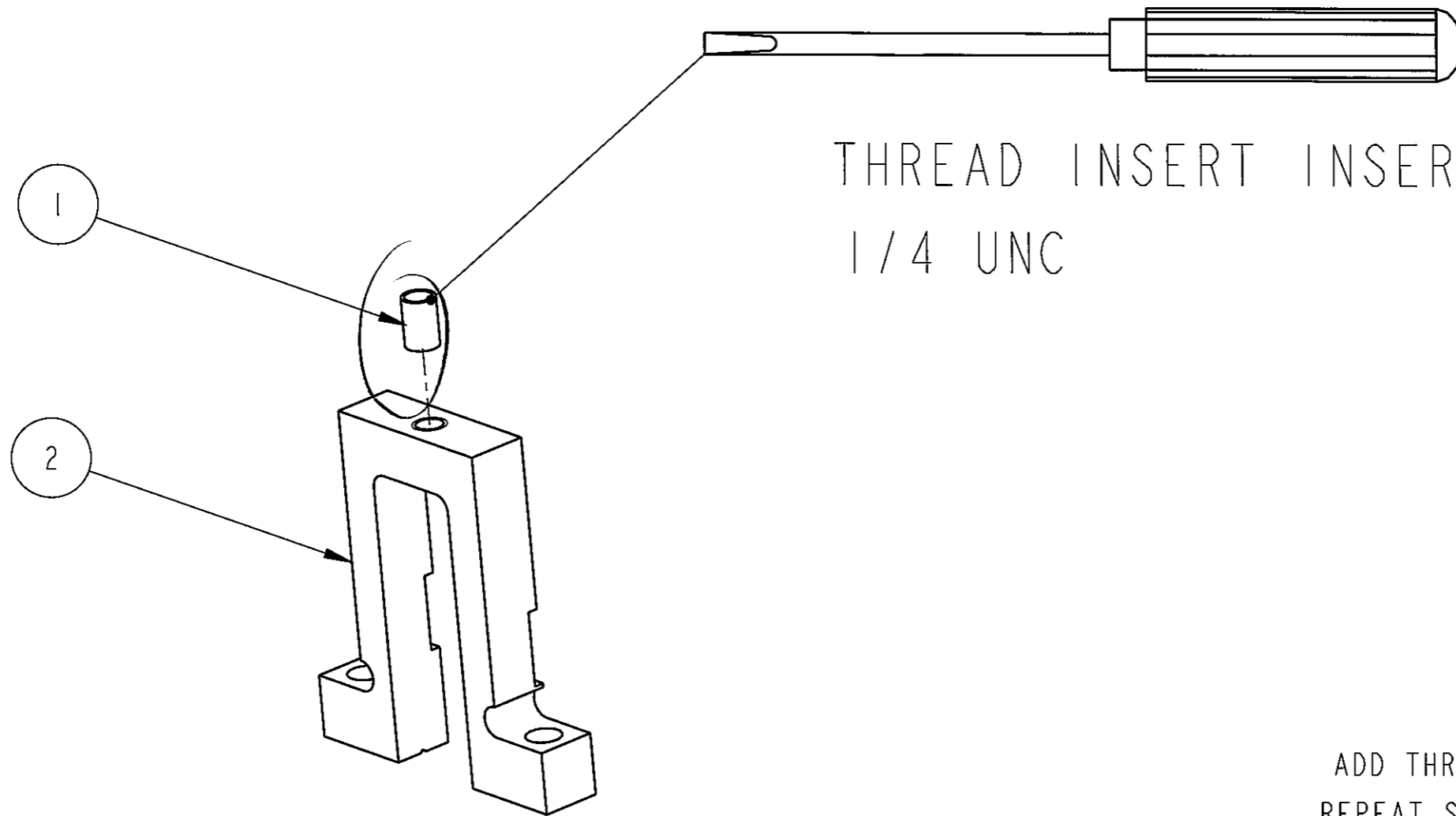


MASS: 50 KG

STRAIGHTEN FIRST BLADE
 PULL THE FIRST BLADE FLAT BY HANGING MASS FROM THE TIP

NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
1.		SYSTEM ADVANCED LIGO SUB-SYSTEM SJS NEXT ASSY PART NAME TOP MASS ASSEMBLY SEQUENCE	
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		DRAWN M BALDWIN 01/03/07 CHECKED --- APPROVED ---	SIZE B DRG. NO. D060403_ASS.PRO SCALE 3:14 PROJECTION:  SHEET 15 OF 17

REV.	DATE	DCN #	DRAWING TREE #



THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERT INTO STOP BRIDGE
REPEAT STEP FOR ALL BRIDGES (4 OFF)

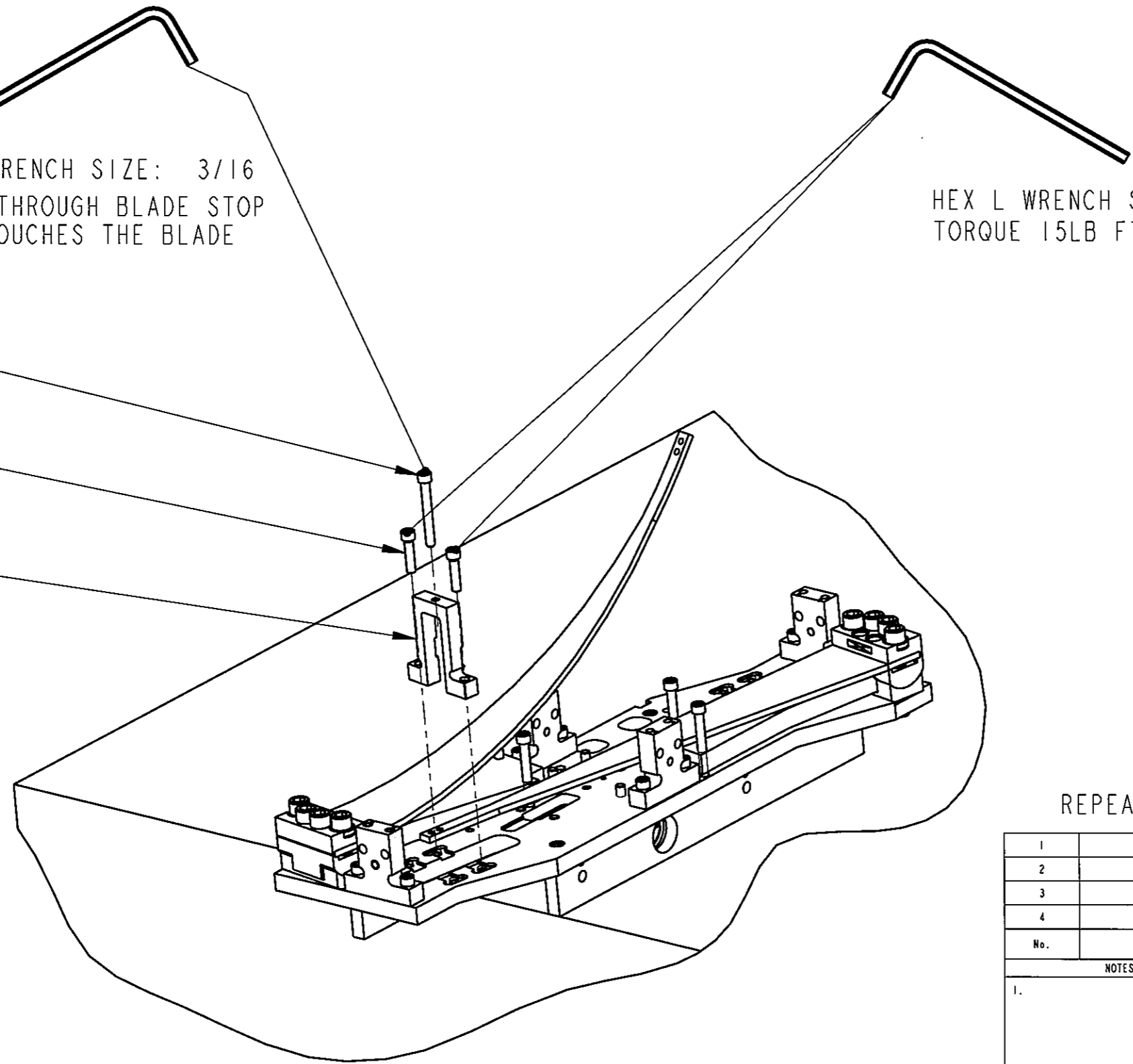
1	1-4_20x1-50_UNC_THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	1
2	D060399	STOP BRIDGE	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	
		PART NAME	TOP MASS ASSEMBLY SEQUENCE
	NAME	DATE	SIZE
	DRAWN M BALDWIN	01/03/07	B
	CHECKED ---	---/---/---	DRG. NO. D060403_ASS.PRO
	APPROVED ---	---/---/---	REV. A.
SCALE 1:1 PROJECTION: SHEET 16 OF 17			

REV.	DATE	DCN #	DRAWING TREE #

HEX L WRENCH SIZE: 3/16
SCREW BOLT THROUGH BLADE STOP
UNTILL IT TOUCHES THE BLADE

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

- 2
- 1
- 4



ADD STOP BRIDGE
REPEAT LAST TWO STEPS WITH OTHER BLADE

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4.20.UNC.1-00INCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4.20.UNC.2-00INCH.ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	1
3	D060236_FLAT	MIDDLE BLADE SPRING	1
4	D060399	STOP BRIDGE	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO		
	SUB-SYSTEM SUS		
	NEXT ASSY		
PART NAME TOP MASS ASSEMBLY SEQUENCE			
	NAME	DATE	
	M BALDWIN	01/03/07	
	CHECKED	---	
	APPROVED	---	
	SIZE	DRG. NO.	REV
	B	D060403.ASS.PRO	A.
SCALE 3:14 PROJECTION: SHEET 17 OF 27			

REV.	DATE	DCN #	DRAWING TREE #

HEX L WRENCH SIZE: 3/16
LEAVE BOLT LOOSE

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT


- 2
- 1
- 3

ADD ADDITIONAL BLADE CLAMPS

1	1-4.20 UNC .1-001 INCH	1/4" 20 UNC X 1" CAP HEAD	4
2	1-4.20 UNC .2-001 INCH ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	3
3	D060399	STOP BRIDGE	2
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 IGR, GLASGOW UNIVERSITY GEO 600 GROUP
 RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**


SUB-SYSTEM **SUS**

NEXT ASSY

PART NAME **TOP MASS ASSEMBLY SEQUENCE**

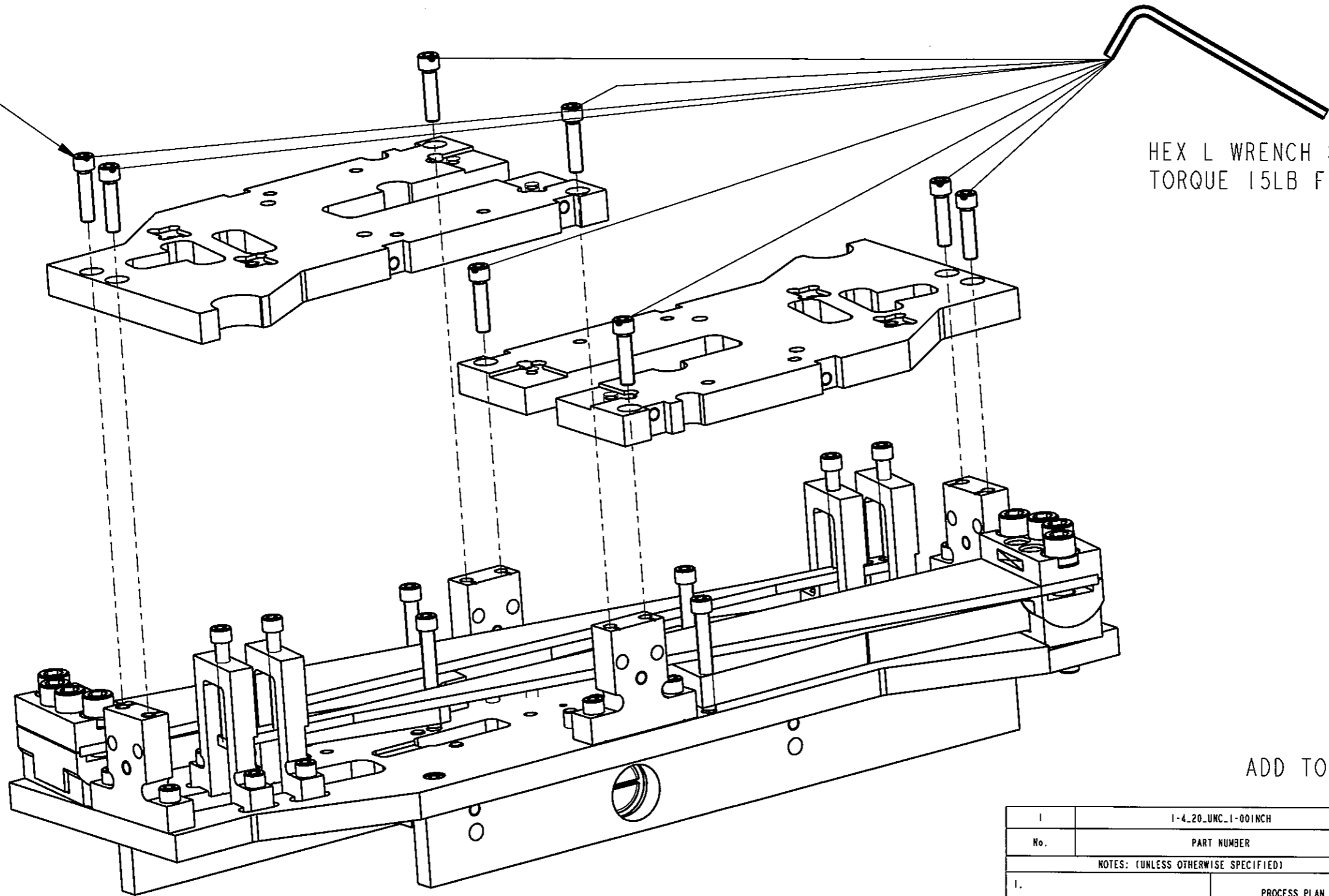
NAME	DATE	SIZE	REV
DRAWN M BALDWIN	01/03/07	B	A
CHECKED ---	---/---/---		
APPROVED ---	---/---/---		

DRG. NO. **D060403_ASS.PRO**

SCALE 1:2 PROJECTION:  SHEET 18 OF 27



INTRALINK NAME: D060403.ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #



HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

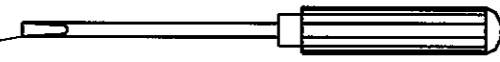
ADD TOP PLATES

1	1-4.20 UNC 1-00 INCH	1/4" 20 UNC X 1" CAP HEAD	8
No.	PART NUMBER	PART DESCRIPTION	NO. REQD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY	
		PART NAME TOP MASS ASSEMBLY SEQUENCE	
	NAME	DATE	SIZE
DRAWN	M BALDWIN	05/03/07	B
CHECKED	---	--/---/---	
APPROVED	---	--/---/---	
		DRG. NO. D060403.ASS.PRO	REV A
SCALE 1:2 PROJECTION:  SHEET 19 OF 27			

REV.	DATE	DCN #	DRAWING TREE #

- 2
- 3
- 5
- 4
- 1

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT



SCREWDRIVER
FLAT HEAD

ENSURE VARIANT "VIII" (100G) IS
USED IN ALL 4 POSITIONS
NOTE.
MAY NEED CHANGING AT LAST MINUTE.

ADD TOP PITCH ADJUSTER

1	1-4-20-UNC-1-001NCH	1/4" 20 UNC X 1" CAP HEAD	4
2	1-4-20-UNC-2-001NCH	1/4" 20 UNC X 2" CAP HEAD	4
3	1-4-20-UNC-X-0-188-GRUBSCREW	1/4" 20 UNC X 0.188" GRUBSCREW	1
4	D060359-100_0	ADDITIONAL MASS	4
5	D060398	PITCH ADJUSTER & MASS	1
6	D060405	PITCH ADJUSTER	1
No.	PART NUMBER	PART DESCRIPTION	NO. REQD

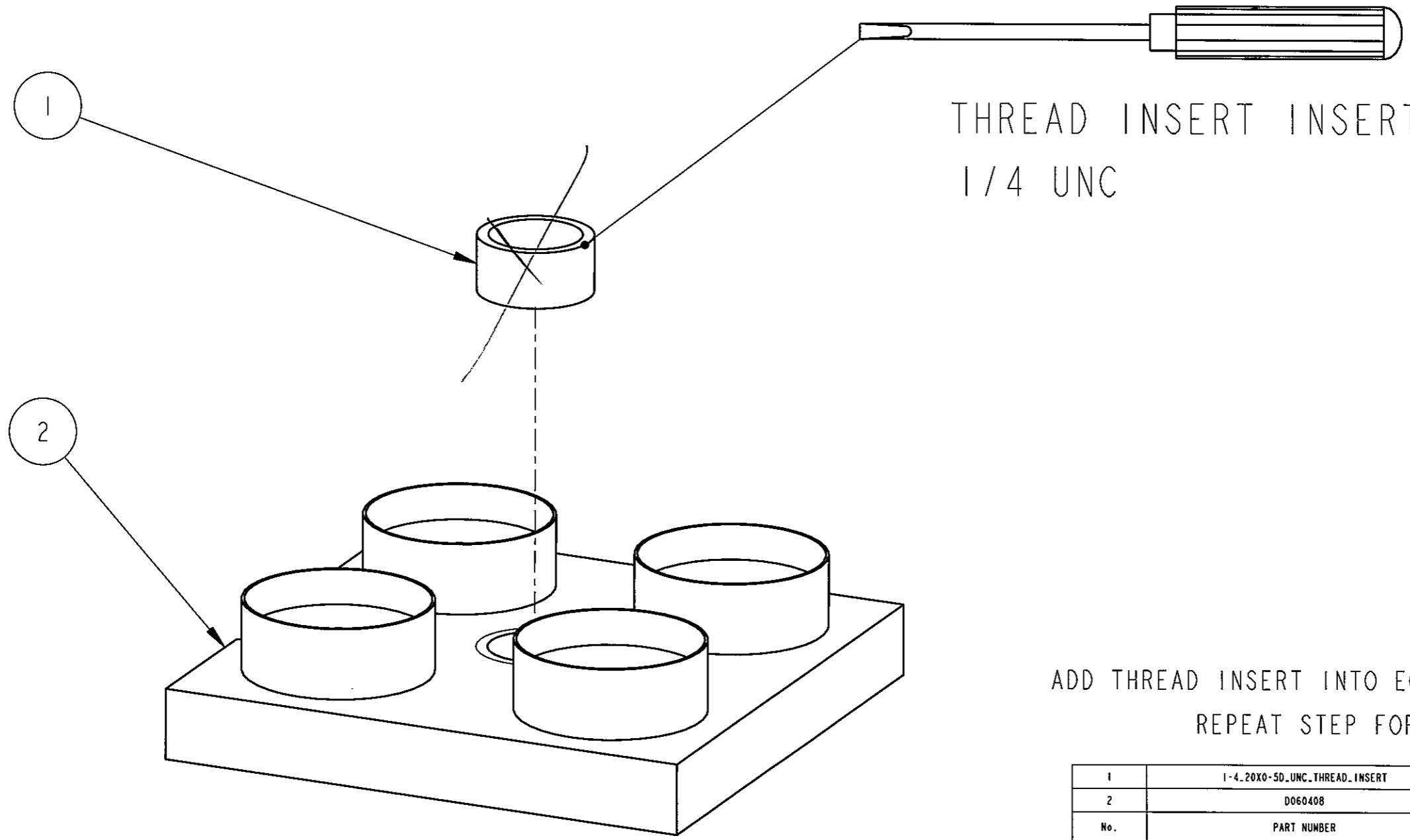
NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY PART NAME TOP MASS ASSEMBLY SEQUENCE	
	NAME DATE DRAWN M BALDWIN 05/03/07 CHECKED --- --/---/--- APPROVED --- --/---/---	SIZE B DRG. NO. D060403.ASS.PRO REV A
SCALE 1:2 PROJECTION: SHEET 20 OF 27		

INSERT PART AND SCREW INTO TURRET,
UNTILL IT IS CENTRAL IN THE BLOCK

6



REV.	DATE	DCN #	DRAWING TREE #



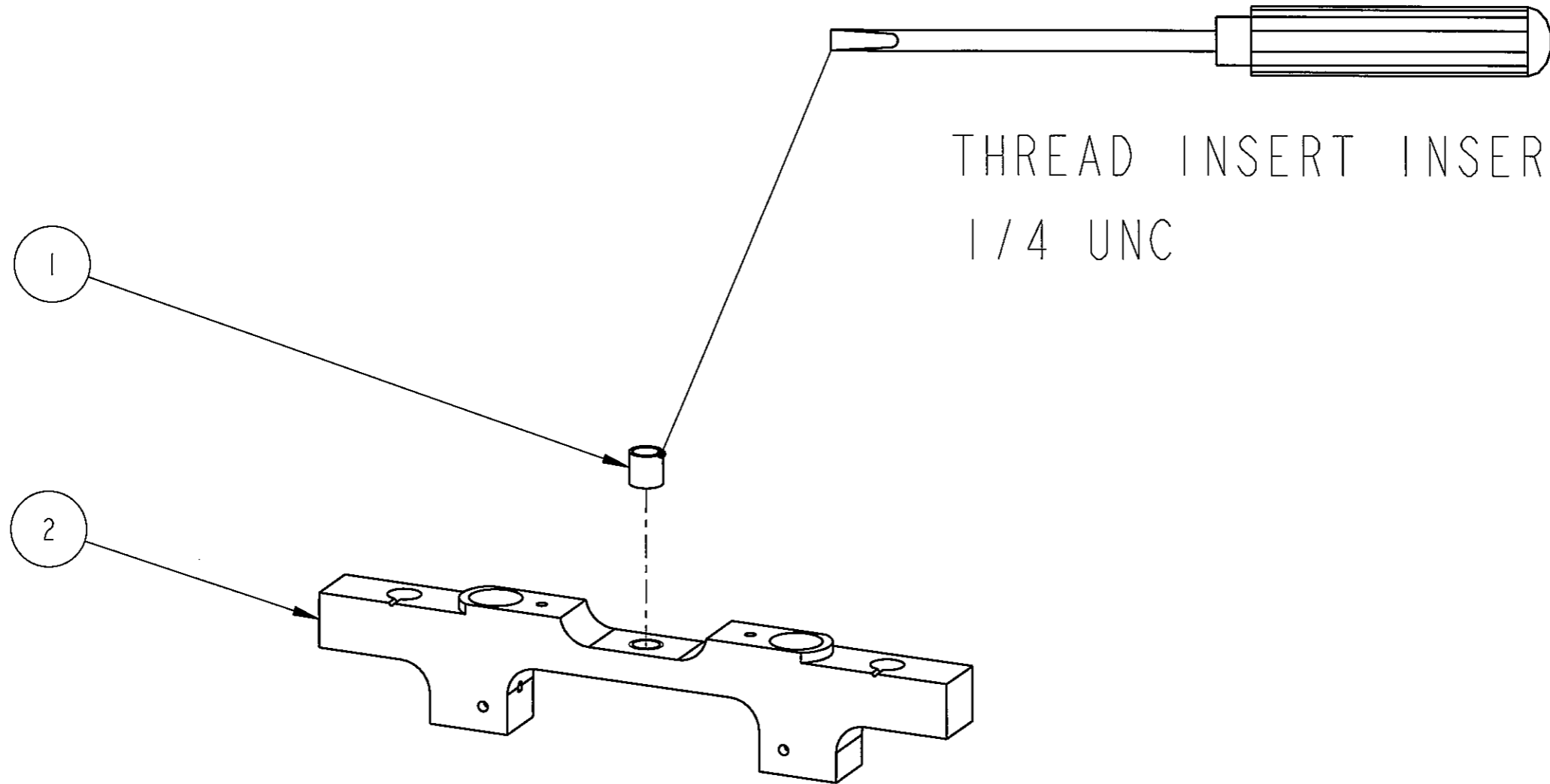
THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERT INTO ECD MAGNET MOUNT PLATE
REPEAT STEP FOR ALL PLATES

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4.20X0.5D.UNC.THREAD.INSERT	1/4-20 x 0.5D UNC THREAD INSERT	1
2	D060408	ECD MAGNET MOUNT PLATE	1



NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY	
		PART NAME TOP MASS ASSEMBLY SEQUENCE	
	NAME	DATE	SIZE
DRAWN	M BALDWIN	05/03/07	B
CHECKED	---	---/---/---	DRG. NO. D060403.ASS.PRO
APPROVED	---	---/---/---	REV A.
		SCALE 4:1	PROJECTION:  SHEET 21 OF 27

REV.	DATE	DCN #	DRAWING TREE #

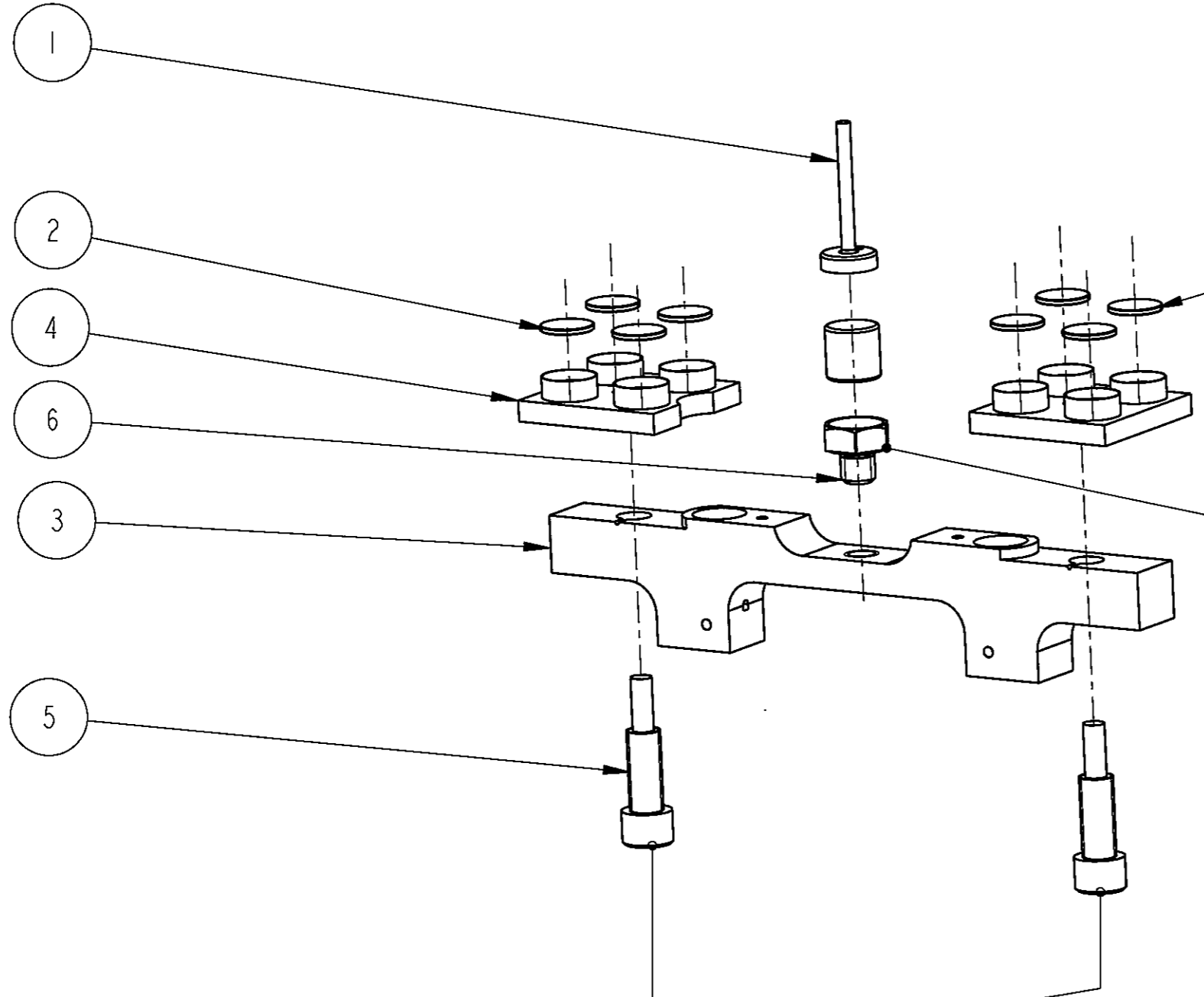


THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERT INTO OSEM AND ECD UNIT BACKBONE

1	1-4_20X10_UNC_THREAD_INSERT	1/4-20 x 10 UNC THREAD INSERT	1
2	D060407	OSEM & ECD UNIT BACKBONE	1
No.	PART NUMBER	PART DESCRIPTION	NO. RECD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO		
	SUB-SYSTEM SUS		
	NEXT ASSY		
	PART NAME TOP MASS ASSEMBLY SEQUENCE		
	NAME	DATE	
	DRAWN M BALDWIN	05/03/07	SIZE
	CHECKED ---	--/---/---	DRG. NO. D060403.ASS.PRO
	APPROVED ---	--/---/---	REV A.
SCALE 1:1 PROJECTION:  SHEET 22 OF 27			

REV.	DATE	DCN #	DRAWING TREE #



NOTE.
DISC TO BE PRESSED IN
WITH BENCH PRESS.



1/2 INCH
15 LB FT

ASSEMBLE BACKBONE
REPEAT STEP FOR ALL 4 BACKBONES

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	D060400	OSEM MAGNET FLAG	1
2	D060401	MAGNETIC PLUG	8
3	D060407	OSEM & ECD UNIT BACKBONE	1
4	D060408	ECD MAGNET MOUNT PLATE	2
5	D060413	1/4" 20 UNC X 1" CAP HEAD	2
6	D060418	MAGNET RETAINER	1
7	TD-1084-231	10MM MAGNET	9

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.
PROCESS PLAN
TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

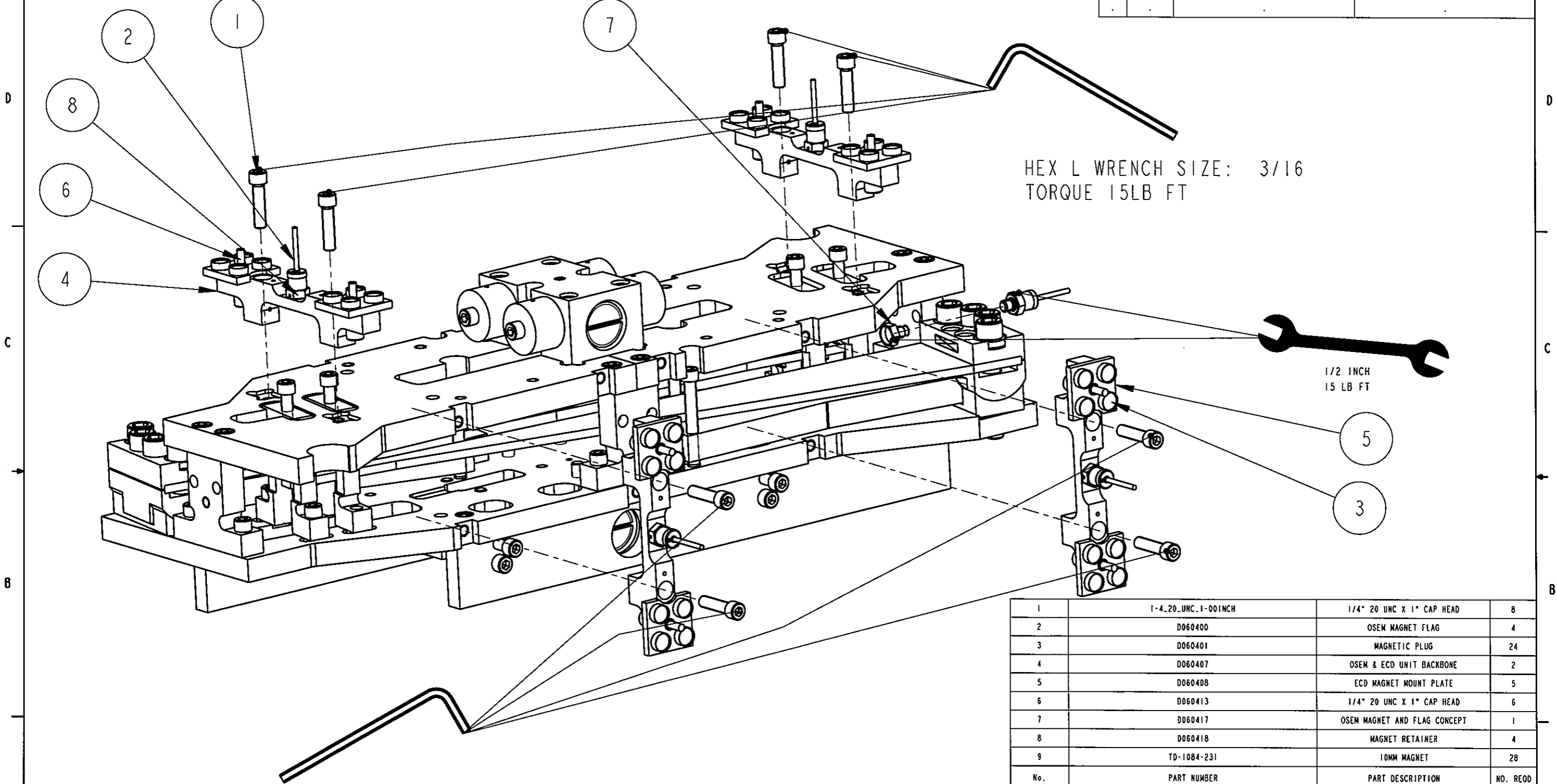
CALIFORNIA INSTITUTE OF TECHNOLOGY
LIGO MASSACHUSETTS INSTITUTE OF TECHNOLOGY
IGR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY
PART NAME **TOP MASS ASSEMBLY SEQUENCE**

NAME	DATE	SIZE	REV
DRAWN M BALDWIN	05/03/07	B	A
CHECKED	---		
APPROVED	---		

INTRALINK NAME: D060403.ASS.PRO

REV.	DATE	DCN #	DRAWING TREE #



HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

1/2 INCH
15 LB FT

HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

ADD ALL 4 ECD AND OSEM UNITS AND END FLAG UNIT

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4_20 UNC_1-00INCH	1/4" 20 UNC X 1" CAP HEAD	8
2	D060400	OSEM MAGNET FLAG	4
3	D060401	MAGNETIC PLUG	24
4	D060407	OSEM & ECD UNIT BACKBONE	2
5	D060408	ECD MAGNET MOUNT PLATE	5
6	D060413	1/4" 20 UNC X 1" CAP HEAD	6
7	D060417	OSEM MAGNET AND FLAG CONCEPT	1
8	D060418	MAGNET RETAINER	4
9	TD-1084-231	10MM MAGNET	28

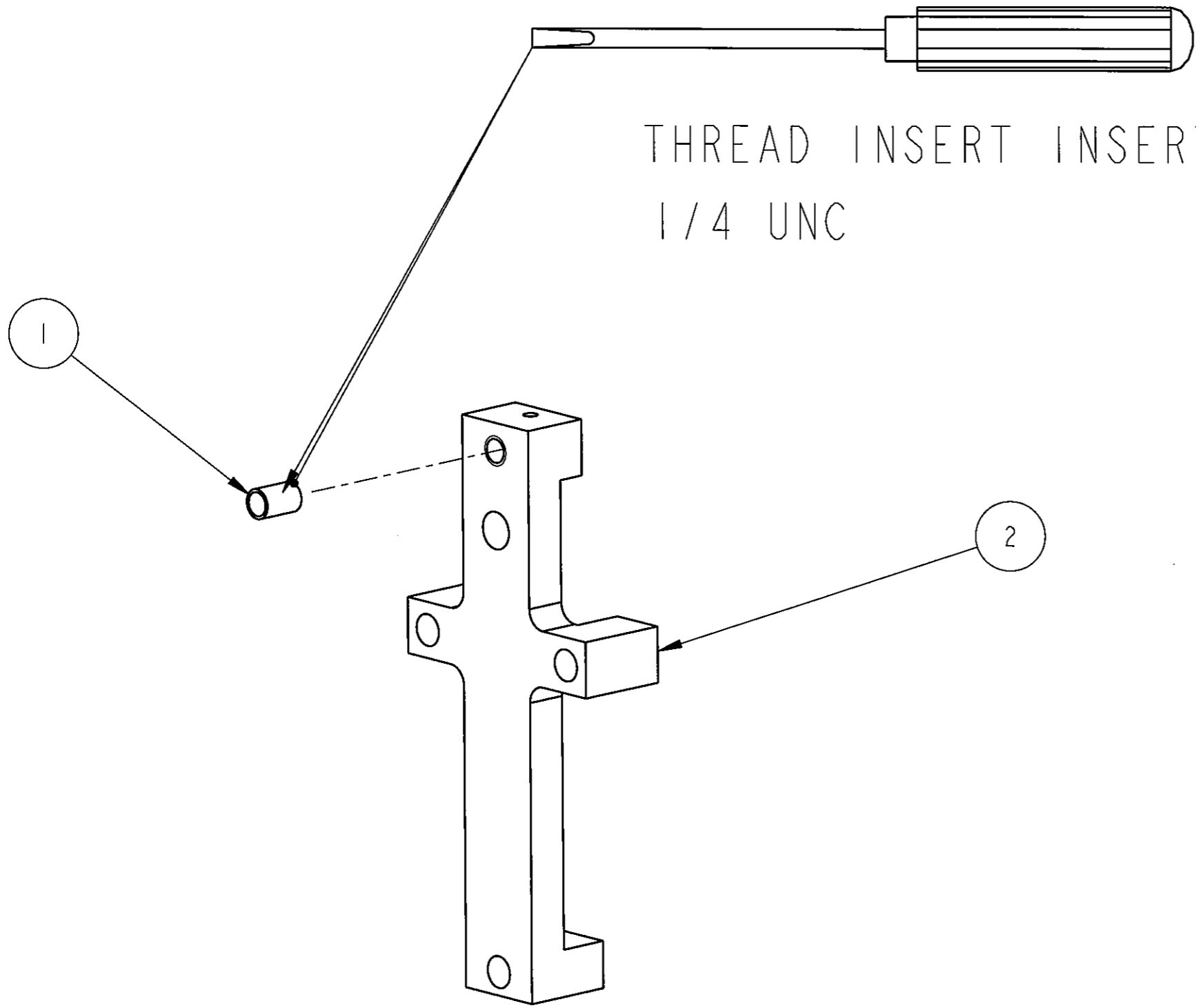
NOTES: (UNLESS OTHERWISE SPECIFIED)

1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	SYSTEM ADVANCED LIGO							
			SUB-SYSTEM SUS							
			NEXT ASSY							
			PART NAME TOP MASS ASSEMBLY SEQUENCE							
	<table border="1"> <tr> <th>NAME</th> <th>DATE</th> </tr> <tr> <td>M BALDWIN</td> <td>05/03/07</td> </tr> <tr> <td>CHECKED</td> <td>---</td> </tr> <tr> <td>APPROVED</td> <td>---</td> </tr> </table>	NAME	DATE	M BALDWIN	05/03/07	CHECKED	---	APPROVED	---	SIZE B DRG. NO. D060403.ASS.PRO REV A
NAME	DATE									
M BALDWIN	05/03/07									
CHECKED	---									
APPROVED	---									
SCALE 1:2		PROJECTION:	SHEET 24 OF 27							

REV.	DATE	DCN #	DRAWING TREE #

THREAD INSERT INSERTION TOOL

1/4 UNC



ADD THREAD INSERT INTO OSEM BRACKET

No.	PART NUMBER	PART DESCRIPTION	NO. RECD
1	1-4_20X1-50 UNC.THREAD_INSERT	1/4-20 x 1.50 UNC THREAD INSERT	1
2	D060412	OSEM BRACKET (TOP OSEM)	1

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES								
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	SYSTEM	ADVANCED LIGO							
		SUB-SYSTEM	SUS							
		NEXT ASSY								
		PART NAME	TOP MASS ASSEMBLY SEQUENCE							
	<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>M BALDWIN</td> <td>05/03/07</td> </tr> <tr> <td>CHECKED</td> <td>---</td> </tr> <tr> <td>APPROVED</td> <td>---</td> </tr> </tbody> </table>	NAME	DATE	M BALDWIN	05/03/07	CHECKED	---	APPROVED	---	SIZE DRG. NO. D060403.ASS.PRO SCALE 1:1 PROJECTION: SHEET 25 OF 27
NAME	DATE									
M BALDWIN	05/03/07									
CHECKED	---									
APPROVED	---									

REV.	DATE	DCN #	DRAWING TREE #

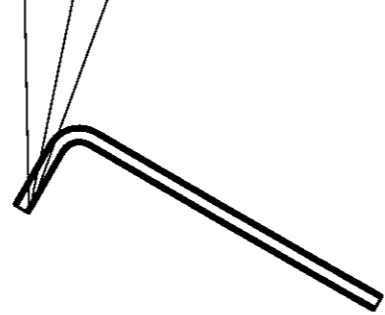
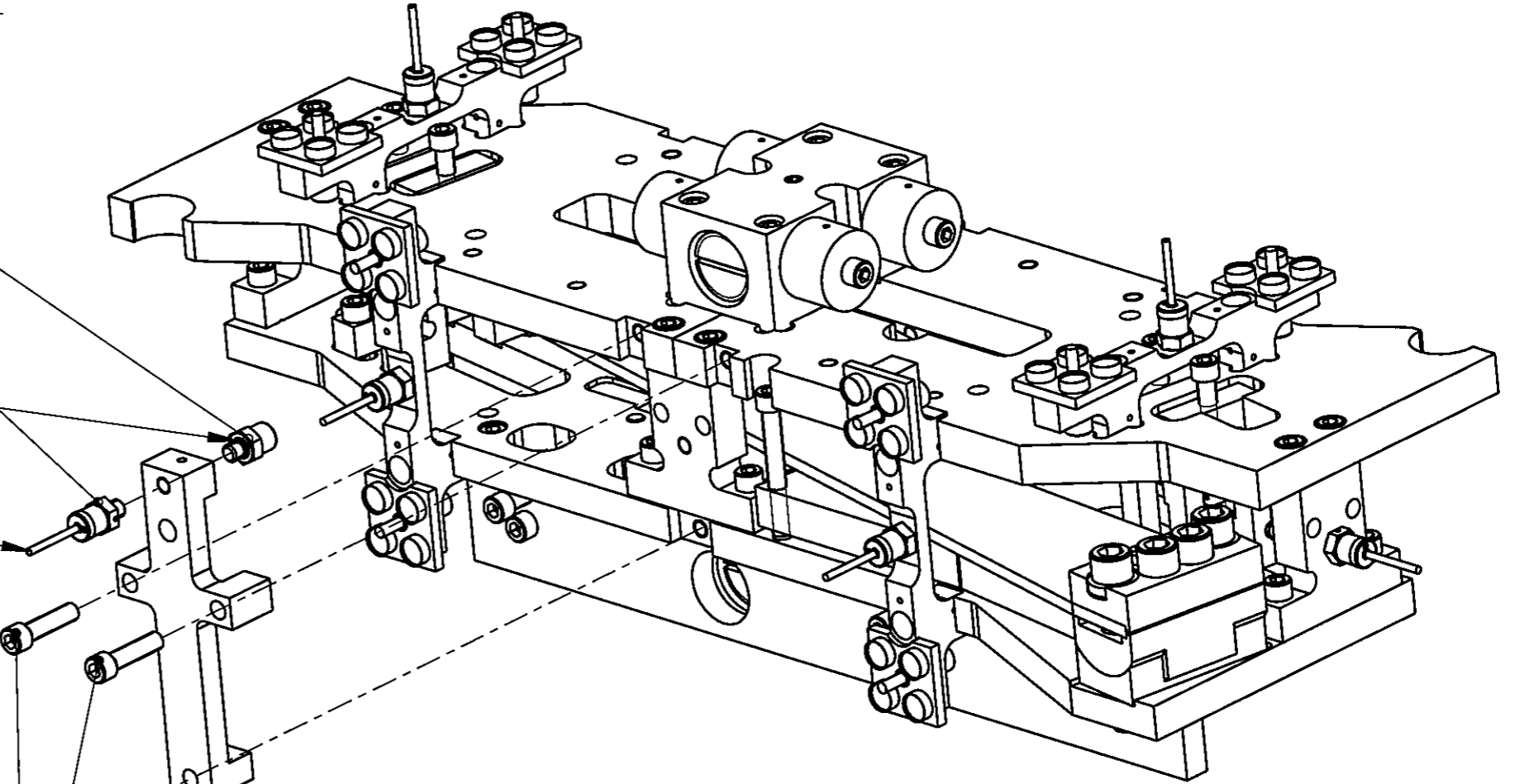


SIZE: 1/2 INCH
TORQUE: 15LB FT

3

2

1



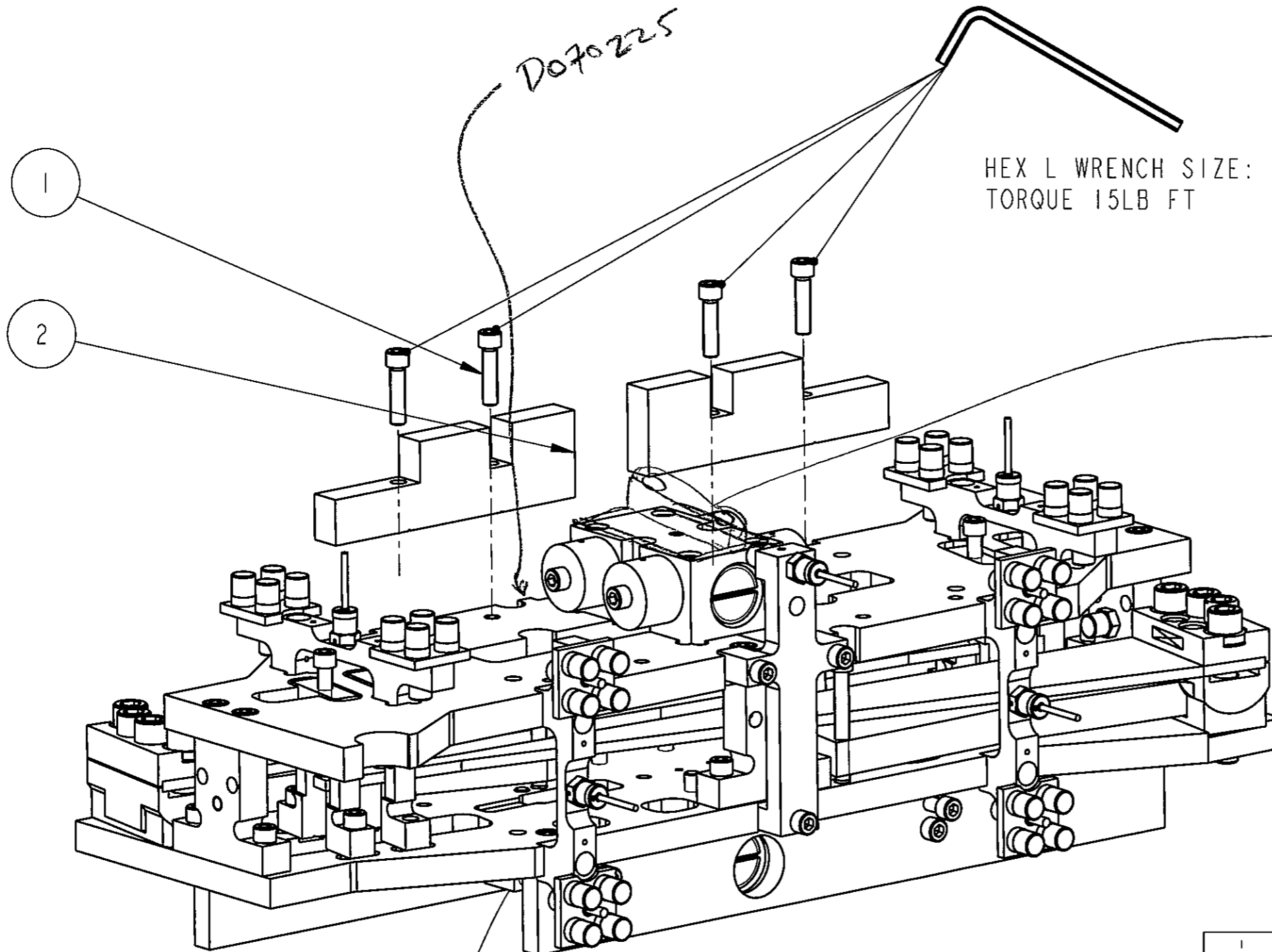
HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

ADD FINAL OSEM MAGNET FLAG ASSEMBLY

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20 UNC 1-001NCH	1/4" 20 UNC X 1" CAP HEAD	3
2	D060416	OSEM MAGNET AND FLAG	1
3	D060417	OSEM MAGNET AND FLAG CONCEPT	1

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES									
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY	SYSTEM ADVANCED LIGO									
	NOT TO BE USED FOR MANUFACTURE	SUB-SYSTEM SUS									
		NEXT ASSY									
		PART NAME TOP MASS ASSEMBLY SEQUENCE									
	<table border="1"> <thead> <tr> <th>NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>M BALDWIN</td> <td>06/03/07</td> </tr> <tr> <td>CHECKED</td> <td>---</td> </tr> <tr> <td>APPROVED</td> <td>---</td> </tr> </tbody> </table>	NAME	DATE	M BALDWIN	06/03/07	CHECKED	---	APPROVED	---	SIZE B DRG. NO. D060403.ASS.PRO SCALE 1:2 PROJECTION: SHEET 26 OF 27	REV A
NAME	DATE										
M BALDWIN	06/03/07										
CHECKED	---										
APPROVED	---										

REV.	DATE	DCN #	DRAWING TREE #



HEX L WRENCH SIZE: 3/16
TORQUE 15LB FT

ON THE REACTION CHAIN, ADD
ASSEMBLIES D070218.ASM

ADD ADDITIONAL MASS / SUPPORT MEMBER

D070218.ASM

AS PER RENDERING
ATTACHED.

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4.20 UNC-1-001NCH	1/4" 20 UNC X 1" CAP HEAD	4
2	D060421	MASS AND SUPPORT MEMBER	2

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY LIGO MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY	
		PART NAME TOP MASS ASSEMBLY SEQUENCE	
DRAWN	M BALDWIN	DATE	06/03/07
CHECKED	---	DATE	---/---/---
APPROVED	---	DATE	---/---/---
SIZE	B	ORG. NO.	D060403.ASS.PRO
SCALE 1:2		PROJECTION:	SHEET 27 OF 27

REACTION CHAIN ONLY
ADD CABLE CLAMPS.

