
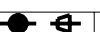


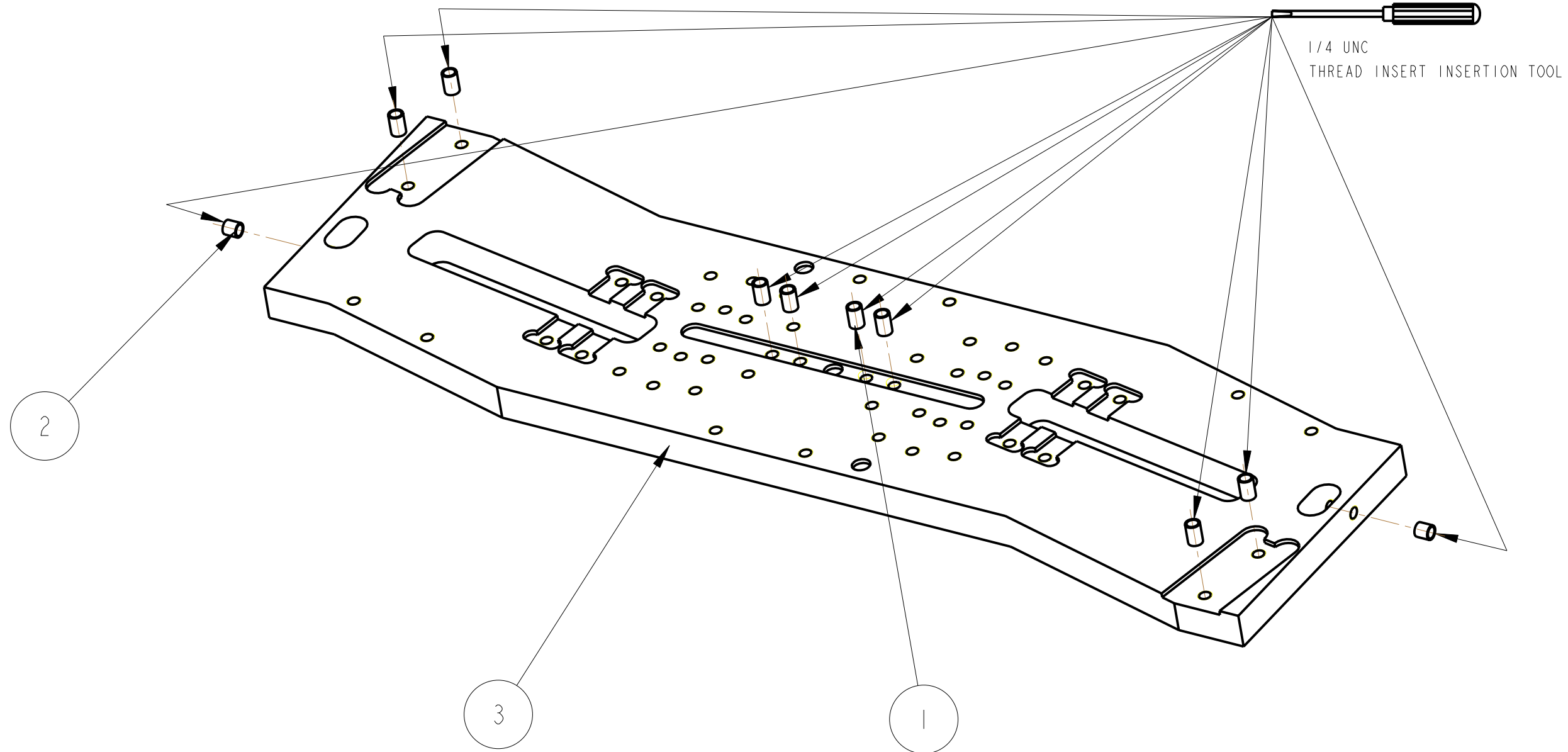
STEP	DESCRIPTION	PART#	QTY	TIME
1	ADD THREAD INSERTS TO BASE PLATE	I-4_20X1-5D_UNC_THREAD_INSERT	8	
		I-4_20X1D_UNC_THREAD_INSERT	2	
		D060376	1	
2	ATTACH ALL 4 STANDOFFS	I-4_20_UNC_1-001INCH_SIL_PLT	8	
		D060397	4	
		D060377	2	
3	ADD 2 UIM BLADE ADJUSTER BASES (D060377) MAY REQUIRE TAPPING IN WITH SOFT HEAD HAMMER	D060377	2	
4	ASSEMBLE BLADE INTO BLADE CLAMP (2 OFF)	I-4_20X1-5D_UNC_THREAD_INSERT	10	
		I-4_20_UNC_1-001INCH	8	
		I-4_20_UNC_2-001INCH_ROUND	2	
		D060237	2	
		D060378	2	
5	ATTACH ONE BLADE ASSEMBLY TO MASS	I-4_20_UNC_2-001INCH	2	
		I-4_SPHERICAL_WASHER	2	
		SURFACE_TABLE	1	
6	HELICOIL BLADE TIP STOPS (4 OFF)	I-4_20X1-5D_UNC_THREAD_INSERT	4	
		D060399	4	
7	PULL BLADE DOWN FLAT AND INSTALL BLADE TIP STOP (NOTE POSITION OF STOP)	I-4_20_UNC_1-001INCH_SIL_PLT	4	
		I-4_20_UNC_2-001INCH	2	
		I-4_20_UNC_2-001INCH_ROUND	2	
		I-4_20_UNC_NUT_..	2	
		I-4_SPHERICAL_WASHER	2	
8	AND SECONDARY BLADE TIP STOPS	D060237_FLAT	1	
		I-4_20_UNC_1-001INCH_SIL_PLT	4	
		I-4_20_UNC_2-001INCH_ROUND	2	
		I-4_20_UNC_NUT_..	2	
9	ADD THREAD INSERTS TO TOP PLATES (2 OFF) AND ATTACH TO MASS	D060237_FLAT	1	
		I-4_20X1D_UNC_THREAD_INSERT	2	
		I-4_20_UNC_1-001INCH_SIL_PLT	8	
10	ADD BLADE EDDY CURRENT DAMPERS	D060382	2	
		D060381	2	
		D0901344	2	
11	ASSEMBLE TURRET IN PLACE WITH NOMINAL ADDED MASS	D060398	1	
		I-4_20_UNC_1-001INCH_SIL_PLT	4	
		I-4_20_UNC_2-001INCH_SIL_PLT	2	
		D060359-100_0	4	
12	ASSEMBLE BOTTOM TURET AND MASS	D060398	1	
		I-4_20_UNC_1-001INCH_SIL_PLT	4	
		I-4_20_UNC_2-001INCH_SIL_PLT	2	
13	ASSEMBLE 4 OFF OSEMS ONTO ADJUSTERS	D060359-100_0	4	
		2-56_UNC_0-375INCH	3	
		8-32X1-5D_UNC_THREAD_INSERT	2	
		8-32_UNC_0-625INCH	2	

STEP	DESCRIPTION	PART#	QTY	TIME
		D060336	2	
		D060388	1	
		D060389	1	
		OSEM_CORE	1	
14	ASSEMBLE ALL OSEMS AND COUNTER WEIGHTS TO MASS	I-4_20_UNC_1-001INCH_SIL_PLT	10	
		D060379	4	
		D060387	3	
15	ASSEMBLE FLAG ASSEMBLY	I-4_20X1-5D_UNC_THREAD_INSERT	1	
		I-4_20_UNC_1-001INCH_SIL_PLT	2	
		I-4_20_UNC_NUT_..	1	
		D060386	1	
		D060392	1	
16	ASSEMBLE FLAGS AND COUNTER-WEIGHTS TO MASS	D060394	1	
		D060400	1	
		D060401	4	
		D0901344	2	
17	ADD NOMINAL ADDABLE/REMOVABLE MASS, AND EQ-STOPS	I-4_20_UNC_1-001INCH_SIL_PLT	8	
		D060379	4	
		D060385	3	
18	ASSEMBLE TOP CABLE CLAMP	I-4_20_UNC_1-001INCH_SIL_PLT	6	
		I-4_20_UNC_NUT_..	8	
		D070549	4	
		D060359-050_0	6	
19	ASSEMBLE BOTTOM CABLE-CLAMP	I-4_20_UNC_1-001INCH	2	
		I-4_20_UNC_NUT_..	2	
		D070220	1	
		D070226	1	
20	ASSEMBLE CABLE CLAMPS TO REACTION CHAIN MASS	I-4_20_UNC_1-001INCH	2	
		I-4_20_UNC_NUT_..	2	
		D070219	1	
		D070226	1	
21	ADD SCREWS TO THE MAIN CHAIN MASS	I-4_20_UNC_2-001INCH_SIL_PLT	4	

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 aLIGO QUAD		
PART NAME UIM PROCESS		
PART NAME aLIGO QUAD		
DRAWN J O'DELL 05/03/10 CHECKED J'OD ---/---/--- APPROVED JOD 07/MAR/10	NAME DATE J O'DELL 05/03/10 J'OD ---/---/--- JOD 07/MAR/10	DRG. NO. D060375_PROCESS SCALE 1:1 PROJECTION:  SHEET 1 OF 2



1/4 UNC
THREAD INSERT INSERTION TOOL

2

3

1

ADD THREAD INSERTS TO BASE PLATE

1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	8
2	1-4_20X1D_UNC_THREAD_INSERT	1/4-20 x 1.0D UNC THREAD INSERT	2
3	D060376	MASS BASE PLATE	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

NOTES: (UNLESS OTHERWISE SPECIFIED)

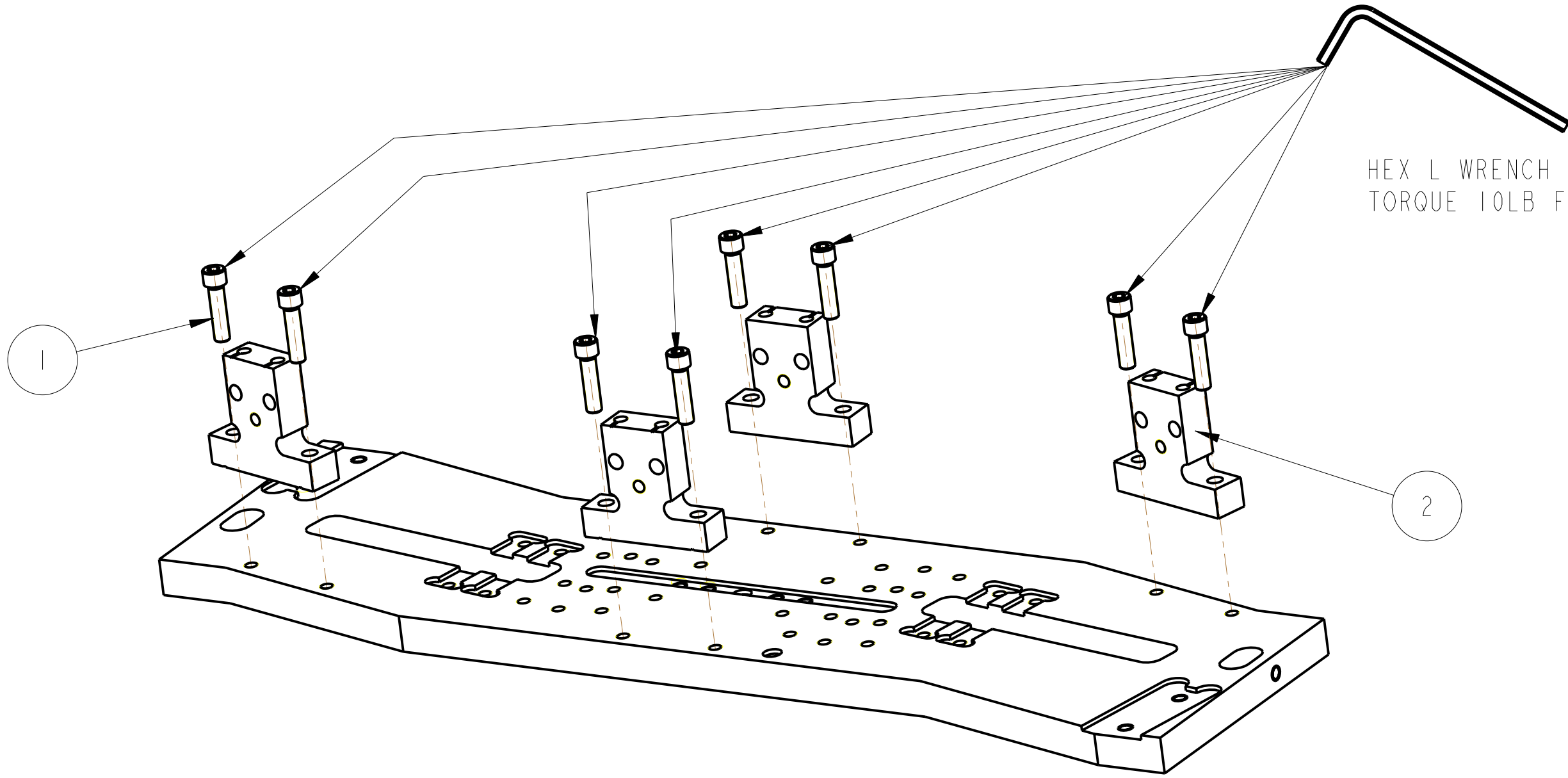
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

NAME	DATE
DRAWN J O'DELL	16/11/09
CHECKED J'OD	--/--/--
APPROVED JOD	07/MAR/10

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 RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
 SUB-SYSTEM **SUS**
 NEXT ASSY **aLIGO QUAD**
 PART NAME **UIM PROCESS**
aLIGO QUAD

SCALE 1:2 PROJECTION: SHEET 2 OF 2



HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

ATTACH ALL 4 STANDOFFS

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20 UNC 1-00 INCH SIL PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	8
2	D060397	TOP MASS SPACER	4

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.		
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		
	NAME	DATE
DRAWN	J O'DELL	11/11/09
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

LIGO CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1GR, GLASGOW UNIVERSITY GEO 600 GROUP
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SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

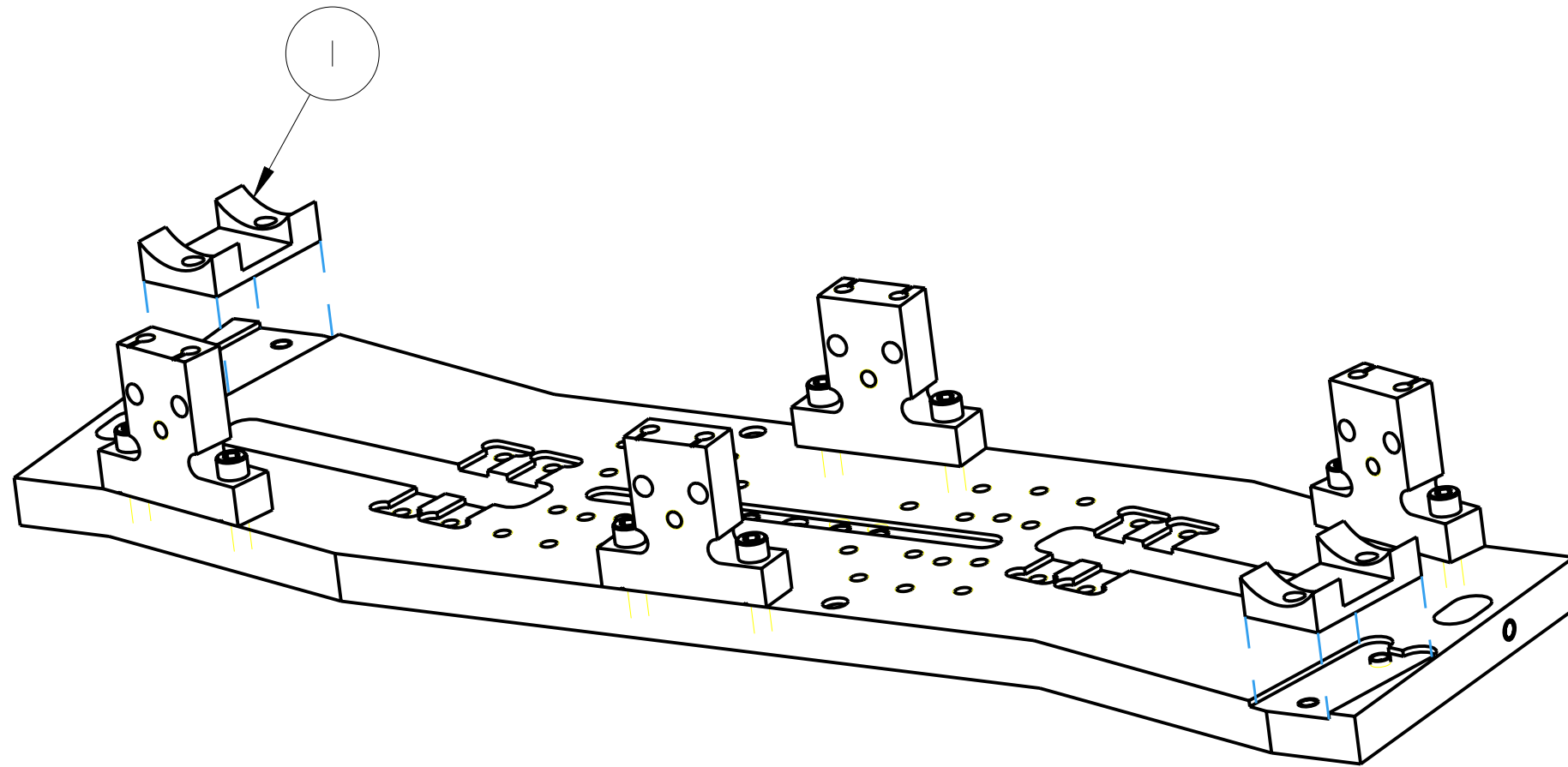
NEXT ASSY **aLIGO QUAD**

PART NAME **UIM PROCESS**
aLIGO QUAD

SIZE **B** DRG. NO. **D060375_PROCESS** REV **B.**

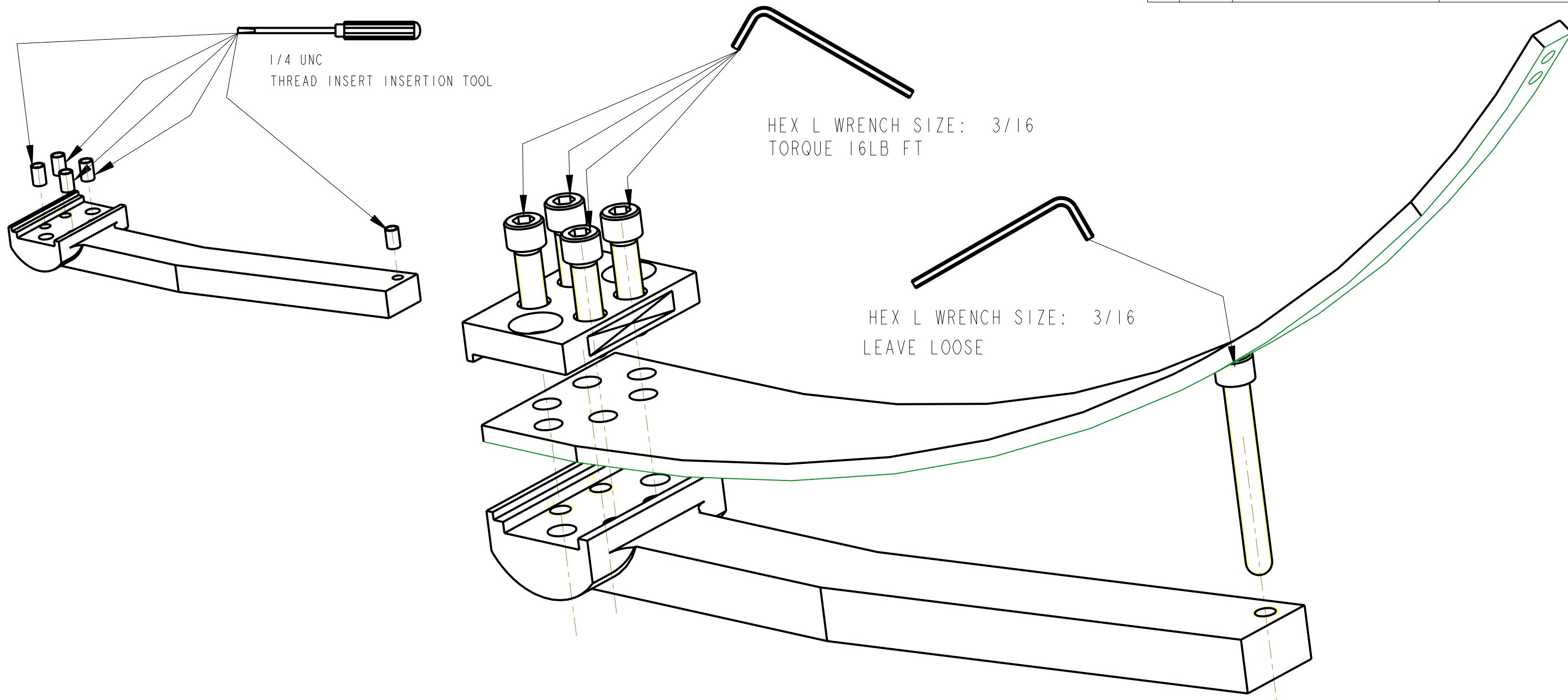
SCALE 1:2 PROJECTION: SHEET 3 OF 2

REV.	DATE	DCN #	DRAWING TREE #



ADD 2 UIM BLADE ADJUSTER BASES (D060377)
MAY REQUIRE TAPPING IN WITH SOFT HEAD HAMMER

1	D060377	BLADE TIP Z POSITION ADJ	2
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES 100	
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY aLIGO QUAD	
		PART NAME UIM PROCESS	
		PART NAME aLIGO QUAD	
	NAME	DATE	SIZE
DRAWN	J O'DELL	28/Jun/07	B
CHECKED	J'OD	--/--/--	DRG. NO. D060375_PROCESS
APPROVED	JOD	07/MAR/10	REV B.
SCALE 1:2		PROJECTION:	SHEET 4 OF 2



ASSEMBLE BLADE INTO BLADE CLAMP (2 OFF)

1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	10
2	1-4_20_UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	8
3	1-4_20_UNC_2-001NCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	2
4	D060237	BOTTOM BLADE SPRINGS	2
5	D060378	BLADE TIP Z POSITION ADJ	2
6	D060380-000	BLADE CLAMP	2
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

NOTES: (UNLESS OTHERWISE SPECIFIED)

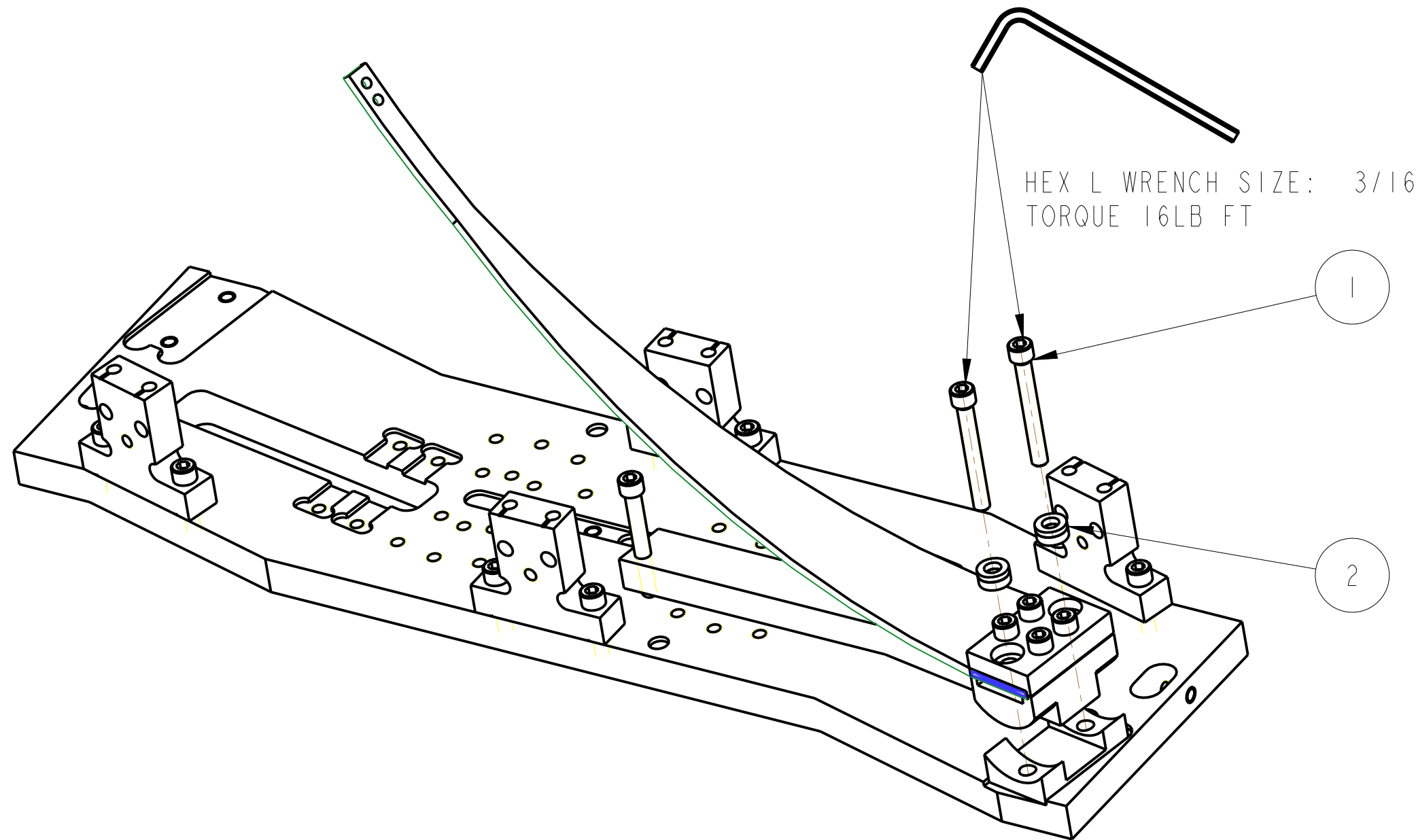
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

DRAWN	J O'DELL	05/03/10
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
DRG. NO.	D060375_PROCESS

SCALE 1:2 PROJECTION: SHEET 5 OF 2

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ATTACH ONE BLADE ASSEMBLY TO MASS

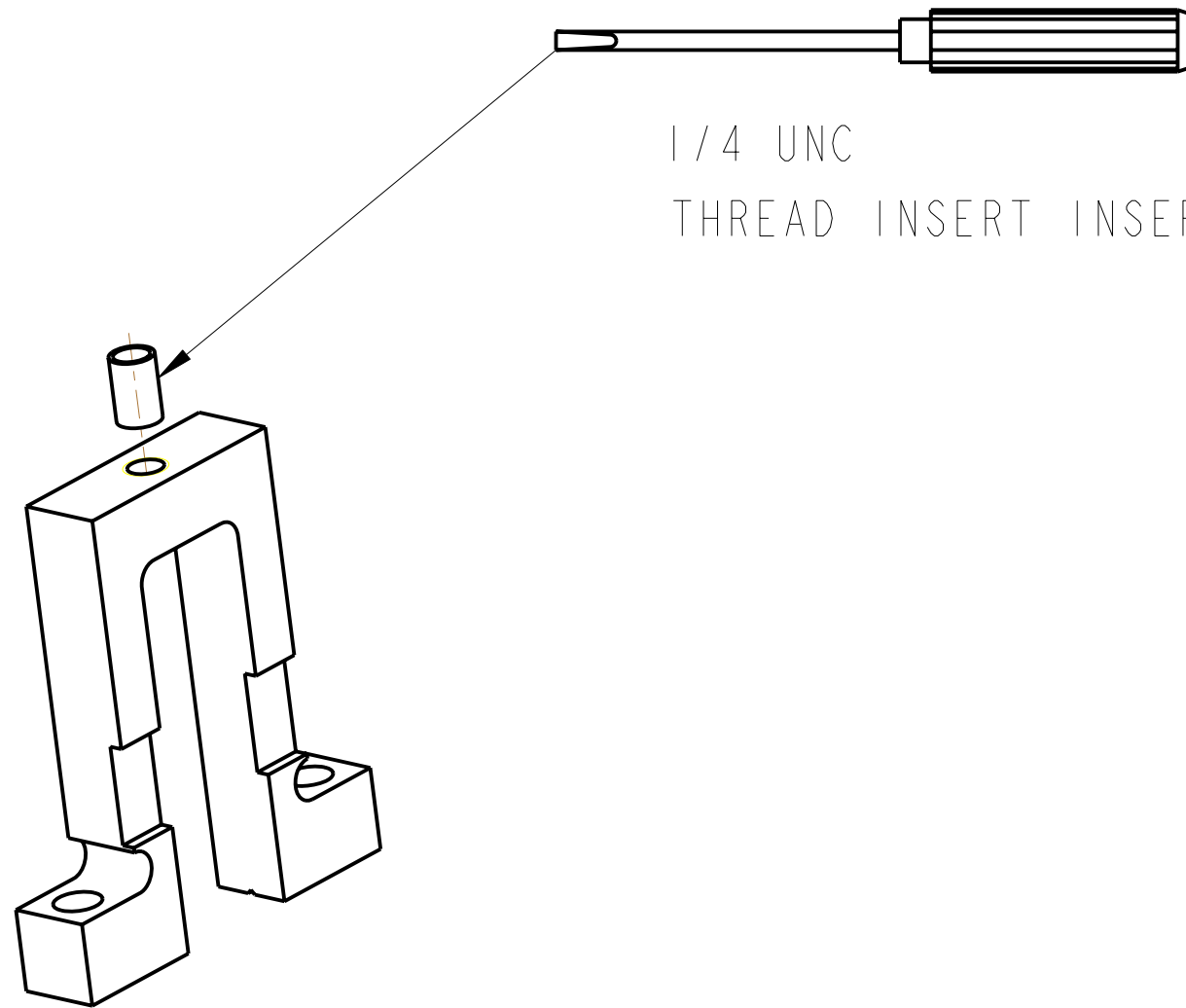
1	1-4.20 UNC.2-00INCH	1/4" 20 UNC X 2" CAP HEAD	2
2	1-4.SPHERICAL.WASHER	1/4 SPHERICAL WASHER	2
3	SURFACE.TABLE		1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

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 aLIGO QUAD																			
PART NAME UIM PROCESS aLIGO QUAD																			
<table border="1"> <tr> <td> </td> <td>NAME</td> <td>DATE</td> </tr> <tr> <td>DRAWN</td> <td>J O'DELL</td> <td>12/11/09</td> </tr> <tr> <td>CHECKED</td> <td>J'OD</td> <td>--/--/--</td> </tr> <tr> <td>APPROVED</td> <td>JOD</td> <td>07/MAR/10</td> </tr> </table>		NAME	DATE	DRAWN	J O'DELL	12/11/09	CHECKED	J'OD	--/--/--	APPROVED	JOD	07/MAR/10	<table border="1"> <tr> <td>SIZE</td> <td>DRG. NO.</td> <td>REV</td> </tr> <tr> <td>B</td> <td>D060375_PROCESS</td> <td>B.</td> </tr> </table>	SIZE	DRG. NO.	REV	B	D060375_PROCESS	B.
	NAME	DATE																	
DRAWN	J O'DELL	12/11/09																	
CHECKED	J'OD	--/--/--																	
APPROVED	JOD	07/MAR/10																	
SIZE	DRG. NO.	REV																	
B	D060375_PROCESS	B.																	
SCALE 1:2		PROJECTION:																	
SHEET 6 OF 2																			

REV.	DATE	DCN #	DRAWING TREE #



1/4 UNC
THREAD INSERT INSERTION TOOL

HELICOIL BLADE TIP STOPS (4 OFF)

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20 UNC_1-001NCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
2	1-4_20 UNC_2-001NCH	1/4" 20 UNC X 2" CAP HEAD	2
3	1-4_20 UNC_2-001NCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	2
4	1-4_20 UNC_NUT_..	1/4 20 UNC NUT	2
5	1-4_SPERICAL_WASHER	1/4 SPHERICAL WASHER	2
6	D060237_FLAT	BOTTOM BLADE SPRINGS	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		
	NAME	DATE
DRAWN	J O'DELL	12/11/09
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

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SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

NEXT ASSY **aLIGO QUAD**

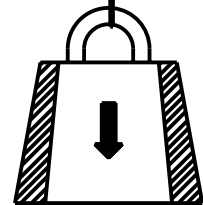
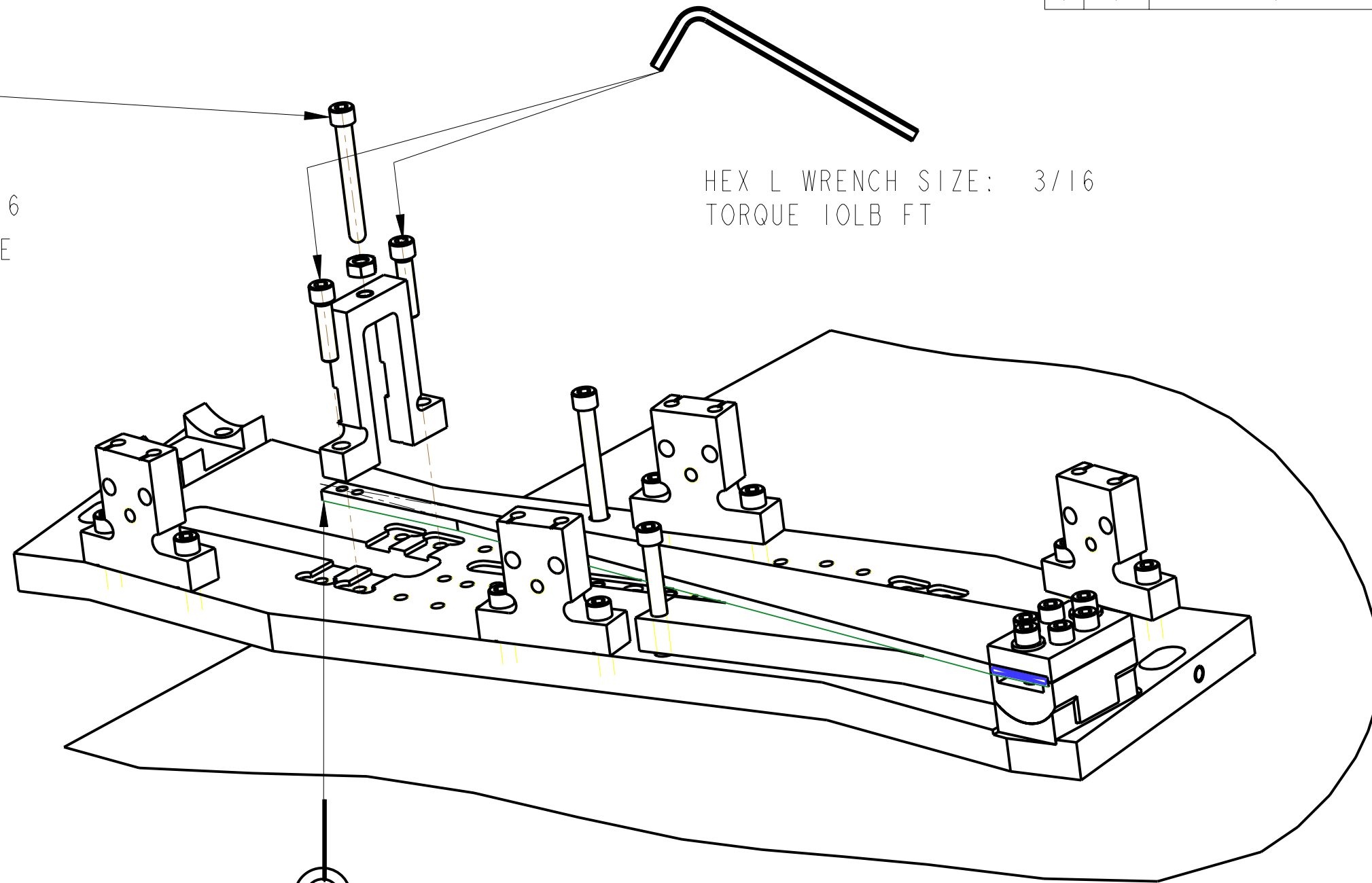
PART NAME **UIM PROCESS**
aLIGO QUAD

SIZE **B** DRG. NO. **D060375_PROCESS** REV **B.**

SCALE 1:1 PROJECTION: SHEET 7 OF 2

HEX L WRENCH SIZE: 3/16
 ROUND TIP TO TOUCH BLADE

HEX L WRENCH SIZE: 3/16
 TORQUE 10LB FT



MASS: 40 KG

PULL BLADE DOWN FLAT AND INSTALL BLADE TIP STOP
 (NOTE POSITION OF STOP)

REPEAT THIS STEP (AND PREVIOUS 2) FOR REMAINING BLADE

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20_UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
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	1-4_20_UNC_NUT_	1/4 20 UNC NUT	2
5	1-4_SPERICAL_WASHER	1/4 SPHERICAL WASHER	2
6	D060237_FLAT	BOTTOM BLADE SPRINGS	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

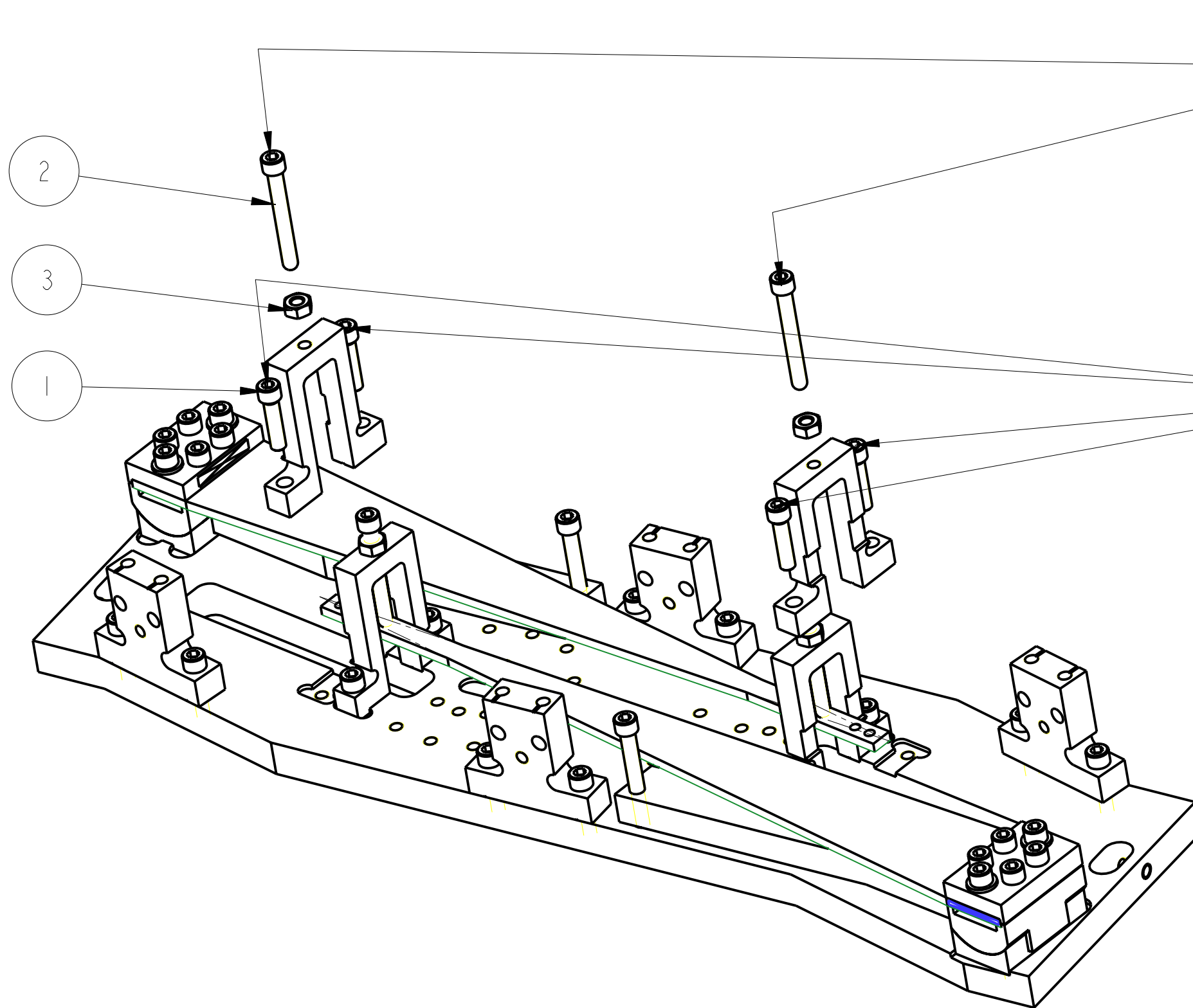
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

DRAWN	J O'DELL	08/03/10
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
DRG. NO.	D060375_PROCESS

SCALE 1:2 PROJECTION: SHEET 8 OF 2

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HEX L WRENCH SIZE: 3/16
ROUND TIP TO TOUCH BLADE

HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

AND SECONDARY BLADE TIP STOPS

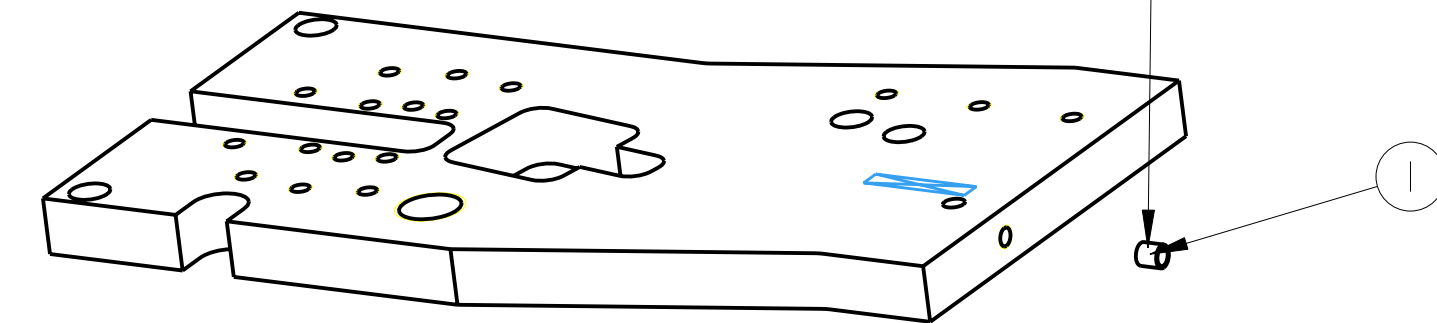
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20 UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
2	1-4_20 UNC_2-00INCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	2
3	1-4_20 UNC_NUT_	1/4 20 UNC NUT	2
4	D060237_FLAT	BOTTOM BLADE SPRINGS	1

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 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
	SYSTEM ADVANCED LIGO		
	SUB-SYSTEM SUS		
	NEXT ASSY aLIGO QUAD		
PART NAME UIM PROCESS		SIZE B DRG. NO. D060375_PROCESS REV B. SCALE 1:2 PROJECTION: SHEET 9 OF 2	
DRAWN	J O'DELL 17/11/09		
CHECKED	J'OD ---/---/---		
APPROVED	JOD 07/MAR/10		

HEX L WRENCH SIZE: 3/16
TORQUE 10 LB FT

THREAD INSERTION TOOL
1/4 UNC



ADD THREAD INSERTS TO TOP PLATES (2 OFF) AND ATTACH TO MASS

1	1-4-.20XID-UNC-THREAD-INSERT	1/4-20 x ID UNC THREAD INSERT	2
2	1-4-.20-UNC-1-00INCH-SIL-PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	8
3	D060382	UI MASS TOP PLATE	2
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

NAME	DATE	SIZE	REV
DRAWN J O'DELL	04/JUL/07	B	B.
CHECKED J'OD	--/--/--		
APPROVED JOD	07/MAR/10		

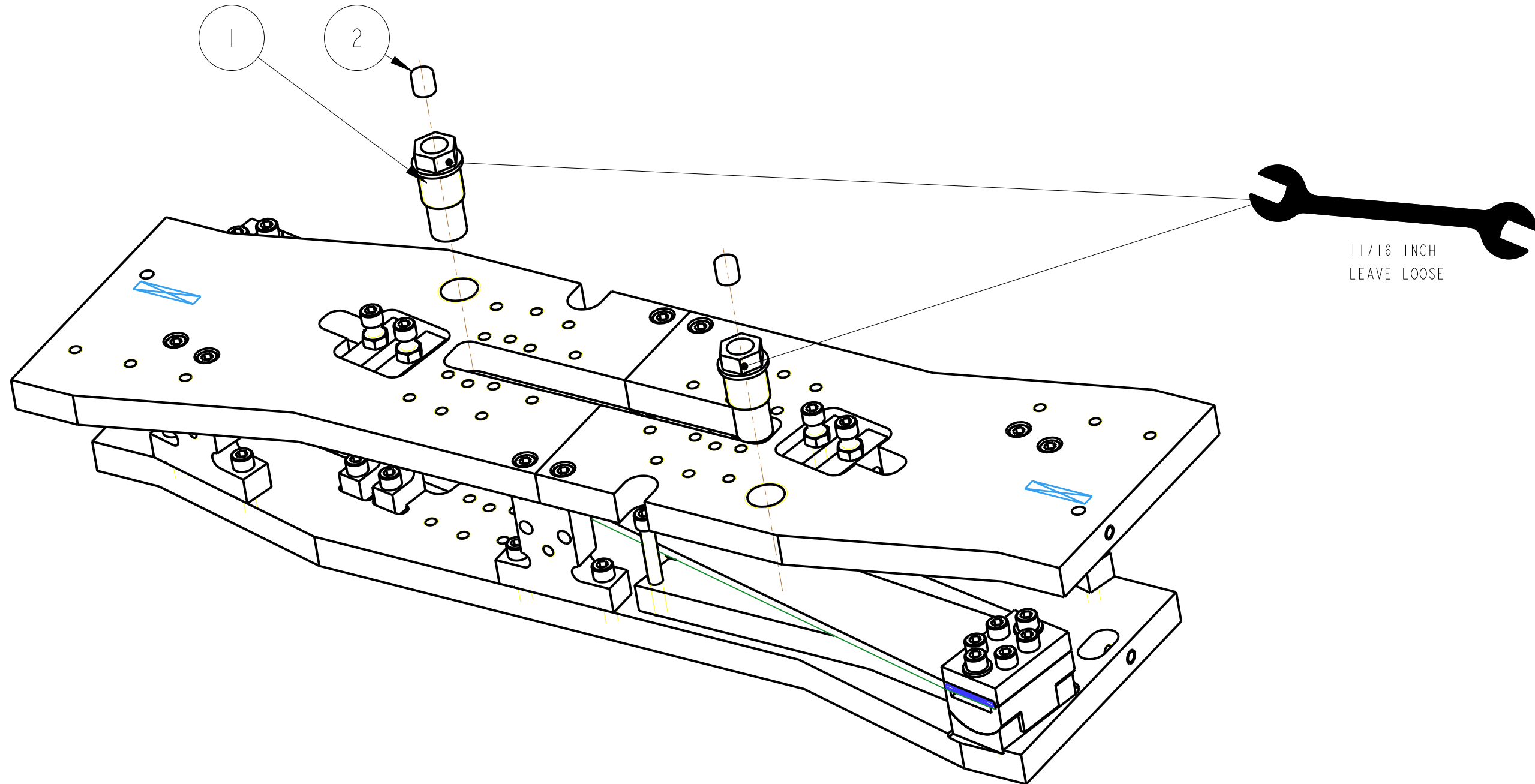
DRG. NO. D060375_PROCESS

SCALE 1:2 PROJECTION: SHEET 10 OF 2

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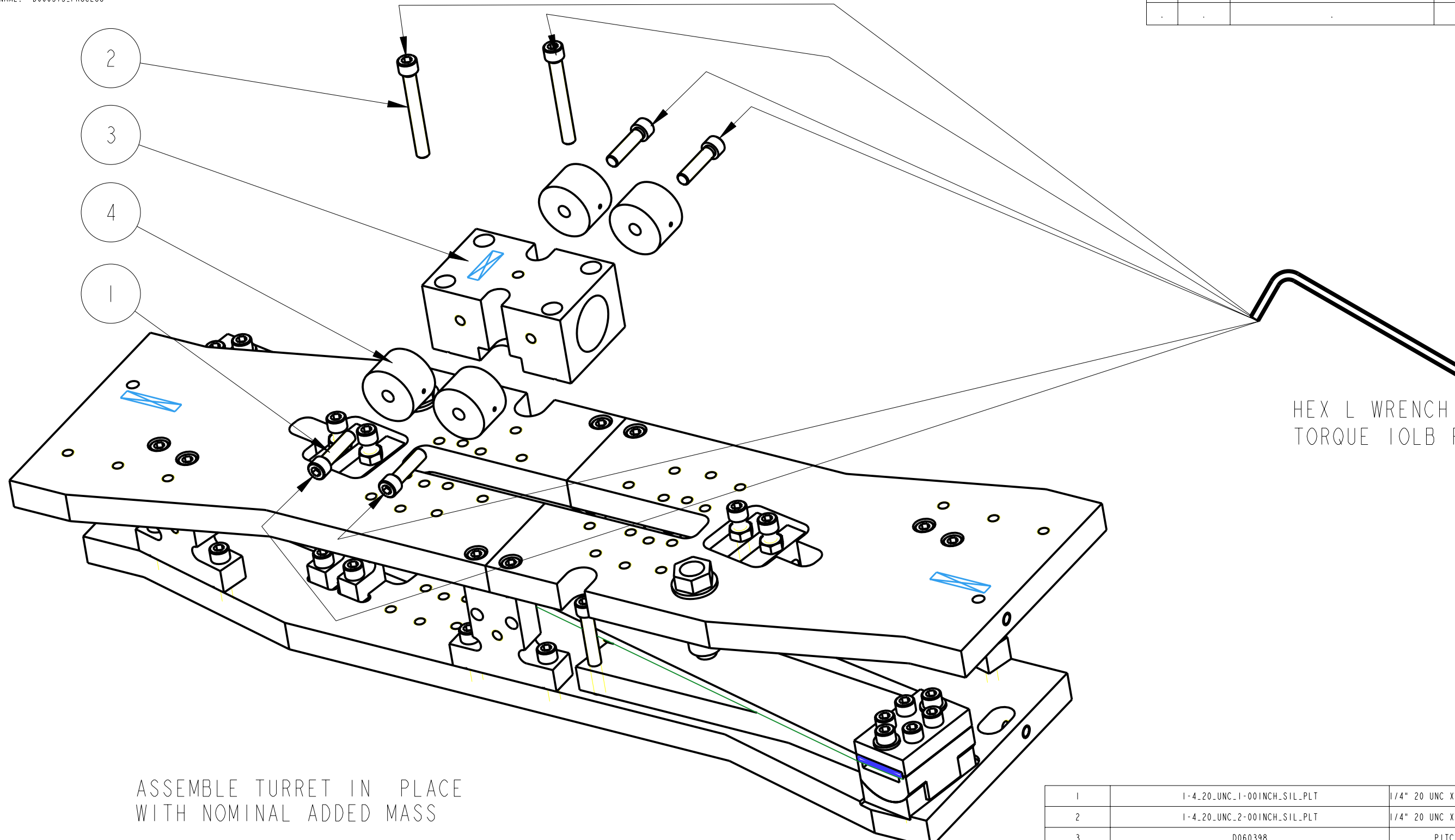
SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY **aLIGO QUAD**
PART NAME **UIM PROCESS**
aLIGO QUAD

ADD BLADE EDDY CURRENT DAMPERS



No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	D060381	UI MASS BLADE ECD	2
2	D0901344	10MM DIA X 10MM MAGNET	2

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 aLIGO QUAD
		PART NAME UIM PROCESS aLIGO QUAD
DRAWN	J O'DELL 04/Ju1/07	SIZE B DRG. NO. D060375_PROCESS REV B.
CHECKED	J'OD ---/---/---	
APPROVED	JOD 07/MAR/10	
		SCALE 1:2 PROJECTION: SHEET 11 OF 2



ASSEMBLE TURRET IN PLACE WITH NOMINAL ADDED MASS

1	1-4_20 UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
2	1-4_20 UNC_2-00INCH_SIL_PLT	1/4" 20 UNC X 2" CAP HEAD SILVER PLATED	2
3	D060398	PITCH ADJUSTER & MASS	1
4	D060359-100_0	ADDITIONAL MASS	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

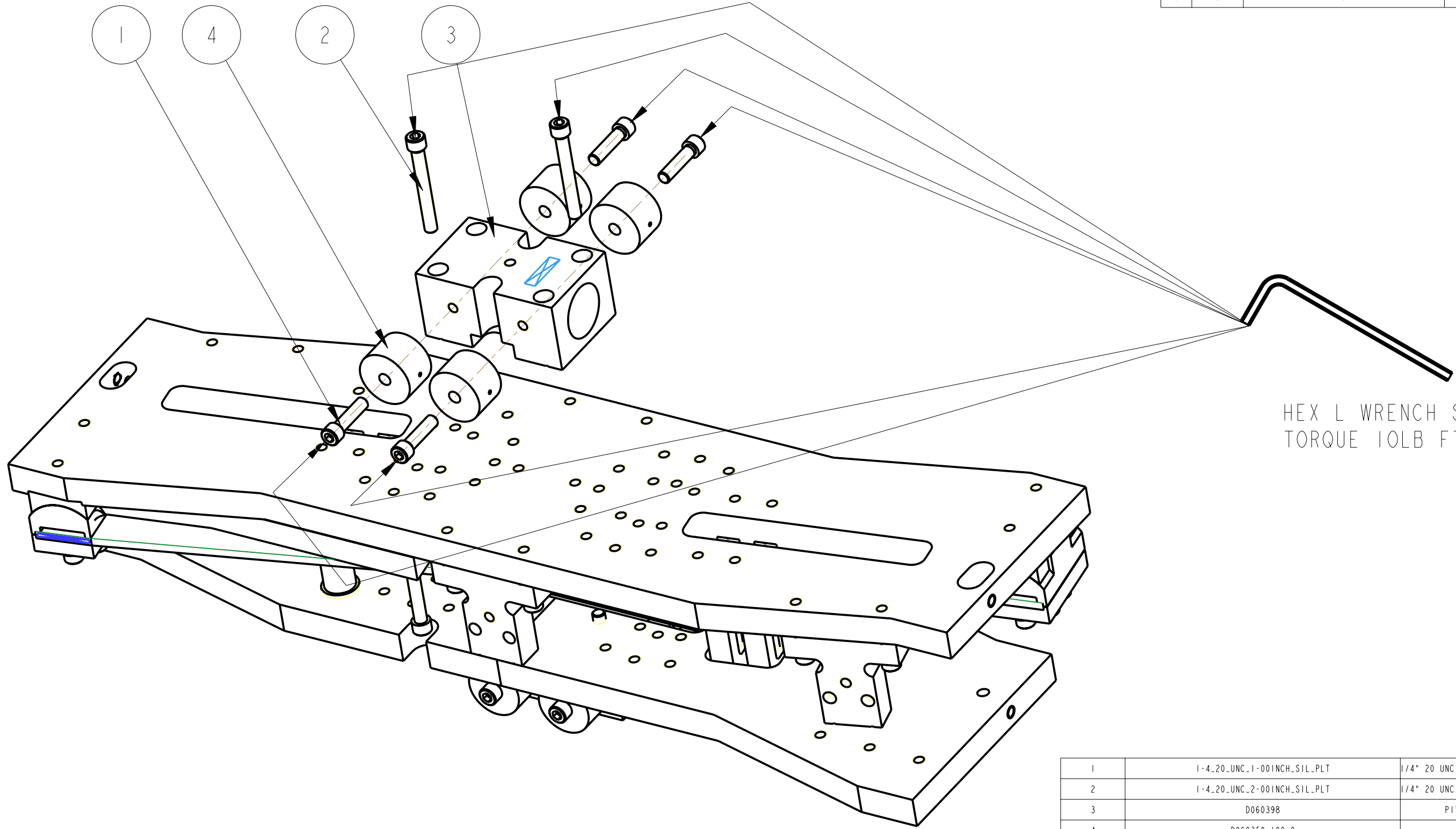
NOTES: (UNLESS OTHERWISE SPECIFIED)

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

CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
SCALE	1:2
PROJECTION	1st Angle
SHEET	12 OF 2

DRAWN	J O'DELL	04/JUL/07
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SIZE	B
DRG. NO.	D060375_PROCESS
REV	B.



HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

ASSEMBLE BOTTOM TURET AND MASS

1	1-4_20_UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
2	1-4_20_UNC_2-00INCH_SIL_PLT	1/4" 20 UNC X 2" CAP HEAD SILVER PLATED	2
3	D060398	PITCH ADJUSTER & MASS	1
4	D060359-100_0	ADDITIONAL MASS	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

NAME	DATE
DRAWN J O'DELL	05/Ju1/07
CHECKED J'OD	--/--/--
APPROVED JOD	07/MAR/10

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RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**

SUB-SYSTEM **SUS**

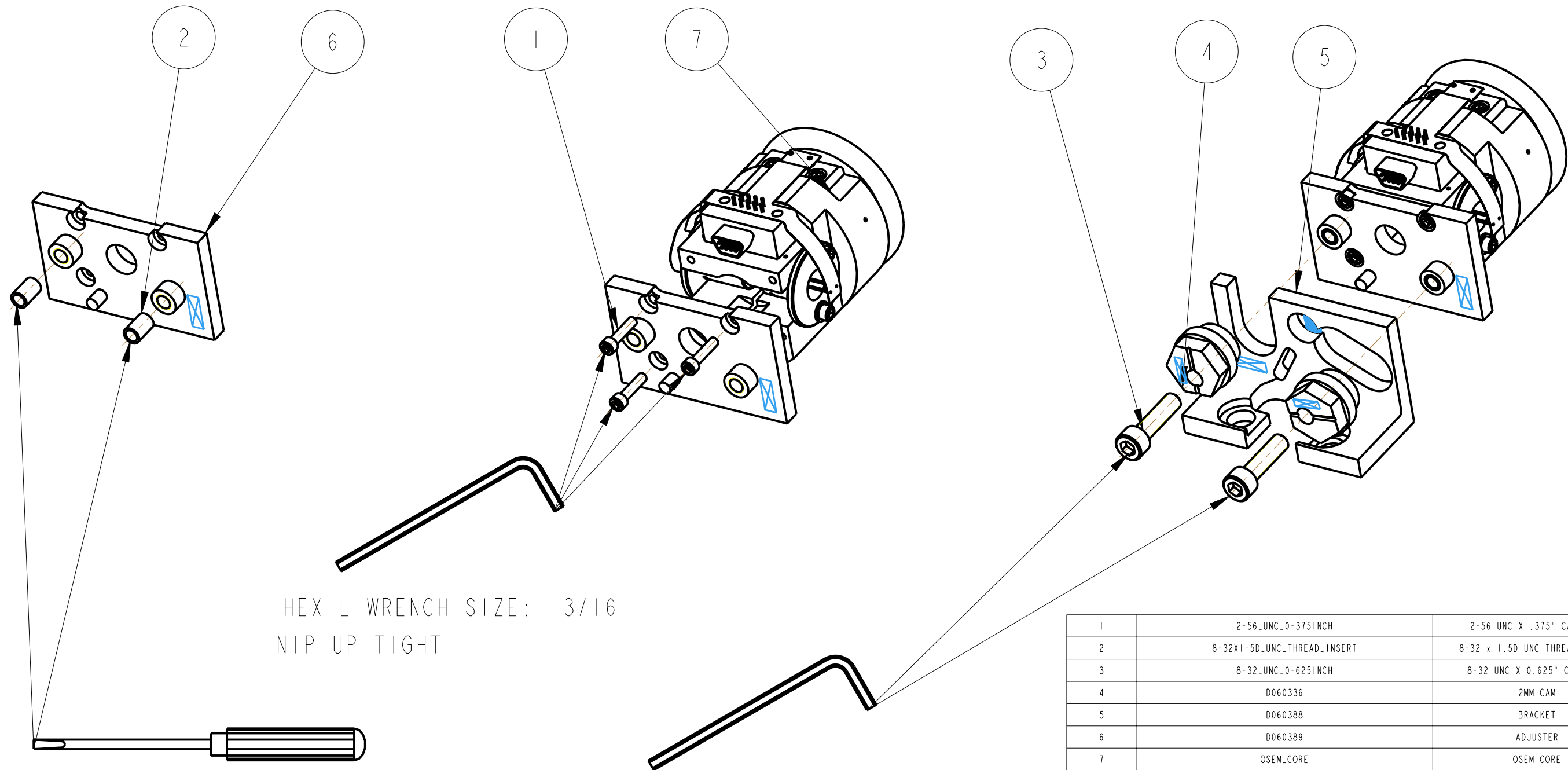
NEXT ASSY **aLIGO QUAD**

PART NAME **UIM PROCESS**
aLIGO QUAD

DRG. NO. **D060375_PROCESS**

SCALE 1:2 PROJECTION: SHEET 13 OF 2

REACTION CHAIN ONLY



HEX L WRENCH SIZE: 3/16
NIP UP TIGHT

8-32
THREAD INSERT INSERTION TOOL

HEX L WRENCH SIZE: 9/64
FINGER TIGHT

ASSEMBLE 4 OFF OSEMS ONTO ADJUSTERS
(REACTION CHAIN MASS ONLY)

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	2-56_UNC_0-375INCH	2-56 UNC X .375" CAP HEAD	3
2	8-32X1-5D_UNC_THREAD_INSERT	8-32 x 1.5D UNC THREAD INSERT	2
3	8-32_UNC_0-625INCH	8-32 UNC X 0.625" CAP HEAD	2
4	D060336	2MM CAM	2
5	D060388	BRACKET	1
6	D060389	ADJUSTER	1
7	OSEM_CORE	OSEM CORE	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

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

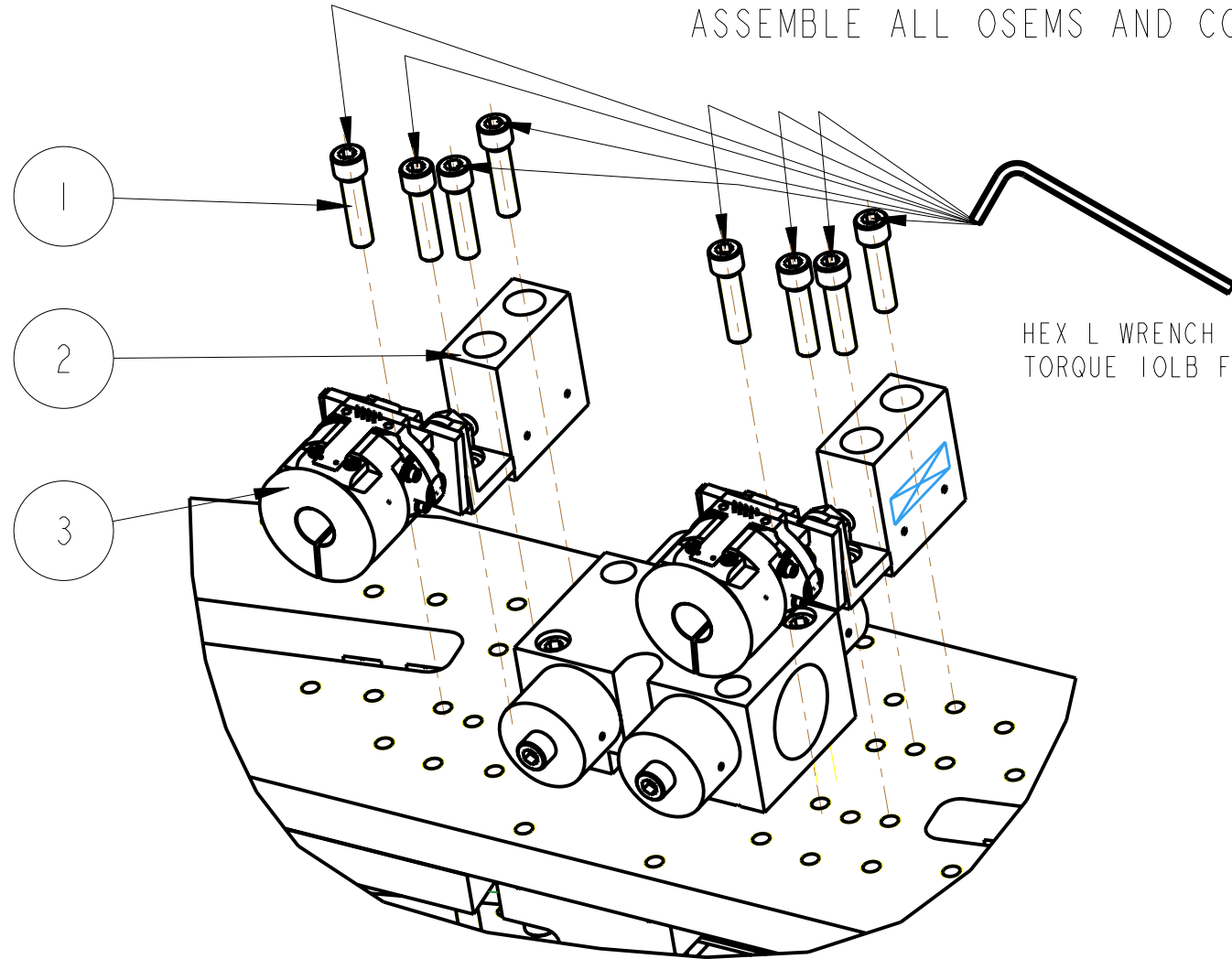
DRAWN	J O'DELL	05/JUL/07
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
DRG. NO.	D060375_PROCESS

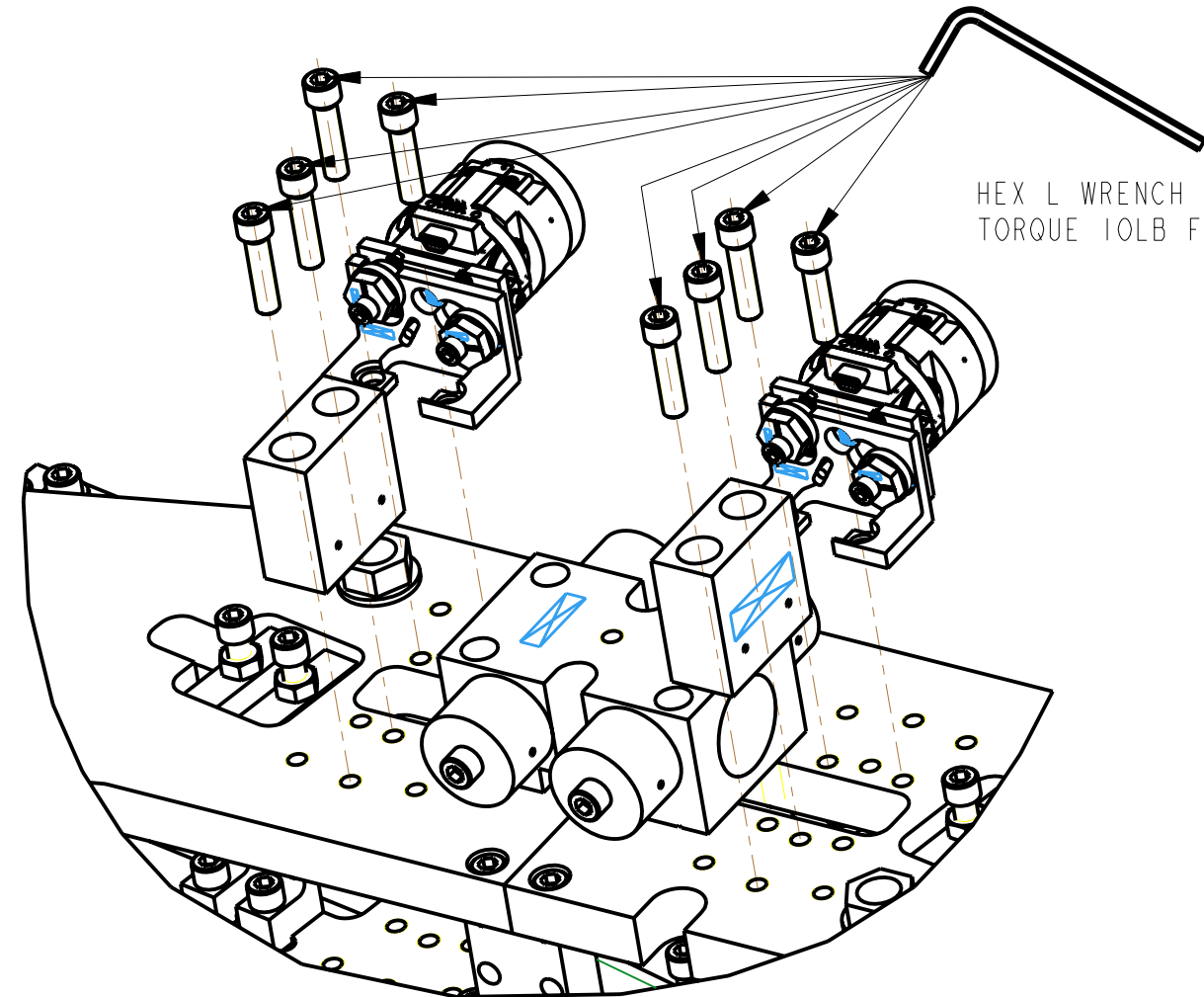
SCALE 1:1 PROJECTION: SHEET 14 OF 2

REACTION CHAIN ONLY

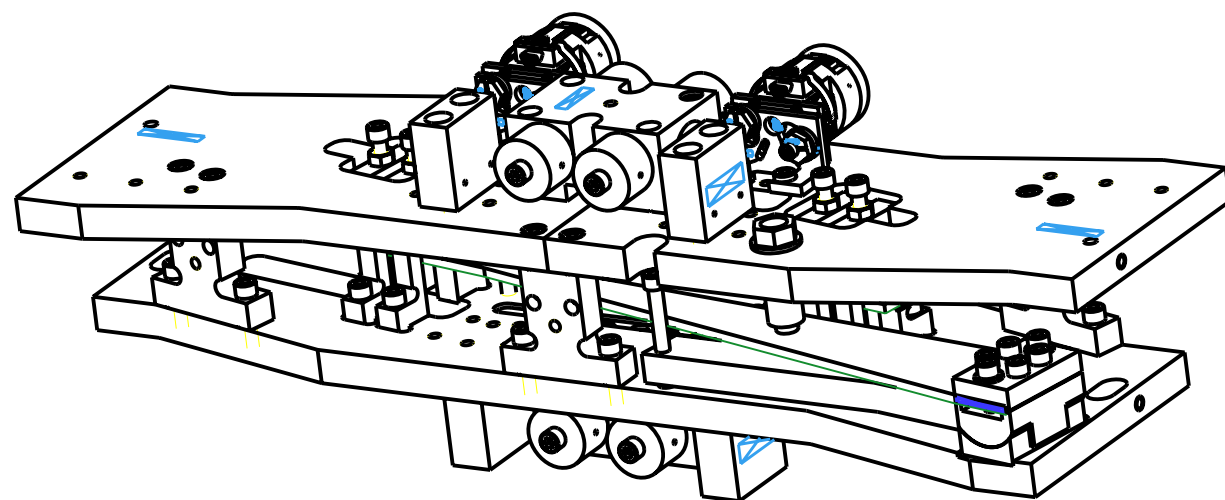
ASSEMBLE ALL OSEMS AND COUNTER WEIGHTS TO MASS



PARTIAL VIEW SHOWING OSEM AND COUNTER WEIGHT ATTACHMENT TO BOTTOM OF MASS



PARTIAL VIEW SHOWING ATTACHMENT OF OSEM AND COUNTER WEIGHT ATTACHMENT TO TOP OF MASS



SCALE 3:10

1	1-4_20_UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	10
2	D060379	OSEM AND FLAG COUNTERWEIGHT	4
3	D060387	UI MASS OSEM MOUNT	3
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

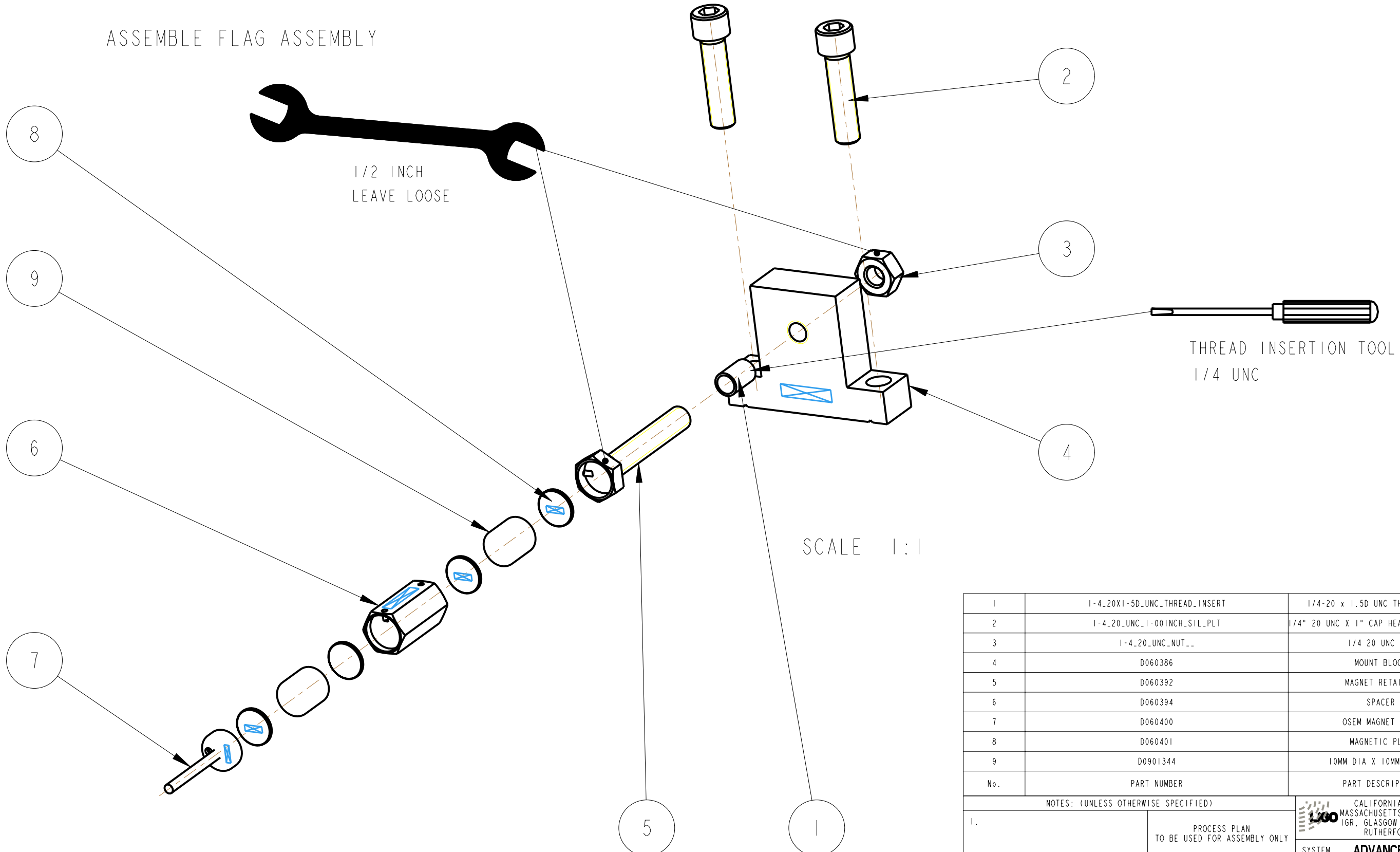
DRAWN	J O'DELL	04/03/10
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
DRG. NO.	D060375_PROCESS

SCALE 1:2 PROJECTION: SHEET 15 OF 2

MAIN CHAIN ONLY

ASSEMBLE FLAG ASSEMBLY



NOTE:

PRESS MAGNETIC PLUGS (D060401) INTO PARTS D060392, D060394 AND D060400 IN THE LOCATIONS SHOWN, USING A SMALL BENCH PRESS

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	1
2	1-4_20_UNC-1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	2
3	1-4_20_UNC_NUT_..	1/4 20 UNC NUT	1
4	D060386	MOUNT BLOCK	1
5	D060392	MAGNET RETAINER	1
6	D060394	SPACER	1
7	D060400	OSEM MAGNET FLAG	1
8	D060401	MAGNETIC PLUG	4
9	D0901344	10MM DIA X 10MM MAGNET	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

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

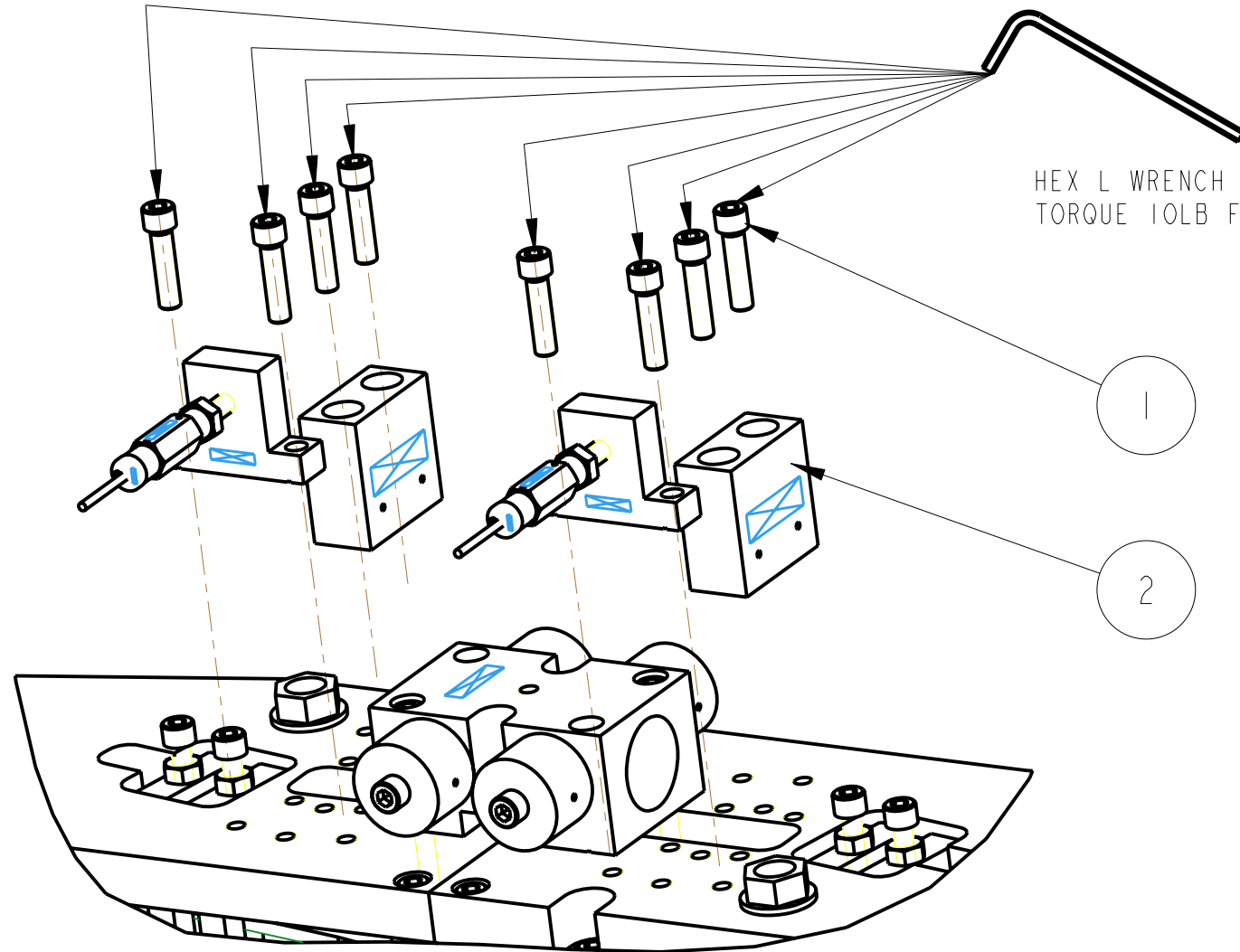
NAME	DATE
DRAWN J O'DELL	25/02/10
CHECKED J'OD	--/--/--
APPROVED JOD	07/MAR/10

SYSTEM **ADVANCED LIGO**
 SUB-SYSTEM **SUS**
 NEXT ASSY **aLIGO QUAD**
 PART NAME **UIM PROCESS aLIGO QUAD**

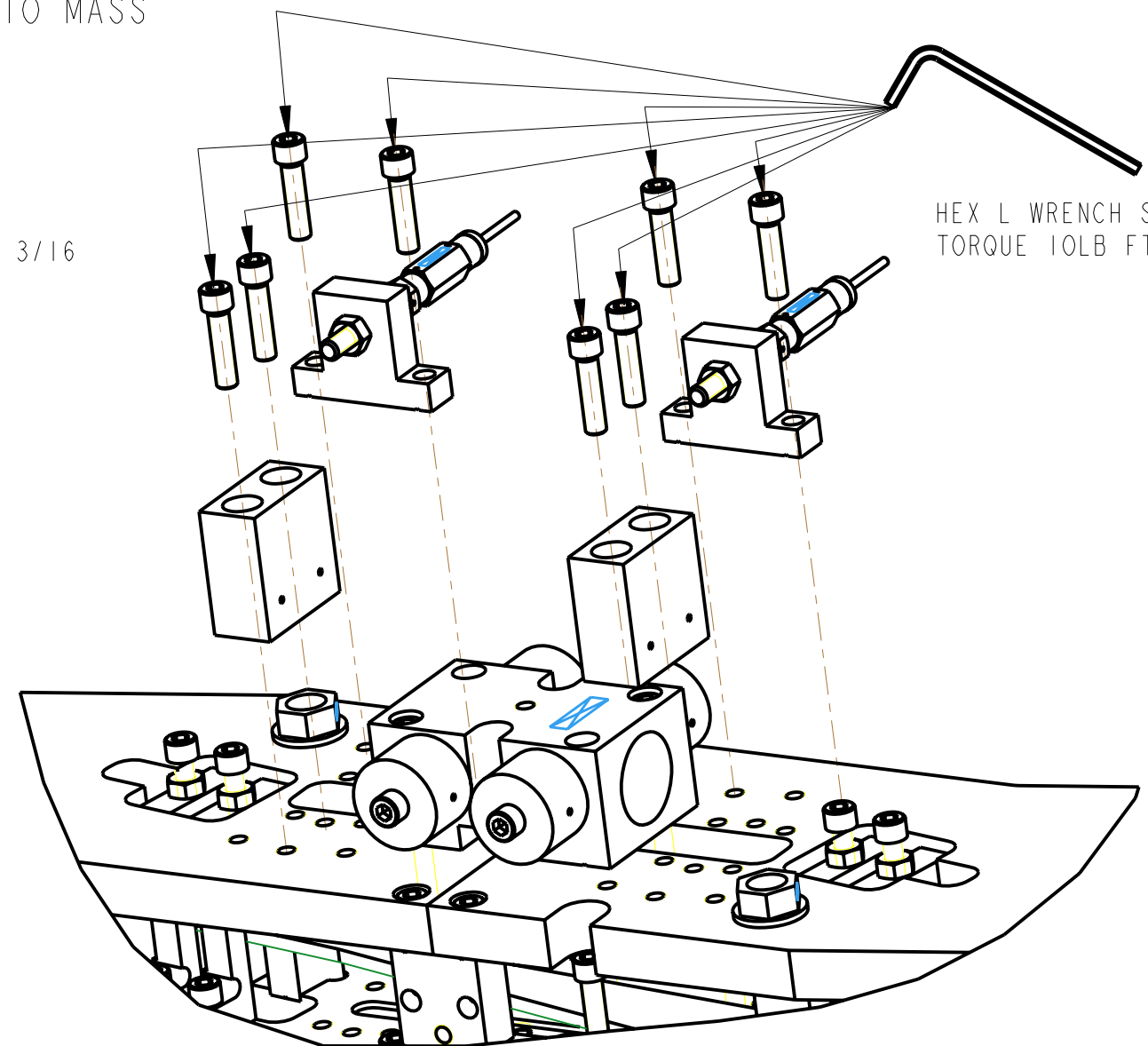
SIZE **B** DRG. NO. **D060375_PROCESS** REV **B**
 SCALE 1:2 PROJECTION: SHEET 16 OF 2

MAIN CHAIN ONLY

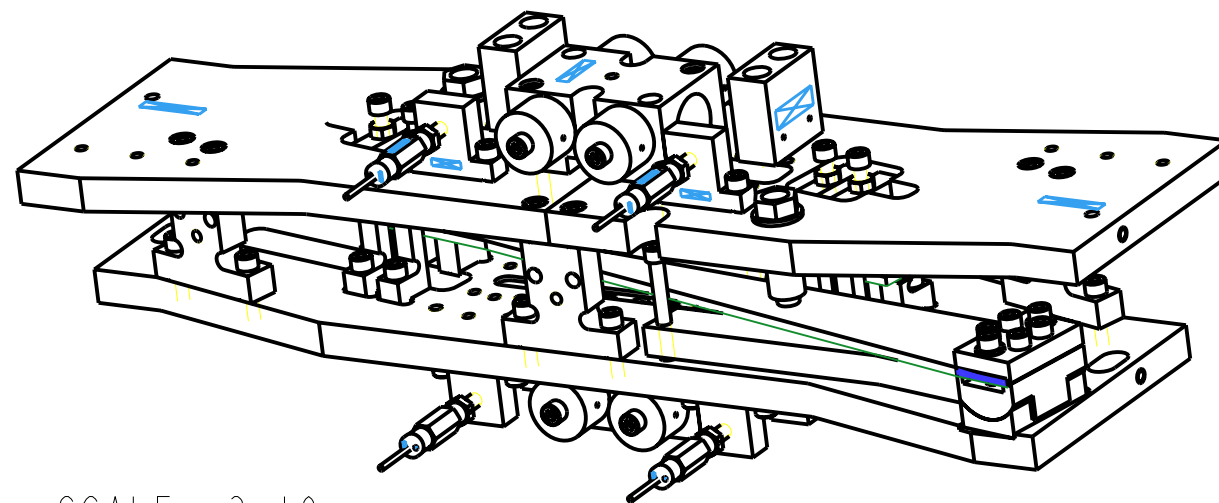
ASSEMBLE FLAGS AND COUNTER-WEIGHTS TO MASS



VIEW ON TOP OF MASS



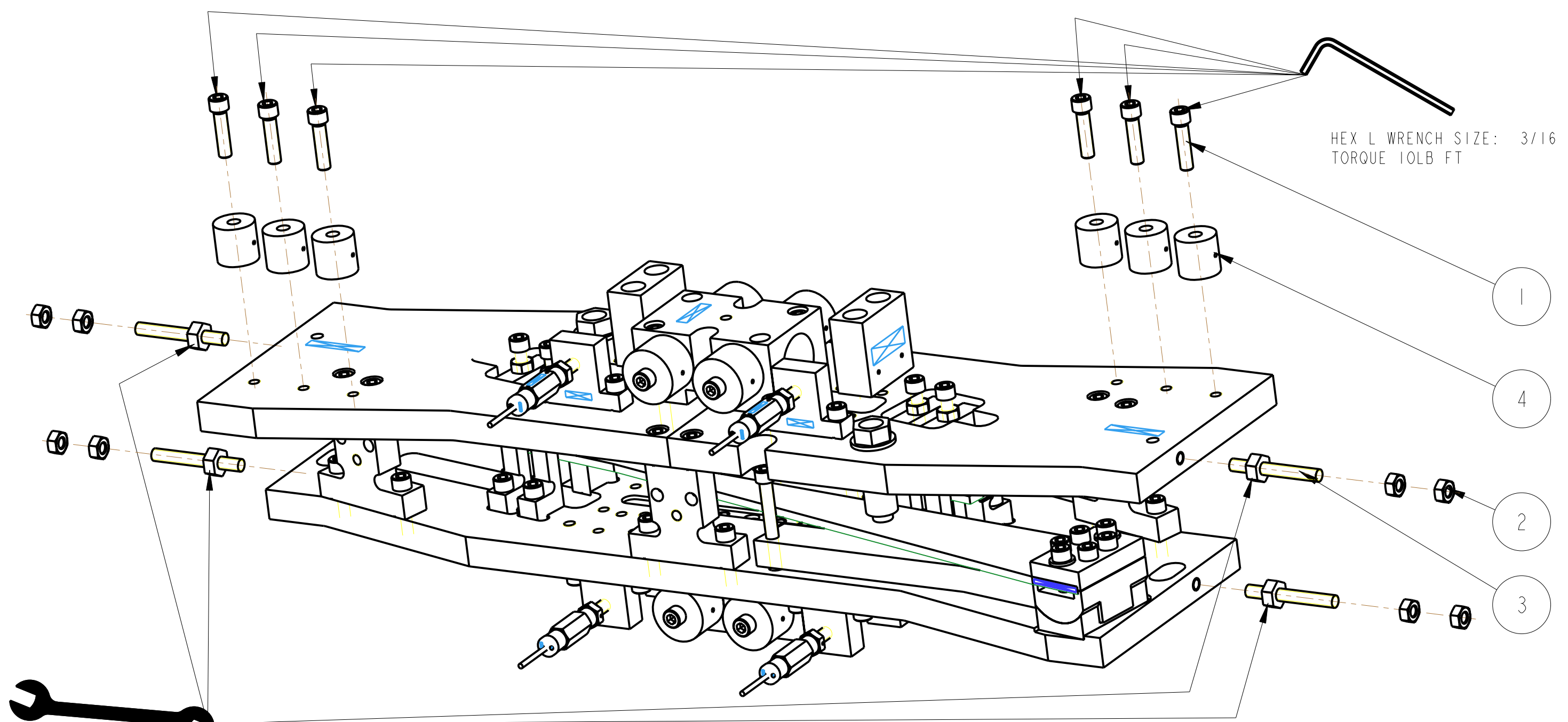
VIEW ON UNDERSIDE OF MASS



SCALE 3:10
VIEW ON MASS AT THE END OF THIS ASSEMBLY STAGE

1	I-4_20_UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	8
2	D060379	OSEM AND FLAG COUNTERWEIGHT	4
3	D060385	UI MASS FLAG MOUNT	3
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

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 aLIGO QUAD PART NAME UIM PROCESS aLIGO QUAD	
	NAME	DATE	
DRAWN	J O'DELL	02/03/10	
CHECKED	J'OD	--/--/--	
APPROVED	JOD	07/MAR/10	
	SIZE B	DRG. NO. D060375_PROCESS	REV B.
SCALE 1:2		PROJECTION:	SHEET 17 OF 2



ADD NOMINAL ADDABLE/REMOVABLE MASS, AND EQ-STOPS
(MAIN AND REACTION CHAINS - THE MAIN CHAIN IS SHOWN HERE
ARBITRARILY)

1	I-4_20_UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	6
2	I-4_20_UNC_NUT_..	1/4 20 UNC NUT	8
3	D070549	UIM E'QUAKE STOP	4
4	D060359-050_0	ADDITIONAL MASS	6
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

NOTES: (UNLESS OTHERWISE SPECIFIED)

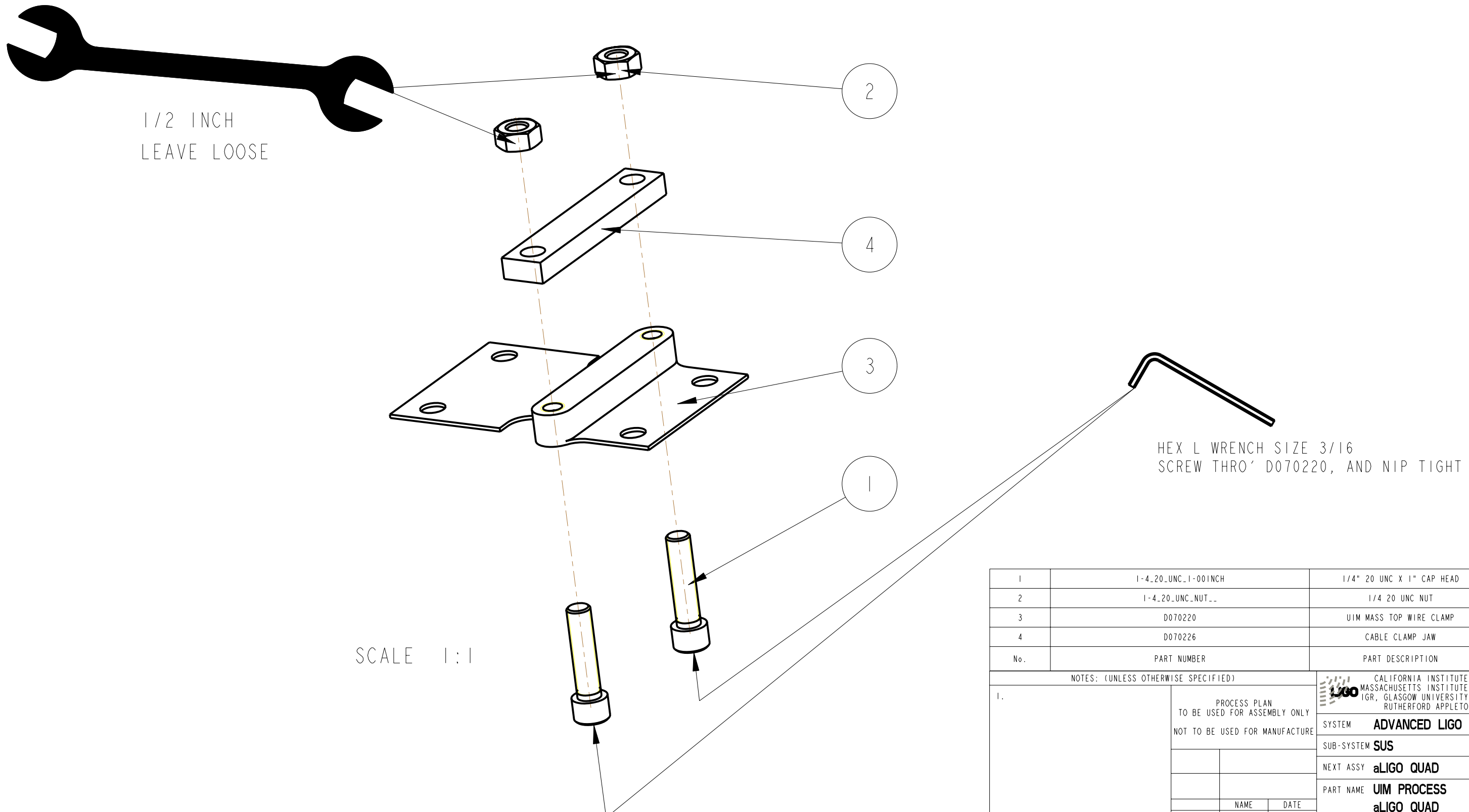
1.

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			aLIGO QUAD		
PART NAME		UIM PROCESS aLIGO QUAD			
DRAWN	J O'DELL	02/03/10	SIZE B	DRG. NO. D060375_PROCESS	REV B.
CHECKED	J'OD	--/--/--			
APPROVED	JOD	07/MAR/10			
SCALE 1:2		PROJECTION:	SHEET 18 OF 2		

REV.	DATE	DCN #	DRAWING TREE #

REACTION CHAIN ONLY

ASSEMBLE TOP CABLE CLAMP



No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20 UNC_1-00INCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4_20 UNC_NUT_..	1/4 20 UNC NUT	2
3	D070220	UIM MASS TOP WIRE CLAMP	1
4	D070226	CABLE CLAMP JAW	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

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

DRAWN	J O'DELL	02/03/10
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

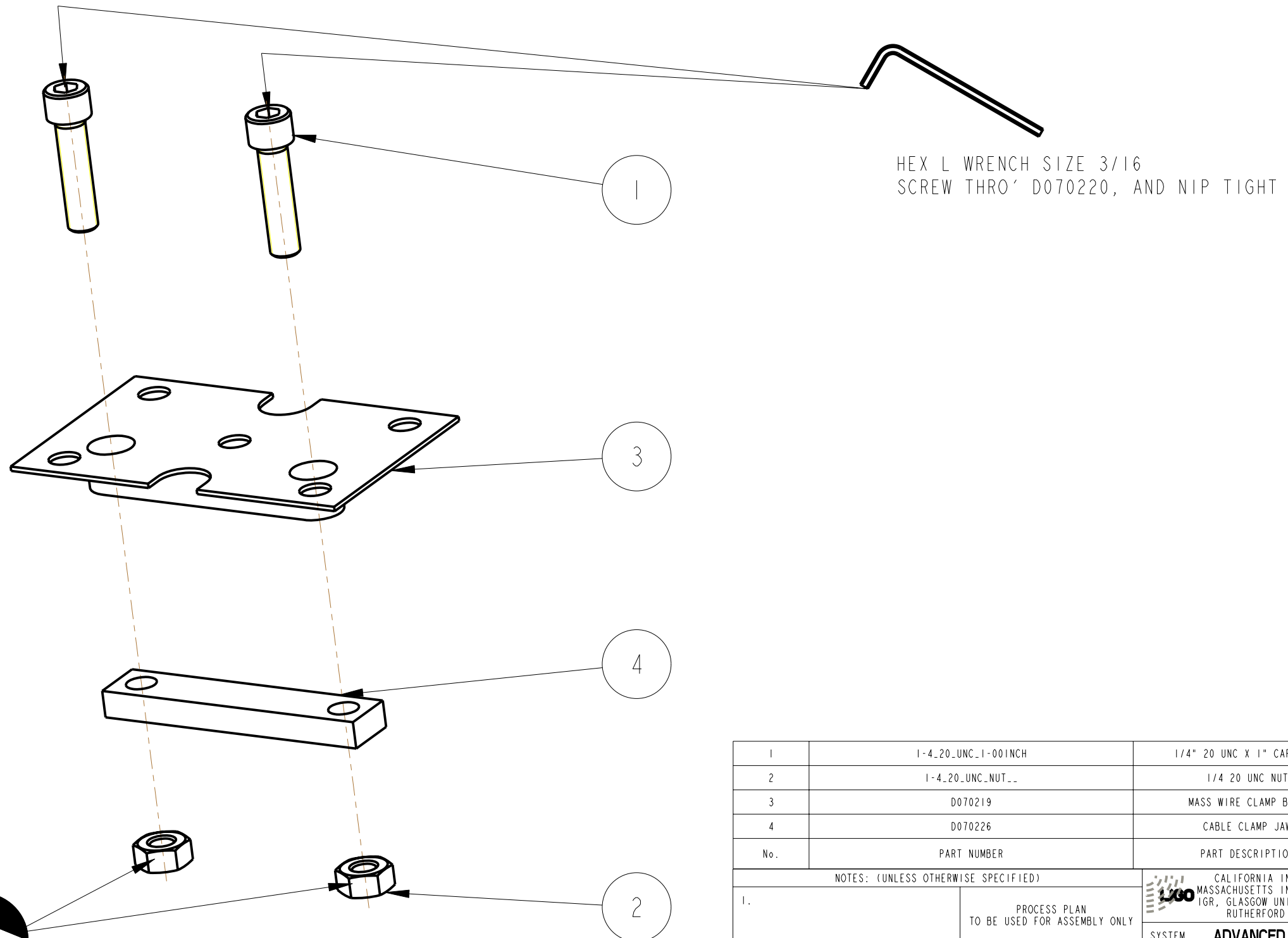
SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	aLIGO QUAD
PART NAME	UIM PROCESS aLIGO QUAD
DRG. NO.	D060375_PROCESS

SCALE 1:2 PROJECTION: SHEET 19 OF 2

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

MAIN CHAIN ONLY

ASSEMBLE BOTTOM CABLE-CLAMP



No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20 UNC_1-00 INCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4_20 UNC_NUT_..	1/4 20 UNC NUT	2
3	D070219	MASS WIRE CLAMP BASE	1
4	D070226	CABLE CLAMP JAW	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

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

DRAWN	J O'DELL	02/03/10
CHECKED	J'OD	--/--/--
APPROVED	JOD	07/MAR/10

SCALE 1:2 PROJECTION: SHEET 20 OF 2

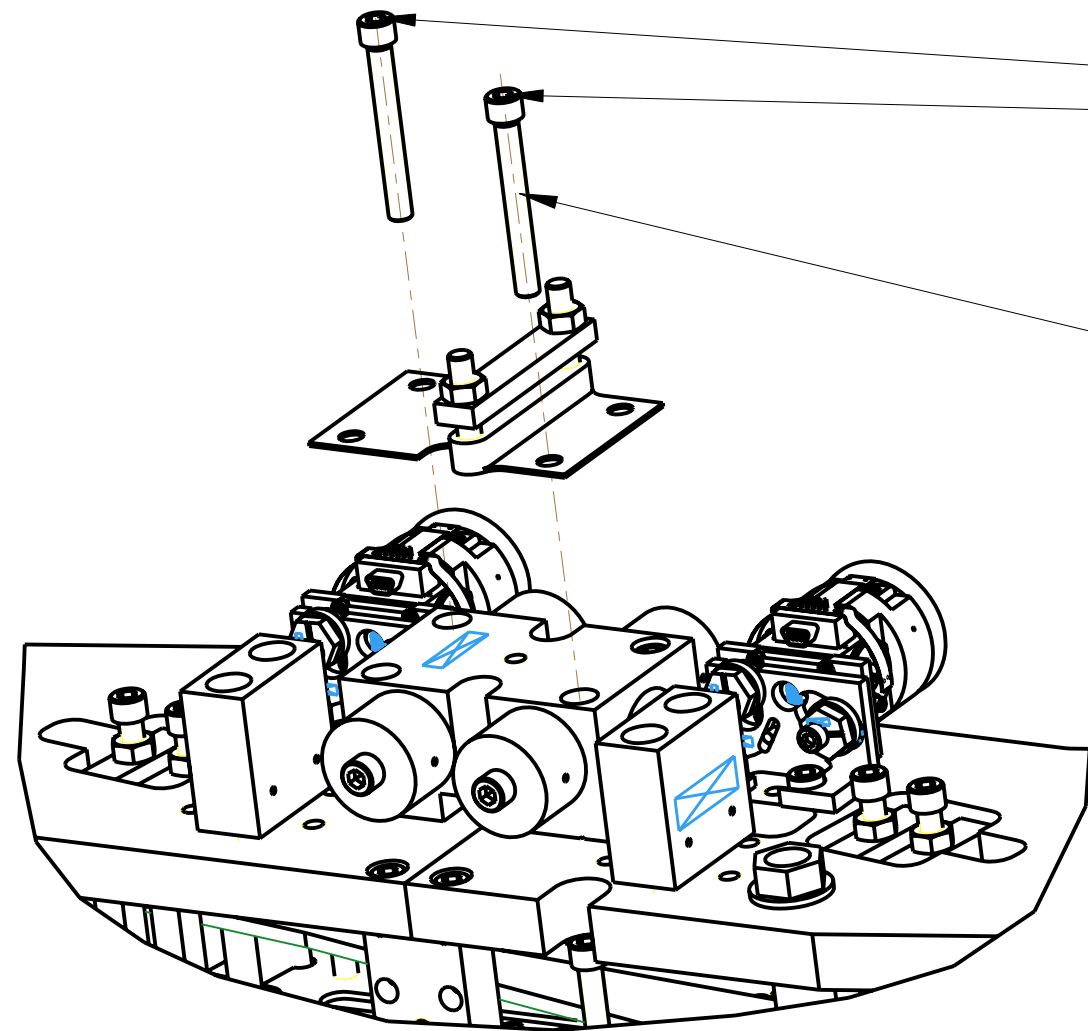
CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 IGR, GLASGOW UNIVERSITY GEO 600 GROUP
 RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
 SUB-SYSTEM **SUS**
 NEXT ASSY **aLIGO QUAD**
 PART NAME **UIM PROCESS**
aLIGO QUAD

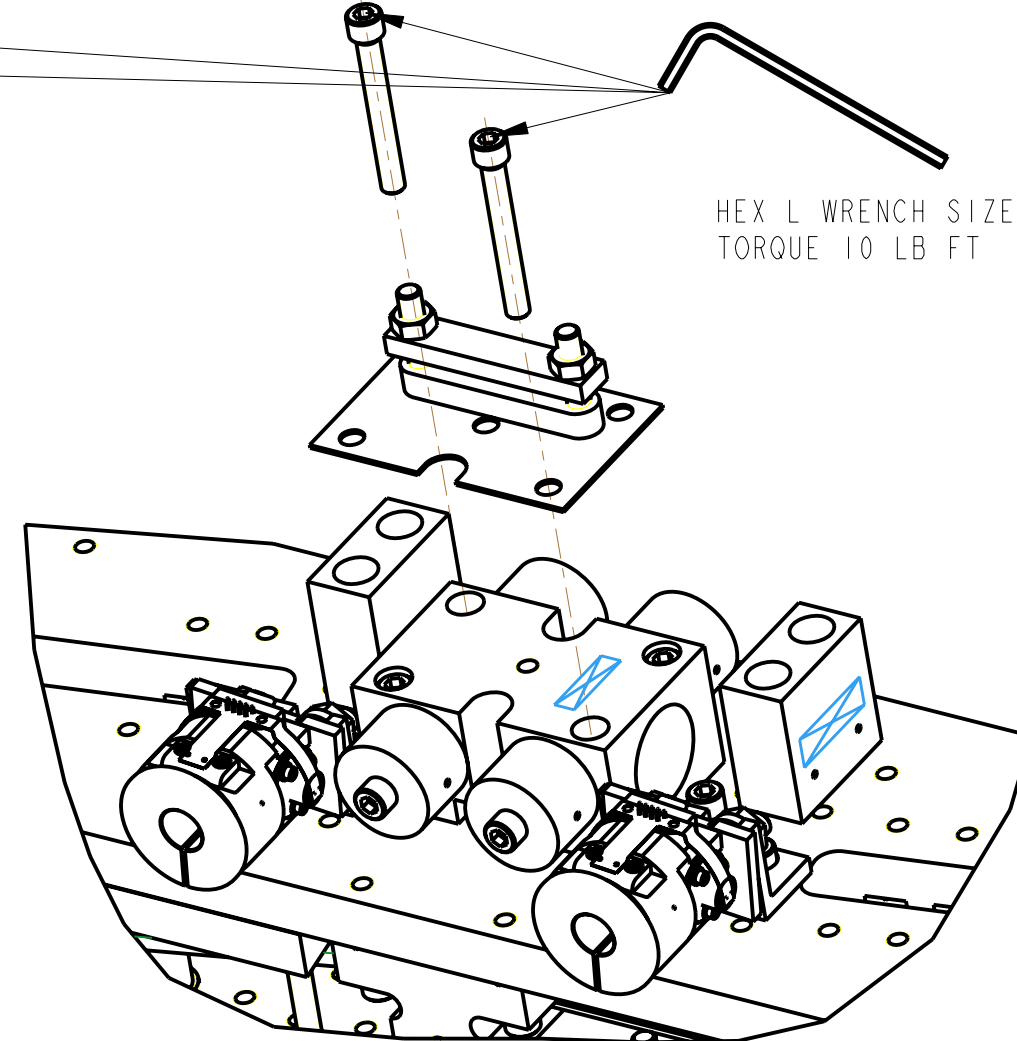
DRG. NO. **D060375_PROCESS** REV **B.**

REACTION CHAIN ONLY

ASSEMBLE CABLE CLAMPS TO REACTION CHAIN MASS

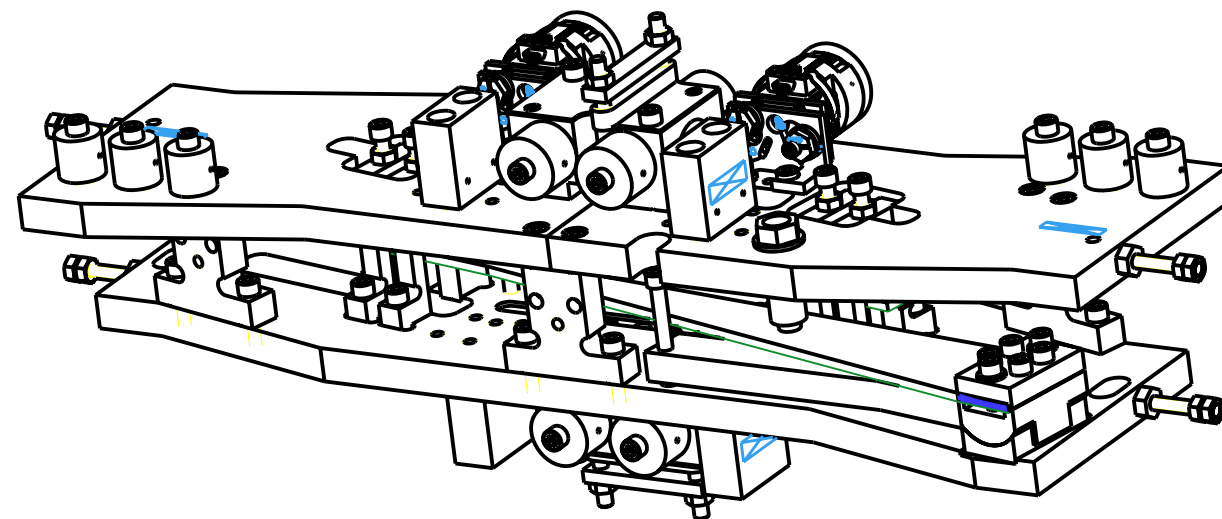


VIEW ON TOP SIDE OF MASS



HEX L WRENCH SIZE 3/16
TORQUE 10 LB FT

VIEW ON UNDER-SIDE OF MASS

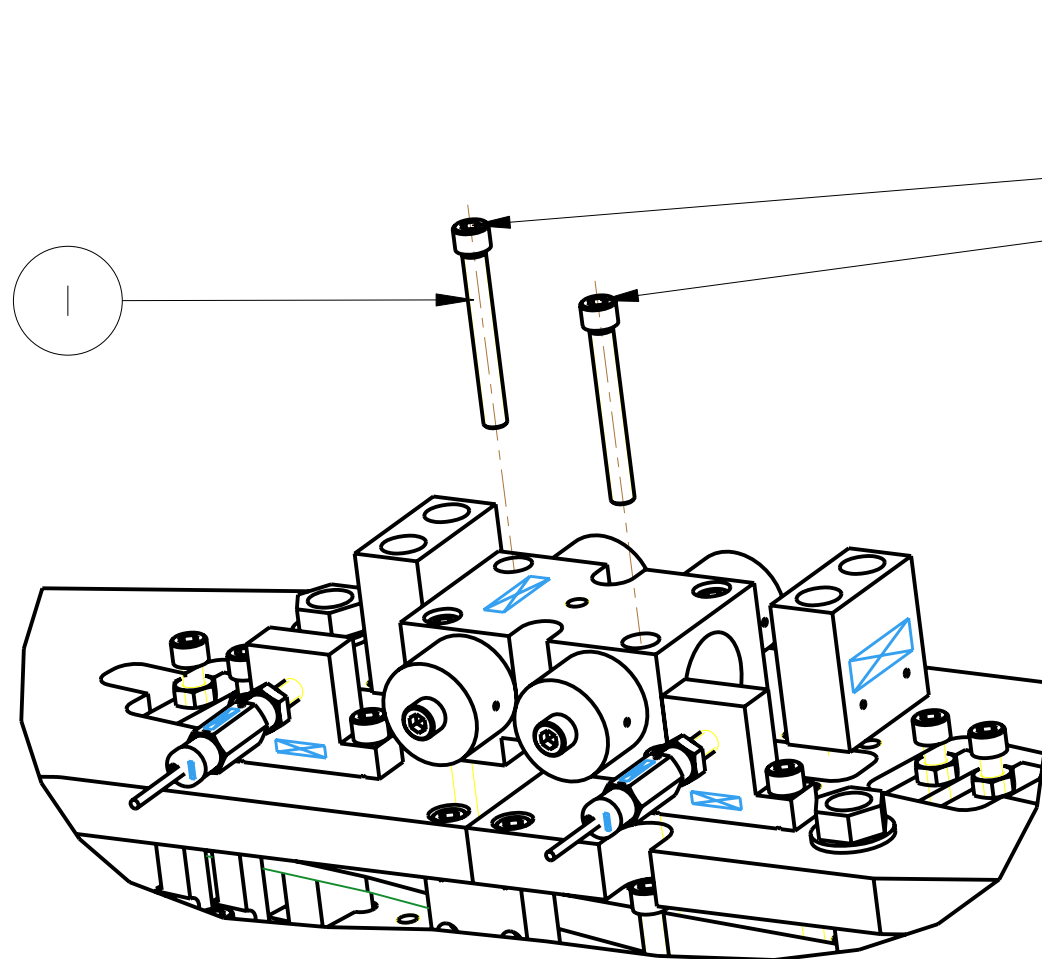


SCALE 3:10
VIEW ON MASS AT THE END OF THIS ASSEMBLY STEP

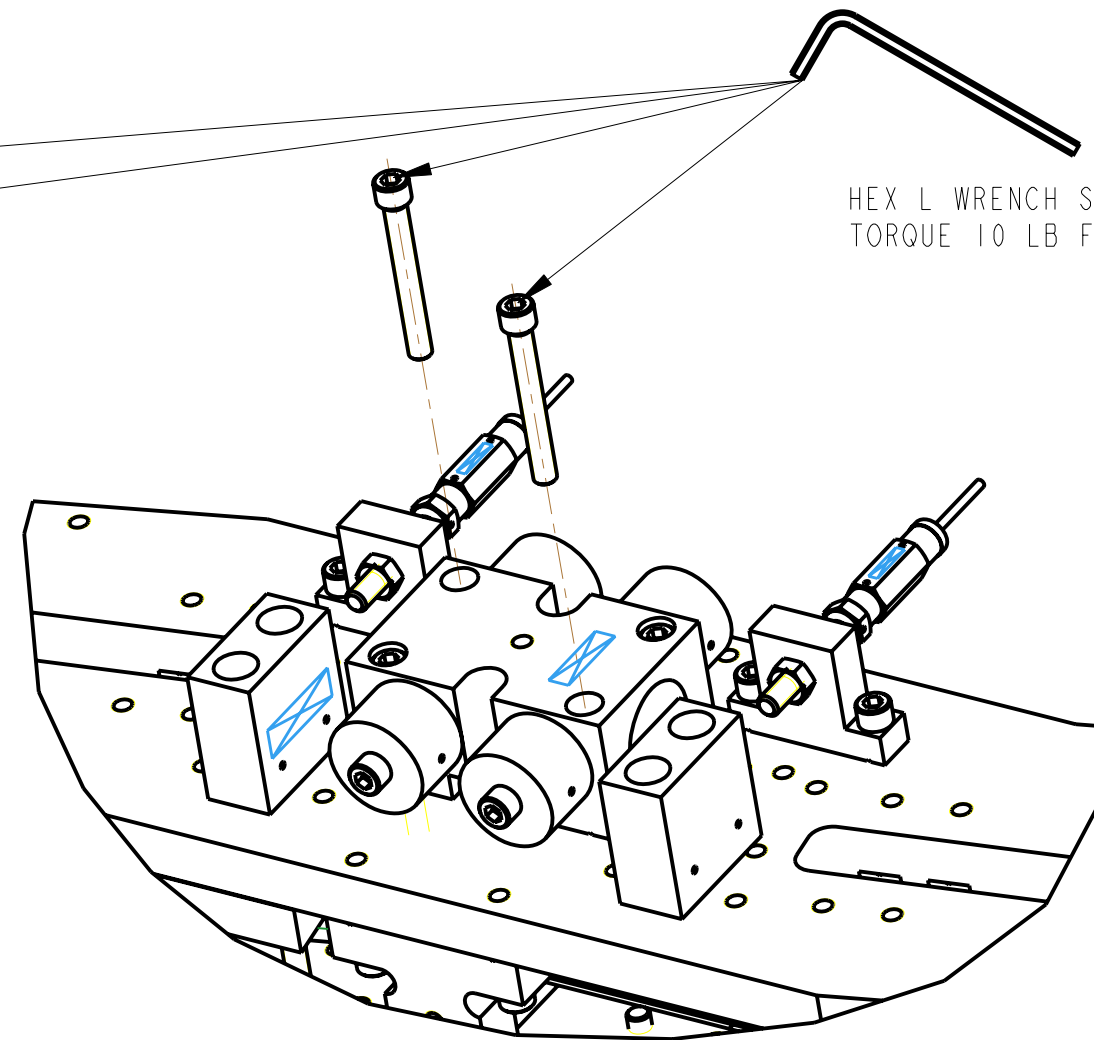
1	1-4_20_UNC_2-00INCH_SIL_PLT	1/4" 20 UNC X 2" CAP HEAD SILVER PLATED	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	aLIGO QUAD
		PART NAME	UIM PROCESS aLIGO QUAD
		SIZE	B
		DRG. NO.	D060375_PROCESS
		REV	B.
		SCALE	1:2
		PROJECTION	1st Angle
		SHEET	21 OF 2

MAIN CHAIN ONLY

ADD SCREWS TO THE MAIN CHAIN MASS





VIEW ON TOP SIDE OF MASS



HEX L WRENCH SIZE 3/16
TORQUE 10 LB FT

VIEW ON UNDERSIDE OF MASS

1	1-4_20 UNC 2-00INCH_SIL_PLT	1/4" 20 UNC X 2" CAP HEAD SILVER PLATED	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
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	aLIGO QUAD
		PART NAME	UIM PROCESS aLIGO QUAD
	NAME	DATE	SIZE
	DRAWN J O'DELL	02/03/10	B
	CHECKED J'OD	--/--/--	DRG. NO. D060375_PROCESS
	APPROVED JOD	07/MAR/10	REV B.
SCALE 1:2		PROJECTION: 	SHEET 22 OF 2