


REV.	DATE	DCN #	DRAWING TREE #

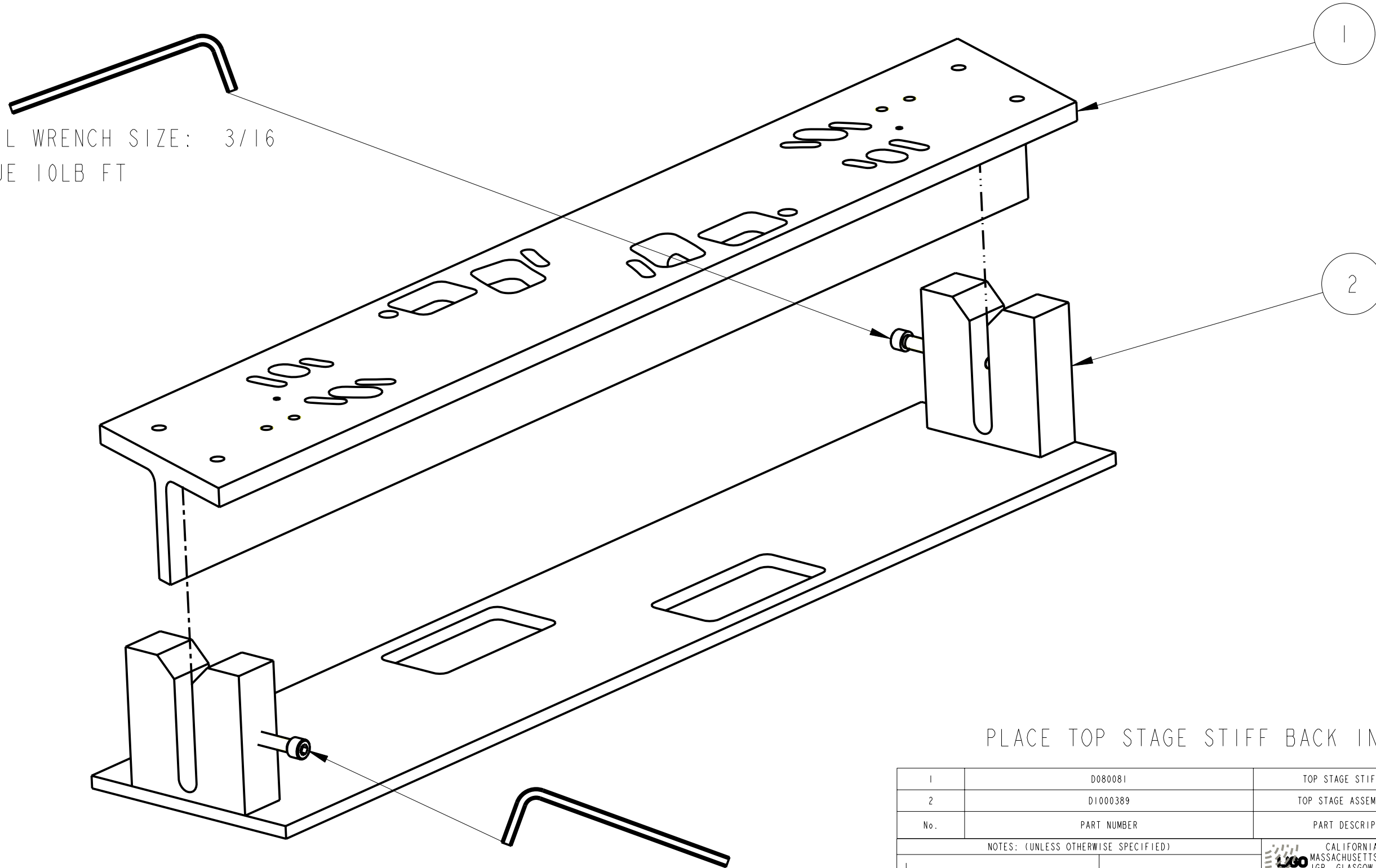
1	PLACE TOP STAGE STIFF BACK INTO JIG	D080081	1	
		D1000389	1	
2	ADD THREAD INSERTS INTO BLADE CLAMP BOTTOM	1-4.20X2D.UNC.THREAD.INSERT	6	
		D080083	1	
3	CLAMP TOGETHER BLADE ASSEMBLY	1-4.20.UNC.1-00INCH	4	
		D080084	1	
		D080513	1	
4	ADD THREAD INSERTS INTO BLADE CLAMP BASE	1-4.20X2D.UNC.THREAD.INSERT	5	
		D080085	1	
5	ADD THREAD INSERTS INTO ADJUSTER ARM	1-4.20X1D.UNC.THREAD.INSERT	2	
		D080086	1	
6	ADD THREAD INSERT INTO ROTATIONAL BUSH	1-4.20X2D.UNC.THREAD.INSERT	1	
		D080091	1	
7	ASSY BLADE CLAMP BASE , ROTATIONAL BUSH AND ADJUSTER ARM	D080085	1	
8	ASSEMBLE BLADE ASSEMBLY TO BLADE BASE ASSEMBLY	1-4.20.UNC.1-00INCH	2	
		1-4.SPHERICAL.WASHER	2	
9	ADD BLADE ASSEMBLY TO STIFF BACK	1-4-20.WASHER	5	
		1-4.20.UNC.0-75INCH	1	
		1-4.20.UNC.1-00INCH	4	
		1-4.20.UNC.2-00INCH_ROUND	1	
		1-4.20.UNC.NUT.	1	
10	ADD THREAD INSERT INTO ROTATIONAL ADJUSTER	1-4.20X2D.UNC.THREAD.INSERT	1	
		D060325	1	
11	ADD ROTATIONAL ADJUSTER BLOCK TO ASSEMBLY	1-4-20.WASHER	1	
		1-4.20.UNC.1-25INCH	2	
		1-4.20.UNC.1-5INCH	1	
		1-4.20.UNC.2-00INCH_ROUND	1	
12	ADD BLADE TIP STOP MOUNT TO ASSEMBLY	1-4-20.WASHER	5	
		1-4.20.UNC.1-00INCH	10	
		1-4.20.UNC.1-25INCH	2	

		1-4.20.UNC.1-5INCH	3	
		1-4.20.UNC.2-00INCH_ROUND	4	
		1-4.20.UNC.NUT.	3	
		1-4.SPHERICAL.WASHER	2	
		D060325	1	
		D080083	1	
		D080084	1	
		D080086	1	
		D080090	1	
		D080091	1	
		D080513	1	
13	STRAIGHTEN FIRST BLADE	8-32.UNC.NUT	2	
		D080089	1	
		D080090	1	
		D080513_FLAT	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	
		SCALE	1:1
		PROJECTION	1
		SHEET	1 OF 1
		REV	A.

SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE**

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



PLACE TOP STAGE STIFF BACK INTO JIG

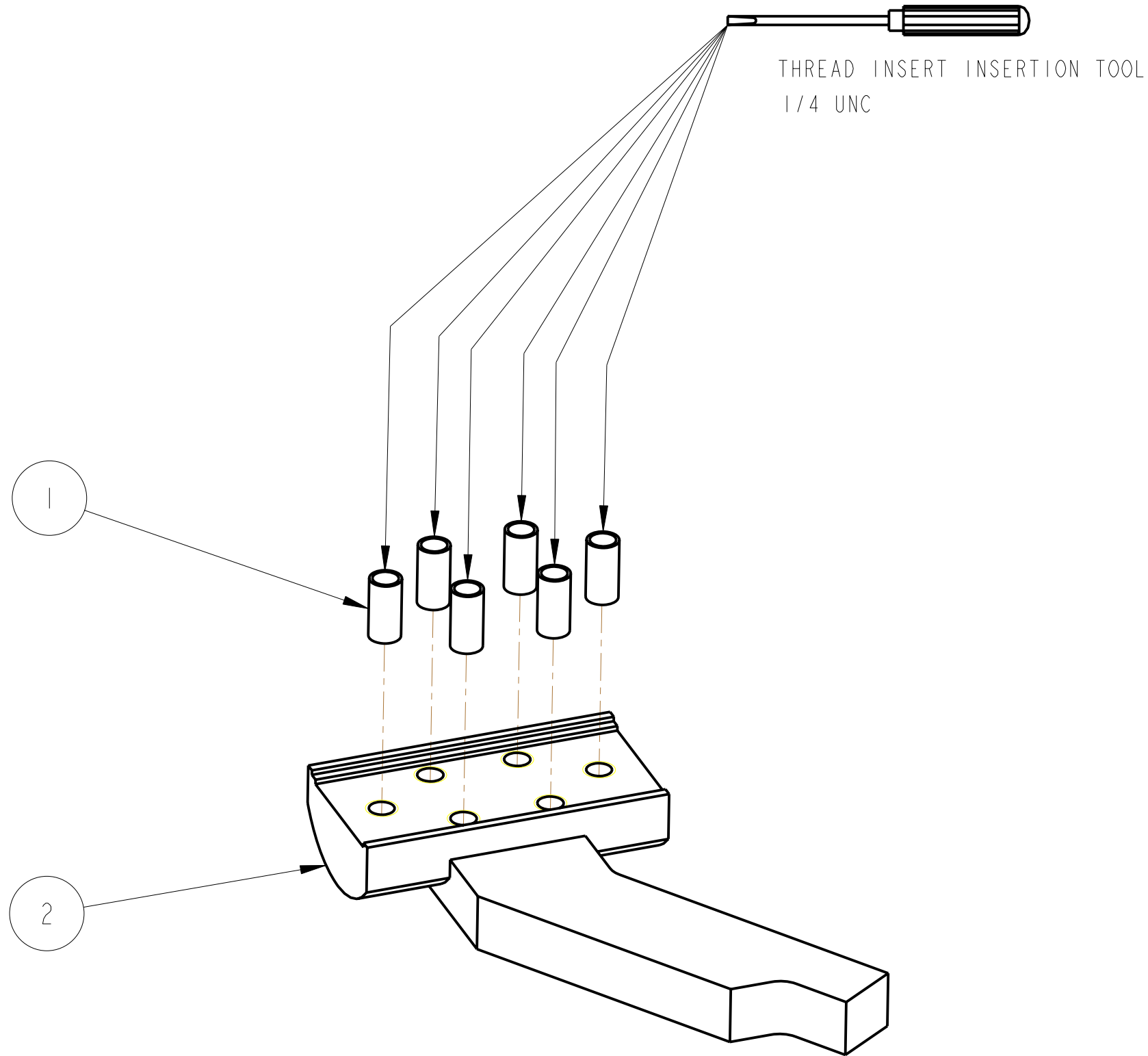
HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

1	D080081	TOP STAGE STIFF BACK	1
2	D1000389	TOP STAGE ASSEMBLY JIG	1
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	
		PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	
		SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY PART NAME	
	NAME	DATE	
DRAWN	.	02/12/09	
CHECKED	---	--/--/--	
APPROVED	---	--/--/--	
SCALE 1:2		PROJECTION:	SHEET 2 OF 1

1:200
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
SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE** REV **A**

REV.	DATE	DCN #	DRAWING TREE #



ADD THREAD INSERTS INTO BLADE CLAMP BOTTOM
REPEAT THIS STEP FOR SECOND BLADE BOTTOM

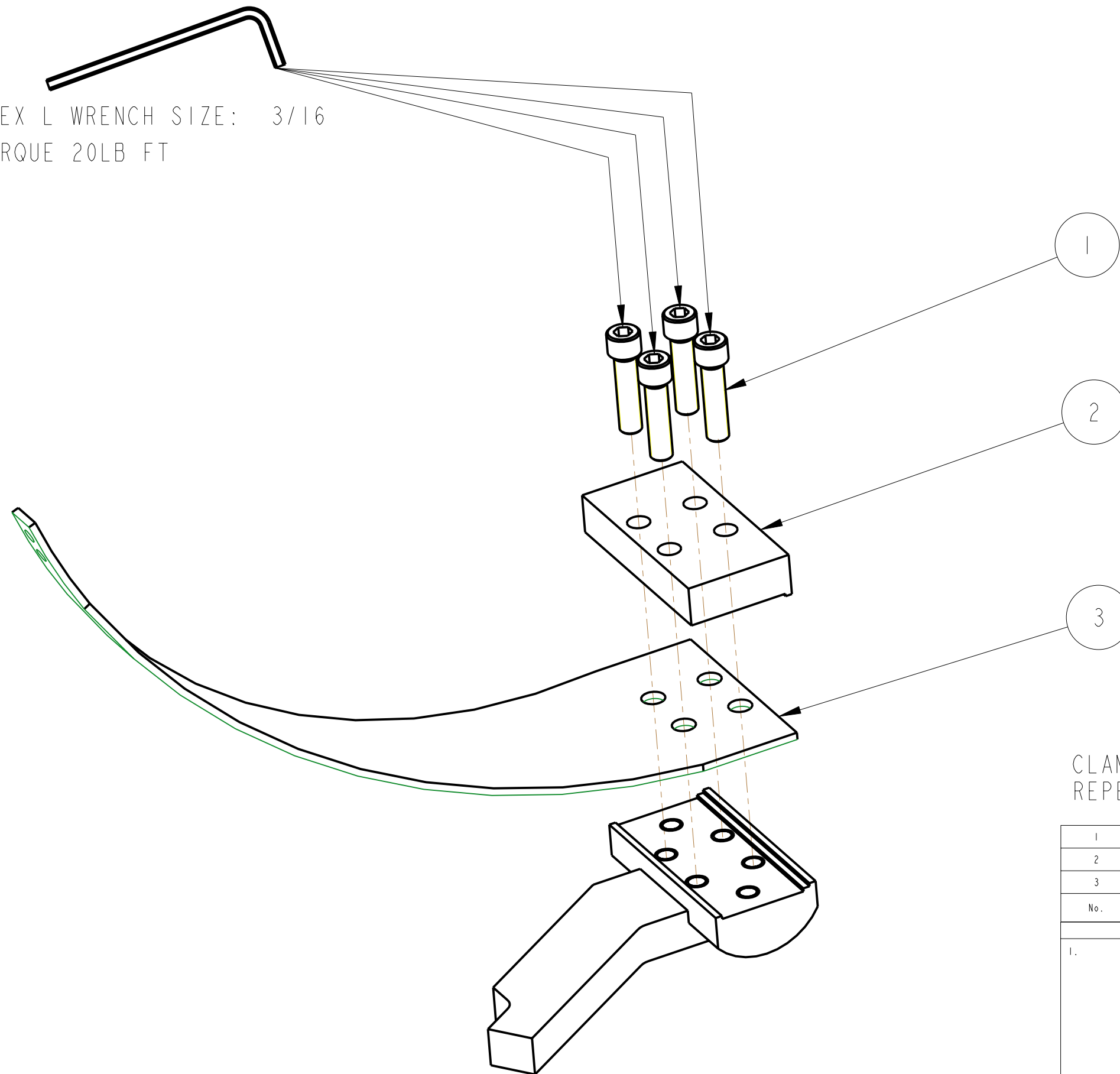
1	1-4_20X2D_UNC_THREAD_INSERT	1/4-20 x 2D UNC THREAD INSERT	6
2	D080083	BLADE CLAMP BOTTOM	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY PART NAME	
	NAME	DATE	
DRAWN	.	02/12/09	
CHECKED	---	--/--/--	
APPROVED	---	--/--/--	
SCALE 1:1		PROJECTION:	SHEET 3 OF 1

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

SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE** REV. **A.**

HEX L WRENCH SIZE: 3/16
TORQUE 20LB FT



CLAMP TOGETHER BLADE ASSEMBLY
REPEAT THIS STEP FOR SECOND BLADE ASSEMBLY

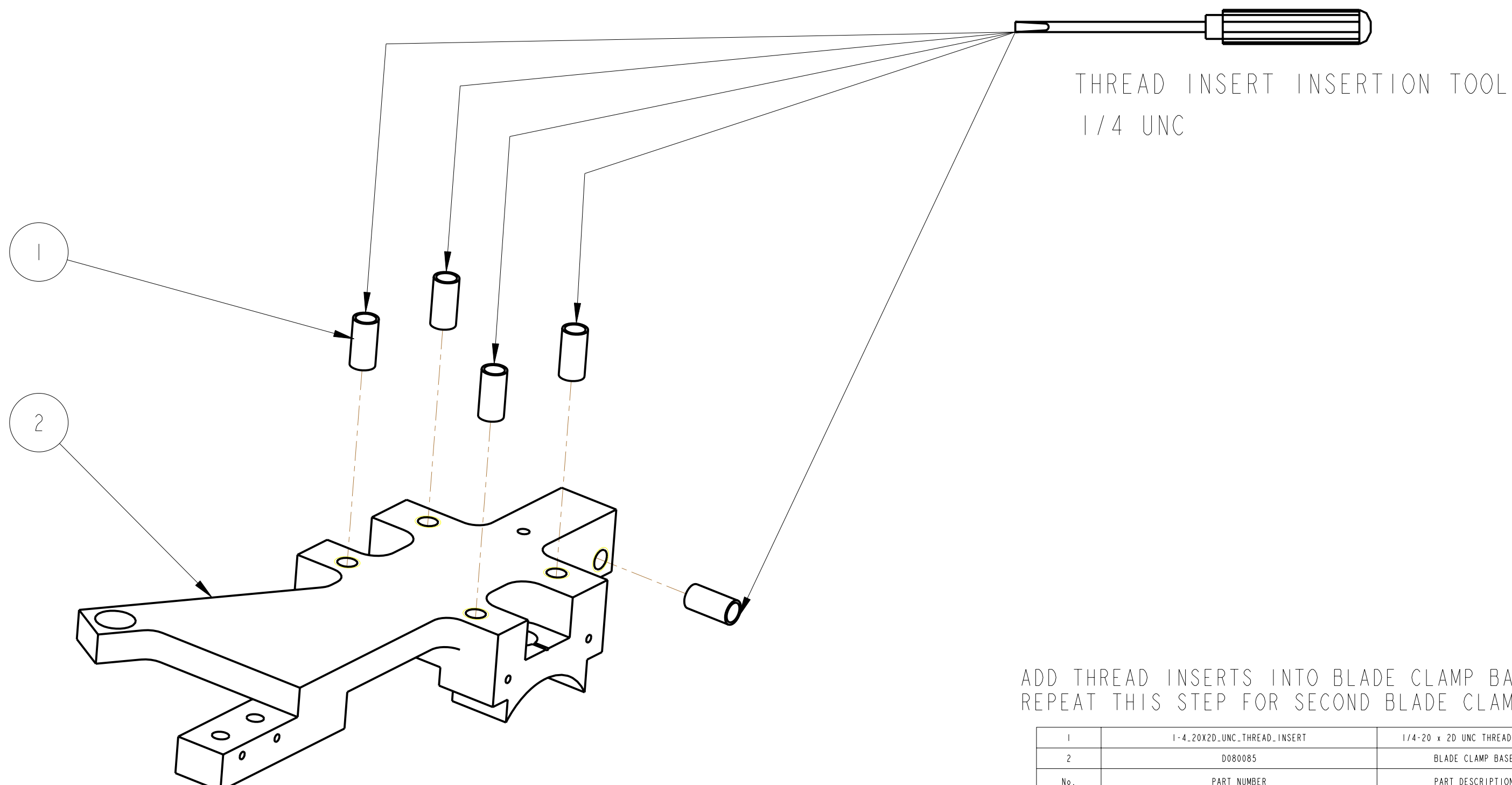
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4.20-UNC-1-001NCH	1/4" 20 UNC X 1" CAP HEAD	4
2	D080084	BLADE CLAMP TOP	1
3	D080513	TOP STAGE BLADE SPRING	1

NOTES: (UNLESS OTHERWISE SPECIFIED)


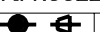
1.

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
PART NAME		
	NAME	DATE
DRAWN		02/12/09
CHECKED	---	--/--/--
APPROVED	---	--/--/--

SIZE B	DRG. NO. D080080_ASSY_PROCEEDURE	REV A.
SCALE 4:5	PROJECTION:	SHEET 4 OF 1

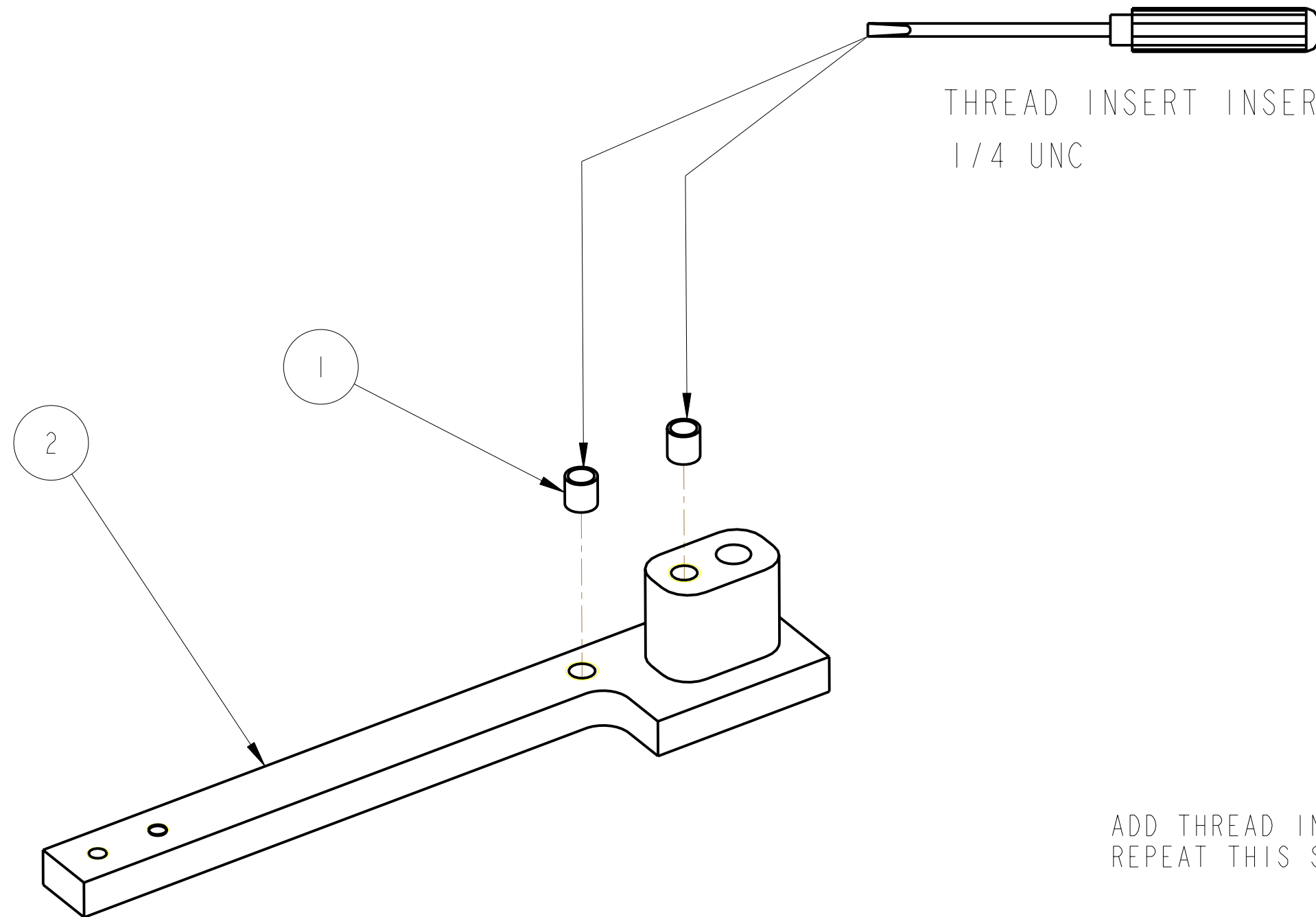


ADD THREAD INSERTS INTO BLADE CLAMP BASE
REPEAT THIS STEP FOR SECOND BLADE CLAMP BASE

1	1-4_20X2D_UNC_THREAD_INSERT	1/4-20 x 2D UNC THREAD INSERT	5
2	D080085	BLADE CLAMP BASE	1
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 PART NAME	
	NAME	DATE	
	DRAWN	02/12/09	
	CHECKED	---	
	APPROVED	---	
SCALE 1:1		PROJECTION: 	SHEET 5 OF 1


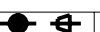
SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE** REV. **A**

REV.	DATE	DCN #	DRAWING TREE #



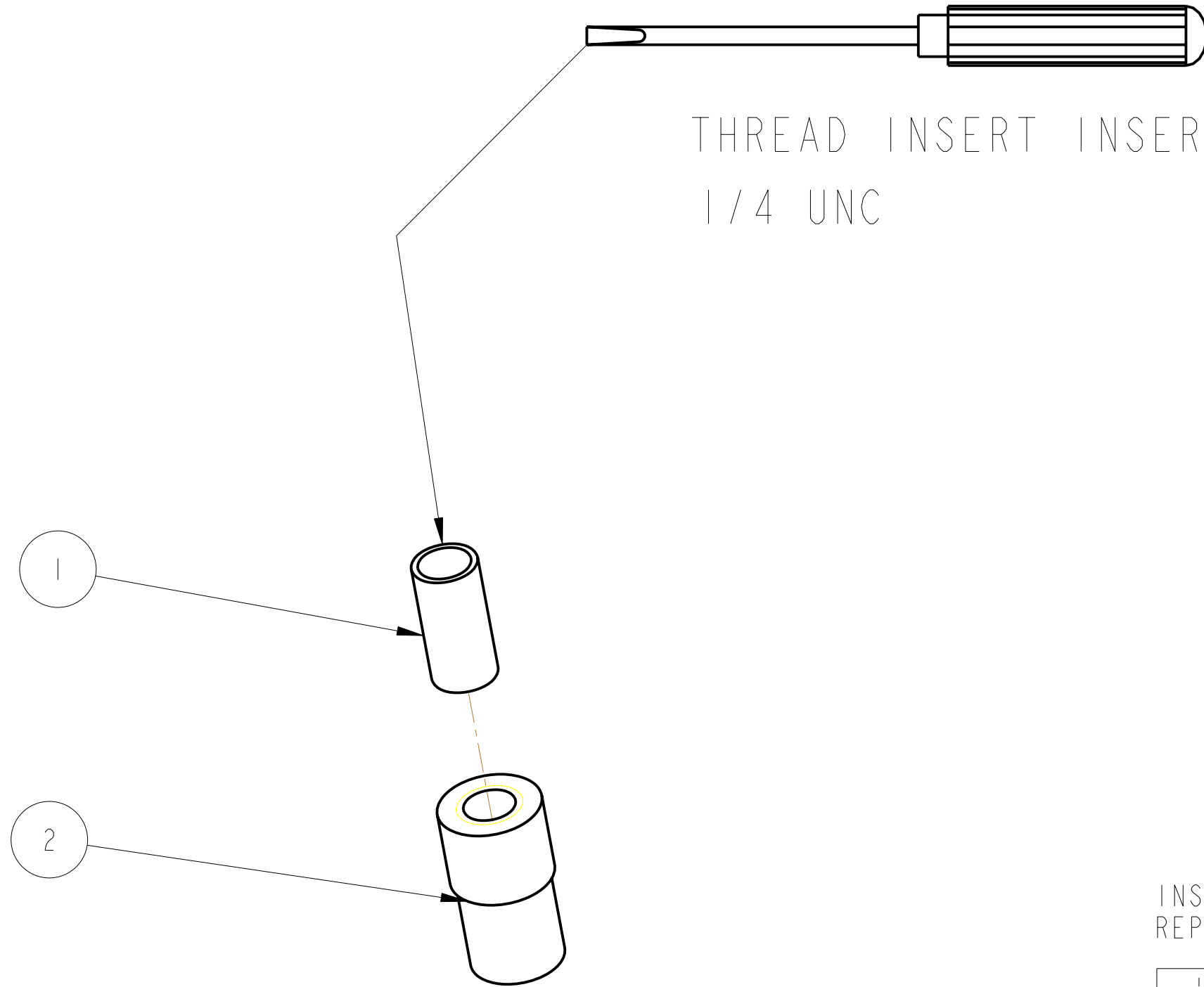
THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERTS INTO ADJUSTER ARM
REPEAT THIS STEP FOR SECOND ADJUSTER ARM


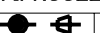
1	1-4_20X1D_UNC_THREAD_INSERT	1/4-20 x 1D UNC THREAD INSERT	2
2	D080086	ADJUSTER ARM	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
1.	PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY PART NAME	
	NAME	DATE	
	DRAWN	02/12/09	
	CHECKED	---	
	APPROVED	---	
SCALE 1:1		PROJECTION: 	SHEET 6 OF 1
SIZE B		DRG. NO. D080080_ASSY_PROCEEDURE	REV A.

REV.	DATE	DCN #	DRAWING TREE #

THREAD INSERT INSERTION TOOL
1/4 UNC

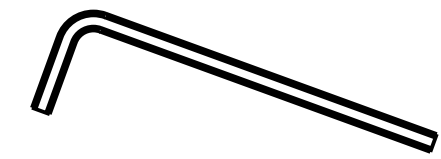


INSERT THREAD INSERT INTO ROTATIONAL BUSH
REPEAT THIS STEP FOR SECOND ROTATIONAL BUSH

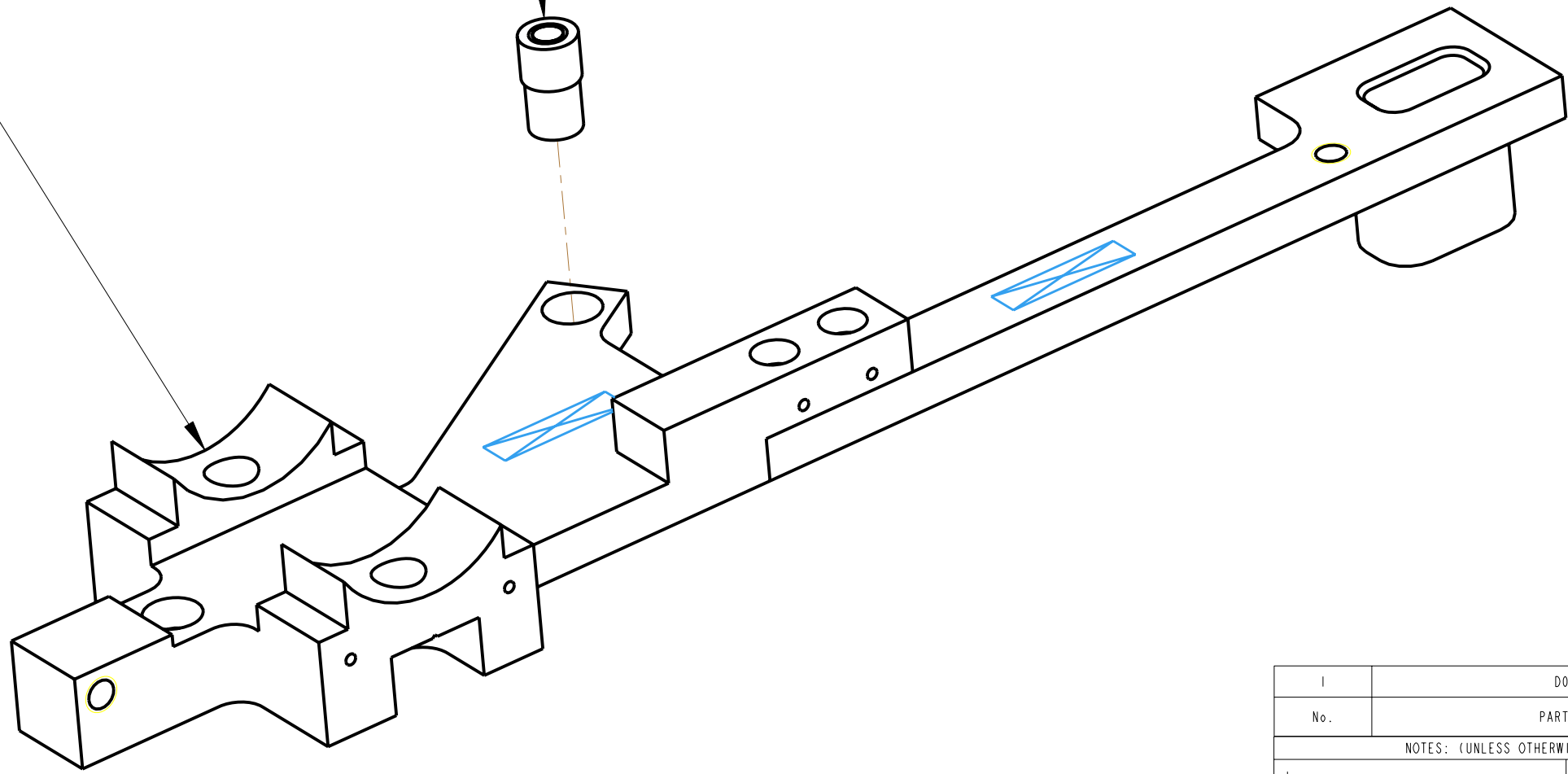
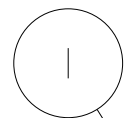
1	1-4_20X2D_UNC_THREAD_INSERT	1/4-20 x 2D UNC THREAD INSERT	1
2	D080091	ROTATIONAL BUSH	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES	
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE		SYSTEM ADVANCED LIGO	
		SUB-SYSTEM SUS	
		NEXT ASSY	
		PART NAME	
	NAME	DATE	
DRAWN	.	02/12/09	
CHECKED	---	--/--/--	
APPROVED	---	--/--/--	
SCALE 2:1		PROJECTION: 	SHEET 7 OF 1
SIZE B		DRG. NO. D080080_ASSY_PROCEEDURE	REV A.

REV.	DATE	DCN #	DRAWING TREE #


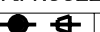
PUSH BUSH INTO
BLADE CLAMP BASE

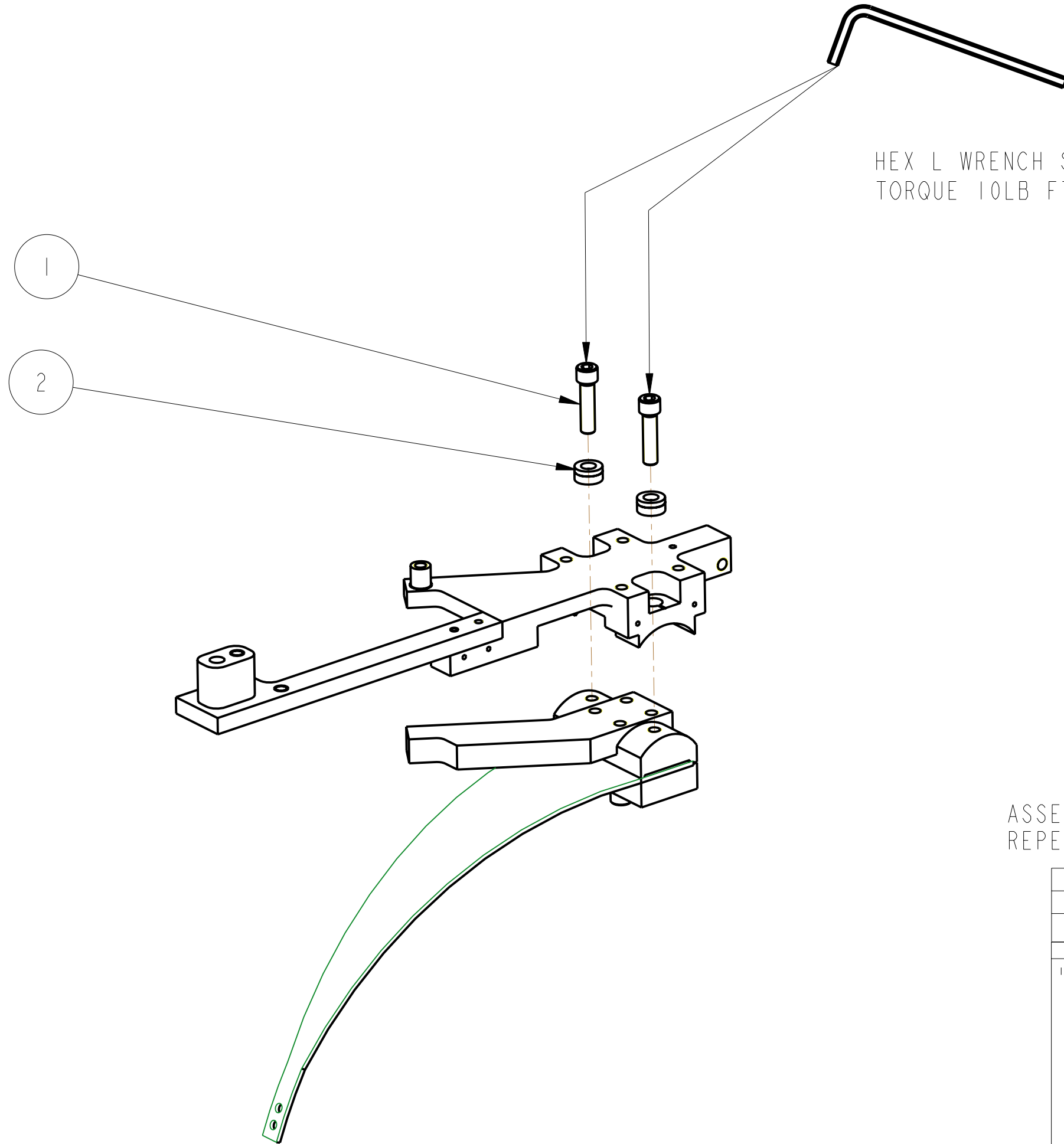


HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT



ASSEMBLE TOGETHER BLADE CLAMP BASE, ROTATIONAL BUSH AND ADJUSTER ARM
REPEAT THIS STEP FOR SECOND BLOCK CLAMP BASE, BUSH AND ADJUSTER ARM

1	D080085	BLADE CLAMP BASE	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)		 CALIFORNIA INSTITUTE OF TECHNOLOGY 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	
	NAME	DATE	
DRAWN	---	02/12/09	
CHECKED	---	--/--/--	
APPROVED	---	--/--/--	
SCALE 1:1		PROJECTION: 	SHEET 8 OF 1
SIZE B		DRG. NO. D080080_ASSY_PROCEEDURE	REV A.

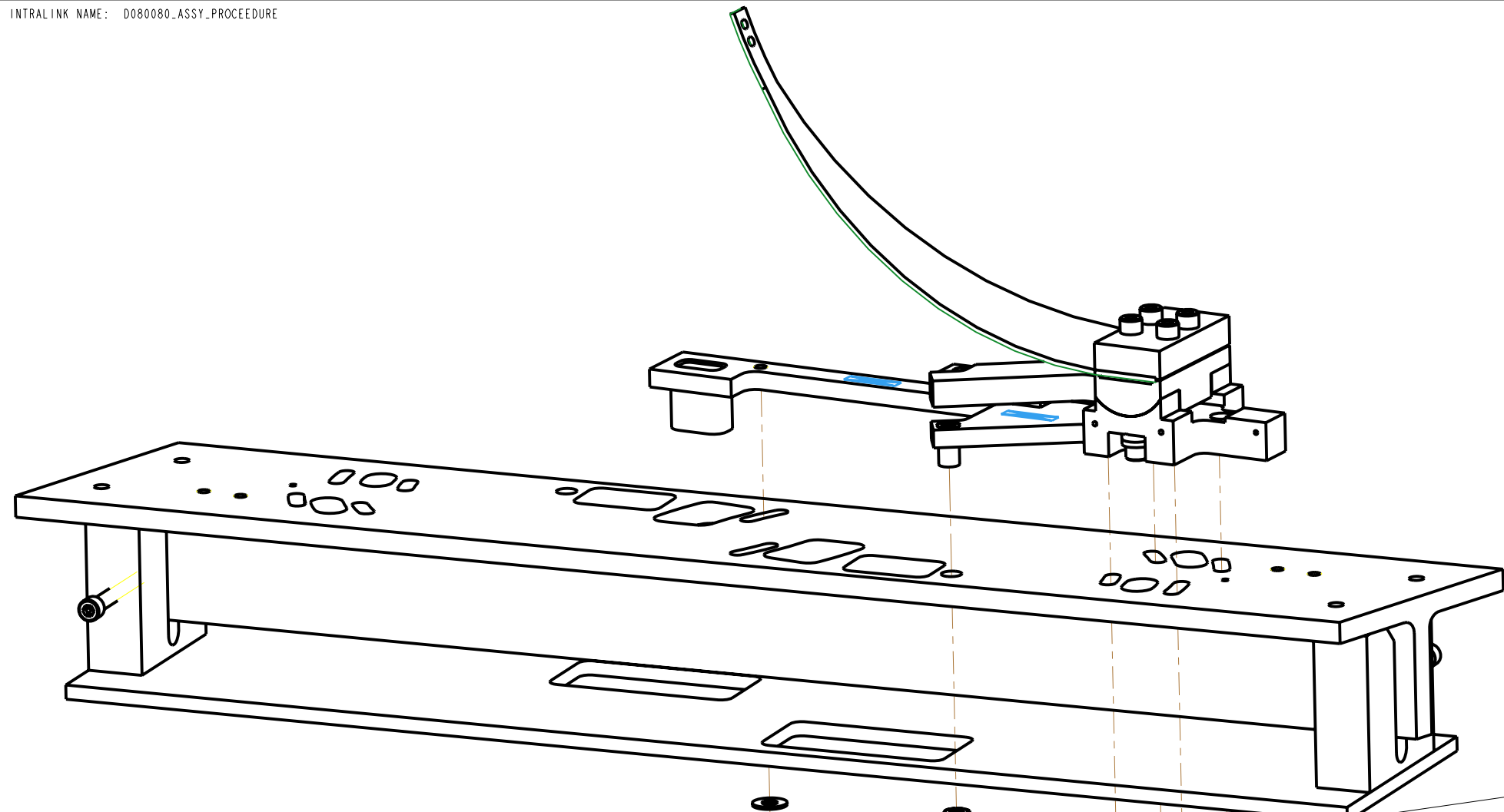


HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

ASSEMBLE BLADE ASSEMBLY TO BLADE BASE ASSEMBLY
REPEAT THIS STEP FOR SECOND BLADE ASSEMBLY

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20 UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	2
2	1-4_SPERICAL_WASHER	1/4 SPHERICAL WASHER	2

NOTES: (UNLESS OTHERWISE SPECIFIED)		CALIFORNIA INSTITUTE OF TECHNOLOGY 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
DRAWN	NAME DATE	SIZE
CHECKED	---	B
APPROVED	---	DRG. NO. D080080_ASSY_PROCEEDURE
		SCALE 1:2 PROJECTION: SHEET 9 OF 1



ADD BLADE ASSEMBLY TO STIFF BACK
REPEAT THIS STEP FOR SECOND BLADE ASSEMBLY

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

1	1-4-20_WASHER	1/4" 20 UNC WASHER	5
2	1-4-20 UNC 0.75INCH	1/4" 20 UNC X 0.75" CAP HEAD	1
3	1-4-20 UNC 1.00INCH	1/4" 20 UNC X 1" CAP HEAD	4
4	1-4-20 UNC 2.00INCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	1
5	1-4-20 UNC_NUT	1/4" 20 UNC NUT	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

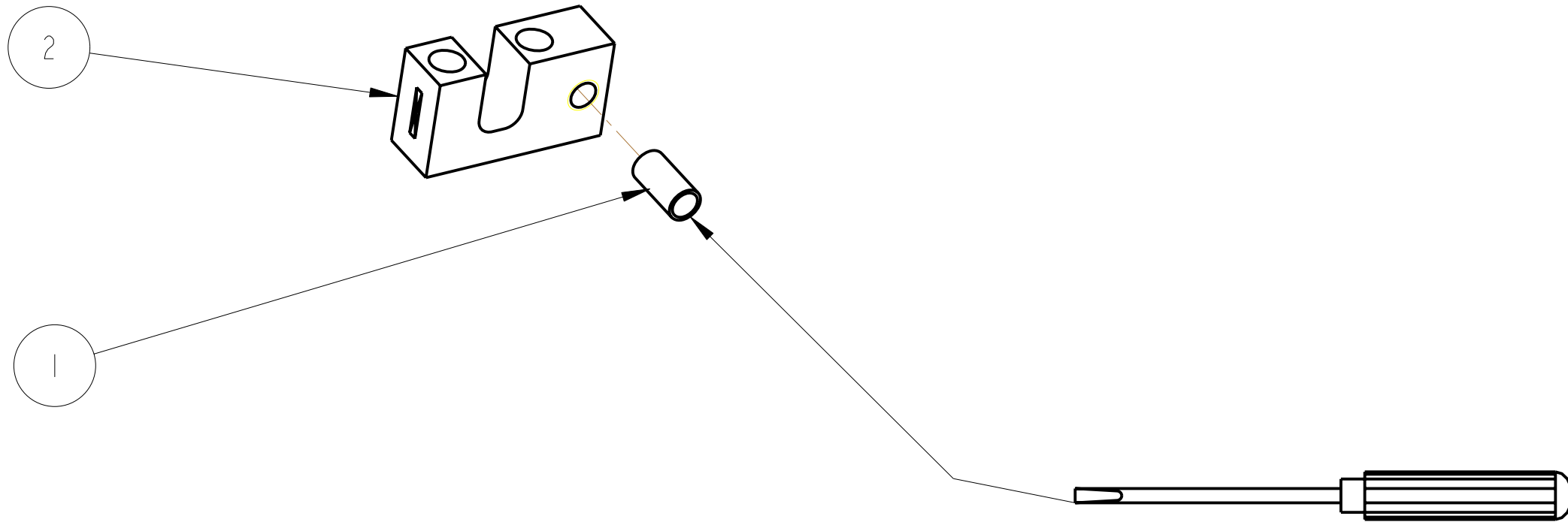
NOTES: (UNLESS OTHERWISE SPECIFIED)

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
DRAWN	NAME	DATE
CHECKED	---	02/12/09
APPROVED	---	--/--/--


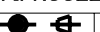
SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE** REV **A**
SCALE 2:5 PROJECTION: SHEET 10 OF 4

REV.	DATE	DCN #	DRAWING TREE #

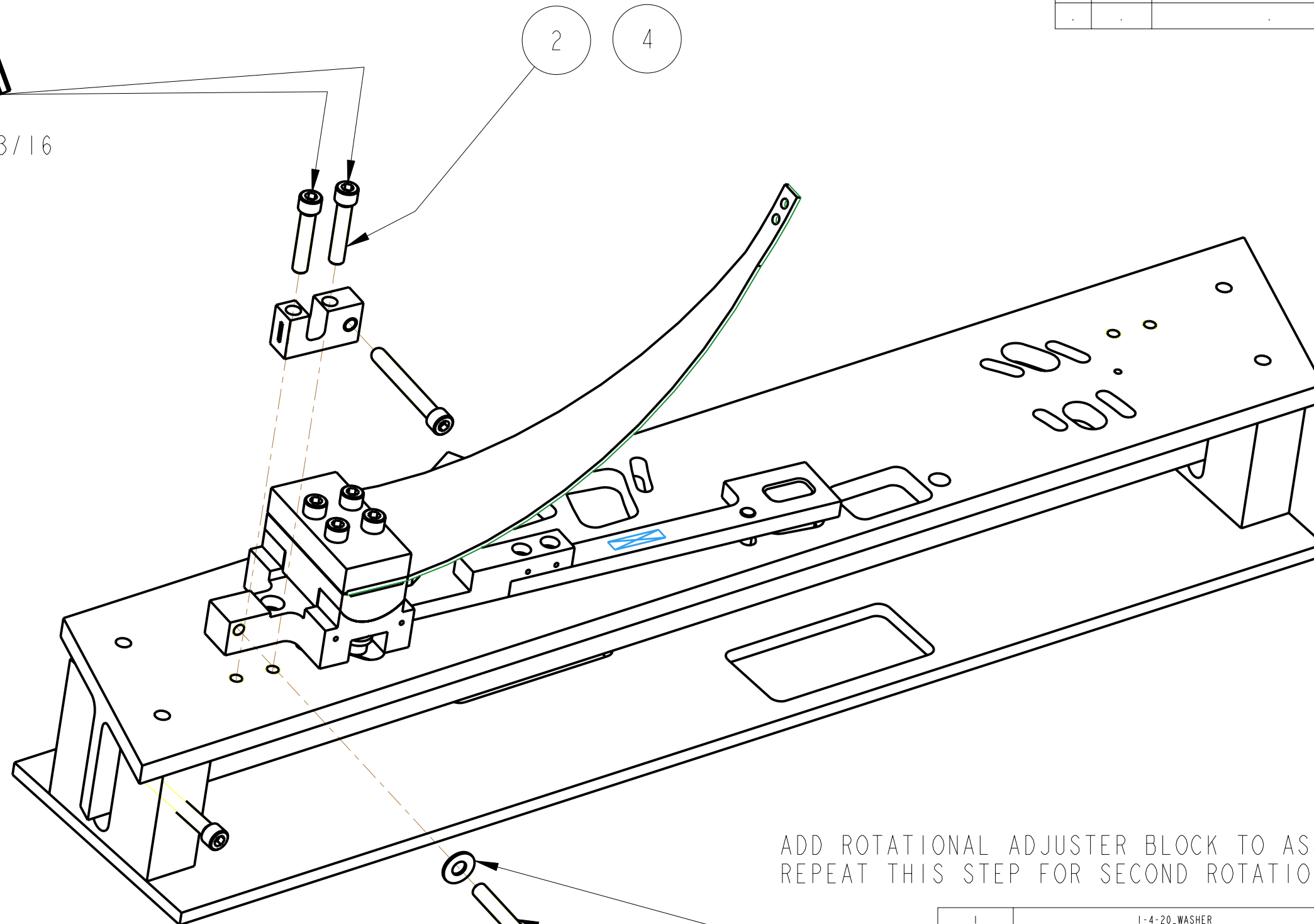


THREAD INSERT INSERTION TOOL
1/4 UNC

ADD THREAD INSERT INTO ROTATIONAL ADJUSTER
REPEAT THIS STEP FOR SECOND ROTATIONAL ADJUSTER

1	1-4_20X2D_UNC_THREAD_INSERT	1/4-20 x 2D UNC THREAD INSERT	1
2	D060325	ROTATIONAL ADJUSTER	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	
		PART NAME	
	NAME DATE	SIZE	
	DRAWN . 02/12/09	B DRG. NO. D080080_ASSY_PROCEEDURE REV A.	
	CHECKED --- --/--/--	SCALE 1:1 PROJECTION:  SHEET 11 OF 4	
	APPROVED --- --/--/--		

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



ADD ROTATIONAL ADJUSTER BLOCK TO ASSEMBLY
REPEAT THIS STEP FOR SECOND ROTATIONAL ADJUSTER BLOCK

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

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4-20_WASHER	1/4" 20 UNC WASHER	1
2	1-4-20 UNC 1-25INCH	1/4" 20 UNC X 1.25" CAP HEAD	2
3	1-4-20 UNC 1-5INCH	1/4-20 UNC X 1.5" CAP HEAD	1
4	1-4-20 UNC 2-00INCH ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	1

NOTES: (UNLESS OTHERWISE SPECIFIED)

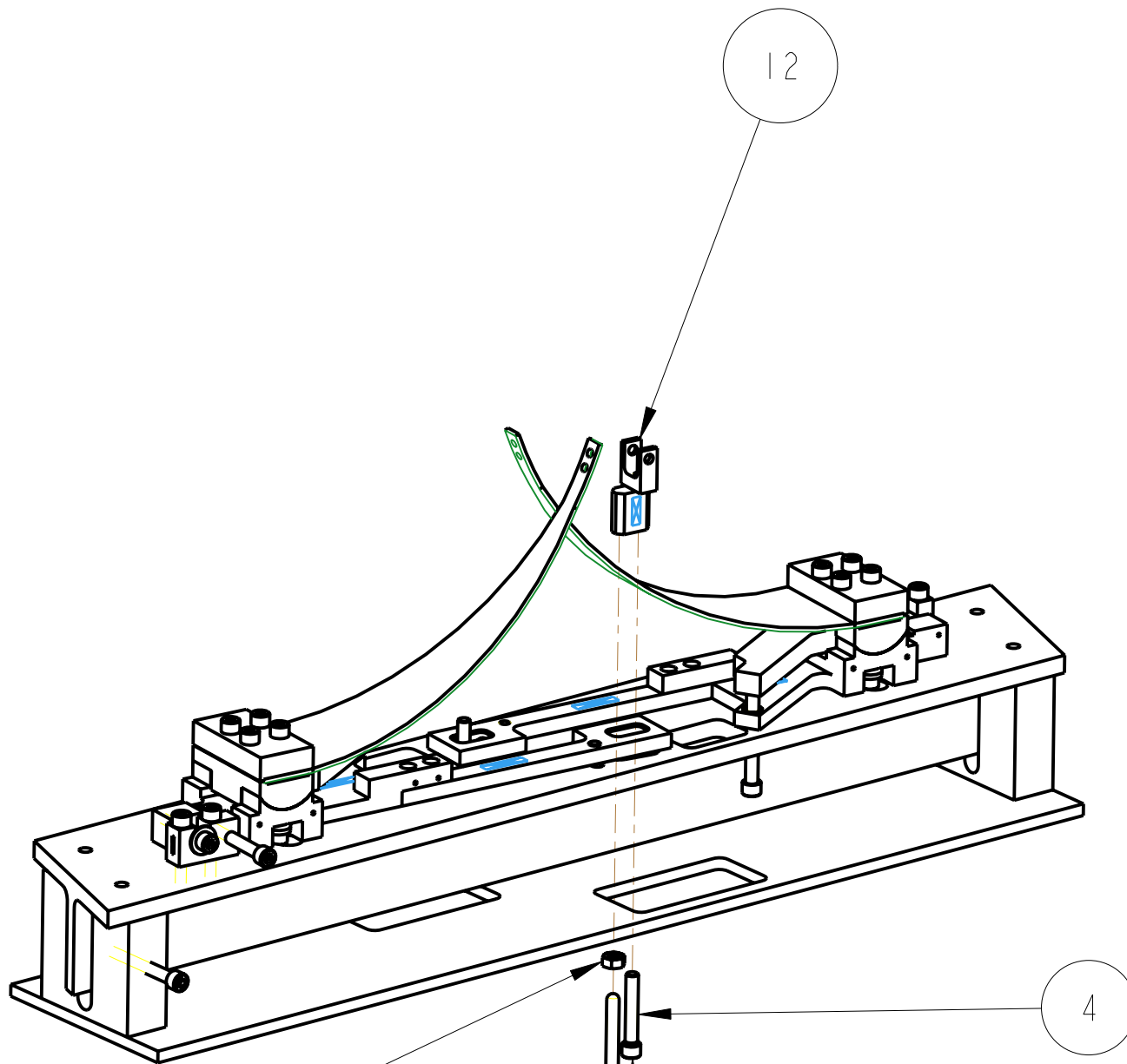
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

DRAWN	NAME	DATE
CHECKED	---	--/--/--
APPROVED	---	--/--/--

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

SCALE 1:2 PROJECTION: SHEET 12 OF 14



ADD BLADE TIP STOP MOUNT TO ASSEMBLY
REPEAT THIS STEP FOR SECOND BLADE TIP STOP MOUNT

6

4

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


1	1-4-20_WASHER	1/4" 20 UNC WASHER	5
2	1-4-20_UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	10
3	1-4-20_UNC_1-251NCH	1/4" 20 UNC X 1.25" CAP HEAD	2
4	1-4-20_UNC_1-51NCH	1/4-20 UNC X 1.5" CAP HEAD	3
5	1-4-20_UNC_2-001NCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	4
6	1-4-20_UNC_NUT_	1/4" 20 UNC NUT	3
7	1-4_SPERICAL_WASHER	1/4 SPHERICAL WASHER	2
8	D060325	ROTATIONAL ADJUSTER	1
9	D080083	BLADE CLAMP BOTTOM	1
10	D080084	BLADE CLAMP TOP	1
11	D080086	ADJUSTER ARM	1
12	D080090	BLADE TIP STOP MOUNT	1
13	D080091	ROTATIONAL BUSH	1
14	D080513	TOP STAGE BLADE SPRING	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

NOTES: (UNLESS OTHERWISE SPECIFIED)

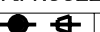
1.

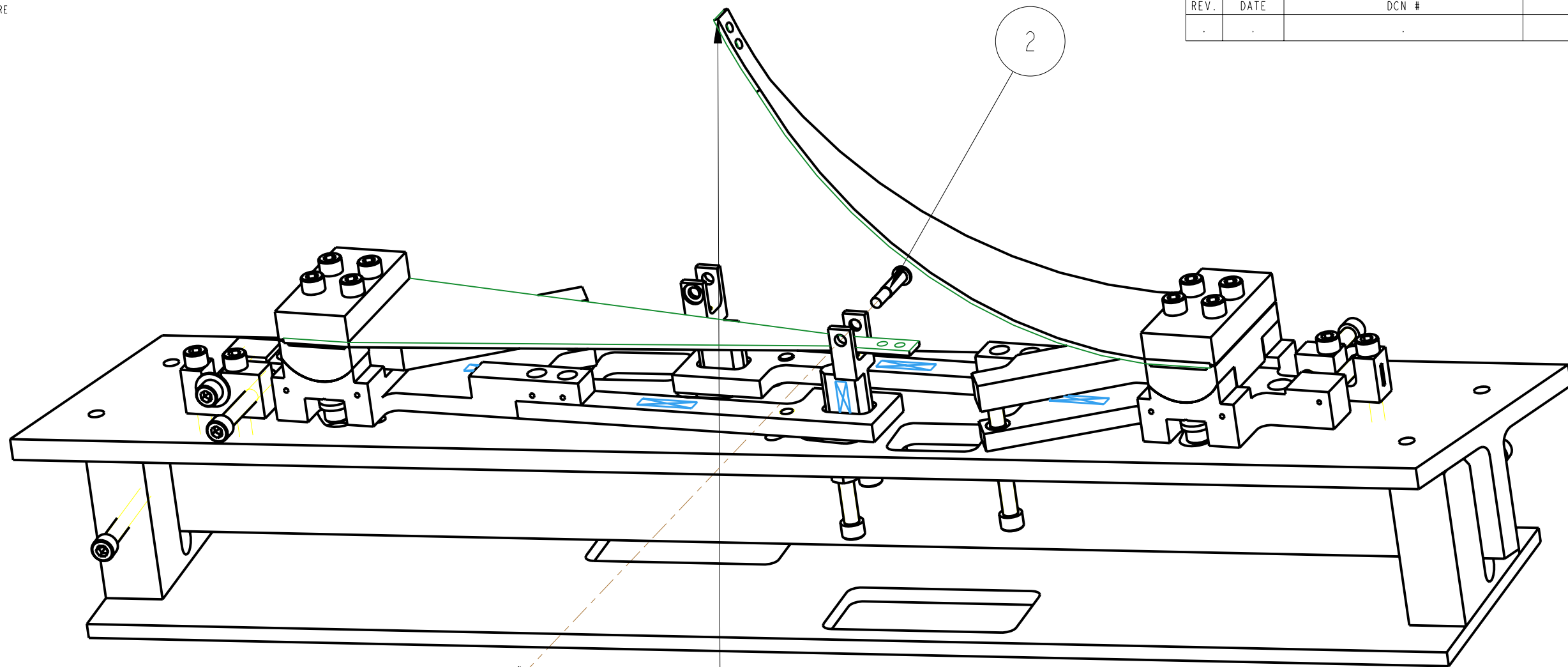
PROCESS PLAN
TO BE USED FOR ASSEMBLY ONLY
NOT TO BE USED FOR MANUFACTURE

	NAME	DATE
DRAWN		02/12/09
CHECKED	---	--/--/--
APPROVED	---	--/--/--

 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

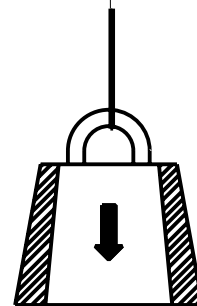
SIZE **B** DRG. NO. **D080080_ASSY_PROCEEDURE** REV **A.**
 SCALE 3:10 PROJECTION:  SHEET 13 OF 14



STRAIGHTEN FIRST BLADE
 PULL THE FIRST BLADE FLAT BY HANGING MASS FROM THE TIP
 ENSURE THAT THE ASSEMBLY IS SECURELY CLAMPED TO A ROBUST TABLE DURING THIS PROCEEDURE
 INSERT BLADE STOP PIN AND ATTACH LOCKING NUTS
 REPEAT THIS STEP FOR SECOND BLADE



5/16 A/F
 10 LB FT



MASS: 50 KG

1	8-32 UNC NUT	8-32 UNC X NUT	2
2	D080089	BLADE STOP PIN	1
3	D080090	BLADE TIP STOP MOUNT	1
4	D080513_FLAT	TOP STAGE BLADE SPRING	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		
PART NAME		
NAME	DATE	
DRAWN	02/12/09	
CHECKED	---	
APPROVED	---	

SCALE 1:2 PROJECTION: SHEET 14 OF 14