


INTRALINK NAME: D070435_PROCESS

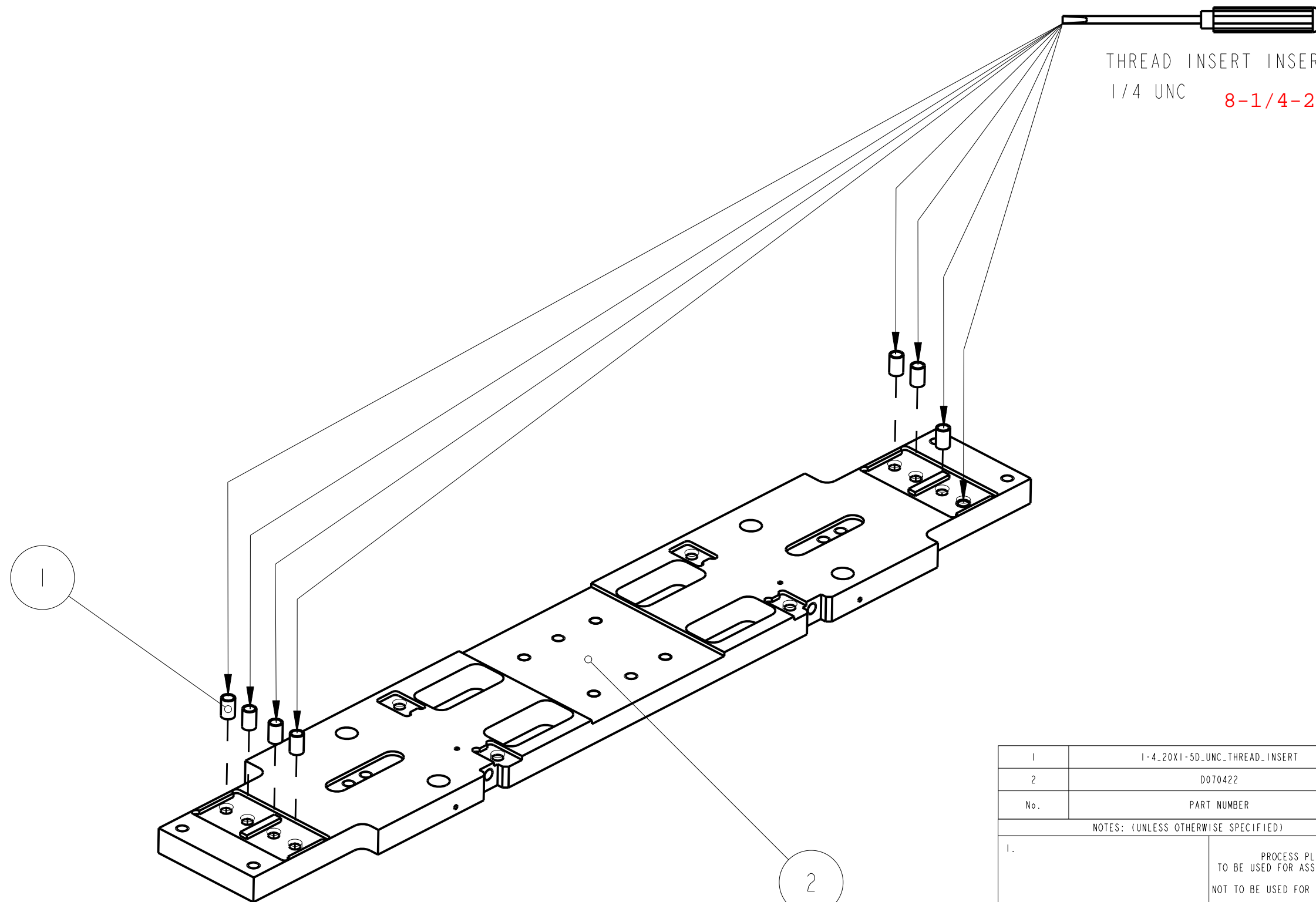
REV.	DATE	DCN #	DRAWING TREE #


STEP	DESCRIPTION	PART#	QTY	TIME
1		I-4_20X1-50 UNC_THREAD_INSERT	8	
		D070422	1	
2	STABILITY LEGS TO BASEPLATE ASSEMBLY	I-4_20 UNC_1-001NCH	4	
		D070434	4	
3	BLADE AND BLADE CLAMP ASSEMBLY TO BASE PLATE	I-4_20 UNC_1-001NCH	8	
		I-4_20 UNC_2-001NCH	8	
		I-4_20 UNC_2-001NCH_ROUND	4	
		I-4_SPERICAL_WASHER	8	
		D070417	4	
		D070418	2	
		D070419	4	
		D070420	4	
		D070421	2	
4	BLADE STRAIGHTENING AND TIP STOP ASSEMBLY	I-4_20 UNC_1-001NCH_SIL_PLT	4	
		I-4_20 UNC_2-501NCH_ROUND	4	
		I-4_20 UNC_NUT_	4	
		D070428	4	
		D070417_FLAT	4	
5	PITCH ADJUSTER TO BASE PLATE ASSEMBLY	I-4_20 UNC_2-001NCH_SIL_PLT	4	
		D060405	1	
		D070423	1	
6	TOP PLATE AND STAND OFF ASSEMBLY TO BASE PLATE	I-4_20 UNC_0-751NCH_SIL_PLT	4	
		I-4_20 UNC_1-001NCH	4	
		I-4_20 UNC_1-001NCH_SIL_PLT	4	
		D070429	2	
		D070430	2	
7	MASS FLAG AND SHEILDING MAGNET ASSEMBLY, AND ASSEMBLY OF ADDABLE/REMOVABLE MASS TO THE TOP PLATES	I-4_20 UNC_1-001NCH	4	
		D060400	1	
		D060401	3	
		D060418	2	
		D0901344	2	
		D060359-050_0	4	
8	MASS FLAG ASSEMBLY, AND ASSEMBLY OF ADDABLE/REMOVABLE MASS TO BASE PLATE	I-4_20 UNC_1-001NCH_SIL_PLT	2	
		D060400	1	
		D060401	2	
		D060418	1	
		D0901344	1	
		D060359-100_0	2	
9	EDDIE CURRENT DAMPER ASSEMBLY TO MASS TOP AND BASE PLATES	I-4_20 UNC_1-001NCH	6	
		I-4_20 UNC_1-001NCH_SIL_PLT	2	
		D060400	4	
		D060401	40	
		D060407	4	
		D060408	8	
		D060413	8	
		D060418	4	
		D0901344	4	
10	ADD ECD MAGNETS, WITH ATTENTION TO POLARITY	D0901344	32	

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	BEAMSPLITTER
		PART NAME	BS TOP MASS BEAMSPLITTER TRIPLE
		SCALE	1:2
	DRAWN	J O'DELL	10/JAN/09
	CHECKED	IW	10/JAN/09
	APPROVED	JOD	10/JAN/09
	SIZE	B	DRG. NO. D070435_PROCESS
			REV E-
			SHEET 1 OF 1

REV.	DATE	DCN #	DRAWING TREE #

INSERT HELICOILS

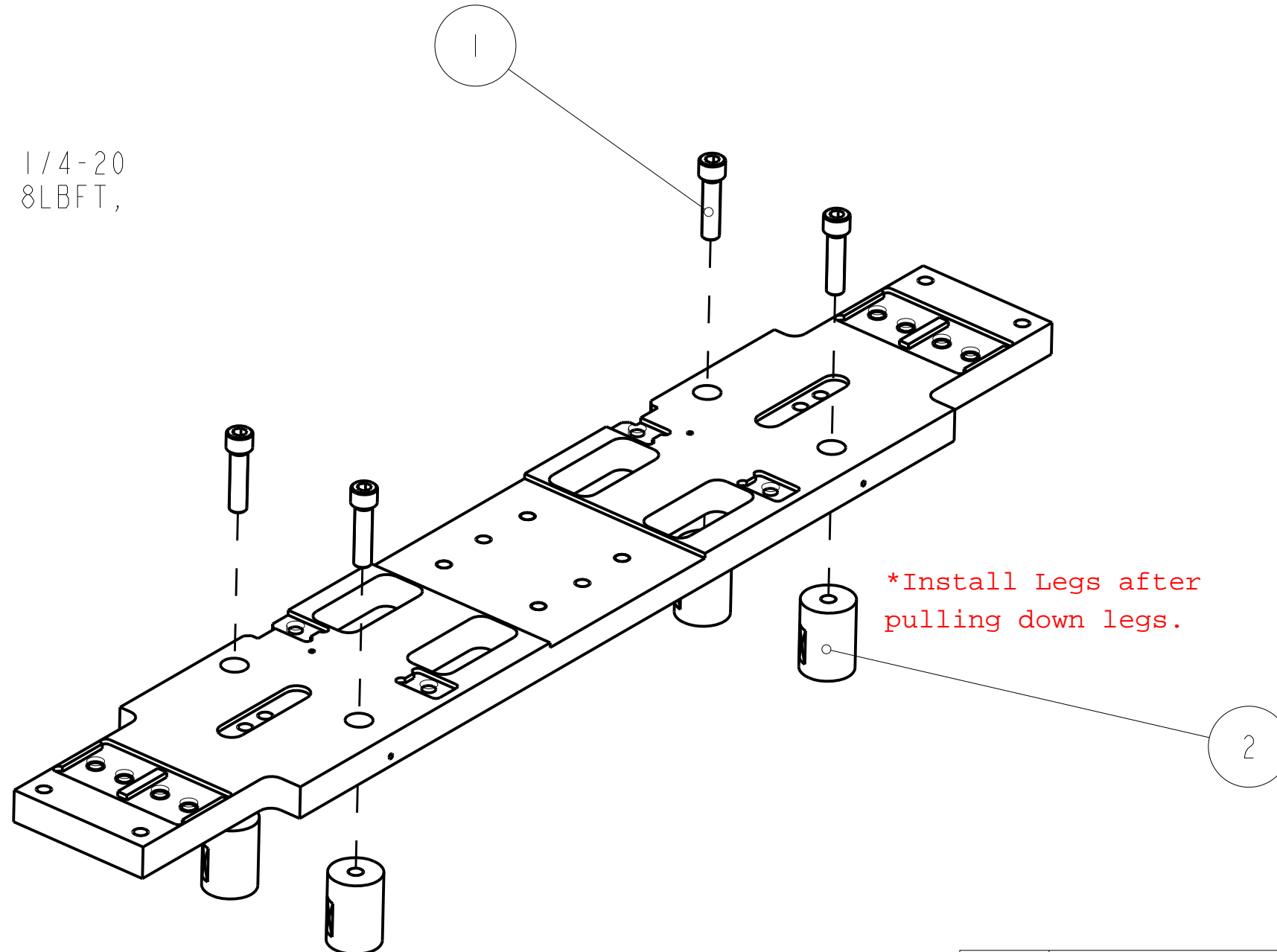


1	1-4_20X1-5D_UNC_THREAD_INSERT	1/4-20 x 1.5D UNC THREAD INSERT	8
2	D070422	BASE PLATE	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD
NOTES: (UNLESS OTHERWISE SPECIFIED)			
1.		PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	 CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES
		SYSTEM	ADVANCED LIGO
		SUB-SYSTEM	SUS
		NEXT ASSY	BEAMSPLITTER
		PART NAME	BS TOP MASS BS TRIPLE
	NAME	DATE	SIZE
DRAWN	J O'DELL	10/JAN/09	B
CHECKED	IW	10/JAN/09	DRG. NO.
APPROVED	JOD	10/JAN/09	D070435_PROCESS
		SCALE	1:2
		PROJECTION	1st Angle
		SHEET	2 OF 1

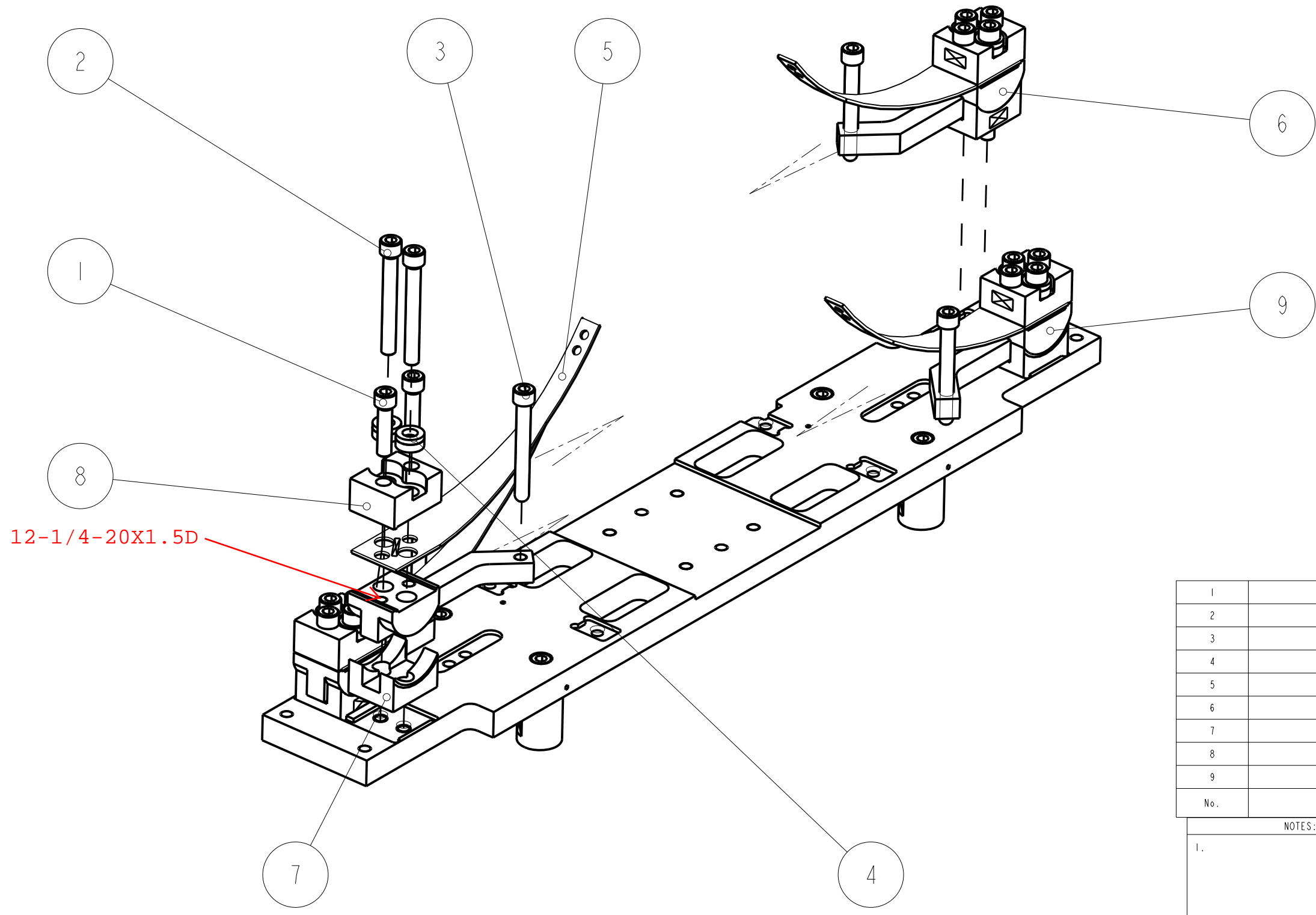
REV.	DATE	DCN #	DRAWING TREE #

NOTE:

NOMINAL TORQUES FOR ALL 1/4-20
UNC SCREWS THROUGHOUT = 8LBFT,
UNLESS OTHERWISE STATED



1	1-4_20_UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	4
2	D070434	STABILITY LEG	4
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 BEAMSPLITTER PART NAME BS TOP MASS BEAMSPLITTER TRIPLE	
	NAME	DATE	SIZE
DRAWN	J O'DELL	10/JAN/09	B
CHECKED	IW	10/JAN/09	DRG. NO. D070435_PROCESS
APPROVED	JOD	10/JAN/09	REV E-
SCALE 1:2		PROJECTION:	SHEET 3 OF 1



NOTE:

TORQUE ALL 1/4-20 UNC X 1" AND 1/4-20 UNC X 2" SCREWS IN THIS STAGE TO 14LBFT

WIND 1/4-20 UNC X 2" SPHERICAL TIPPED SCREWS THROUGH HEIGHT ADJUSTER, SO THAT THE TIP PROTRUDES ~6MM BENEATH

No.	PART NUMBER	PART DESCRIPTION	NO. REQD
1	1-4_20 UNC_1-00INCH	1/4" 20 UNC X 1" CAP HEAD	8
2	1-4_20 UNC_2-00INCH	1/4" 20 UNC X 2" CAP HEAD	8
3	1-4_20 UNC_2-00INCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	4
4	1-4_SPERICAL_WASHER	1/4 SPHERICAL WASHER	8
5	D070417	BOTTOM BLADE SPRINGS	4
6	D070418	BLADE TIP HEIGHT ADJ#1	2
7	D070419	BLADE CLAMP BOTTON JAW	4
8	D070420	BLADE CLAMP TOP JAW	4
9	D070421	BLADE TIP HEIGHT ADJ#2	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.

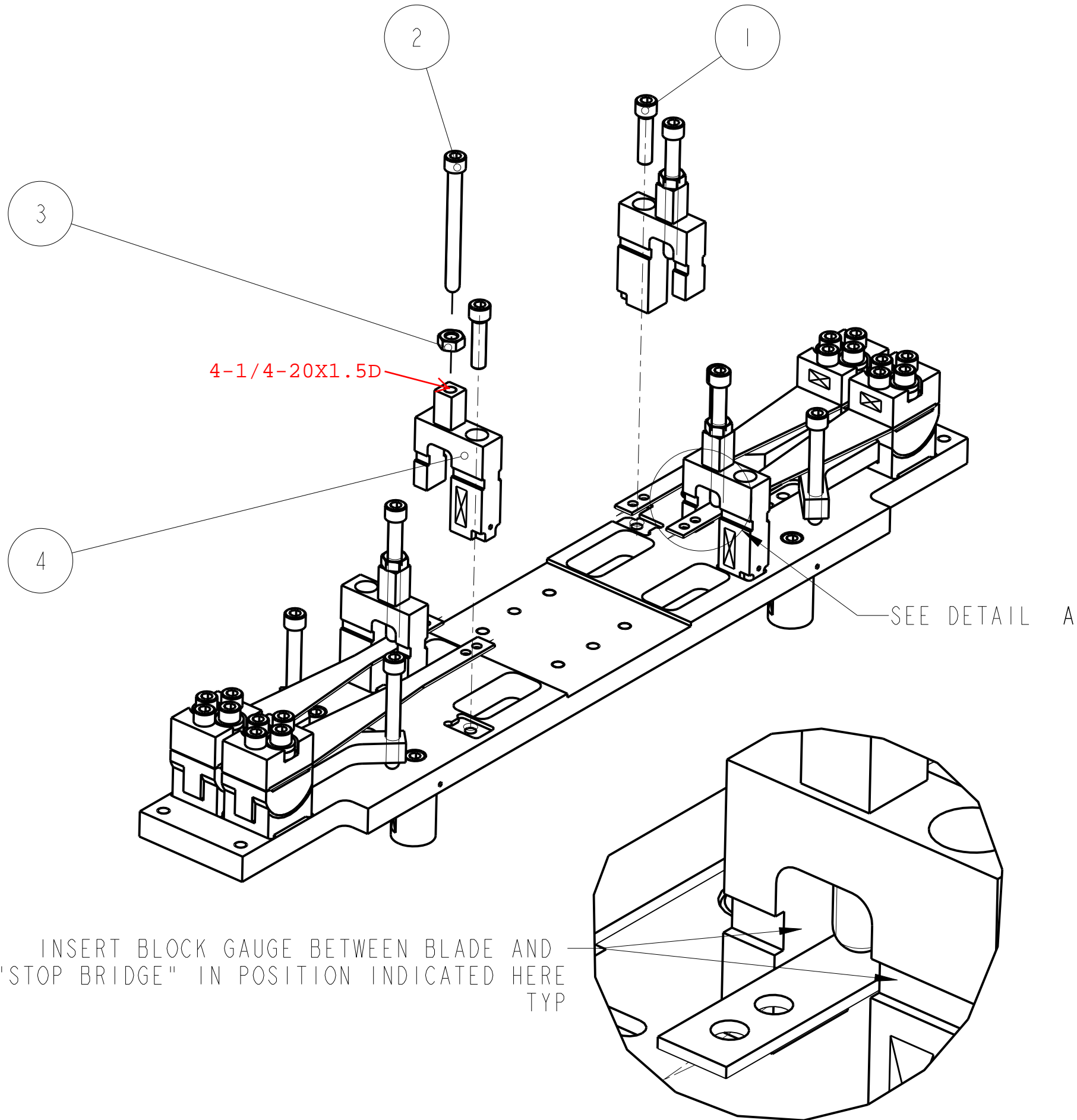
PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE	
NAME	DATE
DRAWN J O'DELL	10/JAN/09
CHECKED IW	10/JAN/09
APPROVED J'OD	10/JAN/09

1300 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 **BEAMSPLITTER**
 PART NAME **BS TOP MASS
 BEAMSPLITTER TRIPLE**

SCALE 1:2 PROJECTION: SHEET 4 OF 1

SIZE B	DRG. NO. D070435_PROCESS	REV E-
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INSTRUCTIONS

PULL BLADES DOWN FLAT USING A HANGING MASS (~7KG), AND ADD BLADE TIP STOPS

WIND 1/4-20 UNC X 2" SPHERICAL TIPPED SREWS THROUGH BRIDGE STOPS SO THE TIP PROTRUDES ~10 MM BELOW THE BRIDGE

WITH THE WEIGHT STILL HANGING FROM THE BLADE TIP, AND THE BLADE TIP FREE, USE A 2MM BLOCK GAUGE TO SET BLADES CENTRAL WITH RESPECT TO THE STOP BRIDGES. THIS IS A VERY IMPORTANT STEP, AND MUST BE CORRECT!

TIP - THE BLOCK GAUGE SHOULD SLIDE BETWEEN THE BLADE AND THE BRIDGE ON BOTH SIDES WITH THE SAME AMOUNT OF FRICTION. THIS INDICATES THAT THE BLADE IS CENTRAL.

WHEN THE BLADE HAS BEEN CENTERED, WIND THE BLADE TIP STOP DOWN UNTIL IT TOUCHES THE BLADE TIP. AT THIS POINT, THE HANGING MASS CAN BE REMOVED

REPEAT FOR ALL FOUR BLADES

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_2-501NCH_ROUND	1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP	4
3	1-4_20 UNC_NUT_	1/4" 20 UNC NUT	4
4	D070428	STOP BRIDGE	4
5	D070417_FLAT	BOTTOM BLADE SPRINGS	4
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

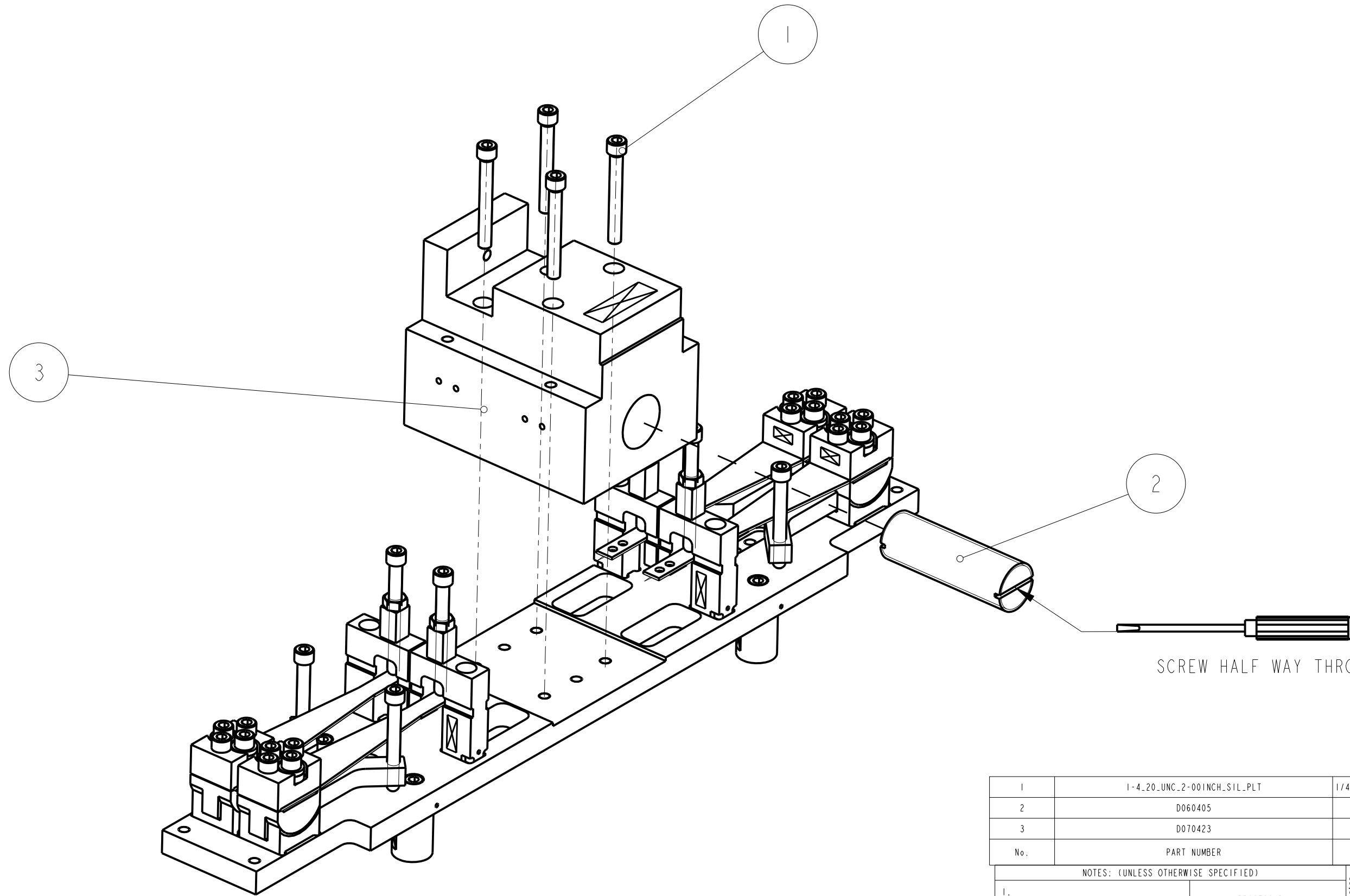
NOTES: (UNLESS OTHERWISE SPECIFIED)

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 BEAMSPLITTER	
		PART NAME BS TOP MASS BEAMSPLITTER TRIPLE	
DRAWN	J O'DELL	10/JAN/09	SIZE B
CHECKED	IW	10/JAN/09	DRG. NO. D070435_PROCESS
APPROVED	J'OD	10/JAN/09	REV E-
SCALE 1:2		PROJECTION:	

SHEET 5 OF 1

DETAIL A
SCALE 2:1



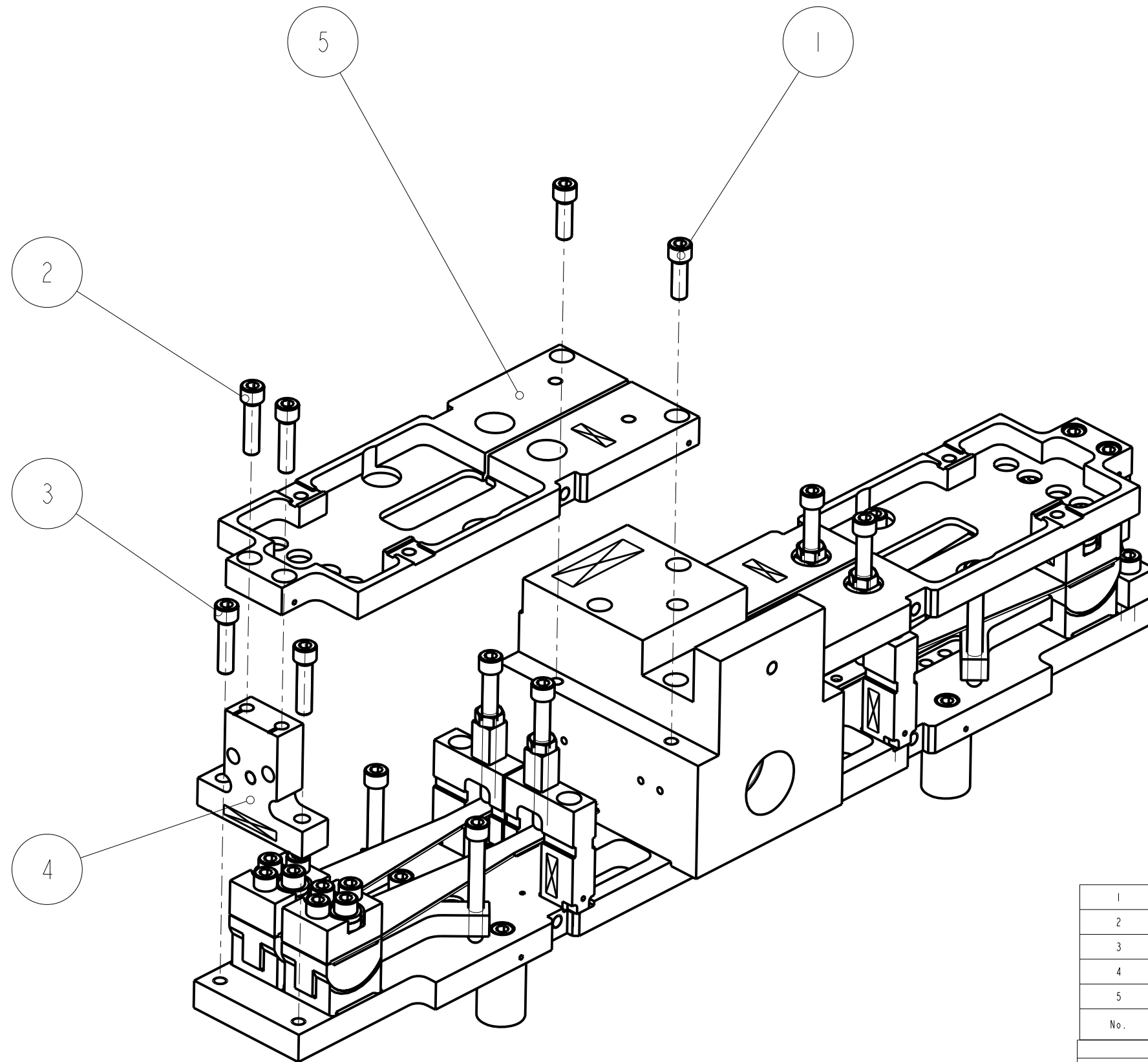
1	I-4-20 UNC 2-001 INCH SIL PLT	1/4" 20 UNC X 2" CAP HEAD SILVER PLATED	4
2	D060405	PITCH ADJUSTER	1
3	D070423	PITCH ADJUSTER & MASS	1
No.	PART NUMBER	PART DESCRIPTION	NO. REOD

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 BEAMSPLITTER															
PART NAME BS TOP MASS BEAMSPLITTER TRIPLE															
<table border="1"> <tr><th>NAME</th><th>DATE</th></tr> <tr><td>DRAWN J O'DELL</td><td>10/JAN/09</td></tr> <tr><td>CHECKED IW</td><td>10/JAN/09</td></tr> <tr><td>APPROVED J'OD</td><td>10/JAN/09</td></tr> </table>	NAME	DATE	DRAWN J O'DELL	10/JAN/09	CHECKED IW	10/JAN/09	APPROVED J'OD	10/JAN/09	<table border="1"> <tr><th>SIZE</th><th>DRG. NO.</th><th>REV</th></tr> <tr><td>B</td><td>D070435_PROCESS</td><td>E-</td></tr> </table>	SIZE	DRG. NO.	REV	B	D070435_PROCESS	E-
NAME	DATE														
DRAWN J O'DELL	10/JAN/09														
CHECKED IW	10/JAN/09														
APPROVED J'OD	10/JAN/09														
SIZE	DRG. NO.	REV													
B	D070435_PROCESS	E-													
SCALE 1:2 PROJECTION:															
SHEET 6 OF 1															

REV.	DATE	DCN #	DRAWING TREE #



No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20 UNC_0-75INCH_SIL_PLT	1/4" 20 UNC X 0.75" CAP HEAD SILVER PLATED	4
2	1-4_20 UNC_1-00INCH	1/4" 20 UNC X 1" CAP HEAD	4
3	1-4_20 UNC_1-00INCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	4
4	D070429	TOP MASS SPACER	2
5	D070430	TOP PLATE	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

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

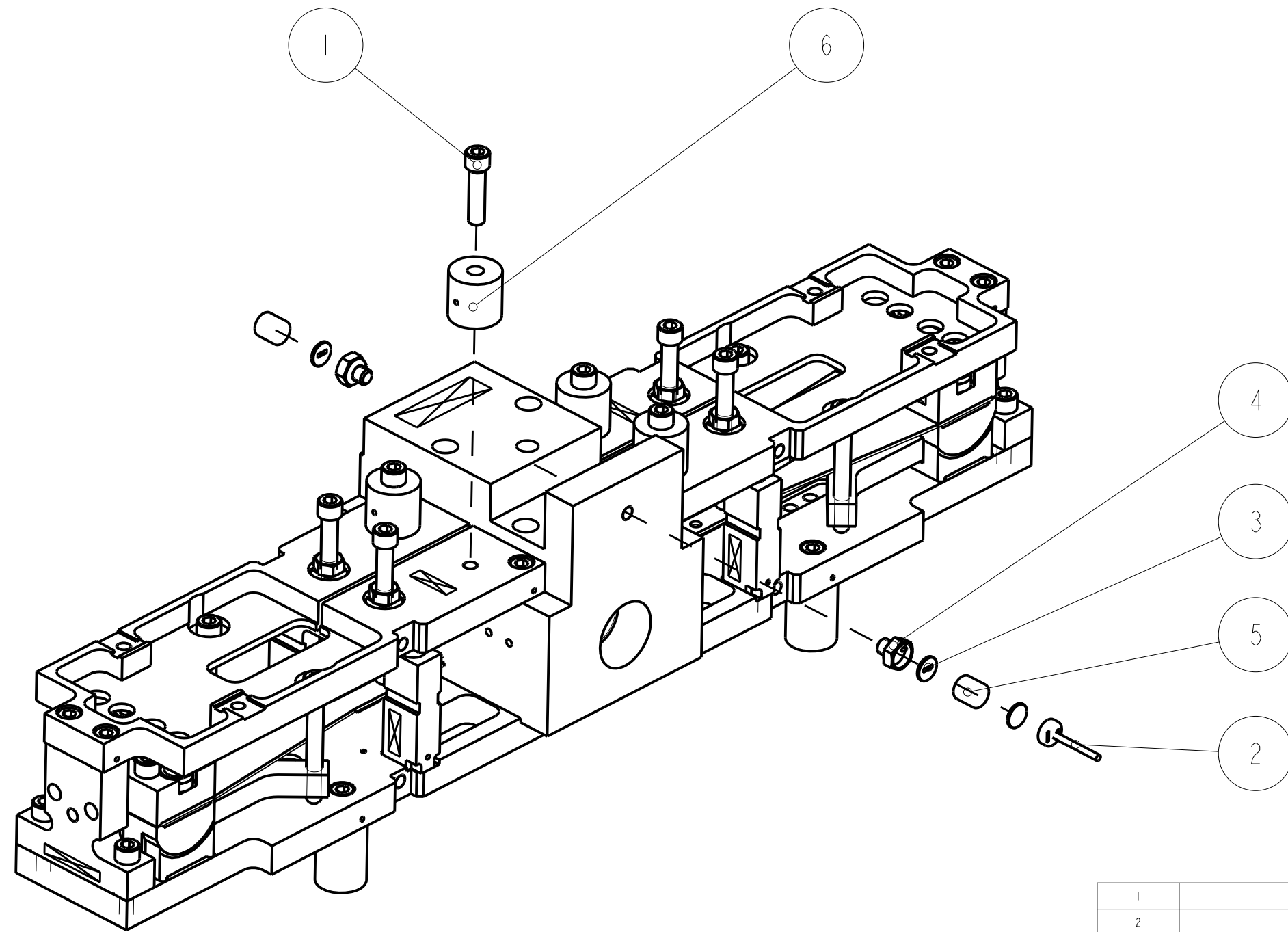
SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	BEAMSPLITTER
PART NAME	BS TOP MASS BEAMSPLITTER TRIPLE

DRAWN	J O'DELL	10/JAN/09
CHECKED	IW	10/JAN/09
APPROVED	J'OD	10/JAN/09

SCALE	1:2	PROJECTION	1st Angle	SHEET	7 OF 1
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 RUTHERFORD APPLETON LABORATORIES

SIZE B DRG. NO. D070435_PROCESS REV E-



NOTE:
PRESS MAGNETIC PLUGS
INTO OSEM MAGNET FLAGS
AND MAGNET RETAINERS

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20_UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	4
2	D060400	OSEM MAGNET FLAG	1
3	D060401	MAGNETIC PLUG	3
4	D060418	MAGNET RETAINER	2
5	D0901344	10MM DIA X 10MM MAGNET	2
6	D060359-050_0	ADDITIONAL MASS	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	10/JAN/09
CHECKED IW	10/JAN/09
APPROVED J'OD	10/JAN/09

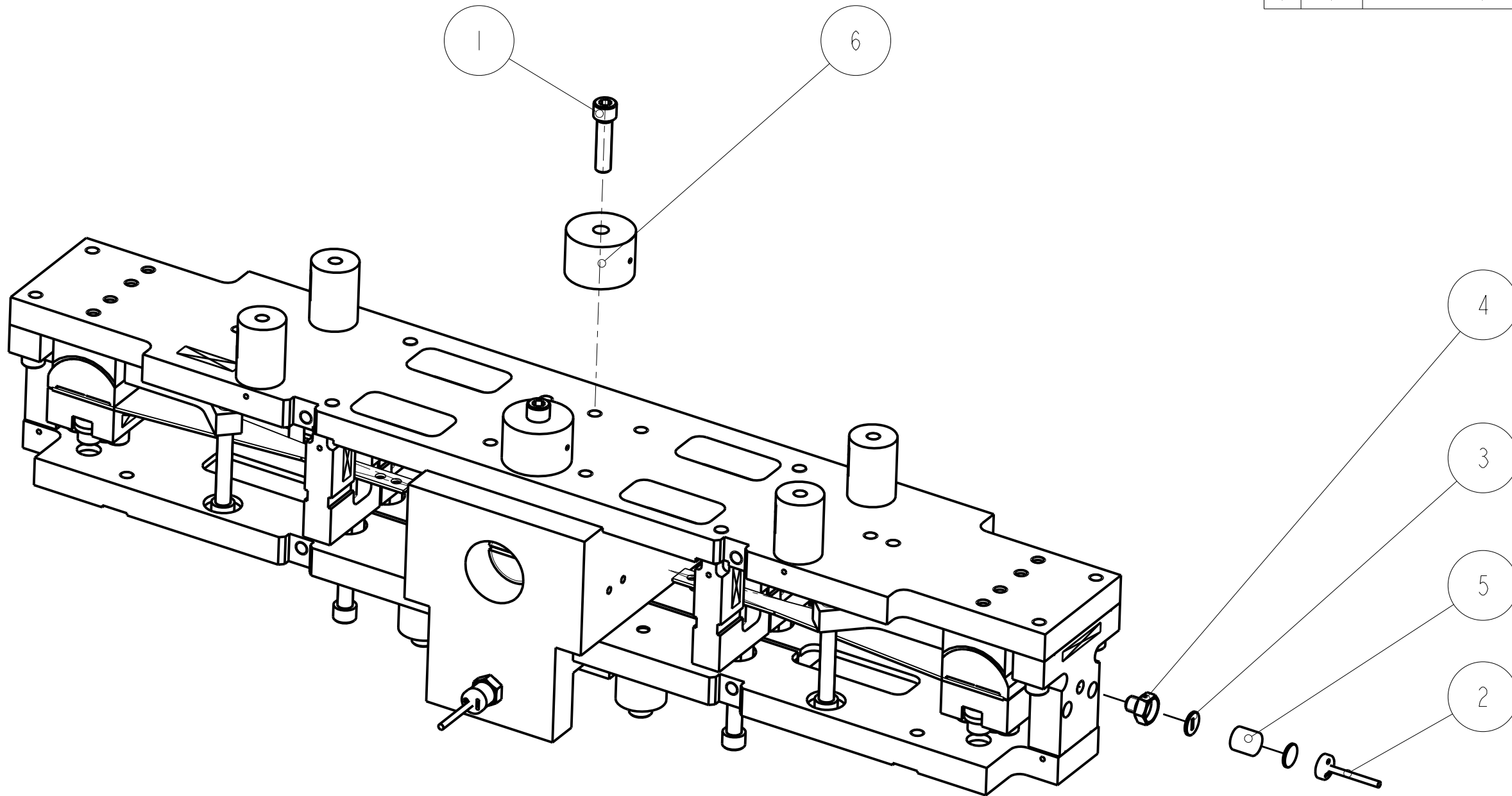
SYSTEM	ADVANCED LIGO
SUB-SYSTEM	SUS
NEXT ASSY	BEAMSPLITTER
PART NAME	BS TOP MASS BEAMSPLITTER TRIPLE

SCALE	1:2	PROJECTION	1st Angle	SHEET	8 OF 1
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IGR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

DRG. NO. **D070435_PROCESS**

REV.	DATE	DCN #	DRAWING TREE #



NOTE:
 PRESS MAGNETIC PLUGS
 INTO OSEM MAGNET FLAGS AND
 MAGNET RETAINERS

 TURN MASS OVER, TO ADD
 MASS ON UNDERSIDE

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	2
2	D060400	OSEM MAGNET FLAG	1
3	D060401	MAGNETIC PLUG	2
4	D060418	MAGNET RETAINER	1
5	D0901344	10MM DIA X 10MM MAGNET	1
6	D060359-100_0	ADDITIONAL MASS	2

NOTES: (UNLESS OTHERWISE SPECIFIED)

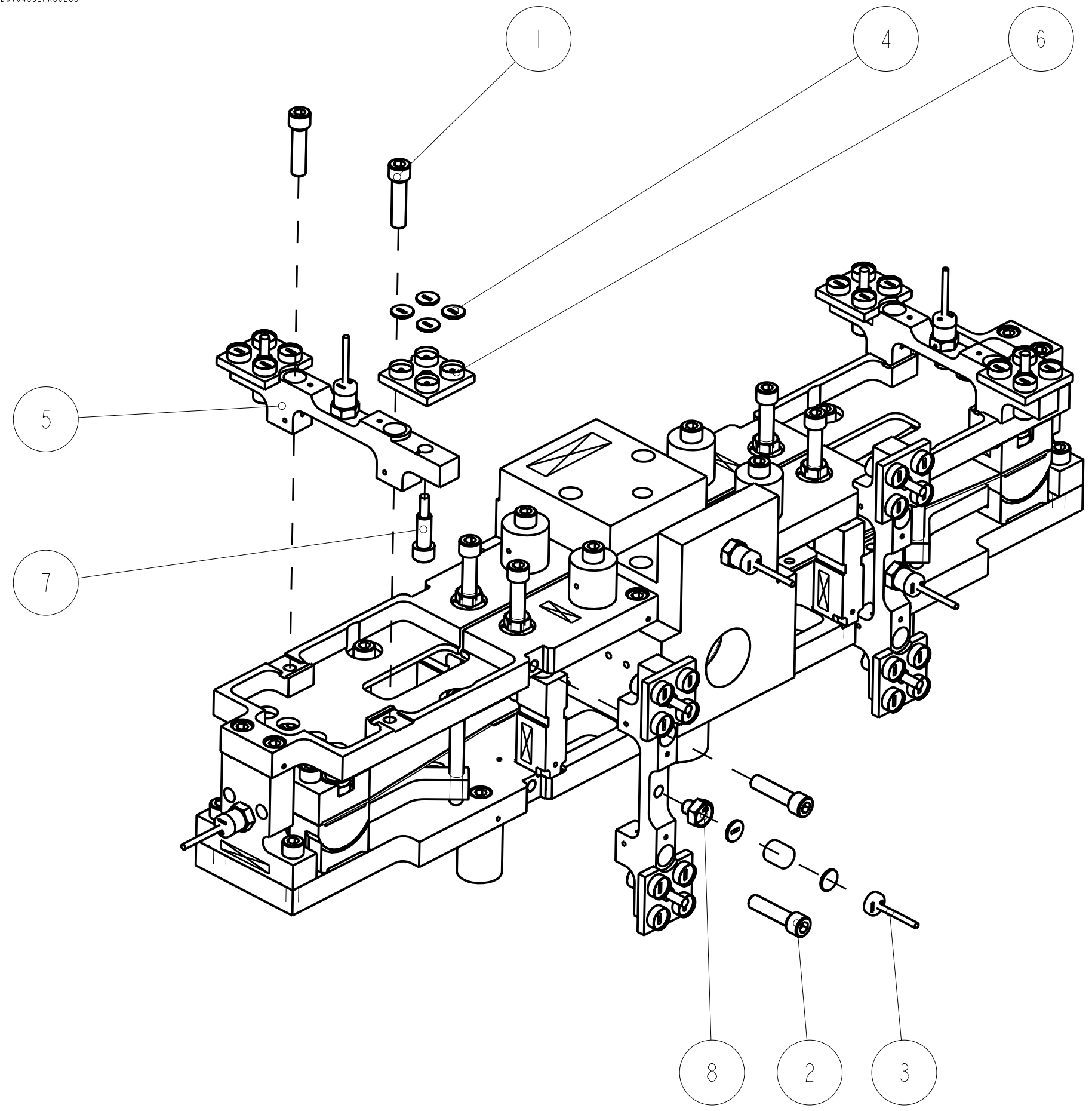
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

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	BEAMSPLITTER
PART NAME	BS TOP MASS BEAMSPLITTER TRIPLE
SCALE	1:2
PROJECTION	1st Angle
SHEET	9 OF 1

NAME	DATE
DRAWN J O'DELL	10/JAN/09
CHECKED IW	10/JAN/09
APPROVED J'OD	10/JAN/09

SIZE	DRG. NO.	REV
B	D070435_PROCESS	E

REV.	DATE	DCN #	DRAWING TREE #



NOTE:


PRESS MAGNETIC PLUGS INTO OSEM MAGNET FLAGS AND MAGNET RETAINERS

No.	PART NUMBER	PART DESCRIPTION	NO. REOD
1	1-4_20_UNC_1-001NCH	1/4" 20 UNC X 1" CAP HEAD	6
2	1-4_20_UNC_1-001NCH_SIL_PLT	1/4" 20 UNC X 1" CAP HEAD SILVER PLATED	2
3	D060400	OSEM MAGNET FLAG	4
4	D060401	MAGNETIC PLUG	40
5	D060407	OSEM & ECD UNIT BACKBONE	4
6	D060408	ECD MAGNET MOUNT PLATE	8
7	D060413	1/4" 20 UNC X 1" CAP HEAD	8
8	D060418	MAGNET RETAINER	4
9	D0901344	10MM DIA X 10MM MAGNET	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	10/JAN/09
CHECKED IW	10/JAN/09
APPROVED J'OD	10/JAN/09

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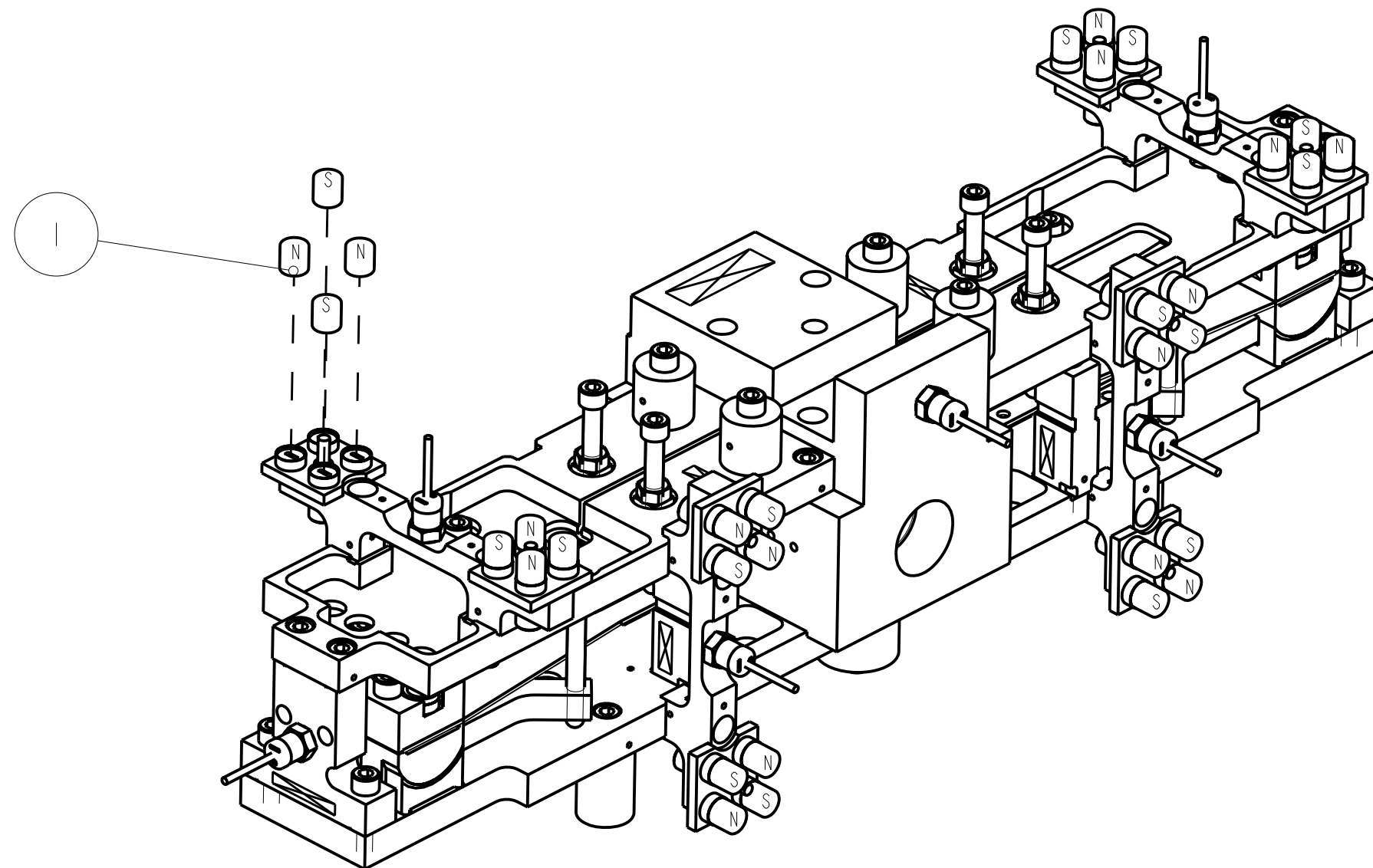
SYSTEM **ADVANCED LIGO**
 SUB-SYSTEM **SUS**
 NEXT ASSY **BEAMSPLITTER**
 PART NAME **BS TOP MASS BEAMSPLITTER TRIPLE**

SIZE B	DRG. NO. D070435_PROCESS	REV E-
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SCALE 1:2 PROJECTION:  SHEET 10 OF 10


REV.	DATE	DCN #	DRAWING TREE #

MAGNET POLARITY



NOTE:

ASSEMBLE MAGNETS WITH ALTERNATIVE POLARITIES, ARRANGED AS SHOWN

I	D0901344	10MM DIA X 10MM MAGNET	32
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	BS TOP MASS BS TRIPLE
	NAME	DATE	SIZE
DRAWN	J O'DELL	01/12/10	B
CHECKED	IW	10/JAN/09	
APPROVED	JOD	10/JAN/09	
		DRG. NO.	D070435_PROCESS
		SCALE	1:2
		PROJECTION	1st Angle
		SHEET	11 OF 11