

INTRALINK NAME: D060403.ASM.PROCEDURE

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------|-------|----------------|
| | | | |

| STEP | DESCRIPTION | PART# | QTY | TIME |
|------|--|-------------------------------|-----|------|
| 1 | ADD WIRE THREAD INSERTS INTO BASE PLATE. | 1-4.20X1-50.UNC.THREAD.INSERT | 3 | |
| | | 3-8.16X1D.UNC.THREAD.INSERT | 4 | |
| | | D060430 | 1 | |
| 2 | ADD WIRE THREAD INSERTS INTO BOTTOM OF BASE | 1-4.20X1D.UNC.THREAD.INSERT | 6 | |
| | | D060398 | 1 | |
| 3 | ADD THREAD INSERTS INTO PITCH ADJUSTER BLOCK | 1-4.20X1D.UNC.THREAD.INSERT | 1 | |
| | | D060398 | 1 | |
| | | D060405 | 1 | |
| 4 | ADD PITCH ADJUSTER COMPONENTS TO BASE PLATE | 1-4.20.UNC.1-00INCH.SIL.PLT | 4 | |
| | | 1-4.20.UNC.2-00INCH.SIL.PLT | 2 | |
| | | 1-4.20.UNC.X.0-188.GRUBSCREW | 1 | |
| | | D060359-100.0 | 4 | |
| 5 | ADD THREAD INSERTS INTO WIRE CLAMP | 1-4.20X1D.UNC.THREAD.INSERT | 2 | |
| | | D060420 | 1 | |
| 6 | ADD BASE PLATE STIFFENERS AND WIRE CLAMPS. | 1-4.20.UNC.1-00INCH | 12 | |
| | | 1-4.20.UNC.1-00INCH.SIL.PLT | 2 | |
| | | 1-4.20.UNC.2-00INCH | 2 | |
| | | 1-4.20.UNC.2-00INCH.ROUND | 2 | |
| | | D060359-050.0 | 2 | |
| | | D060406 | 2 | |
| 7 | ADD TOP MASS SPACERS. | 1-4.20.UNC.1-00INCH.SIL.PLT | 8 | |
| | | D060397 | 4 | |
| 8 | ADD BLADE TIP Z POSITION ADJUSTER | D060414 | 2 | |
| | | D060415 | 1 | |
| 9 | ADD THREAD INSERTS INTO BLADE ADJUSTER | 1-4.20X1-50.UNC.THREAD.INSERT | 2 | |
| | | 3-8.16X1-50.UNC.THREAD.INSERT | 4 | |
| | | D060415 | 1 | |
| 10 | ADD BLADES AND CLAMPS | 1-4.20.UNC.2-00INCH.ROUND | 4 | |
| | | 3-8.16.UNC.1-25INCH | 8 | |
| | | 3-8.16.UNC.2-25INCH | 4 | |
| | | 3-8.SPHERICAL.WASHER | 4 | |
| 11 | STRAIGHTEN FIRST BLADE | D060236 | 2 | |
| | | D060404-000 | 2 | |
| 12 | ADD THREAD INSERT INTO STOP BRIDGE | D060415 | 1 | |
| | | D060236.FLAT | 1 | |
| | | SURFACE.TABLE | 1 | |
| 13 | ADD STOP BRIDGE | 1-4.20X1-50.UNC.THREAD.INSERT | 1 | |
| | | D060399 | 1 | |
| | | 1-4.20.UNC.1-00INCH.SIL.PLT | 2 | |
| | | 1-4.20.UNC.2-00INCH.ROUND | 1 | |
| 14 | ADD ADDITIONAL BLADE CLAMPS | 1-4.20.UNC.1-00INCH.SIL.PLT | 6 | |
| | | 1-4.20.UNC.2-00INCH.ROUND | 3 | |
| | | 1-4.20.UNC.NUT.. | 3 | |
| | | D060399 | 2 | |
| 15 | ADD TOP PLATES | 1-4.20.UNC.1-00INCH.SIL.PLT | 8 | |
| | | D060399 | 2 | |

| | | | | |
|----|--|------------------------------|----|--|
| 16 | ADD TOP PITCH ADJUSTER | D060411 | 2 | |
| | | 1-4.20.UNC.1-00INCH.SIL.PLT | 4 | |
| | | 1-4.20.UNC.2-00INCH.SIL.PLT | 2 | |
| 17 | ASSEMBLE BACKBONE | 1-4.20.UNC.X.0-188.GRUBSCREW | 1 | |
| | | D060359-100.0 | 4 | |
| | | D060398 | 1 | |
| | | D060405 | 1 | |
| 18 | ADD ALL 4 ECD AND OSEM UNITS AND END FLAG UNIT | D060400 | 1 | |
| | | D060401 | 10 | |
| | | D060407 | 1 | |
| | | D060408 | 2 | |
| | | D060413 | 2 | |
| | | D060418 | 1 | |
| 19 | ADD FINAL OSEM MAGNET FLAG ASSEMBLY | D0901344 | 1 | |
| | | 1-4.20.UNC.1-00INCH | 2 | |
| | | 1-4.20.UNC.1-00INCH.SIL.PLT | 6 | |
| | | D060400 | 4 | |
| | | D060401 | 24 | |
| | | D060407 | 3 | |
| 20 | ADD ADDITIONAL MASS / SUPPORT MEMBER | D060408 | 6 | |
| | | D060413 | 6 | |
| | | D060417 | 1 | |
| 21 | ADD TURRET SCREWS (MAIN CHAIN ONLY) | D060418 | 4 | |
| | | D0901344 | 4 | |
| 22 | ADD UPPER CABLE CLAMP | 1-4.20.UNC.1-00INCH | 1 | |
| | | 1-4.20.UNC.1-00INCH.SIL.PLT | 2 | |
| 23 | ADD LOWER CABLE CLAMP | D060412 | 1 | |
| | | D060416 | 1 | |
| | | D060417 | 1 | |
| 24 | ADD ADDITIONAL MASS / SUPPORT MEMBER | 1-4.20.UNC.1-00INCH.SIL.PLT | 6 | |
| | | D060359-050.0 | 2 | |
| | | D060421 | 2 | |
| | | D070219 | 4 | |
| 25 | ADD UPPER CABLE CLAMP | 1-4.20.UNC.1-00INCH | 2 | |
| | | 1-4.20.UNC.2-00INCH.SIL.PLT | 2 | |
| 26 | ADD LOWER CABLE CLAMP | 1-4.20.UNC.NUT.. | 2 | |
| | | D070219 | 1 | |
| 27 | ADD UPPER CABLE CLAMP | D070226 | 1 | |
| | | D070226 | 1 | |
| 28 | ADD LOWER CABLE CLAMP | 1-4.20.UNC.1-00INCH | 2 | |
| | | 1-4.20.UNC.2-00INCH.SIL.PLT | 2 | |
| 29 | ADD UPPER CABLE CLAMP | 1-4.20.UNC.NUT.. | 2 | |
| | | D070219 | 1 | |
| 30 | ADD LOWER CABLE CLAMP | D070226 | 1 | |
| | | D070226 | 1 | |
| 31 | ADD UPPER CABLE CLAMP | D0901344 | 32 | |
| | | D0901344 | 32 | |

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 MILACRON'S CIMTECH 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: D020188-001. A VIBRATORY TOOL MAY BE USED.

DIMENSIONS ARE IN mm (INCHES)
TOLERANCES:
X.XX ± mm (INCHES)
ANGULAR ±

MATERIAL: AS DRW

FINISH: AS DRW

SCALE: 1:2 PROJECTION: 1

| | | |
|----------|----------|-----------|
| DRAWN | J O'DELL | 08/SEP/08 |
| CHECKED | IW | 08/SEP/08 |
| APPROVED | JOD | 08/MAR/10 |

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

SYSTEM: **ADVANCED LIGO**

SUB-SYSTEM: **SUS**

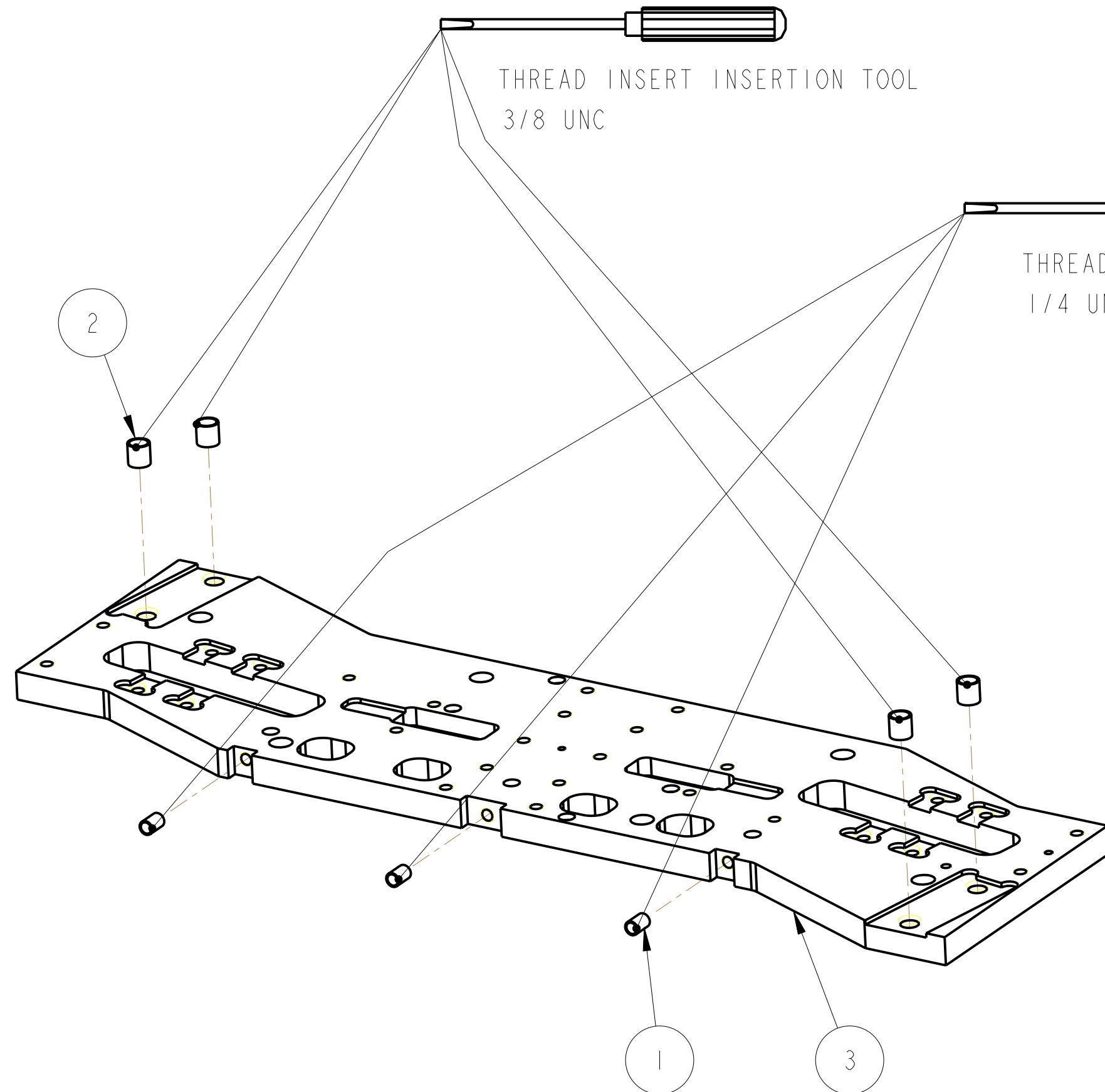
NEXT ASSY: **aLIGO QUAD**

PART NAME: **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**

DRG NO: **D060403.ASM.PROCEDURE**

REV: **B**

SHEET 1 OF 2



THREAD INSERT INSERTION TOOL
3/8 UNC



THREAD INSERT INSERTION TOOL
1/4 UNC

ADD WIRE THREAD INSERTS INTO BASE PLATE.

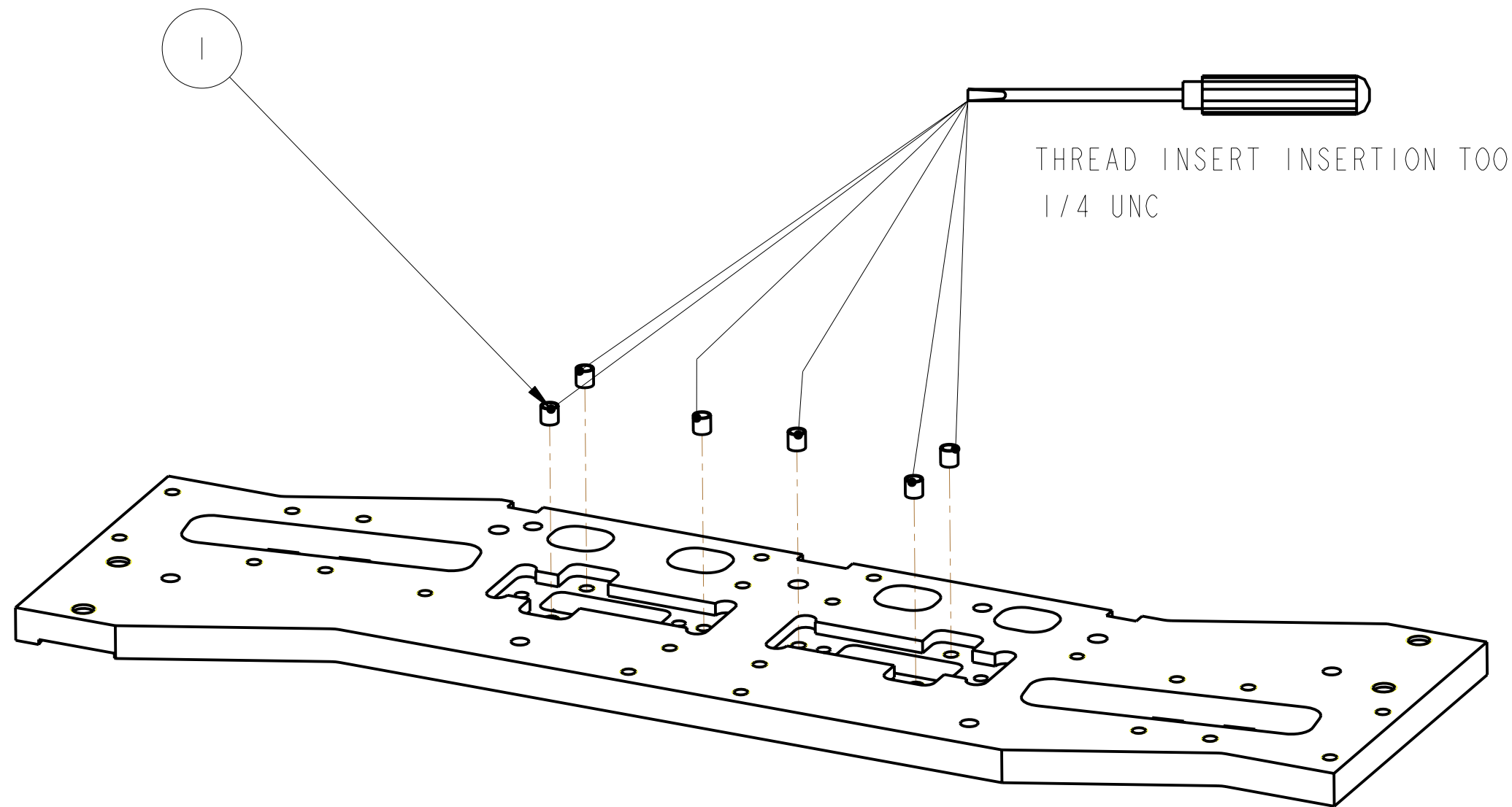
| | | | |
|-----|-------------------------------|---------------------------------|----------|
| 1 | 1-4_20X1-5D_UNC_THREAD_INSERT | 1/4-20 x 1.5D UNC THREAD INSERT | 3 |
| 2 | 3-8_16X1D_UNC_THREAD_INSERT | 3/8-16 x 1D UNC THREAD INSERT | 4 |
| 3 | D060430 | BASE PLATE | 1 |
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |

NOTES: (UNLESS OTHERWISE SPECIFIED)

1.


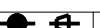
| | | |
|--|-----------|--|
| PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE | |  CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES |
| | | |
| NAME | DATE | SIZE |
| DRAWN J O'DELL | 08/SEP/09 | DRG. NO. D060403_ASM_PROCEDURE REV. B SCALE 1:2 PROJECTION:  SHEET 2 OF 2 |
| CHECKED IW | 08/SEP/09 | |
| APPROVED J O'DELL | 08/SEP/09 | |

| | | | |
|------|------|-------|----------------|
| REV. | DATE | DCN # | DRAWING TREE # |
| | | | |

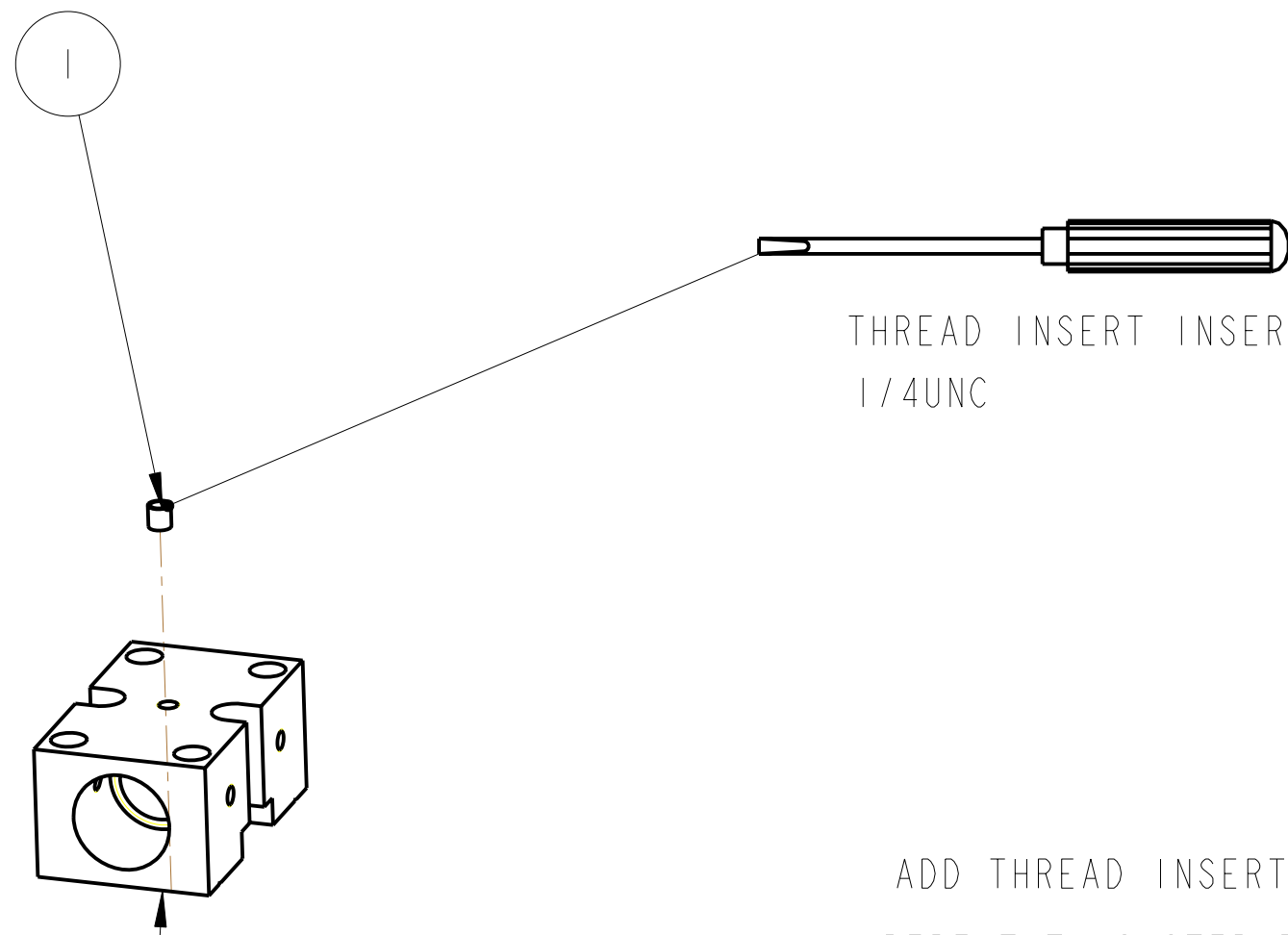


THREAD INSERT INSERTION TOOL
1/4 UNC

ADD WIRE THREAD INSERTS INTO BOTTOM OF BASE


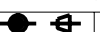
| | | | | | | | | | | | | | | | |
|-------------------------------------|--|--|----------|------|-------|----------|-----------|---------|--|-----------|----------|----------|-----------|--|-----|
| 1 | 1-4_20X1D_UNC_THREAD_INSERT | 1/4-20 x 1D UNC THREAD INSERT | 6 | | | | | | | | | | | | |
| No. | 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td></td> <td>NAME</td> <td>DATE</td> </tr> <tr> <td>DRAWN</td> <td>J O'DELL</td> <td>08/SEP/09</td> </tr> <tr> <td>CHECKED</td> <td></td> <td>08/SEP/09</td> </tr> <tr> <td>APPROVED</td> <td>J O'DELL</td> <td>08/SEP/09</td> </tr> </table> | | NAME | DATE | DRAWN | J O'DELL | 08/SEP/09 | CHECKED | | 08/SEP/09 | APPROVED | J O'DELL | 08/SEP/09 | SIZE B DRG. NO. D060403_ASM_PROCEDURE SCALE 1:2 PROJECTION:  SHEET 3 OF 2 | REV |
| | NAME | DATE | | | | | | | | | | | | | |
| DRAWN | J O'DELL | 08/SEP/09 | | | | | | | | | | | | | |
| CHECKED | | 08/SEP/09 | | | | | | | | | | | | | |
| APPROVED | J O'DELL | 08/SEP/09 | | | | | | | | | | | | | |

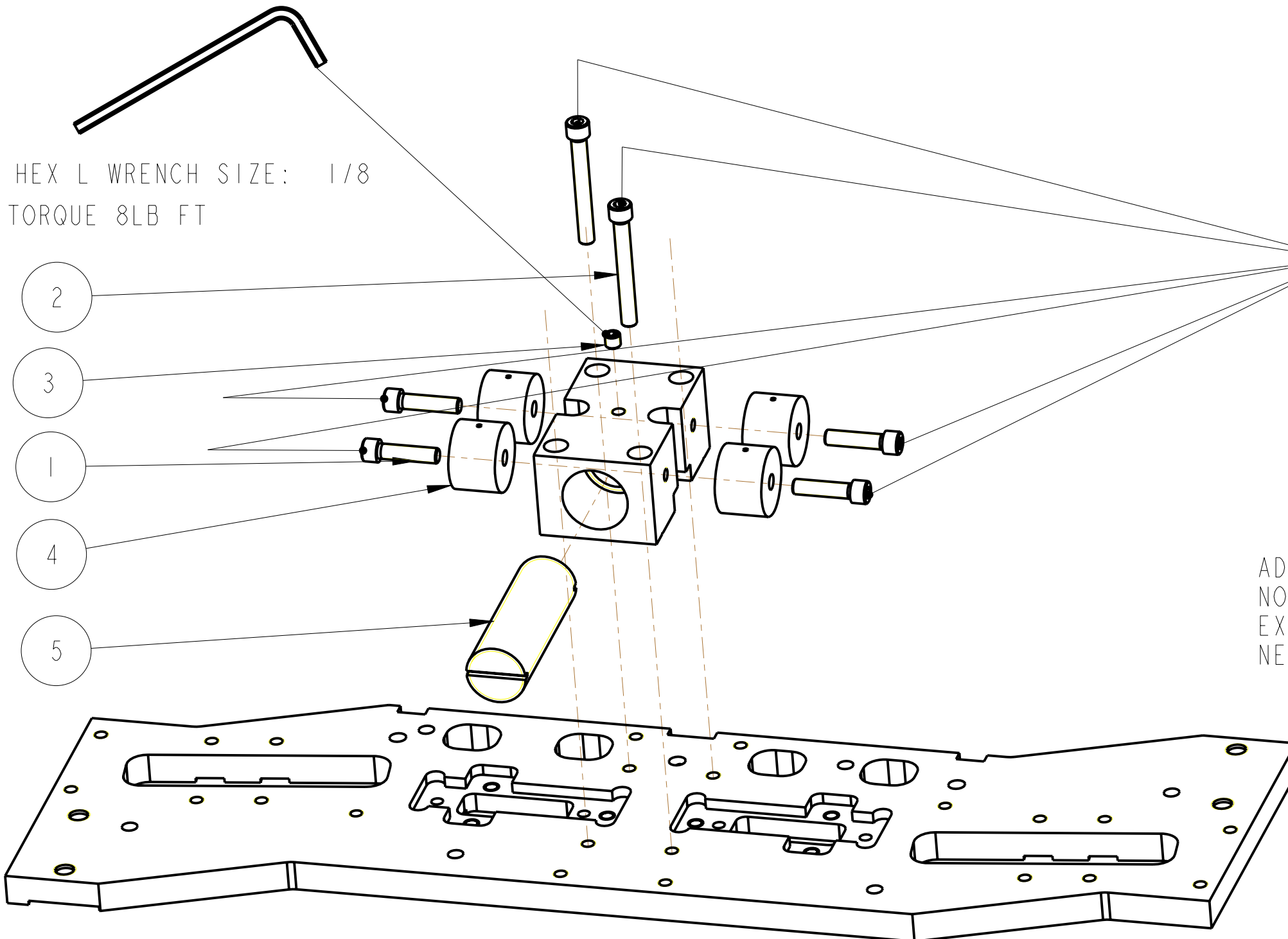
| REV. | DATE | DCN # | DRAWING TREE # |
|------|------|-------|----------------|
| | | | |



THREAD INSERT INSERTION TOOL
1/4UNC

ADD THREAD INSERTS INTO PITCH ADJUSTER BLOCK
REPEAT THIS STEP FOR THE SECOND PITCH ADJUSTER BLOCK

| 1 | 1-4_20X1D UNC_THREAD_INSERT | 1/4-20 x 1D UNC THREAD INSERT | 1 |
|-------------------------------------|--|--|--|
| 2 | D060398 | 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 | aLIGO QUAD |
| | | PART NAME | TOP MASS ASM SEQUENCE TEST/REACTION CHAIN |
| | NAME DATE | SIZE | DRG. NO. REV |
| | DRAWN J O'DELL 08/SEP/09 | B | D060403_ASM_PROCEDURE B |
| | CHECKED IW 08/SEP/09 | | |
| | APPROVED JOD 08/MAR/10 | | |
| | | SCALE 1:2 | PROJECTION:  SHEET 4 OF 2 |



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

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

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

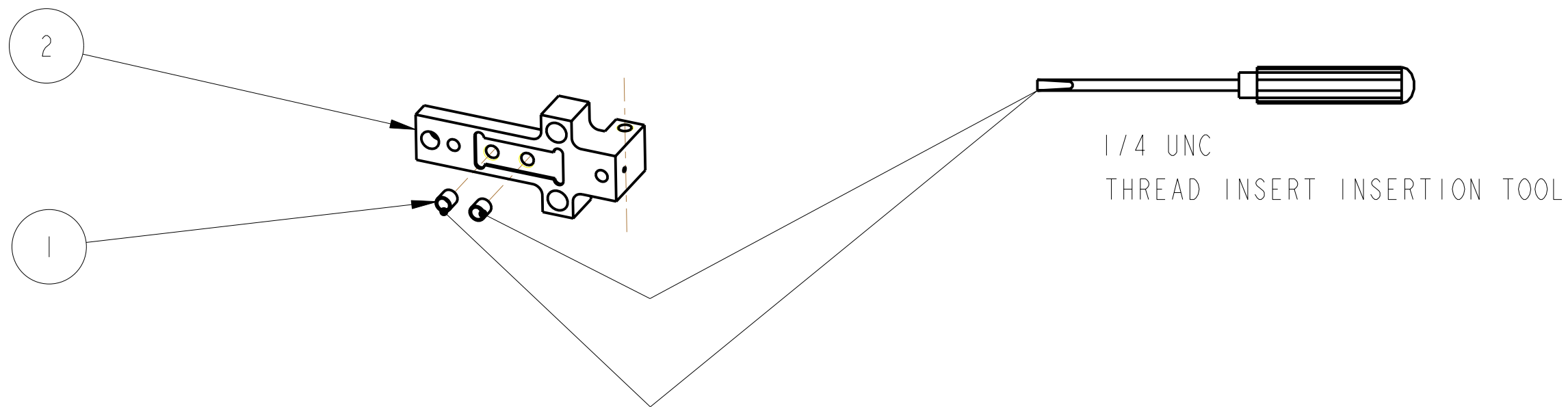
| 1 | 1-4_20_UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 4 |
|-----|------------------------------|---|----------|
| 2 | 1-4_20_UNC_2-00INCH_SIL_PLT | 1/4" 20 UNC X 2" CAP HEAD SILVER PLATED | 2 |
| 3 | 1-4_20_UNC_X_0-188_GRUBSCREW | 1/4" 20 UNC X 0.188" GRUBSCREW | 1 |
| 4 | D060359-100_0 | ADDITIONAL MASS | 4 |
| 5 | D060405 | PITCH ADJUSTER | 1 |
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |

NOTES: (UNLESS OTHERWISE SPECIFIED)



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

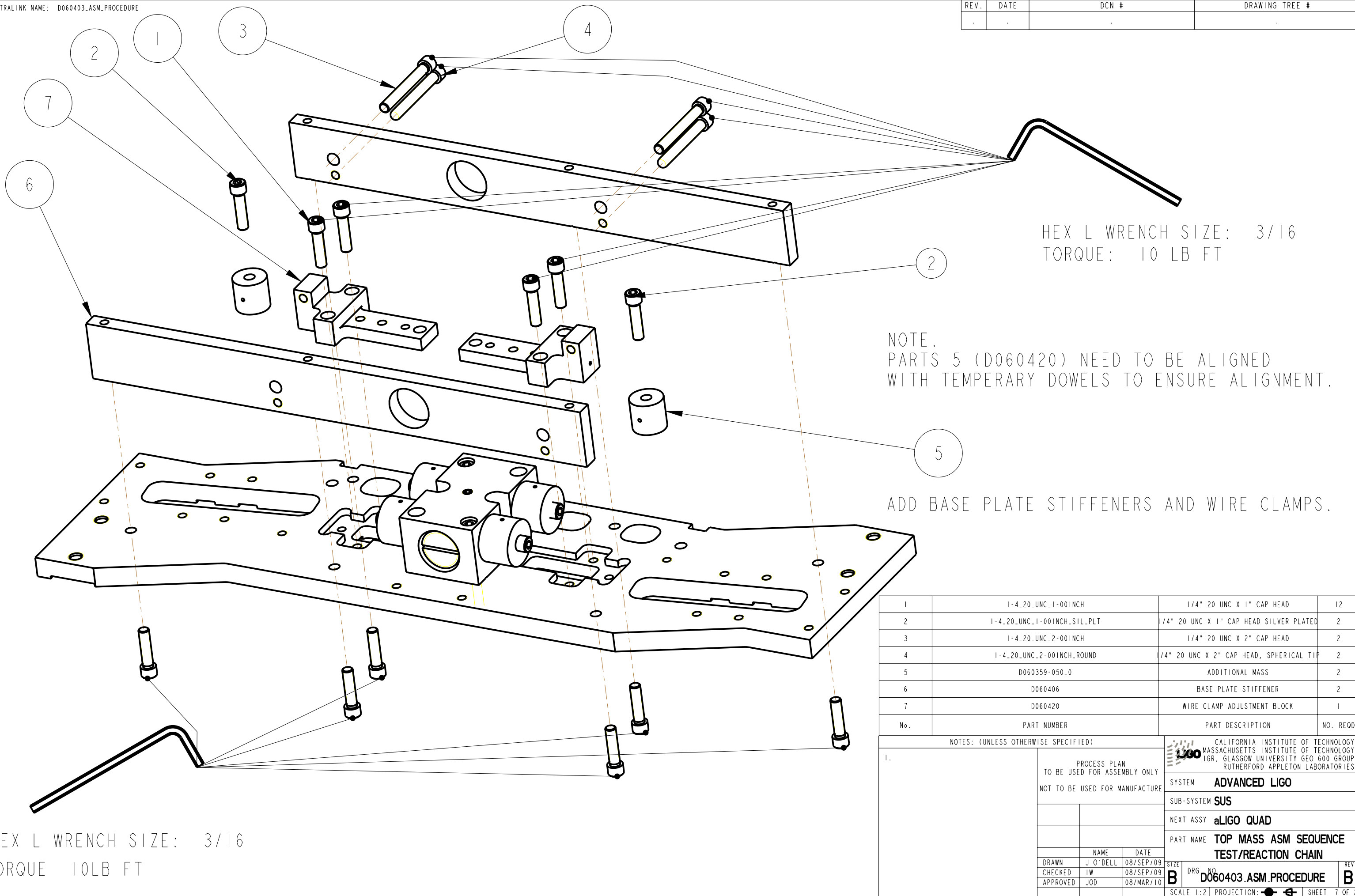
| CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES | | | | | | | | | | | | | | | |
|--|------------------------------|----------|----------------|-----------|------------|-----------|--------------|-----------|---|------|----------|------|----------|------------------------------|----------|
| SYSTEM ADVANCED LIGO | | | | | | | | | | | | | | | |
| SUB-SYSTEM SUS | | | | | | | | | | | | | | | |
| NEXT ASSY aLIGO QUAD | | | | | | | | | | | | | | | |
| PART NAME TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th>NAME</th> <th>DATE</th> </tr> <tr> <td>DRAWN J O'DELL</td> <td>08/SEP/09</td> </tr> <tr> <td>CHECKED IW</td> <td>08/SEP/09</td> </tr> <tr> <td>APPROVED JOD</td> <td>08/MAR/10</td> </tr> </table> | NAME | DATE | DRAWN J O'DELL | 08/SEP/09 | CHECKED IW | 08/SEP/09 | APPROVED JOD | 08/MAR/10 | <table border="1"> <tr> <th>SIZE</th> <th>DRG. NO.</th> <th>REV.</th> </tr> <tr> <td>B</td> <td>D060403_ASM_PROCEDURE</td> <td>B</td> </tr> </table> | SIZE | DRG. NO. | REV. | B | D060403_ASM_PROCEDURE | B |
| NAME | DATE | | | | | | | | | | | | | | |
| DRAWN J O'DELL | 08/SEP/09 | | | | | | | | | | | | | | |
| CHECKED IW | 08/SEP/09 | | | | | | | | | | | | | | |
| APPROVED JOD | 08/MAR/10 | | | | | | | | | | | | | | |
| SIZE | DRG. NO. | REV. | | | | | | | | | | | | | |
| B | D060403_ASM_PROCEDURE | B | | | | | | | | | | | | | |
| SCALE 1:2 PROJECTION: | | | | | | | | | | | | | | | |
| SHEET 5 OF 2 | | | | | | | | | | | | | | | |

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------|-------|----------------|
| | | | |



ADD THREAD INSERTS INTO WIRE CLAMP
REPEAT THIS STEP FOR THE SECOND WIRE CLAMP

| 1 | 1-4_20X1D_UNC_THREAD_INSERT | 1/4-20 x 1D UNC THREAD INSERT | 2 |
|--|-----------------------------|--|--------------|
| 2 | D060420 | WIRE CLAMP ADJUSTMENT BLOCK | 1 |
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |
| NOTES: (UNLESS OTHERWISE SPECIFIED) | | | |
| 1. | |  CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY 1GR, 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 aLIGO QUAD | |
| | | PART NAME TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | NAME | DATE | SIZE |
| DRAWN | J O'DELL | 08/SEP/09 | B |
| CHECKED | IW | 08/SEP/09 | B |
| APPROVED | JOD | 08/MAR/10 | B |
| SCALE 1:2 | | PROJECTION:  | SHEET 6 OF 2 |



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

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

ADD BASE PLATE STIFFENERS AND WIRE CLAMPS.

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

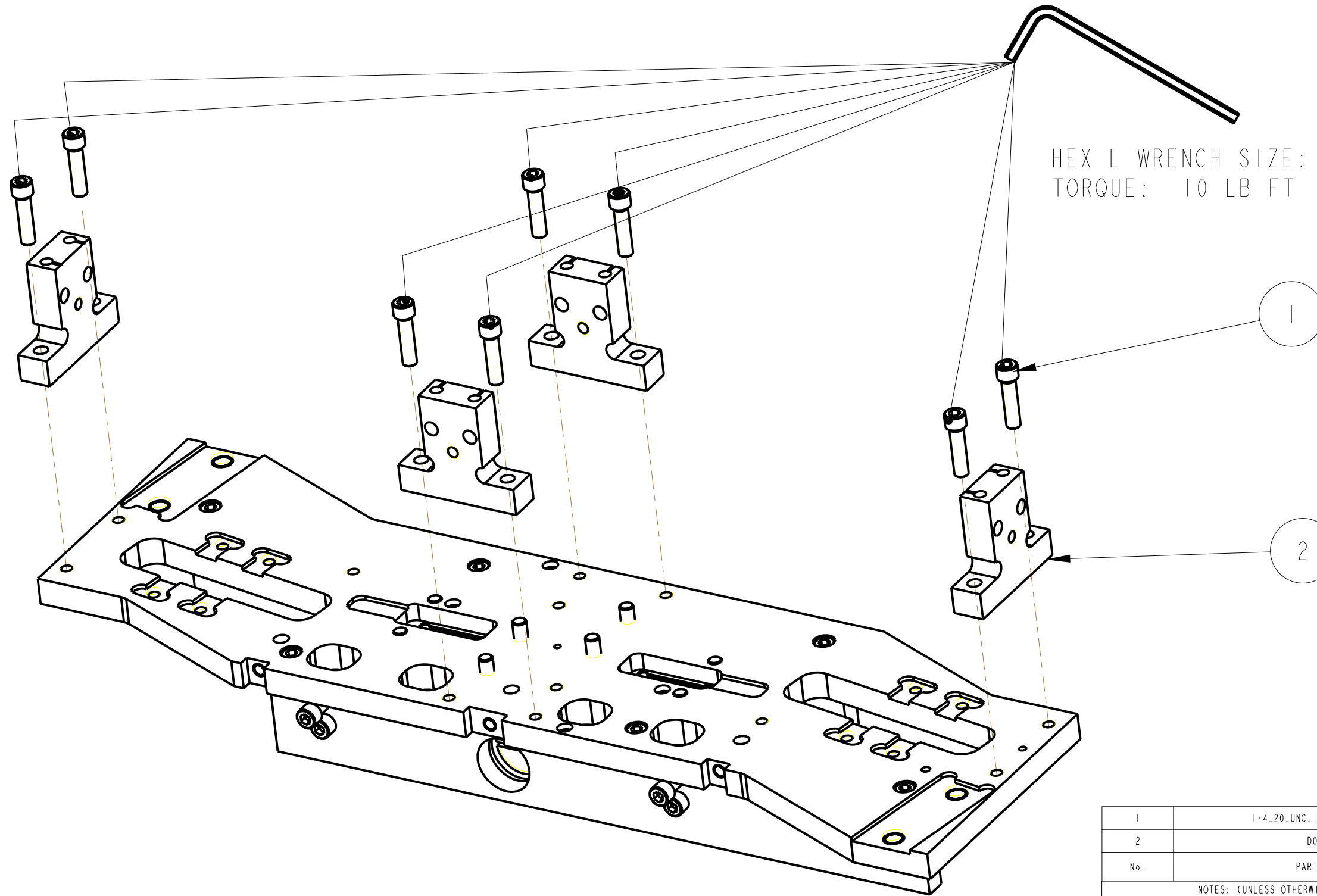
| 1 | 1-4.20 UNC.1-001NCH | 1/4" 20 UNC X 1" CAP HEAD | 12 |
|-----|-----------------------------|--|----------|
| 2 | 1-4.20 UNC.1-001NCH.SIL.PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 2 |
| 3 | 1-4.20 UNC.2-001NCH | 1/4" 20 UNC X 2" CAP HEAD | 2 |
| 4 | 1-4.20 UNC.2-001NCH.ROUND | 1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP | 2 |
| 5 | D060359-050_0 | ADDITIONAL MASS | 2 |
| 6 | D060406 | BASE PLATE STIFFENER | 2 |
| 7 | D060420 | WIRE CLAMP ADJUSTMENT BLOCK | 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| NAME | DATE | SIZE | REV |
| DRAWN J O'DELL | 08/SEP/09 | B | B |
| CHECKED IW | 08/SEP/09 | | |
| APPROVED JOD | 08/MAR/10 | | |
| DRG. NO. D060403_ASM_PROCEDURE | | SHEET 7 OF 2 | |

SCALE 1:2 PROJECTION:



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

ADD TOP MASS SPACERS.

| | | | |
|-----|-----------------------------|---|----------|
| 1 | 1-4_20_UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 8 |
| 2 | D060397 | TOP MASS SPACER | 4 |
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |

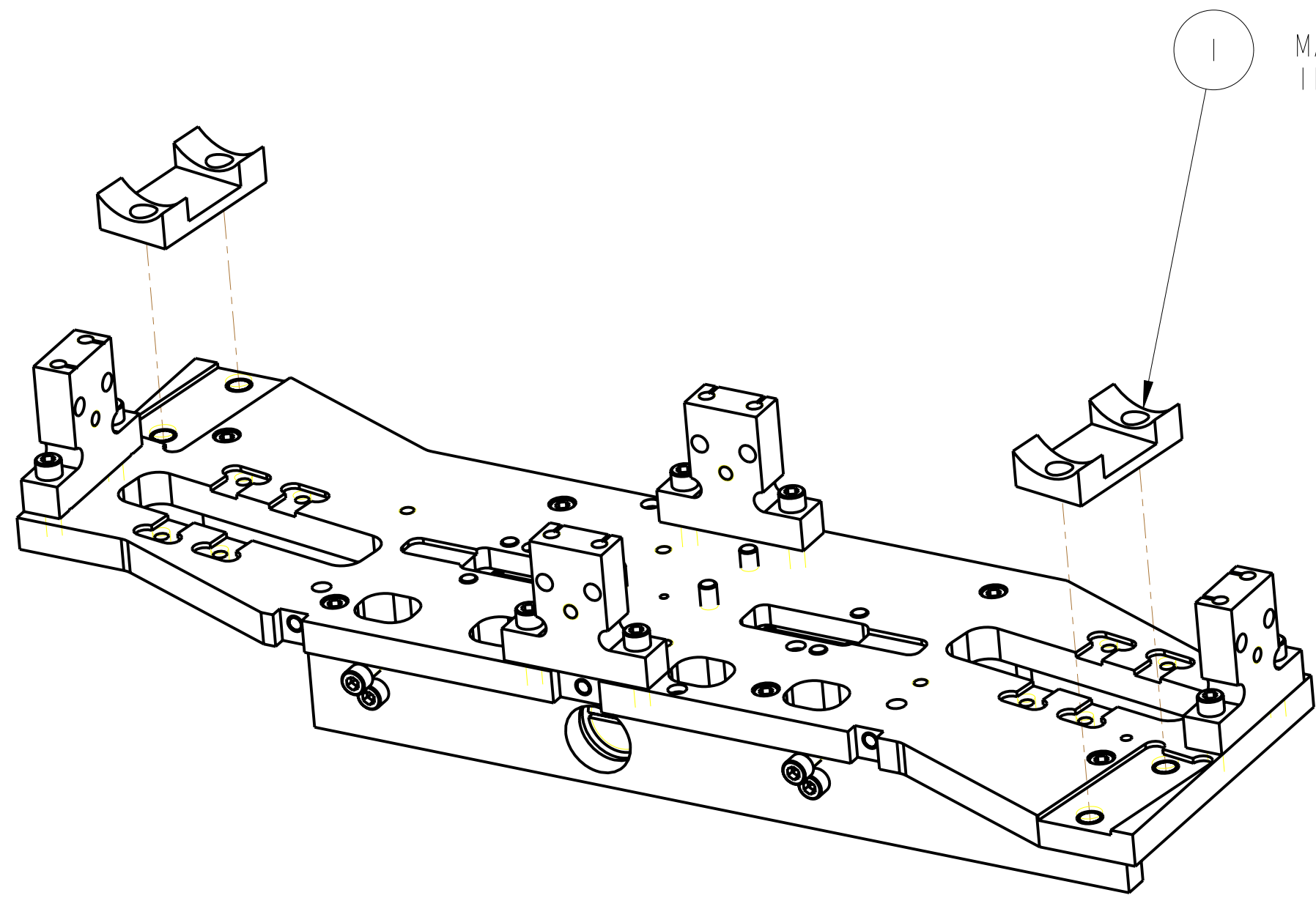
NOTES: (UNLESS OTHERWISE SPECIFIED)

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 | TOP MASS ASM SEQUENCE TEST/REACTION CHAIN |
| NAME | DATE |
| DRAWN J O'DELL | 08/SEP/09 |
| CHECKED IW | 08/SEP/09 |
| APPROVED JOD | 08/MAR/10 |



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|-----------|--------------------------------|--------------|
| SIZE B | DRG. NO. D060403_ASM_PROCEDURE | REV B |
| SCALE 1:2 | PROJECTION: | SHEET 8 OF 2 |

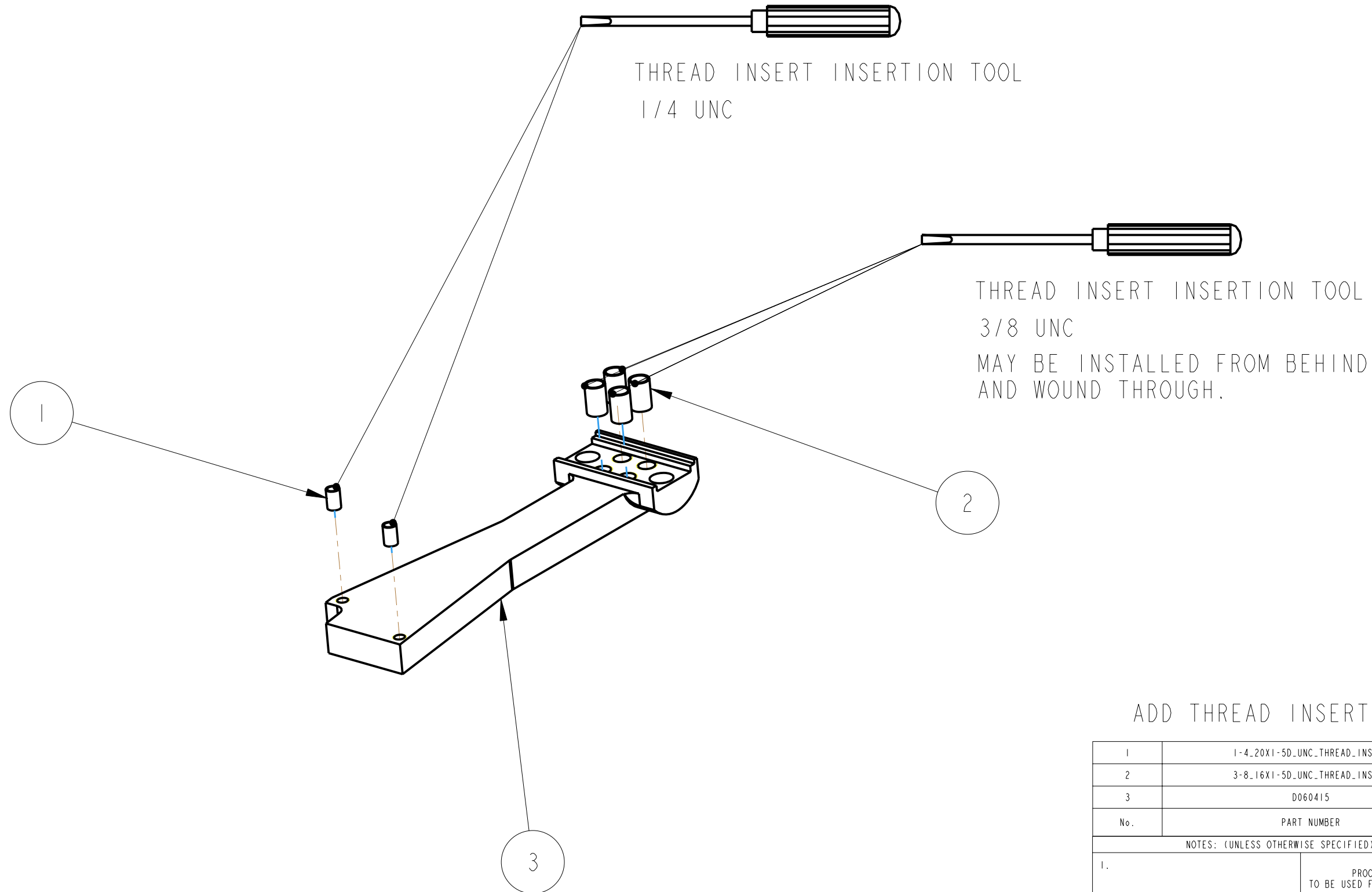
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|------|------|-------|----------------|
| REV. | DATE | DCN # | DRAWING TREE # |
| | | | |



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. 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | NAME | DATE | |
| DRAWN | J O'DELL | 08/SEP/09 | SIZE |
| CHECKED | IW | 08/SEP/09 | B |
| APPROVED | JOD | 08/MAR/10 | DRG. NO. D060403_ASM_PROCEDURE |
| | | SCALE 1:2 | PROJECTION:  SHEET 9 OF 2 |



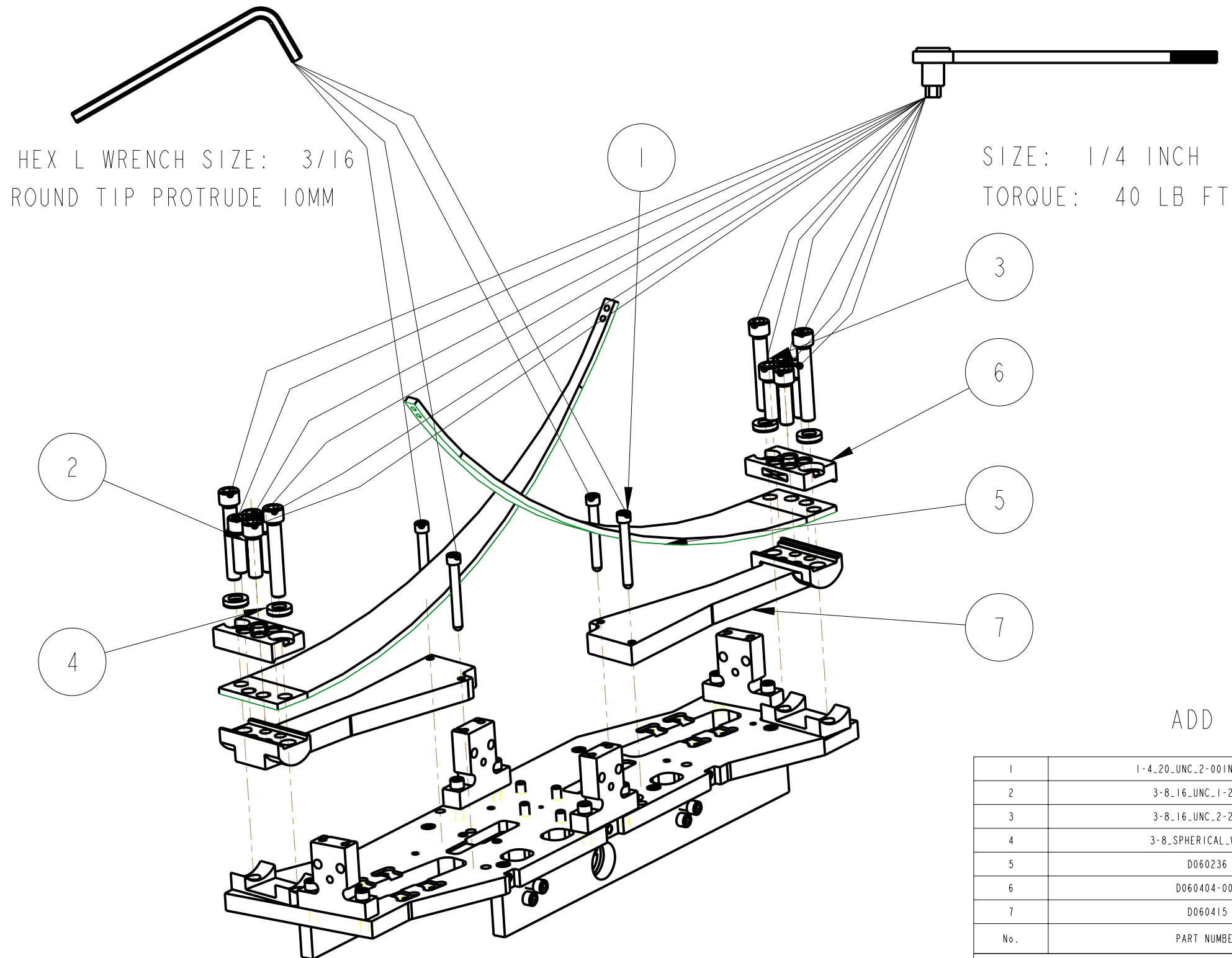
ADD THREAD INSERTS INTO BLADE ADJUSTER

| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |
|-----|-------------------------------|---------------------------------|----------|
| 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 | 4 |
| 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 1GR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES | |
| SYSTEM ADVANCED LIGO | |
| SUB-SYSTEM SUS | |
| NEXT ASSY aLIGO QUAD | |
| PART NAME TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| DRAWN J O'DELL 08/SEP/09 CHECKED IW 08/SEP/09 APPROVED JOD 08/MAR/10 | SIZE B DRG. NO. D060403_ASM_PROCEDURE SCALE 1:2 PROJECTION: SHEET 10 OF 15 |



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

SIZE: 1/4 INCH
 TORQUE: 40 LB FT

ADD BLADES AND CLAMPS

| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |
|-----|---------------------------|--|----------|
| 1 | 1-4_20 UNC_2-001NCH_ROUND | 1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP | 4 |
| 2 | 3-8_16 UNC_1-251NCH | 3/8 16 UNC X 1.25" CAP HEAD | 8 |
| 3 | 3-8_16 UNC_2-251NCH | 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 |

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

NOTES: (UNLESS OTHERWISE SPECIFIED)

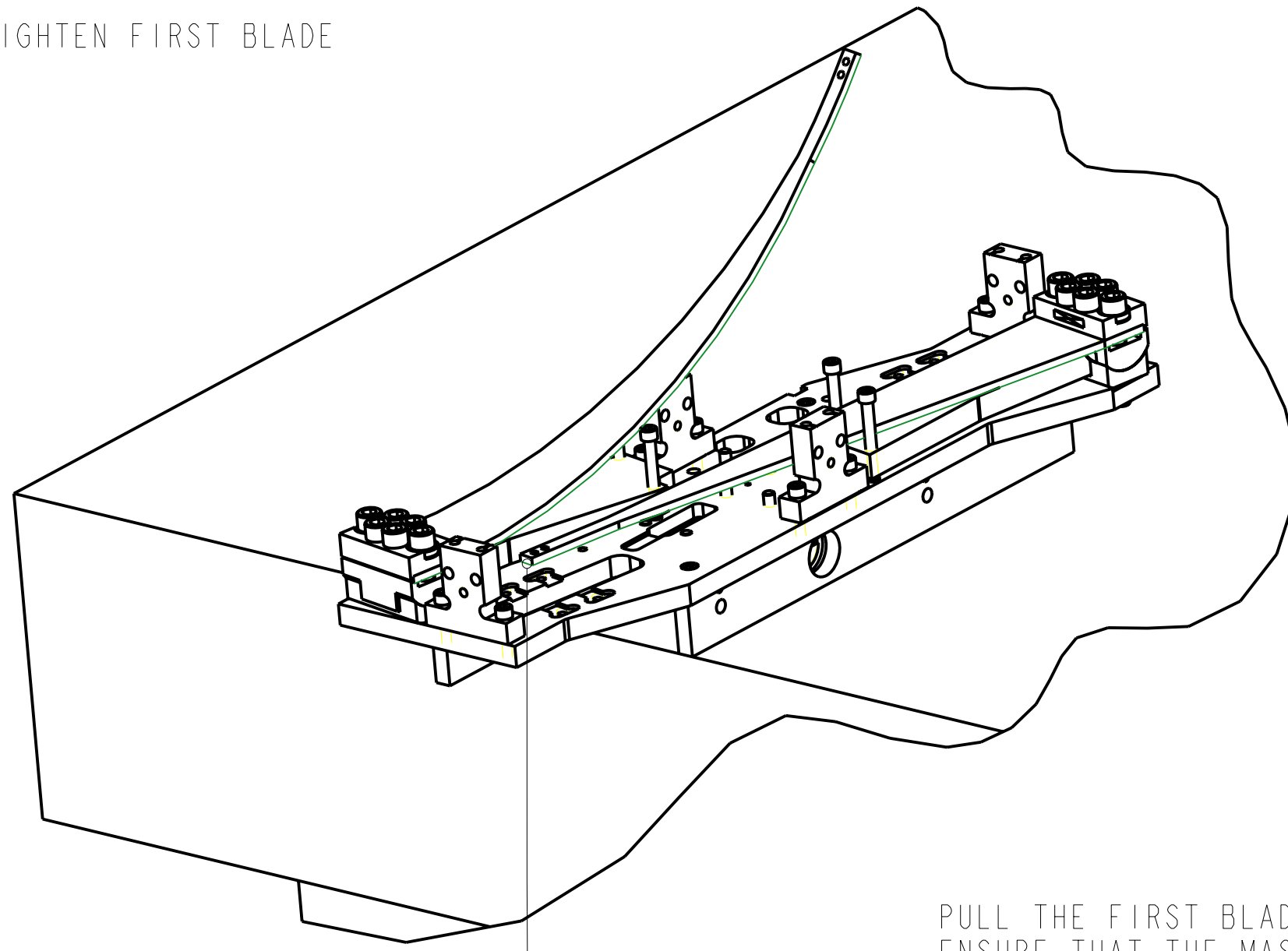
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

| | | |
|------------|--|-----------|
| LOGO | 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 | TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| DRAWN | J O'DELL | 08/SEP/09 |
| CHECKED | IW | 08/SEP/09 |
| APPROVED | JOD | 08/MAR/10 |

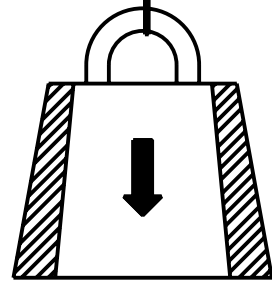
SCALE 3:10 PROJECTION: SHEET 11 OF 15

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------|-------|----------------|
| | | | |


STRAIGHTEN FIRST BLADE



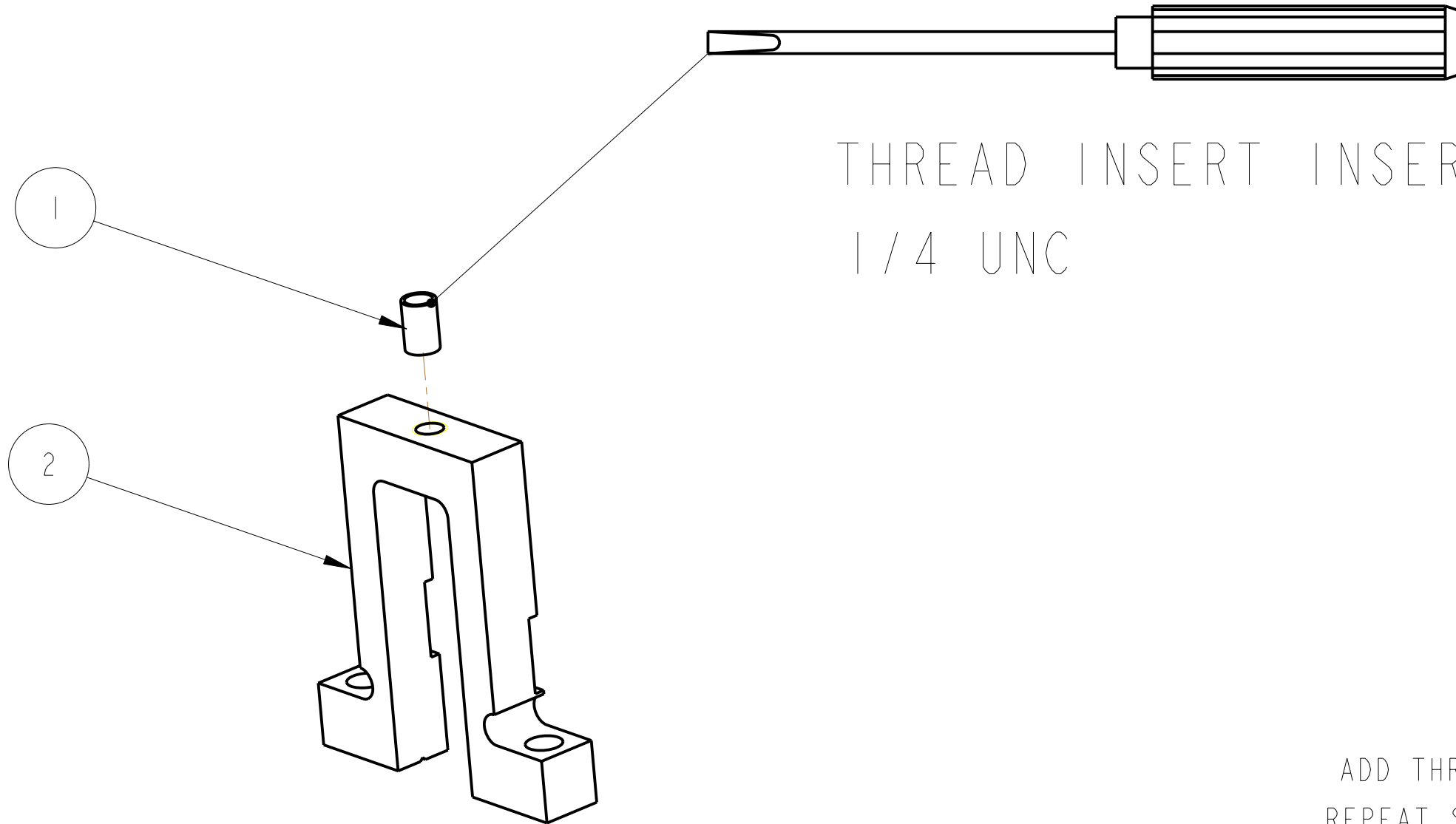
PULL THE FIRST BLADE FLAT BY HANGING MASS FROM THE TIP
 ENSURE THAT THE MASS IS SECURELY CLAMPED TO A ROBUST
 TABLE DURING THIS PROCEDURE



MASS: 50 KG


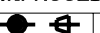
| | | | |
|-------------------------------------|--|--|--------------------------------|
| NOTES: (UNLESS OTHERWISE SPECIFIED) | |  CALIFORNIA INSTITUTE OF TECHNOLOGY MASSACHUSETTS INSTITUTE OF TECHNOLOGY IGR, GLASGOW UNIVERSITY GEO 600 GROUP RUTHERFORD APPLETON LABORATORIES | |
| 1. | | SYSTEM ADVANCED LIGO SUB-SYSTEM SUS NEXT ASSY aLIGO QUAD PART NAME TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | | DRAWN J O'DELL 08/SEP/09 CHECKED IW 08/SEP/09 APPROVED JOD 08/MAR/10 | |
| | | SIZE B DRG. NO. D060403_ASM_PROCEDURE SCALE 3:10 PROJECTION: | REV B SHEET 12 OF 15 |

| 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_20X1-5D_UNC_THREAD_INSERT | 1/4-20 x 1.5D UNC THREAD INSERT | 1 |
|-------------------------------------|--|---------------------------------|--|
| 2 | D060399 | STOP BRIDGE | 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | | |
| | NAME | DATE | |
| DRAWN | J O'DELL | 08/SEP/09 | SIZE |
| CHECKED | IW | 08/SEP/09 | B DRG. NO. D060403_ASM_PROCEDURE B REV |
| APPROVED | JOD | 08/MAR/10 | SCALE 1:1 PROJECTION:  SHEET 13 OF 15 |

| REV. | DATE | DCN # | DRAWING TREE # |
|------|------|-------|----------------|
| | | | |

D
C
B
A

D
C
B
A

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

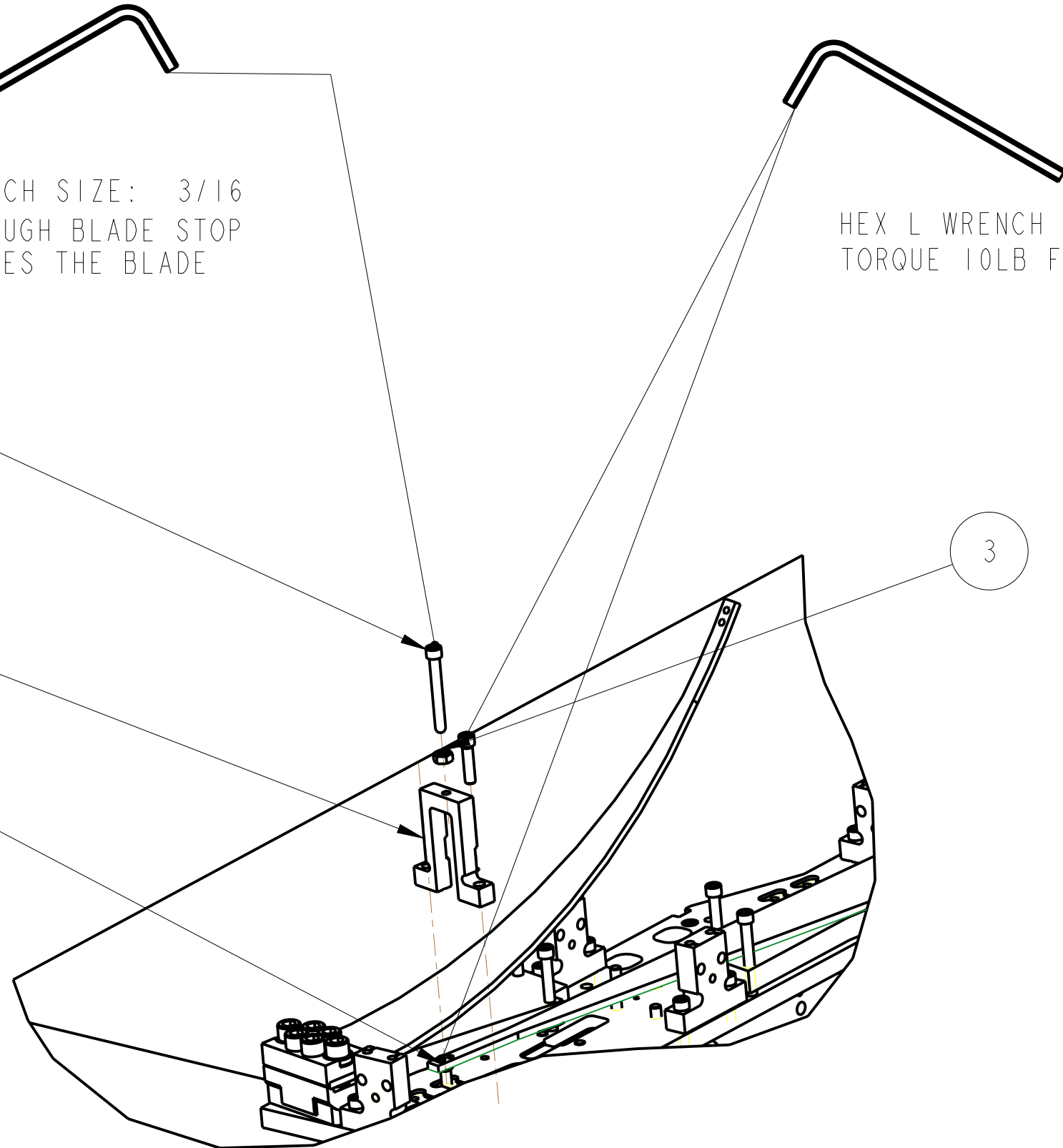
HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

2

5

1

3



ADD STOP BRIDGE

REPEAT LAST TWO STEPS WITH OTHER BLADE
LEAVE LOCK-NUT LOOSE

| 1 | 1-4_20_UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 2 |
|-----|-----------------------------|--|----------|
| 2 | 1-4_20_UNC_2-00INCH_ROUND | 1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP | 1 |
| 3 | 1-4_20_UNC_NUT_ | 1/4 20 UNC NUT | 1 |
| 4 | D060236_FLAT | MIDDLE BLADE SPRING | 1 |
| 5 | D060399 | STOP BRIDGE | 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| NAME | DATE | SIZE | REV |
| DRAWN J O'DELL | 08/SEP/09 | B | B |
| CHECKED IW | 08/SEP/09 | DRG. NO. D060403_ASM_PROCEDURE | |
| APPROVED JOD | 08/MAR/10 | SCALE 3:10 PROJECTION: SHEET 14 OF 15 | |

HEX L WRENCH SIZE: 3/16
LEAVE BOLT LOOSE

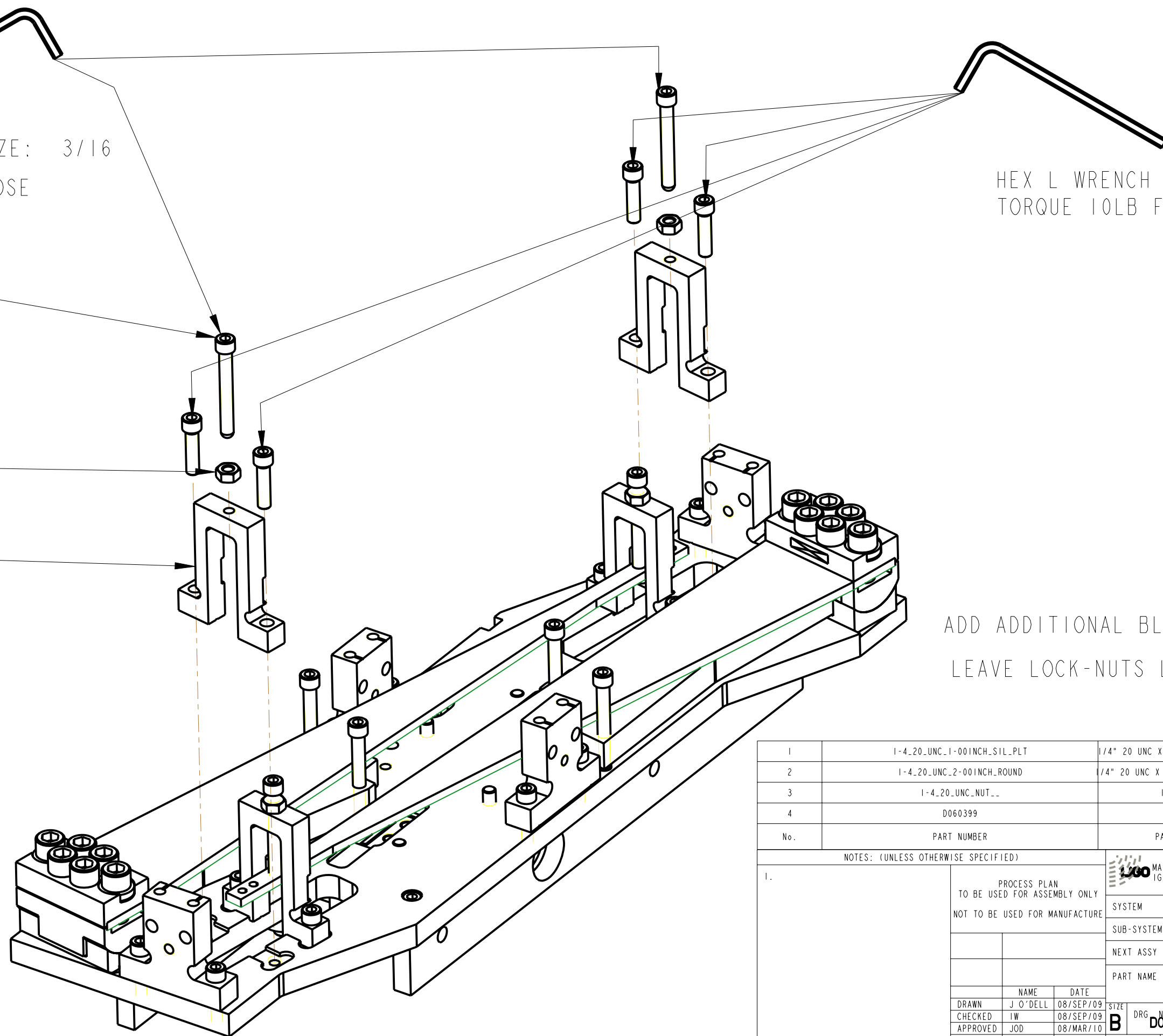
HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

2

3

4

ADD ADDITIONAL BLADE CLAMPS
LEAVE LOCK-NUTS LOOSE



| | | | |
|-----|-----------------------------|--|----------|
| 1 | 1-4_20 UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 6 |
| 2 | 1-4_20 UNC_2-00INCH_ROUND | 1/4" 20 UNC X 2" CAP HEAD, SPHERICAL TIP | 3 |
| 3 | 1-4_20 UNC_NUT_.. | 1/4 20 UNC NUT | 3 |
| 4 | D060399 | STOP BRIDGE | 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 | DRG. NO. | REV |
| DRAWN J O'DELL | 08/SEP/09 | B | D060403_ASM_PROCEDURE | B |
| CHECKED IW | 08/SEP/09 | | | |
| APPROVED JOD | 08/MAR/10 | | | |

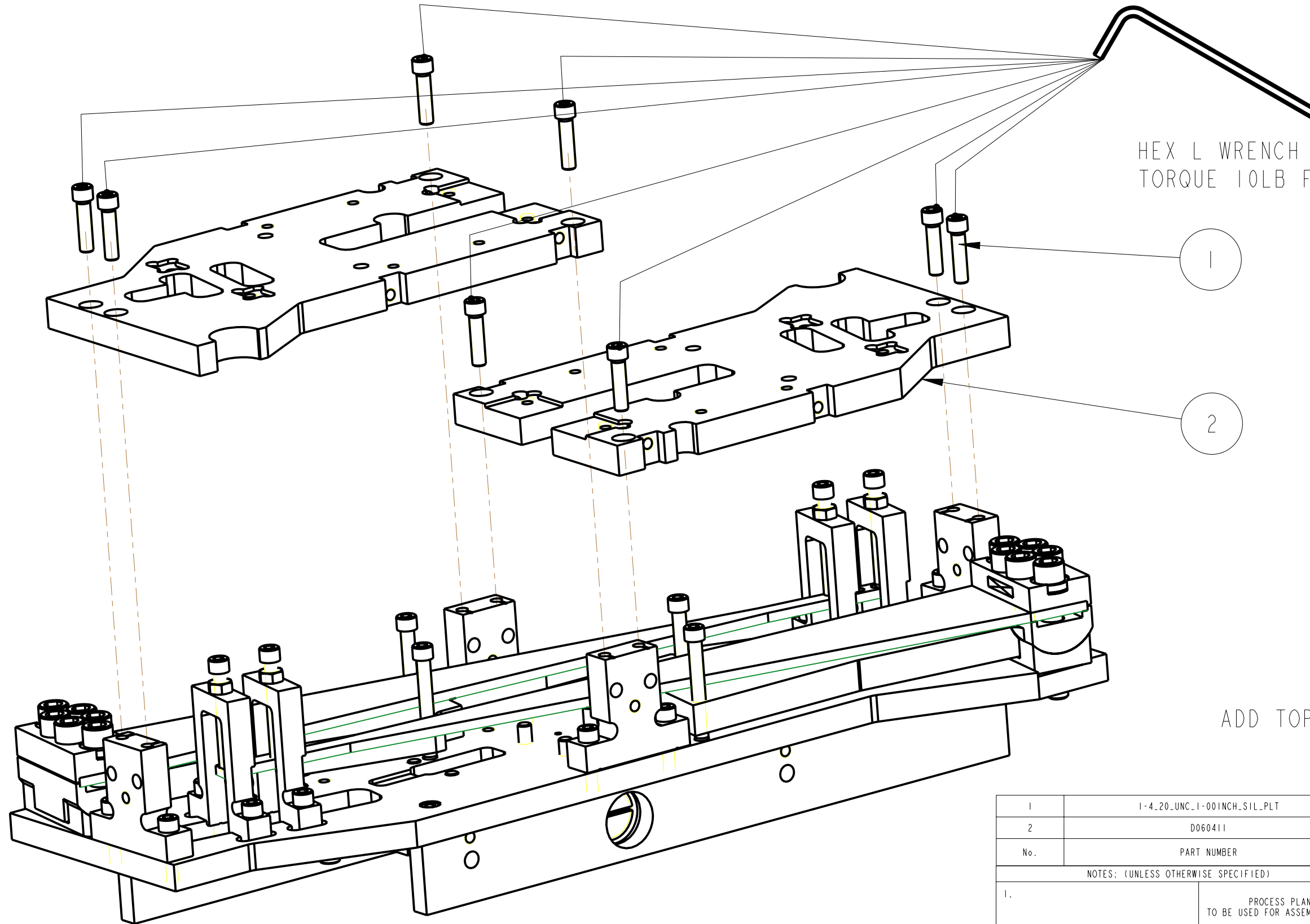
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
1GR, GLASGOW UNIVERSITY GEO 600 GROUP
RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY **aLIGO QUAD**
PART NAME **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**

SCALE 1:2 PROJECTION: SHEET 15 OF 15

D
C
B
A

D
C
B
A



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

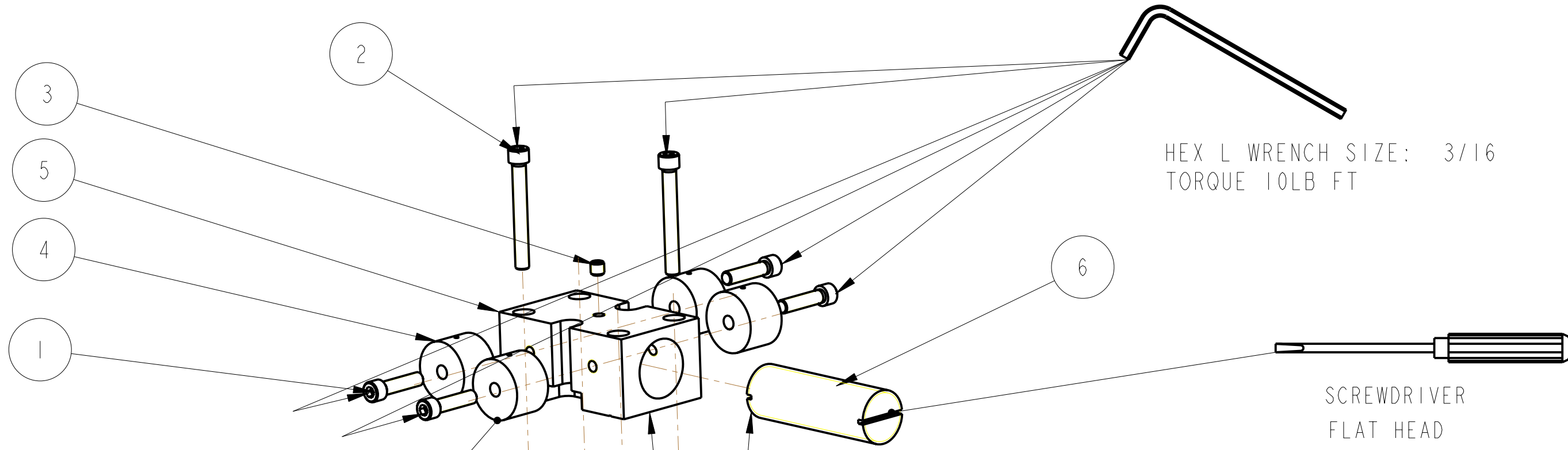
ADD TOP PLATES

| | | | |
|-----|-----------------------------|---|----------|
| 1 | 1-4_20_UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 8 |
| 2 | D060411 | 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

| | |
|--|---|
| 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 | TOP MASS ASM SEQUENCE TEST/REACTION CHAIN |
| NAME | DATE |
| DRAWN J O'DELL | 08/SEP/09 |
| CHECKED IW | 08/SEP/09 |
| APPROVED JOD | 08/MAR/10 |
| SIZE B | DRG. NO. D060403_ASM_PROCEDURE |
| SCALE 1:2 | PROJECTION: SHEET 16 OF 15 |

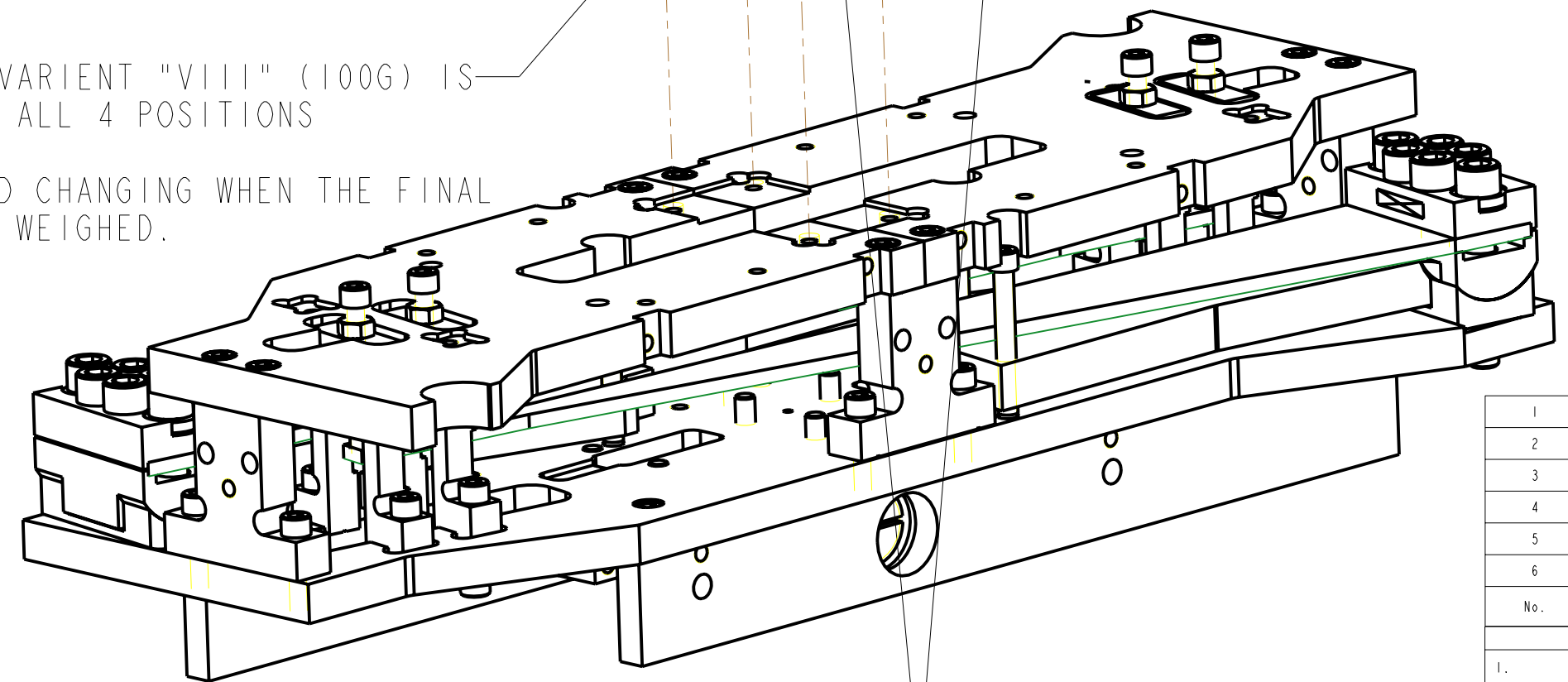


HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

SCREWDRIVER
FLAT HEAD

ENSURE VARIENT "VIII" (100G) IS USED IN ALL 4 POSITIONS
NOTE.
MAY NEED CHANGING WHEN THE FINAL MASS IS WEIGHED.

ADD TOP PITCH ADJUSTER



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

| 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_SIL_PLT | 1/4" 20 UNC X 2" CAP HEAD SILVER PLATED | 2 |
| 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 |

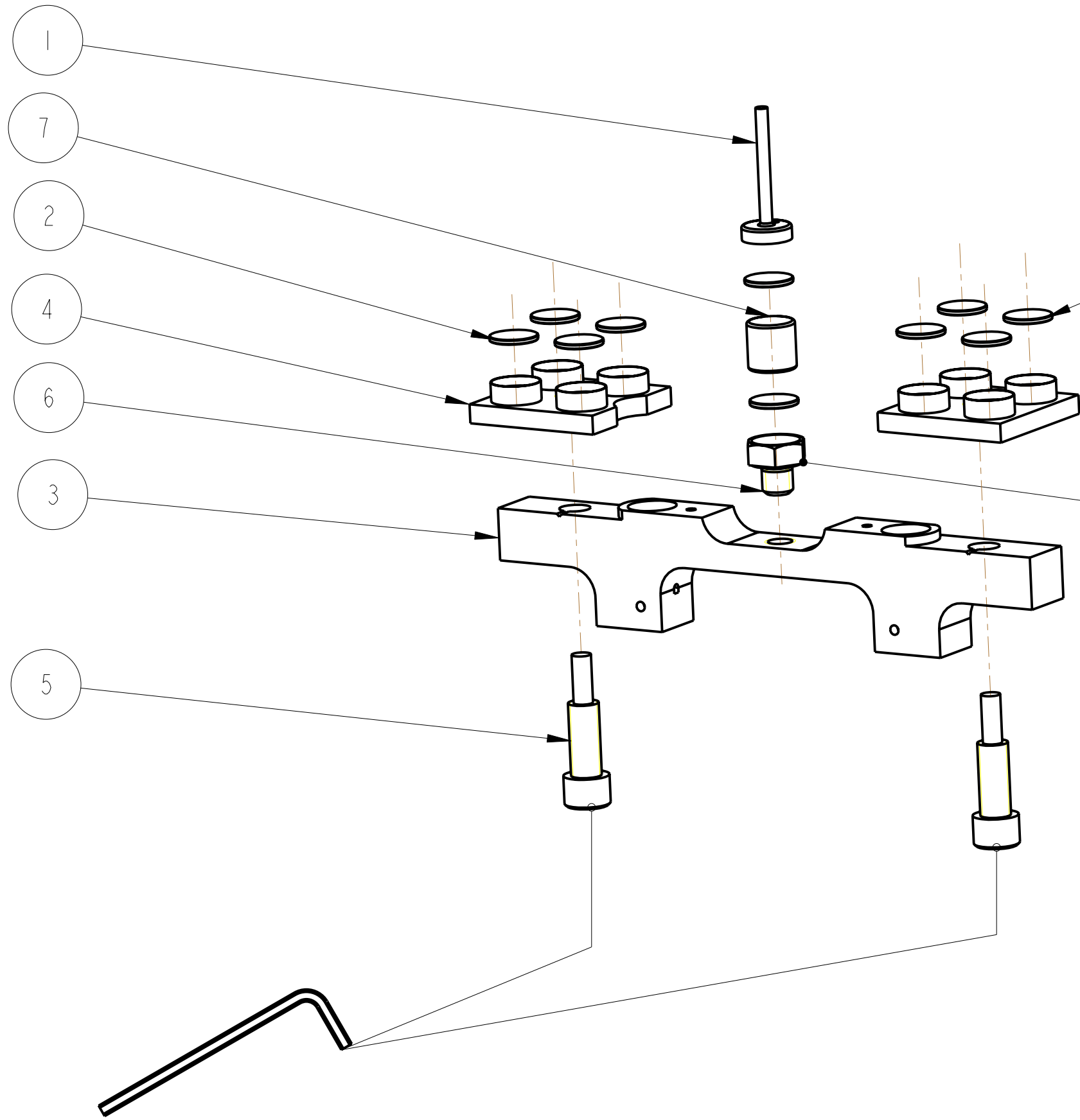
NOTES: (UNLESS OTHERWISE SPECIFIED)

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

| | | | | | | | | |
|----------|----------|-----------|-------|-----|-------------|-----------------------|-------|----------|
| DRAWN | J O'DELL | 08/SEP/09 | SIZE | B | DRG. NO. | D060403_ASM_PROCEDURE | REV | B |
| CHECKED | IW | 08/SEP/09 | SCALE | 1:2 | PROJECTION: | | SHEET | 17 OF 15 |
| APPROVED | JOD | 08/MAR/10 | | | | | | |

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 **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**



NOTE.
DISC TO BE PRESSED IN
WITH BENCH PRESS.



1/2 INCH
10 LB FT

ASSEMBLE BACKBONE
REPEAT STEP FOR ALL 4 BACKBONES

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

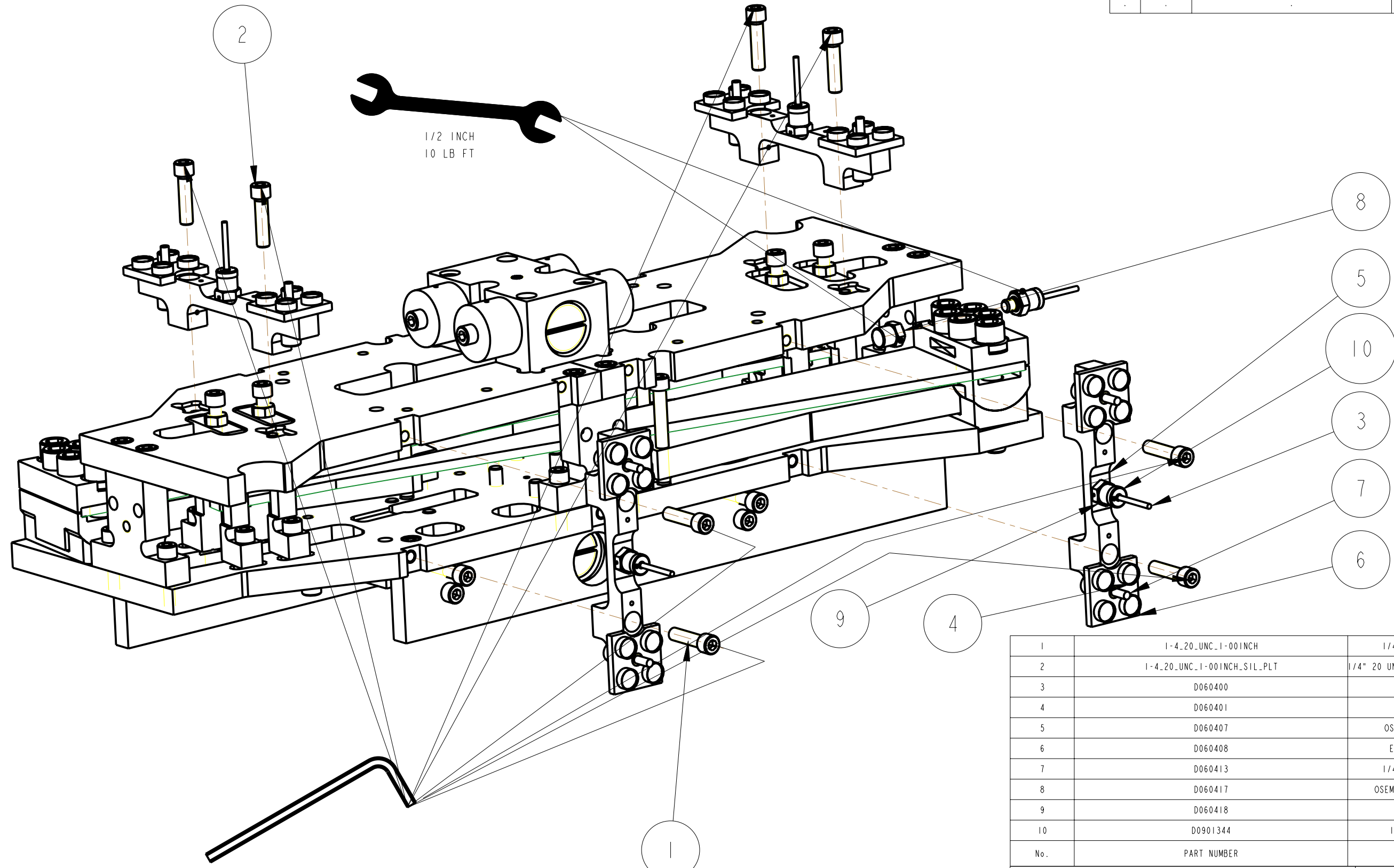
| No. | PART NUMBER | PART DESCRIPTION | NO. RECD |
|-----|-------------|---------------------------|----------|
| 1 | D060400 | OSEM MAGNET FLAG | 1 |
| 2 | D060401 | MAGNETIC PLUG | 10 |
| 3 | D060407 | OSEM & ECD UNIT BACKBONE | 1 |
| 4 | D060408 | ECD MAGNET MOUNT PLATE | 2 |
| 5 | D060413 | 1/4" 20 UNC X 1" CAP HEAD | 2 |
| 6 | D060418 | MAGNET RETAINER | 1 |
| 7 | D0901344 | 10MM DIA X 10MM MAGNET | 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 ALIGO QUAD | |
| | | PART NAME TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| DRAWN | J O'DELL | 08/SEP/09 | SIZE |
| CHECKED | IW | 08/SEP/09 | B |
| APPROVED | JOD | 08/MAR/10 | DRG. NO. D060403_ASM_PROCEDURE |
| | | SCALE 1:1 | PROJECTION: |

SHEET 18 OF 19





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

ADD ALL 4 ECD AND OSEM UNITS AND END FLAG UNIT

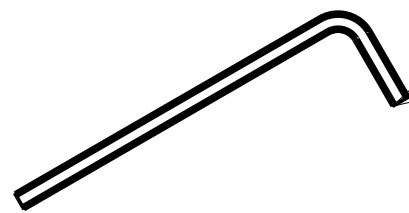
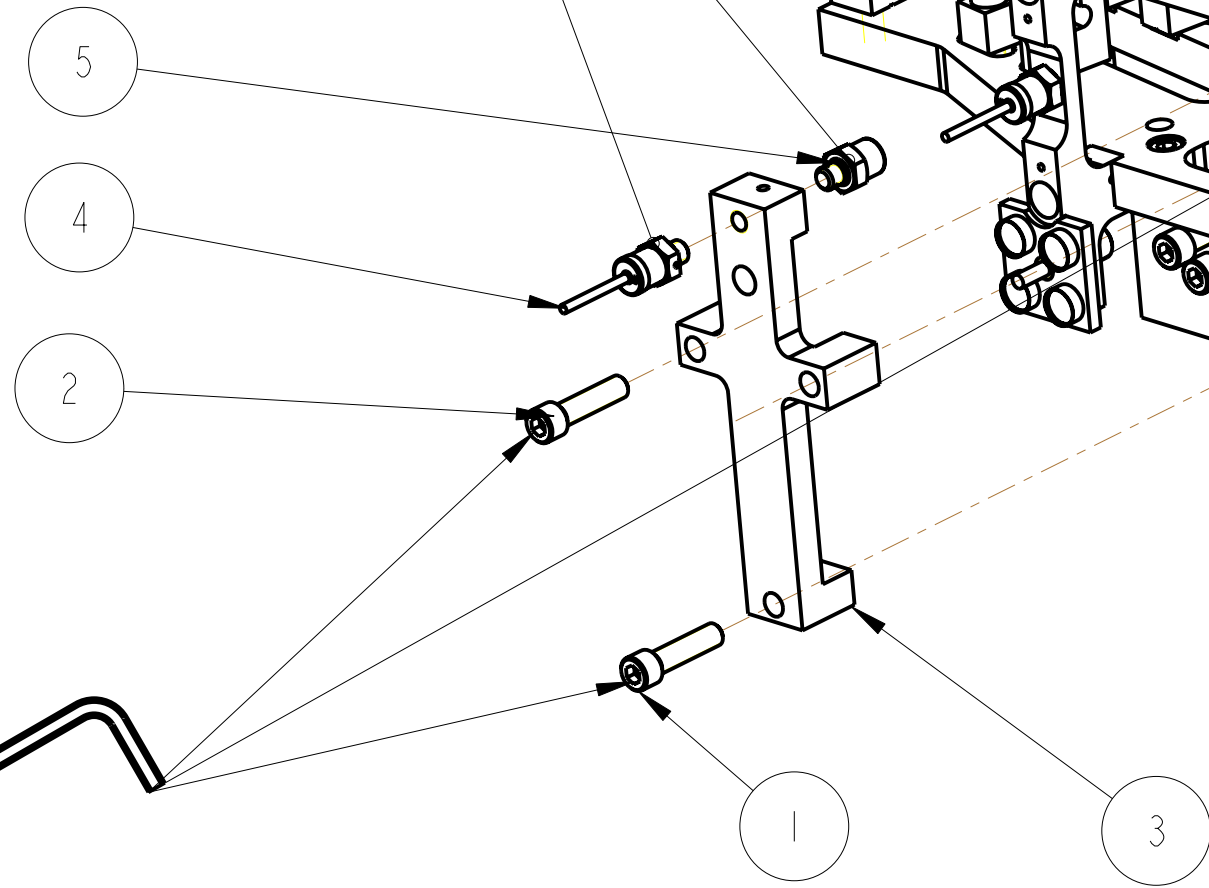
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |
|-----|-----------------------------|---|----------|
| 1 | 1-4_20 UNC_1-001NCH | 1/4" 20 UNC X 1" CAP HEAD | 2 |
| 2 | 1-4_20 UNC_1-001NCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 6 |
| 3 | D060400 | OSEM MAGNET FLAG | 4 |
| 4 | D060401 | MAGNETIC PLUG | 24 |
| 5 | D060407 | OSEM & ECD UNIT BACKBONE | 3 |
| 6 | D060408 | ECD MAGNET MOUNT PLATE | 6 |
| 7 | D060413 | 1/4" 20 UNC X 1" CAP HEAD | 6 |
| 8 | D060417 | OSEM MAGNET AND FLAG CONCEPT | 1 |
| 9 | D060418 | MAGNET RETAINER | 4 |
| 10 | 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 | |  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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | | |
| | NAME | DATE | |
| | DRAWN J O'DELL | 08/SEP/09 | SIZE B |
| | CHECKED IW | 08/SEP/09 | DRG. NO. D060403_ASM_PROCEDURE |
| | APPROVED JOD | 08/MAR/10 | REV B |
| SCALE 1:2 | | | PROJECTION:  |
| SHEET 19 OF 25 | | | |



SIZE: 1/2 INCH
TORQUE: 10LB FT



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

ADD FINAL OSEM MAGNET FLAG ASSEMBLY

| 1 | 1-4_20_UNC_1-00INCH | 1/4" 20 UNC X 1" CAP HEAD | 1 |
|-----|-----------------------------|---|----------|
| 2 | 1-4_20_UNC_1-00INCH_SIL_PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 2 |
| 3 | D060412 | OSEM BRACKET (TOP OSEM) | 1 |
| 4 | D060416 | OSEM MAGNET AND FLAG | 1 |
| 5 | D060417 | OSEM MAGNET AND FLAG CONCEPT | 1 |
| No. | PART NUMBER | PART DESCRIPTION | NO. RECD |

NOTES: (UNLESS OTHERWISE SPECIFIED)

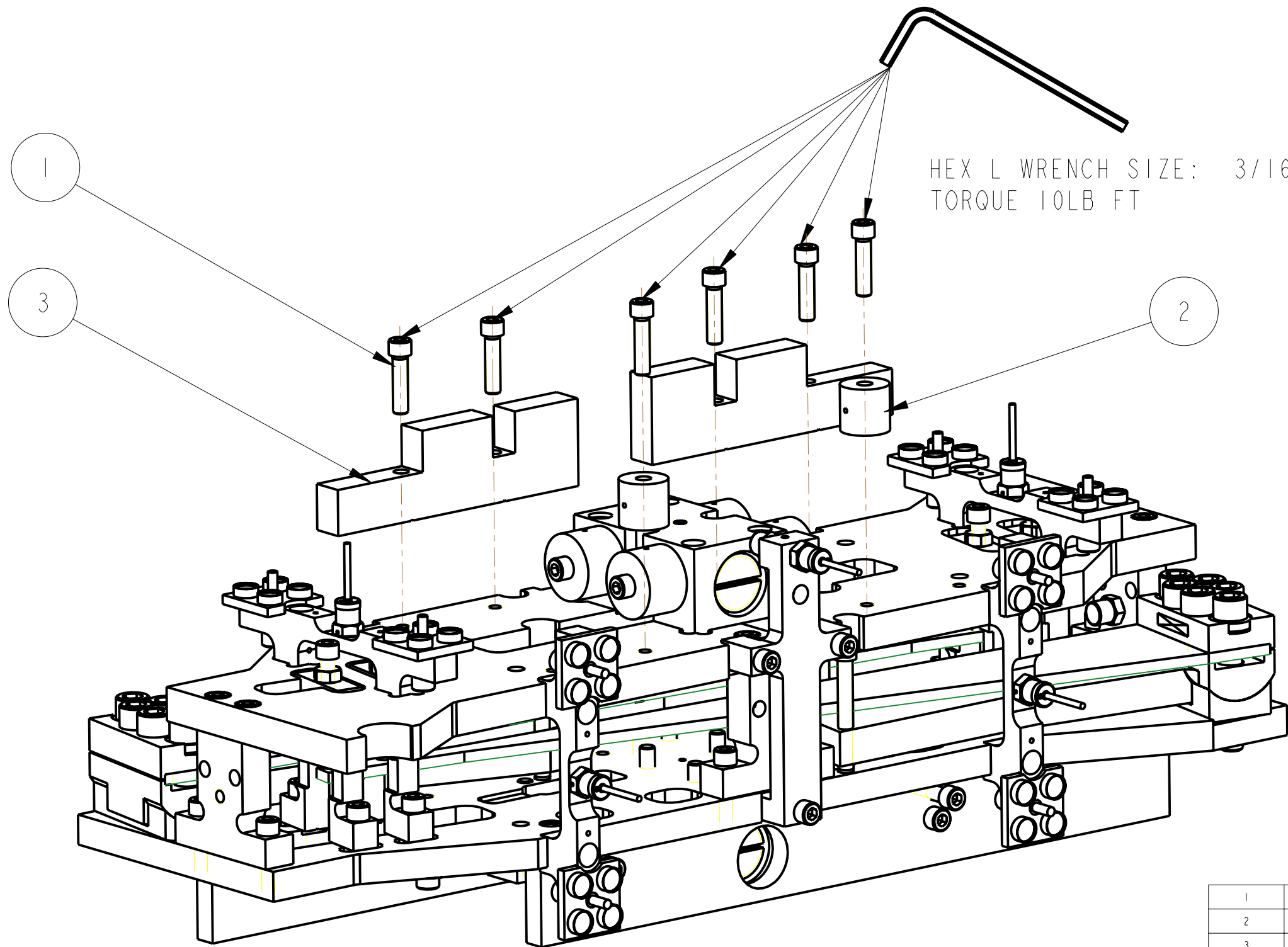
1. PROCESS PLAN TO BE USED FOR ASSEMBLY ONLY NOT TO BE USED FOR MANUFACTURE

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 **ALIGO QUAD**
 PART NAME **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**

| | | |
|----------|----------|-----------|
| | NAME | DATE |
| DRAWN | J O'DELL | 08/SEP/09 |
| CHECKED | IW | 08/SEP/09 |
| APPROVED | JOD | 08/MAR/10 |


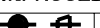
SCALE 1:2 PROJECTION: SHEET 20 OF 25



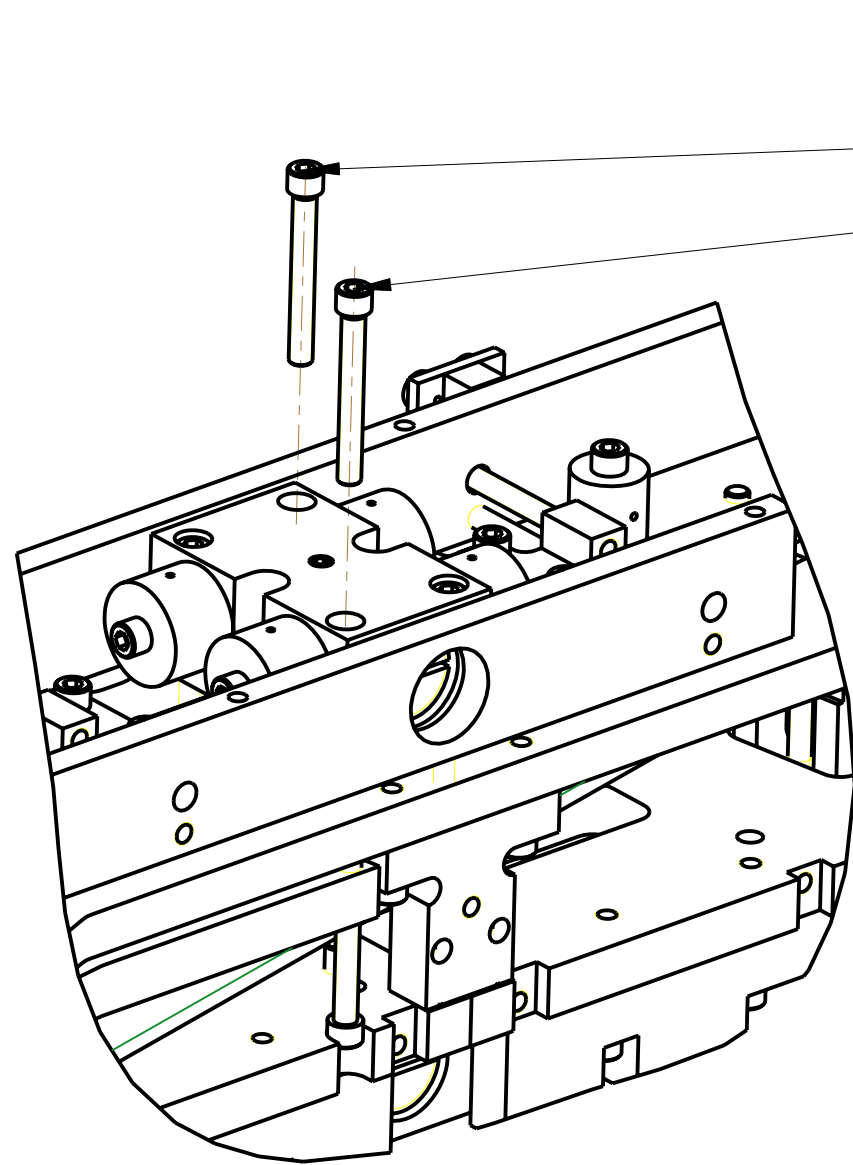
HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

ADD ADDITIONAL MASS / SUPPORT MEMBER

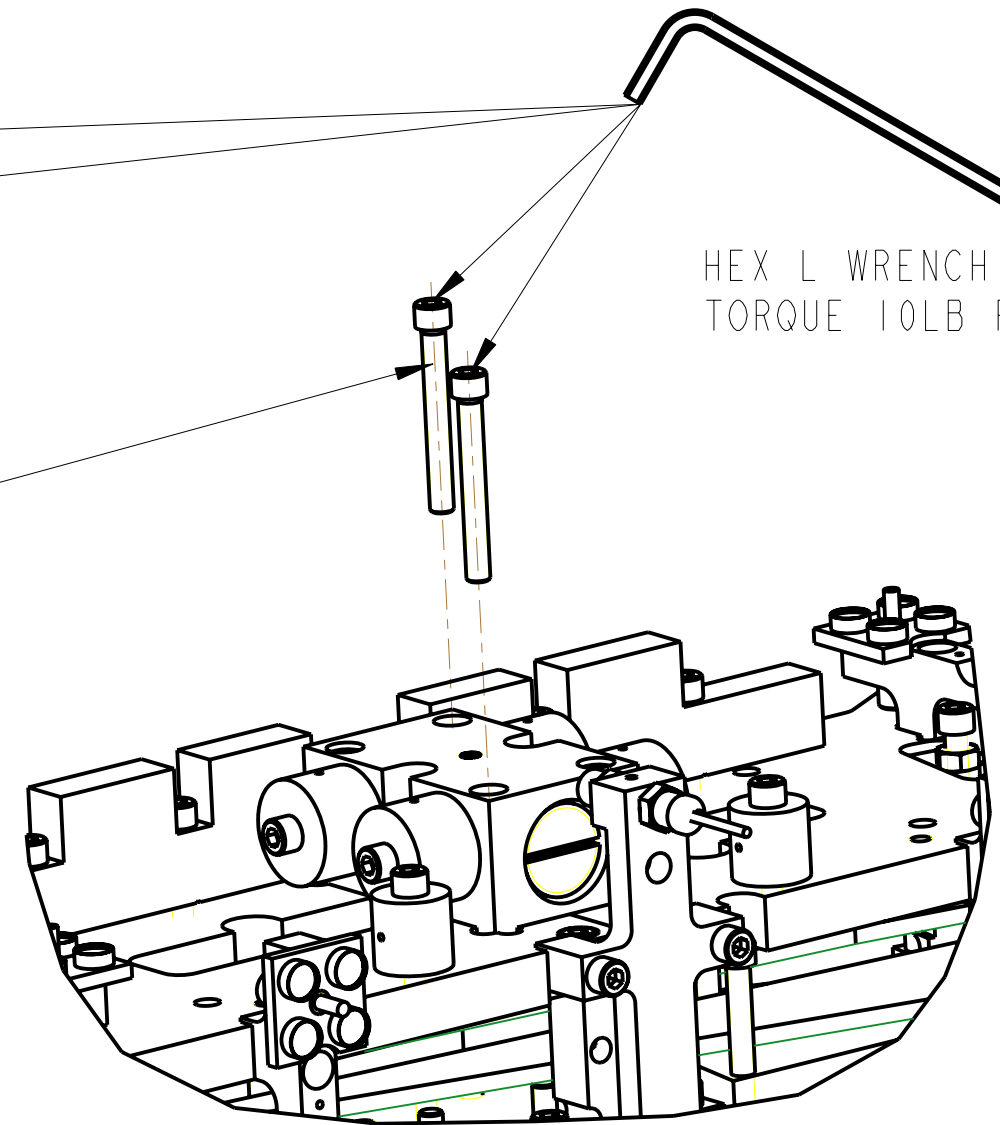
| | | | |
|-----|-----------------------------|---|----------|
| 1 | 1-4-20 UNC 1-00INCH SIL PLT | 1/4" 20 UNC X 1" CAP HEAD SILVER PLATED | 6 |
| 2 | D060359-050_0 | ADDITIONAL MASS | 2 |
| 3 | D060421 | MASS AND SUPPORT MEMBER | 2 |
| No. | PART NUMBER | PART DESCRIPTION | NO. REOD |

| | | | |
|-------------------------------------|----------|--|----------------|
| 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | NAME | DATE | SIZE |
| DRAWN | J O'DELL | 08/SEP/09 | B |
| CHECKED | IW | 08/SEP/09 | |
| APPROVED | JOD | 08/MAR/10 | |
| | | DRG. NO. | REV |
| | | D060403_ASM_PROCEDURE | B |
| SCALE 1:2 | | PROJECTION:  | SHEET 21 OF 25 |

MAIN CHAIN ONLY





VIEW ON UNDER SIDE OF MASS



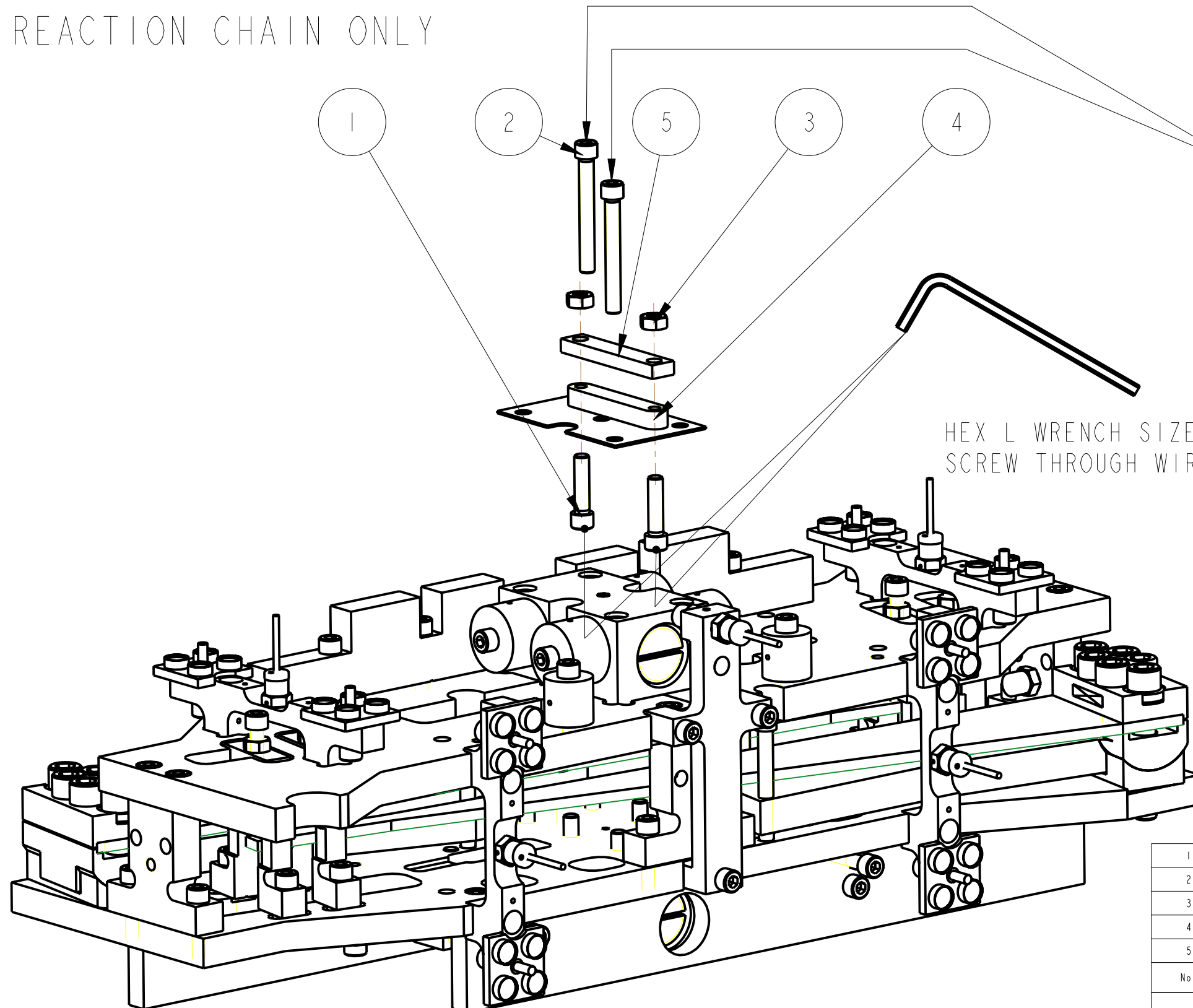
HEX L WRENCH SIZE: 3/16
TORQUE 10LB FT

VIEW ON TOP SIDE OF MASS

ADD TURRET SCREWS (MAIN CHAIN ONLY)

| 1 | 1-4_20 UNC 2-00 INCH 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | NAME DATE | SIZE | REV |
| | DRAWN J O'DELL 11/03/10 | B | B |
| | CHECKED IW 08/SEP/09 | DRG NO | |
| | APPROVED JOD 08/MAR/10 | D060403_ASM_PROCEDURE | |
| | | SCALE 1:2 | PROJECTION:  SHEET 22 OF 25 |

REACTION CHAIN ONLY



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

HEX L WRENCH SIZE: 3/16
SCREW THROUGH WIRE CLAMP BASE PLATE, UP TO SCREW SHOULDER

ADD UPPER CABLE CLAMP

| | | | |
|-----|-----------------------------|---|----------|
| 1 | 1-4_20 UNC_1-00INCH | 1/4" 20 UNC X 1" CAP HEAD | 2 |
| 2 | 1-4_20 UNC_2-00INCH_SIL_PLT | 1/4" 20 UNC X 2" CAP HEAD SILVER PLATED | 2 |
| 3 | 1-4_20 UNC_NUT_.. | 1/4 20 UNC NUT | 2 |
| 4 | D070219 | MASS WIRE CLAMP BASE | 1 |
| 5 | D070226 | CABLE CLAMP JAW | 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

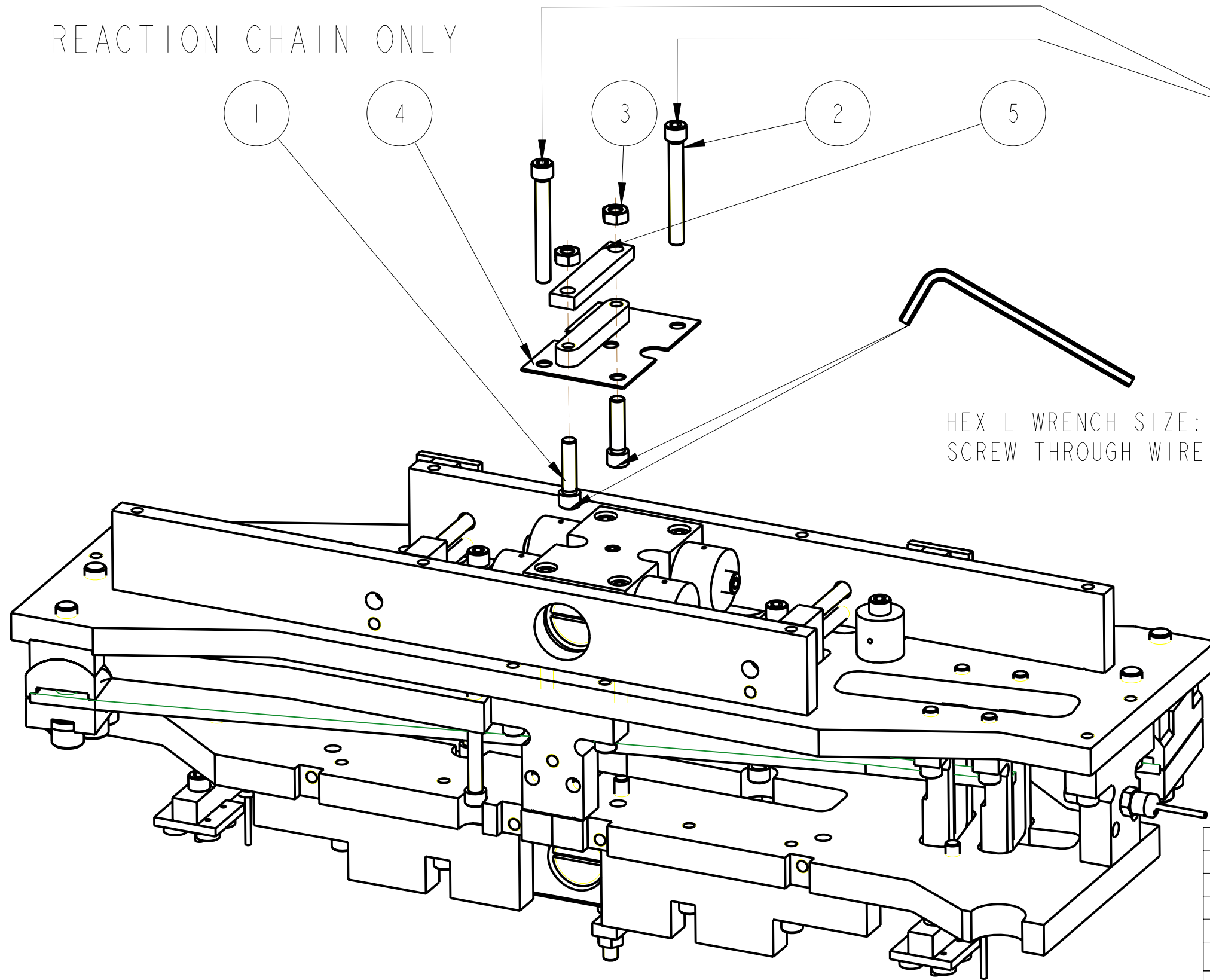
CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY
 IGR, GLASGOW UNIVERSITY GEO 600 GROUP
 RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
 SUB-SYSTEM **SUS**
 NEXT ASSY **ALIGO QUAD**
 PART NAME **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**

| | | |
|----------|----------|-----------|
| | NAME | DATE |
| DRAWN | J O'DELL | 08/SEP/09 |
| CHECKED | IW | 08/SEP/09 |
| APPROVED | JOD | 08/MAR/10 |

SCALE 1:2 PROJECTION: SHEET 23 OF 25

REACTION CHAIN ONLY



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

HEX L WRENCH SIZE: 3/16
SCREW THROUGH WIRE CLAMP BASE PLATE, UP TO SCREW SHOULDER

ADD LOWER CABLE CLAMP

| | | | |
|-----|-----------------------------|---|----------|
| 1 | 1-4_20 UNC_1-00INCH | 1/4" 20 UNC X 1" CAP HEAD | 2 |
| 2 | 1-4_20 UNC_2-00INCH_SIL_PLT | 1/4" 20 UNC X 2" CAP HEAD SILVER PLATED | 2 |
| 3 | 1-4_20 UNC_NUT_.. | 1/4 20 UNC NUT | 2 |
| 4 | D070219 | MASS WIRE CLAMP BASE | 1 |
| 5 | D070226 | CABLE CLAMP JAW | 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

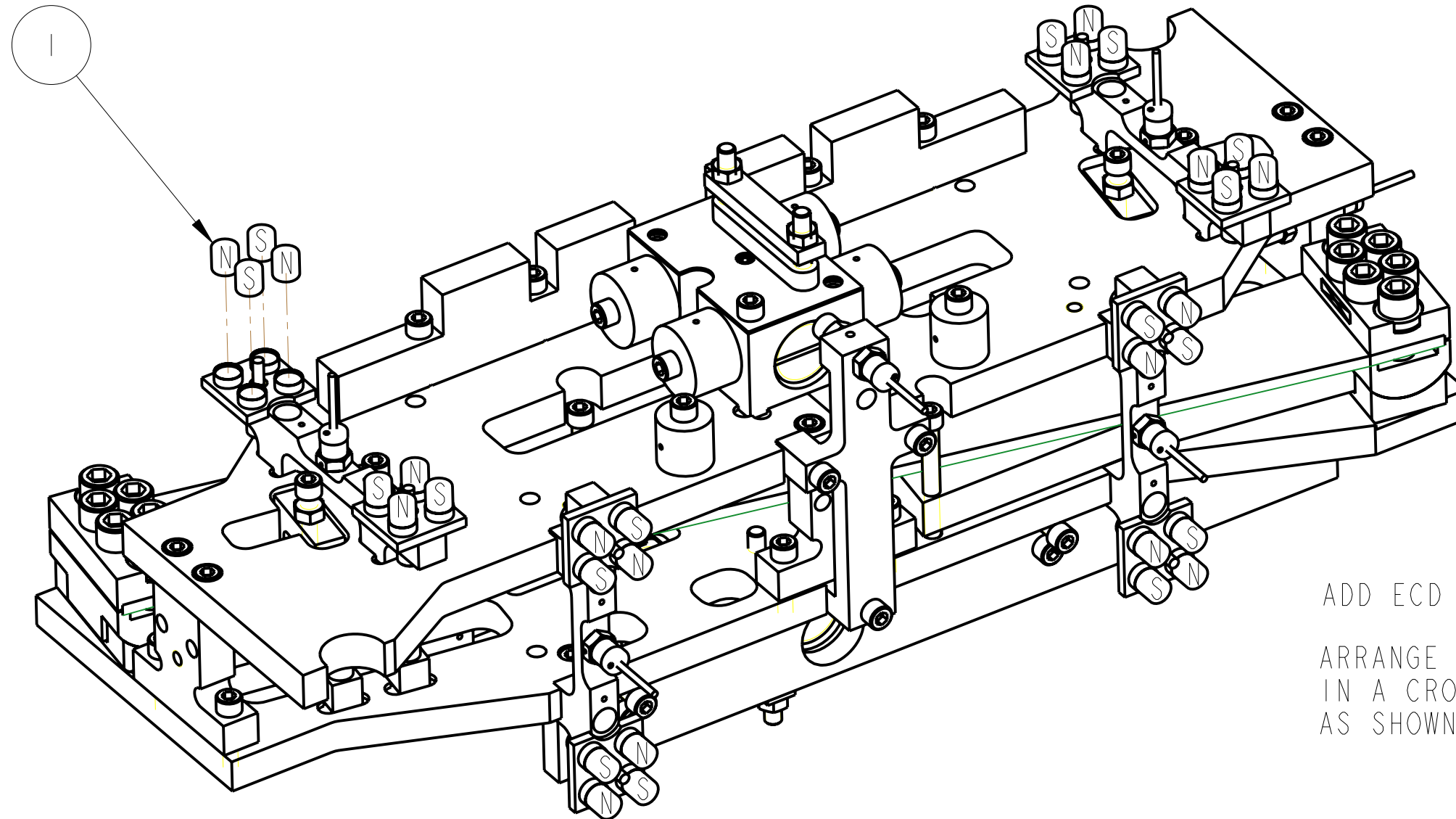
| | | | | |
|----------------|-----------|------|-----------------------|------|
| NAME | DATE | SIZE | DRG. NO. | REV. |
| DRAWN J O'DELL | 08/SEP/09 | B | D060403_ASM_PROCEDURE | B |
| CHECKED IW | 08/SEP/09 | | | |
| APPROVED JOD | 08/MAR/10 | | | |

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RUTHERFORD APPLETON LABORATORIES

SYSTEM **ADVANCED LIGO**
SUB-SYSTEM **SUS**
NEXT ASSY **ALIGO QUAD**
PART NAME **TOP MASS ASM SEQUENCE TEST/REACTION CHAIN**


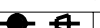
SCALE 1:2 PROJECTION: SHEET 24 OF 25

MAIN AND REACTION CHAINS - THE REACTION CHAIN IS SHOWN HERE



ADD ECD MAGNETS

ARRANGE THESE WITH ALTERNATE POLARITIES N/S IN A CROSS OVER THE FRONT AND TOP OF THE MASS AS SHOWN IN THIS VIEW

| | | | |
|-------------------------------------|-------------|--|------------------------------|
| I | D0901344 | 10MM DIA X 10MM MAGNET | 32 |
| 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 TOP MASS ASM SEQUENCE TEST/REACTION CHAIN | |
| | NAME | DATE | SIZE |
| DRAWN | J O'DELL | 08/SEP/09 | B |
| CHECKED | IW | 08/SEP/09 | DRG NO |
| APPROVED | JOD | 08/MAR/10 | D060403_ASM_PROCEDURE |
| SCALE 1:2 | | PROJECTION:  | SHEET 25 OF 25 |