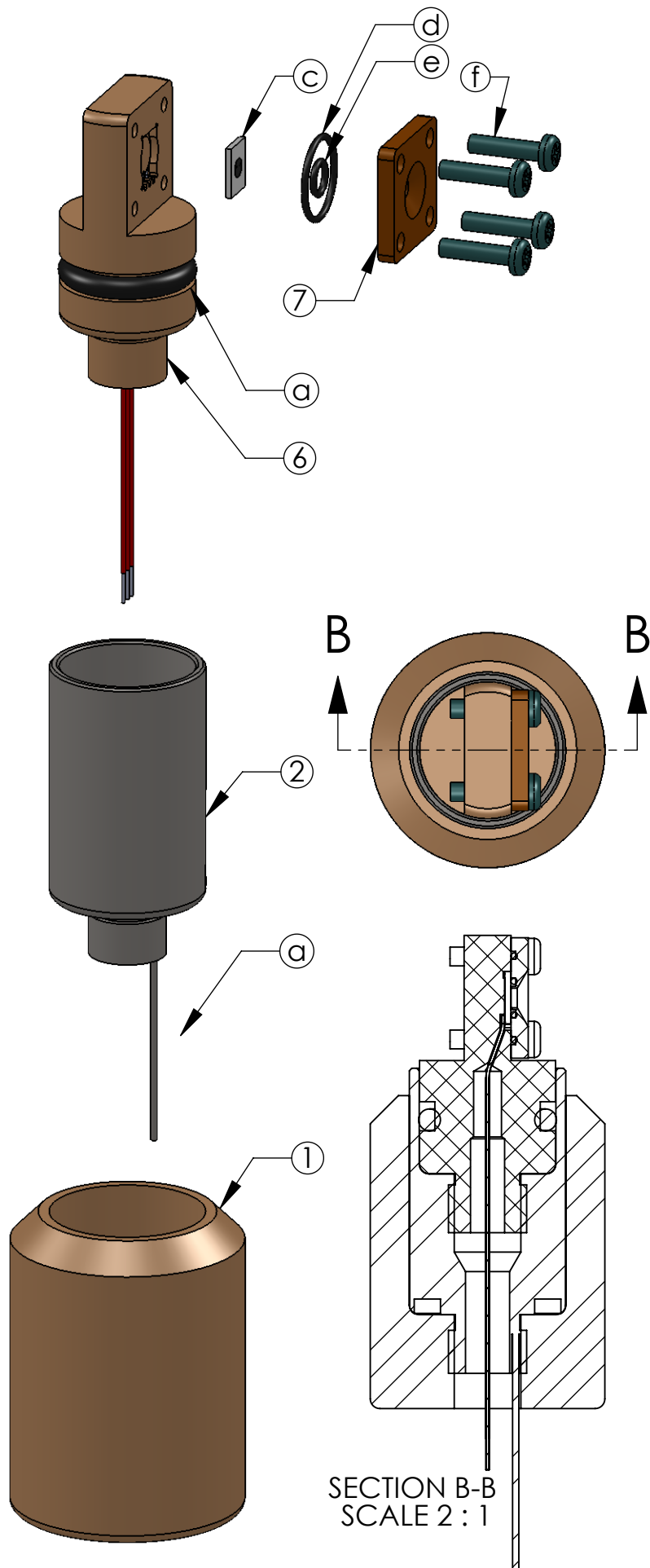
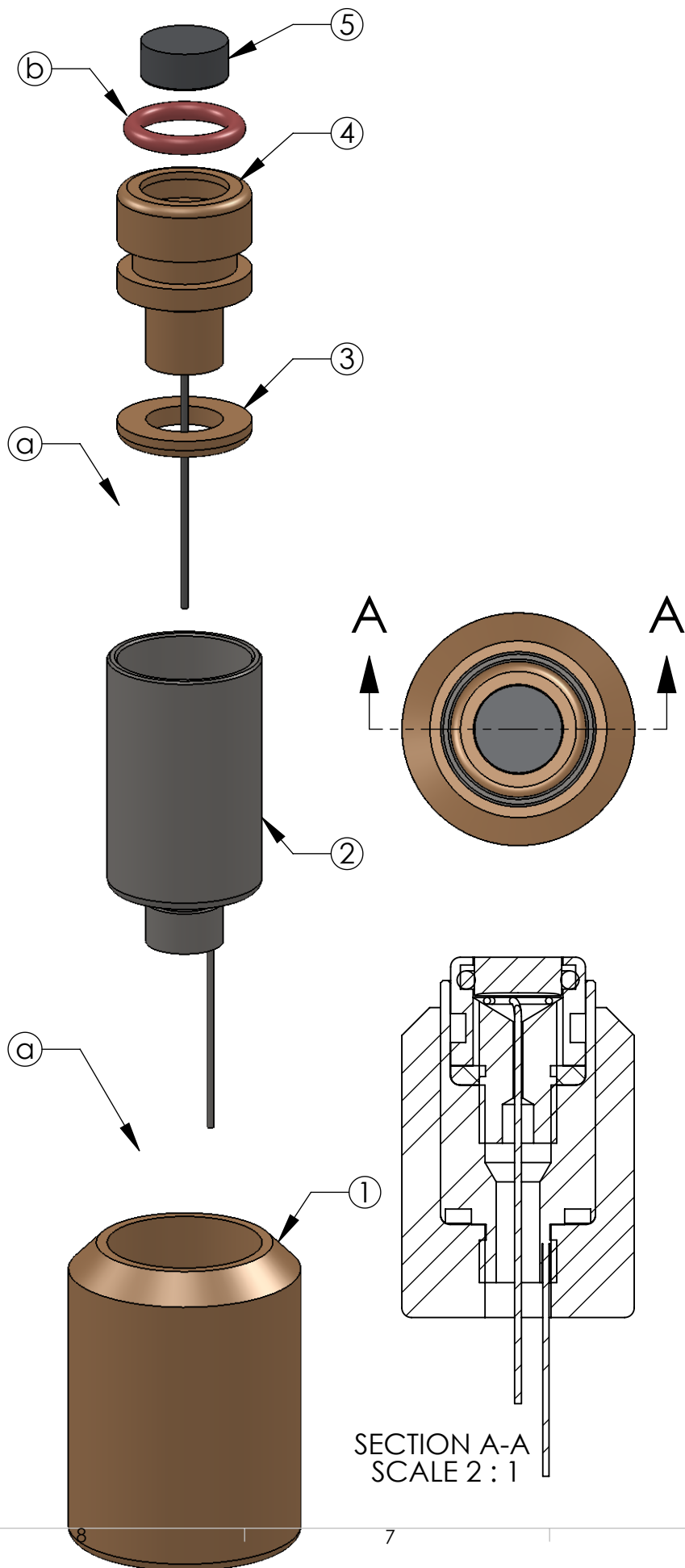


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High-pressure Reference (A1) and DuraFET (A2) PTChamber ASSEMBLIES

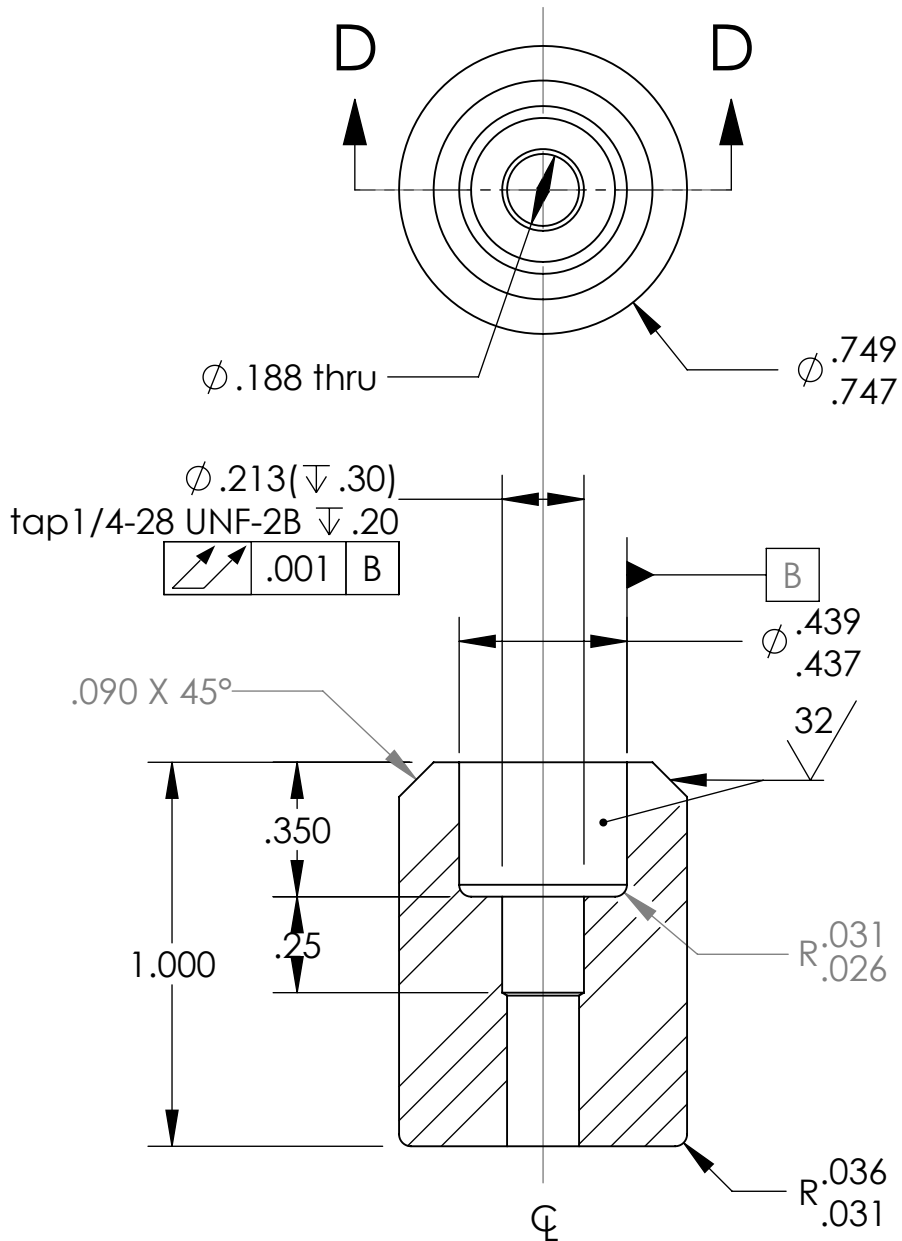
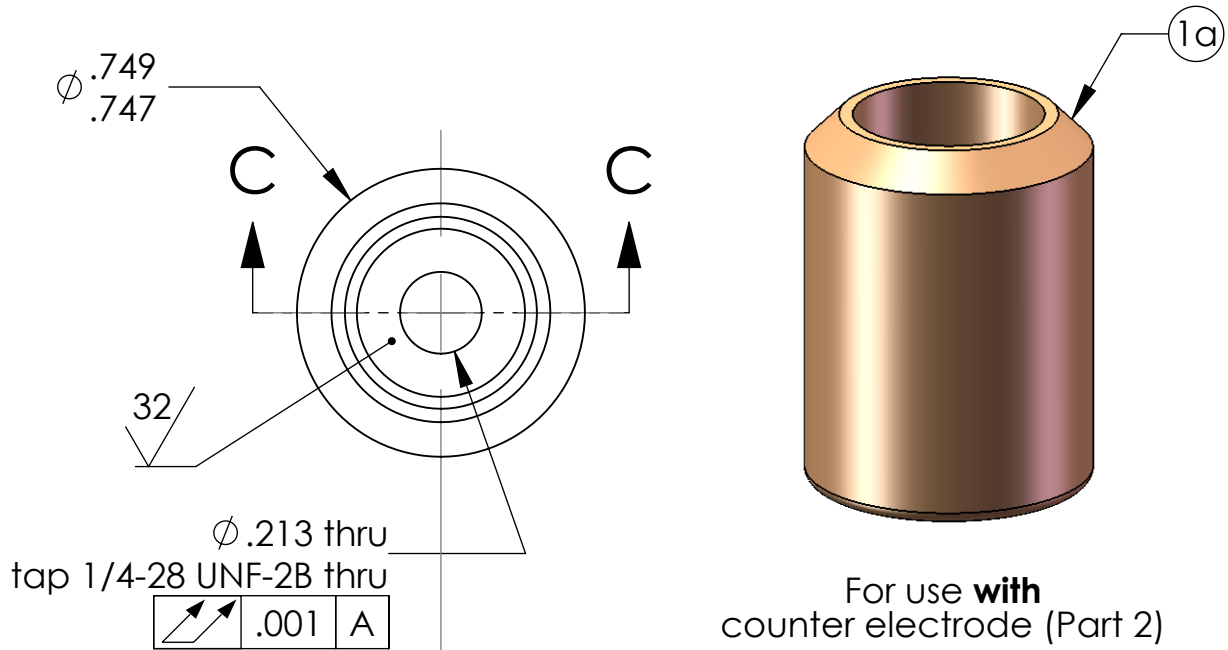
| REV. | DESCRIPTION                           | DATE     | APPROVED |
|------|---------------------------------------|----------|----------|
| A    | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B    | Increased cover thickness             | 10/16/11 | hwj      |

| Item No. | Qty | Part No. | Description                  | Material Specification                 |
|----------|-----|----------|------------------------------|----------------------------------------|
| f        | 4   |          | #0-80 x 3/16" panhead screws | Type 316 Stainless Steel               |
| e        | 1   |          | .087 x .020 O-ring           | Viton, D75 (Apple Rubber)              |
| d        | 1   |          | .248 x .020 O-ring           | Viton, D75 (Apple Rubber)              |
| c        | 1   |          | DuraFET Chip                 | Honeywell                              |
| b        | 1   |          | 7 X 1.5 mm O-ring            | Silicone, D50                          |
| a        | 2   |          | -011 O-ring                  | Viton, D75                             |
| 7        | 1   |          | DuraFET Cover                | PEEK (natural)                         |
| 6        | 1   |          | DuraFET Mount                | PEEK Rod (natural)                     |
| 5        | 1   |          | Silver Chloride Pellet       | vanLondon 7.2 x 3.6 mm silver chlodide |
| 4        | 1   |          | Ref Pellet Housing           | PEEK Rod (natural)                     |
| 3        | 1   |          | Isolation Washer             | PEEK Rod (natural)                     |
| 2        | 1   |          | Counter Electrode            | Type 316 Stainless Steel Rod           |
| 1b       | 1   |          | Common Support (Config b)    | PEEK Rod (natural)                     |
| 1a       | 1   |          | Common Support (Config a)    | PEEK Rod (natural)                     |
| A2       | 1   |          | DuraFET for PTChamber        |                                        |
| A1       | 1   |          | Ref Cell for PTChamber       |                                        |

| Shop / Q.C.           | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                                                                | APPROVALS   | DATE                  | Monterey Bay Aquarium Research Institute              |
|-----------------------|-----------------------------------------------------------------------------------------------------------|-------------|-----------------------|-------------------------------------------------------|
| Inspector             | 1 PLACE DIM ±.1/16                                                                                        | DRAWN       | Hans Jannasch 5/30/11 | MBARI                                                 |
| Shop Foreman          | 2 PLACE DIM ±.02                                                                                          | ENGINEER    |                       | 7700 Sandholdt RD.                                    |
| Engineer              | 3 PLACE DIM ±.005                                                                                         | CHECKED     |                       | Moss Landing, CA 95039                                |
| NEXT ASSY Description | 4. MACHINED FILLET RADII .0150-.030.                                                                      | PROJECT NO. | 900918                | PH: (831) 775-1700                                    |
| NEXT ASSY Number      | 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005                                       | PROJECT     | Novel Sensors         | Common DuraFET & Reference                            |
| Application           | 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE. | WEIGHT      |                       | SIZE B DWG. NO. 242jahaCommonDF+Ref REV. B            |
|                       | DO NOT SCALE DRAWING                                                                                      |             |                       | SCALE 1:3 CAD FILE: Tornado/chem/SWfiles SHEET 1 OF 6 |

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| REVISIONS |                                       |          |          |
|-----------|---------------------------------------|----------|----------|
| REV.      | DESCRIPTION                           | DATE     | APPROVED |
|           | INITIAL RELEASE                       |          |          |
| A         | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B         | Increased cover thickness             | 10/16/11 | hwj      |



For use **without**  
counter electrode (Part 2)

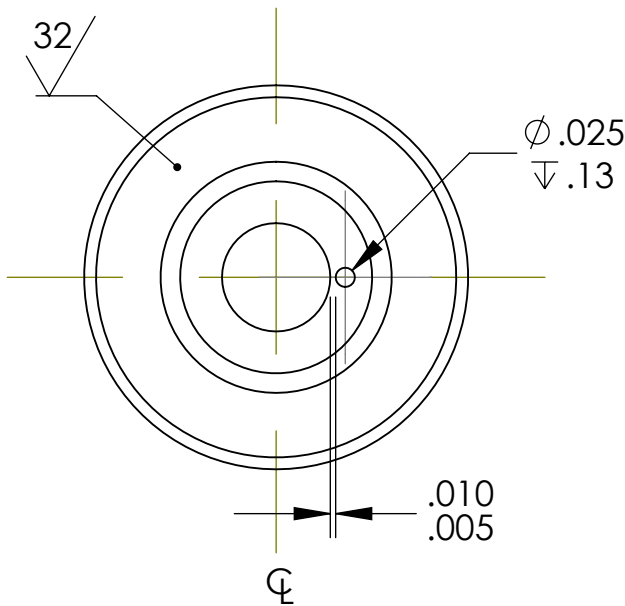
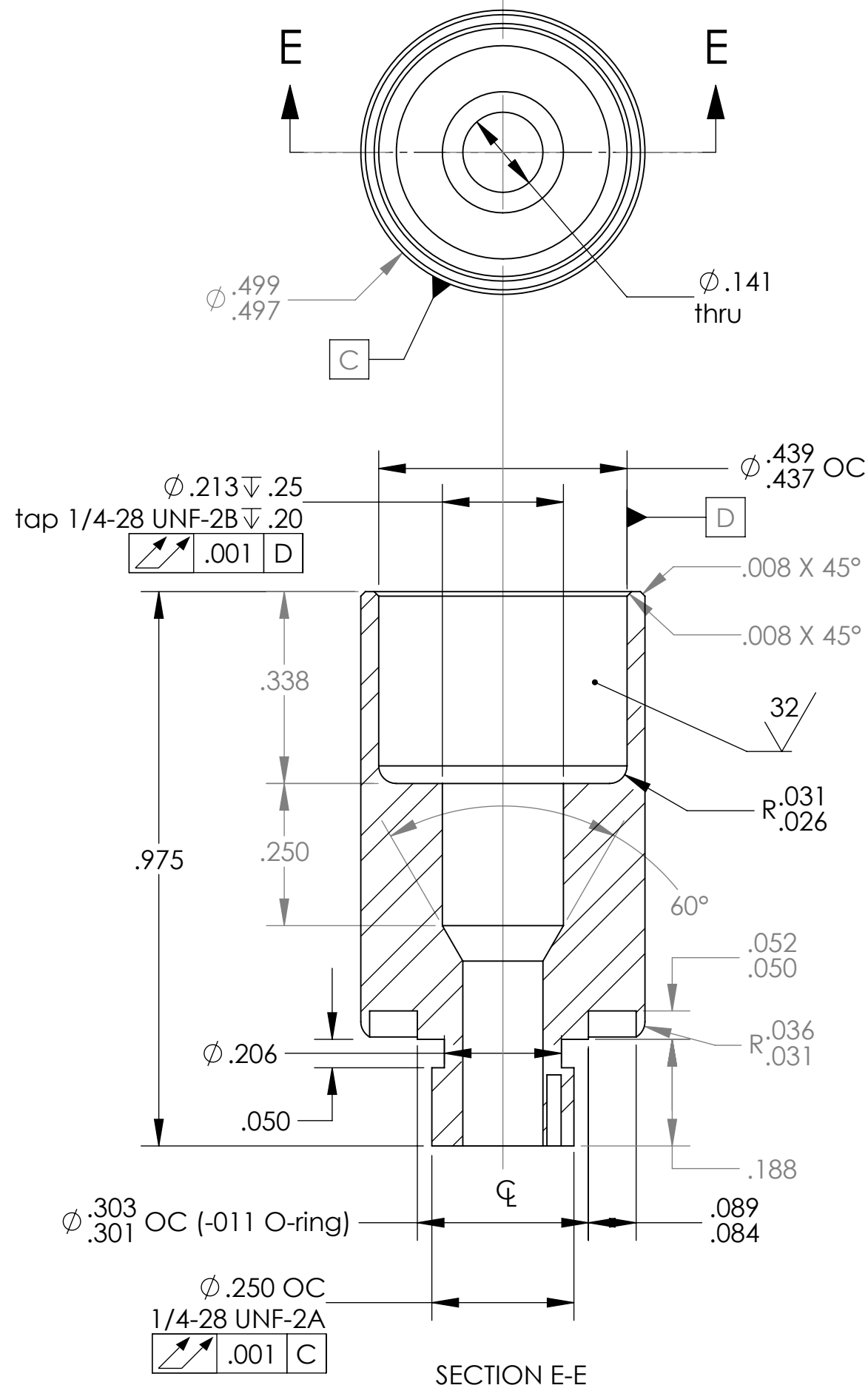
SECTION D-D

SECTION C-C

|                          |                     |                                                                                                           |                                 |                        |                                                                                       |
|--------------------------|---------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------|------------------------|---------------------------------------------------------------------------------------|
| 1b                       | 1                   | Common Support (Config b)                                                                                 |                                 | PEEK Rod (natural)     |                                                                                       |
| 1a                       | 1                   | Common Support (Config a)                                                                                 |                                 | PEEK Rod (natural)     |                                                                                       |
| Item No.                 | Qty                 | Part No.                                                                                                  | Description                     | Material Specification |                                                                                       |
| Bill of Materials        |                     |                                                                                                           |                                 |                        |                                                                                       |
| Shop / Q.C.              |                     | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                                                                |                                 | APPROVALS DATE         |                                                                                       |
| Inspector                |                     | 1 PLACE DIM<br>±1/16                                                                                      | 2 PLACE DIM<br>±.02             | 3 PLACE DIM<br>±.005   | DRAWN<br>Hans Jannasch 5/30/11                                                        |
| Shop Foreman             |                     | 1. DIMENSIONS ARE IN INCHES                                                                               |                                 |                        |                                                                                       |
| Engineer                 |                     | 2. DIMENSION LIMITS HELD AFTER PLATING.                                                                   |                                 |                        | CHECKED                                                                               |
| NEXT ASSY<br>Description | NEXT ASSY<br>Number | 3. REMOVE BURRS AND SHARP EDGES .015 MAX.                                                                 |                                 |                        | PROJECT NO. 900918                                                                    |
|                          |                     | 4. MACHINED FILLET RADII .0150-.030.                                                                      |                                 |                        | PROJECT Novel Sensors                                                                 |
|                          |                     | 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005                                       |                                 |                        |                                                                                       |
|                          |                     | 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE. |                                 |                        |                                                                                       |
| Application              |                     | DO NOT SCALE DRAWING                                                                                      |                                 | WEIGHT                 |                                                                                       |
|                          |                     |                                                                                                           |                                 |                        | Monterey Bay Aquarium Research Institute                                              |
|                          |                     |                                                                                                           |                                 |                        | MBARI<br>7700 Sandholdt RD.<br>Moss Landing, CA 95039<br>PH: (831) 775-1700           |
|                          |                     |                                                                                                           |                                 |                        |  |
|                          |                     |                                                                                                           |                                 |                        | Common DuraFET & Reference                                                            |
|                          |                     | SIZE<br>B                                                                                                 | DWG. NO.<br>242jahaCommonDF+Ref | REV.<br>B              |                                                                                       |
| SCALE 1:3                |                     | CAD FILE: Tornado/chem/SWfiles                                                                            |                                 | SHEET 2 OF 6           |                                                                                       |

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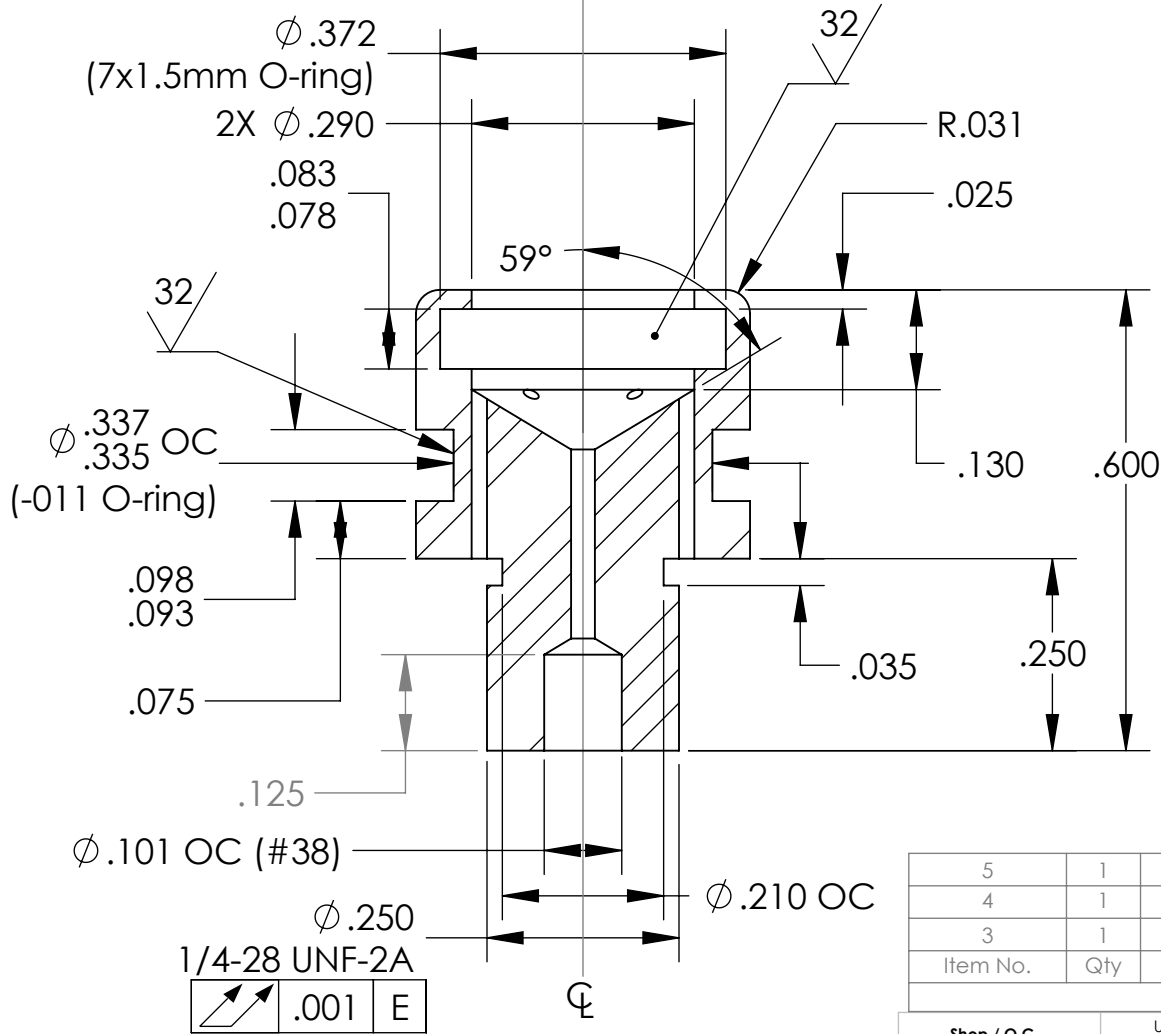
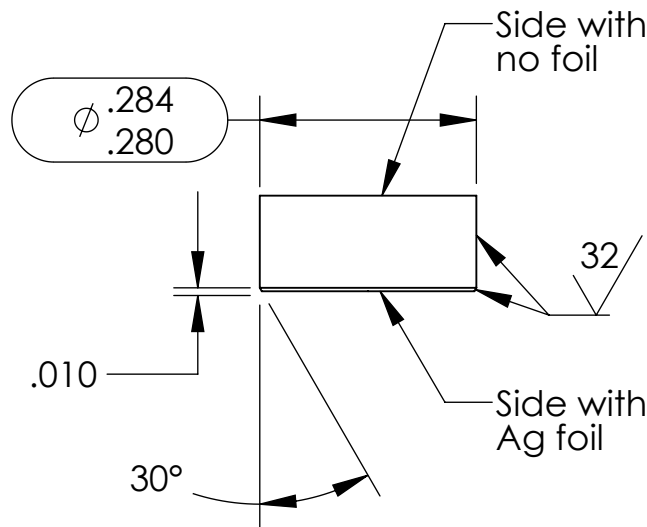
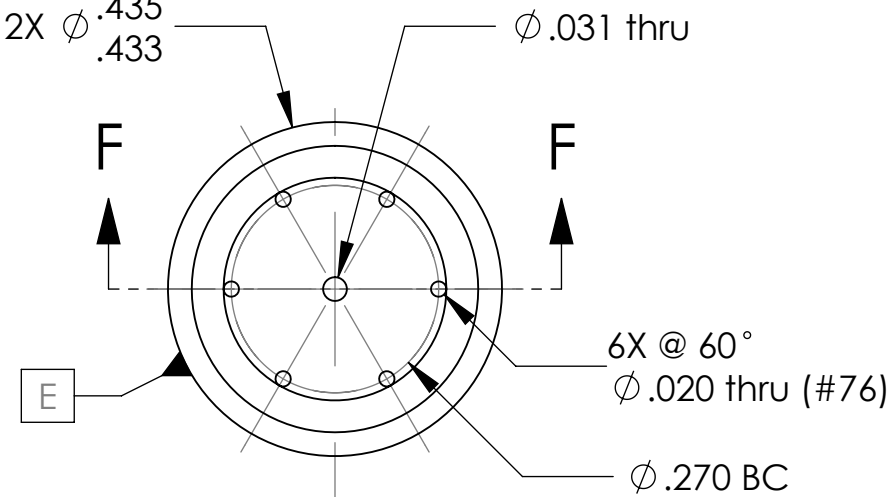
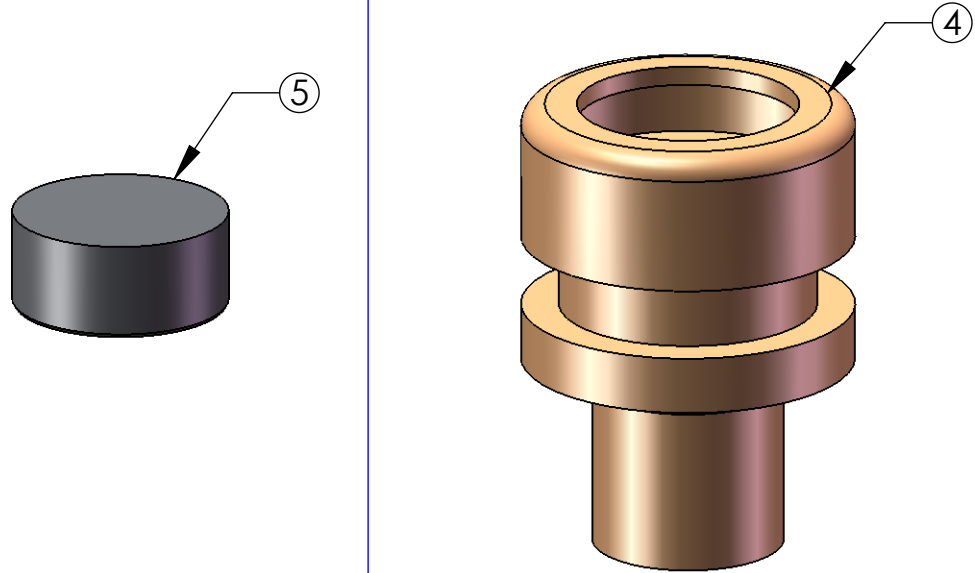
| REVISIONS |                                       |          |          |
|-----------|---------------------------------------|----------|----------|
| REV.      | DESCRIPTION                           | DATE     | APPROVED |
|           | INITIAL RELEASE                       |          |          |
| A         | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B         | Increased cover thickness             | 10/16/11 | hwj      |



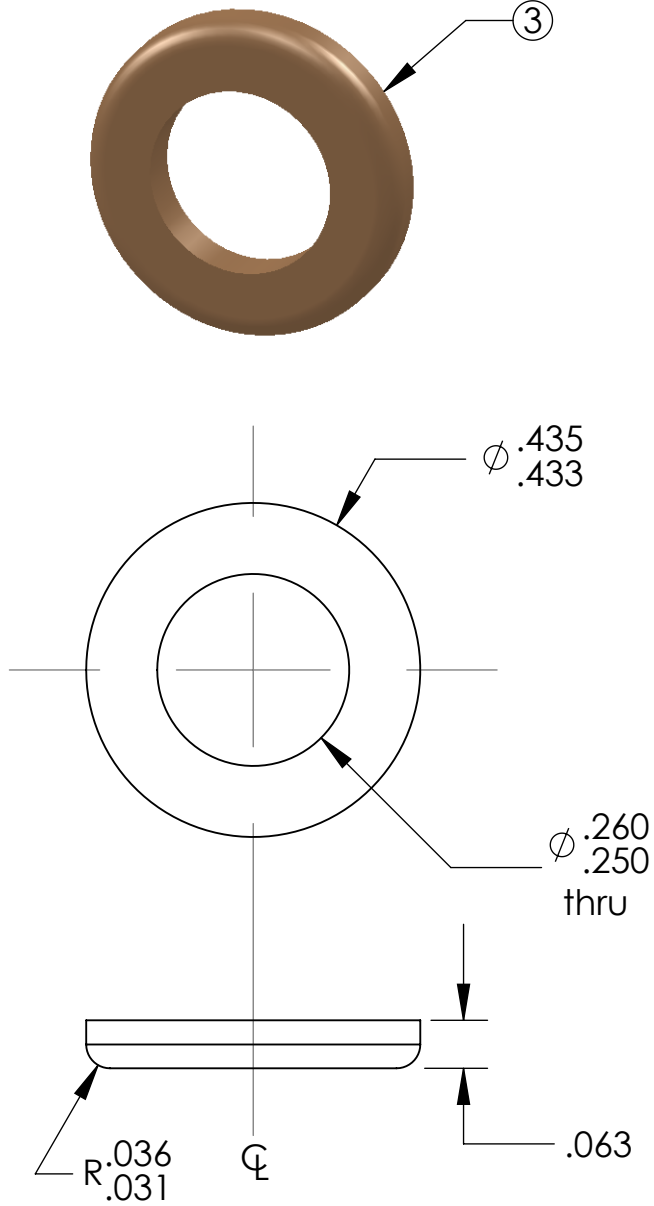
|                       |                  |                                                                                                           |                     |                                |               |                                                                                                         |  |
|-----------------------|------------------|-----------------------------------------------------------------------------------------------------------|---------------------|--------------------------------|---------------|---------------------------------------------------------------------------------------------------------|--|
| 2                     |                  | 1                                                                                                         |                     | Counter Electrode              |               | Type 316 Stainless Steel Rod                                                                            |  |
| Item No.              |                  | Qty                                                                                                       |                     | Part No.                       |               | Description                                                                                             |  |
|                       |                  |                                                                                                           |                     |                                |               | Material Specification                                                                                  |  |
| Bill of Materials     |                  |                                                                                                           |                     |                                |               |                                                                                                         |  |
| Shop / Q.C.           |                  | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                                                                |                     |                                |               | APPROVALS DATE                                                                                          |  |
| Inspector             |                  | 1 PLACE DIM<br>±1/16                                                                                      | 2 PLACE DIM<br>±.02 | 3 PLACE DIM<br>±.005           | ANGLES<br>±1° | DRAWN<br>Hans Jannasch 5/30/11                                                                          |  |
| Shop Foreman          |                  | 1. DIMENSIONS ARE IN INCHES                                                                               |                     |                                |               | ENGINEER                                                                                                |  |
| Engineer              |                  | 2. DIMENSION LIMITS HELD AFTER PLATING.                                                                   |                     |                                |               | CHECKED                                                                                                 |  |
|                       |                  | 3. REMOVE BURRS AND SHARP EDGES .015 MAX.                                                                 |                     |                                |               |                                                                                                         |  |
|                       |                  | 4. MACHINED FILLET RADII .0150-.030.                                                                      |                     |                                |               | PROJECT NO. 900918                                                                                      |  |
| NEXT ASSY Description | NEXT ASSY Number | 5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005                                       |                     |                                |               | PROJECT Novel Sensors                                                                                   |  |
|                       |                  | 6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH. MAX .012 INCHES FOR SINGLE SURFACE. |                     |                                |               |                                                                                                         |  |
| Application           |                  | DO NOT SCALE DRAWING                                                                                      |                     |                                |               | WEIGHT                                                                                                  |  |
|                       |                  |                                                                                                           |                     |                                |               |                    |  |
|                       |                  |                                                                                                           |                     |                                |               | <b>MBARI</b><br><b>7700 Sandholdt RD.</b><br><b>Moss Landing, CA 95039</b><br><b>PH: (831) 775-1700</b> |  |
|                       |                  |                                                                                                           |                     |                                |               | <b>Common DuraFET &amp; Reference</b>                                                                   |  |
|                       |                  | SIZE B                                                                                                    |                     | DWG. NO. 242jahaCommonDF+Ref   |               | REV. B                                                                                                  |  |
|                       |                  | SCALE 1:3                                                                                                 |                     | CAD FILE: Tornado/chem/SWfiles |               | SHEET 3 OF 6                                                                                            |  |

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| REVISIONS       |                                       |          |          |
|-----------------|---------------------------------------|----------|----------|
| REV.            | DESCRIPTION                           | DATE     | APPROVED |
| INITIAL RELEASE |                                       |          |          |
| A               | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B               | Increased cover thickness             | 10/16/11 | hwj      |



SECTION F-F  
SCALE 4 : 1



Note: Machine chamfer while turning pellet in clean soft collet with clean sharp tool. Use NO oil or other fluids. Handle pellet with clean latex gloves.

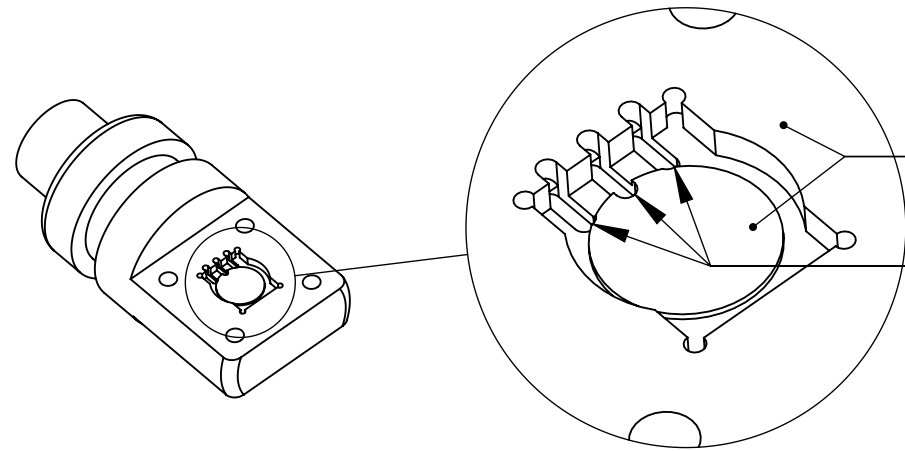
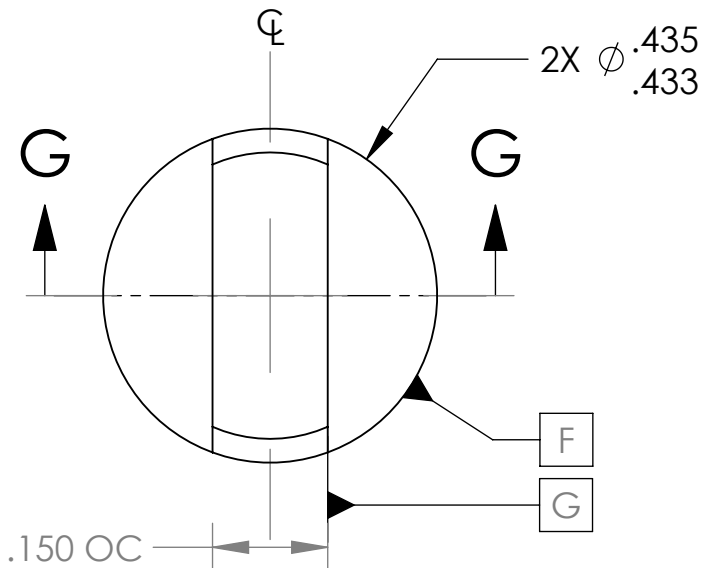
Note: Side with no foil is not machined (machined flat after epoxying into part #4)

| 5        | 1   |          | Silver Chloride Pellet | vanLondon 7.2 x 3.6 mm silver chloride |
|----------|-----|----------|------------------------|----------------------------------------|
| 4        | 1   |          | Ref Pellet Housing     | PEEK Rod (natural)                     |
| 3        | 1   |          | Isolation Washer       | PEEK Rod (natural)                     |
| Item No. | Qty | Part No. | Description            | Material Specification                 |

| Bill of Materials     |                  |                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                         |
|-----------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Shop / Q.C.           |                  | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                                                                                                                                                                                                                                                                                                      | APPROVALS DATE                                                                                                          |
| Inspector             |                  | 1 PLACE DIM ±1/16<br>2 PLACE DIM ±.02<br>3 PLACE DIM ±.005<br>ANGLES ±1°                                                                                                                                                                                                                                                                        | DRAWN<br>Hans Jannasch 5/30/11<br>ENGINEER                                                                              |
| Shop Foreman          |                  | 1. DIMENSIONS ARE IN INCHES<br>2. DIMENSION LIMITS HELD AFTER PLATING.<br>3. REMOVE BURRS AND SHARP EDGES .015 MAX.<br>4. MACHINED FILLET RADII .0150-.030.<br>5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005<br>6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH, MAX .012 INCHES FOR SINGLE SURFACE. | CHECKED                                                                                                                 |
| Engineer              |                  |                                                                                                                                                                                                                                                                                                                                                 | PROJECT NO. 900918                                                                                                      |
| NEXT ASSY Description | NEXT ASSY Number |                                                                                                                                                                                                                                                                                                                                                 | PROJECT Novel Sensors                                                                                                   |
| Application           |                  | DO NOT SCALE DRAWING                                                                                                                                                                                                                                                                                                                            | WEIGHT                                                                                                                  |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 | Monterey Bay Aquarium Research Institute<br>MBARI<br>7700 Sandholdt RD.<br>Moss Landing, CA 95039<br>PH: (831) 775-1700 |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 | Common DuraFET & Reference                                                                                              |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 | SIZE B DWG. NO. 242jahaCommonDF+Ref REV. B                                                                              |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 | SCALE 1:3 CAD FILE: Tornado/chem/SWfiles SHEET 4 OF 6                                                                   |

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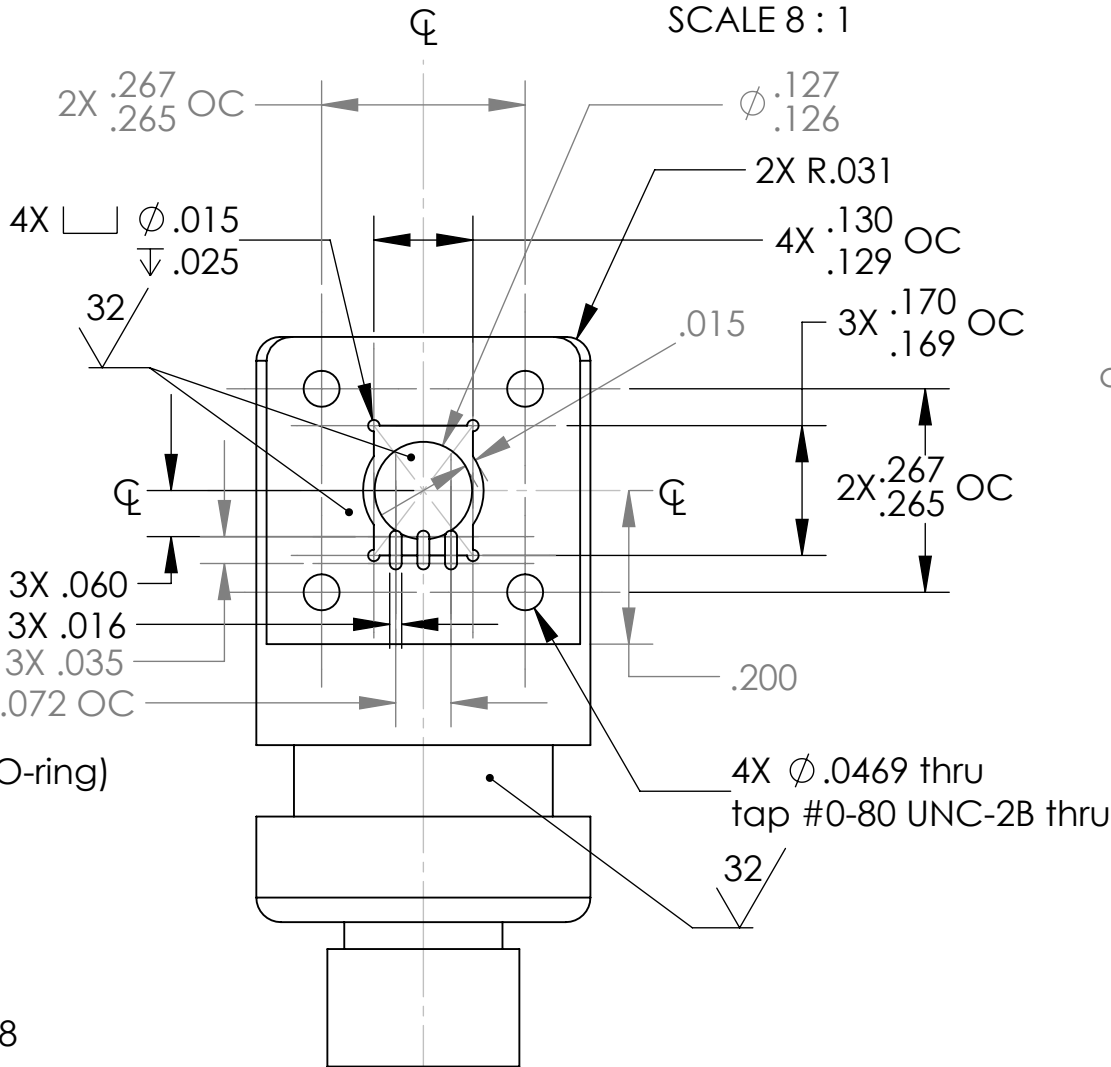
| REVISIONS |                                       |          |          |
|-----------|---------------------------------------|----------|----------|
| REV.      | DESCRIPTION                           | DATE     | APPROVED |
|           | INITIAL RELEASE                       |          |          |
| A         | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B         | Increased cover thickness             | 10/16/11 | hwj      |



These two surfaces to be flat and parallel to  $.001$

$20^\circ$  holes to clear these edges and fully penetrate to center bore

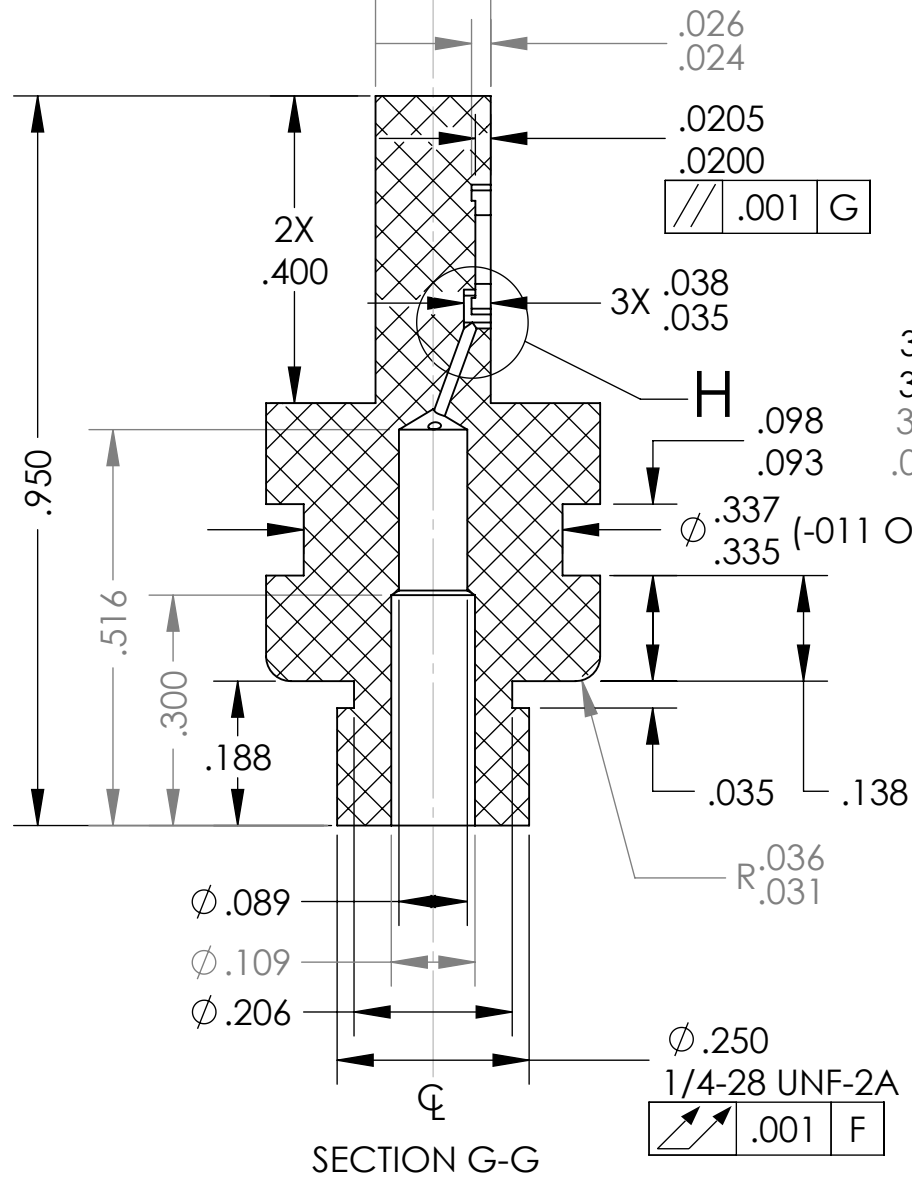
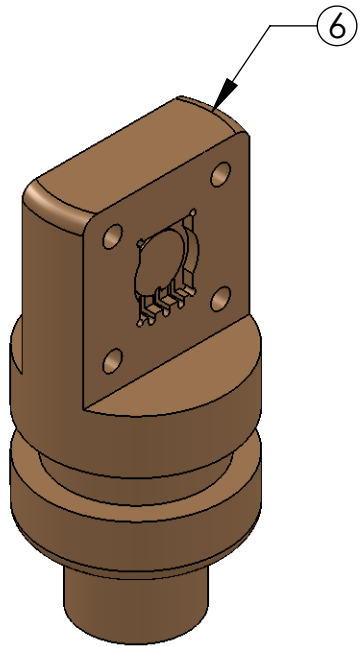
DETAIL H  
SCALE 8 : 1



$3X \phi .016$  thru to center bore

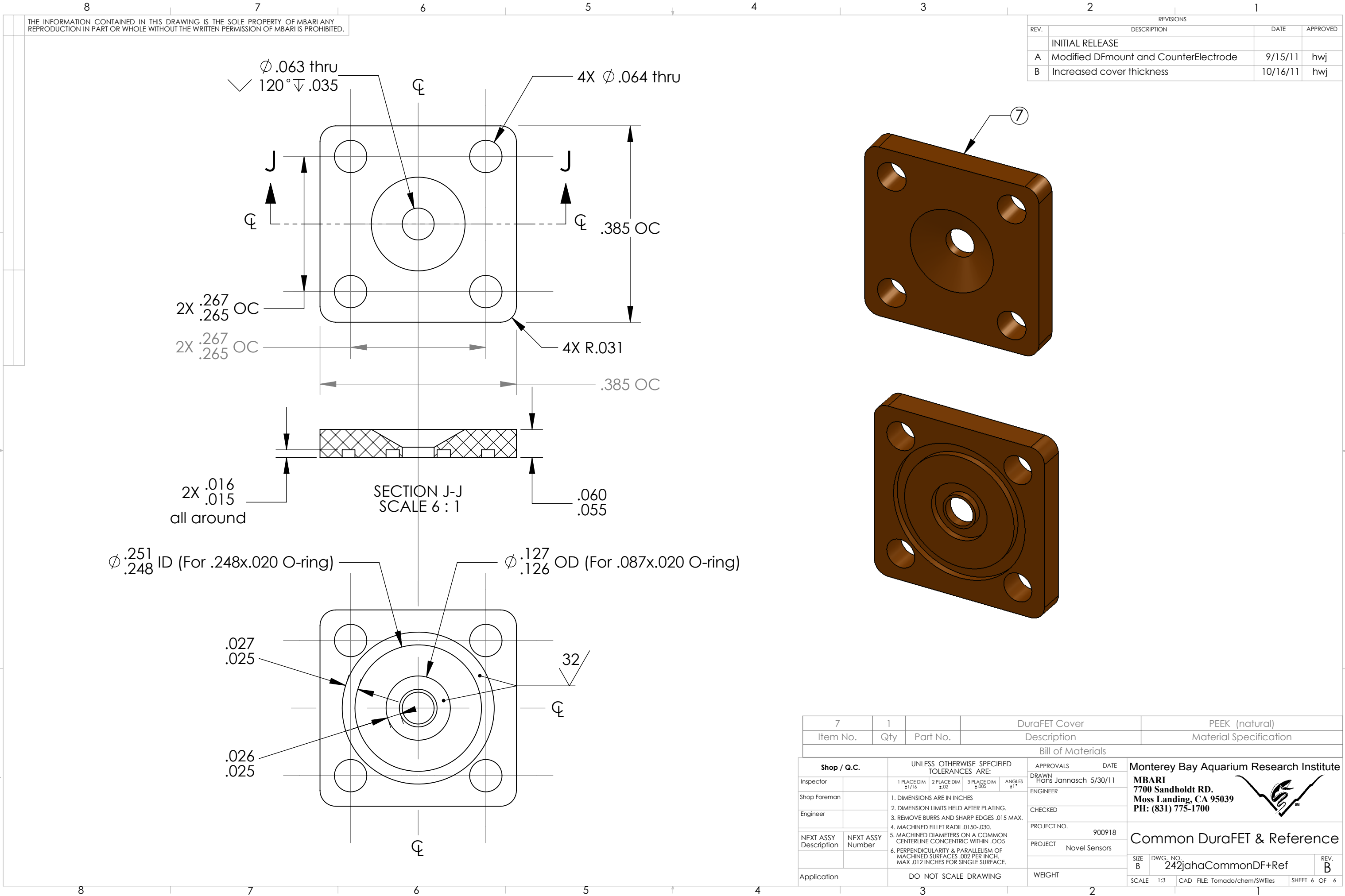
$3X 20^\circ$

DETAIL H  
SCALE 8 : 1



SECTION G-G

| 6                     |                  | 1                                          |                     | DuraFET Mount        |               | PEEK Rod (natural)            |                                                                                                                                |                       |
|-----------------------|------------------|--------------------------------------------|---------------------|----------------------|---------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Item No.              |                  | Qty                                        | Part No.            | Description          |               | Material Specification        |                                                                                                                                |                       |
| Bill of Materials     |                  |                                            |                     |                      |               |                               |                                                                                                                                |                       |
| Shop / Q.C.           |                  | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE: |                     |                      | APPROVALS     |                               | Monterey Bay Aquarium Research Institute<br><b>MBARI</b><br>7700 Sandholdt RD.<br>Moss Landing, CA 95039<br>PH: (831) 775-1700 |                       |
| Inspector             |                  | 1 PLACE DIM<br>±1/16                       | 2 PLACE DIM<br>±.02 | 3 PLACE DIM<br>±.005 | ANGLES<br>±1° | DATE<br>Hans Jannasch 5/30/11 |                                                                                                                                |                       |
| Shop Foreman          |                  |                                            |                     |                      |               |                               |                                                                                                                                | ENGINEER              |
| Engineer              |                  |                                            |                     |                      |               |                               |                                                                                                                                | CHECKED               |
| NEXT ASSY Description | NEXT ASSY Number |                                            |                     |                      |               |                               |                                                                                                                                | PROJECT NO. 900918    |
|                       |                  |                                            |                     |                      |               |                               |                                                                                                                                | PROJECT Novel Sensors |
| Application           |                  | DO NOT SCALE DRAWING                       |                     |                      | WEIGHT        |                               |                                                                                                                                |                       |
|                       |                  |                                            |                     |                      |               |                               | SIZE B                                                                                                                         |                       |
|                       |                  |                                            |                     |                      |               |                               | DWG. NO. 242jahaCommonDF+Ref                                                                                                   |                       |
|                       |                  |                                            |                     |                      |               |                               | REV. B                                                                                                                         |                       |
|                       |                  |                                            |                     |                      |               |                               | SCALE 1:3                                                                                                                      |                       |
|                       |                  |                                            |                     |                      |               |                               | CAD FILE: Tornado/chem/SWfiles                                                                                                 |                       |
|                       |                  |                                            |                     |                      |               |                               | SHEET 5 OF 6                                                                                                                   |                       |



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| REVISIONS |                                       |          |          |
|-----------|---------------------------------------|----------|----------|
| REV.      | DESCRIPTION                           | DATE     | APPROVED |
|           | INITIAL RELEASE                       |          |          |
| A         | Modified DFmount and CounterElectrode | 9/15/11  | hwj      |
| B         | Increased cover thickness             | 10/16/11 | hwj      |

|                       |                                 |                                                                                                                                                                                                                                                                                                                                                 |  |                          |  |                                |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
|-----------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------|--|--------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|---------------------------------|-----------|--------------|--------------------------------|--------------|
| 7                     |                                 | 1                                                                                                                                                                                                                                                                                                                                               |  | DuraFET Cover            |  | PEEK (natural)                 |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
| Item No.              |                                 | Qty                                                                                                                                                                                                                                                                                                                                             |  | Part No.                 |  | Description                    |  | Material Specification                                                                                                                                                                                                                       |  |           |                                 |           |              |                                |              |
| Bill of Materials     |                                 |                                                                                                                                                                                                                                                                                                                                                 |  |                          |  |                                |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
| Shop / Q.C.           |                                 | UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:                                                                                                                                                                                                                                                                                                      |  |                          |  | APPROVALS                      |  | DATE                                                                                                                                                                                                                                         |  |           |                                 |           |              |                                |              |
| Inspector             |                                 | 1 PLACE DIM<br>±1/16                                                                                                                                                                                                                                                                                                                            |  | 2 PLACE DIM<br>±.02      |  | 3 PLACE DIM<br>±.005           |  | ANGLES<br>±1°                                                                                                                                                                                                                                |  |           |                                 |           |              |                                |              |
| Shop Foreman          |                                 | 1. DIMENSIONS ARE IN INCHES<br>2. DIMENSION LIMITS HELD AFTER PLATING.<br>3. REMOVE BURRS AND SHARP EDGES .015 MAX.<br>4. MACHINED FILLET RADII .0150-.030.<br>5. MACHINED DIAMETERS ON A COMMON CENTERLINE CONCENTRIC WITHIN .005<br>6. PERPENDICULARITY & PARALLELISM OF MACHINED SURFACES .002 PER INCH, MAX .012 INCHES FOR SINGLE SURFACE. |  |                          |  | DRAWN<br>Hans Jannasch 5/30/11 |  | <div>Monterey Bay Aquarium Research Institute</div> <div>MBARI<br/>7700 Sandholdt RD.<br/>Moss Landing, CA 95039<br/>PH: (831) 775-1700</div>           |  |           |                                 |           |              |                                |              |
| Engineer              |                                 |                                                                                                                                                                                                                                                                                                                                                 |  |                          |  | ENGINEER                       |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
|                       |                                 |                                                                                                                                                                                                                                                                                                                                                 |  |                          |  | CHECKED                        |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
| NEXT ASSY Description |                                 | NEXT ASSY Number                                                                                                                                                                                                                                                                                                                                |  | PROJECT NO.              |  | 900918                         |  | <div>Common DuraFET &amp; Reference</div> <table><tr><td>SIZE<br/>B</td><td>DWG. NO.<br/>242jahaCommonDF+Ref</td><td>REV.<br/>B</td></tr><tr><td>SCALE<br/>1:3</td><td>CAD FILE: Tornado/chem/SWfiles</td><td>SHEET 6 OF 6</td></tr></table> |  | SIZE<br>B | DWG. NO.<br>242jahaCommonDF+Ref | REV.<br>B | SCALE<br>1:3 | CAD FILE: Tornado/chem/SWfiles | SHEET 6 OF 6 |
| SIZE<br>B             | DWG. NO.<br>242jahaCommonDF+Ref | REV.<br>B                                                                                                                                                                                                                                                                                                                                       |  |                          |  |                                |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
| SCALE<br>1:3          | CAD FILE: Tornado/chem/SWfiles  | SHEET 6 OF 6                                                                                                                                                                                                                                                                                                                                    |  |                          |  |                                |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |
| Application           |                                 | DO NOT SCALE DRAWING                                                                                                                                                                                                                                                                                                                            |  | PROJECT<br>Novel Sensors |  | WEIGHT                         |  |                                                                                                                                                                                                                                              |  |           |                                 |           |              |                                |              |

Monterey Bay Aquarium Research Institute  
MBARI  
7700 Sandholdt RD.  
Moss Landing, CA 95039  
PH: (831) 775-1700

Common DuraFET & Reference