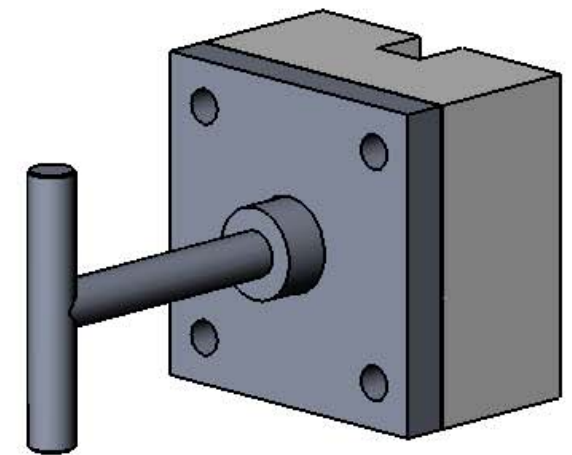
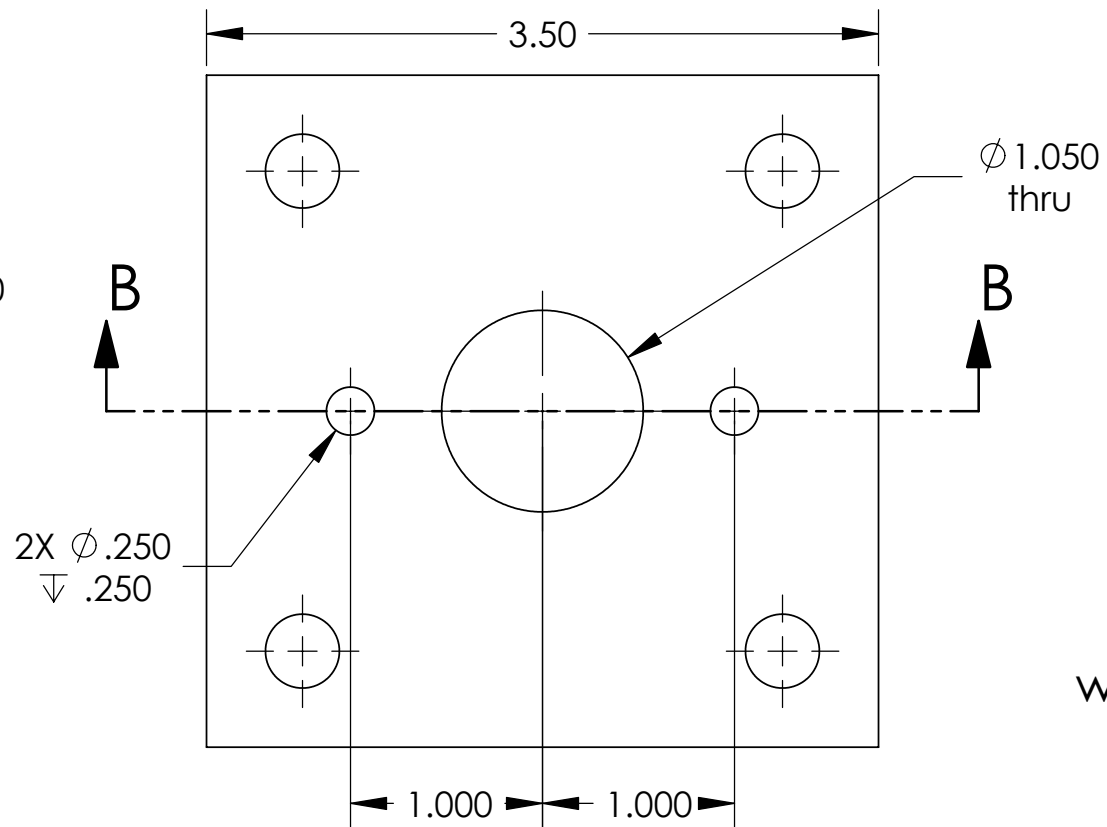
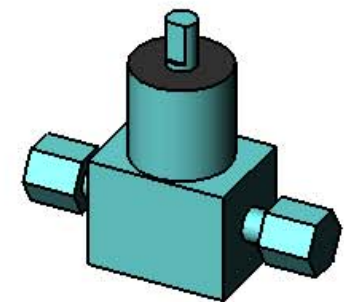


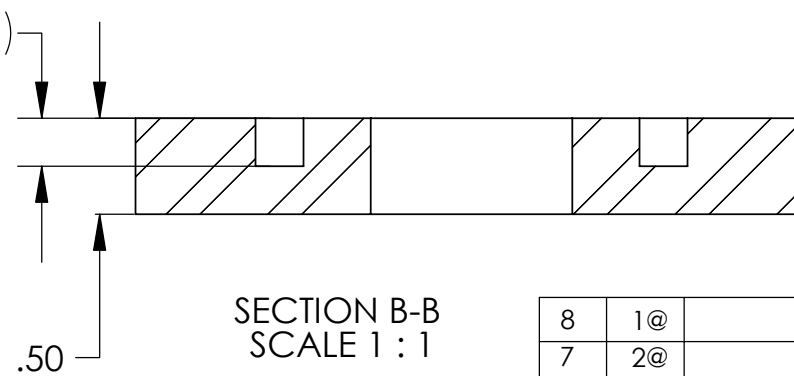
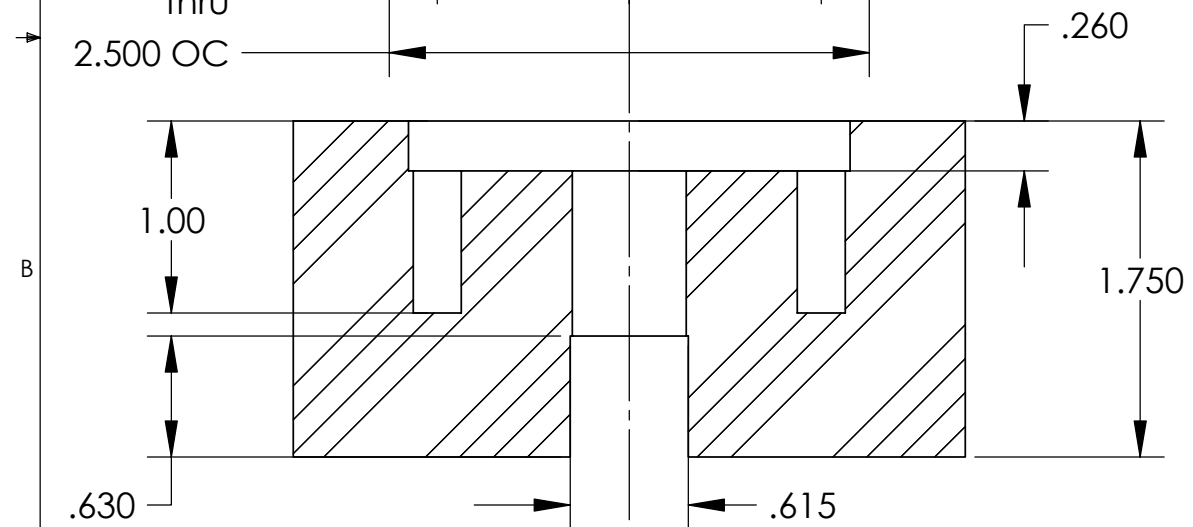


## Valve Assembly

(Configurations A and B  
w/long and short T-handle)

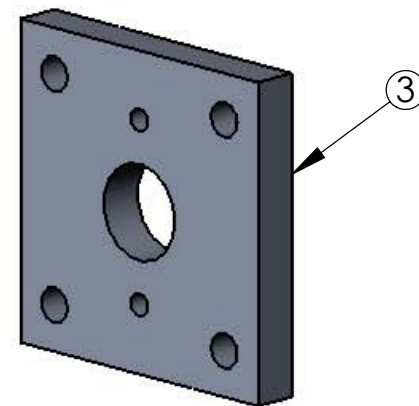
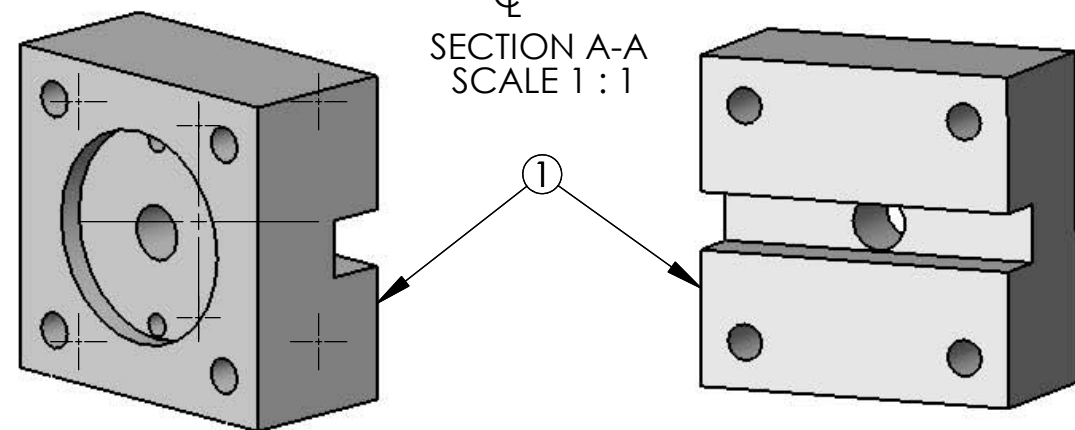


Swagelok SS-41S1 Valve  
for 1/16" tubing with .053 bore



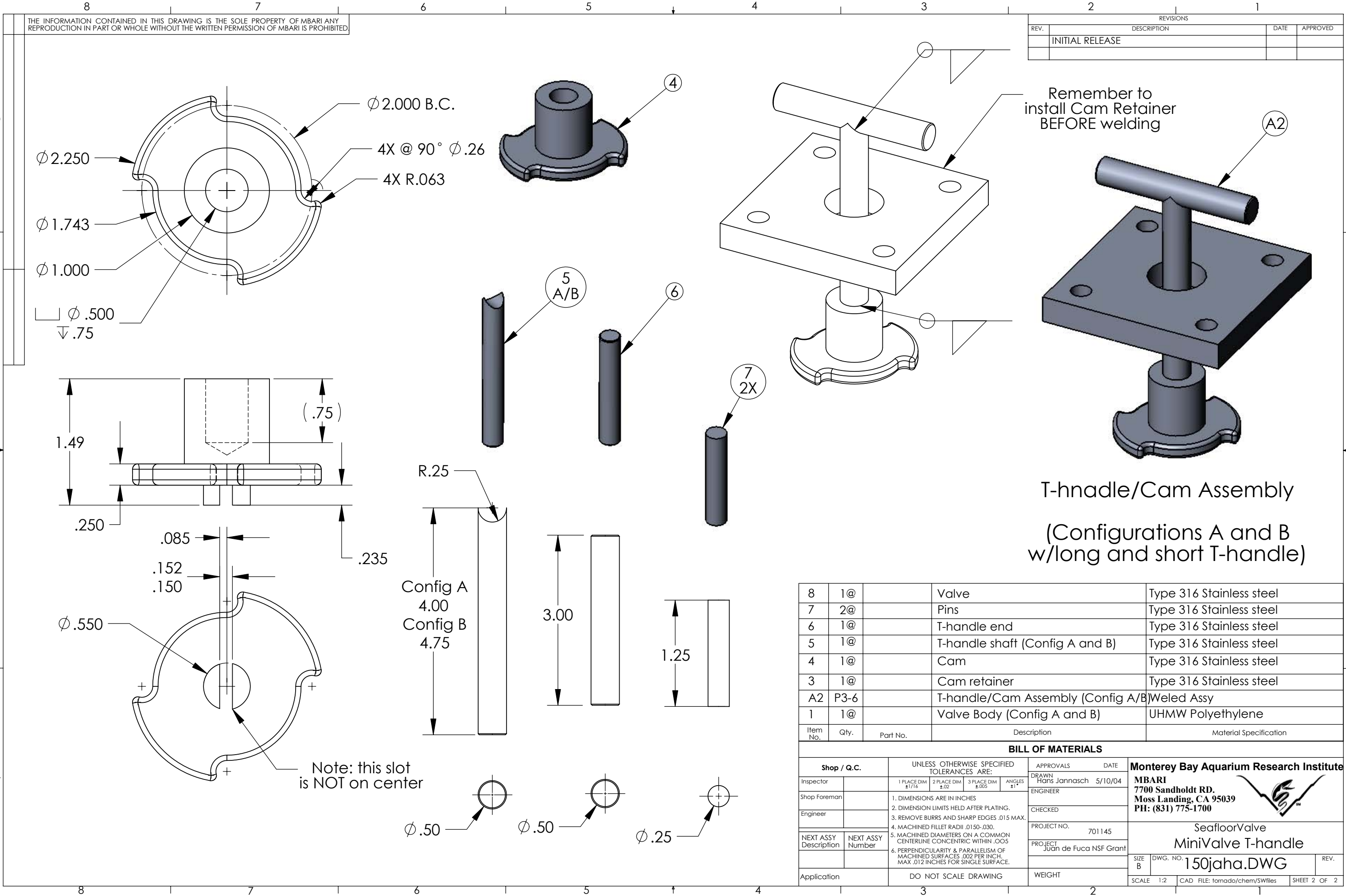
SECTION B-B  
SCALE 1 : 1

All other dimensions  
same as Part 1



|          |      |          |                                    |                          |
|----------|------|----------|------------------------------------|--------------------------|
| 8        | 1@   |          | Valve                              | Type 316 Stainless steel |
| 7        | 2@   |          | Pins                               | Type 316 Stainless steel |
| 6        | 1@   |          | T-handle end                       | Type 316 Stainless steel |
| 5        | 1@   |          | T-handle shaft (Config A and B)    | Type 316 Stainless steel |
| 4        | 1@   |          | Cam                                | Type 316 Stainless steel |
| 3        | 1@   |          | Cam retainer                       | Type 316 Stainless steel |
| A2       | P3-6 |          | T-handle/Cam Assembly (Config A/B) | Weled Assy               |
| 1        | 1@   |          | Valve Body (Config A and B)        | UHMW Polyethylene        |
| Item No. | Qty. | Part No. | Description                        | Material Specification   |

|                       |                  |                                                                                                                                                                                  |                     |                      |               |                        |                        |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
|-----------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|---------------|------------------------|------------------------|------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------|--|
| Shop / Q.C.           |                  | UNLESS OTHERWISE SPECIFIED<br>TOLERANCES ARE:                                                                                                                                    |                     |                      |               | APPROVALS              |                        | DATE |  | <b>Monterey Bay Aquarium Research Institute</b><br><b>MBARI</b><br><b>7700 Sandholdt RD.</b><br><b>Moss Landing, CA 95039</b><br><b>PH: (831) 775-1700</b>  |                                |              |  |
| Inspector             |                  | 1 PLACE DIM<br>±1/16                                                                                                                                                             | 2 PLACE DIM<br>±.02 | 3 PLACE DIM<br>±.005 | ANGLES<br>±1° | DRAWN<br>Hans Jannasch | 5/10/04                |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
| 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.                      |                     |                      |               | ENGINEER               |                        |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
| Engineer              |                  | 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                |                        |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
| NEXT ASSY Description | NEXT ASSY Number |                                                                                                                                                                                  |                     |                      |               | PROJECT NO.            | 701145                 |      |  | <b>SeafloorValve</b><br><b>MiniValve T-handle</b><br>                                                                                                       |                                |              |  |
|                       |                  |                                                                                                                                                                                  |                     |                      |               | PROJECT                | Juan de Fuca NSF Grant |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
|                       |                  |                                                                                                                                                                                  |                     |                      |               |                        |                        |      |  |                                                                                                                                                                                                                                                  |                                |              |  |
| Application           |                  | DO NOT SCALE DRAWING                                                                                                                                                             |                     |                      |               | WEIGHT                 |                        |      |  | SIZE<br>B                                                                                                                                                                                                                                        | DWG. NO.<br>150jaha.DWG        | REV.         |  |
|                       |                  |                                                                                                                                                                                  |                     |                      |               |                        |                        |      |  | SCALE 1:2                                                                                                                                                                                                                                        | CAD FILE: tornado/chem/SWfiles | SHEET 1 OF 2 |  |



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| REVISIONS |                 |      |          |
|-----------|-----------------|------|----------|
| REV.      | DESCRIPTION     | DATE | APPROVED |
|           | INITIAL RELEASE |      |          |

|          |      |          |                                    |                          |
|----------|------|----------|------------------------------------|--------------------------|
| 8        | 1@   |          | Valve                              | Type 316 Stainless steel |
| 7        | 2@   |          | Pins                               | Type 316 Stainless steel |
| 6        | 1@   |          | T-handle end                       | Type 316 Stainless steel |
| 5        | 1@   |          | T-handle shaft (Config A and B)    | Type 316 Stainless steel |
| 4        | 1@   |          | Cam                                | Type 316 Stainless steel |
| 3        | 1@   |          | Cam retainer                       | Type 316 Stainless steel |
| A2       | P3-6 |          | T-handle/Cam Assembly (Config A/B) | Welded Assy              |
| 1        | 1@   |          | Valve Body (Config A and B)        | UHMW Polyethylene        |
| 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            | 5/10/04 |                                |  |
| 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. |                     |                      |               | ENGINEER                          |         |                                |  |
| Engineer              |                  |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               | CHECKED                           |         |                                |  |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               | PROJECT NO. 701145                |         |                                |  |
| NEXT ASSY Description | NEXT ASSY Number |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               | PROJECT<br>Juan de Fuca NSF Grant |         |                                |  |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               | SIZE<br>B                         |         | DWG. NO. 150jaha.DWG           |  |
| Application           |                  | DO NOT SCALE DRAWING                                                                                                                                                                                                                                                                                                                            |                     |                      |               | WEIGHT                            |         | REV.                           |  |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               | SCALE 1:2                         |         | CAD FILE: tornado/chem/SWfiles |  |
|                       |                  |                                                                                                                                                                                                                                                                                                                                                 |                     |                      |               |                                   |         | SHEET 2 OF 2                   |  |

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SeafloorValve  
MiniValve T-handle