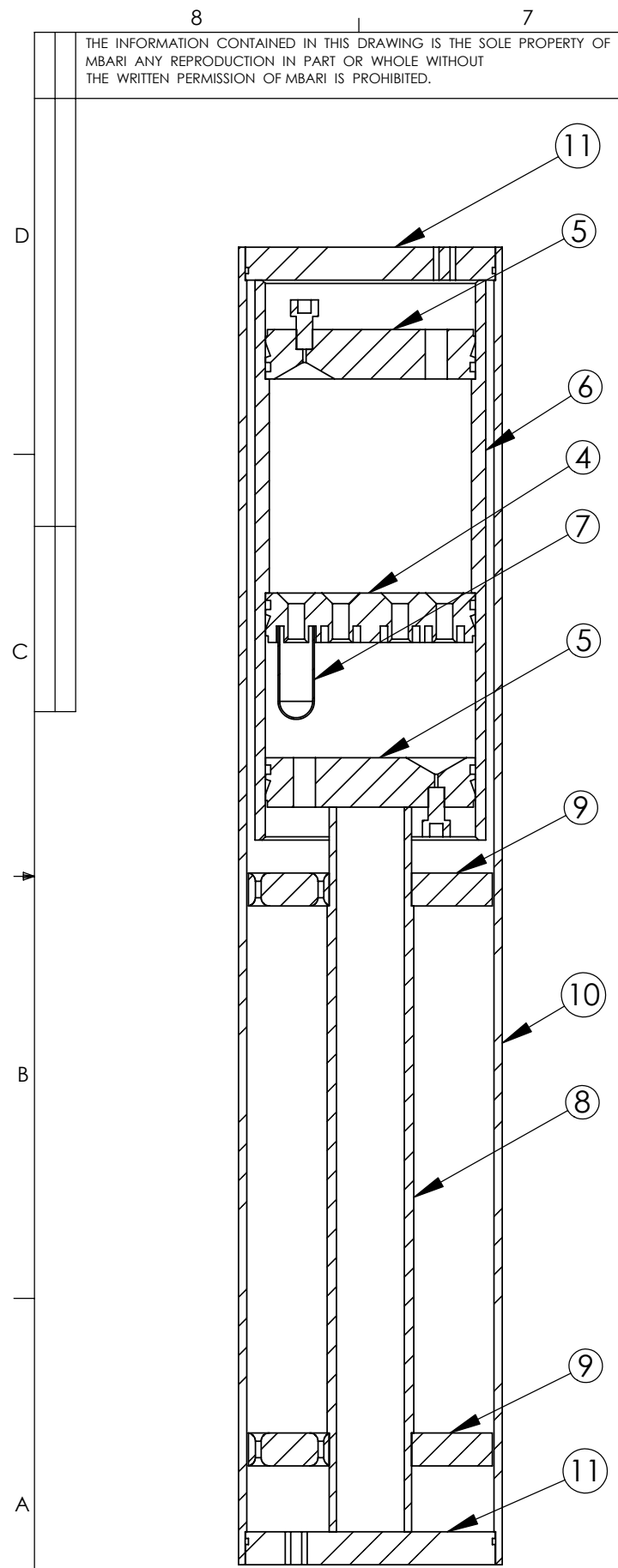
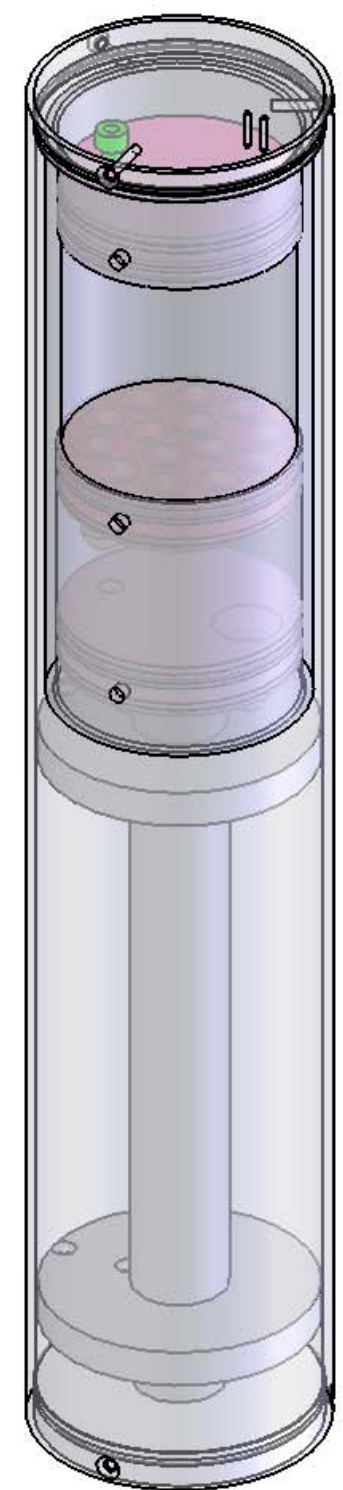


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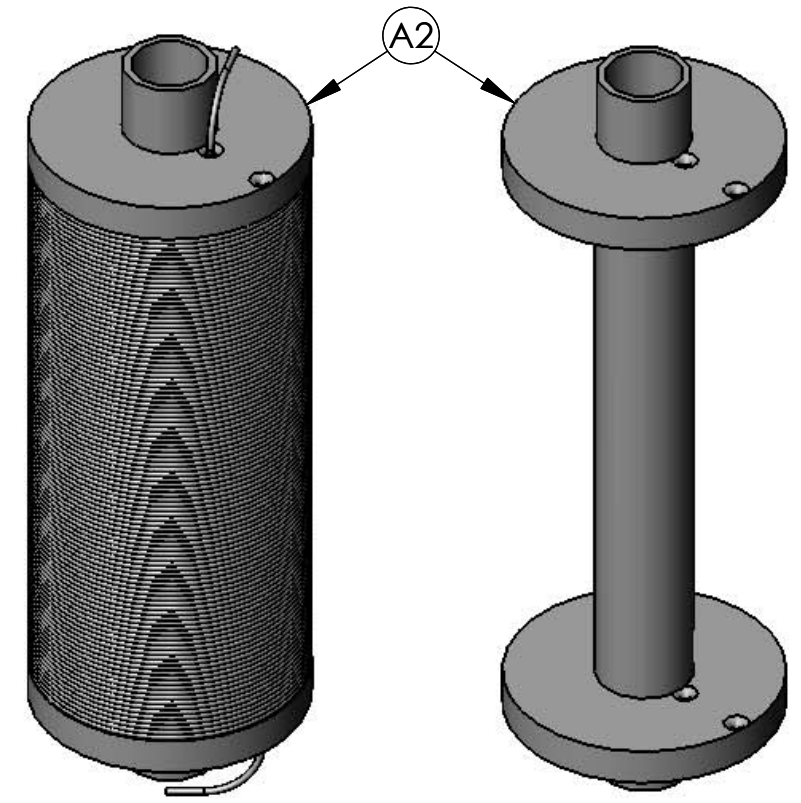
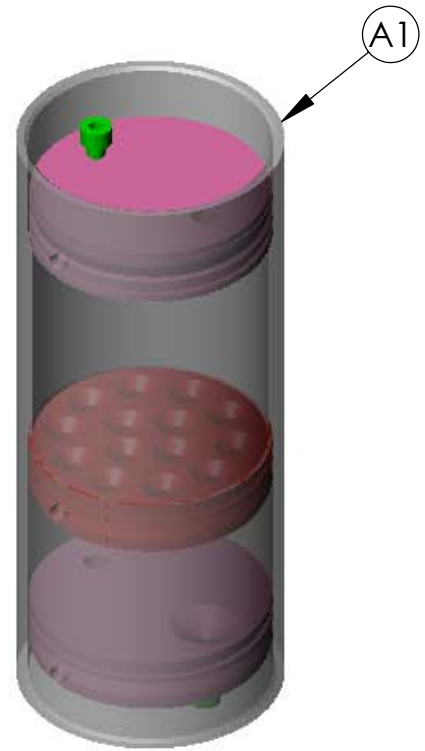
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		



Seafloor OsmoSampler Section



Seafloor OsmoSampler Assembly



Wrapped Spool Assy

Note 7.
Bonded spools to be wrapped with evenly laid tubing in one continuous length. Tubing must not be kinked, pinched, severely stretched, or have joints. All Teflon tubing will be supplied by MBARI. Tubing comes on 1000 ft spools. Loose tubing ends should extend 24-30 in on each end.

A2- Wrap with .079in OD Teflon tubing, 15 layers of about 100 wraps per layer. Total length about (~980 ft).

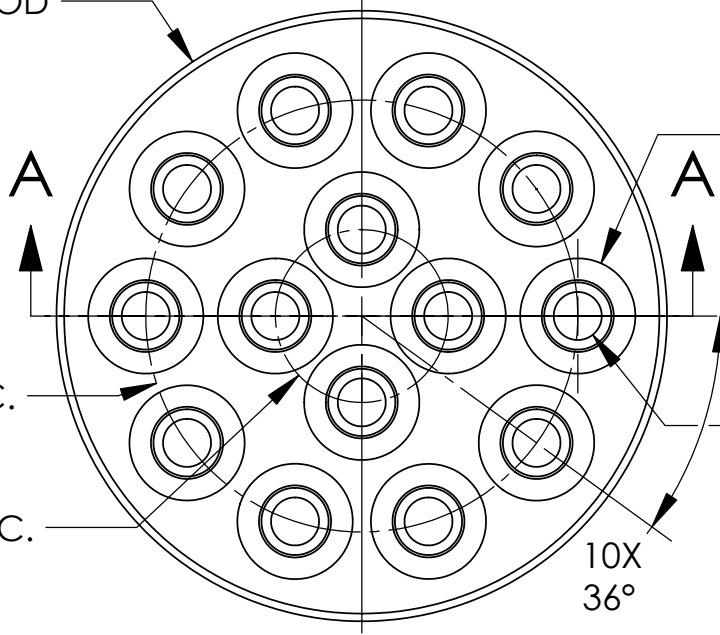
ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	4"OD 1/8" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" Sched-40 PVC pipe
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	3" Sched 40 Clear Acrylic Pipe
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE	BILL OF MATERIALS	
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN	Hans Jannasch	04/20/04	Monterey Bay Aquariu MBARI Research Institute 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770	
±.116	±.02	±.005	±.1	ENGINEER			PROJECT NO. 701445 PROJECT Juan de Fuca Boreholes	
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 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.				CHECKED			SIZE B DWG. NO. 157jaha.DWG REV.	
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	WEIGHT	SCALE	CAD FILE: TORNADO/CHEM/SWFILES	SHEET 1 OF 5	

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		

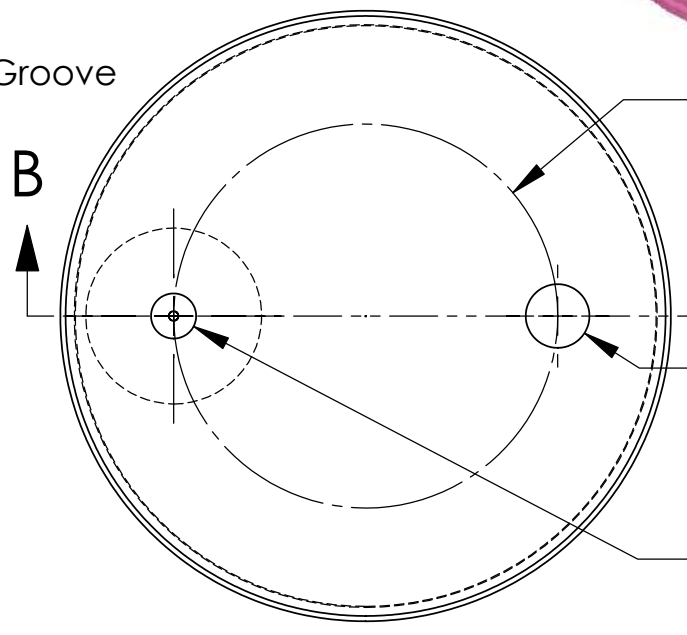
3X ϕ 3.180 OD
3.178



14X Membrane Groove
 ϕ .600 OD
 ϕ .375 ID
 ∇ .250

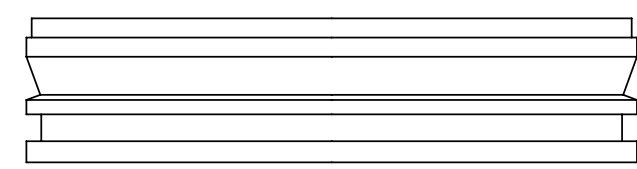
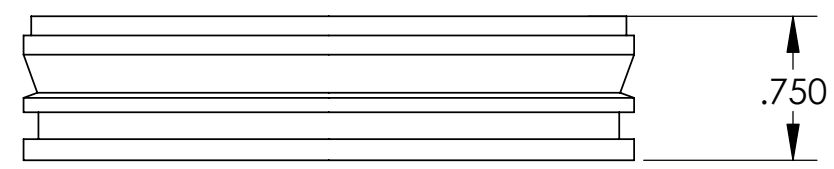
14X ϕ .250 thru
(12X at 36° and 4X at 90°)

ϕ 2.000 B.C.



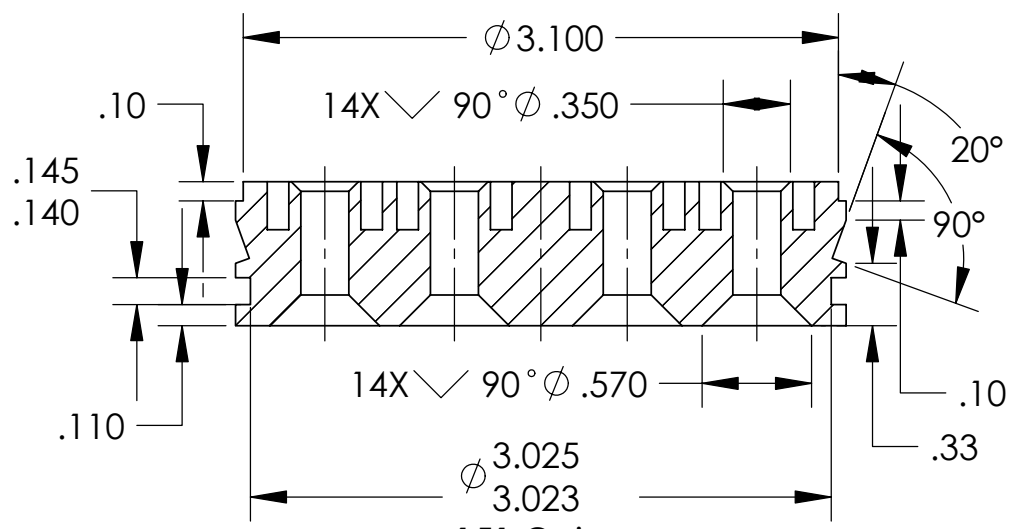
ϕ .332 thru
1/8"-27 NPT-2B
This side

\square ϕ .213 ∇ .300
1/4"-28 UNF-2B ∇ .200
bottom flat to within .002
after tapping
Drill ϕ .050 thru

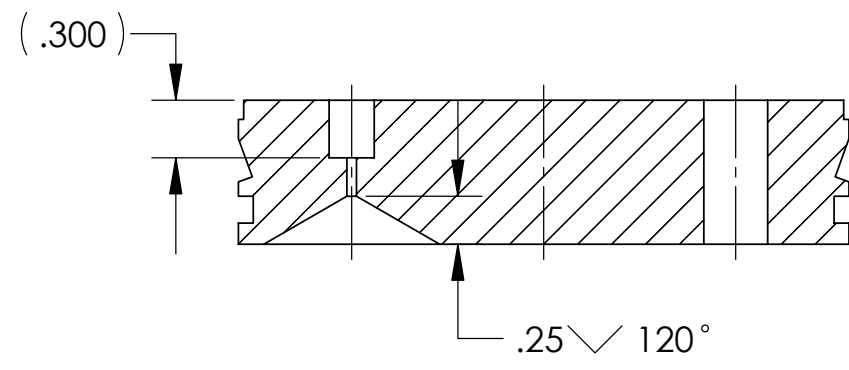


Pump Assembly Section
Pump to be assembled at MBARI

All other dimensions
same as Part 4




SECTION A-A
SCALE 1:1



SECTION B-B
SCALE 1:1

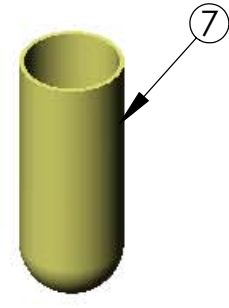
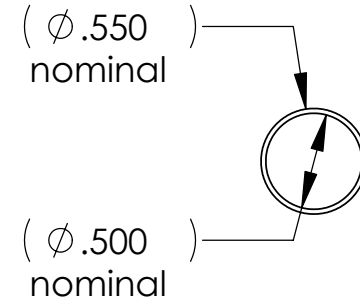
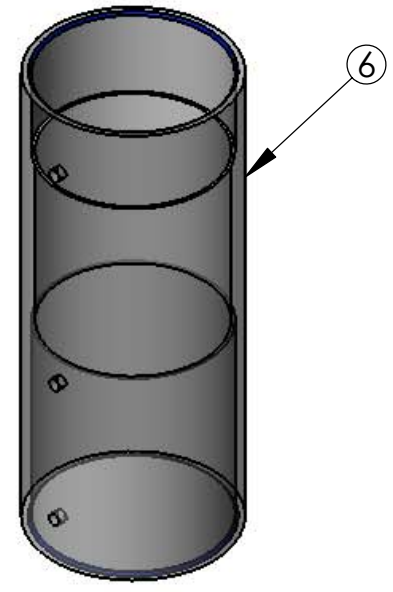
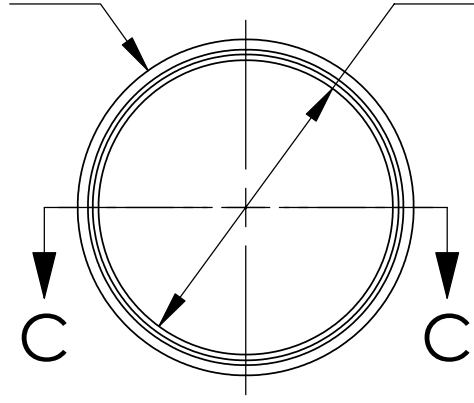
ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	4"OD 1/8" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" Sched-40 PVC pipe
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	3" Sched 40 Clear Acrylic Pipe
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE	Monterey Bay Aquariu Research Institute  7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770				
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN		04/20/04					
\pm .016	\pm .02	\pm .005	\pm .1	Hans Jannasch	ENGINEER						
					CHECKED						
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 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.							PROJECT NO. 701445 PROJECT Juan de Fuca Boreholes	PROJECT Juan de Fuca Seafloor OsmoSampler	SIZE B	DWG. NO. 157jaha.DWG	REV.
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	WEIGHT	SCALE	CAD FILE: TORNADO/CHEM/SWFILES	SHEET 2 OF 5				

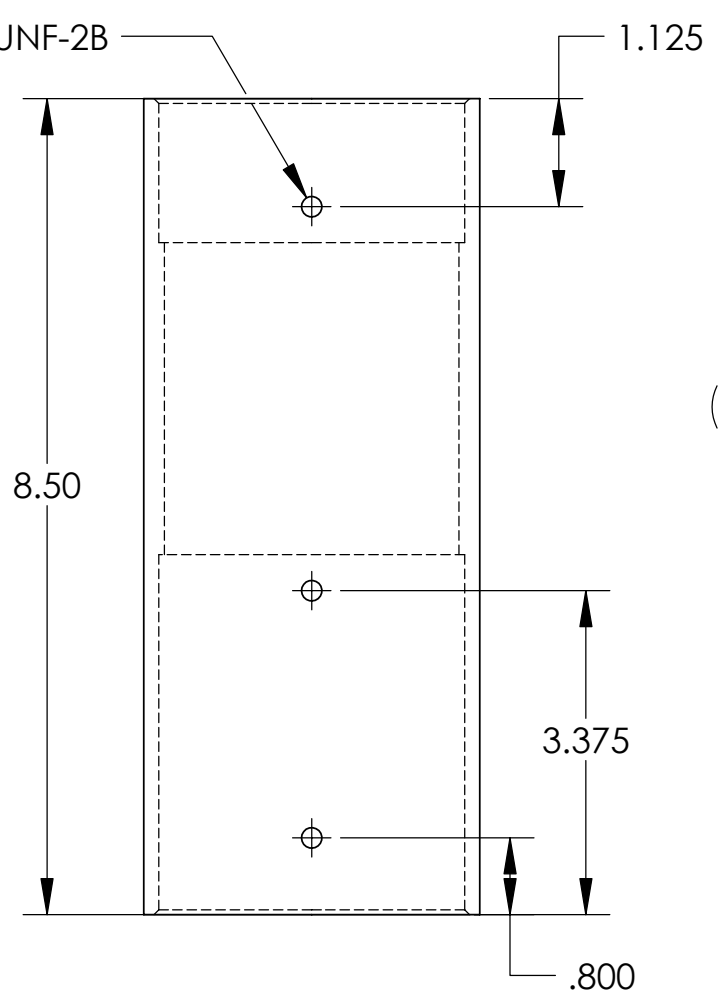
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		

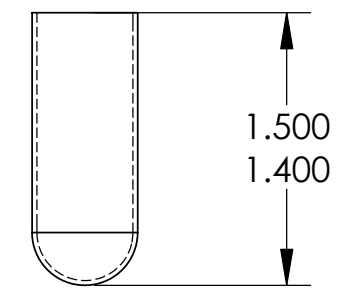
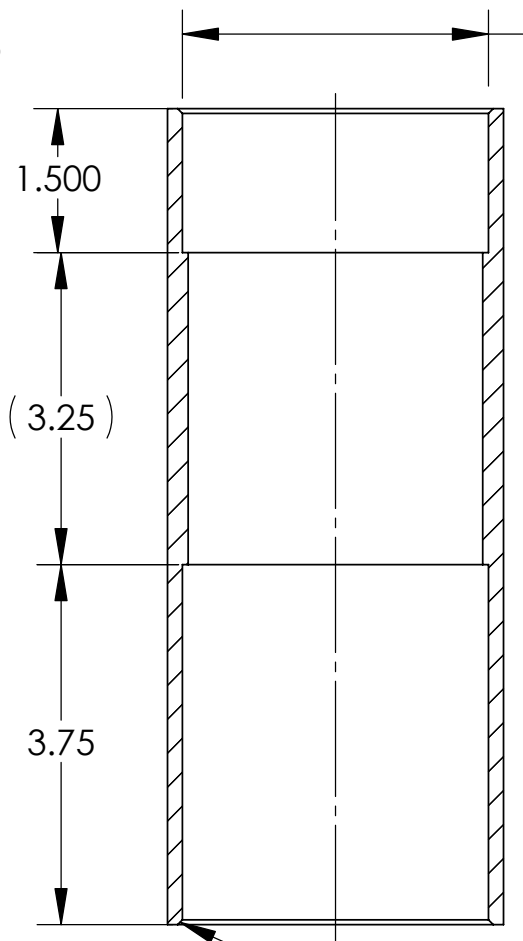
$\phi 3.50$ nominal OD
 $\phi 3.07$ nominal ID



3X 10-32 UNF-2B



2X $\square \phi 3.189$
 $\phi 3.187$
 Nonstd O-ring
 both ends



ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	4"OD 1/8" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" Sched-40 PVC pipe
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	3" Sched 40 Clear Acrylic Pipe
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:

1 PLACE DIM $\pm .016$	2 PLACE DIM $\pm .02$	3 PLACE DIM $\pm .005$	ANGLES $\pm .1$
------------------------	-----------------------	------------------------	-----------------

1. DIMENSIONS ARE IN INCHES
 2. DIMENSION LIMITS HELD AFTER PLATING.
 3. REMOVE BURRS AND SHARP EDGES .015 MAX.
 4. MACHINED FILLET RADII .0150-.030.
 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.

APPROVALS DATE
 DRAWN: Hans Jannasch 04/20/04
 ENGINEER
 CHECKED
 PROJECT NO. 701445
 PROJECT: Juan de Fuca Boreholes

Monterey Bay Aquarium Research Institute
 7700 Sandholdt RD.
 Moss Landing, CA 95039
 PH: (831) 775-1770

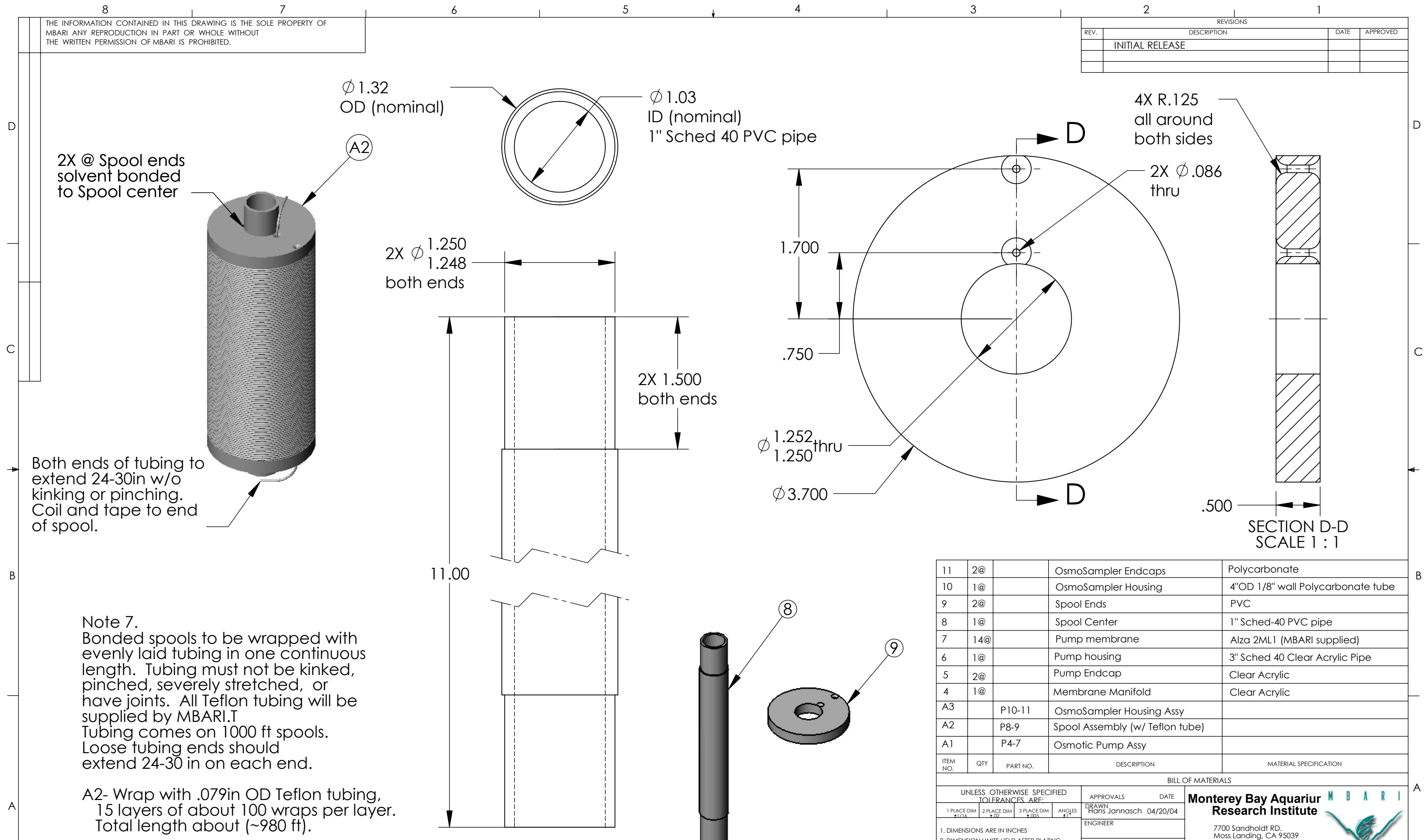
Juan de Fuca Seafloor OsmoSampler

SIZE B DWG. NO. 157jaha.DWG REV.
 SCALE CAD FILE: TORNADO/CHEM/SWFILES SHEET 3 OF 5

NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING
	WEIGHT

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REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		



2X @ Spool ends solvent bonded to Spool center

Ø 1.32 OD (nominal)

Ø 1.03 ID (nominal)
1" Sched 40 PVC pipe

4X R.125 all around both sides

2X Ø .086 thru

2X Ø 1.250
1.248 both ends

2X 1.500 both ends

Ø 1.252 thru
1.250

Ø 3.700

.500

SECTION D-D
SCALE 1 : 1

Both ends of tubing to extend 24-30in w/o kinking or pinching. Coil and tape to end of spool.

Note 7.
Bonded spools to be wrapped with evenly laid tubing in one continuous length. Tubing must not be kinked, pinched, severely stretched, or have joints. All Teflon tubing will be supplied by MBARI.T
Tubing comes on 1000 ft spools. Loose tubing ends should extend 24-30 in on each end.

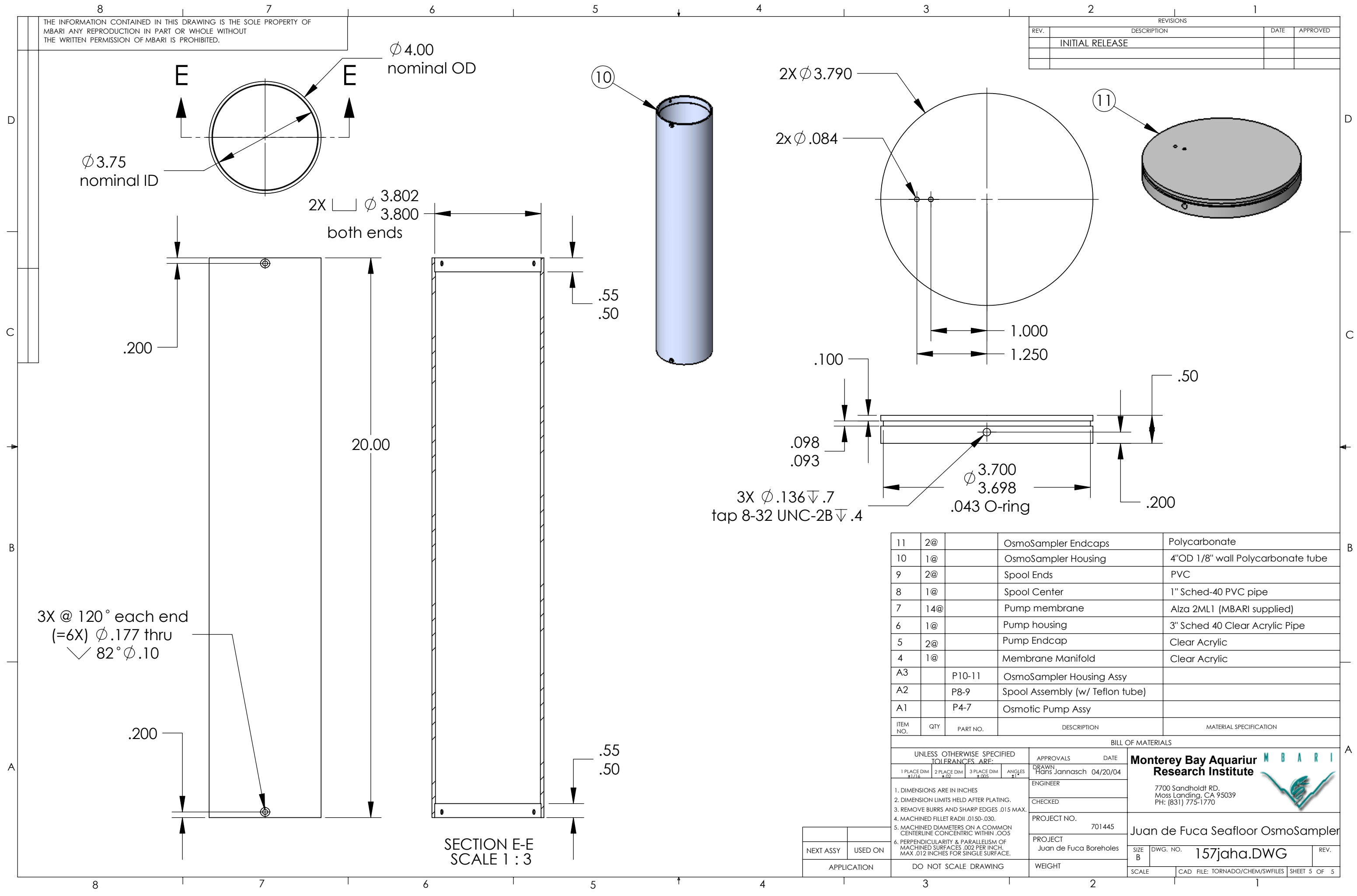
A2- Wrap with .079in OD Teflon tubing, 15 layers of about 100 wraps per layer. Total length about (~980 ft).

ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	4"OD 1/8" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" Sched-40 PVC pipe
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	3" Sched 40 Clear Acrylic Pipe
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

TOLERANCES ARE:				APPROVALS		DATE	Monterey Bay Aquariu MBARI Research Institute 7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN			
+/- .016	+/- .02	+/- .005	+/- .1	Hans Jannasch		04/20/04	
1. DIMENSIONS ARE IN INCHES 2. DIMENSION LIMITS HELD AFTER PLATING. 3. REMOVE BURRS AND SHARP EDGES .015 MAX. 4. MACHINED FILLET RADII .0150-.030. 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.				CHECKED			
NEXT ASSY		USED ON		PROJECT NO.	701445		Juan de Fuca Seafloor OsmoSampler
APPLICATION		DO NOT SCALE DRAWING		PROJECT	Juan de Fuca Boreholes		
				WEIGHT			SIZE B DWG. NO. 157jaha.DWG REV.
				SCALE		CAD FILE: TORNADO/CHEM/SWFILES SHEET 4 OF 5	

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REV.	DESCRIPTION	DATE	APPROVED
	INITIAL RELEASE		



3X @ 120° each end
 (=6X) ϕ .177 thru
 \sphericalangle 82° ϕ .10

SECTION E-E
 SCALE 1 : 3

3X ϕ .136 ∇ .7
 tap 8-32 UNC-2B ∇ .4

ITEM NO.	QTY	PART NO.	DESCRIPTION	MATERIAL SPECIFICATION
11	2@		OsmoSampler Endcaps	Polycarbonate
10	1@		OsmoSampler Housing	4"OD 1/8" wall Polycarbonate tube
9	2@		Spool Ends	PVC
8	1@		Spool Center	1" Sched-40 PVC pipe
7	14@		Pump membrane	Alza 2ML1 (MBARI supplied)
6	1@		Pump housing	3" Sched 40 Clear Acrylic Pipe
5	2@		Pump Endcap	Clear Acrylic
4	1@		Membrane Manifold	Clear Acrylic
A3		P10-11	OsmoSampler Housing Assy	
A2		P8-9	Spool Assembly (w/ Teflon tube)	
A1		P4-7	Osmotic Pump Assy	

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE:				APPROVALS		DATE	Monterey Bay Aquariu Research Institute <small>7700 Sandholdt RD. Moss Landing, CA 95039 PH: (831) 775-1770</small>
1 PLACE DIM	2 PLACE DIM	3 PLACE DIM	ANGLES	DRAWN			
\pm .116	\pm .02	\pm .005	\pm .1	Hans Jannasch		04/20/04	
				ENGINEER			
				CHECKED			
				PROJECT NO.		701445	Juan de Fuca Seafloor OsmoSampler
				PROJECT		Juan de Fuca Boreholes	
				NEXT ASSY			SIZE B DWG. NO. 157jaha.DWG REV.
				APPLICATION		DO NOT SCALE DRAWING	SCALE CAD FILE: TORNADO/CHEM/SWFILES SHEET 5 OF 5

- 1. DIMENSIONS ARE IN INCHES
- 2. DIMENSION LIMITS HELD AFTER PLATING.
- 3. REMOVE BURRS AND SHARP EDGES .015 MAX.
- 4. MACHINED FILLET RADII .0150-.030.
- 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.