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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
LESS OR EQU TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400		
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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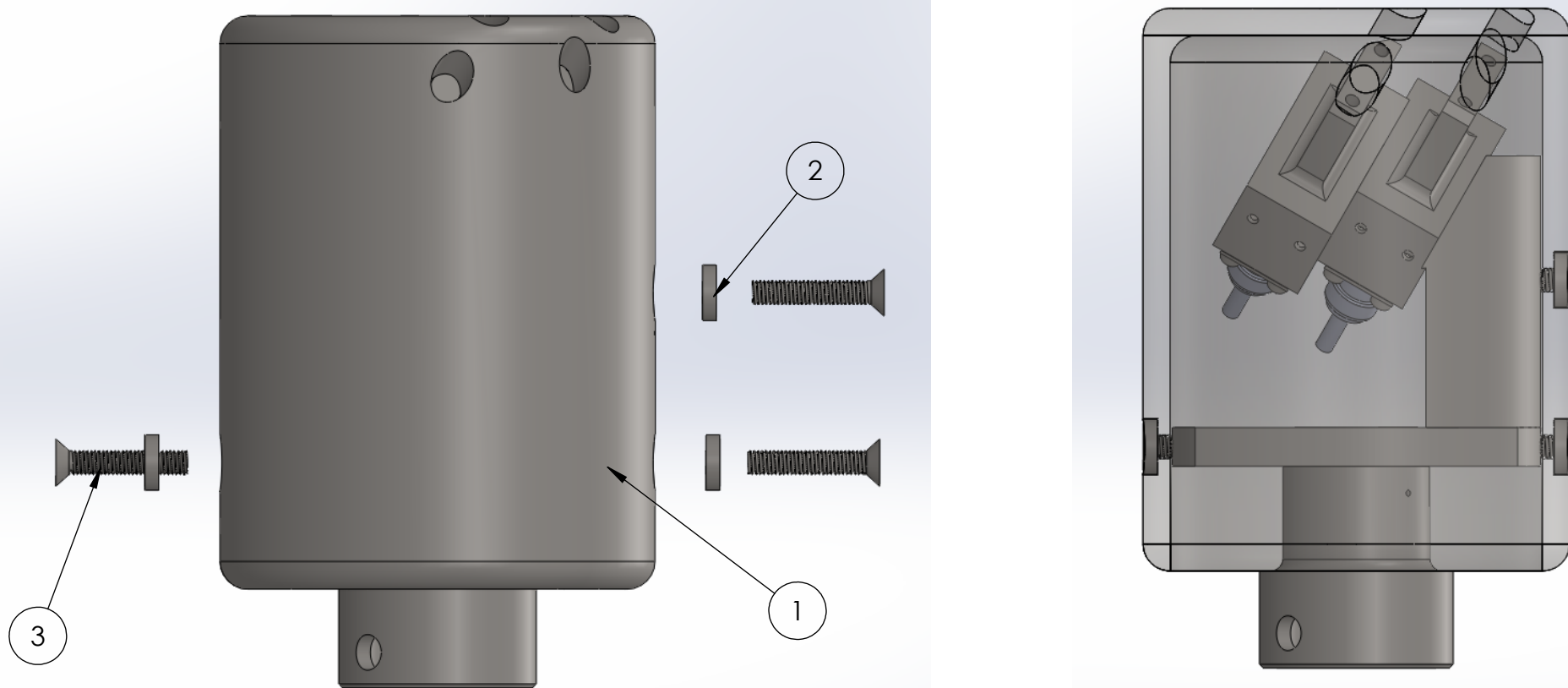


MATERIAL	PEEK 1000, SS316, BN CERAMIC GRADE XP	
DRAWN	NAME	DATE
CHECKED	RAMONA V PEREZ	06/13/13
	RAMONA V PEREZ	06/28/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES	

TITLE:  
**PROTON DETECTOR  
ASSEMBLED TOTAL**

SIZE **A** DWG. NO. PD\_22\_TOTAL\_VIEW REV

SHEET 1 OF 1



PARTS LIST			
ITEM NO.	TITLE	DWG. NO.	QUANTITY
1	PROTON DETECTOR SHIELD	PD_22_Shell	1
2	PROTON DETECTOR BRACKET	PD_22_Bracket	3
3	McMaster-Carr PN#93395A366		3

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8

TOLERANCES ANGULAR DIMENSIONS				
LESS THAN 50	50 TO 120	120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'

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MATERIAL: SS316 AND BN CERAMIC GRADE XP

DRAWN	RAMONA V PEREZ	DATE	06/13/13
CHECKED	RAMONA V PEREZ	DATE	06/28/13

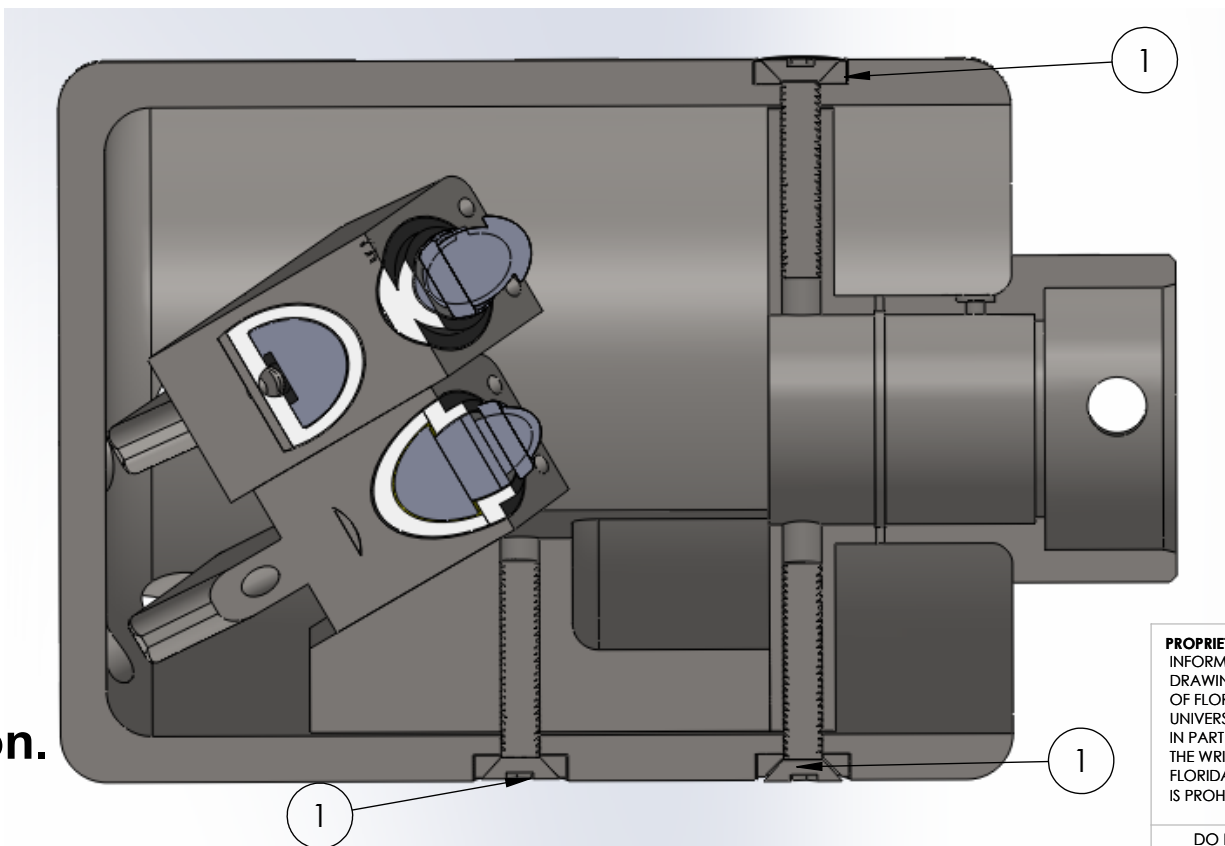
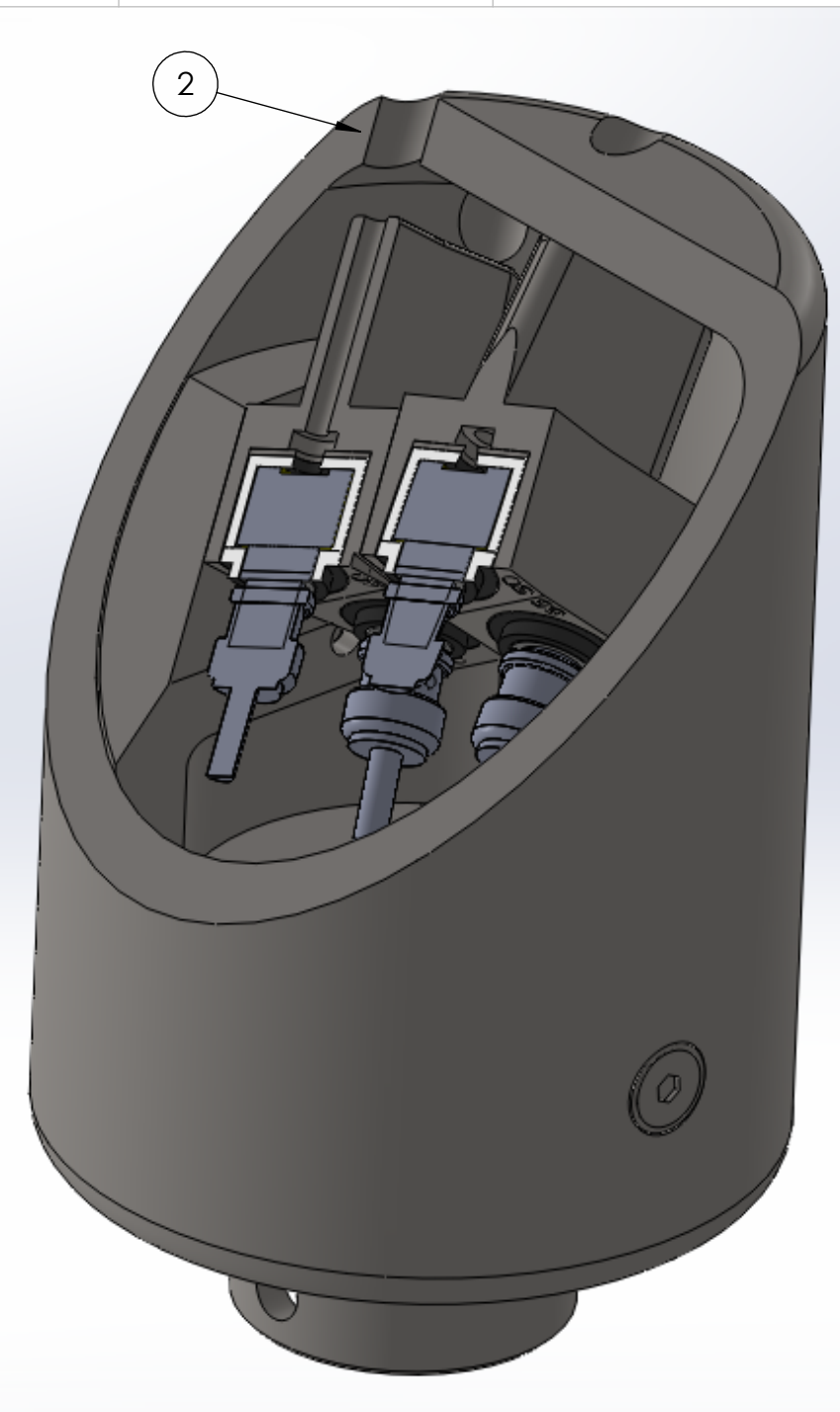
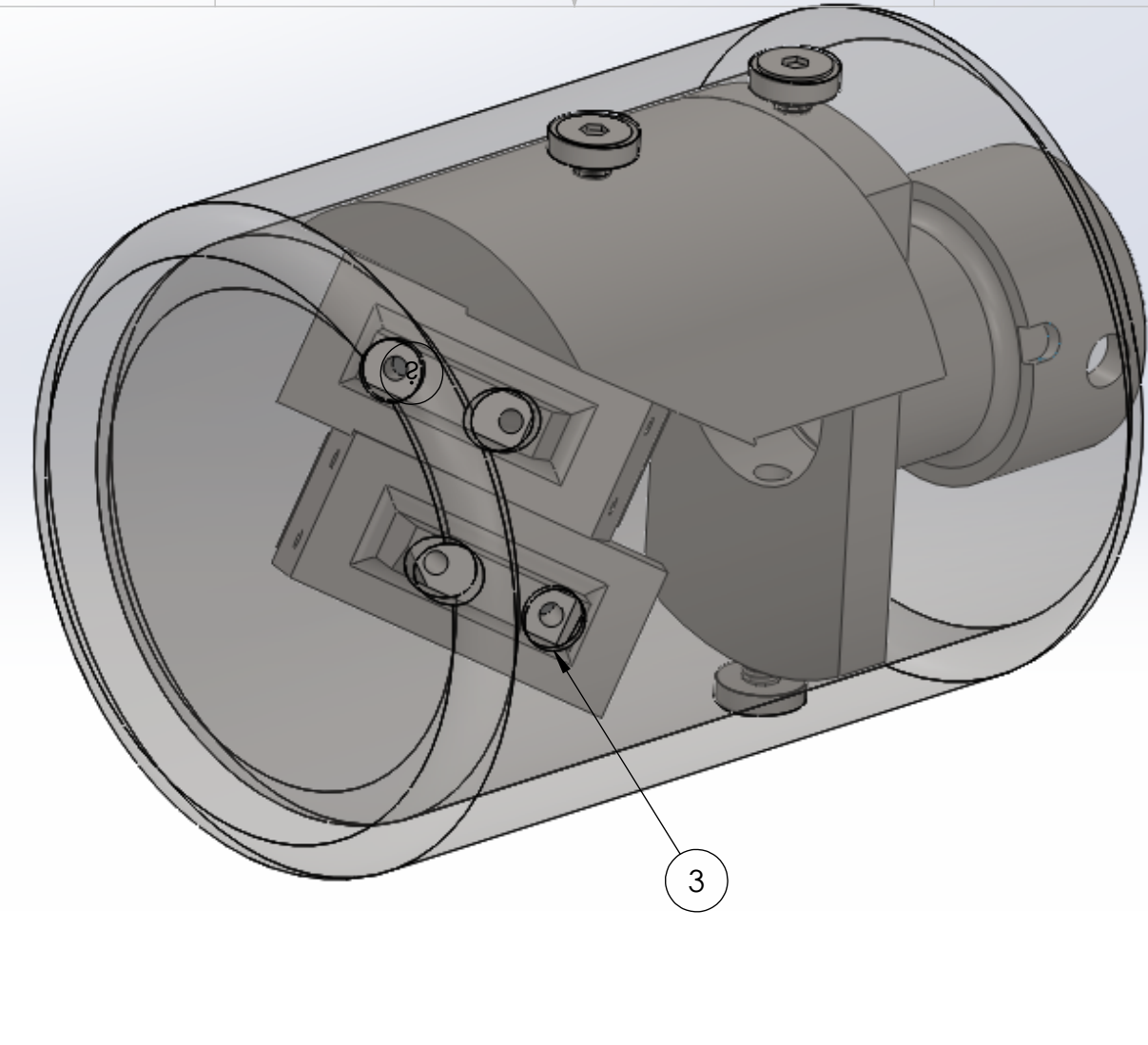
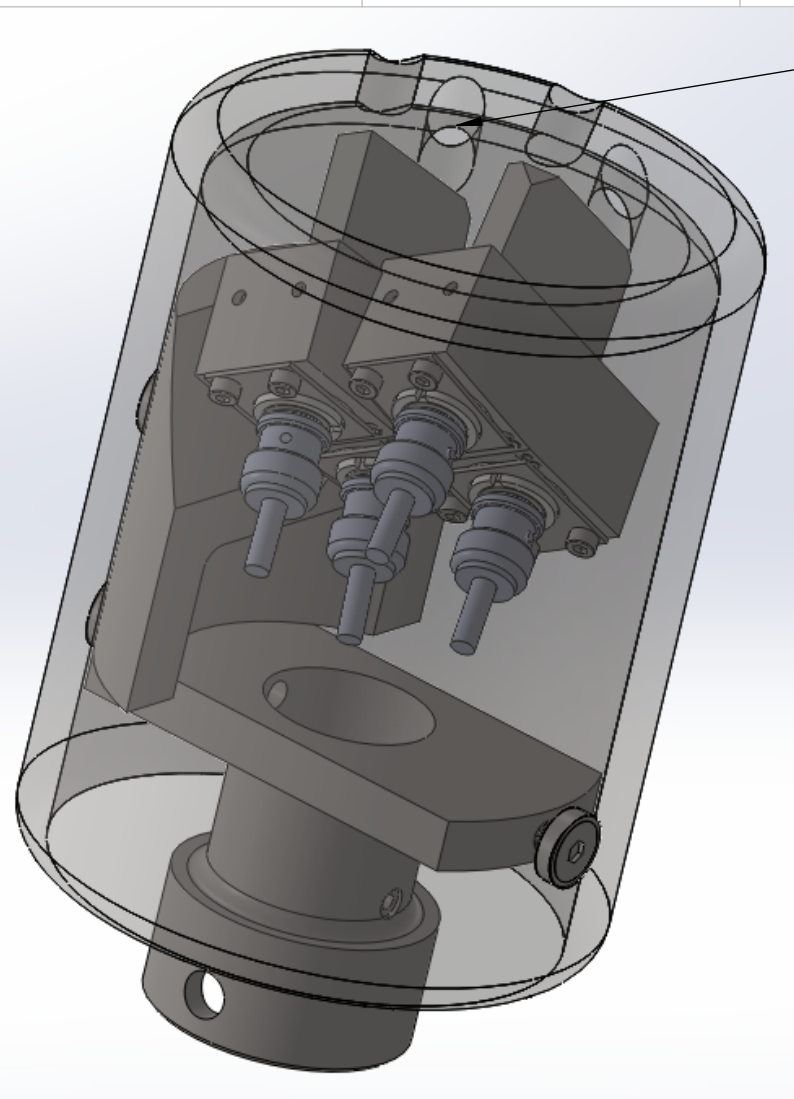
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM

REMOVE ALL BURRS AND SHARP EDGES

TITLE: **PROTON DETECTOR ASSEMBLED SHIELD**

SIZE <b>A</b>	DWG. NO. PD_22_Shield_assembled	REV
---------------	---------------------------------	-----

SHEET 1 OF 1



- NOTES:
1. SHIELD ATTACHED TO SS316 COMPONENTS WITH BRACKETS AND SCREWS.
  2. CROSS SECTIONAL VIEW OF 10mm DIAMETER COLLIMATOR HOLES IN SHIELD.
  3. VIEW OF ASSEMBLED INSTRUMENT WITH SHIELD HOLES (SHIELD IS TRANSPARENT).

NOTES 08/02/13:  
 4. INSTEAD OF BRACKETS AND MACHINE SCREWS USED CUSTOM SHOULDER SCREWS TO PREVENT OVER-TIGHTENING SHIELD.

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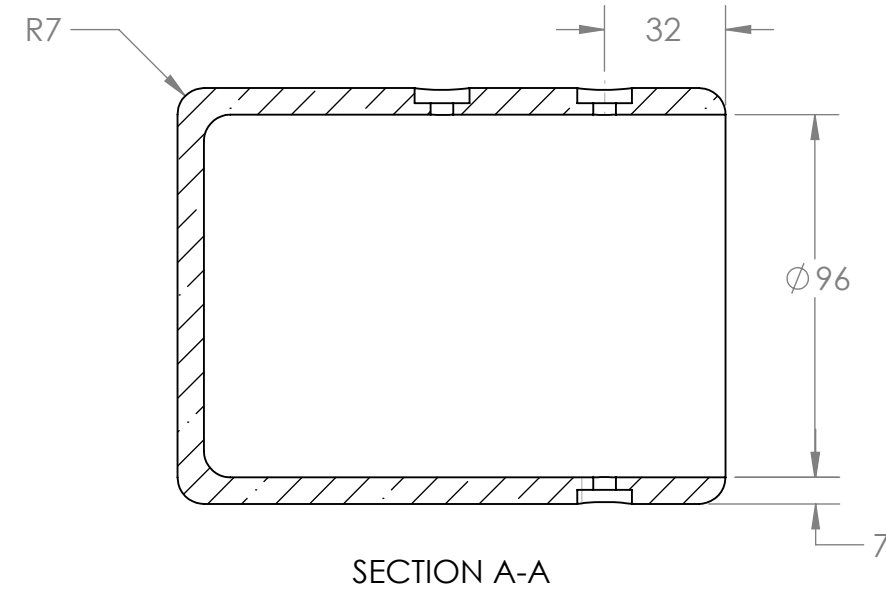
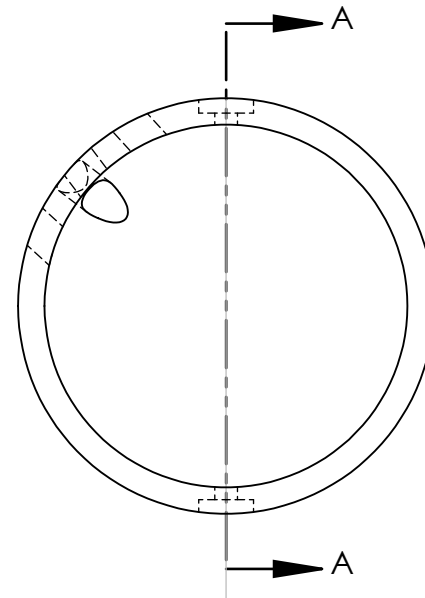
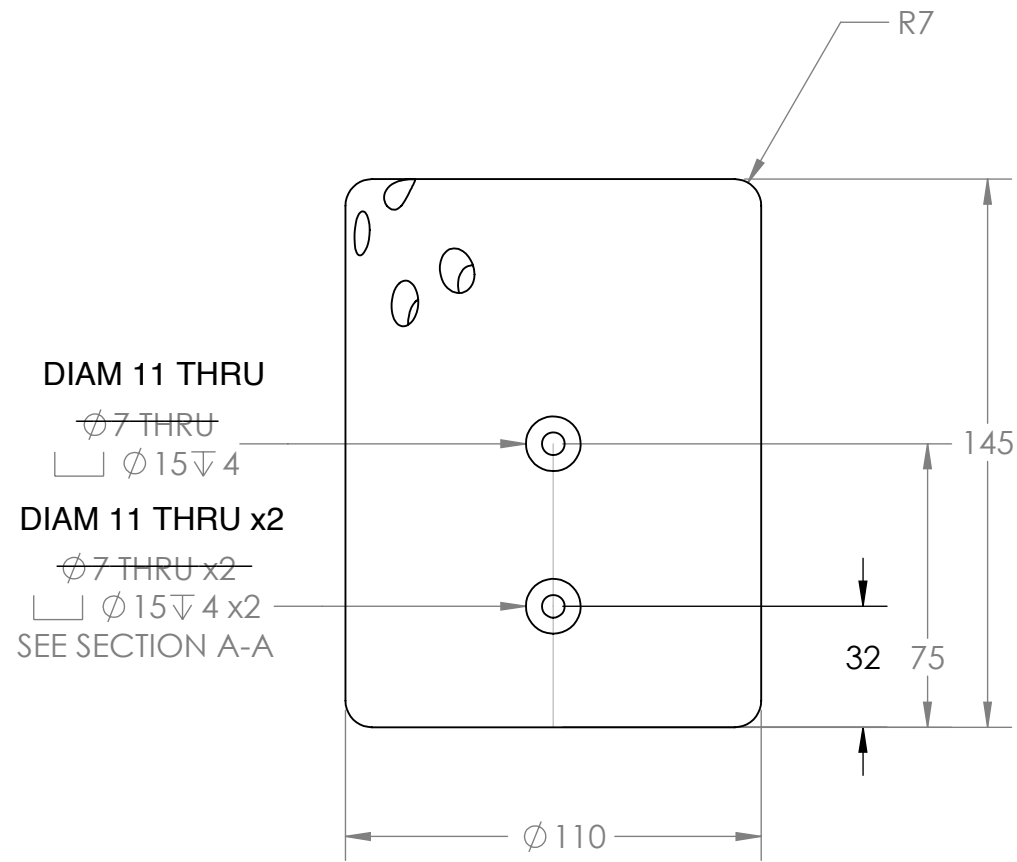
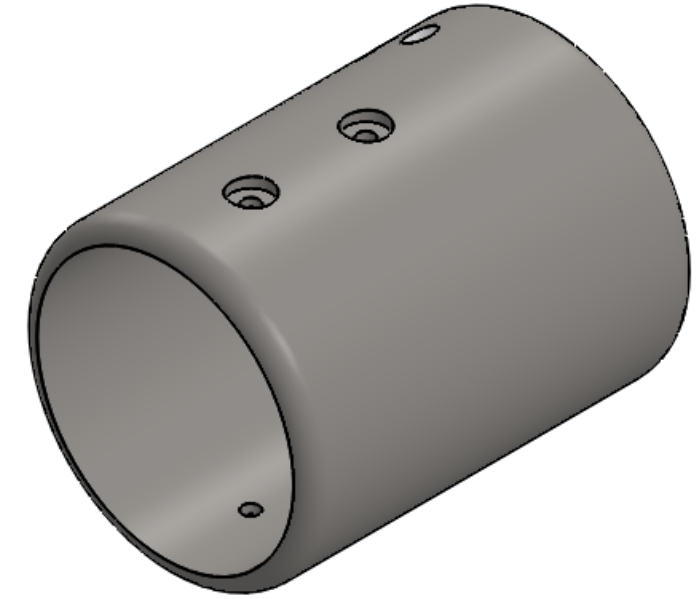


MATERIAL		BN CERAMIC GRADE XP	
DRAWN		RAMONA V PEREZ	06/06/13
CHECKED		RAMONA V PEREZ	07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES	

TITLE:		
PROTON DETECTOR SHIELD		
SIZE	DWG. NO.	REV
<b>B</b>	PD_22_SHELL	
not to scale	WEIGHT: 1.2kg	SHEET 1 OF 4

NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm AND +/- 0Degree 30' EXCEPT WHERE SHOWN OTHERWISE.

NOTES 08/02/13:  
 2. CHANGED THRU HOLE DIAMTER FROM 7MM TO 11MM TO ACCOUNT FOR USING CUSTOM SHOULDER SCREWS AS OPPOSED TO THE BRACKETS AND MACHINE SCREWS.



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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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MATERIAL		BN CERAMIC GRADE XP	
NAME		DATE	
DRAWN	RAMONA V PEREZ	06/06/13	
CHECKED	RAMONA V PEREZ	07/05/13	
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES	

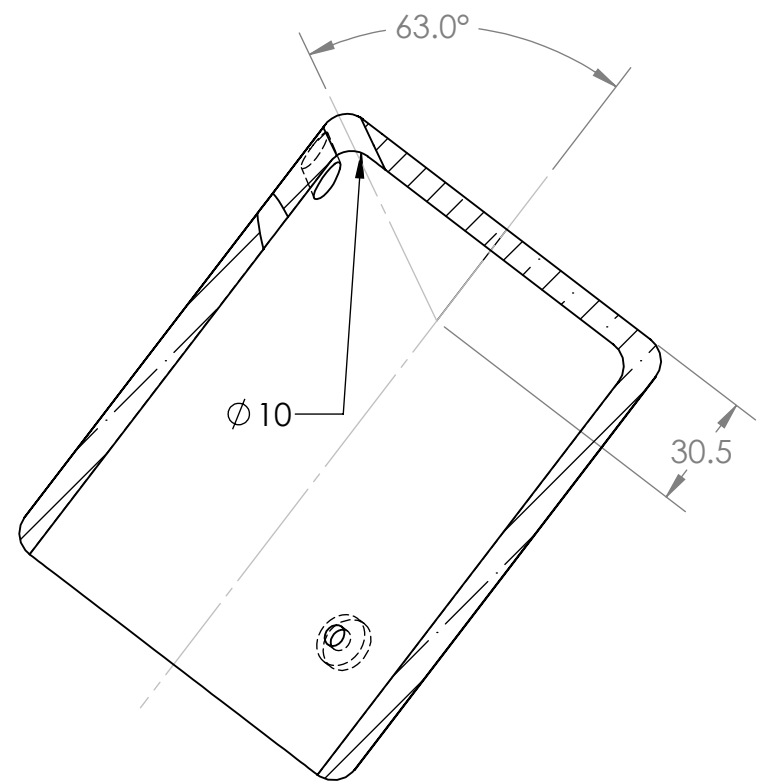


TITLE:  
**PROTON DETECTOR SHIELD**

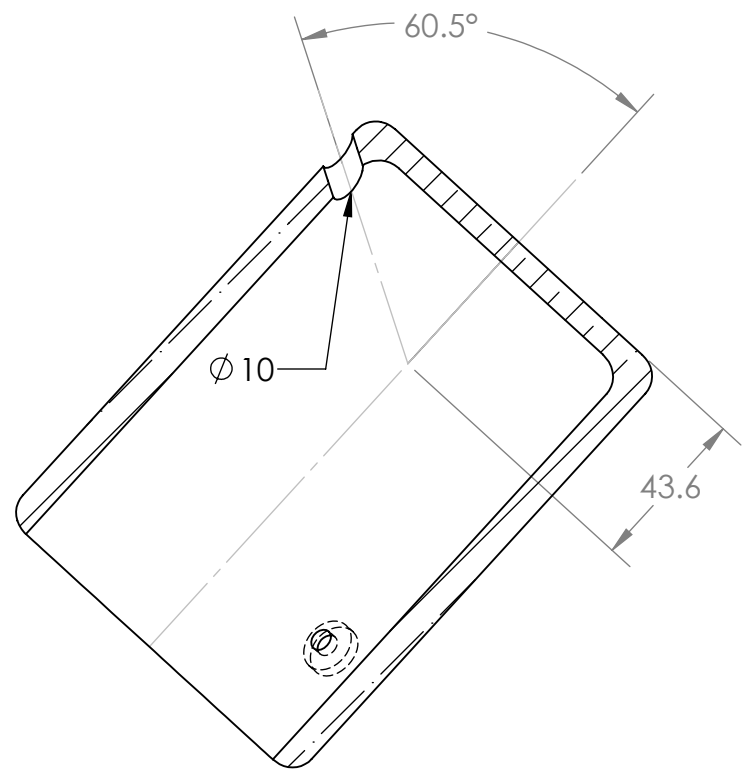
SIZE **B** DWG. NO. PD\_22\_SHELL REV

SCALE: 1:2 WEIGHT: 1.2kg SHEET 2 OF 4

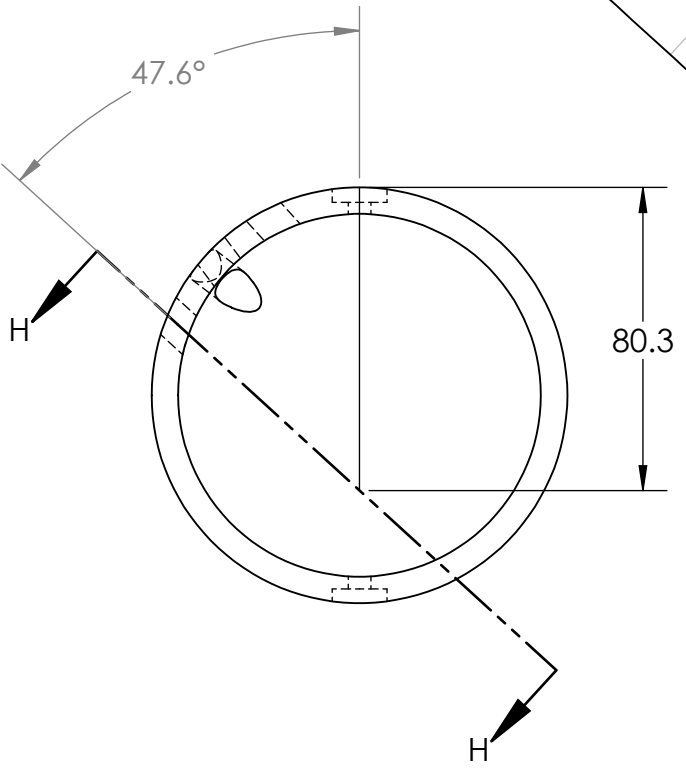
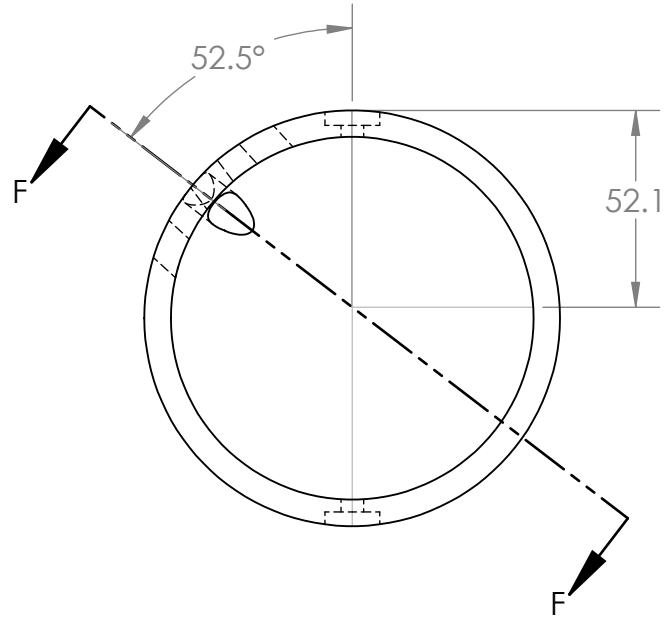
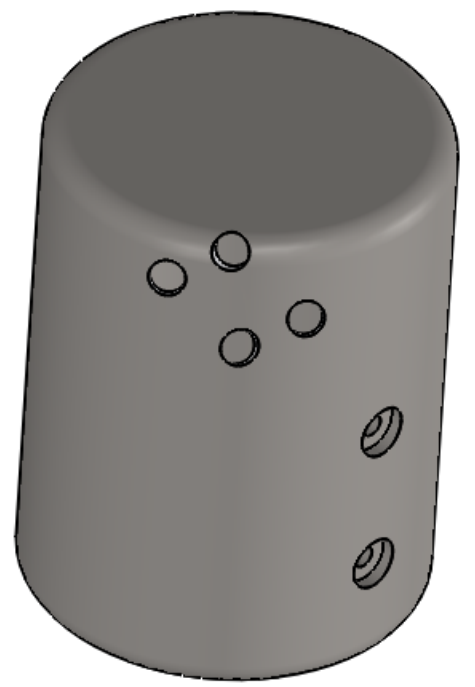
8 7 6 5 4 3 2 1



SECTION F-F



SECTION H-H



NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm AND +/- 0Degree 30' EXCEPT WHERE SHOWN OTHERWISE.

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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MATERIAL		BN CERAMIC GRADE XP	
NAME		DATE	
DRAWN	RAMONA V PEREZ	06/06/13	
CHECKED	RAMONA V PEREZ	07/02/13	
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES	

DO NOT SCALE DRAWING

TITLE:  
**PROTON DETECTOR SHIELD**

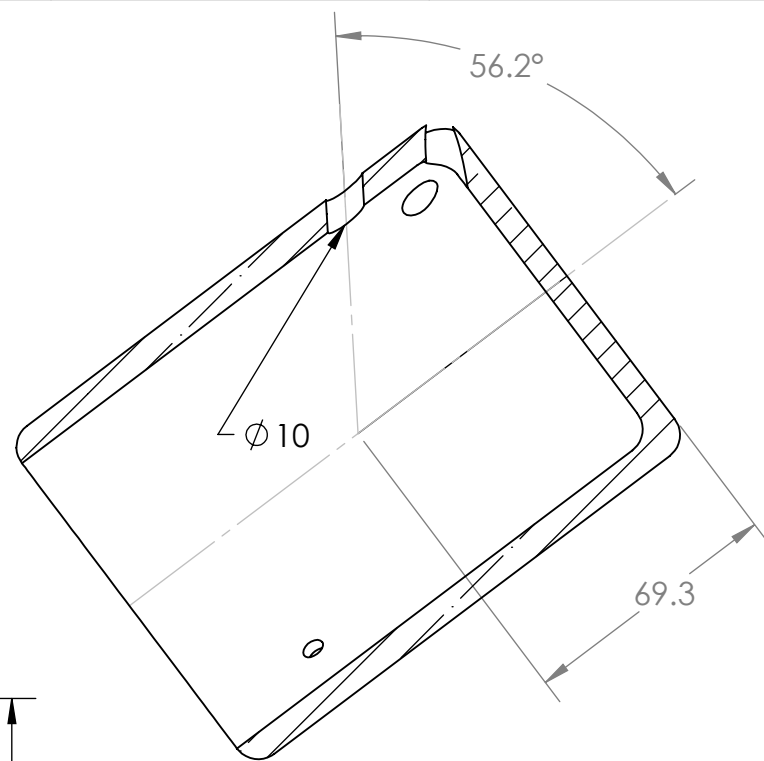
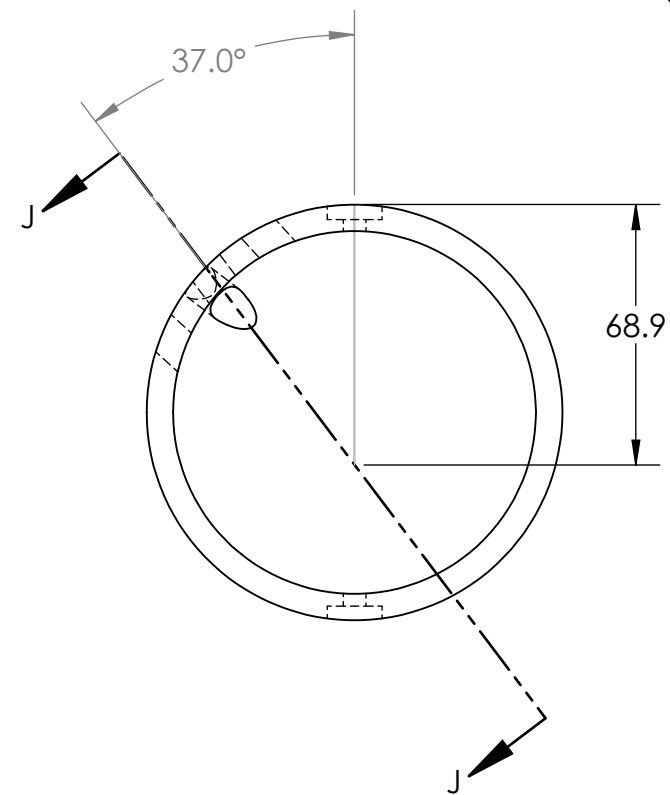
SIZE **B** DWG. NO. PD\_22\_SHELL REV

SCALE: 1:2 WEIGHT: 1.2kg SHEET 3 OF 4

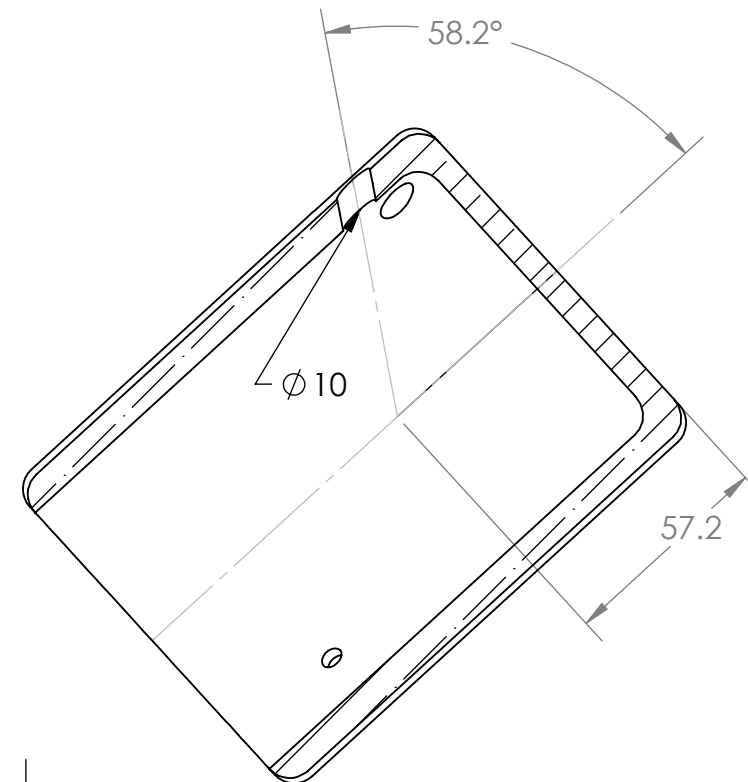
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8 7 6 5 4 3 2 1

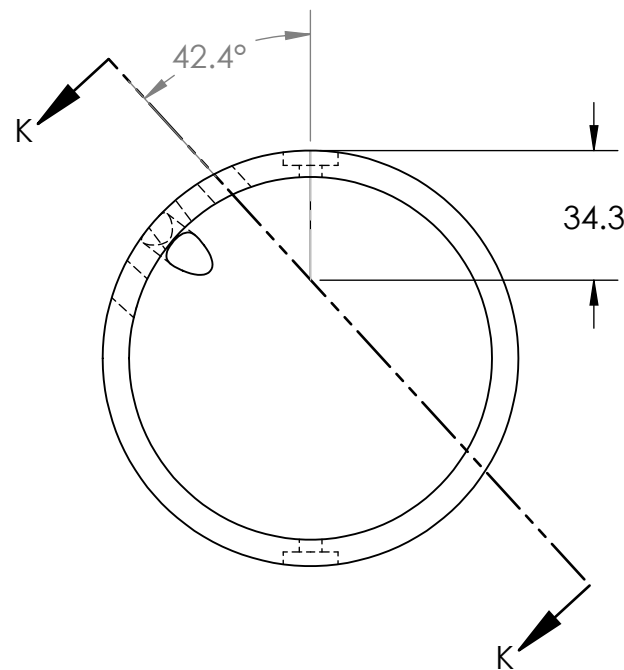
D  
C  
B  
A



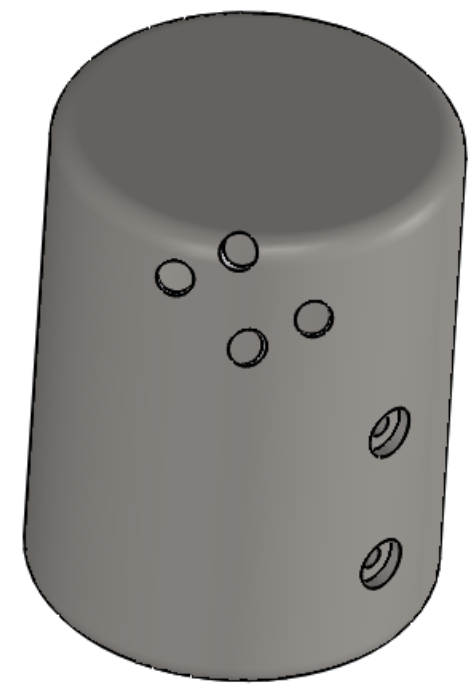
SECTION J-J



SECTION K-K



**NOTES:**  
1. ALL MACHINING TOLERANCES TO  $\pm 0.2\text{mm}$  AND  $\pm 0^\circ 30'$  EXCEPT WHERE SHOWN OTHERWISE.



D  
C  
B  
A

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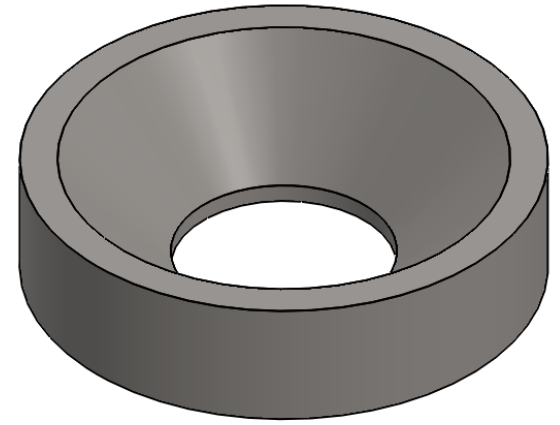
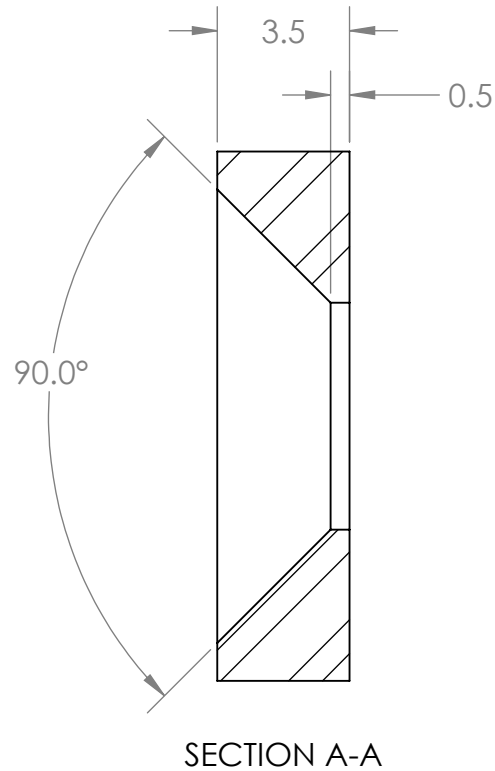
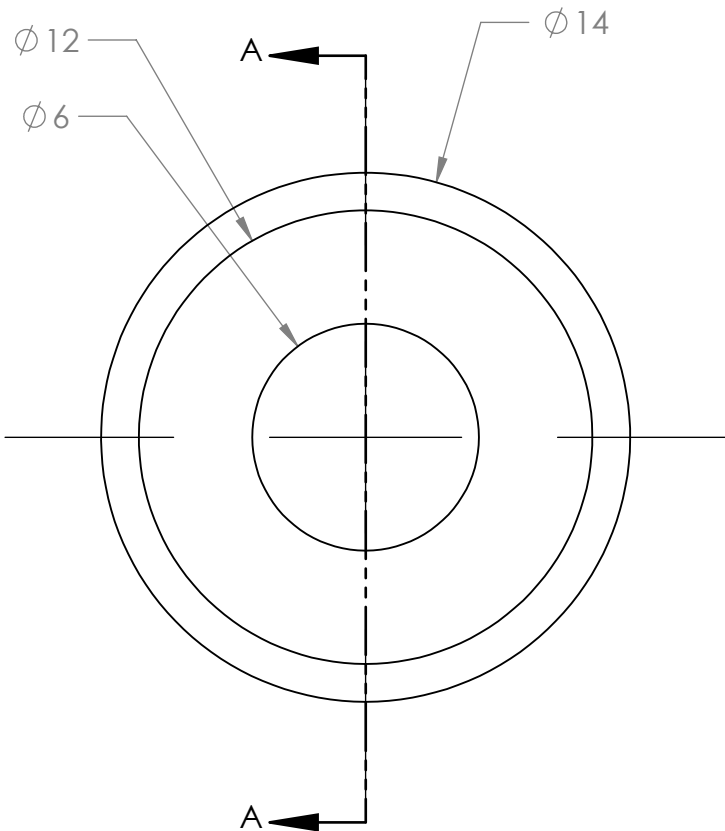
TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
$\pm 0.1$	$\pm 0.1$	$\pm 0.2$	$\pm 0.3$	$\pm 0.5$	$\pm 0.8$
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
$\pm 1^\circ$	$\pm 0^\circ 30'$	$\pm 0^\circ 20'$	$\pm 0^\circ 10'$	$\pm 0^\circ 5'$	

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<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL	BN CERAMIC GRADE XP
NAME	DATE
DRAWN	RAMONA V PEREZ 06/06/13
CHECKED	RAMONA V PEREZ 07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

TITLE: <b>PROTON DETECTOR SHIELD</b>		
SIZE <b>B</b>	DWG. NO. PD_22_SHELL	REV
SCALE: 1:2	WEIGHT: 1.2kg	SHEET 4 OF 4

8 5 7 4 6 3 5 2 4 1 2 1



NOTES 08/02/13:  
 2. USED CUSTOM SHOULDER SCREWS INSTEAD OF BRACKETS.

NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.

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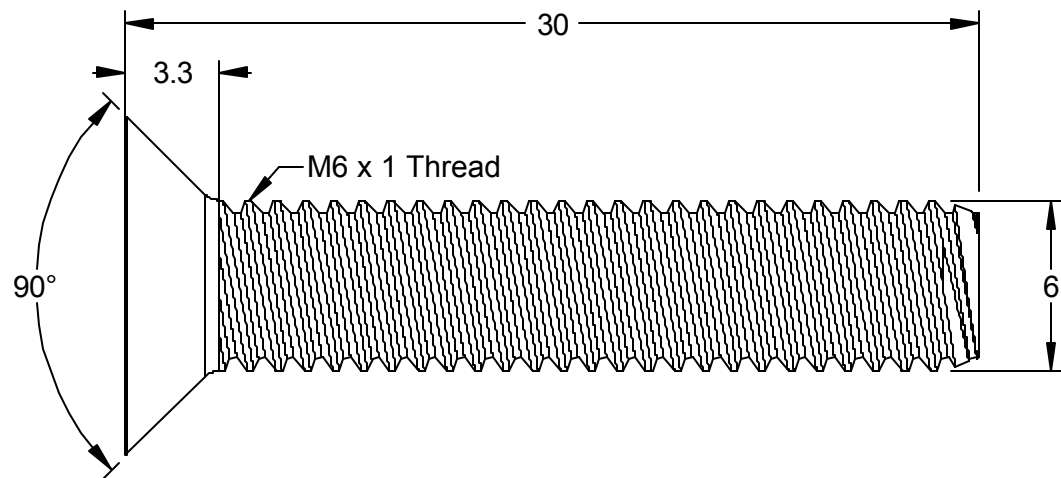
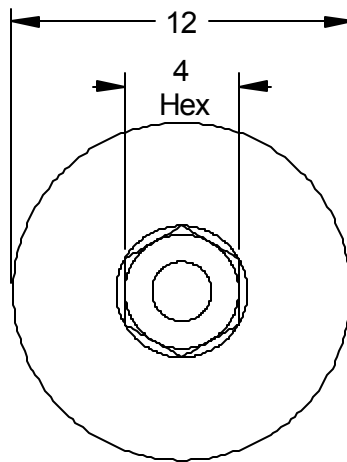
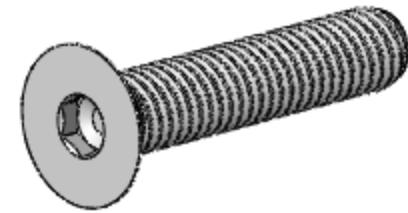
TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
LESS THAN 50	50 TO 120	120 TO 400	OVER 400		
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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MATERIAL			SS316		
DRAWN		RAMONA V PEREZ	DATE		05/01/13
CHECKED		RAMONA V PEREZ	DATE		06/19/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM			REMOVE ALL BURRS AND SHARP EDGES		

TITLE:					
PROTON DETECTOR SHIELD BRACKET					
SIZE	DWG. NO.				REV
<b>A</b>	PD_22_Bracket				
SCALE: 5:1	WEIGHT: .003KG	SHEET 1 OF 1			



NOTES 08/02/13:

1. USED CUSTOM SHOULDER SCREW INSTEAD OF THIS MACHINE SCREW.

**McMASTER-CARR** CAD

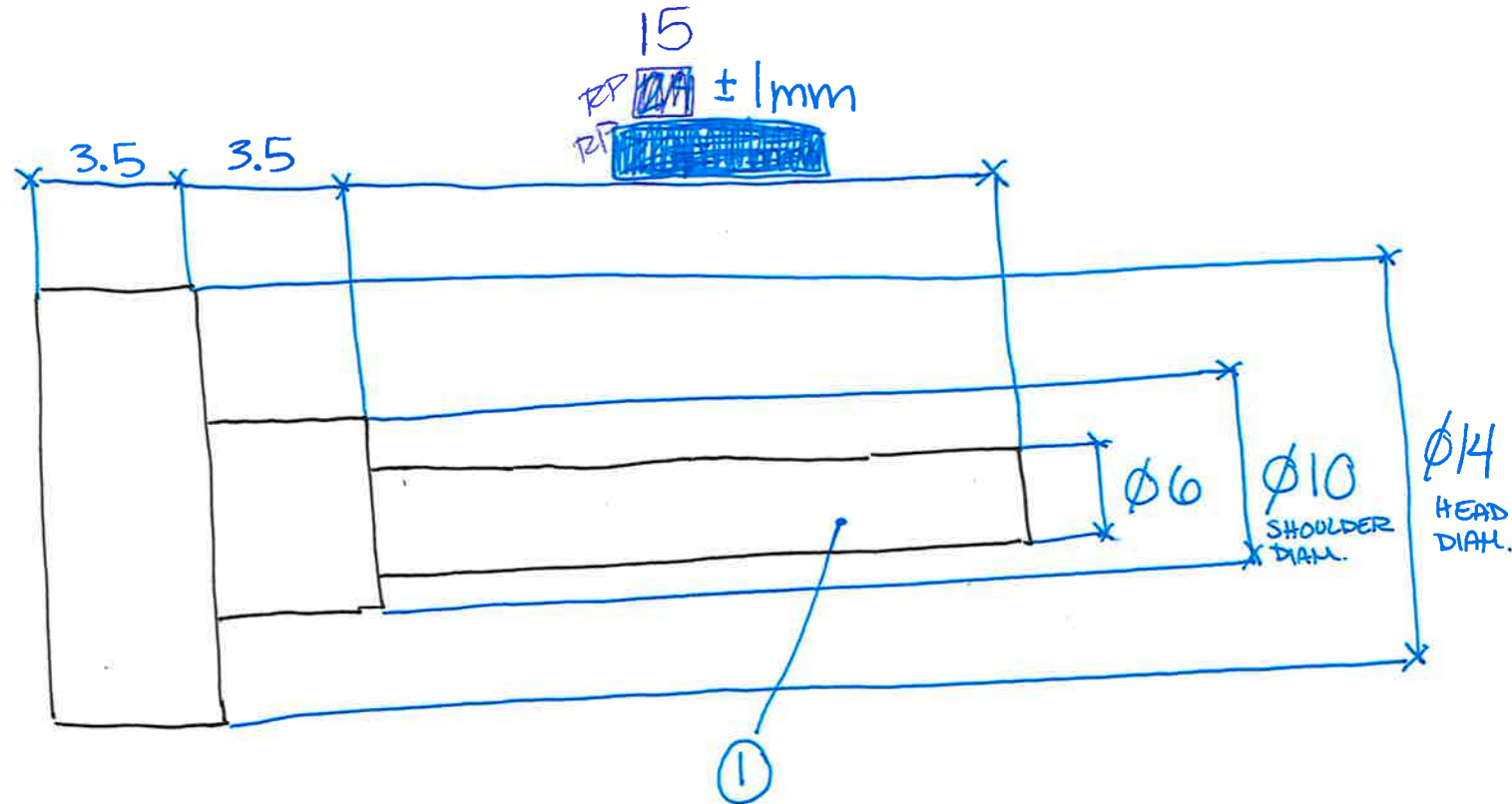
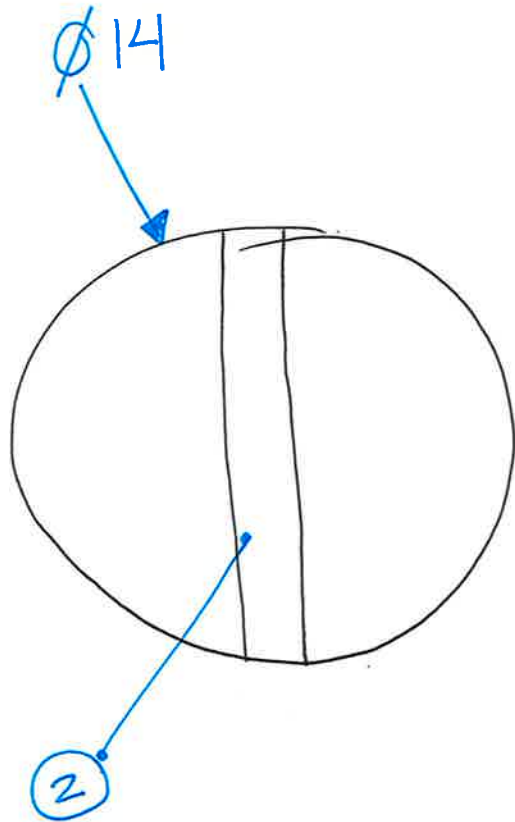
PART NUMBER **93395A366**

<http://www.mcmaster.com>  
(c) 2004 McMaster-Carr Supply Company

Type 316 Stainless Steel DIN 7991-A4  
Flat Socket Head Cap Screw

Unless otherwise specified, dimensions are in millimeters. Information in this drawing is provided for reference only.





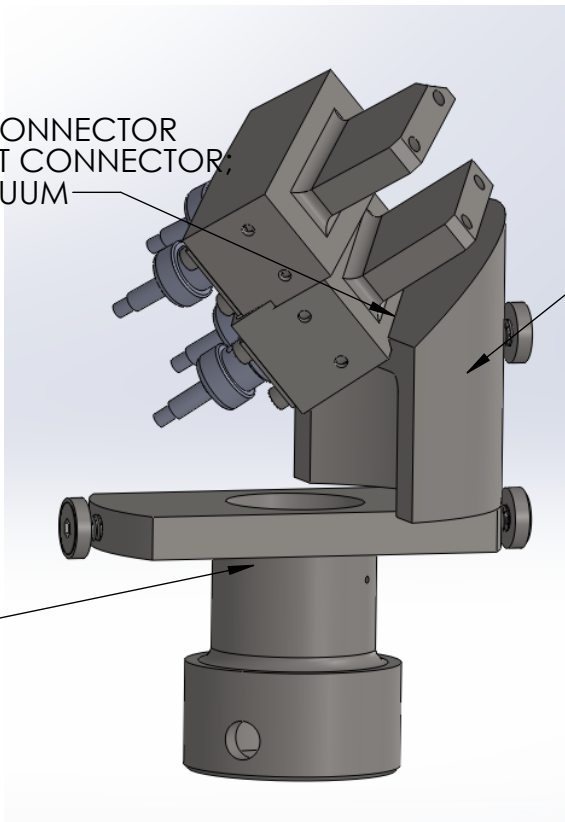
NOTES :

- ① M6 x 1 THREAD ALONG LENGTH.
- ② HEX SOCKET OR CHEESEHEAD DRIVE?
- ③ REQUEST QUANTITY : 3
- ④ TOLERANCES +/- 0.2mm EXCEPT OTHERWISE STATED.

NOTES 08/02/13:  
 5. THIS CUSTOM SHOULDER SCREW REPLACES THE PREVIOUS BRACKET AND MACHINE SCREW TO SECURE SHIELD.

DATE: 26/07/13	NOT DRAWN TO SCALE	TITLE: PROTON DETECTOR SHIELD SHOULDER SCREW
MATERIAL: 316SS	UNITS: MM	DRAWN BY: RAMONA V PEREZ
SHT: 1 OF 1		

WELD PROTON DETECTOR CONNECTOR TO PROTON DETECTOR MAST CONNECTOR; WELD FOR ULTRA HIGH VACUUM



4

5

PARTS LIST			
ITEM NO.	TITLE	DWG. NO.	QUANTITY
4	PROTON DETECTOR CONNECTOR	PD_22_connector	1
5	PROTON DETECTOR MAST CONNECTOR	MAST_connector_1	1

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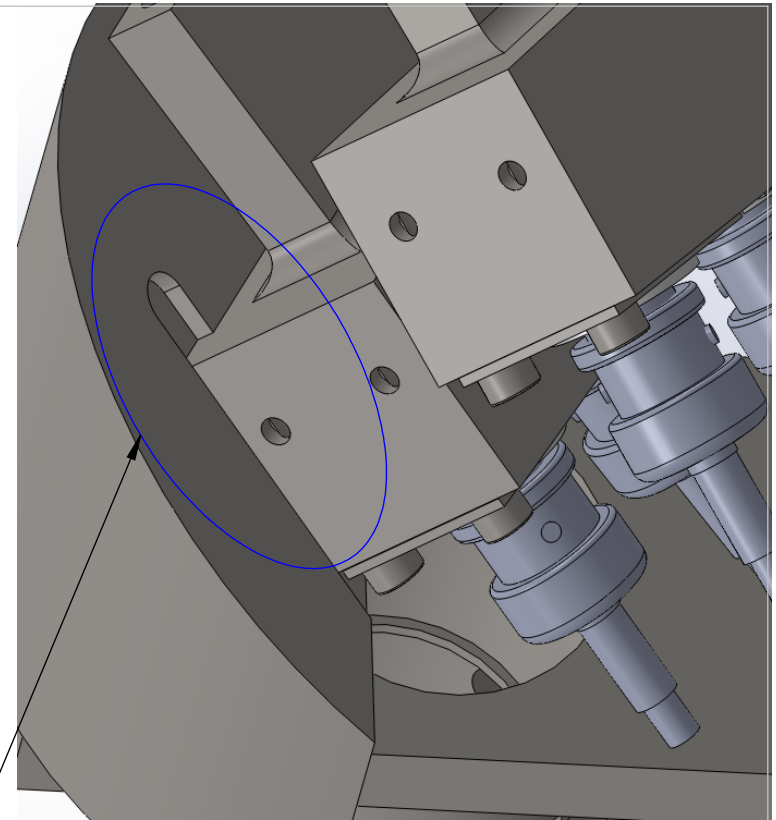
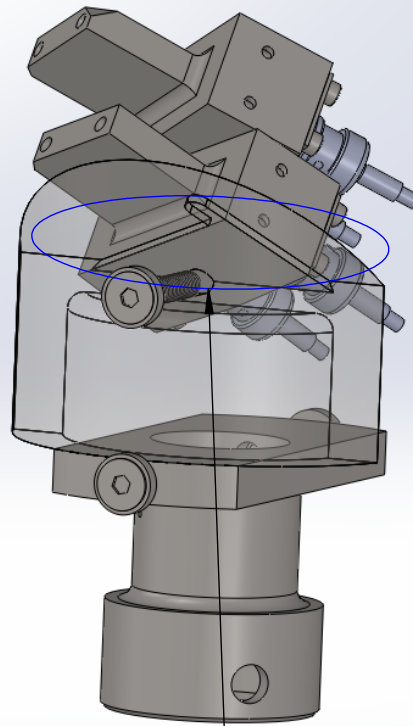
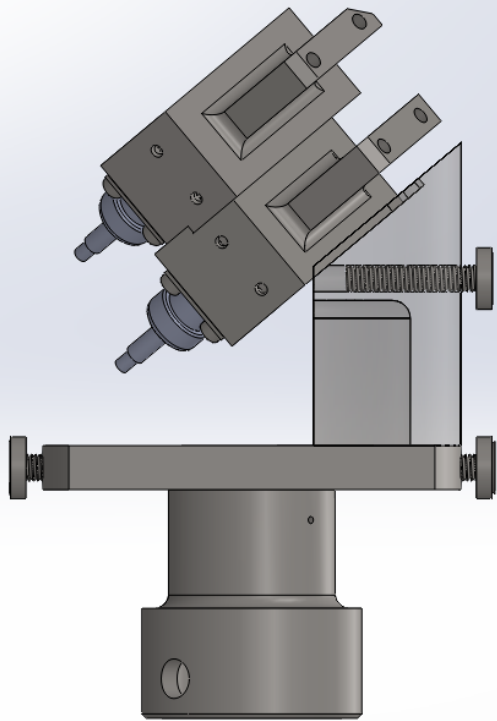
TOLERANCES ANGULAR DIMENSIONS				
LESS THAN 50	50 TO 120	120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'

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MATERIAL		SS316
	NAME	DATE
DRAWN	RAMONA V PEREZ	05/28/13
CHECKED	RAMONA V PEREZ	07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES	

TITLE:		
PROTON DETECTOR ASSEMBLED CONNECTOR		
SIZE	DWG. NO.	REV
<b>A</b>	PD_22_connector_assembled	
		SHEET 1 OF 2



NOTES:  
ANOTHER VIEW OF STEP ON  
TRANSPARENT CONNECTOR.

- NOTES:
1. WELD PROTON DETECTOR MODULE A TO PROTON DETECTOR CONNECTOR
  2. WELD FOR ULTRA HIGH VACUUM
  3. NOTE STEP ON CONNECTOR IS TO CORRECTLY POSITION PROTON DETECTOR MODULE A

NOTES 08/02/13:

4. WELDING PIECES WAS CUMBERSOME. INCLUDE REFERENCE NOTCHES IN DESIGN TO CONSIDER SUBSEQUENT WELDING PROCESS.

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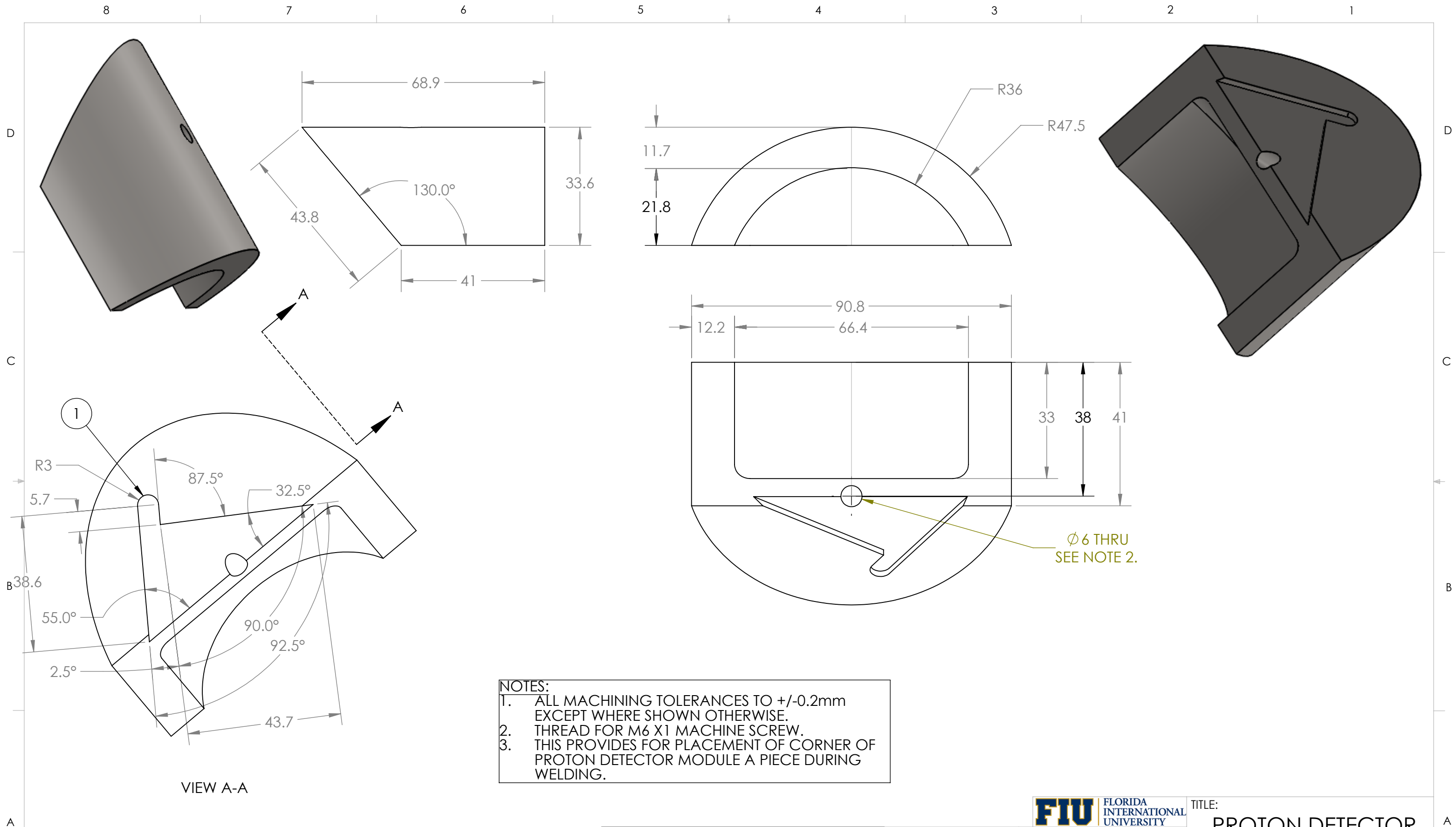
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+/- 0.1	+/- 0.1	+/- 0.1	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
LESS OR EQUALLY TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400		
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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MATERIAL		SS316
NAME		DATE
DRAWN	RAMONA V PEREZ	06/13/13
CHECKED	RAMONA V PEREZ	07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES

TITLE:		
PROTON DETECTOR ASSEMBLED CONNECTOR		
SIZE	DWG. NO.	REV
<b>A</b>	PD_22_connector_assembled	
		SHEET 2 OF 2



**NOTES:**

1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.
2. THREAD FOR M6 X1 MACHINE SCREW.
3. THIS PROVIDES FOR PLACEMENT OF CORNER OF PROTON DETECTOR MODULE A PIECE DURING WELDING.

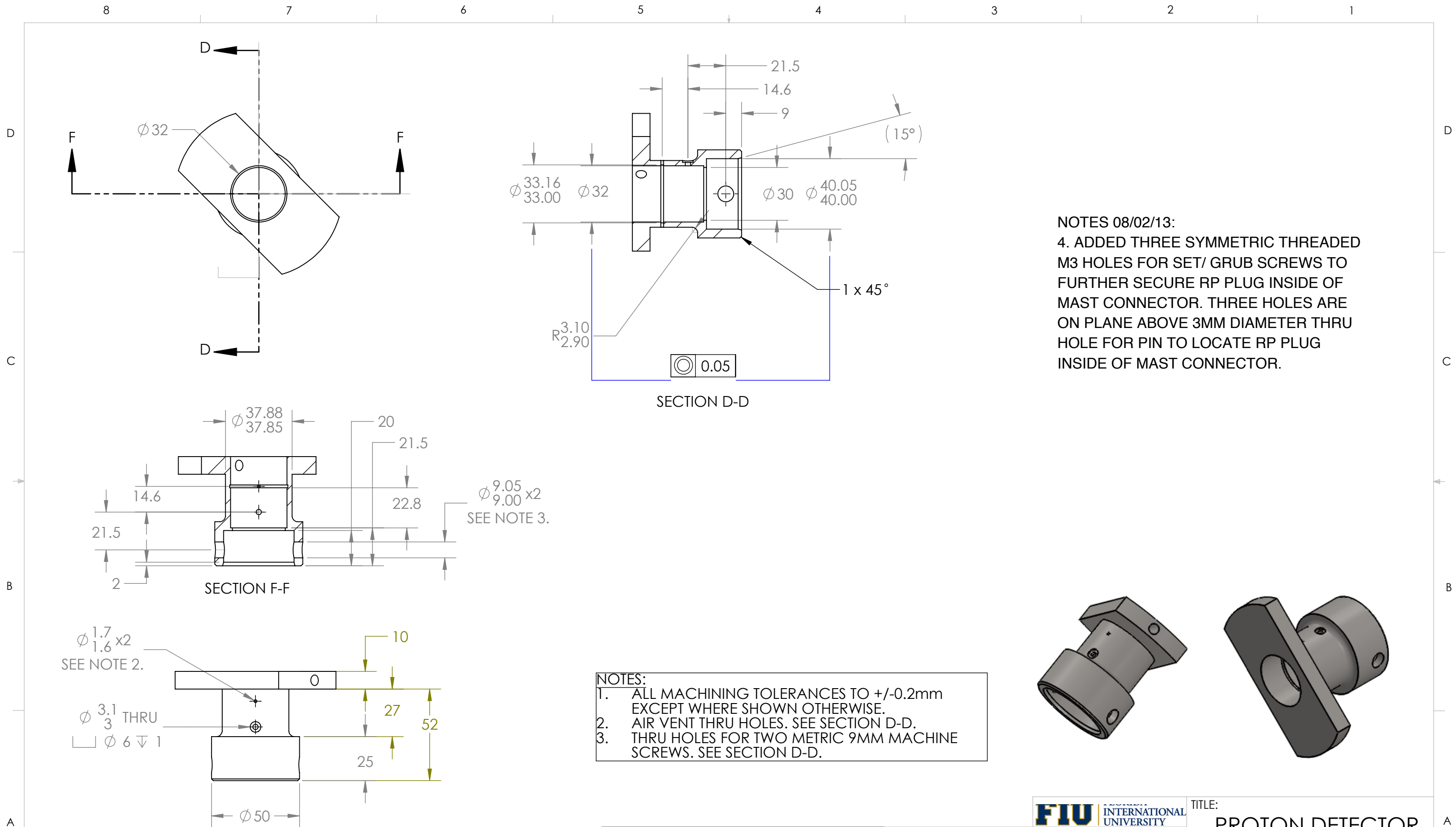
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TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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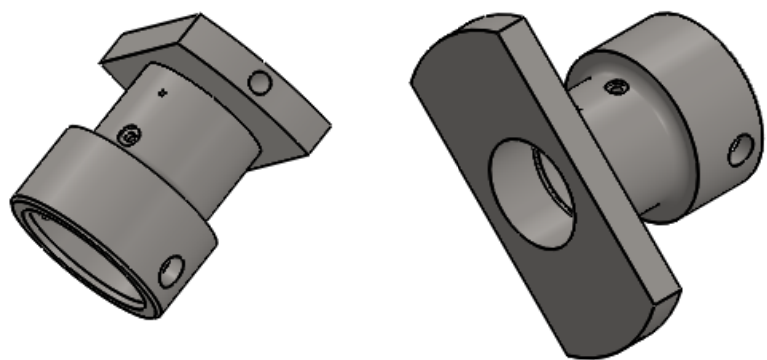
<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL	SS316
NAME	DATE
DRAWN	RAMONA V PEREZ 06/13/13
CHECKED	RAMONA V PEREZ 07/05/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

TITLE: <b>PROTON DETECTOR CONNECTOR</b>		
SIZE	DWG. NO.	REV
<b>B</b>	PD_22_connector	
SCALE: 1:1	WEIGHT: 0.64kg	SHEET 1 OF 1



NOTES 08/02/13:  
 4. ADDED THREE SYMMETRIC THREADED M3 HOLES FOR SET/ GRUB SCREWS TO FURTHER SECURE RP PLUG INSIDE OF MAST CONNECTOR. THREE HOLES ARE ON PLANE ABOVE 3MM DIAMETER THRU HOLE FOR PIN TO LOCATE RP PLUG INSIDE OF MAST CONNECTOR.

NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.  
 2. AIR VENT THRU HOLES. SEE SECTION D-D.  
 3. THRU HOLES FOR TWO METRIC 9MM MACHINE SCREWS. SEE SECTION D-D.



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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

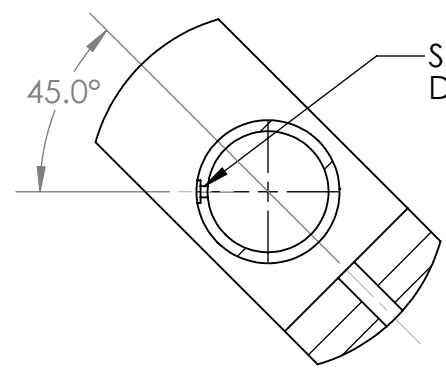
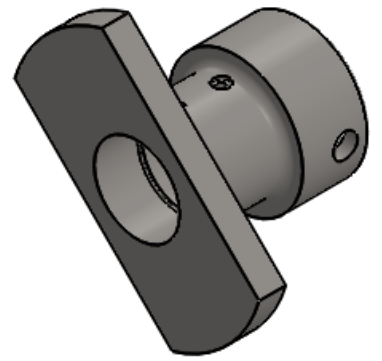
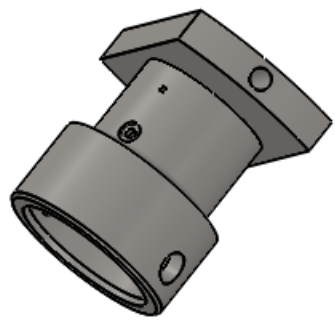
**PROPRIETARY AND CONFIDENTIAL**  
 REFER TO UNITED KINGDOM ATOMIC ENERGY AUTHORITY CULHAM CENTRE FOR FUSION ENERGY DWG M1150123 ISSUE C. DWG PROPERTIES USED TO COMPLY WITH MAST RECIPROCATING PROBE INSTALLATION OF PROTON DETECTOR.

<b>FIU</b> INTERNATIONAL UNIVERSITY	
MATERIAL	SS316
NAME	DATE
DRAWN	RAMONA V PEREZ 05/27/13
CHECKED	RAMONA V PEREZ 07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

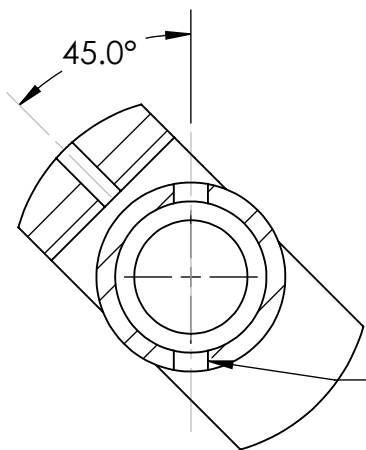
TITLE: <b>PROTON DETECTOR MAST CONNECTOR</b>		
SIZE <b>B</b>	DWG. NO. MAST_connector_2	REV
SCALE: 1:2	WEIGHT: 0.49kg	SHEET 1 OF 2

A

A



SECTION Z-Z

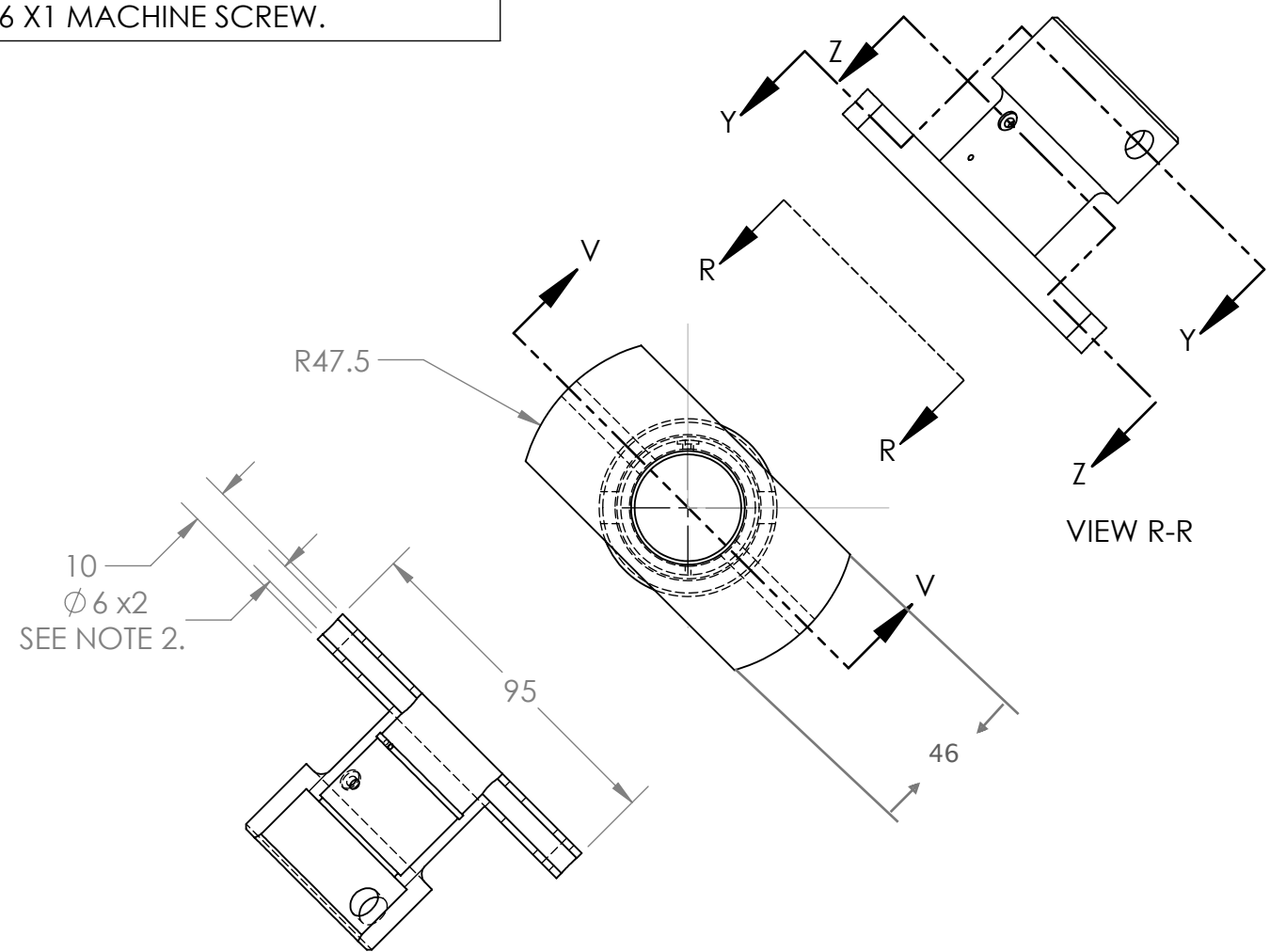


SECTION Y-Y

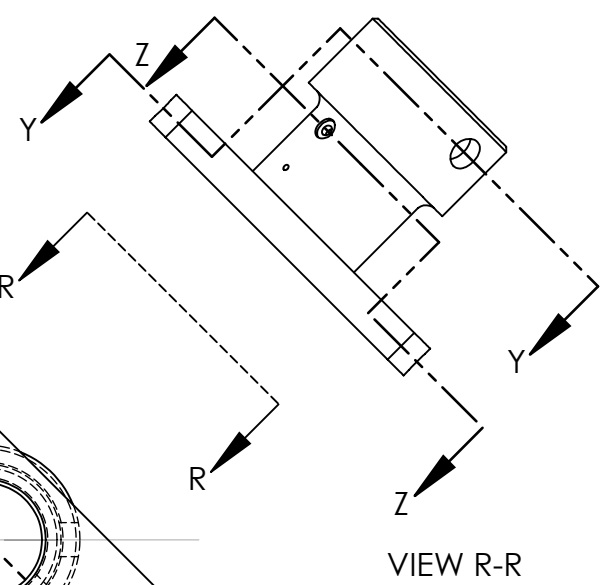
SEE SECTION D-D OF PROTON DETECTOR MAST CONNECTOR SHEET 1.

SEE SECTION D-D AND SECTION F-F OF PROTON DETECTOR MAST CONNECTOR SHEET 1.

**NOTES:**  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.  
 2. THREAD FOR M6 X1 MACHINE SCREW.



SECTION V-V



VIEW R-R

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

**PROPRIETARY AND CONFIDENTIAL**  
 REFER TO UNITED KINGDOM ATOMIC ENERGY AUTHORITY CULHAM CENTRE FOR FUSION ENERGY DWG M1150123 ISSUE C. DWG PROPERTIES USED TO COMPLY WITH MAST RECIPROCATING PROBE INSTALLATION OF PROTON DETECTOR.

DO NOT SCALE DRAWING

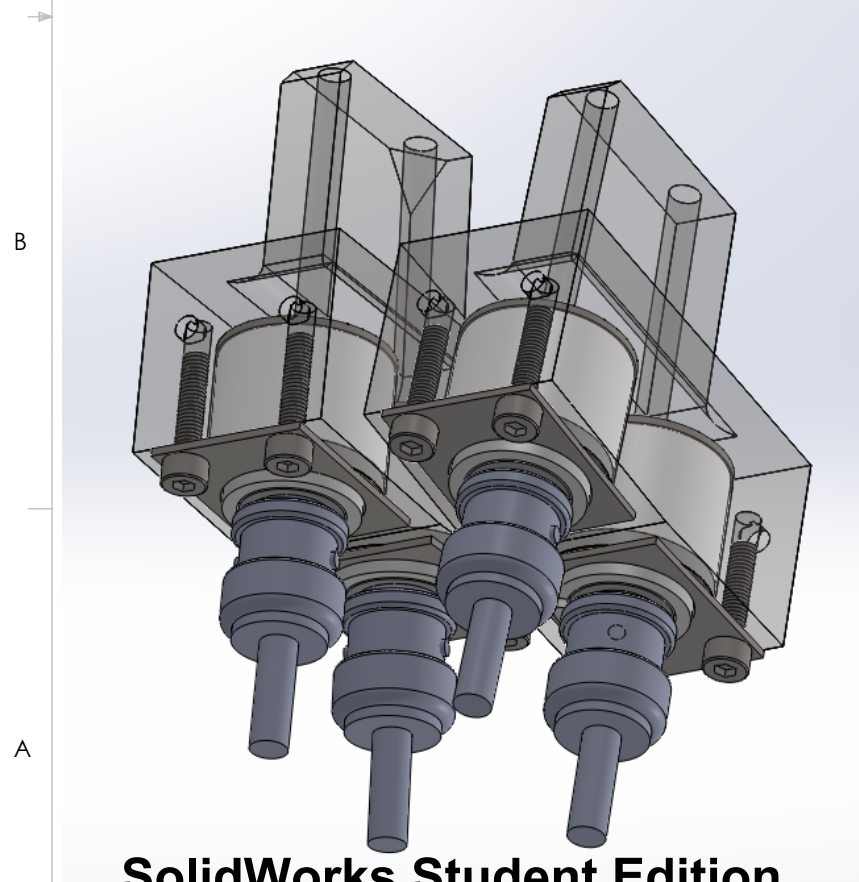
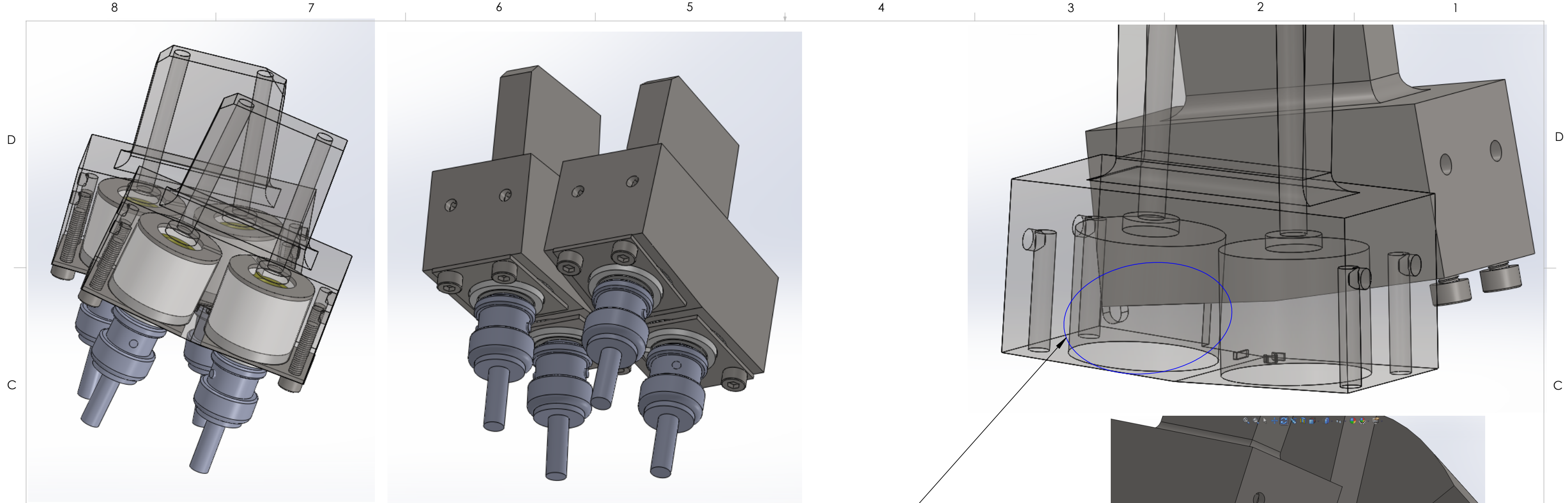


MATERIAL		SS316
NAME		DATE
DRAWN	RAMONA V PEREZ	05/27/13
CHECKED	RAMONA V PEREZ	07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES

TITLE: <b>PROTON DETECTOR MAST CONNECTOR</b>		
SIZE <b>B</b>	DWG. NO. MAST_connector_2	REV
SCALE: 1:2	WEIGHT: 0.49kg	SHEET 2 OF 2

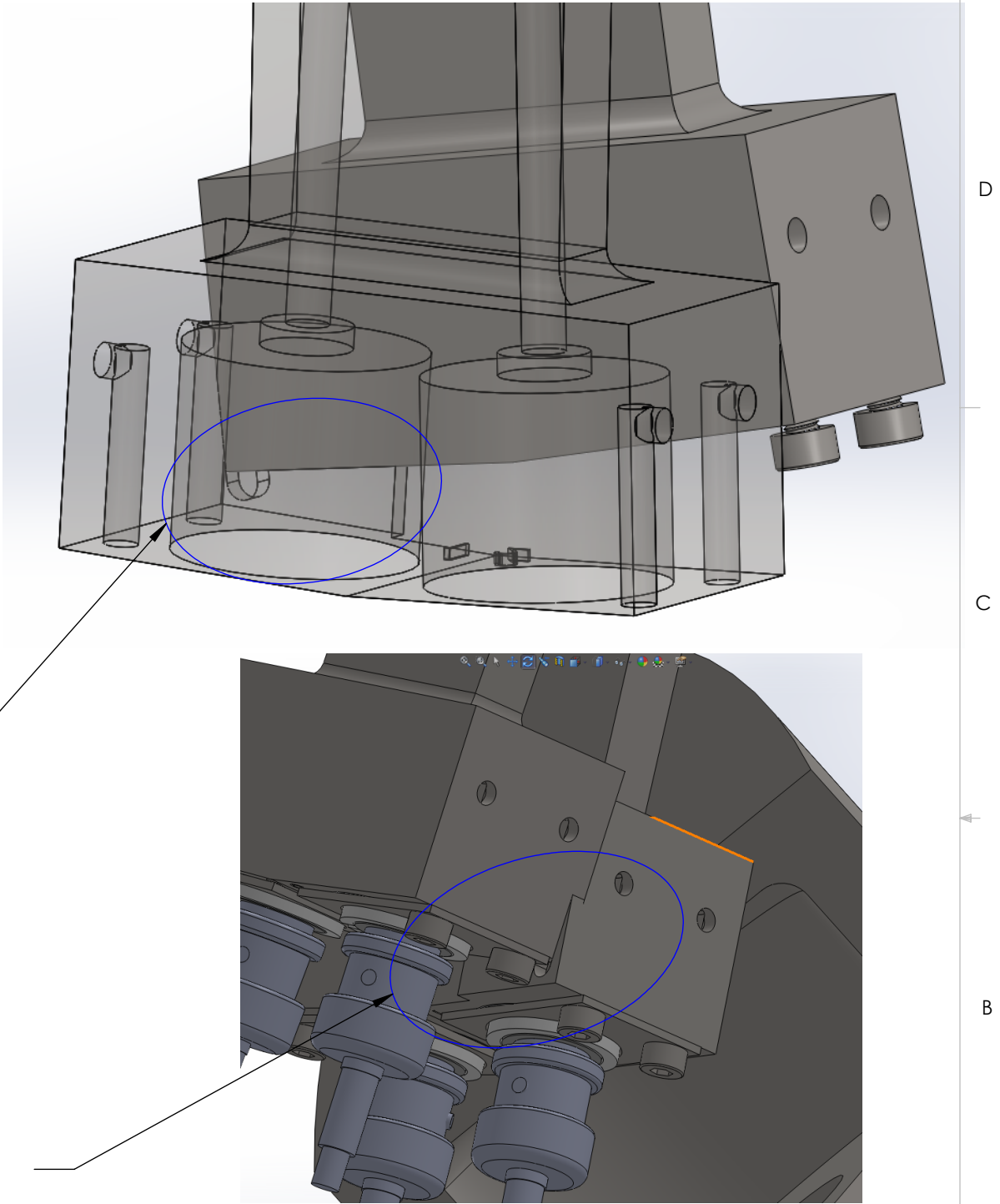
8 7 6 5 4 3 2 1

8 5 7 4 6 3 5 2 4 1 2 1



- NOTES:
1. WELD PROTON DETECTOR MODULE B TO PROTON DETECTOR MODULE A
  2. WELD FOR ULTRA HIGH VACUUM
  3. NOTE STEP ON PROTON MODULE A TO CORRECTLY POSITION PROTON DETECTOR MODULE B

NOTES:  
ANOTHER VIEW OF STEP TO USE FOR WELDING MODULE B TO MODULE A.



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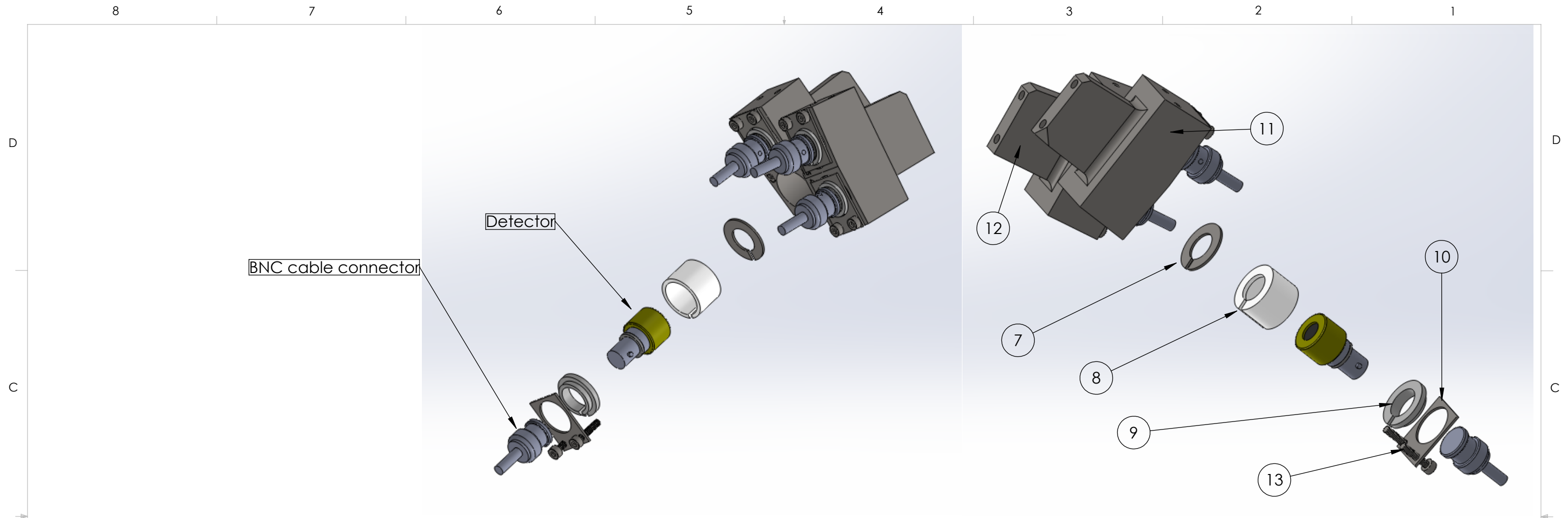
TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL	SS316, PEEK 1000
NAME	DATE
DRAWN	RAMONA V PEREZ 06/13/13
CHECKED	RAMONA V PEREZ 07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

TITLE:  
**PROTON DETECTOR ASSEMBLED MODULE**

SIZE **B** DWG. NO. PD\_22\_Module\_assembled REV



PARTS LIST			
ITEM	TITLE	DWG. NO.	QUANTITY
6	NO ITEM 6	N/A	N/A
7	PROTON DETECTOR WASHER	PD_22_Washer	4
8	PROTON DETECTOR PEEK SLEEVE	PD_22_Peek_sleeve	4
9	PROTON DETECTOR PEEK BOTTOM	PD_22_Peek_bottom	4
10	PROTON DETECTOR MODULE BASE	PD_22_base	4
11	PROTON DETECTOR MODULE A	PD_22_b	1
12	PROTON DETECTOR MODULE B	PD_22_a	1
13	McMaster-Carr PN#92290A118		8

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8

TOLERANCES ANGULAR DIMENSIONS				
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'

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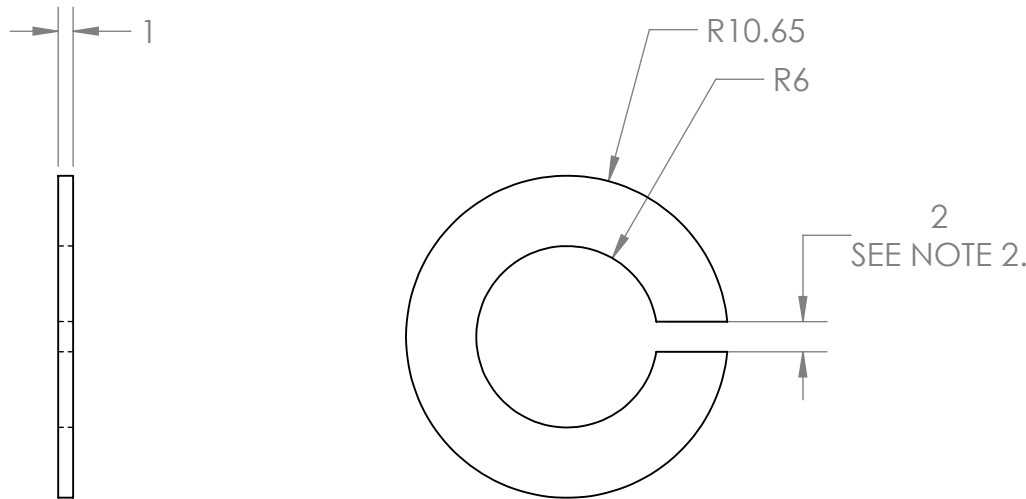
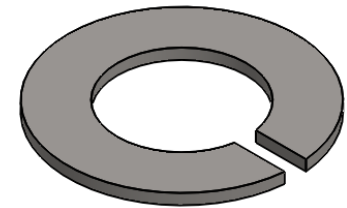


MATERIAL		SS316, PEEK 1000
NAME		DATE
DRAWN	RAMONA V PEREZ	06/13/13
CHECKED	RAMONA V PEREZ	06/19/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES

TITLE:  
**PROTON DETECTOR ASSEMBLED MODULE**

SIZE	DWG. NO.	REV
<b>B</b>	PD_22_Module_assembled	





NOTES 08/02/13:  
 3. INSTEAD OF WASHER USED  
 TWO PIECES OF 316SS SHIMSTOCK  
 .004" THICK WITH SIMILAR INNER  
 AND OUTER DIAMETER.

- NOTES:**
1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.
  2. PLEASE NOTE THAT THE 2mm SLIT IS USED FOR AIR TO ESCAPE AND DOES NOT NEED A +/-0.2mm TOLERANCE. MINIMUM DIMENSION: 2mm AND MAXIMUM DIMENSION: 4mm

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8

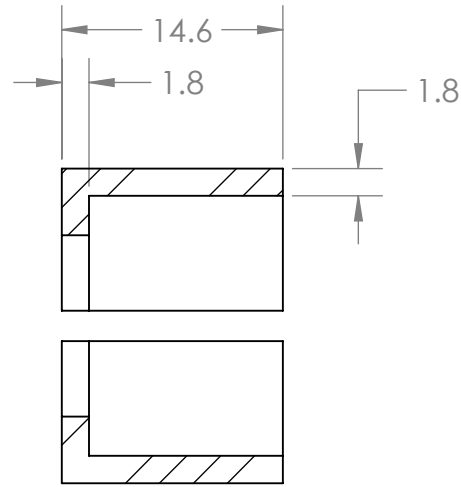
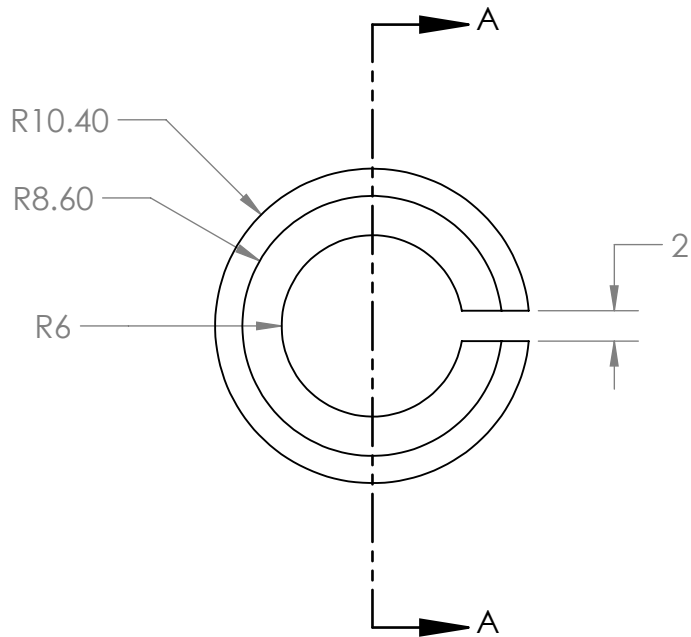
TOLERANCES ANGULAR DIMENSIONS				
LESS THAN 50	50 TO 120	120 TO 400	400 TO 1000	OVER 1000
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'

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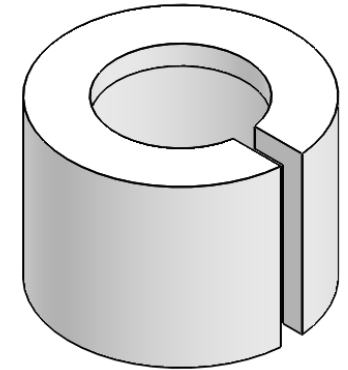
DO NOT SCALE DRAWING

MATERIAL			SS316		
DRAWN		RAMONA V PEREZ	DATE		
CHECKED		RAMONA V PEREZ	07/02/13		
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM			REMOVE ALL BURRS AND SHARP EDGES		

TITLE:					
PROTON DETECTOR WASHER					
SIZE	DWG. NO.				REV
<b>A</b>	PD_22_Washer				
SCALE: 2:1	WEIGHT:0.002kg	SHEET 1 OF 1			



SECTION A-A



NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8

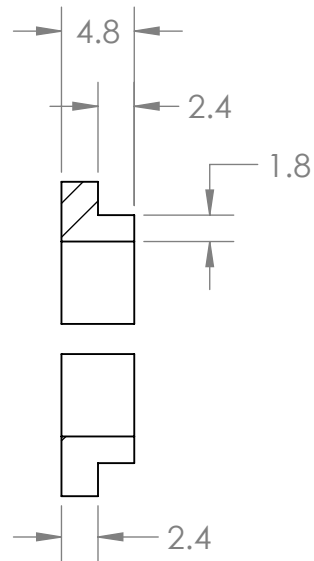
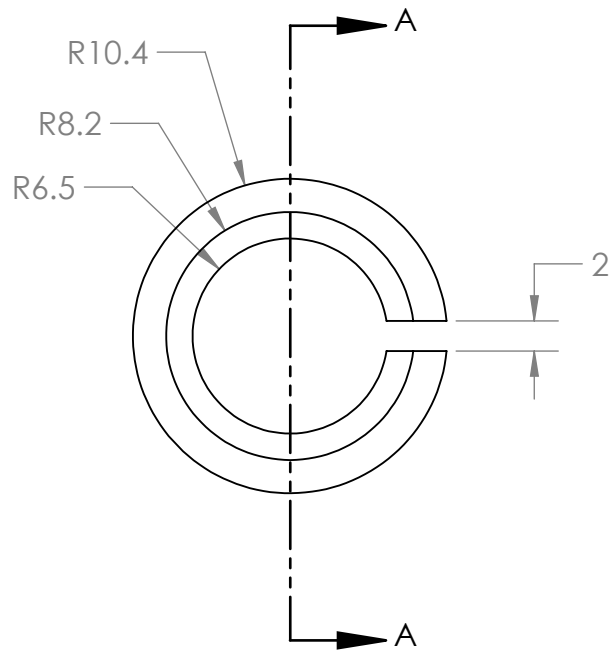
TOLERANCES ANGULAR DIMENSIONS				
LESS THAN 90°	90° TO 120°	120° TO 400°	OVER 400°	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'

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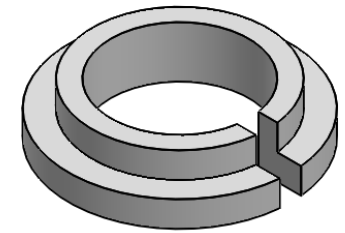


MATERIAL		PEEK 1000	
	NAME	DATE	
DRAWN	RAMONA V PEREZ	06/13/13	
CHECKED	RAMONA V PEREZ	06/14/13	
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES	

TITLE: <b>PROTON DETECTOR PEEK SLEEVE</b>		
SIZE <b>A</b>	DWG. NO. PD_22_Peek_sleeve	REV
SCALE: 2:1	WEIGHT: 0.002kg	SHEET 1 OF 1



SECTION A-A



NOTES 08/02/13:  
 2. CONVERSION ERROR IN INCHES DRAWINGS LED TO A DIAMETER AS OPPOSED TO A DIAMETER.

NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.

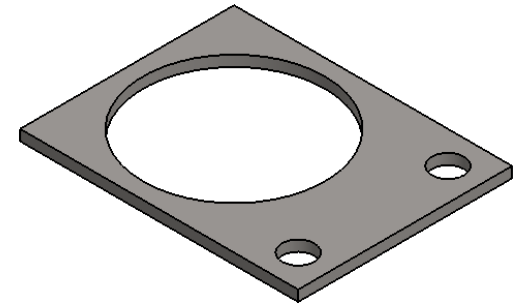
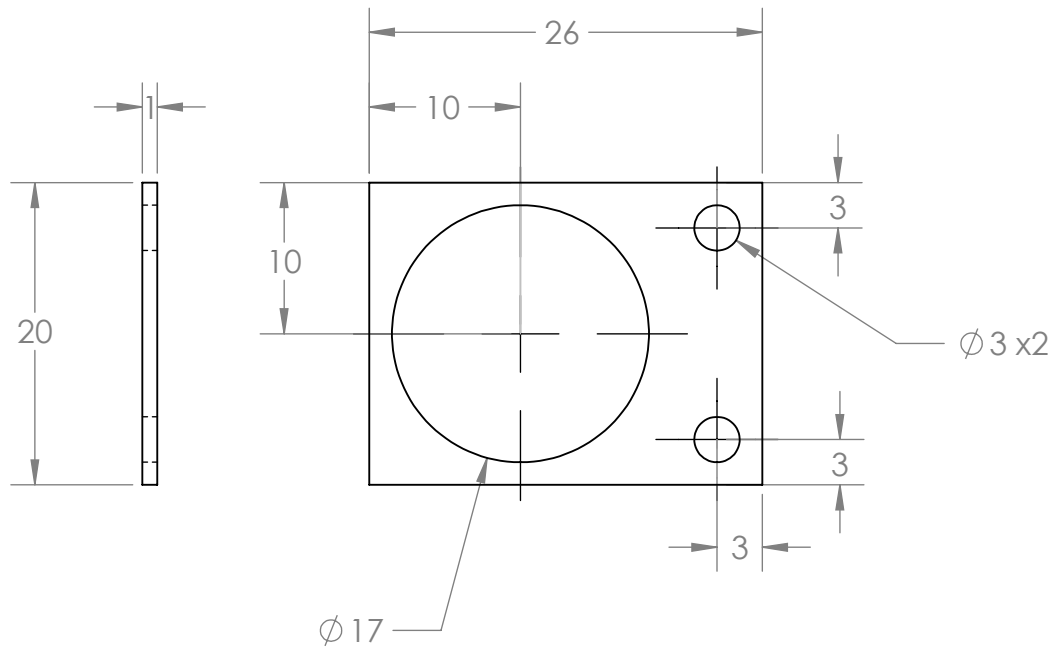
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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
LESS THAN 10	10 TO 30	30 TO 60	60 TO 120	120 TO 400	400 TO 1000
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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<b>FIU</b>	<b>FLORIDA INTERNATIONAL UNIVERSITY</b>	
	MATERIAL PEEK 1000	
DRAWN	RAMONA V PEREZ	DATE 06/13/13
CHECKED	RAMONA V PEREZ	DATE 06/14/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM		REMOVE ALL BURRS AND SHARP EDGES

TITLE: PROTON DETECTOR PEEK BOTTOM		
SIZE <b>A</b>	DWG. NO. PD_22_Peek_bottom	REV
SCALE: 2:1	WEIGHT: 0.001kg	SHEET 1 OF 1



NOTES 08/02/13:  
 2. DID NOT SPECIFY THAT 3MM HOLES WERE FOR M3 SCREWS, THEREFORE FIT WAS TOO TIGHT FOR SCREWS AND HOLES HAD TO BE WIDENED.

NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.

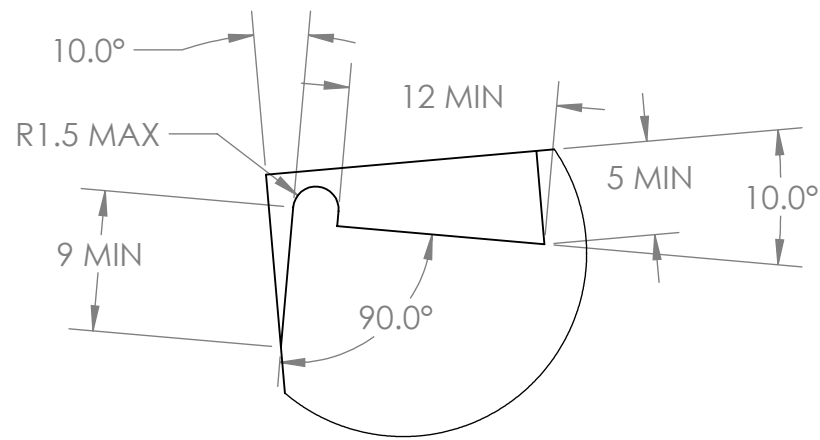
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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.15	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
LESS THAN 10	10 TO 30	30 TO 60	60 TO 120	120 TO 400	OVER 400
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

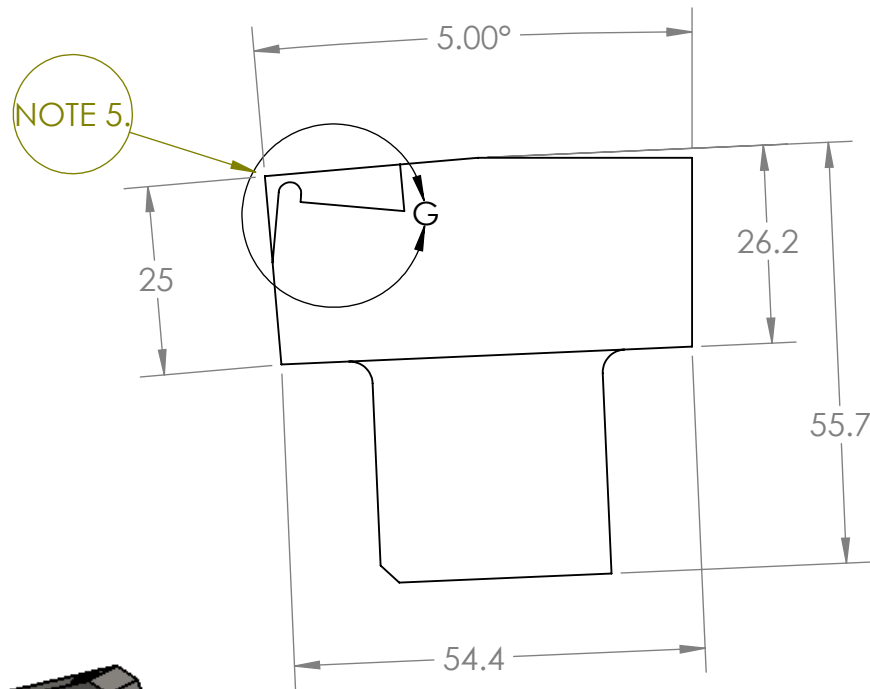
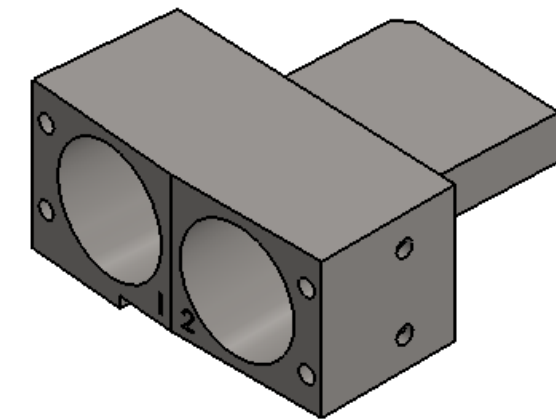
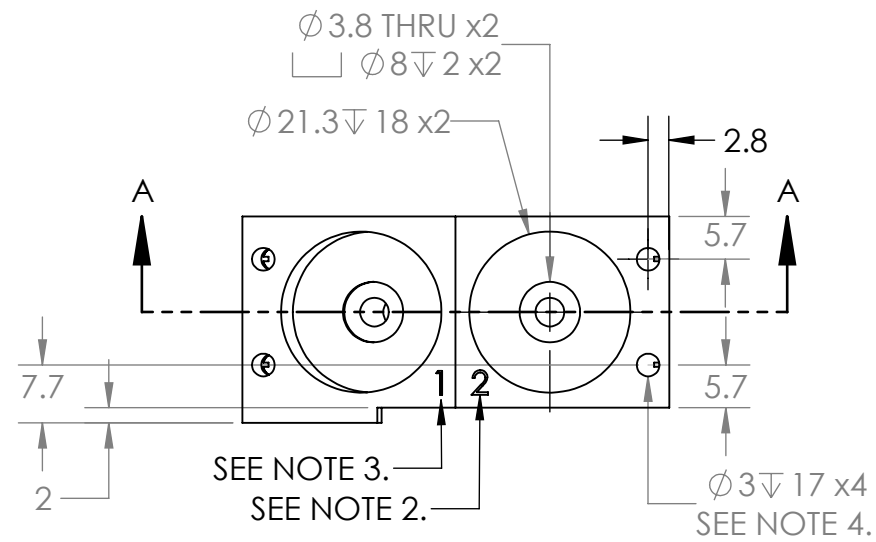
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<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL SS316	
	NAME DATE
DRAWN	RAMONA V PEREZ 06/13/13
CHECKED	RAMONA V PEREZ 06/14/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

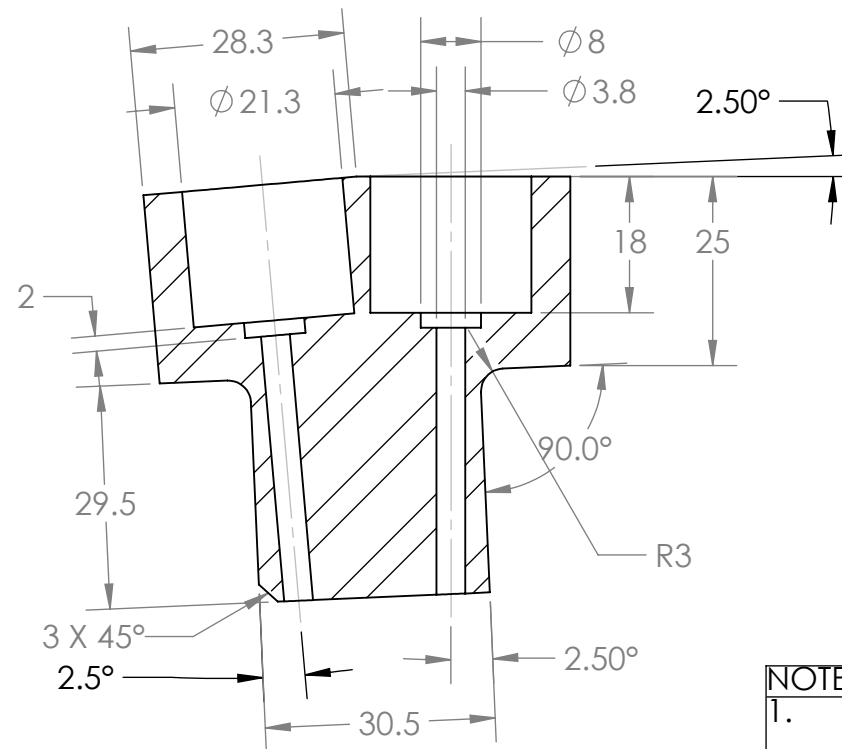
TITLE: PROTON DETECTOR MODULE BASE		
SIZE <b>A</b>	DWG. NO. PD_22_base	REV
SCALE: 2:1	WEIGHT: 0.002kg	SHEET 1 OF 1



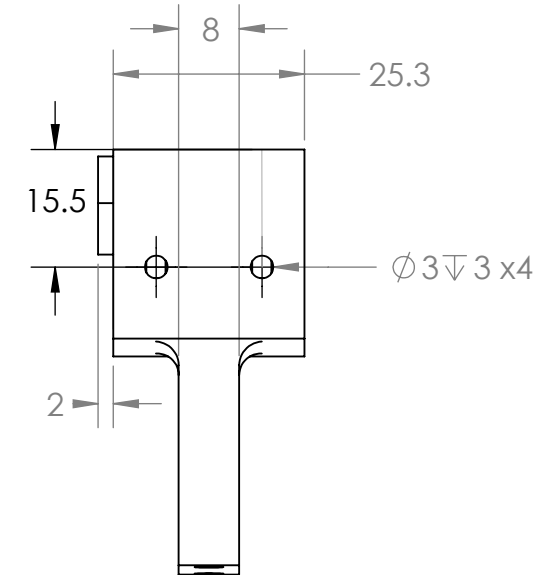
DETAIL G  
SCALE 2 : 1



NOTE 5.



SECTION A-A



- NOTES:
1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.
  2. ENGRAVE "2."
  3. ENGRAVE "1."
  4. THREAD FOR M3X0.5 MACHINE SCREW.
  5. THIS PROVIDES FOR PLACEMENT OF CORNER OF MODULE B PIECE DURING WELDING.

NOTES 08/02/13:  
6. CHAMFER WAS NOT SUFFICIENT; IT HAD TO BE FURTHER FILED DOWN.



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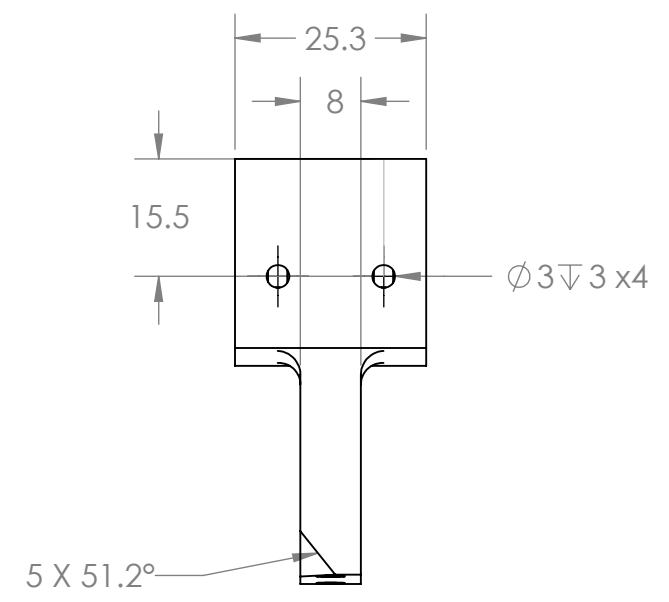
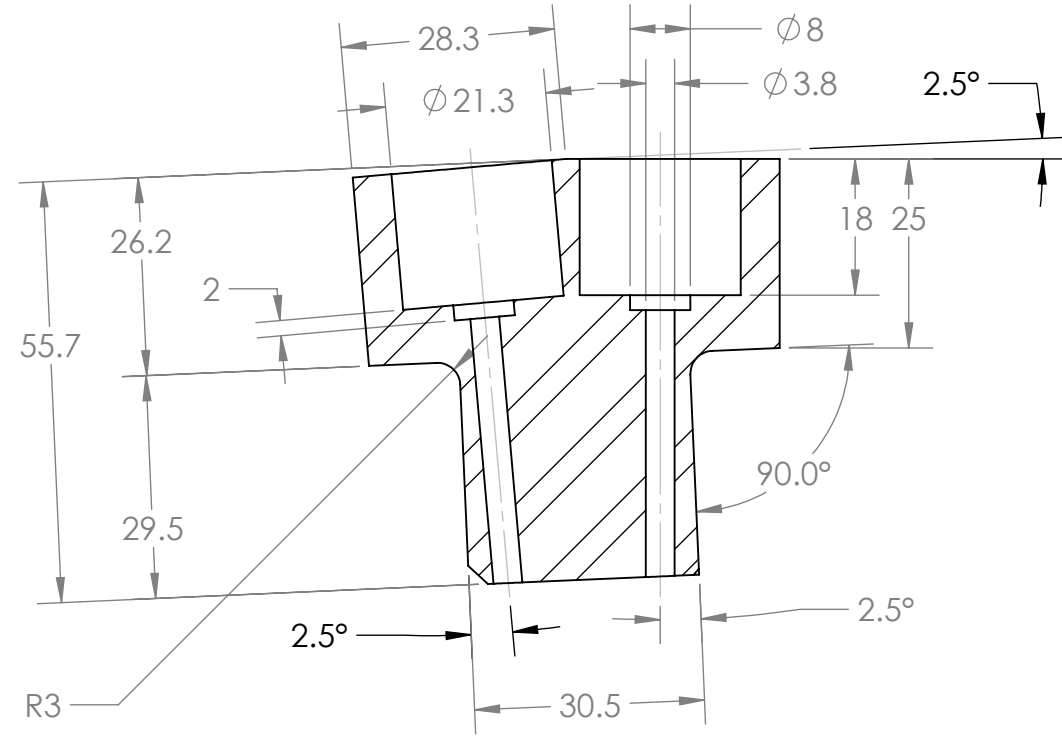
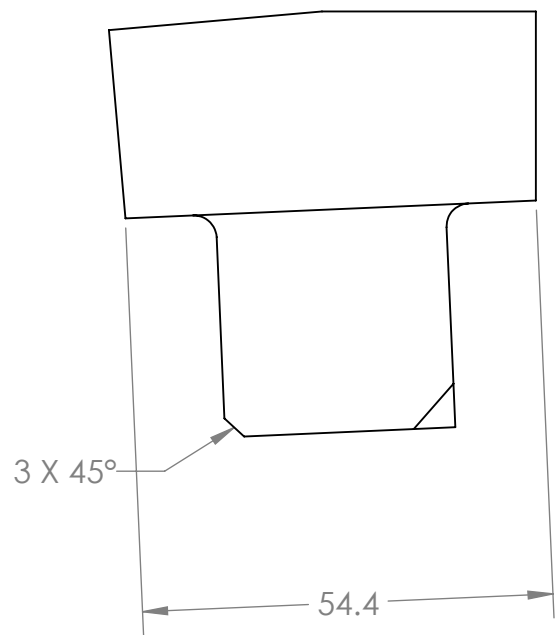
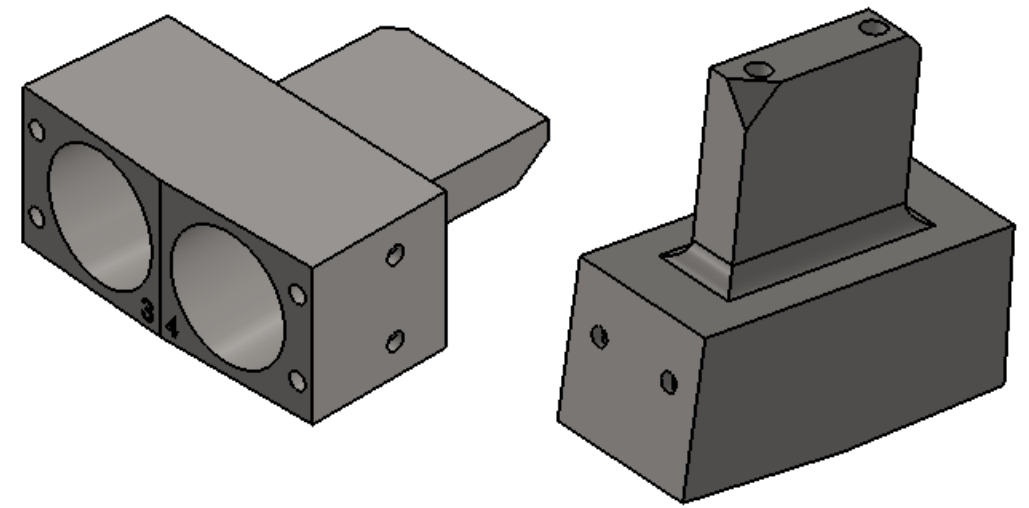
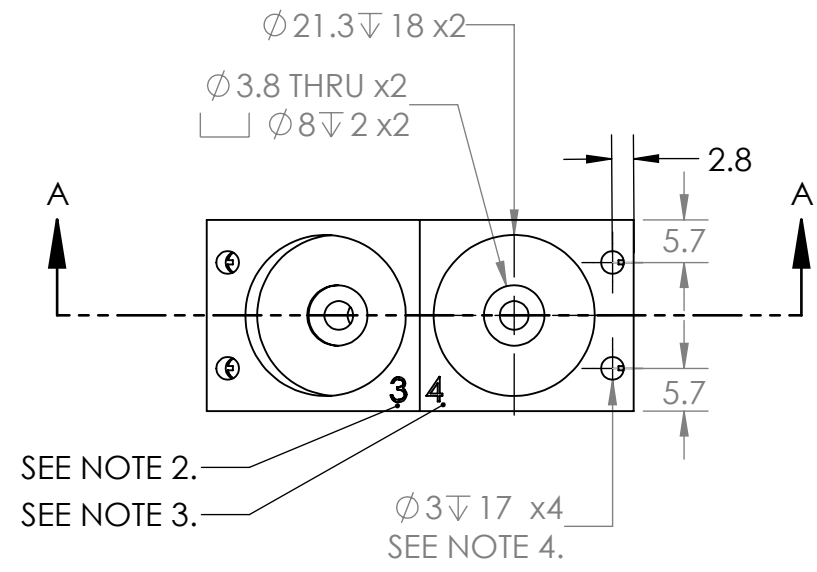
TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

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<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL	SS316
NAME	DATE
DRAWN	RAMONA V PEREZ 06/13/13
CHECKED	RAMONA V PEREZ 07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

TITLE: <b>PROTON DETECTOR MODULE A</b>		
SIZE <b>B</b>	DWG. NO. <b>PD_22_a</b>	REV
SCALE: 1:1	WEIGHT: .23kg	SHEET 1 OF 1

NOTES 08/02/13:  
 5. CHAMFER WAS NOT SUFFICIENT; HAD TO BE FURTHER FILED DOWN.



NOTES:  
 1. ALL MACHINING TOLERANCES TO +/-0.2mm EXCEPT WHERE SHOWN OTHERWISE.  
 2. ENGRAVE "3."  
 3. ENGRAVE "4."  
 4. THREAD FOR M3X0.5 MACHINE SCREW.

SECTION A-A

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TOLERANCES LINEAR DIMENSIONS					
OVER 0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000
+/- 0.1	+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8
TOLERANCES ANGULAR DIMENSIONS					
10 OR LESS	OVER 10 TO 50	OVER 50 TO 120	OVER 120 TO 400	OVER 400	
+/- 1°	+/- 0°30'	+/- 0°20'	+/- 0°10'	+/- 0°5'	

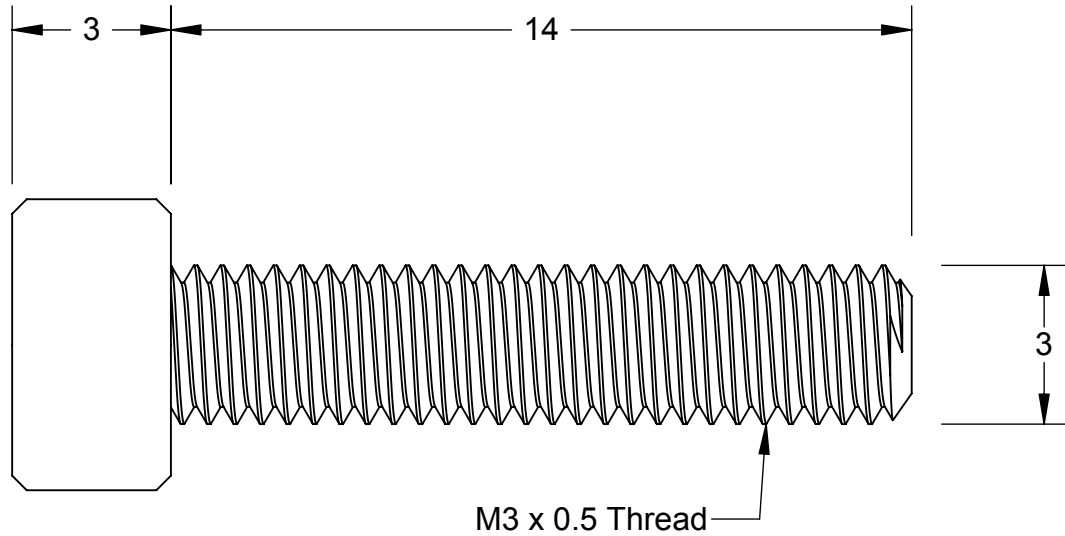
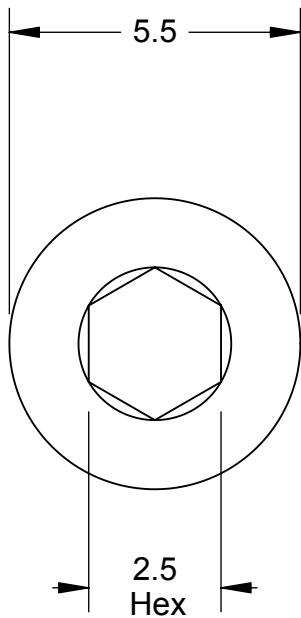
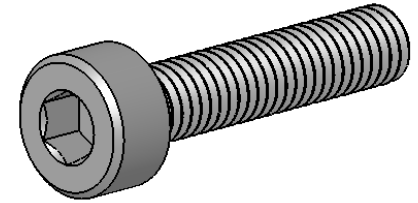
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<b>FIU</b> FLORIDA INTERNATIONAL UNIVERSITY	
MATERIAL	SS316
NAME	DATE
DRAWN	RAMONA V PEREZ 06/13/13
CHECKED	RAMONA V PEREZ 07/02/13
UNLESS OTHERWISE STATED DIMENSIONS ARE IN MM	REMOVE ALL BURRS AND SHARP EDGES

TITLE: <b>PROTON DETECTOR MODULE B</b>		
SIZE	DWG. NO.	REV
<b>B</b>	<b>PD_22_b</b>	
SCALE: 1:1	WEIGHT: 0.23kg	SHEET 1 OF 1

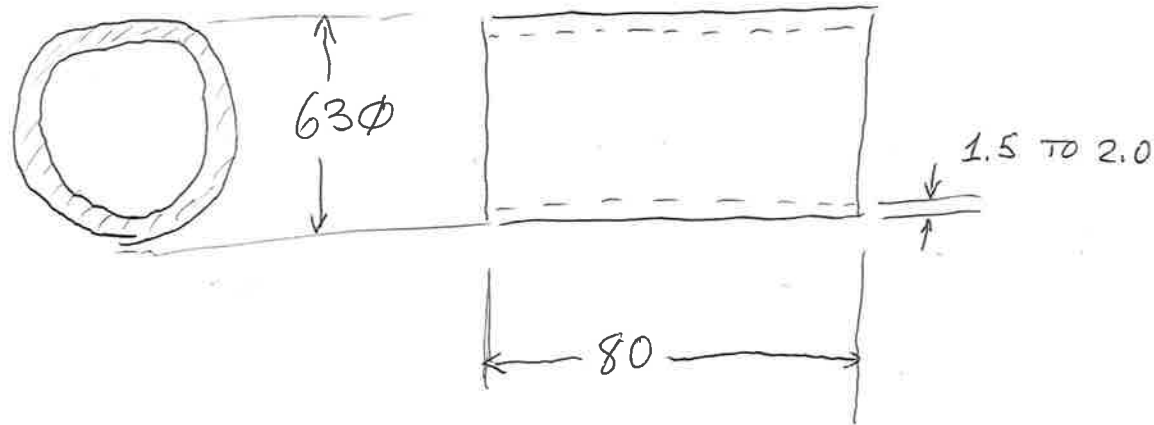
NOTES 08/02/13:

1. DURING WELDING ONE THREADED HOLE ON ONE MODULE WAS DEFORMED. FOR THAT HOLE USE M3x0.5 THREAD WITH 6MM LENGTH AS OPPOSED TO 14MM LENGTH.



<b>McMASTER-CARR</b> <small>CAD</small>	PART NUMBER	<b>92290A118</b>
<a href="http://www.mcmaster.com">http://www.mcmaster.com</a> © 2008 McMaster-Carr Supply Company	Type 316 Stainless Steel Socket Head Cap Screw	
Unless otherwise specified, dimensions are in millimeters. Information in this drawing is provided for reference only.		

MAST RP RF SCREEN CAP BARREL



DIMENSIONS: MM

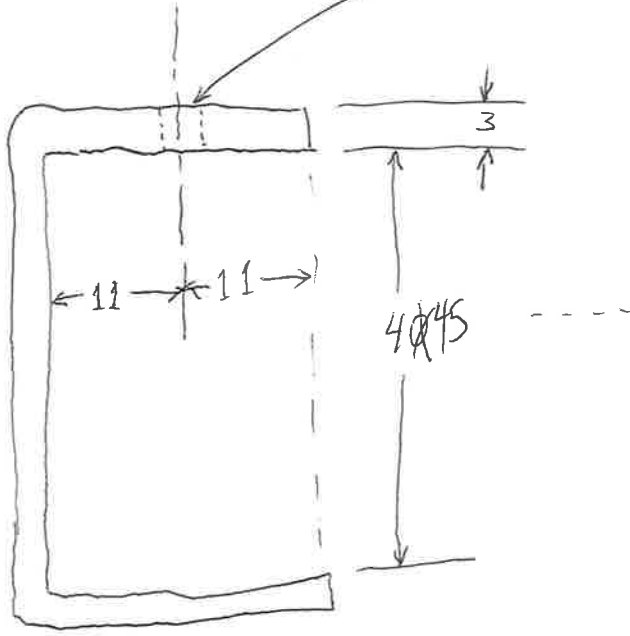
TOLERANCES:  $\pm 0.5$ MM

MATERIAL: COPPER OR BRASS ~~AL~~

DRAWN BY: P. DARROW 13 AUG 13

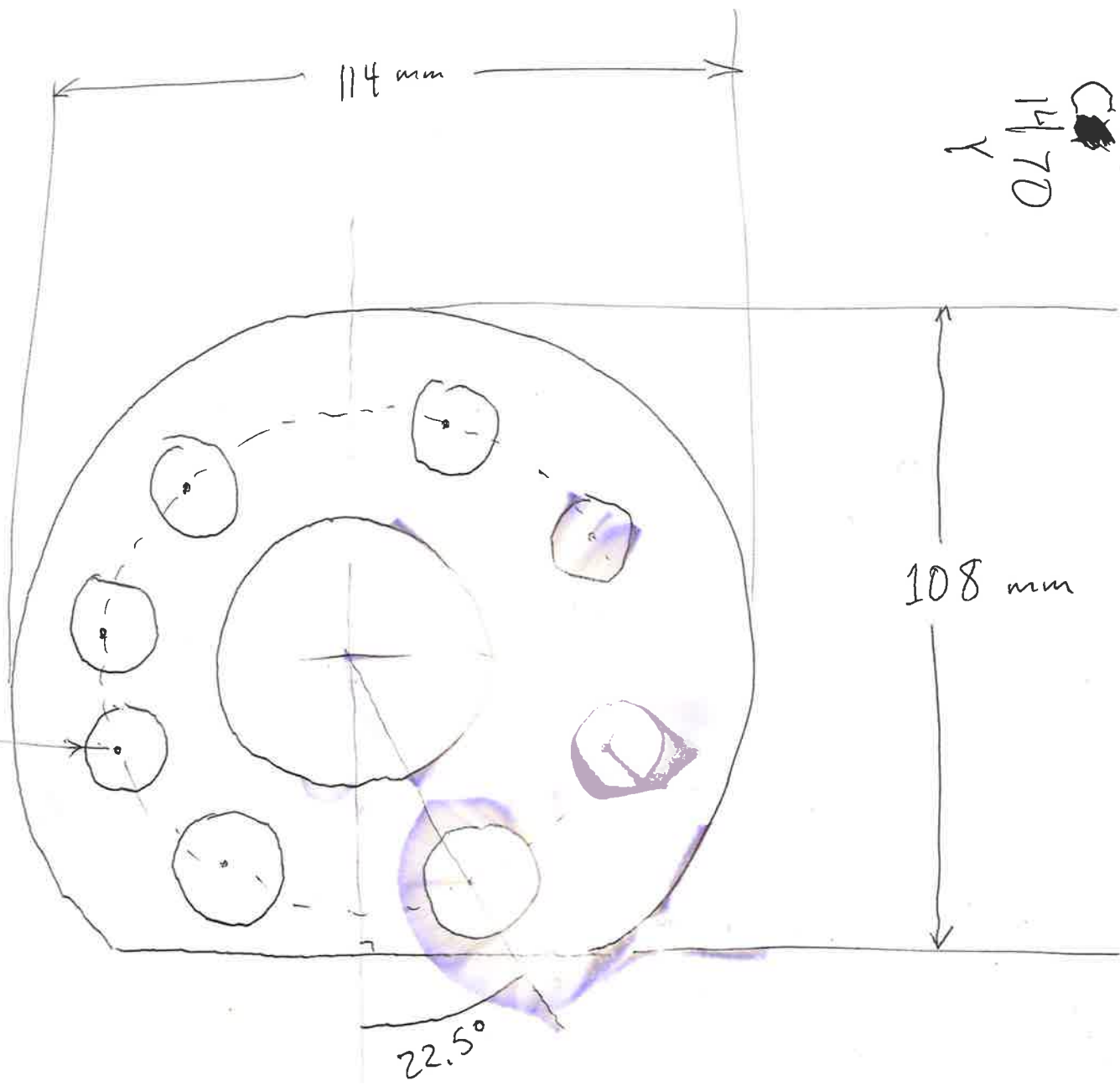


DRELL THROUGH & TAP  
M6 x 1.0  
1 PLACE

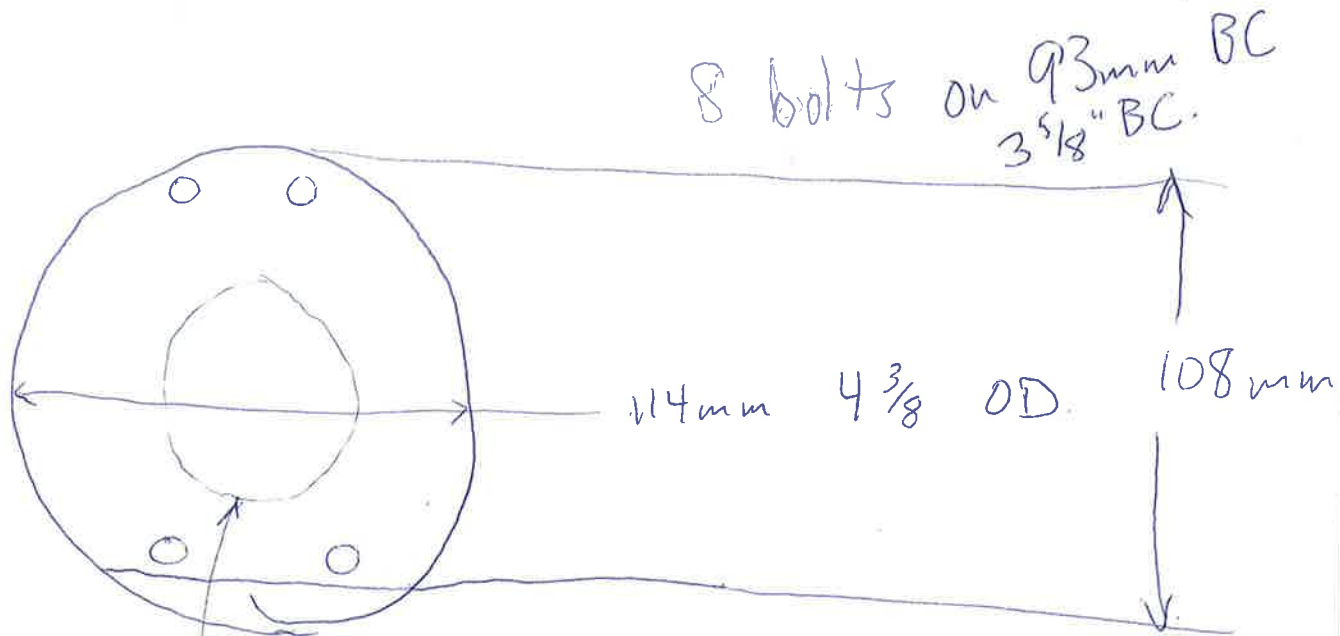


CF is 18mm thick each! + 3mm Cu plat + some  
slop.

20  $\phi$   
8 PLACES  
ON 92  $\phi$  P.C.D.



# RP End flange



8 bolts on 93mm BC  
3 5/8" BC.

114mm 4 3/8 OD

108mm

Connectors  
fit within  
65mm OD  
63

Allen head bolts:

~ 12 - 12.5mm  
head OD.

washers: ~ 18mm OD

Double flange thickness ~ 35mm.

Cover should extend back  $\geq$  40mm.

BNC connector cables probably need ~ 15mm  $\phi$  clearance hole  
(SHV measured) + some mm extra for cables.