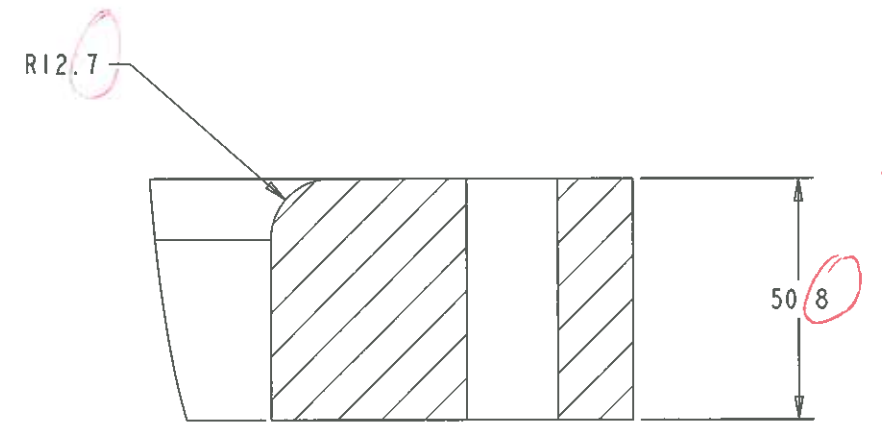
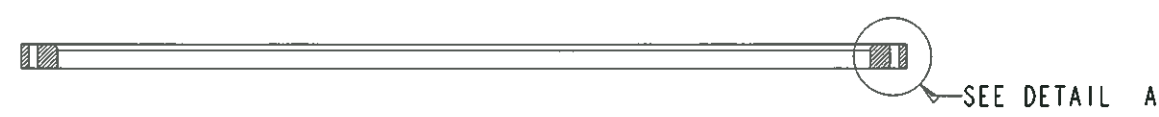


ITEM	DESCRIPTION	MATL	QUANTITY



DETAIL A  
SCALE 1.000

*MATERIAL  
6061*



SECTION A-A

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS  $X \pm 0.1$   $XX \pm 0.05$   
 ANGULAR DIMENSIONS  $\pm 1'$   
 SURFACE FINISH 32um

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 EDMONTON ALBERTA CANADA

DESIGNED CHRIS NG TELEPHONE (780) 492 3095  
 DRAWN CHRIS NG FAX (780) 492 3408  
 CHECKED E-MAIL: c.jng@ualberta.ca

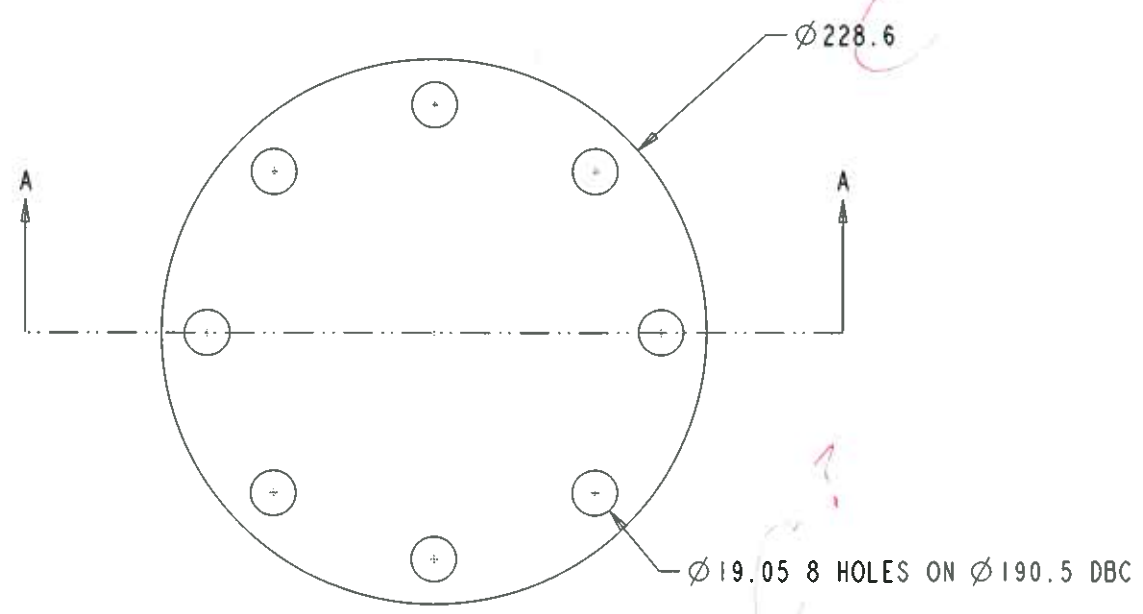
APPROVED

REF. DWGS.	REV.	DATE	REVISION	BY

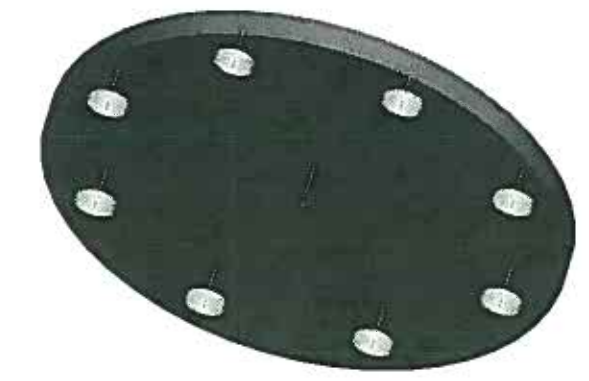
**CENTER OF PARTICLE PHYSICS**

WINDOW CLAMP

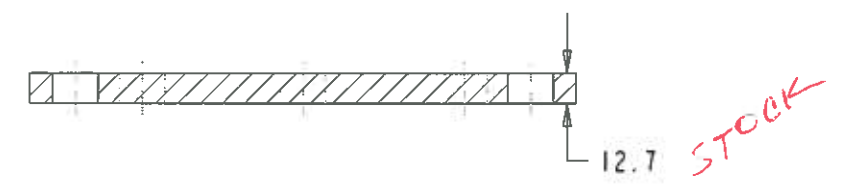
SCALE 0.100 APPROVAL DWG NO. REV.  
 DATE JAN 9, 2012 CHIEF ENGR



ITEM	DESCRIPTION	MATL	QUANTY



*MATERIAL?*



SECTION A-A

REF. DWGS.	REV.	DATE	REVISION	BY
	A	DEC 7	ORIGINAL	
	B	DEC 22	ELIMINATED HOLE IN MIDDLE	

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1'  
 SURFACE FINISH 32mm

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**CENTER OF PARTICLE PHYSICS**

GAS PORT PLATE

SCALE 0.500 APPROVAL DWG. NO. REV.  
 DATE DEC 22, 2011 CHIEF ENGR. B

e

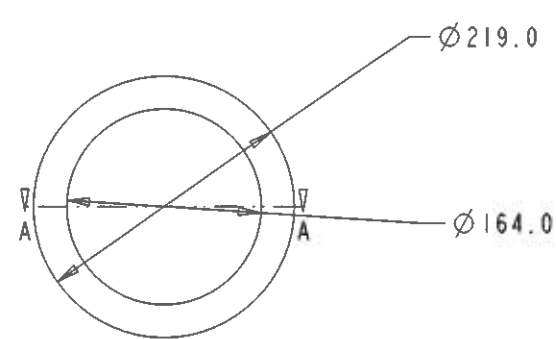
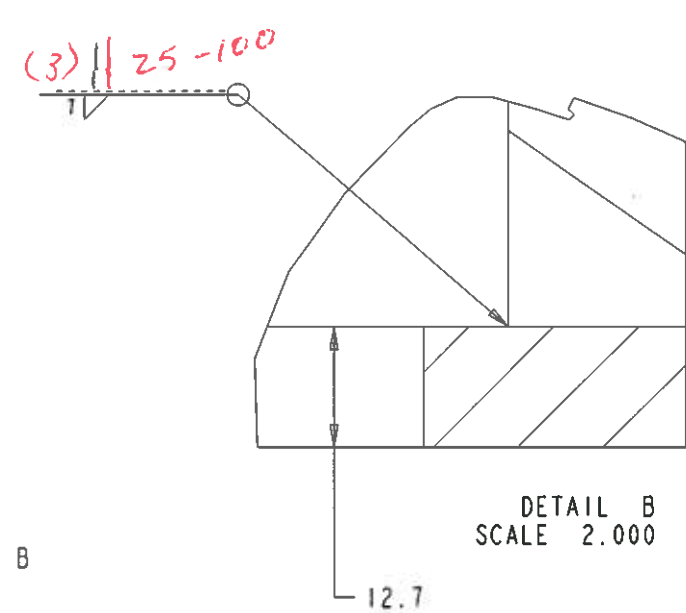
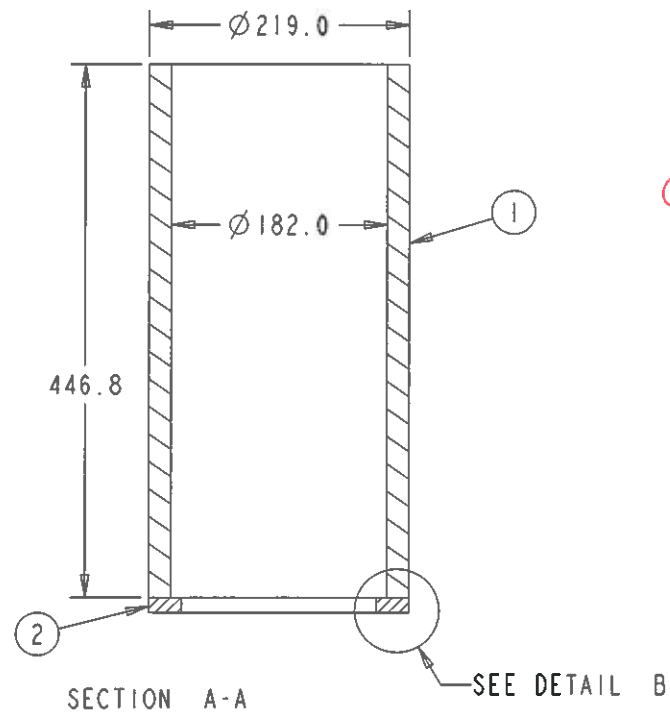
d

c

b

a

ITEM	DESCRIPTION	MATL	QUANTITY
1	Quartz Window Sleeve Pipe	ALUM	1
2	Quartz Window Sleeve Plate	ALUM	1



NOTES:

- 1 WILL BE A 8" SCH 140 PIPE WITH ID BORED TO PROPER DIMENSION
- 2 WILL BE MADE FROM AN ALUMINUM PLATE

*TYPE ?  
LOOK!*

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1°  
 SURFACE FINISH 32um

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APPROVED

REF. DWGS.	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**

QUARTZ WINDOW SLEEVE WELDED BEFORE MACHINING

SCALE 0.250 APPROVAL DWG. NO. REV.  
 DATE JAN 6. 2012 CHIEF ENGR.

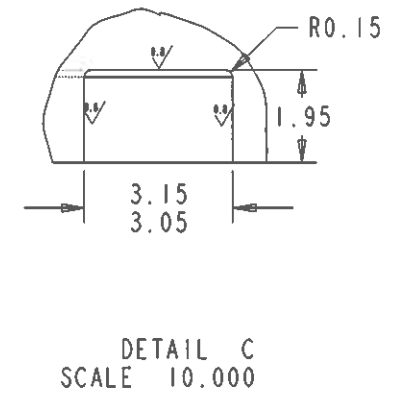
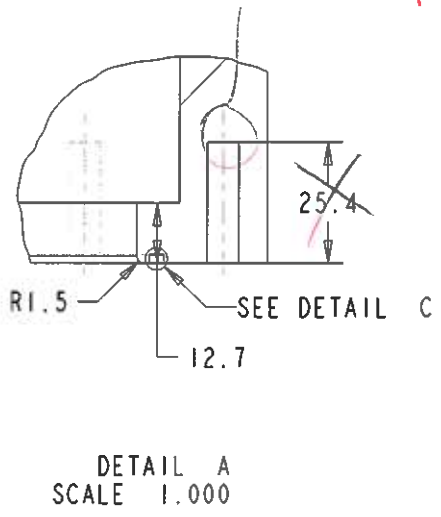
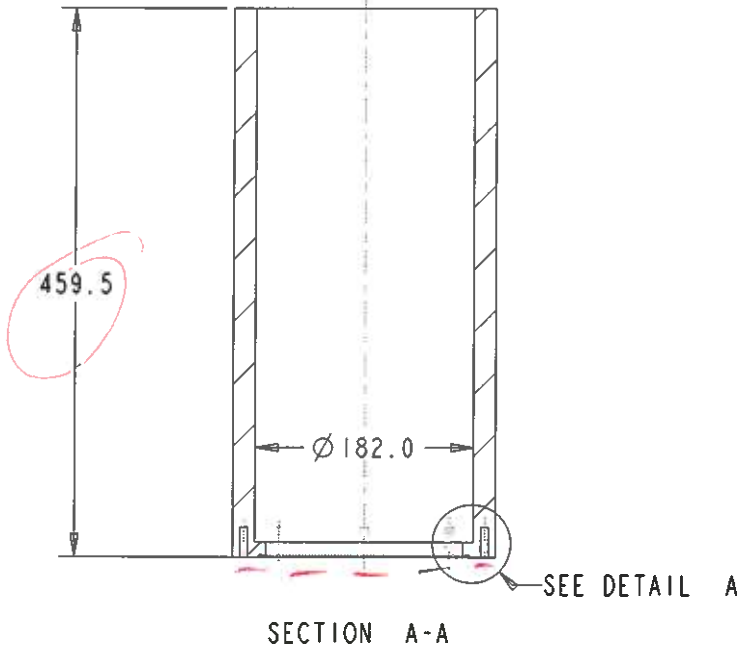
e

d

c

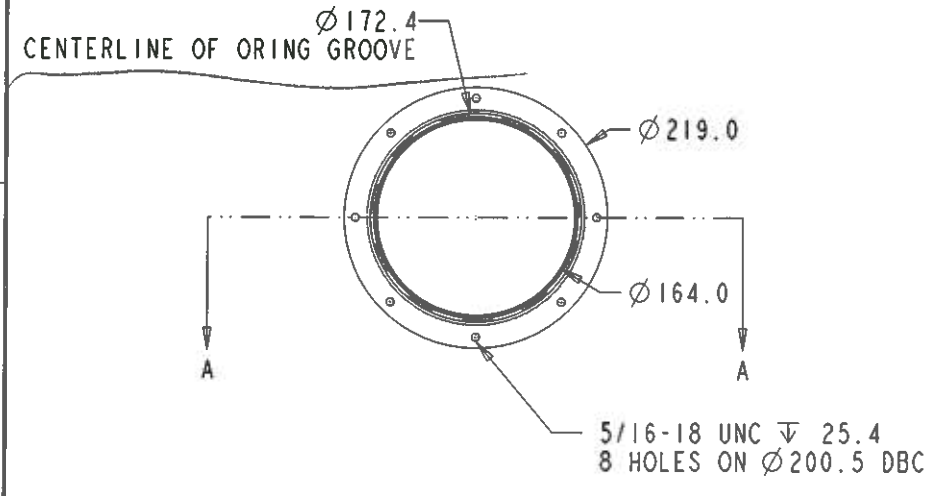
b

a



ITEM	DESCRIPTION	MATL	QUANTITY

- NOTES:
- O-ring Groove for AS568-166 Standard O-ring
  - Sealing surface must be free of burrs and scratches



ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1°  
 SURFACE FINISH 32µm

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APPROVED

REF. DWGS.	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**

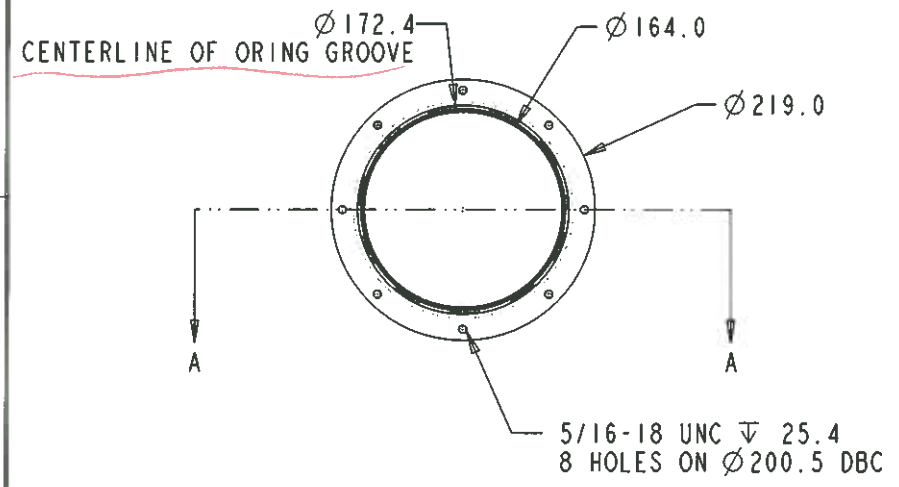
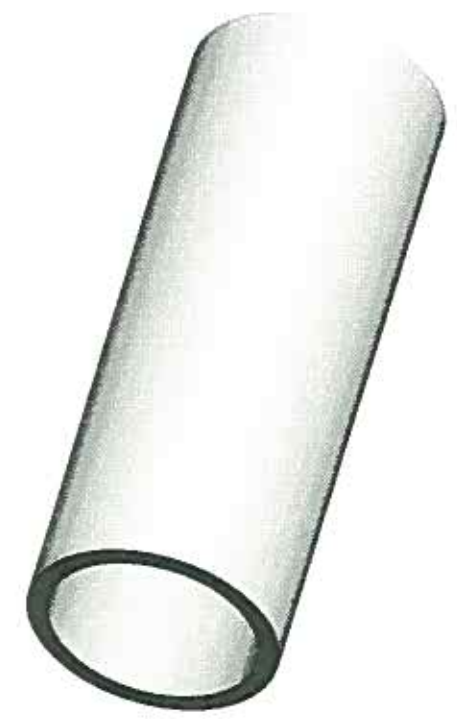
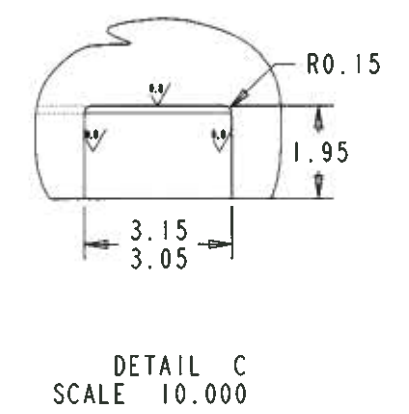
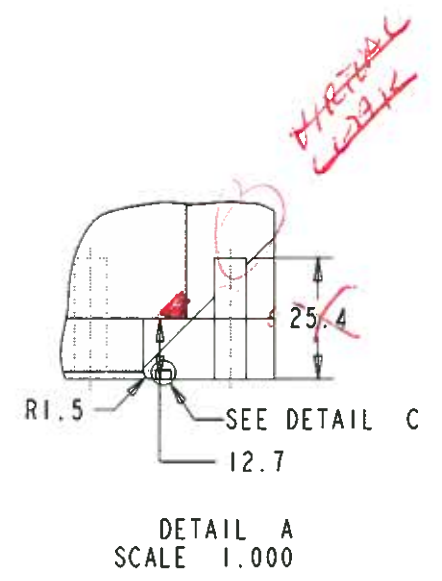
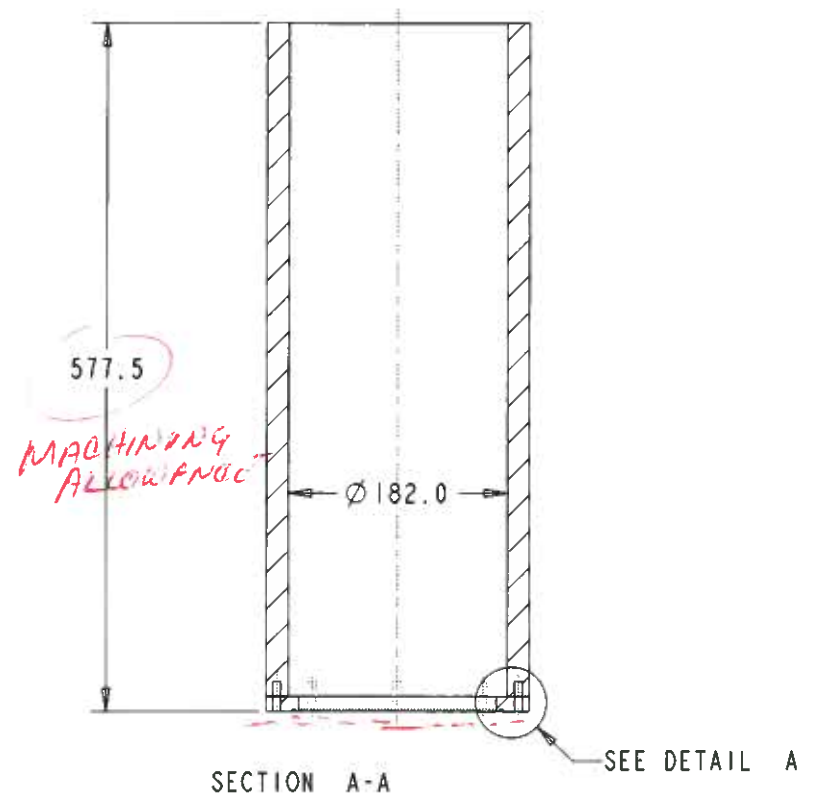
QUARTZ WINDOW SLEEVE

SCALE 0.250 APPROVAL DWG. NO. REV.  
 DATE Jan 9, 2012 CHIEF ENGR. B

*Handwritten in red:*  
 VITREX  
 MATERIAL?

e d c b a

ITEM	DESCRIPTION	MATL	QUANTITY



- NOTES:
- O-ring Groove for AS568-166 Standard O-ring
  - Sealing surface must be free of burrs and scratches

JITON

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1'  
 SURFACE FINISH 32um

**UNIVERSITY OF ALBERTA**  
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 APPROVED

REF. DWGS	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**  
 QUARTZ WINDOW SLEEVE LONG  
 SCALE 0.250 APPROVAL DWG. NO. REV.  
 DATE JAN 9, 2012 CHIEF ENGR. 8

e d c b a

e

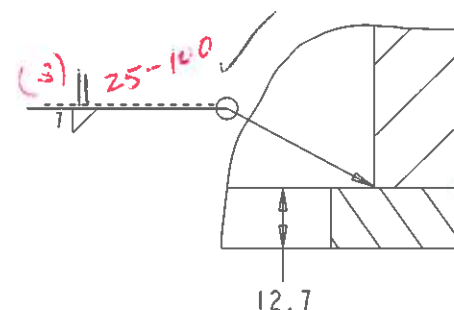
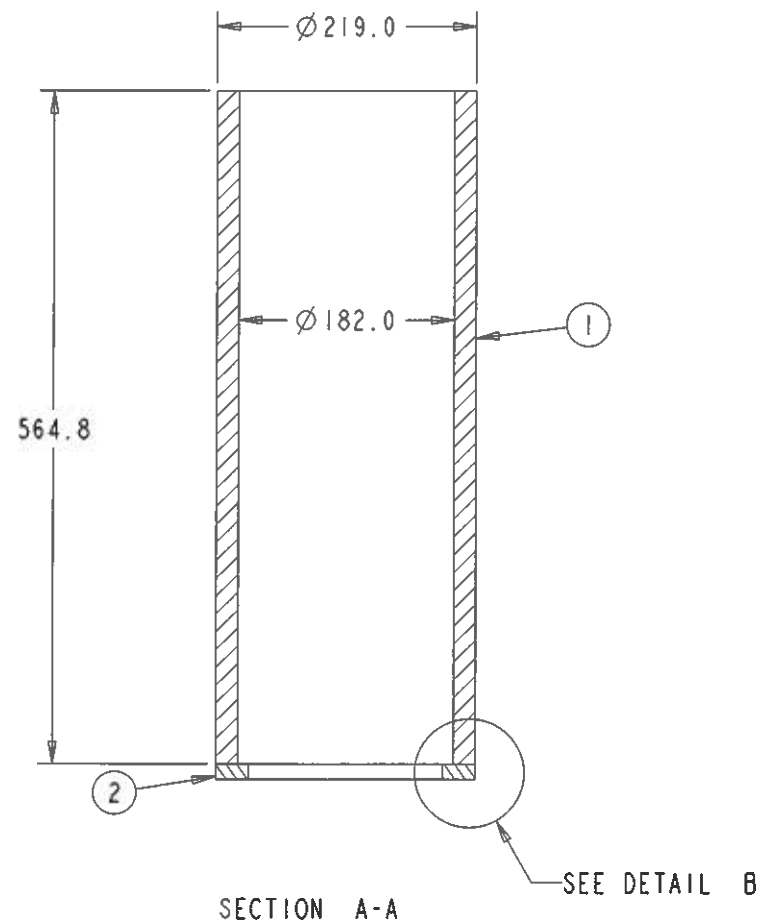
d

c

b

a

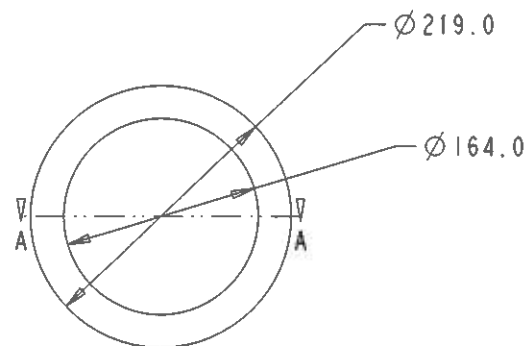
ITEM	DESCRIPTION	MATL	QUANTITY
1	Quartz Window Sleeve Pipe Long	ALUM	1
2	Quartz Window Sleeve Plate	ALUM	1



NOTES:

- 1. 1 WILL BE A 8" SCH 140 PIPE WITH ID BORED TO PROPER DIMENSION
- 2. 2 WILL BE MADE FROM AN ALUMINUM PLATE

*TYPE*  
*Level*



ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1'  
 SURFACE FINISH 32um

UNIVERSITY OF ALBERTA  
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APPROVED  
 DATE JAN 6, 2012

REF. DWGS.	REV.	DATE	REVISION	BY

CENTER OF PARTICLE PHYSICS

QUARTZ WINDOW SLEEVE LONG  
 WELDED BEFORE MACHINING

SCALE 0.250 APPROVAL DWG. NO. REV.  
 DATE JAN 6, 2012 CHIEF ENGR

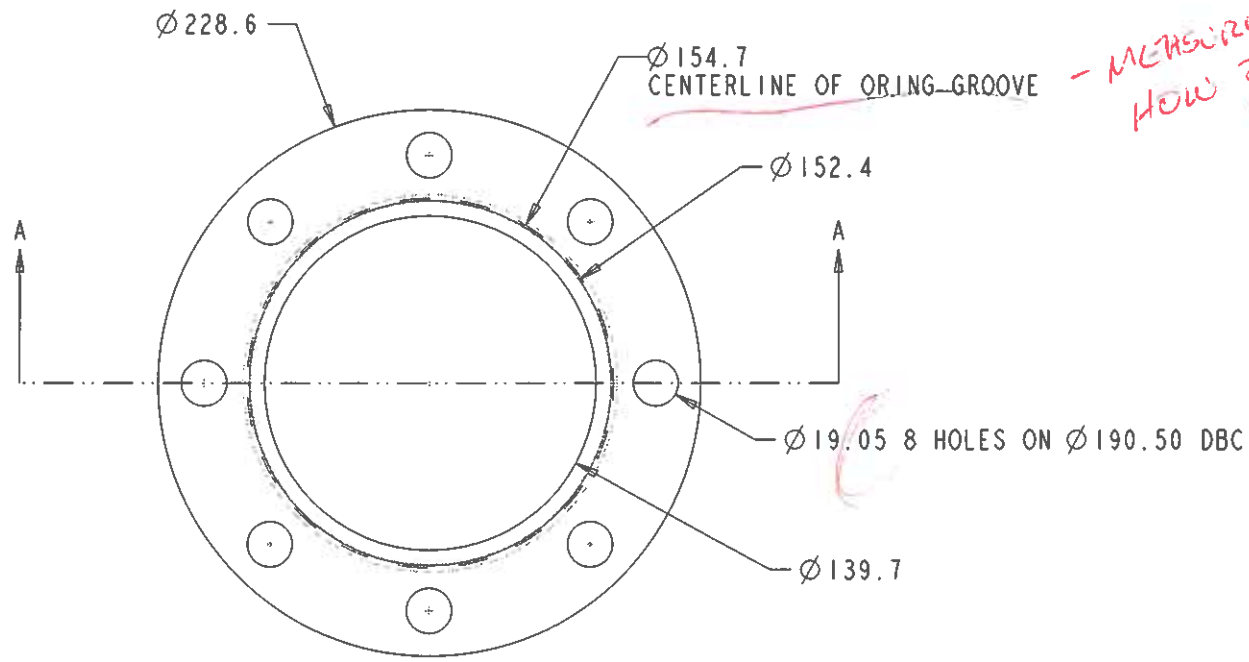
e

d

c

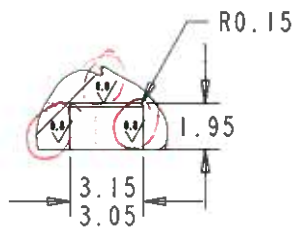
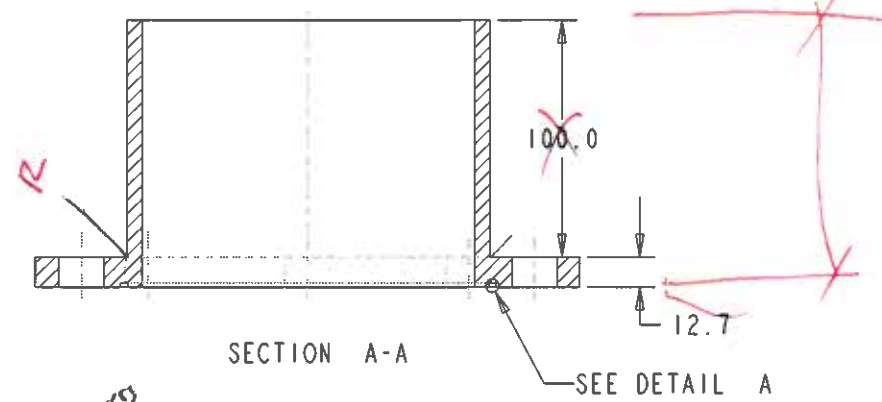
b

a



*- MEASURE HOW?*

*BUY THIS?*



DETAIL A  
SCALE 5.000

*MATERIAL? LOW!*

*suggestion  
break shape corners*

NOTES:

- O-ring Groove for AS568-163 Standard O-ring
- Sealing surface must be free of burrs and scratches

*- VITON*

ITEM	DESCRIPTION	MATL	QUANTITY

REF. DWGS.	REV.	DATE	REVISION	BY

ALL DIMENSIONS IN MM UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1°  
 SURFACE FINISH 32 Ra

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 DRAWN CHRIS NG FAX (780) 492 3408  
 CHECKED E-MAIL: cjang@ualberta.ca

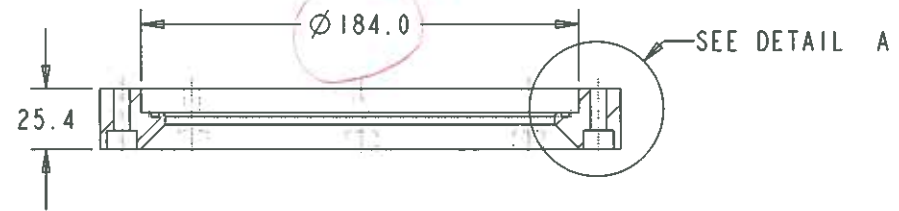
APPROVED

**CENTER OF PARTICLE PHYSICS**

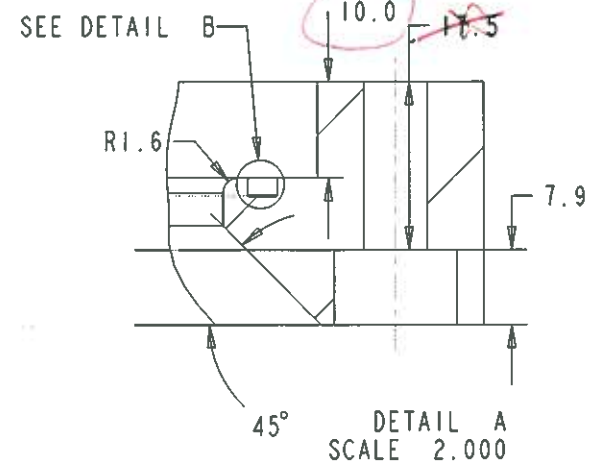
GAS PORT FLANGE

SCALE 0.500 APPROVAL DWG. NO. REV.  
 DATE JAN 9, 2012 CHIEF ENGR. B

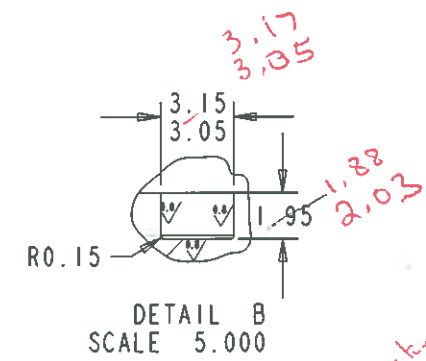
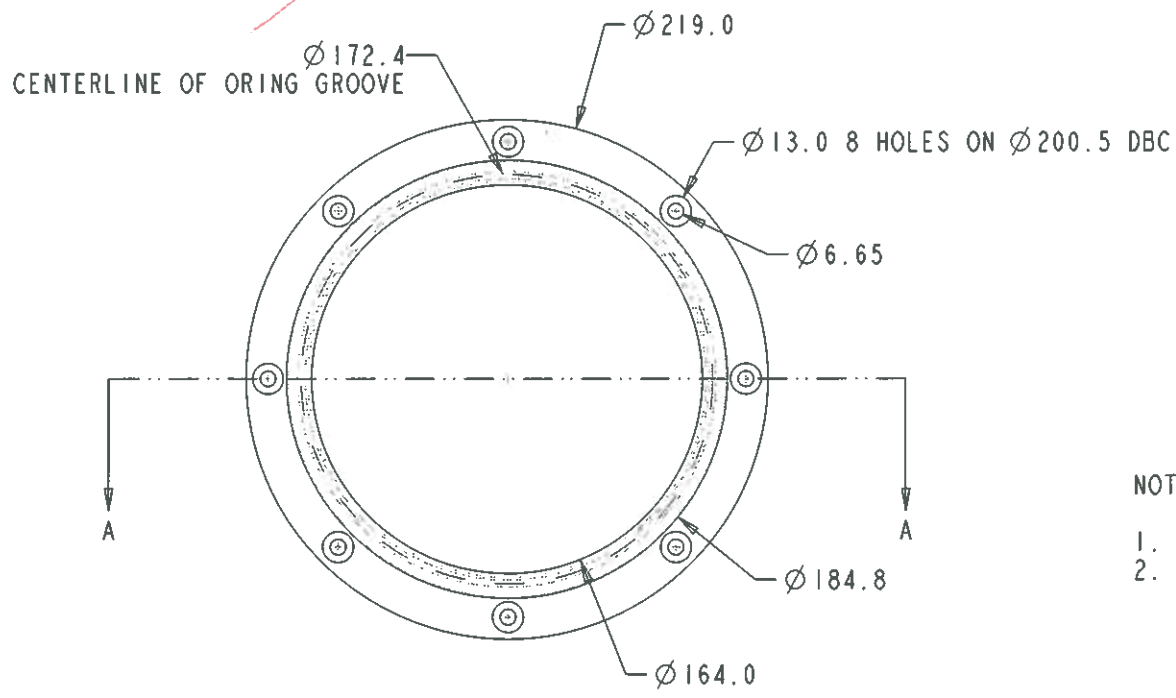




SECTION A-A



DETAIL A  
SCALE 2.000



DETAIL B  
SCALE 5.000



NOTES:

- O-ring Groove for AS568-166 Standard O-ring
- Sealing surface must be free of burrs and scratches

ITEM	DESCRIPTION	MATL	QUANTY

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1'  
 SURFACE FINISH 32

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REF. DWGS.	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**  
 QUARTZ HOLDER  
 SCALE 0.500 APPROVAL DWG. NO. REV.  
 DATE JAN 9, 2011 CHIEF ENGR. B

e

d

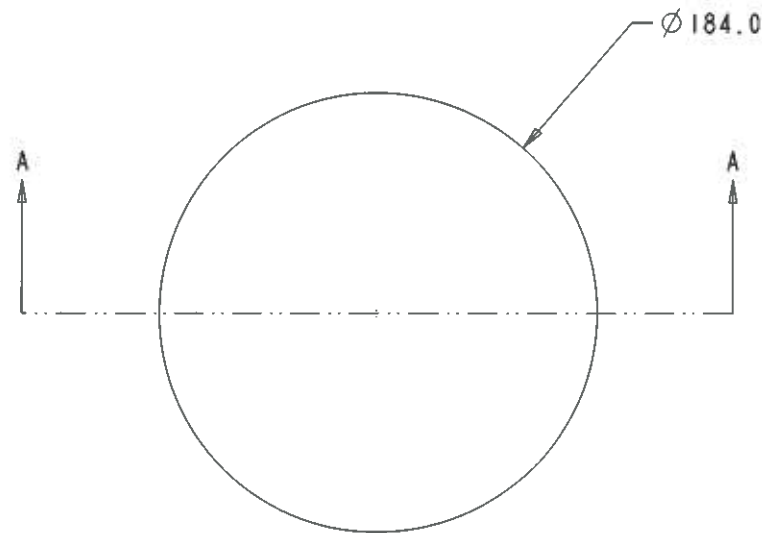
c

b

a

ITEM	DESCRIPTION	MATL	QUANTITY

3

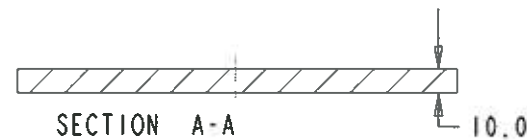


2



*MANUFACTURER  
TOLERANCE*

3



1

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± 1°  
 SURFACE FINISH 32µm

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REF. DWGS.	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**

QUARTZ WINDOW 1404

SCALE 0.500 APPROVAL DWG. NO. REV.  
 DATE DEC 15, 2011 CHIEF ENGR

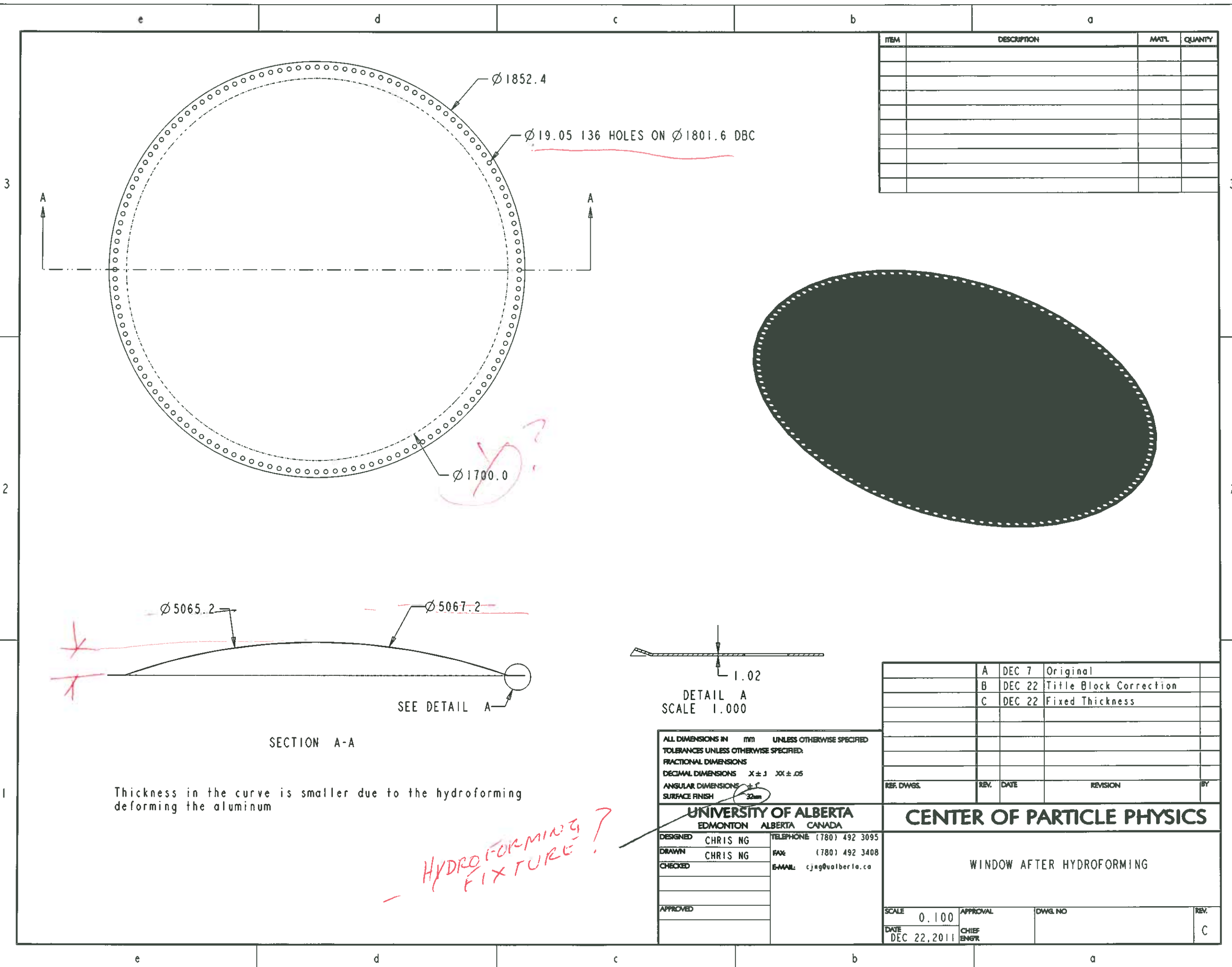
e

d

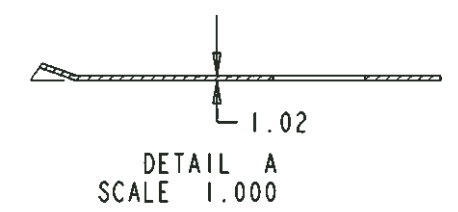
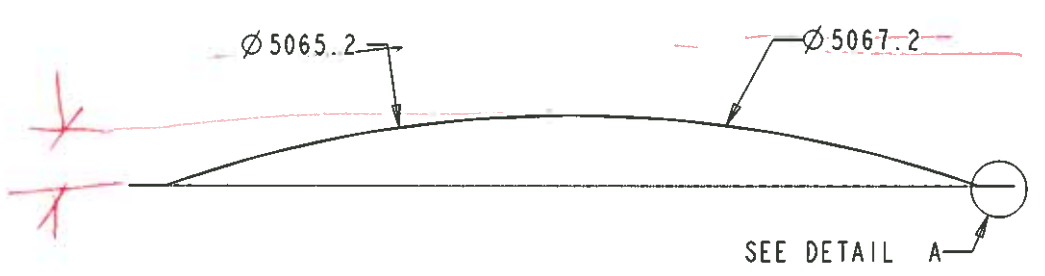
c

b

a



ITEM	DESCRIPTION	MATL	QUANTITY



Thickness in the curve is smaller due to the hydroforming deforming the aluminum

*HYDROFORMING FIXTURE?*

REV.	DATE	REVISION	BY
A	DEC 7	Original	
B	DEC 22	Title Block Correction	
C	DEC 22	Fixed Thickness	

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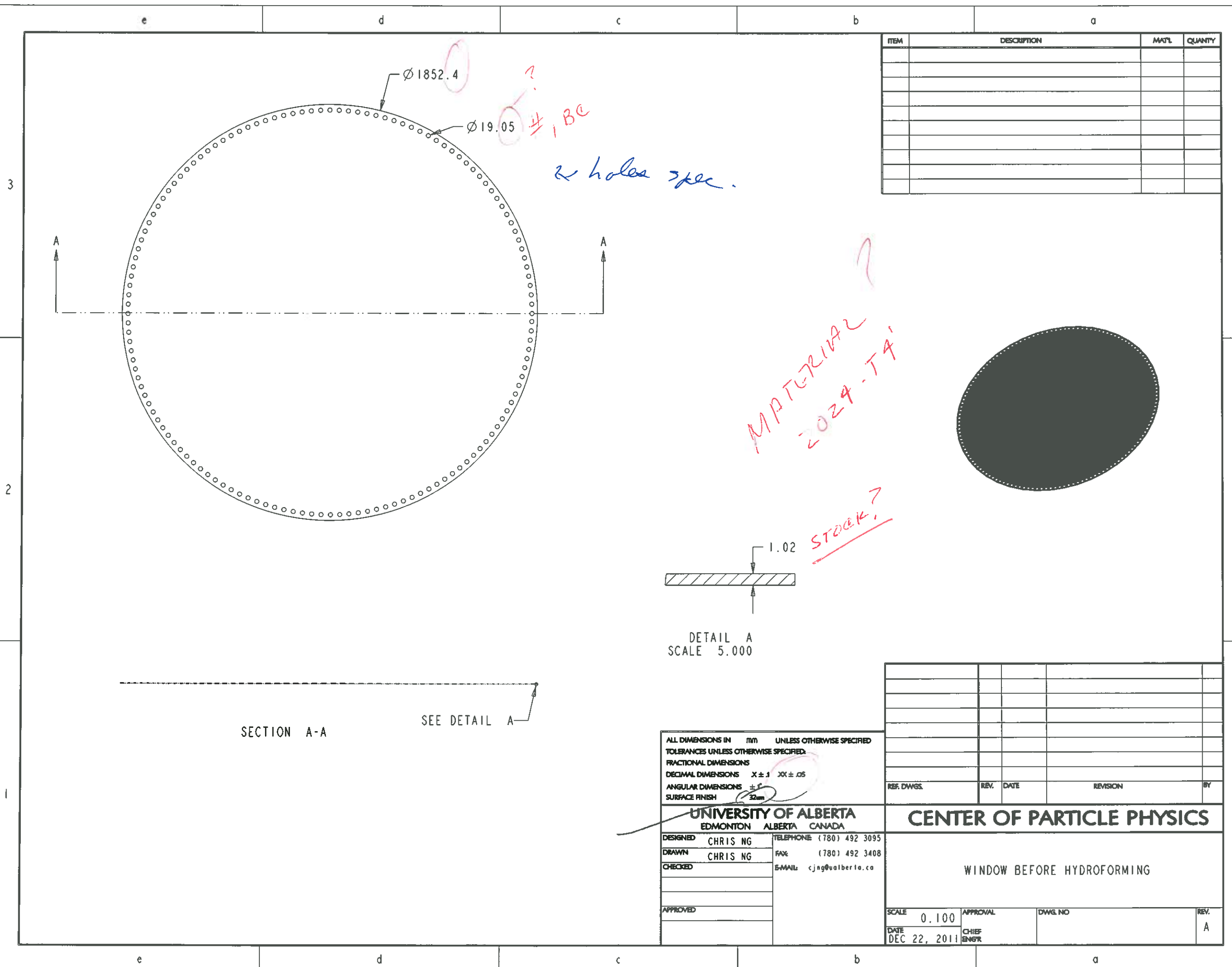
DESIGNED CHRIS NG TELEPHONE (780) 492 3095  
DRAWN CHRIS NG FAX (780) 492 3408  
CHECKED E-MAIL: c.jag@ualberta.ca

APPROVED

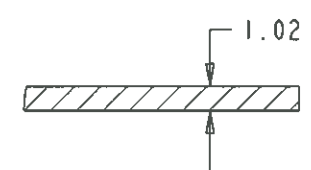
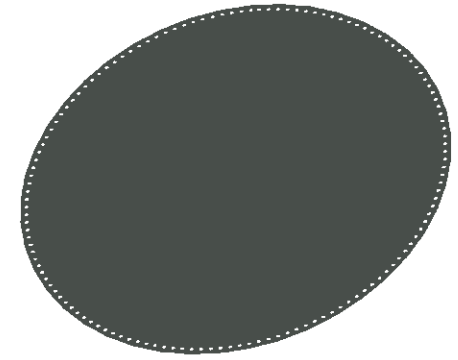
**CENTER OF PARTICLE PHYSICS**

WINDOW AFTER HYDROFORMING

SCALE 0.100 APPROVAL DWG NO. REV. C  
DATE DEC 22, 2011 CHIEF ENGR.



ITEM	DESCRIPTION	MATL	QUANTITY



DETAIL A  
SCALE 5.000

SECTION A-A  
SEE DETAIL A

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
 TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL DIMENSIONS  
 DECIMAL DIMENSIONS X ± .1 XX ± .05  
 ANGULAR DIMENSIONS ± .5  
 SURFACE FINISH 32um

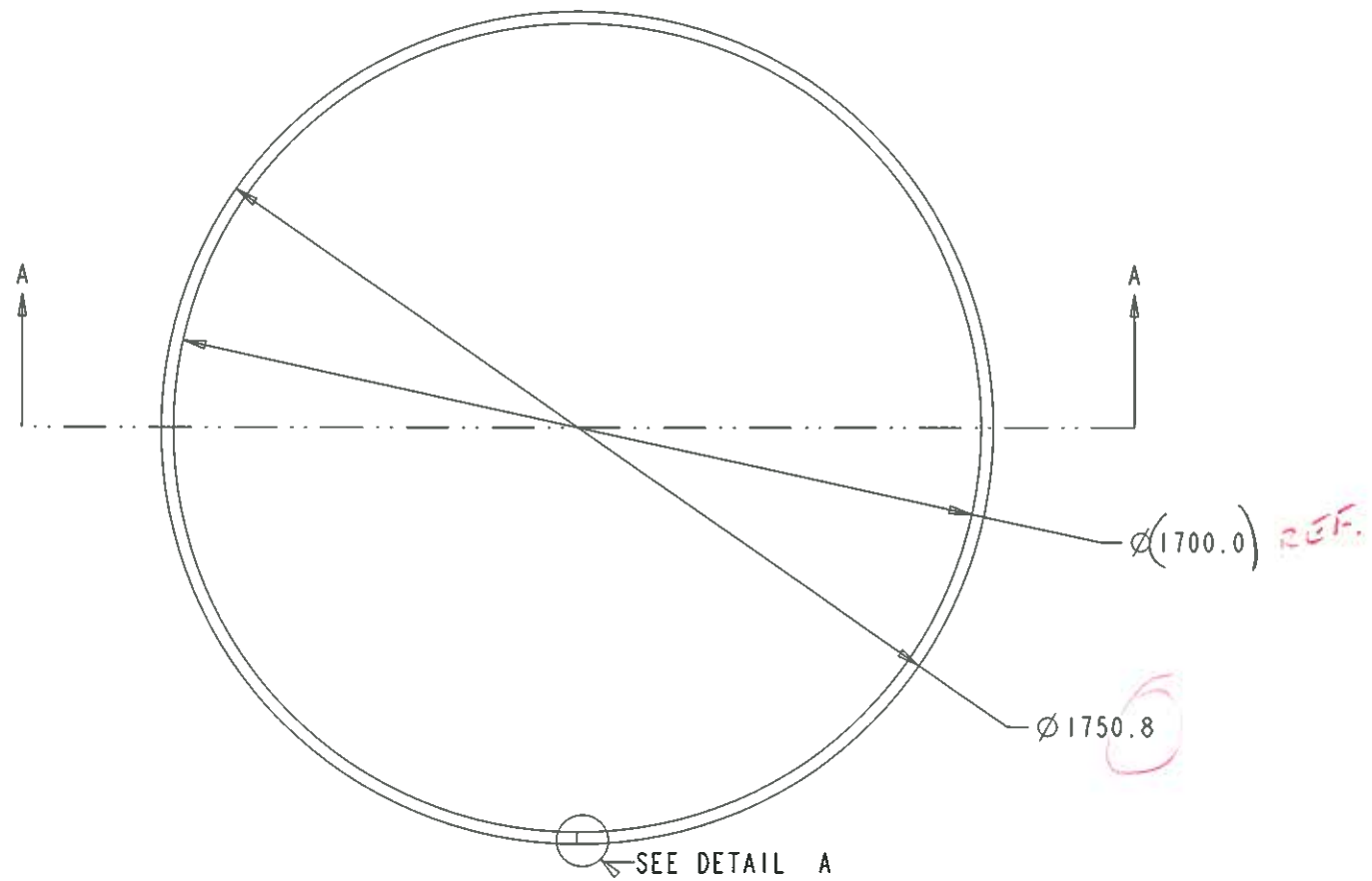
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REF. DWGS.	REV.	DATE	REVISION	BY

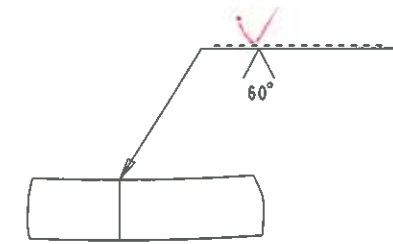
**CENTER OF PARTICLE PHYSICS**

WINDOW BEFORE HYDROFORMING

SCALE 0.100	APPROVAL	DWG. NO	REV. A
DATE DEC 22, 2011	CHIEF ENGR		



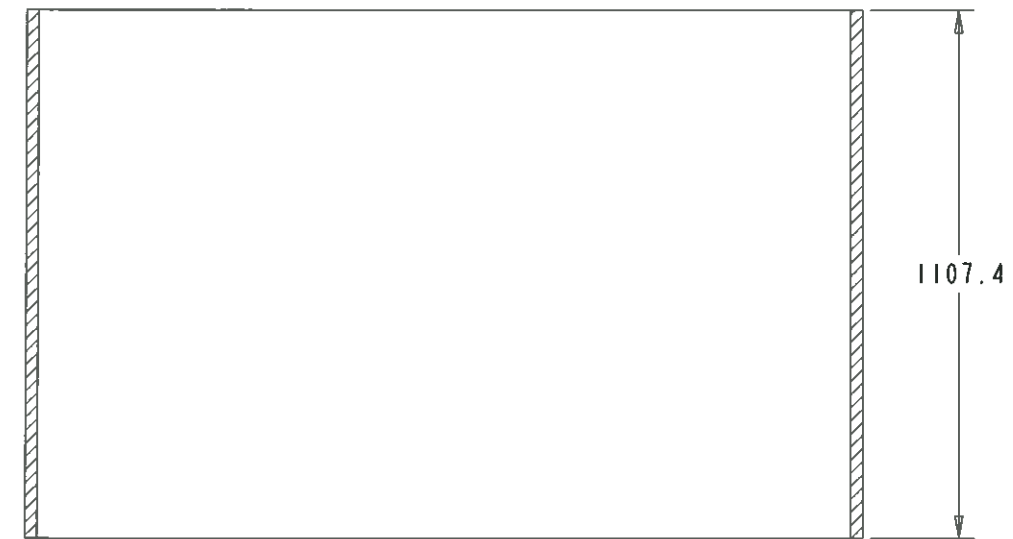
ITEM	DESCRIPTION	MAT'L	QUANTITY



DETAIL A  
SCALE 0.500

*6061  
TYPES?*

NOTES:  
MAKE VESSEL OUT OF ONE 1" SHEET OF ALUMINUM  
BEND INTO CYLINDRICAL SHAPE AND ~~SINGLE-V~~ BUTT WELD  
Double-V



SECTION A-A

ALL DIMENSIONS IN mm UNLESS OTHERWISE SPECIFIED  
TOLERANCES UNLESS OTHERWISE SPECIFIED:  
FRACTIONAL DIMENSIONS X ± .1 XX ± .05  
DECIMAL DIMENSIONS X ± .1 XX ± .05  
ANGULAR DIMENSIONS ± 1  
SURFACE FINISH 32mm

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REF. DWGS.	REV.	DATE	REVISION	BY

**CENTER OF PARTICLE PHYSICS**

MAIN VESSEL WELD

SCALE 0.100	APPROVAL	DWG. NO	REV.
DATE JAN 9, 2012	CHIEF ENGR		A





