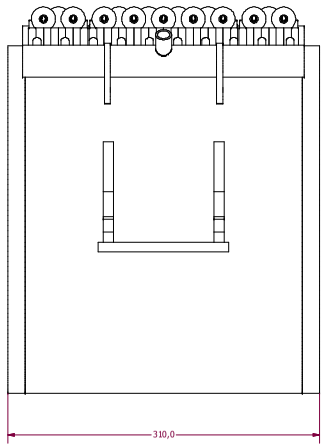
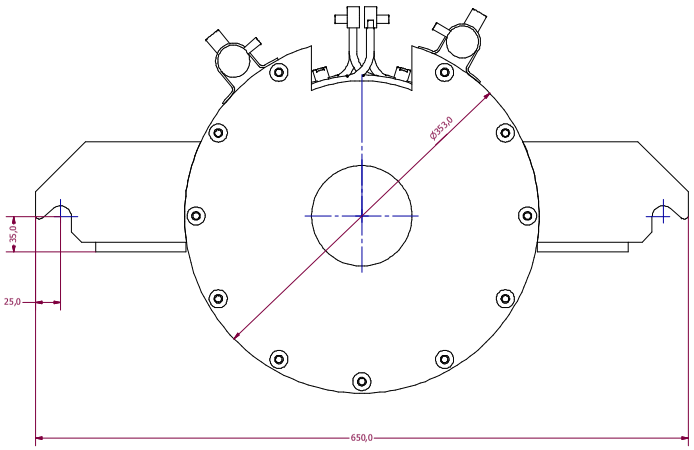
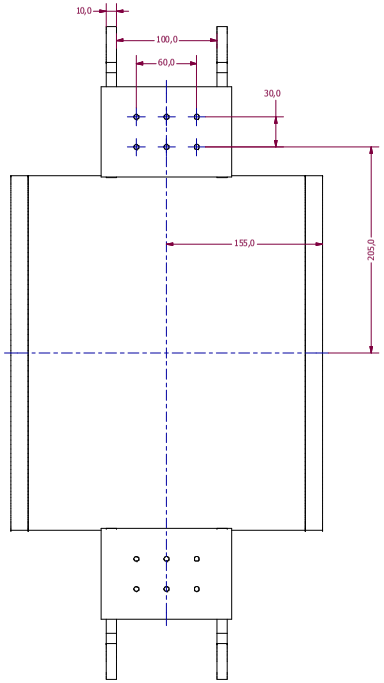






ORIGINAL DIAMETER LEBT,
MODEL REFLECTS OLD SIZES,
NEW SIZES IN PAPER DWG ONLY.

Title:		
Drawn by:	Projection:	
Designed by:	Model file:	PRODUCT_RUTHERFORD_LAB_VER_..iam
Checked by:	Drawing file:	LEBT.idw
Date:	Version number:	
Manufactured by:	Project:	
Material:	Sheet number:	1 / 33
Finish:	Number off:	
Scale:	Drawing number:	
Notes:		

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5'
Hole centres:		± 0.05 mm
Suiface finish:		1.6 microns
Dimensions in mm		□

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

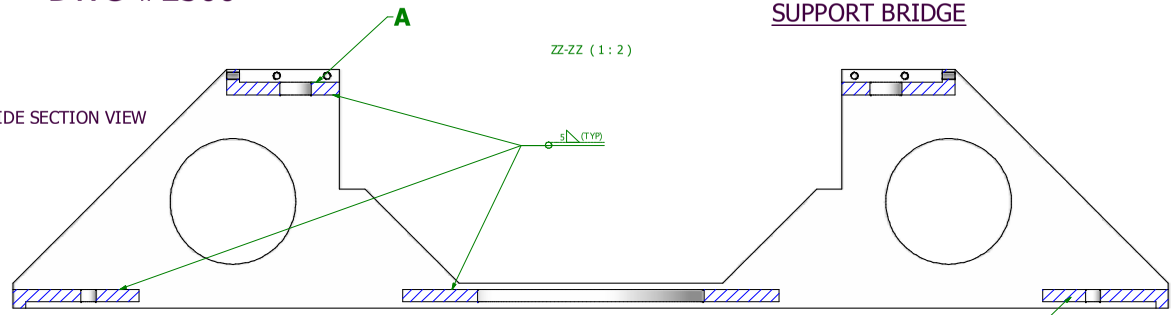
Imperial College London

DWG #2500

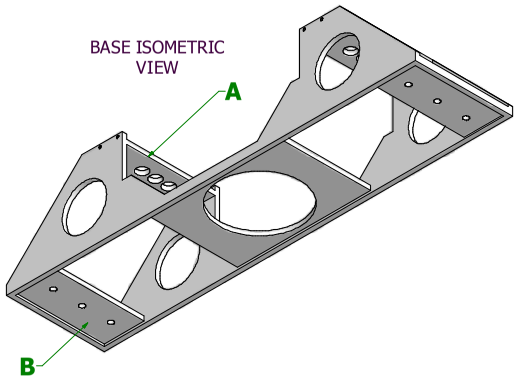
L.E.B.T. SOLENOID SUPPORT BRIDGE

***F**RONT **E**ND **T**EST **S**TAND (F.E.T.S.)*
http://fets.isis.rl.ac.uk/

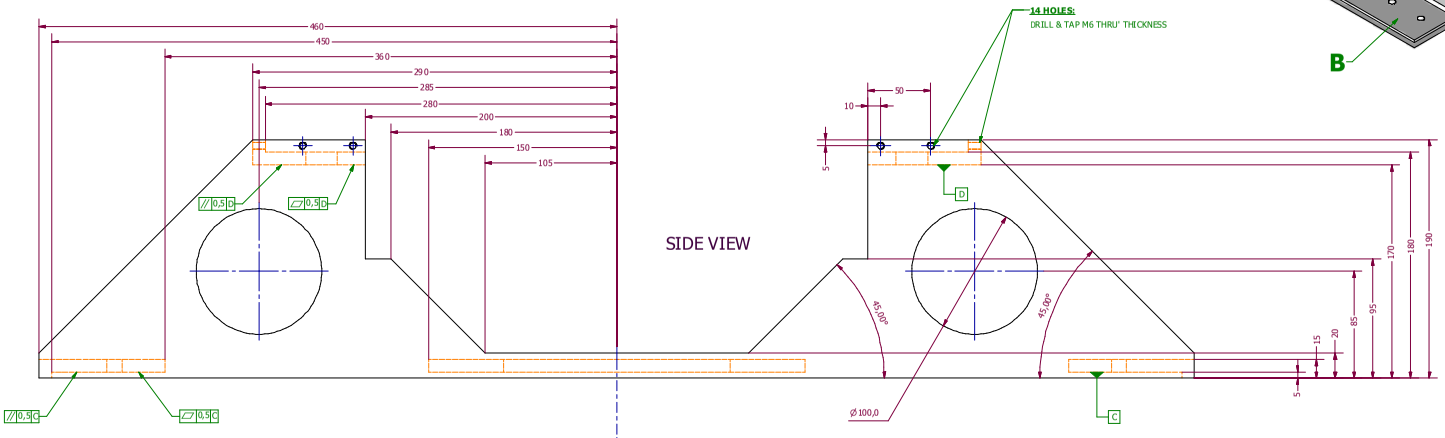
SIDE SECTION VIEW



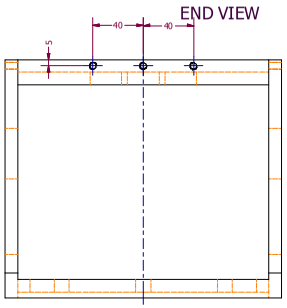
BASE ISOMETRIC VIEW



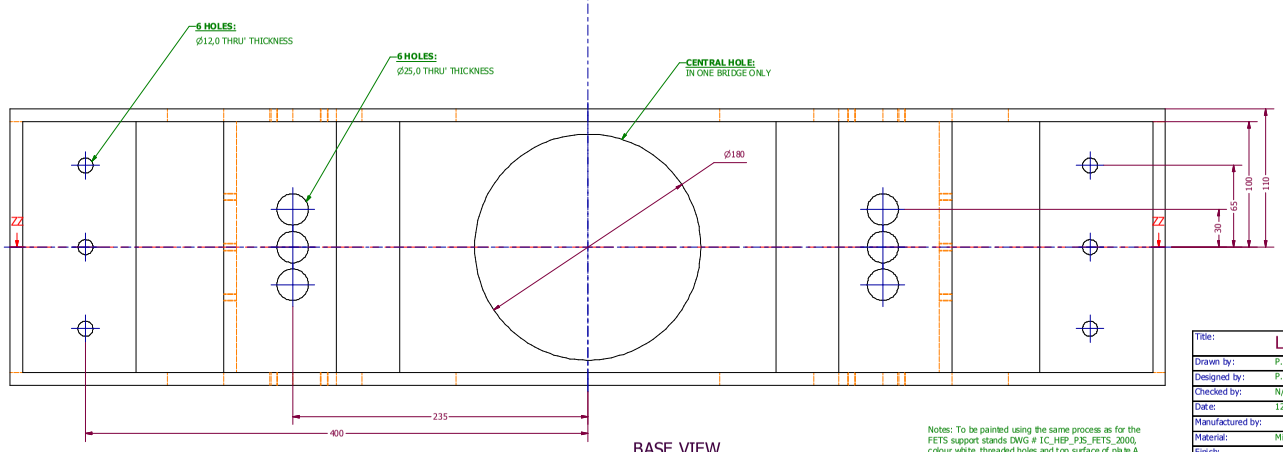
SIDE VIEW



END VIEW



BASE VIEW



Notes: To be painted using the same process as for the FETS support stands DWG # IC_HEP_PJS_FETS_2000, colour white, threaded holes and top surface of plate A and bottom surface of plate B to be free of paint.

** All plates are mild steel except two plates A which are a non-magnetic grade of stainless steel.

Title:	L.E.B.T. Solenoid Support Bridge		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	Bridge12.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	12 June 2008	Version number:	1
Manufactured by:		Project:	Front End Test Stand
Material:	Mild Steel **	Sheet number:	2 / 33
Finish:		Number off:	4
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2500
Notes:			

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5'
Hole centres:		± 0.05 mm
Suiface finish:		1.6 microns
Dimensions in mm		□

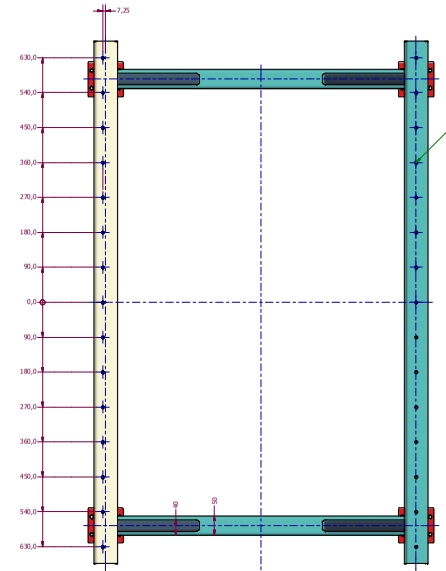
Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

Imperial College London

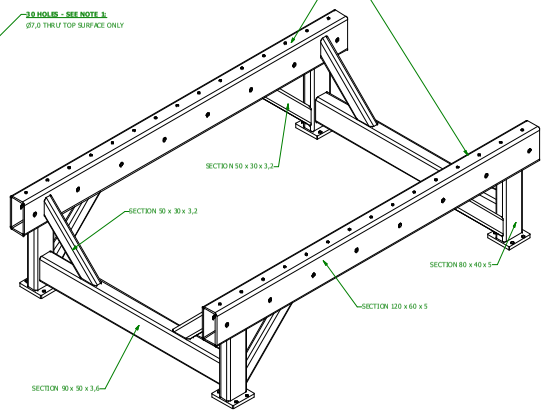
DWG #2501

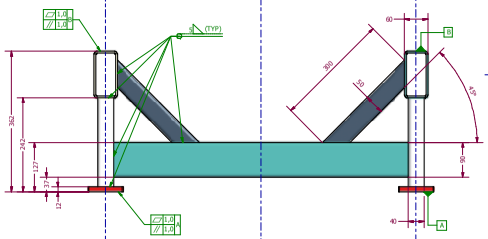
L.E.B.T. SUPPORT

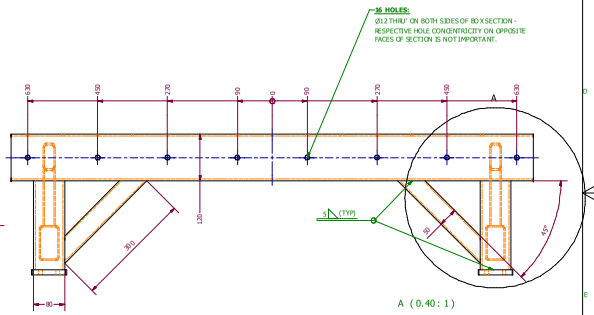
FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

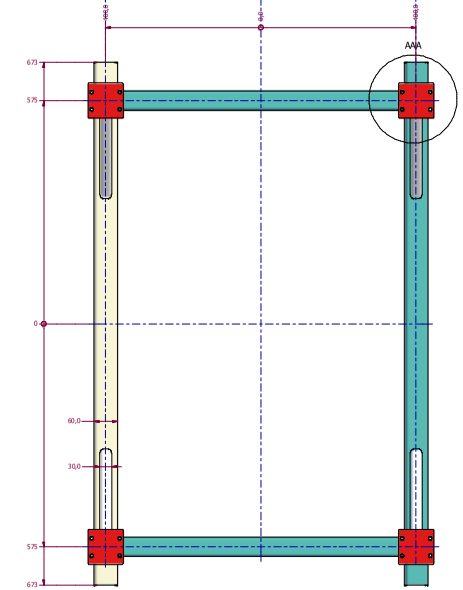


NOTE 1:
TOP FACES OF MAIN SPARS EACH HAVE AN ARRAY OF 15 HOLES, CENTRED ALONG THE SPAN LENGTH AND ON A 90mm PITCH. BUT ONLY ONE OF THE ARRAYS IS CENTRAL TO THE SPAN WIDTH, THE OTHER IS OFFSET BY 7,25mm.

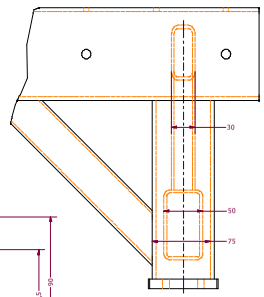




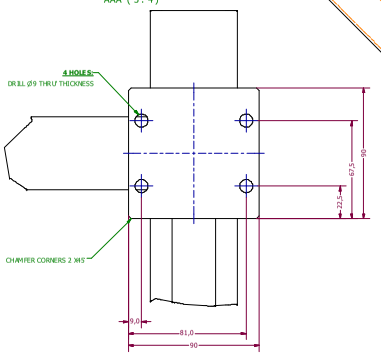


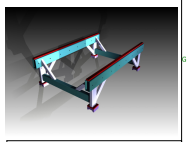


A (0.40 : 1)



AAA (3 : 4)





Title:	L.E.B.T. Support		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	LEBTsupport.iam
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	12 June 2008	Version number:	1
Manufactured by:	S.G.O. - to be confirmed	Project:	Front End Test Stand
Material:	Mild Steel	Sheet number:	3 / 33
Finish:		Number off:	1
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2501
Notes:			

Unless otherwise stated:

Dimensional tolerance: X	± 0.5 mm
X.X	± 0.2 mm
X.XX	± 0.1 mm
Angular tolerance:	± 0.5°
Hole centres:	± 0.05 mm
Surface finish:	1.6 microns
Dimensions in mm	☐

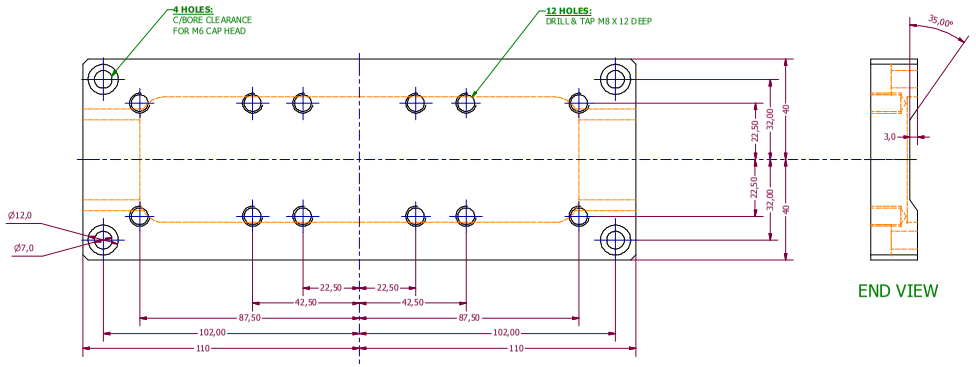
Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 260058

Imperial College London

DWG #2502

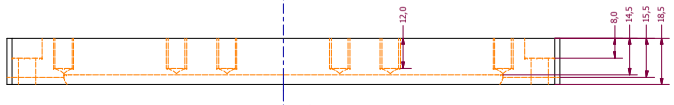
L.E.B.T. SUPPORT
VEE RAIL RUNNER

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

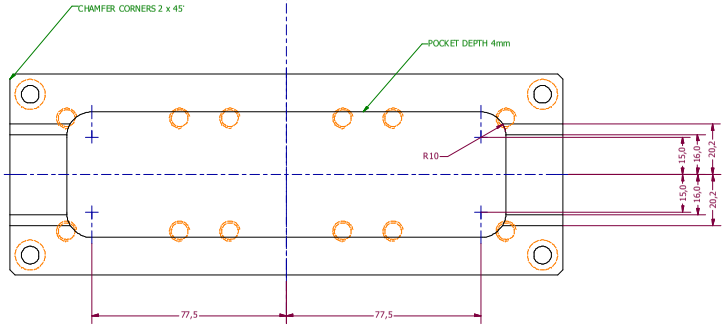


END VIEW

TOP VIEW



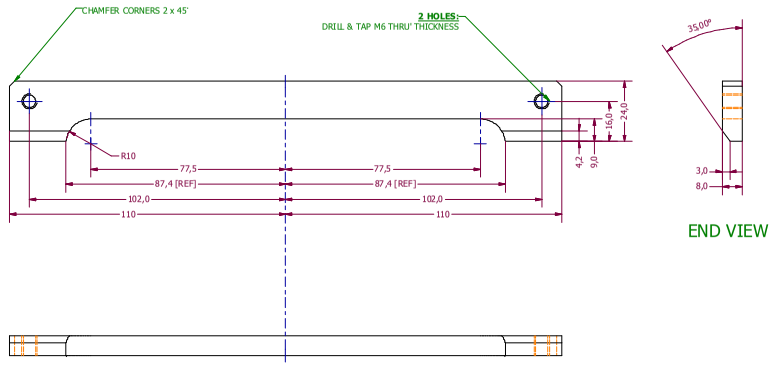
SIDE VIEW



BASE VIEW

VEE RAIL RUNNER - TOP
MATERIAL: EN24
OFF: 4

TOP VIEW

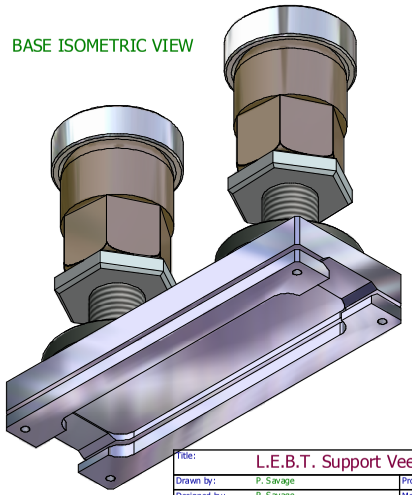


SIDE VIEW

END VIEW

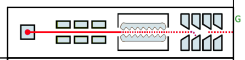
VEE RAIL RUNNER - BASE
MATERIAL: EN24
OFF: 8

BASE ISOMETRIC VIEW



END VIEW

VEE RAIL RUNNER - ASSEMBLY



Title:	L.E.B.T. Support Vee Rail Runner		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	LEBTVeeRailRunner.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Feb 2008	Version number:	1
Manufactured by:	Daresbury Labs - T.B.C.	Project:	Front End Test Stand
Material:	Steel - grade EN24	Sheet number:	4 / 33
Finish:		Number off:	4 complete assemblies
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2502
Notes:	None		

Unless otherwise stated:		
Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5'
Hole centres:		± 0.05 mm
Suiface finish:		1.6 microns
Dimensions in mm		□

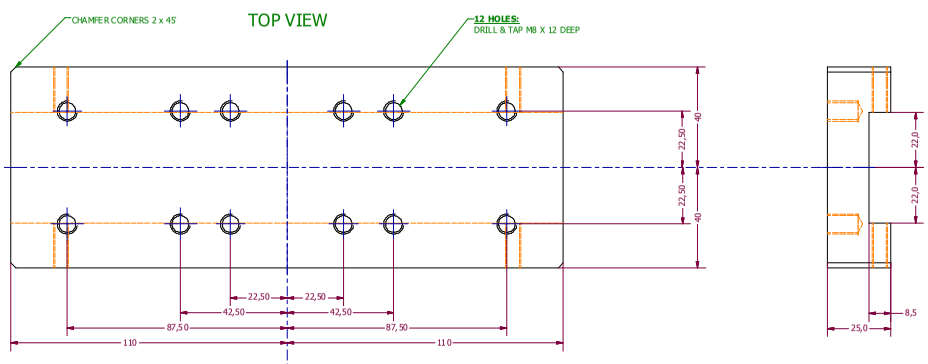
Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

Imperial College London

DWG #2503

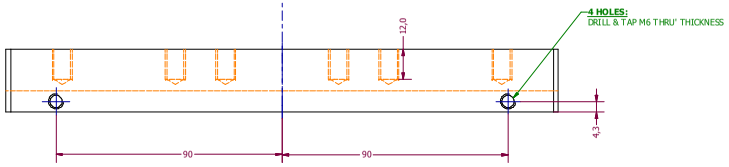
L.E.B.T. SUPPORT
FLAT RAIL RUNNER

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

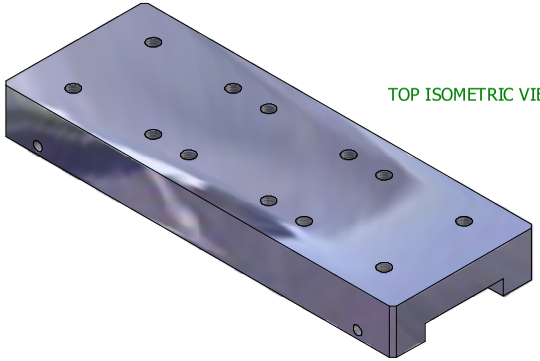


TOP VIEW

END VIEW

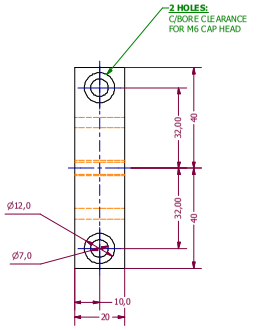


SIDE VIEW

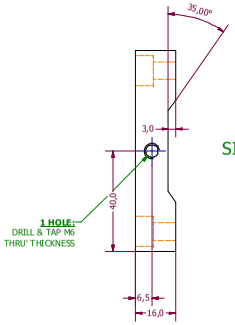


TOP ISOMETRIC VIEW

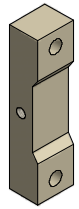
FLAT RAIL RUNNER
MATERIAL: EN24
OFF: 4



TOP VIEW



SIDE VIEW

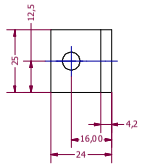


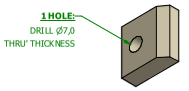
SIDE ISOMETRIC VIEW

VEE RAIL RUNNER STOP - TOP
MATERIAL: EN24
OFF: 6

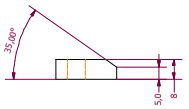
VEE RAIL RUNNER STOP - BASE
MATERIAL: EN24
OFF: 12

TOP VIEW

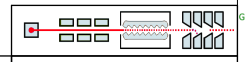




ISOMETRIC VIEW



SIDE VIEW



Title:	L.E.B.T. Support - Flat Rail Runner		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	LEBTFlatRailRunner.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Feb 2008	Version number:	1
Manufactured by:	Daresbury Labs - T.B.C.	Project:	Front End Test Stand
Material:	Steel - grade EN24	Sheet number:	5 / 33
Finish:		Number off:	See individual parts
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2503
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; X.X ± 0.2 mm; X.XX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Suiface finish: 1.6 microns
Dimensions in mm □

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

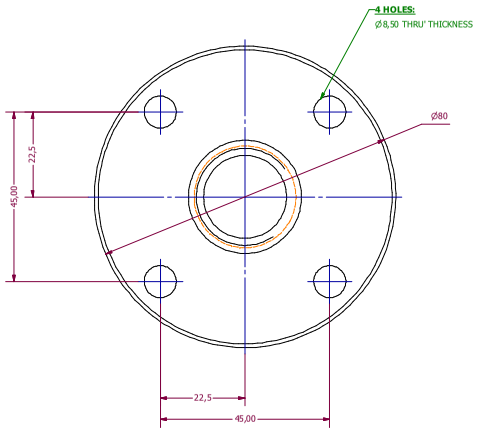
Imperial College London

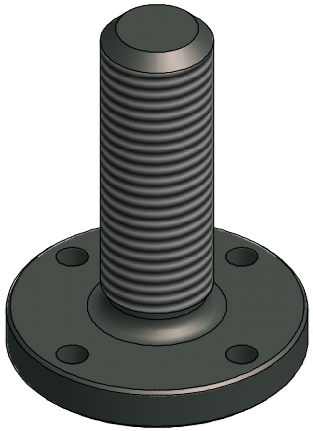
DWG #2504

L.E.B.T. SUPPORT SCREW JACK

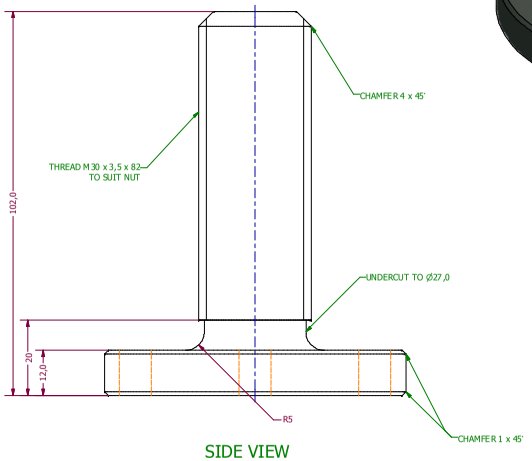
FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

TOP VIEW

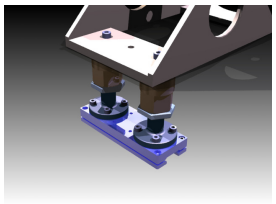




ISOMETRIC VIEW

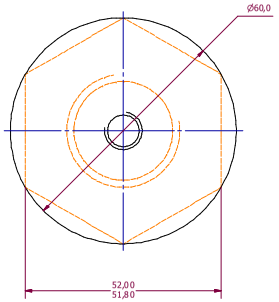


SIDE VIEW

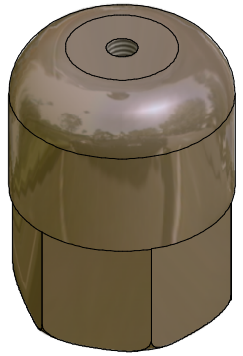


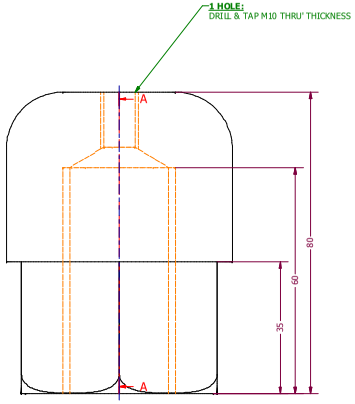
SCREW
MATERIAL: EN24
OFF: 16

TOP VIEW



ISOMETRIC VIEW

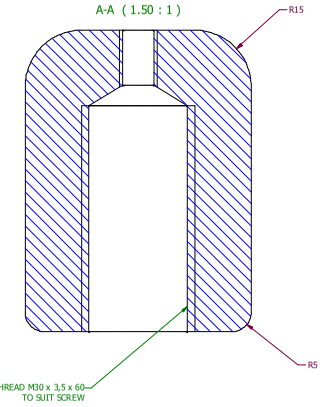




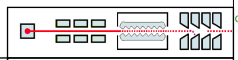
SIDE VIEW

SIDE SECTION VIEW

A-A (1.50 : 1)



NUT
MATERIAL: EN24
OFF: 16



Title:	L.E.B.T. Support Screw Jack		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	Base.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Feb 2008	Version number:	1
Manufactured by:	Daresbury Labs - T.B.C.	Project:	Front End Test Stand
Material:	Steel - grade EN24	Sheet number:	6 / 33
Finish:		Number off:	12 each part
Scale:	Do not scale	Drawing number:	IC_HEP_P3S_FETS_2504
Notes:	-		

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5°
Hole centres:		± 0.05 mm
Suiface finish:		1.6 microns
Dimensions in mm		□

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

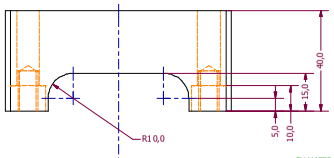
Imperial College London

DWG #2505

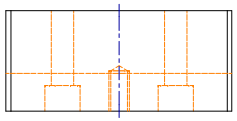
L.E.B.T. Support - Rail Locator

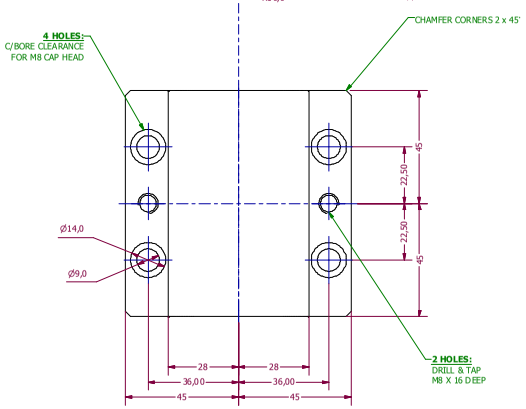
FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

END VIEW



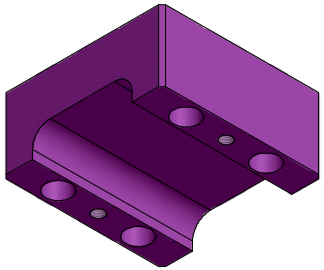
SIDE VIEW





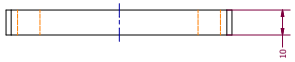
BASE VIEW

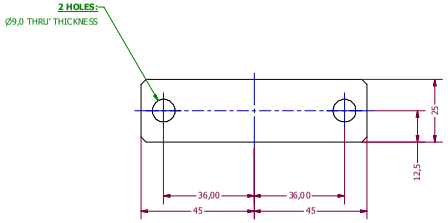
ISOMETRIC VIEW



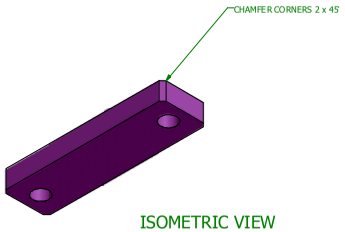
L.E.B.T. Support - Rail Locator Flat
MATERIAL: EN24
OFF: 2

END VIEW





BASE VIEW

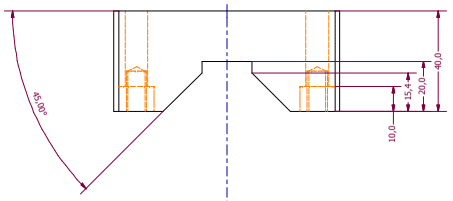


ISOMETRIC VIEW

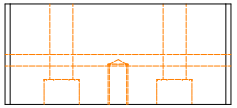
L.E.B.T. Support - Rail Locator Stay
MATERIAL: EN24
OFF: 4

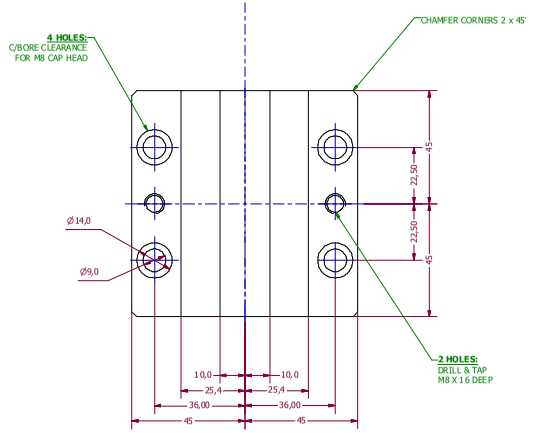
L.E.B.T. Support - Rail Locator Vee
MATERIAL: EN24
OFF: 2

END VIEW



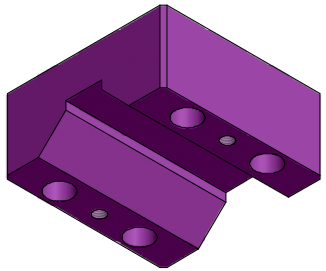
SIDE VIEW

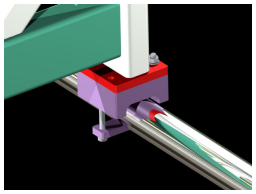


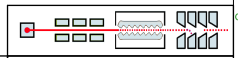


BASE VIEW

ISOMETRIC VIEW







Title:	L.E.B.T. Support - Rail Locator		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	RunnerLocatorFlat.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Feb 2008	Version number:	1
Manufactured by:	Daresbury Labs - T.B.C.	Project:	Front End Test Stand
Material:	Steel - grade EN24	Sheet number:	7 / 33
Finish:		Number off:	2 each type
Scale:	Do not scale	Drawing number:	IC_HEP_P35_FETS_2505
Notes:			

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5°
Hole centres:		± 0.05 mm
Suiface finish:		1.6 microns
Dimensions in mm		□

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

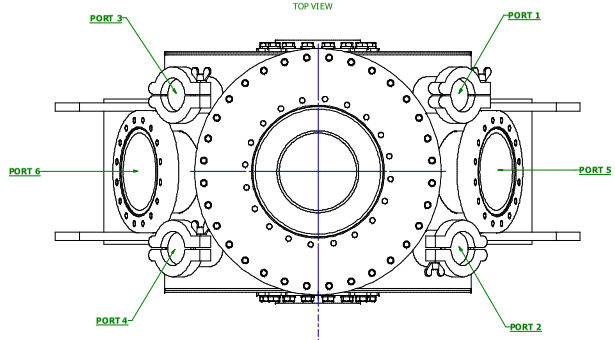
Imperial College London

DWG #2506

DRIFT VESSEL

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

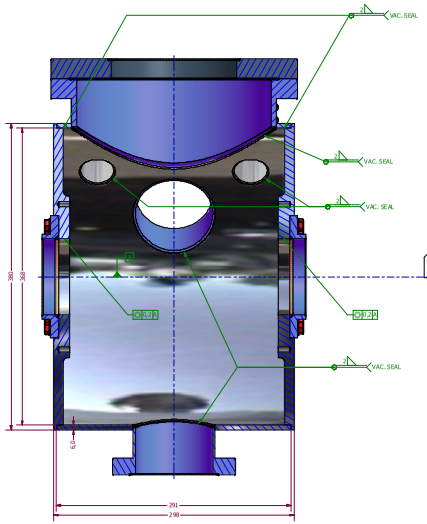
TOP VIEW



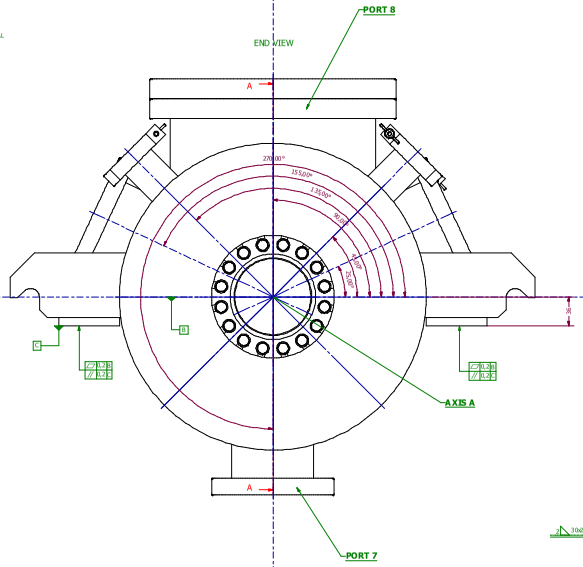
Port table

Port	Flange Type	Port length (from focal axis)	Focal Axis	Angle Beta	Notes
1	KF40	245	A	45	
2	KF40	245	A	45	
3	KF40	245	A	135	
4	KF40	245	A	135	
5	ORG 00CF	245	A	225	
6	ORG 00CF	245	A	135	
7	ORG 00CF	245	A	270	
8	ORG 00CF	245	A	90	Can be fitted with CF 250 to CF 160 reducing flange

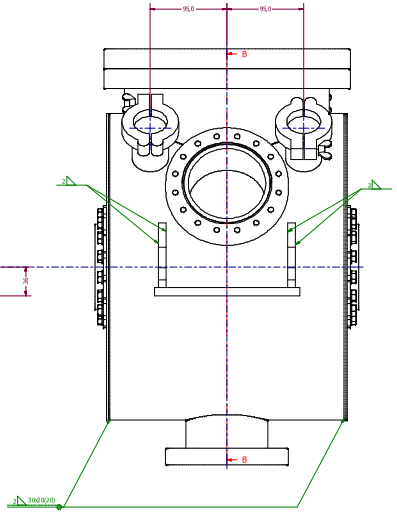
SIDE SECTION VIEW A-A



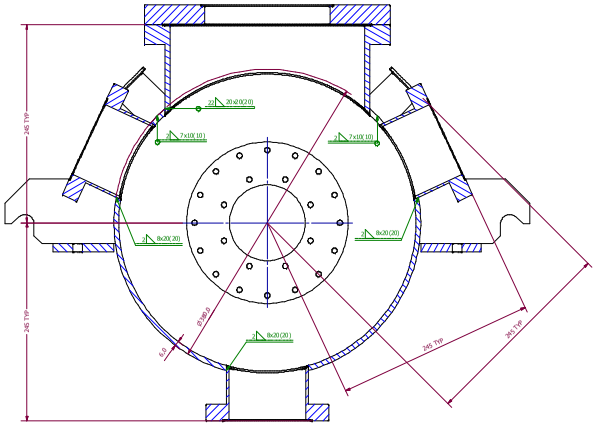
END VIEW



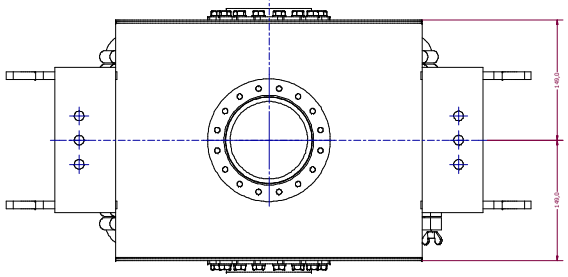
SIDE VIEW



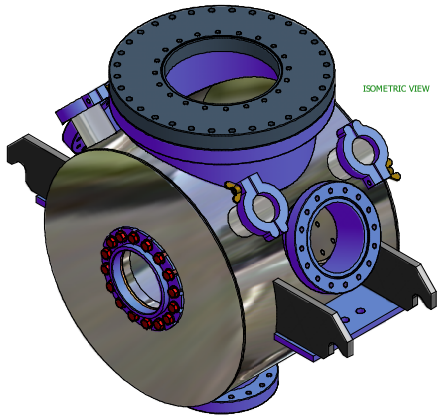
END SECTION VIEW B-B



BASE VIEW



ISOMETRIC VIEW



FINISH:

GRAIN FINISH INSIDE
BEAD BLAST FINISH OUTSIDE

Title:	L.E.B.T. Drift Vessel		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	DriftVessel.iam
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:		Project:	Front End Test Stand
Material:	304 Stainless Steel	Sheet number:	8 / 10
Finish:		Number off:	1 complete assembly
Scale:	Do not scale	Drawing number:	IC_HEP_FB_FETS_2506
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

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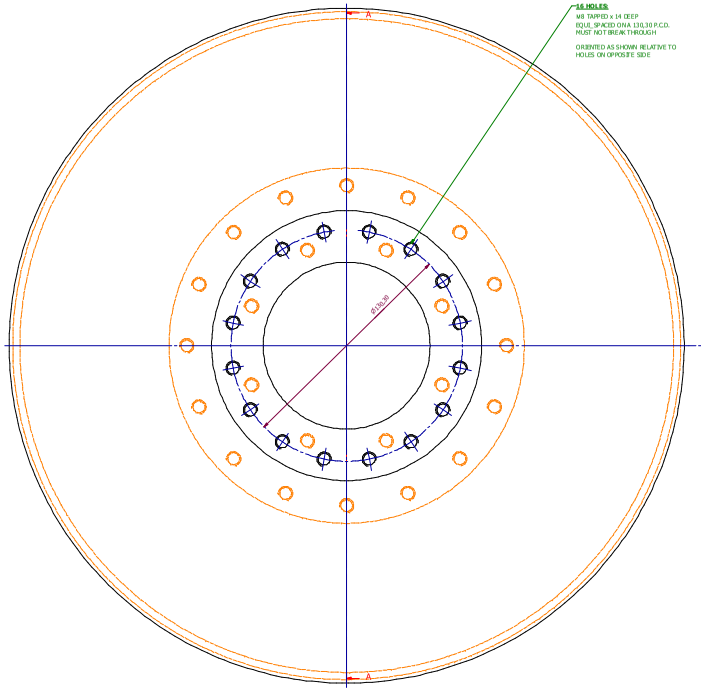
Imperial College London

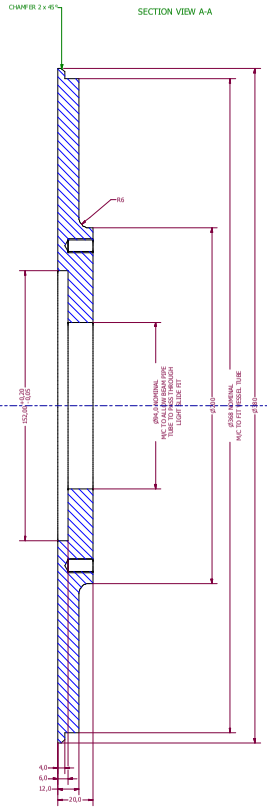
DWG #2507

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

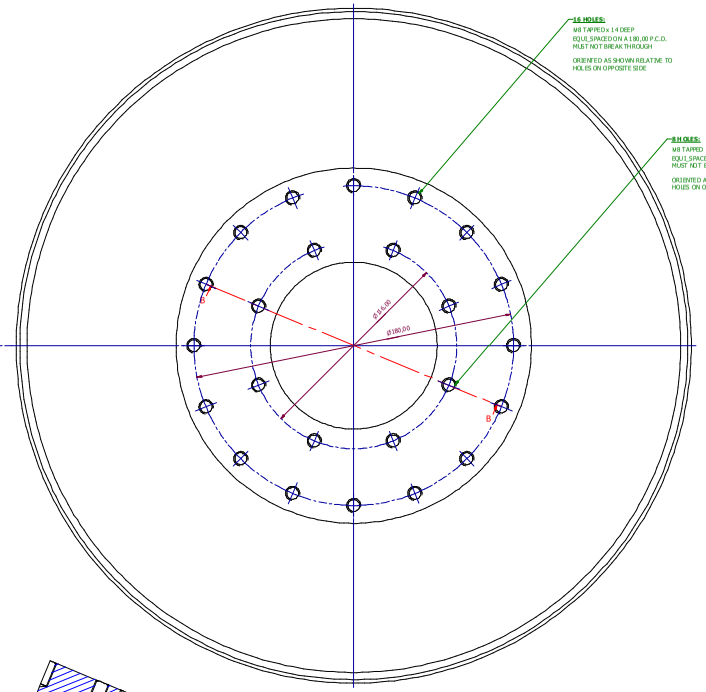
EXTERIOR FACE VIEW
[INCLUDING HIDDEN DETAIL]



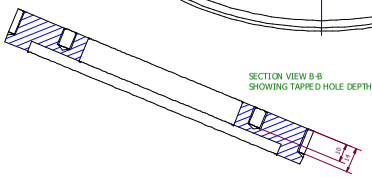
SECTION VIEW A-A



INTERIOR FACE VIEW



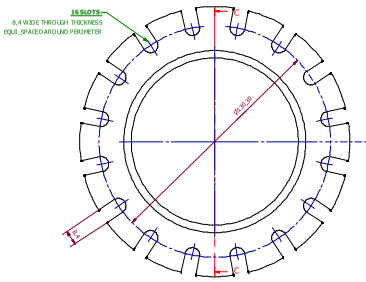
SECTION VIEW B-B
SHOWING TAPPED HOLE DEPTHS



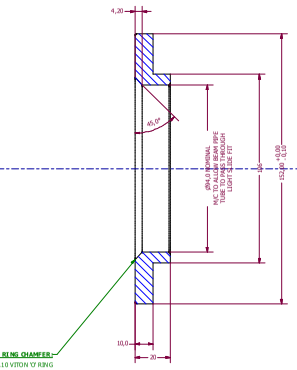
DRIFT VESSEL ENDS

MATERIAL: STAINLESS STEEL 304
OFF: 2

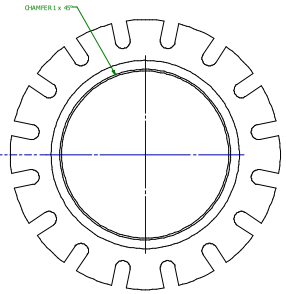
SEALING FACE VIEW



SIDE SECTION VIEW C-C



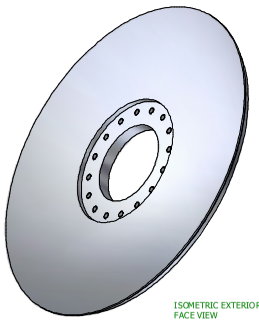
OUTER FACE VIEW



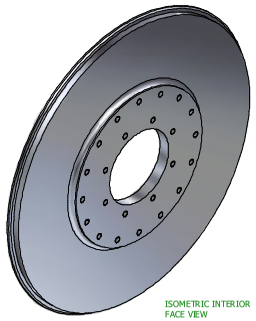
'O' RING CHAMFER:-
TO SUIT Ø3,0 ± 0,10 VITON 'O' RING
CIRCULAR LAY - ENSURE SURFACE IS FREE FROM SCRATCHES

DRIFT VESSEL BEAM PIPE FLANGE

MATERIAL: STAINLESS STEEL 304
OFF: 2



ISOMETRIC EXTERIOR FACE VIEW



ISOMETRIC INTERIOR FACE VIEW

Title:	L.E.B.T. Drift Vessel Ends		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	Vessel Flange .ipt
Checked by:	N/A	Drawing file:	LEBT .idw
Date:	Jan 2009	Version number:	1
Manufactured by:		Project:	Front End Test Stand
Material:	304 Stainless Steel	Sheet number:	1 / 1
Finish:		Number off:	2
Scale:	Do not scale	Drawing number:	XX_HEP_FIS_FETS_2507
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; X.X ± 0.2 mm; X.XX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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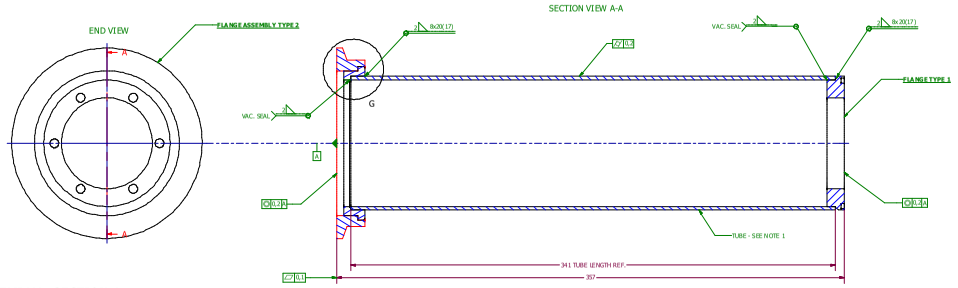
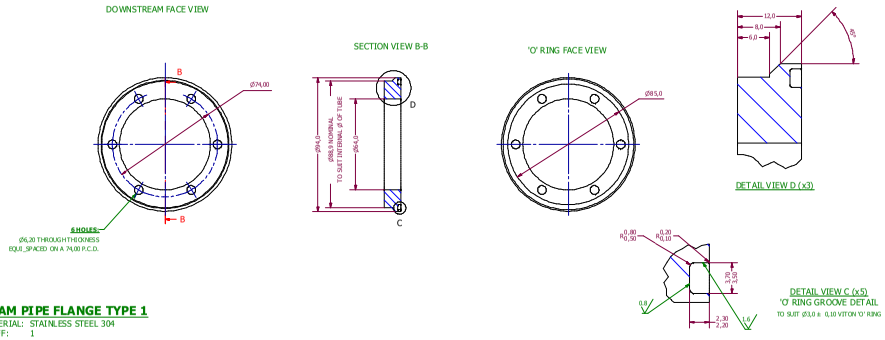
DWG #2508

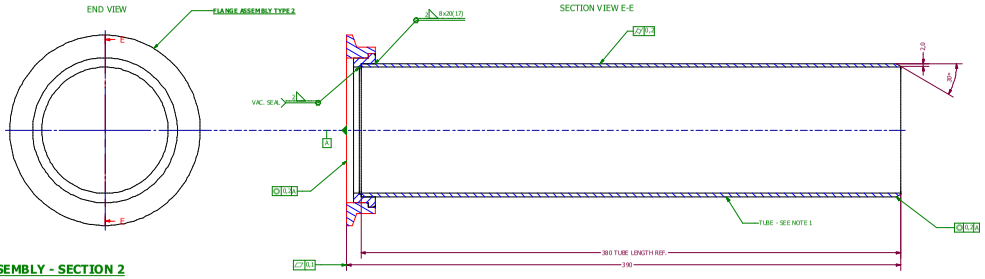
FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/



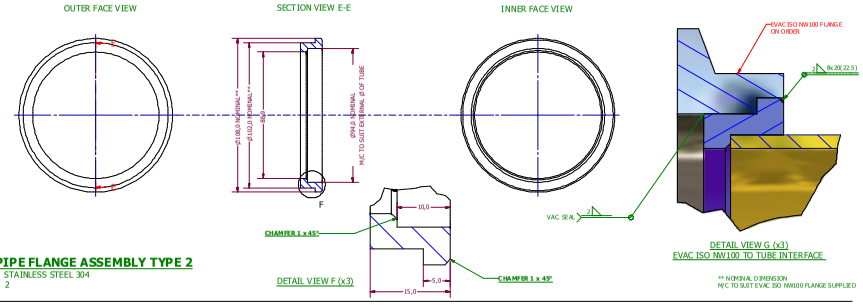
BEAM PIPE ASSEMBLY - SECTION 1
OFF: 1



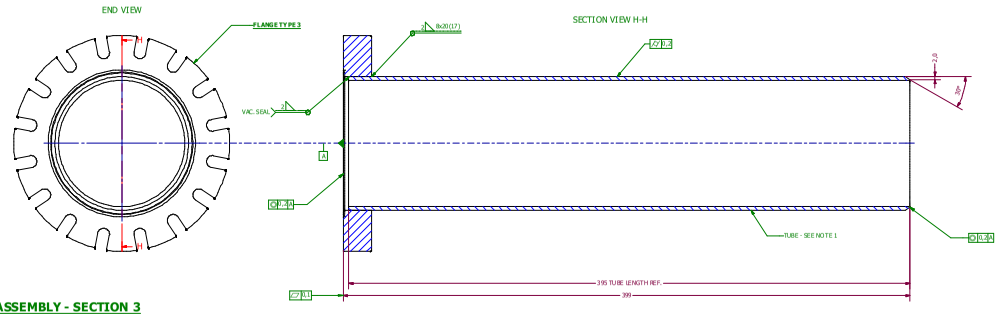
BEAM PIPE FLANGE TYPE 1
MATERIAL: STAINLESS STEEL 304
OFF: 1



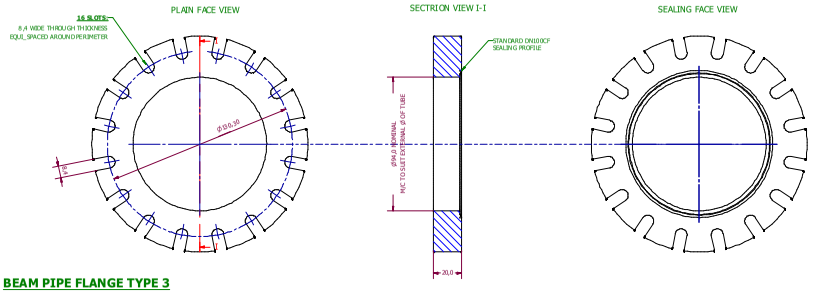
BEAM PIPE ASSEMBLY - SECTION 2
OFF: 1



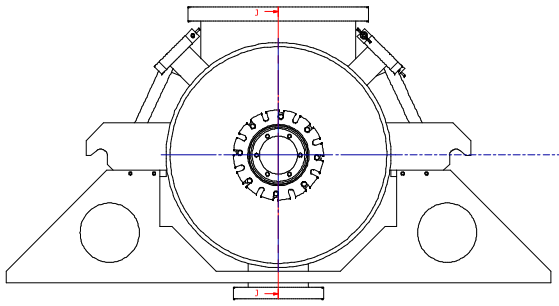
BEAM PIPE FLANGE ASSEMBLY TYPE 2
MATERIAL: STAINLESS STEEL 304
OFF: 2

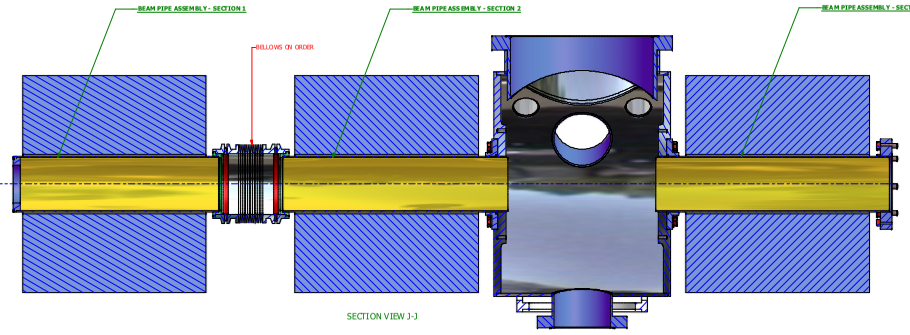


BEAM PIPE ASSEMBLY - SECTION 3
OFF: 1



BEAM PIPE FLANGE TYPE 3
MATERIAL: STAINLESS STEEL 304
OFF: 1





NOTES:

1) TUBE MATERIAL: STAINLESS STEEL 304
TUBE INTERNAL DIAMETER = 88,9 (3.5") STOCK SIZE
TUBE OUTSIDE DIAMETER = 94,0

Title:	L.E.B.T. Beam Pipe Sections		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BeamPipeSection1_Evacuation
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:		Project:	Front End Test Stand
Material:	304 Stainless Steel	Sheet number:	10 / 13
Finish:		Number of:	3 welded sections
Scale:	Do not scale	Drawing number:	XX_HEP_FBL_FETS_2508
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7017 (Mobile) 07894 260858

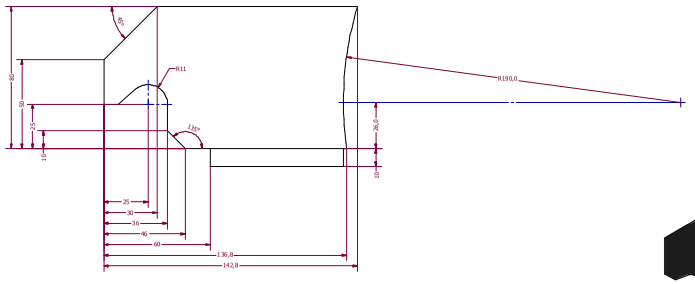
Imperial College London

DWG #2509

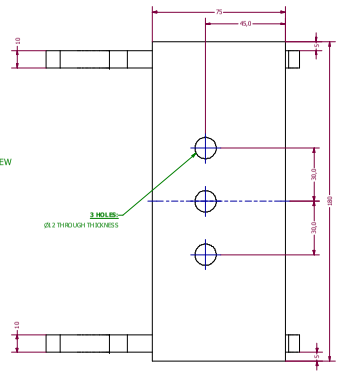
DRIFT VESSEL FLANGES & FEET

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

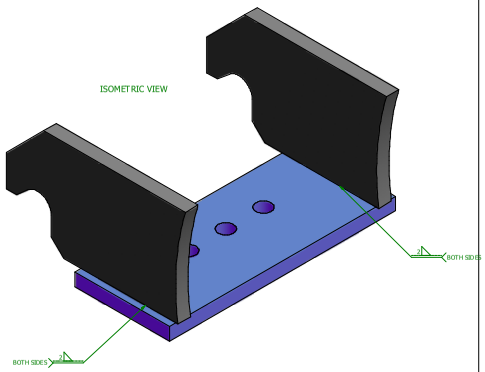
SIDE VIEW



BASE VIEW

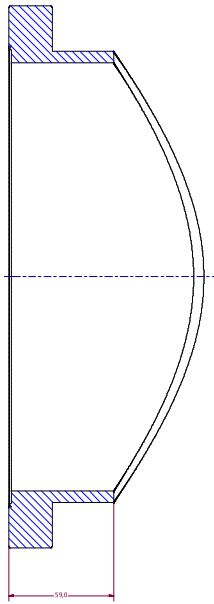


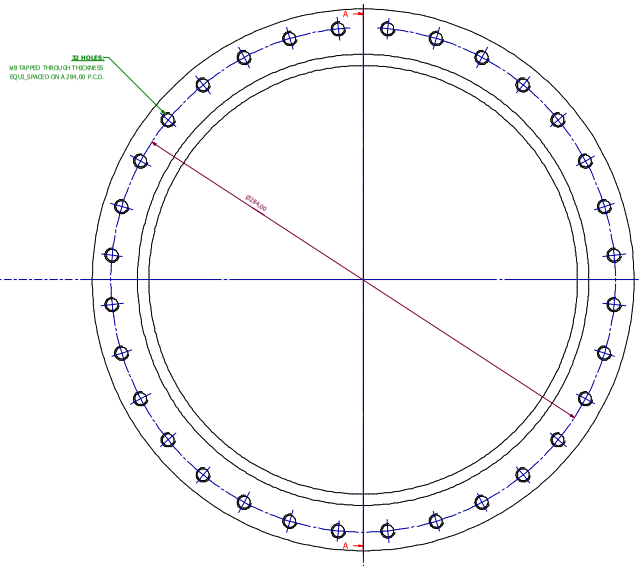
ISOMETRIC VIEW



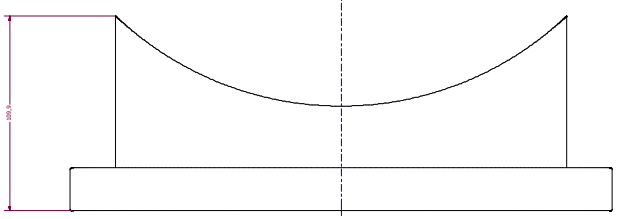
VESSEL FEET
MATERIAL: STAINLESS STEEL 304
OFF: 2 WELDED ASSEMBLIES

SIDE SECTION VIEW A-A





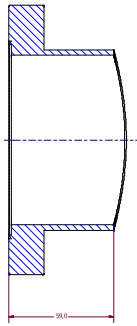
BASE VIEW



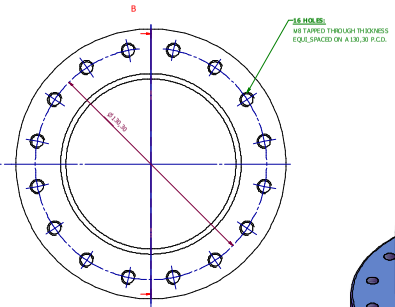
SIDE VIEW

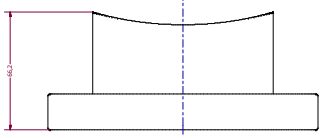
DN250CF TUBE FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 1

SIDE SECTION VIEW B-B



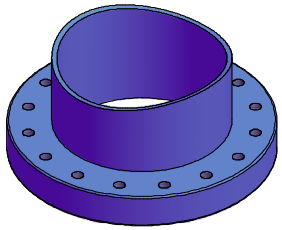
BASE VIEW





SIDE VIEW

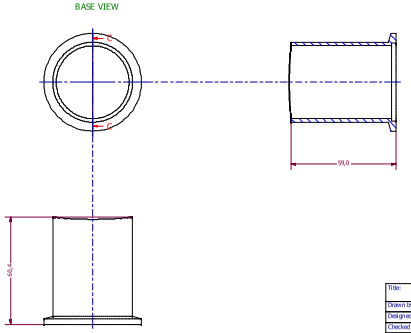
ISOMETRIC VIEW



DN100CF TUBE FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 3

SIDE SECTION VIEW C-C

BASE VIEW



SIDE VIEW

ISOMETRIC VIEW

DN40 ISO-KF TUBE FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 4

Title:	L.E.B.T. Drift Vessel Ports		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	QP100_TubeEnd.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:		Project:	Front End Test Stand
Material:	304 Stainless Steel	Sheet number:	11 / 13
Finish:		Number off:	Stated per part
State:	Do not scale	Drawing number:	XL_HEP_PJS_FETS_2509
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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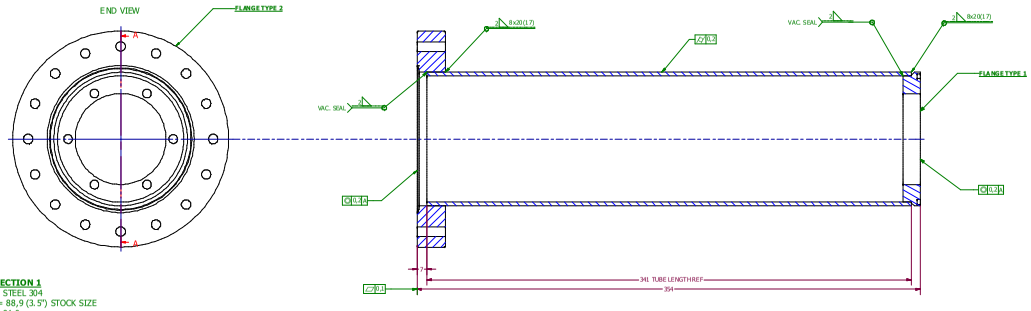
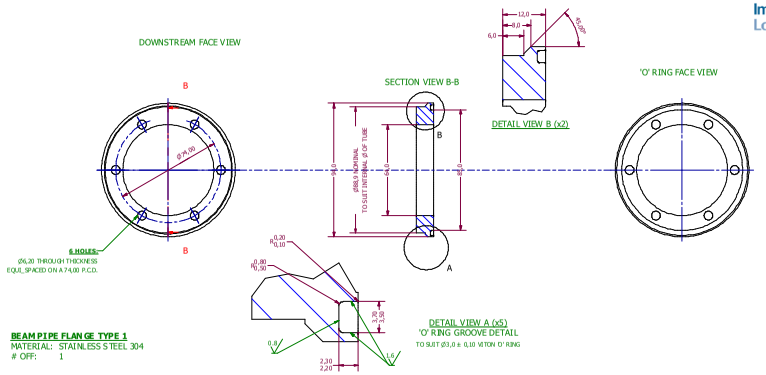
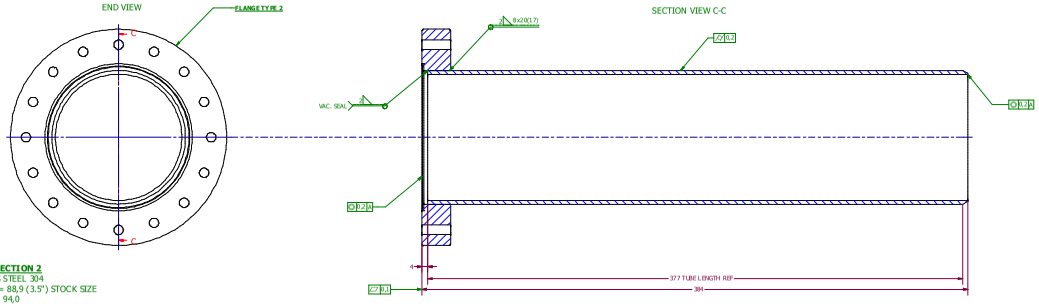


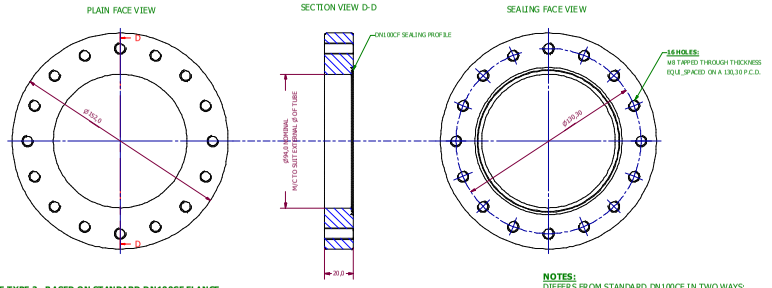
BEAM PIPE ASSEMBLY - SECTION 1
TUBE MATERIAL: STAINLESS STEEL 304
TUBE INTERNAL DIAMETER = 88,9 (3.5") STOCK SIZE
TUBE OUTSIDE DIAMETER = 94,0



BEAM PIPE FLANGE TYPE 1
MATERIAL: STAINLESS STEEL 304
OFF: 1

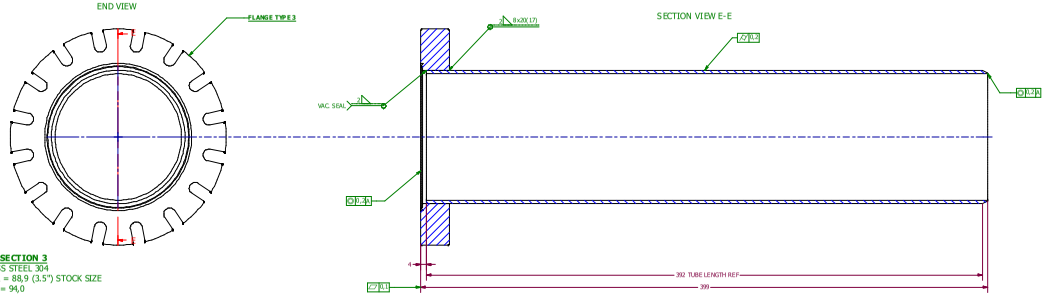


BEAM PIPE ASSEMBLY - SECTION 2
TUBE MATERIAL: STAINLESS STEEL 304
TUBE INTERNAL DIAMETER = 88,9 (3.5") STOCK SIZE
TUBE OUTSIDE DIAMETER = 94,0

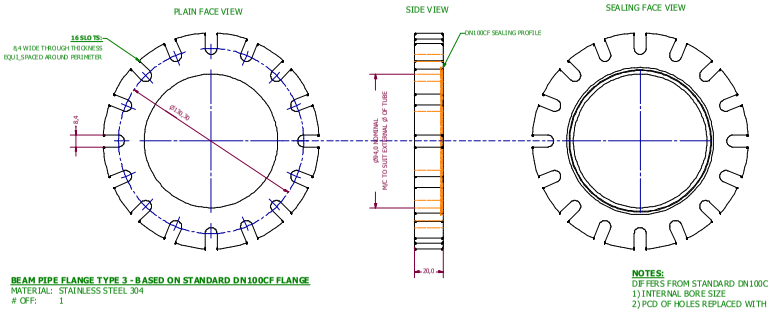


BEAM PIPE FLANGE TYPE 2 - BASED ON STANDARD DN100CF FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 2

NOTES:
DIFFERS FROM STANDARD DN100CF IN TWO WAYS:
1) INTERNAL BORE SIZE
2) TAPPED M8 HOLES IN PLACE OF CLEARANCE HOLES

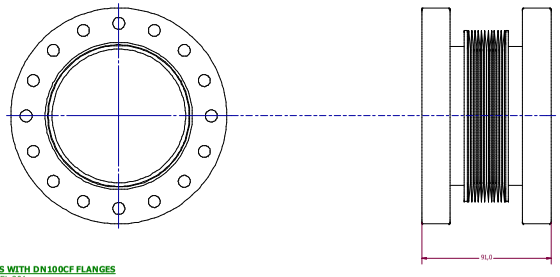


BEAM PIPE ASSEMBLY - SECTION 3
TUBE MATERIAL: STAINLESS STEEL 304
TUBE INTERNAL DIAMETER = 88,9 (3.5") STOCK SIZE
TUBE OUTSIDE DIAMETER = 94,0

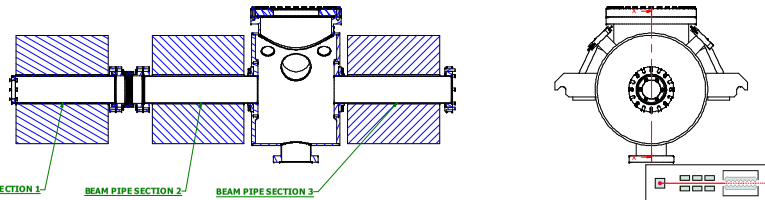


BEAM PIPE FLANGE TYPE 3 - BASED ON STANDARD DN100CF FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 1

NOTES:
DIFFERS FROM STANDARD DN100CF IN TWO WAYS:
1) INTERNAL BORE SIZE
2) PCD OF HOLES REPLACED WITH SLOTS



EDGE-WELDED BELLOWS WITH DN100CF FLANGES
MATERIAL: STAINLESS STEEL 304



Title:			
Drawn by:		Projection:	
Designed by:		Model file:	BeamPipeSection1_holdsits.iam
Checked by:		Drawing file:	UBT.dw
Date:		Version number:	
Manufactured by:		Project:	
Material:		Sheet number:	12 / 33
Finish:	Clean - remove all burrs	Number off:	
Scale:		Drawing number:	
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7017 (Mobile) 07894 260858

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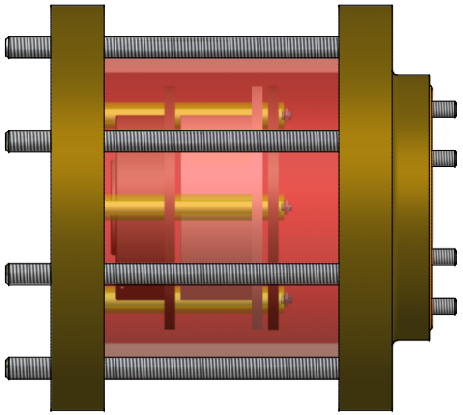
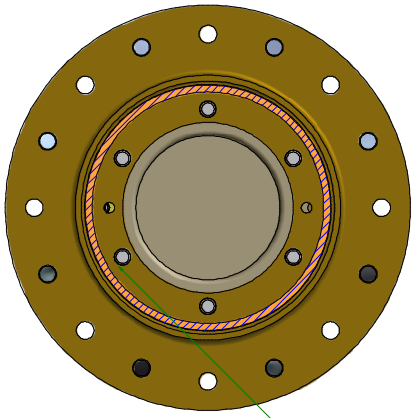
FETS FIRST VESSEL
FARADAY CUP ASSEMBLY

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

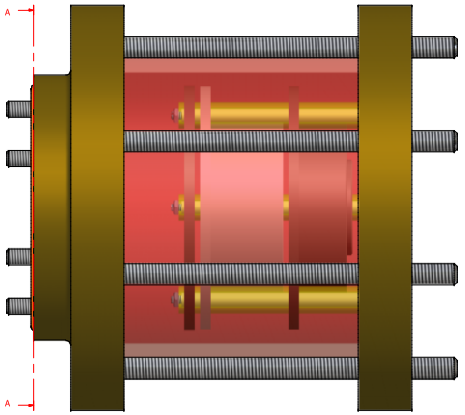
DOWNSTREAM END VIEW



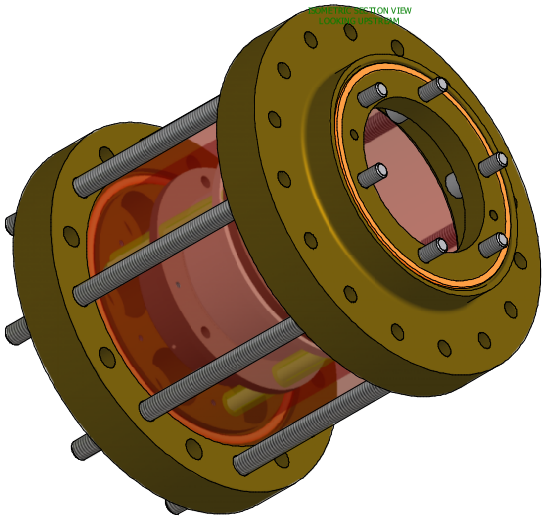
SIDE SECTION VIEW

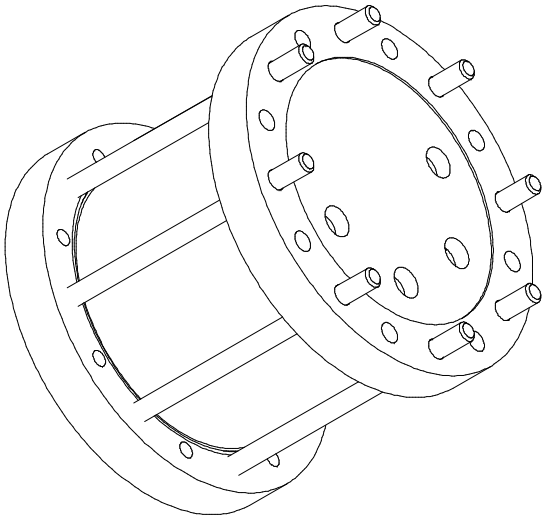


UPSTREAM END VIEW

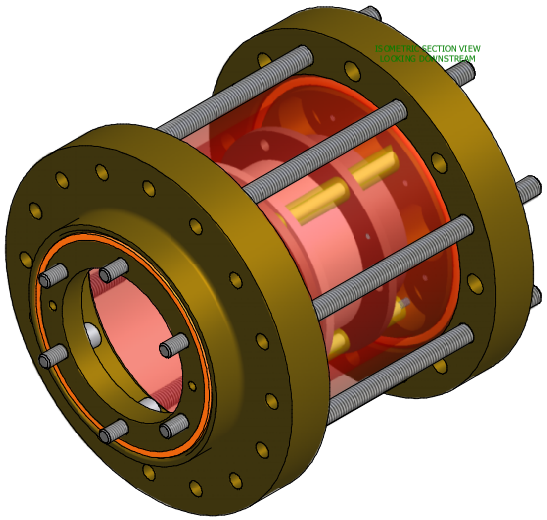


ISOMETRIC SECTION VIEW
LOOKING UPSTREAM





ISOMETRIC SECTION VIEW
LOOKING DOWNSTREAM



ISOMETRIC EXTERNAL VIEW

Title:	First vacuum vessel faraday cup assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BeamPipeBlankAdaptor.iam
Checked by:	N/A	Drawing file:	UBT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	N/A	Sheet number:	13 / 13
Finish:	Remove all burrs	Number off:	1 complete assembly
Scale:	Do not scale	Drawing number:	IC_HEP_FEB_FETS_2520
Notes:			

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

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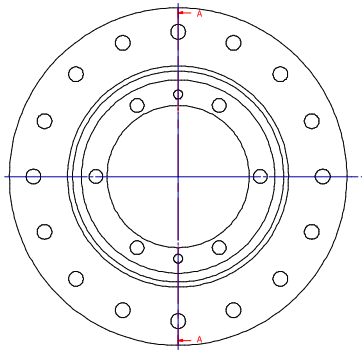
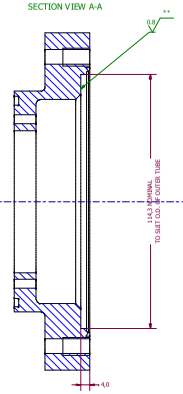
DWG #2521

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

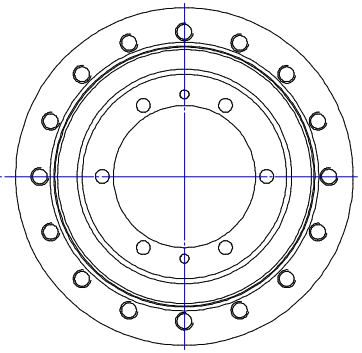
UPSTREAM FACE VIEW

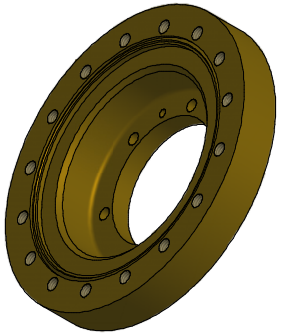


SECTION VIEW A-A



DOWNSTREAM FACE VIEW





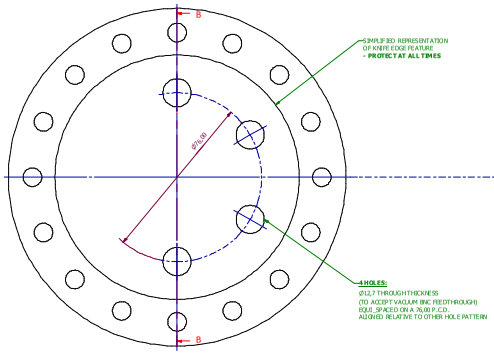
ISOMETRIC
DOWNSTREAM FACE VIEW

BEAM PIPE PORT ADAPTOR

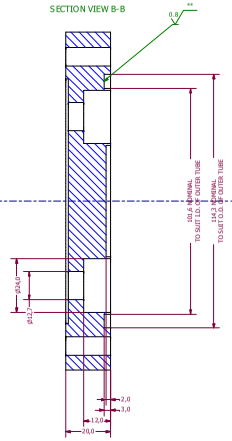
MATERIAL: ALUMINIUM ALLOY
PART SUPPLIED, ADD CIRCULAR POCKET FEATURE DETAILED
OFF: 1

NOTES:
1) SURFACES INDICATED THUS **
M/C LAY CIRCULAR
NO SCRATCHES ACROSS LAY

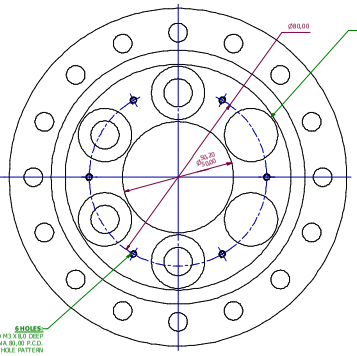
DOWNSTREAM FACE VIEW

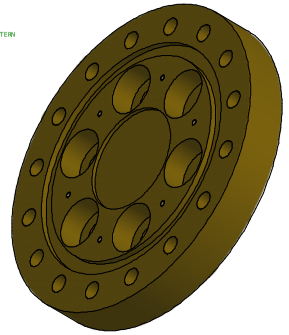


SECTION VIEW B-B



UPSTREAM FACE VIEW





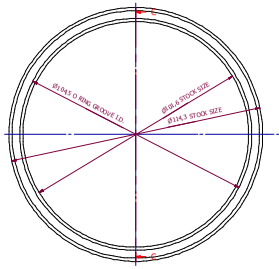
ISOMETRIC
UPSTREAM FACE VIEW

FARADAY CUP ASSEMBLY FLANGE

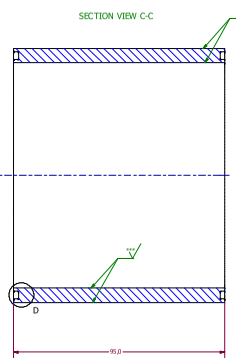
MATERIAL: STAINLESS STEEL GRADE 304
MANUFACTURED FROM DN100CF BLANK FLANGE
SUPPLIED BY OERLIKON
OFF: 1

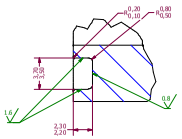
NOTES:
1) SURFACES INDICATED THUS **
M/C LAY CIRCULAR
NO SCRATCHES ACROSS LAY

END VIEW



SECTION VIEW C-C





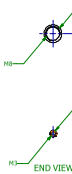
DETAIL VIEW D (x5)
'O' RING GROOVE DETAIL
TO SUIT Ø3,0 x 0,10 VITON 'O' RING
M/C LAY CIRCULAR
NO SCRATCHES ACROSS LAY

OUTER TUBE

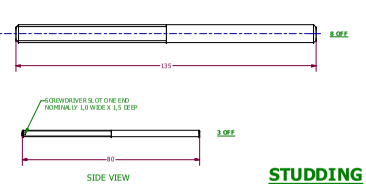
MATERIAL: ALUMINIUM ALLOY 6082
MATERIAL SUPPLIER: AALCO
OFF: 1

NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
PROTECT END SEALING FACES

END VIEW



SIDE VIEW



STUDDING

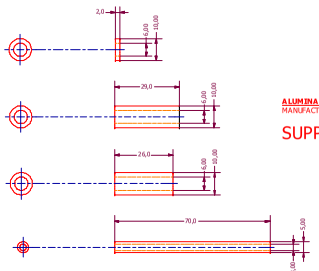
MATERIAL: STAINLESS STEEL

ADAPTOR, 3/8in BSPT M-10mm HOSE ID
RS PART NO. 310-6725
2 OFF

SUPPLIED

SELF ASSEMBLY VACUUM BNC FEEDTHROUGH
6 OFF

SUPPLIED



ALUMINA TUBES
MANUFACTURED BY MULTI-LAB

SUPPLIED

Title:	First vacuum vessel faraday cup assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BeamPipeBlankAdaptor.ipt
Checked by:	N/A	Drawing file:	UBT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	1A / 13
Finish:		Number off:	Stated per part
Scale:	Do not scale	Drawing number:	IC_HEP_FB_FETS_2521
Notes:	N/A		

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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FRONT END TEST STAND (F.E.T.S.)
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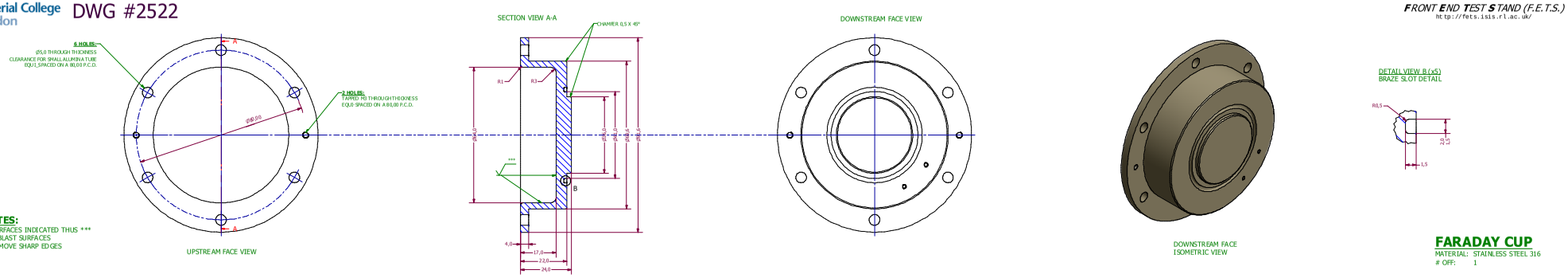
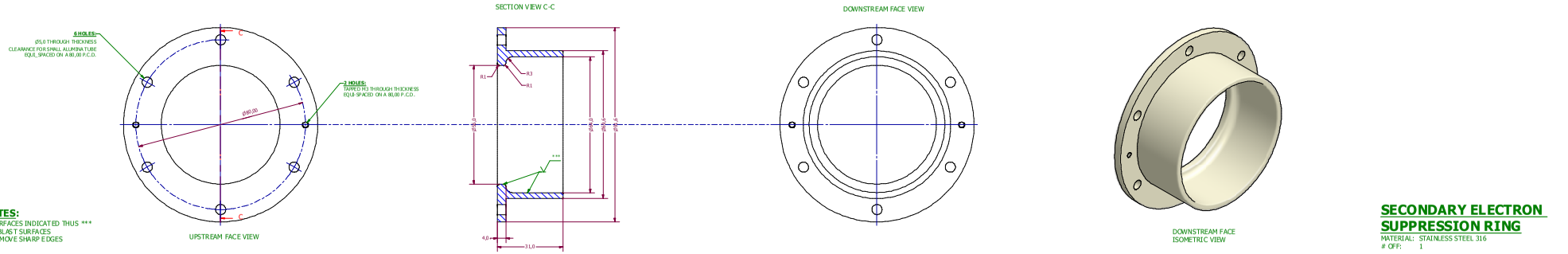


NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
2) REMOVE SHARP EDGES

FARADAY CUP

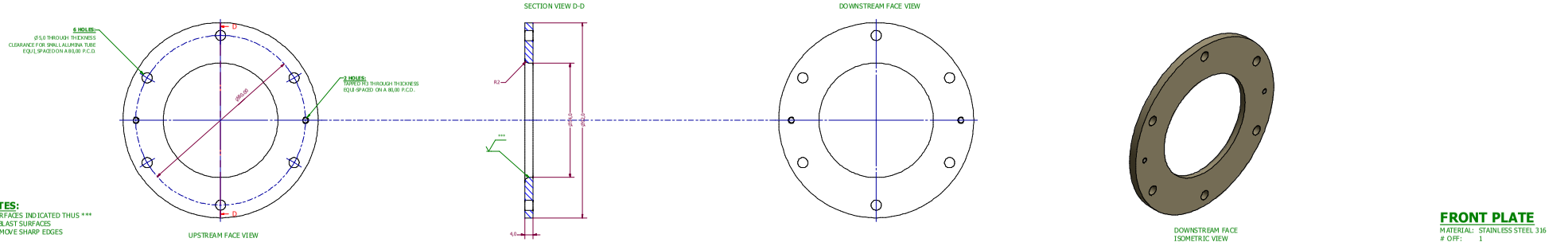
MATERIAL: STAINLESS STEEL 316
OFF: 1



NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
2) REMOVE SHARP EDGES

SECONDARY ELECTRON SUPPRESSION RING

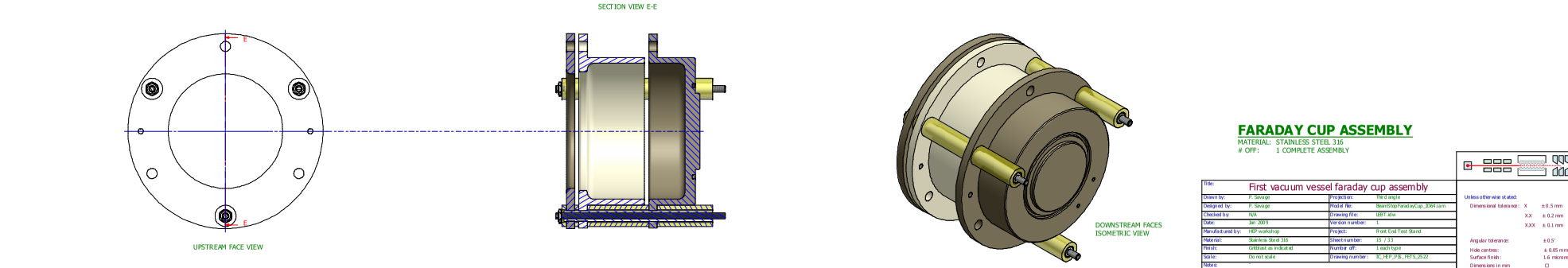
MATERIAL: STAINLESS STEEL 316
OFF: 1



NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
2) REMOVE SHARP EDGES

FRONT PLATE

MATERIAL: STAINLESS STEEL 316
OFF: 1



FARADAY CUP ASSEMBLY

MATERIAL: STAINLESS STEEL 316
OFF: 1 COMPLETE ASSEMBLY

Title:	First vacuum vessel faraday cup assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BeamStopFaradayCup_3064.iam
Checked by:	N/A	Drawing file:	UBIT.idw
Date:	Jan 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stainless Steel 316	Sheet number:	15 / 33
Finish:	Gritblast as indicated	Number off:	1 each type
Scale:	Do not scale	Drawing number:	XX_HEP_FJB_FETS_2522
Notes:			
Contact:	p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858		

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

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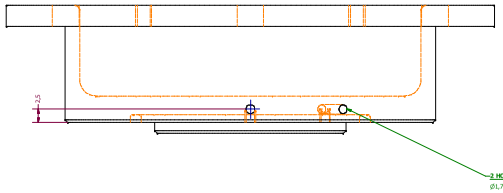
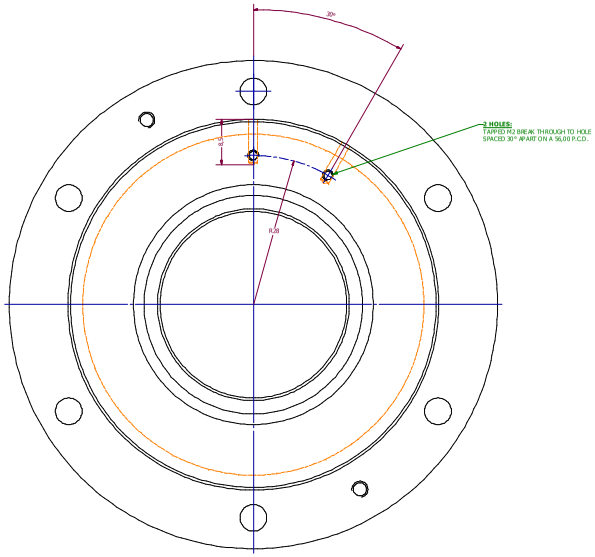
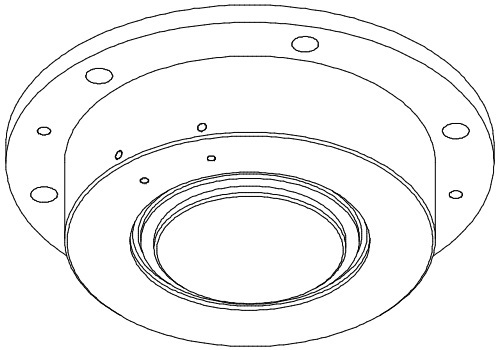
DWG #2523

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/







FARADAY CUP - ADDITION OF MOUNTS FOR TEMPERATURE SENSORS

MATERIAL: STAINLESS STEEL 316

Title:	First vacuum vessel faraday cup addition		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	fferadayCup01A.ipt
Checked by:	N/A	Drawing file:	UBT.idw
Date:	12 March 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stainless Steel 316	Sheet number:	1 / 1
Finish:	Remove all burrs	Number off:	1
Scale:	Do not scale	Drawing number:	IC_HEP_FB_FETS_2523
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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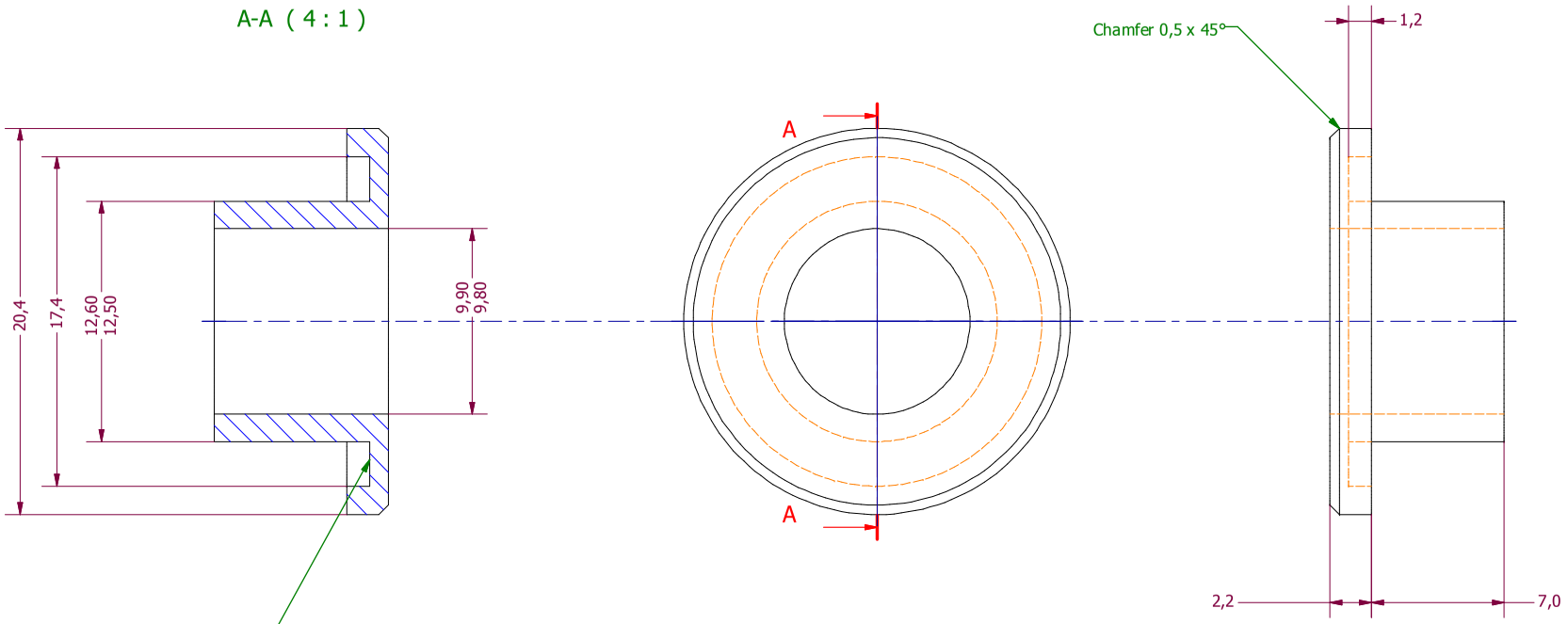
DWG #2524

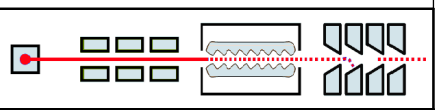
BNC Adapter for First Vessel Faraday Cup Assembly

A-A (4 : 1)



'O' RING GROOVE:-

TO SUIT Ø1,6 ± 0,10 VITON 'O' RING
CIRCULAR LAY - ENSURE SURFACE IS FREE FROM SCRATCHES



Title:	First vacuum vessel faraday cup BNC insert		
Drawn by:	P. Savage	Projection:	Thrid angle
Designed by:	P. Savage	Model file:	BNC_Insert.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	1st May 2009	Version number:	1
Manufactured by:	HEP workshop, IWC	Project:	Front End Test Stand
Material:	Brass or S/Steel	Sheet number:	17 / 33
Finish:	Remove all burrs	Number off:	6
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2524
Notes:			

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5˚
Hole centres:		± 0.05 mm
Surface finish:		1.6 microns
Dimensions in mm		☐

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

BNC vacuum feed-through
http://sigma.octopart.com/556751/datasheet/Radiall-R141625000.pdf

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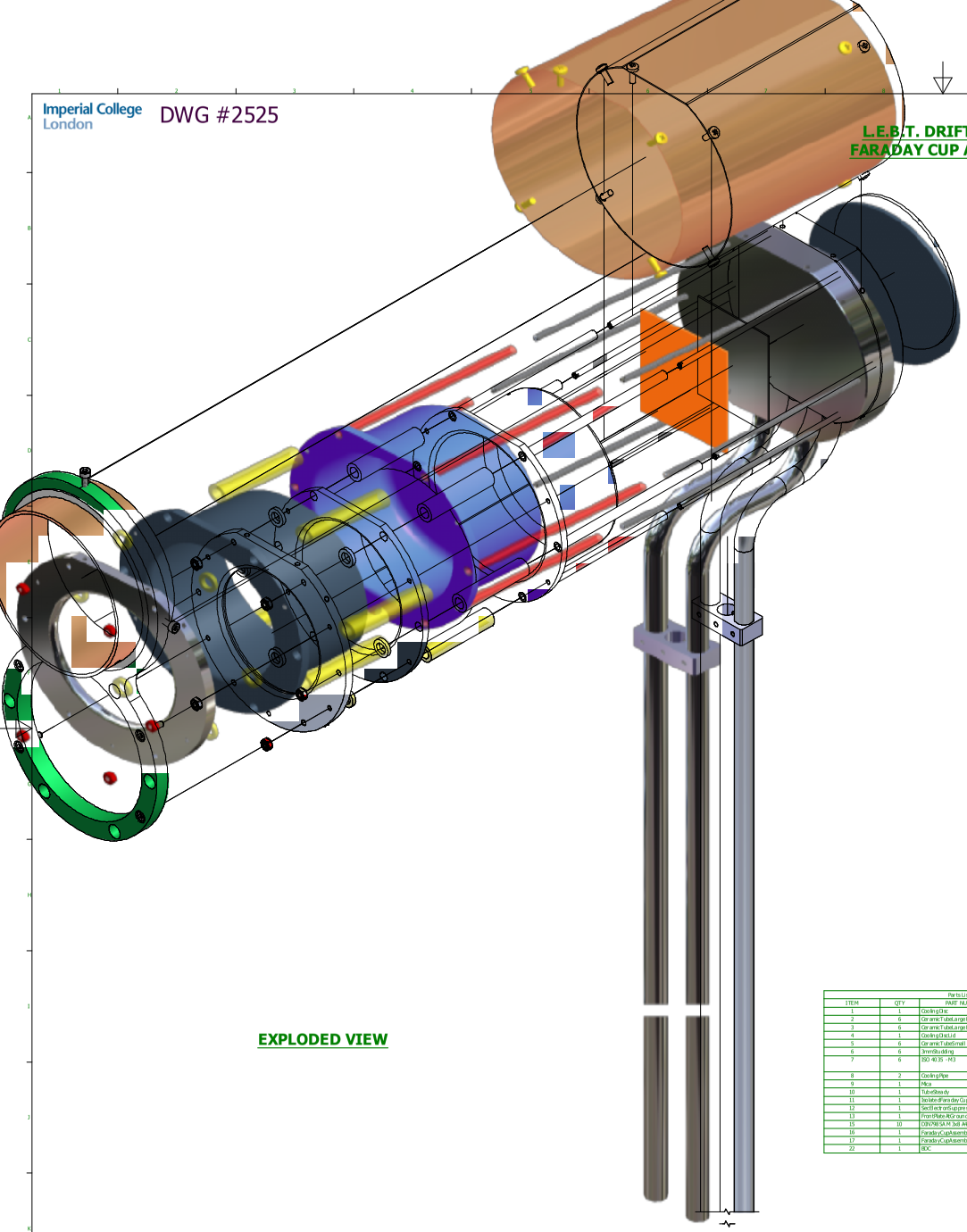
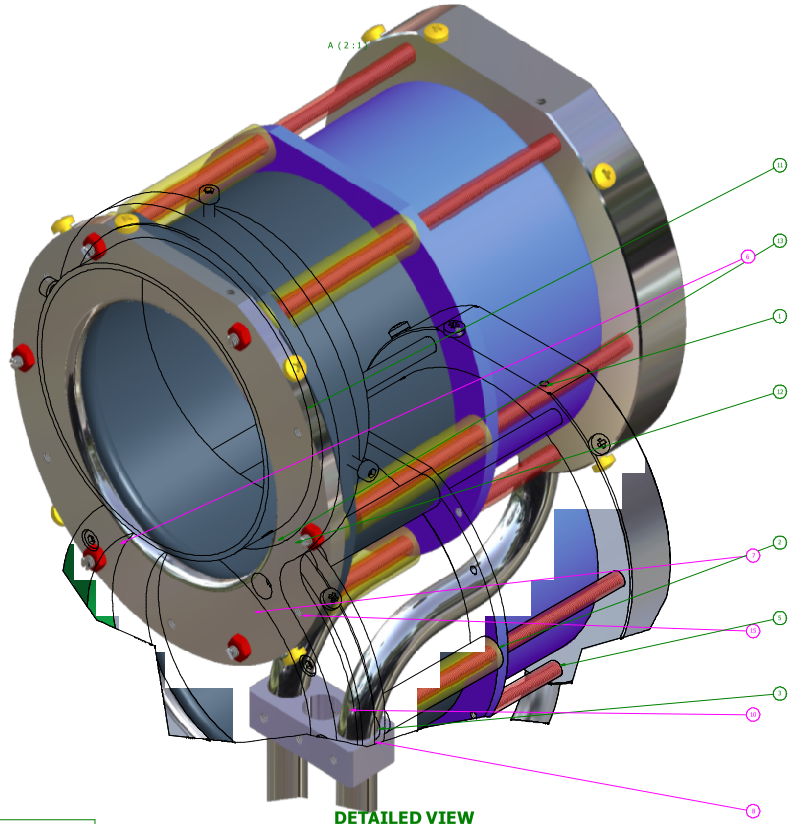
DWG #2525

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

L.E.B.T. DRIFT VESSEL FARADAY CUP ASSEMBLY



EXPLODED VIEW



DETAILED VIEW SHOWING HEAD WITH JACKET REMOVED

Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Cooling Disc	Part of welded assembly
2	6	CeramicTubeLargelength2	Ordered from Multilab
3	6	CeramicTubeLargelength3	Ordered from Multilab
4	1	Cooling Disc Lid	Part of welded assembly
5	6	CeramicTubeSmall	Ordered from Multilab
6	6	3mmStudding	HEP workshop
7	6	ISO 4035 - M3	Hexagon thin nuts (chamfered) - Product grades A and B
8	2	Cooling Pipe	10mm OD, 1mm wall
9	1	Mica	From Dan?
10	1	TubeSteady	HEP workshop
11	1	IsolatedFaraday Cup	HEP workshop
12	1	SecElectrodSuppressor600V	HEP workshop
13	1	FrontPlateAtGround	HEP workshop
15	10	DIN7981A Pt 3x8 A4	HEP workshop
16	1	FaradayCupAssembly4Hamess1	David Lee
17	1	FaradayCupAssembly Jacket3	HEP workshop
22	1	BOC	

COMPLETE

Title:	L.E.B.T. Drift Vessel Faraday Cup Assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	FaradayCupAssembly4.iam
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	May 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Various	Sheet number:	18 / 33
Finish:		Number off:	One complete assembly
Scale:	Do not scale	Drawing number:	XL_HEP_FIL_FETS_2525
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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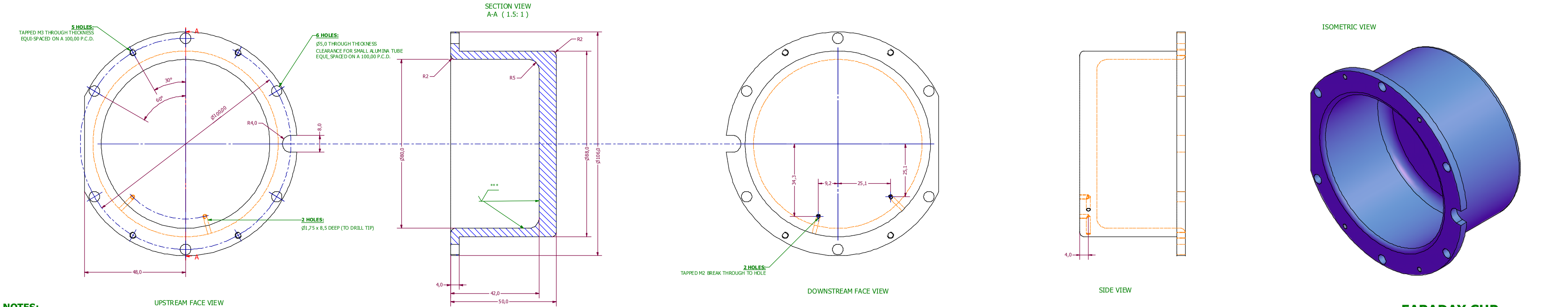
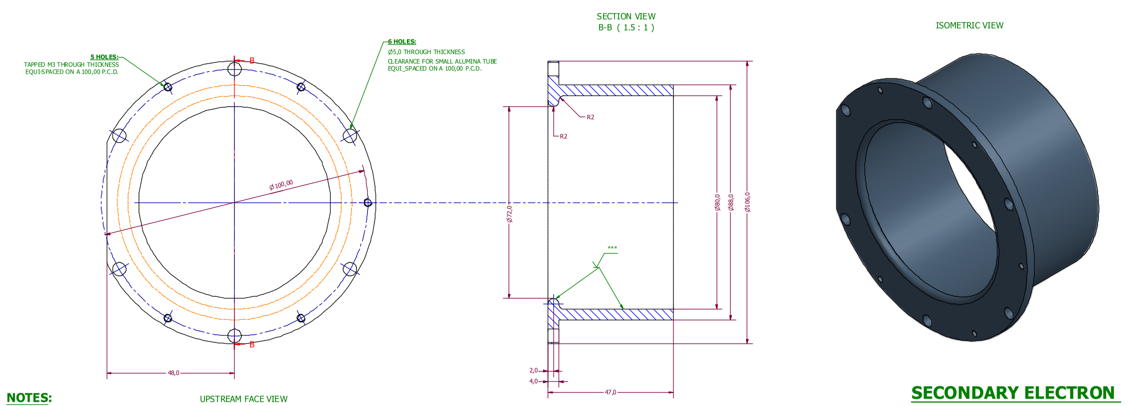
DWG #2526

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/



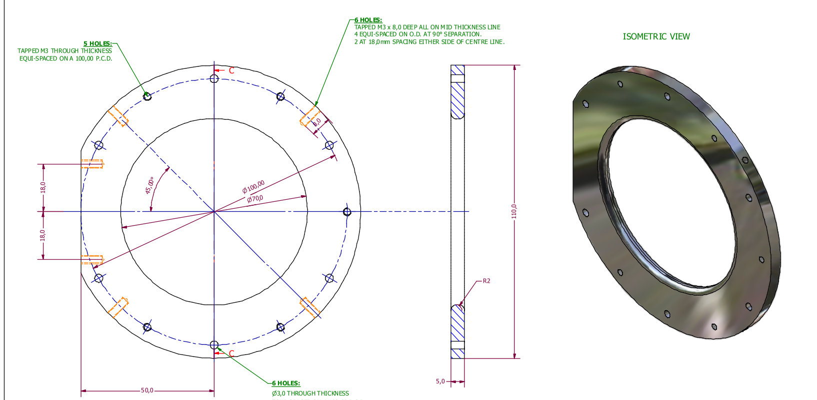
NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
2) REMOVE SHARP EDGES

FARADAY CUP
MATERIAL: STAINLESS STEEL 316
OFF: 1

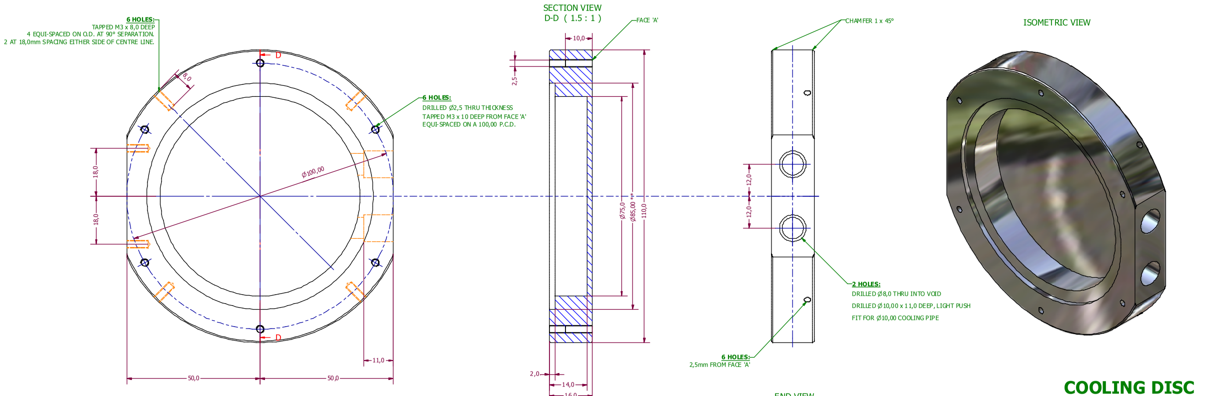


NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
2) REMOVE SHARP EDGES

SECONDARY ELECTRON SUPPRESSION RING
MATERIAL: STAINLESS STEEL 316
OFF: 1



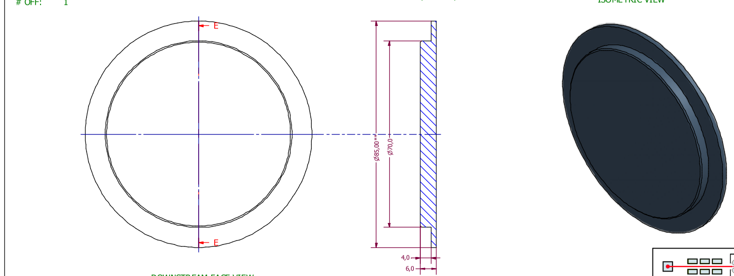
FRONT PLATE
MATERIAL: STAINLESS STEEL 316
OFF: 1



NOTES:
1) ** TO ACCEPT COOLING DISC LID

COOLING DISC
MATERIAL: STAINLESS STEEL 316
OFF: 1

COOLING DISC LID
MATERIAL: STAINLESS STEEL 316
OFF: 1



NOTES:
1) ** LIGHT PUSH FIT INTO COOLING DISC

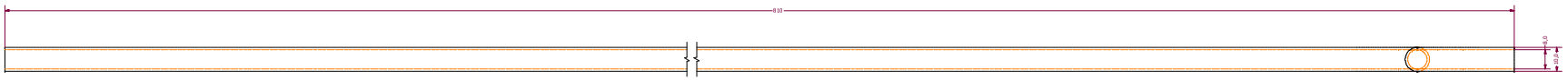
Title:	LEBT Drift Vessel Faraday Cup Assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	IsolatedFaradayCup.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	May 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stainless Steel	Sheet number:	19 / 33
Finish:	Remove all burrs	Number off:	1 per part
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2526
Notes:	Gritblast where indicated		
Contact:	p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058		

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
X.X ± 0.2 mm
X.XX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

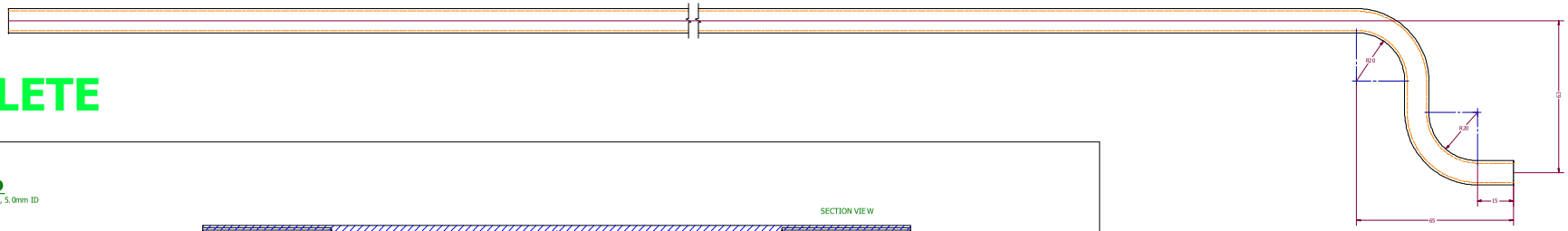
Imperial College London DWG #2527

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

SIDE VIEW



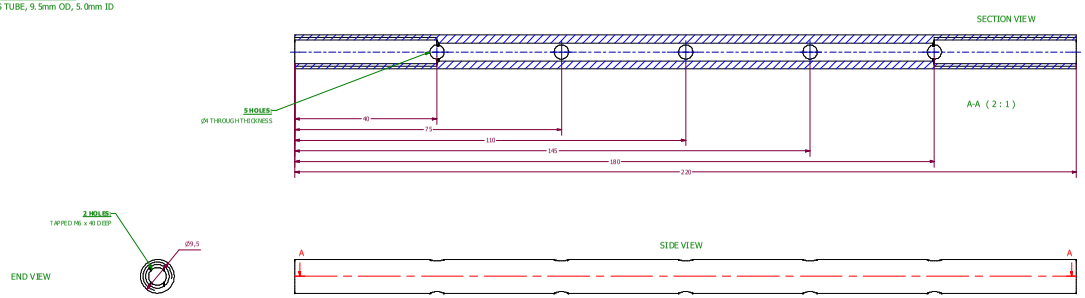
FACE VIEW



COMPLETE

CABLE TIDY ROD

MATERIAL: BRASS TUBE, 9.5mm OD, 5.0mm ID
OFF: 3

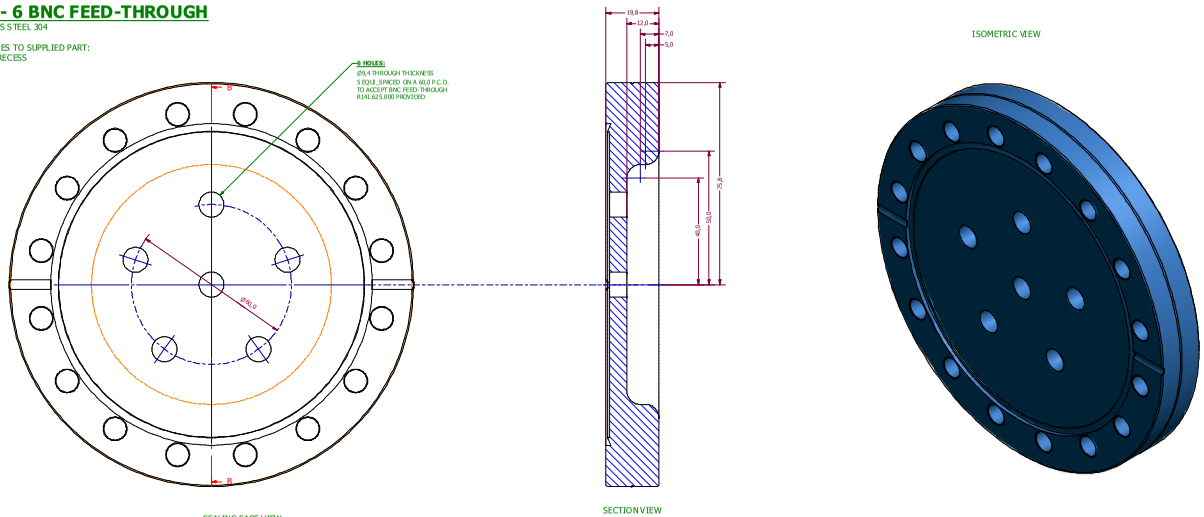


COOLING PIPES

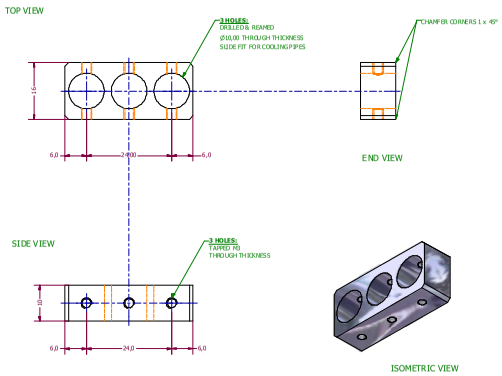
MATERIAL: S/STEEL TUBE, 10 O.D., 1 WALL
OFF: 2

DN100CF - 6 BNC FEED-THROUGH

MATERIAL: STAINLESS STEEL 304
OFF: 1
ADDITION OF FEATURES TO SUPPLIED PART:
6 HOLES + CENTRAL RECESS



NOTES:
1) PROTECT SEALING FACE FROM SCRATCHES



COOLING PIPES STEADY

MATERIAL: S/STEEL
OFF: 1

Title:	LEBT Drift Vessel Misc Components		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	I90303000M_ModifiedPortedstraight.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	May 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	20 / 33
Finish:	Remove all burns	Number off:	Stated per part
Scale:	Do not scale	Drawing number:	XL_HEP_FJB_FETS_2527
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

Imperial College London

DWG #2528

FRONT END TEST STAND (F.E.T.S.)
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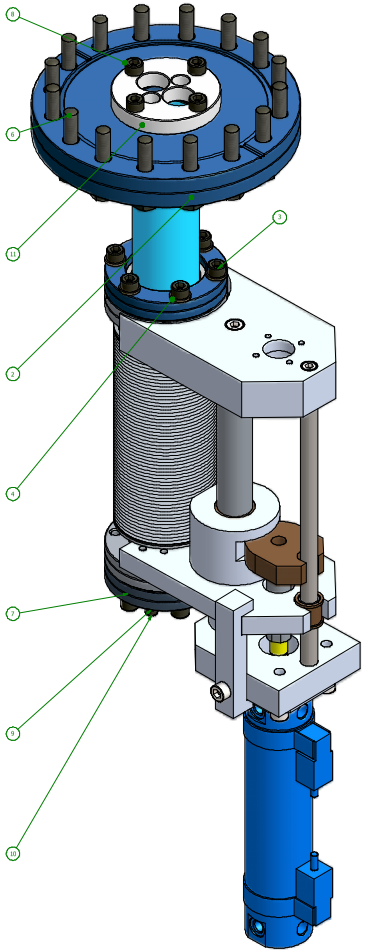
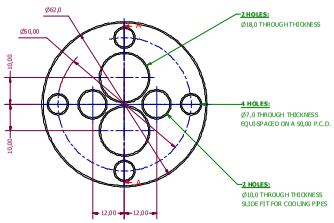
ISOMETRIC ASSEMBLY VIEW

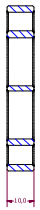


Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	RN0600X275	
3	6	ISO 4762 - M6 x 35	Hexagon Socket Head Cap Screw
4	12	ISO 7089 - 6 - 140 HV	Washer
5	6	ISO 4032 - M6	HexNut
6	16	M8-4J_BOLT	
7	1	DWG'D_MiniPorTubes	
8	10	ISO 4762 - M6 x 20	Hexagon Socket Head Cap Screw
9	2	TubeClamp	
10	8	ISO 4762 - M4 x 16	Hexagon Socket Head Cap Screw

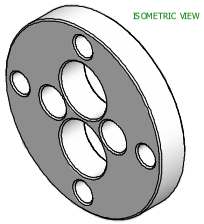
FACE VIEW



SIDE SECTION VIEW A-A



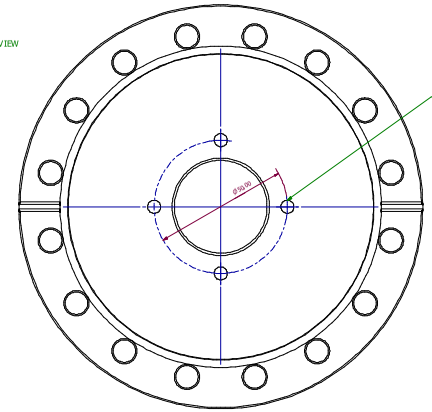
ISOMETRIC VIEW



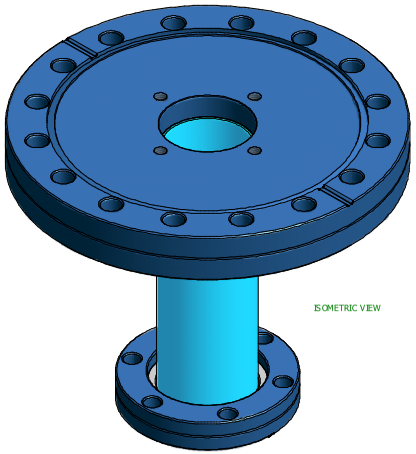
COOLING PIPE BUSH

MATERIAL: P.T.F.E.
OFF: 1

TOP FACE VIEW



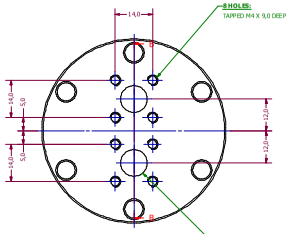
ISOMETRIC VIEW



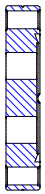
ADDITION OF 4 TAPPED HOLES ONLY

TO PART SUPPLIED BY KURT J LESKER
PART # R N0600X275
NIPPLEREDUCER,SS,6 in. FID UHV TO 2-3/4 in. ROT UHV,1-1/2 in. OD TUBE

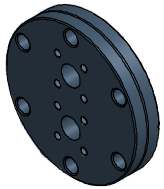
FACE VIEW



SIDE SECTION VIEW B-B



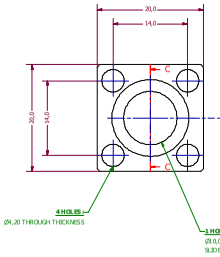
ISOMETRIC VIEW



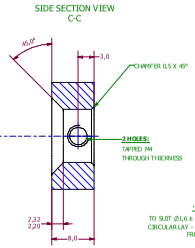
COOLING PIPE SEALING FLANGE

MODIFICATION TO PART SUPPLIED BY KURT J LESKER
P ART # F02 76X 00 0R
FLANGE BLANK 2.75" O.D.
MATERIAL 304 STAINLESS STEEL
NUMBER OFF: 1

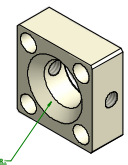
FACE VIEW



SIDE SECTION VIEW C-C



ISOMETRIC VIEW



COOLING PIPE SEALING CLAMP

MATERIAL: 304 STAINLESS STEEL
NUMBER OFF: 2

Title:	LEBT Drift Vessel Misc Components		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	Diff\vessel\beamline\mechanism.iam
Checked by:	N/A	Drawing file:	LEBT .idw
Date:	Jun 2019	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	21 / 33
Finish:	Remove all burrs	Number off:	Stated per part
Scale:	Do not scale	Drawing number:	XL_HEP_FIS_FETS_2528
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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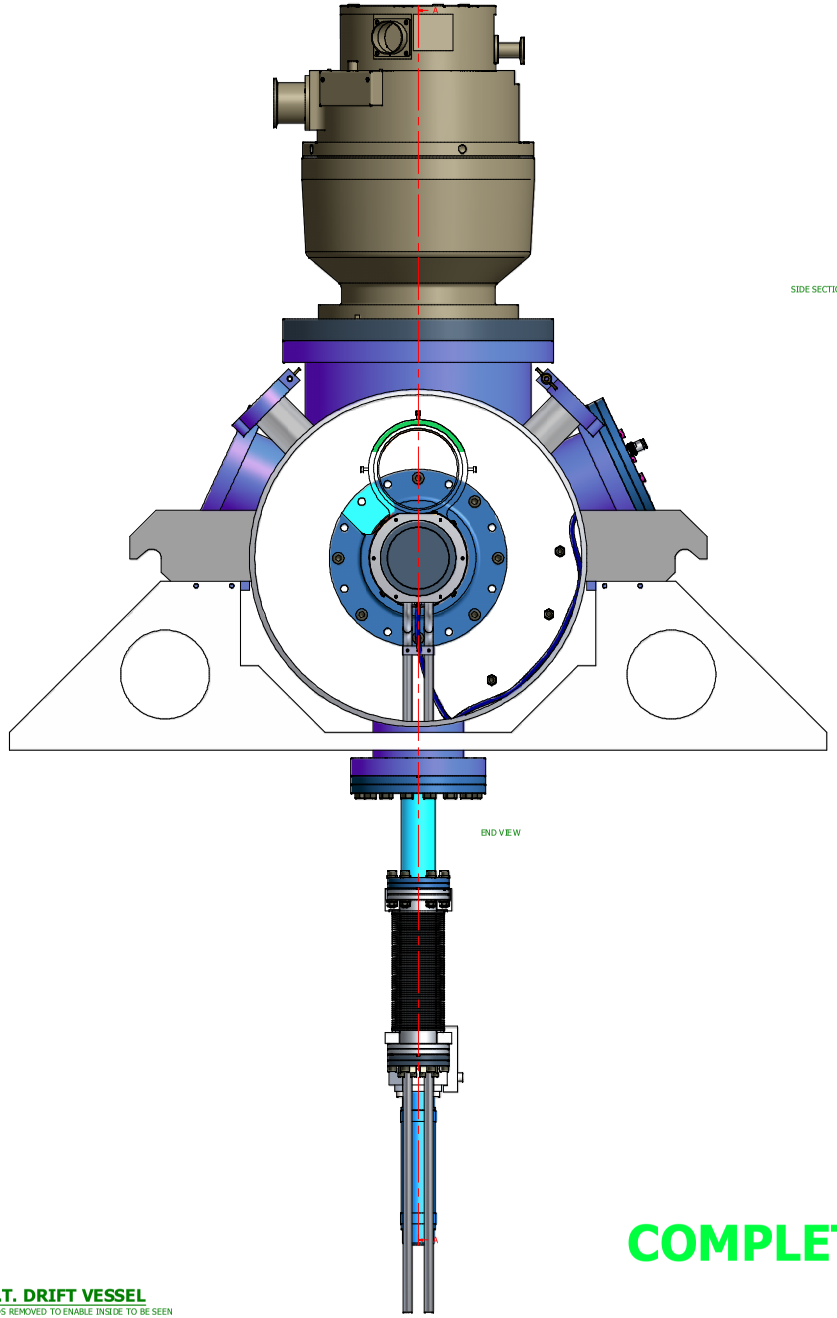
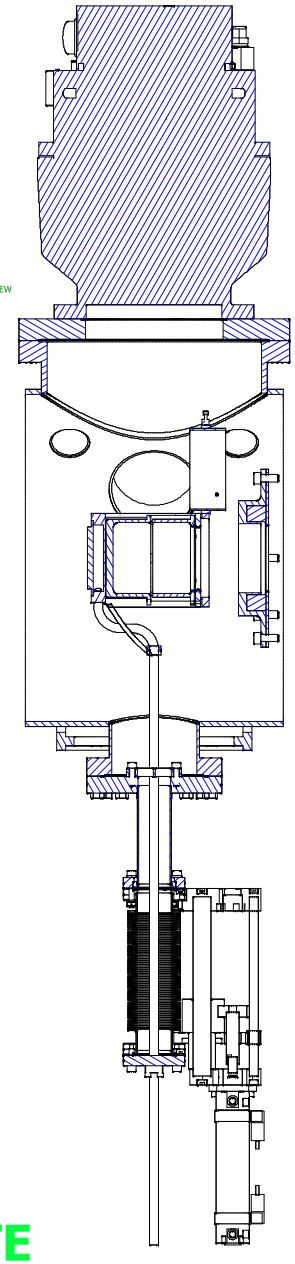
DWG #2529

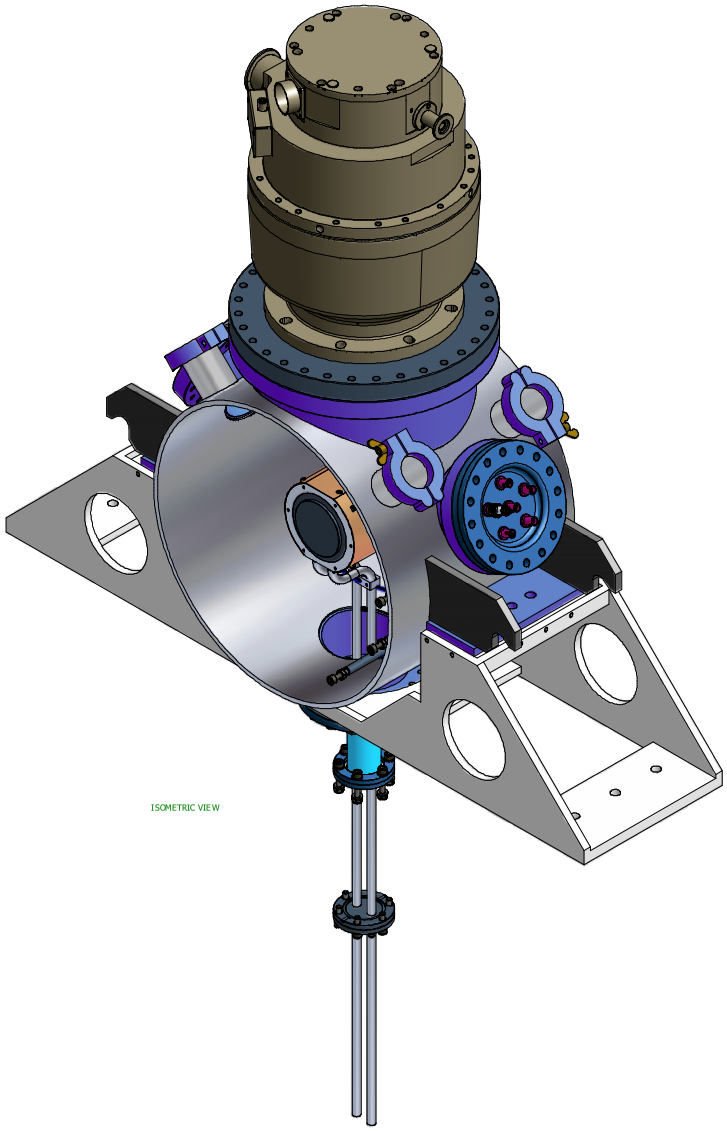
FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/



END VIEW

SIDE SECTION VIEW





ISOMETRIC VIEW

COMPLETE

L.E.B.T. DRIFT VESSEL

VESSEL ENDS REMOVED TO ENABLE INSIDE TO BE SEEN

Title:	L.E.B.T. Drift Vessel		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	DriftVessel+Beam0bp.iam
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	May 2009	Version number:	1
Manufactured by:	Vessel NTE, Internals IC	Project:	Front End Test Stand
Material:	N/A	Sheet number:	22 / 33
Finish:		Number off:	1 assembly
Scale:	Do not scale	Drawing number:	IC_HEP_FB_FETS_2529
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

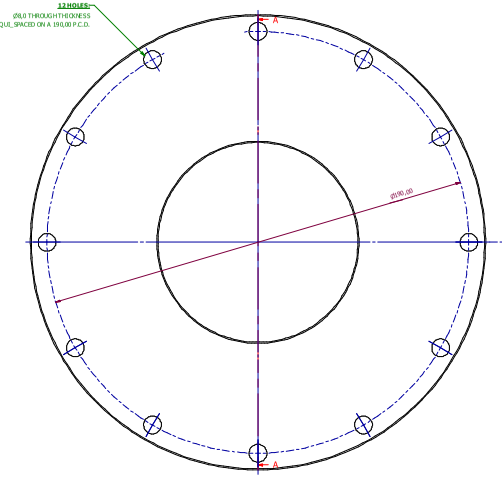
Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

Imperial College London

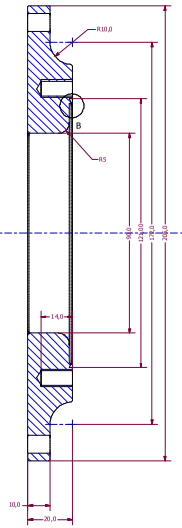
DWG #2530

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

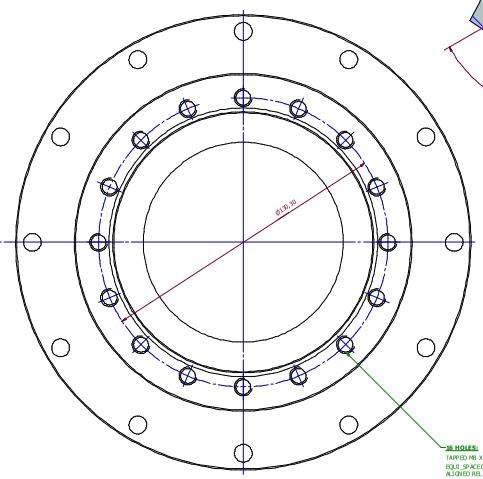
DOWNSTREAM FACE VIEW



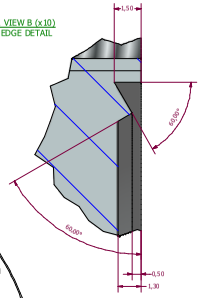
SIDE SECTION VIEW
A-A



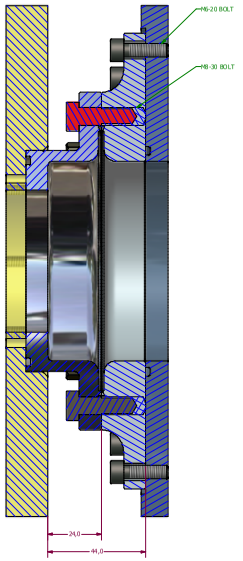
UPSTREAM FACE VIEW



DETAIL VIEW B (x10)
KNIFE EDGE DETAIL



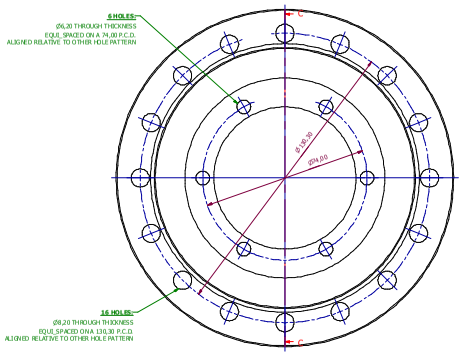
SIDE SECTION ASSEMBLY VIEW



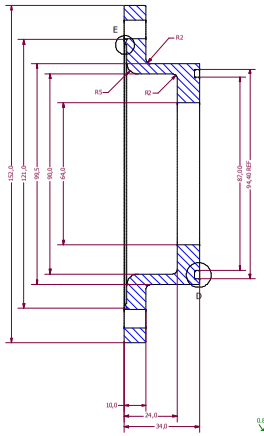
DN100CF TO PEPPERPOT VESSEL FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 1

COMPLETE

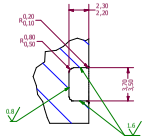
DOWNSTREAM FACE VIEW



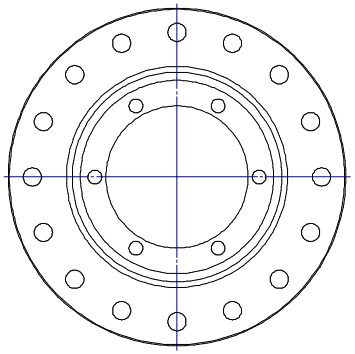
SIDE SECTION VIEW
C-C



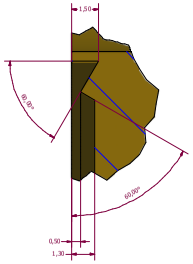
DETAIL VIEW D (x5)
'O' RING GROOVE DETAIL
TO SUIT Ø3,0 ± 0,10 VITON 'O' RING
M'CLAY CIRCULAR
NO SCRATCHES ACROSS LAY



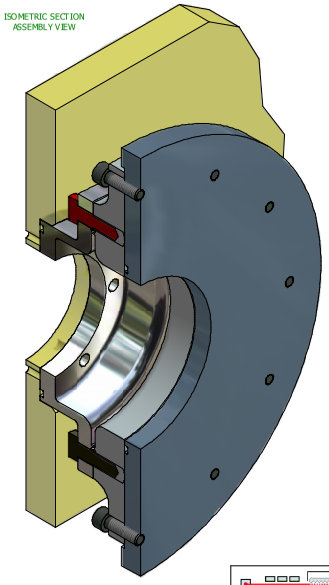
UPSTREAM FACE VIEW



DETAIL VIEW E (x10)
KNIFE EDGE DETAIL



ISOMETRIC SECTION ASSEMBLY VIEW



FIRST TANK TO DN100CF FLANGE
MATERIAL: STAINLESS STEEL 304
OFF: 1

Title:	First vessel to pepperpot vessel flanges		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	WallDownStream150741003*.prt
Checked by:	N/A	Drawing file:	UBT.slw
Date:	June 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stainless Steel 304	Sheet number:	23 / 33
Finish:	Remove all burrs	Number off:	1 each
State:	Do not scale	Drawing number:	XL_HEP_FJB_FETS_2530
Notes:			
Contact:	p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858		

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

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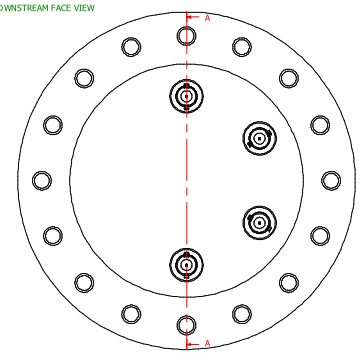
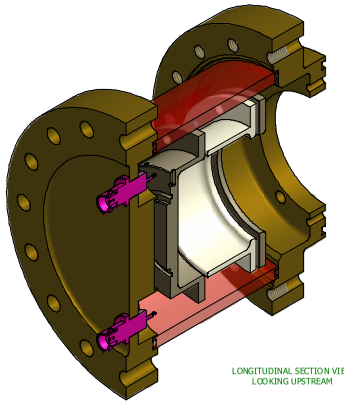
DWG #2531

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

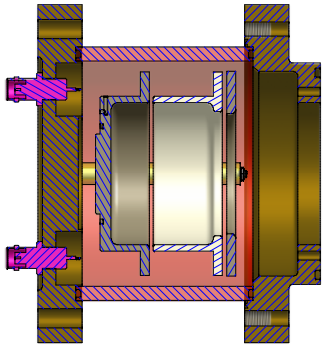
DOWNSTREAM FACE VIEW



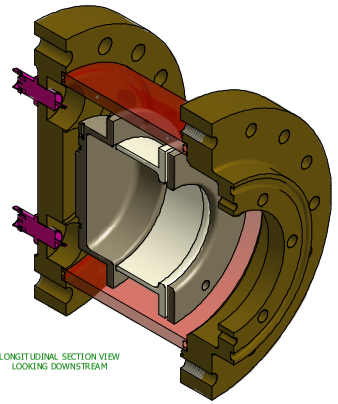


LONGITUDINAL SECTION VIEW
LOOKING UPSTREAM

A-A (1.25 : 1)



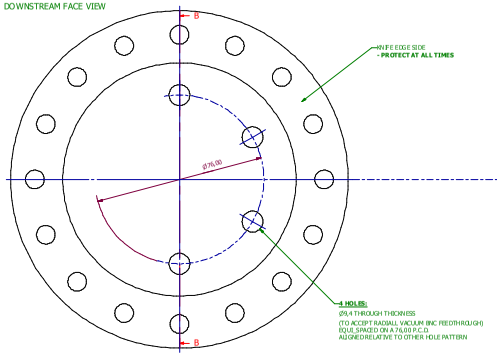
SIDE SECTION VIEW



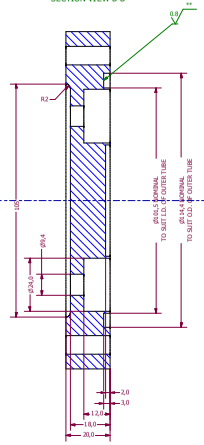
LONGITUDINAL SECTION VIEW
LOOKING DOWNSTREAM

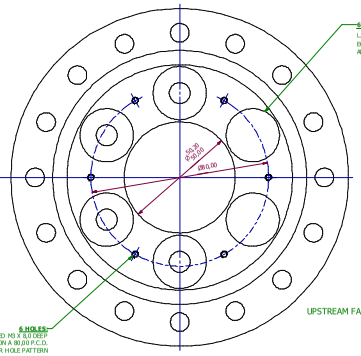
FETS FIRST VESSEL FARADAY CUP ASSEMBLY

DOWNSTREAM FACE VIEW



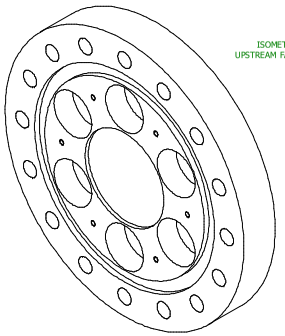
SECTION VIEW B-B





UPSTREAM FACE VIEW

ISOMETRIC
UPSTREAM FACE VIEW

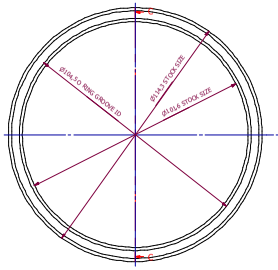


FARADAY CUP ASSEMBLY FLANGE

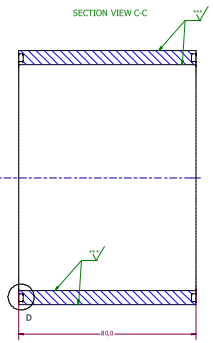
MATERIAL: STAINLESS STEEL GRADE 304
MANUFACTURED FROM DN100CF BLANK FLANGE
SUPPLIED BY OERLIKON
OFF: 1

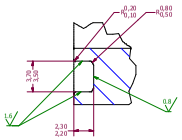
NOTES:
1) SURFACES INDICATED THUS **
M/C LAY CIRCULAR
NO SCRATCHES ACROSS LAY

END VIEW



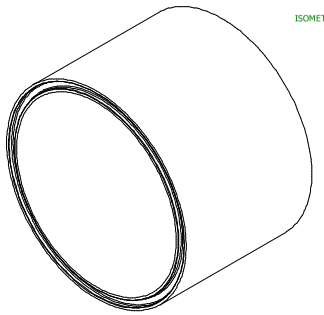
SECTION VIEW C-C





DETAIL VIEW D (x5)
'O' RING GROOVE DETAIL
TO SUIT Ø3,0 x 4,10 VITON O' RING
M/C LAY CIRCULAR
NO SCRATCHES ACROSS LAY

ISOMETRIC VIEW



COMPLETE

OUTER TUBE

MATERIAL: ALUMINIUM ALLOY 6082
MATERIAL SUPPLIER: AALCO
OFF: 1

NOTES:
1) SURFACES INDICATED THUS ***
GRITBLAST SURFACES
PROTECT END SEALING FACES

Title:	First vessel faraday cup assembly		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	frontendtestassembly.iam
Checked by:	N/A	Drawing file:	UBT.idw
Date:	May 2009	Version number:	2
Manufactured by:	HEP Workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	24 / 33
Finish:	Remove all burrs	Number off:	Stated per part
State:	Do not scale	Drawing number:	XL_HEP_FEL_FETS_2531
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; XX ± 0.2 mm; XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

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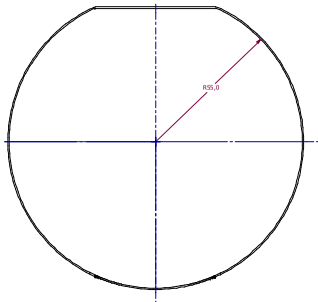
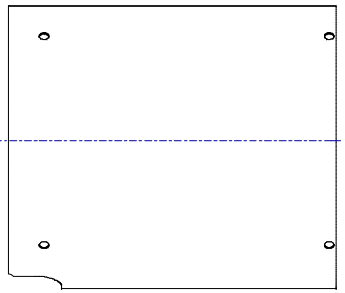
DWG #2532

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/

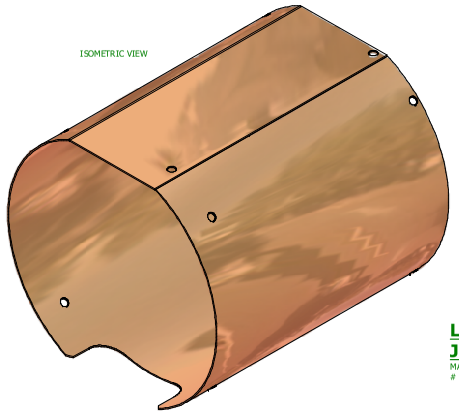
END VIEW



SIDE VIEW

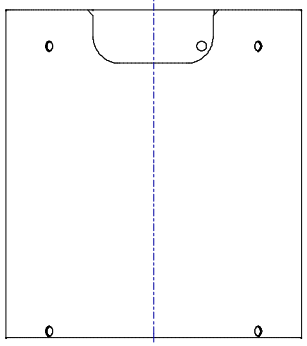


ISOMETRIC VIEW

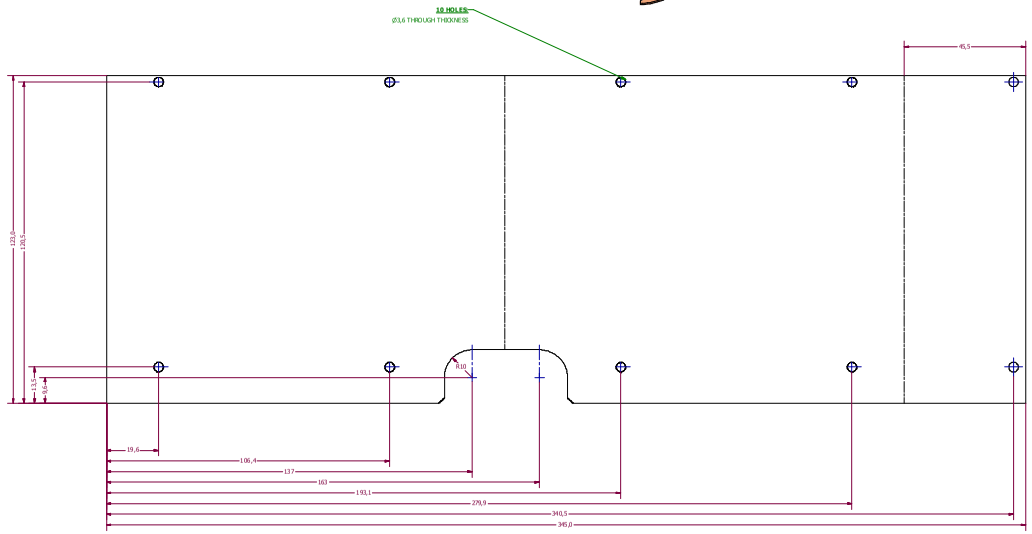


L.E.B.T. FARADAY CUP ASSEMBLY JACKET

MATERIAL: THIN COPPER SHEET (0,5mm)
OFF: 1



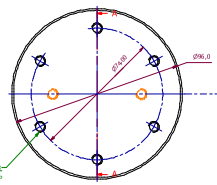
BASE VIEW



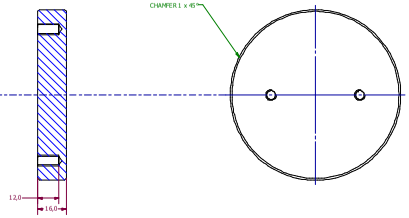
FLAT PATTERN

COMPLETE

INSIDE FACE VIEW

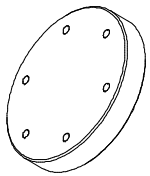


SECTION VIEW A-A



OUTSIDE FACE VIEW

ISOMETRIC VIEW



L.E.B.T. BEAM PIPE SECTION 1 BLANK

MATERIAL: STAINLESS STEEL
OFF: 1

Title:	Copper Jacket + Beam Pipe Blank		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	fferadaCupAssemblyJacket1.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	May 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	29 / 33
Finish:	Remove all burrs	Number off:	1 each
Scale:	Do not scale	Drawing number:	XL_HEP_FB_FETS_2532
Notes:			

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07894 260858

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
XX ± 0.2 mm
XXX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

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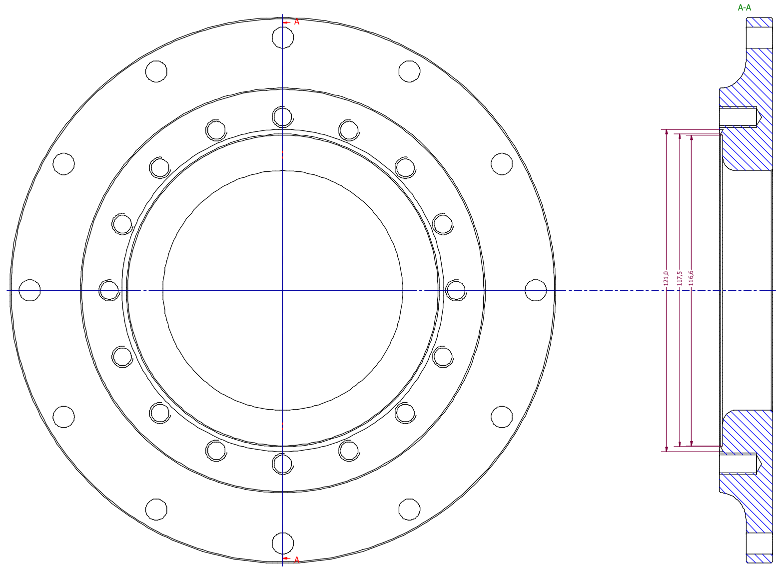
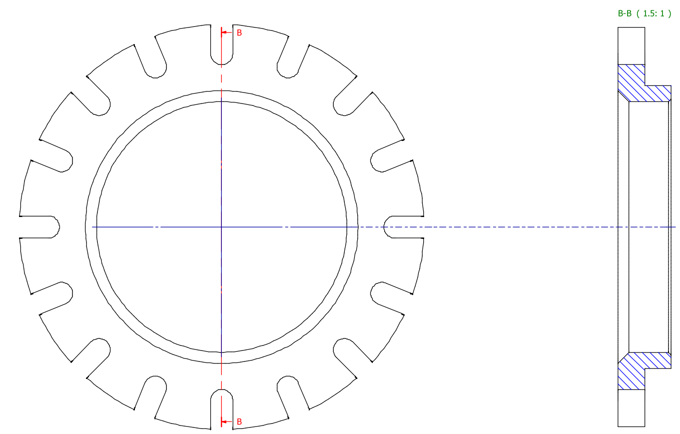
***F**RONT **E**ND **T**EST **S**TAND (F.E.T.S.)*
http://fets.isis.rl.ac.uk/



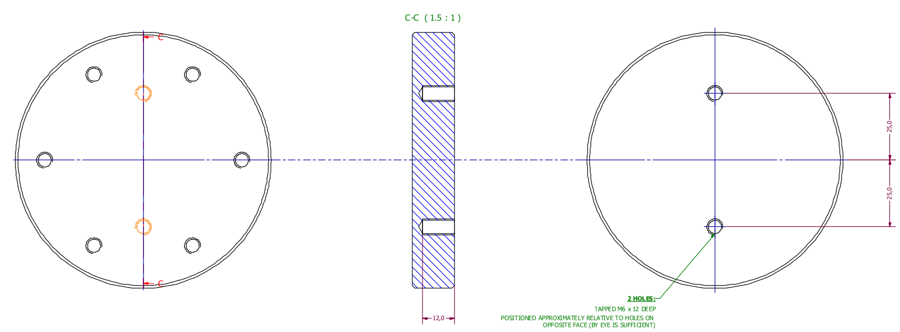
DN100CF ADDITIONAL KNIFE EDGE DIMENSIONS



SKIM INTERNAL DIAMETER

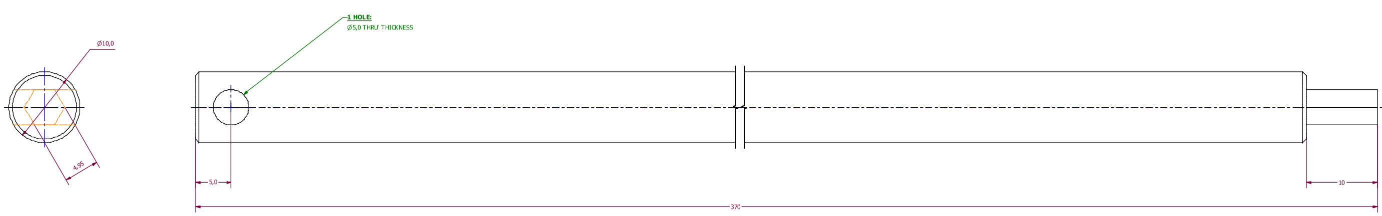
MATERIAL: STAINLESS STEEL
OFF: 2

IF RUN-OUT IN LATHE < 0.02mm MACHINE 0.05mm FROM INTERNAL DIAMETER



ADD TWO TAPPED HOLES

MATERIAL: STAINLESS STEEL
OFF: 1



LONG REACH ALLEN KEY FOR M6 CAPHEAD

MATERIAL: SILVER STEEL
OFF: 1
HARDEN & TEMPER HEXAGONAL TIP

Title:	Tools + modifications		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	DN100CFToPepperpotVessel.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	June 2009	Version number:	-
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	26 / 33
Finish:	Remove all burrs	Number off:	Stated per part
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2533
Notes:	-		

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm; X.X ± 0.2 mm; X.XX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

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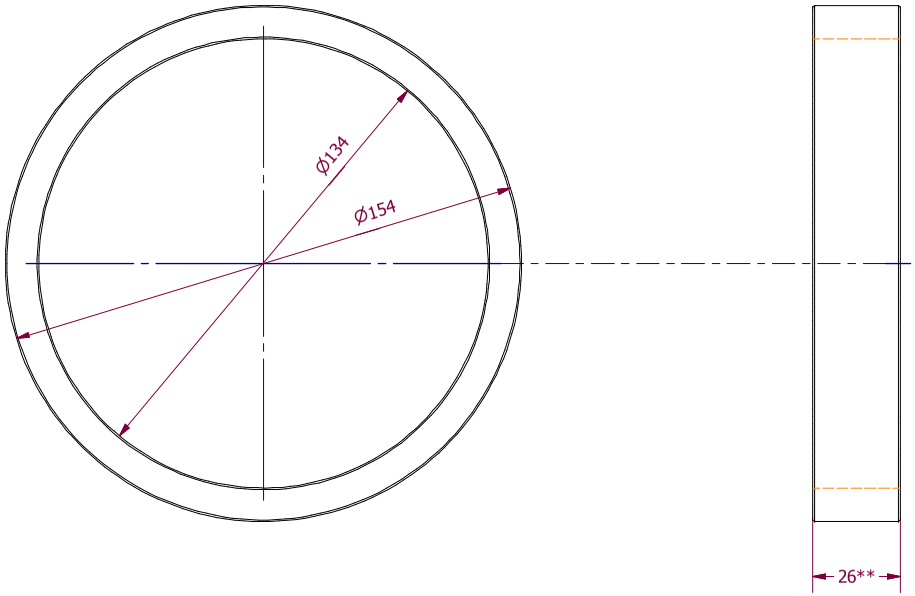
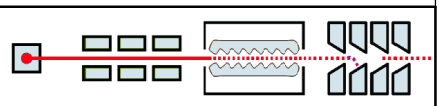
#2534





VACUUM BELLOWS PROTECTION RING

MATERIAL: NYLON 66
OFF: 2

Title:	Vacuum Bellows Protection Ring		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BellowsCompressionLimit.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	July 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Nylon 66	Sheet number:	27 / 33
Finish:	Remove all burrs	Number off:	2
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2534
Notes:	** Material stock thickness		

Unless otherwise stated:

Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5˚
Hole centres:		± 0.05 mm
Surface finish:		1.6 microns
Dimensions in mm		☐

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

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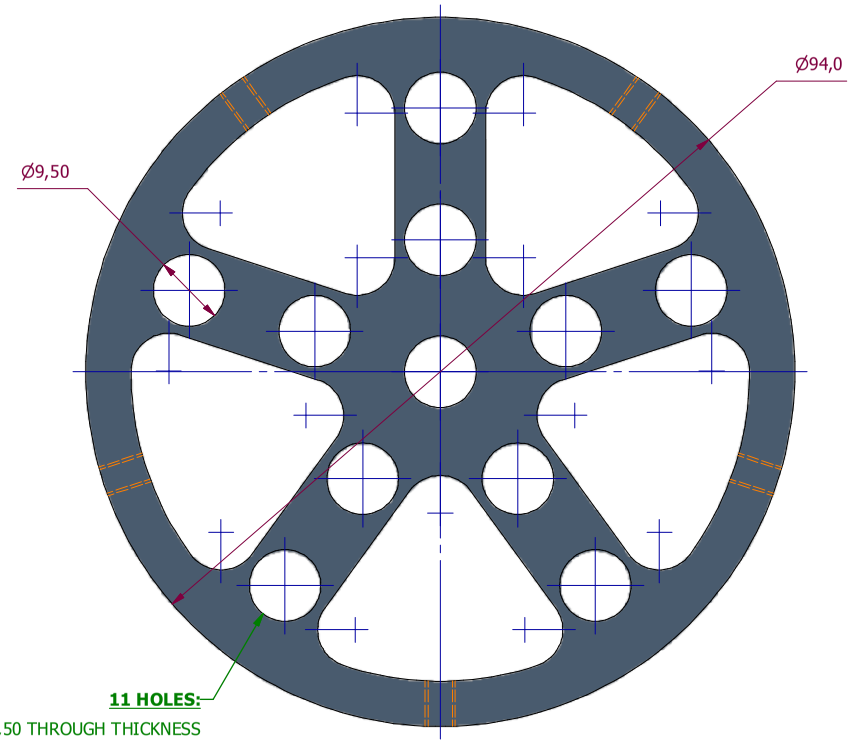
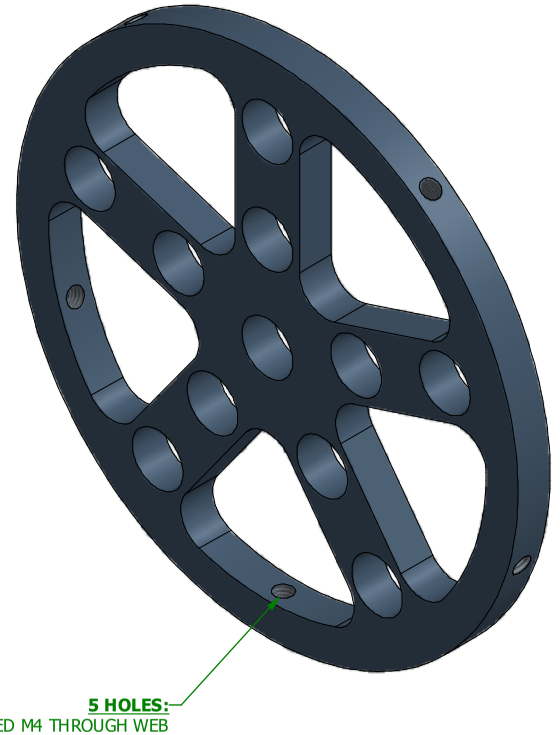
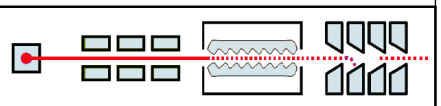
#2535







BNC MOUNTING WHEEL

MATERIAL: 6mm THICK CAST ALUMINIUM ALLOY
OFF: 1

Title:	BNC Mounting Wheel		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BNC_FeedThrough_Wheel.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	July 2009	Version number:	1
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Cast aluminium alloy sheet	Sheet number:	28 / 33
Finish:	Remove all burrs	Number off:	1
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2535
Notes:	-		

Unless otherwise stated:

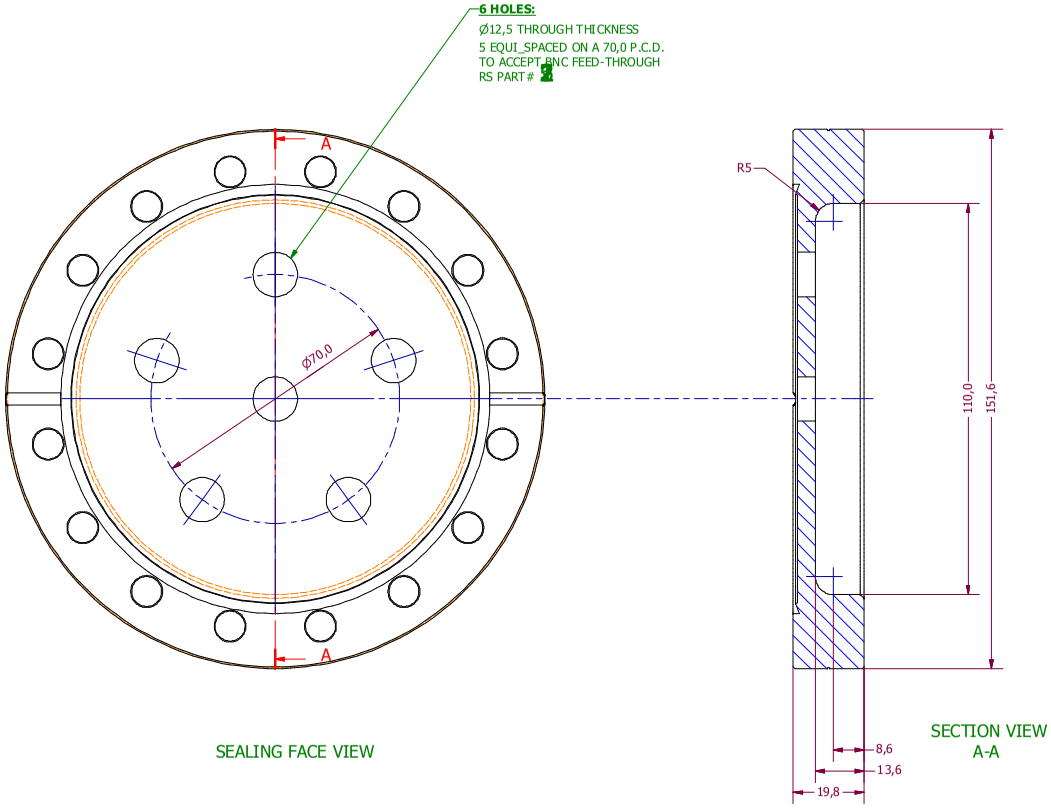
Dimensional tolerance:	X	± 0.5 mm
	X.X	± 0.2 mm
	X.XX	± 0.1 mm
Angular tolerance:		± 0.5˚
Hole centres:		± 0.05 mm
Surface finish:		1.6 microns
Dimensions in mm		☐

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

Imperial College London #2536

DN100CF - 6 BNC FEED-THROUGH

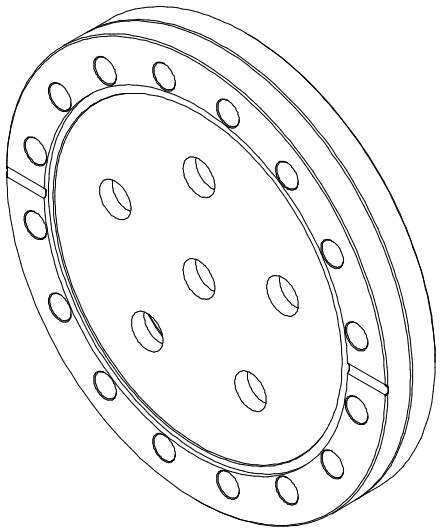
MATERIAL: STAINLESS STEEL 304
OFF: 1
ADDITION OF FEATURES TO SUPPLIED PART: 6 HOLES + CENTRAL RECESS



SEALING FACE VIEW

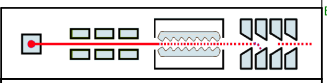
SECTION VIEW
A-A

ISOMETRIC VIEW



NOTES:
1) PROTECT SEALING FACE FROM SCRATCHES

FRONT END TEST STAND (F.E.T.S.)
http://fets.isis.rl.ac.uk/



Title:	DN100CF 6 BNC FEED THROUGH		
Drawn by:	P. Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	F0600X000N_ModifiedForFeedthroughsV2.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	August 2009	Version number:	2
Manufactured by:	HEP workshop	Project:	Front End Test Stand
Material:	Stainless Steel 304	Sheet number:	29 / 33
Finish:	Remove all burrs	Number off:	1
Scale:	Do not scale	Drawing number:	IC_HEP_PJS_FETS_2536
Notes:			

Unless otherwise stated:
Dimensional tolerance: X ± 0.5 mm
X.X ± 0.2 mm
X.XX ± 0.1 mm
Angular tolerance: ± 0.5°
Hole centres: ± 0.05 mm
Surface finish: 1.6 microns
Dimensions in mm □

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058

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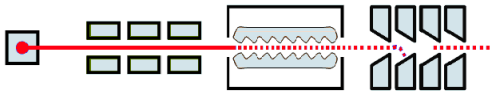
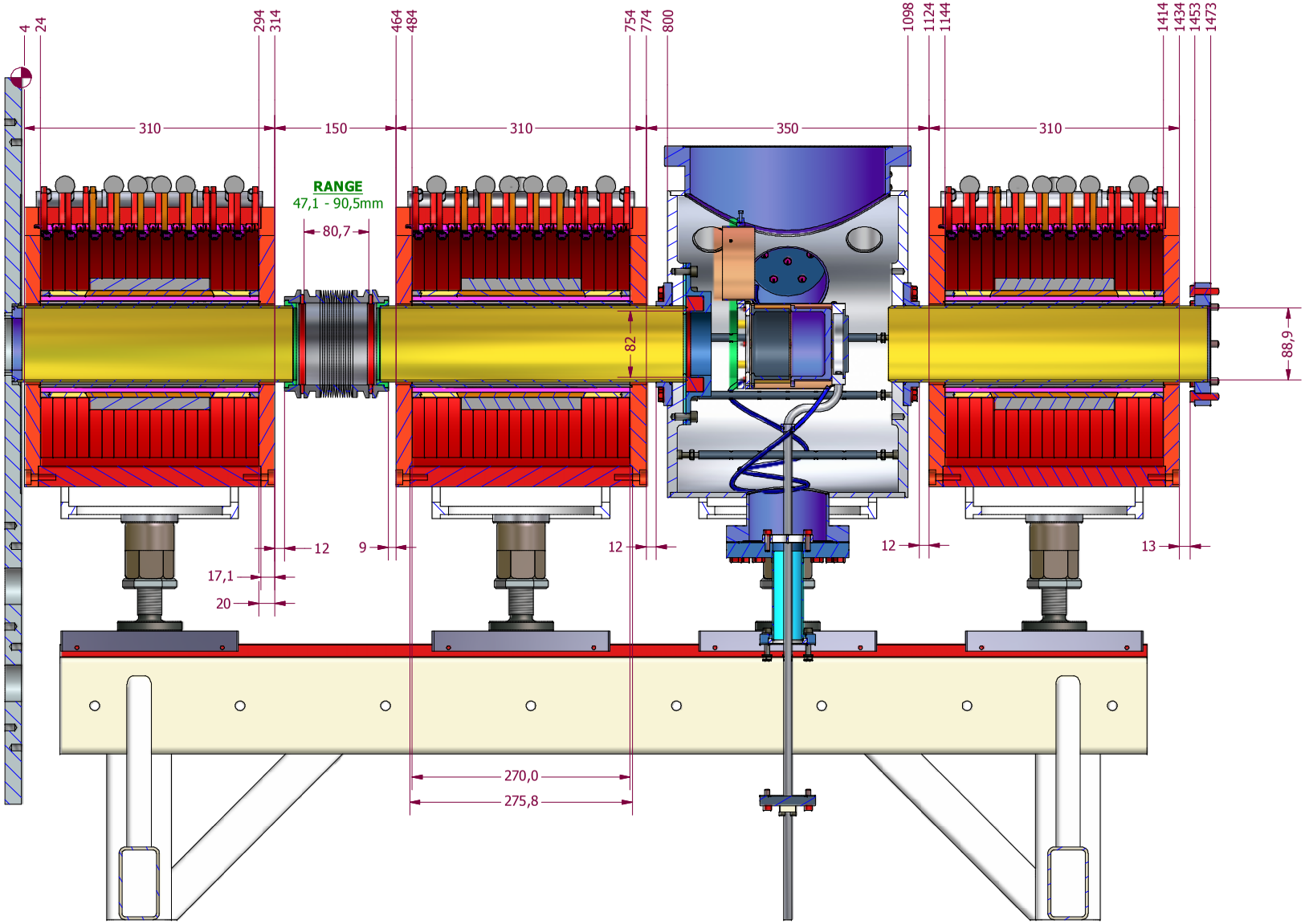
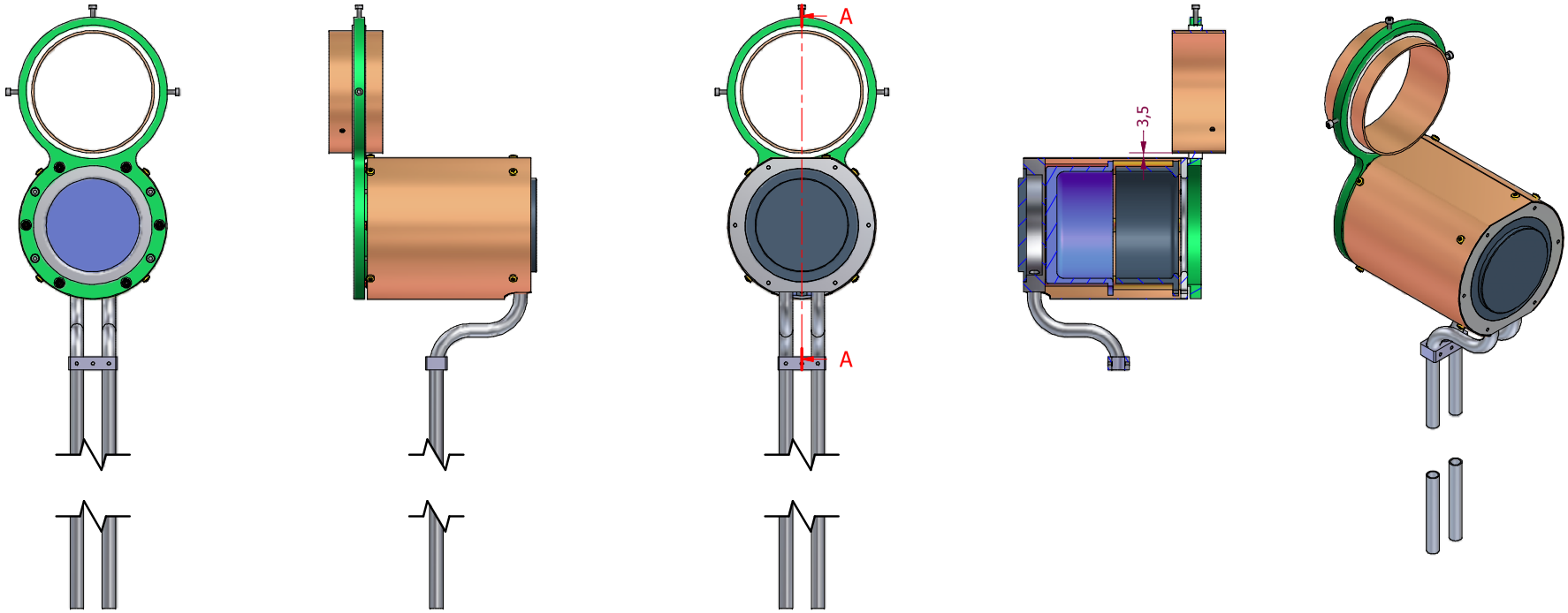
#2537



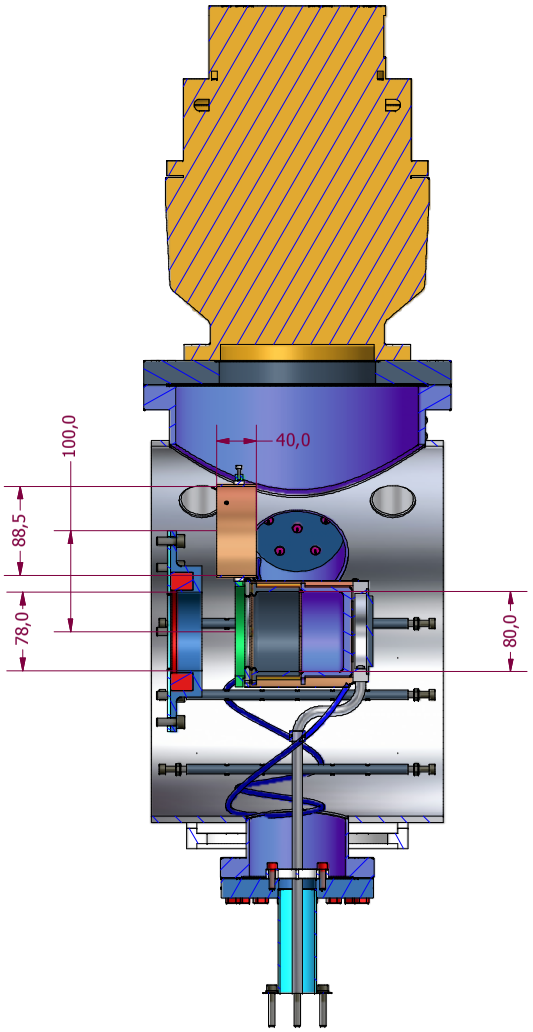


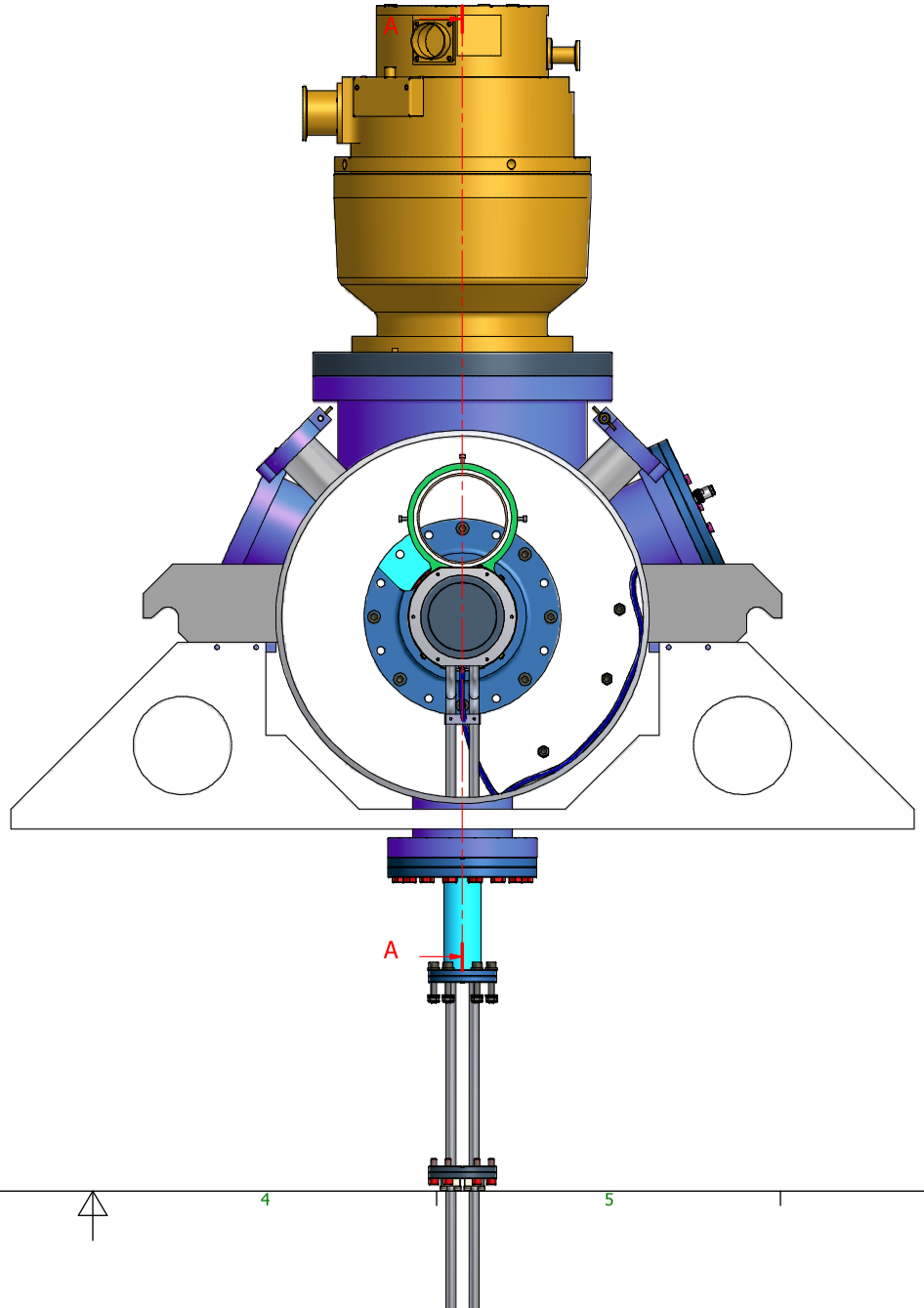
LEBT OVERVIEW

by P. Savage


A-A (0.3 : 1)
A
A
3,5

A-A (0.2 : 1)

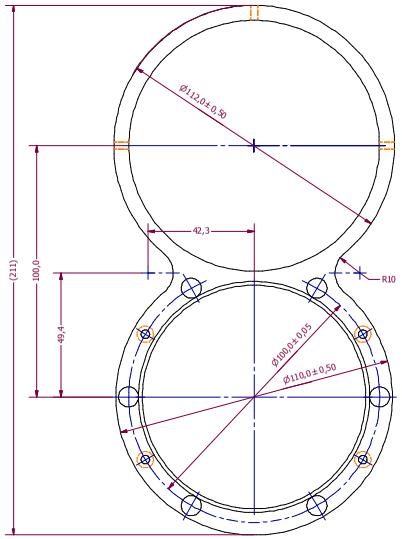




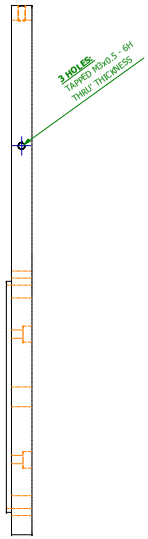
Imperial College London

ION BEAM SPACE CHARGE DECOMPENSATOR

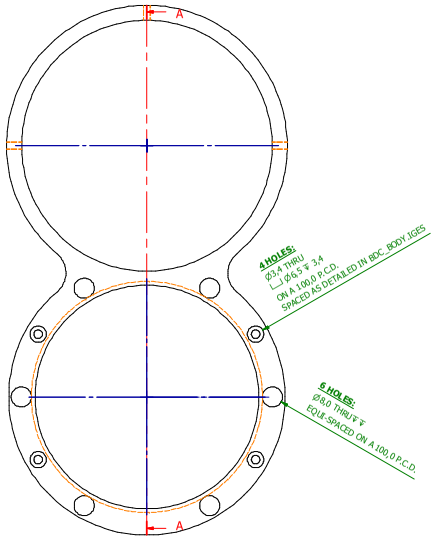
FRONT VIEW



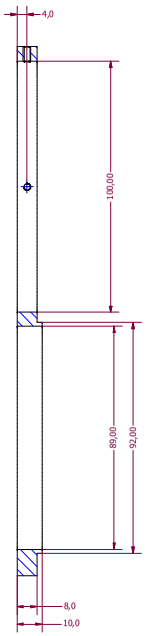
SIDE VIEW



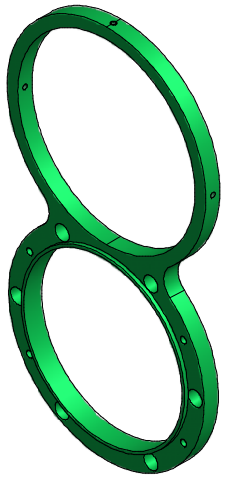
BACK VIEW



SECTION VIEW
A-A (1 : 1)



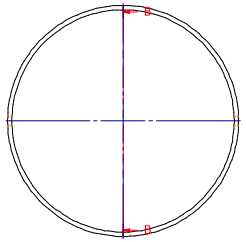
ISOMETRIC VIEW



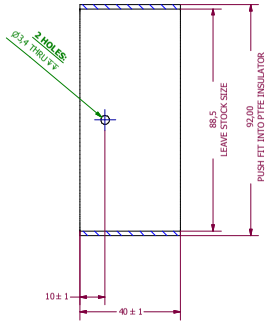
BODY

MATERIAL: ALUMINIUM ALLOY
OFF: 1

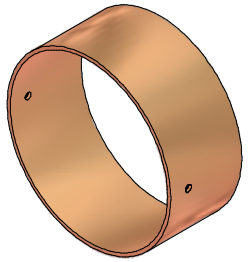
FRONT VIEW



SECTION
B-B (1 : 1)



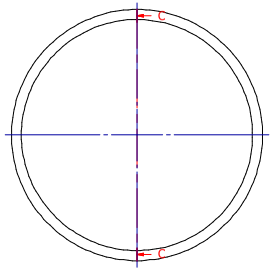
ISOMETRIC VIEW



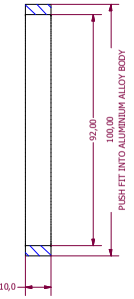
DECOMPENSATOR TUBE

MATERIAL: COPPER
OFF: 1

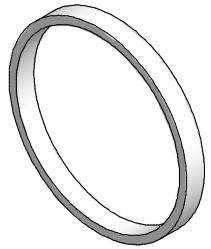
FRONT VIEW



SECTION VIEW
C-C (1 : 1)

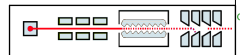


ISOMETRIC VIEW



INSULATOR

MATERIAL: PTFE
OFF: 1



Title:	Ion Beam Space Charge Decompensator		
Drawn by:	P.Savage	Projection:	Third angle
Designed by:	P. Savage	Model file:	BDC_Clamp_Handcuffs.ipt
Checked by:	N/A	Drawing file:	LEBT.idw
Date:	1st August 2011	Version number:	1
Manufactured by:	I. Clark, HEP workshop	Project:	Front End Test Stand
Material:	Stated per part	Sheet number:	33 / 33
Finish:	1.6 microns	Number off:	1 of each part
Scale:	Do not scale	Drawing number:	IC_HEP_P3S_FETS_XXXX
Notes:	-		

Unless otherwise stated:

Dimensional tolerance: X	± 0.5 mm
X.X	± 0.2 mm
X.XX	± 0.1 mm
Angular tolerance:	± 0.5'
Hole centres:	± 0.05 mm
Suiface finish:	1.6 microns
Dimensions in mm	□

Contact: p.savage@imperial.ac.uk (Work) 0207 594 7817 (Mobile) 07884 268058