

STANDARD COMPONENTS

The tables below show a complete list of all the standard elements that are necessary to build the general assembly.

FLANGES

Flanges DN 25 PN 16

Flanges	Quantity	Drawing Id. Num.	Cumulative
DN 25 PN 16	1	1.04.03.02	1

Flanges DN 50 PN 16

Flanges	Quantity	Drawing Id. Num	Cumulative
DN 50 PN 16	1	1.04.07	1
DN 50 PN 16	1	1.04.07	2
DN 50 PN 16	1	1.04.07	3
DN 50 PN 16	1	1.04.07	4
DN 50 PN 16	1	0.02	5
DN 50 PN 16	1	0.02	6
DN 50 PN 16	1	0.02	7
DN 50 PN 16	1	0.02	8
DN 50 PN 16	1	0.02	9
DN 50 PN 16	1	0.02	10
DN 50 PN 16	1	0.02	11
DN 50 PN 16	1	0.02	12
DN 50 PN 16	1	0.02	13
DN 50 PN 16	1	0.02	14
DN 50 PN 16	1	0.02	15
DN 50 PN 16	1	0.02	16
DN 50 PN 16	1	0.02	17
DN 50 PN 16	1	0.02	18
DN 50 PN 16	1	0.02	19
DN 50 PN 16	1	0.02	20
DN 50 PN 16	1	0.02	21
DN 50 PN 16	1	0.02	22
DN 50 PN 16	1	0.02	23
DN 50 PN 16	1	0.02	24
DN 50 PN 16	1	0.02	25
DN 50 PN 16	1	0.02	26
DN 50 PN 16	1	0.02	27
DN 50 PN 16	1	0.02	28
DN 50 PN 16	1	0.02	29
DN 50 PN 16	1	0.02	30
DN 50 PN 16	1	0.02	31
DN 50 PN 16	1	0.02	32

Flanges DN 80 PN 16

Flanges	Quantity	Drawing Id. Num	Cumulative
DN 80 PN 16	1	0.03	1
DN 80 PN 16	1	0.03	2
DN 80 PN 16	1	0.03	3
DN 80 PN 16	1	0.03	4
DN 80 PN 16	1	0.03	5
DN 80 PN 16	1	0.03	6

Flanges DN 100 PN 10

Flanges	Quantity	Drawing Id. Num.	Cumulative
DN 100 PN 10	1	1.07.03	1

Flanges DN 100 PN 16

Flanges	Quantity	Drawing Id. Num	Cumulative
DN 100 PN 16	1	1.04.04	1

Flanges DN 150 PN 16

Flanges	Quantity	Drawing Id. Num.	Cumulative
DN 150 PN 16	1	1.05.02	1
DN 150 PN 16	1	1.05.02	2
DN 150 PN 16	1	1.05.02	3
DN 150 PN 16	1	1.05.02	4

Flanges DN 200 PN 16

Flanges	Quantity	Drawing Id. Num.	Cumulative
DN 200 PN 16	1	1.04.03.01	1
DN 200 PN 16	1	0.04	2
DN 200 PN 16	1	0.04	3

Flanges DN 300 PN 10

Flanges	Quantity	Drawing Id. Num.	Cumulative
DN 300 PN 10	1	1.04.05	1
DN 300 PN 10	1	1.03.03	2

Flanges DN 350 PN 10

Flanges	Quantity	Drawing Id. Num	Cumulative
DN 350 PN 10	1	1.05.03	1

Flanges DN 800 PN 10

Flanges	Quantity	Drawing Id. Num	Cumulative
DN 800 PN 10	2	1.01.01	2
DN 800 PN 10	2	1.02.01	4
DN 800 PN 10	2	1.03.01	6
DN 800 PN 10	2	1.04.01	8

SPADES

Spades	Quantity	Drawing Id. Num.	Cumulative
DN 200 PN 16	1	0.04	1
DN 200 PN 16	1	0.04	2
DN 250 PN 10	1	1.05.04	1
DN 300 PN 10	1	1.04.05	1
DN 300 PN 10	1	1.03.03	2
DN 800 PN 10	1	1.00	1
DN 800 PN 10	1	1.05.01	2

BOLTS

Bolts M12

Bolts	Quantity	Drawing Id. Num.	Cumulative
M12x25	120	1.07	120
M12x60	4	1.04.03.02	4

Bolts M16

Bolts	Quantity	Drawing Id. Num.	Cumulative
M16x70	4	1.04.07	4
M16x70	4	1.04.07	8
M16x70	4	1.04.07	12
M16x70	4	1.04.07	16
M16x70	4	0.02	20
M16x70	4	0.02	24
M16x70	4	0.02	28
M16x70	4	0.02	32
M16x70	4	0.02	36
M16x70	4	0.02	40
M16x70	4	0.02	44
M16x70	4	0.02	48
M16x70	4	0.02	52
M16x70	4	0.02	56
M16x70	4	0.02	60
M16x70	4	0.02	64
M16x70	4	0.02	68
M16x70	4	0.02	72
M16x70	4	0.02	76
M16x70	4	0.02	80
M16x70	4	0.02	84
M16x70	4	0.02	88
M16x70	4	0.02	92
M16x70	4	0.02	96
M16x70	4	0.02	100
M16x70	4	0.02	104
M16x70	4	0.02	108
M16x70	4	0.02	112
M16x70	4	0.02	116
M16x70	4	0.02	120
M16x70	4	0.02	124
M16x70	4	0.02	128
M16x70	8	0.03	136
M16x70	8	0.03	144
M16x70	8	0.03	152
M16x70	8	0.03	160
M16x70	8	0.03	168
M16x70	8	0.03	176
M16x70	8	1.04.04	184

Bolts M20

Bolts	Quantity	Drawing Id. Num.	Cumulative
M20X40	16	1.05	16
M20x80	12	1.04.03.01	12
M20x80	12	1.04.05	24
M20X80	12	0.04	36
M20X80	12	0.04	48
M20x80	12	1.03.03	60
M20X80	8	1.05.02	68
M20X80	8	1.05.02	76
M20X80	8	1.05.02	84
M20X80	8	1.05.02	92
M20X80	12	1.05	104

Bolts M30

Bolts	Quantity	Drawing Id. Num.	Cumulative
M30X90	24	1.05	24
M30x110	24	1.00	24
M30x120	96	1.00	96

NUTS

Nuts	Quantity	Drawing id. Num.	Cumulative
M20	12	0.04	12
M20	12	0.04	24
M20	12	1.04.05	36
M20	12	1.03.03	48
M20	12	1.05	60
M30	120	1.00	120
M30	24	1.05	144

PIPES

Pipes DN 15 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num	Cumulative (mm)
DN 15 PN 10	1	545	1.03.04	545
DN 15 PN 10	1	545	1.03.04	1090
DN 15 PN 10	1	515	0.01	1605
DN 15 PN 10	1	515	0.01	2120
DN 15 PN 10	1	515	0.01	2635
DN 15 PN 10	1	515	0.01	3150
DN 15 PN 10	1	515	0.01	3665
DN 15 PN 10	1	515	0.01	4180
DN 15 PN 10	1	515	0.01	4695
DN 15 PN 10	1	515	0.01	5210
DN 15 PN 10	1	515	0.01	5725
DN 15 PN 10	1	515	0.01	6240
DN 15 PN 10	1	515	0.01	6755
DN 15 PN 10	1	515	0.01	7270
DN 15 PN 10	1	515	0.01	7785
DN 15 PN 10	1	515	0.01	8300
DN 15 PN 10	1	515	0.01	8815
DN 15 PN 10	1	515	0.01	9330
DN 15 PN 10	1	515	0.01	9845
DN 15 PN 10	1	515	0.01	10360
DN 15 PN 10	1	515	0.01	10875
DN 15 PN 10	1	515	0.01	11390
DN 15 PN 10	1	515	0.01	11905
DN 15 PN 10	1	515	0.01	12420
DN 15 PN 10	1	515	0.01	12935
DN 15 PN 10	1	515	0.01	13450
DN 15 PN 10	1	587	1.04.06	14037
DN 15 PN 10	1	587	1.04.06	14624
DN 15 PN 10	1	587	1.04.06	15211
DN 15 PN 10	1	587	1.04.06	15798
DN 15 PN 10	1	587	1.04.06	16385
DN 15 PN 10	1	587	1.04.06	16972
DN 15 PN 10	1	587	1.04.06	17559
DN 15 PN 10	1	587	1.04.06	18146
DN 15 PN 10	1	587	1.04.06	18733
DN 15 PN 10	1	587	1.04.06	19320

Pipes DN 20 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num	Cumulative (mm)
DN 20 PN 10	8	268	1.05.03	2144
DN 20 PN 10	1	371	1.05.03	2515

Pipes DN 25 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 25 PN 10	1	343	1.04.03.02	343

Pipes DN 50 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 50 PN 10	1	451	1.04.07	451
DN 50 PN 10	1	451	1.04.07	902
DN 50 PN 10	1	451	1.04.07	1353
DN 50 PN 10	1	451	1.04.07	1804
DN 50 PN 10	1	379	0.02	2183
DN 50 PN 10	1	379	0.02	2562
DN 50 PN 10	1	379	0.02	2941
DN 50 PN 10	1	379	0.02	3320
DN 50 PN 10	1	379	0.02	3699
DN 50 PN 10	1	379	0.02	4078
DN 50 PN 10	1	379	0.02	4457
DN 50 PN 10	1	379	0.02	4836
DN 50 PN 10	1	379	0.02	5215
DN 50 PN 10	1	379	0.02	5594
DN 50 PN 10	1	379	0.02	5973
DN 50 PN 10	1	379	0.02	6352
DN 50 PN 10	1	379	0.02	6731
DN 50 PN 10	1	379	0.02	7110
DN 50 PN 10	1	379	0.02	7489
DN 50 PN 10	1	379	0.02	7868
DN 50 PN 10	1	379	0.02	8247
DN 50 PN 10	1	379	0.02	8626
DN 50 PN 10	1	379	0.02	9005
DN 50 PN 10	1	379	0.02	9384
DN 50 PN 10	1	379	0.02	9763
DN 50 PN 10	1	379	0.02	10142
DN 50 PN 10	1	379	0.02	10521
DN 50 PN 10	1	379	0.02	10900
DN 50 PN 10	1	379	0.02	11279
DN 50 PN 10	1	379	0.02	11658
DN 50 PN 10	1	379	0.02	12037
DN 50 PN 10	1	379	0.02	12416

Pipes DN 80 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num	Cumulative (mm)
DN 80 PN 10	1	355	0.03	355
DN 80 PN 10	1	355	0.03	710
DN 80 PN 10	1	355	0.03	1065
DN 80 PN 10	1	355	0.03	1420
DN 80 PN 10	1	355	0.03	1775
DN 80 PN 10	1	355	0.03	2130
DN 80 PN 10	1	144	1.05.04	2274
DN 80 PN 10	1	191	1.05.03	2465

Pipes DN 100 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 100 PN 10	1	83	1.07.03	83
DN 100 PN 10	1	914	1.04.04	997

Pipes DN 150 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 150 PN 10	1	320	1.05.02	320
DN 150 PN 10	1	320	1.05.02	640
DN 150 PN 10	1	320	1.05.02	960
DN 150 PN 10	1	320	1.05.02	1280

Pipes DN 200 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 200 PN 10	1	1044	1.04.03.01	1044
DN 200 PN 10	1	319	0.04	1363
DN 200 PN 10	1	319	0.04	1682

Pipes DN 250 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 250 PN 10	1	260	1.07.03	260

Pipes DN 300 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 300 PN 10	1	383	1.04.05	383
DN 300 PN 10	1	311	1.03.03	694

Pipes DN 350 PN 10

Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 350 PN 10	1	42	1.05.03	42

Pipes DN 800 PN 10

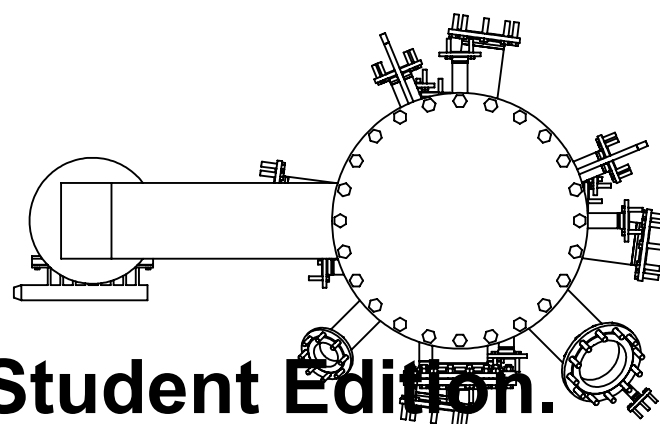
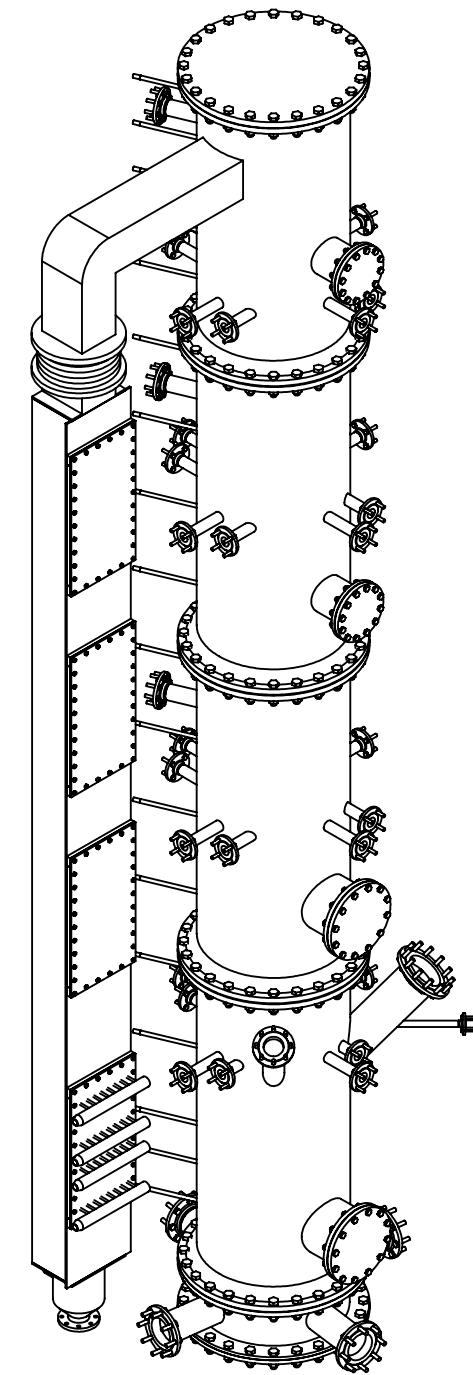
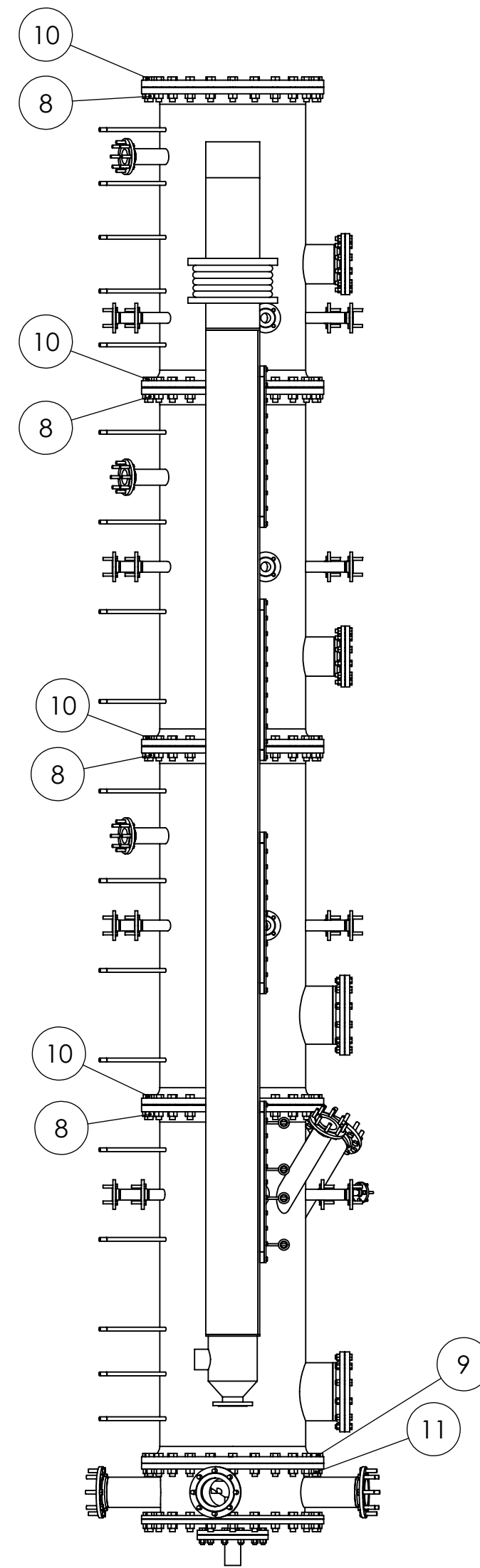
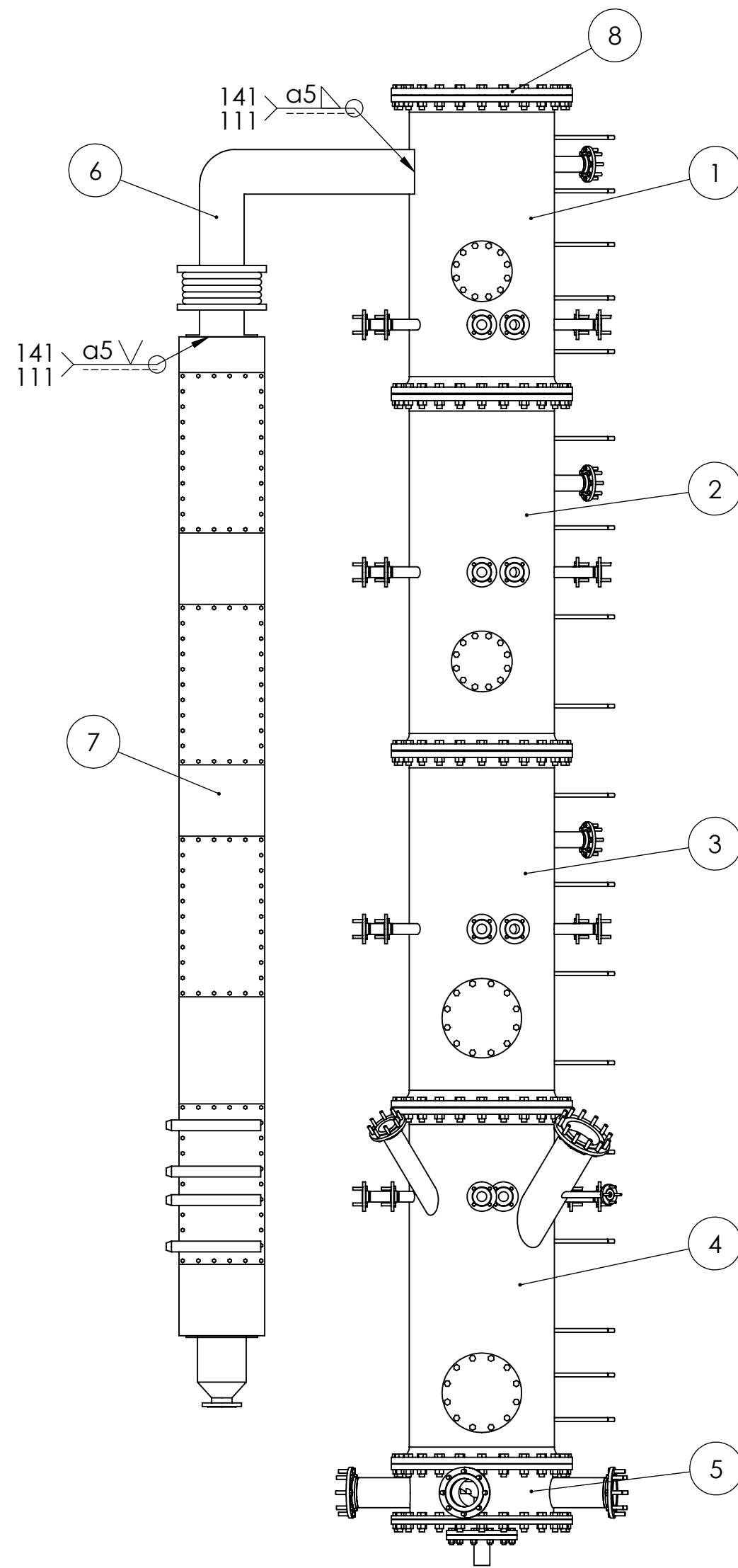
Pipes	Quantity	Length (mm)	Drawing Id. Num.	Cumulative (mm)
DN 800 PN 10	1	1483	1.01.01	1483
DN 800 PN 10	1	1808	1.02.01	3291
DN 800 PN 10	1	1808	1.03.01	5099
DN 800 PN 10	1	1808	1.04.01	6907

MUFFS

Muffs	Quantity	Drawing identification number	Cumulative
DN 10	1	0.01	1
DN 10	1	0.01	2
DN 10	1	0.01	3
DN 10	1	0.01	4
DN 10	1	0.01	5
DN 10	1	0.01	6
DN 10	1	0.01	7
DN 10	1	0.01	8
DN 10	1	0.01	9
DN 10	1	0.01	10
DN 10	1	0.01	11
DN 10	1	0.01	12
DN 10	1	0.01	13
DN 10	1	0.01	14
DN 10	1	0.01	15
DN 10	1	0.01	16
DN 10	1	0.01	17
DN 10	1	0.01	18
DN 10	1	0.01	19
DN 10	1	0.01	20
DN 10	1	0.01	21
DN 10	1	0.01	22
DN 10	1	0.01	23
DN 10	1	0.01	24
DN 10	1	1.03.04	25
DN 10	1	1.03.04	26
DN 10	1	1.04.06	27
DN 10	1	1.04.06	28
DN 10	1	1.04.06	29
DN 10	1	1.04.06	30
DN 10	1	1.04.06	31
DN 10	1	1.04.06	32
DN 10	1	1.04.06	33
DN 10	1	1.04.06	34
DN 10	1	1.04.06	35
DN 10	1	1.04.06	36

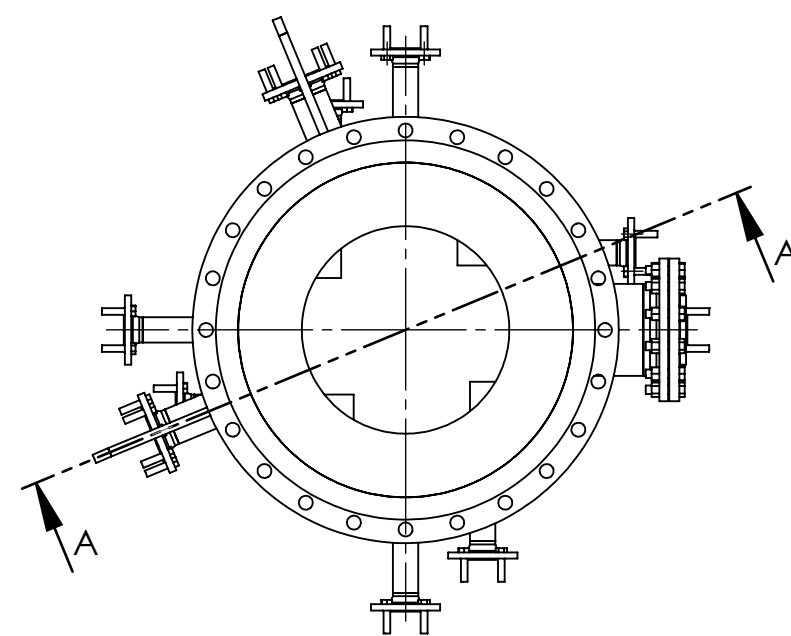
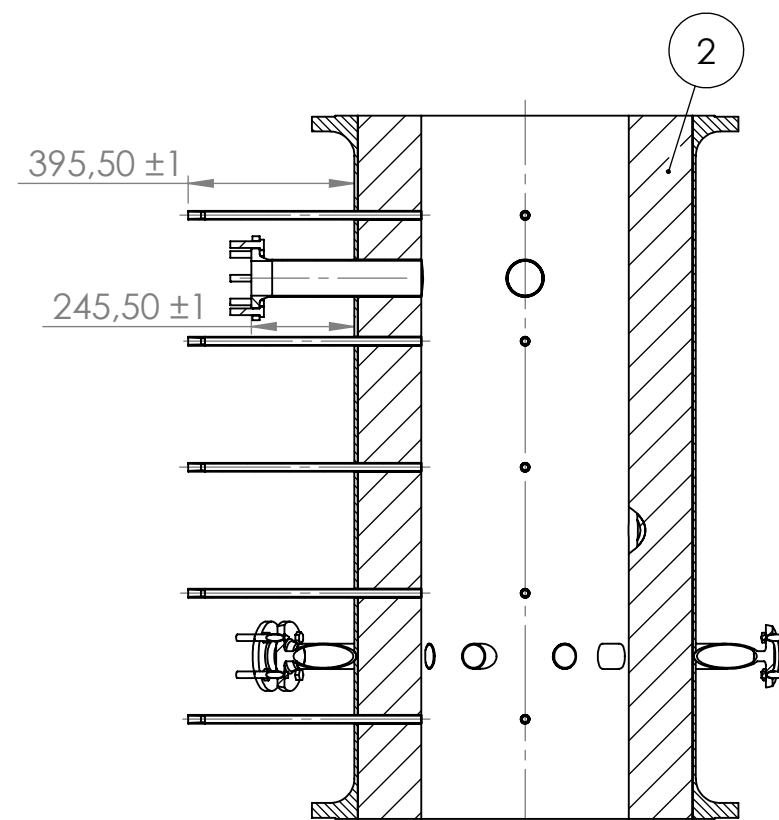
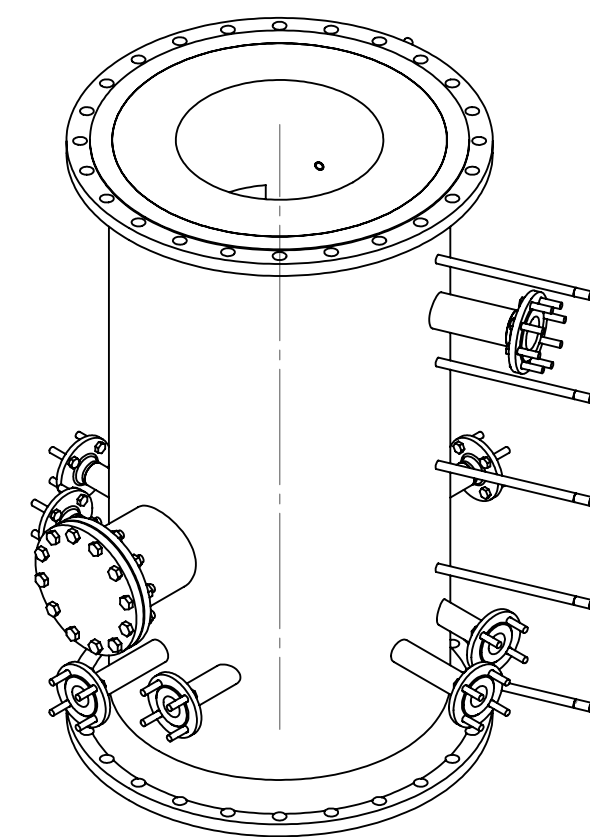
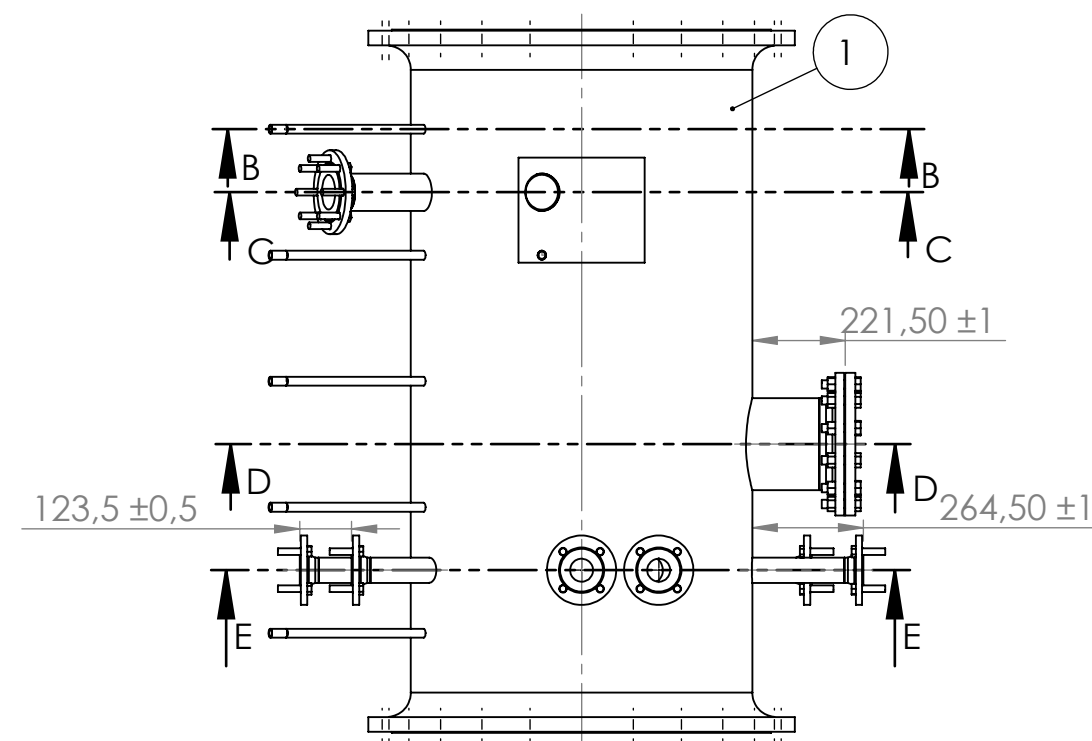
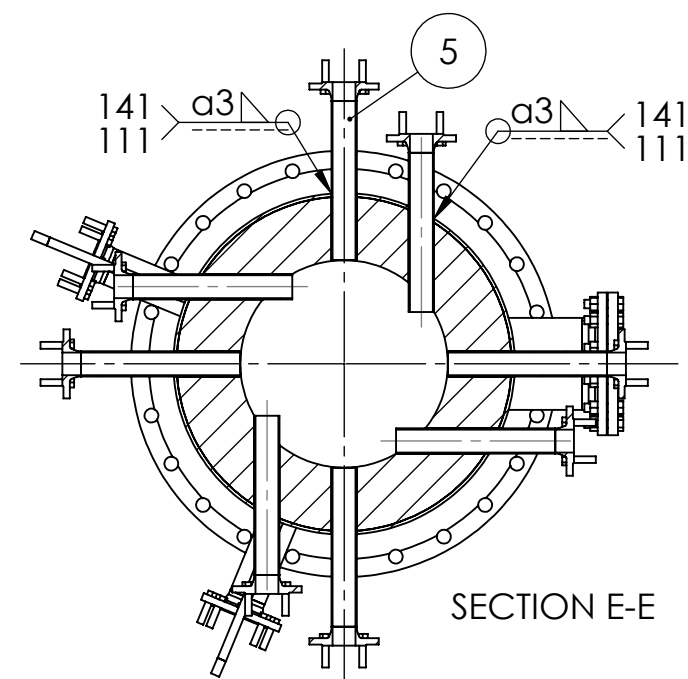
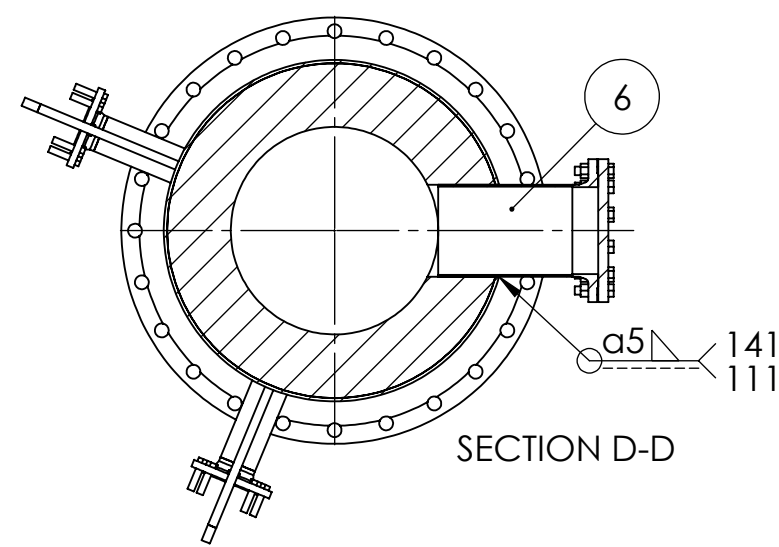
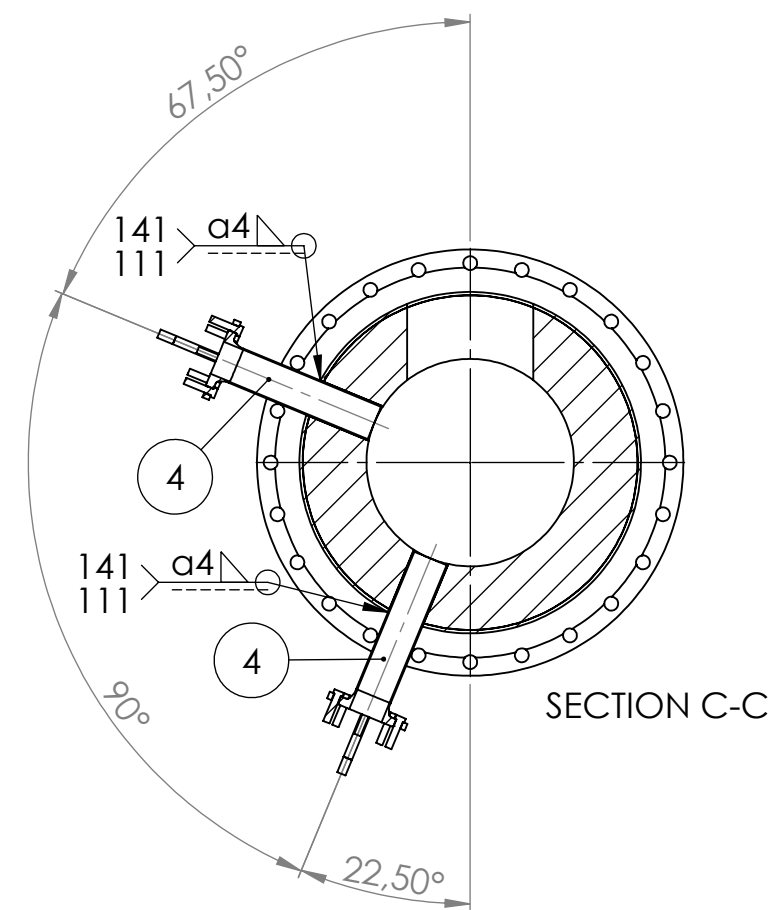
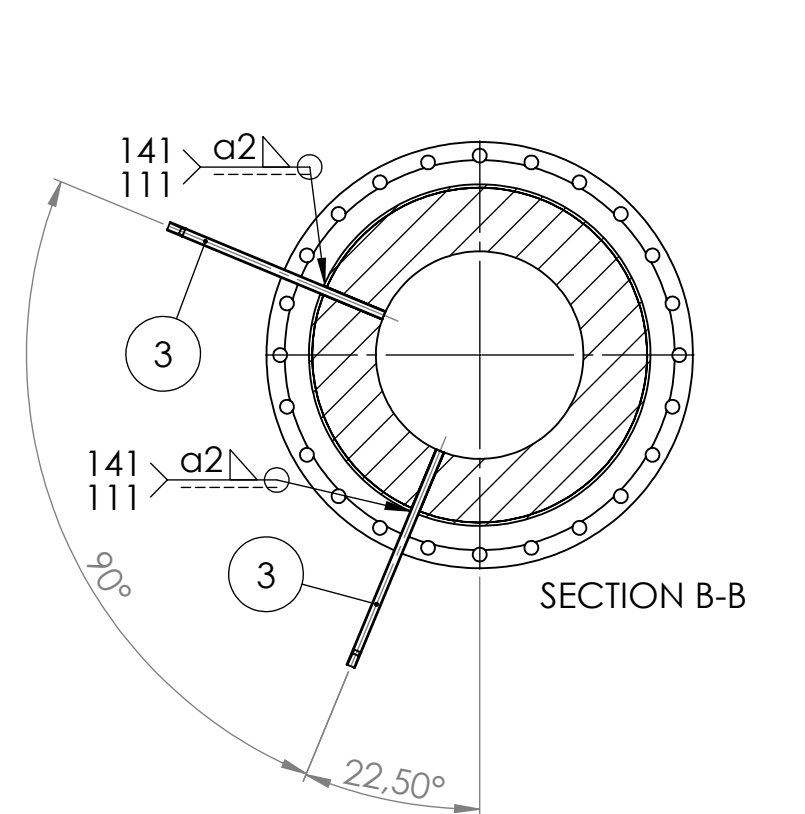
OTHERS

Components	Quantity	Drawing Id. Num.
Bellows	1	1.06
Pipe reducer DN 250x100 PN 10	1	1.07.03
Pipe reducer DN 350x80 PN 10	1	1.05.03

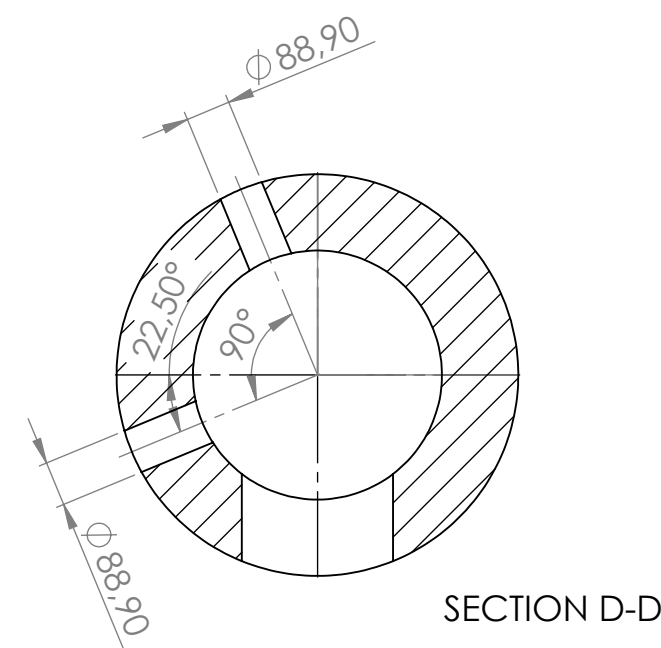
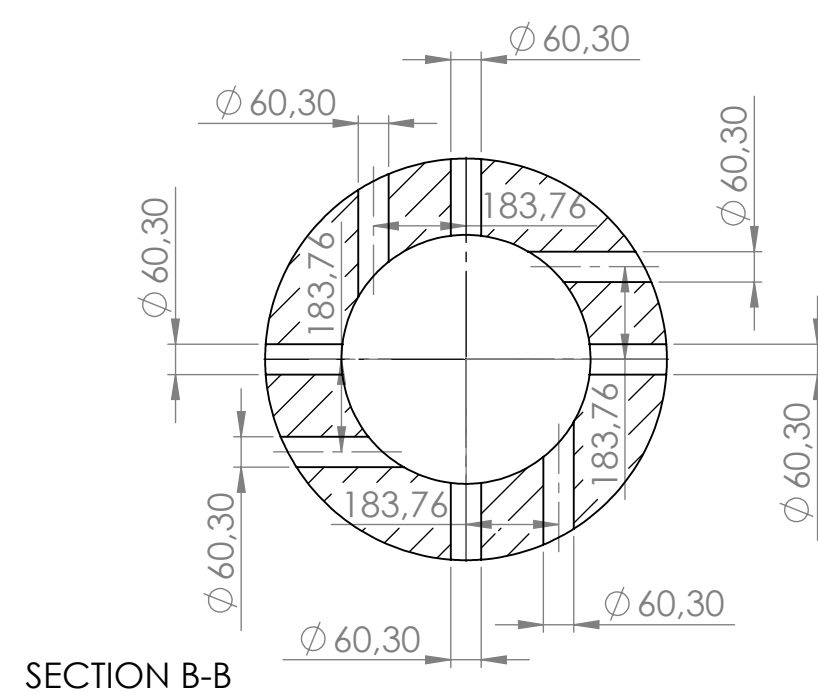
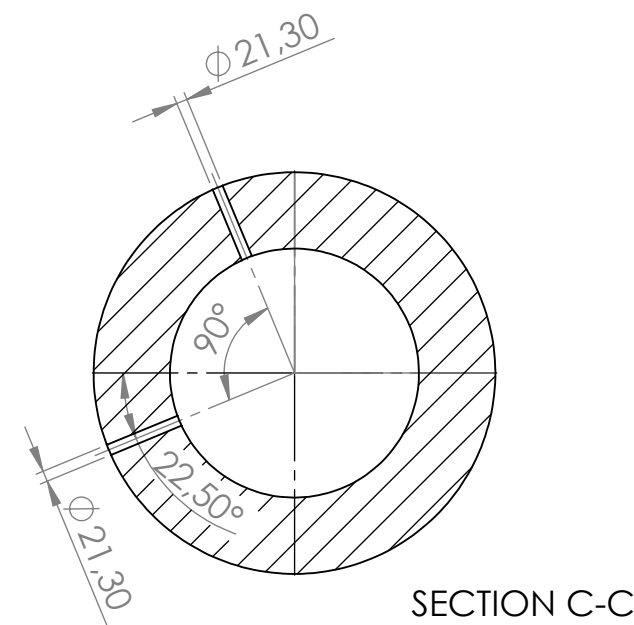
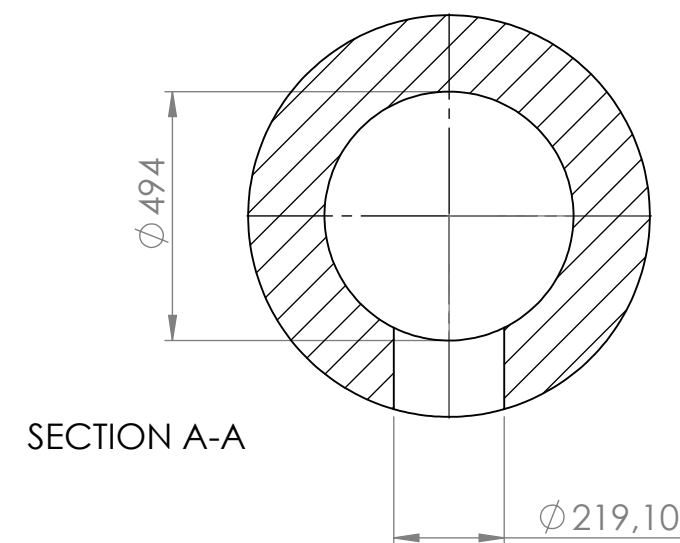
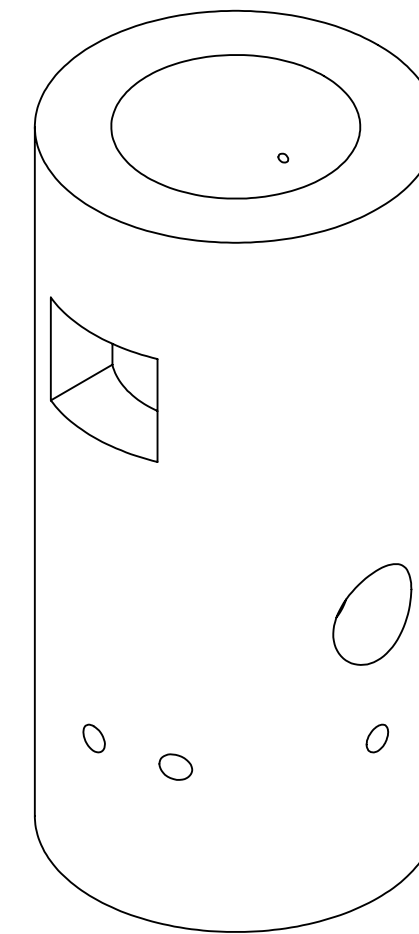
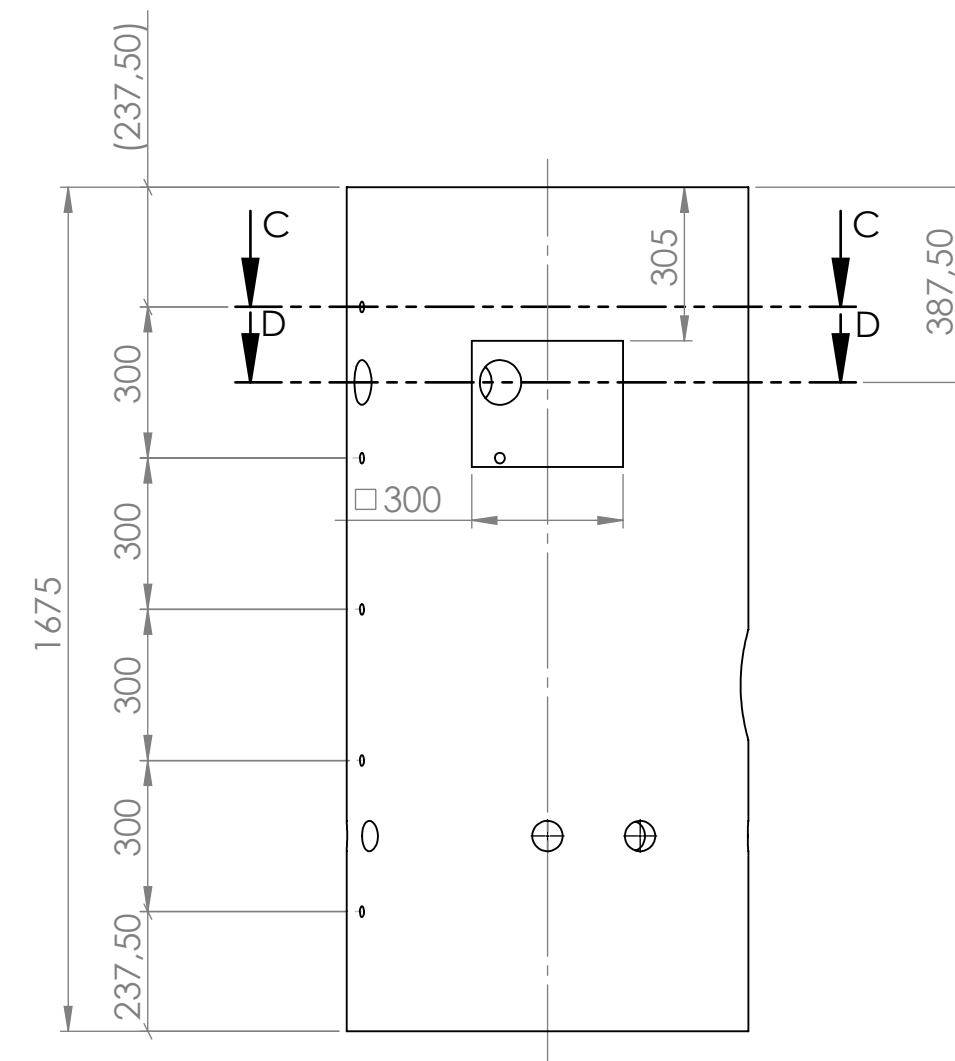
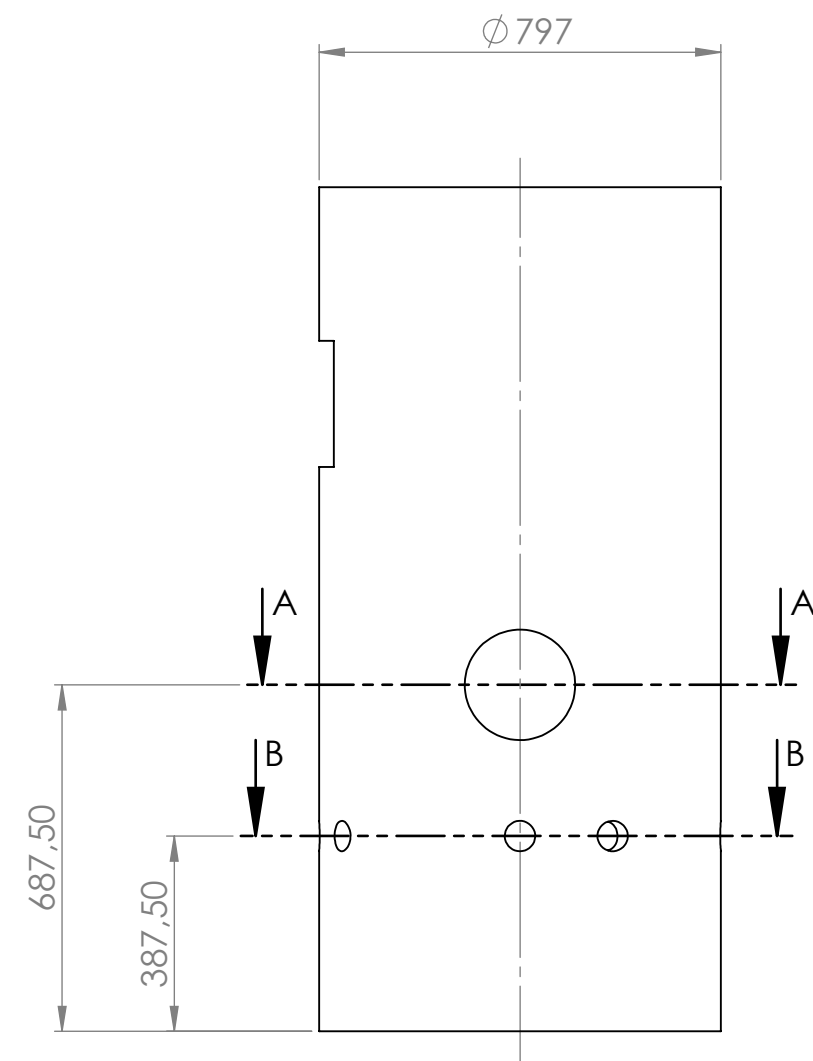


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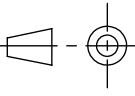
11	120	Nut M30 ISO 4032	
10	96	Bolt M30x120 ISO 4018	
9	24	Bolt M30x110 ISO 4018	
8	1	Spade DN 800 PN 10	
7	1	Heat exchangers assembly	1.07
6	1	Flue gas tube	1.06
5	1	Windbox	1.05
4	1	Boiler assembly 4	1.04
3	1	Boiler assembly 3	1.03
2	1	Boiler assembly 2	1.02
1	1	Boiler assembly 1	1.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:30	Work number:	Approval Person:
		Designation: Boiler, flue gas tube and heat exchangers	Identification number: 1.00

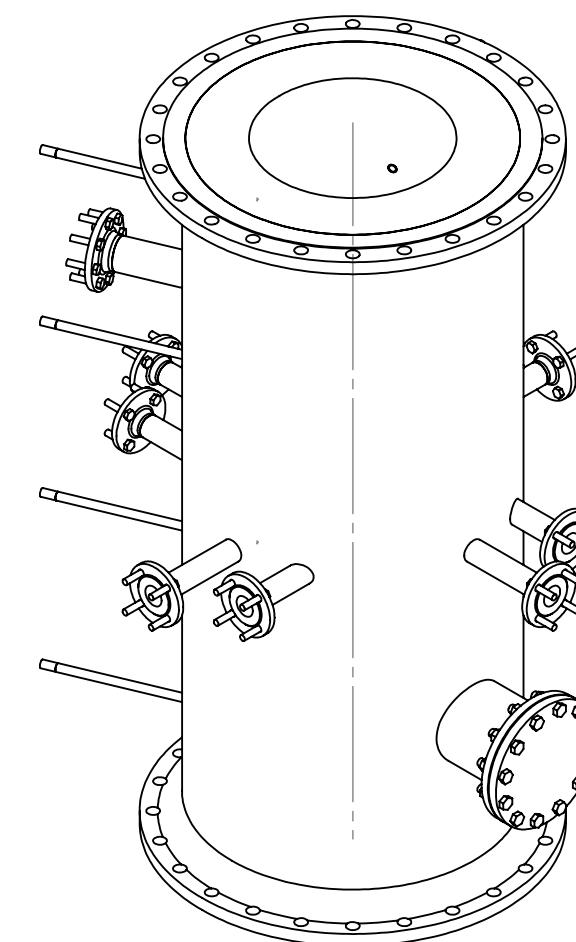
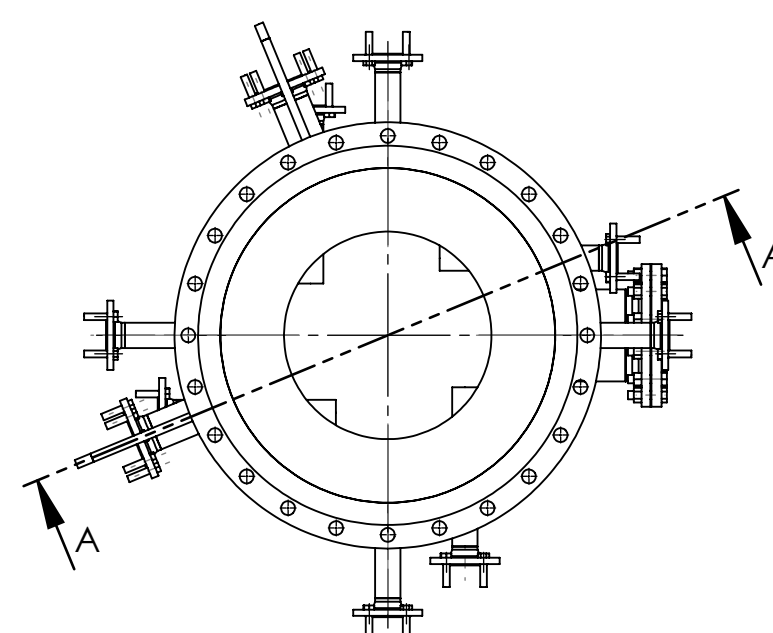
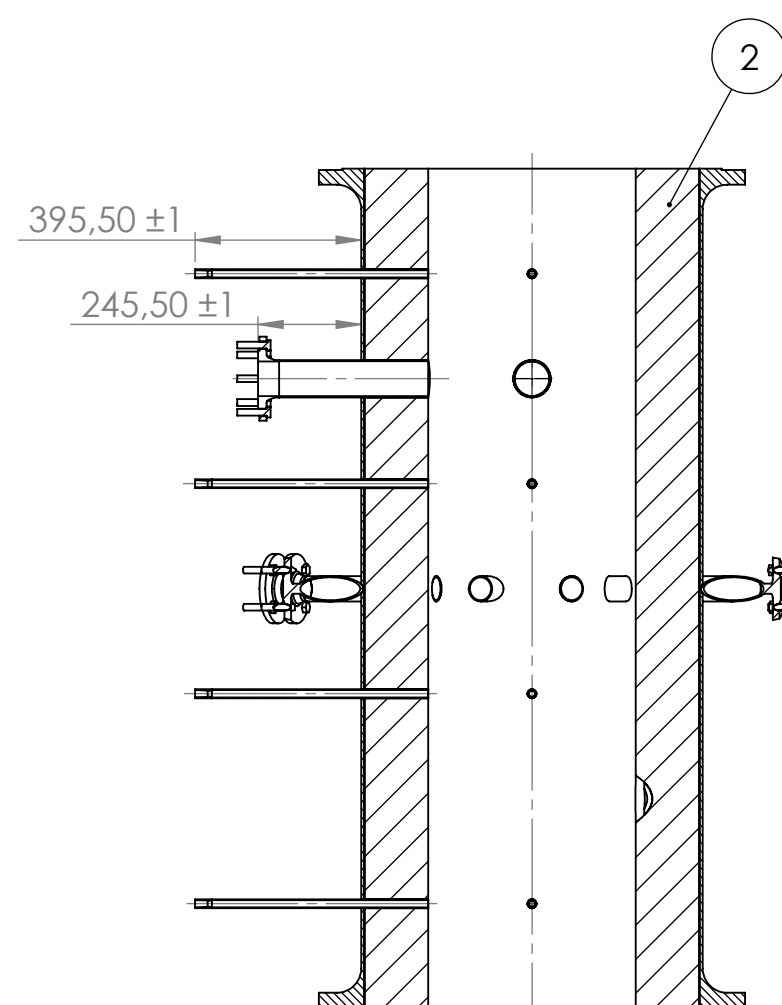
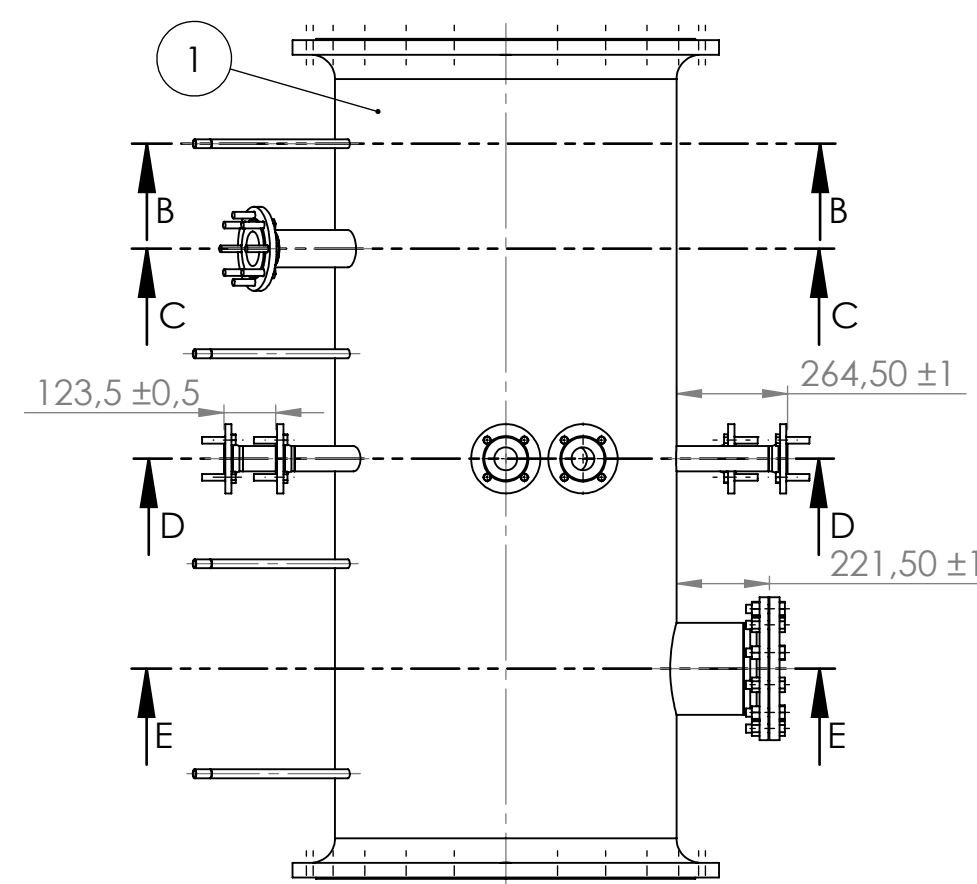
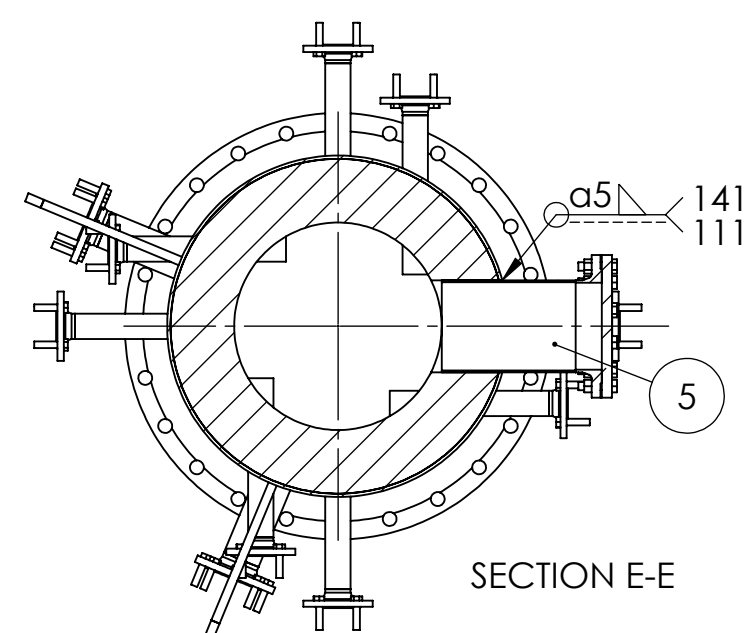
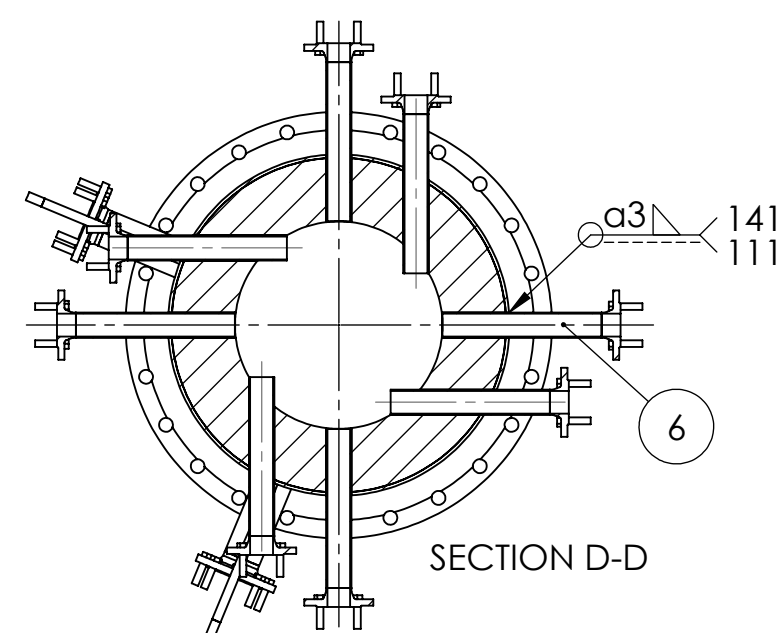
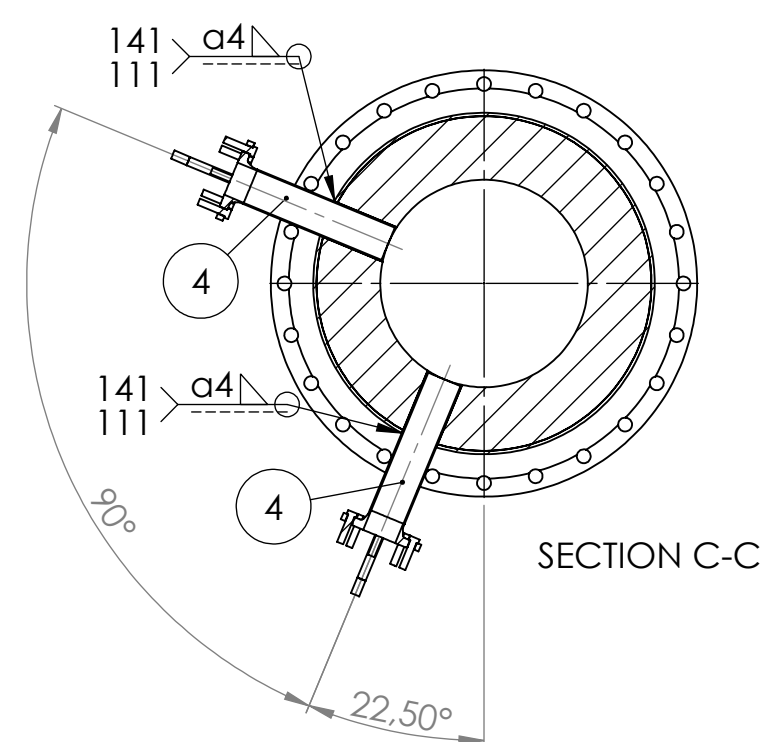
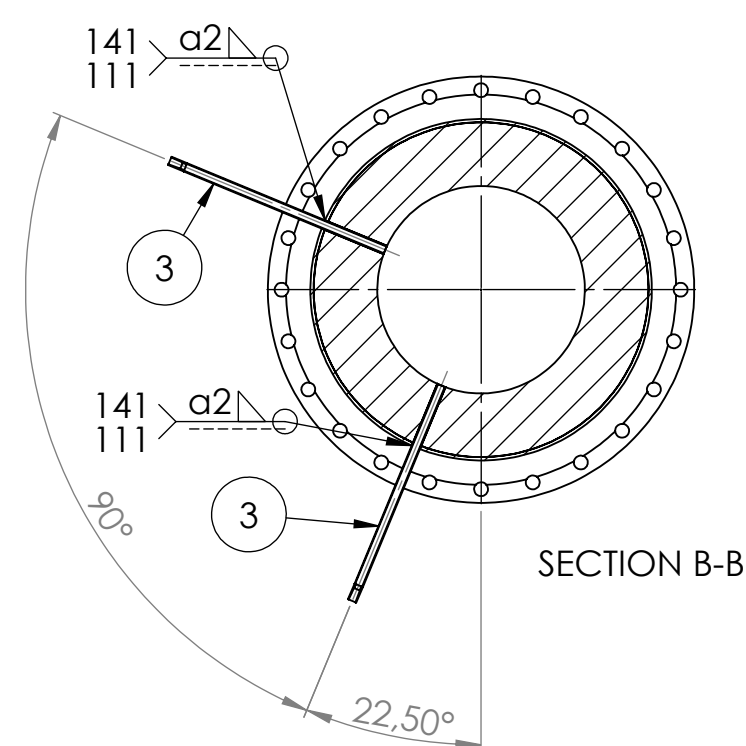


6	1	Maintenance flange DN 200	0.04
5	8	Short air nozzle	0.02
4	2	Flue gas measurement flange	0.03
3	10	Short pipe for pressure and temperature measurement	0.01
2	1	Ceramic layer 1	1.01.02
1	1	Boiler tube 1	1.01.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler assembly 1	1.01



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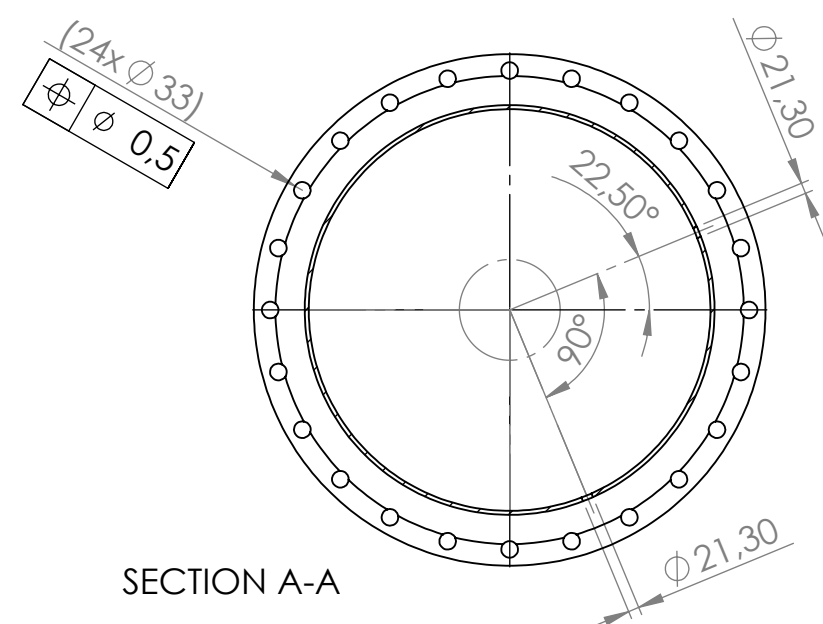
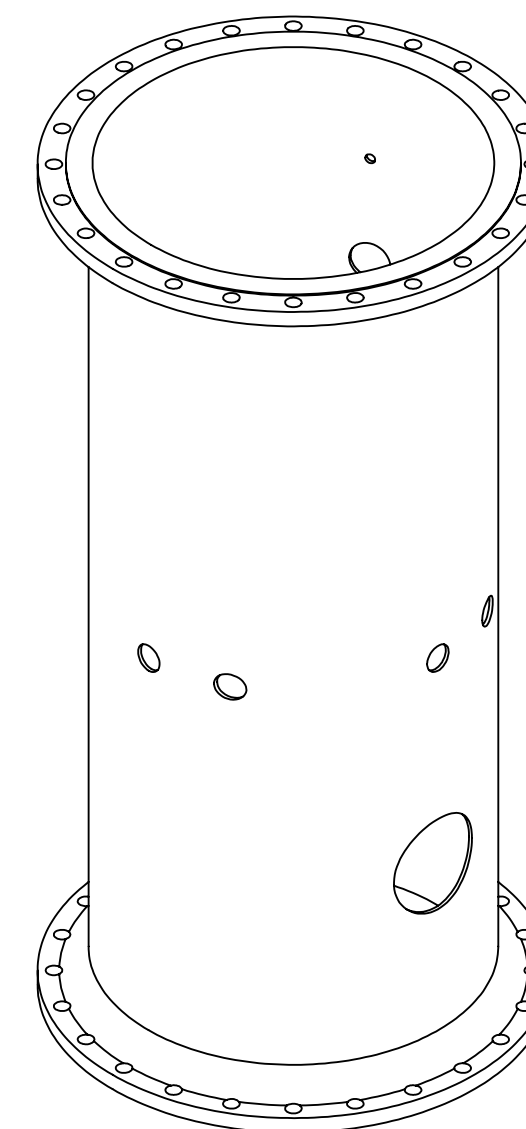
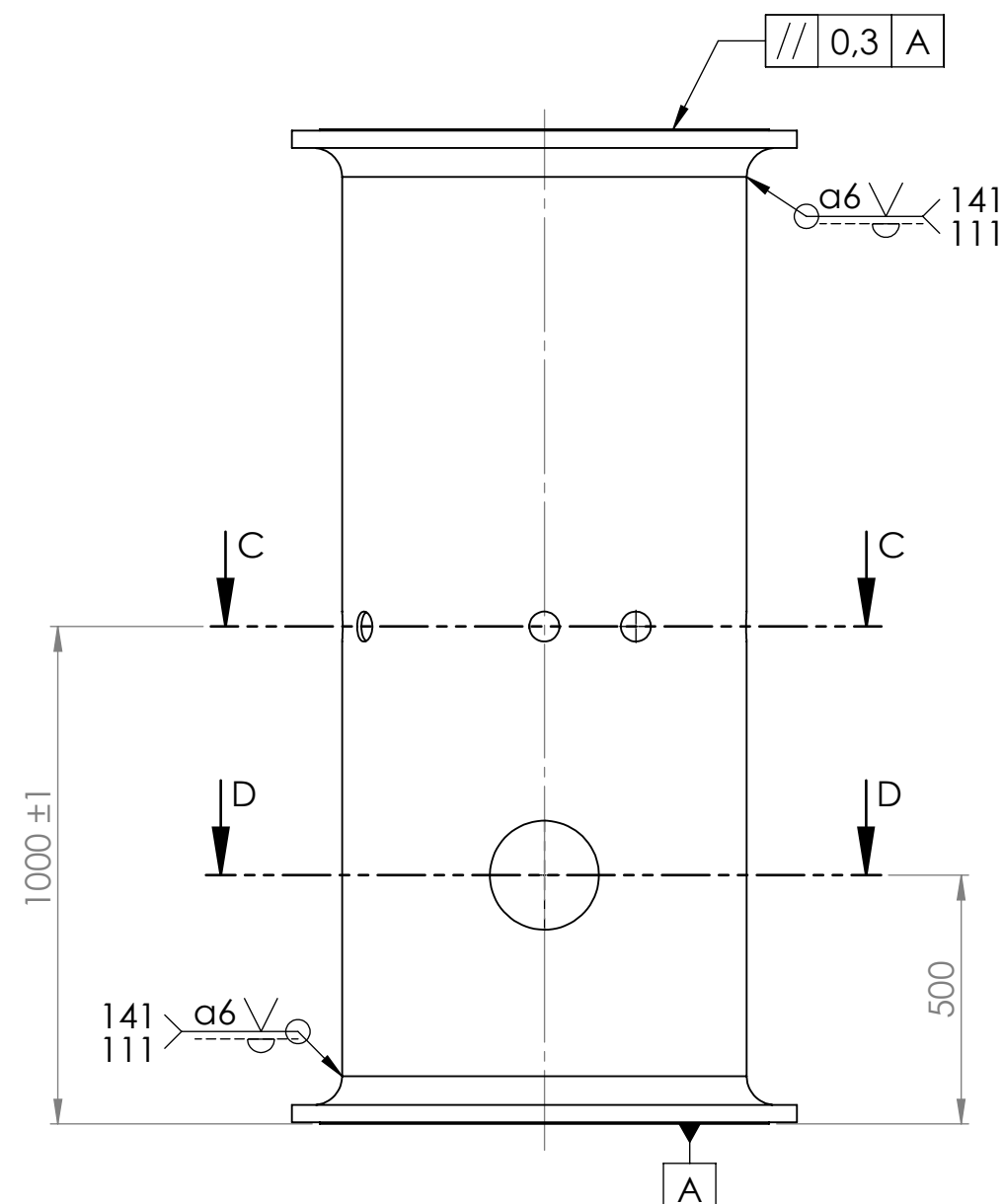
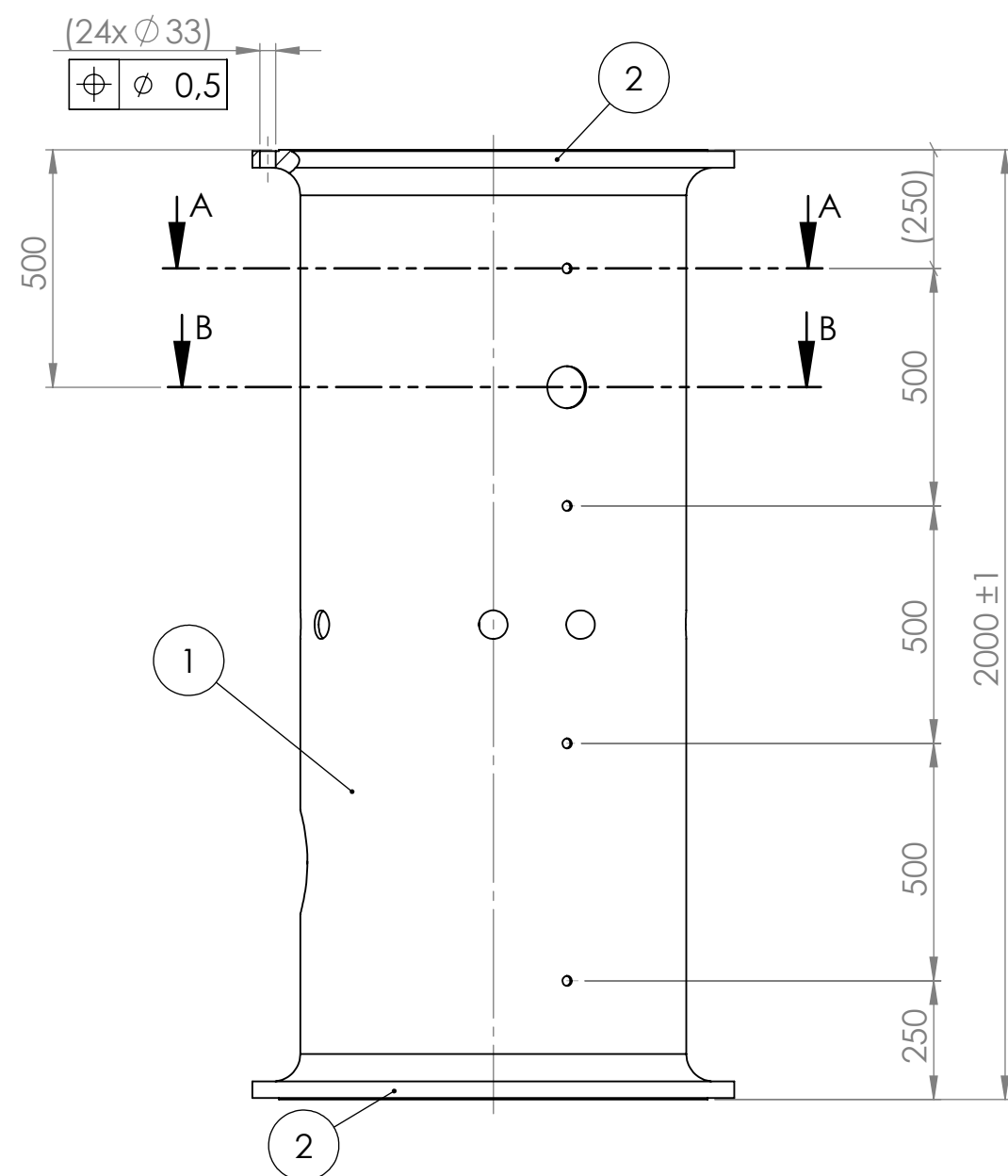
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	Scale: 1:15	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Designation:	Work number:	Approval Person:	Date
	Ceramic layer 1	Identification number:	1.01.02	



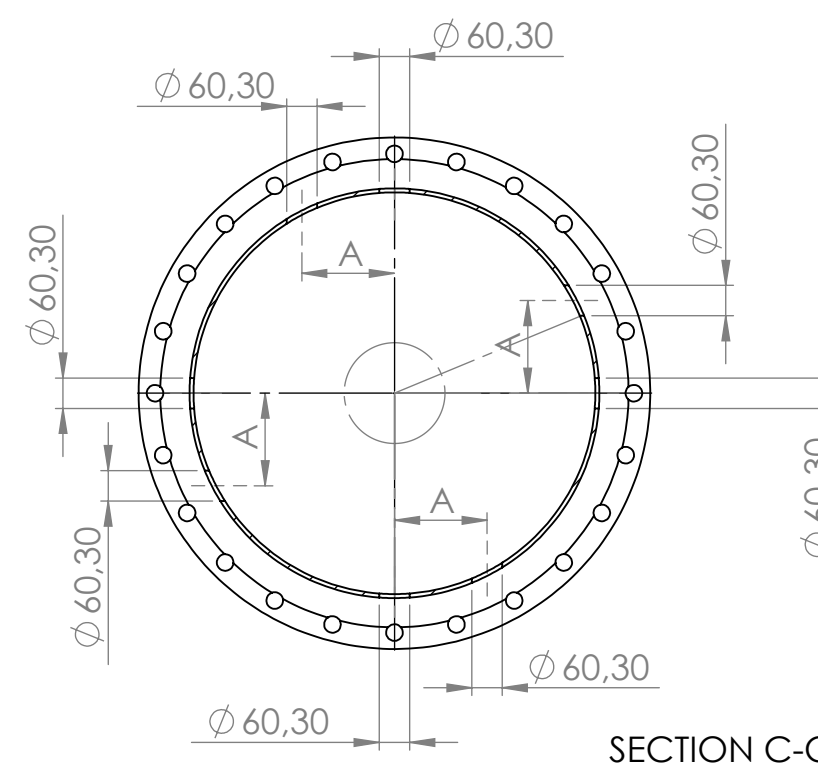
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SECTION A-A

6	8	Short air nozzle	0.02
5	1	Maintenance flange DN 200	0.04
4	2	Flue gas measurement flange	0.03
3	8	Short pipe for pressure and temperature measurement	0.01
2	1	Ceramic layer 2	1.02.02
1	1	Boiler tube 2	1.02.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler assembly 2	1.02

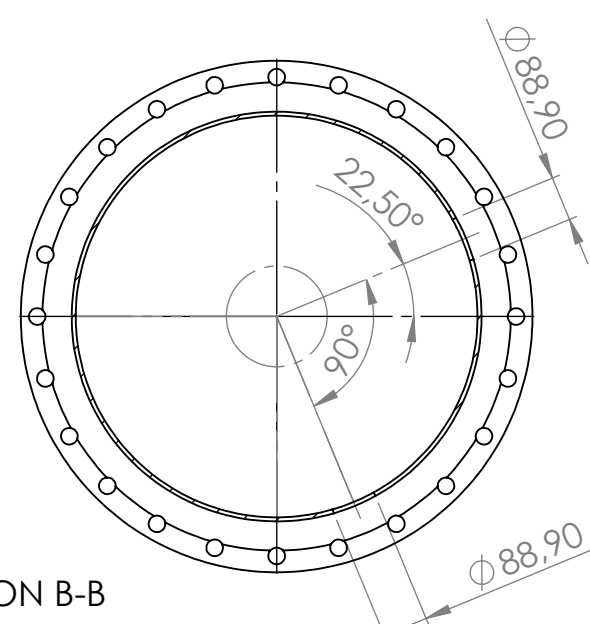


SECTION A-A

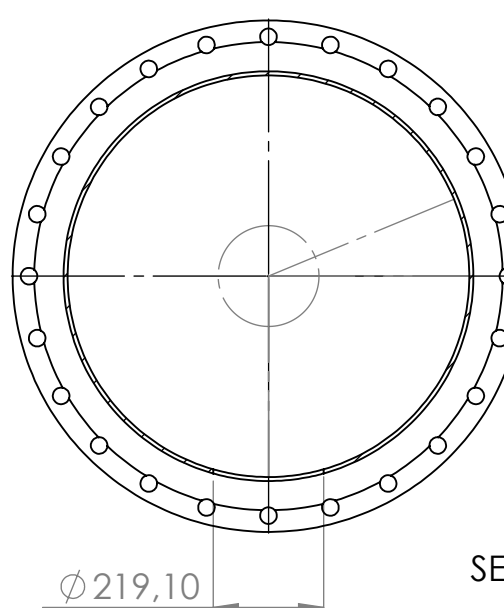


SECTION C-C

$$A=183,76_{-1}^0$$



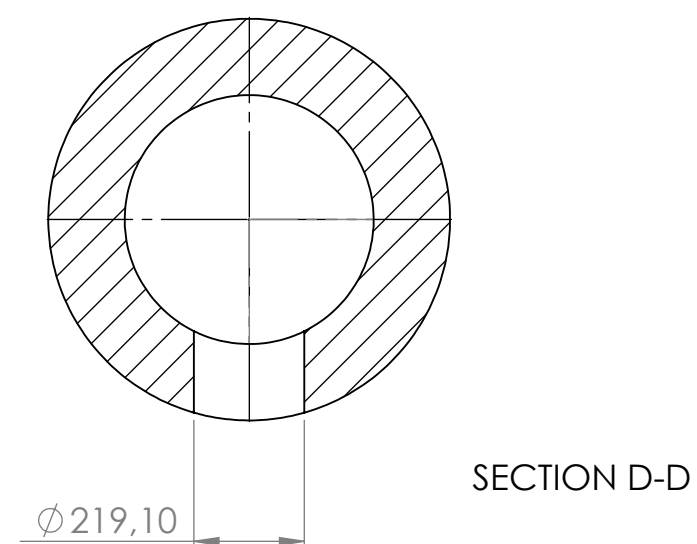
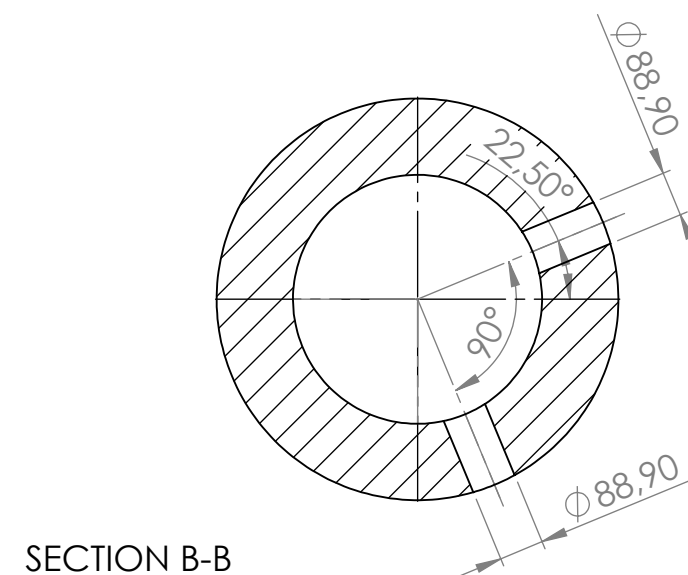
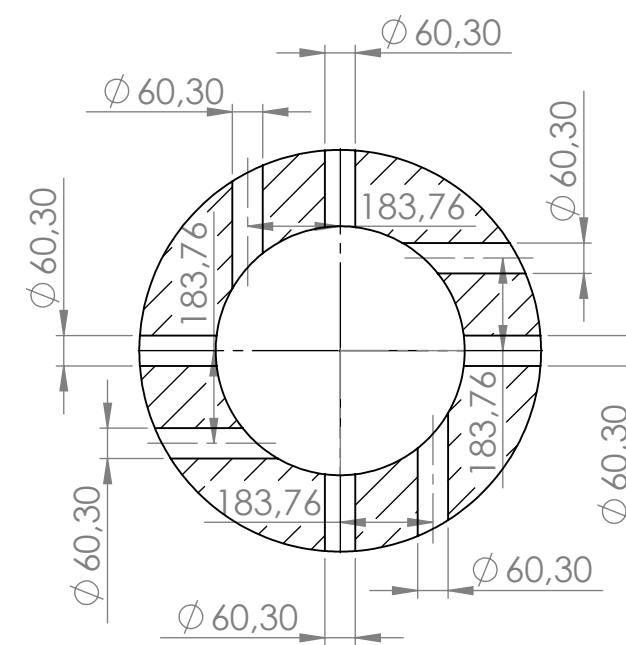
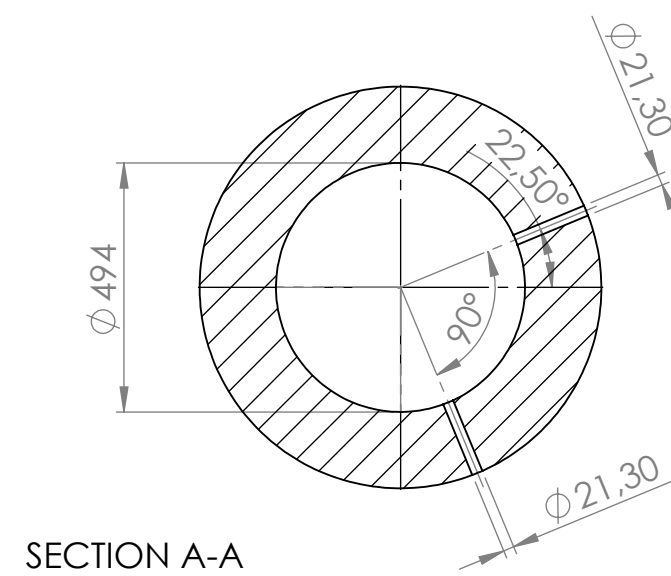
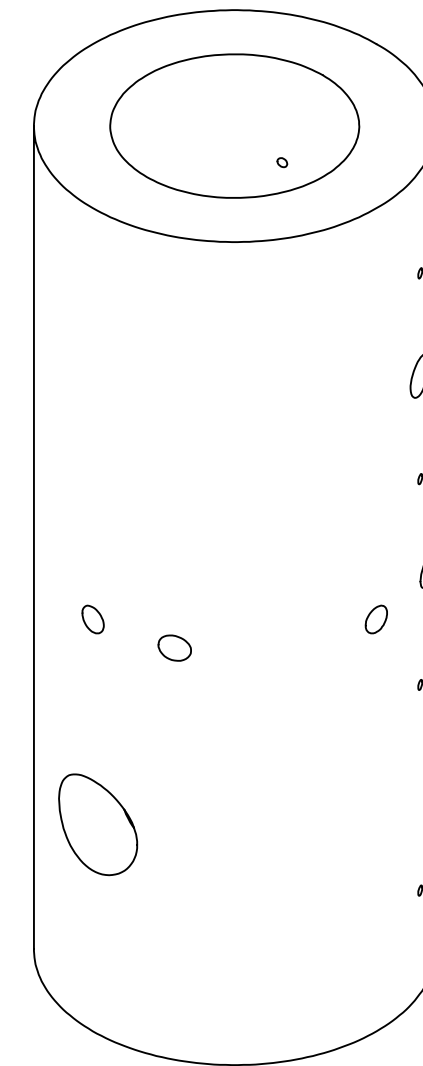
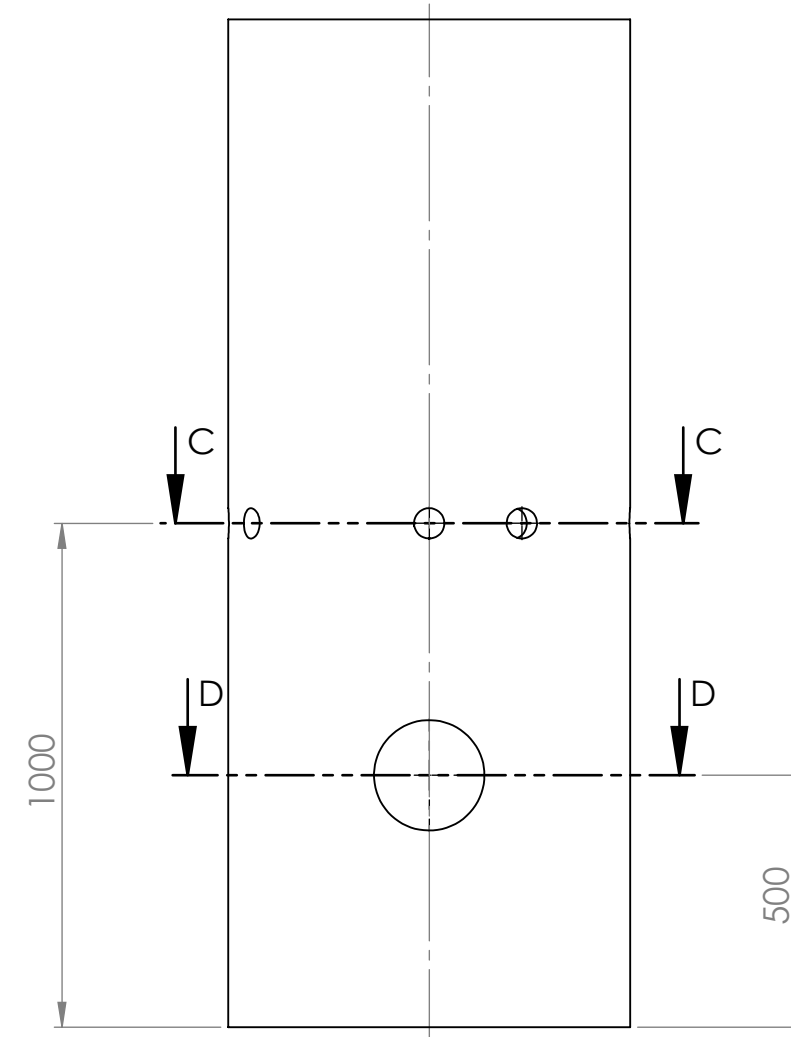
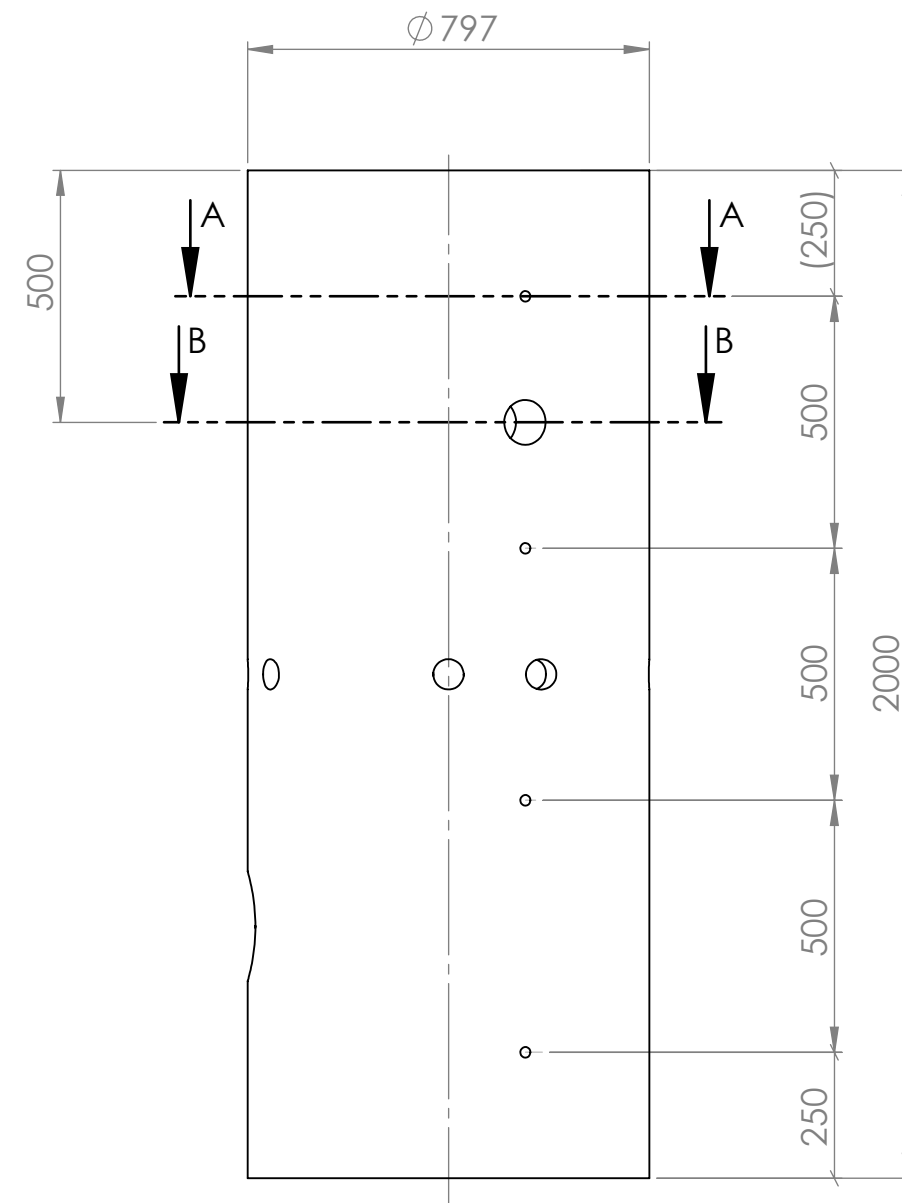
SECTION B-B



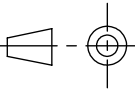
SECTION D-D

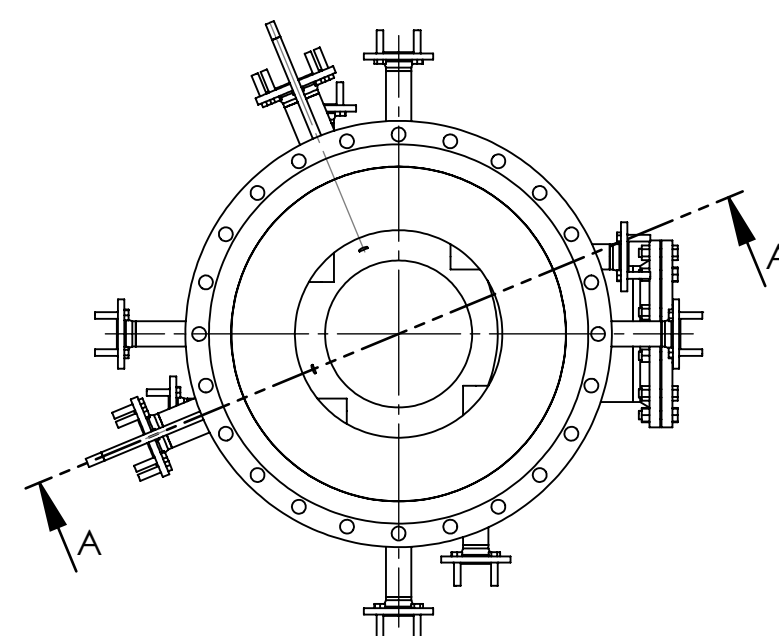
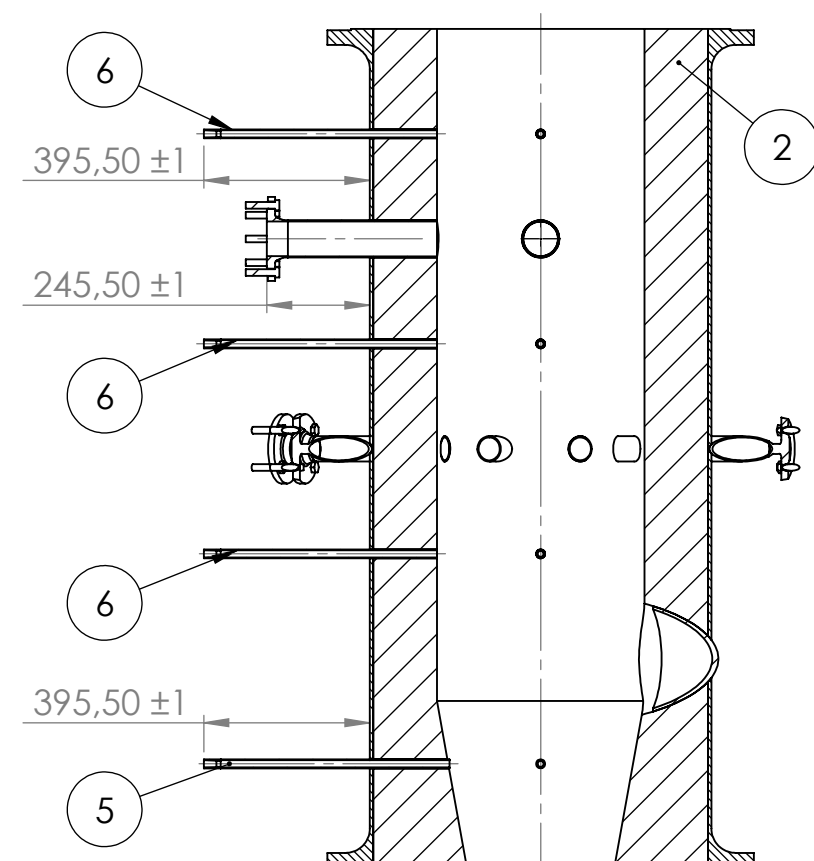
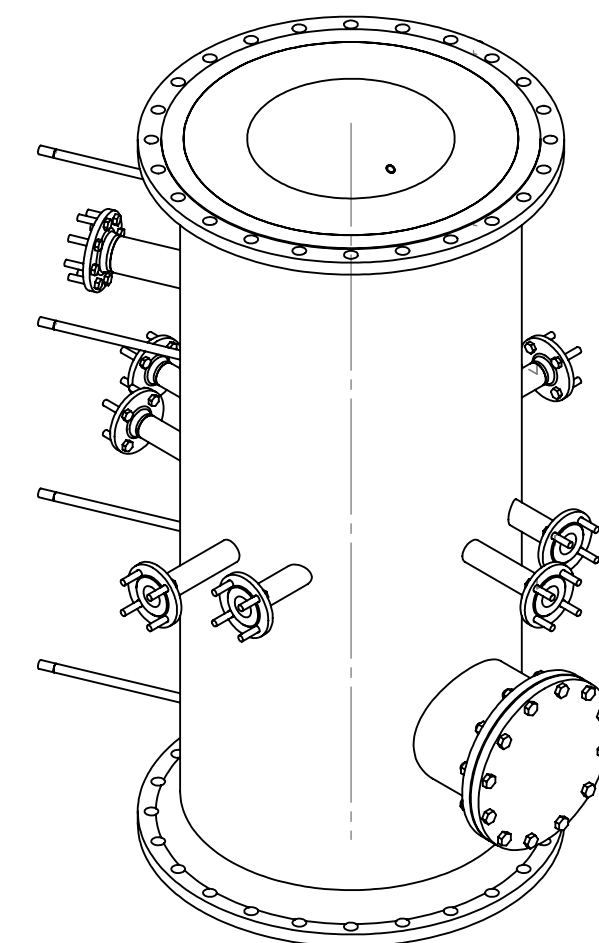
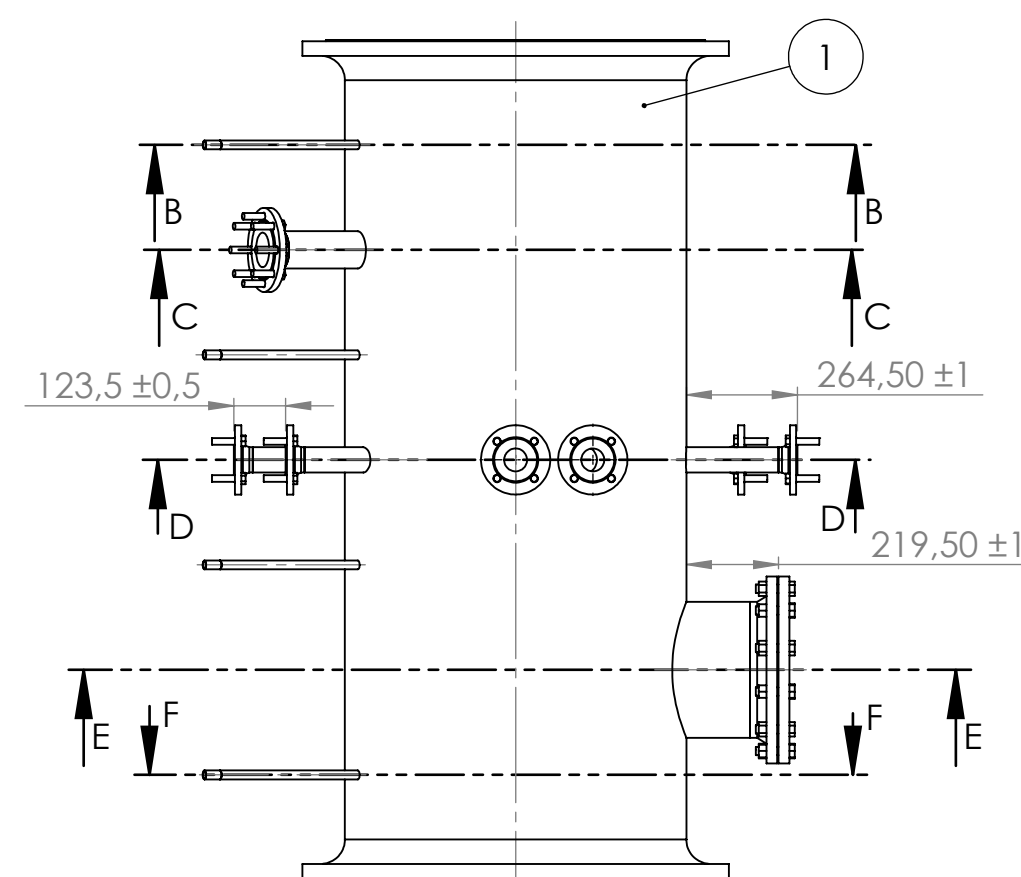
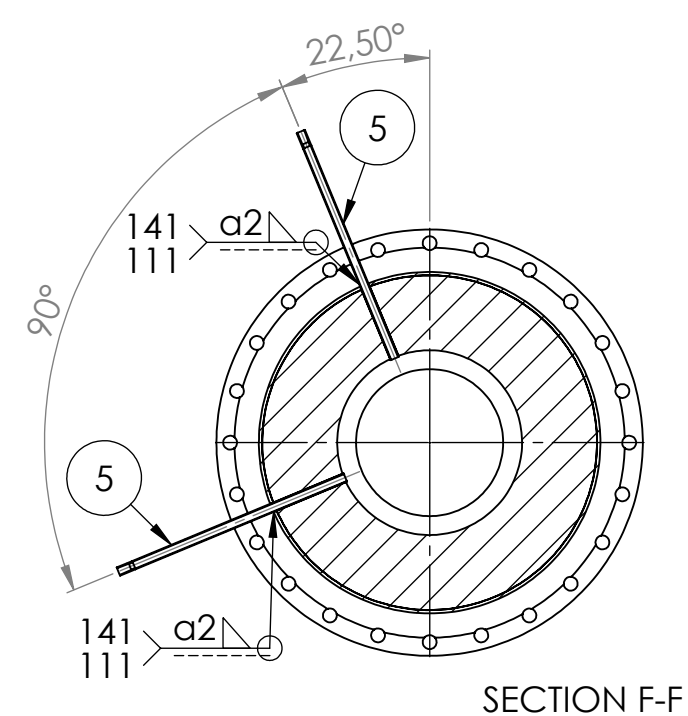
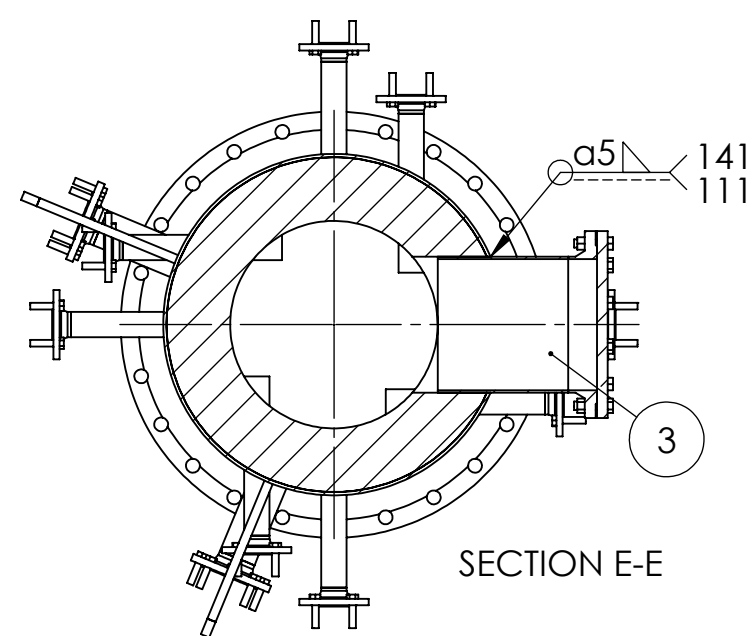
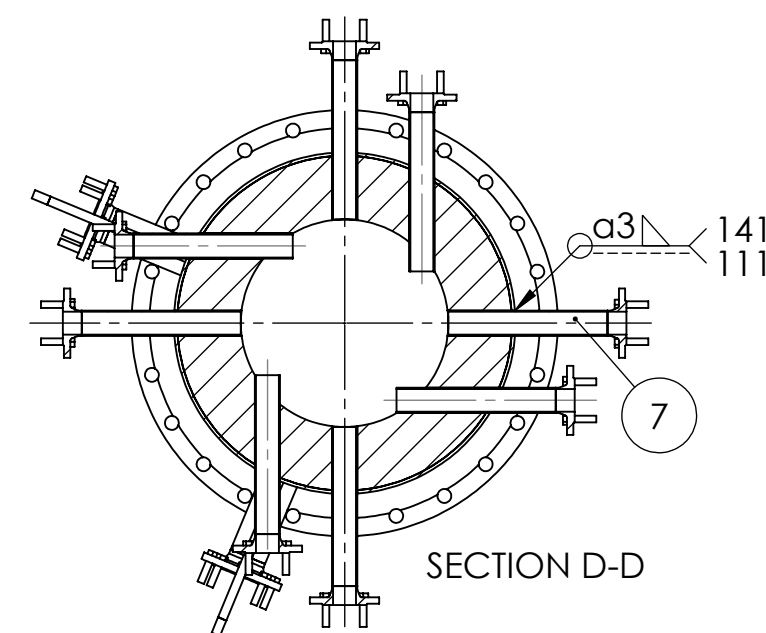
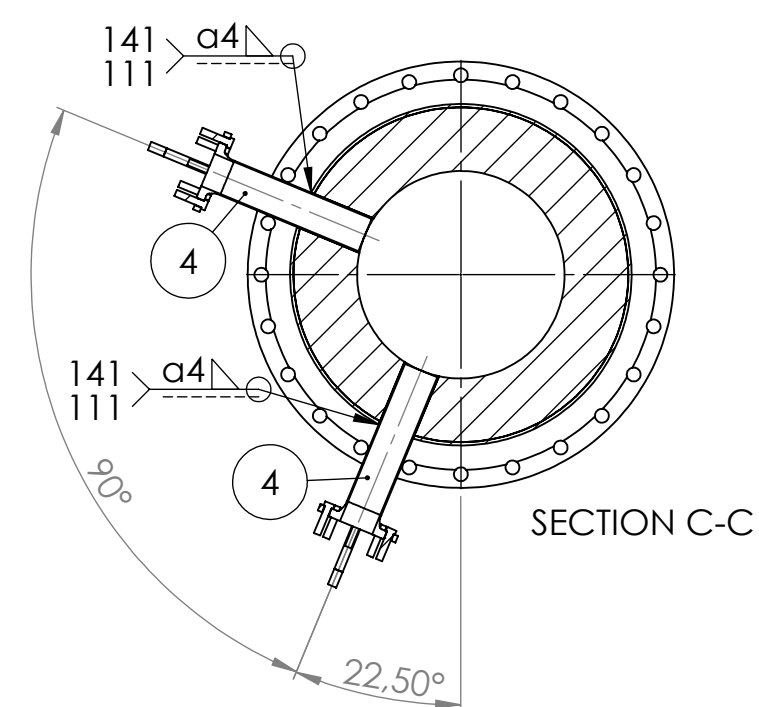
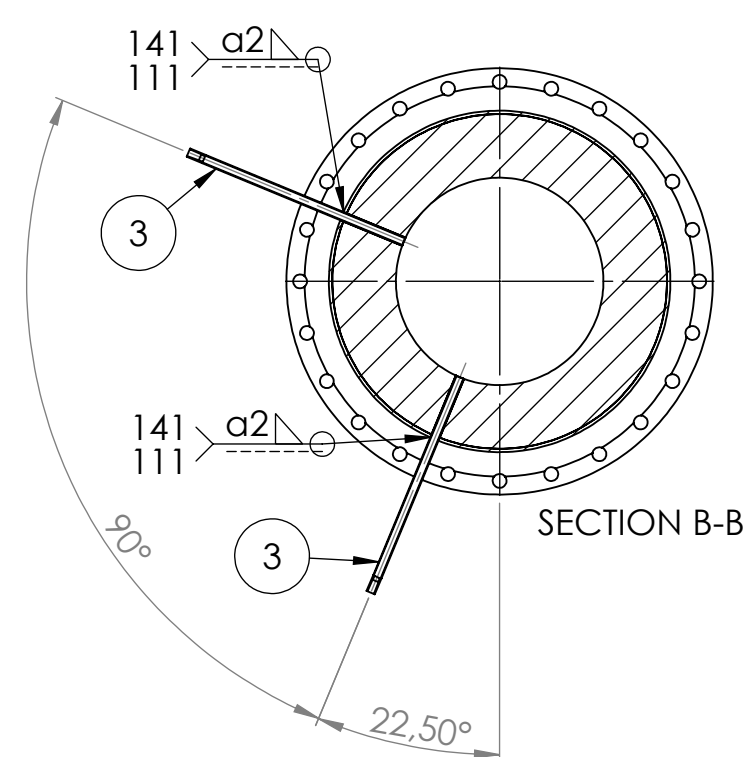
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2	2	Flange DN 800 PN 10	
1	1	Pipe DN 800 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: 12,5/		Customer:	Creator: D. Castiella
Mass:		Project: BFB Boiler	Inspector: J. Huttunen
Scale: 1:15		Work number:	Approval Person:
Designation:		Identification number:	
Boiler tube 2		1.02.01	

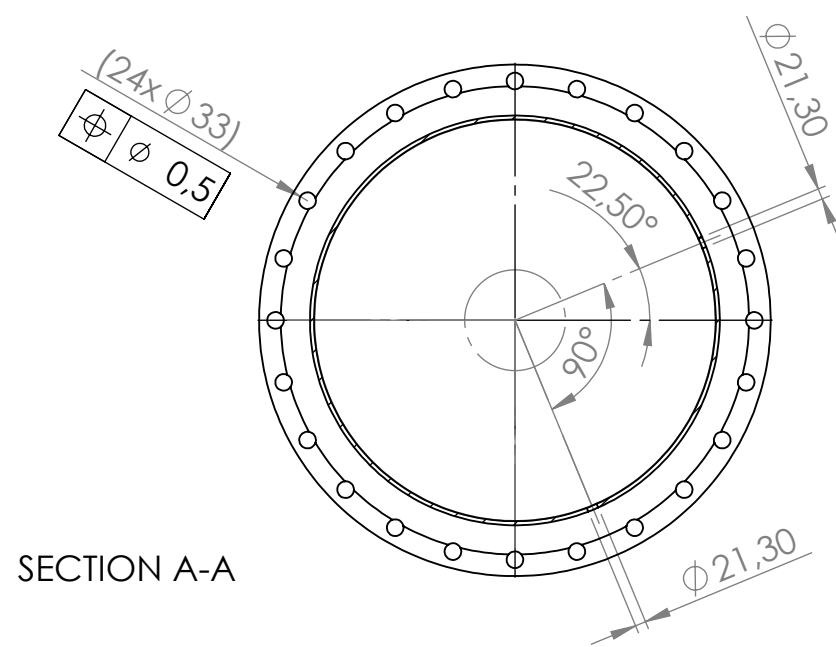
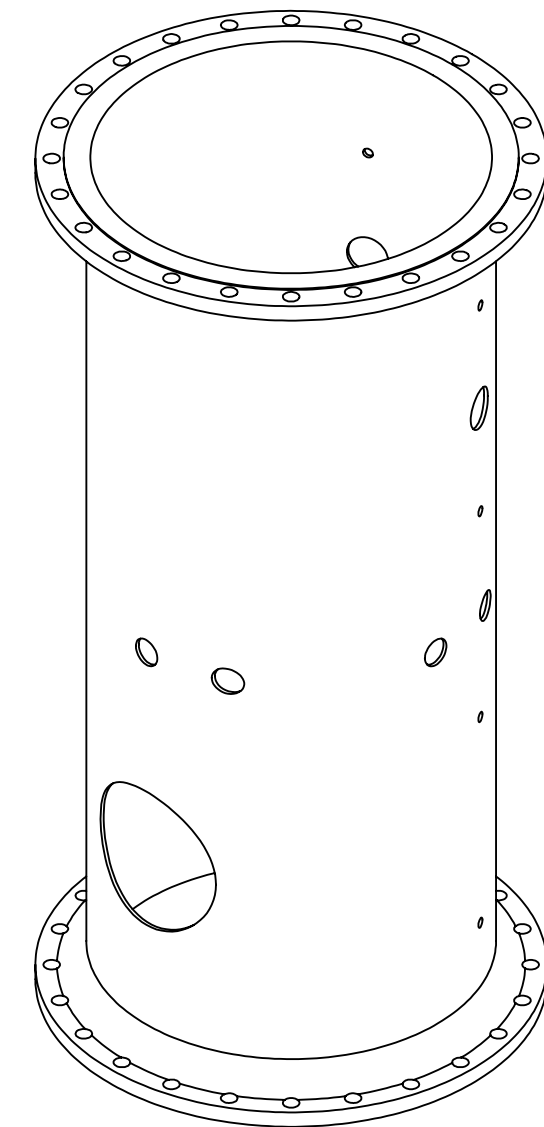
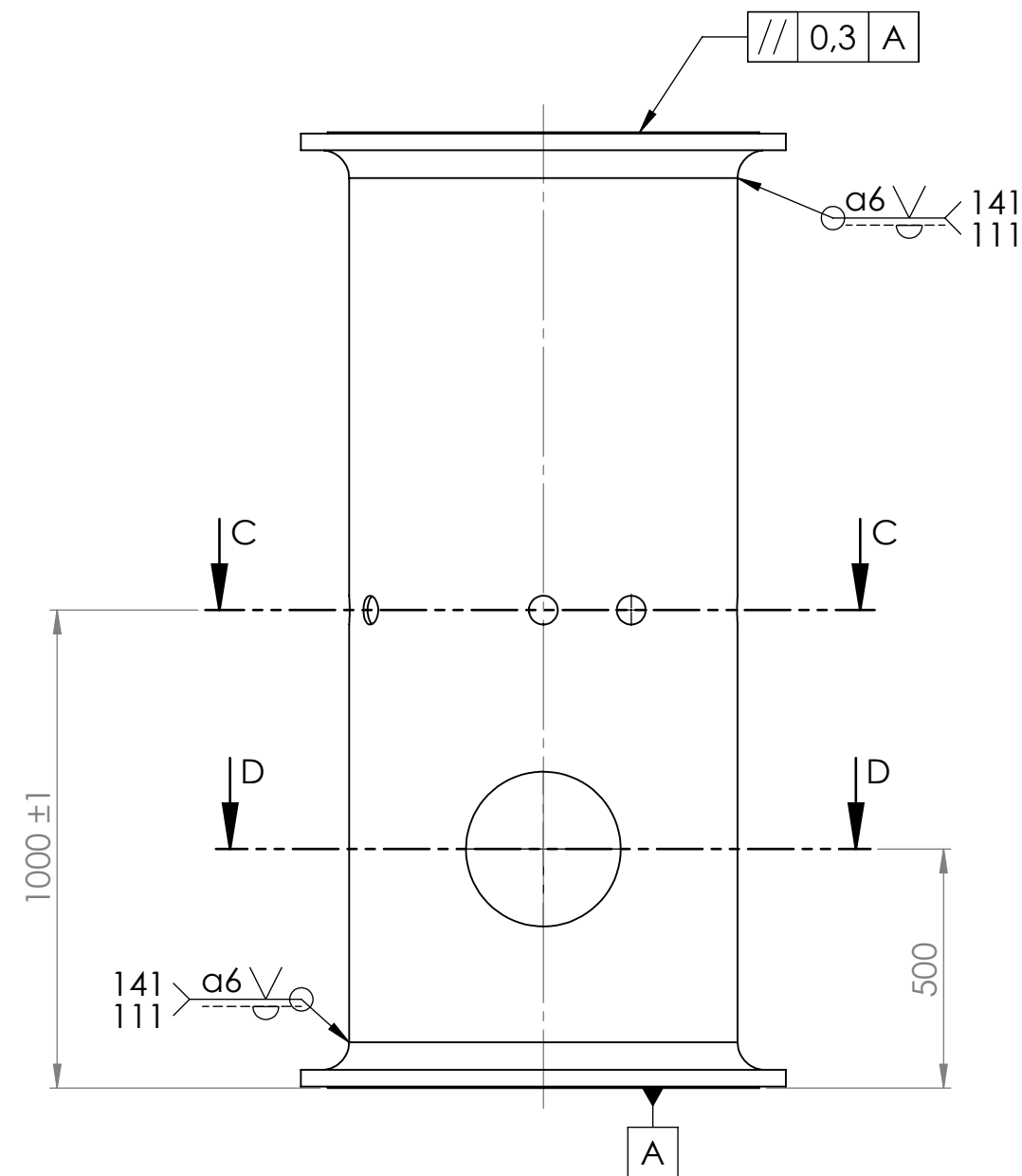
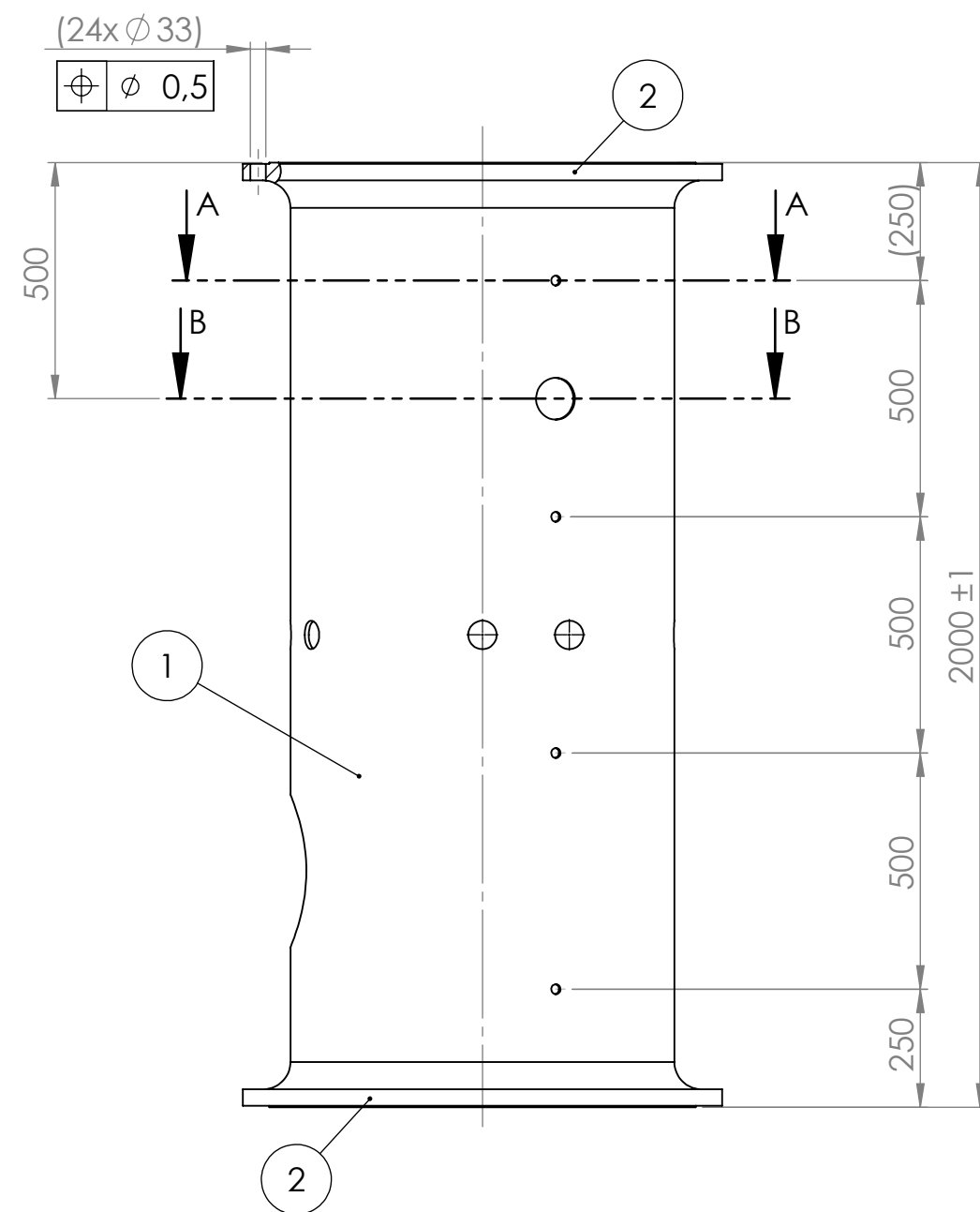


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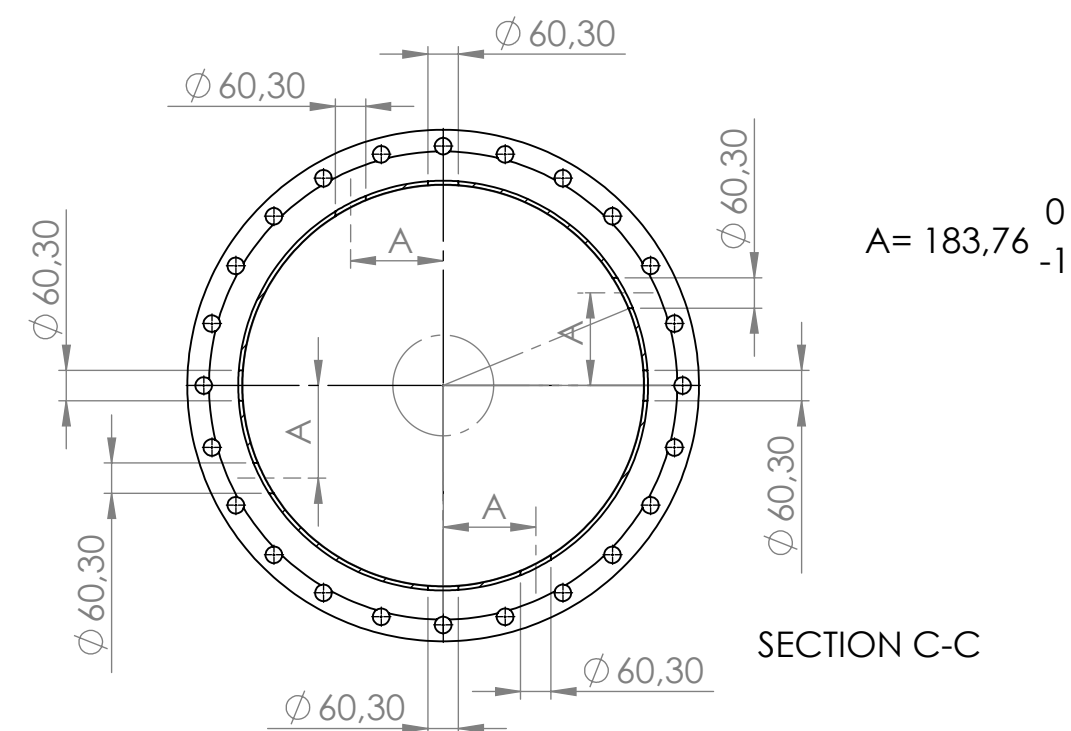
	Mass:	Customer:	Creator: D. Castiella	19-04-2013
	Scale: 1:15	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Designation:	Work number:	Approval Person:	Date
	Ceramic layer 2		Identification number:	1.02.02



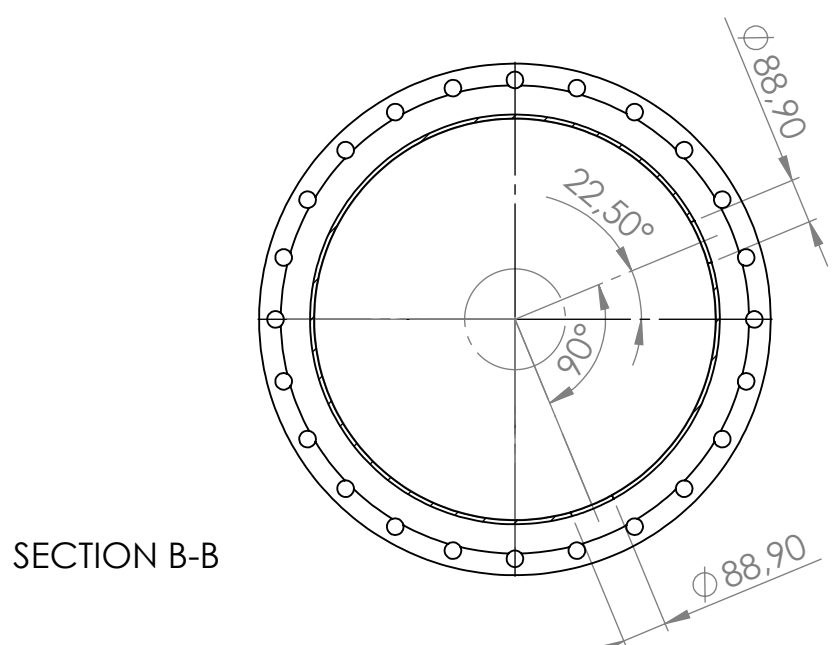
7	8	Short air nozzle	0.02
6	6	Short pipe for pressure and temperature measurement	0.01
5	2	Pipe for pressure and temperature measurement - connection	1.03.04
4	2	Flue gas measurement flange	0.03
3	1	Short maintenance flange DN 300	1.03.03
2	1	Ceramic layer 3	1.03.02
1	1	Boiler tube 3	1.03.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler assembly 3	1.03



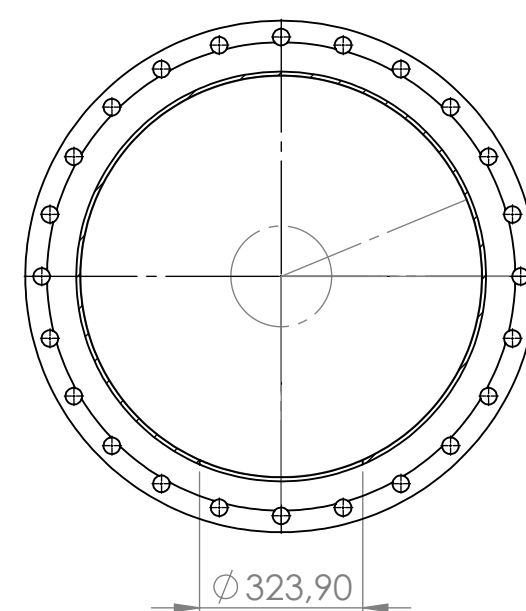
SECTION A-A



SECTION C-C



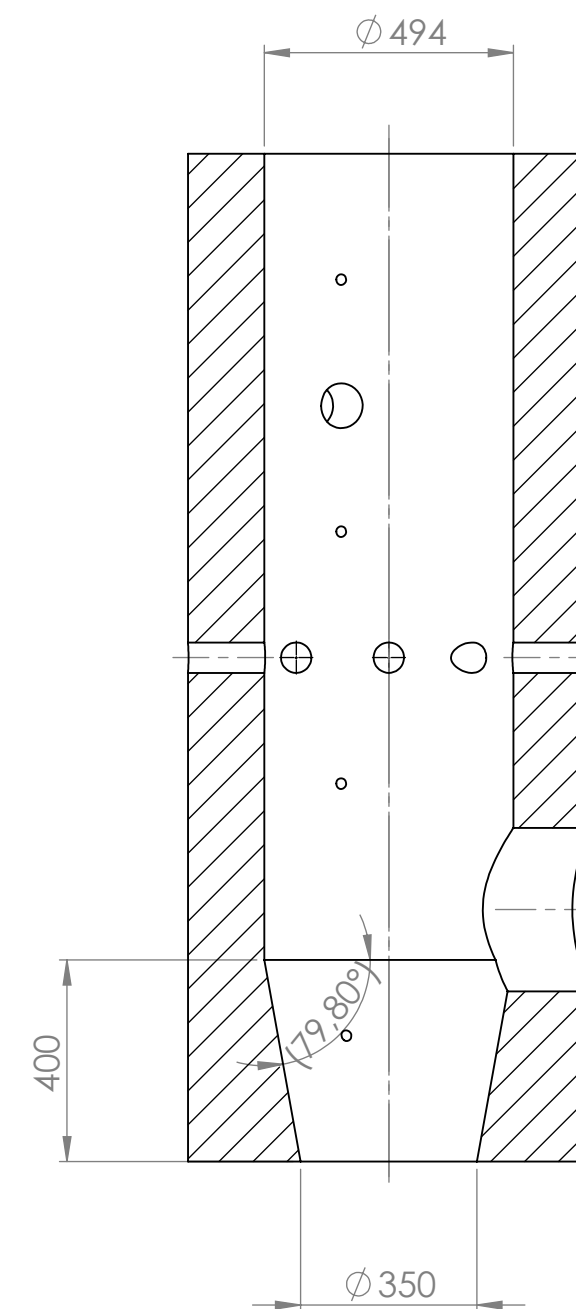
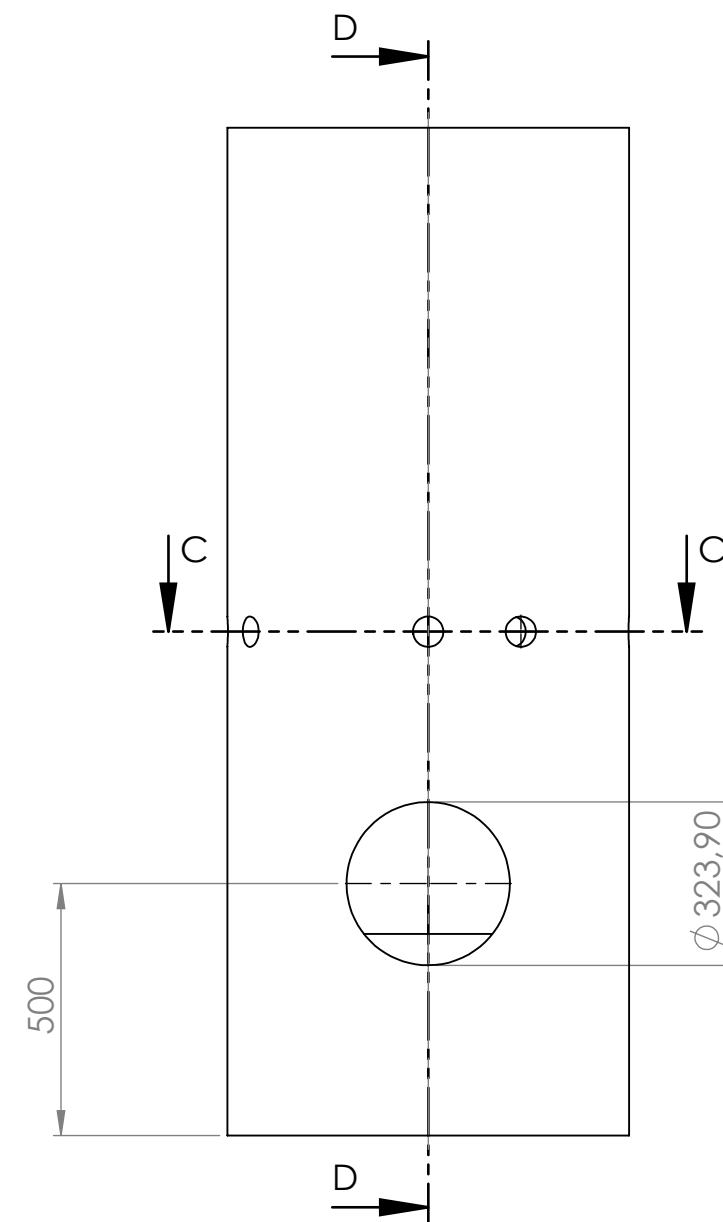
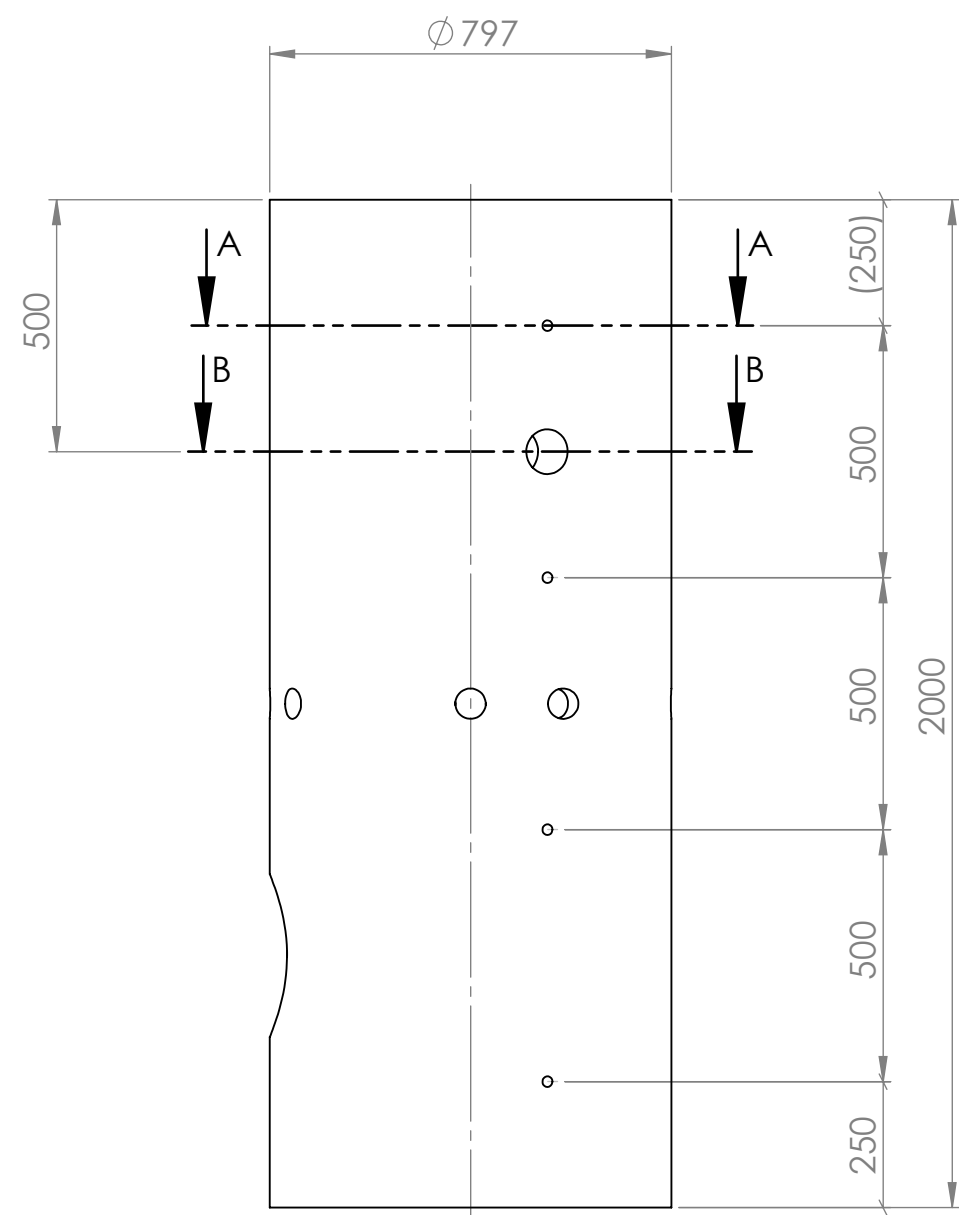
SECTION B-B



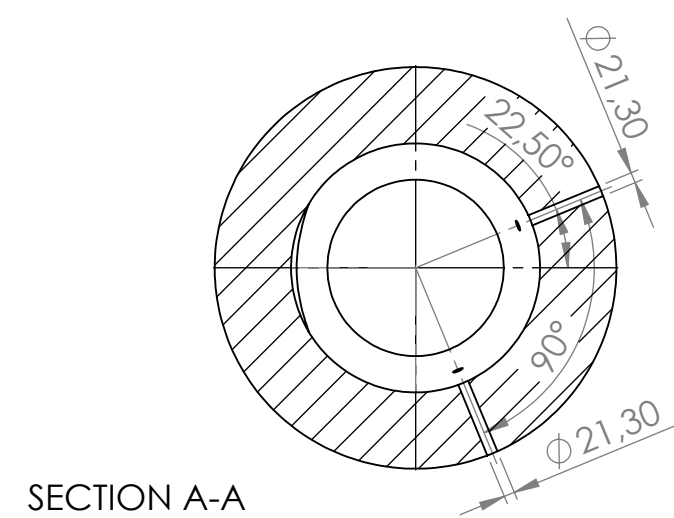
SECTION D-D

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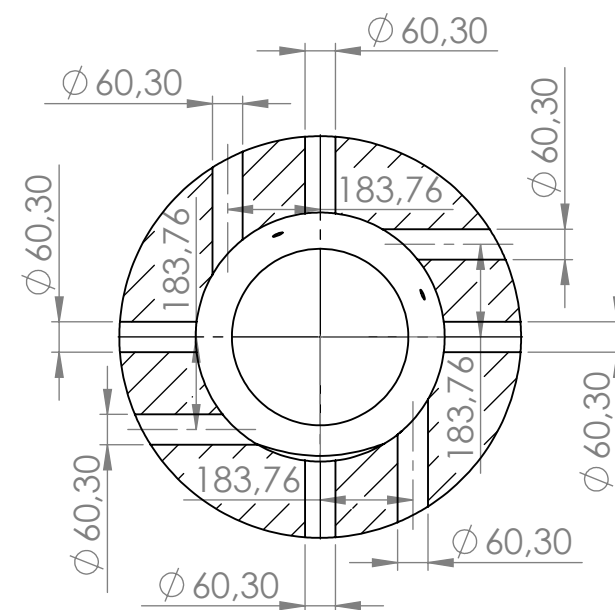
2	2	Flange DN 800 PN 10	
1	1	Pipe DN 800 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: 12.5/		Customer:	Creator: D. Castiella
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler tube 3	1.03.01



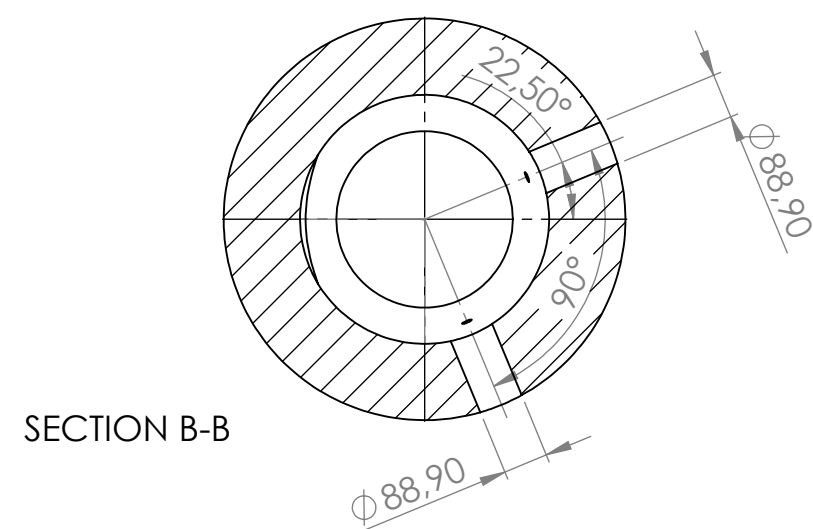
SECTION D-D



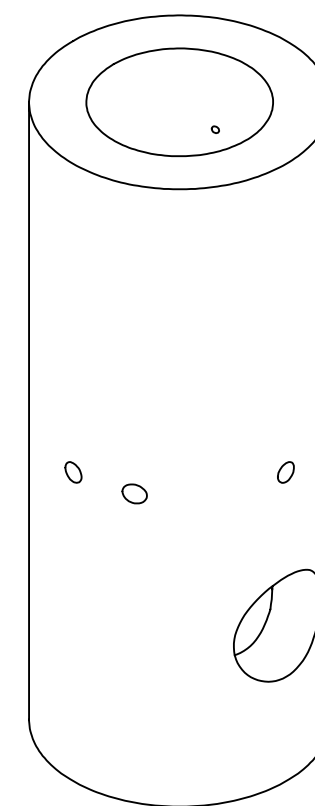
SECTION A-A



SECTION C-C

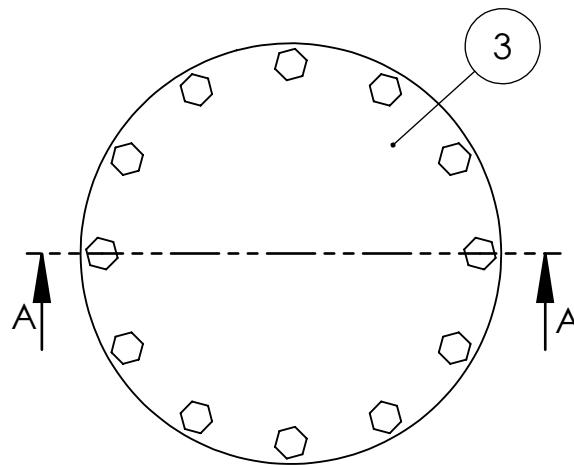
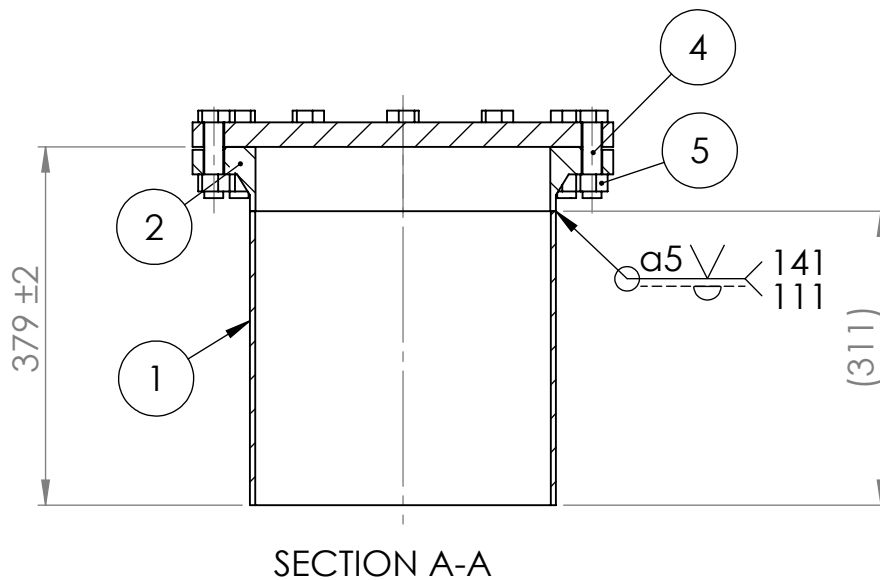


SECTION B-B



**SolidWorks Student Edition.
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		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:15	Work number:	Approval Person:	Date
Designation: Ceramic layer 3		Identification number: 1.03.02		



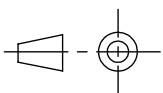
5	12	Nut M20 ISO 4032	
4	12	Bolt M20x80 ISO 4018	
3	1	Spade DN 300 PN 10	
2	1	Flange DN 300 PN 10	
1	1	Pipe DN 300 PN 10	
Ref.	Quantity	Description	Id. Number

Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:8

Work number:

Approval Person:

Date

SolidWorks Student Edition.

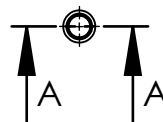
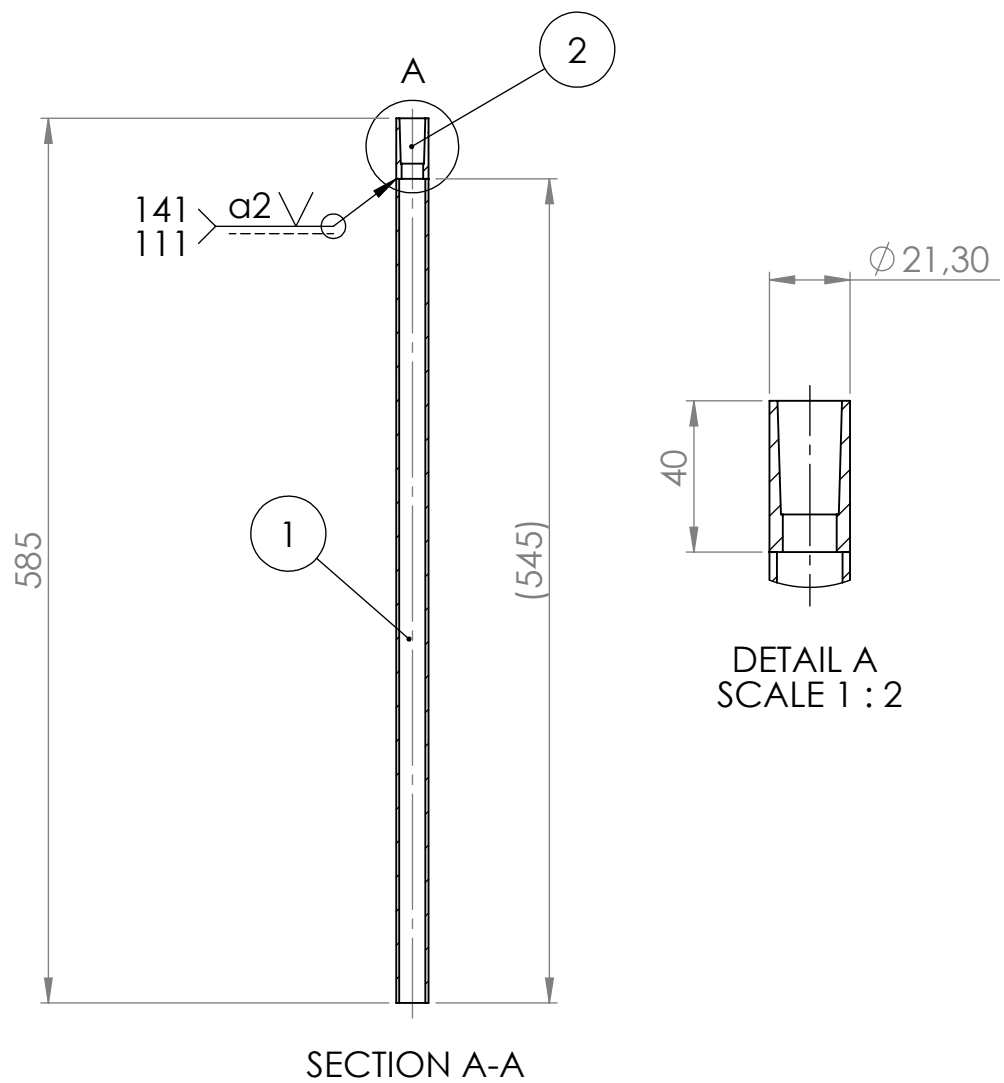
For Academic Use Only

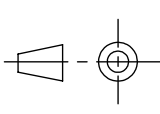
Description:

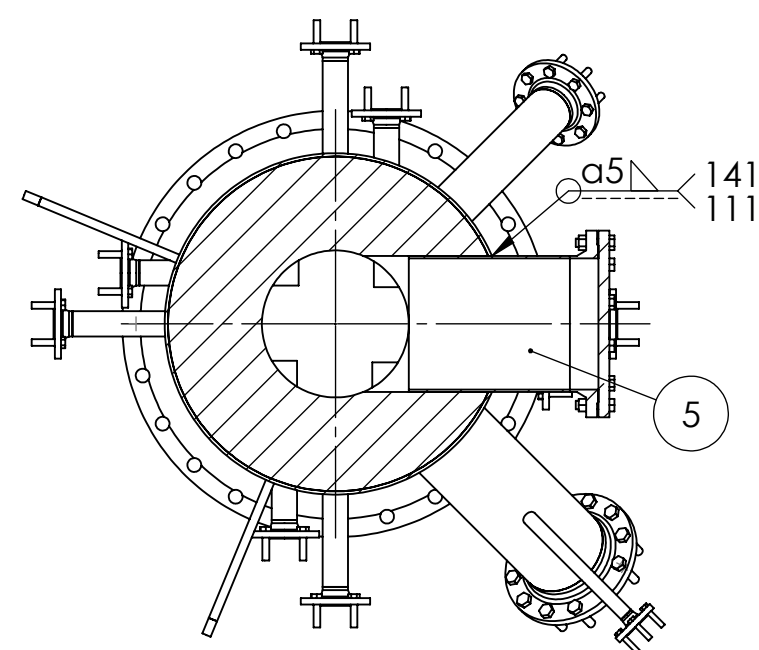
Small maintenance
flange - DN 300

Identification number:

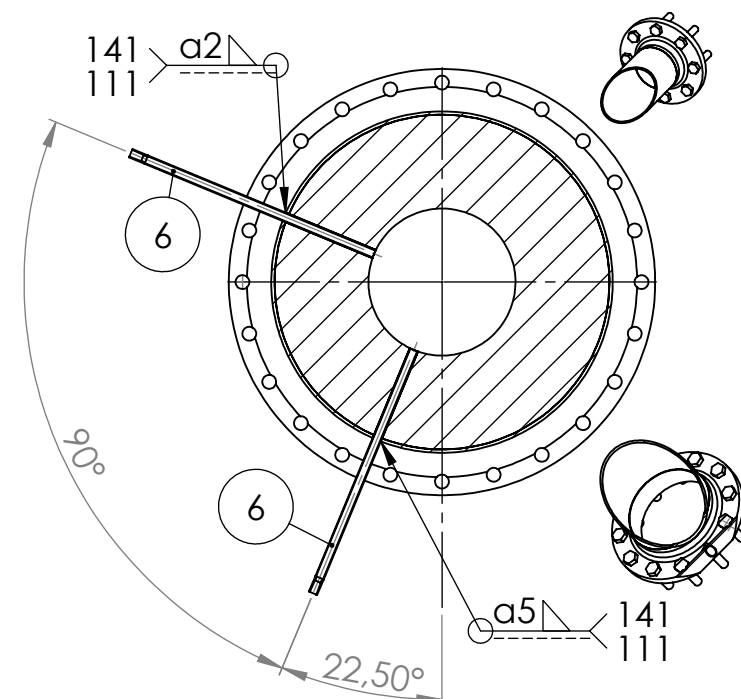
1.03.03



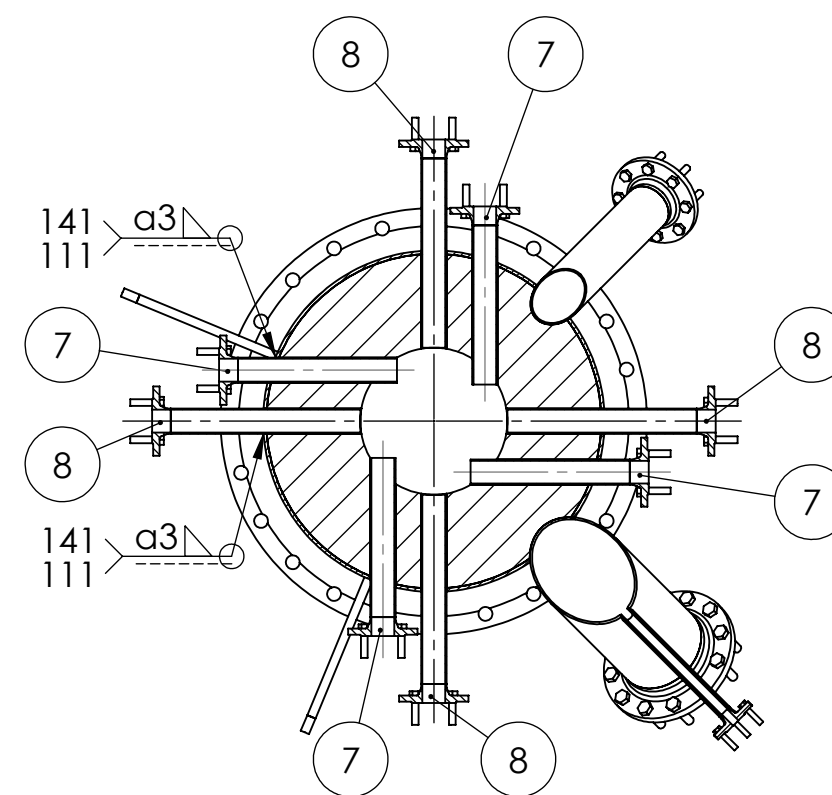
2	1	Muff DN 10	
1	1	Pipe DN 15 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12,5}$		Customer:	Creator: D. Castiella
		Mass:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Scale: 1:5	Date
		Work number:	Approval Person:
		Date	
SolidWorks Student Edition.  For Academic Use Only		Identification number: 1.03.04	
		Description: Pipe for pressure and temperature measurement - connection	



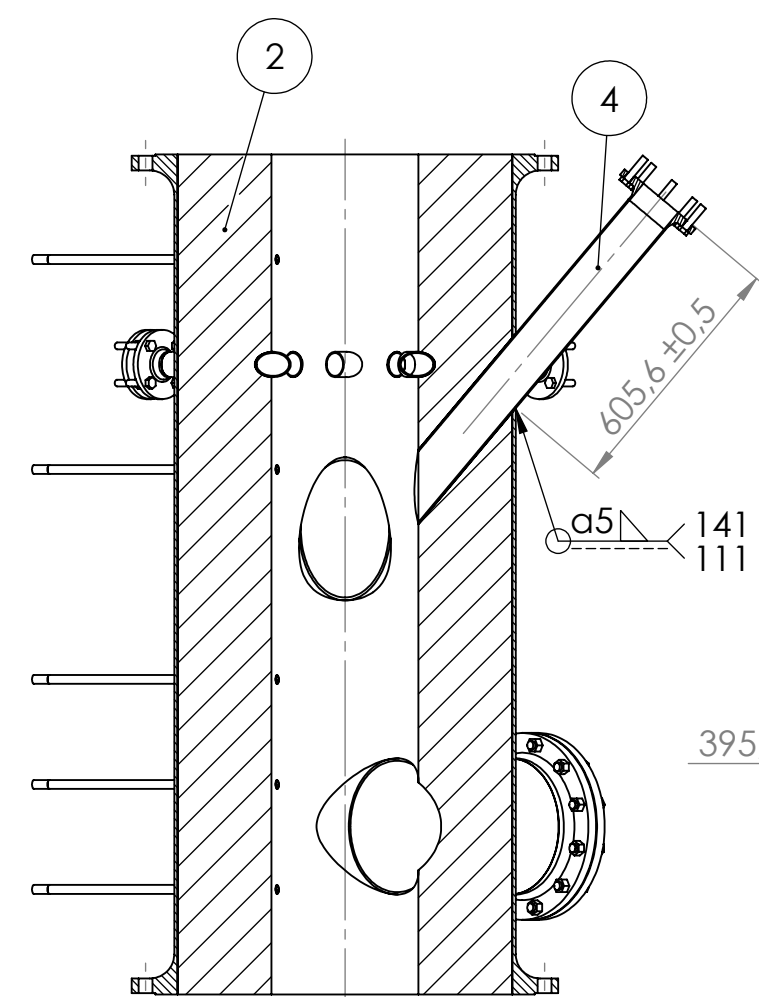
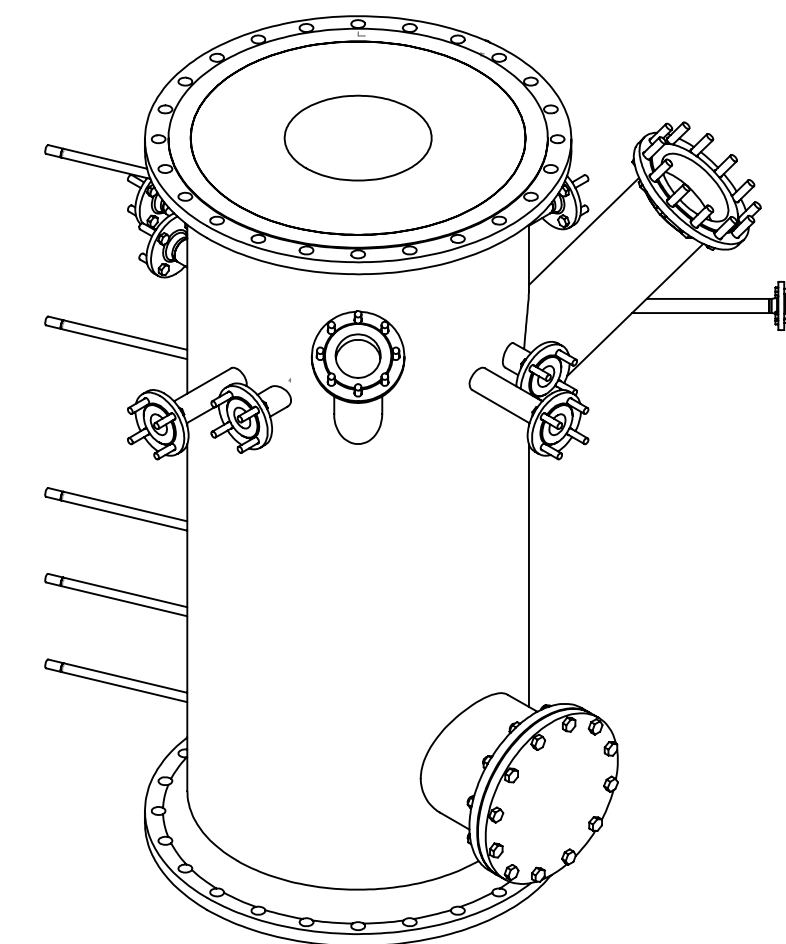
SECTION C-C



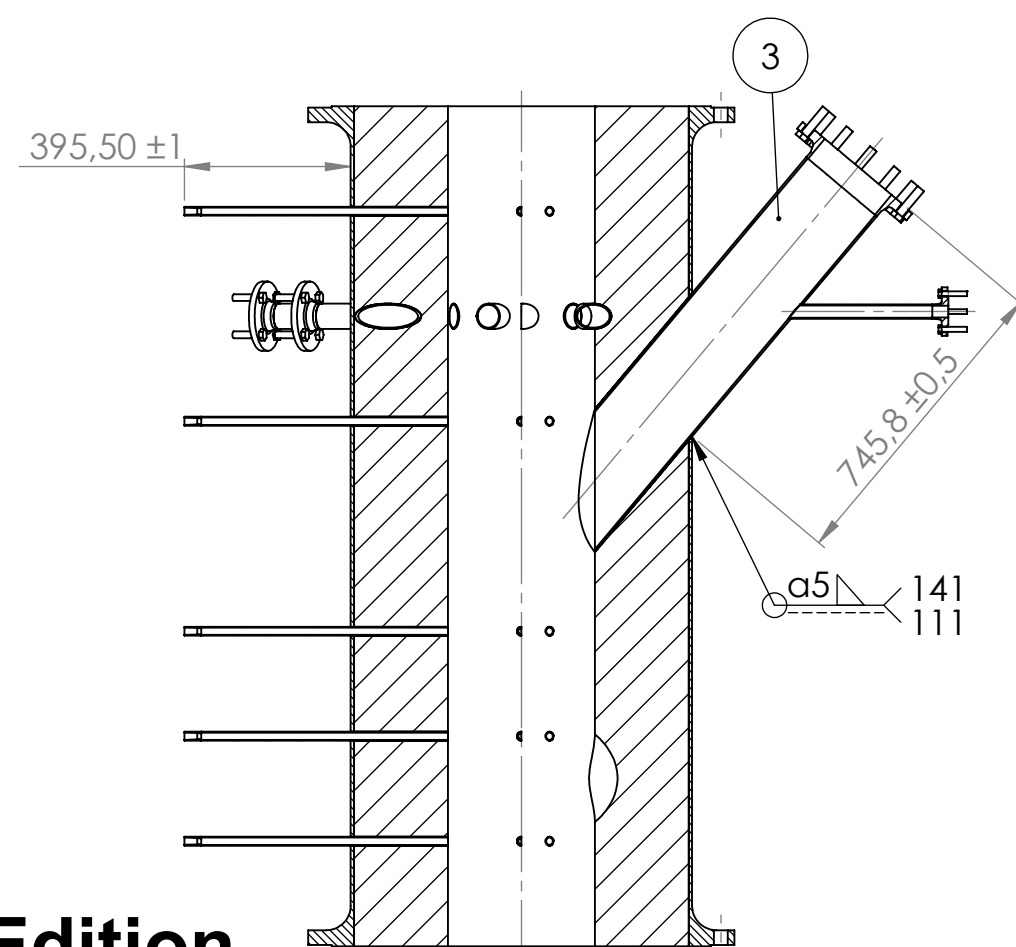
SECTION D-D



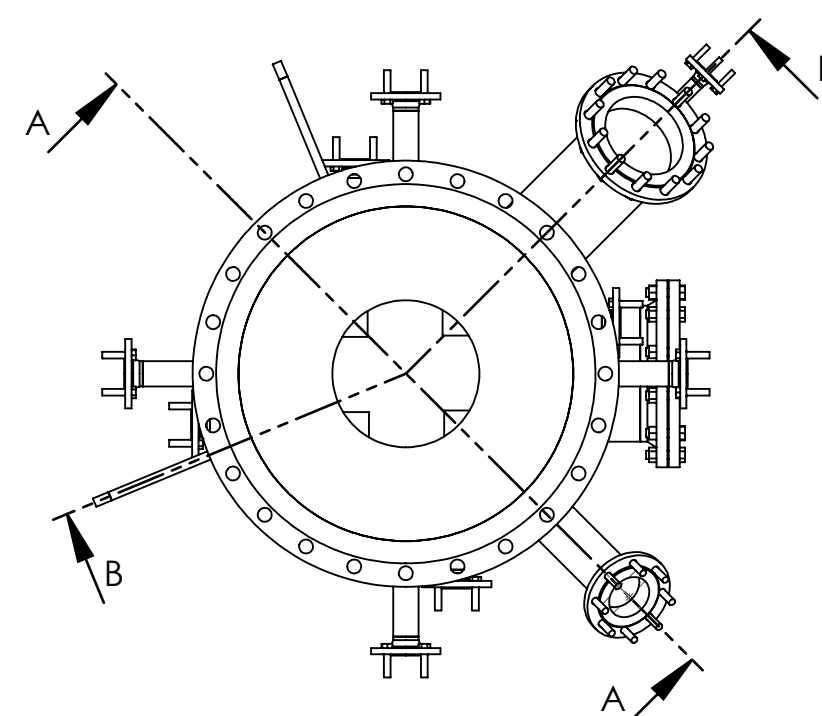
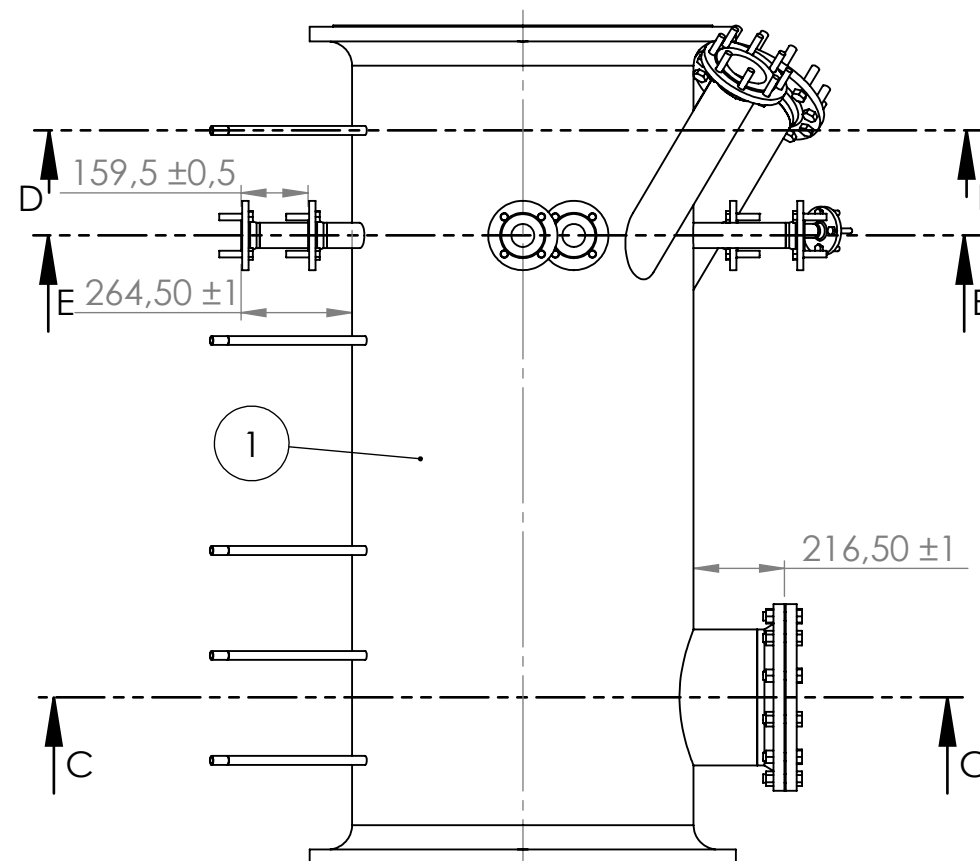
SECTION E-E



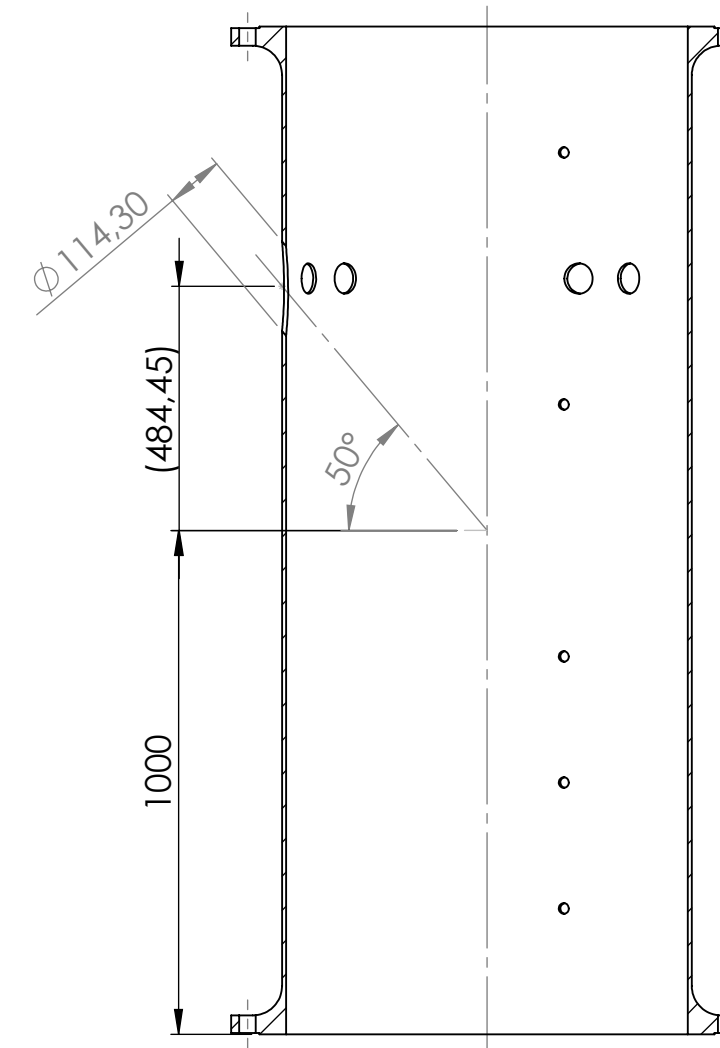
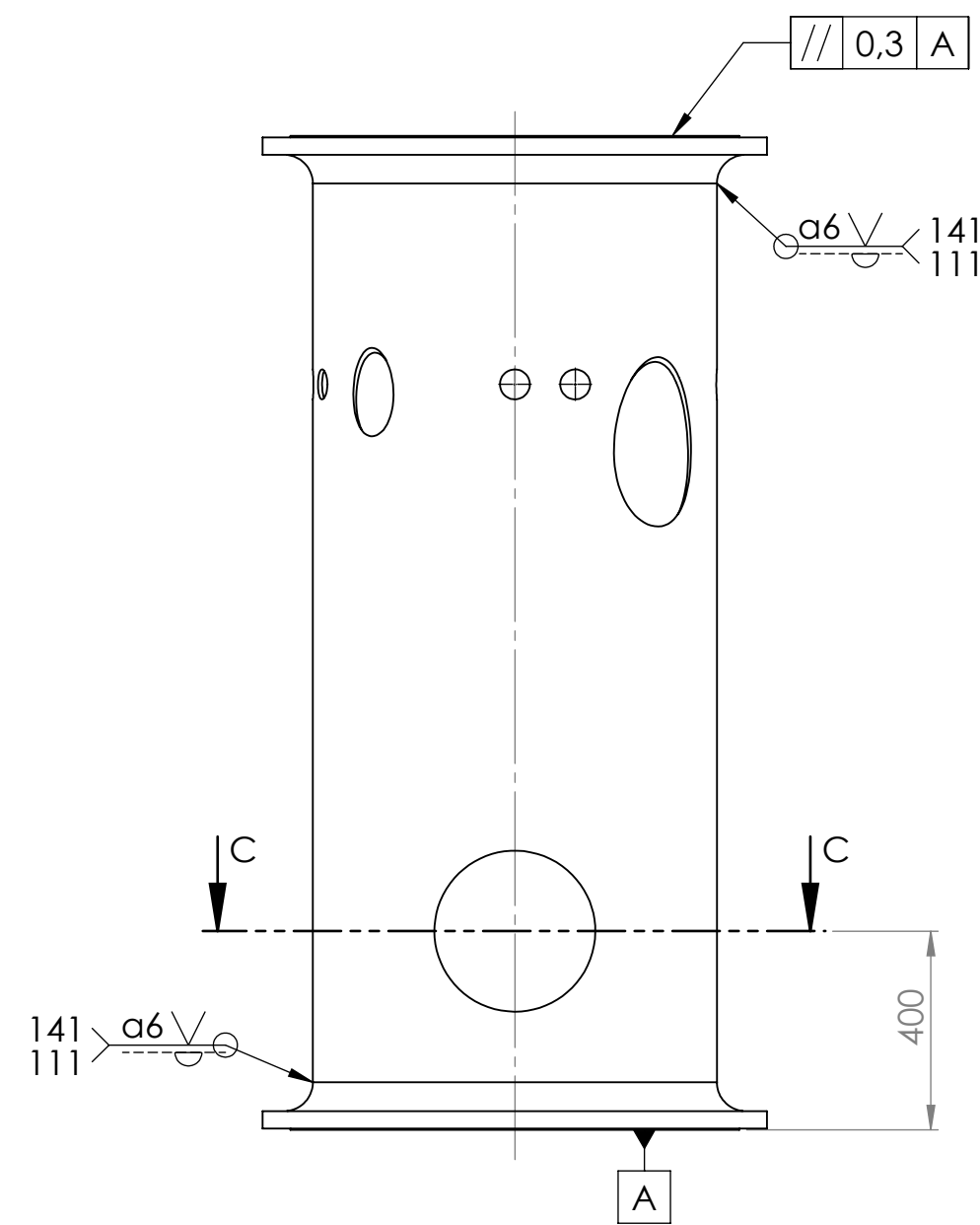
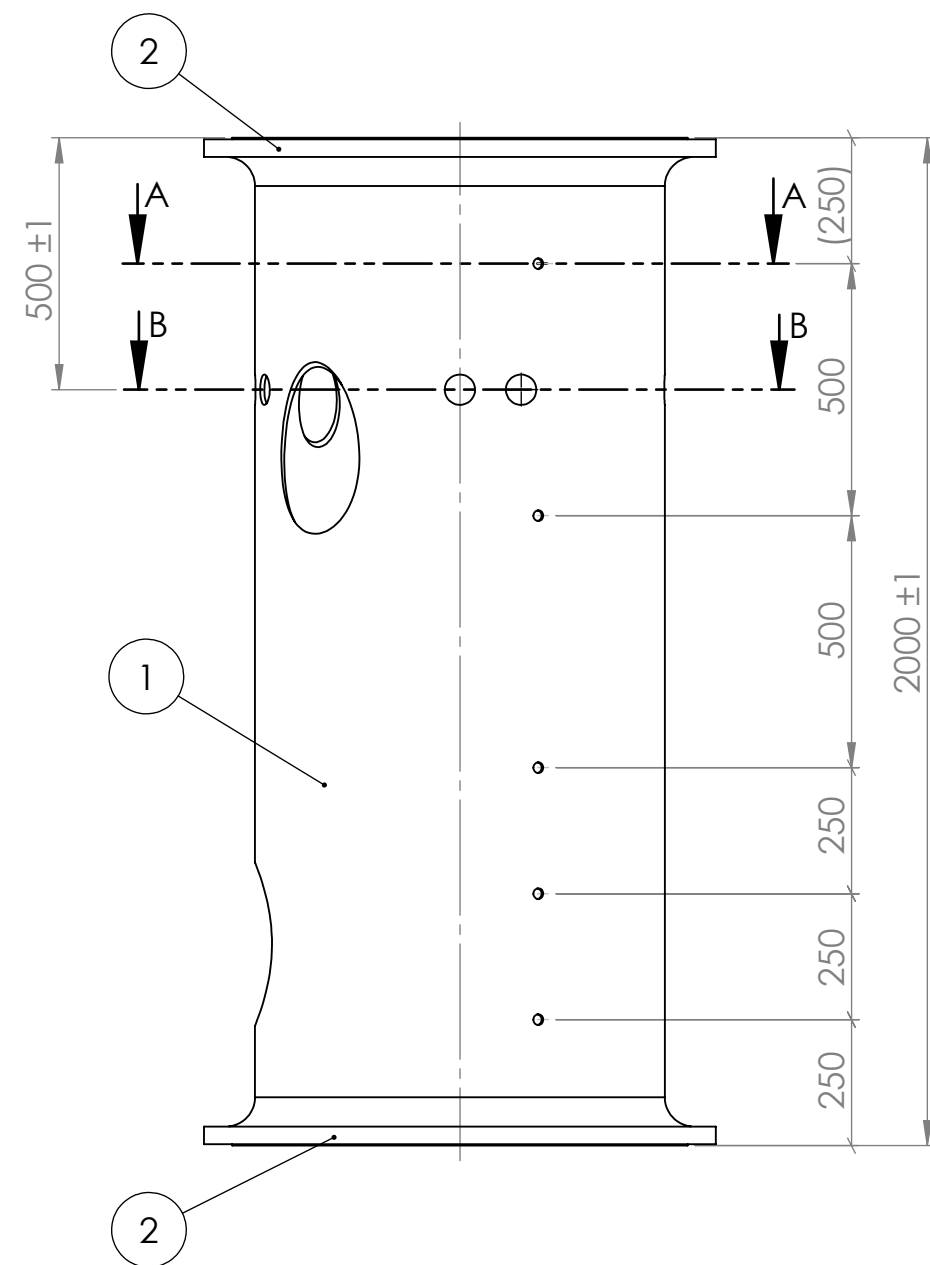
SECTION A-A



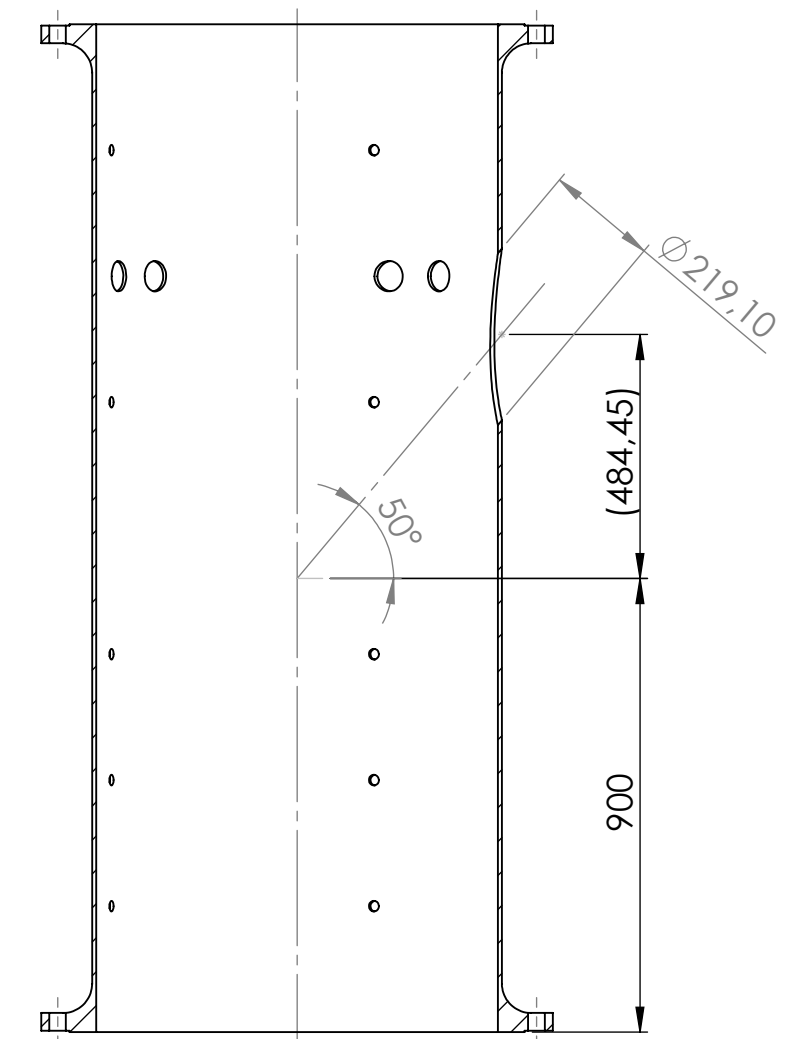
SECTION B-B



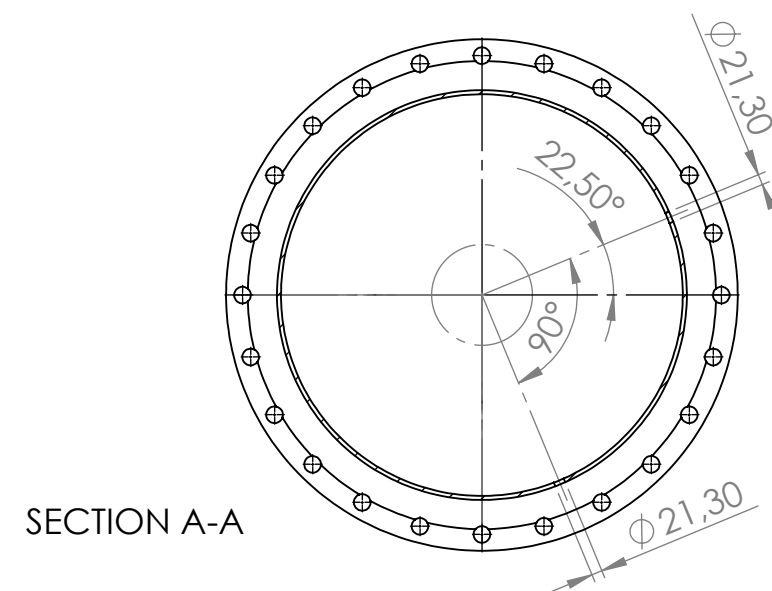
8	4	Long air nozzle	1.04.07
7	4	Short air nozzle	0.02
6	10	Long pipe for pressure and temperature measurement	1.04.06
5	1	Long maintenance flange DN 300	1.04.05
4	1	Sand feeder	1.04.04
3	1	Fuel feeder-Air nozzle	1.04.03
2	1	Ceramic layer 4	1.04.02
1	1	Boiler tube 4	1.04.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler assembly 4	1.04



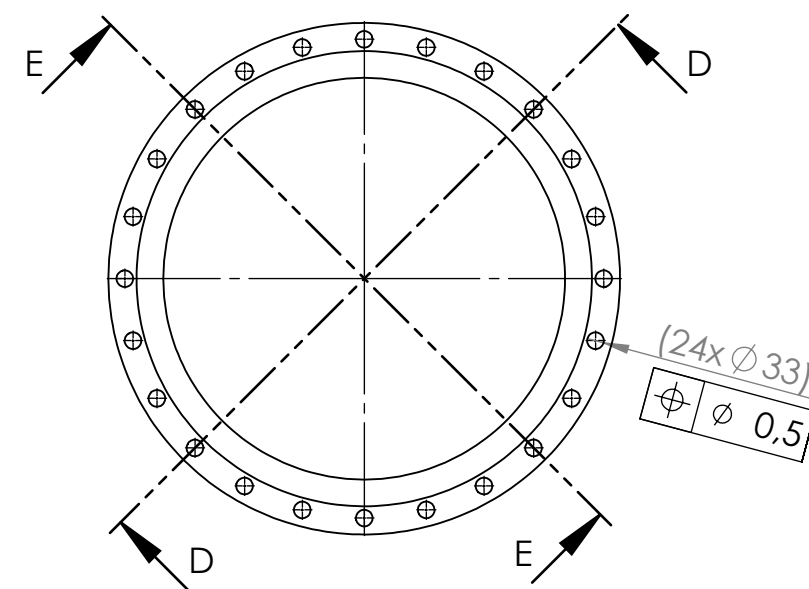
SECTION D-D



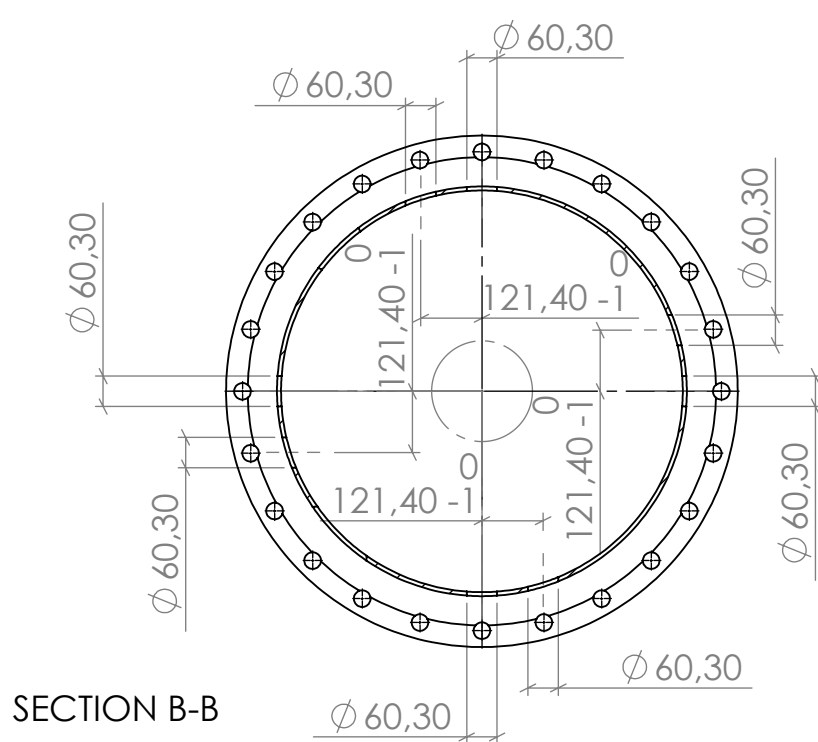
SECTION E-E



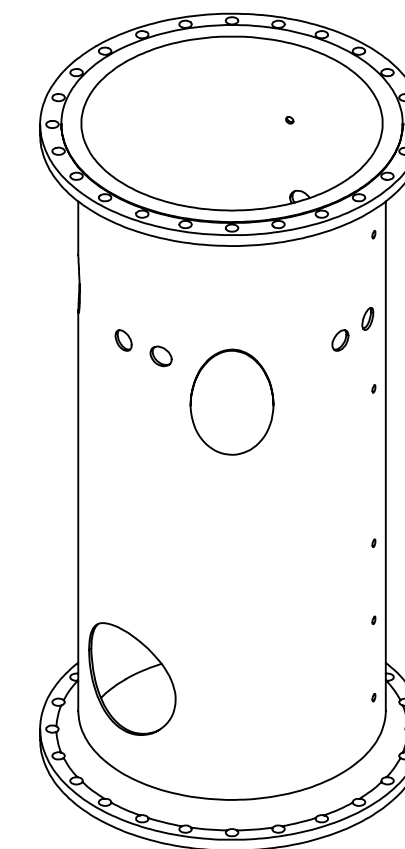
SECTION A-A



SECTION C-C

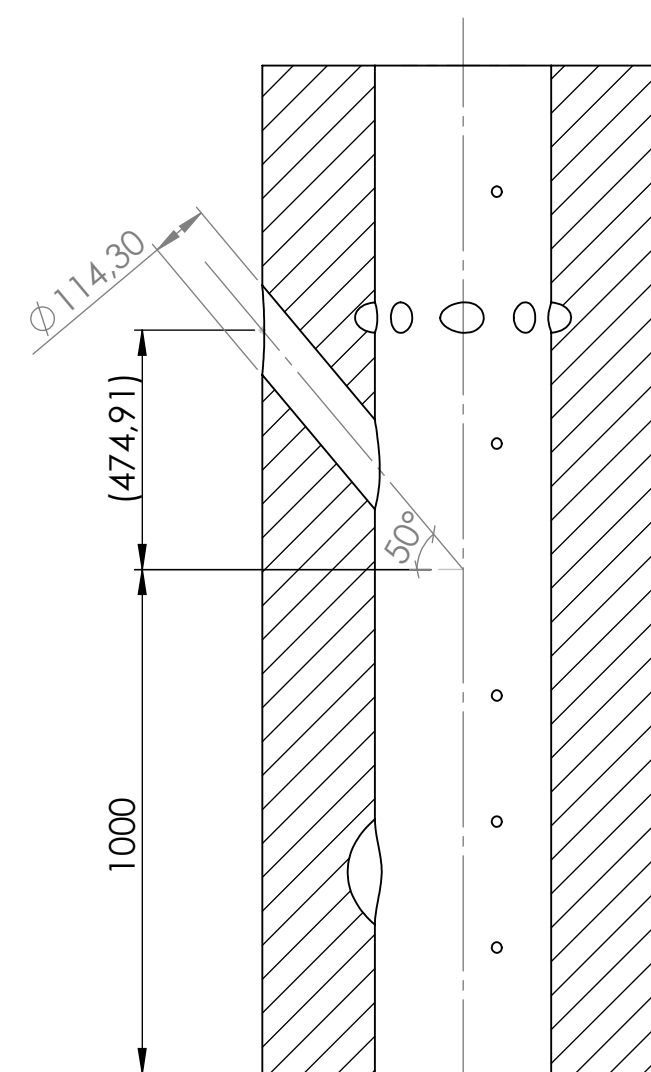
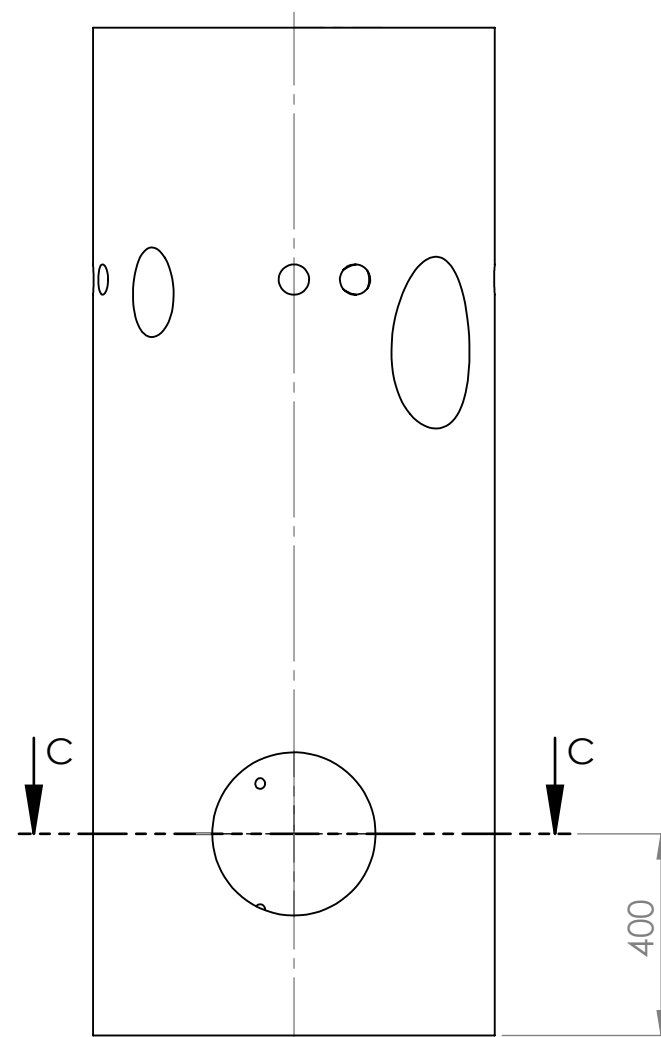
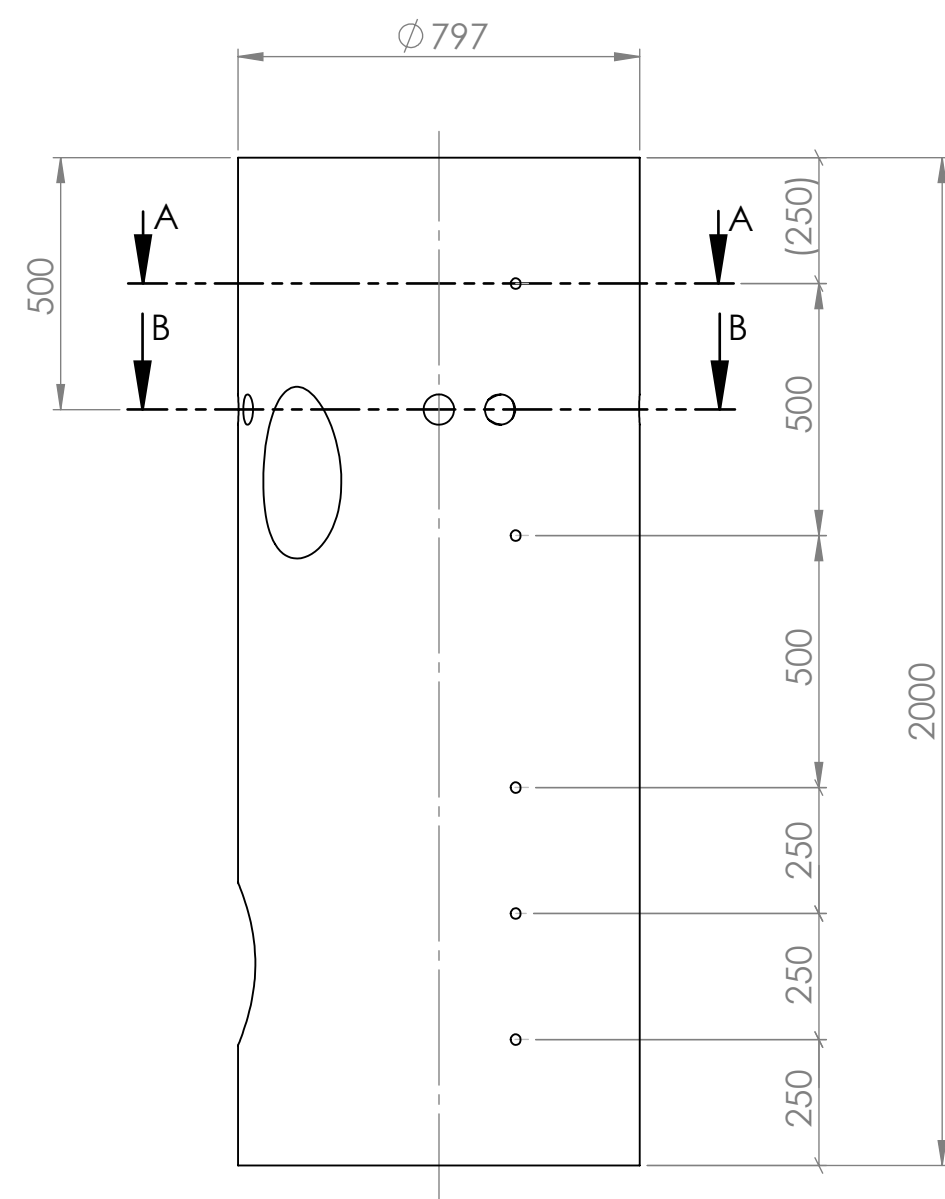


SECTION B-B

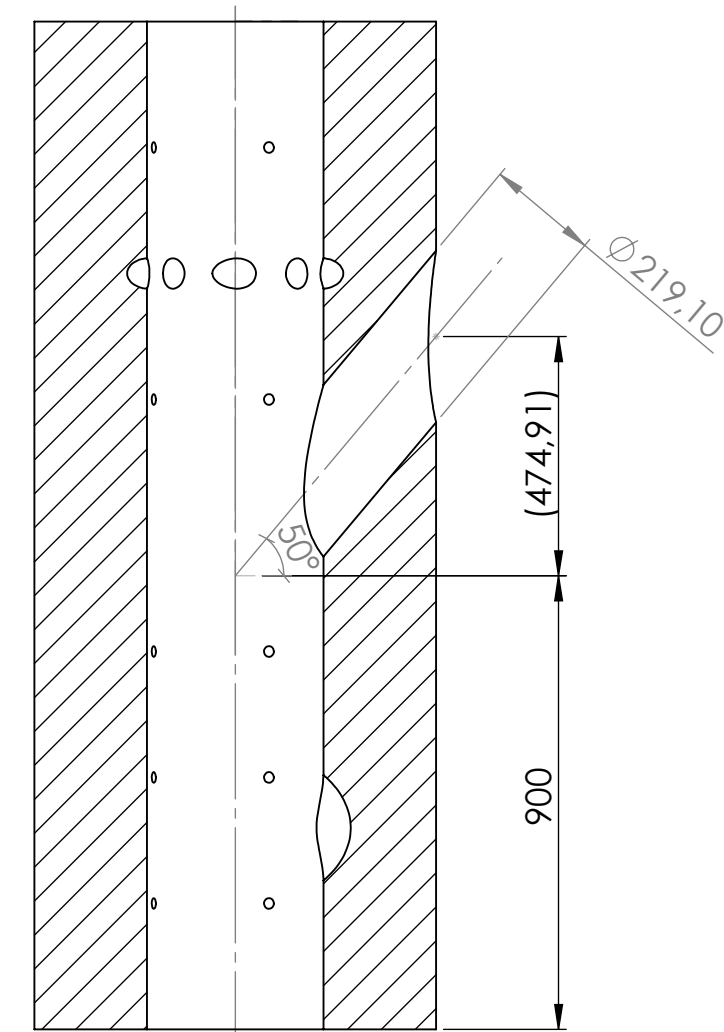


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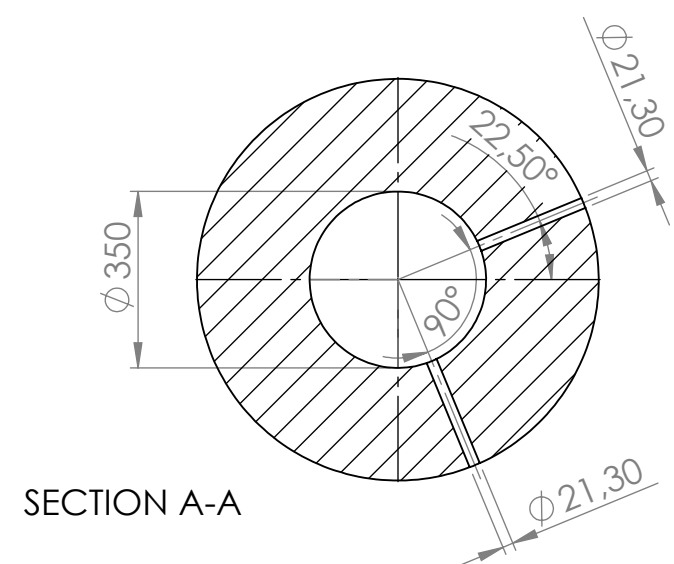
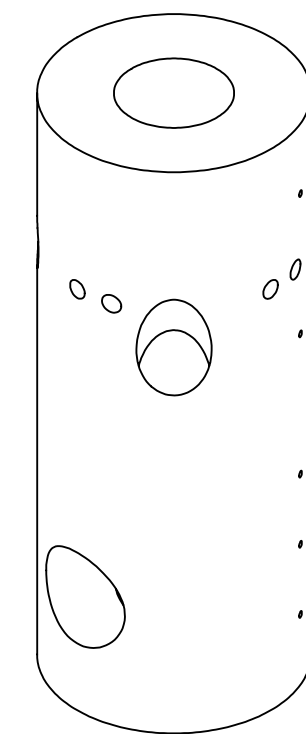
2	2	Flange DN 800 PN 10	
1	1	Pipe DN 800 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: 12,5/		Customer:	Creator: D. Castiella
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Boiler tube 4	1.04.01



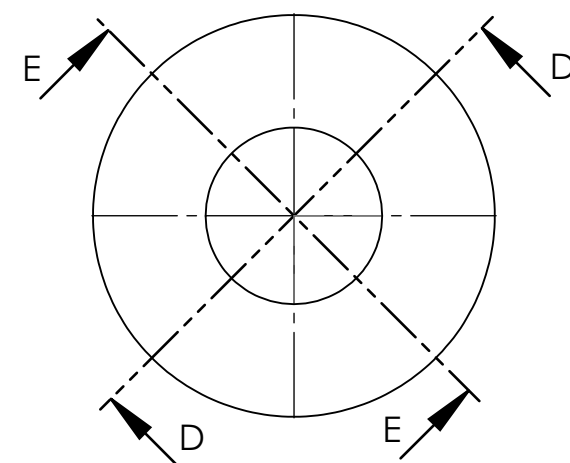
SECTION D-D



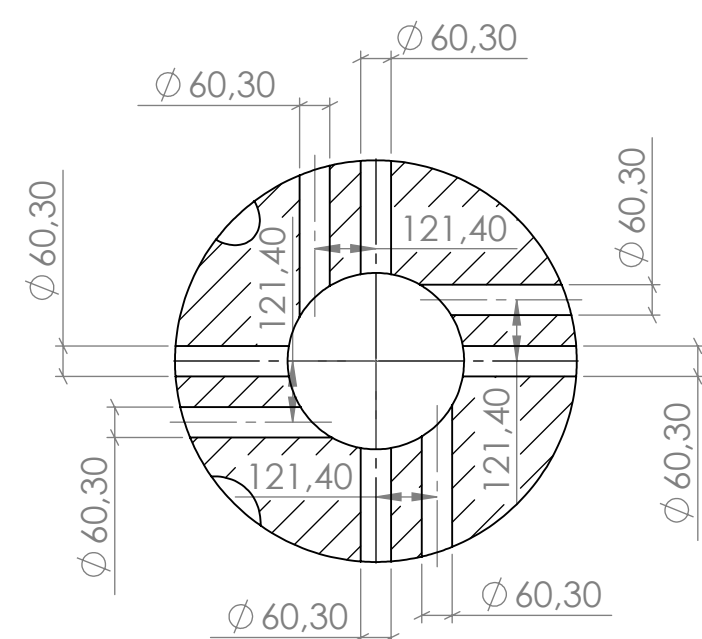
SECTION E-E



SECTION A-A



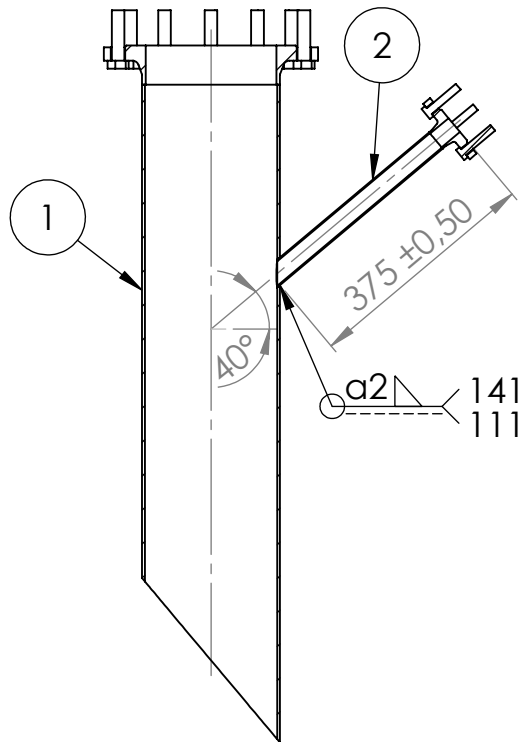
SECTION C-C



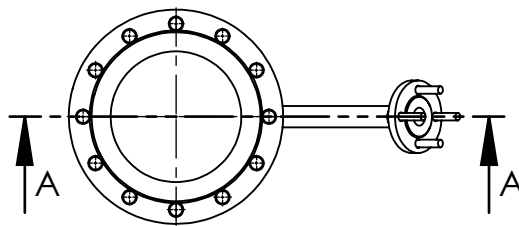
SECTION B-B

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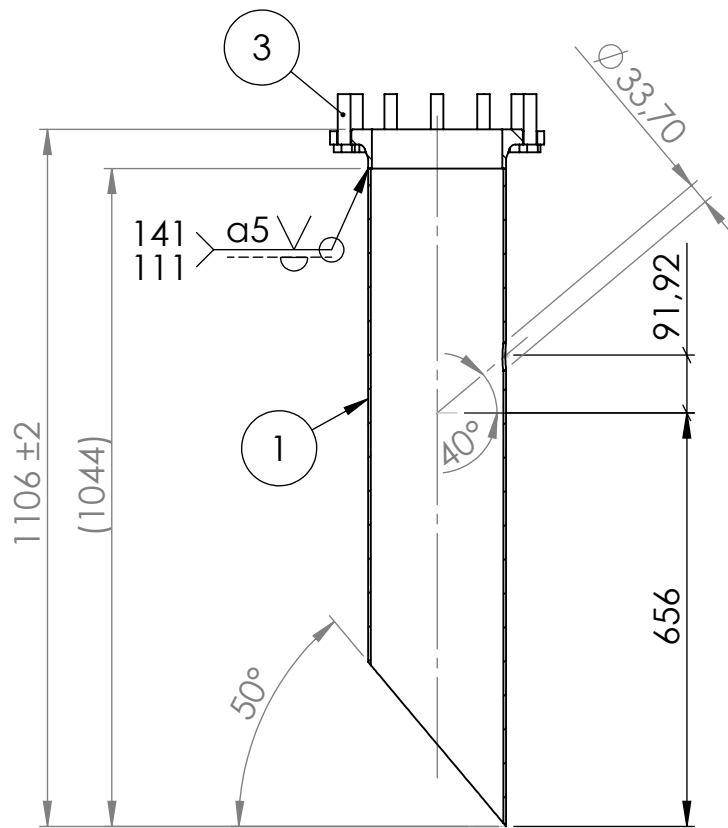
	Mass:	Customer:	Creator: D. Castiella	19-04-2013
	Scale: 1:15	Project: BFB Boiler	Inspector: J. Huttunen	Date
		Work number:	Approval Person:	Date
		Designation: Ceramic layer 4	Identification number: 1.04.02	



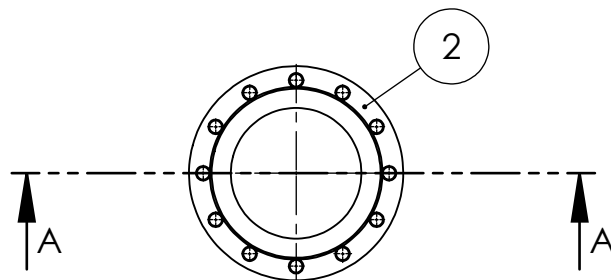
SECTION A-A



2	1	Air nozzle of the fuel feeder	1.04.03.02
1	1	Fuel feeder	1.04.03.01
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
			19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:12	Work number:	Approval Person:
			Date
			Date
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Fuel feeder-Air nozzle		1.04.03	



SECTION A-A



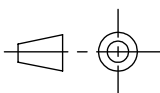
3	12	Bolt M20x80 ISO 4018	
2	1	Flange DN 200 PN 16 DIN 2633	
1	1	Pipe DN 200 PN 10	
Ref.	Quantity	Description	Id. Number

Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:12

Work number:

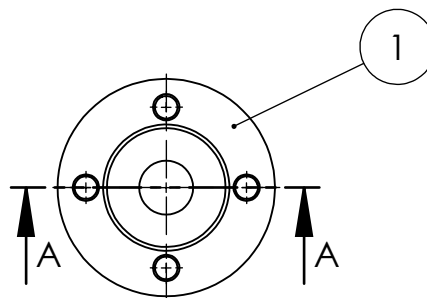
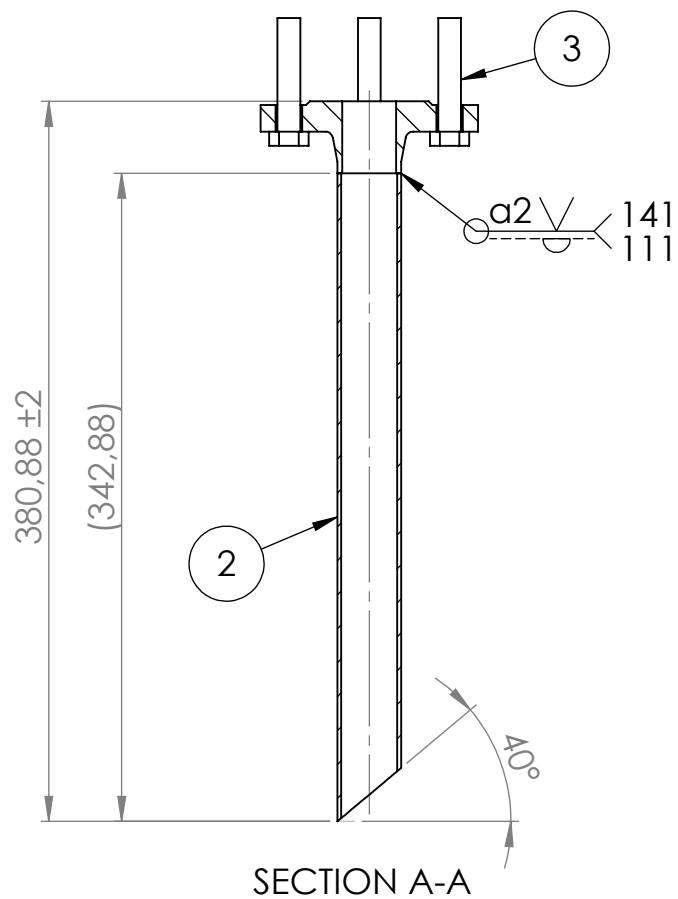
Approval Person:

Date

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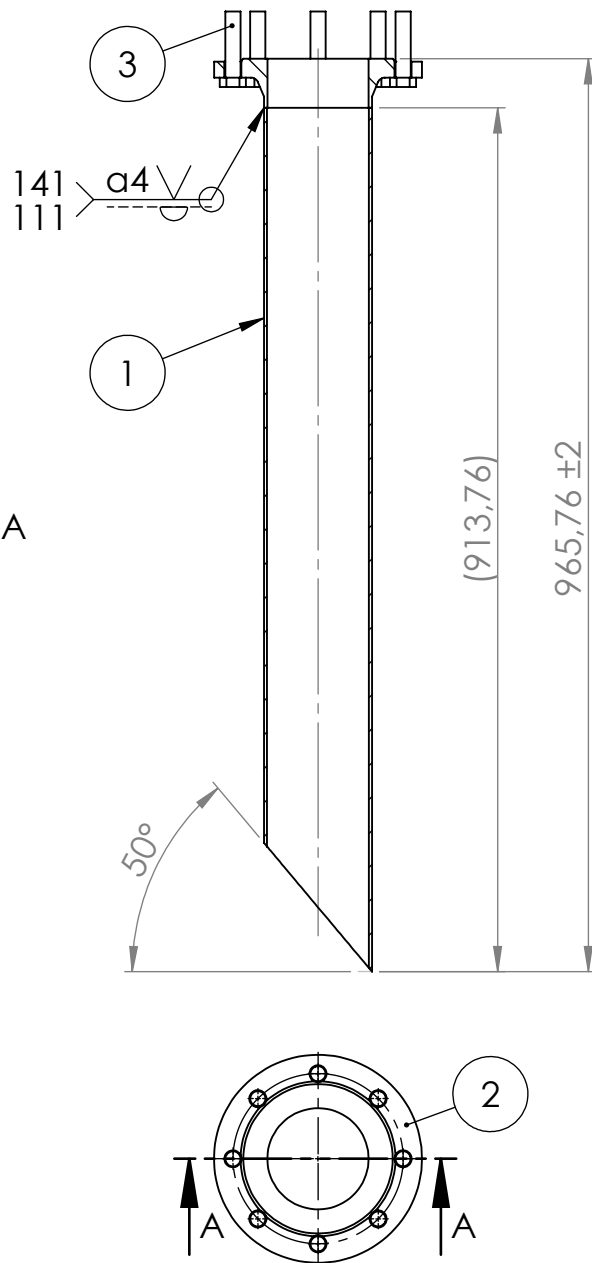
Designation:
Feder

Identification number:
1.04.03.01

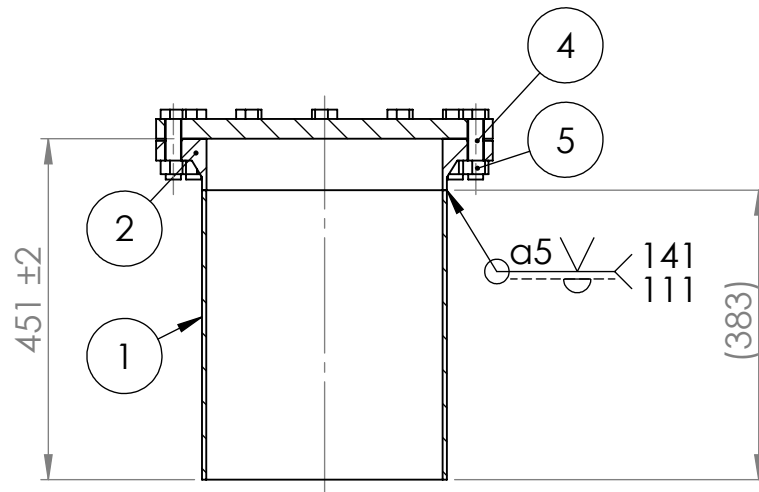


3	4	Bolt M12x60 ISO 4018	
2	1	Pipe DN 25 PN 10	
1	1	Flange DN 25 PN 16 DIN 2633	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
			19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:4	Work number:	Approval Person:
			Date
			Date
SolidWorks Student Edition. For Academic Use Only		Identification number:	
SAVONIA		1.04.03.02	
Description: All nozzle of the fuel feeder			

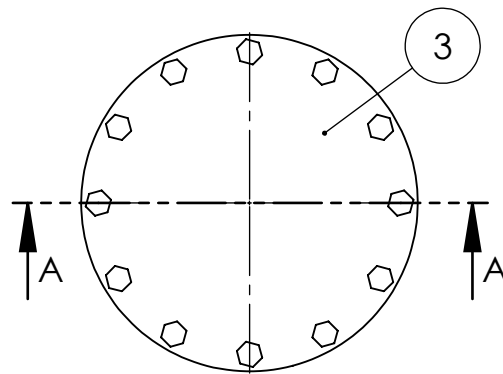
SECTION A-A



3	8	Bolt M16x70 ISO 4018	
2	1	Flange DN 100 PN 16 DIN 2633	
1	1	Pipe DN 100 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: 12.5/		Customer:	Creator: D. Castiella
			19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:8	Work number:	Approval Person:
			Date
			Date
SolidWorks Student Edition. For Academic Use Only		Identification number:	
SAVONIA		1.04.04	



SECTION A-A



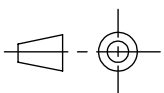
5	12	Nut M20 ISO 4032	
4	12	Bolt M20x80 ISO 4018	
3	1	Spade DN 300 PN 10	
2	1	Flange DN 300 PN 10	
1	1	Pipe DN 300 PN 10	
Ref.	Quantity	Description	Id. Number

Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:10

Work number:

Approval Person:

Date

SolidWorks Student Edition.

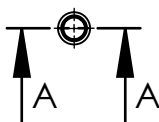
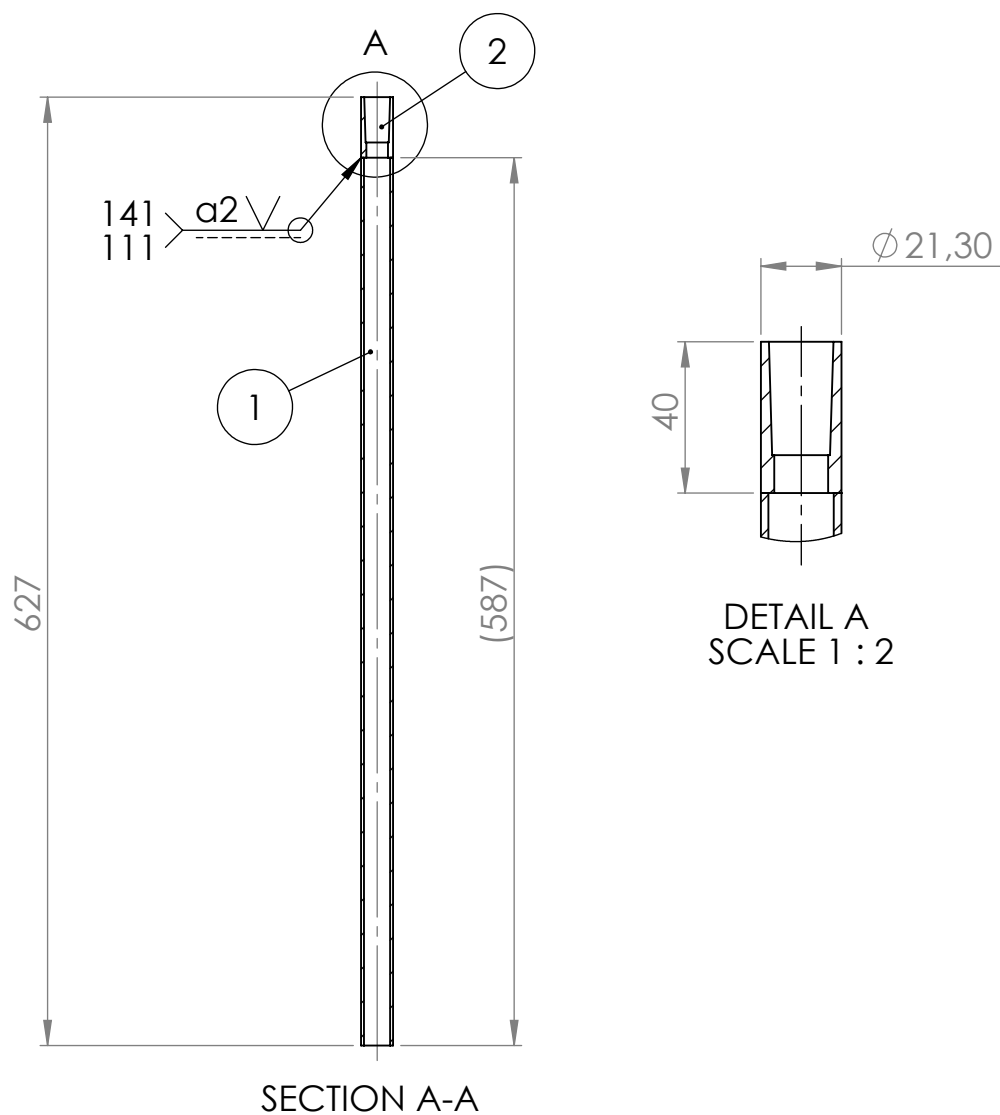
For Academic Use Only

Description:

Long maintenance
flange - DN 300

Identification number:

1.04.05



2	1	Muff DN 10	
1	1	Pipe DN 15 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Identification number:	1.04.06

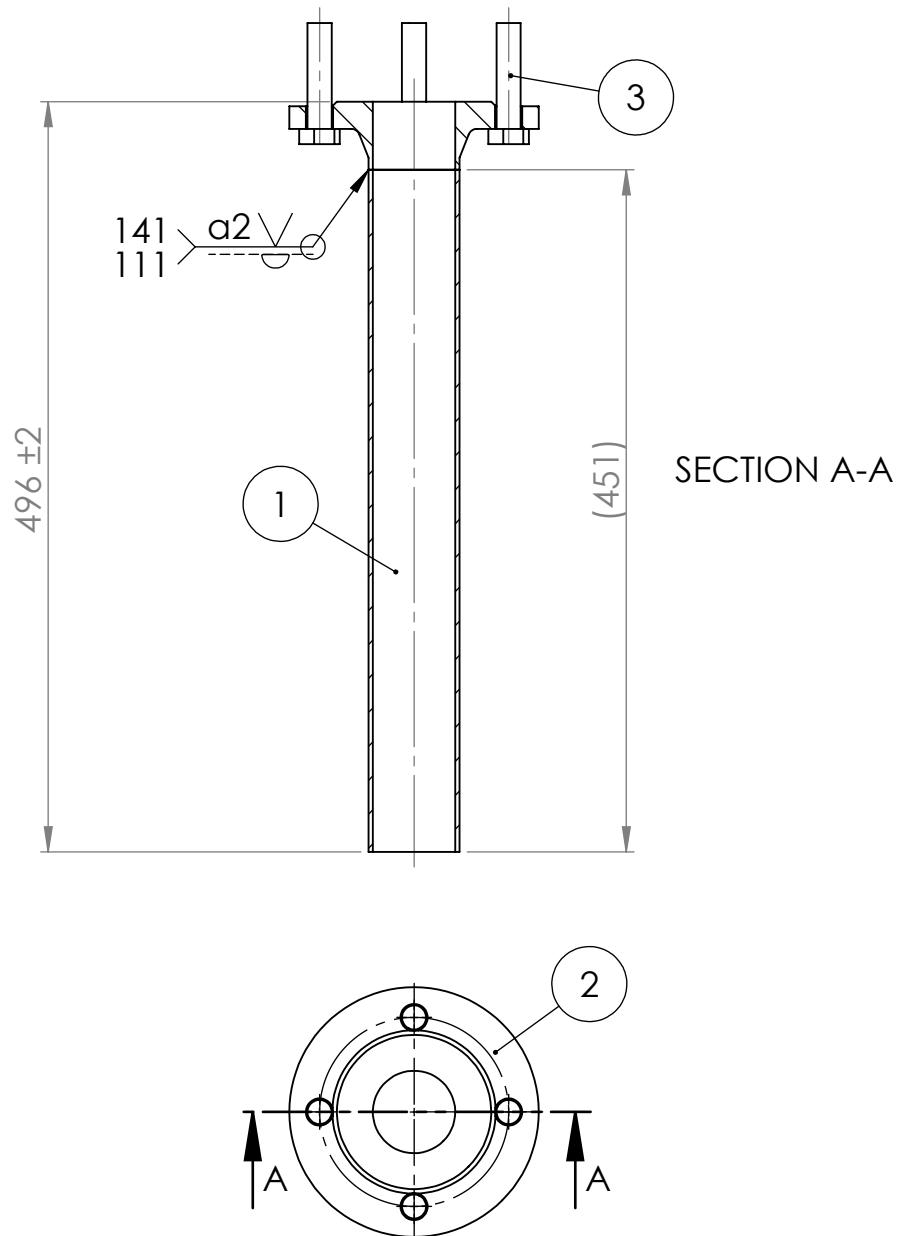
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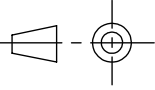
Description:
Locking pipe for pressure and
temperature measurement

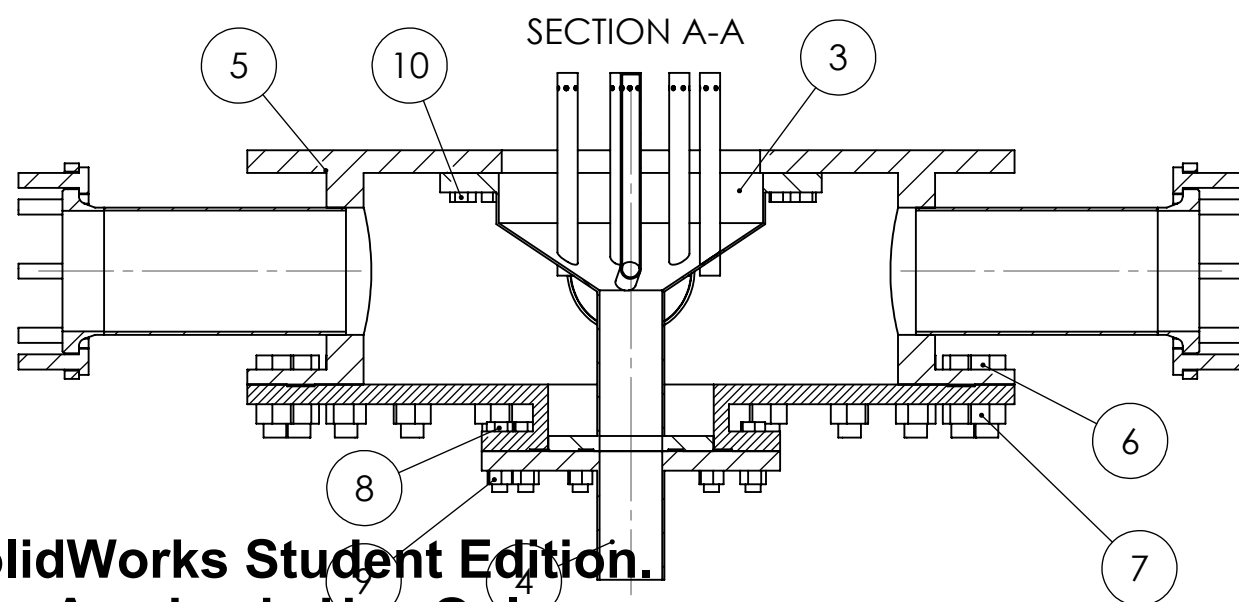
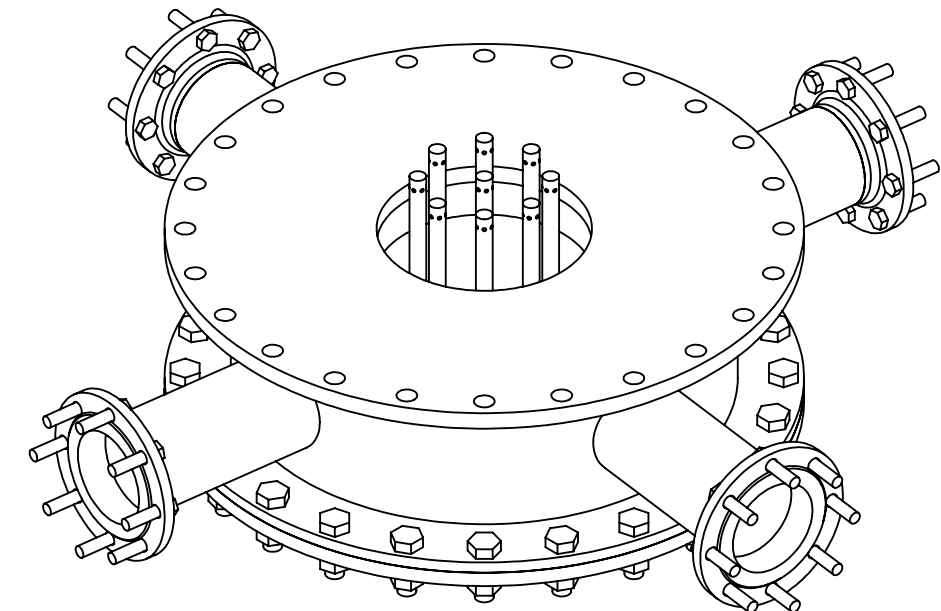
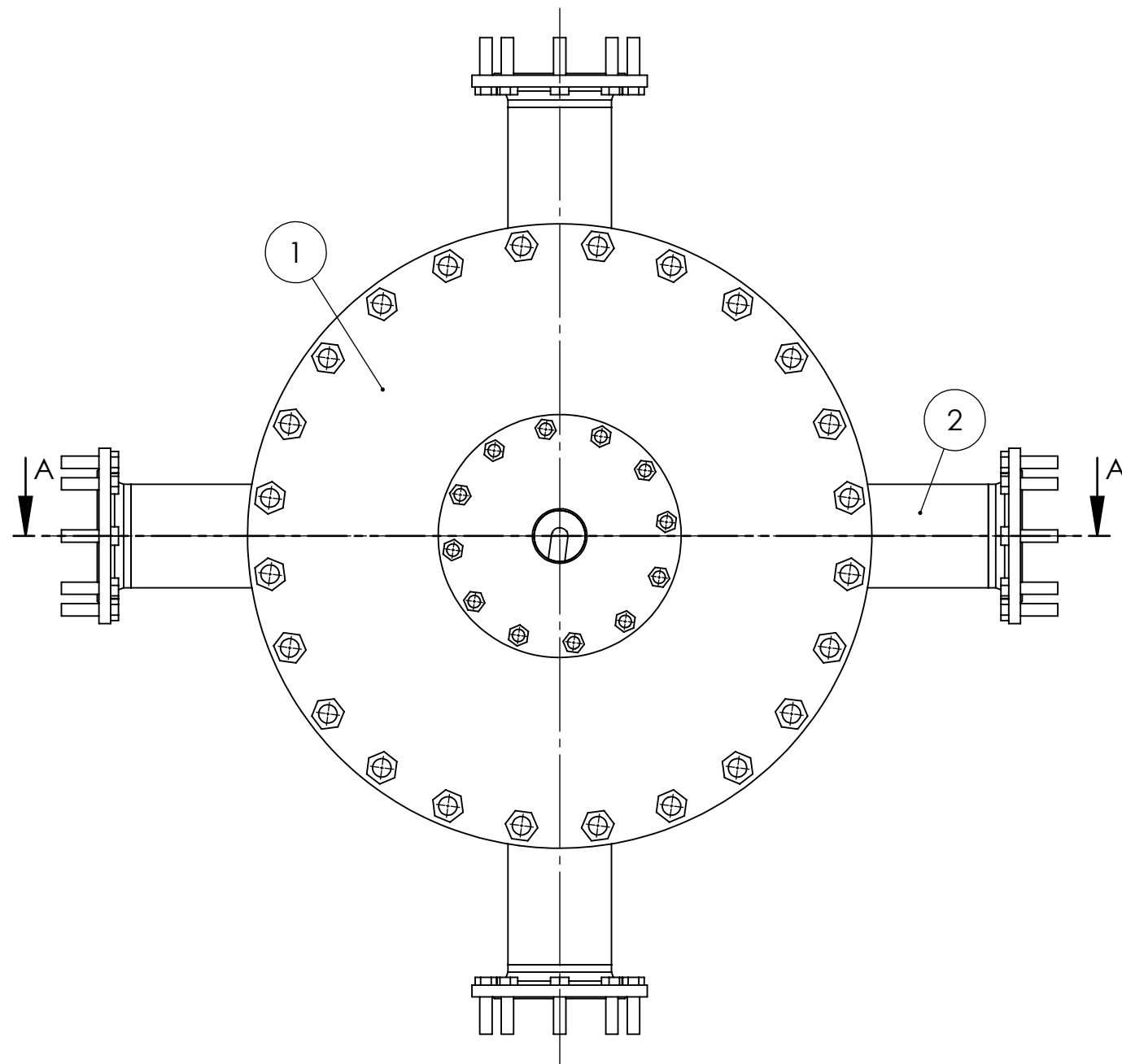
19-04-2013

Date

Date



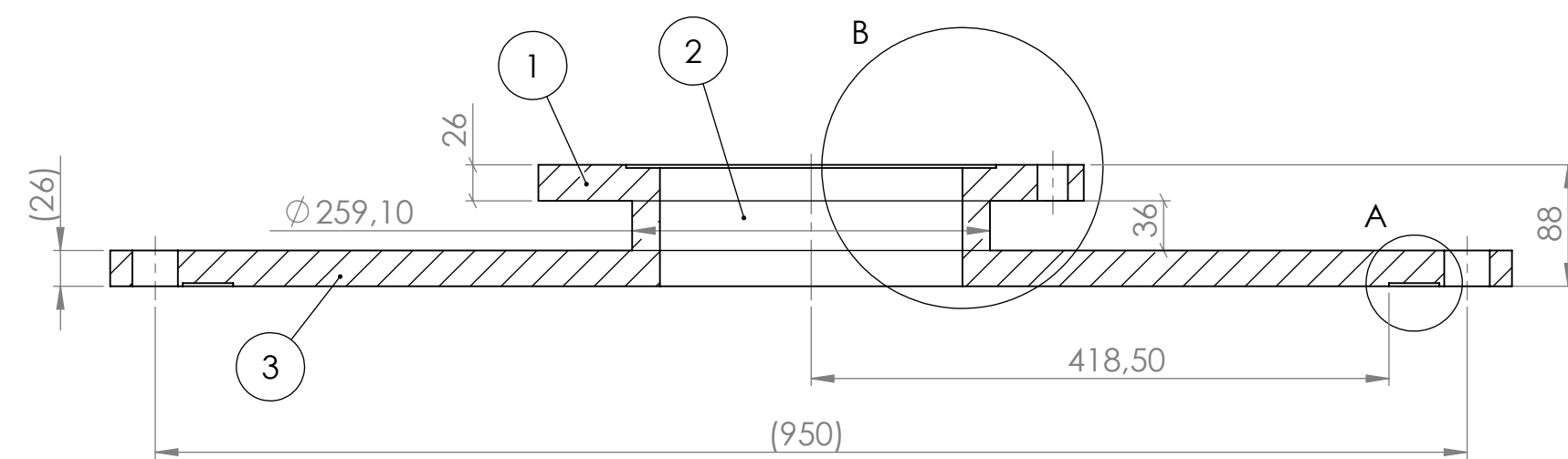
3	4	Bolt M16x70 ISO 4018	
2	1	Flange DN 50 PN 16 DIN 2633	
1	1	Pipe DN 50 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Mass:	19-04-2013
		Project: BFB Boiler	Inspector: J. Huttunen
		Scale: 1:5	Date
		Work number:	Approval Person:
			Date
 SolidWorks Student Edition. For Academic Use Only		Identification number: 1.04.07	



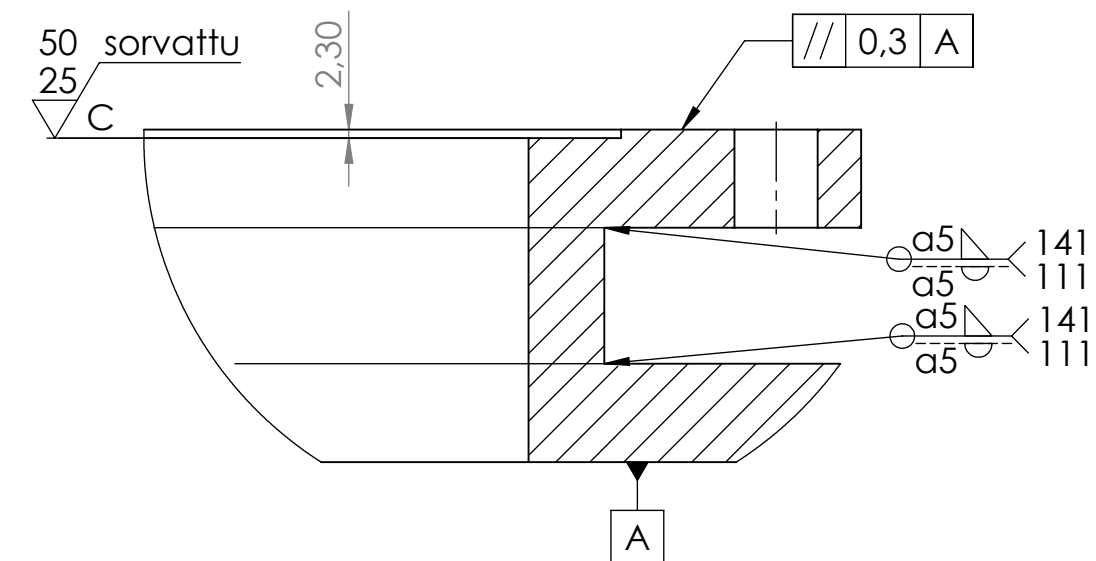
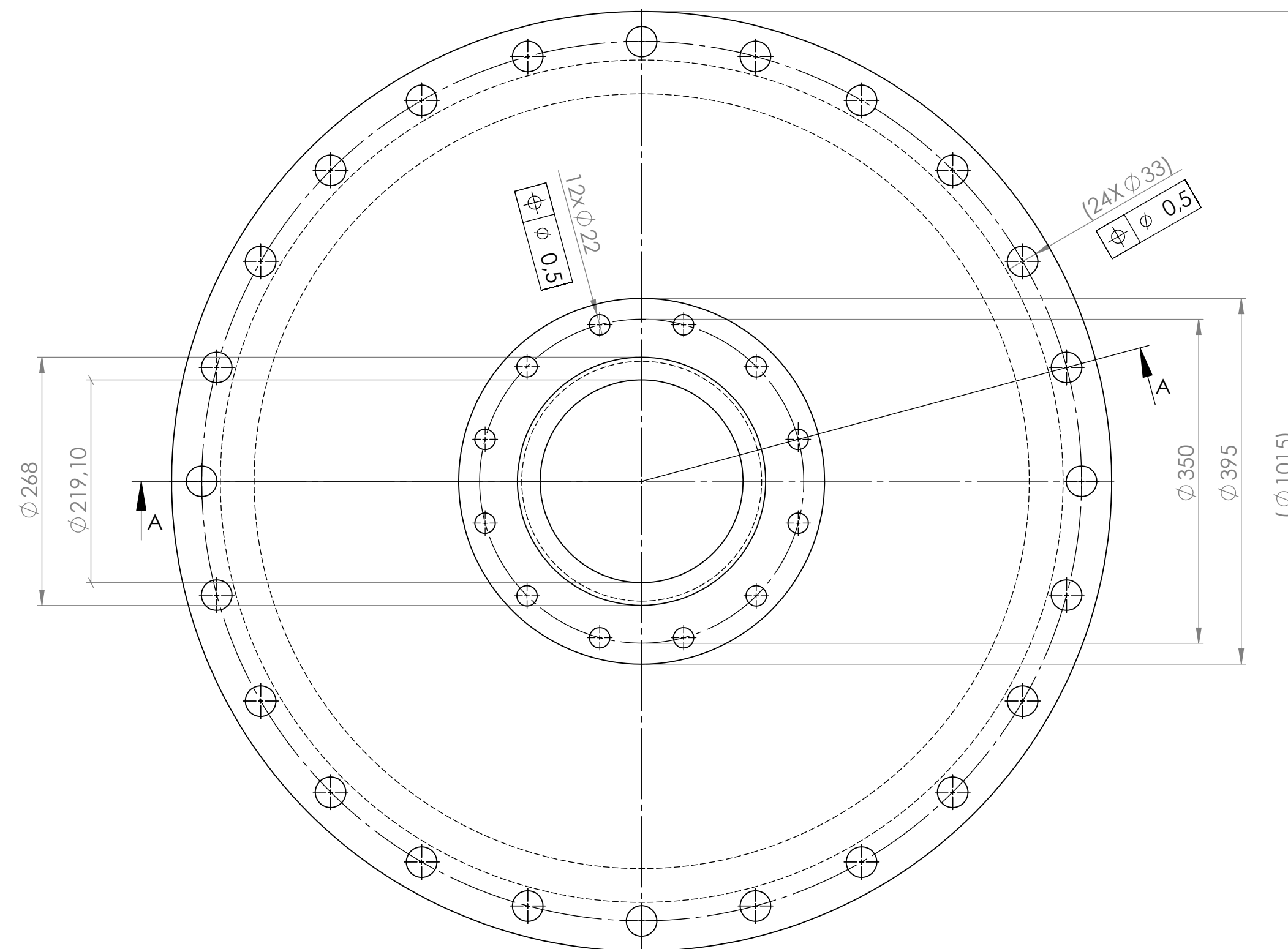
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10	16	Bolt M20x40 ISO 4018	
9	12	Nut M20 ISO 4032	
8	12	Bolt M20x80 ISO 4018	
7	24	Nut M30 ISO 4032	
6	24	Bolt M30x90 ISO 4018	
5	1	Windbox upper frame	1.05.05
4	1	Sand and ash removal flange	1.05.04
3	1	Sump	1.05.03
2	4	Windbox air nozzle	1.05.02
1	1	Windbox bottom frame	1.05.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Creator: D. Castiella	
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:10	Work number:	Approval Person:
		Designation:	Identification number:
		Windbox	1.05

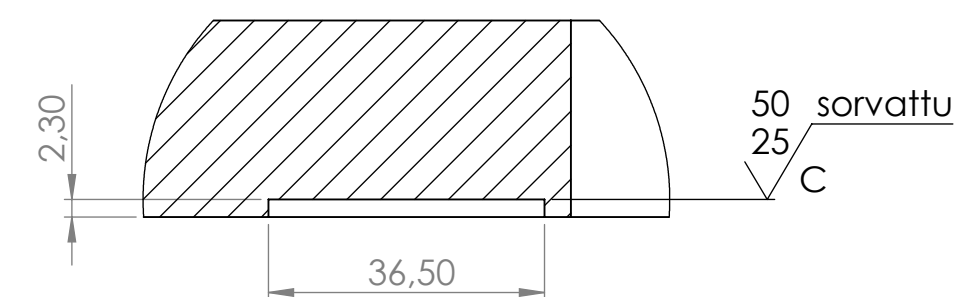




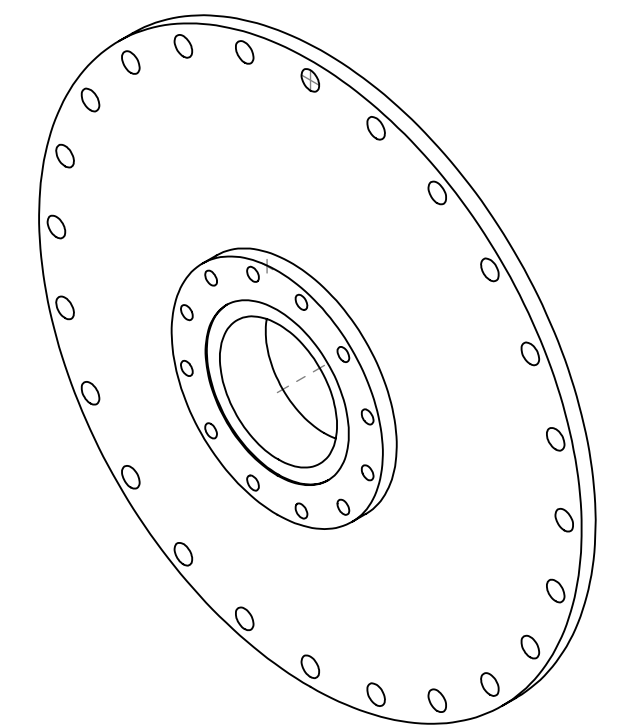
SECTION A-A



DETAIL B
SCALE 1 : 2

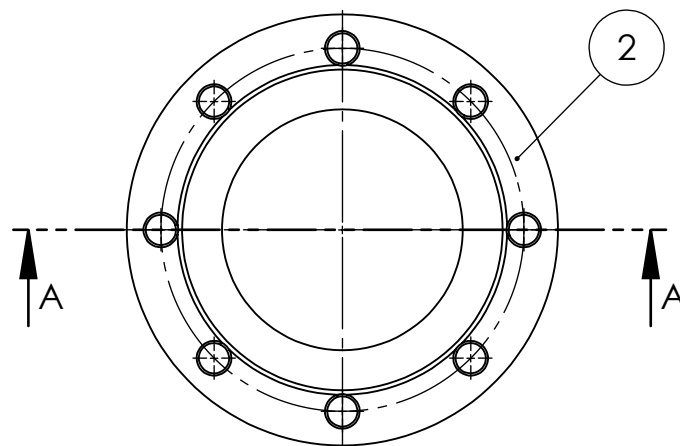
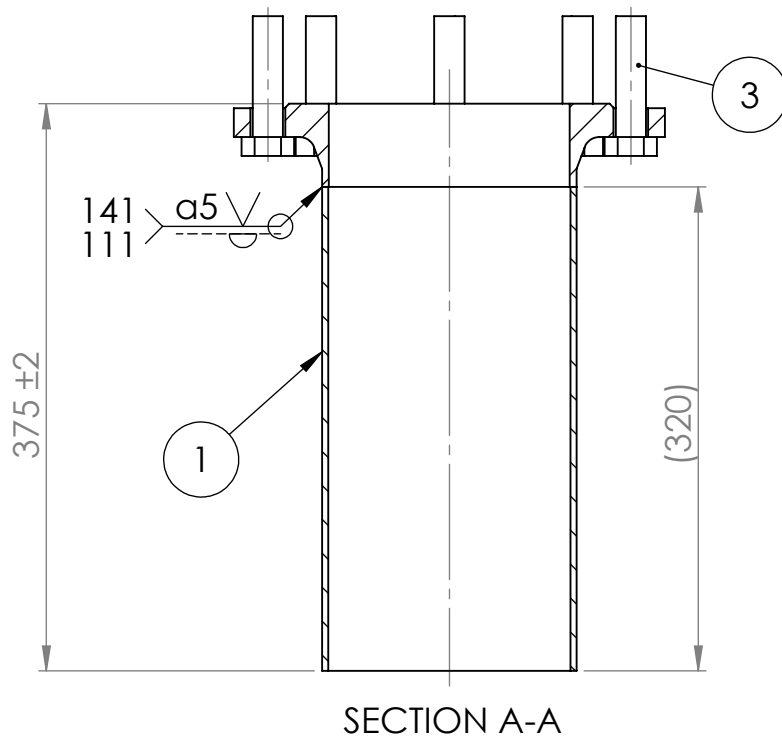


DETAIL A
SCALE 1:1



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3	1	Spade DN 800 PN 10		
2	1	Tube; inner ϕ =259,1 outer ϕ =219,1		
1	1	Plate; ϕ 400 s=26		
Ref.	Quantity	Description		Id. Number
Roughness: $\sqrt{12,5}$		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:5	Work number:	Approval Person:	Date
		Designation: Windbox bottom frame	Identification number: 1.05.01	



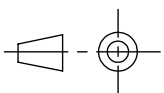
3	8	Bolt M20x80 ISO 4018	
2	1	Flange DN 150 PN 16 DIN 2633	
1	1	Pipe DN 150 PN10	
Ref.	Quantity	Description	Id. Number

Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:5

Work number:

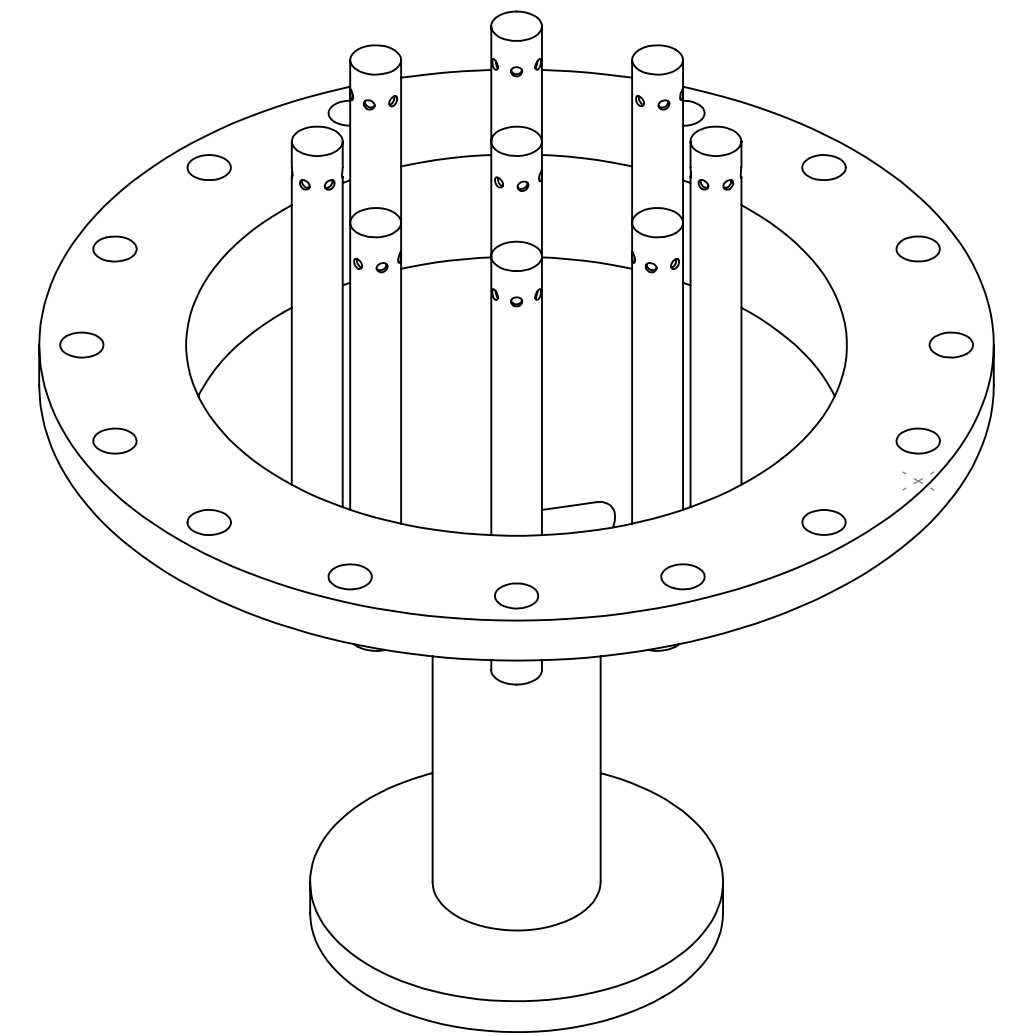
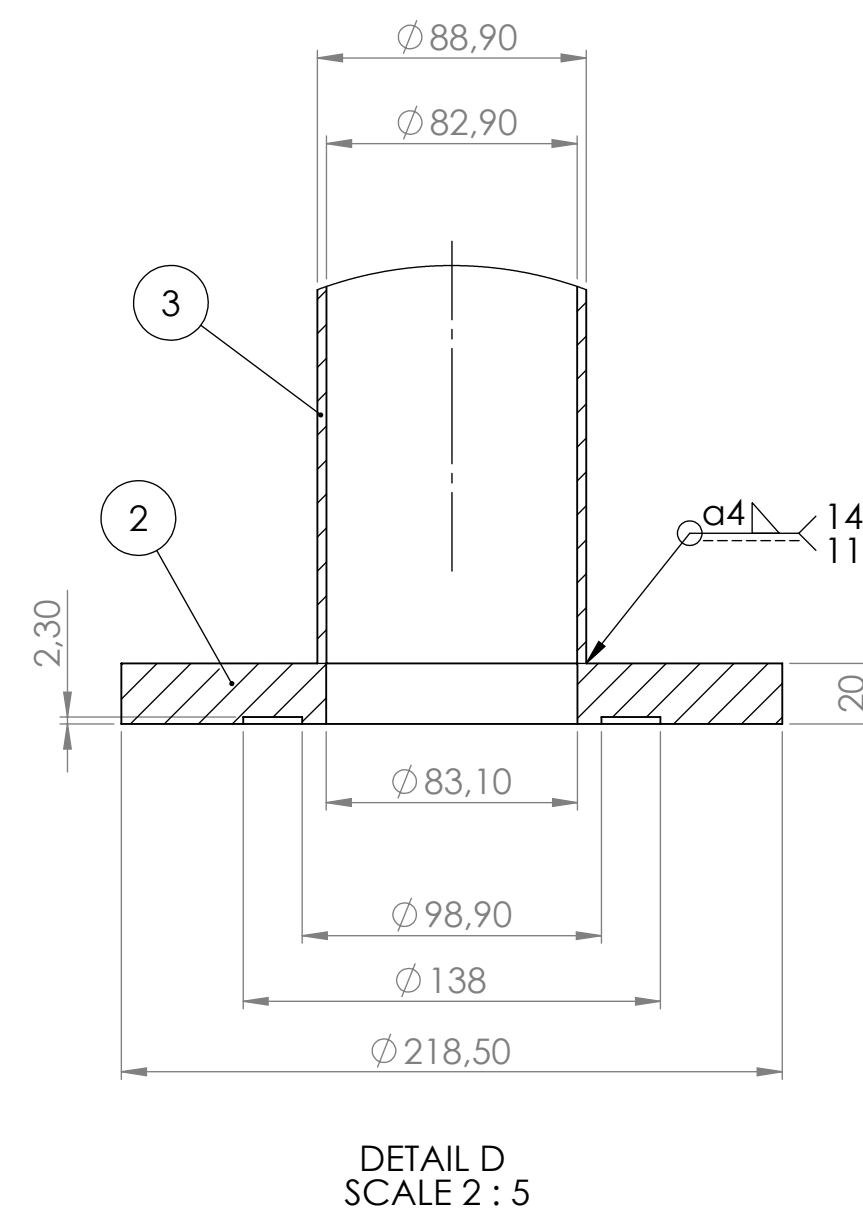
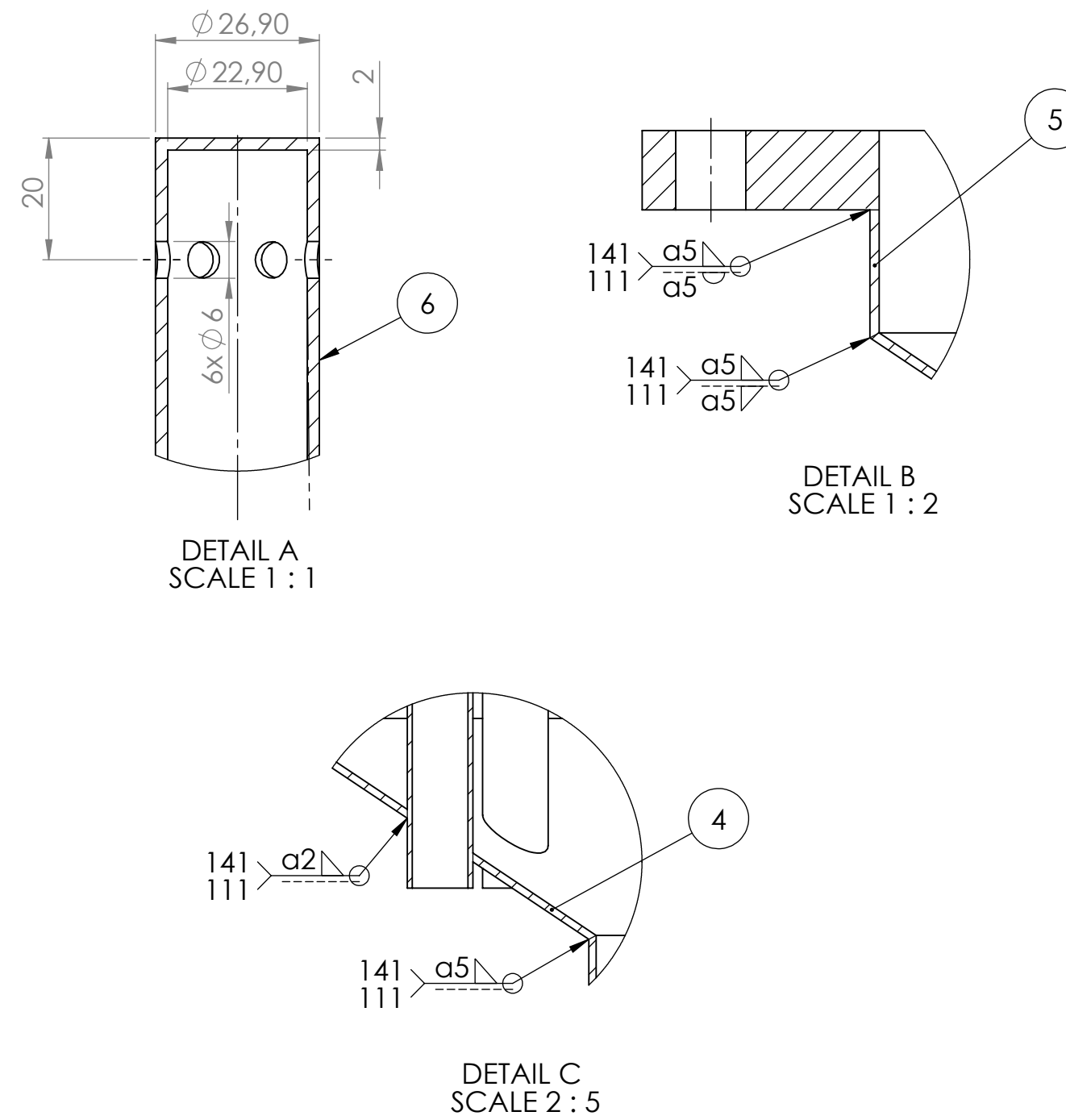
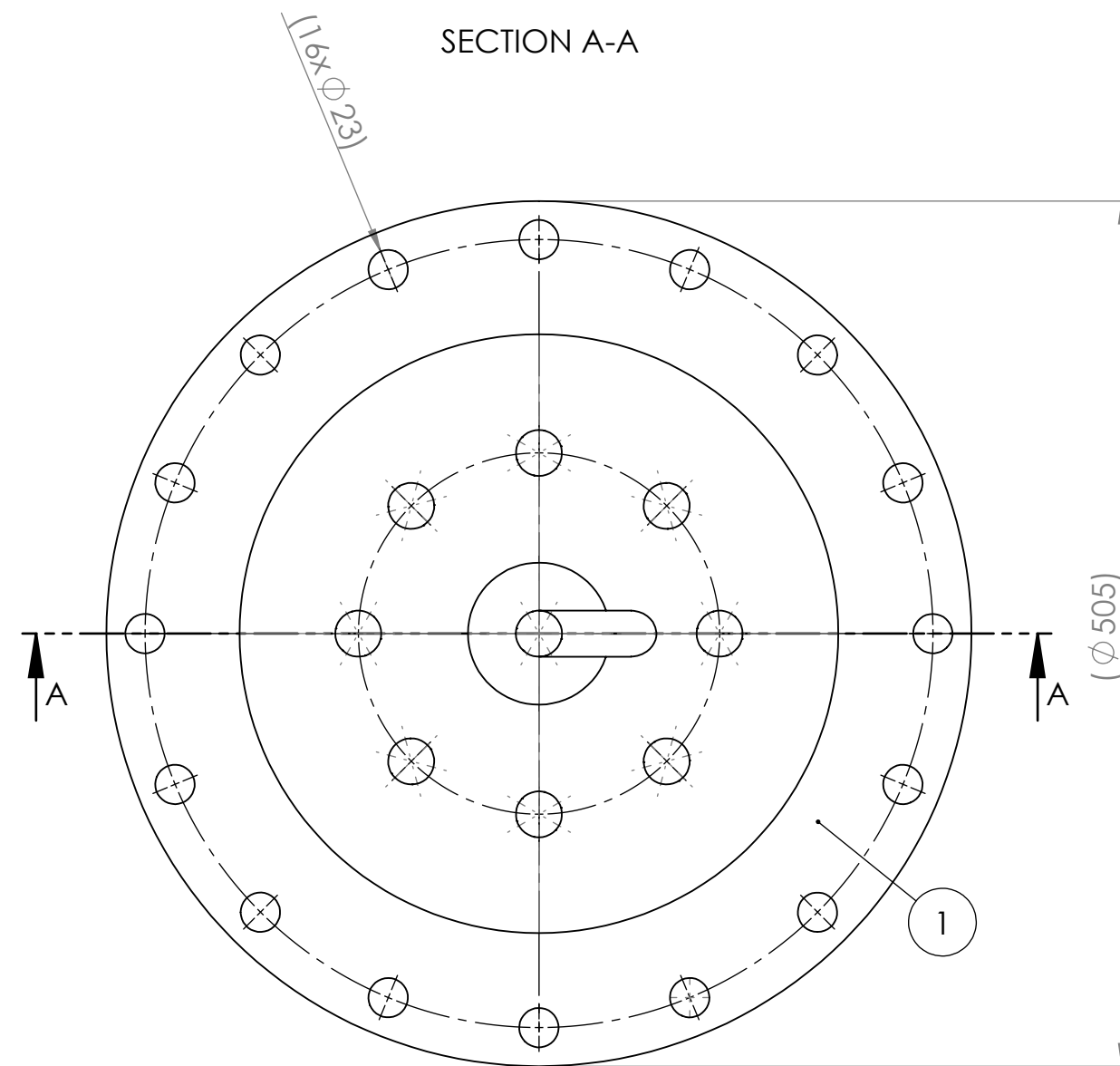
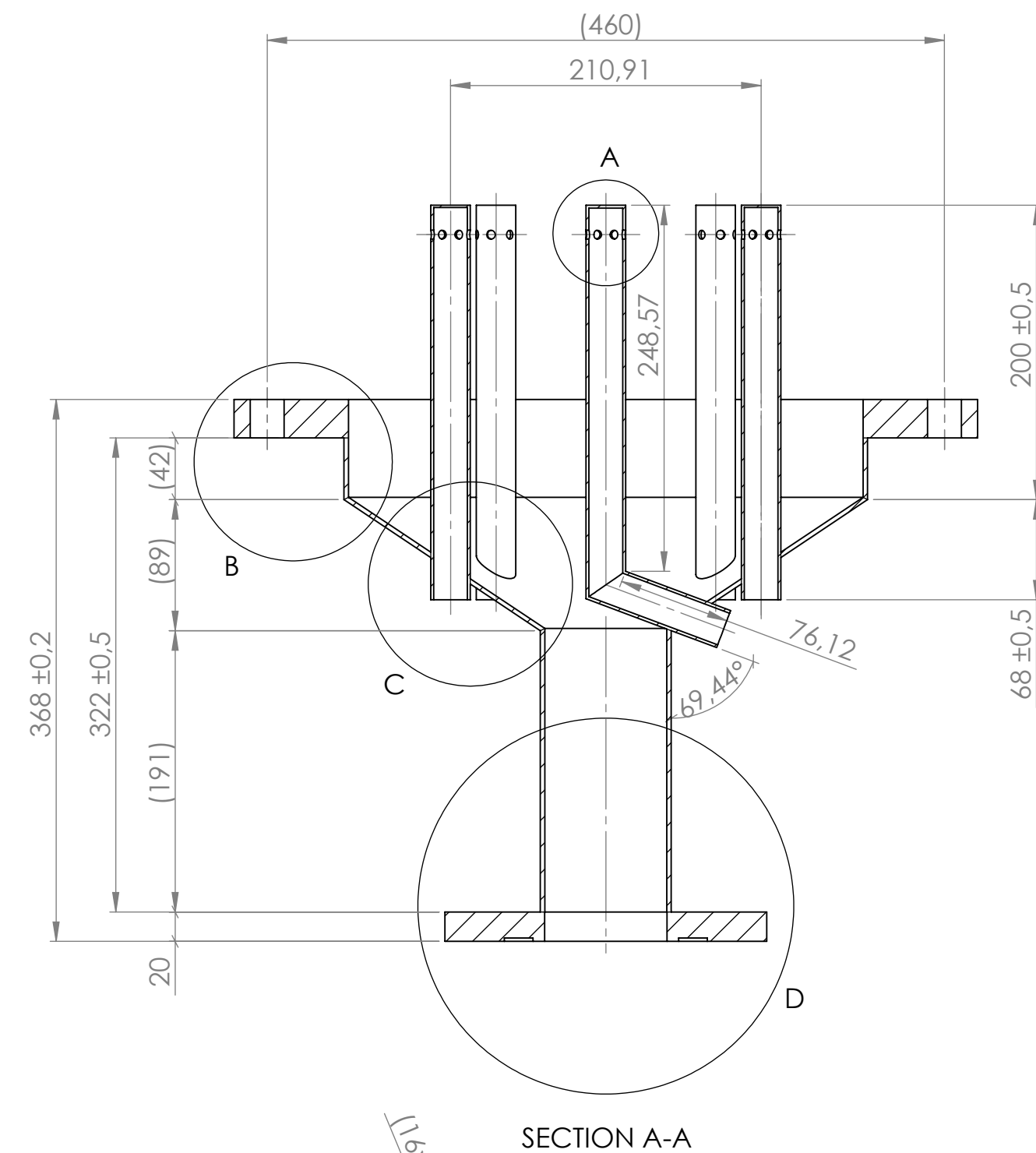
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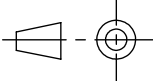
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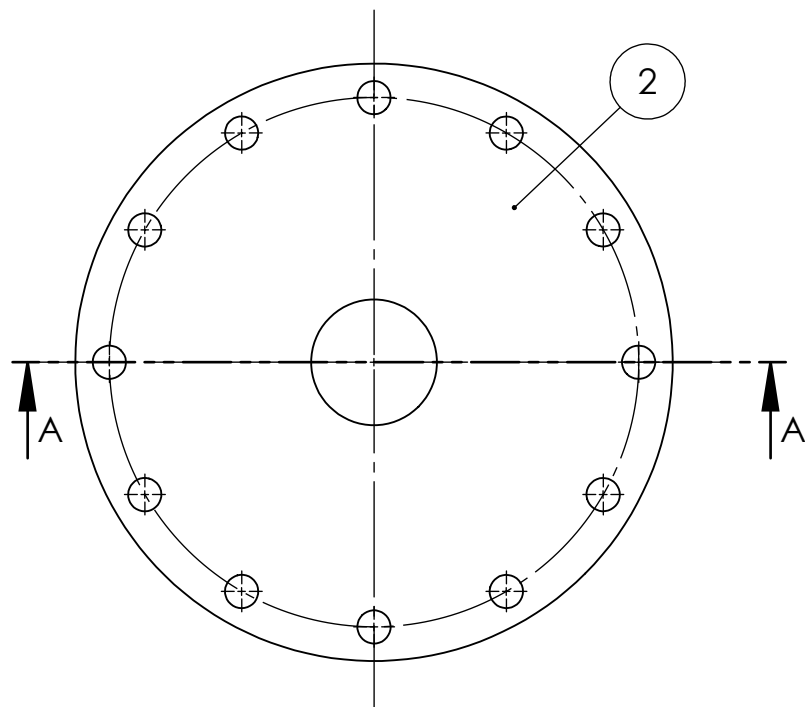
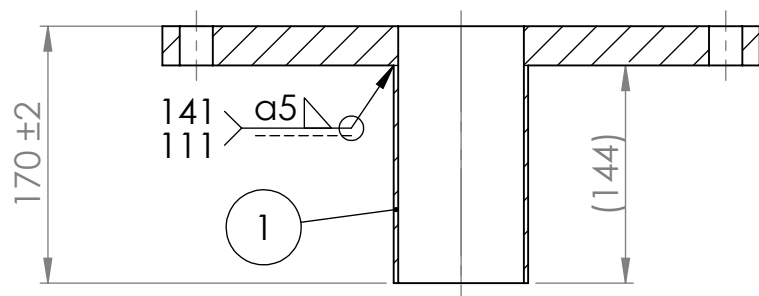
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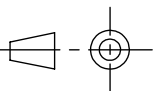
Description:
Weldox air nozzle

Identification number:
1.05.02



6	9	Pipe DN 20 PN 10	
5	1	Pipe DN 350 PN 10	
4	1	Pipe reducer DN 350x80 PN 10	
3	1	Pipe DN 80 PN 10	
2	1	Plate; $\varnothing 223,5$ s=20	
1	1	Flange DN 350 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Project: BFB Boiler	Inspector: J. Huttunen
Scale: 1:4		Work number:	Approval Person:
 SAVONIA		Designation: Sump	Identification number: 1.05.03

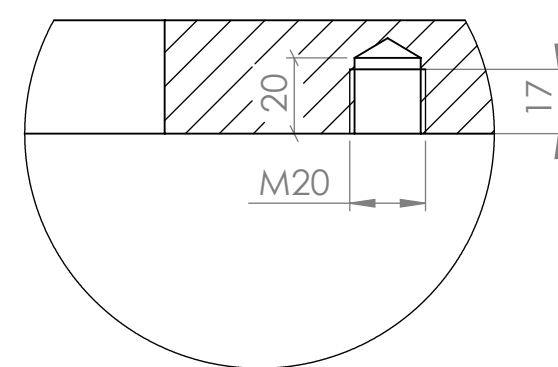
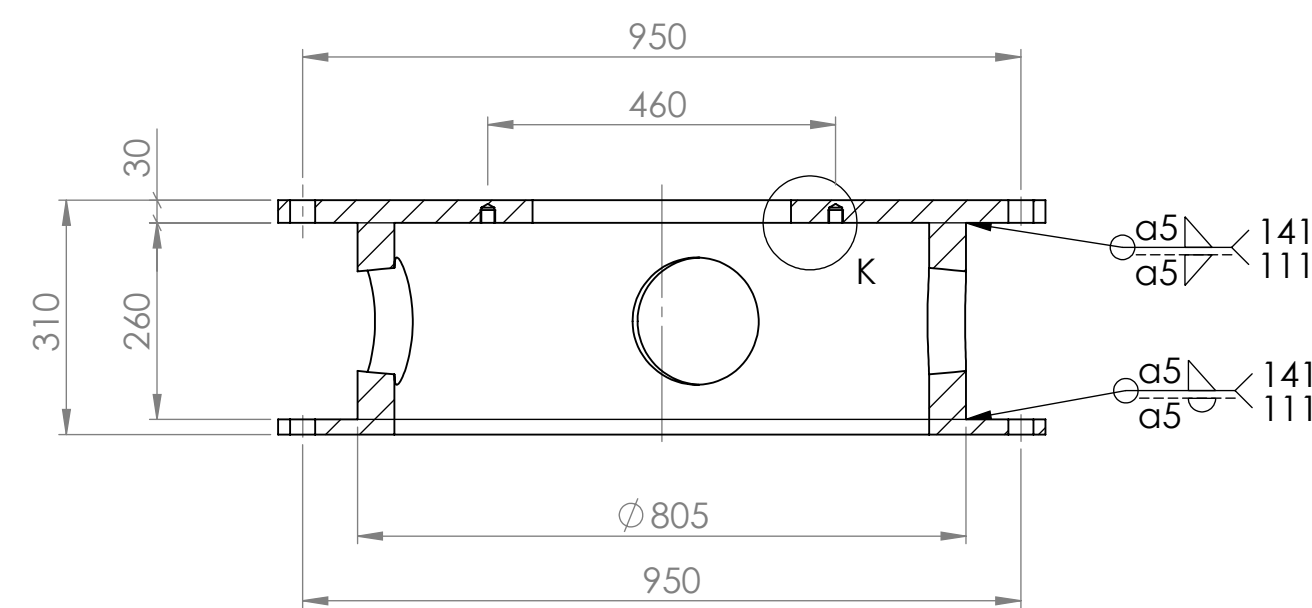
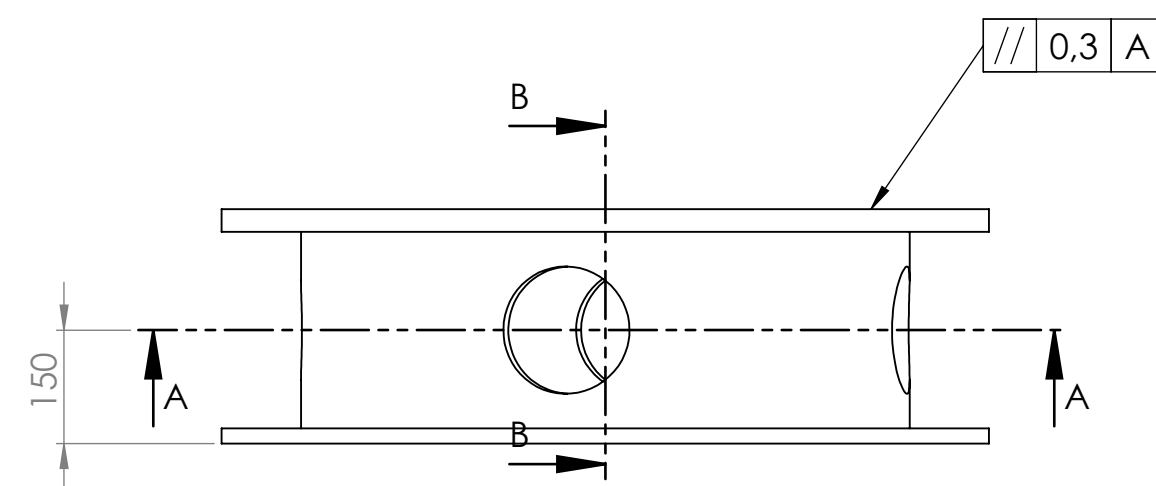
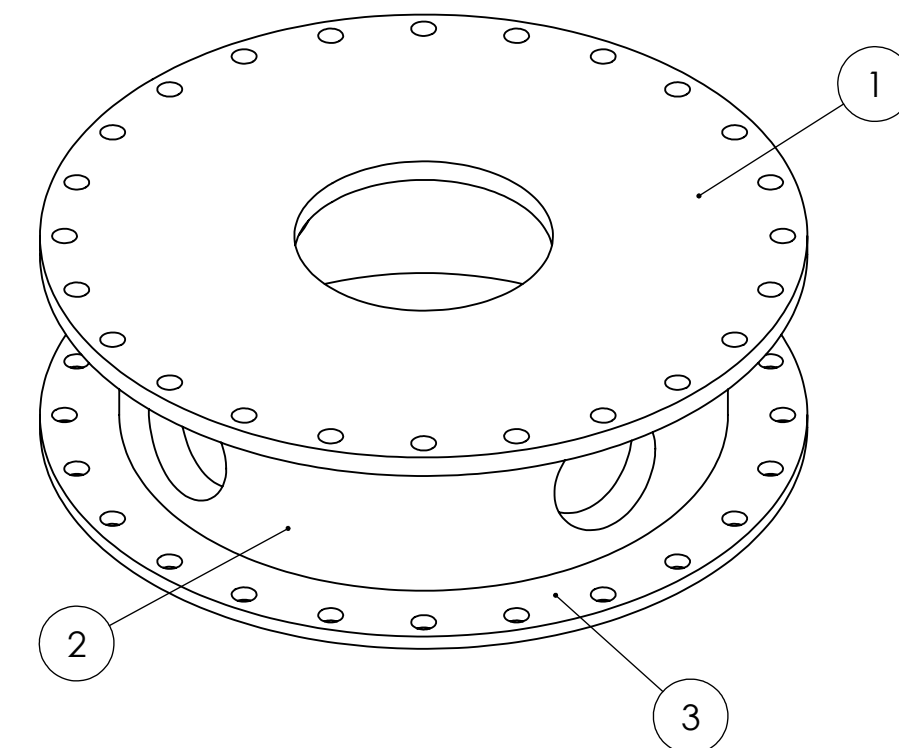
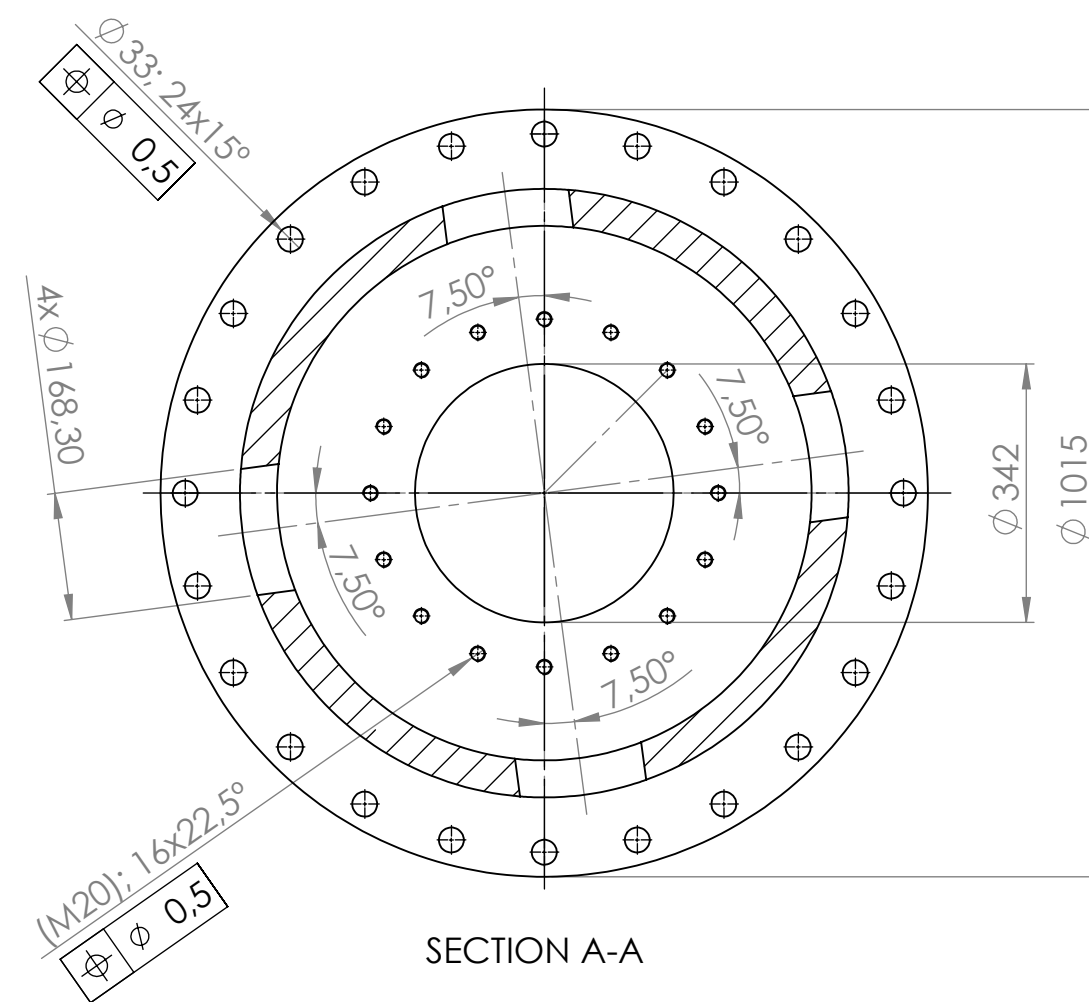
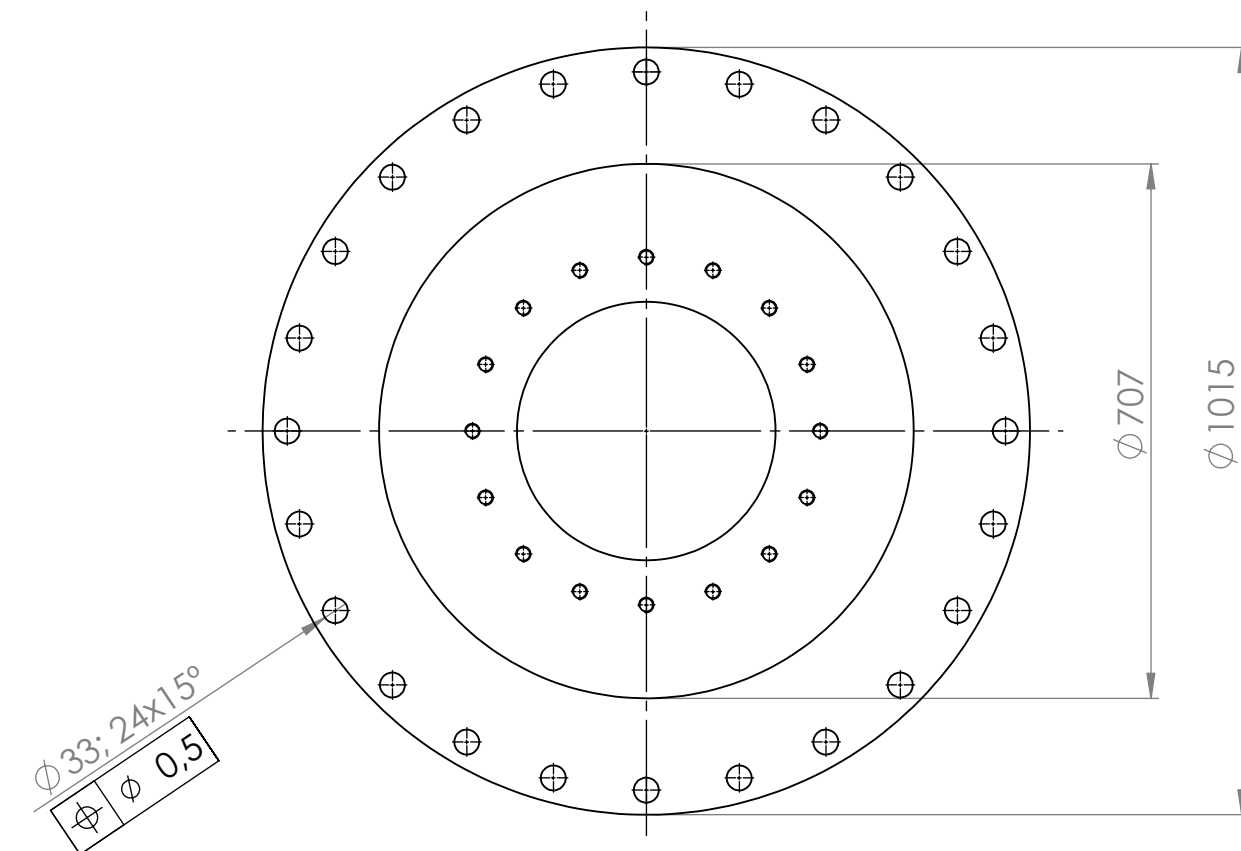


2	1	Spade DN 250 PN 10 DIN 2632	
1	1	Pipe DN 80 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Mass:	Inspector: J. Huttunen
		Scale: 1:4	Approval Person:
SolidWorks Student Edition. For Academic Use Only		Identification number:	1.05.04
Description: Soot and ash removal flange			

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Description:
Soot and ash removal flange

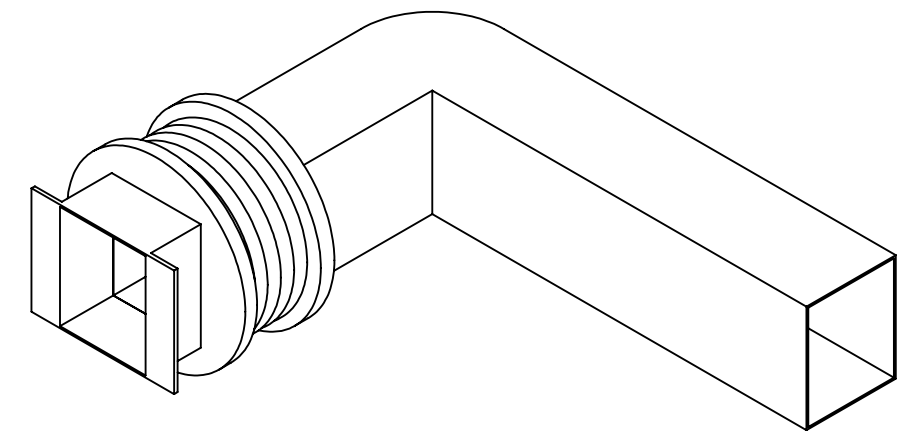
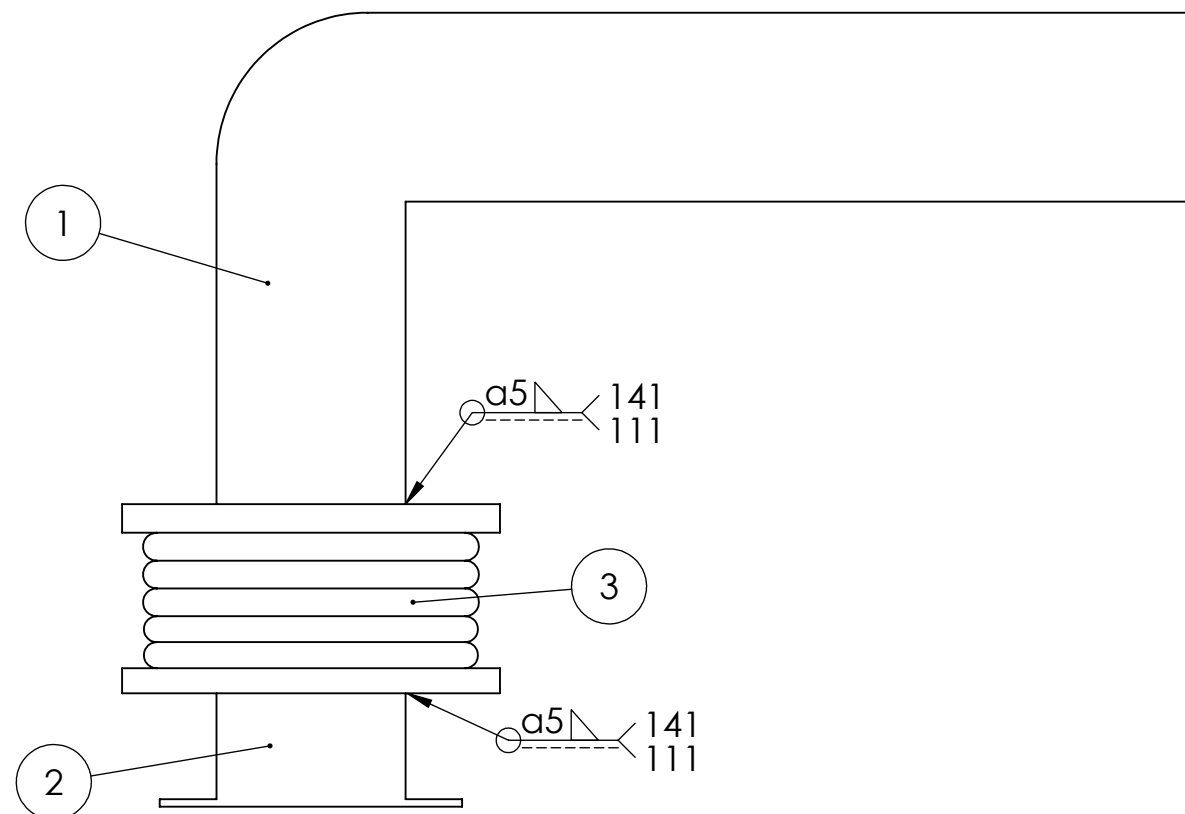
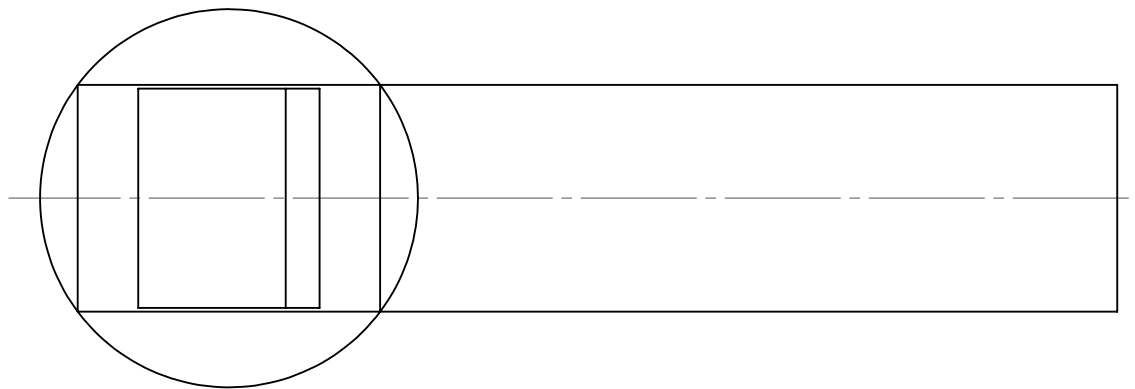
Identification number:
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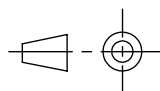


DETAIL K
SCALE 1 : 2

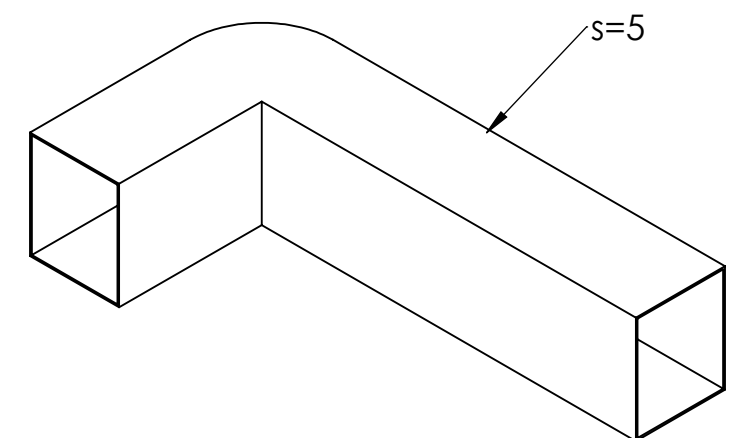
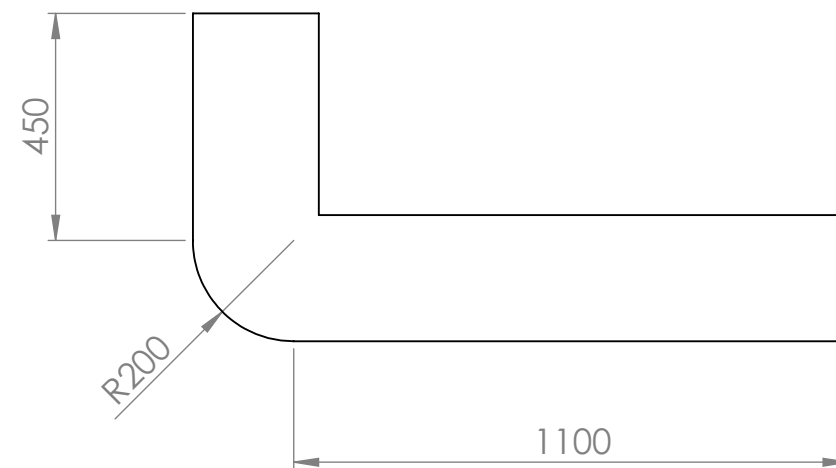
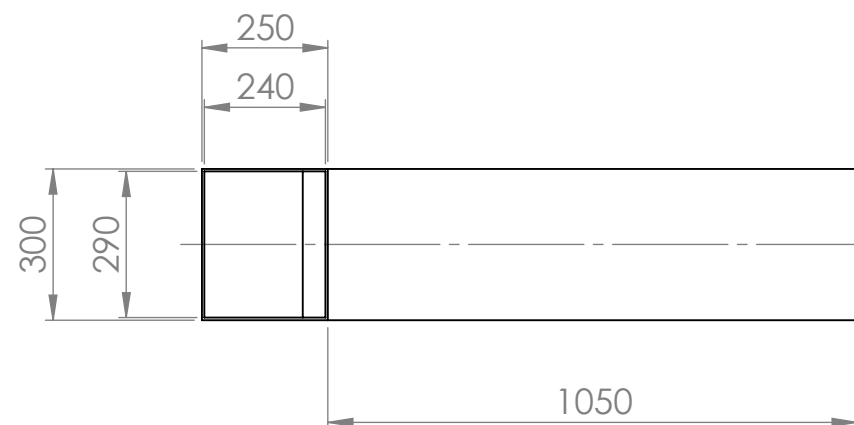
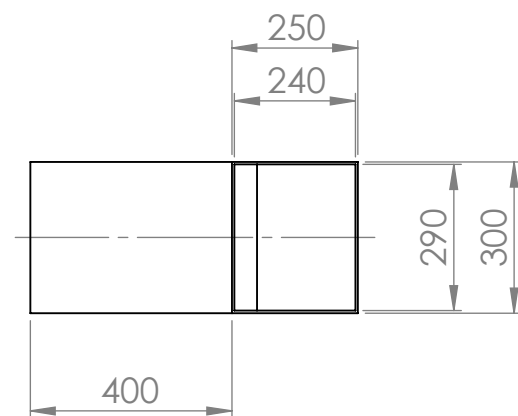
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3	1	Plate: $\varnothing 1020$ s=20		
2	1	Tube: inner $\varnothing=707$, outer $\varnothing=805$		
1	1	Plate: $\varnothing 1020$ s=30		
Ref.	Quantity	Description		Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:10	Work number:	Approval Person:	Date
		Designation: Windbox upper frame	Identification number: 1.05.05	



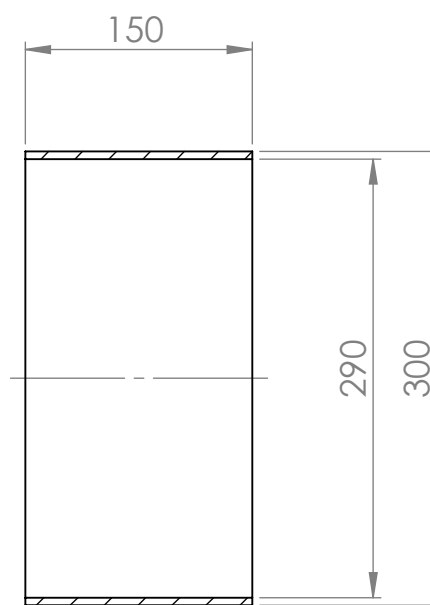
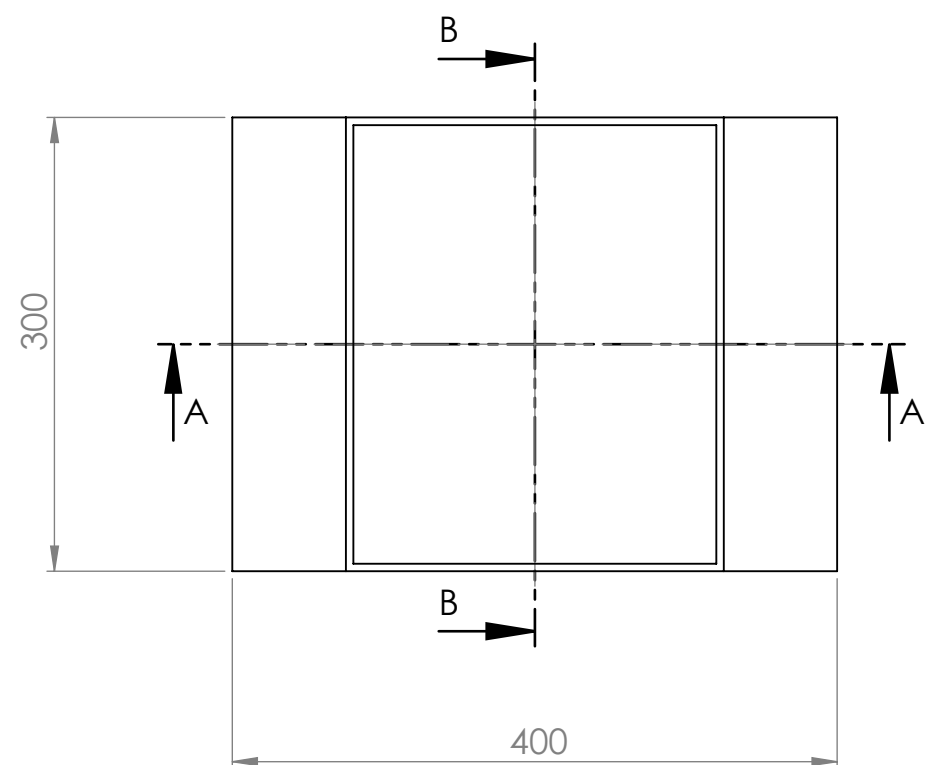
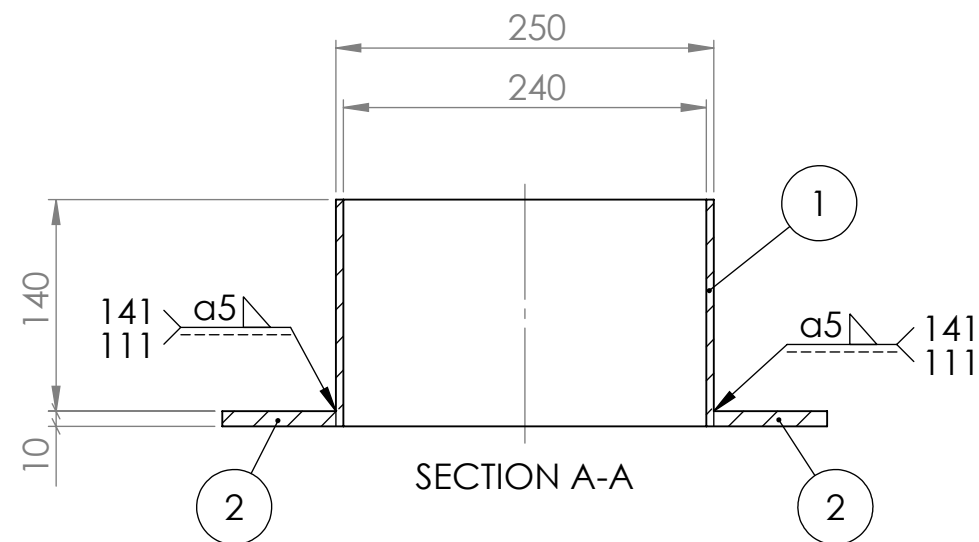
3	1	Bellows		
2	1	"Bellows-heat exchangers assembly" connection		1.06.02
1	1	"Boiler-bellows" tube		1.06.01
Ref.	Quantity	Description		Id. Number
		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:15	Work number:	Approval Person:	Date
		Designation: Flue gas tube	Identification number: 1.06	

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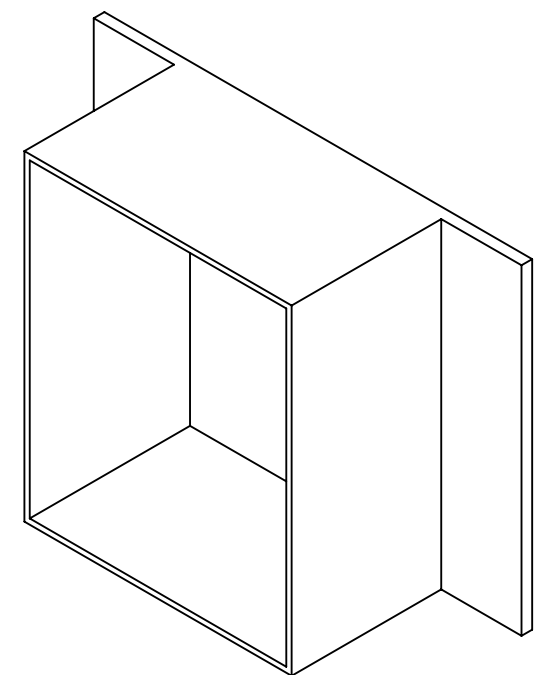


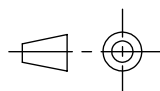
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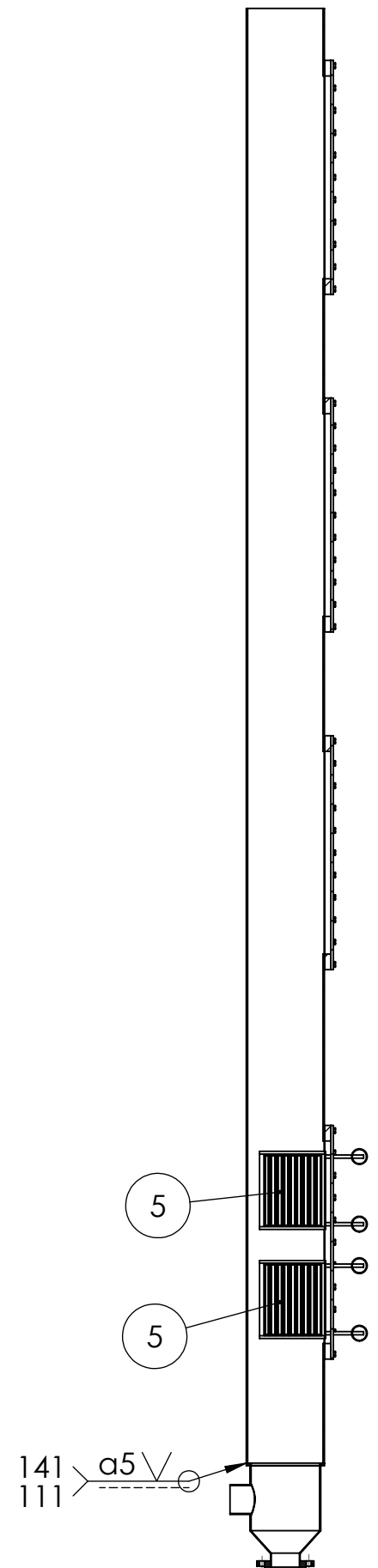
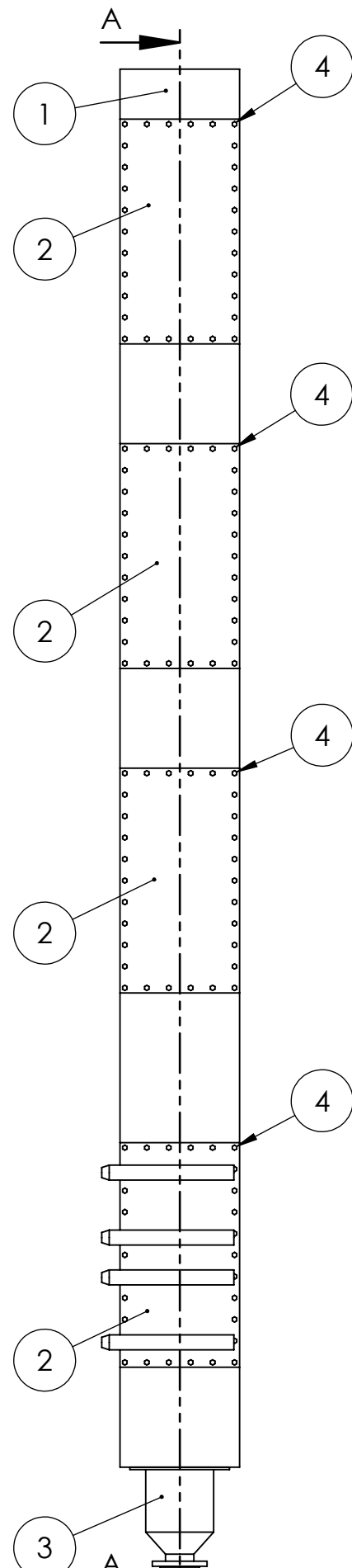
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:15	Work number:	Approval Person:	Date
		Designation: "Boiler-bellows" tube	Identification number: 1.06.01	



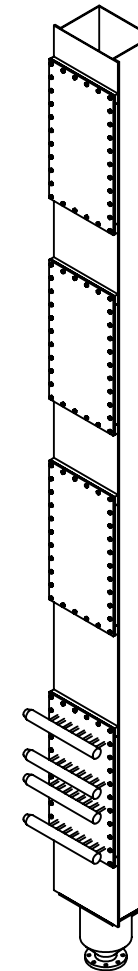
SECTION B-B



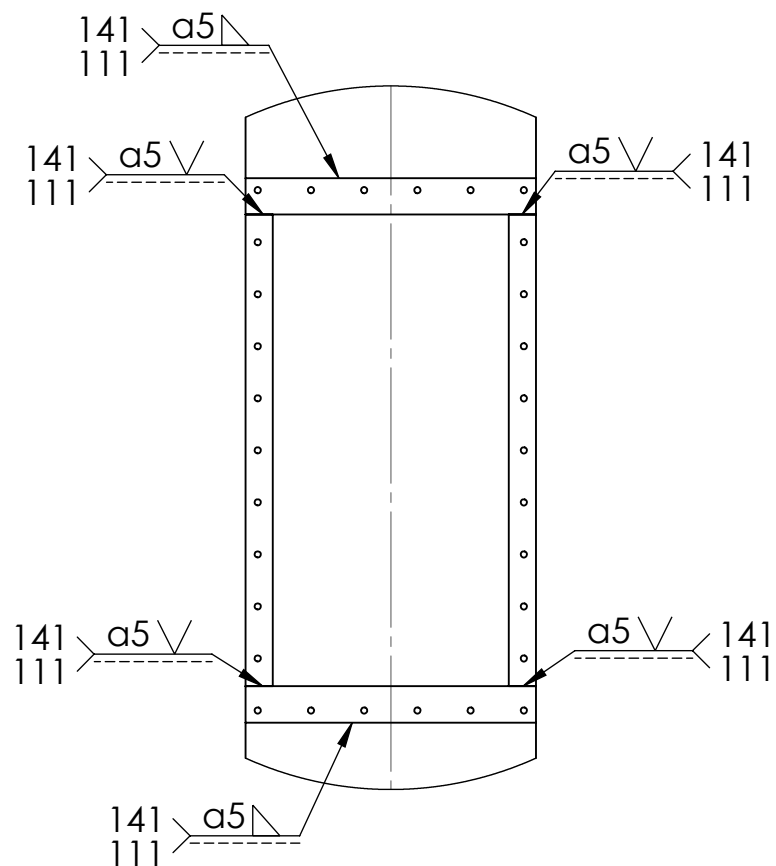
2	2	Plate s=10		
1	1	Plate s=5		
Ref.	Quantity	Description		Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:5	Work number:	Approval Person:	Date
		Designation: "Bellows-heat exchangers assembly" connection	Identification number: 1.06.02	



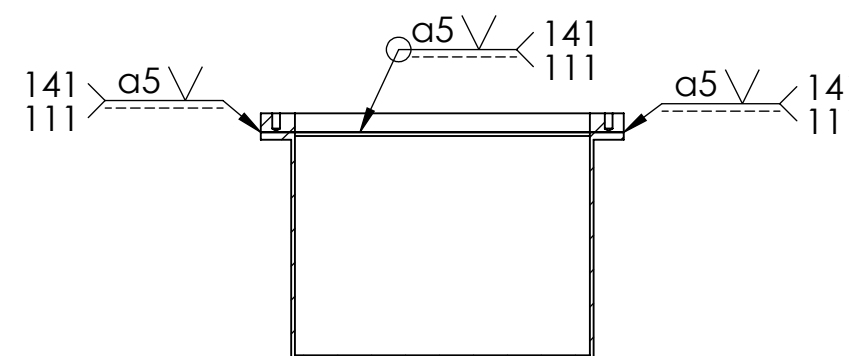
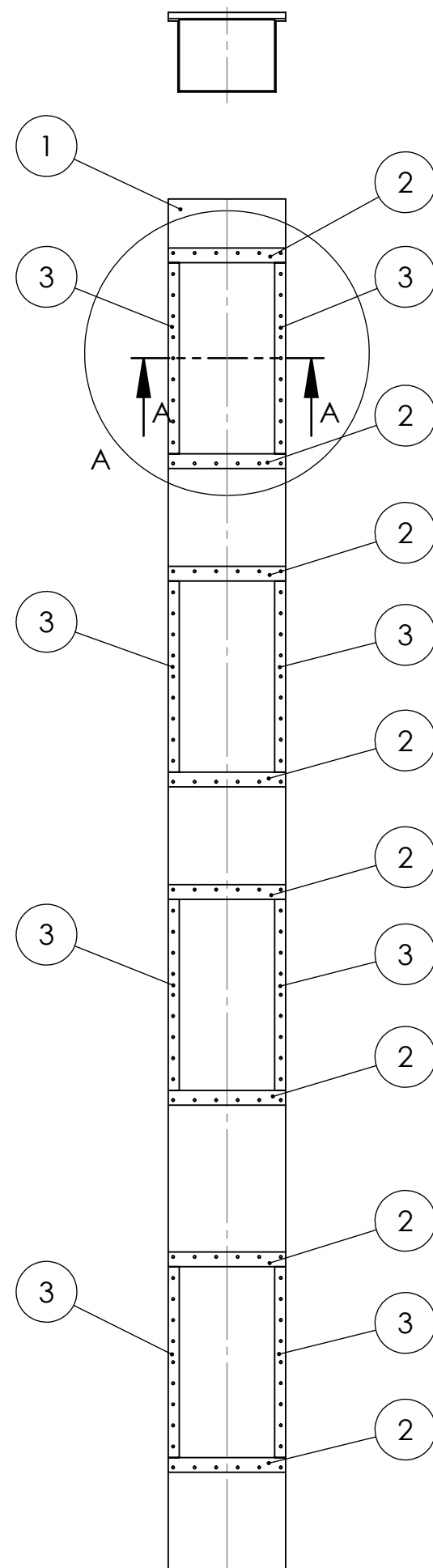
SECTION A-A



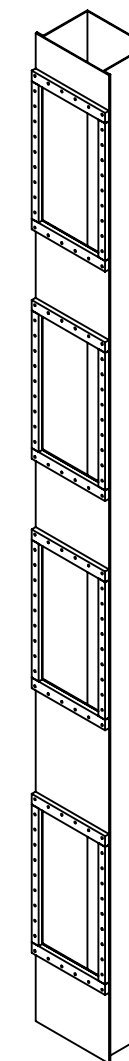
5	2	Heat exchangers	
4	120	Bolt M12x25 ISO 4018	
3	1	Outflow pipes	1.07.03
2	4	Cover	1.07.02
1	1	Tube for heat exchangers	1.07.01
Ref.	Quantity	Description	Id. Number
		Customer:	19-04-2013
		Creator: D. Castiella	
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:25	Work number:	Approval Person:
		Designation:	Identification number:
		Heat exchangers assembly	1.07



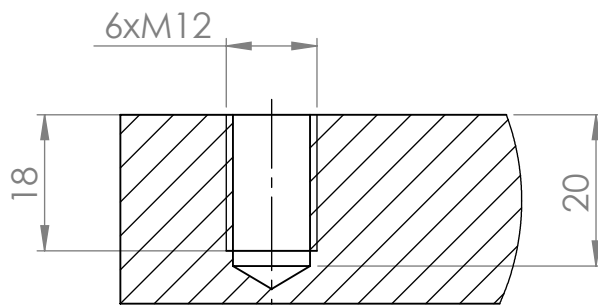
DETAIL A
SCALE 2 : 25



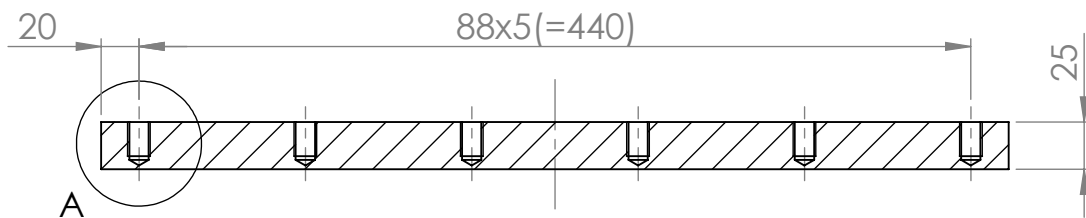
SECTION A-A
SCALE 1 : 10



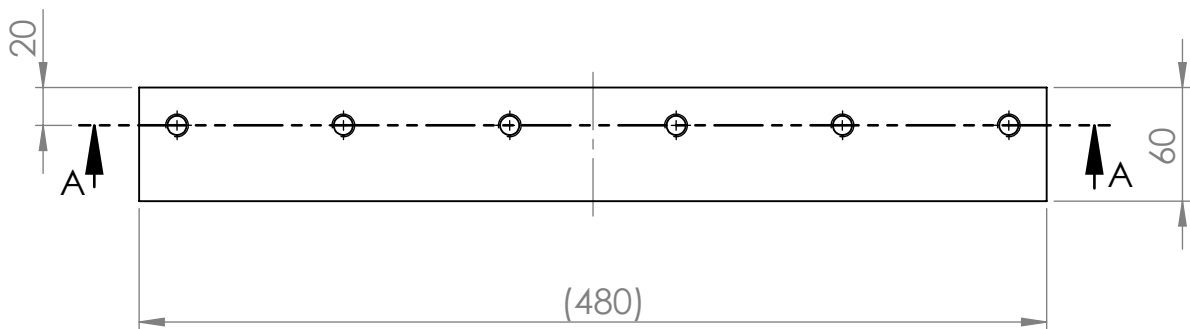
3	8	Long bar	1.07.01.03
2	8	Short bar	1.07.01.02
1	1	Tube	1.07.01.01
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Project: BFB Boiler	Inspector: J. Huttunen
		Work number:	Approval Person:
		Designation:	Identification number:
		Tube for heat exchangers	1.07.01
			Date
			Date

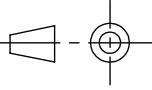


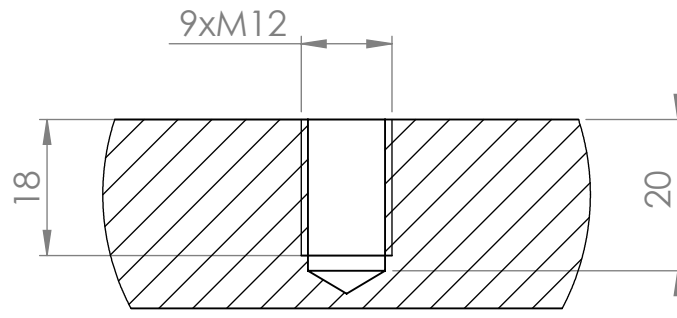
DETAIL A
SCALE 1 : 1



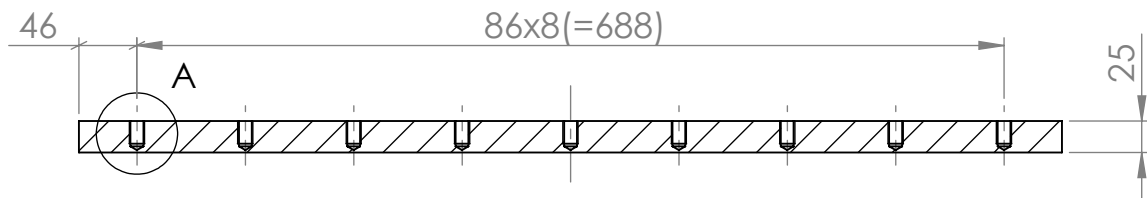
SECTION A-A
SCALE 1 : 4



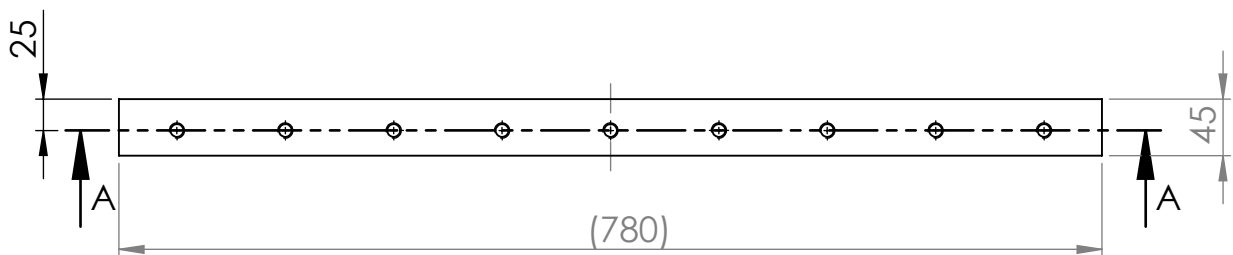
Roughness: $\sqrt{12.5}$	Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:4	Work number:	Approval Person:
SolidWorks Student Edition.  For Academic Use Only		Identification number: 1.07.01.02	



DETAIL A
SCALE 1 : 1



SECTION A-A

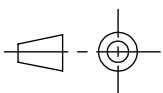


Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:6

Work number:

Approval Person:

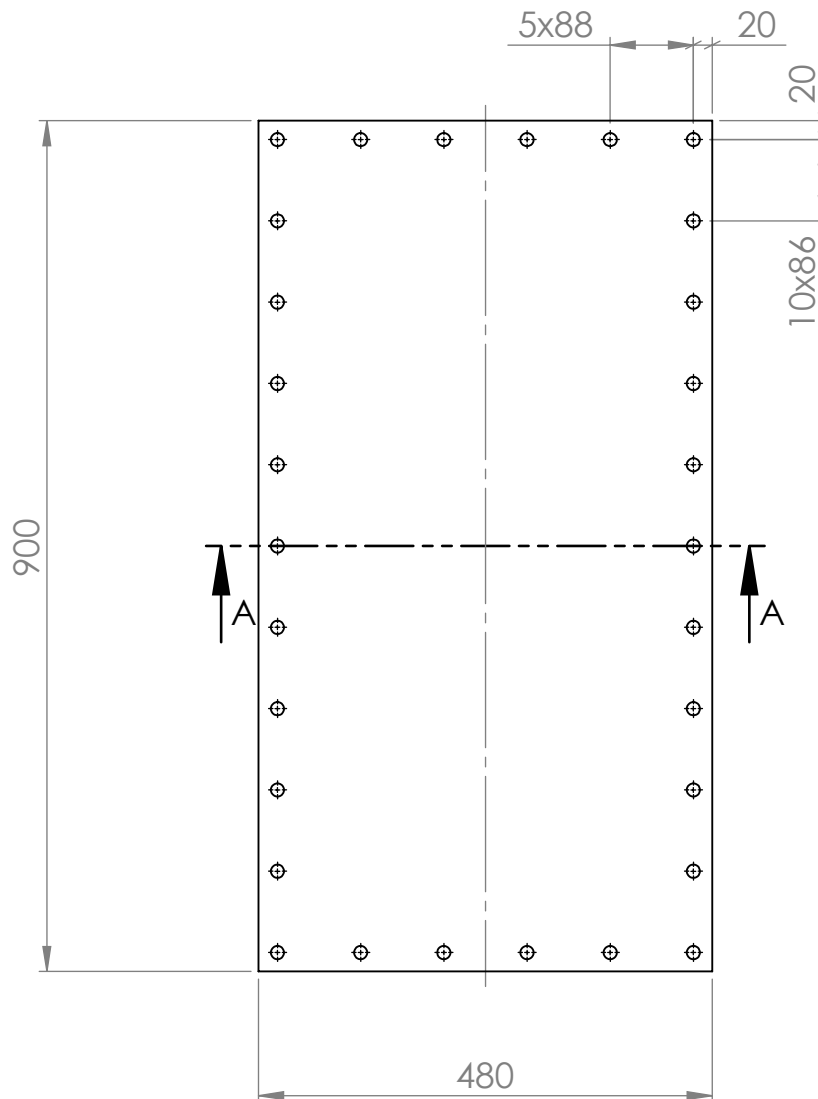
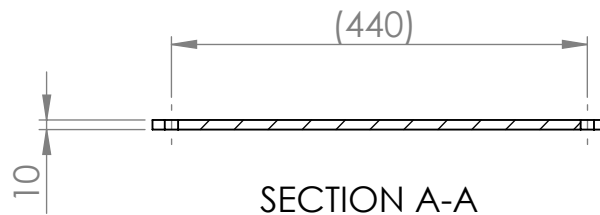
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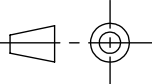
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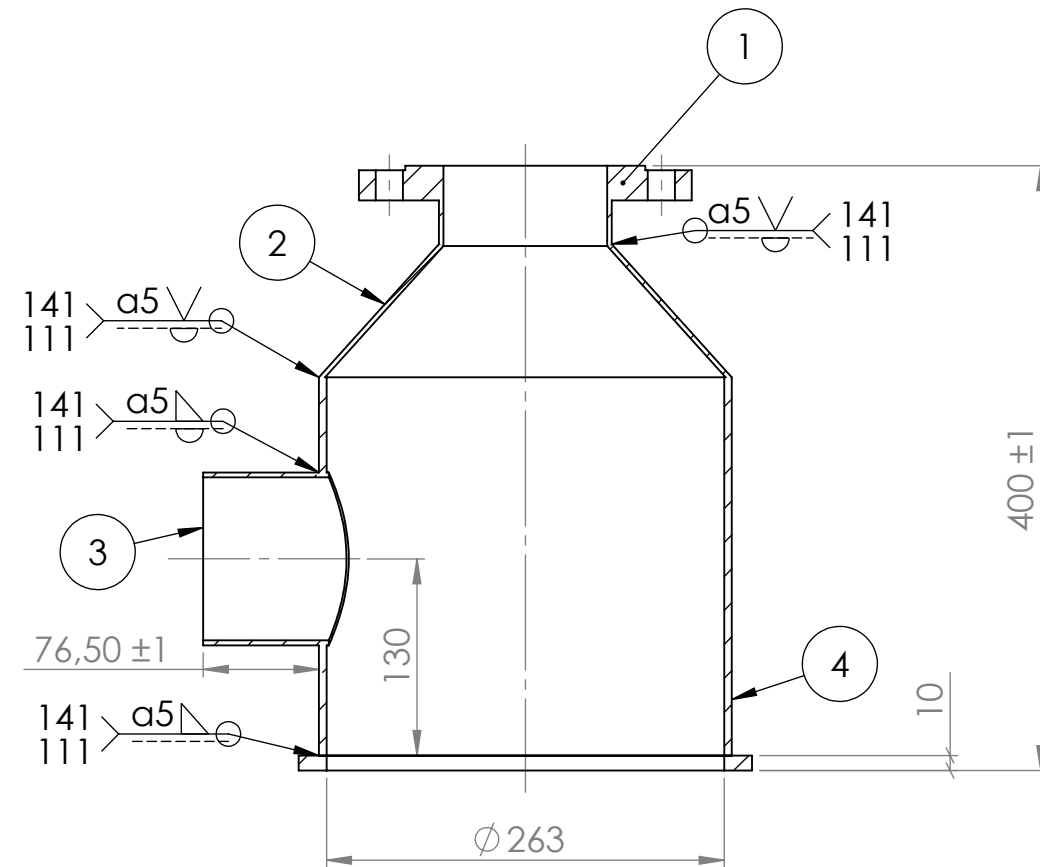
Destination:
Long bar

Identification number:

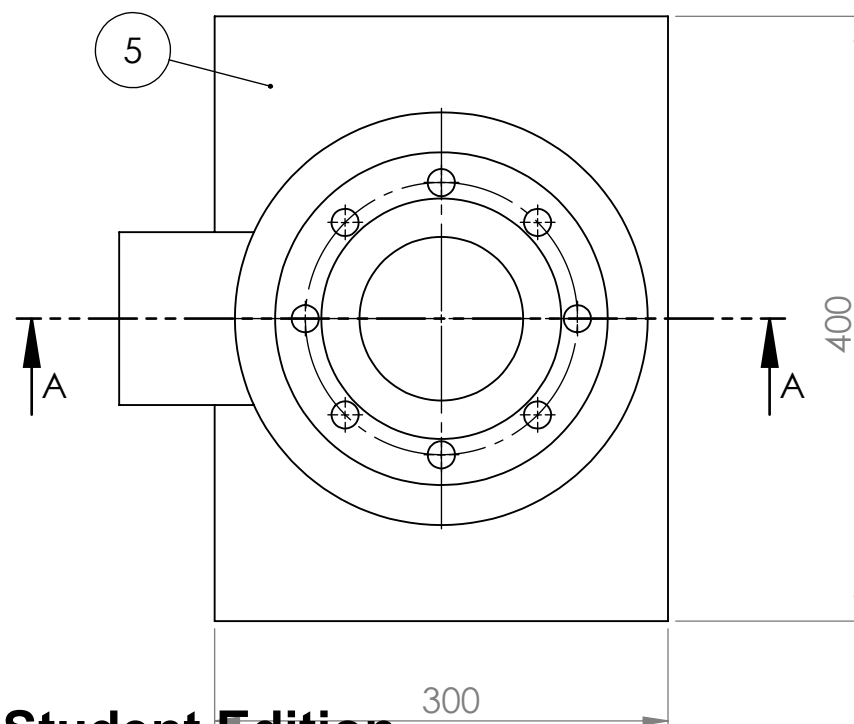
1.07.01.03



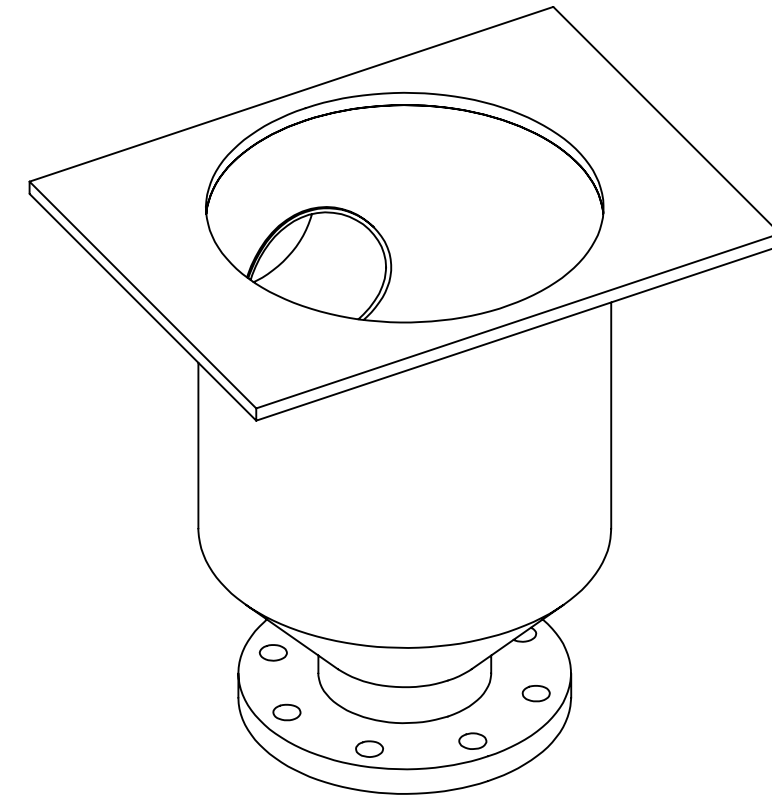
Roughness: $\sqrt{12.5}$	Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:8	Work number:	Approval Person:
SolidWorks Student Edition. For Academic Use Only.		Identification number: 1.07.02	



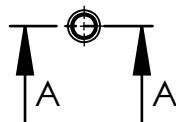
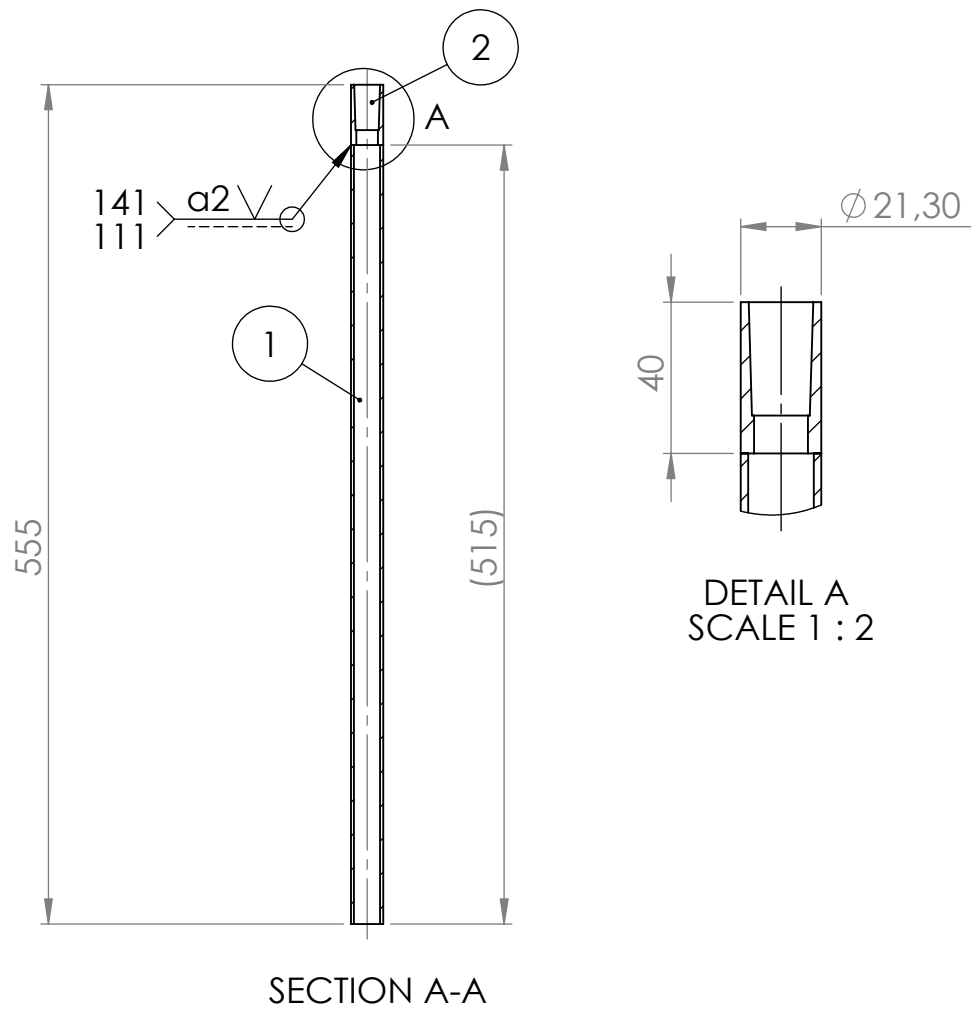
SECTION A-A

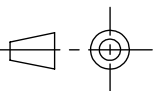


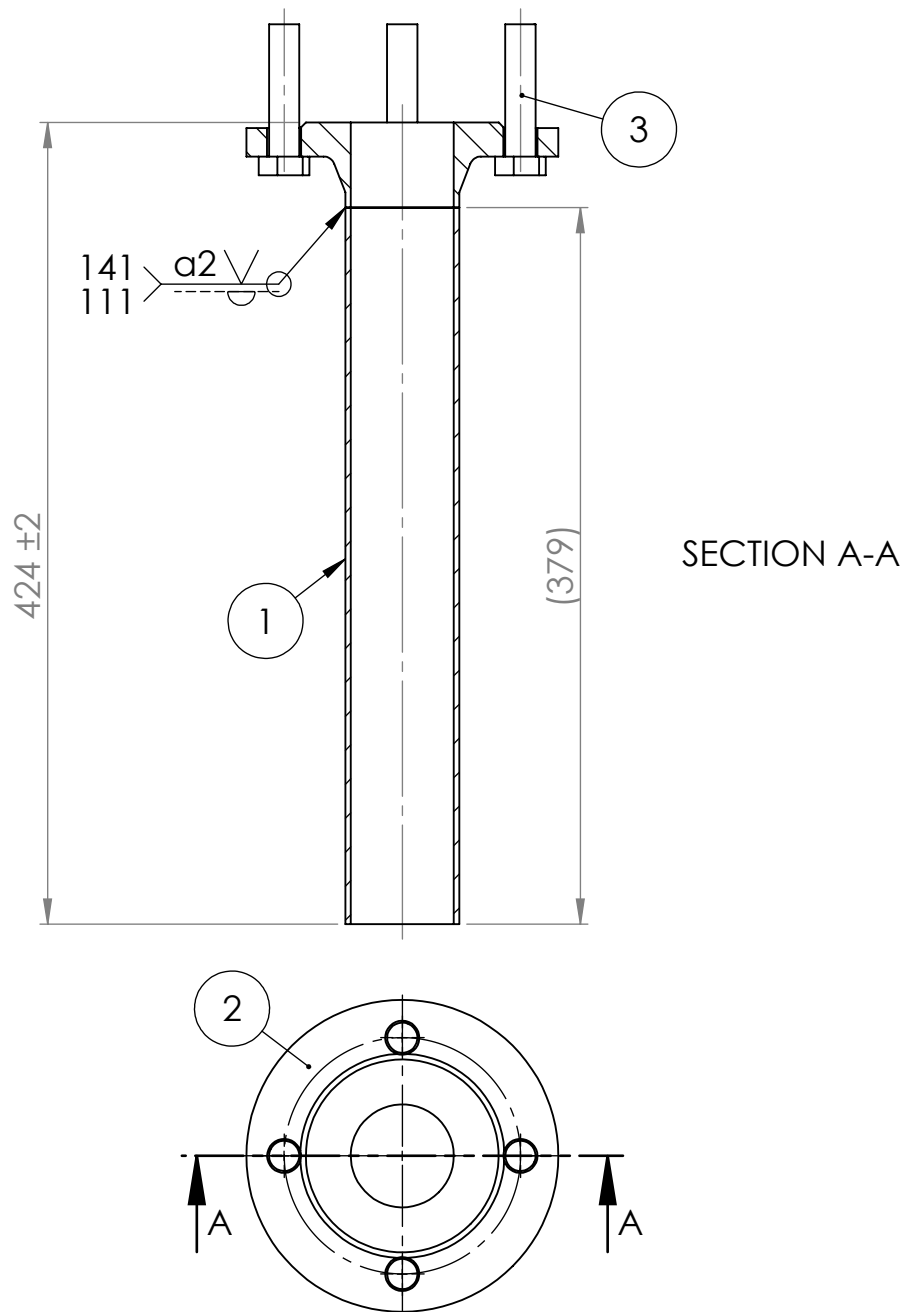
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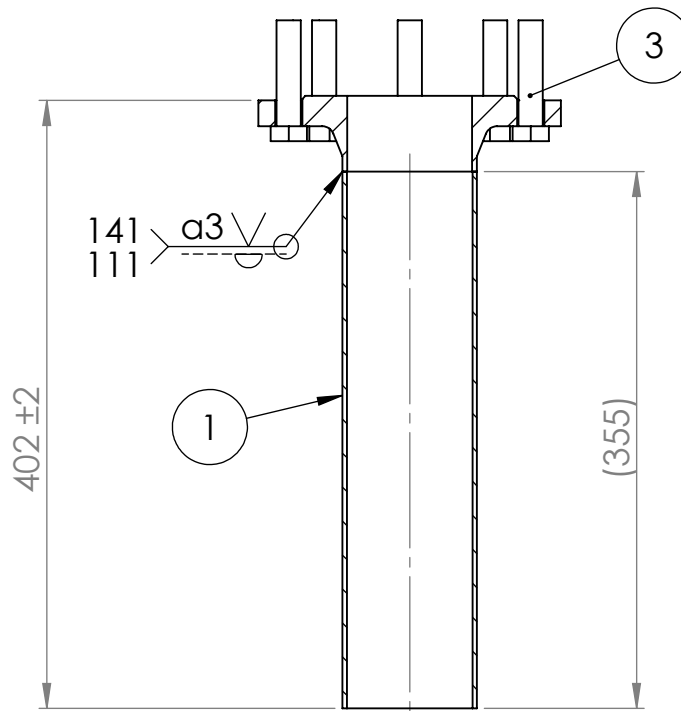
5	1	Plate s=10		
4	1	Pipe DN 250 PN 10		
3	1	Pipe DN 100 PN 10		
2	1	Pipe reducer DN250x100 PN 10		
1	1	Flange DN 100 PN 10		
Ref.	Quantity	Description	Id. Number	
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella	19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen	Date
	Scale: 1:5	Work number:	Approval Person:	Date
		Designation: Outflow pipes	Identification number: 1.07.03	



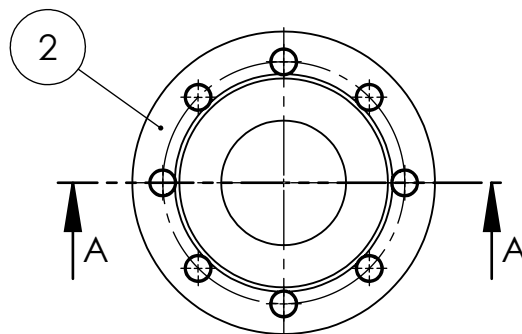
2	1	Muff DN 10	
1	1	Pipe DN 15 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: $\sqrt{12.5}$		Customer:	Creator: D. Castiella
		Mass:	Project: BFB Boiler
		Scale: 1:5	Inspector: J. Huttunen
		Work number:	Approval Person:
		Identification number:	19-04-2013
		0.01	Date
		For Academic Use Only	Date
		Designation: Shut-off pipe for pressure and temperature measurement	



3	4	Bolt M16x70 ISO 4018	
2	1	Flange DN 50 PN 16 DIN 2633	
1	1	Pipe DN 50 PN 10	
Ref.	Quantity	Description	Id. Number
Roughness: 12.5/		Customer:	Creator: D. Castiella
			19-04-2013
	Mass:	Project: BFB Boiler	Inspector: J. Huttunen
	Scale: 1:4	Work number:	Approval Person:
		Identification number:	
		0.02	



SECTION A-A



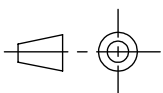
3	8	Bolt M16x70 ISO 4018	
2	1	Flange DN 80 PN 16 DIN 2633	
1	1	Pipe DN 80 PN 10	
Ref.	Quantity	Description	Id. Number

Roughness: $\nabla 12.5$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:5

Work number:

Approval Person:

Date

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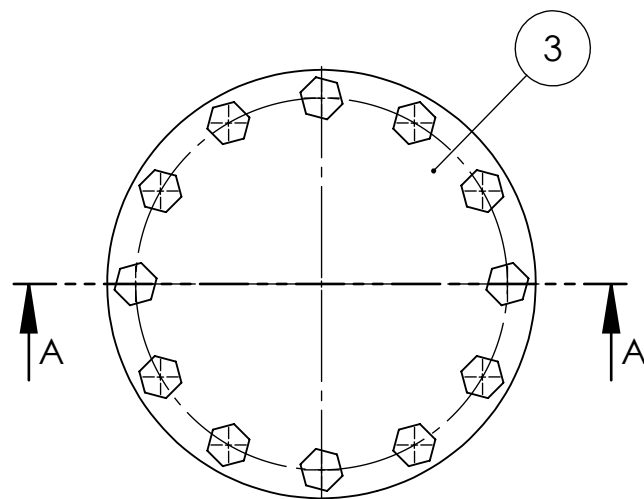
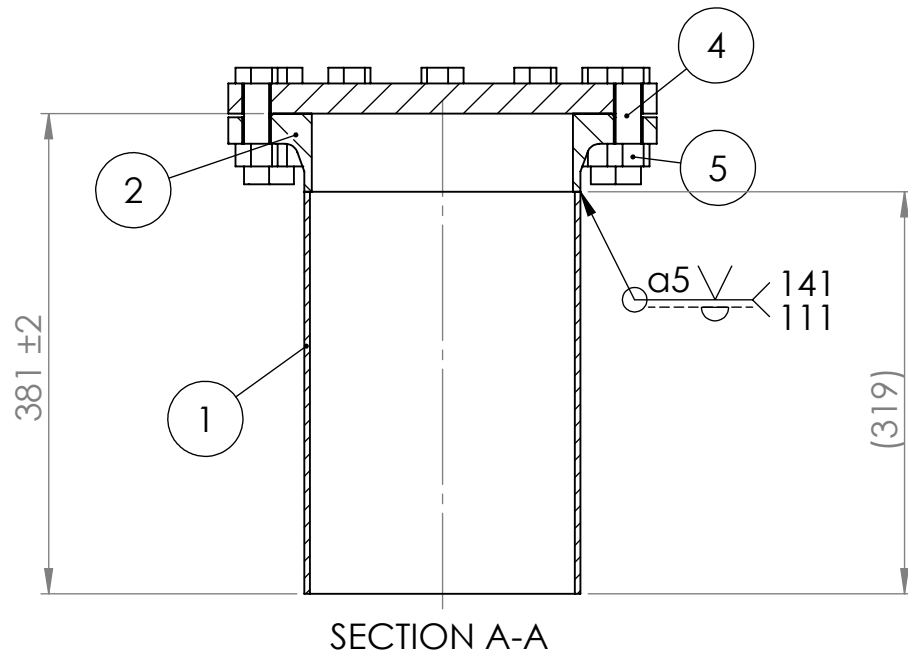
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Description:

Flange measurement
flange

Identification number:

0.03



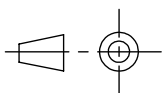
5	12	Nut M20 ISO 4032	
4	12	Bolt M20x80 ISO 4018	
3	1	Spade DN 200 PN 16	
2	1	Flange DN 200 PN 16	
1	1	Pipe DN 200 PN 10	
Ref.	Quantity	Description	Id. Number

Roughness: $\sqrt{12.5}$

Customer:

Creator: D. Castiella

19-04-2013



Mass:

Project: BFB Boiler

Inspector: J. Huttunen

Date

Scale: 1:6

Work number:

Approval Person:

Date

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Description:
Maintenance flange
DN 200

Identification number:
0.04