

Simple,
Market based,
Affordable,
Repairable
Technologies



Rope pump

Model 3



www.smartcentregroup.com



The
SMART
Centre
Group

SHIPO Rope pump Model 3



Version 13-8-2014

www.shipo-tz.org

Context

The Rope pump Model 3 is a simple and low cost model. It can be installed on both tube wells and hand dug wells. It is recommended to combine it with a well cover and apron to avoid any contamination. Even without a well cover, the water quality will drastically improve since the recontamination by using a bucket, will be avoided. This pump model can be a 1st step in improving a well. If a family has limited funds they can start with a basic pump. If there is more a well cover and apron can be installed. The handle can be installed at any height for instance at 1.3 meters high to fill up a tank of 90 cm high. If the handle is higher than 90 cm, it is essential to make a platform so the handle is at the height of the belly button. See manual pump model 1. In this model a wheel cover is optional as well as a return PVC pipe. See pictures below.



Rope pump Model 3, with a return pipe, without wheel cover. Used for domestic use and irrigation of a garden. The length of the poles in the ground is 60 to 80 cm.



For mounting of the pump pipe and return pipe use galvanized wire. The yellow rope prevents that the handle turns back after pumping is stopped.

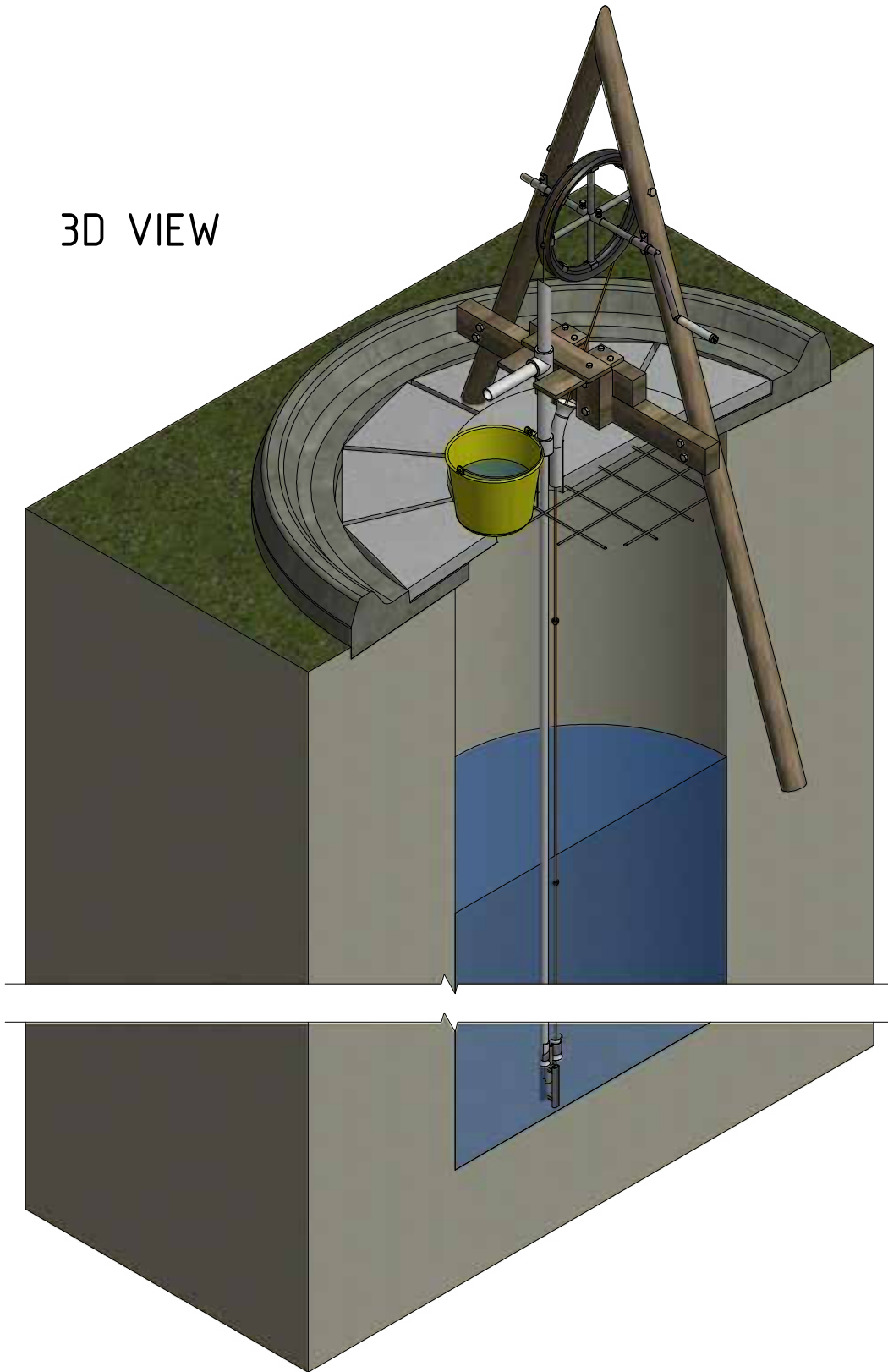


By mounting the handle higher a water tank can be filled up. The dimensions; length, distance of poles depend on the situation. To avoid termites poles have to be treated with Creosote and or oil. Also the part in the ground can be protected with plastic sheet around the poles.






The Model can be a 1st step pump.
Step 1. Install handle and PVC pipes
Step 2. Install well cover and apron
Even without a well cover, water quality will improve 60% or more.

3D VIEW

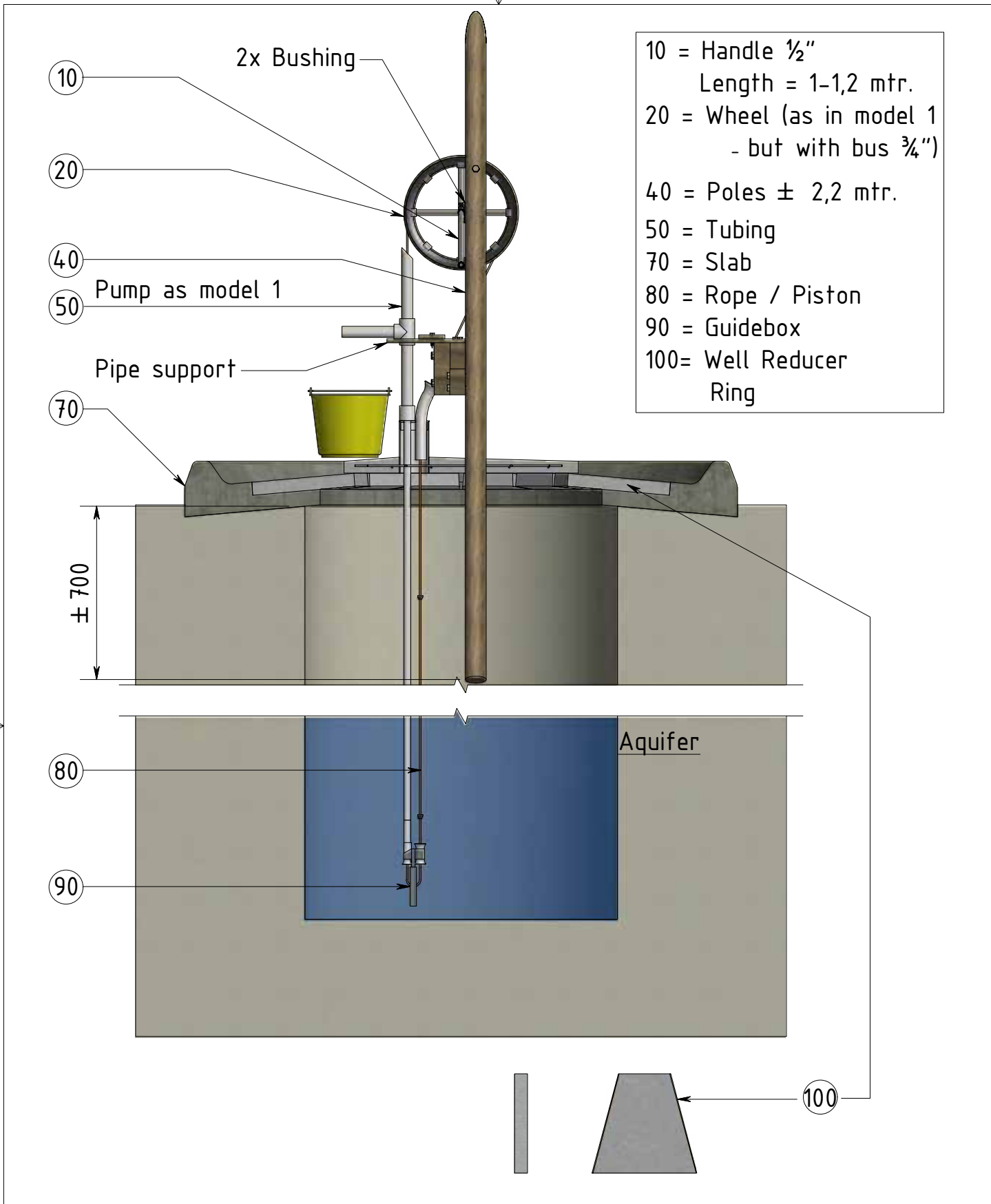


Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3
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Projection: 	Scale: 	Drawing by: AvdHeuvelSR	Creation Date: 5-7-2014
	Unit : mm	Approved by: H. Holtslag	Approved Date: 5-7-2014

 META	Parts:	Part number:	Sheet size:
	3D View - Dug Well	3D View Dug Well Model	

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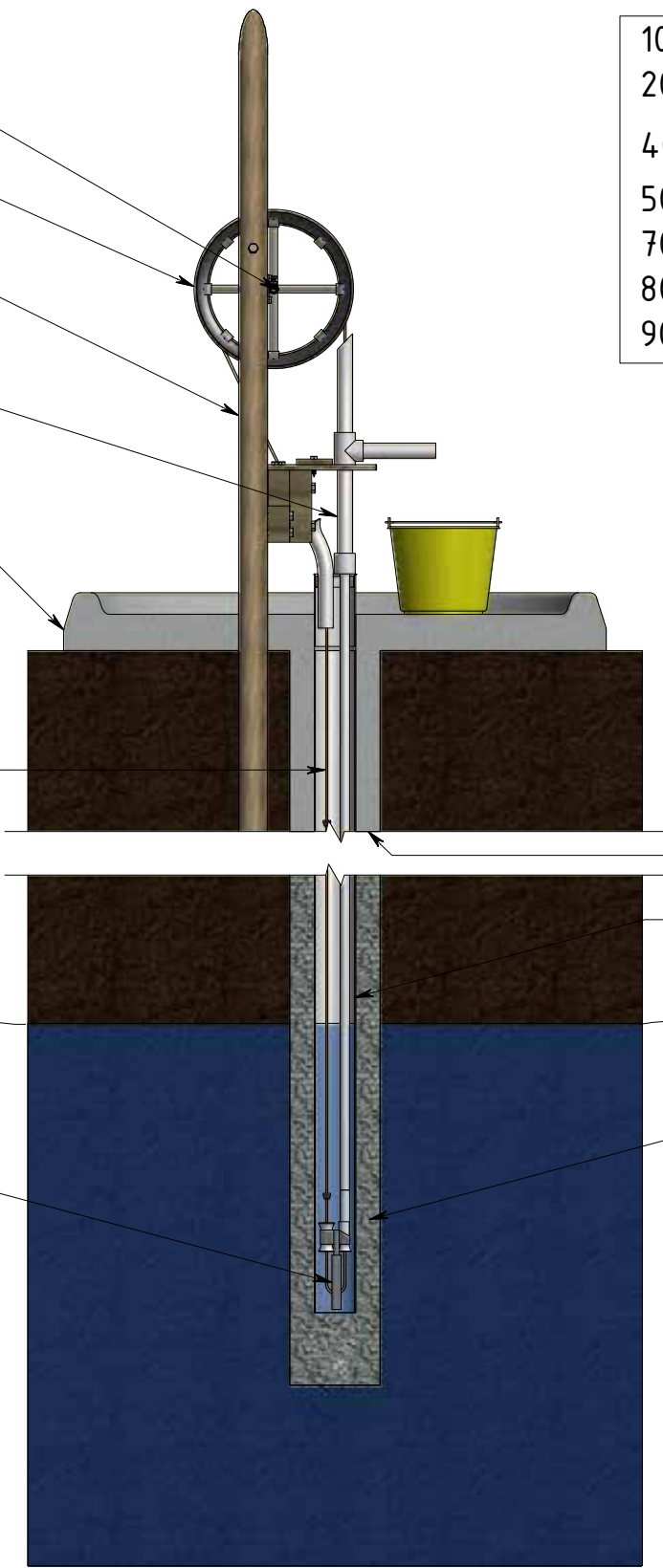


Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1 : 20 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 3-7-2014	
	Parts: Installed on a Dug Well	Approved by: H. Holtslag	Part number:	Approved Date: 5-7-2014
			Sheet size:	A4

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10
20
40
50
70
80
90

10 = Handle
20 = Wheel
40 = Poles ± 2,2 mtr.
50 = Tubing
70 = Slab
80 = Rope / Piston
90 = Guidebox

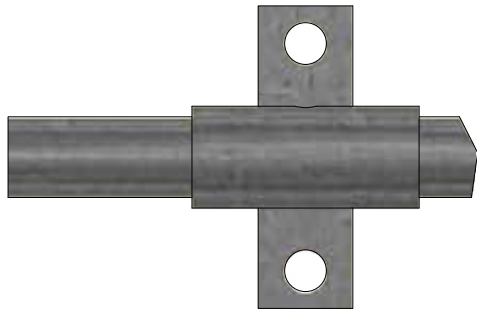


Hygienic seal
Casing PVC
2" to 4"
Gravel pack

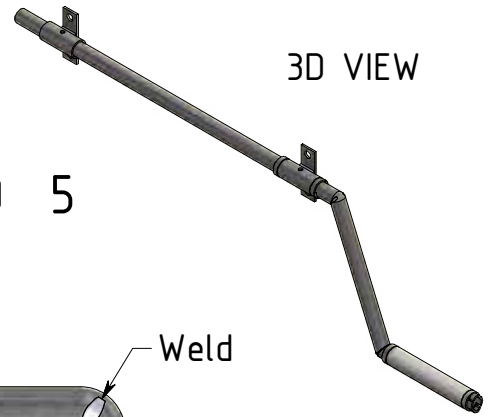
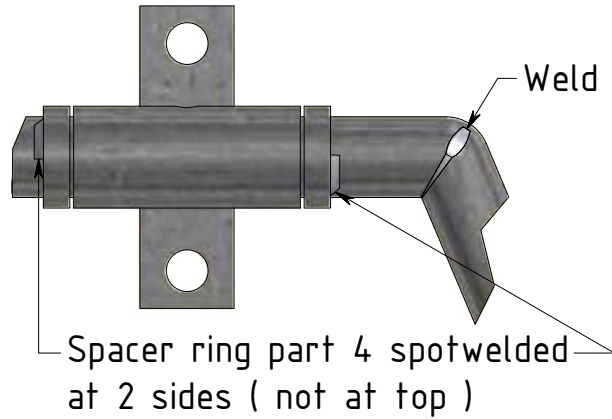
Aquifer

Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1 : 20 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 3-7-2014	
	Parts: Installed on a Borehole	Approved by: H. Holtslag	Approved Date: 4-7-2014	Sheet size: A4
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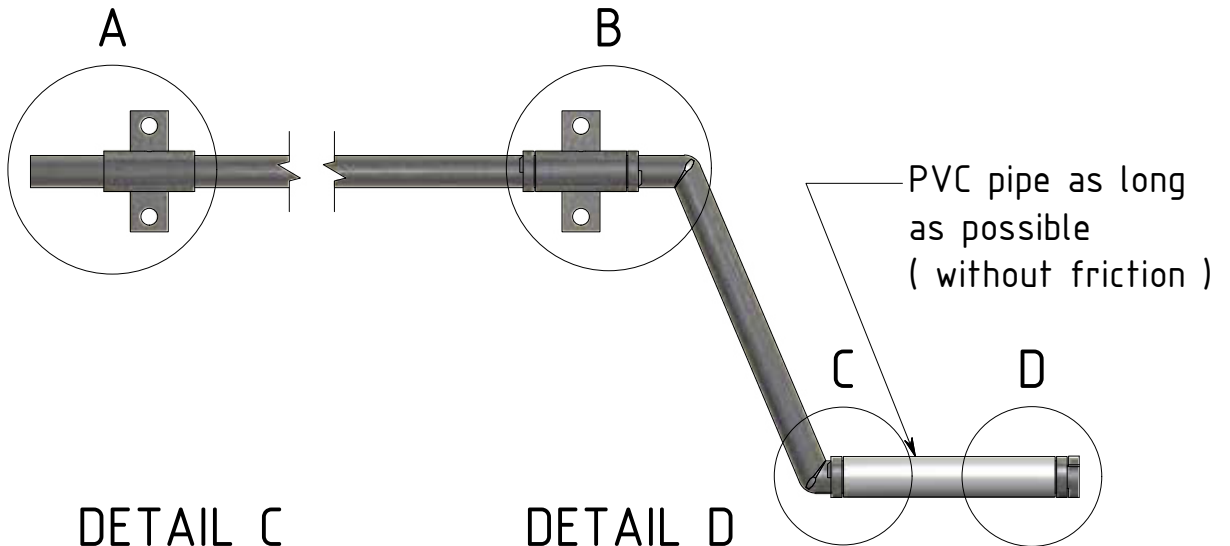
DETAIL A
(1 : 2)
PART 3 AND 5



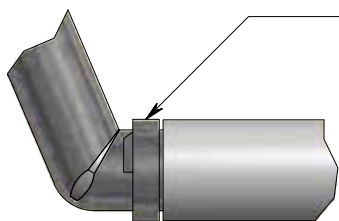
DETAIL B
(1 : 2)
PART 3 AND 5



3D VIEW

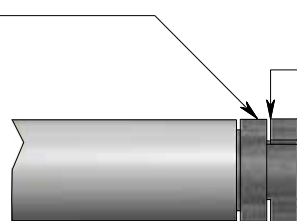


DETAIL C
(1 : 2)



DETAIL D
(1 : 2)

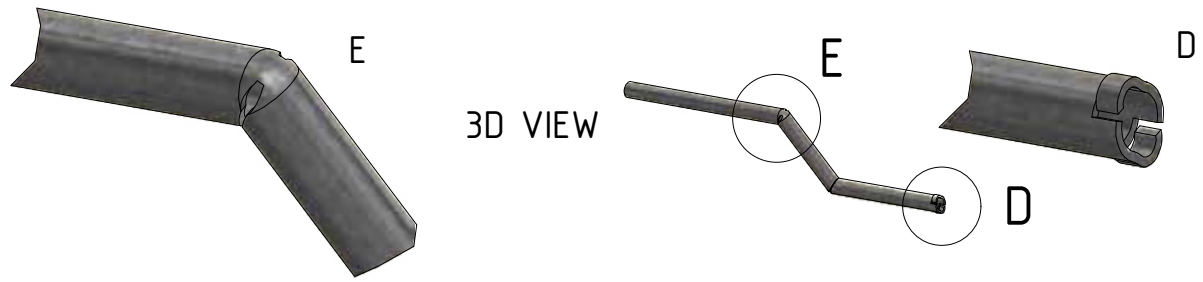
Spacer ring part 4



Cut and bend

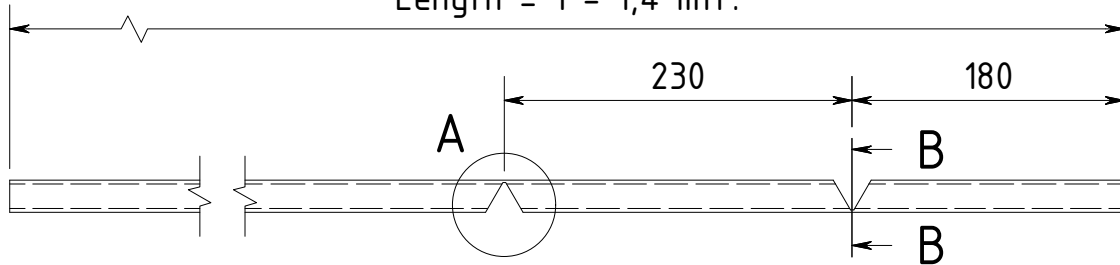


Roughness:	Dimensional tolerance: ISO 2768-1-f / -2-H	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1:2 1:5 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 3-7-2014	
		Approved by: H. Holtslag	Approved Date: 4-7-2014	
Parts: Handle - Assembly		Part number: 10	Sheet size: A4	



3D VIEW

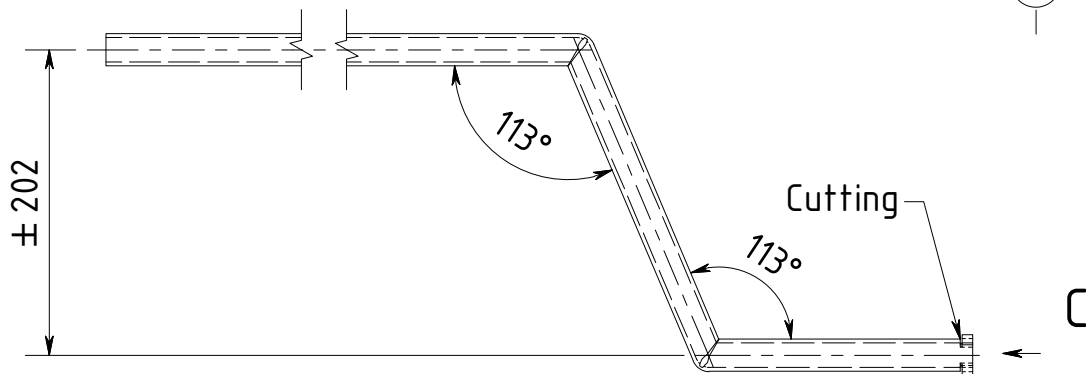
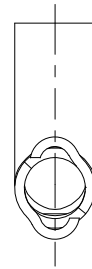
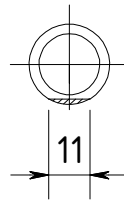
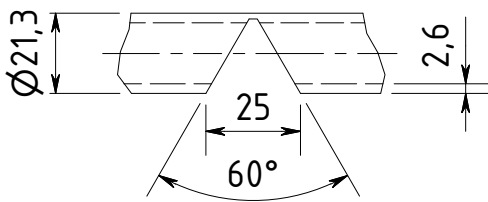
Length = 1 - 1,4 mtr.



DETAIL A
(1 : 2)

SECTION B-B
(1 : 2)

VIEW C
(1 : 2)



ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER	MASS
1	1	Pipe 21,3 x 2,6 mm Length 1 - 1,4 mtr.	S 235 JRH	Part 10-1	0,641 kg

PARTS LIST

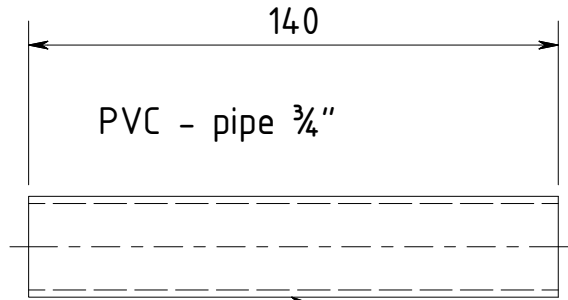
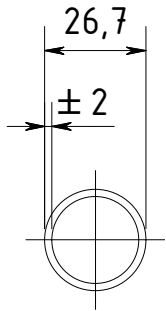
Roughness: Dimensional tolerance: ISO 2768-1-f / -2-H Title/Name: **ROPE PUMP Model 3**

Projection: Scale: 1:2 1:5 Drawing by: AvdHeuvelSR Creation Date: 3-7-2014
Unit : mm Approved by: H. Holtslag Approved Date: 4-7-2014

Parts: **Handle - Galvanized** Part number: **10-1** Sheet size: **A4**

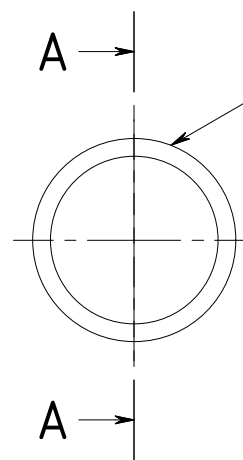
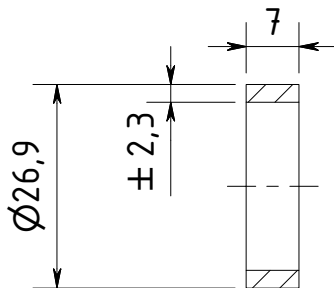


3D VIEW



Part 2

SECTION A-A
(1 : 1)



Part 4

Spacer ring
pipe 3/4"
Galvanized

4	4	Pipe 26,9 x 2,3 mm Length 7 mm	S 235 JRH	Part 4	
2	1	Pipe 26,7 x 2 mm Length 140 mm	PVC	Part 2	0,029 kg
ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER	MASS

PARTS LIST

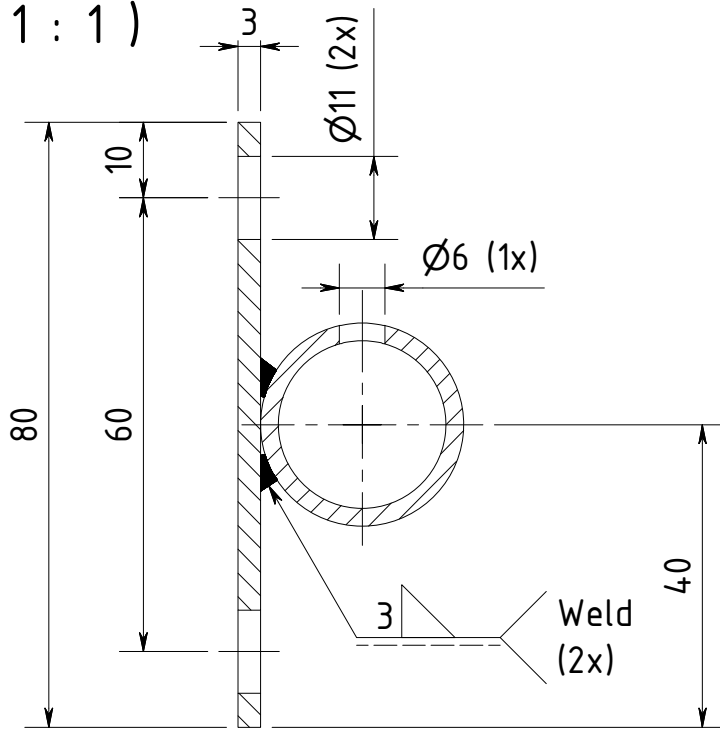
Roughness:	Dimensional tolerance: ISO 2768-1-f / -2-H	Title/Name: ROPE PUMP Model 3
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Projection: 	Scale: 1:1 1:2 Unit : mm	Drawing by: AvdHeuvelSR Approved by: H. Holtslag	Creation Date: 3-7-2014 Approved Date: 4-7-2014
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	Parts: Handle, PVC pipe and Spacer ring	Part number: 10-2 10-4	Sheet size: A4
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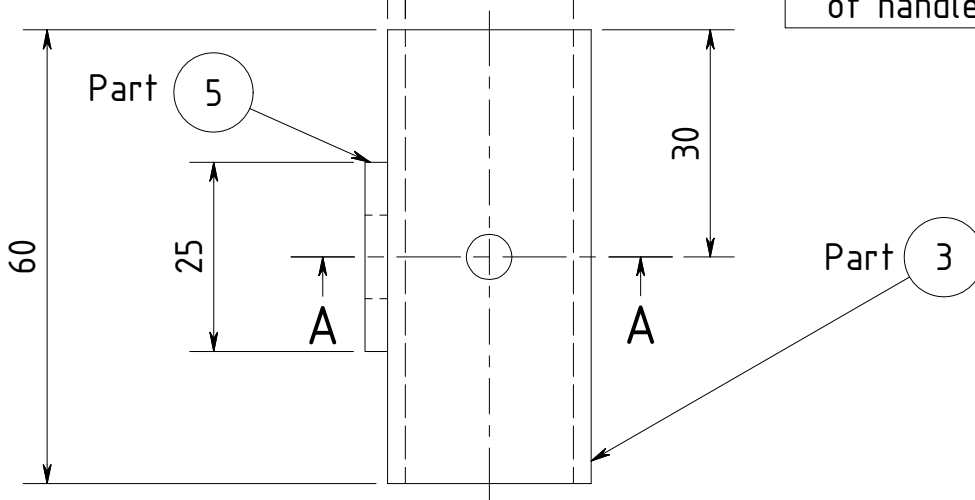
SECTION A-A
(1 : 1)

3D VIEW



Pipe 3/4" x ± 2,3 Galvanized * ± 22,2

* Inside diametre 0,5-0,8 mm more than outside diametre of handle.



ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER	MASS
5	2	Flat bar 25 x 3mm Length 100mm	S 235 JR	Part 5	0,043 kg
3	2	Pipe 3/4" x 2,35mm Length 60mm	S 235 JRH	Part 3	0,085 kg

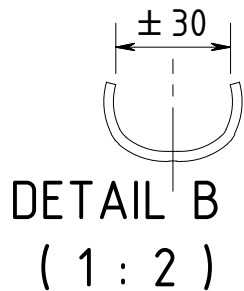
PARTS LIST

Roughness:	Dimensional tolerance: ISO 2768-1-f / -2-H	Title/Name: ROPE PUMP Model 3
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Projection:	Scale: 1 : 1 Unit : mm	Drawing by: AvdHeuvelSR Approved by: H. Holtslag	Creation Date: 3-7-2014 Approved Date: 4-7-2014
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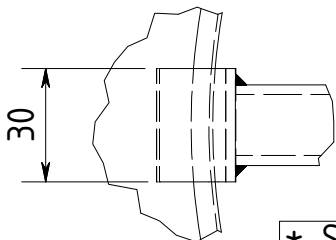
	Parts: Bushing - Assembly	Part number: 10-3 10-5	Sheet size: A4
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DETAIL C (1 : 2)

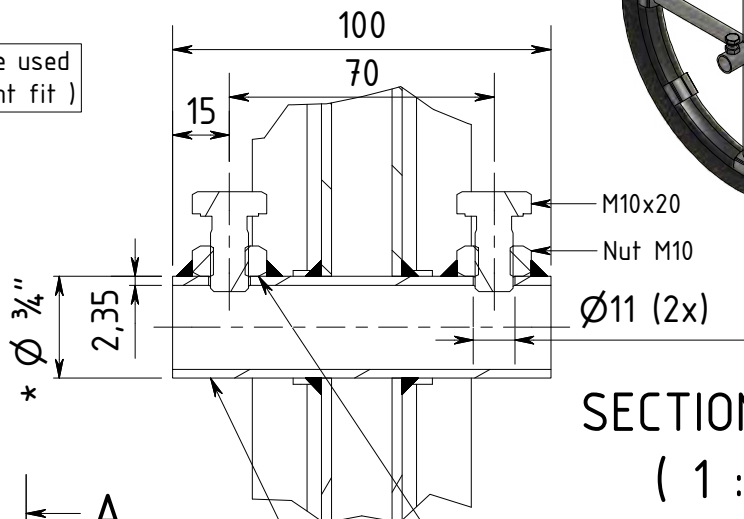


Clamps made off
¾" Pipe-Galvanized

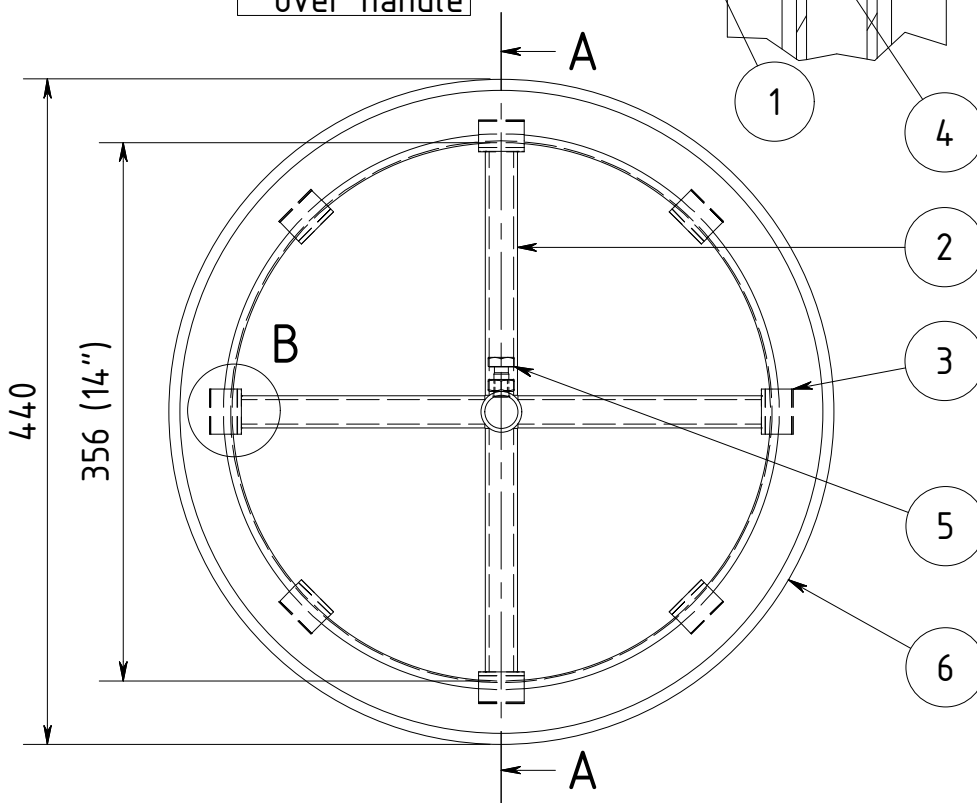
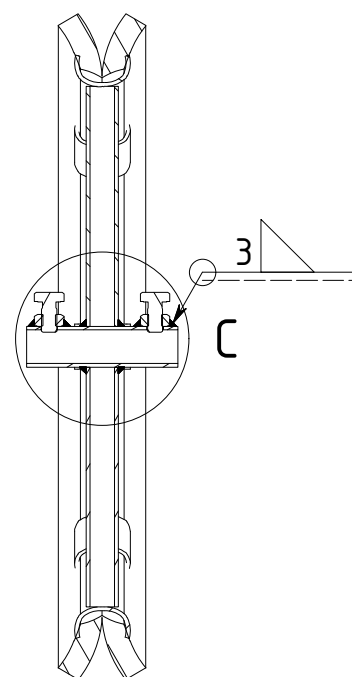
Depends on tire used
(should be tight fit)



* Should fit
over handle



SECTION A-A (1 : 5)




2	4	Pipe ½" x 2,6 mm Length 159 mm	S 235 JRH Galv.	Part 2	0,192 kg
3	8	Pipe ¾" x 2,6 mm Length 30 mm	S 235 JRH Galv.	Part 3	0,037 kg
5	2	Bolt M10 x 20 mm	Steel 8.8 Galvanized	Part 5	0,024 kg
6	1	Wheel rim 14"	Car tire 14"	Part 6	1,320 kg
4	2	Nut M10	Steel 8.8 Galvanized	Part 4	0,012 kg
1	1	Pipe ¾" x 2,6 mm Length 100 mm	S 235 JRH Galv.	Part 1	0,139 kg
ITEM	QTY	DESCRIPTION	MATERIAL	PART NUMBER	MASS

PARTS LIST

Roughness: Dimensional tolerance: ISO 2768-1-f / -2-H Title/Name: **ROPE PUMP Model 3**

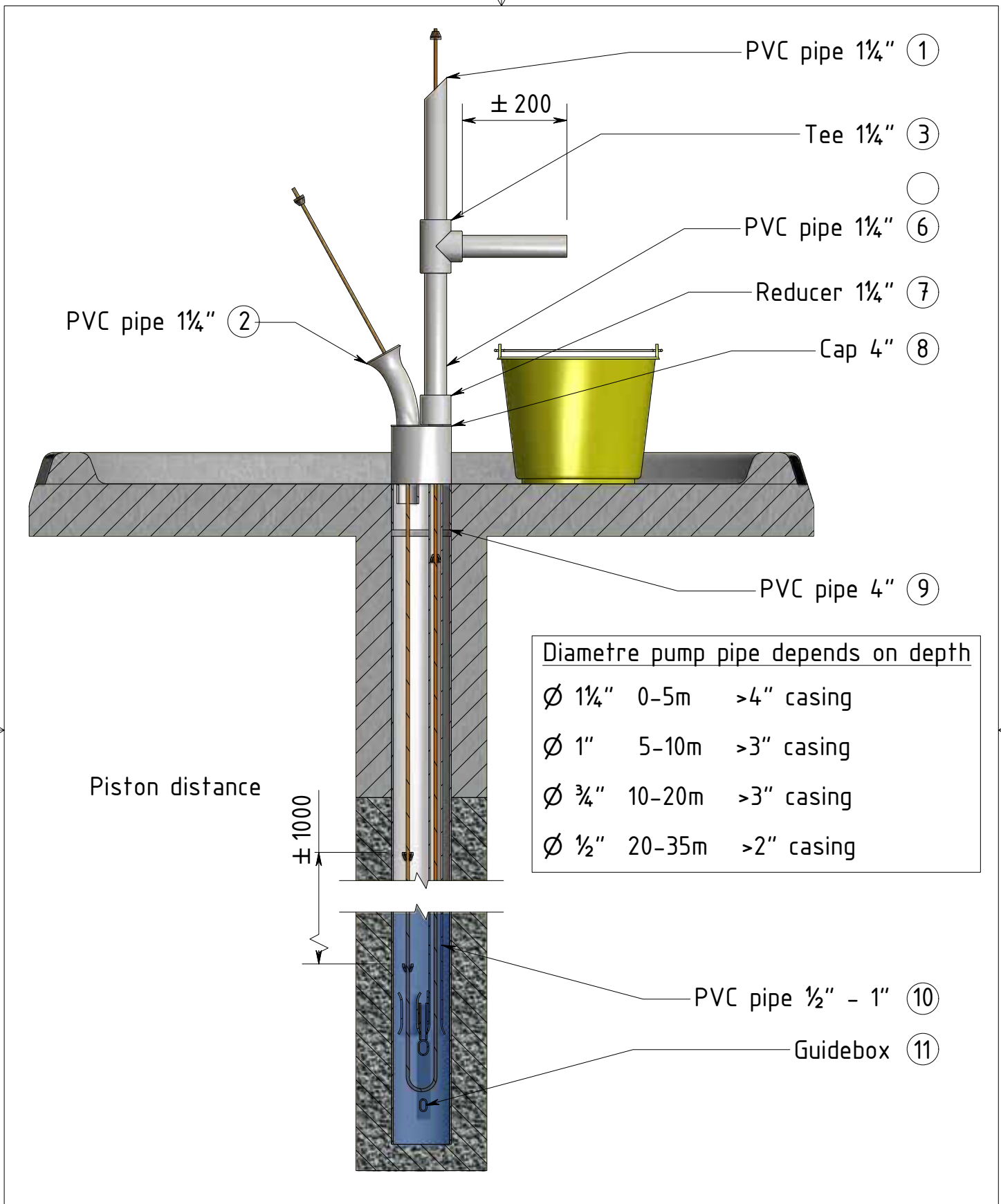
Projection: Scale: 1:2 1:5 Drawing by: AvdHeuvelSR Creation Date: 3-7-2014
Unit : mm Approved by: H. Holtslag Approved Date: 4-7-2014



Parts:
Wheel - Assembly

Part number:
20-1 to 20-6

Sheet size:
A4

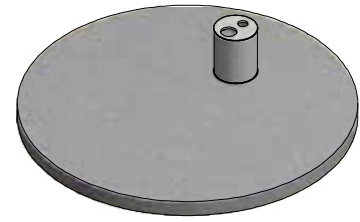
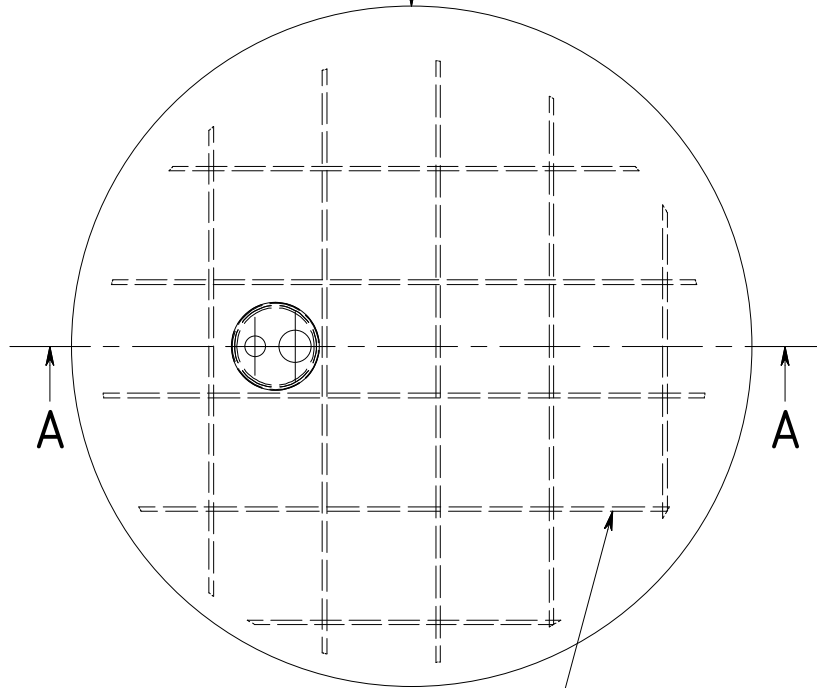


Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1 : 10 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 3-7-2014	
		Approved by: H. Holtslag	Approved Date: 4-7-2014	
		Parts: Tubing - Assembly	Part number: 50	Sheet size: A4

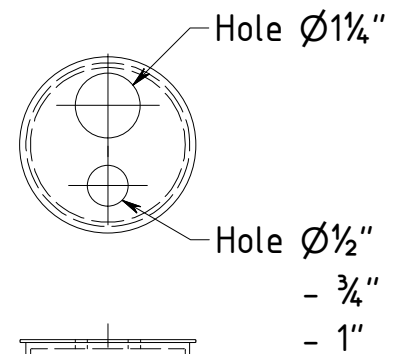
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Part ① - Cement slab

3D VIEW



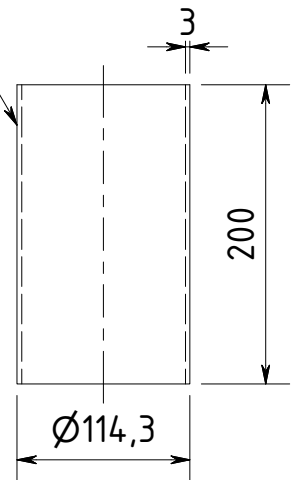
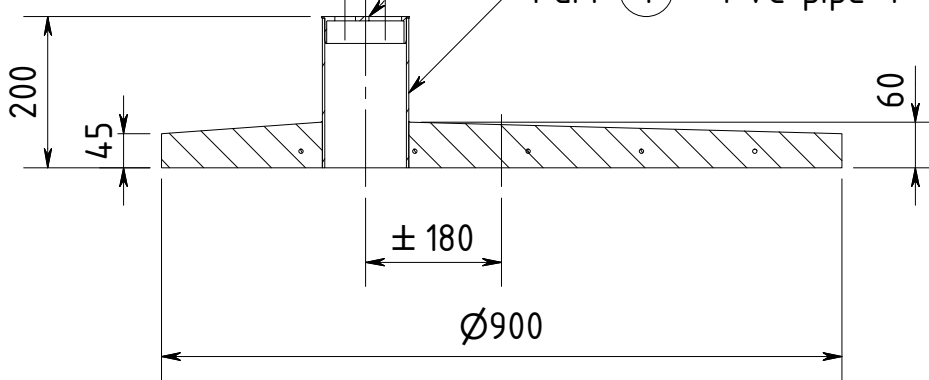
Part ② - Rebar $\varnothing 6 - 800$



SECTION A-A
(1 : 10)

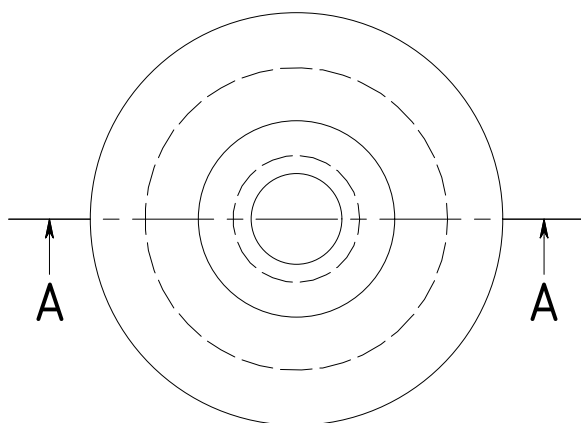
Part ③ - PVC cap 4"

Part ④ - PVC pipe 4" x 3



Roughness:	Dimensional tolerance: ISO 2768-1-f / -2-H	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1:5 1:10 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 5-7-2014	
	Parts: Slab / Wellcover - Assembly	Approved by: H. Holtslag	Part number: 70-1 to 4	Approved Date: 5-7-2014 Sheet size: A4

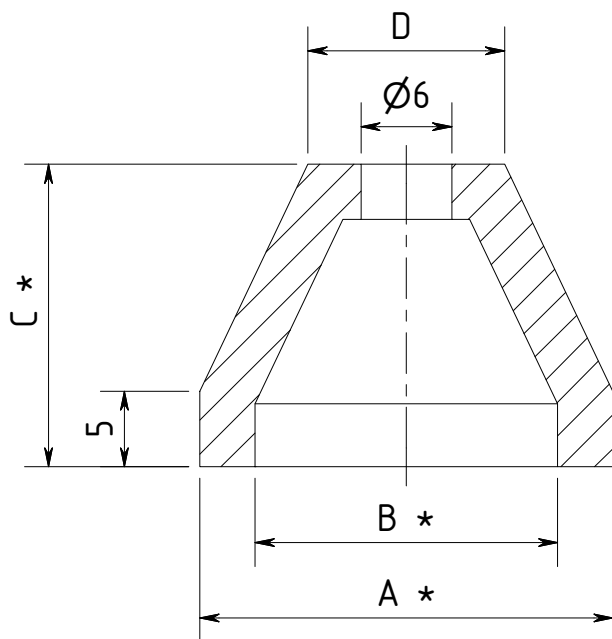
3D VIEW



SECTION A-A
(2 : 1)

* Size depends on pump pipe diameter inside.

Pipe	A *	B **	C **	D
1/2"	15,3	11	13	11
3/4"	20,3	13	15	12
1"	27,3	20	20	13



* Tolerance $\pm 0,2$ ** Tolerance $\pm 0,5$

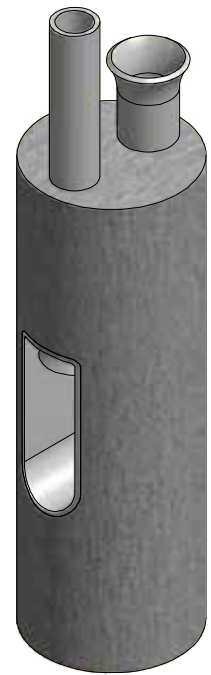
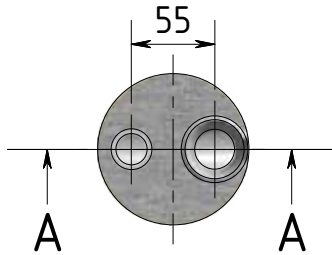
Based on pipes 1/2" OD = 20 ID = 16
 3/4" OD = 25 ID = 21
 1" OD = 32 ID = 28

OD Outside diameter
 ID Inside diameter

Roughness:	Dimensional tolerance: ISO 2768-1-f / -2-H	Title/Name: ROPE PUMP		
Projection:	Scale: 2 : 1 Unit : mm	Drawing by: AvdHeuvelSR	Creation Date: 23-6-2014	
	Parts: Piston	Approved by: H. Holtslag	Part number: 80	Approved Date: 4-7-2014 Sheet size: A4

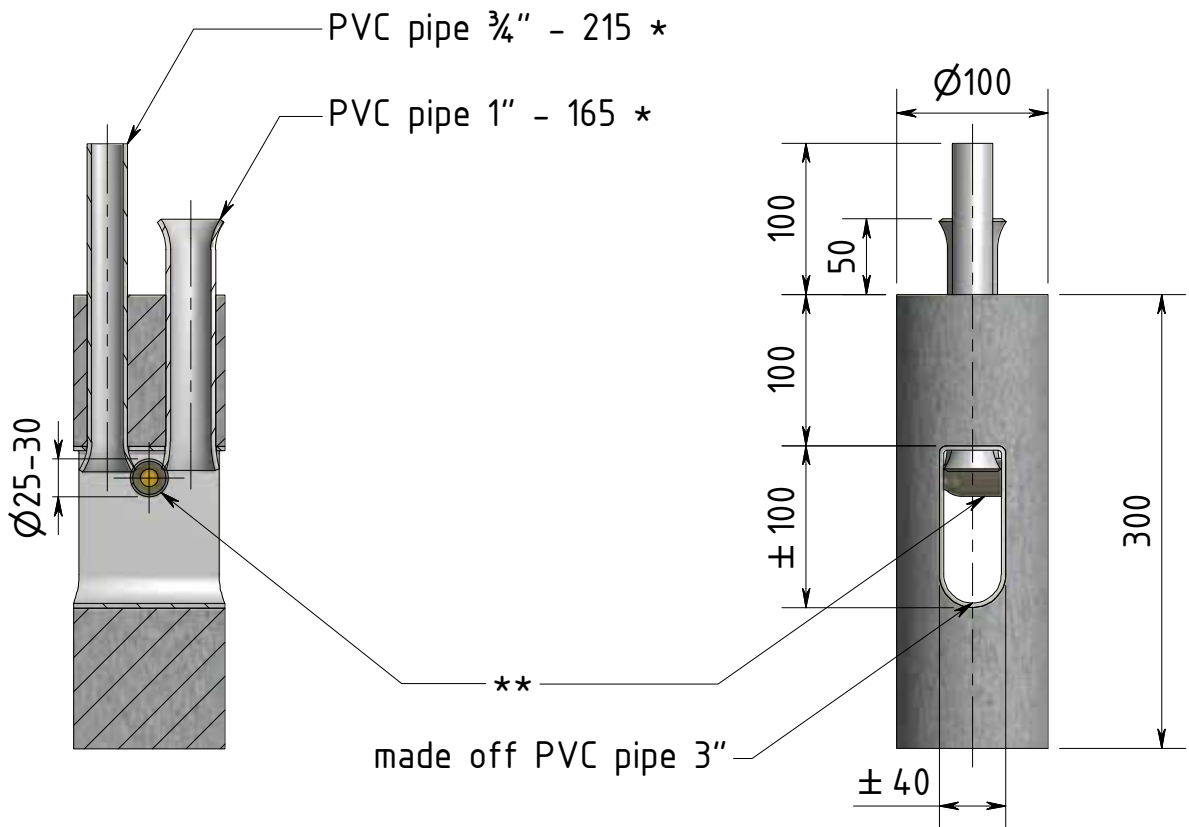
* This guidebox is for $\frac{3}{4}$ "
 For pump pipes of 1" and $\frac{1}{2}$ "
 pump pipe + return pipe
 are different $\frac{1}{2}$ " - $\frac{3}{4}$ "
 1" - $1\frac{1}{4}$ "

** Use small glass bottle
 or Galv. pipe $\frac{3}{4}$ "



3D VIEW

SECTION A-A
 (1 : 5)



Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3
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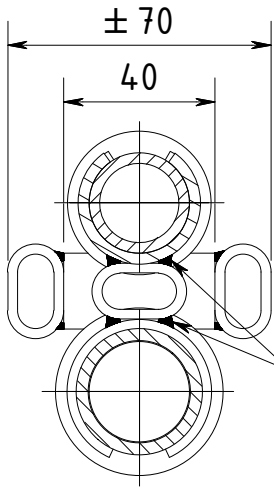
Projection:	Scale: 1 : 5 Unit : mm	Drawing by: AvdHeuvelSR Approved by: H. Holtslag	Creation Date: 25-6-2014 Approved Date: 4-7-2014
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	Parts: Guidebox Cement $\frac{3}{4}$ "	Part number: 90 Guidebox	Sheet size: A4
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SECTION B-B

(1 : 2)

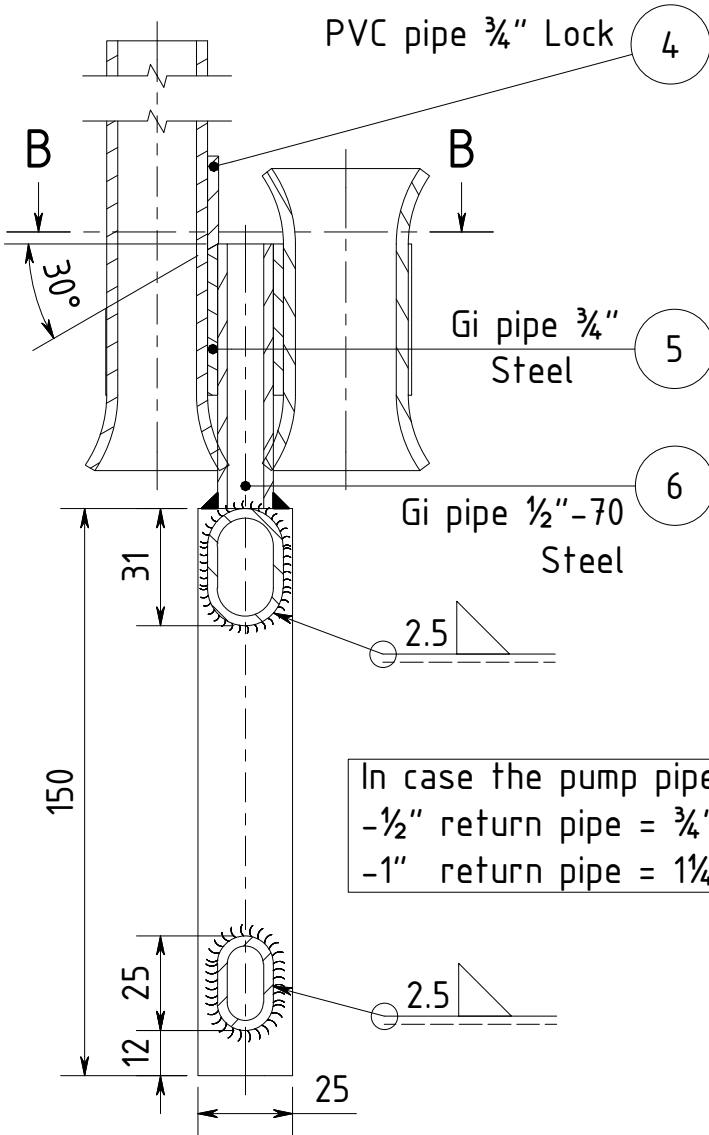


Guidebox has to fit
in casing.
min.tolerance 5 mm

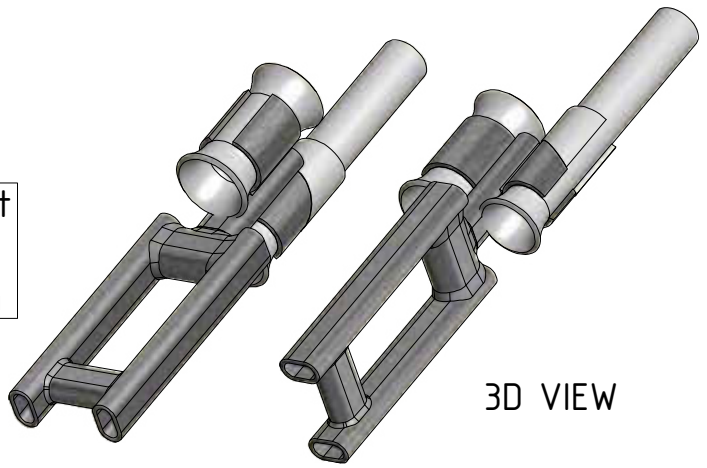
Weld

SECTION A-A

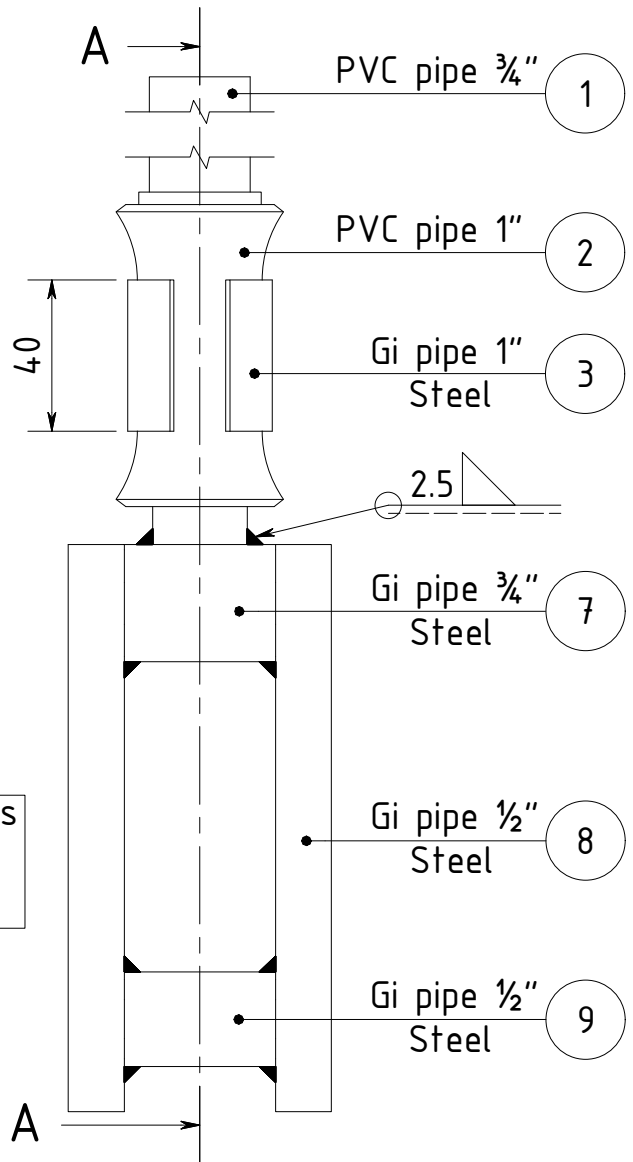
(1 : 2)



In case the pump pipe is
-1/2" return pipe = 3/4"
-1" return pipe = 1 1/4"



3D VIEW

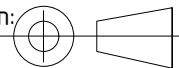


Roughness:

Dimensional tolerance:
ISO 2768-1-f / -2-H

Title/Name: **ROPE PUMP Model 3**

Projection:



Scale: 1 : 2

Unit : mm

Drawing by: AvdHeuvelSR

Approved by: H. Holtslag

Creation Date: 3-7-2014

Approved Date: 4-7-2014



META
META

Parts:
Guidebox - Assembly

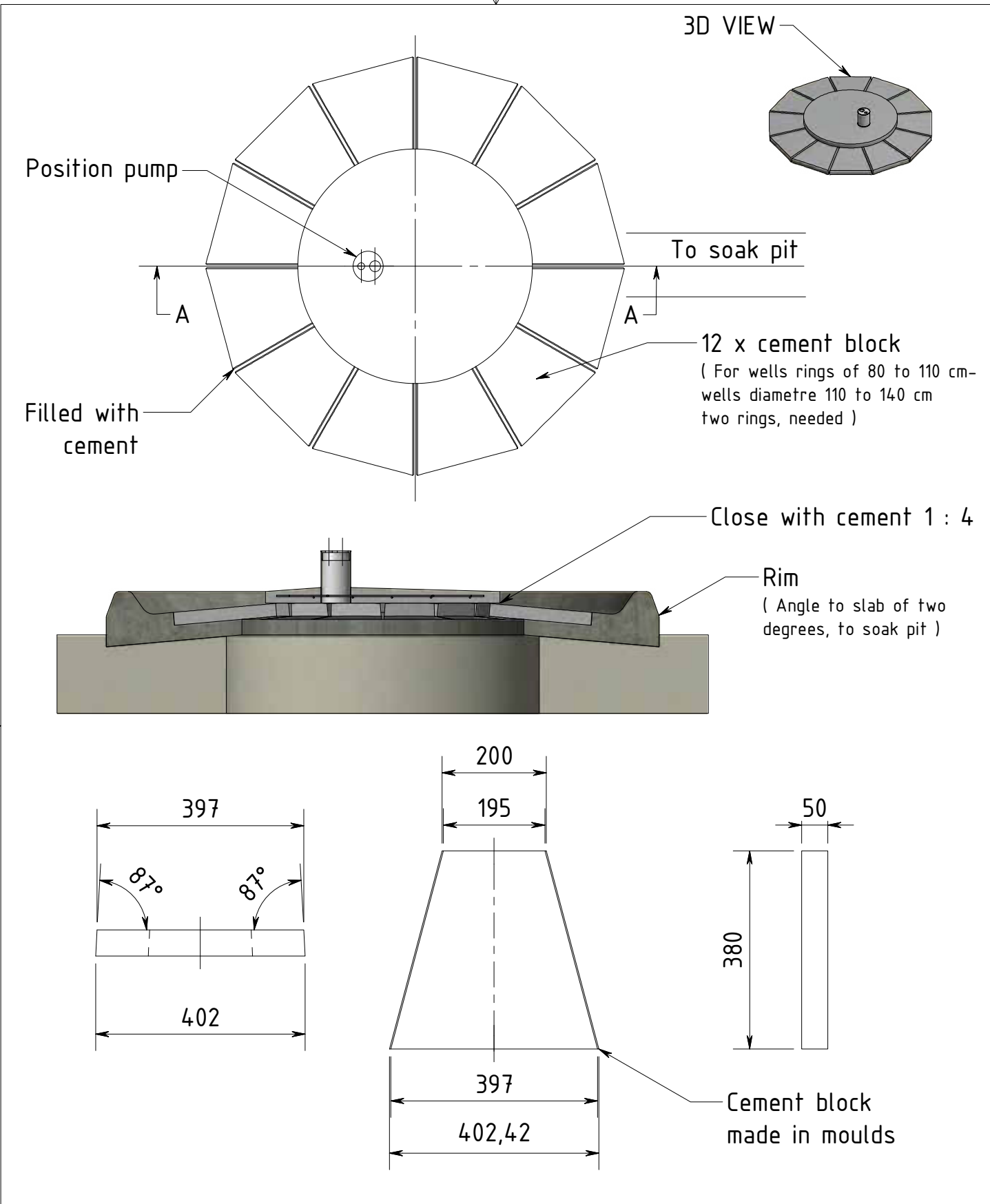
Part number:

90 - 1 to 9

Sheet size:

A4





Roughness:	Dimensional tolerance:	Title/Name: ROPE PUMP Model 3		
Projection:	Scale: 1:10 1: 20	Drawing by: AvdHeuvelSR	Creation Date: 5-7-2014	
	Unit : mm	Approved by: H. Holtslag	Approved Date: 5-7-2014	
	Parts: Well Reducer Ring	Part number: 100	Sheet size: A4	